START

U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL. NO 969

APRIL
1978

MICRO PHOTO DIVISION

DD

BELL & HOWELL

Vol. 969 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 4, 1978

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

April 4, 1978 Volume 969 Number 1

CONTENTS

	Page
Patent and Trademark Notices	
Notice to Purchasers of Trademark Indices	969 OG 2
Notice to Official Gazette Subscribers	969 OG 2
Patent Suits	969 OG 2
Reissue Applications Filed	969 OG 3
Patent Notices	
Certificates of Correction for the Week of April 4, 1978	969 OG 4
Disclaimers	969 OG 4
Dedications	969 OG 4
National Technical Information Service	969 OG 4
Condition of Patent Applications	969 OG 5
Defensive Publications (T969,001)	1
Reissue Patents Granted (29,601)	5
Plant Patents Granted (4,232)	7
Patents Granted	
General and Mechanical (4,081,864)	9
Chemical (4,082,500)	223
Electrical (4,082,914)	333
Design Patents Granted (247,656)	385
Index of Patentees	PI 1
Indices of Applicants of Defensive Publications, Reissues, Plants and Designs	PI 40
Classification of	
Patents (Including Reissues)	PI 43
Designs, Plants and Defensive Publications	PI 45
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 46
Designs, Plants and Applicants of Defensive Publications	PI 47
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $342.20 per annum for first class mailing, also available as fourth-class mail at $250.00; foreign mailing $85.55 additional; single copies $6.60 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $88.40 per annum, foreign mailing $22.10 additional; single copies $1.70 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS, price 60 cents each.

CIRCULARS OF GENERAL INFORMATION concerning TRADEMARKS, price 50 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Notice to Purchasers of Trademark Indices

An incorrect stock number has been assigned to the "1976 Index of Trademarks."

The correct stock number to be used when ordering the "1976 Index of Trademarks" through the Superintendent of Documents is as follows: 003-004-00532-7. The cost of this publication is $8.00 per copy.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

Mar. 14, 1978.

Notice to Official Gazette Subscribers

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the patent and/or trademark sections of the OFFICIAL GAZETTE, MPEP Revisions, Trademark Rules of Practice, Annual Indices, and all other patent and trademark publications.

The Superintendent of Documents advises that expiration notices are sent out approximately three months in advance of the expiration date. However, subscribers should not be dependent upon such notices. In the event that a notice is not received within two months of the expiration date, the subscriber should renew his subscription with the Superintendent of Documents and *attach a label* from the envelope in which he receives the gazette, together with a check covering the amount of the subscription.

All correspondence and inquiries concerning subscription services to patent and trademark related publications, and requests for reinstatement of subscriptions should be directed to:

Mr. C. A. LaBarre
Asst. Public Printer
Superintendent of Documents (SD)
Government Printing Office
Washington, D.C. 20401

This notice is effective with the publication date and supersedes the notice published on this subject in 939 O.G. 1, dated October 7, 1975.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

Mar. 14, 1978.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,737,503, Sprague and Scantlebury, Jr., METHOD OF MAKING AN EXPANDED OR CELLULAR POLYVINYL CHLORIDE COMPOSITION, **filed** May 24, 1972, D.C. Conn. (New Haven), Doc. 15056, *The B. F. Goodrich Company* v. *No-Ark, Inc.* Stipulation and order for dismissal of action with prejudice entered, ordering defendants to refrain from using any validly existing trade secrets asserted by Goodrich in the actions in competition, etc., Aug. 12, 1977. **Same, filed** July 28, 1969, D.C. Conn. (New Haven), Doc. 13-303, *The B. F. Goodrich Company* v. *Cellular Industries, Inc. et al.* Stipulation and order for dismissal of action with prejudice, entered, ordering defendants to refrain from using any validly existing trade secrets asserted by Goodrich in the action in competition with Goodrich, etc., Aug. 12, 1977.

2,972,349, R. A. DeWall, CAPILLARY OXYGENATOR; **3,228,876,** H. I. Mahon, PERMEABILITY SEPARATORY APPARATUS; **3,546,209,** B. J. Lipps, Jr., PROCESS FOR THE FABRICATION OF A CELLULOSE HOLLOW FIBER SEPARATORY CELL, **filed** Mar. 6, 1975, D.C. Del. (Wilmington), Doc. 75-67, *Cobe Laboratories, Inc. and Abcor, Inc.* v. *The Dow Chemical Co., Cordis Dow Corp. and The Regents of the University of Minnesota.* Judgment, except to the extent of the agreement cited, plaintiffs are hereby permanently enjoined from infringement of any of the claims of said patents. Said complaint is dismissed with prejudice, Aug. 30, 1977.

3,002,770, Chesnut and Singalewitch, THREADED JOINT WITH LUBRICATING AND SEALING RIBBON INTERPOSED BETWEEN THE THREADS, **filed** Feb. 24, 1972, D.C. Del. (Wilmington), Doc. 4334, *Johnson & Johnson* v. *W. L. Gore & Associates, Inc.* Order, claims 1, 2, and 3 of said patent are invalid for obviousness under 35 U.S.C. 103. Plaintiff is not barred from enforcing the above patent by reason of fraud, bad faith, laches or estoppel, Aug. 31, 1977.

3,049,399, Gamson and Kuehner, COMPOSITION AND METHOD FOR DEODORIZING AIR, **filed** Sept. 12, 1977, D.C., S.D. Tex. (Houston), Doc. CA H-77-1508, *H. E. Burroughs & Associates, Inc.* v. *Contamination Control, Inc.*

3,064,246, L. L. Waugh, ELECTRICALLY ILLUMINATED SIGN, filed Sept. 6, 1977. D.C., E.D. Mo. (St. Louis), Doc. 77-956C(3), *Lorin L. Waugh, doing business as Waugh Electronics* v. *Richard C. Kohm, doing business as Aero Ads of Missouri.*

3,073,235, Smith and Randall, ROOF VENTILATORS, **Re. 25,921,** L. L. Smith, ROOF RIDGE VENTILATOR, **filed** Aug. 26, 1977, D.C., S.D. Ill. (Peoria), Doc. 77-1099, *HC Products Co.* v. *Air Vent, Inc. and Laurence Edward Curran, Jr.*

3,077,724, Stoddard and Seem, APPARATUS FOR PROCESSING YARNS, **filed** Sept. 7, 1977, D.C., W.D.N.C. (Charlotte), Doc. C-C-77-0252, *Lex Tex Ltd. Inc.* v. *Leesona Corporation.*

3,147,882, A. R. Waters, STACKING AND NESTING CONTAINER, **filed** Jan. 31, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73-C-47, *Alfred R. Waters* v. *G. B. Lewis & Co.* Consent judgment and decree, said patent infringed by defendant. Defandant's counterclaim is dismissed with prejudice, Sept. 6, 1977.

3,155,249, L. N. Johnson, BOAT SUPPORT FOR TRAILERS, **filed** Sept. 13, 1977, D.C., N.D. Tex. (Fort Worth), Doc. CA-4-77-249, *E-Z Loader Boat Trailers, Inc.* v. *Shoreline Trailer Sales, Inc.*

3,228,876. (See 2,972,349.)

3,270,268, Carmichael, Maier and Schilling, ALTERNATOR WITH SILICON CONTROLLED RECTIFIER REGULATOR FOR BATTERY CHARGING, **filed** Aug. 29, 1977, D.C. M.D. Fla. (Orlando), Doc. 77-372-Orl-R, *Syncro Corporation* v. *Minks Electronics Inc.*

3,397,001, N. R. Friedman, CLOSURE LATCH ASSEMBLY, **filed** Aug. 26, 1977, D.C., N.D. Ohio (Akron), Doc. C77-323A, *Kindergard Corporation* v. *Pace Inc., Donkin Products Inc., Raymond C. Casper and Charles Casper.*

3,440,525, C. P. Cardeiro, pH METER AND CONTROL SYSTEM, **filed** Sept. 6, 1977, D.C., E.D. Ill. (Danville), Doc. CV 77-0167-D, *Uniloc, Inc.* v. *Stran Corporation and Aquatronics International Inc.*

3,441,393, Finneran, Mayo, Multhaup and Smith, PROCESS FOR THE PRODUCTION OF HYDROGEN-RICH GAS, **filed** Aug. 22, 1975, D.C., W.D. Okla. (Oklahoma City), Doc. C-750713-D, *Pullman Incorporated* v. *W. R. Grace & Co. and Woodward Chemical Corporation.* Complaint of defendant is dismissed without prejudice and counterclaims dismissed with prejudice, Aug. 18, 1977.

3,463,197, W. L. Slade, WIRE-BRAIDED HYDRAULIC HOSE, **filed** July 14, 1975, D.C. Del. (Wilmington), Doc. 75-195, *Raybestos-Manhatton, Inc.* v. *Atlas Corporation.* Pursuant to the provisions of Rule 41, F.R. Civ. P., it is stipulated that the complaint and counterclaim be and the same hereby are dismissed, Aug. 31, 1977.

3,491,590, B. K. Watkins, POWER STOPPER WEIGHT TRANSFER APPARATUS, **filed** Sept. 13, 1977, D.C., M.D. Pa. (Scranton), Doc. C-77-846, *Billy K. Watkins* v. *Franklin County Tractor, Puller Association, Inc. and Carl B. Allison.*

3,540,684, S. L. Snyder, PILOT CHUTE CONTROLLED INFLATION SYSTEM FOR PARACHUTES; **3,866,862,** same, RISER CONTROLS FOR GLIDING PARACHUTES, **filed** Aug. 31, 1977, D.C.N.J. (Camden), Doc. C-77-1812, *Stephen L. Snyder* v. *North American Aerodynamics, Inc. and John P. Higgins.*

3,546,209. (See 2,972,349.)

3,624,536. D. E. Norton, HIGH-DYNAMIC-RANGE AMPLIFIER, **filed** Sept. 15, 1977, D.C., M.D. Fla. (Orlando), Doc. 77-395-Orl-R, *Adams-Russell Co., Inc.* v. *Q-Bit Corporation.*

3,675,367, R. D. Amburn, APPARATUS FOR MAGNETICALLY TREATING SEEDS, **filed** May 17, D.C., E.D. Mich. (Detroit), Doc. 76-71002, *Raymond D. Amburn and Agro-Magnetics, Inc.* v. *Harold Forster Industries Ltd. and Qsine Corporation Limited.* Consent judgment, except as expressly reserved in the agreement of settlement, nonexclusive license and release between the parties, the parties hereby release each other from all claims, counterclaims and defenses raised in the pleadings and any such claims and counterclaims are hereby dismissed with prejudice, Sept. 6, 1977.

3,732,913, W. A. Wrono, TOLL-UP SLATTED SHADE ASSEMBLY, **filed** Nov. 21, 1973, D.C. S.D. Fla. (Fort Lauderdale), Doc. (FL) 73-155-JE, *Wrono Enterprise Corporation* v. *Sandor-Tapco, Inc.* Settlement and consent to entry of final decree, defendant enjoined from manufacture, use and sale of all infringing products, Jan. 15, 1974. **Same, filed** Jan. 30, 1974, D.C., S.D. Fla. (Fort Lauderdale), Doc. (FL) 74-36-JE, *Wrono Enterprise Corporation* v. *Armor Shield Aluminum Products, Inc. and Armor Shield Products Company.* Settlement and consent to final decree, defendants agree to discontinue from manufacture, sale and/or use of any purlin and headed assembly of a roll-up slatted shade assembly, etc., July 29, 1974.

3,778,800, Blackwell and Staby, SELF-MONITORING BATTERY OPERATED CIRCUIT; **3,899,732,** P.A. Staby, METHOD AND APPARATUS FOR MONITORING BATTERY ENERGY LEVEL, **filed** Sept. 7, 1977, D.C. Colo. (Denver), Doc. 77-W-830, *Teledyne Industries Inc.* v. *Statitrol Corporation.*

3,814,139, Loyd and Mills, INSULATING CONNECTOR; **3,908,267,** same, METHOD OF APPLYING AN INSULATING CONNECTOR, **filed** Sept. 1, 1977, D.C., W.D.N.C. (Statesville), Doc. ST-C-77-34, *Stone Industrial Division of J. L. Clark Mfg. Co.* v. *Niemand Industries, Inc.*

3,855,208, Rutner, Rapun and Lewin, DERIVATIVES OF DIGOXIGENIN; **3,953,431,** same, **filed** Oct. 29, 1975, D.C. Mass. (Boston), Doc. C.A. 75-4481-C, *Becton, Dickinson and Co., Inc.* v. *Clinical Assays, Inc.*

3,863,192, I. R. Grey, WATERPROOF MECHANICALLY PROTECTED SENSOR PACKAGE AND METHOD OF INSTALLATION, **filed** Aug. 25, 1977, D.C., N.D. Calif. (San Francisco), Doc. C-77-1897-WWS, *Irving Richard Grey* v. *C.T.E., Inc. and John J. Labno.*

3,866,862. (See 3,540,684.)

3,899,732. (See 3,778,800.)

3,908,267. (See 3,814,139.)

3,953,431. (See 3,855,208.)

3,999,050, S. G. Pitroda, ELECTRONIC DIARY, **filed** Aug. 31, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3246, *Satyan G. Pitroda* v. *American Express Company.*

Re. 25,921. (See 3,073,235.)

D. 198,760, L. T. Harris, RIVETLESS CHAIN LINK, **filed** Feb. 10, 1975, D.C., E.D. Wis. (Milwaukee), Doc. 75-66, *Janes Manufacturing, Inc.* v. *Portee, Inc.* Stipulation and order dismissing action with prejudice, Aug. 29, 1977.

D. 243,427, W. R. Watts, FRAME FOR A SEAT, **filed** Sept. 9, 1977, D.C. Del. (Wilmington), Doc. 77-343, *William R. Watts* v. *University of Delaware.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,549,089, Re. S.N. 854,905, Filed Nov. 25, 1977, Cl. 236/15, METHOD AND MEANS FOR TRIMMING POSITION CONTROL MEMBERS, Bruce E. Hamlett, Owner of Record: *Milton Roy Company, St. Petersburg, Fla.,* Attorney or Agent: Richard E. Kurtz, Ex. Gp.: 344

3,892,270, Re. S.N. 811,502, Filed Jun. 30, 1977, Cl. 166/251, PRODUCTION OF HYDROCARBONS FROM UNDERGROUND FORMATIONS, Robert H. Lindquist, Owner of Record: *Chevron Research Company, San Francisco, Calif.,* Attorney or Agent: James A. Buchanan, Jr., Ex. Gp.: 354

3,901,181, Re. S.N. 874,184, Filed Feb. 1, 1978, Cl. 118/7, CEMENT APPLYING MECHANISM, Walter Vornberger, Owner of Record: *International Shoe Machine Corporation, Nashua, N.H.,* Attorney or Agent: Albert Gordon, Ex. Gp.: 352

3,935,546, Re. S.N. 872,275, Filed Jan. 25, 1978, Cl. 331/116 R, COMPLEMENTARY MOS TRANSISTOR CRYSTAL OSCILLATOR CIRCUIT, Shinji Morozumi, et al., Owner of Record: *Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan,* Attorney or Agent: Harold I. Kaplan, et al., Ex. Gp.: 252

3,938,553, Re. S.N. 874,575, Filed Feb. 2, 1978, Cl. 137/625.47, VALVE CONSTRUCTION, Robert Ortega, Owner of Record: *Inventor,* Attorney or Agent: William W. Haefliger, Ex. Gp.: 341

3,938,708, Re. S.N. 867,456, Filed Jan. 6, 1978, Cl. 222/95, AEROSOL DISPENSING SYSTEM, Norman D. Burger, Owner of Record: *Norman D. Burger, Culver City, Calif.; Nicholas A. Mardesich, Palos Verdes Estates, Calif.,* Attorney or Agent: Thomas H. Jones, et al., Ex. Gp.: 344

3,949,258, Re. S.N. 872,120, Filed Jan. 25, 1978, Cl. 313/25, METHOD AND MEANS FOR SUPPRESSING OZONE GENERATED BY ARC LAMPS, Charles Soodak, Owner of Record: *Baxter Travenol Laboratories, Inc., Deerfield, Ill.,* Attorney or Agent: Paul C. Flattery, et al., Ex. Gp.: 252

3,952,849, Re. S.N. 862,764, Filed Dec. 20, 1977, Cl. 192/41, SPRAG CLUTCHES, Edward Joseph Brownhill et al., Owner of Record: *Renold Limited, Manchester, England,* Attorney or Agent: Robert D. Flynn, et al., Ex. Gp.: 345

4,000,000, Re. S.N. 875,397, Filed Feb. 6, 1978, Cl. 106/280, PROCESS FOR RECYCLING ASPHALT-AGGREGATE COMPOSITIONS, Robert L. Mendenhall, Owner of Record: *Inventor,* Attorney or Agent: Jerry R. Seiler, Ex. Gp.: 142

PATENT NOTICES

Certificates of Correction for the Week of Apr. 4, 1978

D. 244,927	4,038,423	4,051,950	4,059,735
D. 246,731	4,038,534	4,052,037	4,060,585
3,776,629	4,039,067	4,052,263	4,060,851
3,778,583	4,039,175	4,052,462	4,060,981
3,859,448	4,039,715	4,052,586	4,061,015
3,898,081	4,040,000	4,052,691	4,061,063
3,908,063	4,040,801	4,052,938	4,061,145
3,910,944	4,041,055	4,053,285	4,061,383
3,921,598	4,041,229	4,053,433	4,061,453
3,925,507	4,041,413	4,055,601	4,061,593
3,933,643	4,042,603	4,055,638	4,061,770
3,935,182	4,043,028	4,055,790	4,061,906
3,938,051	4,044,345	4,056,047	4,061,998
3,948,959	4,044,520	4,056,352	4,062,096
3,959,140	4,044,793	4,056,368	4,062,335
3,966,332	4,045,112	4,056,470	4,062,340
3,967,774	4,045,504	4,056,651	4,062,486
3,972,908	4,046,080	4,056,707	4,062,565
3,980,006	4,046,666	4,056,850	4,062,580
4,011,269	4,046,730	4,057,069	4,062,849
4,011,838	4,046,774	4,057,221	4,062,873
4,013,696	4,046,952	4,057,310	4,062,875
4,015,393	4,047,012	4,057,322	4,062,879
4,017,440	4,047,125	4,057,349	4,063,010
4,018,901	4,048,140	4,057,413	4,063,023
4,019,907	4,048,496	4,057,846	4,063,033
4,022,231	4,048,972	4,057,937	4,063,109
4,022,577	4,049,028	4,058,080	4,063,236
4,025,198	4,049,584	4,058,115	4,063,455
4,026,657	4,049,624	4,058,536	4,063,554
4,027,305	4,049,625	4,058,576	4,063,717
4,029,679	4,049,630	4,058,880	4,063,934
4,031,747	4,049,833	4,058,917	4,064,032
4,032,429	4,049,857	4,058,954	4,064,151
4,032,510	4,050,277	4,058,979	4,064,368
4,032,712	4,050,405	4,059,179	4,064,633
4,033,761	4,050,530	4,059,306	4,065,134
4,034,193	4,050,643	4,059,483	4,065,316
4,035,301	4,050,895	4,059,497	4,065,456
4,035,625	4,050,942	4,059,518	4,066,157
4,036,798	4,050,978	4,059,582	4,066,174
4,036,861	4,051,073	4,059,602	
4,037,316	4,051,391	4,059,657	

Disclaimer

3,982,923.—*Eugene G. Teach* El Cerrito, Calif. GEM-BIS AMIDE HERBICIDE ANTIDOTE COMPOSITIONS AND METHODS OF USE. Patent dated Sept. 28, 1976. Disclaimer filed Nov. 21, 1977, by the assignee, *Stauffer Chemical Company.*

Hereby enters this disclaimer to claims 1 through 15 of said patent.

Dedication

3,050,533.—*Neil Munro* and *Duncan Maclean,* Harrogate, England. MANUFACTURE OF ESTERS. Patent dated Aug. 21, 1962. Dedication filed Feb. 2, 1978, by the assignee, *Imperial Chemical Industries Limited.*

Hereby dedicates to the Public the remaining term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF INTERIOR
Branch of Patents
18th & C St. NW.
Washington, D.C. 20240

Patent Application 815,127. Muffler for Pneumatic Drill. Filed July 13, 1977.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents Office of Naval Research, Code 302
Arlington, Va. 22217

Patent application 817,884. Fluidic Interface Means. Filed July 20, 1977.

Patent application 832,507. Active Waveguide Coupler for Surface Acoustic Waves. Filed Sept. 12, 1977.

Patent application 833,414. Strain Actuated Hydraulic Holdback Bar. Filed Sept. 15, 1977.

Patent application 833,415. Catapult Restraint/Release System. Filed Sept. 15, 1977.

Patent application 835,089. Remote Plotter Control System. Filed Sept. 21, 1977.

Patent application 836,167. Explosively-Separated Tongue and Groove Joint. Filed Sept. 23, 1977.

Patent application 836,822. Intense Ion Beam Producing Reflex Triode. Filed Sept. 26, 1977.

Patent application 837 058. Dual Ground Microstrip Antennas. Filed Sept. 28, 1977.

Patent application 839,946. A Vinyl Polymer-Fluoroalkylether Oligomer Composition. Filed Oct. 6, 1977.

Patent application 840,080. Dual Asymmetrically Fed Electric Microstrip Dipole Antenna. Filed Oct. 6, 1977.

Patent application 840,081. Dual Diagonally Fed Electric Microstrip Dipole Antenna. Filed Oct. 6, 1977.

Patent application 840,082. Dual Notch Fed Electric Microstrip Dipole Antenna. Filed Oct. 6, 1977.

Patent application 840,865. Submersible Apparatus for Evacuating Seawater From Suction-Type Work-Handling Gripper Members. Filed Oct. 11, 1977.

Patent application 847,331. Notched/Diagonally Fed Twin Electric Microstrip Dipole Antennas. Filed Oct. 31, 1977.

Patent application 847,454. End Fed Twin Electric Microstrip Dipole Antennas. Filed Oct. 31, 1977.

Patent 4,048,500. Infrared Background Suppression. Filed Nov. 8, 1976. Patented Sept. 13, 1977. Not available NTIS.

Patent 4,051,062. 7-Amino Coumarin Dyes for Flashlamp-Pumped Dye Lasers. Filed Sept. 3, 1976. Patented Sept. 27, 1977. Not available NTIS.

Patent 4,053,886. Stepped Dual-Frequency Ocean-Wave Spectrometer. Filed Nov. 19, 1976. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,054,879. Dual-Frequency, Remote Ocean-Wave Spectrometer. Filed Nov. 19, 1976. Patented Oct. 18, 1977. Not available NTIS.

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA Code GP–2
Washington, D.C. 20546

Patent 4,027,494. Low Gravity Phase Separator. Filed Sept. 12, 1975. Patented June 7, 1977. Not available NTIS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 11, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-11-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-1-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-20-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-6-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-7-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-10-76
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-9-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-28-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-5-77
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-3-76
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-6-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-28-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	5-17-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-6-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-9-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-9-77

Expiration of patents: The patents within the range of numbers indicated below expire during February 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,970,313 to 2,973,518, inclusive
Plant Patents ..... Numbers 2,019 to 2,031, inclusive

Pr
Pub
num
appl
D
asse

Me
a
3
al

Syn
sha
bei
wh
nan
in t
ban
leas
elim
no
ser
use

GR
U

Me
b
S

Pro
sub
du
mo
sub
cer
is
tu
a
pr
the
gr
so
gr
ur

DEFENSIVE PUBLICATIONS

PUBLISHED APRIL 4, 1978

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T969,001
DYED FIBERS

Merton Louis Davis, 3A Palmetto Arms, Camden, S.C. 29020, and Lee Oleh Dworjanyn, 819 Milledge Rd., Augusta, Ga. 30904

Continuation-in-part of Ser. No. 712,650, Aug. 9, 1976, abandoned. This application Oct. 4, 1977, Ser. No. 839,319

Int. Cl.[2] D06P *1/00*

U.S. Cl. 8—25

No Drawing. 24 Pages Specification

Synthetic organic fibers are dyed to a dark brown to black shade with a mixture of dyes, one of the dyes in the mixture being a green to blue dye having an absorption spectrum in which the peak value of absorbance is between 600 and 700 nanometers, said green to blue dye being further characterized in that the ratio of absorbance at 700 nanometers to the absorbance at the peak value between 600 and 700 nanometers is at least 0.05. The presence of this green to blue dye reduces or eliminates transmittance of red light along the fiber axis, so that no reddish glow is seen when the ends of the fibers are observed. The dark brown to black fibers are thus well suited for use in artificial furs.

T969,002
GRANULAR AMMONIUM PHOSPHATE SULFATE AND UREA-AMMONIUM PHOSPHATE SULFATE USING A COMMON PIPE-CROSS REACTOR

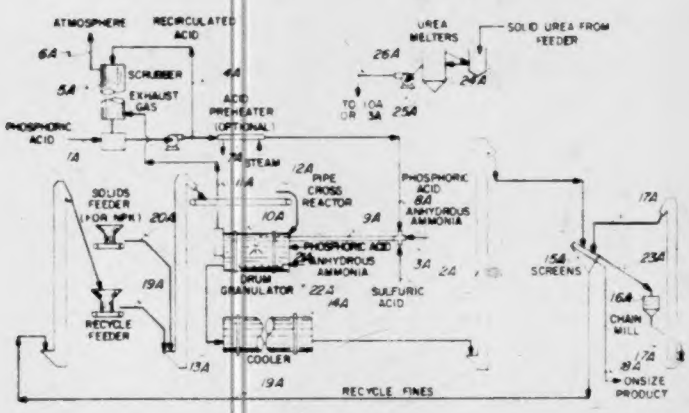
Melvin M. Norton, Sheffield, and Byron R. Parker, Florence, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Jul. 25, 1977, Ser. No. 818,602

Int. Cl.[2] C05C *9/00*; C05B *7/00*

U.S. Cl. 71—29

7 Sheets Drawing. 33 Pages Specification



FLOWSHEET OF THE GRANULATION PILOT-PLANT FOR PRODUCTION OF UREA-AMMONIUM PHOSPHATE SULFATE FERTILIZER USING PIPE-CROSS REACTOR

Process for production of fertilizers from phosphoric and sulfuric acids, anhydrous ammonia, and urea, and for the production of high-analysis granular ammonium phosphates, ammonium phosphate sulfates, and urea-ammonium phosphate sulfates—some with polyphosphate contents of up to 68 percent of the total P_2O_5. A specially designed pipe-cross reactor is used to produce a homogeneous melt or slurry of low moisture content from the reactants and thus eliminates the need for a preneutralizer as used in many prior-art granular fertilizer processes. Because of the low melt or slurry moisture content, the dryer is eliminated. The elimination of these two items greatly simplifies pollution abatement, since both items are sources of fumes and dust. The equipment used to produce granular monoammonium phosphate, diammonium phosphate, urea-ammonium phosphate sulfate, and ammonium phosphate sulfate fertilizers is inexpensive and simple to operate. The products produced are dust-free and of such particle size that they are well suited for bulk blends. Ammonium phosphate sulfate grades of 12-48-0, 6-24-24, 13-13-13, 10-40-10, a monoammonium phosphate grade of 11-55-0, a diammonium phosphate and diammonium phosphate sulfate grade of 18-46-0, and urea-ammonium phosphate sulfate grades of 33-11-0, 17-17-17, and 20-10-10 have been produced.

T969,003
CONTROLLED RELEASE LIQUID FERTILIZERS

John F. Phillips, Jr., and John J. Kohler, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Jun. 20, 1977, Ser. No. 807,842

Int. Cl.[2] C05G *3/06*

U.S. Cl. 71—64 F

1 Sheets Drawing. 12 Pages Specification

Liquid fertilizers having controlled release properties are prepared from fertilizer solutions and oil-surfactant mixtures. An invert surfactant is dissolved in an oil such as kerosene. The amount of surfactant used can vary over a wide range. Use of between 0.6 and 1.0 percent surfactant in the fertilizer formulation yields fertilizers with acceptable release rates. Liquid fertilizer is slowly added to the oil-surfactant mixture with vigorous agitation causing a water-in-oil emulsion to form. Mixtures containing 80 to 90 percent liquid fertilizer and 10 to 20 percent oil made excellent products.

The final fertilizer product is an invert emulsion containing 80 to 90 percent liquid fertilizer, 10 to 20 percent oil, and 0.6 to 1.0 percent surfactant. The product consists of small droplets of liquid fertilizer solution surrounded by a thin but essential impenetrable oil-surfactant layer. Water slowly dissolves the surfactant from the oil, thus breaking the emulsion and allowing the liquid fertilizer to be released. Ammonium phosphate, ammonium polyphosphate, ammonium nitrate, potassium chloride, uran solutions, and mixtures thereof, may be used as liquid fertilizers.

T969,004
LIGHT-ABSORBING FILTERS

Bruce Martin Watkiss, Welwyn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 2, 1977, Ser. No. 792,502

Claims priority, application United Kingdom, May 10, 1976, 19105/76

Int. Cl.[2] G03C *5/04*; G03B *5/20, 15/02*

U.S. Cl. 96—27 R

No. Drawing. 10 Pages Specification

Light-absorbing filters comprise a self-supporting polymeric film, such as an oriented polyethylene terephthalate film, containing or coated with a lacquer containing a compound which absorbs light in the wavelength band less than 0.4 μm (i.e. UV light). The filters are particularly useful as UV-absorbing filters for use in flashbulbs for color photography. Suitable light-absorbing compounds are hydroxyphenyl benzotriazoles, e.g. 2(2′-hydroxy-3′,5′-di-t-amylphenyl)benzotriazole, and hydroxy-substituted benzophenone, e.g. 2,2′-dihydroxy-4,4′-dimethoxy-benzophenone.

T969,005

COLOR PHOTOGRAPHIC MATERIALS CONTAINING HIGH-BOILING ORGANIC SOLVENT

Akira Tanaka; Akikazu Mikawa; Yuji Mihara, and Yasuo Mukunoki, all of No. 210 Nakanuma, Minami Ashigara-shi, Kanagawa, Japan

Filed Jul. 25, 1977, Ser. No. 818,704
Claims priority, application Japan, Jul. 23, 1976, 51-88538
Int. Cl.[2] G03C *1/40*
U.S. Cl. 96—100 R
No Drawing. 61 Pages Specification

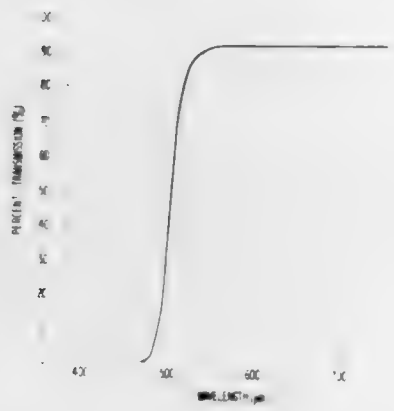
In a highly or superhighly sensitive color photographic material having at least one highly or superhighly light-sensitive silver halide emulsion layer containing a color-forming coupler and silver iodobromide grains color-sensitized with a dye having at least one sulfo group or carboxy group, the silver halide emulsion grains having a mean grain size of larger than about 1 micron, the occurrence of fog due to pressure stimulus is prevented effectively by the incorporation of a high-boiling organic solvent having a boiling point of higher than about 175° C at normal pressure in the silver halide emulsion layer in an amount of higher than about 20% by weight of the amount of binder present in the emulsion layer.

T969,006

SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSIONS

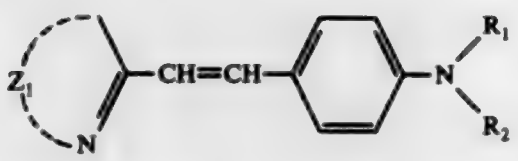
Yuji Mihari; Takeo Sakai; Hideki Ohmatsu, and Akira Sato, all of No. 210, Nakanuma, Minami Ashigara-shi, Kanagawa, Japan

Filed Jul. 15, 1977, Ser. No. 816,118
Claims priority, application Japan, Jul. 15, 1976, 51-84859
Int. Cl.[2] G03C *1/14*
U.S. Cl. 96—126
1 Sheets Drawing. 65 Pages Specification



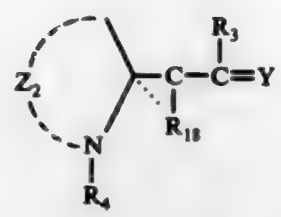
An internal latent image type silver halide photographic emulsion which provides a direct positive image by surface development in the presence of a fogging agent and which is useful in a light-sensitive material for the diffusion transfer process, which emulsion is spectrally sensitized with a supersensitizing combination of at least one sensitizing dye represented by the following general formula (I) or (II)

(I)



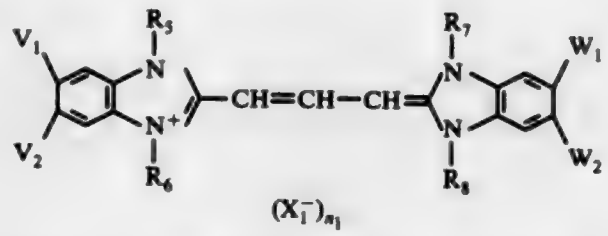
wherein Z_1 represents a non-metallic atomic group necessary to complete a 5- or 6-membered heterocyclic ring; and R_1 and R_2, which may be the same or different, each represents an alkyl group;

(II)



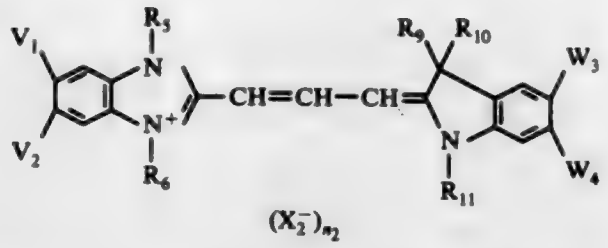
wherein Z_2 represents a non-metallic atomic group necessary to complete a 5- or 6-membered heterocyclic ring; R_3 represents an alkyl group or an aryl group; R_4 represents an alkyl group or a substituted alkyl group; R_{18} represents a hydrogen atom or an alkylene group necessary to complete a ring when R_4 and R_{18} combine to form a ring; and Y represents an oxygen atom or $=N-R_{19}$ wherein R_{19} represents a hydrogen atom, an alkyl group or an aryl group; and at least one sensitizing dye represented by the following general formula (III), (IV), (V), (VI) or (VII)

(III)



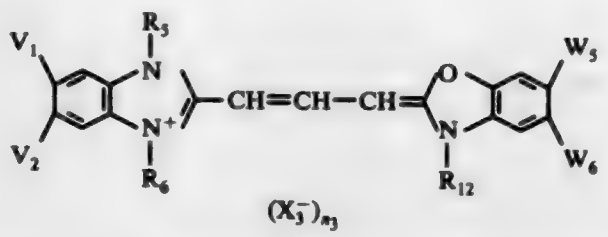
wherein V_1, V_2, W_1 and W_2, which may be the same or different, each represents a hydrogen atom, a halogen atom, a trifluoromethyl group, a cyano group, a carboxy group, an alkoxycarbonyl group, an aminosulfonyl group or an alkylsulfonyl group; R_5, R_6, R_7 and R_8, which may be the same or different, each represents an alkyl group or a substituted alkyl group; X_1 represents an acid anion; and n_1 represents 0 or 1;

(IV)

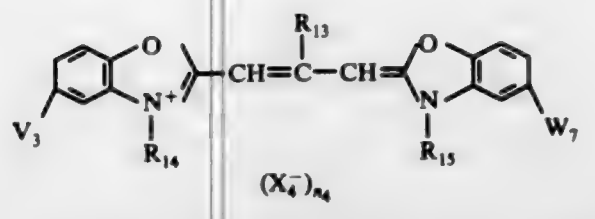


wherein V_1, V_2, R_5 and R_6, which may be the same or different, each has the same meaning as defined in general formula (III); R_9, R_{10} and R_{11}, which may be the same or different, each represents an alkyl group or a substituted alkyl group; X_2 represents an acid anion; n_2 represents 0 or 1; and W_3 and W_4, which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a hydroxy group, an acyloxy group or a phenyl group;

(V)

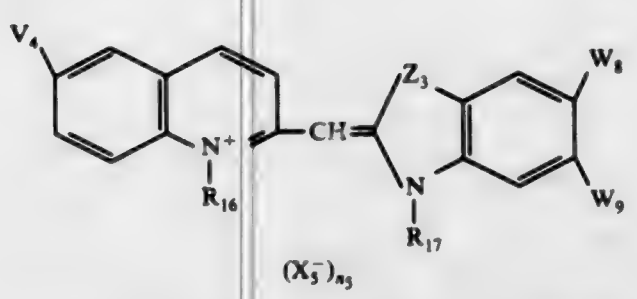


wherein V_1, V_2, R_5 and R_6, which may be the same or different, each has the same meaning as defined in general formula (III); W_5 and W_6, which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a hydroxy group, an acyloxy group or a phenyl group; R_{12} represents an alkyl group or a substituted alkyl group; X_3 represents an acid anion; and n_3 represents 0 or 1;



(VI)

wherein V_3 and W_7, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkoxy group, a hydroxy group, an acyloxy group or a phenyl group; R_{13} represents an alkyl group; R_{14} and R_{15}, which may be the same or different, each represents an alkyl group or a substituted alkyl group; X_4 represents an acid anion; and n_4 represents 0 or 1;



(VII)

wherein V_4 represents a hydrogen atom, a halogen atom, an alkyl group, a hydroxy group, an acyloxy group or a phenyl group; Z_3 represents an oxygen atom, a sulfur atom, a selenium atom or —CH=CH—; W_8 and W_9, which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a hydroxy group or a phenyl group; R_{16} and R_{17}, which may be the same or different, each represents an alkyl group or a substituted alkyl group; X_5 represents and acid anion; and n_5 represents 0 or 1.

T969,007

METHOD FOR MAKING ROCK BITS

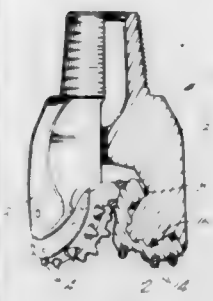
Richard E. Goetz, Huntington Beach, Calif., assignor to Smith International, Inc., Irvine, Calif.

Continuation of Ser. No. 706,632, Jul. 19, 1976, abandoned. This application Aug. 5, 1977, Ser. No. 822,009

Int. Cl.[2] B23K *15/00*

U.S. Cl. 219—121 EM

4 Sheets Drawing. 15 Pages Specification



A method of making a rock bit which is a welded assembly of legs each carrying a rotatable cutter. Electrochemical grinding is used for finish machining of mating surfaces of heat-treated bit legs, and the legs are secured together by electron-beam welding along the mating surfaces.

T969,008

PRODUCTION OF ORIENTED FIBRILLAR PRODUCTS

Frederic Neil Cogswell, Welwyn Garden City, and Jiri George Tomka, Harrogate, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 4, 1977, Ser. No. 784,630

Claims priority, application United Kingdom, Jan. 25, 1977, 2951/77

Int. Cl.[2] C08G *73/08*

U.S. Cl. 260—78.41

No Drawing. 34 Pages Specification

The process for the production of an oriented fibrillar product from a polyarylene-oxadiazole which is heat-softenable without substantial degradation when in an air-free inert atmosphere comprises extruding contiguously disposed particles of the polymer, which particles are heat-softened but non-molten and are blanketed in an air-free atmosphere of an inert fluid, through a die to produce a substantially non-degraded oriented fibrillar product. Means are provided, if necessary, to substantially prevent relaxation of the orientation resulting from the extrusion.

Particularly preferred polyarylene-oxadiazoles for use according to the process are the amorphous and non-crystallizable copolymeric polyphenylene-1,3,4-oxadiazoles having the characteristic repeating units



where R_1 is a p-phenylene radical, R_2 is a m-phenylene radical, the ratio of R_1 radicals to R_2 radicals is within the range 60/40 to 10/90, and the R_1 and/or R_2 radicals are sufficiently substituted with bulky groups such as bromine atoms to inhibit crystallisation of the polymer.

Preferably steam and/or water is the protective fluid and is derived from water associated with the polymer particles, the steam being formed by vaporization of the water during extrusion. The particles are usually in the form of a wet cake. The associated water may be present only as surface water (which has not significantly penetrated into the particles) or as water which has significantly penetrated into the polymer particles prior to extrusion. The use of liquid-interpenetrated particles is advantageous in that the vapor and/or compressed liquid provides a high pressure which provides a driving force for the extrusion and also the interpenetrated liquid flashes off from the extrudate leaving the die thereby rapidly cooling the extrudate throughout its thickness and freezing in the orientation. The extrusion product is an attractive paper-like tape, ribbon or sheet comprised of very stiff fibrils and is usually rather porous. The product can be used as such, or when coextruded with other stiff fiber-forming polymers to obtain a highly reinforced extrudate. The fibrous extrudate can also be used as a base within the interstices of which other monomers may be polymerized.

T969,009

TRANSFER OF MAGNETIC TONER PARTICLES WITH A DIRECTED MAGNETIC FIELD

Joseph A. Lahut, and Raymond E. Skoda, both of Scotia, N.Y., assignors to General Electric Company, New York, N.Y.

Continuation of Ser. No. 579,678, May 21, 1975, abandoned. This application Apr. 18, 1977, Ser. No. 788,292

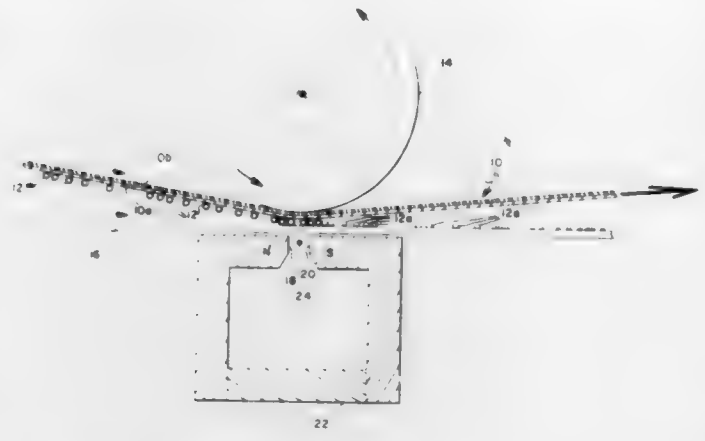
Int. Cl.[2] G03G *19/00*

U.S. Cl. 346—74.1

1 Sheets Drawing. 14 Pages Specification

Magnetic toner images are transferred from a latent magnetic image on a magnetic recording surface to hard copy medium, which may be paper, by (1) disposing the hard copy medium in contact with a toner image; and (2) applying a transfer magnetic field in the region of contact. The transfer magnetic field is directed tangential to the recording surface and has a gradi-

ent directed from the recording surface to the copy medium. The intensity of the magnetic transfer field may be greater or



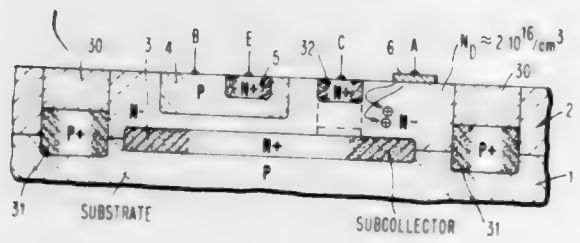
less than the intensity which is necessary to erase the latent magnetic image in the magnetic recording surface.

T969,010

MONOLITHICALLY INTEGRATED SEMICONDUCTOR STRUCTURE CONTAINING AT LEAST TWO DEVICES IN A COMMON ZONE AND TECHNIQUE FOR PREVENTING PARASITIC TRANSISTOR ACTION

Horst H. Berger, Sindelfingen, and Siegfried K. Wiedmann, Stuttgart, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 690,224, May 26, 1976, abandoned.
This application May 20, 1977, Ser. No. 801,433
Claims priority, application Germany, Aug. 1, 1975, 2534398
Int. Cl.[2] H01L *27/02, 29/48*
U.S. Cl. 357—46
2 Sheets Drawing. 27 Pages Specification



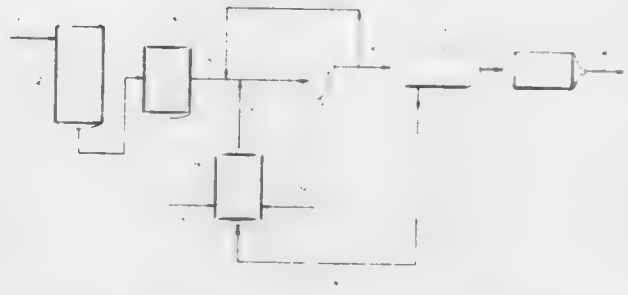
To prevent a parasitic lateral transistor or thyristor effect in an integrated structure including a transistor and a further device sharing one common zone, a doped region which is more highly doped with regard to the common zone and which simultaneously constitutes a contact region is arranged between the components to be separated. This separating and contact region acts as a barrier reflecting an undesired minority carrier current flow injected from the further device. In the preferred embodiment, the transistor structure is a bipolar transistor and the further semiconductor device is a Schottky diode integrated into the collector zone of the bipolar transistor.

T969,011

HOT MELT ADHESIVE EMULSION PROCESS

Hans F. Vermeire, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 4, 1977, Ser. No. 821,879
Int. Cl.[2] C09J *7/02*
U.S. Cl. 427—207 B
1 Sheets Drawing. 9 Pages Specification



A novel process for applying an adhesive to a substrate is disclosed, which process comprises:

a. melt blending a monoalkenyl arene/conjugated diene block copolymer, tackifying resin and extending oil to form a hot melt adhesive composition,
b. emulsifying the hot melt with water and an emulsifying agent, and
c. applying the resulting emulsion as a film on a substrate.

Preferably, the block copolymer is a styrene/isoprene block copolymer and the tackifying resin is selected from the group consisting of diene-olefin copolymers, hydrogenated resins, esters of resin, polyterpenes, terpenephenol resins, and polymerized mixed olefins.

REISSUES

APRIL 4, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

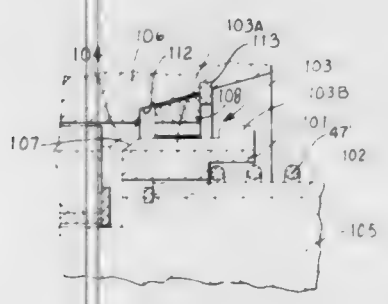
Re. 29,601
TRANSMISSION WITH RESILIENTLY LOADED MAINSHAFT GEARS

Elmer A. Richards, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Original No. 3,921,469, dated Nov. 25, 1975, Ser. No. 452,825, Mar. 20, 1974. Division of Ser. No. 276,376, Jul. 31, 1972, Pat. No. 3,799,002. Application for reissue Dec. 13, 1976, Ser. No. 750,299

Int. Cl.[2] F16H *3/38;* F16D *13/00, 21/02*

U.S. Cl. 74—339 **9 Claims**



1. In an interengageable jaw clutch system the combination comprising:

first rotatable means and a first jaw clutch portion mounted thereon for axial sliding relationship therewith and positive rotation therewith about an axis;

second rotatable means coaxially related to said first means and a second jaw clutch portion arranged thereon for interengagement with said first jaw clutch portion upon relative axial movement of said jaw clutch portions toward one another;

one of said jaw clutch portions having drive teeth at a radius suitable for engaging with clutch teeth on the other jaw clutch portion, said one clutch portion having also blocking teeth projecting radially beyond and axially offset from said drive teeth;

blocker means coacting between said first and second jaw clutch portions for positively preventing engagement of said jaw clutch portions so long as a substantial difference in relative speed exists therebetween, said blocker means including an annular blocker having blocking portions arranged on and supported by said drive teeth for limited rotation with respect thereto and positioned axially between said blocking teeth and said clutch teeth when said jaw clutch portions are disengaged, some of said blocking teeth being provided with spaces therebetween capable of receiving therein said blocking portions when said blocking portions and said spaces are axially aligned to permit said blocking portions to relatively move axially past said blocking teeth so that said jaw clutch portions can be engaged with one another; and

a surface on said blocker frictionally cooperating with a surface on said other jaw clutch portion for circumferentially offsetting said blocker with respect to said one jaw clutch portion whenever and for so long as a substantial difference in relative rotative speeds exist between said respective jaw clutch portions, said blocking portions interfering with said blocking teeth when said blocker is circumferentially offset so as to prevent engagement of said jaw clutch portions.

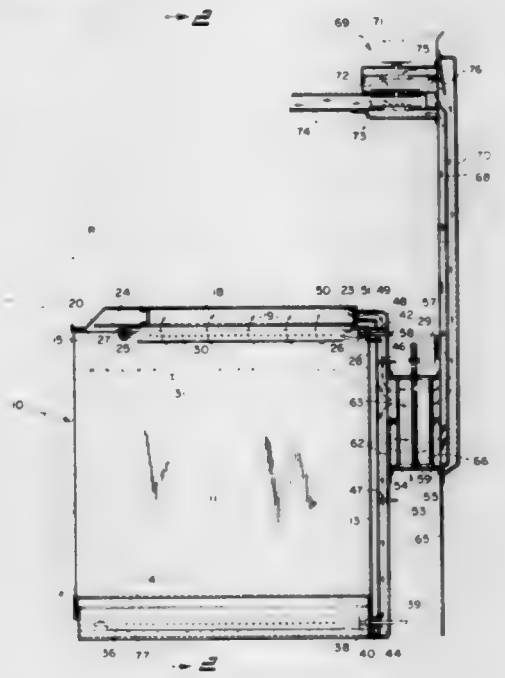
Re. 29,602
DOMESTIC OVEN

Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Original No. 3,417,742, dated Dec. 24, 1968, Ser. No. 643,104, Jun. 2, 1967. Application for reissue Oct. 21, 1970, Ser. No. 82,707

Int. Cl.[2] F24C *15/32*

U.S. Cl. 126—21 A **9 Claims**



1. A domestic oven comprising a liner forming a cooking cavity having top, bottom, side and rear walls, the bottom walls being substantially smooth and imperforate, broiler burner means mounted in the upper portion of said cavity, with the top wall thereabove having an opening for exhaust of the cavity, bake burner means disposed exteriorly of the cavity, means for delivering combustion air under pressure selectively to either the broiler or bake burner or both, means for circulating the heated products from the bake burner in operation over exterior surfaces of the bottom and side walls, the latter being provided with openings for inflow of such heated products to the cavity and exhaust therefrom through the top wall opening, and means for directing the flue products from such top wall opening to a remote discharge.

Re. 29,603
BUCKET REINFORCEMENT STRUCTURE

Stanley A. Oke, Batavia, and Robert F. Shankwitz, Edelstein, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

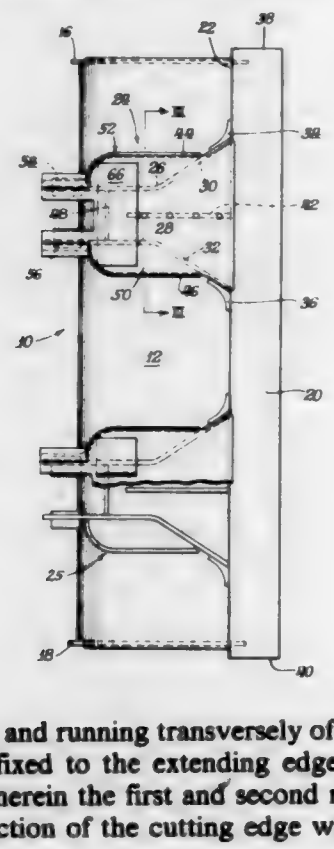
Original No. 3,853,232, dated Dec. 10, 1974, Ser. No. 287,671, Sep. 11, 1972. Application for reissue Dec. 6, 1976, Ser. No. 748,033

Int. Cl.[2] E02F *3/70*

U.S. Cl. 214—145 R **23 Claims**

1. In a bucket construction having a bottom wall portion, a rear wall portion extending therefrom, a pair of end wall portions between which the rear wall and bottom wall portions extend, and a cutting edge fixed to and running along the forward edge of the bottom wall portion, reinforcement means comprising: first and second rib members spaced apart and fixed externally to the bottom wall portion and running continuously from the cutting edge, and fixed relative thereto, to the rear of the bottom wall portion; and, a plate fixed to the extending edges of the first and second rib members and running therealong, the rib members and plates together forming a box

section running transversely of the cutting edge, wherein the plate is fixed to the cutting edge, wherein the reinforcement means further comprise a third rib member fixed to the bottom wall portion externally thereof intermediate the first and sec-



ond rib members and running transversely of the cutting edge, the plate being fixed to the extending edge of the third rib member, and, wherein the first and second rib members flare apart in the direction of the cutting edge when proximate to the cutting edge.

Re. 29,604

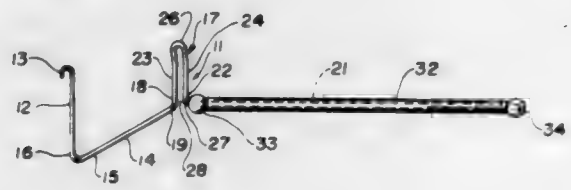
WHIP FINISHING TOOL

Frank W. Matarelli, 4426 Irving St., San Francisco, Calif. 94122

Original No. 3,866,959, dated Feb. 18, 1975, Ser. No. 468,030, May 8, 1974. Application for reissue Jul. 16, 1976, Ser. No. 705,751

Int. Cl.² D03J *3/00*

U.S. Cl. 289—17 **12 Claims**



1. A whip finishing tool comprising:

a rigid slender element having a first substantially straight free end portion with a hook formed at its free end;

a substantially straight first intermediate portion having one end connected to and extending laterally from the opposite end of said first end portion;

a second U-shaped intermediate portion having one end connected to the opposite end of said first intermediate portion and extending laterally therefrom in the direction of said first end portion; and

a manually engageable substantially straight second end portion connected to the opposite end of said second intermediate portion and extending therefrom in a direction away from said first intermediate portion.

Re. 29,605

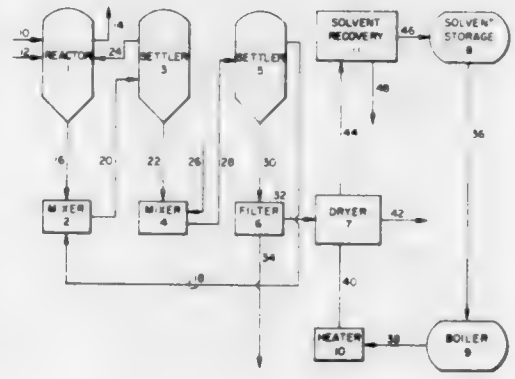
HIGH-POROSITY, HIGH-SURFACE AREA, LOW-BULK DENSITY ALUMINA

William C. Ziegenhain, and John H. Smith, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Original No. 3,907,512, dated Sep. 23, 1975, Ser. No. 439,679, Feb. 4, 1974. Continuation-in-part of Ser. No. 218,882, Jan. 19, 1972, abandoned. Application for reissue May 10, 1976, Ser. No. 690,766

Int. Cl.² C01F *7/02*; B01J *11/58*

U.S. Cl. 23—293 A **5 Claims**



1. A method for producing low density, high porosity, high surface area alumina from an aqueous alumina mixture produced by the water hydrolysis of aluminum alkoxides and containing up to about 32 weight percent Al_2O_3, said method consisting essentially of drying said aqueous alumina mixture by contacting said aqueous alumina mixture with [an] *a superheated* alkanol vapor selected from the group consisting of [alkanols containing from 1 to 8 carbon atoms] *ethanol, propanol and isopropanol* and combinations thereof at a temperature to minimize condensation of said alkanol vapors in the aqueous alumina mixture in an amount sufficient to produce alumina containing at least about 50 weight percent Al_2O_3 and having a pore volume from about 1.0 to about 2.75 cc/g, a loose bulk density from about 7.5 to about [25] *21* lb/ft^3 and a surface area from about 260 to about 400 m^2/g, *and thereafter further drying said alumina with superheated steam.*

PLANT PATENTS

GRANTED APRIL 4, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,232

FRENCH PRUNE

Martin Friedman, and Cora G. Friedman, both of Rte. 1, Box 119, Biggs, Calif. 95917

Filed Aug. 16, 1976, Ser. No. 669,504
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—38 1 Claim

1. A novel French prune substantially as shown and described, characterized by its dense foliage; upright, vase shaped tree form of medium to large size; its vigorous growth; and its consistent bearing of a profuse crop of large, excellent grade fruit which are particularly adapted for drying.

4,233

PEONY PLANT NAMED MY PAL RUDY

Roy G. Klehm, Barrington, Ill., assignor to Klehm Boys' Partnership, Arlington Heights, Ill.

Filed Apr. 14, 1977, Ser. No. 787,714
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. The new and distinct variety of peony plant substantially as herein shown and described, characterized by the rose-type flower form of its blooms combined with their soft pink coloration, the strong weather-resistant stems on which the blooms are borne, the above average lasting quality of the blooms, and the clean and attractive plant foliage.

4,234

PEONY NAMED WHOPPER

Roy G. Klehm, Barrington, Ill., assignor to Klehm Boys' Partnership, Arlington Heights, Ill.

Filed Apr. 14, 1977, Ser. No. 787,715
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of peony plant substantially as herein shown and described, distinguished by the very large size of its soft pink bomb type flowers borne on sturdy stiff stems, its late spring blooming habit and by the above average lasting quality of the flowers.

4,235

POINSETTIA PLANT NAMED GUTBIER V-10

Gregor Gutbier, Linz (Rhine), Germany, assignor to Paul Ecke, Jr., Encinitas, Calif.

Filed May 27, 1977, Ser. No. 801,160
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinctive red poinsettia cultivar substantially as herein shown and described, characterized by its short and rapid habit of growth, its easy self-branching, the unique arched shape and abundance of the bracts, its easy branching habit, and its early blooming habit at low temperatures.

4,236

PECAN TREE NAMED GRACROSS

Harry Cross, Jr., Greenville, Tex., assignor to O. S. Gray, Jr., Arlington, Tex.

Filed May 25, 1977, Ser. No. 800,180
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—31 1 Claim

1. A new variety of pecan tree substantially as herein shown and described, characterized by the spreading habit of growth with numerous twiggy nut clusters producing branches growing along the principal limbs of the tree and well inside the periphery of the tree foliage, and by the prolific production of a medium to large sized thin shell nut having a high kernel to shell ratio and good cracking qualities.

PATENTS

GRANTED APRIL 4, 1978

ERRATA

For CLASS	See PATENT NO.
137–076	4,082,100
366–179	4,082,251
536–030	4,082,743
544–098	4,082,748
560–121	4,082,789
560–260	4,082,791
424–241	4,082,881
264–111	4,082,942
235–303.1	4,082,943
235–309	4,082,944
235–419	4,082,945
362–032	4,082,946
137–322	4,082,993

Sa

U.

w
a

M

U

PATENTS

GRANTED APRIL 4, 1978

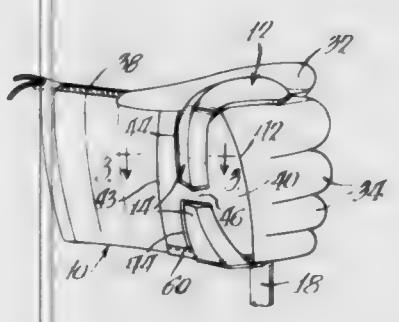
GENERAL AND MECHANICAL

4,081,864

SKI GLOVE OR MITT

Sandy Liman, Ketchum, Id., assignor to Scott USA, Inc., Sun Valley, Id.

Filed Sep. 13, 1976, Ser. No. 723,024
Int. Cl.[2] A63D *5/00*; A41D *19/00*
U.S. Cl. 2—161 A **12 Claims**



1. A ski glove or mitt capable of interlocking engagement with an extension of a ski pole grip which overlies a portion of a skier's hand, comprising:

a protective covering having a palmar region for engaging an elongated body of the ski pole grip, and other regions spaced from the palmar region including a thumb stall and a finger stall for containing one or more fingers of a skier's hand, and

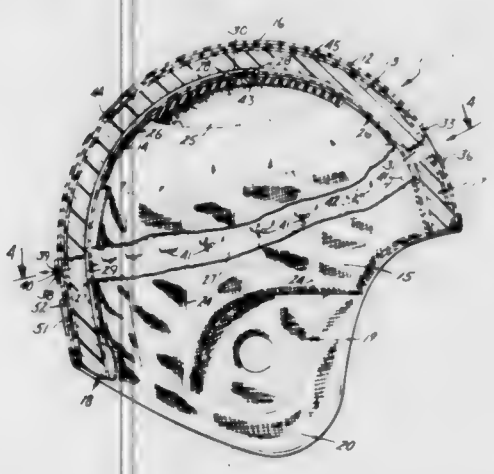
a raised padding secured to a portion of the other regions of the protective covering and containing a recess with a shape conforming at least in part to the shape of the extension on the ski pole grip, the recess snugly seating at least a portion of the extension to interlock the glove or mitt with the grip.

4,081,865

PROTECTIVE HELMET AND VENTILATING SYSTEM THEREFOR

Mark A. Bergee, 5808 Ashcroft Ave., Edina, Minn. 55424, and William K. Gilchrist, 5545 Warden Ave., Edina, Minn. 55436

Filed Jul. 8, 1977, Ser. No. 814,106
Int. Cl.[2] A63B *71/10*
U.S. Cl. 2—425 **10 Claims**



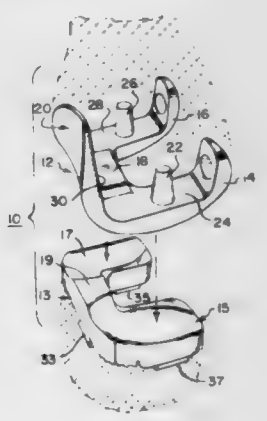
1. A protective helmet comprising a rigid outer protective shell, a relatively thick liner of cushioning material, a relatively thin inner cover on said liner, said shell, liner and inner cover defining crown, front, side and neck portions; a cushioning pad extending circumferentially about the interior of said inner cover and secured thereto; said inner cover and liner cooperating to define a circumferentially extending passage means around said front, side and neck portions; said inner cover defining a plurality of apertures extending between said passage means and the interior of the helmet; air inlet opening means in said front portion of the shell and liner and air outlet opening means in said neck portion of the shell and liner for communication with said passage means; and valve means for controlling movement of air through said inlet and outlet openings, passage means, and apertures.

4,081,866

TOTAL ANATOMICAL KNEE PROSTHESIS

Jackson E. Upshaw, Corpus Christi, Tex., and Charles Edward Meisch, Jersey City, N.J., assignors to Howmedica, Inc., New York, N.Y.

Filed Feb. 2, 1977, Ser. No. 764,844
Int. Cl.[2] A61F *1/24*
U.S. Cl. 3—1.911 **9 Claims**



1. A prosthetic knee joint comprising cooperating femoral and tibial components,

said femoral component having bone fixation means for implantation in the human femur and a pair of spaced condylar support members joined by an intercondylar segment, said condylar support members comprising a medial member and a lateral member, the longitudinal axis of said medial member being disposed at an anteriorly convergent angle of from about 3 to 7 degrees with respect to the longitudinal axis of said femoral component,

each of said condylar support members having a downwardly facing convex articulating surface with interior and exterior sides whose profile in transverse cross-section is defined by a circular arc extending upwardly to the interior side of said articulating surface and whose longitudinal cross-sectional configuration is defined by a condylar curve having at least three radii of curvature, each said curve comprising a central section and a pair of terminal sections, the radius of curvature of the posterior terminal section of each said curve being smaller than the radii of curvature of the central and anterior terminal sections of said curve, the condylar curve of said lateral member having at least one central portion radius of curvature larger than the central portion radii of said medial member,

said tibial component having bone fixation means for implantation in the human tibia and having a pair of spaced plateau members joined by an intercondylar eminence segment, said plateau members comprising a medial and lateral bearing surface, each with interior and exterior sides, wherein the longitudinal axis of the medial and lateral bearing members is disposed at an anteriorly convergent angle of from about 3° to 7° with respect to the longitudinal axis of said tibial component, said angle of convergence of each of said bearing members being substantially equal to the angle of convergence of said medial condylar support member, each of said bearing members having an upwardly facing concave articulating surface

for cooperating with the corresponding convex articulating surface of said condylar support member, defined by a circular arc whose radius of curvature is at least as large as the largest radius of curvature of said corresponding condylar support member, and

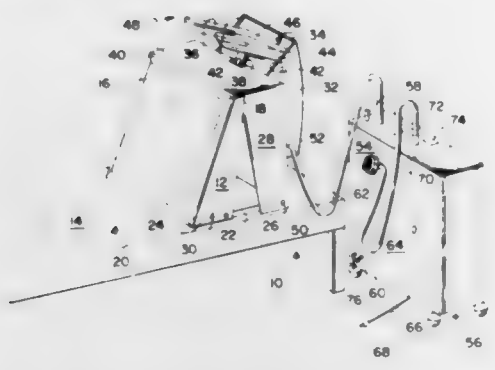
said plateau bearing surfaces each having in transverse cross-section a profile defined by a portion of a circular quadrant smoothly merging to a portion that is substantially horizontally tangent to said quadrant, said quadrant portion curving upwardly to the interior side of said bearing surface to form side walls for guiding the articulating movement of the condylar support members.

4,081,867

PORTABLE SHAMPOO UNIT

Mario J. Simeola, P.O. Box 617, Riverhead, N.Y. 11901

Filed Feb. 7, 1977, Ser. No. 766,076
Int. Cl.[2] A61H *35/00;* A47K *3/12*
U.S. Cl. 4—159 **5 Claims**



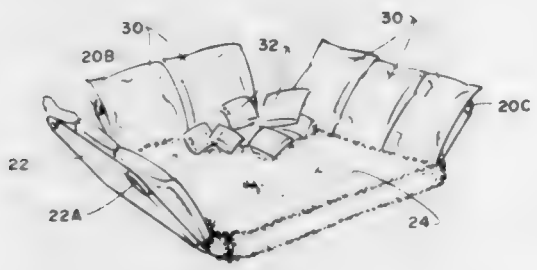
1. A portable shampoo unit for use on a horizontal surface comprising a back rest, a frame, the frame hingably secured to the back rest, the frame supporting the back rest in an inclined position with respect to the horizontal surface when the frame and the back rest are set up for use, a chamber, the chamber secured to the and frame having an open mouth portion extending upwardly and outwardly from the the frame being normal to said horizontal surface frame, a shampoo tray having a front and a rear region, means to pivotably secure the shampoo tray to the frame, the pivotable securing means including positioning the front region of the tray extending toward the back rest, the pivotable securing means including positioning the rear region of the tray into the open mouth portion of the chamber, means to bias the rear region of the tray towards the open mouth portion of the chamber.

4,081,868

ARTICLE OF FURNITURE

James R. Hull, 10910 Kinross Ave., Los Angeles, Calif. 90024

Filed Feb. 4, 1977, Ser. No. 765,434
Int. Cl.[2] A47C *7/20*
U.S. Cl. 5—12 R **5 Claims**



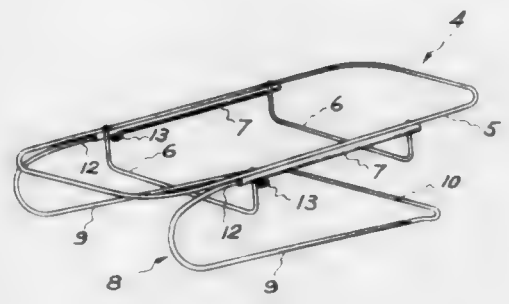
1. An article of furniture comprising: a rectangular bottom frame circumscribing a rectangular bottom area for the article; and plurality of side frames each comprising a U-shaped tubular member; coupling means connecting said side frames to said bottom frame to cause said side frames to define sides for the article slanting upwardly and outwardly from the plane of the bottom area; and pieces of fabric stretched over respective ones of the side frames and over respective ones of the portions of said bottom frame adjacent thereto.

4,081,869

INFANT'S CRADLE HOLDER

Richard Graham Ash, 59 The Serpentine, Avalon Beach, New South Wales, Australia

Filed Feb. 1, 1977, Ser. No. 764,692
Int. Cl.[2] A47D *9/00*
U.S. Cl. 5—105 **2 Claims**



1. An infant's cradle holder comprising:

(a) a platform upon which an infant's cradle may be located, rested and retained, and which consists of a rectangular frame and at least two floor bars fixed to and depending from said frame,

(b) two socket tubes respectively fixed to the sides and extending longitudinally of said frame,

(c) a platform mounting, of resilient rod-like material, comprising a pair of U-shaped members having first limbs forming part of a base able to rest on a support surface, and second limbs adapted to be freely and respectively inserted in the socket tubes, and

(d) means to retain selected adjustment of said second limbs within said socket tubes.

4,081,870

BOLSTER FOR PHYSICAL THERAPY

Anthony Iannucci, 192 Chatterton Pkwy., White Plains, N.Y. 10606

Filed May 5, 1976, Ser. No. 683,496
Int. Cl.[2] A47G *9/00;* A61G *7/06*
U.S. Cl. 5—340 **5 Claims**



1. A light-weight bolster for physical therapy of handicapped individuals comprising:

a plurality of spaced intermediate supporting discs each having at least one aperture extending therethrough, and a pair of solid discs at the ends of the plurality of discs, one of said solid discs being spaced from the other discs at each end,

a layer of thin gauge metal wrapped circumferentially about said discs and fastened thereto, said metal being suffi-

ciently thin to permit ready handling by handicapped individuals,

a layer of foam rubber wrapped circumferentially about and adhered to said layer of thin gauge metal, said foam rubber layer being slightly longer than the distance between the solid end discs, and being folded over at its ends onto the end discs,

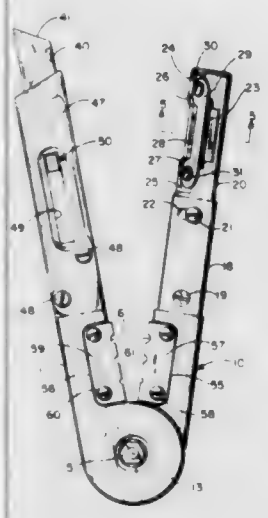
a layer of plastic material covering the foam rubber layer and being mounted to the solid end discs to hold the foam rubber layer in position and a layer of plastic material covering the exterior of the solid end discs, and, mounting means securing both the foam rubber layer to the solid end discs and the layer of plastic material thereto; the bolster further includes a handle mounted on at least one of the end discs to facilitate handling.

4,081,871

ELECTRICIAN'S WIRE STRIPPING TOOL

Everett F. Knuth, 814 - 16th Ave. NE., Rochester, Minn. 55901

Filed Apr. 4, 1978, Ser. No. 775,614
Int. Cl.[2] R26B *11/00;* H02G *1/12*
U.S. Cl. 7—107 **7 Claims**



1. A tool for stripping insulation from multiple conductor electrical cable comprising:

A. handle means adapted to be grasped in the palm of a hand and including a pair of arms pivotally connected at one end for opening and closing pincer movement,

B. a transverse groove in the inside edge of one of said arms adjacent the free end thereof,

C. longitudinally extending flat cable stripping blade means disposed overlying said groove,

1. the cutting edge of said blade being spaced from the bottom of said groove, and

2. said blade being disposed at an angle from about 45° to 60° from the plane including the longitudinal axes of the arms,

D. smooth cable hold-down means on the inside edge of the other of said arms adjacent the free end thereof, overlying said groove and spaced from said blade means when said arms are in closed position,

E. an internal longitudinal channel in said other arm adjacent the free end thereof, one end of said channel opening into said free end,

F. a longitudinally reciprocable knife blade holder disposed in said channel for reciprocation therein partially through said open end,

G. a flat knife blade in said blade holder,

H. a longitudinal slot in said other arm overlying said channel over part of its length, and

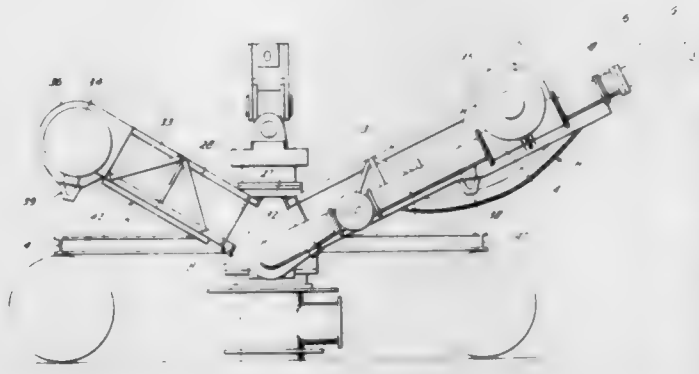
I. thumb actuating means associated with said blade holder and extending through said longitudinal slot for extending and retracting said holder and knife blade, said thumb actuating means being within normal reach of the thumb of the hand grasping the handle means, whereby the insulation may be stripped from one side of a cable and folded back and cut from the other side without disengaging the tool from the hand.

4,081,872

SUBMERGED SELF-STABILIZED CARGO HOSE ARM FOR A SINGLE POINT MOORING SYSTEM

Kristen I. Pedersen, Scarsdale, N.Y., and William L. Kiely, Houston, Tex., assignors to Sofec, Inc., Houston, Tex.

Filed Aug. 30, 1976, Ser. No. 718,459
Int. Cl.[2] B63B *21/00;* B65B *3/04*
U.S. Cl. 9—8 P **6 Claims**



1. A single anchor leg mooring and cargo transfer system of the type described comprising anchor base means including a sea-floor base and a pipe shaft extending upwardly from said base, a cargo hose arm having a pivotal mounting on said pipe shaft and capable of swivelling action relative to said base means about horizontal and vertical axes, stabilizing structure having pivotal mounting on said base means and having lever arms extending oppositely from said pipe shaft, one of said lever arms supporting said hose arm, and buoyancy members carried by said lever arms for tending to maintain said hose arm and coupled hose in optimum position.

4,081,873

SELF-DECOUPLING TAP AND DIE HOLDER

Savarian F. Lemanski, 109 Taylor, Detroit, Mich. 48202

Continuation of Ser. No. 667,036, Mar. 15, 1976, abandoned. This application Jul. 5, 1977, Ser. No. 812,666
Int. Cl.[2] B23G *5/12, 5/16*
U.S. Cl. 10—89 H **3 Claims**



1. A holder for a thread-forming tool, comprising a pair of coaxially telescoped members axially movable relative to one another, one of which members has means to mount said tool, said members having a torque-transmitting connection to one another enabling a predetermined relative axial slide of said members as said tool is threadingly engaged with a workpiece over a predetermined time interval, said connection being automatically discontinued after said interval whereby the tool-mounting member and workpiece have relative overrunning rotation, said torque-transmitting connection comprising a radially extending element on one member and an axially extending radial slot of predetermined length in the other

member which effectively opens at an end of the latter, the discontinuance of the connection occurring as said element reaches and departs the open end of said slot, and a plurality of longitudinally spaced opening means in said one member to receive and position said radially extending element at plural positions lengthwise of said slot to adjust the duration of said time interval, thus to vary the axial length of a thread formed by the tool.

4,081,874

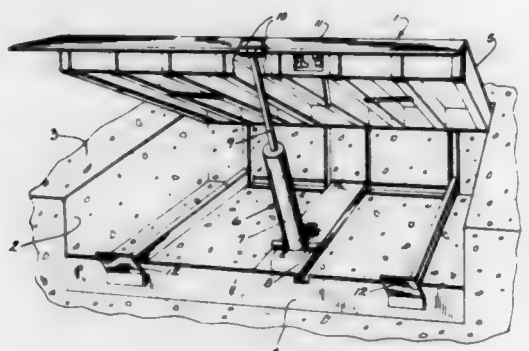
HYDRAULIC DOCKBOARD SYSTEM

Thomas G. Artzberger, Menomonee Falls, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

Filed Jan. 12, 1977, Ser. No. 758,667

Int. Cl.² E01D *1/00*

U.S. Cl. 14—71.7 **8 Claims**



6. A hydraulic dock loading system, comprising a loading dock having a plurality of pits therein, a dockboard mounted in each pit with each dockboard including a supporting structure, a ramp hinged at its rear edge to the supporting structure and movable between a generally horizontal position and an upwardly inclined position, each dockboard including a hydraulic cylinder unit connected between the supporting structure and the ramp for raising the ramp from the horizontal position to the upwardly inclined position, said dockboards arranged in a series of groups with each group comprising a pair of dockboards, a single hydraulic pumping means, a reservoir connected to the inlet of said pumping means, a discharge line for each group of dockboards and connected to the outlet of the pumping means, said pumping means being operable to maintain a substantially constant pressure in said discharge lines, a return line for each group of dockboards and connected to the reservoir, a supply line connected to the cylinder unit of each dockboard, valve means for each group of dockboards and operably connecting the discharge line, the return line and the supply lines of that group, each valve means having a first position wherein the supply lines are connected to the return line whereby the ramps can float freely up and down during a loading operation, and having a second position wherein a first of said supply lines is connected to the discharge line and a second of said supply lines is connected to the return line whereby fluid is supplied to the cylinder unit associated with said first supply line to thereby elevate the corresponding ramp and the ramp associated with the second supply line is free to float and having a third position wherein said second supply line is connected to the discharge line and said first supply line is connected to the return line whereby fluid is supplied to the cylinder unit associated with said second supply line to thereby elevate the corresponding ramp and the ramp associated with the first supply line is free to float, and means for moving said valve means between said positions.

4,081,875

SCALE REMOVAL DEVICE

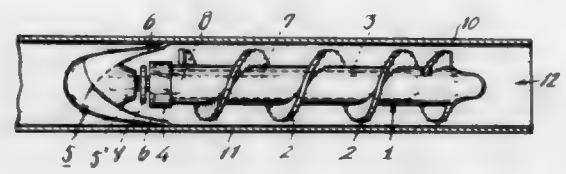
Eizo Nishino, 2-7-9, Sanno Yahata Higashi-ku, Kitakyushu-shi, Fukuoka-ken, Japan

Filed Nov. 10, 1976, Ser. No. 740,603

Claims priority, application Japan, Nov. 15, 1975, 50-155768[U]

Int. Cl.² B08B *9/04*

U.S. Cl. 15—104.06 R **6 Claims**



1. A scale removal device for scraping scale from the inner surface of tube sections, comprising, in combination,

a rotary shaft to be received coaxially in a tube section to be scraped,

a spiral blade secured to and around said shaft and extending along a substantial portion of the length of said shaft,

a center bore extending into a leading end of the shaft,

a scraper head having a plurality of resilient scraper blades extending radially outwardly and rearwardly in yielding abutment against the inner surface of the tube section,

said spiral blade and said scraper blades being of opposite hand,

and connector means detachably longitudinally connecting said scraper head to said rotary shaft for joint advancement and opposite rotation.

4,081,876

TOOTHBRUSHES

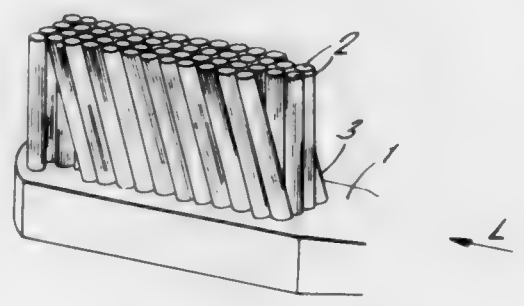
Brinley Roy Pugh, Tolworth, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Nov. 17, 1976, Ser. No. 742,607

Claims priority, application United Kingdom, Nov. 21, 1975, 48001/75

Int. Cl.² A46B *9/04*

U.S. Cl. 15—167 R **6 Claims**



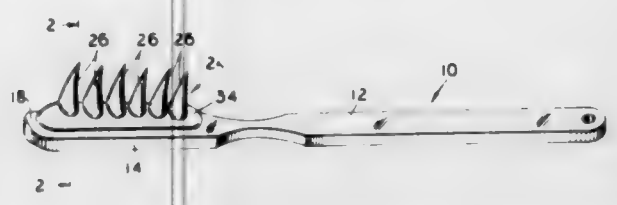
1. A toothbrush having a longitudinally aligned handle and brushhead and within the brushhead four parallel longitudinal rows of filaments, of which the filaments in two rows extend perpendicular to said brushhead and the filaments in the other two rows, while substantially lying in longitudinal planes perpendicular to said brushhead, are inclined in the same longitudinal direction and relative to said perpendicular filaments and in which each row of filaments lies adjacent a row whose filaments are inclined relative to the filaments in that row.

4,081,877

GUM MASSAGING IMPLEMENT

Ben Vitale, 1302 83rd St., Brooklyn, N.Y. 11228

Filed Sep. 23, 1976, Ser. No. 725,790
Int. Cl.[2] A46B 9/04
U.S. Cl. 15—188 3 Claims



1. A gum massaging device including a handle having a toothbrush head insert retaining portion on one end thereof in the form of a recess wherein said recess is bounded by a bottom surface and four upwardly extending side walls, said toothbrush head insert comprising:

(a) a flexible resilient base element affixed within said recess, said base element including a bottom surface, four sides of a predetermined depth, and a rounded upper surface;

(b) a single longitudinally aligned row of vertically disposed, similarly flexible, resilient conically shaped massage elements affixed to the said rounded upper surface of said base element along the central longitudinal axis and inwardly of the longitudinal sides of said base element, wherein each of said conically shaped massage elements include a base and a height dimension wherein said base dimension is about one-third the magnitude of said height dimension; and

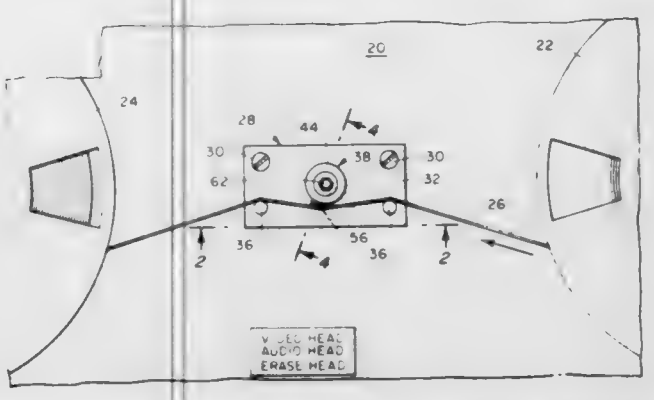
(c) a relationship between the height of said base element and the height dimension of each of said conically shaped massage elements wherein said height of said base element has a magnitude of about one-half of said height dimension said head insert being integrally formed.

4,081,878

TAPE CLEANING DEVICE

William H. Seidel, and Ralph B. McDaniel, both of Canoga Park, Calif., assignors to N.O.V.A. Corporation, Canoga Park, Calif.

Filed Nov. 13, 1975, Ser. No. 631,504
Int. Cl.[2] B08B 1/02; G11B 3/58
U.S. Cl. 15—256.5 11 Claims



1. In combination with a video tape recorder having a recorder housing upon which is mounted a recording head, a playback head, a supply reel and a take-up reel for magnetic tape, a tape cleaning device mounted on said recorder housing in the path of said magnetic tape, said device comprising:

a tape cleaning block constructed of a material of extreme hardness, said block having at least one angularly formed elongated sharp edge, said sharp edge to contact said magnetic tape to effect cleaning thereof, said block having an internal granular pattern extending in a given direction, said direction of said granular pattern being located at substantially a right angle to said magnetic tape;

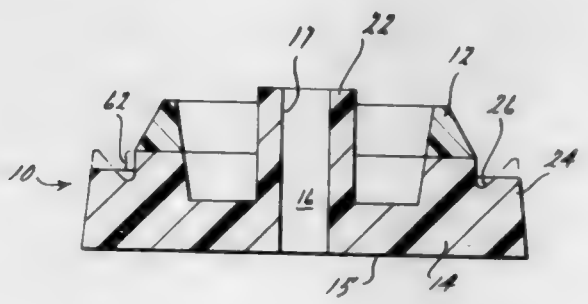
mounting means for fixedly mounting said block upon said housing, said mounting means including structure enabling said block to be removed for subsequent remounting of said block in a different position within said mounting means.

4,081,879

SEALING MEMBER

Phillip L. Rubright, Berkley, Mich., assignor to Chemcast Corporation, Detroit, Mich.

Filed Jan. 28, 1976, Ser. No. 653,268
Int. Cl.[2] B65D 55/00
U.S. Cl. 16—2 17 Claims



1. A grommet for sealing an opening in a panel, said grommet comprising

an annular base portion having a continuous circumferential and axial extending sealing band surface,

an annular locking portion having a continuous circumferential and axial extending ridge portion approximately the same diameter as said sealing band surface,

said sealing band surface constituting an axial extending continuation of said ridge portion,

said locking portion and said base portion being in contact with each other and integrally bonded together,

said base portion comprising an elastomeric material and said locking portion being more rigid than said base portion,

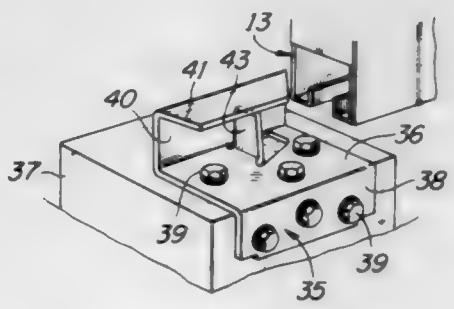
whereby when the grommet is installed in a panel opening, the locking position is inserted through the opening to a position on the opposite side of the panel from the base portion locking the grommet in place, and said sealing band surface forms a complete seal continuously around the entire inner periphery of the panel opening.

4,081,880

LOWER GUIDE FOR HORIZONTALLY SLIDING DOOR

James A. Edeus, Rock Falls, Ill., assignor to National Manufacturing, Co., Sterling, Ill.

Filed Nov. 10, 1976, Ser. No. 740,254
Int. Cl.[2] A47H 15/00; E05D 13/02
U.S. Cl. 16—90 8 Claims



1. A lower guide for a pair of biparting sliding doors, comprising

a member having a mounting plate portion adapted to be secured to a supporting surface

said member having an upstanding flange

the upper end portion of said flange being bent over to provide a laterally extending lip, and

a stop extending laterally from said member adjacent said flange and below said lip.

4,081,881

FOLDING CLOSURE

Cerge Rudolf Maxime Lamarre, Pointe Claire, Canada, assignor to R. Labelle, Brossard, Canada

Filed Jul. 12, 1976, Ser. No. 704,411

Claims priority, application Canada, Jan. 22, 1976, 244067

Int. Cl.[2] E05D *3/04*

U.S. Cl. 16—162 **9 Claims**



1. A hinge member comprising an elongated main body, a longitudinal opening in the main body for receiving a hinge pin, an elongated facing wall spaced from the main body, a web extending radially from the main body to the longitudinal center of the wall to connect the wall to the body, and connecting means on one side of the web for use in connecting a panel member to a hinge employing the hinge member.

4,081,882

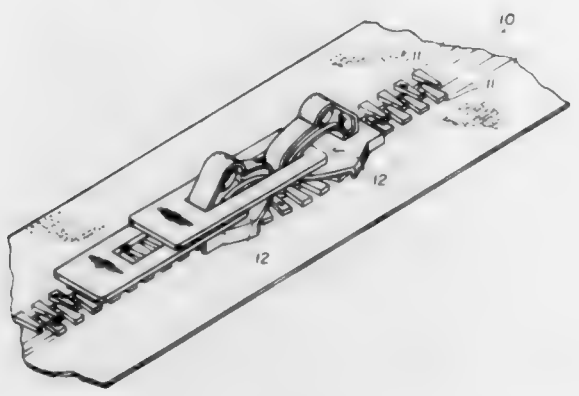
LOCKING ZIPPER SLIDER, AND ZIPPER INCORPORATING SAID SLIDER

Werner Toepelt, Old Greenwich, Conn., and Richard Bernier, Uniondale, N.Y., assignors to Coats & Clark, Inc., Stamford, Conn.

Filed Nov. 1, 1976, Ser. No. 738,161

Int. Cl.[2] A44B *19/26;* E05B *67/38*

U.S. Cl. 24—205 R **9 Claims**



1. In a slider assembly for a zipper, wherein the slider has a U-shaped projection with one arm thereof fixed to and extending from one face thereof at the leading edge of the slider, the other arm of the projection extending toward the trailing end of said slider, a slider pull having only a single aperture through which said projection extends, the other arm of said projection being spaced from said face a distance less than the thickness of said slider pull, whereby said pull is loosely held to said slider; the improvement wherein said aperture in said pull has a length greater than the lengthwise dimension of said U-shaped projection, and said U-shaped projection has a locking hole extending transversely therethrough.

4,081,883

LOCKING SLIDER FOR SLIDING CLASP FASTENERS

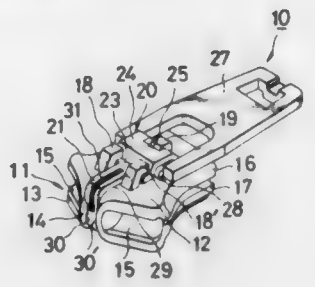
Susumu Ishii, and Tuneo Suzuki, both of Kurobe, Japan, assignors to Yoshida Kogyo K.K., Japan

Filed Mar. 16, 1977, Ser. No. 777,950

Claims priority, application Japan, Mar. 19, 1976, 51-33227[U]

Int. Cl.[2] A44B *19/30*

U.S. Cl. 24—205.14 R **2 Claims**



1. An automatic locking slider of the class described comprising a slider body having an upper wing member and a lower wing member positioned in spaced, opposed relation and connected at one end by an integral neck portion to provide a substantially Y-shaped channel therebetween, a locking spring member formed from a strip of stainless steel and supported on said upper wing member, and a pull tab having a transversely extending trunnion pivotally disposed between said locking spring member and said upper wing member, said locking member having a first section secured to the slider body adjacent said neck portion and a second section including a locking prong movable into and out of said Y-shaped channel, said first section having a groove formed by cold press and being higher in the cold rolling modulus at an area adjacent to said groove than said second section.

4,081,884

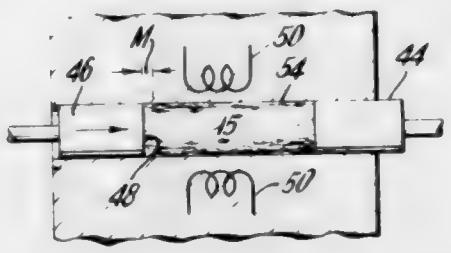
METHOD FOR MAKING DIMENSIONALLY STABLE ARTICLES

Wolfgang Johst, Gevelsberg; Axel Friese, Wuppertal, both of Germany, and Stefan Simon, Moedling, Austria, assignors to Dr. Carl Hahn, GmbH, Dusseldorf, Germany

Filed May 11, 1977, Ser. No. 795,975

Int. Cl.[2] D04H *1/22;* A61F *13/20*

U.S. Cl. 28—119 **10 Claims**



1. A method for providing a relatively dimensionally stable absorbent body comprising compressed cellulosic fibers, said method comprising the steps of:

radially compressing a generally cylindrical blank comprising said cellulosic fibers, said radially compressed blank having a length in excess of the desired finished length;

introducing said blank into a chamber having heated walls;

axially compressing said blank to a length less than the desired finished length by continuously applying a force against at least one end of the blank while the sides and other end are held confined within said heated chamber;

releasing said force to the extent necessary for said blank to expand in length to the desired length; and

immediately upon having the blank expanded to said desired length, continuously maintaining a force resistant to further expansion against said one end of the blank while still

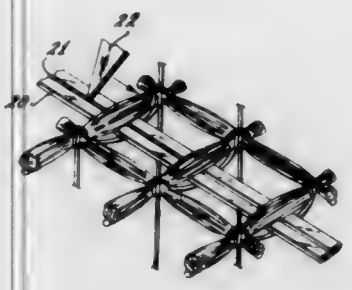
maintaining said blank within the confines of said heated chamber until said blank attains the desired dimensional stability.

4,081,885

METHOD OF MAKING A TEXTILE PRODUCT

Lee R. Shank, 18211 N. 35th Ave., Phoenix, Ariz. 85032

Filed Sep. 1, 1976, Ser. No. 719,459
Int. Cl.[2] D04D *7/04*
U.S. Cl. 28—149 **1 Claim**



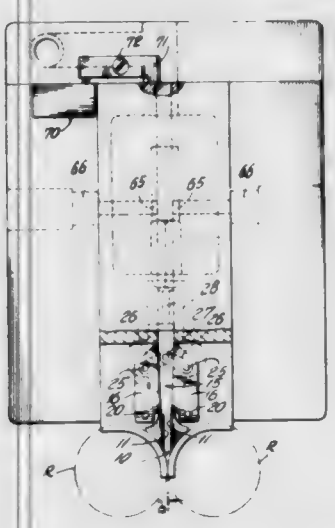
1. A method of making a textile article comprising the steps of forming a backing web by positioning textile strands transversely between the sides of the loom, extending multiple strands of yarn between the sides of the loom in alignment with the textile strands, providing securements of the yarn strands to the textile strands at the intersections thereof, including the step of providing the securements at the said intersections by way of strings extending diagonally between intersections, cutting the yarn strands between secured intersections while leaving the web backing and diagonal strings intact whereby the cut strands of yarn can form rosettes, including the step of inserting a cutting stick in a longitudinal position between parallel aligned yarn strands on one side and textile strands and diagonal strings on the other, and cutting yarn strands by moving a cutting blade along said stick without cutting the textile strands and diagonal strings and guiding the blade solely by holding it against an edge surface on the cutting stick.

4,081,886

METHOD FOR CRIMPING YARN

John S. Roberts, Ellicott, Md., assignor to Kling-Tecs, Inc., Columbia, Md.

Division of Ser. No. 446,175, Mar. 13, 1974, Pat. No. 3,934,226. This application Oct. 14, 1975, Ser. No. 621,992
Int. Cl.[2] D02G *1/12*
U.S. Cl. 28—251 **4 Claims**



1. A method of crimping drawn yarn the denier of which varies from yarn end to yarn end and along the length of any yarn end comprising feeding the yarn into a crimping head to form a plug of yarn, retaining the mass of the yarn plug substantially constant by applying a uniform pressure only to the sides of the plug downstream of the trailing end of the plug while permitting the plug to advance past the area of pressure application as the yarn enters the crimping head and is crimped at the trailing end of the plug thereby crimping the yarn of lower denier to higher crimp levels than the yarn of higher denier and taking up the thus crimped yarn onto packages.

4,081,887

PRODUCTION OF BULKY, CONTINUOUS FILAMENT YARN

Gordon Alan Holden, Vine Acre, Wales, assignor to Crimpfil Limited, Aberbargoed, Bargoed, Wales

Continuation-in-part of Ser. No. 541,355, Jan. 15, 1975, Pat. No. 4,000,551. This application Dec. 16, 1976, Ser. No. 751,408
Int. Cl.[2] D02G *1/16*
U.S. Cl. 28—271 **13 Claims**



1. A method of producing bulky, continuous filament yarn in which a primary continuous multi-filament yarn of polymeric material comprising at least 20% of the total filaments and having filaments which are substantially straight and free from crunodal ring-like loops and a secondary continuous multi-filament yarn of polymeric material comprising up to 80% of the total filaments and having filaments which are formed at randomly spaced longitudinal intervals with crunodal ring-like loops separated by relatively straight portions and are intermingled with each other and with the substantially straight filaments of the primary yarn so that, when a gradually increasing tensile load is imposed on the bulky yarn, the filaments of both the primary and secondary yarns break simultaneously; the method including the steps of:

pre-treating at least one of the primary and secondary continuous multi-filament yarns by the application of an aqueous liquid;

feeding the primary and secondary yarns into a treatment zone so that each yarn to which the aqueous liquid has been applied enters the treatment zone while still wet;

providing within the treatment zone a fluid flow of sufficient turbulence to separate the individual filaments of the yarns, to form crunodal ring-like loops and other convolutions at randomly spaced intervals along the lengths of the individual filaments of each secondary yarn, and to cause the individual filaments of each secondary yarn to intermingle with each other and with the individual filaments of each primary yarn to form a single bulky yarn;

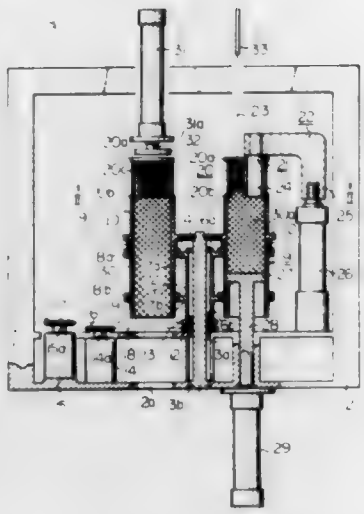
withdrawing the intermingled filaments from the treatment zone at a rate such that each primary yarn is fed into the treatment zone at a rate between 4% and 26% higher than the rate at which the intermingled filaments are withdrawn from the treatment zone and each secondary yarn is fed in to the treatment zone at a rate which is at least 2.5% higher than the rate of feed of each primary yarn and up to 30% higher than the rate at which the intermingled filaments are withdrawn from the treatment zone.

4,081,888

APPARATUS FOR PRODUCING COMPACT YARN PACKAGE

Katsumi Hasegawa, Kusatsu; Toru Nakanishi, Otsu, and Toshihiko Oka, Moriyama, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 23, 1977, Ser. No. 780,690
Claims priority, application Japan, Mar. 26, 1976, 51-32415
Int. Cl.[2] B65H *54/84*
U.S. Cl. 28—285 16 Claims



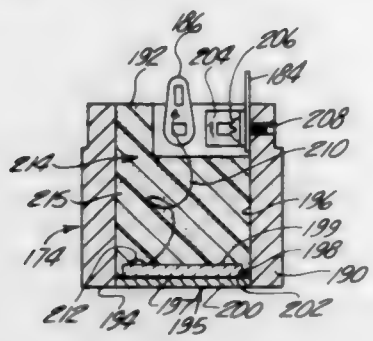
1. An apparatus for producing a compact package of a textile yarn, comprising an accumulation container disposed to a machine frame in a rotatable condition about a longitudinal axis thereof, an inlet of a textile yarn formed a position above said accumulation container in an eccentric condition to said longitudinal axis of said accumulation container, a compression means provided with a pressing head capable of being insered into said accumulation container, said pressing head being capable of reciprocally displacing up and down along said longitudinal axis of said accumulation container in such a condition that the working position of said pressing head is eccentric from said longitudinal axis of said accumulation container.

4,081,889

METHOD FOR MANUFACTURING AN ULTRASONIC TRANSDUCER

Walter E. Levine, Port Huron, Mich., assignor to Bindicator Company, Port Huron, Mich.

Division of Ser. No. 560,245, Mar. 20, 1975, Pat. No. 4,015,319.
This application Nov. 12, 1976, Ser. No. 741,310
Int. Cl.[2] H01L *41/22*
U.S. Cl. 29—25.35 5 Claims



1. For use with an ultrasonic transducer having a preselected resonant frequency f_0 and comprising an open hollow shell and a vibratory element including a piezoelectric crystal mechanically coupled to said shell at one open end thereof, the method of lowering the Q of said transducer comprising the steps of:

(a) measuring the Q of said transducer at said preselected resonant frequency,

(b) preparing a mixture of RTV and a nonconductive particulate material in a predetermined weight ratio, said ratio depending on the measured Q and a desired final Q value,

(c) pouring said mixture into said shell at an open end thereof remote from said one end, and

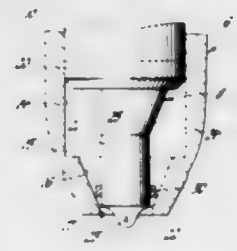
(d) curing said mixture within said shell, whereby the Q of the transducer is lowered to the desired final value.

4,081,890

METHOD OF FORMING AN INJECTOR VALVE NUT SEAL

Elmer Bluhm, Grandville, and Frederick T. Vaas, Jr., Grand Rapids, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 21, 1976, Ser. No. 688,693
Int. Cl.[2] B23P *15/00*
U.S. Cl. 29—157 C 1 Claim





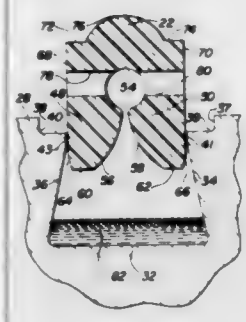
1. A method of forming in place a ring seal in the clearance space between the outer peripheral conical surface of an injector spray tip body and the inner peripheral conical surface of a sleeve type valve nut in a unit fuel injector, said method including the steps of forming an annular substantially flat ring of rectangular cross-section and of ductile material which, when viewed in cross-section, is of a predetermined shape and size so as to provide sufficient material to fill any clearance space that exists between the injector spray tip body and the interior surface of the sleeve valve nut after they are in assembled position relative to each other, positioning said ring to slidably encircle the lower portion of the spray tip body prior to the assembly of the spray tip body with the valve nut, inserting the lower end of the spray tip body with said ring thereon through the lower open end of the valve nut and then effecting axial displacement of the valve nut relative to the spray tip body thereby causing said rectangular ring to move and to become formed in place around the outer peripheral conical surface of the spray tip body and to the inner peripheral conical surface in the valve nut so as to form a conical ring seal in the clearance space therebetween with one surface of the ring seal in sealing abutment against the outer peripheral conical surface of the spray tip body and at its other side in sealing abutment against the inner peripheral surface of the valve nut and forming an upper seal by contacting surfaces on said spray tip body and said valve nut, said conical ring seal preventing corrosive materials from being transmitted to said upper seal.

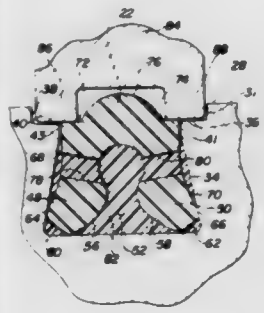
4,081,891

METHOD OF MAKING A VALVE

Bertram L. Morrison, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Division of Ser. No. 644,233, Dec. 24, 1975, Pat. No. 4,034,959.
This application Apr. 13, 1977, Ser. No. 787,173
Int. Cl.[2] B23P *15/00;* F16K *3/02;* B32B *1/10, 1/06*
U.S. Cl. 29—157.1 R 1 Claim





1. A method of making a seat structure for a valve having a body with a passageway therethrough, a cavity in said body, a valve member mounted in said cavity for movement between open and closed positions relative to said passageway, comprising the steps of:

first forming a groove in a seal ring supporting portion of said valve body about the passageway with the groove having divergent side walls,

then partially filling the groove with a chemical fastener material,

next inserting an annular resilient seal ring having a lateral passageway between opposed sides thereof within the groove adjacent the divergent side walls and into the chemical fastener material so that the chemical fastener material flows through the lateral passageway and between the side walls and adjacent sides of the resilient seal,

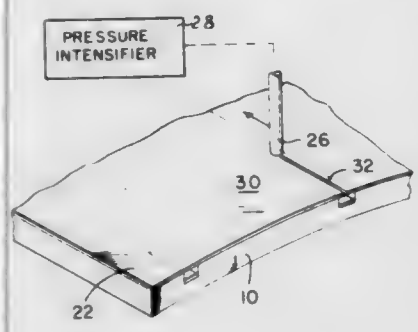
and curing the chemical fastener material in said groove and said lateral passageway for a predetermined time until the seal ring is anchored within said groove between the divergent side walls thereof.

4,081,892

METHOD OF MAKING COMPOSITE STRUCTURE

John E. Mercer, Kent, Wash., assignor to Flow Industries, Inc., Kent, Wash.

Filed Nov. 1, 1976, Ser. No. 737,738
Int. Cl.[2] B23P *17/00*
U.S. Cl. 29—421 R 15 Claims



1. A method of making a composite structure, such as an air foil, comprising a base member and a sheet member, secured one to the other and defining therebetween a chamber area, such as an air plenum, and a precision opening communicating through the sheet with the chamber area, such as a boundary layer air suction opening for the air foil, said method comprising:

a. providing a base member and a sheet member of a predetermined configuration,

b. joining the base member and sheet member one to another to form a composite structure with a chamber area defined by a portion of the sheet member and a portion of the base member,

c. also providing in said chamber area a shield member positioned between said sheet portion and said base member portion, and

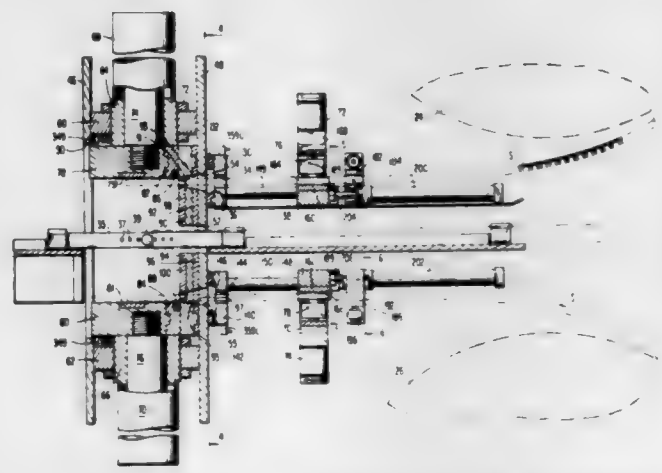
d. directing a high velocity fluid jet against an exterior surface of said sheet portion to form an opening therethrough, said fluid jet being oriented in a direction to impact said shield member after passing through said sheet portion.

4,081,893

METHODS FOR FORMING WOODEN JOINTS

John Calvin Jureit, Coral Gables; Roy Leutwyler, Miami; Larry Brodsky, Sunrise; Benjamin Kushner, Miami; Andrew G. Seipos, Miami, and Adolfo Castillo, Miami, all of Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Division of Ser. No. 594,247, Jul. 9, 1975, abandoned, which is a division of Ser. No. 509,567, Sep. 26, 1974, Pat. No. 3,964,663.
This application Aug. 4, 1976, Ser. No. 711,499
Int. Cl.[2] B23P *11/00*
U.S. Cl. 29—432 7 Claims



1. A method of joining a pair of longitudinally aligned end to end butting wooden members by applying a sheet metal connector plate of the type having integrally struck teeth projecting from one side thereof to joints formed between the wooden members comprising the steps of:

(1) providing a coil of connector stock of the type having integrally struck teeth projecting from one side thereof;

(2) feeding the connector stock from the coil to a presshead which is movable along a predetermined path and carries a cutting edge for cutting the stock as the presshead moves along the said path, thereby to form a connector plate of predetermined length;

(3) aligning a stop at a predetermined position relative to said predetermined path for said presshead;

(4) locating the joint between the longitudinally aligned end to end butting wooden members in opposition to the path of movement of said presshead by butting the leading end of trailing wooden member against said stop;

(5) clamping the said wooden members in the said longitudinally aligned butting end to end relation;

(6) moving said presshead in said predetermined path and cutting the stock to form a connector plate of predetermined length; and

(7) upon further movement of the presshead, pressing the

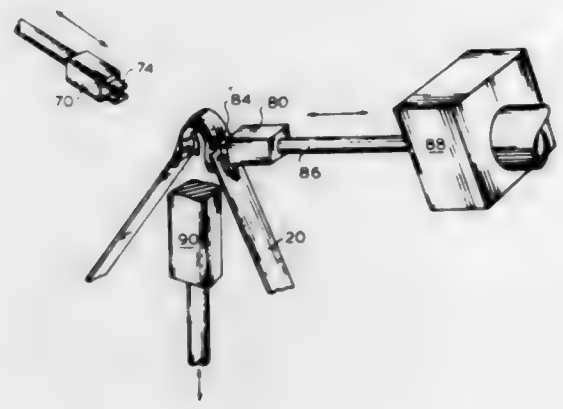
teeth of the connector plate thus formed into one side of the adjoining wooden members.

4,081,894

METHOD FOR ATTACHING A WORKPIECE TO A CONTINUOUS LENGTH OF LINE

Gerald Peter Hermanson; David Murray Rickel, both of Maitland, and Robert Joseph Carr, Winter Park, all of Fla., assignors to Dayron Corporation, Orlando, Fla.

Division of Ser. No. 694,243, Jun. 9, 1976, Pat. No. 4,017,955.
This application Apr. 14, 1977, Ser. No. 787,353
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—433 **10 Claims**



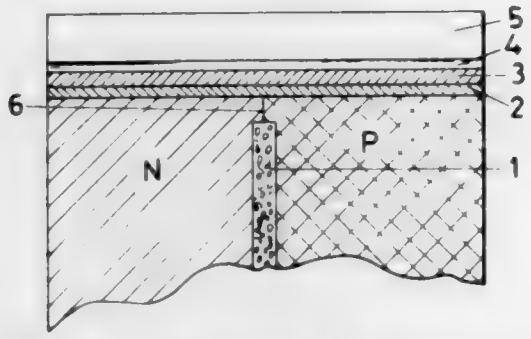
1. A method for coupling one way apertures of a workpiece to a specified position along a continuous length of line, said method comprising the steps of:
(a) positioning a first one way aperture in the workpiece adjacent the specified position along the line;
(b) making a first fold in the line adjacent said first one way aperture;
(c) stuffing said first fold through said first one way aperture;
(d) unfolding said first fold within said first one way aperture, thereby coupling the line to the workpiece.

4,081,895

METHOD FOR CONSTRUCTING A THERMOELECTRIC MODULE AND THE MODULE SO OBTAINED

Giovanni Germano; Francesco Losciale, both of Rome; Roberto Falesiedi, Piansano (Viterbo); Ferruccio Daclon, Grottaferrata (Rome), and Nicola Merzagora, Rome, all of Italy, assignors to Snamprogetti, S.p.A., Italy

Filed Sep. 20, 1976, Ser. No. 724,544
Claims priority, application Italy, Sep. 30, 1975, 27777 A/75
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—573 **2 Claims**



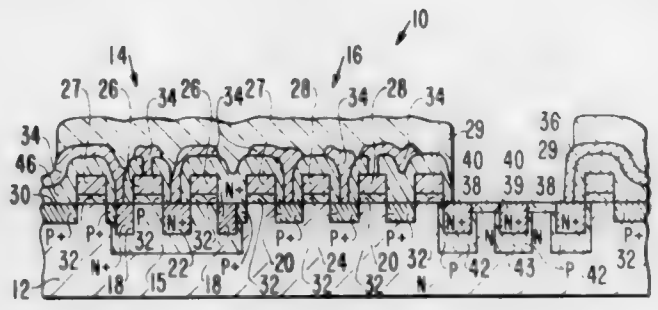
1. A method for constructing a thermoelectric module, comprising the following operations:
(a) constructing a reference shoulder on the semiconductor bar by an ultrasonic perforator;
(b) assembling the semiconductor bars in series, using a cement of insulating properties;
(c) cleaning the surfaces by sandblasting;
(d) gold plating to a thickness of 1 μ by metalisation;
(e) nickel plating to a thickness of 0.01 – 0.03 mm using a Watts bath;
(f) brasing copper electrodes under vacuum using a welding alloy consisting of Au, Ag, Ga;
(g) machining the regions between elements which have to remain isolated using an ultrasonic perforator;
(h) protecting the copper electrodes by nickel or chromium plating.

4,081,896

METHOD OF MAKING A SUBSTRATE CONTACT FOR AN INTEGRATED CIRCUIT

Andrew Gordon Francis Dingwall, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,246
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—590 **5 Claims**



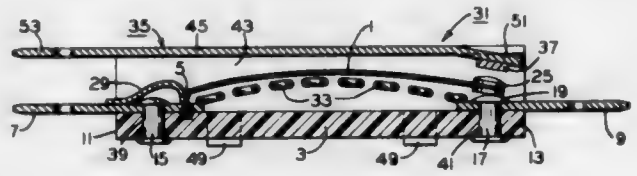
1. A method of making electrical contact to the substrate of a COS/MOS integrated circuit having a surface comprising the steps of:
(a) forming at least one highly conductive region in said surface which extends into a well region of opposite type conductivity to said substrate and separated from said substrate by said well region, said highly conductive region being of the same conductivity type as said substrate;
(b) altering the electrical characteristics of at least a portion of said well region which is contiguous with said substrate and with said conductive region, by ion bombardment to convert its conductivity to that of said conductive region, thus forming a continuous current path whereby current will flow in either direction between said highly conductive region and said substrate; and
(c) making electrical contact to said highly conductive region.

4,081,897

METHOD OF MAKING AN ELECTRIC SWITCH

Edward O. Andersen, Rock Falls, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 477,828, Jun. 10, 1974, Pat. No. 3,968,468.
This application Apr. 2, 1976, Ser. No. 672,851
Int. Cl.[2] H01H *11/00*
U.S. Cl. 29—622 **20 Claims**



1. A method of making an electrical switch having means adapted to be movable in response to heat supplied thereto between a pair of operable positions comprising the steps of:
a. heating the movable means so as to effect its deflection into a predetermined curvature in one of the operable positions and securing an integral part of the movable means against movement while the movable means is

deflected in the predetermined curvature thereof in the one operable position;

b. forming a means adapted for heating the movable means with a curvature generally complementary to the predetermined curvature of the movable means in the one operable position; and

c. disposing the heating means closely adjacent to the movable means so that the complimentary curvature of the heating means generally approximates the predetermined curvature of the movable means only when the movable means is deflected into the one operable position.

4,081,898

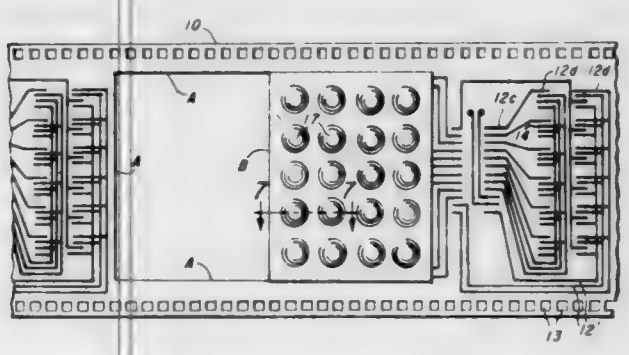
METHOD OF MANUFACTURING AN ELECTRONIC CALCULATOR UTILIZING A FLEXIBLE CARRIER

James B. Taylor, Jr., Plano, and Galen F. Fritz, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 678,103, Apr. 19, 1976, abandoned. This application May 5, 1976, Ser. No. 683,366

Int. Cl.[2] H01H *11/00*

U.S. Cl. 29—622 **26 Claims**



1. A method of manufacturing an electronic calculator comprising:

(a) forming a pattern of conducting stripes on a flexible substrate;

(b) forming a plurality of indentations in said substrate intersecting selected portions of said conducting stripes in said pattern;

(c) folding a portion of said substrate back on itself to form a keyboard utilizing the indentations and selected conducting stripes as keyboard switches; and

(d) connecting a tape-mounted semiconducting device and a display device to said flexible substrate.

4,081,899

METHOD OF PRODUCING A SEALED ELECTROLYTE-LIMITED LEAD-ACID BATTERY

Roy F. Thornton, and Joseph L. Weininger, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,469

Int. Cl.[2] H01M *2/36*

U.S. Cl. 29—623.2 **3 Claims**

1. A method of producing a sealed electrolyte-limited lead-acid battery which comprises providing a container having a body portion and a cover with at least one opening therein, providing at least one positive plate, providing at least one negative plate, positioning a separator therebetween, positioning the plates with separator therebetween within the body portion of the container, affixing the cover to the body portion of the container, adding a limited amount of sulfuric acid electrolyte within the body portion containing a metallic sulfate in an amount equivalent to from 0.01 to 2.5 weight percent sodium sulfate, forming charged positive and negative plates therein, retaining within the body portion the limited amount of sulfuric acid electrolyte containing the metallic sulfate, and sealing the battery.

4,081,900

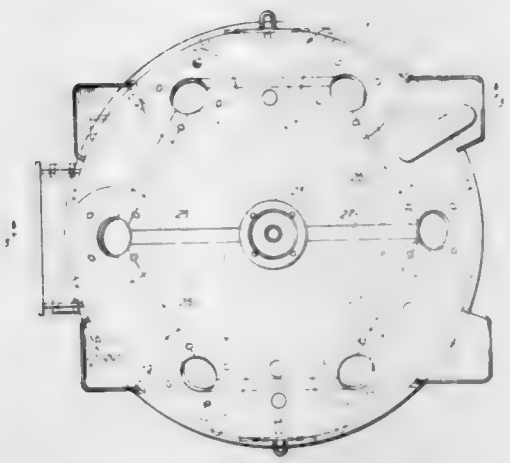
METHOD OF FORMING COVERS FOR ELECTRICAL EQUIPMENT

Richard R. Boni, McMurray, and Joseph J. Janubetz, Canonsburg, both of Pa., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Sep. 30, 1976, Ser. No. 728,501

Int. Cl.[2] H01B *13/00*

U.S. Cl. 29—624 **7 Claims**



1. A method of forming a cover for an electrical equipment casing comprising the steps of:

determining a portion of flat sheet material having a relatively high magnetic permeability to be utilized in constructing the cover;

replacing selected segments of said portion with material having low magnetic permeability; and

forming the cover from said portion after replacement of said segments without distortion of the cover.

4,081,901

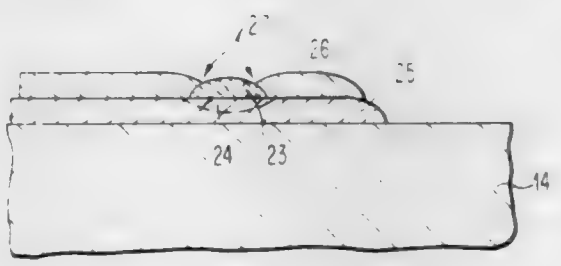
METHOD OF MAKING A TERNARY BARRIER STRUCTURE FOR CONDUCTIVE ELECTRODES

Lewis F. Miller, LaGrangeville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 535,261, Dec. 23, 1974, Pat. No. 4,017,889. This application Feb. 4, 1977, Ser. No. 765,551

Int. Cl.[2] H01R *43/00*

U.S. Cl. 29—630 R **10 Claims**



1. The method of forming a barrier structure on a conductive electrode comprising:

providing on a substrate a conductive electrode composed of predominently silver and a lesser quantity of one or more of a platinum group metal;

depositing over a portion of said electrode a homogeneous mixture comprising a gold powder and a finely divided material which upon heating to an elevated temperature will coalesce and upon cooling form a continuous layer;

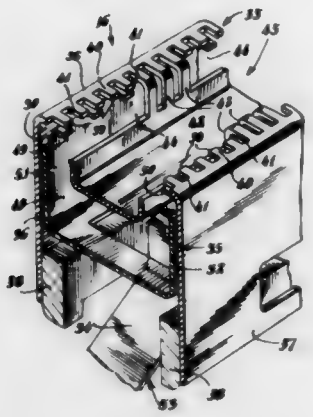
heating and composite to said elevated temperature to cause said coalescence and for a time to cause a diffusion of a portion of said gold into said portion of the electrode wherein a gold-silver-platinum group metal alloy is formed therein; and

cooling said composite.

4,081,902
CUTTER HEAD ASSEMBLY FOR AN ELECTRIC DRY SHAVER

David Richard Locke, Bridgeport, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.

Filed Dec. 7, 1976, Ser. No. 748,611
Int. Cl.[2] B26B *19/04*
U.S. Cl. 30—43.92 12 Claims



7. In an electric shaver having a casing, a motor driven cutter drive means and a cutter head disposed in said casing, said cutter head including an elongated inverted U-shaped stationary cutter member, a movable inner cutter mounted within said cutter member in hair shearing engagement therewith and operable by the drive means, said cutter member comprising,

a. an elongated bight portion having a width defined by a pair of spaced longitudinally extending opposed sidewalls depending from and formed perpendicular to said bight portion,

b. longitudinally extending ledges having continuous coplanar surfaces formed from said bight portion coextensive with said sidewalls,

c. an elongated hair receiving opening formed in said bight portion and extending longitudinally of said cutter member, said opening occupying a substantial portion of the width of said bight portion, said opening forming a passage into the interior of said cutter member,

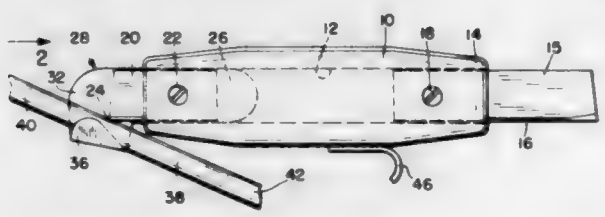
d. a plurality of hair combing teeth formed in said ledges extending in the direction of said opening, said teeth terminating in leading edges adjacent said opening, and

e. said teeth each having skin engaging surfaces formed on the same plane as the continuous coplanar surfaces of said ledges for stretching the skin in advance of the movable inner cutter, said teeth combing hair into said opening for passage into shearing engagement with the movable inner cutter.

4,081,903
CABLE STRIPPER

Joseph Tilmon Cormier, 1130 Main St., Tewksbury, Mass. 01876

Filed Jun. 25, 1976, Ser. No. 699,983
Int. Cl.[2] B21F *13/00;* B26B *27/00*
U.S. Cl. 30—90.6 4 Claims



1. A cable stripper comprising an elongated handle having a passage therethrough, a cable slitting blade located in said passage and extending from an end thereof, said blade having an exposed sharpened point,

a cable guide comprising a tang in said passage aligned with said blade in said passage, said tang having a laterally extending portion outside said passage, said laterally extending portion being directed away from said point, a downwardly and forwardly extending portion on the laterally extending portion spaced from said blade, said forwardly and downwardly extending portion including a transverse floor thereon at a point spaced from said sharpened point, and an upwardly directed cable guide portion terminating the floor,

and releasable means securing the blade and cable guide to the handle,

said floor being slightly inclined with relation to said cable stripping blade,

the releasable means comprising a single screw fastener extending through one side of the passage and laterally abutting the side of one of said cable stripping blade and said cable guide tang for forcing both of the latter elements against the opposite side of said passage thereby securing said cable stripping blade and cable guide in longitudinally adjusted position,

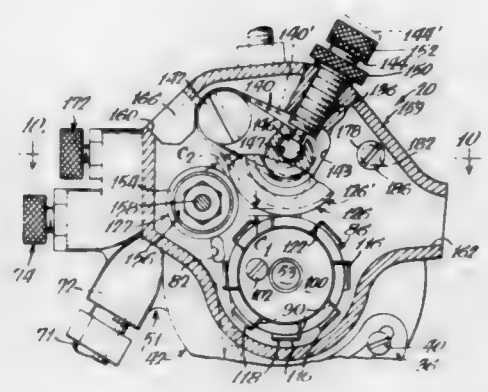
the blade and the guide being longitudinally adjustable relative to each other, and

said cable stripping blade and the cable guide being separate and removable from the handle.

4,081,904
ROVING CUTTER

Duane D. Krohn, Westminster, and Samuel W. Culbertson, Arvada, both of Colo., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Division of Ser. No. 586,206, Jun. 12, 1975, Pat. No. 4,001,935.
This application Oct. 26, 1976, Ser. No. 735,539
Int. Cl.[2] B26B *17/00*
U.S. Cl. 30—128 6 Claims

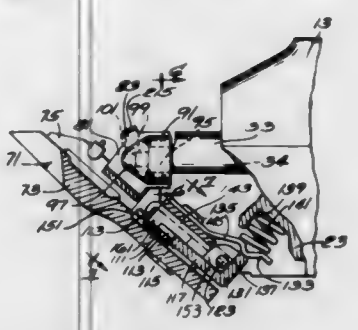


1. In a roving cutter having a rotatable cutter roller, a rotatable back-up roller cooperating with said cutter roller, and an idler roller cooperating with said back-up roller for feeding roving between said cutter roller and said back-up roller, the improvement comprising means adjustably mounting said back-up roller for movement into engagement with both of said cutter and idler rollers and in substantially equal increments away from both of them, and positive displacement adjusting means connected with said mounting means for fixing the position of said back-up roller relative to said cutter and idler rollers, said adjusting means including manually operable means remote from said rollers for adjusting said back-up roller while the cutter is operating, whereby the clearance between said idler and back-up rollers remains substantially equal to and varies substantially equally with the clearance between said cutter and back-up rollers.

4,081,905
ELECTRIC CLIPPER

Richard L. Urbush, Racine, Wis., assignor to Andis Clipper Co., Racine, Wis.

Division of Ser. No. 572,056, Apr. 28, 1975, Pat. No. 3,992,778.
This application Apr. 21, 1976, Ser. No. 678,927
Int. Cl.[2] B26B *19/06*
U.S. Cl. 30—221 14 Claims

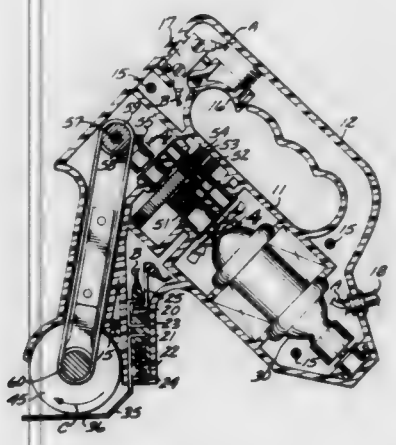


1. A hair clipper comprising a housing assembly including a recess, a blade set having a stationary blade with means thereon defining a groove, a blade set mounting assembly including a mounting plate fixed to said housing assembly, a tongue removably extending into said groove, means on said tongue and on said mounting plate affording pivotal movement of said tongue relative to said mounting plate between a first position permitting insertion and withdrawal of said tongue relative to said groove and a second position preventing such insertion and withdrawal, and spring means secured to said mounting plate and including a portion engaging said tongue for selectively and releasably holding said tongue in said first and second positions, and a spring in said recess bearing, at one end, against said housing assembly and bearing, at the other end, against said portion of said spring means to augment the action of said spring means.

4,081,906
CAST CUTTER

Thelma G. Sigler, Orange, Calif., assignor to Alpha Nova Development Corporation, Santa Ana, Calif.

Filed Apr. 28, 1977, Ser. No. 791,865
Int. Cl.[2] B26B *7/00*
U.S. Cl. 30—276 8 Claims

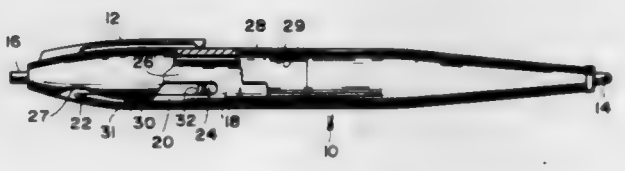


1. A portable cutter assembly adapted for use in removing casts from the body of a patient, comprising:
- an electrically driven motor adapted for connection to an electric power source;
- gearing coupled to the output of said motor;
- a first housing conformed to receive said motor and said gearing;
- a second housing extending from said first housing and communicating on the interior therewith;
- a first and a second rotary cutter mounted for rotation in said second housing, said first and second rotary cutters having cutting edges partially exposed therefrom, said first and second cutters being aligned at a toe in and positive caster relative each other symmetrically about a longitudinal plane intersecting said first and second housing;
- pulley means disposed on the interior of said first and second housing for transferring rotary power between said gearing and said first and second rotary cutter;
- a bottom plate assembly telescopically received within said second housing and extending outwardly therefrom to align distally subjacent of said exposed edges of said first and second cutters said bottom plate assembly being adapted for telescopic translation relative said cutters;
- spring means disposed in said second housing for urging said bottom plate assembly upwardly towards said cutters;
- a manually operative switch connected in circuit with said motor; and
- a normally open switch connected in series with said manually operative switch, said normally open switch being articulated to a closed state by the downward articulation of said bottom plate assembly.

4,081,907
LETTER OPENER DEVICE

Barry L. Bosshold, 220 Atlantic No. 209, Santa Cruz, Calif. 95062

Filed Aug. 9, 1976, Ser. No. 712,585
Int. Cl.[2] B26B *29/00*
U.S. Cl. 30—294 6 Claims



1. A letter opener comprising:
- a non-cutting finger having a relatively pointed distal end to be inserted under the flap of a sealed envelope and tapering gradually outward to a wider trailing portion displaced from said distal end;
- a sharp cutting blade extending upwardly from said finger at said trailing portion and facing toward said distal end; and
- an elongated hood joined to and carrying said finger in a junction therewith at said trailing portion and extending forwardly therefrom generally above and parallel to said finger
- the side surfaces of said junction forming a continuation of the side surfaces of said finger and flaring outward to an increased width rearward of said blade;
- depending sides on said hood extending downward to embrace said finger and to restrict access to said blade;
- the leading edges of said depending sides occuring adjacent the distal end of said finger while leaving same visually exposed, and the trailing edges of said depending sides occurring forward of the flared sides of said finger and hood junction leaving a space between said trailing edges and said flared sides for withdrawal of a severed envelope therebetween.

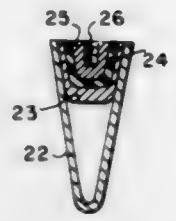
4,081,908
DENTAL IMPLANTS

Meer Sneer, 24 Merkas Baale Melacha St., Tel-Aviv, Israel

Filed Jul. 8, 1976, Ser. No. 703,379
Int. Cl.[2] A61C *13/00*
U.S. Cl. 32—10 A 6 Claims

1. A dental implant comprising in combination a foundation member of V-shaped cross section, comprising two members connected at the apex of the V;
- said two members comprising plates of substantially rectangular shape, of about 10 mm. height and about 20–35 mm. width, forming an angle of 10° to 30° with each other;

the foundation member having crown-support connecting means provided with cup-shaped shock-absorbing means,



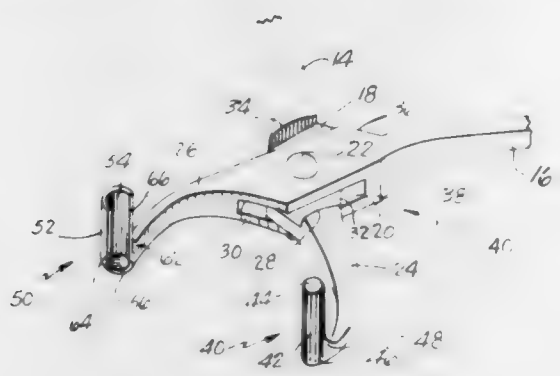
said foundation member being adapted to be inserted in to the jaw.

4,081,909

ORTHODONTIC PLIERS

Francisco G. Garcia, Box A B, Rio Piedras, P.R. 00928

Filed Jul. 30, 1976, Ser. No. 710,125
Int. Cl.[2] A61C *13/22*
U.S. Cl. 32—66 **6 Claims**



1. An orthodontic pliers, which comprises:

first and second jaw members pivotally coupled to each other and having handle means extending laterally from one end thereof and wire bending means extending transversely from the other end thereof;

said wire bending means including a first elongated bending member having an arcuate outer surface and connected to said other end of said first jaw member at a first junction point, and a second elongated bending member connected to said other end of said second jaw member at a second junction point and comprising a semi-tubular body having an arcuate inner surface complementary to and adapted to mate with said arcuate outer surface of said first elongated bending member;

the major portion of said first and second elongated bending members extending substantially beyond their respective junction points with said first and second jaw members for permitting intra-oral bending of orthodontic arch wires therebetween.

4,081,910

SHUT HEIGHT GAUGE AND METHOD OF USING SAME

H. Jack Hammond, 8004 Acme Way, Louisville, Ky. 40219

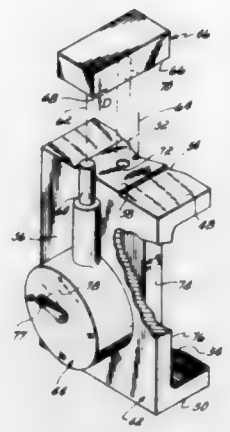
Filed May 19, 1976, Ser. No. 687,988
Int. Cl.[2] G01B *3/30*
U.S. Cl. 33—181 R **11 Claims**

1. A shut height gauge comprising, in combination,

a body having at least one apparatus engaging surface and a surface perpendicular thereto,

an indicator mounted on said body and including a plunger substantially parallel to said apparatus engaging surface and extending beyond the plane of said perpendicular surface, and

a set bar for mastering said indicator receivable on said perpendicular surface, said set bar having first and second surfaces substantially parallel to said perpendicular surface, said second surface being offset a predetermined distance from said first surface, said first surface contacting said perpendicular surface and said plunger contacting



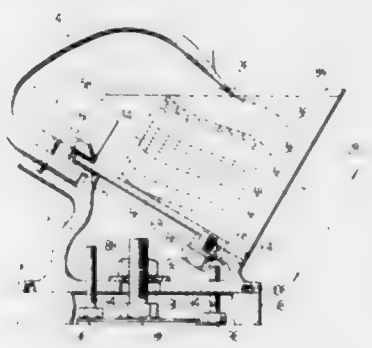
said second surface when said set bar is received on said perpendicuar surface.

4,081,911

SUNDIAL

Albert M. Eldridge, 4711 Chiaperro Trail, Austin, Tex. 78731

Continuation-in-part of Ser. No. 577,176, May 14, 1975, abandoned. This application Oct. 4, 1976, Ser. No. 729,008
Int. Cl.[2] G01C *17/34, 21/02*; G04B *49/02*
U.S. Cl. 33—270 **5 Claims**



1. A sundial comprising:

a body portion having a concave inward, cylindrical wall of fixed radius *r*, the sundial being oriented during operation so that the longitudinal axis of said cylindrical wall and the polar axis of the earth together define a plane extending essentially north and south through the earth;

a pair of thin sheets formed of resiliently flexible material, said sheets being alternately mountable in the same location on said cylindrical wall so as to be bendable from a planar configuration and assume a cylindrical configuration and present an outwardly facing cylindrical surface;

said resiliently flexible sheets, when removed from said cylindrical wall, reassuming a planar configuration;

fastening means which can be loosened to enable the mounted sheet to be rotated about said longitudinal axis, and which can be tightened to secure the mounted sheet against rotation;

said fastening means being releasable to permit substitution of said sheets;

a gnomon connected to said body portion, said gnomon comprising a shaft having a relatively heavy portion narrowing to a fine tip, the tip thereof coinciding with the longitudinal axis of said cylindrical surface and casting a shadow on said cylindrical surface dependent upon the hour angle and declination of the sun;

a plurality of generally parallel, equally spaced time lines disposed on said cylindrical surface and extending in a direction essentially longitudinally of the longitudinal axis thereof, wherein:

said time lines are longitudinally bounded by lines extending circumferentially around said cylindrical surface and spaced apart a distance d_1 defined approximately by the equation

$$d_1 = 2r \sin 23.5°,$$

said time lines vary from time lines strictly parallel to the longitudinal axis of said cylindrical surface by a distance d_2 defined approximately by the equation

$$d_2 = r\pi\alpha/180°$$

said time lines strictly parallel to the longitudinal axis being derivable by the plotting on said cylindrical surface, for given local hour angles, the point of intersection with said surface of a line extending from said tip of said gnomon and inclined to the horizontal and rotated about the vertical to angles defined by the altitude and bearing of the sun for varying declinations thereof, and

α being the algebraic difference between the GHA of the sun and the GHA of noon LCT, so that a positive value for α when the sun is at a particular declination indicates that the GHA of the sun precedes noon LCT and requires that said time lines curve to the east of said times lines strictly parallel to the longitudinal axis of said cylindrical surface and a

negative value for α when the sun is at a particular declination indicates that the GHA of the sun follows noon LCT and requires that said time lines curve to the west of said time lines strictly parallel to the longitudinal axis of said cylindrical surface; said time lines comprising:

a plurality of principal time lines spaced apart about the circumference of said cylindrical surface a distance d_4 defined approximately by the formula

$$d_4 = r\pi(15°)/180°$$

said principal time lines being designated hour lines to represent hours of the day and being marked at one longitudinal extreme in hours of standard time and at the opposite extreme in hours of daylight saving time; and

a plurality of secondary time lines parallel to said hour lines and intercalated therebetween to define minutes of time between said hour lines;

the time lines disposed on one of said sheets being configured to designate time occurring from the winter solstice to the summer solstice, and the time lines disposed on the other sheet being configured to designate time occurring from the summer solstice to the winter solstice;

a plurality of parallel, spaced apart date lines disposed on said cylindrical surface and extending at least partially about the circumference thereof, the distance between said date lines defining ranges of declination of the sun and the locations thereof along said time lines defining the month of the year and the approximate date thereof as the shadow of said tip of said gnomon is cast thereupon or therebetween;

said cylindrical wall being horizontally truncated by a horizontal plane passing therethrough in a manner essentially tangential to the surface of the earth at a point of observation;

said date lines being circumferentially projectable about said cylindrical surface to ultimately intersect the edge of said truncation of said cylindrical surface, the concurrent intersection of one of said time lines with one of said date lines at said edge of said truncation indicating approximately the time of sunrise at the western truncation and the time of sunset at the eastern truncation;

a plurality of lines of declination disposed on said cylindrical surface parallel to a line of zero declination and extending on either side thereof seriatim to the terminal points of said time lines to define the value of the declination of the sun as the shadow of said tip of said gnomon is cast thereupon or therebetween;

a plane perpendicular to the longitudinal axis of said cylindrical surface and including said tip of said gnomon intersects said cylindrical surface to define said line of zero declination of the sun thereon; said time lines being collectively rotatable by moving said sheet about said longitudinal axis a distance d_3 defined approximately by the formula

$$d_3 = r\pi\theta/180°$$

wherein θ is the difference between the longitude of the standard meridian of the zone of time in which the sun is being observed and the longitude of the meridian of the point of observation of the sun; so as to correct for differences between LCT and the time of the standard meridian of the zone of time in which the sun is being observed;

a scale calibrated in degrees; and

an indicator;

one of said scale and indicator being rotatable with said time lines about said longitudinal axis and including indicia intersecting the noon time line of standard time at a point at which α is of zero magnitude;

the other of said scale and indicator being immovable relative to said time lines and including indicia directed along a line parallel to the longitudinal axis of said cylindrical surface through the locus of points defining the vertically lowest points of successive circumferential lines extending about said cylindrical surface;

said indicator being aligned with said scale so that said scale and indicator provide a measurement of the rotation of said time lines about said longitudinal axis.

4,081,912

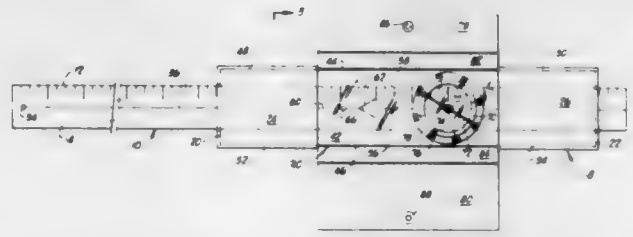
MAGNETIC BEARING PLOTTING AND SIGHTING DEVICE

David F. Laney, 724 Hoover St., Norman, Okla. 73069

Filed Jun. 24, 1977, Ser. No. 809,537

Int. Cl.[2] G01C *17/12*

U.S. Cl. 33—272 **11 Claims**



1. A device for taking and plotting magnetic bearings comprising:

a flat, elongated straight edge element of right parallelepiped configuration having an elongated straight edge along one side thereof, and graduated indicia along said straight edge, said straight edge having an aperture therein for frictionally and removably receiving a sight pin extending vertically upwardly from the major plane of the straight edge element;

a housing including a pair of spaced, opposed hollow portions each closed at one end by an end wall and interconnected by a bottom wall supporting said straight edge element, said end walls each having slots therein with said straight edge element extending through said slots;

a magnetic compass subassembly mounted on said straight edge between said hollow portions of said housing and including:

a transparent plate having indicia thereon facilitating alignment of two spaced points on said plate with said aperture in said straight edge element;

a sight pin removably retained at one of said points and

projecting from said transparent plate and normal to the major plane of said straight edge element; and

a magnetic compass secured to said transparent plate and including a pivotally mounted compass needle supported for pivotation about an axis extending through the second point on said plate and normal to the major plane of said straight edge.

4,081,913

PULP AND PAPER DRYING APPARATUS AND METHOD

Reijo K. Salminen, 1842 Academy Rd., Bellingham, Wash. 98225

Filed Jul. 26, 1976, Ser. No. 708,724
Int. Cl.² F28F *13/18*
U.S. Cl. 34—41 **10 Claims**



1. In a method of drying a sheet of material, such as wood pulp or paper, wherein the method comprises:

a. directing said sheet along a path of travel through one or more rotatably mounted drying drums, with the sheet traveling in a circuitous path around a substantial portion of the circumference of each drum so as to be in heat exchange relationship therewith, and

b. directing pressurized steam into the interior of each drum and removing from each drum interior steam condensate that forms therein,

an improvement to increase the effectiveness of heat transfer to the sheet being dried, said method comprising:

condensing said steam in each drum on an interior surface thereof, which interior surface is of a smooth finish sufficient to reduce impedence of heat transfer due to water condensate at the interior surface of each drum, the interior surfaces of each drum having a roughness index at least at low as approximately 125 as measured on the General Electric Surface Roughness Index Scale Cat. No. 342 × 60.

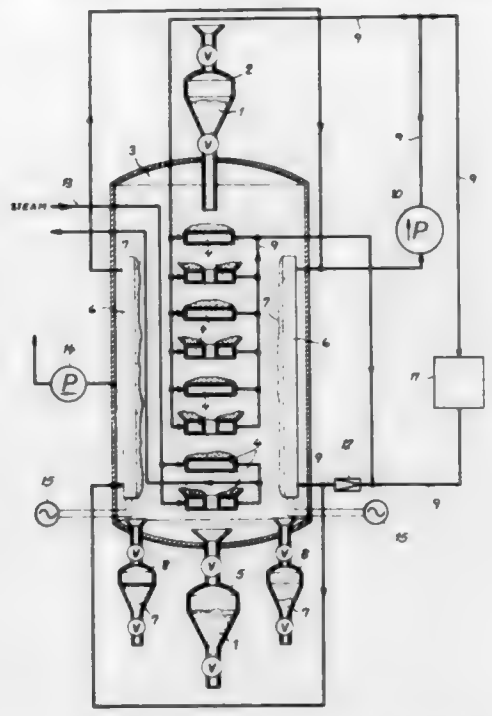
4,081,914

FREEZE DRYER

Robert Rautenbach, Turmstr. 46; Horst Hoeck, Kaiser-Friedrich-Allee 2a, and Wolfgang Beer, Beeckstr. 38, all of Aachen, Germany (5100)

Filed Aug. 25, 1976, Ser. No. 717,556
Claims priority, application Germany, Aug. 26, 1975, 2537850
Int. Cl.² F26B *13/30*
U.S. Cl. 34—92 **6 Claims**

1. A freeze drier comprising housing means forming a sublimation chamber; at least one heating plate in said sublimation chamber for heating a material to be freeze-dried therein; at least one ice condenser in said sublimation chamber; means for evacuating said sublimation chamber; and a hat pump for recovering heat from said ice condenser and recirculating same to said heating place, said ice condenser being provided with means for releasing deposited ice therefrom, the means for releasing ice from said ice condenser comprising a heating



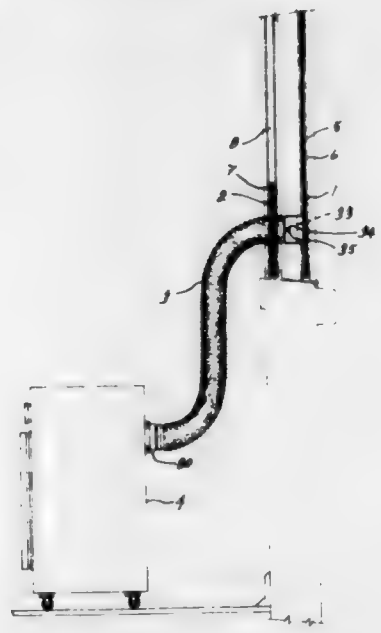
layer carried by said ice condenser and briefly heatable to release the ice therefrom.

4,081,915

EXHAUST SYSTEM FOR LAUNDRY DRYER

Gizela Materniak née Babcerowicz, and Zdzislaw Materniak, both of 7211 Fielding Avenue, Apt. 102, Montreal, Canada

Filed Jun. 4, 1976, Ser. No. 692,686
Int. Cl.² F24F *13/18*
U.S. Cl. 34—235 **5 Claims**



1. An air exhaust system for a laundry dryer located in a room having a window including a window frame and a window sash slidable therein, and having an air exhaust outlet, comprising a window insert plate assembly removably inserted within said window frame and with said window sash contacting an edge of said window insert plate assembly, said window insert plate assembly including telescopically-engaged rectangular plate sections to fit window frames of different widths, one of said plate sections having an aperture, a unitary box-like closure means movably mounted within said aperture for movement between an aperture closing position and an aperture opening position, said box-like closure means including an outside plate, a side wall having a venting opening adjacent said outside plate and a nipple connected to said side wall and remote from said outside plate inwardly of the latter and com-

municating with the interior of said box-like closure means, said side wall and its venting opening being disposed inwardly of said one plate section and said outside plate closing said aperture and flush with said one plate section in the aperture closing position of said box-like closure means, said side wall and outside plate protruding outwardly from said one plate section in the aperture opening position of said box-like closure means with said venting opening being located completely outside of said one plate section, and further including a flexible venting hose having detachable connecting means at both ends for detachably connecting one end of said hose to said nipple and the other end of said hose to the exhaust outlet of said laundry dryer, said box-like closure means preventing air circulation between said room and the outside, in both positions of said box-like closure means when said hose is connected to said nipple and to said laundry dryer.

4,081,916

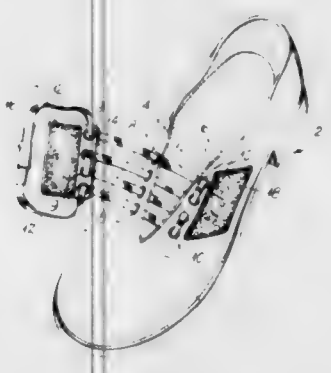
QUICK LACE TIGHTENER FOR SHOES

Thomas Salisbury, Box 80033, College, Ak. 99701

Filed Feb. 3, 1977, Ser. No. 765,303

Int. Cl.[2] A43B *11/00*

U.S. Cl. 36—50 **2 Claims**



1. A quick lace tightener for shoes, a shoe having adjacent closure flaps, each provided with a plurality of eyelets, comprising:

a shoe lace member laced through and extending from the eyelets of one flap and outwardly through the eyelets of the other flap;

a first patch of fastener fabric secured to the outer ends of said shoe lace members; and

a second path of complementary fastener fabric secured to the outer surface of said shoe adjacent to said one flap whereby said first patch may be pulled toward said second patch to tighten said lace and draw said flaps together and then engaged with said second patch to hold said lace in tensioned condition, said lace being threaded through eyelets in a leather patch having said first patch of said material secured thereon.

4,081,917

TECHNIQUE AND ARTICLES FOR FORMING SHOE SHANKS

Robert W. Bradley, Marblehead; Donald L. Bray, Beverly, and Raymond L. Peterson, Beverly Farms, all of Mass., assignors to Bush Universal, Inc., Woburn, Mass.

Filed Apr. 29, 1976, Ser. No. 681,562

Int. Cl.[2] A43B *13/42;* A43D *0/00*

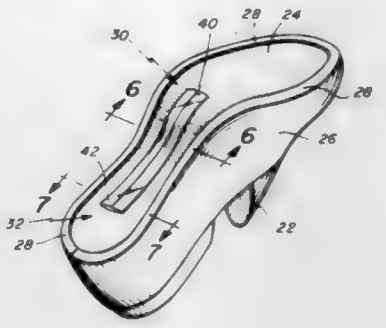
U.S. Cl. 36—76 R **25 Claims**

1. An article for use as a shoe reinforcement comprising:

an elongated sleeve surrounding a matrix which includes an externally activatable thermosetting resin and a multiplicity of reinforcing fibers embedded in the matrix,

said sleeve being substantially impermeable to said matrix,

said sleeve, matrix and reinforcing fibers being flexible and deformable, as a unit, to enable said article to be applied to a selected surface of a shoe and to substantially conform to



the shape of said surface while in an unactivated condition.

4,081,918

GOLF TRAINING DEVICE

John P. O'Brien, 175 E. Delaware Pl., Chicago, Ill. 60611

Filed Oct. 26, 1976, Ser. No. 735,761

Int. Cl.[2] A63B *69/36;* A43C *15/00*

U.S. Cl. 36—132 **5 Claims**



1. A wedge-shaped golf training device adapted to be removably affixed to a shoe, said training device comprising a wedge-shaped body having a lower, ground engaging surface, and an upper support surface, said upper support surface adapted to support the lower surface of a shoe, said wedge-shaped body including an upper extension and a lower extension extending at right angles to said upper support surface, said upper extension including plunger means adapted to move parallel to said upper support surface, and means to adjustably urge said plunger means toward said lower extension and frictionally engage the sole of a shoe between said plunger means and said lower extension.

4,081,919

BACKHOE BUCKET

Ted L. Teach, Dayton, Ohio, assignor to Laserplane Corporation, Dayton, Ohio

Filed Mar. 30, 1977, Ser. No. 782,926

Int. Cl.[2] E02F *5/02*

U.S. Cl. 37—103 **2 Claims**

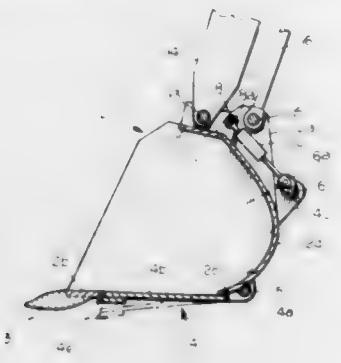
1. A digging bucket for a backhoe or similar machine for producing a smooth-bottomed excavation, comprising, in combination:

(1) a "U"-shaped primary frame having planar sidewalls rigidly interconnected by two spaced, fixed bottom portions;

(2) the first of said fixed bottom portions comprising a transverse bar extending across the forward portions of the bucket and rigidly mounting a plurality of forwardly projecting, laterally spaced digging teeth;

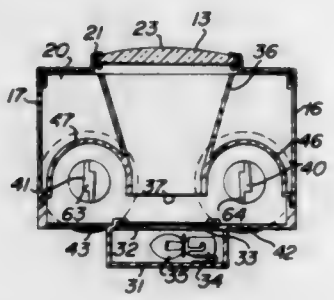
(3) the other of said fixed bottom portions comprising an upwardly curved sheet, rearwardly spaced from said transverse bar and extending upwardly to define at least a portion of the back wall of the digging bucket;

(4) a movable bottom member of generally "U"-shaped configuration, constructed and arranged to snugly surround said primary frame and having a platelike bottom portion thereof fitting snugly within the space provided between said fixed bottom portions;
(5) means for pivotally securing the side walls of said movable bottom member respectively to opposite sides of said other bottom portion of said primary frame;
(6) a pair of reinforcing bars respectively secured to the outer forward portions of said planar side walls of said primary frame, said reinforcing bars being of a greater



thickness than said side walls of said movable bottom member, thereby protecting said side walls of said movable bottom member from primary engagement with any soil being dug, and
(7) power means for pivoting said movable bottom member relative to said primary frame to displace the forward edge of said platelike bottom portion a limited distance downwardly relative to said digging teeth, whereby said forward edge may selectively become the effective digging edge of the bucket to produce a smooth bottomed excavation.

4,081,920
FILM VIEWER
Raymond J. Magee, 335 Independence Dr., Forked River, N.J. 08731
Filed Oct. 19, 1976, Ser. No. 733,790
Int. Cl.² G03B *1/10*
U.S. Cl. 40—362 **1 Claim**



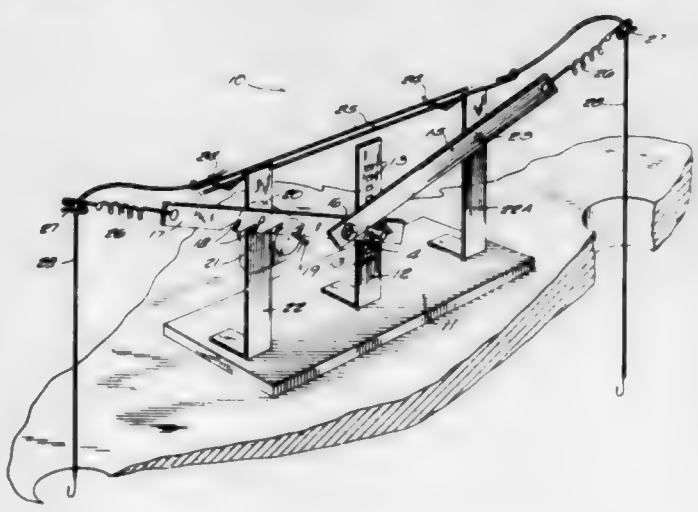
1. A film viewer comprising a housing front wall, a peripheral housing side wall extending about and rearwardly from said front wall, a housing rear wall swingably connected to and extending in closing relation with the rear of said side wall, a front viewing window in said housing front wall, a rear lamp in said housing carried by said rear wall and visually accessible through said viewing window, a generally flat film holder located in position between said window and lamp for illuminated presentation through said window, and rotary spools carried by said holder on opposite sides thereof for rotatably supporting coiled end portions of film extending through said holder, said holder and spools combining to define a film carrying cartridge removable and replaceable upon opening of said rear housing wall, whereby said spools are selectively wound and unwound for viewing a selected film portion, a pair of rotatable finger-actuable wheels mounted in said housing walls, and direct axial drive means on each of said wheels for direct axial interfitting engagement with respective spools and rotatable therewith, said wheels being at least partially exposed exteriorly of said housing walls for finger rotation to shift film in opposite directions in said holder, lens means on said window to facilitate viewing, said window and lens means being larger than said film holder, and a convergent light passageway extending between said lens means and holder, and internal guide walls within said housing side wall conformably engaging said cartridge to locate said spools in said direct axial interfitting engagement with said wheels.

4,081,921
ADVERTISING FOLDER
Norman J. Humphrey, 17123 Sprenger, E. Detroit, Mich. 48021
Filed Dec. 30, 1976, Ser. No. 755,673
Int. Cl.² G09F *3/04*
U.S. Cl. 40—120 **7 Claims**



1. An advertising folder embodying a cardboard sheet of rectangular form divided into four substantially equal sections by three score lines where folds are to occur, a first section has a tab extending outwardly from the edge thereof, a second section having a flap at each side edge and a tab with a slot cut therefrom aligned with the tab on said first section, a third section having a slot adjacent to said second section, and a fourth section divided by two adjacent score lines both of which are folded to form a tray when secured adjacent to said second section.

4,081,922
DOUBLE FISH POLE JIGGER
Elias J. Johnson, 503 Stevens St., Green Bay, Wis. 54303
Filed Oct. 26, 1976, Ser. No. 735,529
Int. Cl.² A01K *97/10*
U.S. Cl. 43—19.2 **2 Claims**



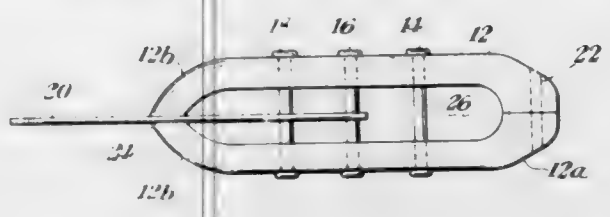
1. A dual fish line jigger including a base, a pair of vertical standards each fixed adjacent to an end of said base, an electric motor fixed to one of the standards, an electric battery attached thereto, a rotary cam driven by said motor to cause upward movement of a pair of pivoted arms mutually joined by pivot and peg means.

4,081,923

FISH HOOK HOLDER

T. John Pruncutz, 6550 SW. 52nd Ter., Miami, Fla. 33155

Filed Aug. 30, 1976, Ser. No. 718,554
Int. Cl.[2] A01K 97/06
U.S. Cl. 43—57.5 R 3 Claims



1. An improved fish hook holder for retaining a fish hook while protecting the manual threading and affixing of a line or leader to a hook comprising:

an elongated resilient body, said body having a hollow interior chamber, said body including a pair of resilient separable bifurcated arms forming a slotted surface at one end of said body, said surface slot being smaller than the diameter of a fish hook body and forming a closed surface at the opposite end of said body;

said bifurcated body arms form a slot with a pair of parallel, planar wall surfaces having a longitudinal length equal to the thickness of the bifurcated arms, said wall surfaces being disposed in the longitudinal axis of said body; and

a plurality of rigid pins spaced apart longitudinally, laterally coupling said bifurcated arms together whereby said pins may accommodate and are spaced at different distances from said slotted end to accommodate fish hooks of varying lengths.

4,081,924

YO-YO TOY CARRYING AN ADDITIONAL MEMBER

Norman Fabricant, 94-19 64th Rd., Rego Park, N.Y. 11374

Filed Nov. 19, 1976, Ser. No. 743,261
Int. Cl.[2] A63H 1/30
U.S. Cl. 46—61 8 Claims



1. A yo-yo toy comprising:

a. two circular blocks arranged in parallel planes, said blocks being spaced apart and having inner faces facing each other and outer faces facing in opposite directions,

b. a pin joining the inner faces of said blocks at their centers,

c. a string extending into the space between said blocks and having one end secured to said pin,

d. additional means carried by said blocks, said additional means having a portion rotatably mounted on the outer face of each of said blocks,

e. a hole in a portion of said additional means which is spaced from said blocks, said string extending through said hole, so that when said blocks are suspended from said string said additional means is maintained above the level of the axis of said pin, and

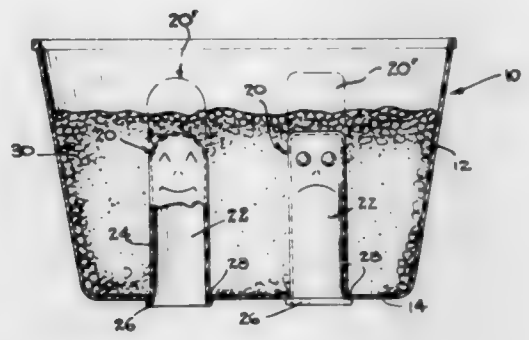
f. a guide forming part of said additional means, said guide having an opening through which said string extends, and said guide being between said portion having said hole and said blocks and being spaced from both said portion and said blocks.

4,081,925

FINGER PUPPETS

Merrill K. Apple, 863 Linden La., Davis, Calif. 95616

Filed Aug. 30, 1976, Ser. No. 718,687
Int. Cl.[2] A63H 3/14
U.S. Cl. 46—116 8 Claims



1. In combination:

a container;

at least one finger hole formed in a wall of said container;

at least one elastic finger puppet, equal in number to said holes, positioned through said finger holes and within the interior of said container;

means for sealing said finger puppets to the periphery of said holes; and

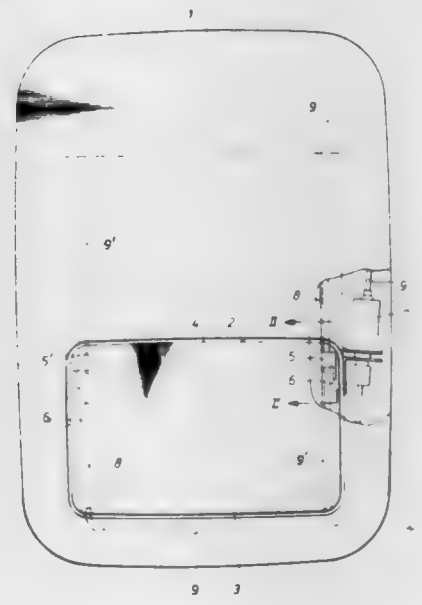
particles within said container sufficient to cover said puppets when said puppets are in their unstretched condition.

4,081,926

SUNROOF

Hans Jardin, Inning, Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Germany

Filed Apr. 1, 1977, Ser. No. 783,647
Claims priority, application Germany, Apr. 29, 1976, 2618788
Int. Cl.[2] E05F 11/38
U.S. Cl. 49—210 10 Claims



1. Sunroof or the like apparatus of the type having an opening surrounded by frame structure, said apparatus comprising:

a rigid cover member,

first and second guide elements disposed at respective opposite lateral sides of said cover member, said guide elements being configured to guidably support said cover member at said frame structure during movement of said cover member from a position closing said opening to respective open positions.

incompressible cable means having a first end connected and

movable with said first guide element and a second opposite end connected to and movable with said second guide element,

and drive means for drivingly moving said cable means,

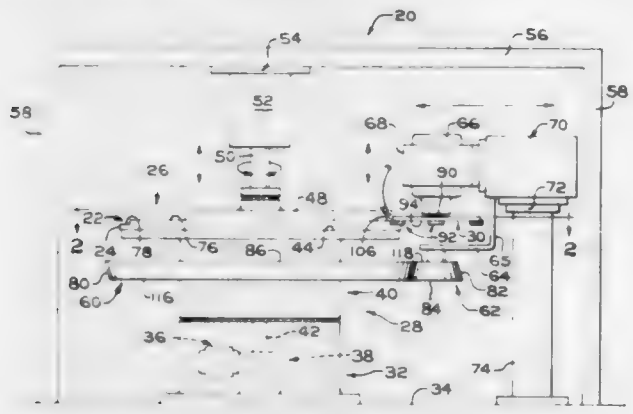
wherein said cable means is disposed so that when said drive means is actuated, said cable means pulls said first guide element in a direction and pushes said second guide element in the same direction.

4,081,927

APPARATUS FOR GRINDING A RABBET IN AN EDGE OF A GLASS SHEET

Joseph B. Kelly, Crestline, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 29, 1976, Ser. No. 745,705
Int. Cl.[2] B24B *17/02*; B24D *7/10*
U.S. Cl. 51—101 R **4 Claims**



1. An apparatus for grinding a recess in marginal edge portions of a glass sheet, comprising:

means for supporting the sheet;

a flat disc;

a circular band of grinding material on a surface of said disc;

shaft means mounting said disc such that the axial center of said shaft means and plane of said disc subtend an oblique angle;

means acting on said shaft means for rotating said disc through a circular oscillatory path to move said band of grinding material toward, through and away from a plane generally parallel to said supporting means; and

means for decreasing the distance between said band of grinding material and said supporting means as said disc is rotated.

4,081,928

SILICON SLICE CARRIER BLOCK AND PLUG ASSEMBLY

Gerald P. Kinnebrew, Dallas; Bobby Mack Watkins, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 470,431, May 16, 1974, abandoned.
This application Aug. 17, 1976, Ser. No. 715,341
Int. Cl.[2] B24B *4/04*
U.S. Cl. 51—131 **12 Claims**

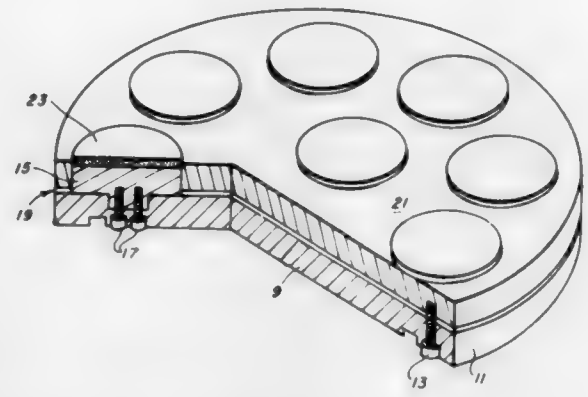
1. A carrier block and plug assembly for retaining semiconductor slices for polishing which comprises:

(a) a rigid block having a planar surface,

(b) a retainer having parallel opposite surfaces and a plurality of apertures extending therethrough, said apertures having the same diameter throughout,

(c) a spacer positioned between said block and retainer in the non-apertured region,

(d) a plurality of plugs secured to said block and extending into said apertures, said plugs having substantially the same diameter as said apertures and substantially the same thickness as said retainer, thereby defining pockets having a uniform depth equal to the thickness of said spacer, said plugs each comprising means for supporting a wet semiconductor slice for free rotation thereon and consisting essentially of a rigid plastic material which is nonabsorptive and retains its shape at elevated temperatures, each plug having only a single surface exposed within its corresponding aperture, said plug surface being planar and having a high lubricity,



(e) means securing said block to said retainer,

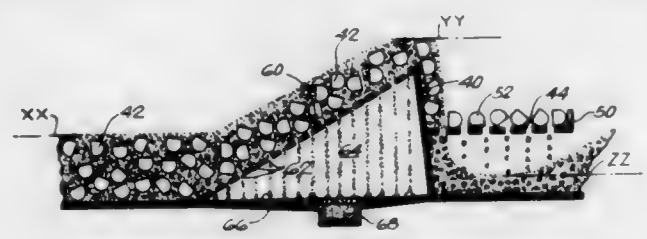
(f) the exposed surfaces of said block, retainer and plugs being mutually parallel.

4,081,929

VIBRATORY MILL WITH DRAINAGE AND CLASSIFYING MEANS

George F. Jones, Mishawaka, and Raymond M. Leliaert, South Bend, both of Ind., assignors to Wheelabrator-Frye, Inc., Hampton, N.H.

Filed Dec. 9, 1976, Ser. No. 748,780
Int. Cl.[2] B24B *31/00*
U.S. Cl. 51—163.2 **5 Claims**



1. The combination of a finishing mill having a substantially annular trough adapted to contain media and parts, means for vibrating the trough to cause media and parts to travel about the trough, a dam extending crosswise of the trough whereby the parts and media rise to a level above normal level in advance of clearance of the dam, the improvement in which the approach to the dam is inclined from the bottom wall of the trough to the apex of the dam, and means to remove fluids, dust, dirt and undersized particles of media comprising passages through the approach dimensioned to be less than the dimension of the parts and media whereby parts and media continue to travel over the approach while the said material fluids, dust, dirt and undersized particles of drains through the openings in the approach, a separate compartment communicating with the underside of the approach to receive the material draining therethrough, and means for removing the said material from the compartment.

4,081,930

ARRANGEMENT FOR CLEANING A CONDUIT

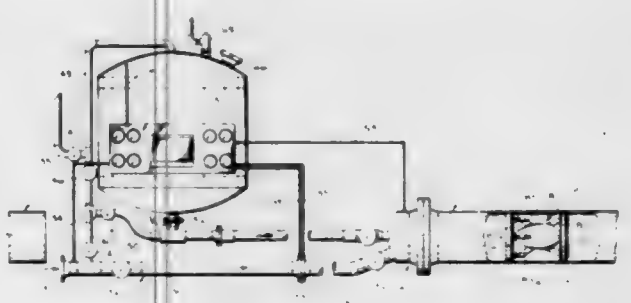
Garnett E. Jones, Baytown, Tex., assignor to Intra-Pipe, Inc., Houston, Tex.

Filed Dec. 15, 1975, Ser. No. 641,100
Int. Cl.[2] B24C *3/16, 1/00*
U.S. Cl. 51—411 **2 Claims**

1. An arrangement for cleaning conduit such as a pipeline or the like including:

a. storage means for receiving particulate material;

b. conduit means for connecting with the pipeline to be cleaned, said conduit means including:
1. first conduit means for receiving a pressurized gas stream and connected with the pipeline to be cleaned;
2. second conduit means connected to said first conduit means and with said storage means for diverting part of the pressurized gas stream from said first conduit means to communicate with said storage means, said second conduit means including:
first branch conduit means for conducting pressurized gas to said storage means to maintain a predetermined pressure on the particulate material therein; and
second branch conduit means connected to said storage means for receiving particulate material from said storage means and commingling it with the pressurized gas in said second branch conduit means, said second branch conduit means being connected to the pipeline to be cleaned whereby the particulate matter and pressurized gas may be conveyed to the pipeline to be cleaned for cleaning thereof;
c. valve means in each said first and second conduit means and in each said first and second branch conduit means for controlling the flow of pressurized gas therethrough;
d. bleed-off conduit means with valve means therein and connected to said first branch conduit means for selectively reducing the pressure in said storage means to atmosphere;
e. means to measure the amount of pressurized gas conducted through said first conduit means to the pipeline to be cleaned;



f. movable barrier means movable in the pipeline by the pressurized gas from said first conduit means and said second branch conduit means, said barrier means including:
1. spaced annular seal means for engaging the interior of the pipeline to be cleaned;
2. support means for said annular seal means including annular members secured to each of said seal means, each of said annular members having an opening for receiving and discharging the pressurized gas therethrough;
3. surface means extending longitudinally between said support means and positioned adjacent the opening in one of said annular members which receives the pressurized gas for directing the gas to impinge on the pipeline to be cleaned; and
4. means adjustably connecting said surface means between said support means of said spaced annular seal means whereby said surface means may be selectively positioned relative to the opening in said one annular member which receives the pressurized gas to adjustably control the angle of impingement of gas against the pipeline to be cleaned and to adjustably control the rate of movement of said movable barrier means through the pipeline to be cleaned.

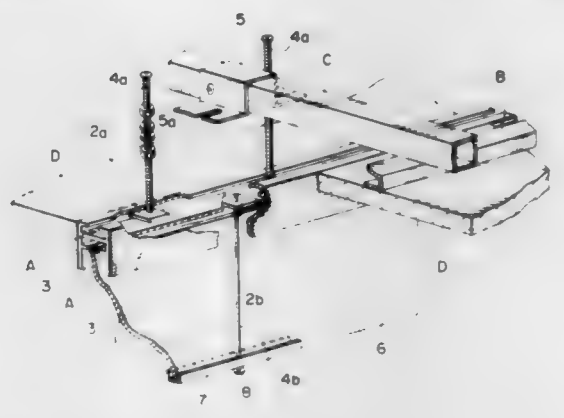
2. A method of performing internal cleaning of pipeline comprising the steps of:
a. positioning a movable barrier in a pipeline;
b. flowing gas under a desired pressure into the pipeline at a predetermined location;
c. flowing a mixture of gas and an abrasive substance into the pipeline at the predetermined location whereby the gas and abrasive substance flow through the movable barrier to propel it through the pipeline while the barrier deflects the gas and abrasive substance against the interior of the pipe line for cleaning thereof;
d. controlling the rate of flow of gas and abrasive through the movable barrier to control the rate of movement thereof;
e. providing an opening in the pipeline for retrieval of the movable barrier and discharge of the gas and abrasive mixture; and
f. maintaining the gas and abrasive mixture under pressure in the pipeline to propel the barrier at the controlled rate of travel through the pipeline for cleaning thereof by the sand and gas mixture.

4,081,931

ANTI-SMOKE HANGING WALL AND CONSTRUCTION METHOD

Kiyotaka Miyoshi, 2-38, 2-Chome, Kamiya-cho,, Hiroshima-shi, Hiroshima-ken, Japan

Filed Apr. 20, 1976, Ser. No. 678,657
Claims priority, application Japan, Apr. 23, 1975, 50-5865[U]
Int. Cl.[2] E04B *5/52*
U.S. Cl. 52—39 **17 Claims**



1. Anti-smoke hanging wall comprising:
a channel bar with a downward-opening slot, said bar being exposedly attached to the ceiling member of a building:
a plurality of hanging bolts having upper ends connected to said channel bar, said bolts hanging from said channel bar and having lowertips remote from said channel bar;
a wall bearer fixed to said lower tips of said hanging bolts; and
a hanging wall positioned between said channel bar slot and said wall bearer, the wall bearer supporting the wall.

4,081,932

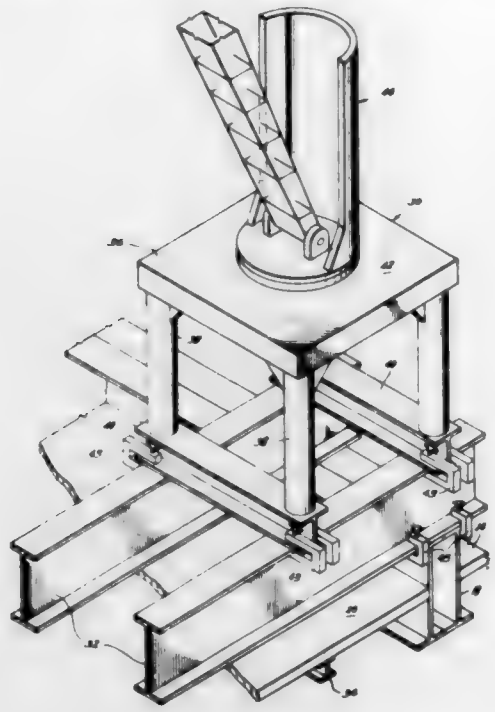
PLATFORM CRANE

James Eubank Armstrong, Crosby, Tex., assignor to Pool Company, Dallas, Tex.

Continuation of Ser. No. 603,734, Aug. 11, 1975, abandoned, which is a continuation of Ser. No. 488,276, Jul. 15, 1974, abandoned. This application Jun. 21, 1976, Ser. No. 698,119
Int. Cl.[2] E02B *17/00*
U.S. Cl. 52—111 **7 Claims**

1. A method for constructing a rig on an offshore platform having a pair of substantially parallel horizontal capping beams and a deck-mounted crane comprising
lifting a pair of base beams with said deck-mounted crane and placing them to span said capping beams,
removably attaching said base beams to said capping beams,
lifting a pedestal of a second crane with said deck-mounted crane and placing it on said base beams,
removably attaching said crane pedestal to said base beams,

lifting a second crane rotating upper works with said deck-mounted crane and placing said works on the pedestal, fastening said works to said pedestal, and



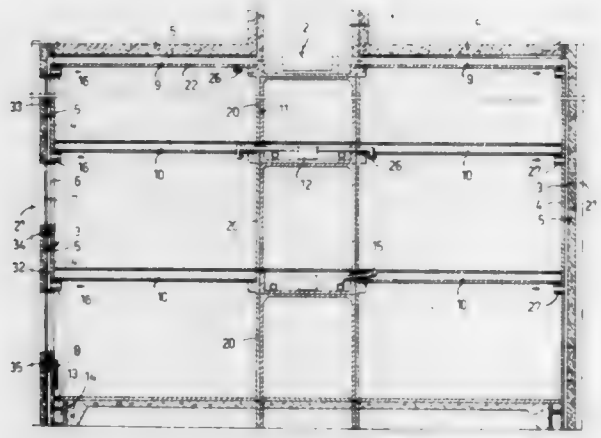
lifting elements of such a rig with said second crane and placing them on said capping beams.

4,081,933

OUTER WALL ELEMENT

Pekka Juhani Lilja, Siilitie 5 B 10, 00800, Helsinki 80, Finland

Continuation-in-part of Ser. No. 585,159, Jun. 9, 1975, abandoned. This application Jun. 17, 1976, Ser. No. 696,986
Claims priority, application Finland, Jun. 19, 1974, 1880/74
Int. Cl.[2] E06B *7/12*
U.S. Cl. 52—171 **8 Claims**



1. An outer wall element for use in a building employing a central unit for air conditioning, with at least one window having at least two panes and with a height the same as the height of the building, comprising

a concrete part and a heat insulating part,

a continuous air channel running through the element from end to end and of a width substantially corresponding to the width of the element, the space between the window panes forming a part of the air channel,

the inlet of said air channel being connected to a feed channel for cooling air or heating air, respectively, from the central unit and the outlet of said air channel being connected to a channel leading to the central unit for reuse of energy stored in the circulation air,

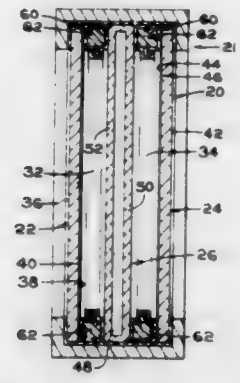
and there being partition walls interconnecting the windows, the windows and the partitions walls dividing said air channel into a part for incoming fresh air and a part for outgoing air, the inlet for the fresh air and the outlet for the outgoing air being arranged at the same end of the wall element, and the fresh air part of the air channel and the outgoing air part of the air channel being in connection with each other at that end of the wall element which is opposite to the end having the inlet and the outlet and through the windows, the windows thus forming a part of the air channel.

4,081,934

SEASONABLY ADJUSTABLE WINDOW

Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 720,184, Sep. 3, 1976, abandoned. This application Apr. 27, 1977, Ser. No. 791,350
Int. Cl.[2] E06B *3/24*
U.S. Cl. 52—171 **25 Claims**



18. A seasonably adjustable window, comprising:

a plurality of transparent substrates;

means for sealing edges of said plurality of transparent substrates to provide a sealed multipane unit having (1) at least one dead airspace between said plurality of transparent panes; and (2) a first outer surface and a second outer surface opposite to the first outer surface; and

selective coating on selected ones of said plurality of transparent substrates to provide said multipane unit (1) with a shading coefficient of less than about 0.20 when the first surface of said multipane unit is in a first predetermined position and the second surface of said multipane unit is in a second predetermined position and (2) with a shading coefficient of greater than about 0.25 when the second surface of said multipane unit is in the first predetermined position and the first surface of the said multipane unit is in the second predetermined position.

4,081,935

BUILDING STRUCTURE UTILIZING PRECAST CONCRETE ELEMENTS

Harry Honon Wise, Belle Meade, N.J., assignor to Johns-Manville Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 708,504, Jul. 26, 1976, abandoned. This application May 5, 1977, Ser. No. 793,972
Int. Cl.[2] E04B *5/16*
U.S. Cl. 52—236.8 **18 Claims**

1. A building floor structure comprising:

(a) a supporting first precast concrete column having protruding from the upper end thereof at least one rod;

(b) at least one horizontal beam and deck member supported on said first column;

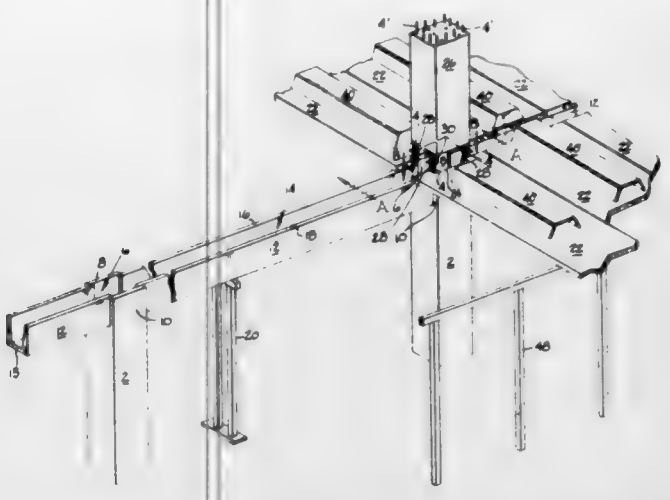
(c) a second precast concrete column disposed above said first column and having extending downwardly therefrom at least one rod;

(d) said first and second columns being spaced apart by a distance substantially equal to the desired depth of the finished floor and said beam and deck member;

(e) said rods extending from said first and second columns respectively being disposed in adjacent pairs, each pair comprising one rod from each column;

(f) said second column being held in said spaced apart position prior to pouring and setting of a topping concrete

layer by coupling means fixedly securing together the rods of each of said pairs; and



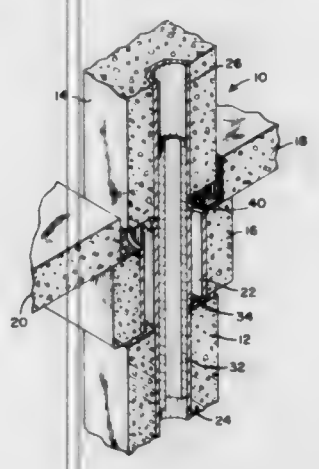
(g) a subsequently applied topping layer of concrete which fills the space between said columns, covers said beam and deck member, and secures these components into a unitary monolithic structure.

4,081,936

STRUCTURAL FRAMEWORK WITH IMPROVED CONNECTOR

Mark J. Wise, Brookville, Ohio, assignor to The Flexicore Co., Inc., Dayton, Ohio

Filed Nov. 24, 1976, Ser. No. 744,690
Int. Cl.² E04H *12/00*
U.S. Cl. 52—301 **6 Claims**



1. In a structural framework including a lower column having a hollow core, an upper column having a hollow core and superimposed above said lower column and an intersecting beam having a vertically extending opening therethrough intermediate said upper and lower columns, a unitized, load-transmitting connector comprising:

a spindle extending through said beam opening and received within said hollow cores of said columns,

said spindle being in substantially non-vertical load bearing relationship to said upper column,

an integral sleeve surrounding said spindle and at least partially received in said beam opening,

said sleeve being in load bearing relationship to said upper column, transferring said weight of said upper column to said lower column by bearing contact therewith, and
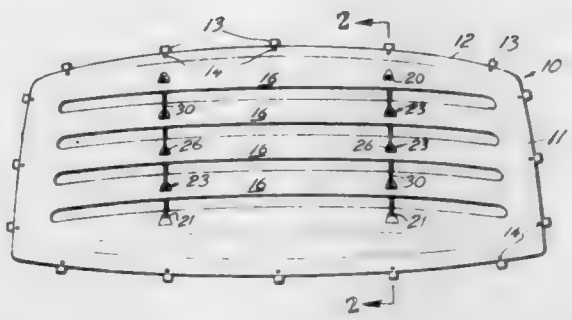
means fixing said sleeve to said spindle with insufficient strength to carry said weight of said upper column.

4,081,937

VEHICLE SUN-SHADE

Kevin Errol Koch, 14 Kinkaid Avenue, North Plympton, Australia (5037)

Filed Sep. 28, 1976, Ser. No. 727,334
Claims priority, application Australia, Sep. 29, 1975, 3351/75
Int. Cl.² E06B *7/08*; E04B *5/52*
U.S. Cl. 52—309.1 **5 Claims**



1. A vehicle sun-shade of the louvre type which is attachable over the rear vision window of a motor vehicle, comprising:

a sheet of polymeric material having a surround, attachment means extending outwardly of the surround, and a plurality of louvres inclined to the general plane of the surround;

a series of aligned apertures in respective said louvres between their ends;

a plurality of bushes each engaging a respective said aperture, said bushes being of polymeric material; and

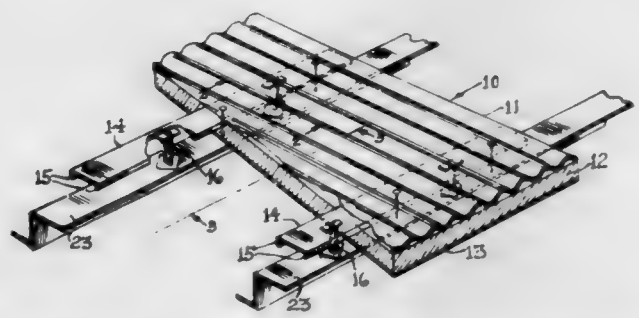
a spacer rod also comprising polymeric material extending through said bushes and frictionally engaging each of the bushes with an interference fit, the alignment of apertures being in such direction that the spacer rod extends substantially at right angles to the general direction of the louvres.

4,081,938

STANDOFF INSULATED PANEL MOUNTING

Ralph Bertacchi, and Frederick R. Gorell, both of 55 E. Jackson, Chicago, Ill. 60604

Filed Dec. 13, 1976, Ser. No. 750,281
Int. Cl.² E04B *5/00*
U.S. Cl. 52—410 **4 Claims**



1. A support mounting for a prefabricated insulating panel having an outer metallic surface, a batt of insulating material and a backing therefor, comprising

(a) an elongated panel-supporting plate extending transversely of the panel beneath the outer metallic surface and between the batt of insulating material and the outer metallic surface,

(b) a rigid standoff member connected to one side of and extending perpendicularly to the panel-supporting plate,

(c) said standoff member providing an elongated hollow body adapted to be embedded in and extending through the batt of insulating material,

(d) a base member connected to the free end of said body exteriorly of the batt of insulating material and extending in substantially parallel relation to said panel-supporting plate and adapted to sit upon a fixed structural member so as to support the panel therefrom, with said standoff mem-

ber preventing displacement of the insulating panel onto the support under weight placed thereon, and

(e) means providing a connection between said base member and said free end of said body of said standoff member so as to attach said base member in a plane substantially parallel to said elongated panel-supporting plate.

4,081,939

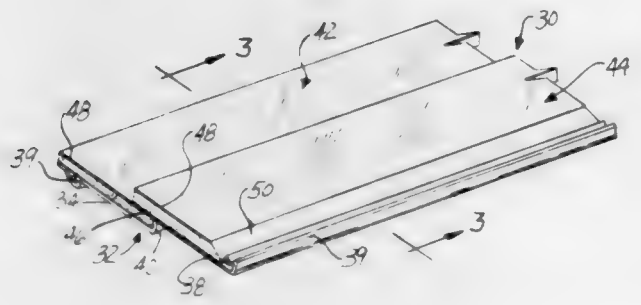
SIDING PANEL BACKERBOARD AND METHOD OF MANUFACTURING SAME

Bertram C. Culpepper, Jr., Linden, and Richard C. Wilson, Troy, both of Mich., assignors to Culpepper & Associates, Inc., Fenton, Mich.

Continuation of Ser. No. 657,190, Feb. 11, 1976, Pat. No. 4,033,802. This application Jun. 24, 1977, Ser. No. 809,902

Int. Cl.[2] E04D *1/10*

U.S. Cl. 52—535 **7 Claims**



1. A backerboard in a siding panel of the type having longitudinally disposed first and second walls connected by a longitudinal step wherein the siding panel is adapted to be fastened to the external wall sheathing of a building, and the backerboard is disposed between the inner surface of the siding panel wall and the exterior surface of said building, said backerboard comprising:

a first longitudinal member fabricated from a material having insulating qualities, said first member having a surface contour complementary to said first wall inner surface and abutting same;

a second longitudinal member fabricated from a material having insulating qualities, said second member having a surface contour complementary to said second wall inner surface and abutting same, said second member having a portion which overlaps a portion of said first member;

means fastening said overlapping portions of said first and second members such that the longitudinal edge of said first member adjacent said overlapping portions abuts the inner surface of said panel step when said backerboard is positioned in abutment with said panel wall inner surfaces.

4,081,940

SYSTEM AND APPARATUS FOR INTERCONNECTING STRUCTURAL MEMBERS, AND METHOD OF UTILIZING SAME

Robert S. Hughes, Southfield, Mich., assignor to Erecto-Pat Company, Oxford, Mich.

Continuation of Ser. No. 372,698, Jun. 22, 1973, Pat. No. 3,921,356. This application Oct. 14, 1975, Ser. No. 621,789

Int. Cl.[2] E04C *3/30, 5/18*

U.S. Cl. 52—712 **1 Claim**

1. An apparatus for facilitating the interconnection of a plurality of structural members, comprising, in combination:

a plurality of fastening means;

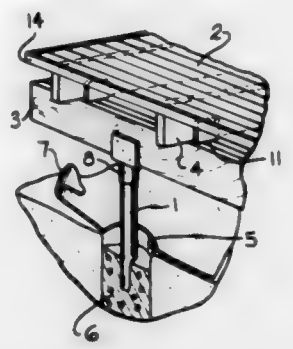
a plurality of said structural members;

and said apparatus includes:

at least one surface of said apparatus is provided with apertures to facilitate the passage therethrough of at least some of said fastening means which serve to fasten said apparatus to at least one of said structural members;

a first side provided with a series of said apertures which are aligned in a first predetermined direction;

a second side which is disposed substantially parallel to said first side and which is provided with a series of said apertures which are aligned in a second predetermined direction which is disposed substantially perpendicular to said first predetermined direction;



a third side which is unitary and integral with said first and second sides and which interconnects and maintains in a spaced apart relationship said first and second sides; and

said third side being provided with a plurality of said apertures to facilitate the passage therethrough of at least some of said fastening means.

4,081,941

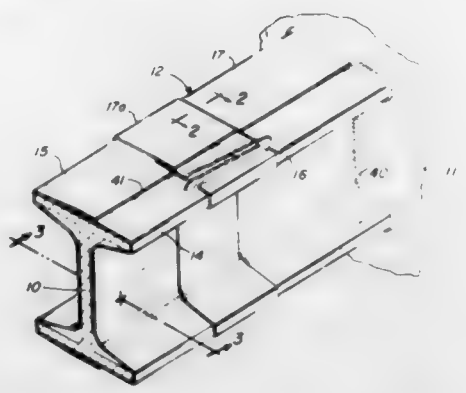
FLEXIBLE PROTECTIVE COVER SECTIONS, ASSEMBLIES AND FORM SYSTEM

James G. Van Ausdall, Englewood, Colo., assignor to Ceel-Co, Denver, Colo.

Filed Oct. 18, 1976, Ser. No. 733,540

Int. Cl.[2] E02D *5/60;* E04C *3/34*

U.S. Cl. 52—726 **21 Claims**



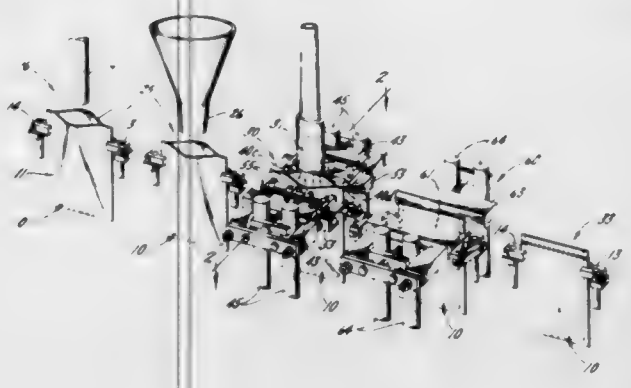
1. A flexible protective cover section for covering a structural shape and the like comprising a corrosion-resistant body that is preformed to a set shape substantially conforming to at least a portion of external surfaces of a structural shape arranged along intersecting planes, said body having an intermediate body portion and a pair of oppositely inner side body portions arranged at an angle with and connected to said intermediate body portion at a flexural joint body portion that flexes to change the angle between said intermediate body portion and said inner side body portions so that said body adjusts to cover a range of structural shape dimensions, the thickness of said body being between about 0.020 and 0.090 inches.

4,081,942

MACHINE AND METHOD FOR FILLING, INTRODUCING STEAM INTO, AND SEALING FLEXIBLE POUCHES

Kenneth R. Johnson, Rockford, Ill., assignor to Rexham Corporation, New York, N.Y.

Filed Aug. 2, 1976, Ser. No. 710,461
Int. Cl.[2] B65B *31/04*
U.S. Cl. 53—22 B **7 Claims**



5. A method of filling, steaming, closing and sealing pouches each defined by two face-to-face flexible panels, said method comprising the steps of advancing the pouches edgewise and open end up along a predetermined path and in ambient atmosphere through spaced filling and steaming stations, stopping each pouch first in said filling station and then in said steaming station, keeping the panels of each pouch spread away from one another to hold the upper end portion of the pouch in a widely open position while the pouch dwells in said filling station, as the pouch is being advanced from the filling station to the steaming station and while the pouch initially dwells in said steaming station, introducing product into each pouch while the pouch is dwelling in said filling station with its upper end portion held in said widely open position, introducing steam into each pouch through a nozzle while the pouch is initially dwelling in said steaming station and beneath said nozzle with the upper end portion of the pouch held in said widely open position, moving the panels of each pouch toward one another to move the upper end portion of the pouch to a closed position while directing steam toward the pouch and while the pouch is still dwelling beneath said nozzle, and sealing the upper end portion of each pouch after the pouch has been closed and before the pouch is advanced from beneath said nozzle thereby to prevent the introduction of air into the pouch.

4,081,943

APPARATUS AND METHOD FOR PRODUCING PACKAGES WITH INDIVIDUAL PRODUCT-FILLED CELLS

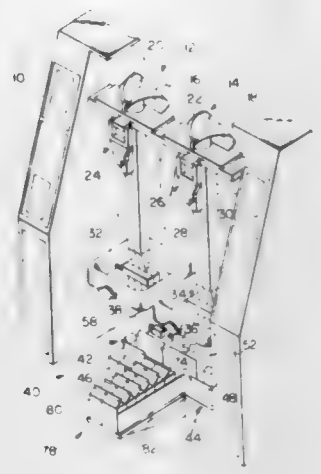
William C. Leasure, and Luis Garcia, both of Houston, Tex., assignors to Mira-Pak, Inc., Houston, Tex.

Filed Jan. 31, 1977, Ser. No. 764,090
Int. Cl.[2] B65b *9/12*; B65B *17/02, 35/40*
U.S. Cl. 53—26 **10 Claims**

9. A method of producing a package including a plurality of product-filled cells comprising the steps of;

forming, filling, and sealing at least a pair of individual product filled cells while maintaining said cells in side by side relation,

applying adhesive to one side of at least one of said sealed product filled cells,



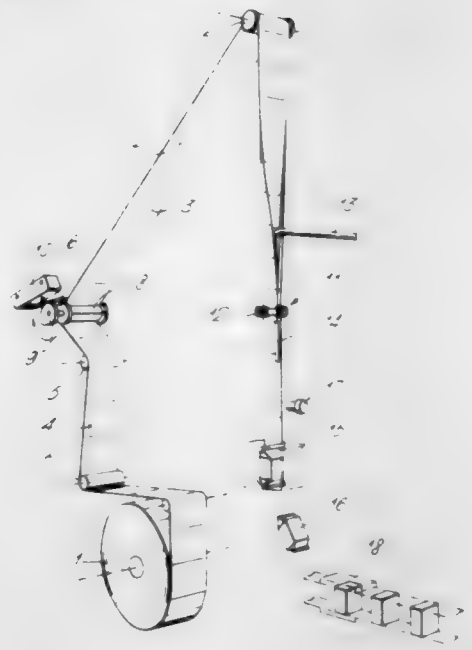
urging the cells into side by side contact with the adhesive coated surface therebetween so as to bond the cells together into a package.

4,081,944

ARRANGEMENT FOR THE READING OF PHOTOCELL MARKINGS ON A MATERIAL WEB PROVIDED WITH DECORATION

Uno Roland Sjöstrand, Flyinge, Sweden, assignor to AB Ziristor, Lund, Sweden

Filed Dec. 3, 1976, Ser. No. 747,097
Claims priority, application Sweden, Dec. 19, 1975, 7514444
Int. Cl.[2] B65B *41/18*
U.S. Cl. 53—51 **1 Claim**



1. In an apparatus for forming a tube-like member from a longitudinal web of packaging material provided with longitudinally spaced transverse creases and spaced transverse decorations thereon between the transverse creases and provided with photocell markings between the transverse decorations, in which the tube-like member is filled with a contents and then transversely sealed, shaped and severed into packages in register with the crease lines, the web and filled tube-like member being subject to elongation prior to the sealing, shaping and severing of the filled tube-like member, the improvement of means for controlling the register of the creases of the tube-like member, after filling with contents, with means for sealing, shaping and severing, said controlling means comprising means engagable with the spaced transverse creases on the web prior to formation of the web into the tube-like member and rotatable thereby, switch means responsive to said crease

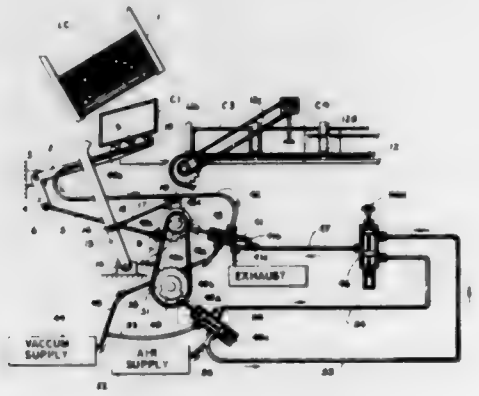
engaging means and operable intermittently thereby, a photocell disposed adjacent the filled tube-like member immediately preceeding the means for sealing, shaping and severing the filled tube-like member and intermittently activated by said switch means when a photocell marking is about to pass said photocell means thereby preventing activation of said photocell means while the spaced transverse decorations are passing said photocell means, said means for sealing, shaping and severing said filled tube-like member being activated when said photocell means reads a photocell marking on said tube-like member whereby elongation of the web and the tube-like member is compensated for.

4,081,945

PACKAGING MACHINE FOR USE WITH CARTONS OF DIFFERENT SIZES WITH MINIMUM ADJUSTMENT

Rodney K. Calvert, Dunwoody, and Charles Rabun Landrum, Doraville, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 15, 1976, Ser. No. 742,056
Int. Cl.[2] B65B *43/28, 7/20*
U.S. Cl. 53—186 **14 Claims**



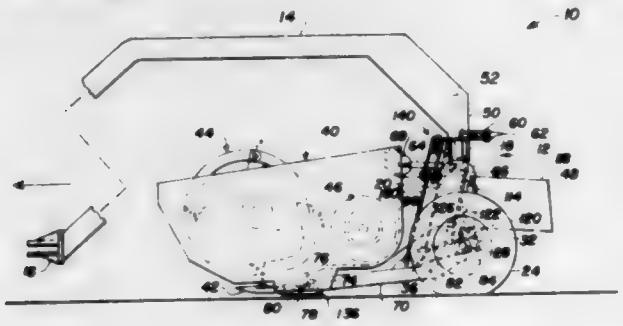
1. A machine for feeding cartons from a hopper, said machine comprising oscillatable means movable sequentially toward and away from the hopper, suction means mounted on said oscillatable means and movable therewith for engaging and withdrawing cartons in sequence from the hopper, main valve means for activating and for deactivating said suction means in synchronism with said oscillatable means, cam means movable in synchronism with said oscillatable means for controlling the operation of said main valve means, and pneumatic means connected with said main valve means for controlling cooperation between said main valve means and said cam means.

4,081,946

HEADER SUSPENSION AND LIFT MEANS

Philip J. Ehrhart, Rothsville, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Dec. 1, 1976, Ser. No. 746,561
Int. Cl.[2] A01D *47/00*
U.S. Cl. 56—14.4 **12 Claims**



1. In a crop harvesting machine having a crop harvesting header, a frame, means adapting said frame for movement in a forward direction across a field, said adapting means including a pair of wheel arms extending rearwardly from said frame, generally parallel to the forward direction and mounted proximate their respective forward ends to said frame at laterally spaced apart locations for vertical pivotal movement relative to said frame about a generally horizontal axis and a ground-engaging wheel rotatably mounted on each of said wheel arms at a location spaced rearwardly of the pivotal axis of said wheel arms, and lift means mounted on said frame and being actuatable to cause pivotal movement of said wheel arms relative to said frame and said wheels to effect upward lifting of said frame relative to the field between a lower field operating position and a raised transport position, an improved means for suspending said header from said frame so as to dispose said header in a harvesting position adjacent the field when said frame is at its lower field operating position and for lifting said header upwardly relative to said field during effectuation of upward lifting of said frame, comprising:

upper means pivotally interconnecting an upper portion of said header to said frame; and

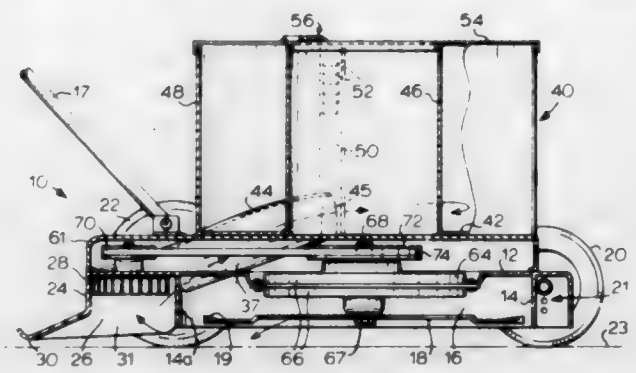
a pair of elongated lower members respectively extending forwardly from said wheel arms and being interconnected at their forward ends to a lower portion of said header, said lower members being mounted at locations proximate said respective forward ends of said wheel arms for vertical pivotal movement and having portions extending rearwardly of said mounting locations and within the path of pivotal movement of said wheel arms such that, during movement of said wheel arms to effect upward lifting of said frame relative to the field, said rearward extending portions of said lower members are engaged by said wheel arms and said lower members are thereby moved with said wheel arms to lift said header relative to the field.

4,081,947

ROTARY LAWN MOWER WITH SEPARATE GRASS PICK UP

Edward Szymanis, Midhurst, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed Aug. 16, 1976, Ser. No. 714,974
Claims priority, application Canada, Aug. 21, 1975, 234102
Int. Cl.[2] A01D *87/10*
U.S. Cl. 56—13.3 **15 Claims**



1. In a rotary lawn mower comprising a cutting chamber designed to be supported by wheels and forwardly moved over a surface to be mown, said mower having a deck including a downwardly dependent skirt defining said cutting chamber, a cutting blade mounted within said chamber for rotary movement about a vertical axis, the improvement wherein said deck and skirt are essentially imperforate whereby discharge of cuttings from said chamber occurs by passage of said cuttings from beneath said skirt, and wherein grass collecting means including vacuum means is provided rearwardly of said cutting chamber and external thereto, said vacuum means comprising a vacuum chamber having an inlet proximate the mown surface and a rotary impeller vertically spaced from said surface.

4,081,948

MANUFACTURE OF BULKED YARN

Walter Parker, Congleton, England, assignor to Ernest Scragg & Sons Limited, Macclesfield, England

Filed Feb. 7, 1977, Ser. No. 766,071

Claims priority, application United Kingdom, Feb. 17, 1976, 6068/76

Int. Cl.[2] D02G *1/02*

U.S. Cl. 57—34 HS 15 Claims



4. Apparatus for the manufacture of bulked multi-filament yarns comprising means for melt-spinning a plurality of filaments, means for combining the filaments to form a yarn, means for texturising said yarn comprising heating means, cooling means and a false twist device, means for arresting the propagation of twist upstream from said false twist device at a point location substantially at the entry end of said heating means, means for drawing the yarn simultaneously with it being textured, and means for stabilising the draw point of the yarn on said heating means.

4,081,949

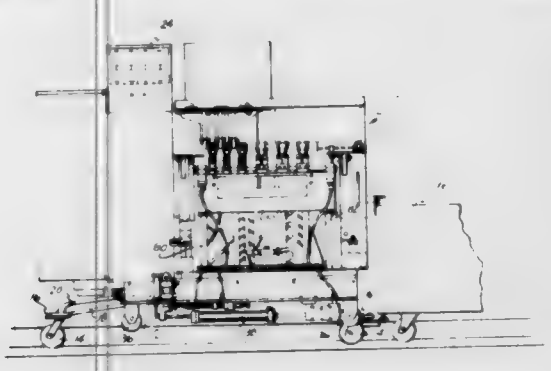
DOFFER WITH PNEUMATIC CONTROL SYSTEM

Alex J. Keller; Keith Sidney Dellinger; James Lester Ray, Jr., all of Gastonia; Thomas Adrian Cherry, Mooresville, all of N.C., and Erhard A. Fechner, Port Washington, N.Y., assignors to Automatic Material Handling, Inc., Bessemer City, N.C.

Filed Jan. 28, 1977, Ser. No. 763,662

Int. Cl.[2] D01H *9/10*

U.S. Cl. 57—53 10 Claims



7. Apparatus for donning and doffing bobbins onto and off the spindles of a spinning frame, said apparatus including:

(a) carriage means having transport means movable to a first position for causing said carriage means to move along said spinning frame, said transport means including engaging means associated therewith for selective engagement with an element fixed with respect to said spinning frame, said engaging means being movable between a first position out of engagement with said fixed element and a second position engaging said first element;

(b) bobbin donning and doffing means carried by said carriage means and arranged for initial movement to a first position at which at least one empty bobbin is donned onto a spindle and released, and for subsequent movement to a second position at which at least one full bobbin is doffed from a spindle;

(c) unloader means for receiving full bobbins doffed by said bobbin donning and doffing means, said unloader means being movable from a first position for receiving said full bobbins to a second position for ejecting said full bobbins;

(d) empty bobbin supply means for supplying empty bobbins to said bobbin donning and doffing means, said bobbin supply means being movable from a first position to receive an empty bobbin to a second position to supply an empty bobbin to said bobbin donning and doffing means;

(e) pneumatic sensor means disposed to emit a stream of air into the paths of movement of said transport means, said engaging means, said bobbin donning and doffing means, said unloader means, and said empty bobbin supply means, said sensor means generating:

(i) a first signal each time said airstream is interrupted by said transport means moving to said first position thereof;

(ii) a second signal each time said airstream is interrupted by said donning and doffing means moving to said first position thereof;

(iii) a third signal each time said airstream is interrupted by said donning and doffing means moving to said second position thereof;

(iv) a fourth signal each time said airstream is interrupted by and said unloader means moving to said second position thereof;

(v) a fifth signal each time said airstream is interrupted by said bobbin supply moving to said second position thereof; and

(vi) a sixth signal each time said airstream is interrupted by said engaging means moving to said second position thereof.

(f) control means receiving said pneumatic signals and operable:

(i) to move said donning and doffing means to said first position thereof only after said first pneumatic signal has been received;

(ii) to move said donning and doffing means to said second position thereof only after said second, fourth and fifth pneumatic signals have been received; and

(iii) to move said transport means to said first position thereof only after said third and sixth pneumatic signals have been received.

4,081,950

CALENDAR MECHANISM FOR TIMEPIECE

Jean-Maurice Chappatte, Neuchatel, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Mar. 8, 1976, Ser. No. 664,883

Claims priority, application Switzerland, Mar. 18, 1975, 3405/75

Int. Cl.[2] G04B *19/24;* G09D *3/08*

U.S. Cl. 58—4 R 4 Claims

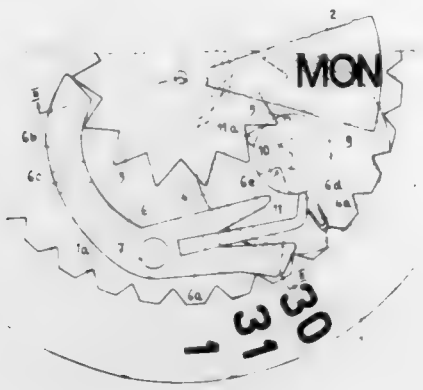
1. In a calendar mechanism for a timepiece having a clockwork, a first indicator for the day of the month and a second indicator for the day of the week, a driving member rotatable by said clockwork for indexing said indicators at the rate of one revolution for every twenty-four hours, each of said indicators having teeth by which they are simultaneously driven step-by-step by said driving member at the rate of one step for each twenty-four hours, a locking device for said indicators comprising

a locking lever articulated on the frame of the timepiece for reciprocal movement between operative and inoperative positions and having two integral arms for simultaneously restraining said indicators against movement when in such operative position,

one of said arms cooperating with the teeth of said first

indicator and the other of said arms cooperating with the teeth of said second indicator for restraining movement of said indicators when said locking lever is in its operative position,

said arms being disengaged from said teeth when said locking lever is in its inoperative position, thereby releasing said indicators,



said driving member and locking lever having means for urging said locking lever into its operative position and for releasing said locking lever so that it can move to its inoperative position while said indicators are being indexed.

4,081,951

ELECTRONIC TIMEPIECE

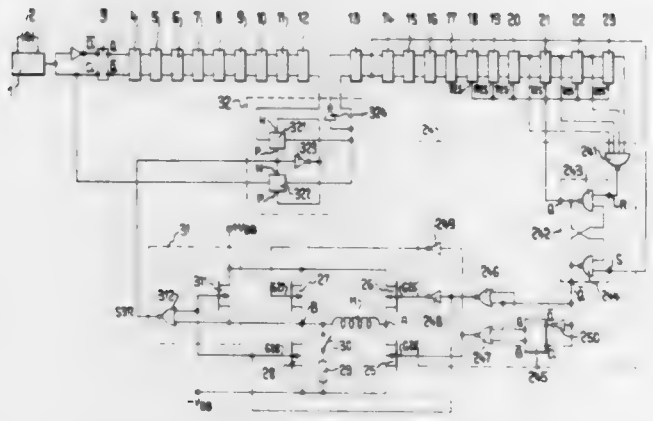
Pierre Hersberger, Neuchatel, Switzerland, assignor to Ebauches SA, Neuchatel, Switzerland

Filed Dec. 20, 1976, Ser. No. 752,429

Claims priority, application Switzerland, Dec. 23, 1975, 16674/75

Int. Cl.² G04C *3/00*

U.S. Cl. 58—23 R **4 Claims**



1. An electronic time piece comprising: An oscillator; a frequency divider chain controlled by said oscillator and having a plurality of stages; a display device; a driver circuit for driving said display device under control of the output signals of said frequency divider chain; a short-circuit detector for detecting a short-circuit between an existing pole serving for connection of said driver circuit to said display device and a pole of the power supply; a selector controlled by said short-circuit detector, inserted between two of said divider chain stages and adapted to feed to the stage following the selector either the output signal of the preceeding stage of a higher frequency signal when said detector detects said short circuit.

4,081,952

WATCH MODULE FOR USE WITH SEPARATE POWER SOURCE

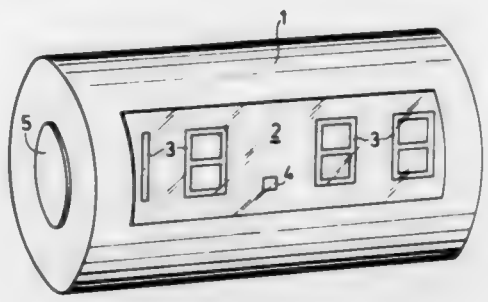
Rudolf Busch; Wolfgang Ganter, both of Schramberg, and Albert Ginter, Lauterbach, all of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Germany

Filed Jul. 15, 1976, Ser. No. 705,613

Claims priority, application Germany, Apr. 24, 1976, 2618097

Int. Cl.² G04C *3/00*

U.S. Cl. 58—50 R **5 Claims**



1. A clock module for use with a separate housing structure containing a battery, said module comprising:

an electrical operating assembly including:

a first elongated conductive plate,

a digital display mounted on said first plate,

a second elongated conductive plate,

a time keeping oscillator and an integrated electrical circuit mounted on said second plate, and

a main contact for engagement with a battery conductor of said separate structure, connected to said circuit,

said first and second plates being insulated from one another,

adjusting means for adjusting said digital recorder, and an elongated rod shaped housing surrounding said operating assembly, said housing including a longitudinal side wall portion and opposite end wall portions,

said digital display being visibly disposed at said longitudinal side wall portion of said housing,

said main contact being disposed on one end wall portion of said elongated housing and being exposed to the exterior of said housing so that said module may be installed within said separate structure, with said main contact being placed in electrical engagement with said battery of said separate structure.

4,081,953

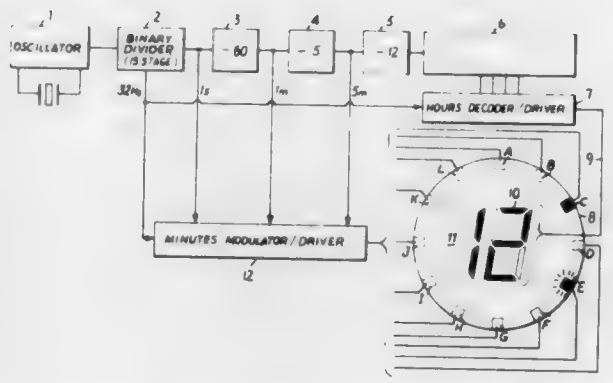
HYBRID HOROLOGICAL DISPLAY USING SPACE MODULATION

William C. Crutcher, Middlebury, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Dec. 27, 1976, Ser. No. 754,205

Int. Cl.² G04C *3/00, 17/00*

U.S. Cl. 58—50 R **5 Claims**



1. In an electronic timepiece of the type having a time base, a countdown dividing circuit connected to the output thereof,

and a decoder/driver connected to the output of said dividing circuit and actuating an electrooptic display of digits for the hours, the improvement comprising a minutes display having twelve selectively actuatable markers, and a modulator/driver for selectively actuating a first of said markers during a five minute interval and second ones of said markers in varying spaced relationship to the first marker so as to indicate the passage of minutes during five minute intervals.

4,081,954

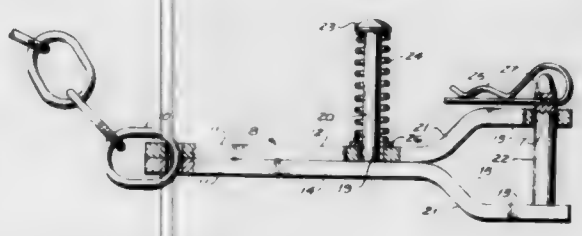
CLEVIS

Lee Fern Arnold, Clayton, Kans. 67629

Continuation-in-part of Ser. No. 736,093, Oct. 27, 1976, abandoned. This application Jun. 17, 1977, Ser. No. 807,573

Int. Cl.² F16G *15/04*; F16C *11/06*

U.S. Cl. 59—86 **5 Claims**



1. A clevis comprising:

a pair of narrow metal straps, each having a stem portion with at least one strap having a parallel offset segment defining a shackle area therebetween;

one of said straps having an elongated, perpendicular locking pin spanning the shackle area and extending through an aligned hole of the other strap in a first closed position of the clevis;

spring-loaded closing means urging the two straps into the first position with the stem portions in flat engagement;

said straps being moveable against the force of the spring into a second position, wherein the locking pin moves away from said other strap to provide a disengagement gap within the shackle area; and

means movably coupling the stem portions of the metal straps together.

4,081,955

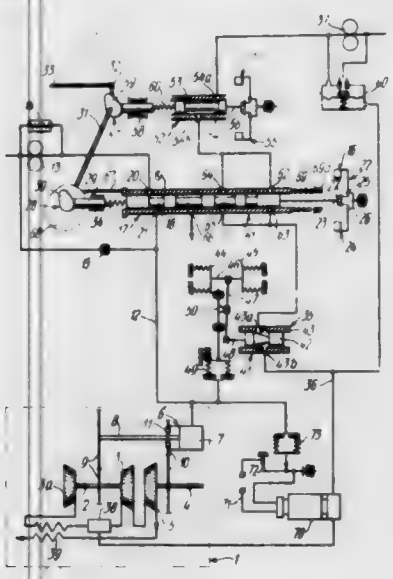
REGULATING SYSTEMS FOR TWO-SHAFT GAS-TURBINE ENGINE

Nikolai Nikolaevich Zakharov, ulitsa Dmitria Ulyanova, 9/11, korpus 2, kv. 64, Moscow, and Evgeny Borisovich Paramonov, ulitsa Volodarskogo, 50, kv. 50, Yaroslavl, both of U.S.S.R.

Filed Jan. 14, 1977, Ser. No. 759,376

Int. Cl.² F02C *9/04*

U.S. Cl. 60—39.16 S **3 Claims**



1. A regulating system for a two-shaft gas-turbine engine including a turbocompressor with its shaft, a power turbine with its shaft and a hydraulically-controlled torque-transmitting device interposed between said shafts, this system comprising: a fuel supply line of the engine; a hydraulic control line of said torque-transmitting device; a gas pedal; an all-speed regulator of the rpm value of said shaft of said turbocompressor, having a metering device, a pickup responsive to the rpm value of said shaft of said turbocompressor, and a mechanism for tuning said pickup, said metering device of said all-speed governor of the rpm value of said shaft of said turbocompressor being cut into said hydraulic control line of said torque-transmitting device; said pickup responsive to the rpm value of said shaft of said turbocompressor, belonging to said all-speed governor of the rpm value of said shaft of said turbocompressor, being adapted to develop control signals controlling said metering device of said all-speed governor of the rpm value of said shaft of said turbocompressor; said mechanism for tuning said pickup responsive to the rpm value of said shaft of said turbocompresssor being operatively connected with said gas pedal; a fuel feed regulator cut into said fuel supply line and controlled by the pressure at the outlet of the compressor of the engine; an all-speed governor of the rpm value of said shaft of said power turbine, having a metering device, a pickup responsive to the rpm value of said shaft of said power turbine and a mechanism for tuning said pickup, said metering device of said all-speed governor of the rpm value of said shaft of said power turbine being cut into said fuel supply line of the engine; said pickup responsive to the rpm value of said shaft of said power turbine, belonging to said all-speed governor of the rpm value of said shaft of said power turbine, being adapted to develop control signals controlling said metering device of said all-speed governor of the rpm value of said shaft of said power turbine; a mechanism for tuning said pickup responsive to the rpm value of said shaft of said power turbine, operatively connected with said mechanism for tuning said pickup responsive to the rpm value of said shaft of said turbocompressor, to provide for timed variation of the tuning of said two pickups.

4,081,956

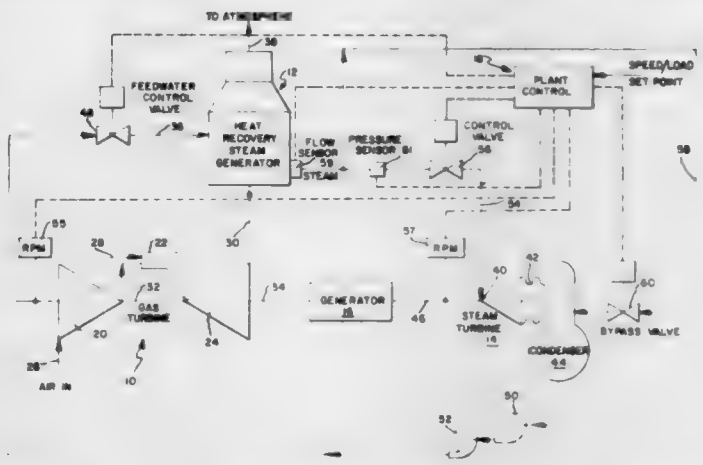
COMBINED GAS TURBINE AND STEAM TURBINE POWER PLANT

Jack M. Baker, Columbia, Mo.; Gordon W. Clark, Greenville, S.C.; Douglas M. Harper, Greenville, S.C., and Leroy O. Tomlinson, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 13, 1976, Ser. No. 685,979

Int. Cl.² F02C *7/00*; F02G *5/02*

U.S. Cl. 60—39.18 B **5 Claims**



1. A combined cycle steam and gas turbine power plant for generating electrical power to satisfy an electrical load which varies from a nominal load set point during normal operation of said power plant after power plant start-up, said power plant comprising:

at least one gas turbine having a compressor, a combustor and a turbine arranged in serial flow relationship, said combustor adapted to receive compressed air from said

compressor and fuel and generate a hot gas stream for driving said turbine, said turbine arranged in driving connection with said compressor and an electrical generator;

a heat recovery steam generator adapted to receive the hot gas stream exhausted by said gas turbine and a supply of water and generate steam;

a steam turbine arranged in driving connection with an electrical generator and having an inlet for receiving steam for driving said steam turbine and an outlet for discharging steam;

a first conduit for communicating steam generated by said heat recovery steam generator with said steam turbine inlet;

a second conduit for bypassing steam generated by said heat recovery steam generator from said steam turbine inlet;

a control valve disposed in said first conduit for adjusting steam flow to said steam turbine inlet;

a bypass valve disposed in said second conduit for adjusting steam flow through said second conduit;

means for sensing variations from said nominal load set point in the electrical power load to be satisfied by said power plant and for generating a load signal which is representative of said load variations;

a power plant control for controlling the electrical power generated by said power plant, said power plant control adapted to supply fuel to said gas turbine at a generally constant rate during normal operation of said power plant after power plant startup and including means, operative during normal operation of said power plant after power plant startup and responsive to said load signal, for increasing and decreasing the opening of said control valve in response, respectively, to increases and decreases in said power plant electrical load from said nominal load set point, said increase in the opening of said control valve, in the case of increases in power plant load from said nominal load set point, being sized to provide an increase in steam flow to said steam turbine which is sufficient to cause said steam turbine power output to be increased in the amount of said increase in power plant electrical load from said nominal load set point, said decrease in the opening of said control valve, in the case of decreased power plant load, being sized to provide a decrease in steam flow to the steam turbine which is sufficient to cause said steam turbine power output to be decreased in the amount of said decrease in power plant electrical load from said nominal load set point, and means for proportionately decreasing the opening of said bypass valve in response to increases in the opening of said control valve and for proportionately increasing the opening of said bypass valve in response to decreases in the opening of said control valve so that total steam flow from said heat recovery steam generator remains generally constant, whereby variations in the electrical power loading on said power plant from said nominal load set point are carried by said steam turbine and whereby the gas turbine, the heat recovery steam generator and the steam turbine are not subjected to thermal cycling as a result of such load variations.

4,081,957

PREMIXED COMBUSTOR

George Benjamin Cox, Jr., Tequesta, Fla., assignor to United Technologies Corporation, Hartford, Conn.

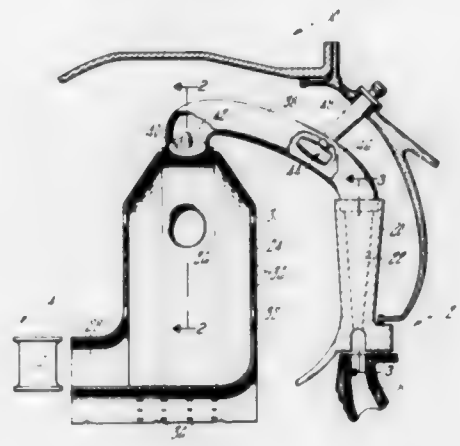
Filed May 3, 1976, Ser. No. 682,945

Int. Cl.² F02C 7/22

U.S. Cl. 60—39.36 **5 Claims**

1. A combustion system for a gas turbine engine of the type having a pipe diffuser including incorporated therein an outwardly oriented diffusion passage, the system comprising:

a radial inflow, annular combustor having a first annular region through which the working medium gases are flowable in the radially inward direction, a flow swirler positioned at the outer circumference of the first annular region and through which a portion of the medium gases are flowable into the combustor, and a second annular region, extending axially rearward from the first annular region, through which working medium gases are flowable; and



a flow transfer tube which communicatively joins said outwardly oriented diffusion passage to said flow swirler and through which a portion of the working medium gases is flowable to the combustor.

4,081,958

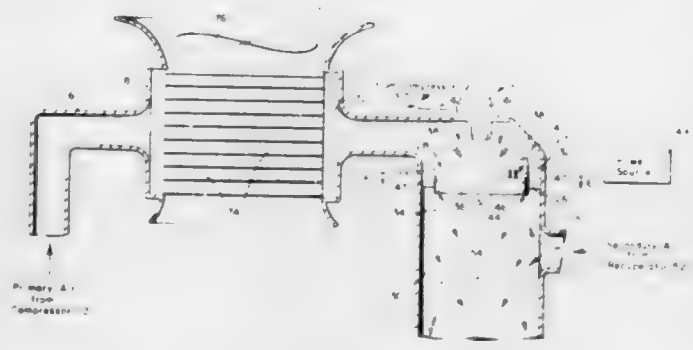
LOW NITRIC OXIDE EMISSION COMBUSTION SYSTEM FOR GAS TURBINES

Helmut R. Schelp, Pacific Palisades, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 411,868, Nov. 1, 1973, abandoned. This application Jan. 19, 1976, Ser. No. 649,935

Int. Cl.² F02C 7/22

U.S. Cl. 60—39.51 R **17 Claims**



10. A combustion system for a gas turbine engine having an air compressor comprising:

a generally cylindrical casing;

a flame liner positioned within said casing and having a closed end portion, an open end portion, and wall openings therethrough;

impermeable annular wall means attached between said casing and said liner, said wall means defining an upper chamber between said closed end portion and said casing and a lower chamber between said open end portion and said casing;

a disc fashioned from porous material concentrically positioned within said liner and defining a fuel air mixture chamber between said closed end portion and said disc and defining a combustion chamber between said disc and said open end portion, said fuel-air mixture chamber being surrounded by and communicating with said upper chamber, said combustion chamber being surrounded by and communicating with said lower chamber, and said disc being operable to introduce a combustible fuel-air mixture to said combustion chamber for conflagration therein, said disc having radially outwardly increasing porosity such that the fuel-air mixture passes more readily through peripheral portions than through central portions

whereby turbulence is generated adjacent said disc in said combustion chamber;

a coating of platinum on said disc within said combustion chamber;

heater wires within said disc adapted for connection to a source of electrical energy for heating said disc;

a first conduit adapted for connection to the compressor and connected to said casing for conveying compressed air from the compressor to said upper chamber;

a first heat exchanger connected in said first conduit for cooling the compressed air conveyed to said upper chamber;

a second conduit adapted for connection to the compressor and connected to said casing for conveying compressed air from the compressor to said lower chamber;

a second heat exchanger connected in said second conduit for heating compressed air in said second conduit; and

means supplying fuel directly to the fuel-air mixture chamber for intermixing with compressed air from the upper chamber.

4,081,959

ARRANGEMENT FOR SUPPORTING A THERMAL REACTOR TO AN ENGINE PROPER

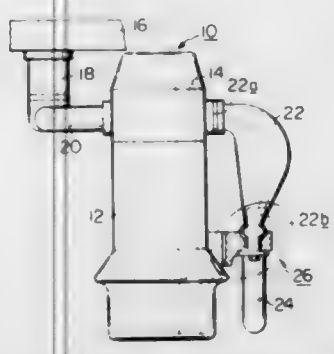
Akira Yokota, Yokosuka, and Yasuhiko Nakagawa, Kamakura, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 1, 1976, Ser. No. 701,836

Claims priority, application Japan, Jul. 29, 1975, 50-105466[U]

Int. Cl.² F01N *7/10*

U.S. Cl. 60—282 **6 Claims**



1. In an internal combustion engine system comprising an engine proper including a cylinder block and a cylinder head which are assembled together to define therebetween combustion chambers, said cylinder head being formed therein with exhaust ports communicable with said combustion chambers; a thermal reactor having at its one side exhaust gas inlet tubes connected in said exhaust ports of said cylinder head and at its other side an exhaust gas outlet duct; an exhaust tube having an open end in communication with said exhaust gas outlet duct of said thermal reactor for receiving the gases emitted from said thermal reactor before discharging into the open air, the improvement comprising a common bracket member mounted on said engine block and means mounting said outlet duct of said thermal reactor and said open end of said exhaust tube on said bracket member.

4,081,960

AIR FLOW CONTROL VALVE

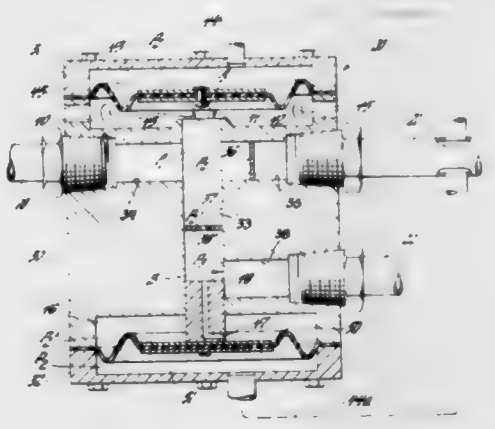
Raymond J. Haka, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 15, 1977, Ser. No. 768,737

Int. Cl.² F01N *3/15*

U.S. Cl. 60—289 **3 Claims**

1. An air flow control valve for use in the exhaust emission control system of an internal combustion engine wherein the system includes conduit means connected to the engine for receiving exhaust gases discharged from the exhaust ports of the engine and for delivering the exhaust gases serially through a reducing converter and an oxidizing converter and an air supply means for providing secondary air to said conduit means, said air flow control valve including a housing means having a first chamber with a boss upstanding centrally therein and a second chamber in spaced apart relation therein, a passage means in said housing means having one end opening through said boss into said first chamber and its opposite end opening into said second chamber, said housing further having an inlet connected to said air supply means and being in communication with said passage means adjacent to said one end, a first outlet in communication with said passage means adjacent to said one end and connectable to said conduit means upstream of said reducing converter, a second outlet in communication with said passage means adjacent to said other end and connectable to said conduit means intermediate said reducing converter and said oxidizing converter, a first fixed orifice in said first outlet, a second fixed orifice in said passage means intermediate the intersection of said first outlet and of said second outlet with said passage means, a first diaphragm positioned in said first chamber to divide said first chamber into a first pressure chamber on the side of said first diaphragm adjacent said port and a second pressure chamber on the opposite side of said first diaphragm, said first diaphragm being movable



relative to said boss to define with said passage means a variable orifice opening into said first pressure chamber, said housing means further having bypass port means in communication with said first pressure chamber, a second diaphragm positioned in said second chamber to divide said second chamber into a third pressure chamber on the one side of said second diaphragm next adjacent to said passage means and a fourth pressure chamber on the opposite side of said diaphragm, an apertured plunger means fixed to said one side of said second diaphragm, said apertured plunger means being slidably positioned in said opposite end of said passage means and extending an axial length into said passage means so that upon movement of said second diaphragm, said apertured plunger means is operable to variably control the flow from said passage means into said second outlet, said apertured plunger means having aperture means therein opening at one end into said passage means downstream of said second fixed orifice and opening at its opposite end into said third pressure chamber and, first conduit means and second conduit means operatively connecting said second pressure chamber and said fourth pressure chamber, respectively, to said first outlet on the side of said first fixed orifice therein opposite said inlet.

4,081,961

ARTICULATED VEHICLE STEERING SYSTEM

Robert M. Dwyer, Livonia, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Apr. 6, 1977, Ser. No. 785,133

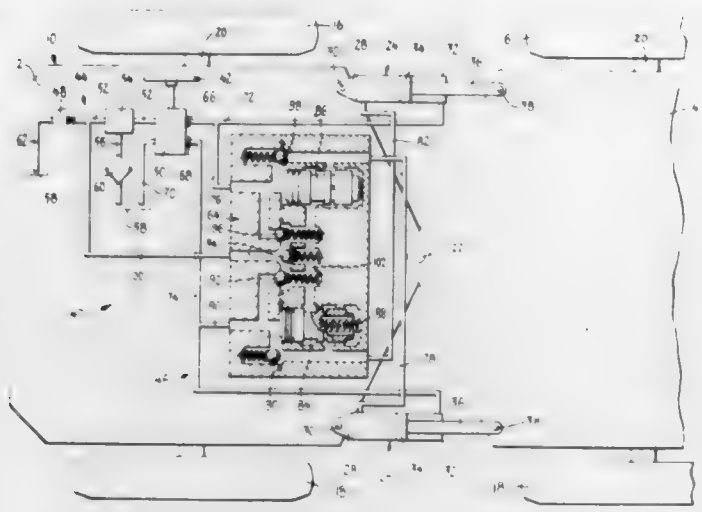
Int. Cl.² F15B *20/00*

U.S. Cl. 60—386 **8 Claims**

1. An articulated vehicle steering system including:

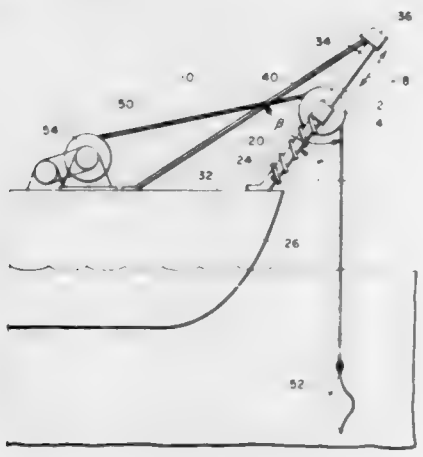
first and second double acting cylinders (**24, 26**) mechanically coupled together for steering an articulated vehicle (**12, 14, 22**);

a rotatable steering wheel (42); and
power steering means (44) consisting of a motor driven pump (48) and a hydrostatic steering unit (50), said steering wheel (42) being interconnected with said hydrostatic steering unit (50);
the improvement comprising



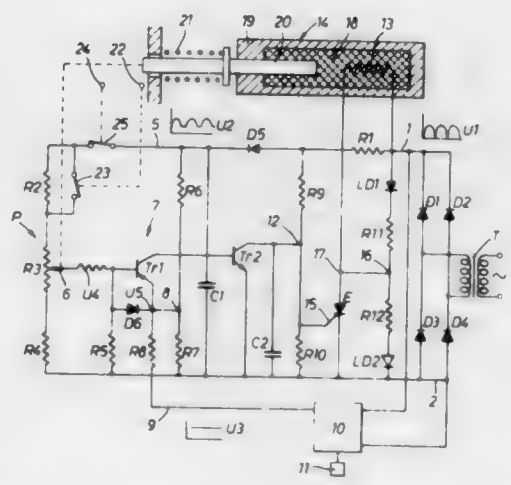
control means (46) disposed between the power steering means (44) and the first and second double acting cylinders (24, 26) for causing fluid to be directed from said power steering means (44) to both of said first and second cylinders (24, 26) during rotation of said steering wheel (42) at a first steering ratio when the motor driven pump (48) is in operation and at a second higher steerng ratio when the motor driven pump (48) is not in operation.

4,081,962
DYNAMIC WAVE ENERGY EXTRACTION SYSTEM
Francis C. Liu, 123 W. Loop Dr., Camarillo, Calif. 93010, and Kwang Ta Huang, 7241 Mesa Cir., Ventura, Calif. 93003
Filed Oct. 26, 1976, Ser. No. 735,726
Int. Cl.[2] E02B *9/08*
U.S. Cl. 60—501 **20 Claims**



1. A dynamic wave energy extraction system comprising:
a. a buoyant body adapted to float on a body of water, said buoyant body having a predominant frequency of motion imparted thereto by surface wave movement;
b. spring bias means connected to said buoyant body including:
(1) a sheave support member attached to said buoyant body;
(2) a sheave slidably mounted on said support member; and
(3) a spring connected between said sheave and said buoyant body;
c. inertia means movably mounted to said sheave for applying forces in response to the motion of said buoyant body to said sheave of spring bias means, said spring bias means elastically countering said applied forces such that said sheave of spring bias means experiences oscillating movement with respect to said buoyant body, said spring bias means and said inertia means having a natural frequency.

4,081,963
CONTROL CIRCUIT FOR A SERVO-MOTOR
Flemming Stove, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Sep. 1, 1976, Ser. No. 719,458
Claims priority, application Germany, Sep. 10, 1975, 2540293
Int. Cl.[2] F03G *7/06*
U.S. Cl. 60—528 **5 Claims**

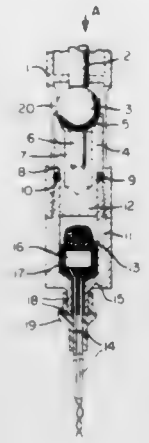


1. A control circuit for a servomotor of the type having a piston displaceable to selectable positions in one heating element and in the other direction by a return spring, said circuit comprising a heating element, a power supply circuit for said heating element including a control switch, first means for generating temperature responsive variable control voltage, second means for generating variable position voltages corresponding to different positions of said piston which means includes a potentiometer with a movable tap and means connecting said piston to said tap, means including comparator means for comparing said control voltage and said piston position voltage and operating said control switch when one of said voltages is larger than the other one.

4,081,964
APPARATUS FOR THE THERMAL AND ELECTRICAL INITIATION OF FIRE PROTECTION DEVICES
Hellmut Bendler, Furth-Dammbach, and Anton Bretfeld, Nuremberg, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany
Continuation-in-part of Ser. No. 662,290, Feb. 27, 1976, Pat. No. 4,043,128. This application Jul. 1, 1976, Ser. No. 701,810
Claims priority, application Germany, Jul. 4, 1975, 2529838
The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.
Int. Cl.[2] F15B *15/06, 15/14*; F16K *17/40*
U.S. Cl. 60—636 **16 Claims**

1. Apparatus for the thermal and electrical initiation of fire protection devices comprising a housing with a displaceable support member and an abutment means provided therein, blocking means being disposed between said displaceable support member and said abutment means, said displaceable support member being biased against said blocking means in the direction toward said abutment means, said blocking means being responsive to the exceeding of a predetermined temperature for enabling displacement of said displaceable support member for initiating a fire protection device, said abutment means being constructed as a plunger means displaceable within said housing in the direction towards said displaceable support means, and an electrically actuatable compressed-gas-generating igniter means being disposed on the side of the plunger means facing away from said blocking means for producing compressed gas to cause displacement of said

plunger means toward said blocking means, said electrically actuatable igniter means including at least one electrical lead extending outwardly from said housing, and further comprising means for sealing at least the housing in the zone of the plunger means and said at least one electrical lead from outside influences.

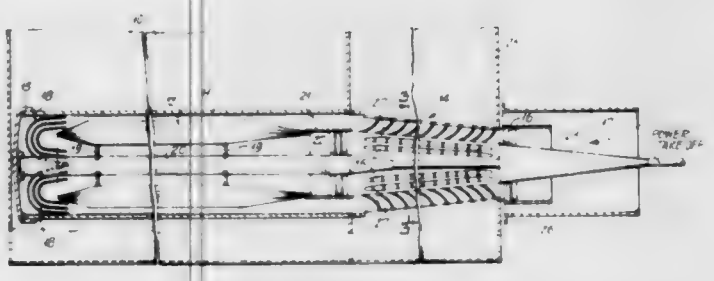


4,081,965

SOLAR OPERATED TURBINE POWER GENERATOR

Arie M. deGeus, 6625 4th St. South, St. Petersburg, Fla. 33705

Filed Mar. 3, 1977, Ser. No. 774,207
Int. Cl.[2] F03G *7/02*
U.S. Cl. 60—641 **6 Claims**



1. A solar operated turbine power generator comprising a transparent tube contained within reflective means for concentrating solar energy upon said transparent tube, said tube being sealed at one end and having a tubular collector of radiant heat positioned concentrically within said tube, compressor means for taking air at atmospheric temperature and pressure and supplying it to the other end of said tube at an elevated pressure, said compressed air passing through said tube outside of said tubular collector and then passing back through said tube inside of said tubular collector to a turbine positioned within a housing concentrically positioned within said tube at said other end of said tube and sealed to said tubular collector, whereby said compressed air at the inlet to said turbine within said housing is heated to a temperature of at least about 300° C., exhaust means associated with said turbine for exhausting said heated compressed gases to the atmosphere through said turbine to drive the same, said exhaust means being in heat exchange relation to the compressed air at said other end of said tube so that a portion of the residual heat in the said turbine exhaust is recovered by the incoming air after it has been compressed.

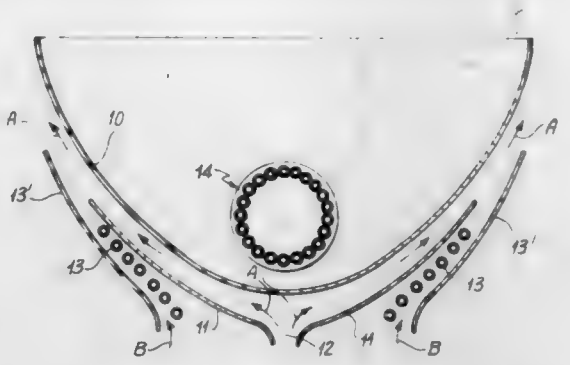
4,081,966

SOLAR OPERATED CLOSED SYSTEM POWER GENERATOR

Arie M. deGeus, 6625 - 4th St. South, St. Petersburg, 33705

Filed Mar. 3, 1977, Ser. No. 774,211
Int. Cl.[2] F03G *7/02*
U.S. Cl. 60—641 **4 Claims**

1. A solor operated closed system power generator which utilizes a low boiling fluid comprising, parabolic reflector means for concentrating solar energy, an elongated boiler extending along the focus of said reflector, said reflector being dimensioned with respect to said boiler to vaporize the liquid which is supplied to said boiler against the elevated pressure prevailing therein, and to superheat the vapor so-produced, turbine means connected to said boiler for obtaining power by the expansion of said superheated vapor, means to convey the exhaust from said turbine to condenser means positioned in the shadow of said reflector, said condenser serving to liquefy the exhaust gases obtained from said turbine, said condenser being cooled by means of cooling air which is moved through the condenser by means of a draft provided by the convection discharge of air heated by said reflector, and pump means for transferring the liquefied exhaust gases in said condenser to said boiler at the greater pressure prevailing therein.



4,081,967

CLOSED CYCLE SOLAR GENERATOR

Arie M. deGeus, 6625 4th St. South, St. Petersburg, Fla. 33705

Filed Mar. 31, 1977, Ser. No. 783,422
Int. Cl.[2] F03G *7/02*
U.S. Cl. 60—641 **6 Claims**



1. A closed cycle solar operated power generator comprising a transparent tube contained within reflective means for concentrating solar energy upon said transparent tube, said transparent tube being sealed at one end and having a tubular collector of radiant heat positioned concentrically within the same, compressor means for taking gas at low temperature and pressure and supplying it to the open end of said transparent tube at an elevated pressure, said compressed gas passing through said transparent tube outside of said tubular collector and then returning to the open end of said transparent tube inside of said tubular collector to a turbine positioned within a housing sealed to said tubular collector, a heat exchanger for receiving the turbine exhaust and for transferring heat therefrom to the compressed gases entering said transparent tube, a conductive tube sealed at one end having its open end sealed to the open end of the transparent tube, said conductive tube receiving the turbine exhaust from said heat exchanger, means for removing heat from said conductive tube, and a tubular compressor inlet for returning cooled gas passing through said conductive tube to said compressor to complete the closed cycle.

4,081,968

MINING OIL SHALE AND BACKFILLING WITH MECHANICALLY COMPRESSED SPENT SHALE

John E. Gwyn, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 16, 1977, Ser. No. 768,933
Int. Cl.[2] E02D *17/04*
U.S. Cl. 61—35 **5 Claims**



1. In a shale oil production process in which portions of a subterranean oil shale are mined out and retorted at a surface location, the improvement comprising, compressing substantially all of the spent shale to a volume at least substantially as small as that of the in situ volume of the oil shale from which the spent shale was derived, under a pressure of more than about 1,000 psi, and disposing the compressed spent shale within a mined out portion of the deposit.

4,081,969

WALL CONSTRUCTIONS

William Leslie Clarke, 182 Queen Street, Westport, New Zealand

Filed Oct. 4, 1976, Ser. No. 729,140
Claims priority, application New Zealand, Oct. 9, 1975, 178908; South Africa, Jan. 29, 1976, 0498
Int. Cl.[2] E02D *17/20*
U.S. Cl. 61—39 **1 Claim**



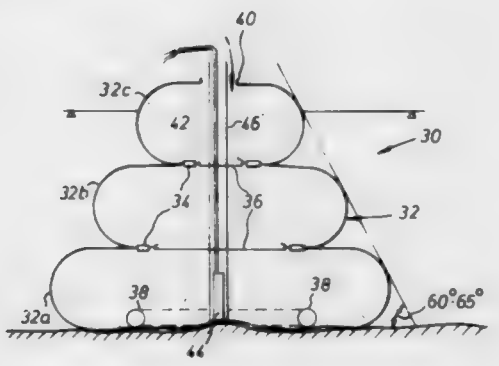
1. A means for erecting a retaining wall comprising a plurality of similar header blocks and a plurality of similar stretcher blocks arranged to be erected in tiered relationship, the header blocks each being elongated members arranged for disposition from the front to the rear of the wall in generally parallel relationship and each having a front end portion with a groove or recess inset from the header block front face in its upper surface and a rear end portion with upper and lower surfaces adapted to engage with lower and upper surfaces of similar next tiered header blocks, each stretcher block being an elongated member arranged for disposition longitudinally of the wall between the front end portions of adjacent tiered header blocks with the front faces of the stretcher and header blocks generally flush and having a longitudinal flange-like rear projection arranged for location in the front end portion groove or recess of the lower one of said adjacent tiered header blocks, and the upper face part of each header block front end portion between its front end face and its inset groove or recess being inclined inwardly and downwardly towards said groove or recess and the mating lower longitudinal face of each stretcher block having a complementary inclined formation, each header block rear end portion being of substantially T formation having upwardly and downwardly projecting flange portions, one of said rear end portions having a medial raised projection and the other of said flange portions having a complementary medial recessed disposition in opposition so that the projection of one header block can engage the recess of an adjacent tiered similar header block, a face of each header block front end portion between its front end face and its inset recess being inclined inwardly towards said groove or recess and the mating face of each stretcher block having a complementary inclined formation, the front end portion of each header block having a depending flange portion with a flat lower surface arranged to rest on the upper flat surface of a stretcher block therebelow so that the medial part of the header block is waisted relative to its end portions, each header block front end portion having a further inset groove or recess similar to the first-mentioned inset groove or recess but on the opposite face of the front end portion, each stretcher block having a further complementary rear projection arranged for location in said further inset groove or recess of an adjacent tiered header block, each header block front end portion having a lower part projecting downwardly at the rear upper longitudinal edge portion of a stretcher block therebelow to provide an abutment for said longitudinal edge portion; the flange portion of said stretcher blocks increasing the effective rear face area of the stretcher blocks, the tapered cross-section of the stretcher blocks enabling molding of the stretcher blocks by removal of the stretcher blocks from a mold.

4,081,970

UNDERWATER STRUCTURE

Brian Edward Wesley Dowse, Ontario, Canada, assignor to Golder Hoek and Associates Limited, Maidenhead, England

Filed Mar. 21, 1977, Ser. No. 779,801
Claims priority, application United Kingdom, Mar. 23, 1976, 11588/76; May 13, 1976, 19878/76
The portion of the term of this patent subsequent to Mar. 1, 1994, has been disclaimed.
Int. Cl.[2] E02D *27/22, 27/52*
U.S. Cl. 61—88 **7 Claims**



1. A method of forming an underwater structure, comprising fabricating an impervious inflatable membrane to form a substantially totally enclosed container, the membrane when inflated being elongate and having a cross-sectional shape consisting of a series of superimposed bulbous sections of progres-

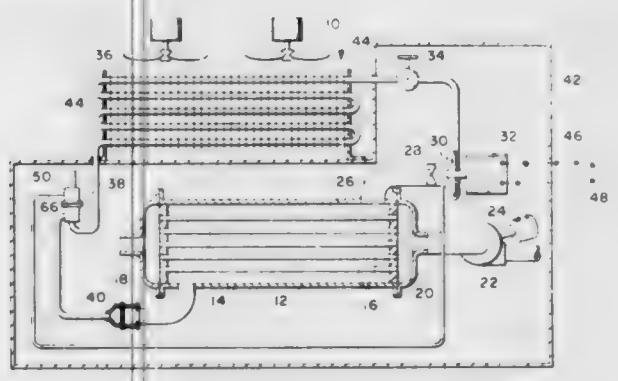
sively smaller area considered in an upward direction; transporting the membrane in a collapsed condition to the site; inflating the membrane to permit or cause a base portion thereof to rest on the river or sea bed; filling the membrane with a non-settable particulate material to form a body of such material; and draining the particulate body to enable the external water pressure to exert a confining pressure on the body to render it coherent.

4,081,971

AIR COOLED CENTRIFUGAL REFRIGERATION MACHINE WITH PROVISION TO PREVENT EVAPORATOR FREEZING

David Henry Eber, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Sep. 17, 1976, Ser. No. 724,185
Int. Cl.[2] F25B *41/04*
U.S. Cl. 62—216 **10 Claims**



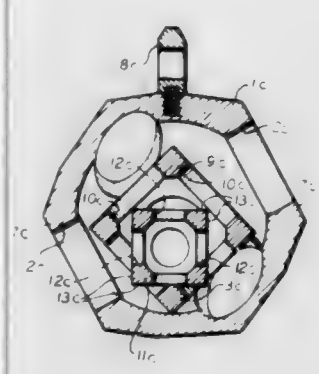
1. A refrigerant system comprising an evaporator, compressor, condenser and refrigerant liquid throttling means connected respectively in a closed refrigerant loop; valve means disposed in said loop between the outlet of said condenser and the inlet of said evaporator; valve operator means for operating said valve; a vent line extending from said valve operator means to the inlet of said compressor; and vent line being disposed to bypass said evaporator; and a controllable gas throttling means disposed between said evaporator and said compressor, said vent line connecting to said loop between said gas throttling means and said compressor.

4,081,972

PENDANT, EARRING OR PIECE OF JEWELRY

Daniel Kotlar, 50 Charles St., New Rochelle, N.Y. 10801

Filed Jun. 2, 1976, Ser. No. 691,993
Int. Cl.[2] A44C *17/00*
U.S. Cl. 63—31 **3 Claims**



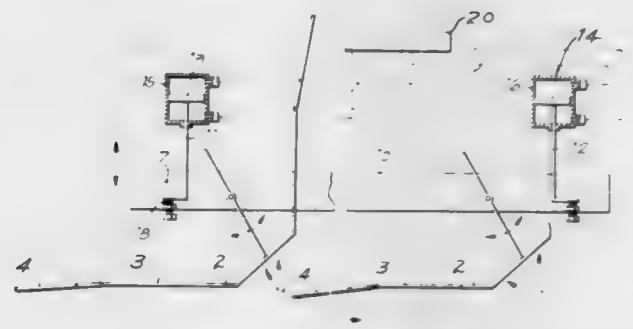
1. A piece of jewelry comprising
a hollow multi-faced outside cage-like casing having a plurality of substantially circular openings in its peripheral surfaces,
at least one body disposed inside of said outside cage-like casing,
the dimensions of said body being larger than those of said circular openings, to prevent escape from said casing, and
said body being freely movable within said outside cage-like casing,
said outside casing being interiorly solid prior to rendering it cage-like, and
said body being formed out of said solid interior and then separated from said casing.

4,081,973

MULTI LEVEL PRESSER-FOOT DEVICE

Andre Theys, Wondelgem, Belgium, assignor to Fabrique Nationale Herstal S.A., Herstal, Belgium

Filed Feb. 23, 1977, Ser. No. 771,337
Claims priority, application Belgium, Mar. 31, 1976, 254921
Int. Cl.[2] D04B *7/04*
U.S. Cl. 66—64 **6 Claims**



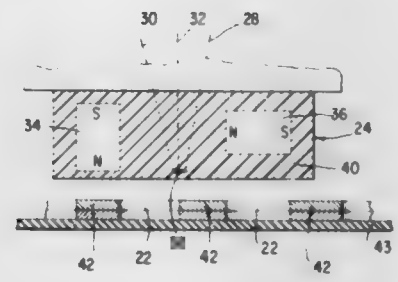
1. In a straight bar knitting machine having double V-shaped needle beds that support and guide independently moveable needles, a program control for the knitting machine, a presser foot arranged to reciprocate along and between the needles, th improvement comprising means automatically responsive to the program control for adjusting the level at which the presser foot reciprocates between either of two preselected levels, one of said levels being above the top of the needle beds and just below the path of travel of the needles, the other of said levels being between and closely adjacent the top edges of the needle beds.

4,081,974

KNITTING MACHINE CARRIAGE WITH HALL EFFECT DETECTING MEANS

Wolfgang Jaffe, Roselle Park, and Joseph James Lukawich, Somerville, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Dec. 20, 1976, Ser. No. 752,049
Int. Cl.[2] D04B *7/00, 15/66*
U.S. Cl. 66—75.2 **2 Claims**



1. In a flat bed knitting machine including a slotted needle bed and carriage slidable on the bed, a pair of dual magnet Hall-effect devices on the carriage disposed to move across slots in the bed as the carriage is moved and subject to actuation by steel in the bed as the devices move between the slots, and circuit means responsive to the operation of the Hall-effect devices, the Hall-effect devices being so located with respect to the slots in the bed as to generate out-or-phase signals from which the direction of carriage motion can be determined.

4,081,975
CLOTHES WASHER WITH CENTERPOST MOUNTED LINT FILTER BAG

Otis W. Wortham, Springfield, and John A. Sundstrom, Springboro, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 22, 1977, Ser. No. 790,075
Int. Cl.[2] D06F *39/10*
U.S. Cl. 68—18 FA 3 Claims

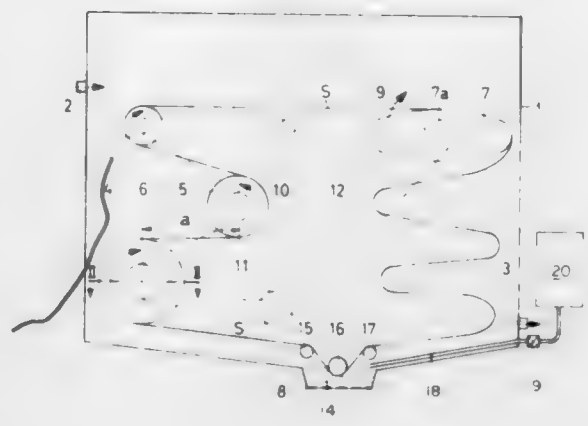


1. In an automatic clothes washing machine having a rotatable, perforate inner tub including a hollow open-top rotatable and vertically reciprocable agitator, a nonrotatable imperforate outer tub surrounding said inner tub and adapted to receive washing liquid from said inner tub, said outer tub having an outlet for removing washing liquid and a top access opening exposing the open-top of said agitator and through which clothes may be loaded into the washing liquid in said inner tub, a pump associated with said access opening and said outlet and operable for recirculating liquid to said inner tub through a hose end adjacent the open-top of said agitator, and drive means to reciprocate said agitator for washing said clothes while the pump is recirculating fluid, the improvement for removing and aggregating solid contaminants from recirculating liquid comprising a filter assembly having a support manually removably fastened to the open-top of said agitator for movement therewith, and an elongated mesh bag carried by said support and depending into the hollow of said agitator, said mesh bag having sidewall and bottom wall portions adapted during recirculation to hang above the level of washing liquid in the hollow of said agitator, and spray means on said hose end adapted to receive recirculating liquid from said hose end and configured to straighten and soften the flow of said recirculating liquid to prevent the aeration thereof while directing said flow through said mesh bag as said agitator reciprocates thereby to remove contaminants from the recirculating liquid by depositing said contaminants on the inside of said sidewall, the shaking of said bag effected by the reciprocation of said agitator and the flow of said recirculating water through said mesh bag cooperating to force and flush the deposited contaminants downwardly thereby to self-clean said sidewall of said contaminants while compacting said contaminants into a wad in the bottom wall portion of said bag for easy manual disposal thereof through the open-top of said agitator.

4,081,976
EQUIPMENT FOR THE TREATMENT OF TEXTILES IN THE FORM OF HANKS OR WEBS WITH LIQUID OR PASTES

David Moreinis-Eisen, Apartado Aereo 4897, Bogota d.E., Colombia

Continuation of Ser. No. 594,990, Jul. 11, 1975, abandoned. This application Mar. 2, 1977, Ser. No. 773,641
Int. Cl.[2] D06B *3/20*
U.S. Cl. 68—19 6 Claims

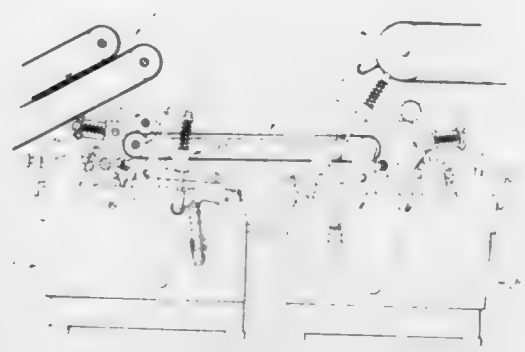


1. Equipment for repeatedly treating textiles in the form of discrete hanks or webs comprising a housing, at least one drive member of oval cross-section mounted for rotation within said housing to convey said hank or web downwardly in a serpentine movement, drive means for rotating said drive member, a liquid or paste applicator device in said housing, guide means positioned to receive said downwardly conveyed hank or web and to guide said received hank or web relative to said applicator for the application of said liquid or paste to said hank or web, at least two centrifugingelements positioned in said housing to receive said hank or web after application of said liquid or paste and to return said hank or web to said drive member, wherein the wrap-round angle of the hank or web on each centrifuging element is at least 90°, and means to rotate said centrifuging elements at different circumferential speeds respectively, thereby to evenly distribute the liquid or paste, applied to the hank or web, throughout the hank or web in cross-section, in the wrap-round zone of the centrifuging elements, under the influence of the pressure on the centrifuging elements and the centrifugal force generated by these, and to centrifuge off the excess liquid or paste.

4,081,977
DE-FLESHING APPARATUS FOR ANIMAL HIDES

Alexander Schmidt, Sr.; Walter Schmidt, and Alexander Schmidt, Jr., all of Weiz, Austria, assignors to USM Corporation, Boston, Mass.

Continuation of Ser. No. 714,275, Aug. 13, 1976, abandoned. This application Jun. 13, 1977, Ser. No. 806,200
Claims priority, application Austria, Aug. 14, 1975, 6372/75
Int. Cl.[2] C14B *1/10*
U.S. Cl. 69—42 1 Claim



1. A machine for defleshing animal hides, comprising:

two de-fleshing machines arranged symmetrically back to back, each machine having a cutter roll and a feed roll and at least one pressure roll pressing the hide against the feed roll, whereby both de-fleshing machines are connected together by a conveyor belt which is movable in opposite directions,

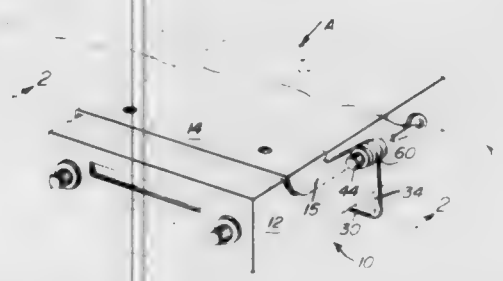
said conveyor belt being guided around the feed roll of one de-fleshing machine, and said conveyor belt is also guided around the feed roll of the second de-fleshing machine.

4,081,978

MOBILE RADIO SECURITY DEVICE

Hollis L. Ivey, 1305 E. 14th St., Lumberton, N.C. 28358

Filed Nov. 2, 1976, Ser. No. 738,009
Int. Cl.[2] E05B *73/00*
U.S. Cl. 70—58 **8 Claims**



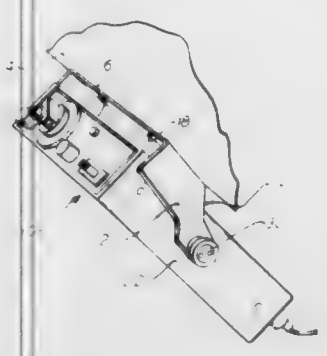
1. A mobile radio and electronic equipment security device comprising; first means for replacing the conventional mounting bolts as used with the normal mounting bracket of mobile radio and electronic equipment devices, second means engageable with the first means for positively securing same, and locking means associated with the first and second means for preventing unauthorized opening of the overall device, the locking means including an entirely separate lock structure, the first means including at least one eyebolt member provided with equipment engaging means at the end thereof opposite to the eye structure, and the second means including a pivotally mounted primary security rod associated with the eye of the eyebolt and a secondary security rod lockable at the other end with the said locking means, the second means further including adjusting means for ready adjustment of the length of the security rod members to whatever size the mobile equipment device may be, the secondary rod member being provided at the end opposite to the adjusting means with an eye construction, and a second eyebolt member is provided with means for attachment to the mobile equipment device, and with the eye thereof in position for association with the eye construction on the end of the secondary rod member for appropriate locking by the said locking means.

4,081,979

LOCKING FASTENER ASSEMBLY

Raymond B. Dawson, Berkeley Heights, N.J., assignor to Super Stud Products, Inc., Berkeley Heights, N.J.

Filed Nov. 24, 1976, Ser. No. 744,629
Int. Cl.[2] E05B *73/00*
U.S. Cl. 70—58 **11 Claims**



1. A locking fastener assembly for securing electronic equipment or the like to a mounting bracket or the like, comprising in combination:

a stud assembly comprising a threaded shank portion for passing through an opening in said mounting bracket and being threadingly receivable in an opening at said equipment, and an enlarged head portion at one end of said shank portion having a plurality of openings for receiving engaging pins therein from a cooperating tool, the spatial pattern of said openings defining a plurality of different spacings between selected pairs of said openings;

an annular collar surrounding said head portion and projecting in a direction opposite said threaded shank to at least cover the rim of said head portion, said collar being freely rotatable about said head portion to prevent grasping thereof by a tool;

a tool member having a face opposable to said collar and head portions, said face including a plurality of openings in a pattern mirroring said pattern on said head portion;

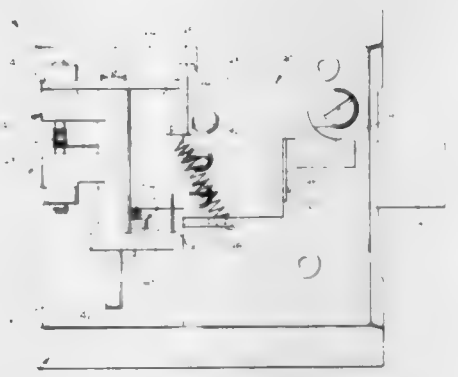
at least a pair of engaging pins being provided within a pair of said openings in said tool member, whereby by overlying said pattern on said tool member with said mirroring pattern on said head portion, said pair of pins may engage with corresponding openings in said head to permit application of torque to tighten and loosen said stud assembly; all of said openings on said head except for the pair alignable with the said pins being closed with a filler material, whereby engagement with said tool member can only be effected when said pin pair is keyed with the alignable pair of openings on said head portion.

4,081,980

ELECTRIC SECURITY LOCK

Tafari Hightower, 765 Rand Ave., Oakland, Calif. 94610

Filed Jan. 26, 1976, Ser. No. 652,103
Int. Cl.[2] E05B *65/10*
U.S. Cl. 70—92 **4 Claims**



1. In an electric security lock including:

a. a dead bolt;

b. a frame, having a top side and a bottom side, with said bottom side adapted to slideably receive said dead bolt;

c. a cover plate coupled to said bottom side of said frame and adapted to secure said dead bolt in place;

d. a pair of rotating cams coupled to said dead bolt and adapted to move said dead bolt in a lateral direction; and

e. a locking cylinder, which includes a mounting member coupled to said top of said frame and a mechanical coupling member coupled to said cam, an electric activating apparatus comprising:

a. a circular latch member pivotably connected and spring coupled to said dead bolt;

b. a metal bar having a first end and a second end and also having a square hole disposed between said first and second ends adapted to be mechanically coupled and uncoupled to said circular latch member, said metal bar being disposed in a slot in said bottom of said frame, said slot being disposed parallel and adjacent to said dead

bolt in said frame, said frame also having a square window disposed along said slot; and

c. a micro electronic switch disposed on said bottom of said frame adjacent to said slot and coupled to said metal bar through said square window of said frame.

4,081,981

APPARATUS FOR PRODUCING A PIPE FROM METAL STRIP

Xaver Lipp, 7091 Tannhausen, Ostalbkreis, Germany

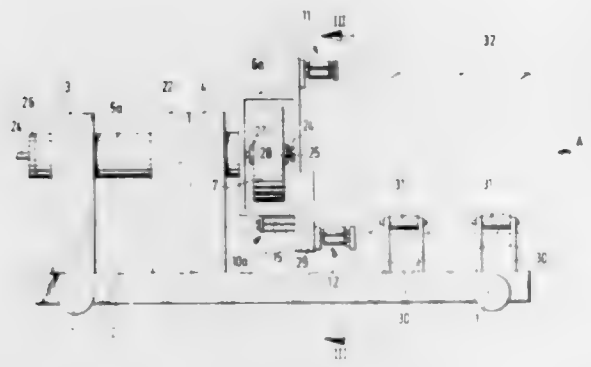
Filed Jan. 16, 1976, Ser. No. 649,676

Claims priority, application Germany, Jan. 18, 1975, 2501943; Nov. 28, 1975, 2553481

Int. Cl.[2] B21C *37/12*; B21D *11/06*

U.S. Cl. 72—49 **10 Claims**





1. An apparatus for manufacturing pipe from an elongated sheet metal strip comprising

a supply reel for said strip;

an elongated horizontally mounted hollow carrier having a central axis;

means operatively associated with said carrier for supporting said carrier for rotation about said central axis;

means operatively associated with said carrier for rotatably mounting said supply reel at an end of said carrier, said means including an axle for rotatably supporting said supply reel and mounting brackets for supporting said axle for rotation with said carrier, the central axis of said axle being perpendicular to the central axis of said carrier;

profiling means operatively associated with said carrier for forming an edge of said strip;

rabbeting means operatively associated with said carrier for joining adjacent edges of said strip;

means operatively associated with said carrier for mounting said profiling means and said rabbeting means on and radially outwardly of said carrier near the opposite end of said carrier from said supply reel for concentric motion with said carrier around said central axis;

means in said carrier defining an opening through a side wall thereof through which said strip can radially pass, said opening being located between said means for mounting said supply reel and said means for mounting said profiling means and rabbeting means;

guide means operatively associated with said carrier for guiding strip withdrawn from said supply reel longitudinally through said carrier parallel with said central axis of said carrier and generally radially through said opening to said profiling and rabbeting means in a generally circular path concentric with said central axis,

whereby said strip is joined to itself in a helical path surrounding said carrier to form an elongated pipe.

7. An apparatus for manufacturing pipe from an elongated sheet metal strip comprising

a supply reel for said strip;

an elongated horizontally mounted generally cylindrical carrier having a central axis;

means operatively associated with said carrier for supporting said carrier for rotation about said central axis;

means operatively associated with said carrier for rotatably mounting said supply reel at an end of said carrier, said means including an axle for rotatably supporting said supply reel and a mounting bracket for supporting said axle for rotation relative to said carrier, the central axis of said axle being parallel to the central axis of said carrier;

profiling means operatively associated with said carrier for forming an edge of said strip;

rabbeting means operatively associated with said carrier for joining adjacent edges of said strip;

means operatively associated with said carrier for mounting said profiling means and said rabbeting means on said carrier or the same end of said carrier as said supply reel and radially outwardly thereof for substantially concentric motion with said carrier around said central axis, said profiling and rabbeting means being radially outwardly disposed from said supply reel;

guide means operatively associated with said carrier for guiding strip withdrawn from said supply reel and generally radially outwardly to said profiling and rabbeting means in a generally circular path substantially concentric with said central axis,

whereby said strip is formed at its edges by said profiling means and joined to itself by said rabbeting means in a helical path to form an elongated pipe around a central axis substantially aligned with the central axis of said carrier.

4,081,982

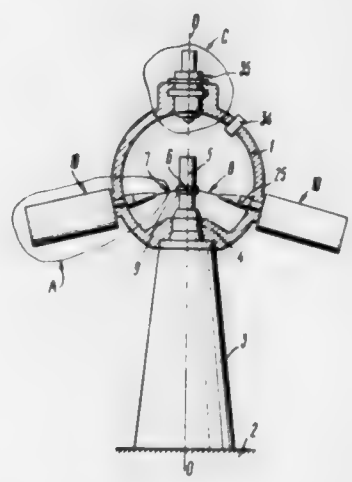
PLANT FOR EXPLOSION WORKING OF MATERIALS

Vladilen Fedorovich Minin, ulitsa Tereshkovoi, 36a, kv. 14; Vitaly Stepanovich Gambarov, ulitsa Promyshlennaya, 8, kv. 73; Mikhail Samuilovich Kachan, ulitsa Pravdy, 9, kv. 38; Vladlen Alexeevich Okladnikov, ulitsa Oleko Dundicha, 29, kv. 13; Boris Leonidovich Troinin, ulitsa Grekova, 13, and Jury Alexeevich Trishin, ulitsa Zolotodolinskaya, 9, kv. 5, all of Novosibirsk, U.S.S.R.

Filed Oct. 12, 1976, Ser. No. 731,412

Int. Cl.[2] B21D *26/12*

U.S. Cl. 72—56 **5 Claims**



1. A plant for explosion working of materials, comprising: a stationary support; a chamber mounted on said stationary support; a work table accommodated within said chamber and adapted to support thereon a material to be worked upon, the material having a charge of an explosive applied thereon, the explosive having means for initiating an explosion embedded

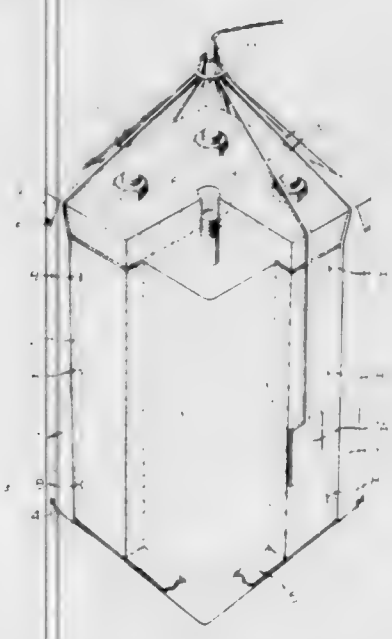
therein; at least one electrode for furnishing an electric pulse to said explosion initiating means, said at least one electrode being mounted in said chamber for an advancing motion towards said explosion initiating means into electric contact with said explosion initiating means; movement means for effecting said advancing motion of said at least one electrode toward said explosion initiating means by a distance equalling the length of the portion of said electrode separated therefrom by an explosion; and ventilation means mounted in said chamber and adapted to remove therefrom the products of detonation of said explosive charge.

4,081,983

MOLDS FOR THE CONTINUOUS CASTING OF METALS

Lorne Russell Shrum, 820 Manchester Road, London, Ontario, Canada (N6H 4J6)

Filed Mar. 29, 1977, Ser. No. 782,364
Int. Cl.² B21D *26/08*
U.S. Cl. 72—56 **10 Claims**



1. In a method of forming tubular copper molds for the continuous casting of metals, in which an arbor is formed having an external surface having the profile and finish required of the finished mold, a copper sleeve of the same general shape as the mold is fitted on the arbor, charges of high explosive material extending longitudinally substantially parallel to the longitudinal axis of the mold are applied to the exterior of the sleeve so as to provide detonation paths extending from one end of the sleeve to the other, air is evacuated from between the sleeve and the arbor, the sleeve with the charges applied thereto is fully immersed in a liquid, and the charges are detonated from one end of the sleeve so as to apply a longitudinally travelling shock wave of sufficient magnitude to cause plastic flow of the material of the sleeve into intimate contact with the arbor,

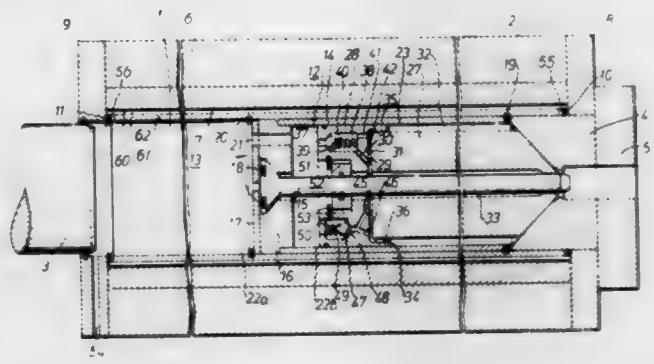
the improvement in which the plurality of longitudinally extending charges are applied adjacent the sleeve in a plurality of successive groups each of at least one charge, charges in the same group being spaced from one another about the periphery of the sleeve and each group of charges being detonated prior to the application of charges of a succeeding group, the charges in successive groups being distributed so that at least one charge is detonated adjacent every portion of the external surface of the sleeve.

4,081,984

PROTECTIVE COATING FOR REMOVABLE LINER OF PRESS FOR HYDROSTATIC EXTRUSION

Sven-Göran Gustafsson, Vesteras; Jan Nilsson, Robertsfors, and Pertti Syväkari, Helsingborg, all of Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Apr. 18, 1977, Ser. No. 788,665
Claims priority, application Sweden, Apr. 22, 1976, 7604613
Int. Cl.² B21D *22/10*
U.S. Cl. 72—60 **11 Claims**



1. A press for the hydrostatic extrusion of metallic billets which includes:

an elongated high pressure cylinder which has a hollow interior and which has openings at the ends thereof, the hollow interior forming a pressure chamber;

a die positioned to close to one of said openings in said high pressure cylinder, said die including a passageway therein through which metal may be extruded in order to form a tube or other profile;

a punch which is insertable through the other of said openings in said high pressure cylinder and which can project into said pressure cylinder to a predetermined point in order to generate a pressure in said pressure chamber for extrusion of a metallic billet through said passageway in said die;

a removably positioned liner forming an inner wall of said high pressure cylinder which encloses said pressure chamber, said liner having an inner wall facing said pressure chamber;

a protective coating of an organic polymer located along said inner wall of said liner which faces said pressure chamber; and

means in the form of a tube positioned in concentric fashion adjacent said protective coating and between said protective coating and said pressure chamber for mechanical protection of said protective coating.

4,081,985

TOOL FOR FORMING NECKS ON CIRCUMFERENTIAL SURFACES OF PIPES

Günter Rothenberger, Bad Homburg, von der Hohe, Germany, assignor to Rothenberger GmbH & Co. Werkzeugeuge-Maschinen, Frankfurt am Main, Germany

Filed Mar. 11, 1976, Ser. No. 666,117
Claims priority, application Germany, Mar. 15, 1975, 7508218[U]
Int. Cl.² B21D *51/40*
U.S. Cl. 72—117 **5 Claims**

1. In a portable necking-out hand-tool for forming projecting cylindrical nipples on the circumferential wall of a pipe, container or the like, having screw plug means with hook-shaped forming head means and thrust sleeve means provided with coaxial downholder flange means for cooperation with the forming head means and the screw plug means, said thrust means having a hollow cylindrical interior corresponding to the contour of the forming head means for the reception of the formed nipple, the improvement which comprises non-rotatable, symmetrical telescopic guide means associated with the thrust sleeve means for mounting torque converter means on

the screw plug means for effecting the continuous rotation of the hook-shaped forming head means, the telescopic guide means comprising two tubular members symmetrically at-



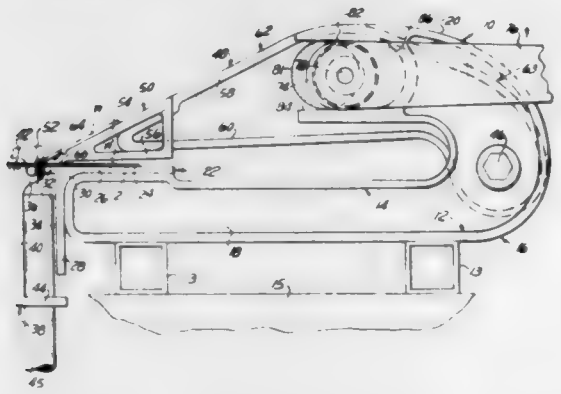
tached to the thrust sleeve means parallel to the screw plug means, U-shaped stirrup means having parallel legs slidably received into the tubular members and yoke means incorporating a fitting for the reception of the torque converter means.

4,081,986

WIDE-RANGE SHEET MATERIAL BENDING BRAKE

Douglas G. Break, Farmington, Mich., assignor to American Industrial Products, Inc., Livonia, Mich.

Filed Dec. 27, 1976, Ser. No. 754,735
Int. Cl.[2] B21D *5/04*
U.S. Cl. 72—320 **4 Claims**



1. A wide-range sheet material bending brake, comprising
a stationary workpiece-claping structure including a plurality of stationary elongated clamping jaw supports disposed in laterally-spaced aligned relationship,
said stationary workpiece clamping jaw supports having forward and rearward end portions,
said stationary workpiece-clamping structure having a stationary workpiece-clamping jaw mounted on and extending between said stationary forward end portions in interconnecting relationship therewith,
a movable workpiece-clamping structure including a plurality of movable elongated-clamping jaw arms disposed in laterally-spaced aligned relationship,
said movable workpiece-clamping jaw arms having forward and rearward end portions,
said movable workpiece-clamping structure having a workpiece-clamping jaw mounted on and extending between said movable forward end portions in interconnecting relationship therewith,
said movable workpiece-clamping jaw having a forward workpiece-bending edge,
said stationary workpiece-clamping jaw having a forward edge with hinge means thereon disposed below said workpiece-bending edge with the pivot of said hinge means disposed in substantially vertical alignment with said workpiece-bending edge,
said stationary workpiece-clamping jaw supports being approximately J-shaped with substantially horizontal forward portions and with upstanding arcuate rearward portions,
said rearward end portions of said movable workpiece-clamping jaw arms being of downwardly and rearwardly extending arcuate configuration.

4,081,987

CURLING PUNCH

Larry Baker Hall, Smyrna, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Apr. 11, 1977, Ser. No. 786,459
Int. Cl.[2] B21D *5/01*
U.S. Cl. 72—389 **5 Claims**



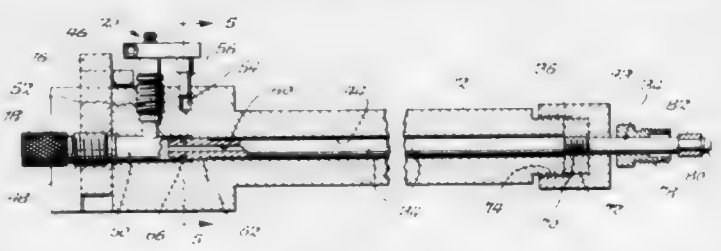
1. A machine tool punch assembly for edge curling of sheet metal workpieces comprising:
a body member means adapted to depend from a machine tool ram when mounted therein to present a body edge distal from the ram;
said distal edge of the body means having an intermediate cutout to form a pair of spaced apart tang projections;
a passage extending through each tang projection, said passages located so as to be in coaxial alignment;
and a removable rod means extending through both tang passages and across the cutout between the tang projections.

4,081,988

PRESSURE TRANSDUCER CALIBRATION

Nicholas D. Change, West Seneca, and Michael T. Riggs, Batavia, both of N.Y., assignors to PCB Piezotronics, Inc., Depew, N.Y.

Filed Mar. 18, 1977, Ser. No. 779,255
Int. Cl.[2] G01L *27/00*
U.S. Cl. 73—4 R **11 Claims**



1. In combination with ammunition testing apparatus comprising an elongated test barrel, means adjacent one end of said barrel for holding a cartridge to be test fired in said barrel and transducer means mounted in said barrel to be in operative

contact with a cartridge to be tested for converting pressure changes into electrical signals, calibration means comprising:

a. a pressure tube element adapted to fit in said test barrel and extend along within said test barrel, said tube element being of sufficient length such that one end is received within an empty cartridge casing held in said barrel and the opposite end of said tube element is adjacent the other end of said barrel;

b. means on said one end of said tube providing a pressure-tight relationship with the interior of the empty cartridge casing;

c. means adjacent said opposite end of said tube engaging said barrel for holding said tube rigidly in said barrel; and

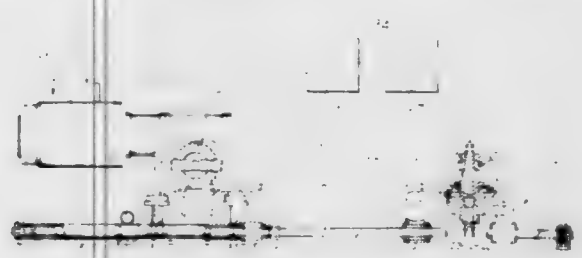
d. calibration pressure supply means connected to said tube for introducing known calibration pressure to the interior of said empty cartridge casing.

4,081,989

DEVICE FOR MEASURING THE STRESS OF TANGENTIAL FRICTION OF A SHOE ON A SURFACING FOR THE GROUND

Richard Majcherczyk, Boulogne-Billancourt, France, assignor to Centre Experimental de Recherches et d'Etudes du Batiment et des Travaux Publics, France

Filed Jan. 24, 1977, Ser. No. 761,472
Int. Cl.[2] G01N *19/02*
U.S. Cl. 73—9 **3 Claims**



1. Device for measuring the stress of tangential friction of a shoe on a surfacing for the ground comprising:

a guiding device capable of being held parallel to the surfacing,

a carriage displaceable over the length of the guiding device, a shoe on said carriage, said shoe being subjected to a vertical load,

dynamometric pick-up means capable of measuring the tangential friction of the shoe on the surfacing in the course of said displacement of said carriage, said shoe being fixed directly on said dynamometric pick-up means, which is mounted at the lower extremity of a loaded vertical spindle mounted slidably on said carriage,

driving assembly for moving said carriage at constant speed over the length of said guiding device, and

recorder means connected to the dynamometric pick-up means to record the variations of tangential friction of the shoe on the surfacing in the course of the displacement of said carriage.

4,081,990

HYDRAULIC PIPE TESTING APPARATUS

John C. Chatagnier, 704 Glendale Ave., Houma, La. 70360

Filed Dec. 29, 1976, Ser. No. 755,266
Int. Cl.[2] G01M *3/28*; E21B *33/124*
U.S. Cl. 73—40.5 R **15 Claims**

1. A pipe testing apparatus, comprising:

a. an elongated body attachable to a source of pressurized hydraulic fluid, said body being insertable into the inner portion of a section of pipe to be tested;

b. a pair of seal means on said body for forming substantially fluid tight pressurized seals between said body and the walls of a pipe in which said testing apparatus is placed, each of said seal means being a flexible expandable section of said body and said flexible expandable section is compressed by the action of a pair of hydraulic pistons cooperatively connected to said flexible section, said pistons being slideable on said elongated body, and said pistons being simultaneously urged towards said flexible expandable section when pressurized fluid is conveyed to said pipe testing apparatus;

c. nozzle injector means on said body between said pair of seal means for introducing pressurized fluid into the space created between said pair of seal means when said seal means are activated by the introduction of pressurized fluid into said body, said nozzle injector means comprising a reduced orifice opening in said elongated body;



d. channel means in said body for simultaneously transmitting pressurized fluid to said nozzle injector means and to said pair of seal means; and

e. a plurality of fluid conduits providing a fluid connection between said channel means and each of said hydraulic pistons, the pressure of fluid within said channel means and each of said fluid conduits being substantially the same whereby each of said hydraulic pistons is urged to expand its respective flexible expandable section with substantially equal force.

4,081,991

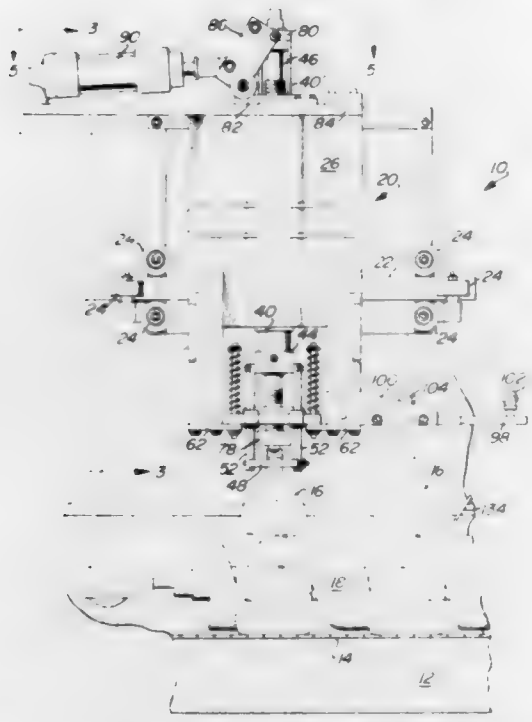
APPARATUS FOR PRESSURE TESTING FRANGIBLE CONTAINERS

Whitney S. Powers, Jr., Pine City, N.Y., assignor to Powers Manufacturing, Inc., Elmira, N.Y.

Filed Aug. 9, 1976, Ser. No. 712,991
Int. Cl.[2] G01M *3/04*
U.S. Cl. 73—41 **10 Claims**

1. Apparatus for pressure testing frangible containers comprising a conveyor for moving containers along a horizontal path, a carriage guided for horizontal reciprocation parallel to said path, a vertically disposed pressure conduit supported by said carriage for horizontal reciprocation with said carriage, means on said carriage for causing movement of said conduit in a vertical direction while the carriage is moving horizontally, means including a pair of jaws supported by said carriage adjacent the lower end of said conduit for lifting a container off said conveyor and supporting the container during such horizontal reciprocation and for returning the container to said conveyor at the end of such horizontal reciprocation, means on said carriage for moving said jaws between open and closed positions as a function of the elevation of said jaws with respect to said conveyor with the jaws being open at the beginning and end of said reciprocatory movement of said carriage and with the jaws remaining open on the return stroke of said carriage, a head on the lower end of said conduit for sealing contact

with the open end of the container to be tested and for introducing a liquid under pressure from said conduit into a container to be tested while the container is supported from above by said jaws, a supply conduit connected to said pressure conduit for introducing the liquid under pressure thereinto



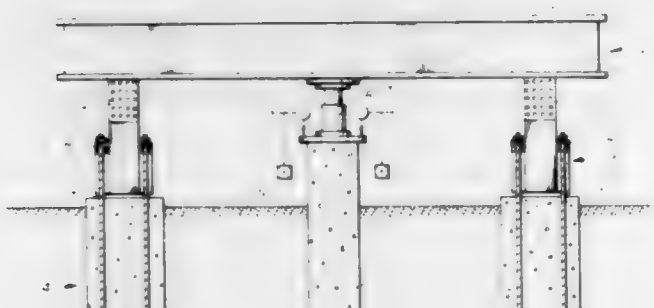
only while the container is supported from above by said jaws, and a selectively operable means on said carriage for preventing upward movement of said pressure conduit when a liquid is being introduced into a container by said pressure conduit, thereby opposing any upward reaction force from the pressurized liquid.

4,081,992

APPARATUS FOR LOAD TESTING FOUNDATION SHAFTS

Ravi P. Aurora, and Glyen D. Farmer, both of Houston, Tex., assignors to Farmer Foundation Company, Inc., Houston, Tex.

Filed Nov. 22, 1976, Ser. No. 743,851
Int. Cl.[2] G01N *33/24*
U.S. Cl. 73—84 **14 Claims**



1. An apparatus for axial load testing foundation shafts, comprising

a plurality of concrete anchor shafts aligned with a foundation shaft to be tested,

beam means spanning between said plurality of anchor shafts and over said foundation shaft,

means for applying an axial load between said beam means and said foundation shaft, and

a tie-down assembly formed within and substantially removable from the interior of each of said anchor shafts for transferring reaction forces from said means for applying an axial load to said anchor shafts, including

base means fixedly connected within said anchor shaft,

a plurality of tension members removably connected to said base means and extending upwardly through said anchor shaft, and

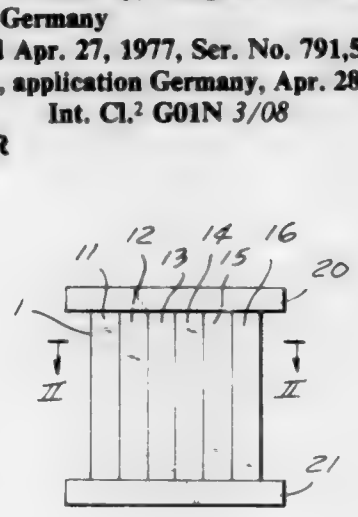
adaptor means for removably connecting said tension members to said beam means.

4,081,993

DEVICE FOR MEASURING THE MAGNITUDE AND DIRECTION OF COMPRESSION FORCES

Joachim Leonhardt, Essen, and Hans-Dieter Klein, Hattingen (Ruhr), both of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Apr. 27, 1977, Ser. No. 791,599
Claims priority, application Germany, Apr. 28, 1976, 2618538
Int. Cl.[2] G01N *3/08*
U.S. Cl. 73—88 R **16 Claims**



1. A device for measuring compression forces, preferably compression forces acting on supports in an underground mine gallery, comprising a pair of spaced substantially parallel abutment members adapted to be subjected on faces thereof directed away from each other to opposite compression forces to be measured; and a pressure body composed of a plurality of elongated parts of relatively brittle material and having respectively different resistance against compression forces, said parts being arranged closely adjacent to each other between said abutment members and extending in longitudinal direction substantially normal thereto to be subjected to the compression forces acting on said abutment members, whereby said parts of said pressure body will be deformed to a different degree, indicating thereby the magnitude of the compression forces.

4,081,994

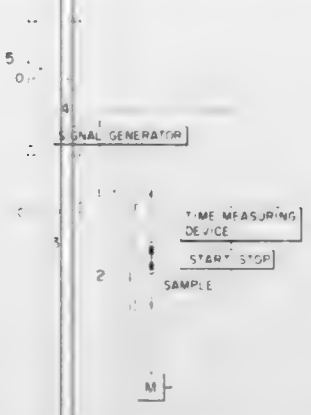
METHOD OF TENSION STRESS TESTING OF RUBBER

Takeshi Yamawaki, Hiratsuka; Tokitaro Hoshijima, Yokohama, and Kiyoshi Mizushima, Atsugi, all of Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1976, Ser. No. 733,867
Claims priority, application Japan, Oct. 20, 1975, 50-126187
Int. Cl.[2] G01N *3/08*
U.S. Cl. 73—95 **1 Claim**

1. A method of tension stress testing of rubber of the type wherein a rubber sample having a predetermined shape is elongated continuously at a predetermined speed, and the tension stress is measured when the distance between a pair of reference positions set on the surface of the sample shows a predetermined elongation, wherein (1) prior to the actual test, a plurality of rubber samples having said predetermined shape and different hardness are elongated continuously under predetermined tension test conditions, the tension stress measuring time between the time of commencing said continuous elongation and a time at which said distance between said reference positions is measured, and by utilizing the data thus obtained and the data regarding the hardness of respective rubber samples, the measuring time function of the tension stress measuring time with regard to hardness is determined by a statistical

method, and (2) in the actual test, the hardness of a rubber sample is measured, the tension stress measuring time is determined from the measured value of hardness in accordance with



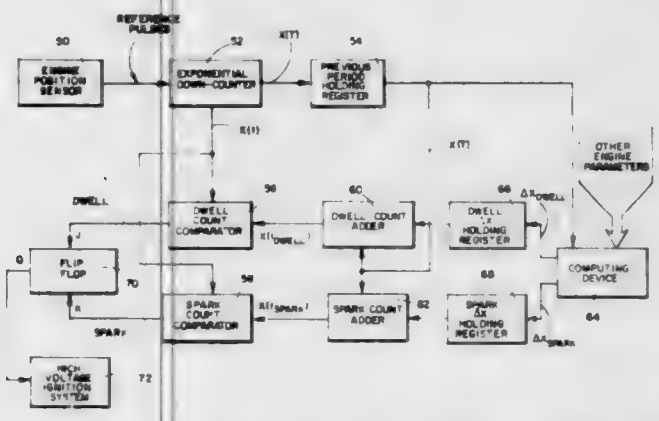
the measuring time function, then the rubber sample is elongated continuously under said tension test conditions, and the stress is measured at said tension stress measuring time to determine the tension stress.

4,081,995

APPARATUS AND METHOD FOR EXTRAPOLATING THE ANGULAR POSITION OF A ROTATING BODY

Glen R. Griffith, Westminster; Zane A. Sandusky, Orange, and George A. Watson, Tustin, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 22, 1977, Ser. No. 771,056
Int. Cl.[2] F02P *5/08*
U.S. Cl. 73—116 **8 Claims**



1. In a timing control system having a sensor device that provides a reference pulse at least once during each period of rotation of a rotatable member to indicate that the rotatable member is at a known angular position, a clock source for generating a periodic clockpulse signal, a counter responsive to the clock source for producing a pulse-count signal the value of which is a function of the number of clock-pulses generated, a computing device for receiving a plurality of signals that indicate a corresponding plurality of parameters for computing a count corresponding to a desired angular position of the rotatable member and for generating a signal representative of the desired angle count, and a comparator for receiving the pulse-count signal and the desired angle count signal and for producing a function initiating signal when the pulse-count signal and the desired angle count signal are equal; an improved position extrapolation device comprising:

means in said counter for generating a count signal that is a non-linear function of time and for resetting said counter to a known starting count at each occurrence of said reference pulse,

means for sequentially storing the final non-linear count signal to occur immediately prior to each said resetting, and

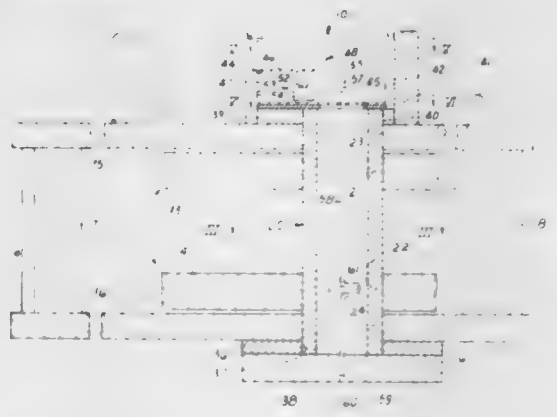
means in said computing device responsive to said storing means and to said parameter indicating signals for computing and generating a signal representing the non-linear count corresponding to a subsequent desired angular position for producing a function signal, whereby a function signal is produced at a desired angular position that is based upon a non-linear extrapolation of a known angular position.

4,081,996

FORCE-MEASURING DEVICES

Marvin D. Jennings, Naperville, and Rolf E. Schmidgall, Hinsdale, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 2, 1977, Ser. No. 765,011
Int. Cl.[2] G01L *1/04*
U.S. Cl. 73—141 A **19 Claims**



1. A device for measuring the force transmitted between two members comprising:

a force-transmitting element of resiliently deformable material and of generally C-shaped cross-sectional configuration having inner and outer generally cylindrical and concentric surfaces and an axially extending slot defined by facing angularly spaced surfaces, said members being engageable with said outer cylindrical surface at diametrically opposite portions of said element lying along a diametrical plane generally transverse to a radial plane through said slot to move said diametrically opposite portions toward each other and to move said slot surfaces toward each other in proportion to the force transmitted between said members by said element;

displacement measuring means including a movable contact element for measuring the displacement of one of said diametrically opposite portions of said element toward the other;

lever means;

means supporting said lever means for pivotal movement about an axis in substantially fixed relation to said other of said diametrically opposite portions and in a plane generally transverse to said diametrical plane through said diametrically opposite portions;

first coupling means coupling said one of said diametrically opposite portions to said lever means at a point spaced a first predetermined distance from said axis; and

second coupling means coupling said movable contact element to said lever means at a point spaced a second predetermined distance from said axis, said second predetermined distance being substantially greater than said first predetermined distance.

4,081,997

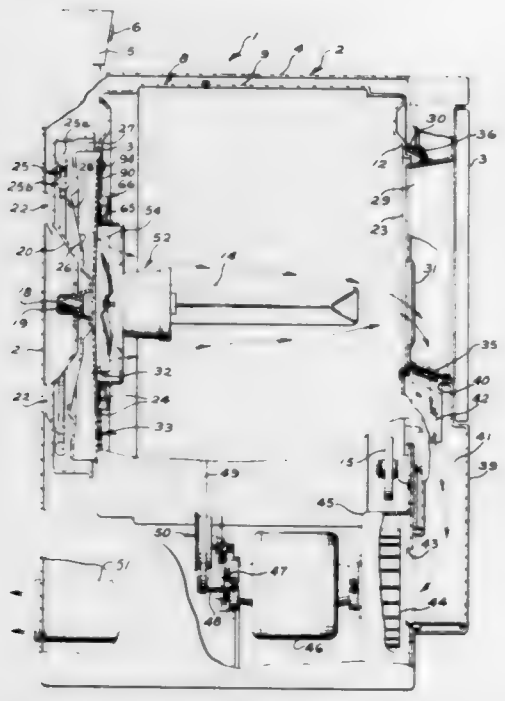
CLOTHES DRYER AIR FLOW TEST DEVICE AND METHOD

Gerhard K. Losert, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Feb. 23, 1977, Ser. No. 771,408
Int. Cl.[2] G01M *19/00*
U.S. Cl. 73—168 **8 Claims**

1. In a device for checking the adequacy of the rate of air

flow in a rotating clothes dryer drum having air flow through a first centrally disposed set of perforations and a second set of perforations radially outward of the first set in the rear wall of the drum, including a rotatable fan, a counter assembly arranged and including means to register the number of revolutions of the fan, and means to removably attach the device to the rear wall of the drum over the first set of perforations, the improvement comprising:



a flexible circular skirt having a central opening and means to removably attach the skirt to the rear wall of the drum over the second set of perforations to block air flow therethrough whereby air flowing through the rear wall of the drum is caused to go through the central opening and the fan.

4,081,998

FLOW STILLING DEVICE

Kenneth W. Martig, Jr., Olympia, Wash., assignor to Pro-Tech, Inc., Paoli, Pa.

Filed Jun. 8, 1977, Ser. No. 804,542
Int. Cl.² G01F *23/14*
U.S. Cl. 73—302 **12 Claims**



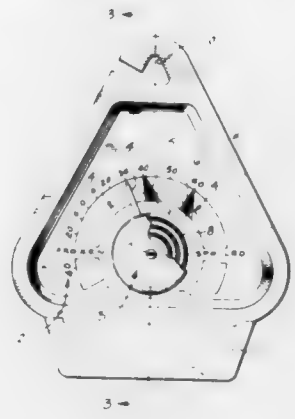
1. Stilling device for use in an open water or sewer pipe or conduit, comprising a T-shaped structure having a cross-bar and having also an open-ended tubular base leg affixed to and extending from the cross-bar a distance exceeding the vertical inside dimension of the pipe or conduit.

4,081,999

TEMPERATURE INDICATOR WITH LIMIT DETECTION APPARATUS

Thomas J. Lenken, Milwaukee, Wis., assignor to Desco Corporation, Milwaukee, Wis.

Filed Nov. 26, 1976, Ser. No. 744,959
Int. Cl.² G01K *3/00, 5/62*
U.S. Cl. 73—343 R **13 Claims**



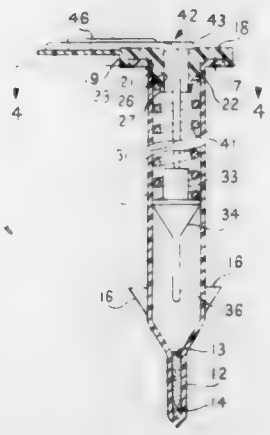
1. A temperature limit indicating apparatus, comprising a temperature sensitive assembly including a moveable indicator element, a support unit for said assembly including a member aligned with and laterally spaced from the path of said moveable element, said assembly including means supporting said moveable indicator element for lateral movement with respect to said member, and an inclined latching wall means secured to the member and projecting outwardly into the path of said element and forming an offset latching means preventing reverse movement of the indicator element.

4,082,000

DISPOSABLE COOKING THERMOMETER STRUCTURE

Anthony J. Volk, 173 E. Syracuse St., Turlock, Calif. 95380

Filed Apr. 9, 1976, Ser. No. 675,290
Int. Cl.² G01K *11/06*
U.S. Cl. 73—358 **1 Claim**



1. In a disposable cooking thermometer having a hollow barrel with a resiliently flexible indicator stem spring loaded therein to move an outer end of the stem into the barrel as a material engaged by the stem in a closed end of the barrel softens at a predetermined temperature, an improved latch and barrel closure structure including a flange about a rear open end of said barrel and an integral prong centrally of the stem and pivotable outward of the stem as the latter is bent at a reduced cross section portion thereof to engage a closure member having an aperture aligned with the barrel opening and an indentation on an under side thereof and engaging said barrel flange in tight fitting relation therein with said closure member having a cutout spelling LIFT STEM therethrough above said barrel flange, and a lateral extension extending laterally outward of the barrel beneath the bent stem with ridges on said closure member alongside the stem is bent and

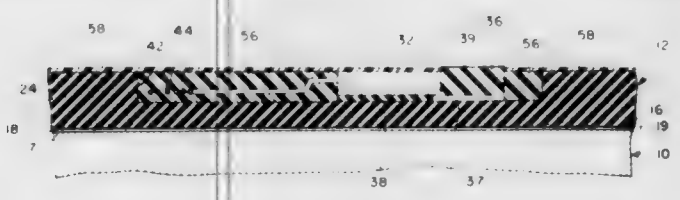
latched position thereof with said lateral extension being of sufficient length to underly all of said stem that is bent over in latched position.

4,082,001

NON-DESTRUCTIVE METHOD FOR APPLYING AND REMOVING INSTRUMENTATION ON HELICOPTER ROTOR BLADES

Walt C. Long, and Milton L. Williams, both of Hampton, Va., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 19, 1977, Ser. No. 788,705
Int. Cl.² G01L *9/00*; B64C *27/46*
U.S. Cl. 73—756 **12 Claims**



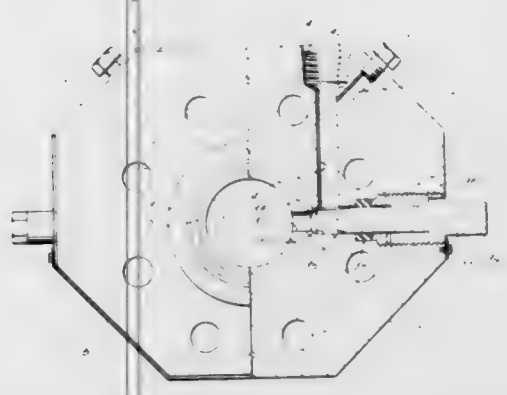
1. A method for applying removable instrumentation to an airfoil while maintaining essentially the same aerodynamic characteristic of the airfoil comprising the steps of:
preparing the area of the airfoil that is to be instrumented;
applying a protective substrate of adhesive dissolvable in methylethylketone to the top, bottom and leading edge of the airfoil;
positioning and bonding balance weights to the leading edge of the airfoil;
bonding filler material to the top, bottom and leading edge of the airfoil;
fairing the filler material;
bonding instrumentation to the airfoil and filler material; and
applying a coat of epoxy resin-saturated glass fiber cloth over the surface of the instrumentation.

4,082,002

GAUGE FLANGE

Benton F. Baugh, Houston, Tex., assignor to Vetco, Inc.

Filed Mar. 7, 1977, Ser. No. 774,852
Int. Cl.² G01L *7/00*
U.S. Cl. 73—756 **1 Claim**



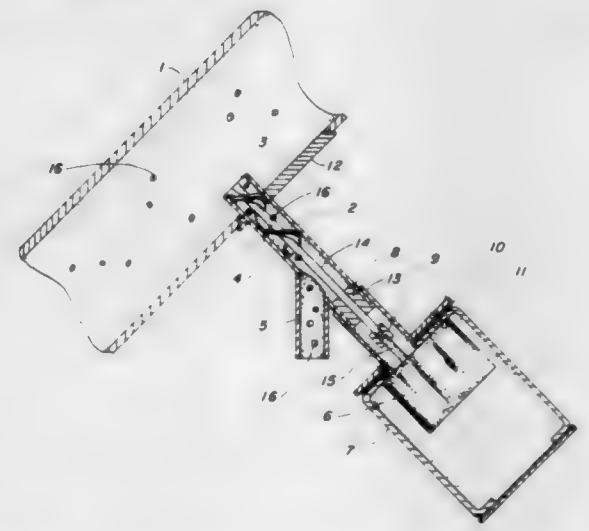
1. A gauge flange for mounting a pressure gauge in a pipeline or pressure vessel, comprising:
a body having substantially parallel plane sides and having a central bore therein;
means for connecting said flange to a pressure vessel or line;
valve passage in said flange body communicating said central bore;
valve seat in said valve passage;
valve stem in said valve passage and adapted to be moved into and out of engagement with said valve seat to close and open communications through said valve passage;
pressure gauge passage in said flange body communicating with said valve passage for connecting a pressure gauge thereto; and
lubricant passage in the flange body communicating with said pressure gauge passage for injecting a lubricant into said pressure gauge passage to exclude the working fluid therefrom.

4,082,003

PELLET SAMPLER AND METHOD OF SAMPLING PELLETS

Robert Carl Hentschel, Jr., and William McIntosh Gignilliat, both of Columbia, S.C., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Feb. 24, 1977, Ser. No. 771,710
Int. Cl.² G01N *1/20*
U.S. Cl. 73—422 R **10 Claims**



1. In a pellet sampling apparatus comprising an opening in a conduit exposed to flowing pellets, said opening communicating with an auger which revolves to remove a portion of said pellets as a sample, the improvement comprising
said opening being fixed and having a plane at an angle including and between parallel and normal to the flow of said pellets and normal to the axis of the drive shaft of said auger,
said opening coinciding with the feed end of said auger,
said auger revolving at a measured rate to meter said pellets through said opening,
said flowing pellets having a periphery, and said opening being located near the periphery of said flowing pellets, providing minimum obstruction to flow of flowing pellets to avoid causing an accumulation of pellets around the sampler,
whereby said pellets collected at said metered rate so that a representative, uniform sample is collected.

4,082,004

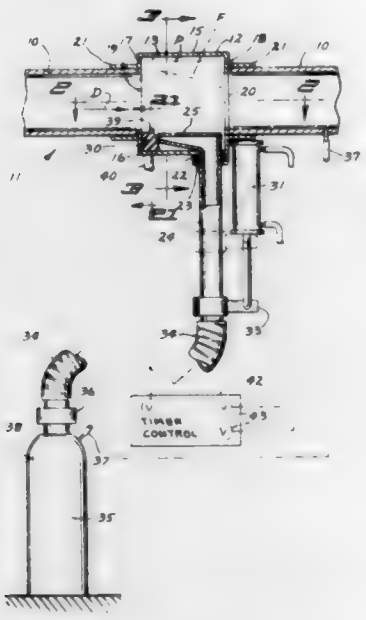
CROSSCUT SAMPLER

Joseph A. Weber, Arlington, Tex., and Hugo Wenshau, Burnsville, Minn., assignors to Gustafson, Inc., Hopkins, Minn.

Filed Apr. 14, 1977, Ser. No. 787,370
Int. Cl.² G01N *1/20*
U.S. Cl. 73—422 R **14 Claims**

1. Apparatus for drawing a representative sample of granular or particulate material flowing in a conveying pipe of a pneumatic conveying system, comprising
a sealed housing with aligned entrance and exit flow openings for connection into the conveying pipe, the housing having an open interior with an unobstructed central passage aligned with the flow openings to permit free flow of the material-laden air moving through the pipe, the housing also having open interior side spaces adjacent the central passage,
means collecting samples of the material flowing through

the central passage of the housing and including a sample collecting head in the housing and movable therein to and between said side spaces and in a first direction transversely of the central passage and entirely through said central passage, the head having a front face oriented to confront the entrance opening of the housing and also oriented at an oblique angle with respect to said first direction, the head also having an elongate entrance in said front face to permit access of such flowing material into the sample collecting head, said entrance extending entirely across the central passage in a direction transversely of said first direction,



an elongate mounting slide carrying said collecting head and also extending transversely outwardly through one side of the housing and being slidably mounted thereon, and

a closure mounted in one of said side spaces of the housing and having a sealing surface to abut and seal against the front face of the sample collecting head to entirely close the entrance to the head when the head is moved out of the flow passage, the sealing surface of said closure also being oriented obliquely of said first direction and lying along and in the direction of said front face to lie flush against the front face of the head.

4,082,005

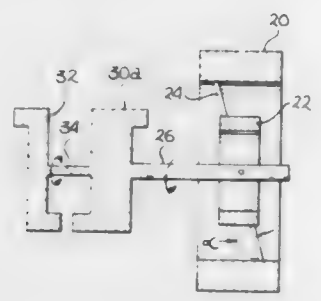
SPIN COUPLED, ANGULAR RATE SENSITIVE INERTIAL SENSORS WITH MOUNTING STRUCTURE AND METHOD OF FABRICATING AND MOUNTING SAME

Harold F. Erdley, Los Angeles, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 608,770, Aug. 25, 1975, Pat. No. 3,974,701. This application Feb. 8, 1976, Ser. No. 710,693

Int. Cl.² G01C *19/22, 19/42*

U.S. Cl. 73—505 **33 Claims**



1. A tuned inertial instrument comprising:

an instrument case;

a shaft means supported on bearings coupled to said instrument case for rotation about a spin axis at a predetermined spin frequency within said instrument case;

a sensitive element;

a suspension means for coupling said sensitive element to said shaft, said suspension means including means for allowing relative oscillation between said sensitive element and said shaft about at least one suspension means axis, said suspension means axis being non-orthogonally disposed with respect to said spin axis by a predetermined angle;

means coupled to said shaft for providing a product of inertia about said spin axis and an axis perpendicular to said spin axis; and

means for reducing the apparent angular restraint of the nonrotating portion of said bearings about axes generally perpendicular to said spin axis.

4,082,006

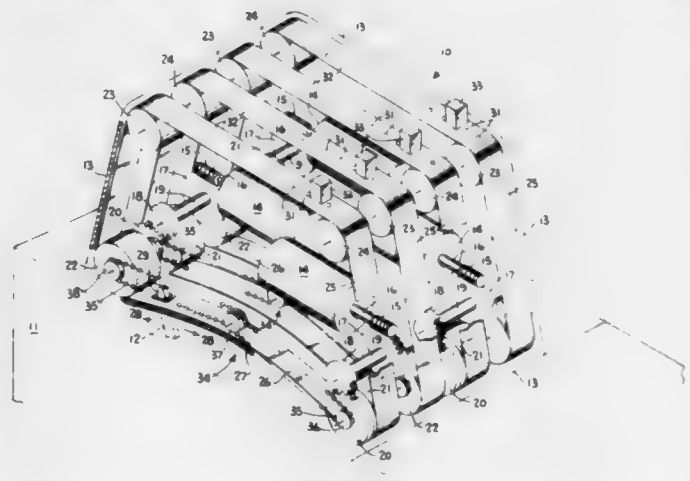
POSTAGE METER CONVERSION APPARATUS

Keith E. Schubert, Rowayton, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sep. 30, 1976, Ser. No. 728,302

Int. Cl.² F16H *27/02*

U.S. Cl. 74—89.2 **7 Claims**



1. A postage meter conversion apparatus for converting a lever settable mechanical postage meter into an electrically controlled postage meter, said postage meter having a number of banks, each bank having a lever movable in an arcuate path to set a postage value for said bank, the postage meter conversion apparatus comprising:

a drive motor for each postage meter bank; and a number of movably supported belt mechanisms each operatively connected to, and driven by, a respective driving motor, each of said belt mechanisms comprising an endless flexible belt and means for supporting a portion of each belt for movement in an arcuate path, said portion of each of said belts conforming to the arcuate path of a corresponding lever, each portion driving the corresponding lever of a meter bank to a postage value position.

4,082,007

CHAIN WITH GUIDE

Robert V. Strickland, 9021 Wedd, Overland Park, Kans. 66212

Filed Jun. 11, 1976, Ser. No. 695,183

Int. Cl.² F16H *7/18*

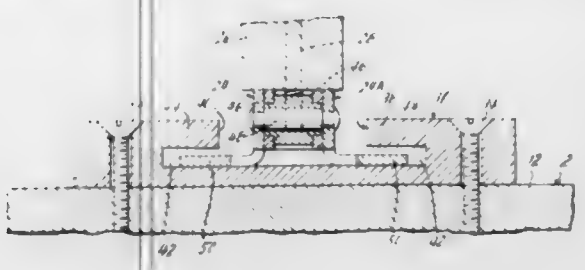
U.S. Cl. 74—240 **2 Claims**

1. In combination with an endless flexible sprocket chain trained about two or more sprocket wheels and driven linearly by said sprocket wheels, said chain having a normally straight reach between a pair of consecutive sprocket wheels to which is affixed a member extending laterally from said chain, a guiding device operable to insure that the extended end of said extending member may be accurately indexed to the linear position of said chain, said guiding device comprising:

a. a fixed, straight guide member extending along said

straight chain reach in parallel closely spaced relation thereto, the surface of said guide member confronting said chain being disposed transversely to the plane of the loop formed by said chain, whereby transverse deflection of said straight chain reach in the plane of the chain loop, toward said guide member, is prevented,

b. means interconnecting a section of said chain, including the point thereof to which said extending member is affixed, to said guide member, said interconnecting means being operable to permit longitudinal sliding movement of said chain relative to said guide member, but to prevent



movement of said chain reach transversely of itself in a direction away from said guide member, and also to prevent canting or cocking of the portion of the chain to which said extending member is affixed, both in the plane of said chain loop and also in a direction transverse to the plane of said chain loop, projecting to a substantial distance laterally from said straight chain reach, and

c. a second fixed guide member spaced substantially apart from said straight chain reach and having a slot formed therein parallel to said straight chain reach, said extending member projecting through and being disposed for longitudinal sliding movement in said slot.

4,082,008

POSITIONING MECHANISM FOR AUTOMOTIVE SEAT, WINDOW OR SIMILAR PART

Bernd Klüting, Radevormwald, Germany, assignor to Keiper KG, Remscheid-Hasten, Germany

Filed Sep. 29, 1976, Ser. No. 728,012
Claims priority, application Germany, Oct. 3, 1975, 2544174
Int. Cl.² G05G 5/06
U.S. Cl. 74—531 **7 Claims**



1. A positioning mechanism comprising:

a support;

a pinion rotatable on said support about a pinion axis and formed with two axially spaced arrays of gear teeth, the teeth of one of said arrays being angularly offset and staggered relative to the teeth of the other array; and

a lever pivotal on said support and formed with two axially spaced racks, one meshing with said one array and the other meshing with said other array.

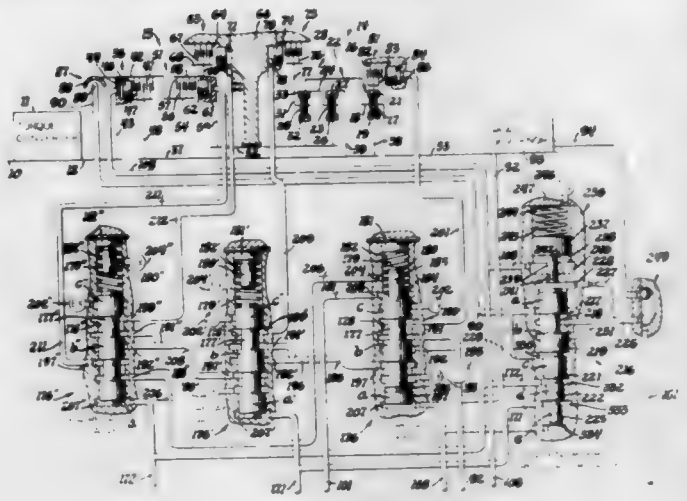
4,082,009

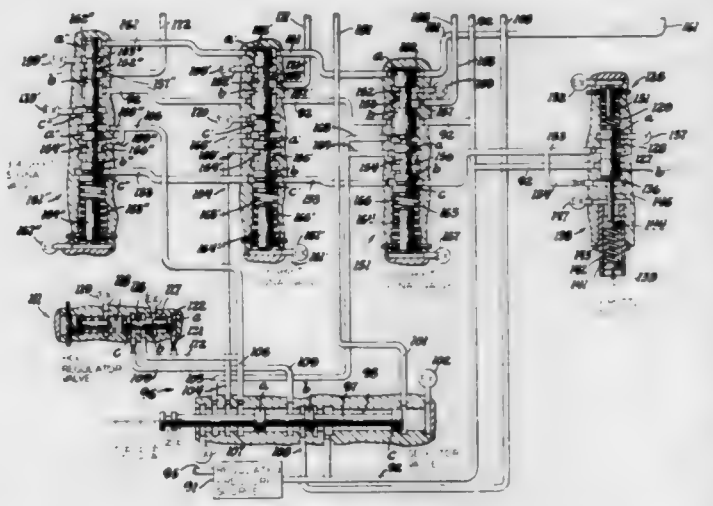
RANGE SHIFT CONTROL BY INPUT GOVERNOR

Carl A. Lentz, Mooresville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1976, Ser. No. 750,129
Int. Cl.² F16H 47/00
U.S. Cl. 74—731 **6 Claims**

1. In a transmission: an input; an output; a gear unit connecting said input and output having gear unit control means including a plurality of ratio establishing means selectively actuated to provide a low ratio drive and a high ratio drive; a source of regulated pressure fluid; an input governor connected to said input providing an input governor pressure proportional to input speed and increasing in said low ratio drive in a higher proportion to output speed than in said high ratio drive; shift valve means operatively connected to said source and said gear unit control means and having an actuator and operative to establish said low ratio drive, and in response to a higher governor pressure in said actuator to automatically shift to establish said high ratio drive; speed pressure control means operatively connected to said input governor and said





shift valve means operative when said shift valve means provides a drive and in response to input governor pressure to regulate modified input governor pressure at values in said low ratio drive proportionately reduced relative to input governor pressure to reduced values increasing in a reduced proportion to output speed to said higher governor pressure and in said high ratio drive to provide said input governor pressure in said high ratio drive up to a limit value and then modified input governor pressure regulated at values proportionately reduced in said reduced proportion and increased in a constant proportion to provide modified input governor pressure similarly varying with output speed in said low and high ratio drives.

4,082,010

DEVICE FOR ROTATIONAL TRANSMISSION OF MECHANICAL POWER DEPENDING ON AN ANGULAR SPEED SELECTOR WHICH FUNCTIONS AS A RESULT OF THE RESISTANCE WHICH IT MEETS

Pierre Gantier, 8 rue des Oiseaux, 37000 Tour, France

Continuation of Ser. No. 450,835, Mar. 13, 1974, abandoned. This application Feb. 5, 1976, Ser. No. 655,541
Int. Cl.² F16H 1/28
U.S. Cl. 74—800 **8 Claims**

1. A power transmission, for equilibrium of forces transmitted by precession of a gyroscope rotor, comprising, in combination, a rotatable drive guide shaft rotatable with the gyroscope rotor; a rotatable driven receiver shaft coaxial with said

drive guide shaft; said drive guide shaft and said driven receiver shaft having facing ends spaced axially from each other; a rotatable secondary shaft extending at an angle to the common axis of said drive guide shaft and said driven receiver shaft; a universal joint interconnecting the facing end of said drive guide shaft to a first end of said secondary shaft, and having a geometrical center; the axes of symmetry of said guide shaft, said driven receiver shaft and said secondary shaft intersecting at said geometrical center; a frusto-conical internal ring gear rotatable with said driven receiver shaft; a frusto-conical pinion rotatable with said secondary shaft and meshing with said internal ring gear, said pinion being positioned intermediate the ends of said secondary shaft; the apices of the frusto-conical surfaces of said internal ring gear in said pinion

intersecting said common axis at said geometrical center; means, including a support rotatable with said driven receiver shaft, defining an annular channel receiving and guiding the end of said secondary shaft opposite said first end for revolving of said secondary shaft about said common axis at a fixed constant angle to said common axis; and a rotationally symmetric inertia device coaxial with said secondary shaft adjacent said first end for rotating therewith to regulate the speed thereof; said frusto-conical pinion transmitting, to said inertia device, the sum of the product of the moments of inertia and the angular velocity of the masses rotating about the axis of symmetry of said secondary shaft and the product of the moment of inertia and the angular velocity of the masses rotating about said common axis.

4,082,011

ENGINE AND TRANSMISSION POWER TRAIN

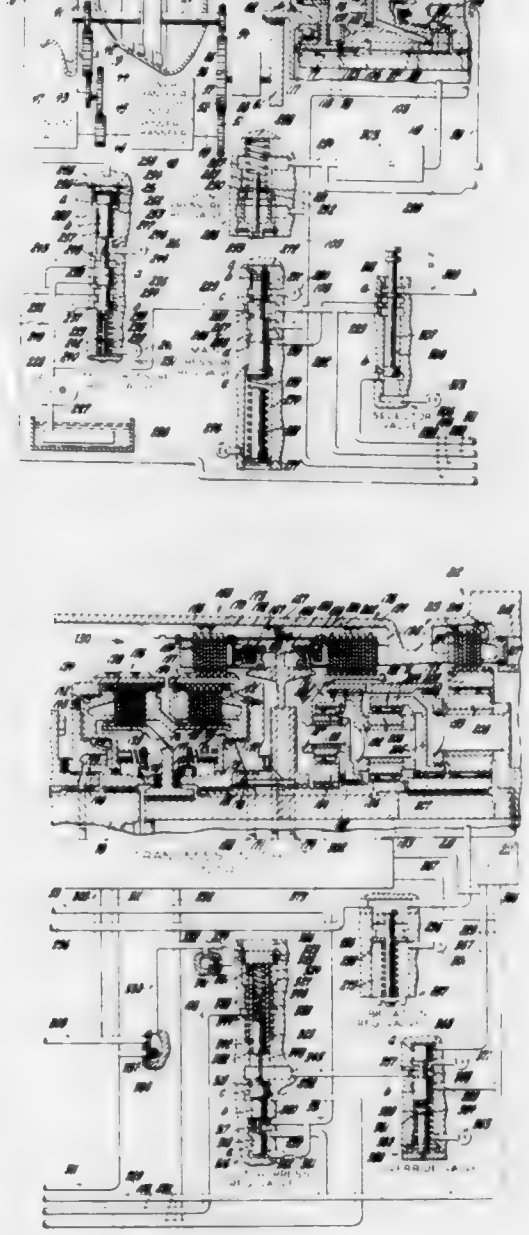
Ted M. McQuinn, Carmel, and Richard B. Anderson, Indianpolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 448,991, Mar. 7, 1974, Pat. No. 4,018,316. This application Dec. 17, 1976, Ser. No. 751,701

Int. Cl.² B60K *41/04*; F16H *39/00*

U.S. Cl. 74—862 **14 Claims**

1. In a transmission for use with an engine providing a net available output torque; fuel feed means movable from idle to full fuel feed including means providing a torque demand signal, a transmission having an input member and a load member, ratio gear means having ratio control means to selectively establish a starting drive ratio connected to drive said load means, a fluid coupling and a variable capacity slipping friction clutch connected in parallel between said input member and ratio gear means, said fluid coupling being operated at stall on engagement of the starting drive ratio and having a predetermined stall torque capacity to provide coupling torque equal to and increasing relative to the net available engine torque at a low functional idle speed for proper accessory drive and a starting drive to automatically regulate engine speed at said low idle speed at idle fuel feed and operative to provide a small gradual increase of torque at stall during fuel feed advance from idle in a low fuel feed range, clutch control means responsive to said torque demand signal to maintain said clutch substantially disengaged in said low fuel feed range and to gradually increase clutch torque capacity to maximum engine torque capacity to provide a slipping clutch drive gradually increasing the clutch torque to clutch lock up and to maximum torque capacity in a higher fuel feed range.



4,082,012

TRANSMISSION AND CONTROL WITH CENTRIFUGAL DUMP VALVE

Robert H. Schaefer, Westfield, and Ted M. McQuinn, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

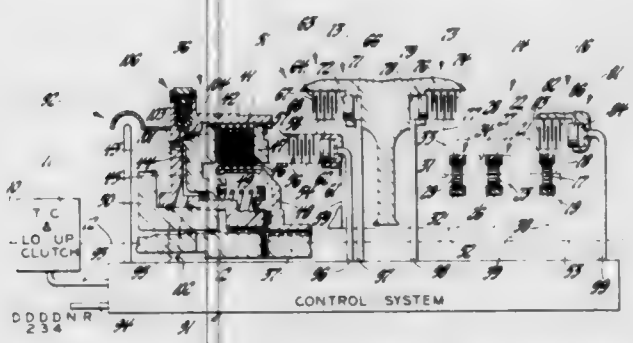
Filed Jan. 17, 1977, Ser. No. 760,226

Int. Cl.² B60K *41/04*

U.S. Cl. 74—864 **5 Claims**

1. In a transmission: a multiratio gear unit having an input rotating in an input drive rated speed range and an output drive higher speed range, an output and a plurality of drive devices including a forward drive device selectively operated to establish forward drives and reverses drive; a source of regulated fluid pressure; control means connected to said source and operatively connected to said drive devices operative in a forward drive position to control the supply of fluid from said source to said drive devices including said forward drive device to selectively establish said forward drives, operative in reverse drive position to control the supply of fluid from said

source to said drive devices to establish said reverse drive; and operative in neutral position to control the supply of fluid from said source to said drive devices to provide neutral dump valve means operatively connected to said forward drive device and having a valve element operative in one position to disengage said forward drive device and in another position to permit engagement of said forward drive device and having total biasing means biasing said valve element with a total bias force to said another position including first biasing means providing a first bias force decreasing with increasing input speed and second biasing means providing a second bias force increasing with increasing input speed, and said valve element being responsive to a centrifugal bias force providing a centrifugal bias force increasing with input speed to bias said valve element to said one position and operative in said foward drive position of said control means in response to said total bias force overcoming said centrifugal bias force to move said valve element to said another position to maintain establishment of any selected one of said forward drives throughout said input drive rated speed range and to move said valve element to said one position to disestablish any selected one of said forward drives at and above a predetermined output drive speed in said output drive higher speed range and operative in another position of said control means to disestablish said second bias force and to move said valve element to said one position in response to said centrifugal bias force overcoming said first bias force at a predetermined low input speed in said input drive rated speed range to flush said small residual amount of fluid through said dump valve means.



4,082,013

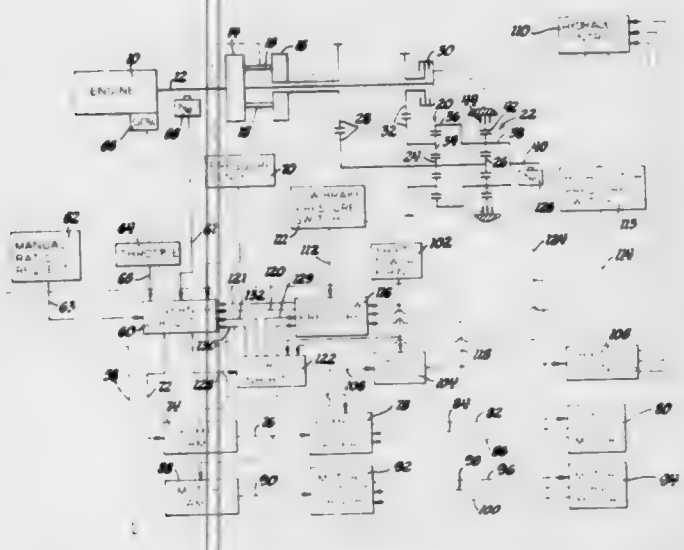
HYDROSTATIC TRANSMISSION CONTROL

Kenneth A. Dornfeld, Indianapolis; Jerry R. Marlow, Greenwood, and Robert K. Sanders, Lebanon, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 22, 1974, Ser. No. 526,379

Int. Cl.[2] **B60K** *41/18;* **F16H** *37/00;* **F16D** *39/00*

U.S. Cl. 74—866 **9 Claims**



1. A control for a variable ratio hydrostatic transmission wherein the transmission responds rapidly and directly to a control signal derived independently of transmission output to provide a transmission ratio corresponding to the magnitude of the control signal comprising,

means for providing a ratio request signal,

means for comparing the ratio request signal with the control signal to produce an error signal, and

means for integrating the error signal to produce the control signal whereby the control signal changes with time when an error signal is present to diminish the difference between the control signal and the ratio request signal.

2. A control for a variable ratio hydrostatic transmission wherein the transmission ratio responds to a control signal comprising,

means for providing a ratio request signal,

means for comparing the ratio request signal with the control signal to produce an error signal,

means for integrating the error signal to produce the control signal whereby the control signal changes with time when an error signal is present to diminish the difference between the control signal and the ratio request signal, and

means for limiting the maximum absolute value of the error signal whereby the rate of change of the control signal and hence the rate of change of the transmission ratio is limited to a maximum value to insure smooth ratio changes.

4,082,014

WHEELHEAD

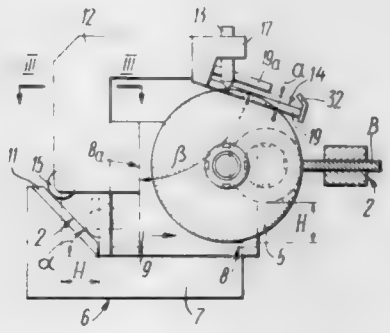
Vladimir Viktorovich Idel, Mukachevsky raion, selo Kolchino ulitsa Kirova, 11, Zakarpatskaya oblast, U.S.S.R.

Filed Apr. 6, 1977, Ser. No. 785,223

Claims priority, application U.S.S.R., Jul. 23, 1976, 2377403; Oct. 19, 1976, 2408301

Int. Cl.[2] **B23D** *63/12;* **B24B** *53/12*

U.S. Cl. 76—43 **9 Claims**



1. A wheelhead in a grinding machine for sharpening the teeth of band saws, comprising: a base; horizontal guideways made on said base; a support mounted in said guideways; a grinding wheel mounted on said support and serving for sharpening the teeth of a band saw; a flat portion on said base on the side thereof opposite to the saw-teeth sharpening area, said flat portion being inclined at 45° to the horizontal; a holder movably mounted on said support and bearing on said flat portion which serves as a guide for displacement of said holder; a dressing tool to dress said grinding wheel, said dressing tool being mounted in said holder; a device for holding the saw in the course of grinding off its weld, said device being mounted in said holder in the area of location of the dressing tool and having at least three supporting elements, of which two lower supporting elements are spaced apart at a distance sufficient for the passage of said grinding wheel therebetween, and the third supporting element is disposed in close proximity to said grinding wheel above said lower supporting elements, parallel thereto and at a distance therefrom substantially equal to the saw thickness, all said supporting elements being arranged at an angle equal or close to 90° to the vertical so that the saw blade held therebetween in the course of grinding off its weld is disposed at a tangent to said grinding wheel.

4,082,015

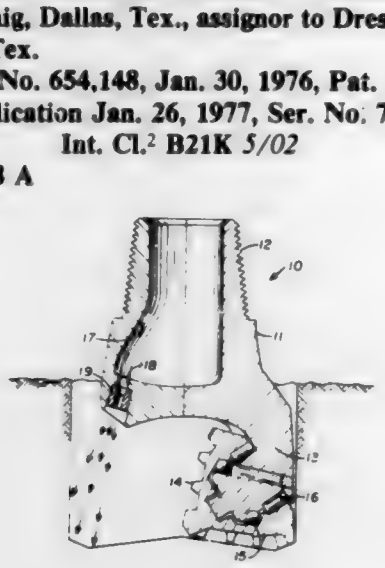
REMOVABLE DRILL BIT NOZZLE

Paul George Craig, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 654,148, Jan. 30, 1976, Pat. No. 4,019,593. This application Jan. 26, 1977, Ser. No. 762,687

Int. Cl.[2] B21K *5/02*

U.S. Cl. 76—108 A **1 Claim**



1. A method of securing and replacing a nozzle in a rotary rock bit, said rock bit having a body with cutter means mounted thereon, a fluid passage for discharging drilling fluid downwardly from the body, and a nozzle of erosion resistant material adapted to fit within said fluid passage for discharging drilling fluid, comprising the steps of:

providing a first annular groove extending around said nozzle;

providing a second annular groove in said body located in said fluid passage adapted to register with the first annular groove extending around said nozzle;

positioning said nozzle in said fluid passage with said first annular groove registering with said second annular groove, said first annular groove and said second annular groove substantially lying in a common plane;

providing a first passageway in said body which extends from the external surface of said body into register with said first and second annular grooves;

providing a second passageway in said body which extends from the external surface of said body into register with said first and second annular grooves, said second passageway being positioned at an angle to said common plane;

positioning a retainer member in one of said first and second passageways and in said first and second annular grooves until it bridges between the first and second annular grooves to form a locking structure which prevents movement of the nozzle within said fluid passage;

forcing a removal element into the other of said first and second passageways and into said first and second annular grooves until it comes into contact with said retainer member; and

driving said retainer member from said first and second annular grooves and allowing said nozzle to be removed from said fluid passage.

4,082,016

LID REMOVER

Joseph S. Vonusa, 47 Somersett Dr., Mystic, Conn. 06355

Filed Apr. 11, 1977, Ser. No. 786,450

Int. Cl.[2] B67B *7/22*

U.S. Cl. 81—3.43 **3 Claims**

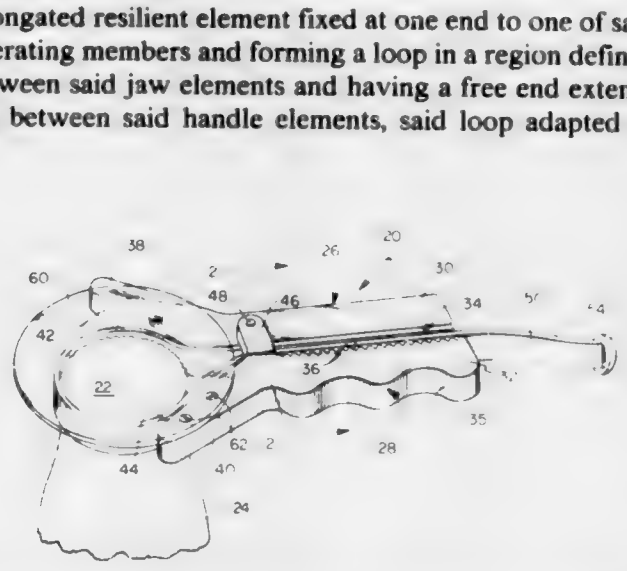
1. Apparatus for removing from a container a lid having an axis of rotation comprising:

first and second operating members each including juxtaposed handle elements at one end thereof having first opposed surfaces and associated jaw elements at the other end thereof having second opposed surfaces generally diverging in a direction away from said handle elements;

pivot means joining said first and second operating members intermediate their ends permitting relative rotation thereof between an open position at which said handle elements are spaced apart and a closed position at which said handle elements are in a substantially contiguous relationship;

a substantially flat rigid plate fixed to one of said operating members and lying in a plane parallel to and proximate with a plane containing said jaw elements, said plate being engageable with an upper surface of the lid to be removed for positioning said jaw elements so that they lie in the plane of the lid; and

an elongated resilient element fixed at one end to one of said operating members and forming a loop in a region defined between said jaw elements and having a free end extending between said handle elements, said loop adapted to



encircle the outer peripheral surface of the lid, such that as the free end of said resilient element is drawn between said handle elements in a direction away from the container lid, the loop engages the outer peripheral surface of the container lid and draws the lid firmly against said resilient element proximate to said opposed surfaces whereby relative rotary displacement of said handle elements from said open position to said closed position draws said first opposed surfaces into engagement with said element and subsequent rotation of said handle elements as a unit in a direction about the axis of rotation of the container lid results in loosening and removal of the lid from the container.

4,082,017

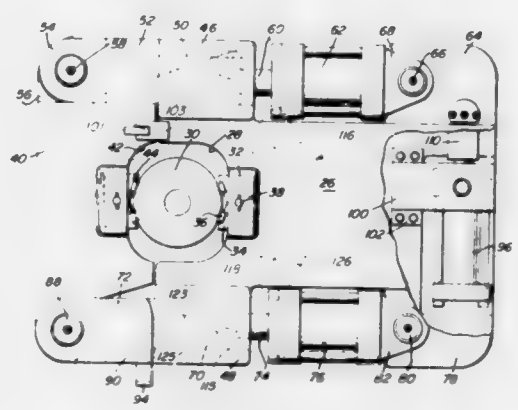
POWER OPERATED DRILL PIPE TONGS

Emery Eckel, Odessa, Tex., assignor to Eckel Manufacturing Co., Odessa, Tex.

Continuation-in-part of Ser. No. 539,078, Jan. 7, 1975, abandoned. This application Sep. 30, 1976, Ser. No. 728,062

Int. Cl.[2] B25B *17/00*

U.S. Cl. 81—57.16 **36 Claims**



1. Power operated tongs for making up or breaking apart pipe joints comprising an upper tong and a lower tong, means swivelly connecting the upper and lower tongs for relative angular movement, each of said tongs including a pair of opposed gripping jaws disposed in facing relation for gripping engagement with an upper and lower drill pipe joint, respectively, and power operated means interconnecting the upper

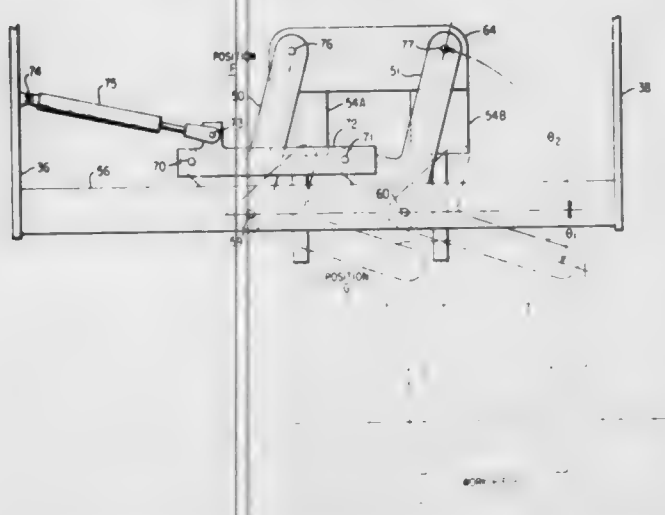
and lower tongs for swivelling the tongs in relation to each other over a limited displacement angle whereby the drill pipe joints may be made up or broken apart, one of the gripping jaws on each of the tongs being supported on a movable door, the opposed gripping jaw on each tong being mounted on a tong body, first means interconnecting the tong body and each end of the door to simultaneously move both ends of the door toward and away from the tong body in parallel relation to the tong body wherein each end of the door remains equidistant from the tong body for enlarging the distance between the jaws to enable the pipe joints to be moved through the tongs without disassembly of the tongs from the pipe, and second means for opening and pivoting said movable door to an open position to enable the pipe joints to be moved through the open door and placed into position between the gripping jaws or removed therefrom.

4,082,018

MACHINE TOOL AUTOMATION

John X. Russell, Troy, and Kenneth T. Liske, Sterling Heights, both of Mich., assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Mar. 25, 1976, Ser. No. 670,804
Int. Cl.[2] B23B *13/00*; B23Q *5/22*
U.S. Cl. 82—2.5 **13 Claims**



1. In machine tool automation, a put-and-take module for putting a workpiece into and taking a workpiece from the machining position of the machine tool, comprising in combination, a linkage system defining in outline a parallelogram having a pair of spaced apart levers pivotally mounted on a fixed member and a cross member pivotally supported by and maintaining said levers in parallel relationship for supporting a workpiece parallel to the machining position, and a servomotor connected to said linkage system for rotating said levers in one direction from a neutral position wherein said levers are substantially in line with said fixed member through an angle to an extended position wherein a workpiece supported by said cross member is in the machining position and in reverse direction to return said levers to the neutral position.

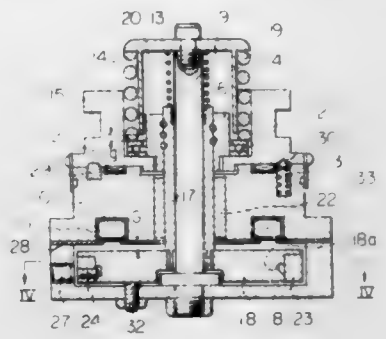
4,082,019

TOOL-INDEXING APPARATUS FOR MACHINE TOOL

Hiromichi Shichida; Kenichi Toyoda, and Jiro Nakano, all of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jan. 19, 1977, Ser. No. 760,713
Claims priority, application Japan, Jan. 23, 1976, 51-5826
Int. Cl.[2] B23B *29/32*
U.S. Cl. 82—36 A **5 Claims**

1. A tool-indexing apparatus for a machine tool comprising:
a first means being moved along a first direction by means of a driving source;
a tool-holding means being screw-engaged to said first means, and;
a stop means for restricting the movement of said tool-holding means along the first direction; wherein at the time when said movement of said first means takes place along said first direction, said tool-holding means together with said first means are moved along said first direction until said movement of said tool-holding means along said first direction is restricted by means of said stop means, and



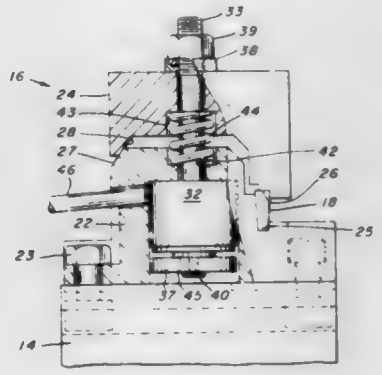
wherein after the time when said movement of said tool-holding means along said first direction is restricted by means of said stop means, said tool-holding means is forced to turn with said the movement of said first means in said first direction.

4,082,020

TOOL-CLAMPING DEVICE AND METHOD OF SETTING UP A PIPE CUTOFF MACHINE

Merle R. Stein, Duquesne, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1977, Ser. No. 761,180
Int. Cl.[2] B23B *29/00, 3/00, 1/00, 3/04*
U.S. Cl. 82—37 **7 Claims**



1. A tool-clamping device comprising a base, a cooperating cap, means attaching said cap to said base with said cap overlying said base, one of said base and cap having a tool-receiving notch and the other having cooperating surfaces for abutting two surfaces of a parting tool received in said notch, spring means urging said cap away from said base to a tool-releasing position, and hydraulic means for pulling said cap toward said base to a tool-clamping position against the action of said spring means, said base and said cap having slidably abutting inclined thrust surfaces to provide a wedge action for clamping said tool.

4,082,021

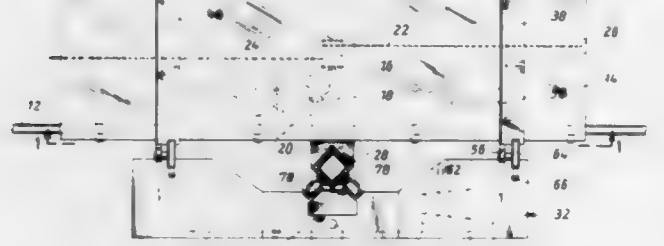
HORIZONTAL SPLITTING APPARATUS

Rolf Jung, Waiblingen, Germany, assignor to Krauss u. Reichert, Spezialmaschinenfabrik GmbH & Co., Fellbach, Germany

Filed Sep. 28, 1976, Ser. No. 727,439
Claims priority, application Germany, Oct. 2, 1975, 2543990
Int. Cl.[2] B26D *1/46, 4/00*
U.S. Cl. 83—4 **12 Claims**

1. Horizontal splitting apparatus comprising a work piece support, two cutting flights each having a cutting means and both being provided by at least one cutting member forming an

endless loop, and drive means for displacing the work piece support and the cutting flights to and fro relative to one another, said cutting flights extending over the work piece support in a substantially horizontal and transverse direction in



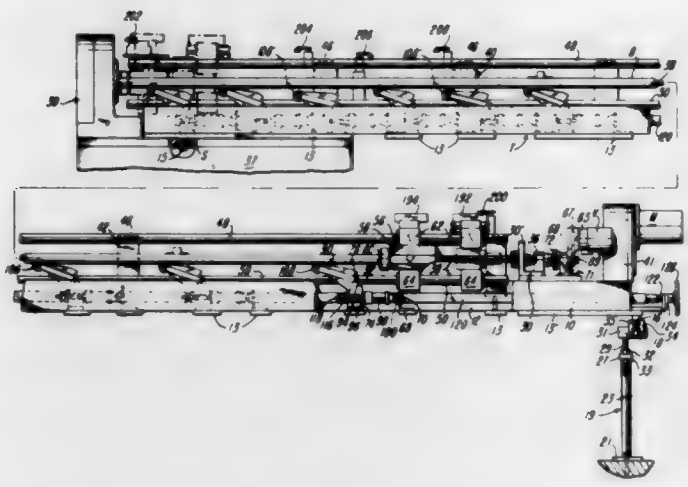
relation to the direction of displacement, said cutting flights being spaced from one another in the direction of displacement and having their cutting means facing in the same direction, and means for vertically displacing said cutting flights relative to said work piece support.

4,082,022

TUBE CUTTING APPARATUS

Charles F. Horn; Arthur L. Lerch; Raymond J. Turckes, all of Dayton, and Ronald P. Nagel, Waynesville, all of Ohio, assignors to The Vulcan Tool Company, Dayton, Ohio

Filed Mar. 17, 1975, Ser. No. 558,730
Int. Cl.[2] B26D *7/06*
U.S. Cl. 83—82 **23 Claims**



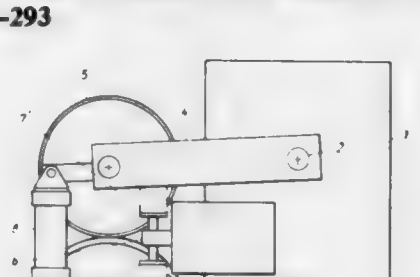
1. Tube cutting apparatus comprising a shearing head, a table-like structure mounting means for engaging, supporting and for moving a tube through a cutting station defined at said shearing head, said shearing head including means for guiding and for cutting said tube at said cutting station, said moving means including an energizable motor for advancing said engaging means with respect to said shearing head, means for energizing and deenergizing said motor to impart a pulsing operation thereto in which said engaging means is advanced in pulse-like increments of motion, a signal device operatively connected to the drive shaft of said motor to move therewith, and sensing means associated with said signal device and responding to motion thereof to preclude an operation of said cutting means while said signal device is in motion.

4,082,023

CABLE CUTTER

Lars-Olov Hertsius, Bromma, and Anders Arneborn, Taby, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed May 20, 1977, Ser. No. 798,766
Claims priority, application Sweden, Jun. 22, 1976, 7607166
Int. Cl.[2] B23D *25/12*; B26D *5/24*
U.S. Cl. 83—293 **1 Claim**



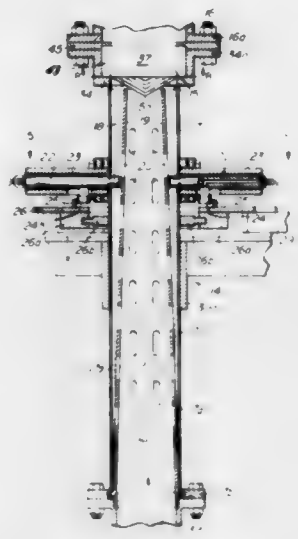
1. An arrangement to measure and cut a cable or the like in chosen lengths when rerolling it for delivery, said arrangement comprising rotatable cutting tools, a measuring wheel and a grip-and-pulling-wheel which is pressed against the measuring wheel, characterized in that the grip-and-pulling-wheel of the cable is connected to one of the rotatable cutting tools by means of a clutch mechanism being arranged to be electromagnetically set either to let the grip-and-pulling-wheel pull the cable and to prevent the motion of the cable in the backward direction or to allow the motion of the cable in the forward as well as the backward direction.

4,082,024

POTATO STRIP CUTTER

Joseph L. Hodges, and Glen R. Green, both of Ontario, Oreg., assignors to Ore-Ida Foods, Inc., Boise, Id.

Filed Nov. 29, 1976, Ser. No. 745,537
Int. Cl.[2] B26D *7/06, 3/26*
U.S. Cl. 83—402 **13 Claims**



1. In apparatus for cutting items such as potatoes into strips, which apparatus comprises singulating conduit means followed by aligning conduit means, followed by knife conduit means, means for hydraulically feeding items to be cut into said singulating conduit means, and a strip-cutting knife device in said knife conduit means, the combination therewith of aligning mechanism in said aligning conduit means for aligning the longitudinal axes, of any of said items which are elongate, with the hydraulic flow path through said knife conduit means; said aligning mechanism comprising a series of elongate walls internally of said aligning conduit means and peripheral to the flow

passage therethrough, each of said walls being hingedly connected to the conduit means at the upstream end of the wall but otherwise free along its length to move toward and away from the longitudinal axis of the conduit; means normally maintaining said walls at respective extreme positions of inward swing to define a flow passage of minimum cross-sectional area through the aligning conduit means; means for simultaneously and equivalently moving all of said walls outwardly to provide a flow passage of increased cross-sectional area through the aligning conduit means when an item, which is being hydraulically carried through the aligning conduit means, impacts against one or more of said walls; and passages in said walls permitting flow of hydraulic fluid to substantially equalize hydraulic pressure against said walls so they are not forced to increased cross-sectional area under hydraulic flow pressure.

8. In apparatus for cutting items such as potatoes into strips, which apparatus comprises singulating conduit means followed by aligning conduit means, followed by knife conduit means, means for hydraulically feeding items to be cut into said singulating conduit means, a strip-cutting knife device in said knife conduit means, and aligning mechanism in said aligning conduit means for aligning the longitudinal axes, of any of said items which are elongate, with the hydraulic flow path through said knife conduit means, said strip-cutting knife device being of pyramidal formation, with its apex directed toward the oncoming stream of hydraulically fed items during operation of the apparatus, and comprising mutually intersecting series of knife blades spaced from one another to provide a multiplicity of individual, side-by-side, box cutters throughout the cross-sectional area of the flow passage through the knife conduit means, said blades being nestingly interengaged and sharpened along their cutting edges such that each box cutter is fronted by a pair of slicer knife edges disposed at mutually different levels, stepwise, and is backed transversely thereof by a pair of stripper knife edges also disposed at mutually different levels, stepwise, the advance knife edge of each pair being beveled along its margin interiorly of the box, and the other knife edge of each pair being unbeveled, the beveled portion of the former knife edge being substantially entirely in advance of the latter knife edge, whereby advance cuts are made and spread in the instance of each pair for each box cutter before subsequent cuts are made by such pair.

4,082,025

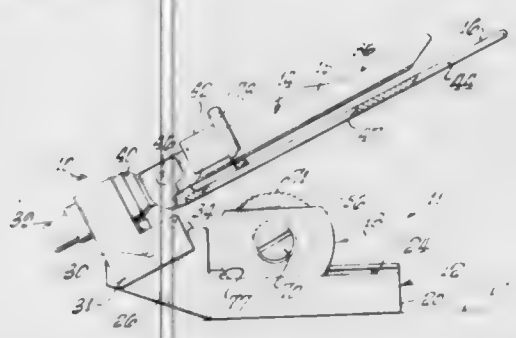
RING CUTTING TOOL AND ACCESSORY

Helmut Reinbacher, 1350 Crescent Heights St., Los Angeles, Calif. 90046

Filed Mar. 31, 1976, Ser. No. 672,253

Int. Cl.[2] B26D *7/02, 7/06*

U.S. Cl. 83—411 R **1 Claim**



1. In a tool for cutting a ring transversely of the plane thereof, the combination of:

(a) saw support means;

(b) a circular saw rotatably mounted on said support means;

(c) jig means pivotally mounted on said support means for holding the ring and for moving the ring into cutting engagement with said circular saw with the plane of the ring perpendicular to the plane of said circular saw;

(d) said jig means including pivotally interconnected first and second jaw elements, said first jaw element being of a size to have the ring slipped thereover, and said second jaw element being pivotable toward said first jaw element to clamp the ring between said jaw elements;

(e) said second jaw element having a slot therethrough in the plane of said circular saw to permit said circular saw to pass through said second jaw element into cutting engagement with said ring; and

(f) said first jaw element having a groove therein in the plane of said circular saw to receive the periphery of said circular saw therein so that said circular saw can cut completely through the ring.

4,082,026

PORTABLE PRESS

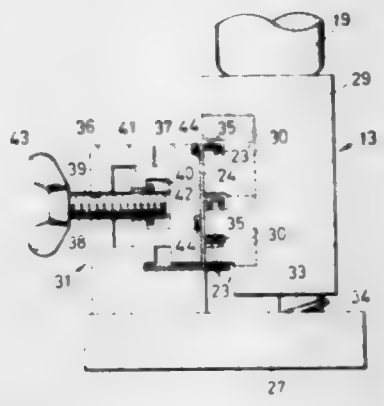
Tatsuyoshi Miyazaki, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 10, 1976, Ser. No. 684,886

Claims priority, application Japan, May 12, 1975, 50-63522[U]

Int. Cl.[2] B26D *7/02*

U.S. Cl. 83—453 **8 Claims**



1. Notching apparatus for use between the bed and ram of a press, comprising:

(a) a base adapted to be supported on the press bed;

(b) a plurality of dies on said base, disposed one above the other;

(c) a punch holder supported on said base for sliding movement and adapted at one end to be driven by the ram;

(d) a plurality of punches on said holder disposed one above the other and each having cutting edge means for cooperating with the die in response to driven movement by the ram, there being means defining a recess beneath each of said cutting edge means receptive of the portion of the workpiece which is to be removed; and

(e) a workpiece presser adjustably carried on said base at one side of said punch holder, and adapted to engage the workpiece for biasing it in a direction transverse to that of said sliding punch holder movement for urging the workpiece to a fixed position of engagement against a lateral side of at least one of said punches.

4,082,027

ELECTRONICS MUSICAL INSTRUMENT

Teruo Hiyoshi; Akira Nakada; Shigeru Yamada, all of Hamamatsu; Kiyoshi Ichikawa, Hamakita, and Shigeki Ishii, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 20, 1976, Ser. No. 678,709

Claims priority, application Japan, Apr. 23, 1975, 50-49525; Apr. 25, 1975, 50-50559; Apr. 26, 1975, 50-51247

Int. Cl.[2] G10H *1/00*

U.S. Cl. 84—1.01 **16 Claims**

9. An electronic musical instrument comprising:

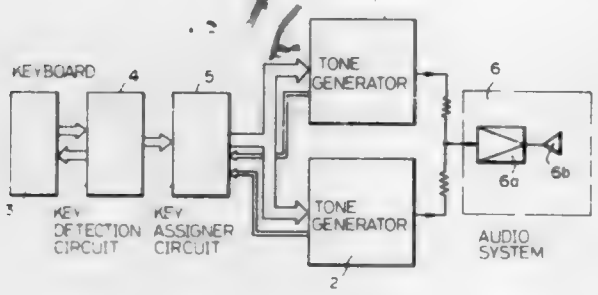
keys;

key identification information generation means responsive to said keys for generating key identification and information; and

a plurality of musical tone generation systems producing

tone signals in a different way from each other according to the same key identification information from said key identification information generation means, wherein one of said tone generation systems includes:

a Fourier synthesis tone generator, responsive to said key identification information, for producing tone signals by combining the sampled amplitudes of individual harmonic constituents each weighted in relative amplitude by a harmonic coefficient for that constituent, and wherein another of said tone generation systems includes:



a frequency attenuation tone generator having a first means for repetitively producing by consecutively sampled amplitudes a waveshape having abundant harmonics, and controllable filter means for selectively attenuating from said abundant harmonic waveshape the frequency components within a certain frequency band, said instrument further comprising:

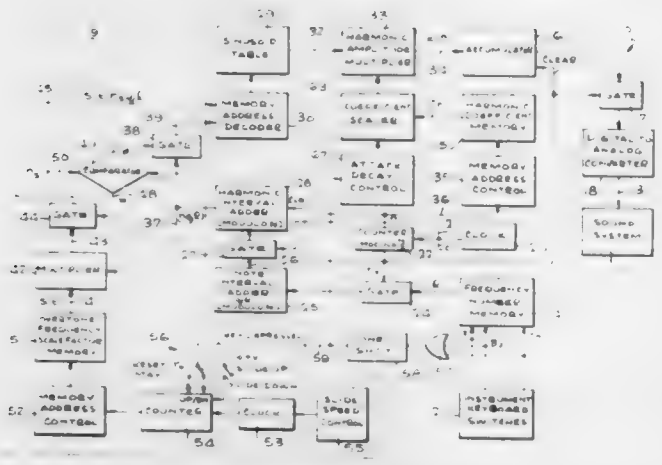
means for providing both said harmonic constituent sampled amplitudes and said abundant harmonic waveshape sampled amplitudes at a common rate established by said key identification information so tht both tone generators produce the same note but with different tonal qualities.

4,082,028

SLIDING OVERTONE GENERATION IN A COMPUTOR ORGAN

Ralph Deutsch, Sherman Oaks, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 16, 1976, Ser. No. 677,705
Int. Cl.[2] G10H *1/02, 5/00*
U.S. Cl. 84—1.24 **20 Claims**



1. In a musical instrument of the type having a tone generator wherein in the amplitudes of a waveshape are computed for successive waveshape sample points at certain regular time intervals from stored harmonic coefficient values, said tone generator having calculator means for individually calculating, for reach computed amplitude, a set of W constituent Fourier components of said waveshape, said calculator means including a multiplier for multiplying a trigonometric function of the waveshape sample point by a harmonic coefficient value which establishes the relative amplitude of the Fourier component being calculated, order signal providing means for providing a signal indicating the order n of the Fourier component currently being calculated, where $n=1, 2, \ldots, W$ and where nR corresponds to the nominal frequency of the nth order Fourier component, and where R is a frequency number which establishes the fundamental frequency of the musical note being produced, accumulator means, connected to said calculator means, for combining said calculated components to obtain the waveshape amplitude at each sample point, and converter means for converting said computed waveshape amplitudes for successive sample points to musical sounds as said computations are carried out, the improvement for providing a sliding overtone effect, comprising:

first means, responsive to said Fourier component order indicating signal from said providing means, for providing a sliding overtone enable signal when a certain order Fourier component currently is being calculated, and

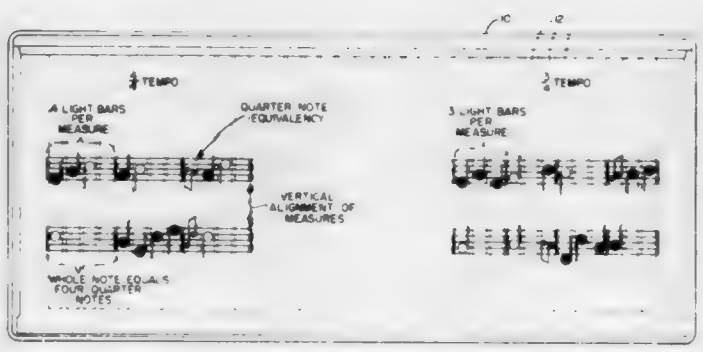
second means, responsive to occurrence of said sliding overtone enable signal and connected to said calculator means, for modifying the argument of the trigonometric function for said certain order Fourier component as a function of time, thereby causing the effective frequency of said certain order Fourier component to vary so as to produce a sliding overtone effect.

4,082,029

OPTICAL METRONOMES

David Orville Rumer, Jr., Rockford; Donald James Findlay, Wheeling; Arthur E. Neumann, Winnetka, all of Ill., and Juan M. Del Castillo, Risco No. 119, Mexico City, Mexico (20), assignors to Juan M. Del Castillo, Mexico City, Mexico

Filed Sep. 10, 1976, Ser. No. 722,283
Int. Cl.[2] G04F *5/02;* **G09B** *15/02*
U.S. Cl. 84—484 **9 Claims**



1. An optical metronome for designating visually the note of music to be played comprising

display panel means receiving a tempo or count pulse to sequentially illuminate the notes to be played in relation to the timing designated for the musical notation,

a sheet of music with the musical notation thereon located in front of said display panel means for sequential illumination by said display panel means,

said display panel means including

a plurality of vertical bars placed side by side forming a series of vertical columns in said display panel means

light sources associated with each of said vertical bars located at an end of said bars,

means to light each of said light sources in sequence in accordance with said tempo or count pulse received by said display panel means.

4,082,030

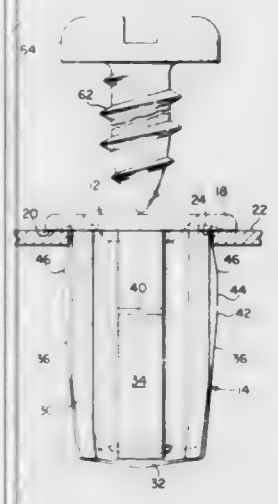
PLASTIC SCREW GROMMET

Lloyd A. Erickson, Park Ridge, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Mar. 25, 1977, Ser. No. 781,075
Int. Cl.[2] F16B *13/04*
U.S. Cl. 85—80 **8 Claims**

1. A one-piece plastic screw grommet for acceptance of a screw and adapted for use in a polygonal apertured panel, said grommet including an enlarged apertured head adapted to overlie one side of said panel and cover said aperture and a

depending shank complimentary in cross section to said panel aperture, said shank including a plurality of substantially rigid posts extending axially from said head in each corner of said shank and so positioned as to be located in each corner of the polygonal aperture, an end element interconnecting the free ends of said posts and spaced from said head to form a closed free entering end on said shank, a plurality of polygonal legs extending axially from and each connected at opposite ends to said head and said end element, each leg having an axially extending transversely concave inner surface spaced from the axis of said shank a predetermined distance and each said leg positioned medially between an adjacent pair of posts, said concave inner surfaces of said legs forming the bore of said shank and normally lying substantially on the pitch diameter of said screw and coaxial with said head aperture, each leg having panel engaging means on its outer surface and a pair of side surfaces interconnecting said outer surface and the concave inner surface, a spring-like thin web-like member extending integrally from each side surface of said legs adjacent to its



inner concave surface and connected at the opposite end to each adjacent post, said thin web-like members and said legs extending continuously from said head to said end element which covers the entire free end of said shank, each pair of adjacent spring-like elements being spaced from each other as they extend from adjacent legs to a common one of said posts to thereby form a plurality of radially disposed slots extending between said bore and said corner posts, said legs, said spring-like elements and said posts forming a closed periphery for said shank, each side of said shank further including axially extending grooves defined by the side surfaces of said legs and their adjacent connected web-like members extending to said corner posts, said posts and the exterior surface of the legs opposite the bore surface defining the external polygonal configuration of said grommet which is complementary to said polygonal aperture, whereby said legs are adapted to flex radially inwardly against said spring-like elements during insertion into said polygonal aperture and flex outwardly upon insertion of said screw in said bore.

4,082,031

GEAR HOBBING MACHINES

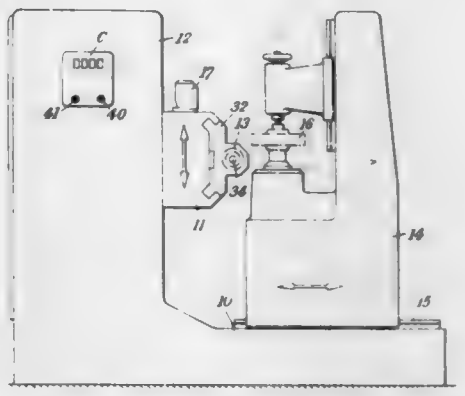
Brian Hodgson, Rowlands Gill; Robert Fairnington, Wylam; Malcolm Thorneycroft, Whitley Bay, and Ronald Malcolm Grant, Chester le Street, all of England, assignors to Charles Churchill Limited, Coventry, England

Filed Jul. 7, 1976, Ser. No. 703,303

Int. Cl.[2] B23F *5/22*

U.S. Cl. 90—4 **4 Claims**

1. In a gear hobbing machine, the combination of a support, a rotatable hob, a slide mounting the hob for axial shifting on the support, a stepping motor operatively connected to the slide, a pulse source comprising a squaring circuit for deriving square pulses from the power supply and a frequency divider connected to the output of the squaring circuit, a relay energizable at the conclusion of a hobbing cycle and operative, when energized, to apply pulses from said frequency divider to the motor and thereby to cause the motor to impart a predetermined axial movement to the slide in response to each pulse, a



subtractive counter for counting the pulses applied to the motor and a connection between the counter and the relay and operative to de-energize the relay, and thereby stop the motor, when the count in the counter is reduced to zero.

4,082,032

CONTROL OF HYDRAULICALLY POWERED EQUIPMENT

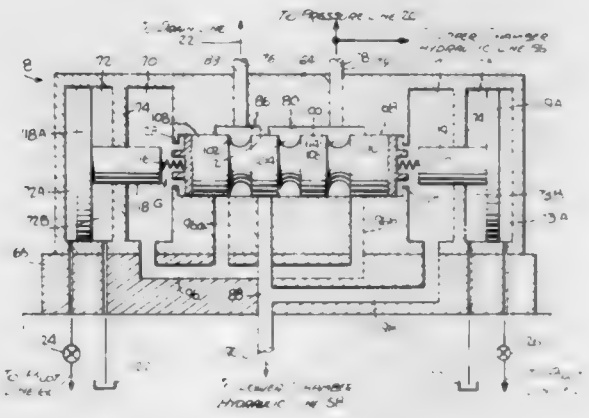
William J. Swenson, Houston, Tex., assignor to Raymond International, Inc., Houston, Tex.

Division of Ser. No. 523,502, Nov. 13, 1974, Pat. No. 4,020,744.

This application Oct. 13, 1976, Ser. No. 731,933

Int. Cl.[2] F01B *15/00, 7/18;* **F01L** *25/06*

U.S. Cl. 91—216 B **7 Claims**



1. A hydraulically powered hammer with adjustable delay hydraulic switching comprising a ram; means guiding said ram for reciprocal movement along a given path and against an anvil; hydraulic piston and cylinder means connected to move said ram; a hydraulic switching valve connected to control operation of said piston and cylinder means and including a housing, a valve spool mounted for reciprocal movement along a bore within said housing, said housing being formed with passageways for a fluid which follows different paths for different switched positions of said valve spool; said valve including feedback means to hold the spool in each switched position until an actuation force is applied thereto; valve actuation means comprising pilot fluid supply means for initiating a flow of pilot fluid from said cylinder to said valve upon the passage of said ram past a predetemined location along said path; said valve further including fluid accumulation means connected to receive said flow of pilot fluid through a pilot pressure line, said accumulation means including at least one fluid accumulation chamber located at one end of said valve spool, a piston in said chamber for movement in the direction of said spool and spool contact means extending from said piston toward said one end of said spool for applying an actuating force to said spool in response to the accumulation of a predetermined volume of fluid in said accumulation chamber, said contact means having a length such that a finite gap exists

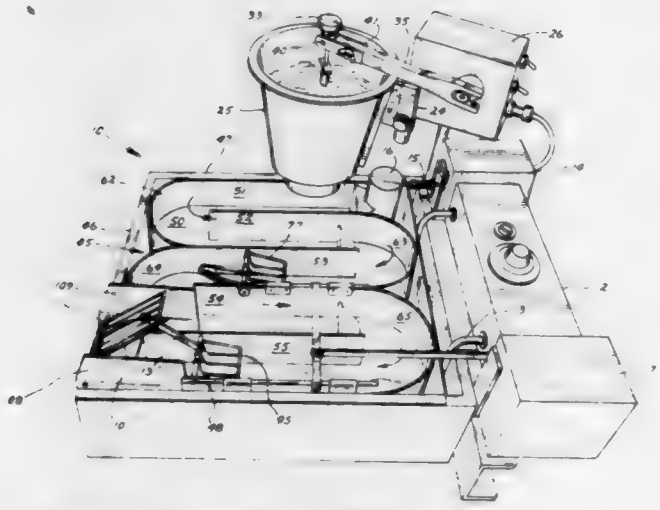
between said contact means and said spool when said piston is furthest away from said spool and the spool is in its extreme position toward said piston and means for adjusting the duration between said initiation of pilot fluid flow and said accumulation of a predetermined volume of fluid.

4,082,033

AUTOMATIC DOUGHNUT MAKING MACHINE

Amos M. Fester, 1821 University Ave., St. Paul, Minn. 55101

Filed Oct. 4, 1976, Ser. No. 729,089
Int. Cl.[2] A47J *37/12*
U.S. Cl. 99—406 **9 Claims**



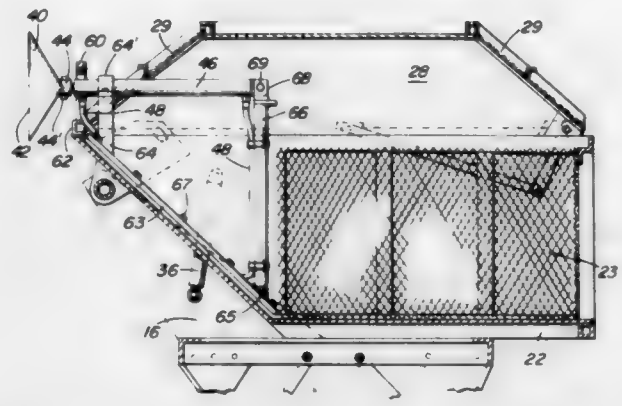
1. A doughnut making machine comprising:
(A) a vessel adapted to contain a liquid cooking medium,
(B) heating means disposed in the bottom of said vessel to heat the cooking medium,
(C) a removable guide channel insert supported within the vessel and having a horizontal bottom wall spaced above the heating means, said channel insert comprising:
(1) a plurality of elongated parallel spaced apart vertical walls defining a plurality of parallel channel segments,
(2) a plurality of arcuate vertical walls interconnecting the opposite ends of alternate parallel vertical walls and defining, with the parallel vertical walls, a serpentine flow path,
(3) a plurality of holes in said bottom wall to facilitate submersion of the insert in liquid cooking medium in said vessel,
(4) a pivoted flap closure covering each of said holes to provide a one way valve to retain said liquid medium in said submersed insert, and
(5) a propulsion pump at the upstream end of the first of said channel segments,
(D) dough expelling means movably mounted above the vessel over the upstream end of the first of the channel segments immediately downstream from said pump,
(E) power means to drive said dough expelling means,
(F) an open turn-over means pivotally mounted between two of said vertical channel walls at the approximate midpoint of said serpentine flow path,
(G) hold-back means operatively connected to said turn-over means to hold back partially cooked doughnuts when the turn-over means is in operation,
(H) an open doughnut discharge means pivotally mounted between two of said vertical channel walls adjacent the downstream end of said serpentine flow path,
(I) hold-back means operatively connected to said discharge means to hold back cooked doughnuts when the discharge means is in operation,
(J) pivotally mounted doughnut ejector means operatively connected to the hold back means of said discharge means to receive cooked doughnuts therefrom and eject them from the vessel, and
(K) power means for operating said turn-over means and discharge means in unison.

4,082,034

COTTON PRESS

Luther R. Wright, Rte. 1, Roscoe, Tex. 79556

Filed Jan. 3, 1977, Ser. No. 758,695
Int. Cl.[2] B30B *5/00*
U.S. Cl. 100—240 **8 Claims**



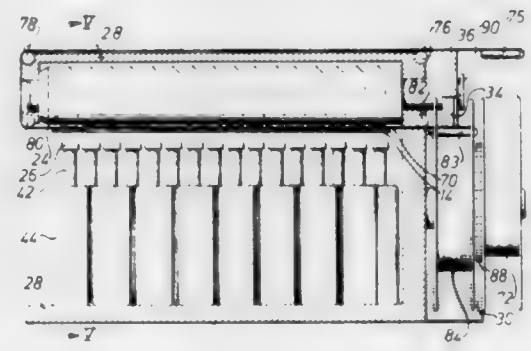
1. An attachment for the dumpable storage box of cotton picker apparaatus comprising; a main support plate, brackets mounted on opposite sides of said main support plate at an angle of approximately 45° thereto, at least one power ram structure attached to the brackets so the operating action thereof will be in a plane approximately 45° from the plane of the main support plate, and a flat surface member suitable for contacting loose cotton attached to the power ram structure for operation thereby, and means for attachment of the flat surface member to the power ram structure which means being a pivotal connection.

4,082,035

HIGH SPEED PRINTER HAVING SEGMENTED DRUM

Gosta Roland Englund, Stockholm, Sweden, assignor to Svenska Dataregister AB, Sweden

Continuation of Ser. No. 593,153, Jul. 3, 1975, abandoned, which is a continuation of Ser. No. 406,090, Oct. 12, 1973, abandoned.
This application Mar. 18, 1977, Ser. No. 779,125
Claims priority, application Sweden, Nov. 2, 1972, 14234/72
Int. Cl.[2] B41J *3/06*
U.S. Cl. 101—93.04 **5 Claims**



1. A printing device for printing characters onto a record medium comprising:
a printing station;
carrier means provided with a plurality of character segments, said character segments being adapted to collectively define an entire font of characters;
moving means for intermittently moving said carrier means to thereby move a particular one of said character segments through said printing station during each such intermittent movement of said carrier means;
record feeding means for intermittently feeding said record medium through a predetermined amount through said printing station;
hammer means for striking said record medium against said carrier means; and

control means for controlling said moving means and said record feeding means in a predetermined sequence of steps;

said moving means moving said carrier means under control of said control means during particular steps in said predetermined sequence of steps;

said record feeding means feeding said record medium through said predetermined amount under control of said control means during certain steps in said predetermined sequence of steps;

said carrier means and said record medium being independently moved during specified steps and being simultaneously moved during other specified steps in said predetermined sequence of steps;

said control means selectively actuating said hammer means to thereby print the particular one of said character segments located at said printing station onto said record medium; whereby

a character is formed by selective actuation of said hammer means after controlled movement of said carrier means and said record medium.

4,082,036

INK TROUGH DIVIDERS FOR ENDLESS BAND SCREEN PRINTER

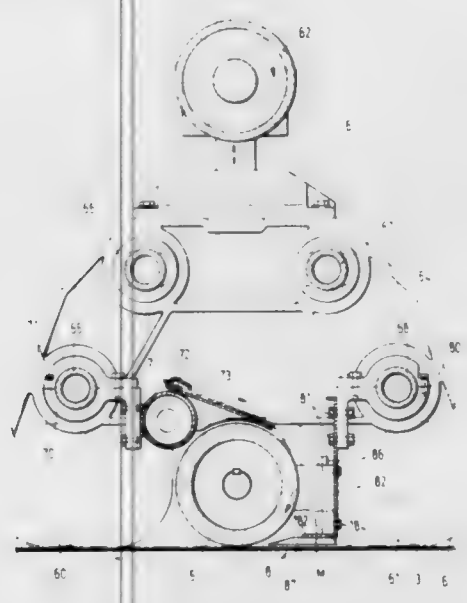
Mathias Mitter, Schloss Holte, Germany, assignor to Mitter & Co., Schloss Holte, Germany

Filed Mar. 30, 1976, Ser. No. 672,074

Claims priority, application Germany, Apr. 3, 1975, 2514586

Int. Cl.[2] B41F *15/10, 15/40*

U.S. Cl. 101—122 **21 Claims**



1. A screen printing machine, comprising an endless printing screen an inwardly directed screen surface of which bounds a space having opposite open ends; a plurality of supporting rollers extending through said space and mounting said printing screen for travel in an endless path in which a part of said printing screen forms a printing run; a driven squeegee roller also extending through said space and having a circumferential surface defining with a portion of said inwardly directed screen surface of said printing screen a trough which extends axially of said squeegee roller and is located ahead of the same, as considered in the direction of travel of said printing screen; means for feeding flowable printing medium into said trough so that the medium forms a pool therein; and confining means extending across said trough at locations which are spaced lengthwise of said trough, for confining the medium therein, said confining means comprising confining elements each having a curved first surface shaped to snugly conform and partly surround said circumferential surface of said squeegee roller and extending to said inwardly directed screen surface and a second surface juxtaposed in sealing contact with said inwardly directed screen surface which slides past said second surface so as to prevent escape of said printing medium between said second and said inwardly directed surfaces while permitting unobstructed travel of said printing screen in said endless path.

4,082,037

APPARATUS FOR REMOVING DUSTING POWDER IN OFFSET PRESSES

C. Ronald Grindley, 108 W. 15th, Higginsville, Mo. 64037, and Larry G. Boyd, 7111 E. 107th Ter., Kansas City, Mo. 64134

Filed Oct. 28, 1975, Ser. No. 626,456

Int. Cl.[2] B41F *35/00;* **B41L** *41/00*

U.S. Cl. 101—425 **10 Claims**



1. Apparatus for removing liquid-mixable, dry particulate matter from sheets under movement in a printing press, said apparatus comprising:

a cleaning roller having a dry, soft, fibrous surface adapted for wiping contact with said sheets;

means for supporting said roller adjacent said sheets;

drive means connected with said roller for rotating the latter to cause said surface thereof to wipe said sheets and collect said dry particulate matter;

a receiver spaced from said roller;

a doctor blade engaging said surface as the roller rotates for stripping the collected matter therefrom;

guide means for receiving the particulate matter stripped from said surface by said blade, and including a member extending from adjacent said blade to said receiver,

said member having a guide surface defining a flow path adjacent said guide surface along which the stripped matter flows under the centrifugal force of the rotating roller, whereby the stripped matter is directed into the receiver by the action of the roller, doctor blade and guide means; and

a quantity of liquid in which the stripped matter is mixable, said liquid being contained in said receiver for retaining the stripped matter directed thereinto, whereby the retained matter is carried away upon removal of the liquid from the receiver and resupply of liquid thereto.

4,082,038

APPARATUS FOR AUTOMATICALLY REMOVING DUST FROM A FORM CYLINDER OF A PRINTING MACHINE

Tadayoshi Ueno, Koganei, and Akio Itaya, Tokyo, both of Japan, assignors to Hitachi Printing Co. Ltd. and Nikka Kabushiki Kaisha, both of Tokyo, Japan

Filed Apr. 5, 1977, Ser. No. 784,688

Claims priority, application Japan, Apr. 7, 1976, 51-38187; Apr. 7, 1976, 51-41992

Int. Cl.[2] B41F *35/02*

U.S. Cl. 101—425 **9 Claims**

1. An apparatus for automatically removing dusts from form-cylinder of a printing machine, comprising:

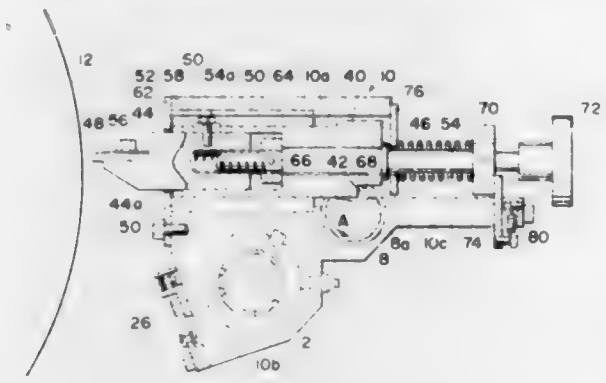
brackets adjacent to the ends of said form-cylinder;

a guide member connected with said brackets;

a movable body slidably contacted with said guide member such that the former is slidable substantially along the entire length of the latter, said movable body having

slidable structure which has a tip member at the end thereof and is slidable toward the rolling surface of said form cylinder, a base portion, an extended portion having a flat upper surface, a housing in which said slidable structure is positioned, a bush member confined between said housing and said slidable structure, said slidable structure having a tip holder, a sleeve member and a first shaft, said first shaft having a stopper member at the end thereof and being inserted through said sleeve member, and a spring confined between said housing and said stopper member;

means for moving said slidable structure toward the rolling surface of said form cylinder, having a second shaft which



is rotatably connected with said brackets and has a shoulder along substantially the entire length thereof and a device for rotating said second shaft in the clockwise and counter-clockwise directions at predetermined angles, whereby when said second shaft is rotated at the predetermined angles, said shoulder presses said slidable structure toward the form cylinder;

means for moving said movable body along said guide member;

a first electrical device which controls the movement of said movable body along said guide member; and

a second electrical device which controls the movement of said slidable structure.

4,082,039

DUPLICATOR CONTROL BY AREA SCANNED CODED MASTER

Elmer F. Schutt, Parma; Bryce G. Thornton, Mentor, and Charles R. Bentivegna, Jr., Mayfield Heights, all of Ohio, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Continuation of Ser. No. 412,347, Nov. 2, 1973, abandoned. This application Oct. 1, 1975, Ser. No. 618,362

Int. Cl.[2] B41M *1/06*

U.S. Cl. 101—450 **6 Claims**



2. A duplicating machine for providing copies of an original comprising:

a rotatable cylinder supporting the original having at least one group of numerical identification data in the form of separate marks arrayed on the original so as to be disposed generally along a path running peripherally of the cylinder when the original is in place thereon;

a reading station including sensing means disposed adjacent said cylinder, for sensing each mark in turn during rotation of said cylinder with the original thereon and for providing unit value data signals, one for each mark sensed;

summing means comprising register means connected with said sensing means for progressively summing the unit value data signals emanating therefrom, for expressing the total number of such unit value data signals received from said sensing means according to a number system having a base greater than one, and for storing the thus expressed total in signal form; and

means responsive to the signals stored by said summing means for controlling a function of the duplicating machine.

4,082,040

LITHOGRAPHIC PRINTING PLATE

Toshiro Yamashina, Sappro, and Hirokazu Sakaki, Yoshida, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 30, 1976, Ser. No. 710,038

Claims priority, application Japan, Aug. 1, 1975, 50-93830

Int. Cl.[2] B41N *1/08*; G03F *7/08*

U.S. Cl. 101—456 **5 Claims**

1. A lithographic printing plate comprising a flat, thin support, a layer of aluminum nitride formed thereon by radio frequency reactive sputtering and a light-sensitive layer over said aluminum nitride layer, said layer of aluminum nitride having a thickness of from about 100 A to about 10,000A, and said aluminum nitride surface coated or converted by a hydrophilizing treatment piror to the coating of said light-sensitive layer.

4,082,041

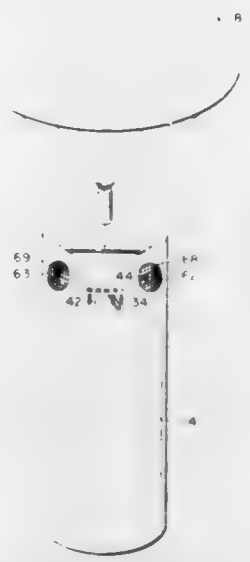
DIRECTIONAL FLARE

John S. Wilson, 3 Kelldon Dr., Felton, Calif. 95018

Filed Sep. 29, 1976, Ser. No. 727,735

Int. Cl.[2] F42B *4/28*

U.S. Cl. 102—35 **15 Claims**



1. A directional flare system comprising:

a flare adapted to emit light generally isotropically when actuated;

an opaque shield located to one side of said flare and adapted to prevent the transmission of light from the flare throughout a preselected sector about a vertical axis passing through the flare;

means for suspending the opaque shield and the flare in the air while the flare is emitting said light; and

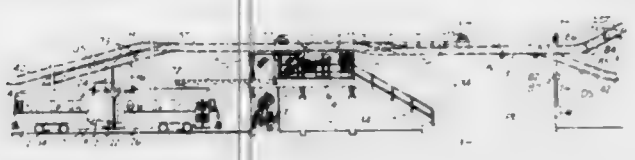
means for automatically maintaining the opaque shield in a preferred angular orientation about said vertical axis while the the flare is emitting said light.

4,082,042

OVERHEAD CONTAINER TRANSFER SYSTEM

Leonard D. Barry, 19300 Pennington Dr., Detroit, Mich. 48221

Continuation of Ser. No. 405,825, Oct. 12, 1973, abandoned. This application Jul. 30, 1976, Ser. No. 710,214
Int. Cl.[2] B61K *1/00*
U.S. Cl. 104—18 20 Claims



1. An overhead container transfer system for unloading and loading transportation vehicles passing a station, including a lower guideway having at least one transportation vehicle thereon, an overhead track run over said guideway for vertical transfer including a slope down and an opposite slope up, at least two transfer containers, a said container being on said vehicle when approaching said station track to meet said slope up from bottom, carrier means for engaging and suspending said containers to travel said overhead track and up said slope, vertical coupling means on said vehicle for pushing said container up said slope up above said vehicle, said overhead track being sloped up to height to carry container above the vehicle and any load thereon, conveying means above said vehicle and along said station track to receive and move the container lifted out to stop for transfer at the station, and accelerating means for starting and accelerating the second said container on said station track including a dip in said track to lower the outgoing container to coupling height and reach coupling speed ahead of coupling alignment with the vehicle to be set on the vehicle, said coupling means on the vehicle engaging said container at safe coupling speed and aligning container over spot to set on vehicle and hold this alignment while pushing container to and along where said track is sloped down tc set container on the vehicle.

4,082,043

FABRICATED RAILWAY CAR TRUCK

James C. Hammonds, and Jan D. Holt, both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 447,823, Mar. 4, 1974, abandoned. This application Nov. 1, 1974, Ser. No. 519,976
Int. Cl.[2] B61F *3/08, 5/14, 5/30, 5/36*
U.S. Cl. 105—182 R 13 Claims



1. A transverse member for a railway car truck adapted to be located between spaced side frames of said truck; said transverse member being elongated and having a cross section including a pair of longitudinally extending sides and a member joining said sides defining a hollow portion having an open bottom such that the shear center of said cross section is spaced upwardly from the neutral axis of said cross section throughout its length; a center bearing located at about the mid portion of said transverse member at about said shear center for receiving a cooperating car body center connection of a railway car body; said center bearing having sufficient vertical surface area to transmit horizontal loads radially between the car body and said truck; said center bearing being spaced upwardly from said neutral axis a distance sufficient to prevent substantial torsional deflection of said transverse member.

4,082,044

ADJUSTABLE FLUID DUNNAGE SYSTEM

Gerald Glynn Day, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Sep. 29, 1975, Ser. No. 617,567
Int. Cl.[2] B60P *7/14, 7/16;* B61D *3/00, 45/00*
U.S. Cl. 105—376 16 Claims



1. A dunnage system for restraining cargo in the freight compartment of a transport vehicle comprising:

at least one movable parallel wall disposed on one side of said freight compartment and in parallel with the longitudinal side walls of said freight compartment;

drive means for moving said wall transversely of said freight compartment into and out of restraining engagement with said cargo; and

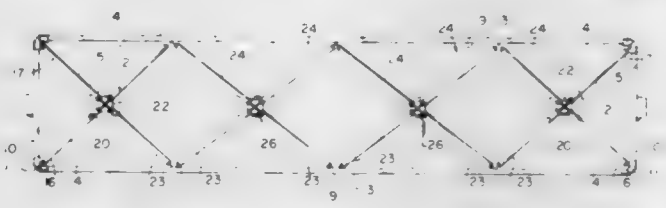
means for operating said drive means in response to changes in the pressure that the movable wall is exerting on the cargo for maintaining a constant and adjustable pressure of said movable wall on said cargo prior to and during transport thereof.

4,082,045

STABILITY BRACING FOR TWIST ON HIGH GONDOLAS OR HOPPER CARS

George S. McNally, South Holland, Ill.; Dilip T. Naik, Hammond, and John H. Spence, Munster, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 7, 1976, Ser. No. 730,510
Int. Cl.[2] B61D *17/00*
U.S. Cl. 105—411 5 Claims



1. An open top high volume railway car body including a pair of side walls and interconnecting end walls defining vertically extending corner portions,

a car underframe connected to a lower portion of said body including center bearing assemblies adapted to support said underframe on longitudinally spaced car trucks,

said underframe including a center sill and longitudinally spaced transversely extending horizontal support means supported on said bearing assemblies, the intersection of said center sill and said horizontal support means defining minimum vertical flexure portions longitudinally spaced from said end walls and laterally inwardly from said side walls

bracing means extending the length of the car body and reactive therewith to resist sagging and end-to-end torsional twisting thereof,

said bracing means including a plurality of serially interconnected V-shaped trusses,

said trusses each having downwardly inwardly longitudinally convergent reinforcing braces including upper end sections adjacent an associated side wall and lower end sections terminating adjacent said center sill and

upper coupling means securing said upper end sections to said associated side wall and lower coupling means securing said lower end sections at spaced locations along said center sill wherein two of said locations are at said minimum flexure portions.

4,082,046

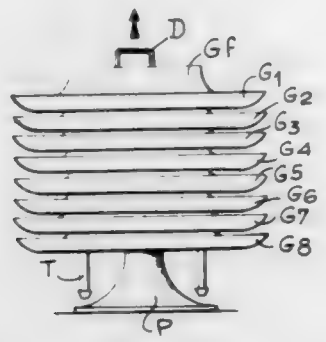
DISPLAY UNIT

Yves Baglin, 8 rue des Jonquilles, Boissise le Roi, France

Filed Feb. 14, 1977, Ser. No. 768,424

Int. Cl.[2] A47B *46/00*

U.S. Cl. 108—106 **4 Claims**



1. A collapsible display unit comprising a plurality of superposed identically formed shelves adapted to receive articles to be displayed when the unit is extended, said display unit being normally stored in collapsed condition, each of said shelves including support means in slidable engagement with an adjacent shelf by means of a series of holes in said shelf, said support means comprising a set of vertical rods rigidly secured to, and depending from, the bottom surface of each shelf and provided at their lower ends with locking means, said locking means engaging both the top and bottom surfaces of the adjacent shelf for positive locking engagement when a shelf is extended away from said adjacent shelf by a predetermined distance and preventing not only the shelves from being pulled apart and separated from each other when the unit is being expanded but also preventing collaping of the shelves one upon another once they have been expanded.

4,082,047

MODULAR VISITOR STATION

Charles V. Williams, Charlotte, N.C., assignor to Southern Business Systems of Greensboro, Inc., Greensboro, N.C.

Filed Apr. 4, 1977, Ser. No. 784,229

Int. Cl.[2] E05G *5/00*

U.S. Cl. 109—21.5 **10 Claims**



1. A modular visitor station for use in a jail, prison or similar institution including a wall having an opening therein, said visitor station including at least one unit for permitting visual and voice communicating between first and second persons respectively disposed on opposite sides of said wall while prohibiting contact and the passage of materials between said persons, said unit comprising:

an upright frame assembly having a main body portion with an open center section mounted within said opening, and with a bottom section disposed in closely adjacent overlying relationship to the bottom extremity of said opening; and peripheral flange means formed integrally with and extending laterally from said main body portion and overlying surfaces of said wall, on both sides of said wall and adjacent said opening therein, for securing said main body portion within said opening;

a generally vertically extending transparent viewing pane fixedly mounted within said center section of said main body portion of said frame assembly, at a location approximately midway of the depth dimension of said frame assembly, for permitting visual communication between persons disposed on opposite sides of said wall;

and combination sound-box and shelf means extending generally horizontally, in underlying relationship to said transparent pane and in overlying engaging relationship to said bottom section of said main body portion of said frame assembly, through and outwardly from said open center of said frame assembly; said combination means comprising an elongate, hollow box-like member, of essentially unitary construction including vertically-spaced and generally parallel top and bottom panels, fixedly secured centrally of its length to said frame assembly and projecting in the direction of its opposite ends freely and distally outwardly from said frame assembly and from the opposite sides of said wall; the said top panel of said box-like member having perforate surface portions adjacent to and on opposite sides of said transparent pane and having relatively larger imperforate surface portions adjacent its opposite ends, said member being adapted to transmit sound through its interior and through at least said top panel thereof between persons upon opposite sides of said wall, and said imperforate surface portions of said member defining shelf-like areas respectively usable for writing and similar purposes by persons on opposite sides of said wall.

4,082,048

PLANTING DIBBLE

Erik Hilding Grundström; Gote Einar Grundström, and Ivar Waleij, all of 8 Sockenvagen, Dorotea, Sweden (S-910 70)

Filed Apr. 27, 1976, Ser. No. 680,799

Claims priority, application Sweden, Apr. 30, 1975, 7505054

Int. Cl.[2] A01C *11/02, 5/04;* A01G *23/04*

U.S. Cl. 111—2 **4 Claims**

1. A planting dibble for the mechanical planting of plants in holes made in the soil, preferably plants rooted in clods, comprising:

a tube supporti..g a hole-making member at the end of said tube facing toward the soil;

said hole-making member comprising at least two parts, said two parts of said hole-making member being arranged at respective lower ends of respective spaced sliding plates guided in respective diverging guide grooves;

said guide grooves diverging upwardly from said tube end;

each of said plates connected by means of a common transverse pin slidably mounted in a hole with a slide bushing in each respective plate;

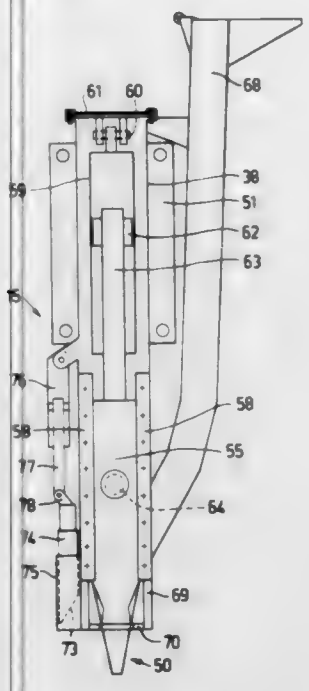
said common transverse pin connected for reciprocal movement along the longitudinal axis of said tube to a piston-cylinder means provided within said tube;

said piston-cylinder moving said pin connected plates in said guide grooves and therefor said two parts from a closed position closing said end of said tube to a spread-apart position opening said end of said tube and, from said spread-apart position to said closed position, each said

slide bushing allowing said common transverse pin to adjust to either position;

said closed position defining a hole-making position and a plant waiting position for a plant to be planted;

a transport pipe for feeding a plant to said waiting position, said transport pipe being attached to the outside of said tube and opening into said tube directly above the defined waiting position and below the lowest position of said common transverse pin; and



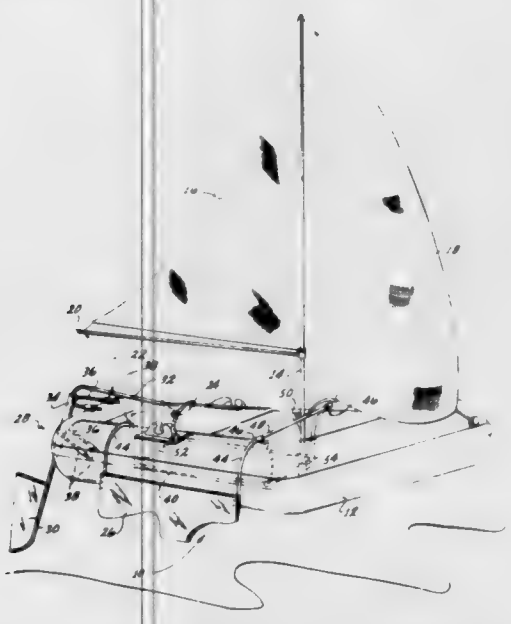
an apertured plate connected to said lower end of said tube, the inner circumferential edge of said apertured plate defining a means for supporting and holding together said at least two parts of said hole-making member within the aperture in said apertured plate during reciprocal movement to and from said closed position and said spread-apart position.

4,082,049

SAILING CRADLE

Henry A. Nicol, 5210 Roundmeadow Rd., Hidden Hills, Calif. 91302

Filed Dec. 8, 1976, Ser. No. 748,525
Int. Cl.[2] B63B *35/00*
U.S. Cl. 114—39 **14 Claims**



9. A kit of disassembled components adapted when assembled to form a sailing combination for an inflatable boat having buoyancy tubes, comprising:

(a) a forward cradle member including port and starboard buoyance tube enclosing elements and upper and lower athwartships cross members having mast receiving means;

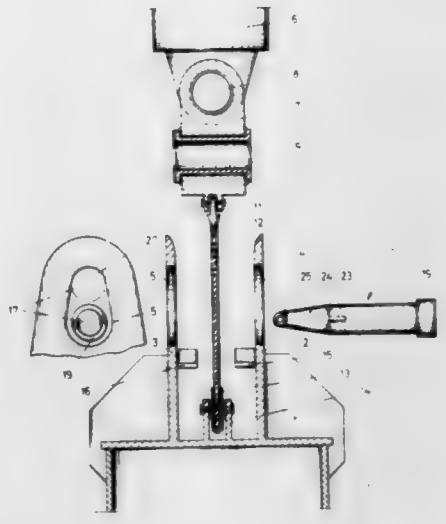
(b) port and starboard strut members positioned to ride at the floor of the boat and adapted to connect said forward cradle member in a sailing cradle.

4,082,050

COUPLING BETWEEN AN ANCHOR UNDER WATER AND A BUOYANT BODY

Willem Jan van Heijst, Monte Carlo, Monaco, assignor to Single Buoy Moorings, Inc., Fribourg, Switzerland

Filed Aug. 30, 1976, Ser. No. 719,589
Int. Cl.[2] B63C *7/00*
U.S. Cl. 114—53 **7 Claims**



1. A coupling between a buoyant body and an anchor, comprising a pair of perpendicular hinged shafts, one of said shafts comprising an internal bush, the other of said shafts being disposed above said bush, a pin insertable in the bush, a pair of spaced parallel cheeks upstanding from the anchor, the pin being of a length greater than the distance between the cheeks, the cheeks having vertically elongated holes therein whose upper ends are of a size to receive the pin and whose lower ends are larger than said upper ends, and a pulley on the anchor, between said cheeks, about which a cable is reeved and secured to said one shaft for pulling said coupling downward, whereby when said bush is aligned between said lower ends of said holes, said pin is insertable in said bush, and when the upward force of said buoyant body pulls the coupling upward, said pin is pulled up into said upper ends of said holes.

4,082,051

CONTAINER SHIP CONSTRUCTION

Peter Timmann, Lubeck, and Heinrich A. Steinborn, Bad Schwartau, both of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft Werk Lubeck, Germany

Filed Jul. 12, 1976, Ser. No. 704,485
Claims priority, application Germany, Jul. 15, 1975, 2531487
Int. Cl.[2] B63B *11/02*
U.S. Cl. 114—72 **8 Claims**



1. A container ship comprising a hull having outer starboard and port side walls, a bottom structure extending between said side walls, a longitudinal bulkhead spaced inwardly from each side wall and extending substantially coextensive in height above said bottom to said side walls, a transverse bracing deck interconnecting said side walls and said longitudinal bulkheads

at the level of the top of said side walls and bulkheads, said ship defining a container bottom loading space above said bottom and between said longitudinal bulkheads, said bracing deck including longitudinally spaced frame members extending transversely between said side walls and defining openings therebetween extending above said bottom loading space, a plurality of top longitudinal walls extending upwardly above and supported on said bracing deck, a plurality of transverse support frames extending above and supported on said bracing deck and connected to said longitudinal walls at longitudinally spaced intervals, support frames and longitudinal walls on each side of the ship forming a substantially continuous wall, a plurality of transverse bulkheads extending between said longitudinal bulkheads in said loading space and extending above said loading space adjacent said frames, the space between said longitudinal walls and said transverse bulkheads defining above said bracing deck an upper loading space, the lower and upper loading spaces containing continuous stowage rack means for containers extending upwardly from said bottom to the top of said longitudinal walls, and a hatch cover covering each loading space.

4,082,052

COUPLING DEVICE FOR CONTAINERS

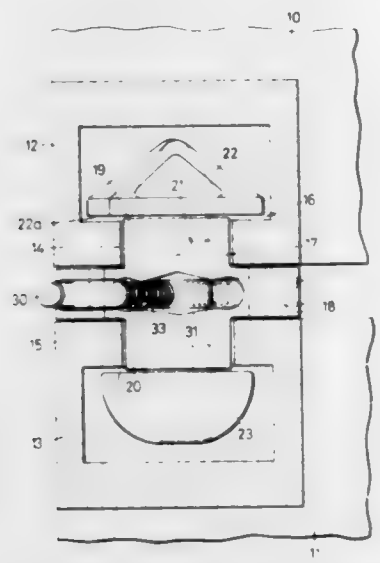
Arnold Looks, Bremen, Germany, assignor to Conver Ingenieur-Technik GmbH & Co., KG, Bremen, Germany

Filed Jul. 27, 1976, Ser. No. 709,014

Claims priority, application Germany, Sep. 6, 1975, 2539741; Sep. 13, 1975, 7529082[U]

Int. Cl.[2] B63B *25/24*

U.S. Cl. 114—75 **13 Claims**



1. A coupling device for detachable connection to at least one container fitting having a slot within a face thereof, said device comprising:

a casing for abutment with the container fitting overlying said slot,

a locking pin having at least at one end an integral hammerhead bolt,

said casing including a longitudinal opening for rotatably carrying said bolt, with said bolt being lockable within said slot to said fitting by rotating said bolt to overlie a portion of said fitting adjacent said slot,

the improvement wherein:

said casing is of one-part construction,

said opening comprises a continuous aperture, and said aperture is so disposed and has a cross-section such that said bolt can be introduced through said casing aperture and rotated to a working position to effect assembly of said locking pin and said casing, and said casing further comprises means for limiting bolt rotation to end operating positions after rotation to said working position which respectively effects locking of said fitting to said casing and release of said fitting from said casing while preventing said bolt from passing back through said casing aperture.

4,082,053

MULTIRUDDER STEERING SYSTEM FOR MULTIHULL BOATS

William R. Woodward, 520 E. 76th St. (Apt. 8C), New York, N.Y. 10021

Filed Sep. 30, 1976, Ser. No. 728,067

Int. Cl.[2] B63H *25/06*

U.S. Cl. 114—163 **23 Claims**



1. A steering system for a multihull boat having at least two parallel elongated hull bodies providing for flotation of a structure maintaining said hull bodies in substantially fixed relation to each other, said steering system comprising:

aft steering means including at least one rudder mounted at least partly below the waterline on the stern portion of at least one of the hulls of the boat;

forward steering means including at least one rudder mounted forward of amidships on said structure, extending below the waterline level in at least one space between two hulls and pivoted on an axis located between said two hulls and abreast of the normally submerged portion of at least one of said two hulls, said location being, in terms of the fore-and-aft dimension, closer to the location about which the boat normally pivots when tacking about when sailing close-hauled than is the location of said aft steering means;

means for mechanically linking said aft steering means and said forward steering means for simultaneous control of both of them and for causing the after edge of said at least one rudder of said forward steering means to be deflected to the side opposite to that to which said at least one rudder of said aft steering means is deflected, said linking means so connecting said steering means that when one of said rudders is in its center position, all of said rudders are in their respective center positions, and so that the mean angular rudder deflection of said forward steering means is always less than the mean angular rudder deflection of said aft steering means when rudders of said respective steering means are deflected from center position, and

steering control means for simultaneously operating said aft and forward steering means and said linking means by means of a single control motion.

4,082,054

DOCKING AND MOORING DEVICE FOR A BOAT

Frank D. Bruner, 10012 Emmett St., Omaha, Nebr. 68134

Filed Dec. 19, 1975, Ser. No. 642,319

Int. Cl.[2] B63B *21/00*

U.S. Cl. 114—230 **7 Claims**

1. A docking and mooring device for a boat comprising:

a line adapted to be secured on one end to the boat;

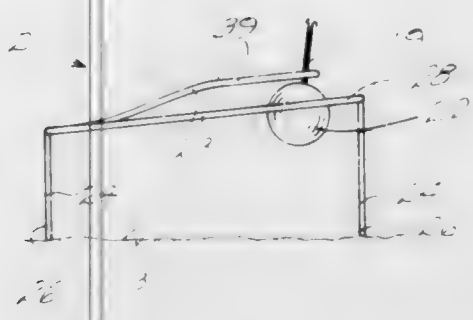
a connector secured to the other end of said line; and

a guide unit disposed proximate the docking position of the

boat and having an open ended trap including an inner rim formed in a generally V-shaped configuration for coacting with said connector, said guide unit includes an arcuate outer rim having diverging ends; a pair of curved sections, each integral on one end with one of said diverging ends with the other ends thereof converging toward each other; and said V-shaped inner rim forming said trap is disposed substantially within said outer rim with the free ends thereof integral with said converging ends thus forming an endless element.

7. A docking and mooring device for a boat comprising:

a line adapted to be secured to the boat;



a connector secured to the other end of said line; and a guide unit disposed proximate the docking position of the boat including a base having a plurality of spaced teeth projecting away therefrom forming a plurality of open ended traps, and further including a disconnector secured to said guide unit and cooperably with said line for disengaging said connector, said disconnector including a boss having one end secured to said guide unit proximate said open ends of said traps and having a free end projecting substantially normally from said guide unit, and a hook element integral with said boss free end.

4,082,055

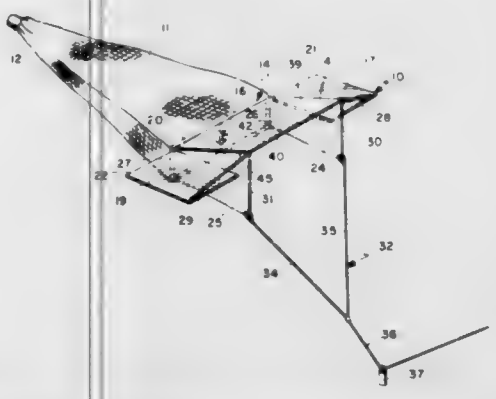
NEUSTON NET APPARATUS

Daniel Maitland Brown, San Diego, Calif., assignor to Regents of the University of California, Berkeley, Calif.

Filed Nov. 1, 1976, Ser. No. 737,785

Int. Cl.[2] B60P *21/56*; B63B *21/64*; B63G *8/42*

U.S. Cl. 114—245 **7 Claims**



1. A neuston net apparatus for guiding a net to be towed at the surface of a body of water comprising:

a frame having a straight rigid top member for defining an opening for attachment to the mouth of a net;

buoyant aquaplanes attached to the frame at the sides of the top of said opening and extending forward and outward from said opening for maintaining the top of said opening at the surface of the water by buoyancy when the apparatus lies still in the water and by dynamic lift when the apparatus having a said net attached thereto is being towed;

paravanes attached to the frame at the sides of said opening and extending in a plane normal to the plane of the aquaplanes forward from said opening and beneath the aquaplanes for steering the apparatus when the apparatus is being towed;

an unbalanced bridle yoke attached to the paravanes for steering the apparatus obliquely to the direction in which the apparatus is being towed,

a tow line attached to the bridle yoke;

a weight attached to the tow line for maintaining the bridle yoke beneath said opening when the apparatus is being towed; and

a sheet attached to the top said opening and extending forward from said opening between the paravanes with the leading edge of the sheet being above the plane of the aquaplanes when the apparatus lies still in the water, whereby the sheet is held out of the water for deflecting toward said opening, splashing water and marine life that has moved above the water surface forward of said opening when the apparatus is being towed.

4,082,056

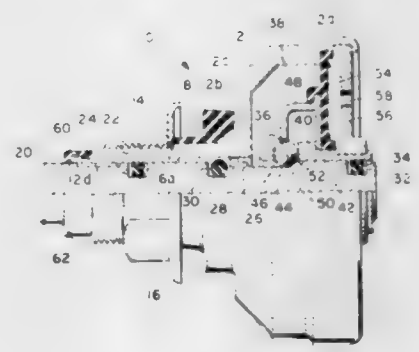
PRESSURE CHANGE INDICATOR

Dale F. German, Roxboro, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 658,427, Feb. 17, 1976, abandoned. This application Nov. 24, 1976, Ser. No. 744,677

Int. Cl.[2] B60C *23/04*

U.S. Cl. 116—34 R **5 Claims**



1. A device for indicating that the pressure in a pressurized container has dropped below a predetermined level, said device comprising:

(a) means defining a pressure sensing chamber including port means exposing said chamber to the pressure in said container, and sensing means movable in response to change in container pressure;

(b) indicator means movable with respect to said chamber defining means in response to movement of said sensing means and including engageable detent means;

(c) means biasing said sensing means in a direction opposing said container pressure such that said sensing means is moved by said bias means when container pressure is less than said predetermined level;

(d) releasable latch means operable to hold said indicator in a first position indicating pressure in said container of at least the said desired level, said latch means being operative, in response to the pressure in said container falling below said desired level, to release said indicator for movement to a second position indicating that the pressure level is below said predetermined level, said latch means including,

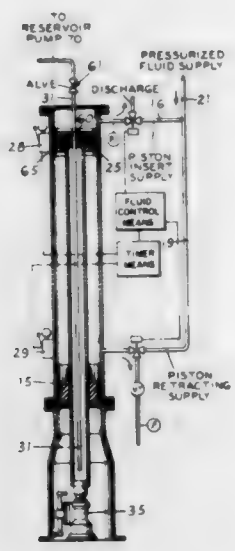
(i) at least one substantially spherical member adapted to engage said detent means for retaining said indicator means in said first position;

(ii) retaining means movable in response to movement of said sensing means and operable to retain said substantially spherical member in engagement with said detent means only when said container pressure is of at least said desired level.

4,082,057
APPARATUS FOR SPRAYING INTERIOR SURFACE OF VESSELS

Tom F. Hayes, La Porte, Tex., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Apr. 21, 1975, Ser. No. 569,880
Int. Cl.[2] B05C 7/02
U.S. Cl. 118—9 8 Claims



1. An apparatus for directing a liquid spray against the interior walls of a vessel from rotating nozzle means which comprises:

(a) a cylinder housing mounted externally on the vessel;

(b) a piston assembly slidably mounted within the cylinder housing;

(c) a fluid conduit one end of which is affixed to said piston assembly;

(d) annular lower cylinder housing seal means fixedly mounted within the cylinder housing surrounding the fluid conduit;

(e) a fluid delivery tube affixed to, and passing through the end of the cylinder housing opposite the vessel, and passing coaxially through the piston assembly and into the fluid conduit, and terminating at a point below the lowermost position of travel of the piston assembly; and

(f) annular seal means affixed to the piston assembly for slidably receiving the coaxial fluid delivery tube,

which elements (a) through (f) cooperate to provide pressure tight expandable chambers above and below the piston assembly; and

(g) upper cylinder conduit means with affiliated means for alternatively admitting and discharging a pressurized fluid into the cylinder housing above the piston assembly;

(h) lower cylinder conduit means with affiliated means for alternatively controllably discharging and admitting a pressurized fluid into the cylinder housing below the piston assembly;

(i) a source of pressurized fluid and means for alternatively delivering it to the upper and lower cylinder conduits to produce a movement of the piston in the direction of and away from the vessel responsive to the flow of the pressurized fluid;

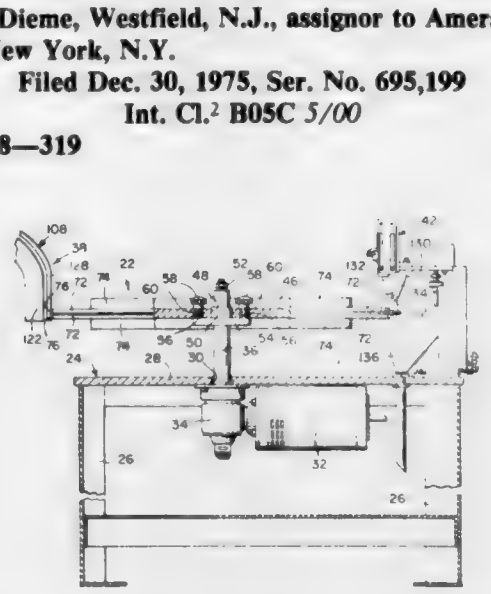
(j) rotating nozzle means mounted on the end of the fluid conduit opposite the piston assembly;

(k) a source of pressurized liquid and means for delivering it to the fluid delivery tube and to thereby activate the rotating nozzle means for spraying.

4,082,058
APPARATUS FOR PRODUCING LOCKING PATCHES ON MAGNETIC SCREWS

Hilmar K. Dieme, Westfield, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Dec. 30, 1975, Ser. No. 695,199
Int. Cl.[2] B05C 5/00
U.S. Cl. 118—319 12 Claims



1. Apparatus for producing locking patches of thermoplastic material on threaded portions of screws of magnetic material, said apparatus comprising:

(a) a dial assembly having an axis;

(b) means mounting said dial assembly with said axis vertical and for rotating said dial in a predetermined direction about said axis;

(c) means for delivering screws to the outer periphery of said dial assembly at a first circumferential location with respect to said dial assembly;

(d) screw heating means adjacent the outer periphery of said dial assembly at a second circumferential location with respect to said dial assembly;

(e) powder dispensing means adjacent the outer periphery of said dial assembly at a third circumferential location with respect to said dial assembly; and

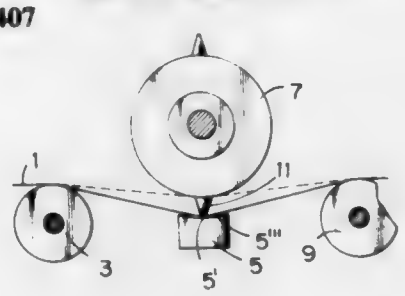
(f) screw stripper means adjacent the outer periphery of said dial assembly at a fourth circumferential location with respect to said dial assembly;

said dial assembly comprising a central disc of non-magnetic material affixed to said mounting and rotating means, and a plurality of similar, closely spaced permanent magnets extending radially outwardly from the outer periphery of said disc and in magnetic communication with the outer periphery of said dial assembly for magnetically holding screws thereagainst.

4,082,059
COATING APPARATUS WITH INTERMITTENT SUBSTRATE BACKUP

Donald B. McIntyre, and Frederic S. McIntyre, both of Wellesley Hills, Mass., assignors to Acumeter Laboratories, Inc., Newton Lower, Mass.

Division of Ser. No. 537,064, Dec. 30, 1974, Pat. No. 4,020,194.
This application Nov. 19, 1976, Ser. No. 743,324
Int. Cl.[2] B05C 3/12
U.S. Cl. 118—407 8 Claims



1. Fluid application apparatus having, in combination, means for longitudinally feeding a sheet along a predetermined path

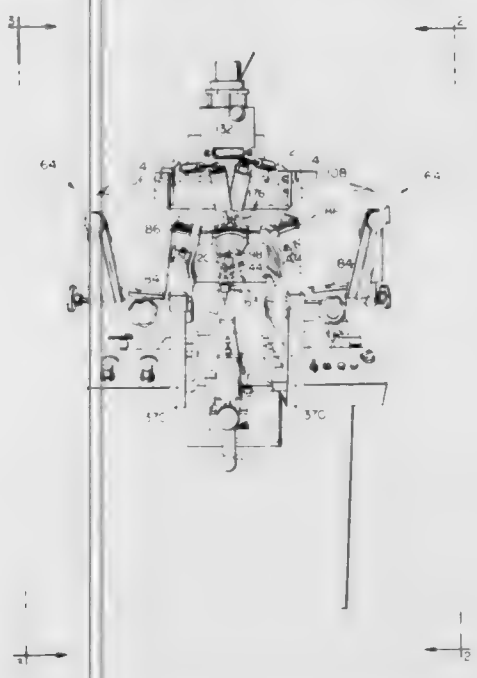
past a predetermined location spaced from said sheet at one side thereof, projection means at the opposite side of said sheet movable along a curved path about an axis transverse to and spaced from the path of said sheet, and spaced from said location along the direction of sheet movement, into engagement with said sheet for deflecting it substantially to said location, extrusion nozzle means at said location providing fluid contacted by the deflected sheet and having a wiping surface generally associated with said path of the projection means, and means for periodically moving said projection means along its path to deflect said sheet and cause fluid contacted by the deflected sheet to be wiped onto the sheet as a coating as the sheet travels along said wiping surface.

4,082,060

CEMENT SIDE AND HEEL LASTING MACHINE

Walter Vornberger, Tewksbury, Mass., and Karl F. Vornberger, Amherst, N.H., assignors to International Shoe Machine Corporation, Nashua, N.H.

Filed Jan. 26, 1977, Ser. No. 762,685
Int. Cl.[2] B05C *3/02, 11/00;* A43D *21/00*
U.S. Cl. 118—411 **9 Claims**



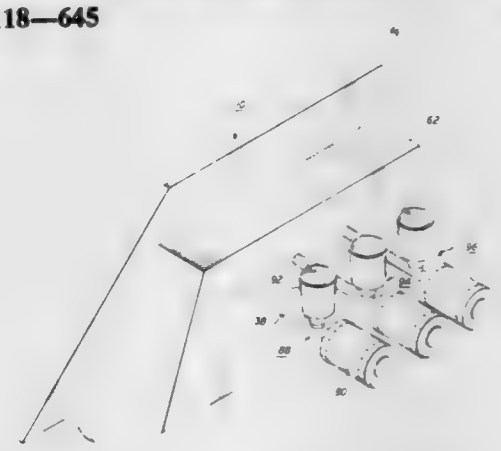
1. A machine, operable on a shoe assembly formed of a last having an insole located on its bottom and an upper mounted thereon with the toe portion of the upper margin being wiped against and secured to the insole and unwiped portions of the upper margin extending heelwardly of said wiped upper margin portion, for applying cement in the corners between said unwiped margin portions and the corresponding portions of the insole periphery comprising: a shoe assembly support for supporting the shoe assembly bottom-up with the toe end of the shoe assembly facing forwardly; a pair of nozzles, located above the shoe assembly, mounted for forward-rearward movement, for heightwise movement, and for inward-outward movement; a stop member located in a particular location; an engaging member, mounted for forward-rearward movement in unison with the nozzles, located rearwardly of the stop member in intersecting relationship with the stop member; means for initially retaining the nozzles in rearward, upper and inner positions; means for thereafter moving the nozzles, together with the engaging member, forwardly until the engaging member intersects the stop member; means for thereafter effecting lowering and outboard movements of the nozzles to move the nozzles into said corners heelwardly of the boundaries between said wiped and unwiped upper margin portions; means for thereafter removing the stop member from said particular location to enable the nozzles to resume their forward movement so as to bring the nozzles to said boundaries; means operative when the nozzles have arrived at said boundaries to effect rearward movement of the nozzles while maintaining the nozzles in said corners; and means for extruding cement from the nozzles into said corners during said rearward movements of the nozzles; the machine having the improvement comprising: a detector member mounted for forward-rearward movement; means so mounting the stop member and so connecting the stop member to the detector member as to cause the stop member to have forward-rearward movement in unison with the detector member; means for initially locating the detector member in a forward position that is forward of the toe end extremity of the shoe assembly; and means, operative prior to said first mentioned forward movement of the nozzles, for yieldably moving the detector member, together with the stop member, rearwardly to bring the detector member into engagement with the toe end extremity of the shoe assembly and to thereby bring the stop member to said particular location.

4,082,061

MULTI-COLOR DEVELOPMENT SYSTEM

Lawrence J. Fraser, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 14, 1977, Ser. No. 777,377
Int. Cl.[2] G03G *15/09*
U.S. Cl. 118—645 **10 Claims**



1. An apparatus for developing a latent image arranged to be recorded on a member with particles, including:

a housing defining a chamber for storing a supply of particles therein;

means, disposed in the chamber of said housing, for depositing particles on the latent image;

means for storing a plurality of differently colored particles remotely from the chamber of said housing;

means for cleaning the particles from the chamber of said housing;

a plurality of conduits coupling said storing means with the chamber of said housing; and

operator selectable means for advancing particles of a selected color from said storing means through one of said conduits to the chamber of said housing.

4,082,062

INTEGRATED AQUARIUM

Donald J. Rodemeyer, City Island, N.Y., assignor to Metaframe Corporation, Elmwood Park, N.J.

Filed Jun. 22, 1976, Ser. No. 698,556
Int. Cl.[2] A01K *64/00*
U.S. Cl. 119—5 **7 Claims**

1. A frameless integrated aquarium comprising:

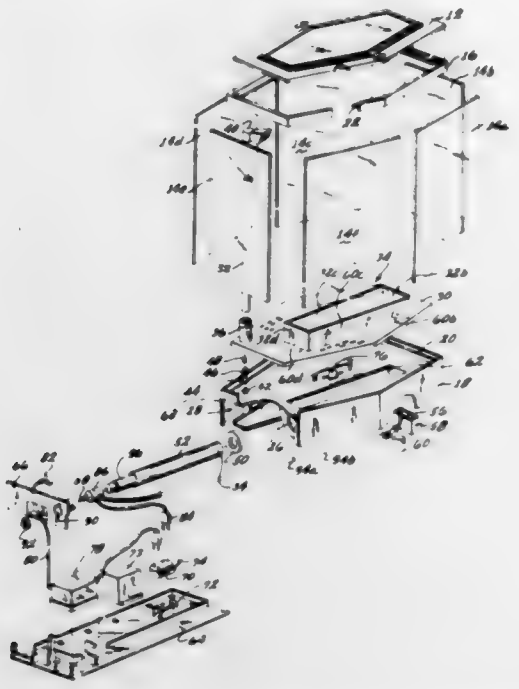
a molded base defining a lower portion of a water containing region, said base being integrally provided with electrical means for heating, illuminating, and circulating the water contained in said water containing region;

a plurality of transparent vertical side walls further defining said water containing region, said side walls being secured in part by integrally molded grooves provided as part of said molded base;

a molded top frame having defined on the lower surfaces therof integrally molded grooves for further securing said side walls; and

a false bottom removably located at the lower portion of the water containing region defined by said base and said side walls, said false bottom comprising:

a vertically upstanding gravel barrier for permitting a light source located below said false bottom to project



light into the interior of said water containing region above said false bottom, and

a riser tube for permitting water to circulate upwards from the region below said false bottom,

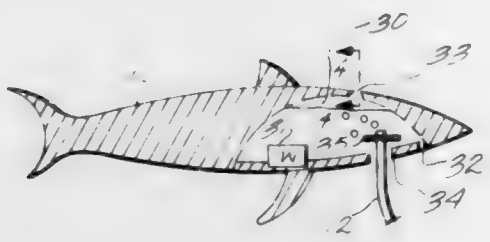
wherein at least a portion of said false bottom functions as an undergravel filter plate.

4,082,063

ALTERNATELY ASCENDING AND DESCENDING AQUATIC ARTICLE

Robert E. Strickland, 1965 S. Beverly Glen Blvd., West Los Angeles, Calif. 90025

Filed Aug. 23, 1976, Ser. No. 716,661
Int. Cl.[2] A01K *63/00;* **A63H** *23/10*
U.S. Cl. 119—5 **17 Claims**



14. An article of manufacture for use in a water container comprising:

a figure having a buoyancy chamber, the figure being heavier than water when the chamber is filled with water and lighter than water when the chamber is filled with gas;

a flexible tube having first and second ends;

a plurality of holes in the figure establishing communication between the chamber and the outside of the figure; and

a swivel connection means between the tube near the first end and the figure for permitting the figure to rotate relative to the tube, the first end of the tube opening into the chamber to establish communication between the first end of the tube and the plurality of holes;

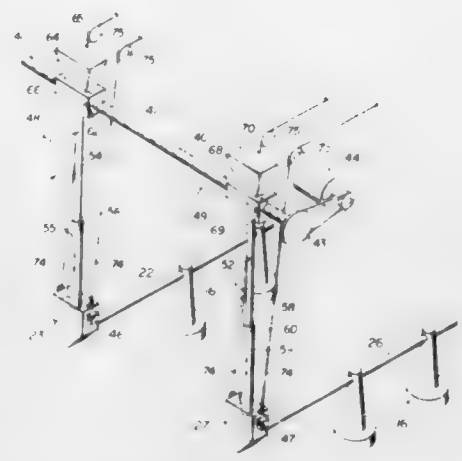
the second end of the tube being adapted to receive gas under pressure for conveyance through the tube to the chamber.

4,082,064

ANIMAL FEEDING APPARATUS

Alfred Turenne Newell, III, 324 Redwood St., Birmingham, Ala. 35210

Filed Nov. 26, 1975, Ser. No. 635,644
Int. Cl.[2] A01K *5/02, 39/00*
U.S. Cl. 119—51.11 **17 Claims**



1. An animal feeding apparatus, comprising:

stationary feed conveying means;

movable feeder assembly means positioned generally below said stationary feed conveying means and including one or more feeding pans each of which has an open portion through which animals can withdraw feed when said feeder assembly means is at a predetermined feeding position, receptacle means for receiving and holding feed, and conveying conduit means connected between said receptacle means and said feeding pans for supplying feed from said receptacle to said feeding pans;

actuating means connected with said feeder assembly means to move said feeder assembly means relative to said stationary feed conveying means between said predetermined feeding position and a non-feeding position at which said animals cannot withdraw feed from said feeder assembly means;

control means for controlling said actuating means to automatically cause movement of said feeder assembly means to said feeding position for a first predetermined period of time and then cause movement of said feeder assembly means to said non-feeding position for a second predetermined period of time;

movable conduit means of variable length connected between said stationary feed conveying means and said receptacle means to provide a feed passageway therebetween; and

auxiliary feed reservoir means distinct from such feedconveying passageway but connected to said stationary feed conveying means in alignment with said movable conduit means for receiving feed displaced in such passageway upon movement of said feeder assembly means between said feeding and non-feeding positions without significant compression of the feed within said conduit means, whereby a bonding together of the individual particles of the feed within said conduit means and a consequent clogging of the feed path there-through are precluded.

4,082,065

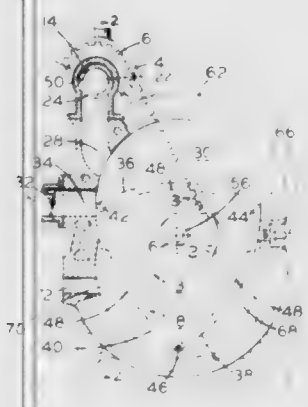
ROTARY INTERNAL COMBUSTION ENGINE

Ernest W. Baxter, 415 E. Main St., Van Wert, Ohio 45891

Filed Mar. 5, 1976, Ser. No. 664,142
Int. Cl.[2] F02B *53/06*
U.S. Cl. 123—219 **1 Claim**

1. In a rotary internal combustion engine of the Wankel type, a three-lobed rotor having spices turning through 360°, a shaft for mounting said rotor and effecting eccentric rotation during the 360° rotation of said three-lobed rotor, a figure-8-shaped

epitrochoidal chamber providing walls in which said rotor turns, the rotor apices of said rotor being in constant contact with said walls, a carburetor for the fuel supplied to said internal combustion engine and including a fuel intake port opening into said chamber to provide an air-fuel mixture which is supplied through said port opening serving as an inlet to said chamber, a carburetor valve means operative independently of said shaft to control the fuel-air flow into said chamber at an unrestricted flow rate downstream of said carburetor valve and with a flow rate and amount which is independent of the rotation of said shaft for mounting the rotor, a supplementary air intake port which is circumferentially spaced from the fuel intake port in the direction of rotation of said rotor and open-



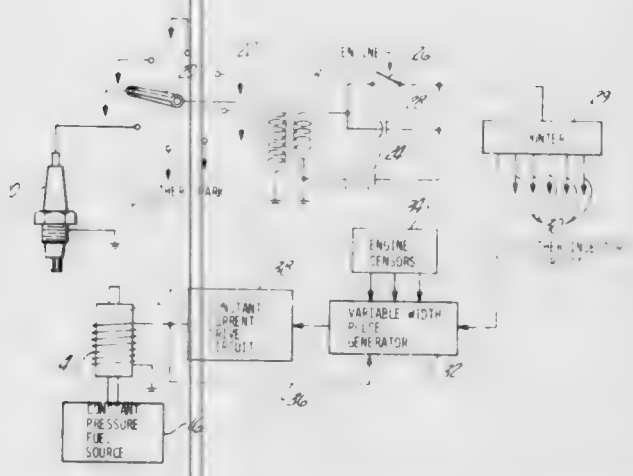
able and operable independently of the throttle opening effective at said fuel intake port, a rotary control valve for controlling said supplementary air intake port and movable at a speed controlled by the speed of said shaft, means driveably interconnecting said shaft and said rotary valve whereby said rotary valve is opened and closed in timed relation to the rotation of said rotor, and whereby an additional charge of air is inducted into the chamber during the intake stage while the engine is operating at throttle openings wherein vacuum develops within said chamber, such additional charge of air being available to obviate subatmospheric pressures each time an apex of said rotor passes said carburetor and air intake ports respectively.

4,082,066

MODULATION FOR FUEL DENSITY IN FUEL INJECTION SYSTEM

E. David Long, Elmira, N.Y., assignor to Allied Chemical Corporation, Morris Township, N.J.

Filed May 3, 1976, Ser. No. 682,701
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—32 EA **15 Claims**



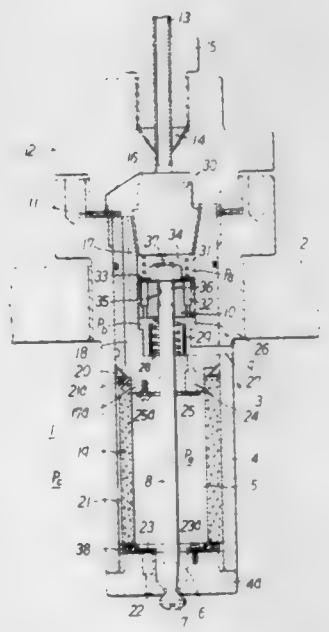
1. In a fuel injection system for an internal combustion spark ignited engine including a source of fuel, at least one injector connected to the fuel source, said injector having an electric coil and being electrically controllable, means for measuring engine operating parameters, and means for controlling the injector to provide the engine with volumes of fuel which vary as a function of the measurements of the operating parameters the improvement comprising: means for generating an electrical signal proportional to the resistance of said coil for measuring the temperature of the fuel adjacent to the injector; means for generating variable width electrical pulses in timed relation to the operation of the engine for controlling the injector to vary the volume of fuel provided to the engine as a function of the output of said means for measuring engine operating parameters; and means for controlling the injector to modify the volume of fuel provided to the engine as a direct function of the output of said means for measuring the fuel temperature adjacent to the injector, whereby the weight of fuel provided to the engine is maintained independent of fuel density changes resulting from fuel temperature variation.

4,082,067

AUTOMATIC FUEL HEATING INJECTION VALVE

Shigeru Yanagihara, Kodaira, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. 26, 1976, Ser. No. 735,254
Int. Cl.[2] F02B *3/00*; F02M *49/02*
U.S. Cl. 123—32 H **13 Claims**



1. An automatic fuel heating and injection valve assembly comprising:

a generally cylindrical casing capable of being mounted fixedly in heat exchange relationship on a combustion chamber of an internal combustion engine and having an inner end capable of being disposed in said combustion chamber;

a fuel injecting port provided at said inner end of said casing;

an evaporating chamber defined in said casing contiguous to said inner end and communicable with said combustion chamber through said fuel injecting port such that heat is exchanged from said combustion chamber to said evaporating chamber by way of said cylindrical casing to aid in fuel evaporation;

an actuator mounted in said casing on the outer side of said evaporating chamber and operative in response to pressure variations in said combustion chamber;

a valve mounted in said fuel injecting port and having a stem connected to said actuator to open and close said fuel injecting port in response to said pressure variations in said combustion chamber;

a fuel chamber provided in said casing on the outer side of said actuator and communicating with a pressurized fuel source through a fuel feeding conduit; and

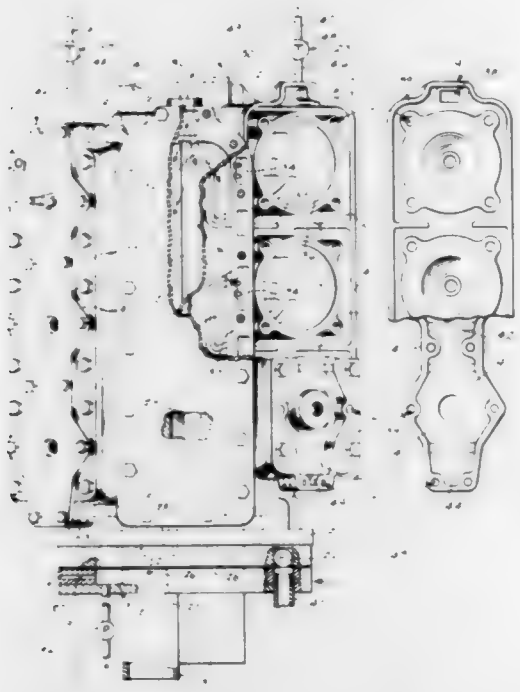
a fuel passage provided axially through said actuator and communicating said fuel chamber with said evaporating chamber.

4,082,068

V-ENGINE COOLING SYSTEM PARTICULARLY FOR OUTBOARD MOTORS AND THE LIKE

David Jerry Hale, Pickett, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Sep. 4, 1975, Ser. No. 610,306
Int. Cl.[2] F01P *7/00, 7/12*
U.S. Cl. 123—41.02 **18 Claims**



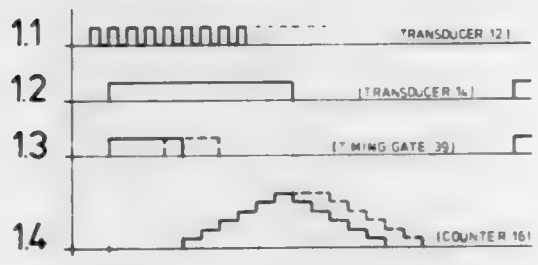
1. In an outboard motor having an engine with a pair of vertically arranged cylinder banks with a pair of parallel cooling water chambers between a common water inlet passageway means at the lower end of the cylinder banks and a common water discharge passageway means at the lower end of the cylinder banks providing a cooling flow upwardly and then downwardly to the discharge passageway means, pressure relief valve means in said discharge passageway means and selected to hold the discharge passageway means closed below a predetermined engine speed, and a pair of thermostatic valve means connected one each to the upper portion of each of said water cooling chambers to separately control water exit from the upper end portion of said chambers at idle.

4,082,069

METHOD AND APPARATUS TO DETERMINE THE TIMING OF CYCLICALLY REPETITIVE EVENTS, PARTICULARLY IGNITION INSTANT FOR INTERNAL COMBUSTION ENGINES

Hartmut Mayer, Aidlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 24, 1976, Ser. No. 660,858
Claims priority, application Germany, Mar. 20, 1975, 2512166
Int. Cl.[2] F02P *5/04*
U.S. Cl. 123—117 D **18 Claims**



1. Method to determine the timing of the ignition instant with respect to cyclical operation of a movable part of an internal combustion engine, in dependence on engine speed, comprising the steps of

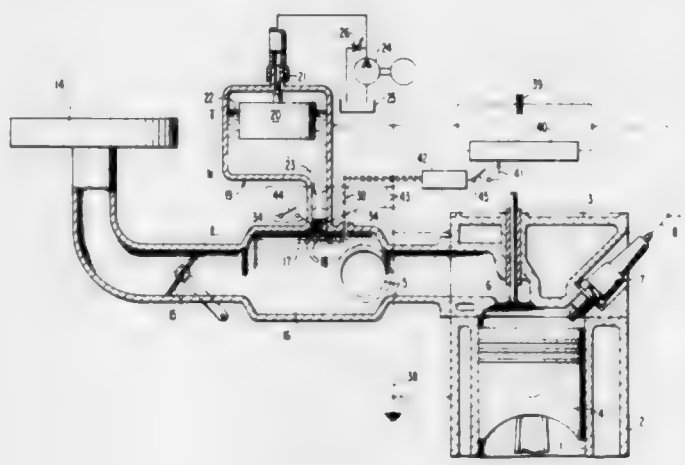
generating a sequence of pulses as a function of movement of, and synchronously with operation of the engine part;
generating a first reference pulse upon occurrence of a predetermined position of the engine part;
determining a timing interval having a predetermined timing duration upon generation of the first reference pulse;
generating a second reference pulse occurring after said first reference pulse, and after said timing interval;
counting the pulses of the pulse sequence after termination of the timing pulse and until occurrence of said second reference pulse, and accumulating said count in a counter (16);
decrementing the count in the counter until the count state of the counter (16) has reached a predetermined level;
and generating an output signal when the count state of said counter has reached said predetermined level.

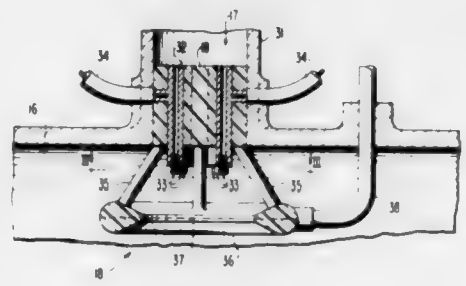
4,082,070

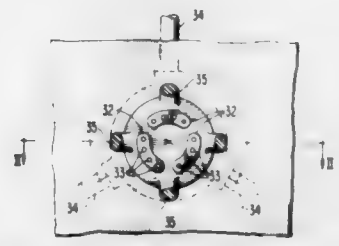
INSTALLATION FOR FEEDING AND ATOMIZING LIQUID, ESPECIALLY COMBUSTION FUEL

Helmut Säufferer, Esslingen, and Karl Willmann, Aichwald, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Oct. 16, 1975, Ser. No. 623,051
Claims priority, application Germany, Oct. 19, 1974, 2449848
Int. Cl.[2] F02B *33/00*
U.S. Cl. 123—119 E **40 Claims**







28. Apparatus for the conveyance and atomization of liquid fuel for internal combustion engines, the apparatus including means providing an outlet cross section directed into a chamber exposed to the flow of intake air and being delimited by an electrically conductive material, pressure means providing a conveying pressure for the liquid, fluid-dynamic conduit means for connecting the outlet cross section means and the pressure means, electrode means arranged at a predetermined distance in front of the outlet cross section means, the outlet cross section means having the boundary edges thereof electri-

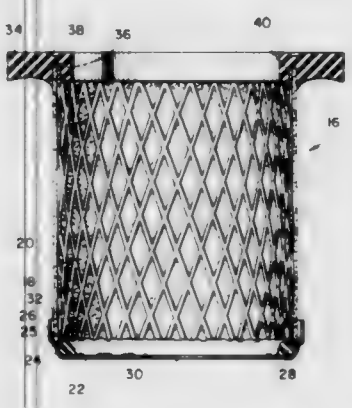
cally insulated at least with respect to the electrode means and constructed narrower with respect to other electrically conductive portions of the outlet cross section means, the boundary edges of the outlet cross section means projecting with respect to other electrically conductive portions of the outlet cross section means in the immediate vicinity of the outlet cross section means in a direction toward the electrode means, means for applying a potential difference between the outlet cross section means and the electrode means during the atomizing period whereby liquid fuel discharged from the outlet cross section means is atomized, the outlet cross section means being formed of a plurality of atomizing nozzle means and at least one nozzle means of the plurality of atomizing nozzle means being electrically insulated with respect to the other of the plurality of atomizing nozzle means, and selective means for one of electrically connecting the at least one nozzle means to the electric potential of the other of the plurality of nozzle means and electrically separating the first nozzle means from the other of the plurality of nozzle means independently of the potential difference between the other of the plurality of nozzle means and the electrode means.

4,082,071

ENGINE VENT VAPOR FILTER AND METHOD OF CONSTRUCTING SAME

Oscar F. Jones, P.O. Box 495, Salina, Okla. 74365

Filed Feb. 20, 1976, Ser. No. 659,694
Int. Cl.[2] F02B *33/00;* B23P *15/16*
U.S. Cl. 123—119 B **4 Claims**



1. In a volumetrically controlled cranckcase ventilation system for internal combustion engines, including a support and cover structure, a container for collecting liquid and solid particles which is sealed at its open end to said support and cover structure, a filter cartridge for retaining small particles, and a control valve, the method of construction of said filter cartridge comprising the steps of:

a. rolling a sheet of perforated metal to form a relatively rigid cylindrical frame open at top and bottom;
b. wrapping an outer layer of filter cloth around said frame, and coextensive therewith;
c. attaching and sealing to one end of said frame and filter cloth a closure plate comprising a shallow dish; comprising the sub-steps of;
   1. placing in the corner of said closure plate a selected amount of thermosetting liquid;
   2. placing said frame and filter cloth in said closure plate so that said liquid will wet said frame and filter cloth; and
   3. heating the assembly of said frame and filter cloth and closure plate to cause said thermosetting liquid to set;
d. forming a molded support and sealing flange at the second end of said frame, of thermosetting material, so as to seal and surround the ends of said frame and filter cloth, and to form a substantially rigid flange; whereby said flange is adapted to be clamped and sealed to said support and cover structure to support said cartridge; comprising the sub steps of;
   1. forming a mold cavity of outer diameter greatr than that of said frame and filter cloth;
   2. inserting into said cavity a selected volume of a selected liquid thermosetting compound;
   3. placing the second end of said frame and filter cloth into said liquid in said cavity; and
   4. heating the assembly to cause said thermosetting liquid to set;

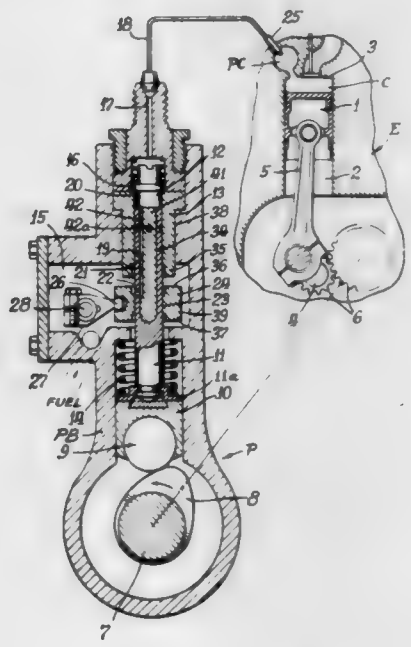
whereby said molded material not only seals the end of said frame and filter cloth, but forms a flange, which is the structural means to support and seal said filter cartridge to said support and cover structure.

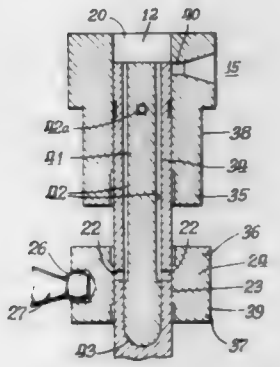
4,082,072

SEALING IN FUEL INJECTION PUMPS

Lloyd E. Johnson, 700 Highview Rd., East Peoria, Ill. 61611

Continuation of Ser. No. 558,639, Mar. 17, 1975, abandoned.
This application Jun. 7, 1976, Ser. No. 693,189
Int. Cl.[2] F02M *59/02*
U.S. Cl. 123—139 AA **20 Claims**





1. In a fuel injection pump for an internal combustion engine, which pump comprises a pump body defining a fuel supply space within which is a relatively low fluid pressure, a fixed cylinder member in said body and having a cylinder chamber, a plunger in that cylinder chamber, precision fitted with a close working clearance to the cylinder member and having a portion external to said cylinder member, a sleeve member in said space, separate from said cylinder member and having a cylindrical chamber within which said portion of said plunger is positioned, said sleeve member being similarly fitted on said portion of the plunger, said plunger being formed about an axis and having a concentric axial bore therein, said plunger reciprocating axially with respect to said members, said plunger having porting means arranged to be closed by reciprocation of the plunger relative to the members, the improvement comprising:

said bore in said plunger having a diameter not less than

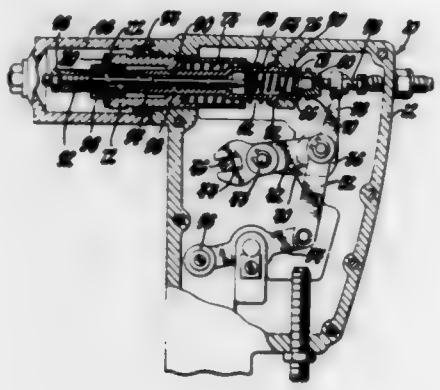
one-half nor more than seven-tenths of the outer diameter of said plunger, whereby pressurization in the bore expands the plunger to reduce the clearance between it and the members.

4,082,073

ENGINE SPEED GOVERNOR WITH IMPROVED PEAK LOAD CONTROL

Richard L. Balogh, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 16, 1976, Ser. No. 696,585
Int. Cl.[2] F02D *1/04*
U.S. Cl. 123—140 R **8 Claims**



1. A governor for limiting the maximum speed of an internal combustion engine operable at varying speeds and loads and having a fuel control actuator for varying fuel input, said governor comprising

a housing carrying actuating means connectable with such fuel control actuator, said means being movable between maximum and minimum fuel positions,

centrifugal speed responsive means in said housing and connected with said actuating means, at least during operation above a predetermined speed, said speed responsive means being arranged to urge said actuating means toward its minimum fuel position with a force varying as an exponential function of the engine speed and increasing with increased engine speed,

a first spring in said housing and biasing said actuating means toward its maximum fuel position over the full range of travel of said first spring, and

a second spring acting on said actuating means in opposition to said first spring during a portion of the travel of said actuating means adjacent its maximum fuel position, said second spring being weaker than said first spring and acting therewith to provide a reduced spring rate for travel of said actuating means over said portion of such travel near its maximum fuel position, said second spring being designed to provide, in combination with said first spring, a decreasing spring rate for travel of said actuating means toward its maximum fuel position in said portion of such travel near its maximum fuel position, said decreasing spring rate being matched to partially offset the increase of force with increased speed of said centrifugal speed responsive means such that movement of said actuating means during said portion of travel near its maximum fuel position equals a substantially constant function of the change in engine speed during said portion of travel.

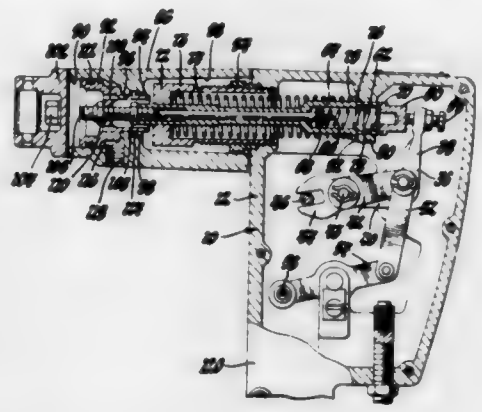
4,082,074

MECHANICAL ENGINE GOVERNOR WITH VARIABLE LIMITING SPEED SETTING

Edward D. Baugh, Union Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 28, 1976, Ser. No. 700,292
Int. Cl.[2] F02D *1/12*
U.S. Cl. 123—140 FG **6 Claims**

1. The combination of an engine governor of the type wherein a speed setting spring has one end fixed in a housing and another operative end effectively engaging and movable with fuel control means connected with speed responsive means that increasingly urge the fuel control means in a fuel decreasing direction as engine speed is increased, said spring being preloaded and yieldable above a predetermined force to permit fuel decreasing movement of the fuel control by the speed responsive means so as to control engine speed at a predetermined setting, and the improvement comprising: a



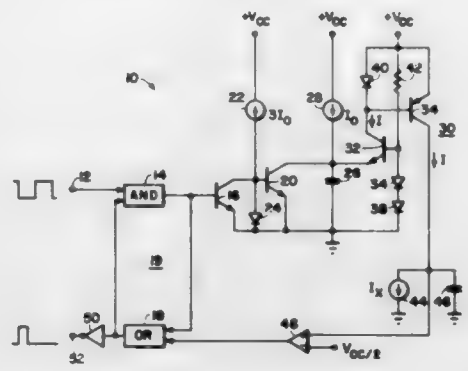
speed adjuster effecive to controllably bias the operative end of the speed setting spring in a direction opposite to its preload force, said adjuster having a force applying element movable with and capable of acting upon the operative end of the spring and of being adjustably biased in relation to the housing to variably oppose the preload force of the spring on the speed responsive means, thereby variably and controllably reducing the effective speed setting of the governor.

4,082,075

INPUT QUARTER CYCLE TIMING CIRCUIT

William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1976, Ser. No. 662,052
Int. Cl.[2] F02P *1/00*
U.S. Cl. 123—148 E **14 Claims**



1. A timing circuit for producing an output signal the time duration thereof being a predetermined percentage of the period of an applied input signal, comprising:

capacitive means having first and second electrodes with said second electrode being connected to a ground reference terminal;

first circuit means coupled to said first electrode of said capacitive means for charging said capacitive means at a predetermined rate during a portion of the applied input signal;

second circuit means coupled to said first electrode of said capacitive means and the input of the timing circuit for discharging said capacitive means at a predetermined rate during another portion of the applied input signal including latch circuit means adapted to receive the input signal for producing first and second portions of a control signal corresponding to first and second time periods of the input signal, and switching circuit means responsive to said first portion of said control signal for discharging said capaci-

tive means, said switching circuit means being responsive to said second portion of control signal to cause said capacitive means to be charged by said first circuit means;

third circuit means coupled to said first electrode of said capacitive means and to said second circuit means for producing the output signal only during the time that said capacitive means is being discharged;

said second circuit means further including:

a. first electron control means having first, second and control electrodes, said first electrode being connected to said ground reference terminal, said control electrode being coupled to said latch circuit means;

b. second electron control means having first and second electrodes, said first electrode being connected to said ground reference terminal, said second electrode being coupled to said second electrode of said first electron control means;

c. third electron control means having first, second and control electrodes, said first electrode being coupled to said ground reference terminal, said control electrode being coupled to said second electrode of said first electron control means, and said second electrode being connected to said first electrode of said capacitive means;

d. first constant current source means coupled to said second electrode of said first electron control means for supplying a first current of a predetermined magnitude; and

e. said second electron control means being rendered nonconductive by said second portion of said input control signal from said latch circuit means such that said capacitive means is charged by said first constant current source means and said second electron control means being rendered conductive in response to said first portion of said input control signal from said latch means such that said capacitive means is discharged at said second predetermined rate.

4,082,076

SPRING TYPE BALL-PITCHING APPARATUS

Jack A. Perry, Box 294, McCamey, Tex. 79752

Filed May 20, 1976, Ser. No. 688,128
Int. Cl.[2] F41B *3/02*
U.S. Cl. 124—7 **6 Claims**



1. Ball pitching apparatus comprising a base, means for releasably supporting a baseball, an arm having opposed ends, a pitching spring, and an arresting spring;

a journal formed on a medial portion of said arm in spaced relation to said opposed ends thereof to thereby present an upper marginal end and a lower marginal end; mount means by which said journal is supported at an elevation above said base to thereby permit said arm to be pivotally mounted in spaced relationship respective to said base such that each of the opposed marginal ends pivot about a common pivot point;

said means for releasably supporting a baseball being affixed to said upper marginal end of said arm; said arresting spring having opposed ends with one end thereof being directly connected to said lower marginal end portion of said arm;

said pitching spring having opposed ends with one end thereof being connected to upper marginal end of said arm at a location between said mount means and said means for releasably supporting a baseball;

the other end of said pitching and arresting springs extend away from said arm, towards one another, and towards a common end of said base;

pitching spring and arresting spring tension adjustable fastener means having one common anchor point to which said other ends of said pitching and arresting springs are anchored to said common end of said base;

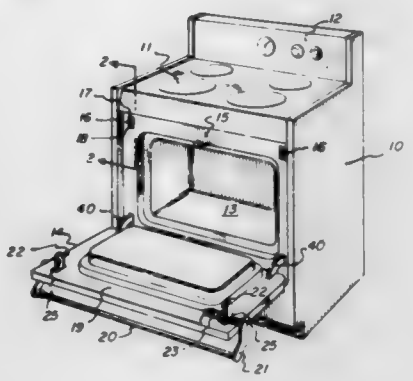
said springs jointly cooperating with said adjustable fastener means to normally bias said arm into a position of rest with the arm being positioned forwardly of a rearward position, whereupon said arm can be forced into a rearward position to store energy in said pitching spring, and when said arm is released said pitching spring accelerates said means for releasably supporting a baseball in a forward direction, while said arresting spring arrests said arm before said means for releasably supporting a baseball approaches the end of its travel, with the arresting force being progressively applied to decelerate the arm until the arm reverses its path of travel and returns to said position of rest.

4,082,077

OVEN DOOR LATCH

Anil C. Marfatia, Brooklyn Center, and George A. Jarvis, Minneapolis, both of Minn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jul. 22, 1976, Ser. No. 707,863
Int. Cl.[2] F23M *7/00*
U.S. Cl. 126—197 **7 Claims**



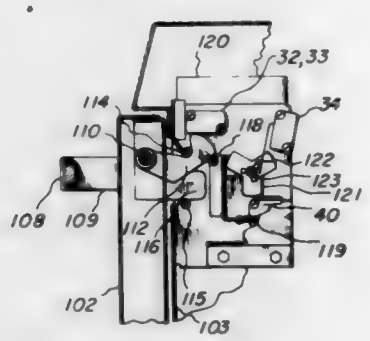
1. A door latching and locking mechanism for a combination cooking appliance of the type adapted to cook foods with both thermal and microwave energy in a single oven cavity, said mechanism comprising an elongated rod member rotatably mounted in the oven door, said rod member oriented generally horizontally across the width of said door; handle means including end portions, said handle oriented generally horizontally across the width of said door and spaced away therefrom by said end portions, said end portions being fastened to the respective ends of said rod member; latch catch means mounted on said rod member and extending through the inside face of said door; latch engaging means mounted within the body of said appliance positioned adjacent said latch catch means when said door is in a closed position, wereby said latch catch means rotates into engagement with said latch engaging means to lock said door into a closed position as said handle means is rotated about the longitudinal axis of said rod member.

4,082,078

PYROLYTIC LOCK ASSEMBLY

Richard A. Thuleen, Minneapolis, and John E. Richard, Buffalo, both of Minn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 6, 1976, Ser. No. 730,229
Int. Cl.[2] F23M 7/00; E05C 3/02
U.S. Cl. 126—197 5 Claims



1. A locking mechanism for a domestic cooking appliance having a pyrolytic cleaning circuit, said appliance having a door, said door including a movable handle portion with latch elements; said appliance having means for receiving and engaging said latch elements when said door is closed, said mechanism comprising:

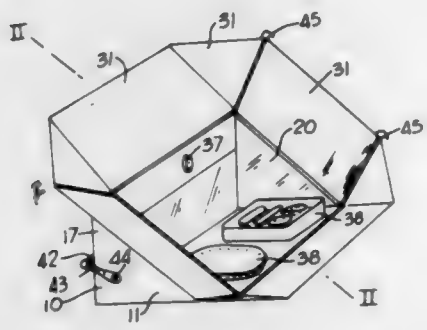
first and second cams mounted for rotation on a common shaft; means for rotating said cams; means for control of said rotating means; a lock element positionable to prevent movement of said latch elements and opening of said door during a pyrolytic cleaning mode of operation; switch means for energizing said pyrolytic cleaning circuit; said first cam adapted to simultaneously engage said lock element and said switch means, said second cam adapted to engage or disengage said control means at preselected rotational intervals.

4,082,079

PORTABLE SOLAR OVEN AND GRILL

John Rodgers, Somerdale, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Feb. 23, 1976, Ser. No. 660,710
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—270 1 Claim



1. An oven adaptable for utilization of solar energy for heating purposes, comprising

an open box, the side walls and bottom wall of which bound a central heating chamber covered by a pane of glass, with the interior faces of the walls coated with a black finish, with one of said walls including a through slot therein to, together with

a grill plate slidably mounted in said box adjacent said through slot of a size to slide through said slot, with

means to heat said grill plate when the grill plate is partially extended through said slot so as to grill food on the portion of the grill plate lying exterior of the heating chamber,

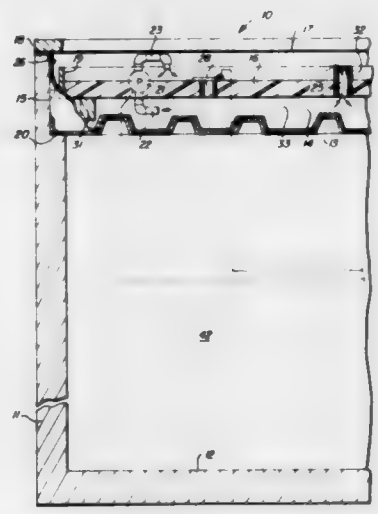
said means comprising a metal plate hinged to the interior of the box which rests on a section of the grill plate that lies within the box so as to heat the grill plate and the section of the grill plate extended beyond the confines of the box by solar energy falling on the hinged plate.

4,082,080

ENERGY ROOF

A. Lincoln Pittinger, 62 Colonia Miramonte, Scottsdale, Ariz. 85253

Division of Ser. No. 575,145, May 6, 1975, Pat. No. 3,994,278.
This application Aug. 13, 1976, Ser. No. 714,252
Int. Cl.[2] F24J 3/02; F28D 19/00
U.S. Cl. 126—271 5 Claims



1. A method for controlling heat exchange between the universe and an enclosure constructed to support in a first portion a quantity of liquid oriented in a place of minimal exposure to solar radiation and in a second portion a quantity of liquid oriented in a place to receive a greater exposure to solar radiation, said portions separated by a member common to each portion, the steps comprising:

positioning during a period of the diurnal temperature cycle the major quantity of the liquid of said first and second portions in said first portion, and

positioning during a second period of said temperature cycle said major quantity of the liquid in said second portion,

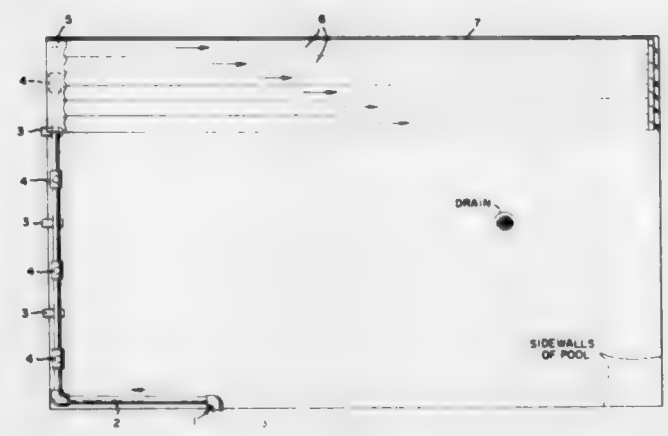
said common member being floatable on the liquid in said first portion and movable vertically to vary the volume of said first portion.

4,082,081

PORTABLE LIGHT-WEIGHT SOLAR HEATER

John M. McColgan, 1623 Roscomare Rd., Los Angeles, Calif. 90024, and Philip F. O'Brien, 142 N. Carmelina Ave., Los Angeles, Calif. 90049

Filed Dec. 18, 1975, Ser. No. 641,740
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—271 6 Claims



1. A flat plate solar energy collector assembly adapted to float on the water surface of a pool, comprising a relatively

thin flexible cellular plastic sheet floating upon and insulating the surface of the pool, a plurality of parallel flexible thin plastic tubes extending over substantially the entire area of the floating plastic sheet, means securing said tubes to the top surface of the floating sheet, entry means provided at one end of said tubes, exit means provided at the other end of said tubes, said exit means from said tubes being relatively large in comparison to the entry means for said tubes and means for pumping the pool water into said entry means and through said thin flexible plastic tubes during hours of exposure to sunlight.

4,082,082

SOLAR ENERGY COLLECTOR

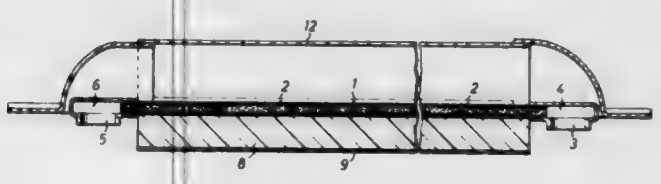
Lawrence Harvey, Coldharbour, near Dorking, England, assignor to The British Petroleum Company Limited, London, England

Filed Aug. 6, 1976, Ser. No. 712,278

Claims priority, application United Kingdom, Aug. 19, 1975, 34398/75

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **6 Claims**



1. A solar energy collector comprising a heat collecting zone which comprises an integrally formed strip including a plurality of parallel, transparent tubes, said tubes being made from a resin selected from the group consisting of polyvinyl chloride, polysulphone and polycarbonate, inlet means communicating with one end of said tubes and outlet means communicating with the opposite end of said tubes for supplying a heat conveying fluid to, and removing said fluid from, said tubes, an energy absorbing particulate or fibrous material substantially filling said tubes but loosely packed so as to permit said fluid to flow through said tubes, said energy absorbing material having a density in the range from 0.9 to 1.0 and a thermal diffusivity below 2.5×10^{-3} $cm^2/sec.$ at temperatures above 20° centrigrade, and an energy transparent cover over one side of said strip for permitting solar energy to pass through said cover and enter said tubes.

4,082,083

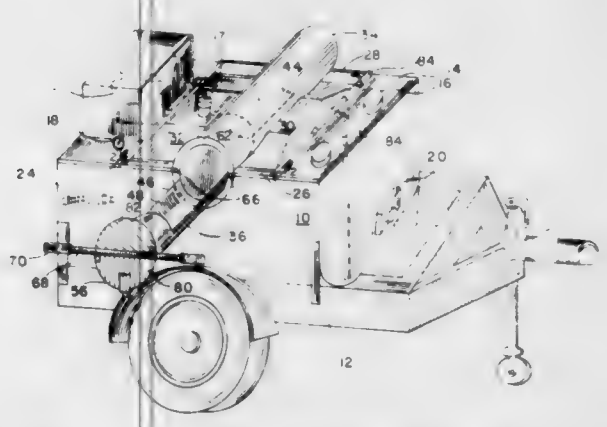
NON-POLLUTING TAR KETTLE ASSEMBLY

Monroe D. Horne, 4161 Cherokee Ave., San Diego, Calif. 92104

Filed Jan. 17, 1977, Ser. No. 759,818

Int. Cl.[2] E01C *19/45*

U.S. Cl. 126—343.5 A **8 Claims**



1. An improved tar kettle assembly, comprising:

a. a tar-receiving kettle having heating means, tar temperature sensing and control means and hot liquid tar pump-out means;

b. a safety loader, for charging solid asphalt into said kettle, comprising:

1. a closure panel closing the top of said kettle, said panel having a lid portion;
2. a hollow fixed cylinder integrated with the top of said lid portion, the lower part of said cylinder and the adjacent part of said lid portion having a common opening therein communicating with the interior of the kettle;
3. a charger cylinder telescopically and reasonably snugly mounted in said fixed cylinder and being essentially a hollow cylinder having a cut-away portion intermediate the length thereof to permit lading asphalt thereinto when the charger cylinder is extended, and said cut-away portion being functional as a discharge opening communicating with said opening in the lower part of the fixed cylinder, the ends of the cut-away portion being closed so that, when extended as well as when telescoped into said fixed cylinder and rotated to discharging position, said charger cylinder effectively closes said opening in the fixed cylinder;
4. and means for manipulating said charger cylinder.

4,082,084

PORTABLE DIAGNOSTIC DEVICE

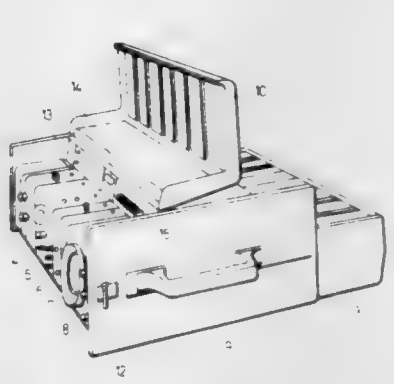
Ervin Lipscher, Budapest, Hungary, assignor to Medicor Muvek, Budapest, Hungary

Filed Jan. 22, 1976, Ser. No. 651,599

Claims priority, application Hungary, Jan. 31, 1975, ME 1832

Int. Cl.[2] A61B *5/00*

U.S. Cl. 128—2 D **2 Claims**



1. A portable diagnostic device, particularly for medical field examinations, comprising a portable carrying case having a handle thereon for carrying the case, and in the case a plurality of replaceable electronic examining units for the examination of different physiological functions and/or conditions, an electronic power supply in the case for feeding each of the electronic examining units, a common display carried by the case receiving output signals of the examining units, electrical connectors providing electrical connections between electrical circuits in the case and electrical circuits in the examining units, the interior of the case comprising at least two separated spaces, a first said space accommodating all of the electronic examining units, a second said space accommodating accessories for the examination, there being at least four said electronic examining units in said first space, a portion of the outside of said portable carrying case being comprised by an L-shaped lid mounted for swinging movement on and relative to said case between a raised position in which said lid rests on said case and a closed position in which said lid closes said first space within said case, said lid in said closed position overlying said examining units, each said examining unit having an L-shaped face plate defining the upper side and the front of said unit, there being an upright front plate between said upper sides of said examining units and the axis of swinging movement of said lid on said case.

4,082,085

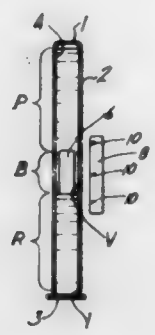
BLOOD CONSTITUENT TESTING METHODS

Stephen Clark Wardlaw, 16 Pine Orchard Rd., Branford, Conn. 06405; Robert Aaron Levine, 31 Pilgrim La., Guilford, Conn. 06437, and James Vincent Massey, III, 80 Driftwood La., Trumbull, Conn. 06610

Division of Ser. No. 673,058, Apr. 2, 1976, Pat. No. 4,027,660. This application Sep. 20, 1976, Ser. No. 724,563

Int. Cl.[2] A61B 5/14

U.S. Cl. 128—2 G 3 Claims



1. A method of determining the approximate volume of the buffy layer in a sample of anticoagulated whole blood comprising the steps of drawing the sample of blood into a capillary tube of constant diameter; centrifuging the drawn sample in the capillary tube to separate the red cells, buffy layer, and plasma gravimetrically into distinct layers; expanding the buffy layer axially of the tube at least about four fold; and measuring the distance between the upper and lower menisci of the buffy layer while the sample remains in the tube to provide a general indication of whether the white cell and platelet count is high, low, or normal.

4,082,086

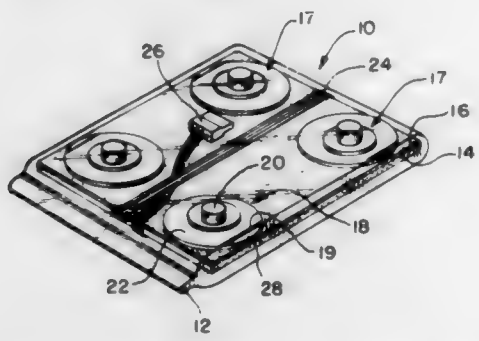
ECG MONITORING PAD

Dennis M. Page, Hinsdale, and Albert J. Bevilacqua, Downers Grove, both of Ill., assignors to M I Systems, Inc., Westmont, Ill.

Filed Dec. 13, 1976, Ser. No. 749,796

Int. Cl.[2] A61B 5/04

U.S. Cl. 128—2.06 E 13 Claims



1. An ECG monitoring device comprising: a first resilient sponge-like sheet, a second resilient sponge-like sheet adhesively attached to said first sheet layered relation and having a plurality of openings formed therethrough, and a plurality of electrode assemblies mounted to said second sheet in overlying relation to each of said openings, each said electrode assembly comprising: a base section having an adhesively coated surface on one side thereof, conductive terminal means carried by said base section and including a portion thereof corresponding to each side of said base section, a pre-gelled, sponge-like pad overlying a first portion of said terminal means on the adhesively coated side of said base section, a second portion of said terminal means on the opposite side of said base section being disposed in an associated opening in said second sheet, removable cover means forming part of each said electrode assembly overlying said adhesive surface on said base section and said pre-gelled pad; and a lead wire connected to each of said second terminal portions and extending between said sheets to the exterior thereof.

4,082,087

BODY CONTACT ELECTRODE STRUCTURE FOR DERIVING ELECTRICAL SIGNALS DUE TO PHYSIOLOGICAL ACTIVITY

David C. Howson, Trumansburg, N.Y., assignor to Isis Medical Instruments, Minneapolis, Minn.

Filed Feb. 7, 1977, Ser. No. 766,836

Int. Cl.[2] A61B 5/04

U.S. Cl. 128—2.06 E 11 Claims



1. For use with apparatus for deriving electrical signals associated with physiological activity, an electrode structure for deriving said signals when disposed upon a body surface, said electrode structure comprising a unitary body of moldable, flexible, soft, elastic, non-conductive material having faces on opposite sides thereof, one face of said opposite faces adapted to be disposed in contact with said body surface, said unitary body having at least one blind opening which extends therein from said one face and forms at least one well therein, an electrode member of flexible, soft, elastic material similar to the material of said unitary body disposed within said unitary body at the bottom of said well, said well being adapted to receive conductive jelly which is disposed in contact with said electrode member, and conductor means connected to the said electrode member for carrying said signals from said electrode member to said apparatus.

4,082,088

APPARATUS FOR DETERMINATION OF RESPIRATORY PASSAGEWAY RESISTANCE

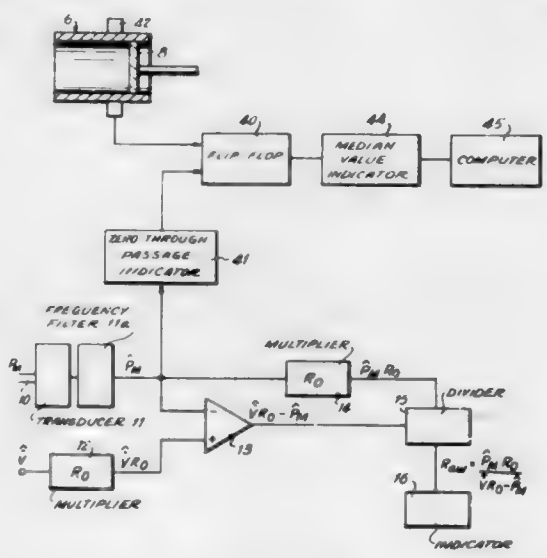
Manfred Franetzki, Erlangen; Volker Korn, Nuremberg, and Karl Prestele, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation-in-part of Ser. No. 559,872, Mar. 19, 1975, abandoned. This application Dec. 7, 1976, Ser. No. 748,385

Claims priority, application Germany, Mar. 22, 1974, 2414019; France, Nov. 28, 1974, 74 38993

Int. Cl.[2] A61B 5/08

U.S. Cl. 128—2.08 14 Claims



1. In an apparatus for determining respiratory passageway resistance, including a breathing tube for conveying a breath flow; a flow resistance in said breathing tube, a pulse generator for subjecting said breath flow to high frequencied pressure and, respectively, flow pulsations; and pressure measuring means comprising a mechanical-electrical transducer for mea-

suring the pressure in said breathing tube, the improvement comprising: an electrical frequency filter connected to said mechanical-electrical transducer for detecting the alternating pressure in said breath flow received by said transducer, said frequency filter being correlated to said pulsating frequency of said pulse generator; and an electronic computer circuit having multiplying, dividing and subtracting elements being connected to the output of said frequency filter, said computer circuit mathematically computing the respiratory passageway resistance R_{aw} from the measured alternating pressure P_M, the predetermined resistace value R_o of the flow resistance, and the predetermined flow pulsations ν of the pulse generator, in accordance with the relationship

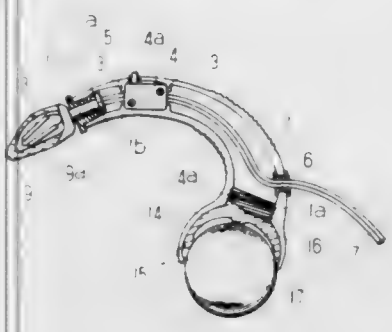
$$R_{aw} = \frac{P_M R_o}{\nu R_o - P_M}.$$

4,082,089

MASSAGING INSTRUMENT AND A MASSAGING ASSEMBLY

Hisa Moriyama, and Toshiyuki Moriyama, both of Nouman 1531, Ichihara-shi, Chiba-ken, Japan

Filed Nov. 8, 1976, Ser. No. 739,737
Int. Cl.² A61H *29/00*
U.S. Cl. 128—24.3 **4 Claims**



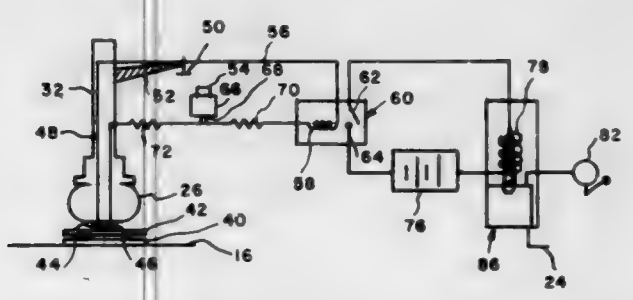
1. A massaging instrument comprising a grippable support member, a first massaging part which is supported by said member and heated to give hot thermal stimulation to human skins, and a second massaging part which is supported by said member and cooled to give cold thermal stimulation to human skins, wherein said member has a permanent magnet and said second massaging part is composed of a magnetic material, whereby said second massaging part is detachably mounted to said member.

4,082,090

MECHANICAL CARDIAC RESUSCITATOR

Roy Major Harrigan, Bromley Mountain Rd., Manchester, Vt. 05254

Filed Jan. 26, 1977, Ser. No. 762,499
Int. Cl.² A61H *7/00*
U.S. Cl. 128—51 **10 Claims**



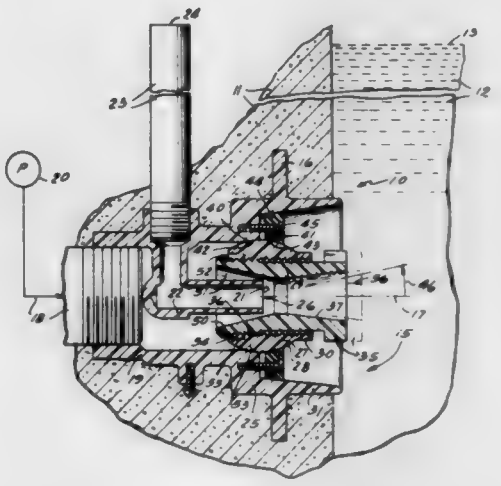
1. Apparatus for mechanical resuscitation which comprises: a plunger, means for driving said plunger between upward and downward positions, means for defining a predetermined region of an associated human torso to which a cyclical force is to be applied, and means for controlling said resuscitation apparatus responsive to impact of said plunger on said predetermined area or the lack of impact on said predetermined area.

4,082,091

HYDRO-AIR FITTING

Alfred Raab, Willowdale, Canada, assignor to Jacuzzi Bros., Inc.

Filed Dec. 22, 1976, Ser. No. 753,450
Int. Cl.² A61H *9/00*
U.S. Cl. 128—66 **6 Claims**



1. In a hydrotherapy nozzle assembly for controlling and directing a flow of aerated water, the assembly comprising a housing forming an axial flow passage for a stream of pressurized water, a tubular air means forming a radially extending air port at the axis of the passage, an externally threaded nozzle member extending downstream of said air port, an internally threaded ball member mounting said nozzle member for movement along and for universal swiveling movement about said axis, and the ball member having respective rearward and forward spherical surfaces, the improvement of a ball socket means and nozzle retention means comprising:

a groove portion of radially reduced outside diameter formed on a rearward end of said nozzle member and having rearward and forward axial walls;

an O-ring member receiveable in said groove portion for retention thereby and extending radially outwardly of the threads on the nozzle member;

a circumferentially extending abutment surface formed in said ball member axially adjacent said internal threads thereof and spaced radially to engage a forward side of said O-ring member;

a spherical socket portion formed in said housing to receive said rearward surface of said ball member; and

a one-piece sealing and retention member received circumferentially about said forward spherical surface of the ball member and secured removably in the housing to retain the ball member swivelably in a selected axial position.

4,082,092

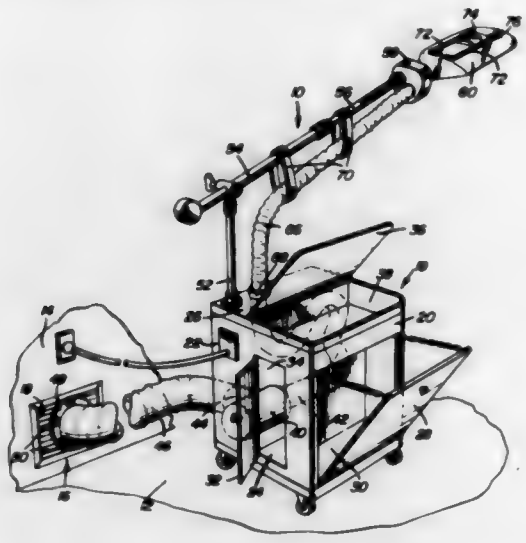
VACUUM CABINET AND GAS VENTING SHIELD

Beatrice D. Foster, 21496 H.C.L. Jackson Dr., Grosse Ile, Mich. 48138

Filed May 11, 1976, Ser. No. 685,169
Int. Cl.² A61B *19/00*
U.S. Cl. 128—139 **3 Claims**

1. In combination with an operating room enclosure defined within the confines of upstanding perimeter wall means, a gas diverting shield disposed within said operating room enclosure and comprising a generally horizontal panel structure defining a shallow downwardly opening cavity, a source of vacuum, passage means communicating said source of vacuum with said cavity, a lower portion of said wall means having an exhaust

vent opening formed therethrough, said passage means including an outlet end portion registered with a portion, only, of said vent opening, said vent opening comprising the inlet for a blower actuated exhaust system for said operating room enclo-



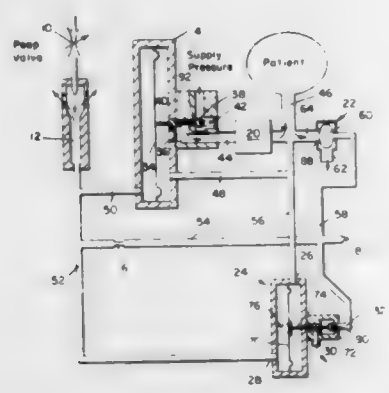
sure, said vent opening including a ferrous foraminated cover thereover, said outlet end portion of said passage means including magnetic attaching means supported therefrom magnetically attaching said outlet end portion to said cover.

4,082,093

COMPENSATOR VALVE

Stanley Eugene Fry, and Claude Calvert Hurd, both of Riverside, Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Apr. 27, 1977, Ser. No. 791,457
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—142.2 **3 Claims**



3. In a ventilator for a patient including means for providing an inhalation phase and an exhalation phase in its operative system having patient connection means and pressure responsive exhalation valve means and including means for determining and providing a positive end expiratory reference pressure in respect to a patient user of said ventilator system with means for distribution of said positive end expiratory reference pressure within the system of the ventilator and first sensing means for sensing a pressure differential between an effort to breathe initiated by said patient user of said ventilator and said reference pressure, and means responsive to said first sensing means within the system of said ventilator for controlling a supply of breatheable gas to be furnished to the patient user of said ventilator and additionally providing second sensing means for sensing a pressure differential between an end expiratory lung pressure remaining in said patient user's lungs at the termination of an expiration and said reference pressure and for varying said patient user's end expiratory lung pressure during any exhalation phase as a function of said positive end expiratory reference pressure, said second sensing and varying means comprising:

a valve housing;

first pressure chamber means in said housing including a first pressure port means communicating with said patient connection means;

second pressure chamber means also defined in said housing including a second pressure port means communicating with said distributing means;

flexible resilient means located in said housing for separating said first pressure chamber means from said second chamber means and resiliently movable therebetween;

an adjustable valve fitting mounted on said valve housing having a third pressure port means communicating with said exhalation valve means;

a valve seat in said adjustable valve fitting communicating with said third pressure port;

ball valve means in said adjustable valve fitting for seating at said valve seat;

shaft means linking said ball valve to said flexible resilient means;

spring means in said second pressure chamber operative to maintain positive bias upon said flexible resilient means so as to maintain said ball valve seated against said valve seat;

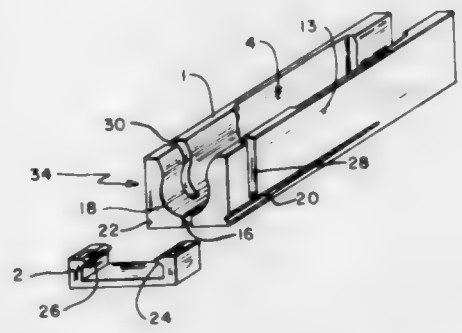
fourth pressure port means in fluid communication with atmospheric pressure and said third pressure port means when said ball valve means is unseated from said valve seat thereby, varying the pressure in said pressure responsive exhalation valve means during any exhalation phase as a function of said positive end expiratory reference pressure.

4,082,094

LOCKING DEVICE FOR INTRAVENOUS INSERT

Calvin L. Dailey, 884 6th St., Petaluma, Calif. 94952

Filed Sep. 13, 1976, Ser. No. 723,047
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—214 R **8 Claims**



1. In a locking device for firmly but releasably holding a tubing connection between a vein insert and supply tubing for intravenous fluid, a body formed of resilient material, said body being provided with a shaped channel extending along its length, said body being compressible transverse to said channel whereby side portions of said body on each side of said channel can be forcibly depressed toward one another, and means for releasably applying compression on said side portions of said body to forcibly depress said side portions toward one another to engage and hold both the vein insert and the supply tubing within said shaped channel of said body.

4,082,095

STOMACH PUMP

Barry Mendelson, Spring Valley, N.Y., and Stephen A. Denman, Dayton, Ohio, assignors to Barry Mendelson, Spring Valley, N.Y.

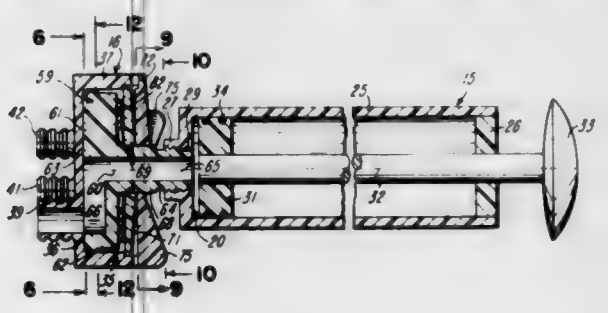
Continuation of Ser. No. 621,061, Oct. 9, 1975, abandoned. This application Jul. 18, 1977, Ser. No. 816,539
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—235 **17 Claims**

1. Intubation apparatus comprising:

a syringe having an end portion including an opening communicating with the interior of said syringe, and

a valve assembly connected to said syringe end portion

including a housing having a plurality of ports, a rotor member, said housing and rotor member being rotatably mounted with respect to each other; first means for automatically setting said housing and rotor member into a selected one of a first portion of a plurality of operating positions relative to each other solely by rotating said housing relative to said rotor member, said plurality of operating positions corresponding to said plurality of ports; means formed by said housing and rotor member for providing a fluid passage between a selected one of said ports and said opening in said syringe end portion



upon setting said housing and rotor member in a corresponding selected operating position; and second means including detent means for setting said housing and rotor member into a selected one of a second remaining portion of said plurality of operating positions by releasing said detent means and rotating said housing relative to said rotor member, whereby the provision of a fluid passage between one of said plurality of ports corresponding to one of the second portion of said plurality of operating positions and said syringe opening solely by rotating said housing relative to said rotor member is normally prevented.

4,082,096

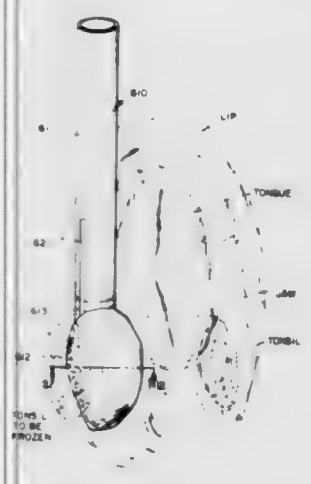
CRYOSURGICAL SYSTEM

Jerrel W. Benson, 2580 Snowberry La., Pepper Pike, Ohio 44124

Division of Ser. No. 423,013, Dec. 10, 1973, Pat. No. 4,022,215. This application Feb. 9, 1977, Ser. No. 767,043

Int. Cl.[2] A61B *17/36*

U.S. Cl. 128—303.1 **6 Claims**



1. A method of cooling selected surface areas of living tissues comprising the steps of:

(a) covering a resilient mass of porous material with a deformable liquid cryogen impervious membrane capable of confining liquid cryogen within said mass;

(b) conforming the membrane covered mass to a configuration which corresponds to the size and shape of the surface areas to be treated;

(c) pressing the preshaped membrane covered mass into firm engagement with the surface areas to be treated;

(d) introducing a controlled supply of liquid cryogen into said mass whereby the porous mass ducts the liquid cryogen along a densely interconnected array of flowpaths into contact with said membrane and heat is transferred from the surface areas to be treated through said membrane to said liquid cryogen; and,

(e) the step of pressing the membrane covered mass into engagement with the surface areas to be treated being performed with sufficient force to cut off the normal flow of blood through said tissues thereby permitting said tissues to freeze far more rapidly than would be possible if normal blood flow were maintained during the initial stages of freezing.

4,082,097

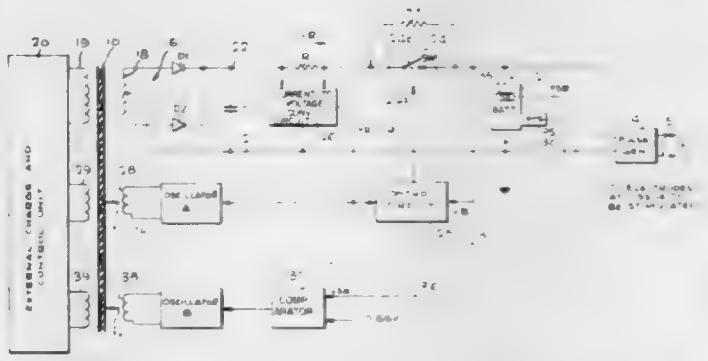
MULTIMODE RECHARGING SYSTEM FOR LIVING TISSUE STIMULATORS

Alfred E. Mann, and Joseph H. Schulman, both of Los Angeles, Calif., assignors to Pacesetter Systems Inc., Sylmar, Calif.

Filed May 20, 1976, Ser. No. 688,411

Int. Cl.[2] A61N *1/36*

U.S. Cl. 128—419 PS **16 Claims**



1. A rechargeable tissue stimulation system adapted to be in part implanted in the body of a patient for applying electrical stimulation pulses to selected body tissue comprising:

implanted pulse circuit means for generating and applying said stimulation pulses;

implanted rechargeable battery means operably connected to supply operating energy to said pulse circuit means;

implanted means including at least first sensing means coupled to said battery means for sensing the state-of-charge of said battery means and for transmitting a first signal when the state-of-charge of said battery means reaches a first level;

external means including an external source for providing recharging energy; and

implanted recharge means responsive to recharging energy provided by said external source for recharging said battery means, means for generating and transmitting a signal indicative of the rate said recharge means recharge said battery means, said external means including receiver means for receiving said first signal and the signal indicative of the rate said battery means is recharged, and external circuit means responsive to the signals received by said receiver means for controlling the energy supplied by said source.

4,082,098

FLAVORED CIGARETTE

William F. Owens, Jr., Pisgah Forest, N.C., assignor to Olin Corporation, Pisgah Forest, N.C.

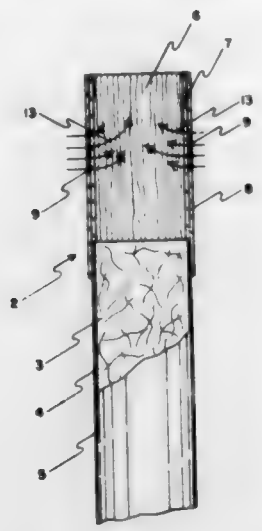
Filed Oct. 28, 1976, Ser. No. 736,421

Int. Cl.[2] A24D *1/02, 1/04*

U.S. Cl. 131—9 **5 Claims**

1. A flavored ventilated filter tip cigarette comprising a tobacco column and an abutting filter, said filter enclosed by an air permeable wrapper impregnated with a volatile smoke flavoring agent, a tipping envelope enclosing said enclosed filter having a ventilated area in communication with said wrapper, said envelope and wrapper being adhered together

over regions of their contiguous surfaces but not over the ventilated area in said tipping envelope, said ventilated area being adhesive-free and air permeable permitting ambient air



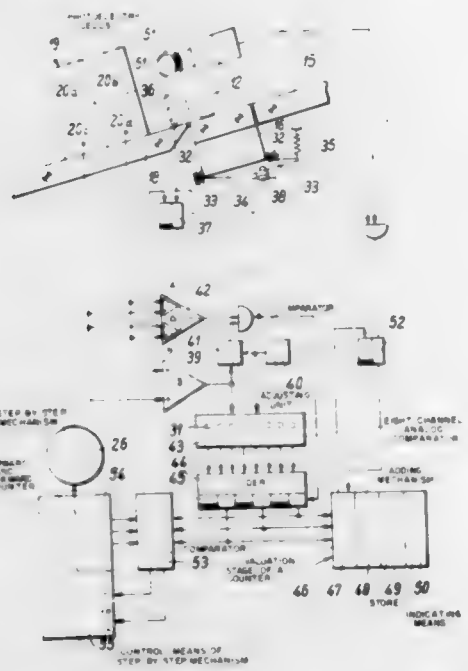
to flow therethrough and through said wrapper whereby volatile smoke flavoring agent is released from said wrapper and carried into said filter imparting flavor to the smoke from the cigarette.

4,082,099

MACHINE FOR IDENTIFYING AND COUNTING COINS OR THE LIKE

Günter Iwersen, Angerburger Allee 551, Berlin 19, Germany

Continuation of Ser. No. 566,760, Apr. 10, 1975, abandoned. This application Oct. 8, 1976, Ser. No. 731,002
Claims priority, application Germany, Apr. 19, 1974, 2419597
Int. Cl.[2] G07D *3/16*
U.S. Cl. 133—3 R **6 Claims**



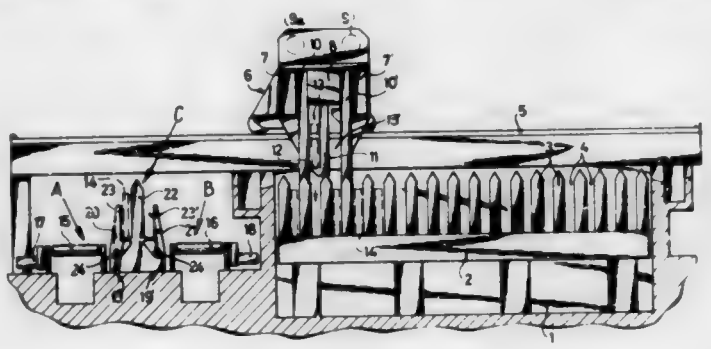
1. Apparatus for identifying and counting coins, coin-like tokens or the like comprising an optico-electronical signal transmitter past which the coins are adapted to be guided and which supplies signals corresponding to different sizes of the coins or the like to at least one counter, characterized in that the optico-electronical signal transmitter is formed by an image converter consisting of two identical cells arranged side by side in the moving direction of the coins and abutting each other along an abut joint, which cells gauge the surface of the silhouette of the respective coins and supply signals analogous to that part of the surface measured by each of them to a summation unit and a zero-passage discriminator, which discriminator when equal voltages are reached at the outputs of the cells initiates the summation unit to at least one rating comparator which in its turn feeds the counter with the rating results.

4,082,100

APPARATUS FOR COOLING HOT SLABS

Willi Bruno Manthey, Duisburg, and Horst Deiwick, Krefeld-Gartenstadt, both of Germany, assignors to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH, Duisburg, Germany

Filed Apr. 11, 1977, Ser. No. 786,396
Claims priority, application Germany, Apr. 10, 1976, 2615924
Int. Cl.[2] B08B *3/04*
U.S. Cl. 134—76 **10 Claims**



1. In an apparatus for cooling hot slabs in a soaking pit divided into a plurality of slab-receiving compartments, wherein a railborne transporter includes a traverse spanning said pit, first and second guide means fixedly depending from said traverse at locations separated in the transport direction, vertically movable gripper means on said traverse disposed between said first and second guide means and defining therewith a first and a second carrying cage alignable with a pair of adjoining compartments, hoist means for raising and lowering said gripper means, and retractable slab-supporting means on said gripper means alternately extendable across the bottoms of said cages for depositing a hot slab from said first cage in a selected compartment and then lifting a cooled slab into said second cage from an adjoining compartment,

the combination therewith of:

first and second positioning means disposed in a loading zone between a pickup area and a receiving area adjoining said pit, the path of said transporter extending to a stop above said loading zone;

first conveyor means for delivering hot slabs to said pickup area, said first positioning means being operable to engage a slab lying prone on said first conveyor means and to erect the engaged slab in line with said first cage upon a stationing of said transporter at said stop; and

second conveyor means for removing cooled slabs from said receiving area, said second positioning means being alignable with said second cage upon a stationing of said transporter at said stop for engaging a slab lowered erect by said gripper means and depositing the engaged slab prone on said second conveyor means, said gripper means being thereupon operable to seize a slab erected by said first positioning means.

4,082,101

COOLANT NOZZLE APPARATUS IN TWIN-BELT CONTINUOUS CASTING MACHINES

Robert William Hazelett, Winooski, and John Frederick Barry Wood, Burlington, both of Vt., assignors to Hazelett Strip-Casting Corporation, Winooski, Vt.

Division of Ser. No. 602,579, Aug. 7, 1975, Pat. No. 4,002,197, which is a division of Ser. No. 414,237, Nov. 9, 1973, Pat. No. 3,937,270. This application Jun. 9, 1976, Ser. No. 694,340
Int. Cl.[2] B08B *3/02*
U.S. Cl. 134—127 **4 Claims**

1. In twin-belt casting machines wherein the casting region is defined between opposed portions of a pair of revolving endless flexible casting belts and wherein at least one of the belts

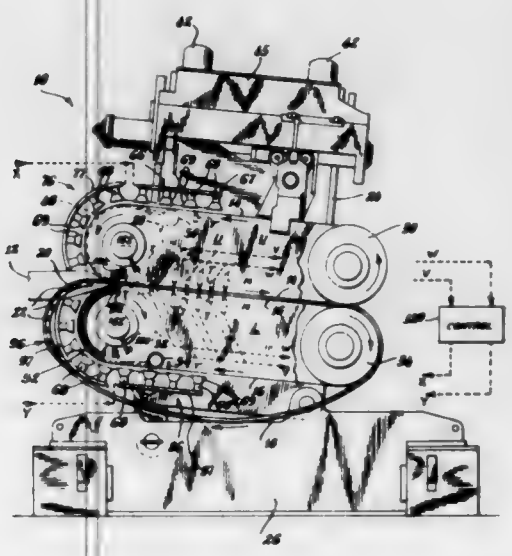
travels partially around a nip roll positioned upstream from the casting region and said nip roll has a plurality of axially spaced narrow circumferential fins with deep circumferential grooves between the respective neighboring fins, coolant apparatus comprising:

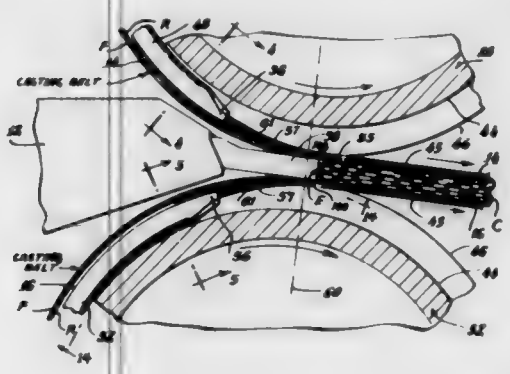
a plurality of curved coolant feed tubes,

said curved coolant feed tubes each being positioned between a pair of said fins and being nested within a respective one of said deep circumferential grooves of the nip roll beneath the casting belt as the belt travels around the nip roll,

each of said curved tubes having a nozzle at its end with its discharge being aimed toward the belt for applying liquid coolant to the casting belt,

a plurality of fingernail-like extenders,





said extenders each being positioned between a pair of said fins and being attached to the end of a respective coolant feed tube,

each extender being positioned between the end of the respective tube to which it is attached and the nearby casting belt,

each extender projecting beyond the nozzle of the respective tube for intercepting and spreading out the liquid coolant being discharged from the nozzle for directing the liquid coolant as a fast moving layer to be applied onto the belt, and each of said fingernail-like extenders having a width just slightly less than the distance between the pair of fins between which it is positioned for shielding the casting belt for preventing the liquid coolant from prematurely engaging the belt.

4,082,102

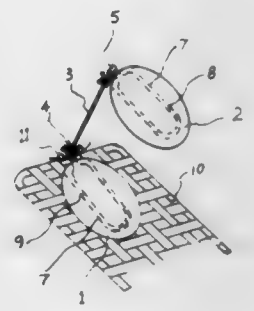
SUNSHADE—FOLDABLE AND HAND-TRANSPORTABLE

Hans Herbert Heuer, 8230 Reche Canyon Rd., Colton, Calif. 92324

Continuation-in-part of Ser. No. 687,539, May 18, 1976, abandoned. This application Apr. 19, 1977, Ser. No. 788,990

Int. Cl.[2] **E04F** *10/00*

U.S. Cl. 135—5 R **8 Claims**



1. Shielding means particularly suitable for use by an individual as a sunshade for his face, comprising:

first generally flat shield means;

second generally flat shield means;

rigid, elongate means formed into a first loop configuration at one end and a second loop configuration at the other end;

first cylindrical means adapted to fit snugly within said first loop configuration;

second cylindrical means adapted to fit snugly within said second loop configuration;

said first generally flat shield means and said first cylindrical means being adapted for interconnection in use whereby the first cylindrical means seated in said first loop configuration serves as a pivot for fan-like adjustment of the first shield means around said one end of said rigid elongate means;

said second generally flat shield means and said second cylindrical means being adapted for interconnection in use whereby the second cylindrical means seated in said second loop configuration serves as a pivot for fan-like adjustment of the second shield means around said other end of said rigid elongate means;

said rigid, elongate means including manual loop size adjusting means to permit independent adjustment of the loop size at each of its end loop configurations;

each of said shield means being rotatable in use around its pivot through at least 300° of rotation;

the parts of said shielding means cooperating so that when it is in use one of the generally flat shield means can be held flush against a horizontal surface by weight means, said rigid elongate means can extend upwardly therefrom at any of various angular adjustments and the other shield means can be adjusted to a position of outward extension from said rigid elongate means at any of a variety of angular positions with respect to the latter;

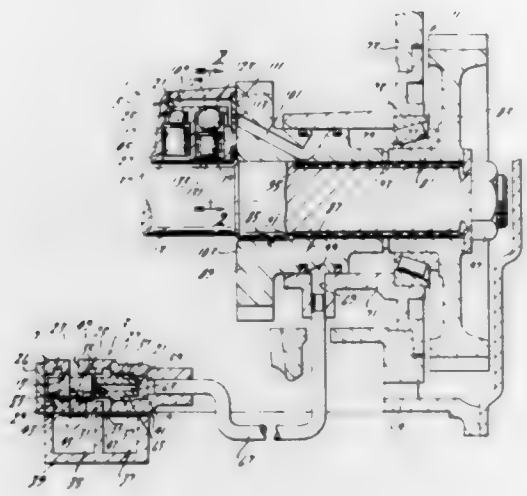
the loop configuration at the pivot of said other shield means being of such character that the weight of that shield means acting through frictional contact of its cooperating cylindrical means with said loop configuration has a tendency to cause tightening of the latter around said cylindrical means which serves to resist downward movement of said other shield means about its pivot under the force of gravity during normal usage of the shielding means by a sunbather.

4,082,103

CENTRIFUGAL FORCE HYDRAULIC GOVERNOR

Uno Kuusik, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 24, 1976, Ser. No. 722,171
Int. Cl.[2] G05D *13/36*
U.S. Cl. 137—54 6 Claims



1. Governor apparatus comprising a body adapted to be mounted on one side of a rotatable member mounted in a case, said body having a passage therein adapted to be connected to a source of fluid under pressure, first and second cylinders in said body each having a valve opening placing said passage in communication with the cylinder, a vent from each of said cylinders, movable valve means in said cylinders adapted to control the opening and closing of said valve openings, each of said movable valve means including a ball valve member adapted to close said opening and a weight urging said ball toward a closed position in response to rotation of said rotatable members, relay valve means mounted on said case, said relay valve means including a bore, an inlet to and an outlet from said bore, a transfer port, a transfer line means connecting said transfer port to said passage in said body, a vent from said bore, and a valve member movable in said bore to selectively connect said inlet to said outlet and said outlet to said vent, said valve member having a land therein adapted to meter the flow of fluid from said inlet to said outlet, the valve member having a passage therein placing said inlet in communication with said transfer port, and a restriction in said passage.

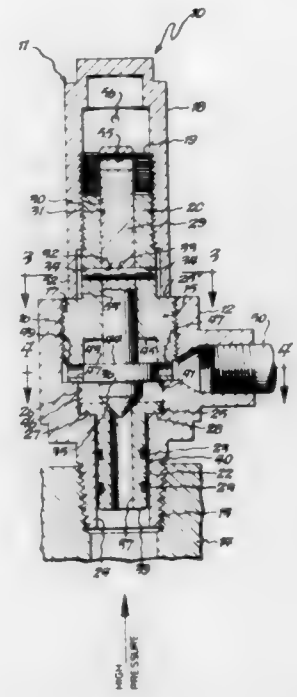
4,082,104

PRESSURE RELIEF VALVE

Joseph G. Keeney, Town of Tonawanda, N.Y., assignor to C. H. Heist Corporation, Clearwater, Fla.

Filed Jun. 21, 1976, Ser. No. 698,087
Int. Cl.[2] F16K *17/14*
U.S. Cl. 137—71 23 Claims

1. A pressure relief valve for a high pressure fluid source comprising a housing, first bore means in said housing, first plunger means having first surface means in effective sliding engagement with said first bore means, second bore means in said first plunger means, third bore means in said housing in alignment with said first bore means, second plunger means having second surface means in effective sliding engagement with said third bore means, third surface means on said second plunger means, fourth surface means on said first plunger means for selective engagement in sealing relationship with said third surface means, fifth surface means on said second plunger means adjacent said third surface means for blocking continuous flow of high pressure fluid through said second bore means and beyond said fifth surface means when said third and fourth surface means are in said sealing relationship, releasable holding means effectively coupled between said second plunger means and said housing to retain said third and fourth surface means in engagement against the force exerted by high pressure fluid against said first plunger means and said fifth surface of said second plunger means, said holding means being responsive to a predetermined pressure valve of said high pressure source to release said second plunger means, means in said housing for permitting said third and fourth surface means to disengage when there is a release of said



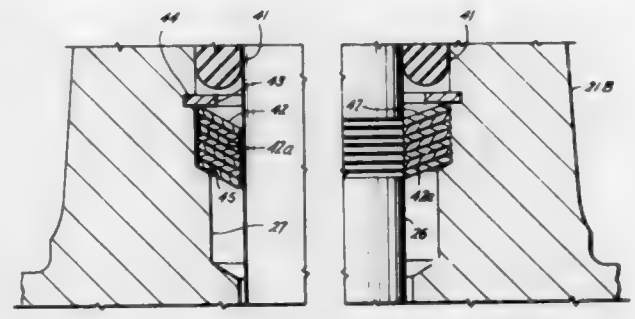
holding means, and conducting means for receiving said high pressure fluid from said high pressure fluid source through said second bore means for conducting high pressure fluid from said housing upon disengagement of said third and fourth surface means resulting from release of said holding means.

4,082,105

VALVE STEM PACKING ASSEMBLY WITH TEMPERATURE RESPONSIVE SEAL

Herbert Allen, Houston, Tex., assignor to Carmeron Iron Works, Inc., Houston, Tex.

Filed Dec. 17, 1976, Ser. No. 751,461
Int. Cl.[2] F16K *41/00*
U.S. Cl. 137—72 12 Claims



1. A valve, comprising a valve body having a passageway therethrough and an opening therein connecting the passageway with the exterior of the body, a closure member mounted within the body for opening and closing the passageway, a stem extending through the opening and connecting with the closure member for moving it between opened and closed positions, said stem being spaced from the opening to define an annular space therebetween, a packing of resilient material disposed within the space for sealing between the stem and the opening, at least one relatively rigid, spring-like annular element disposed within said space, and means holding each said element in a distorted shape in which its outside diameter is closely received within the opening and its inside diameter is greater than and substantially concentric with the outside diameter of the stem, said holding means being fusible at a desired temperature to permit each said annular element to return toward an undistorted shape in which its inside diameter

is forced against the outside diameter of the stem and its outside diameter is forced against the opening, whereby the space may be closed despite destruction of the packing by heat.

4,082,106

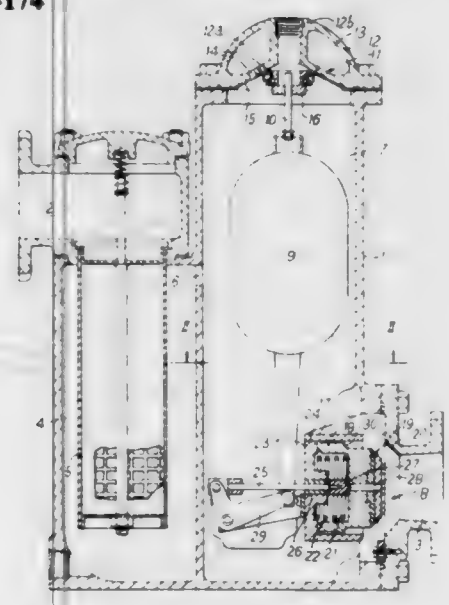
AIR ELIMINATOR VALVE

Alan George Butcher, Bracknall, England, assignor to Dresser Europe S. A., Brussels, Belgium

Continuation of Ser. No. 510,867, Sep. 30, 1974, abandoned. This application Mar. 31, 1976, Ser. No. 672,531

Int. Cl.[2] F16K *31/18*

U.S. Cl. 137—174 **6 Claims**



1. An air eliminator valve comprising a housing, a chamber defined by said housing and having an inlet and an outlet for coupling the chamber to a liquid supply line, the valve being disposed in use so that air collects in the upper part of the chamber, a float in the chamber movable along the axis of the chamber which extends through the top of the chamber, an air release valve at the top of the chamber, the air release valve comprising a valve seat having a seating surface generated by a generatrix rotated 360° around said axis and intersecting said axis and extending outwardly therefrom with the portion of the generatrix intersecting said axis being at an angle to said axis, said valve seat surface having thruflow apertures therein, a flexible diaphragm of generally annular configuration for superposed placement against the seating surface of the valve seat to seal the vent apertures, means securing one end of said diaphragm while leaving the other end free and a coupling connecting the free end of the diaphragm with the float, whereby when the float falls it peels the diaphragm away from its placement position against the seat surface to uncover the vent apertures and allow venting of the air.

4,082,107

AUTOMATIC DRAIN VALVE FOR A COMPRESSED AIR SYSTEM

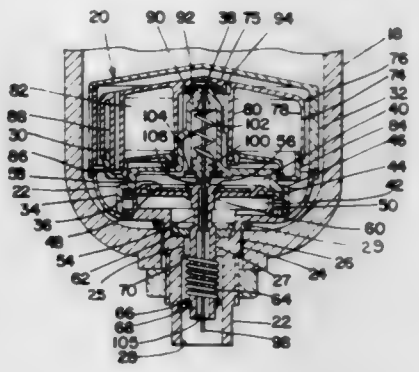
Robert K. Hoffman, Plainwell, and David C. Franson, Kalamazoo, both of Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 637,134, Dec. 3, 1975, abandoned. This application May 4, 1977, Ser. No. 793,691

Int. Cl.[2] F16T *1/20*

U.S. Cl. 137—195 **7 Claims**

1. A valve for automatically draining liquid from a pressurized air system comprising a container having an inlet and an outlet for connection to the system and having a space at its lower end for collecting liquid separated from said air and a space at its upper end for receiving air under pressure from the system, an insert mounted in an opening at the lower end of the container and having a passage therethrough, an inverted cup-shaped member secured to said insert and having screen means in its side wall, a body attached to the insert in radially spaced relation within said member to form a housing with a chamber therein, a diaphragm separating the chamber into upper and lower chambers, a valve element sealingly engaging the diaphragm and extending into the insert passage to close the insert passage and form a differential area across the valve element, resilient means biasing the valve element to a position opening the passage, the housing having a first passage communicating said lower space with the lower chamber through said screen means and having a second passage communicating said upper space with the upper chamber also through said



screen means, a float within said member normally closing said second passage, said float being movable by liquid in said lower space toward the upper wall of said member when the liquid reaches a predetermined level to open said second passage so that the air pressure in the upper chamber and the liquid pressure in the lower chamber offset each other whereby said resilient means and the pressure acting against the differential area move the diaphragm and the valve element to an open position and liquid in the lower chamber flows through the insert passage to drain the container.

4,082,108

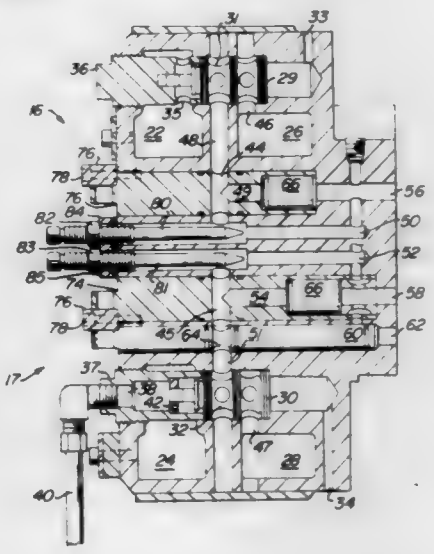
VALVE BLOCK

Thomas Dininio, Milville, N.J., assignor to Maul Technology Corporation, Indianapolis, Ind.

Filed Jul. 19, 1976, Ser. No. 706,647

Int. Cl.[2] F16K *11/10*

U.S. Cl. 137—269.5 **18 Claims**



1. A valve block assembly for use in glassware forming machines comprising:

a valve block having at least two rows of valve stations arranged parallel to one another;

a separate air supply manifold communicating with each of said rows of valve stations for supplying pressurized air to said valve stations;

a separate air exhaust manifold communicating with each of said rows of valve stations for exhausting air from said valve stations;

a cartridge valve disposed at each of said valve stations for controlling the flow of air through a respective valve station;

an outlet conduit forming a flow path away from each of said cartridge valves;

a flow control valve disposed within said outlet conduits;

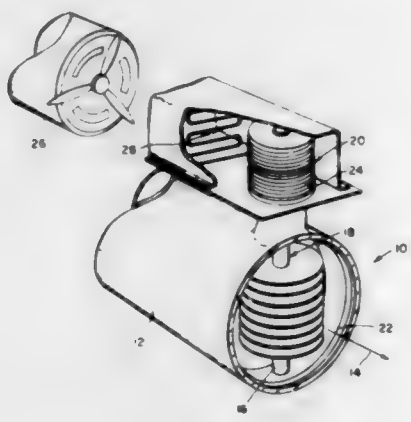
a check valve disposed within at least one of said outlet conduits, all said flow control and check valves being between elevations of said manifolds; and means for retaining each said check valves within its respective outlet conduit, said retaining means being removable from a front face of said valve block.

4,082,109

HEAT PIPE ACTUATED VALVE

Tsu-Hung Sun, Torrance, and Algerd Basiulis, Redondo Beach, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 3, 1976, Ser. No. 720,339
Int. Cl.[2] G05D *7/03;* **F16K** *13/00*
U.S. Cl. 137—340 **10 Claims**



1. A heat pipe actuated valve comprising:

means for defining a flow path for matter which is capable of changing its viscosity; and

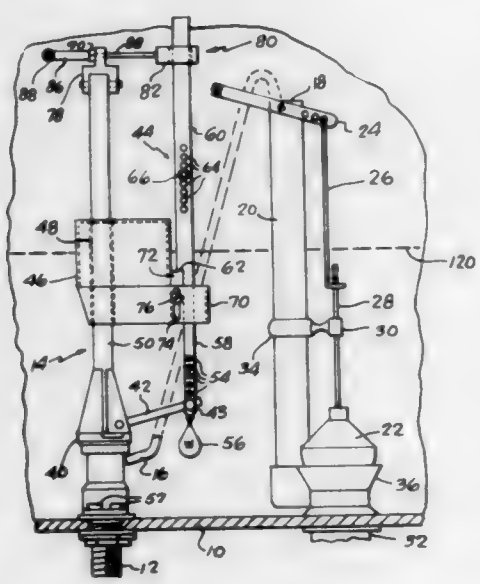
at least one bidirectional heat pipe thermally coupled to said matter for transferring heat from and to said matter and thereby for changing the viscosity of said matter and its rate of flow through said flow path means and for causing said matter itself to check, permit and regulate its own flow by means of its changed viscosity respectively by shutting, opening and partially obstructing said flow path means.

4,082,110

WATER LEVEL CONTROL FOR TOILET HAVING VERTICAL FLOAT

John L. Woodbury, Jr., 7515 Cornith Dr., Alexandria, Va. 22306

Filed Oct. 6, 1976, Ser. No. 730,079
Int. Cl.[2] F16K *31/18*
U.S. Cl. 137—426 **16 Claims**



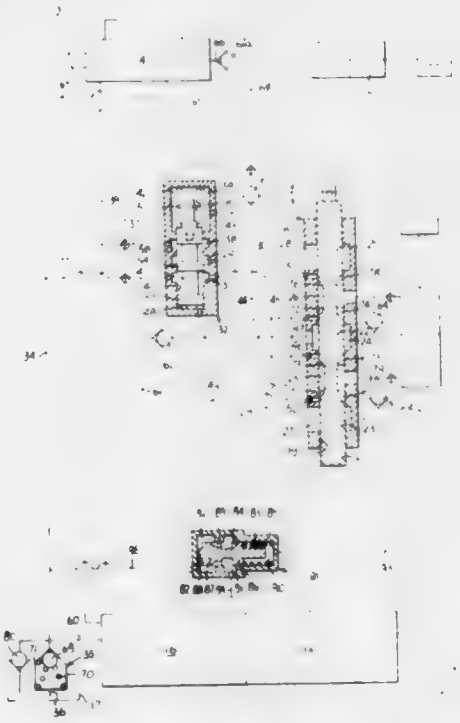
1. In a toilet having a water tank, a bowl, an outlet valve for releasing the water in said tank to flush wastes from said bowl, an inlet valve for supplying water to said tank, said inlet valve being controlled by a float mounted for vertical movement on a vertically oriented guide, the improvement which comprises adjustment means selectively coupling said float to said inlet valve for adjusting the water level within said tank at which said inlet valve is turned off, and means mounted externally of said tank for actuating said adjustment means, said adjustment means comprising catch means disposed on said float and lever means coupled to said inlet valve and having notch means selectively engageable by said catch means.

4,082,111

LOAD RESPONSIVE FLUID CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 729,696, Oct. 5, 1976, Pat. No. 4,028,889, and a continuation-in-part of Ser. No. 773,421, Feb. 28, 1977. This application May 26, 1977, Ser. No. 800,934
Int. Cl.[2] F15B *11/16*
U.S. Cl. 137—596 **11 Claims**



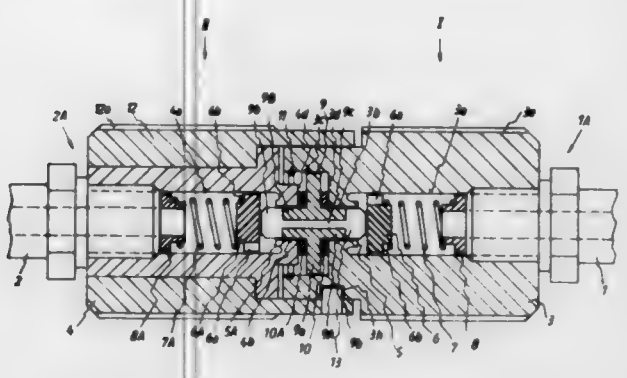
1. A valve assembly supplied with pressure fluid by a pump, said valve assembly comprising a housing having a fluid inlet chamber, a fluid supply chamber, first and second load chambers, and fluid exhaust means, first valve means for selectively interconnecting said fluid load chambers with said fluid supply chamber and said fluid exhaust means, first variable metering orifice means responsive to movement of said first valve means and operable to throttle fluid flow between said fluid supply chamber and said load chambers, second variable metering orifice means responsive to movement of said first valve means and operable to throttle fluid flow between said load chambers and said fluid exhaust means, second valve means having inlet fluid isolating means between said fluid inlet chamber and said fluid supply chamber, actuating means in said fluid isolating means operable to isolate by said fluid isolating means said fluid inlet chamber from said load chambers when one of said load chambers is interconnected to said fluid exhaust means by said first valve means and said load chamber is pressurized, and fluid replenishing means operable to supply fluid flow from said fluid exhaust means to one of said load load chambers which is not pressurized when said fluid isolating means isolate said fluid inlet chamber from said fluid load chambers.

4,082,112

HOSE COUPLING

Manfred Schmidt, Munich, Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Aug. 11, 1976, Ser. No. 713,450
Claims priority, application Germany, Aug. 22, 1975, 2537407
Int. Cl.[2] F16K *37/28*
U.S. Cl. 137—614.03 **12 Claims**



1. A connector for conduits, particularly a quick-disconnect coupling for hoses, comprising first and second valve housings each connected to a different conduit, said first and second housings respectively having first and second open-ended passages communicating with the interior of the respective conduits, first and second end faces remote from the respective conduits and first and second seats facing the respective conduits; first and second valve elements provided in the respective housings; first and second biasing means for urging said first and second valve elements against the respective seats; a tubular member installed in said first housing at the open end of said first passage and having first and second actuating portions and a third portion disposed between and extending radially beyond said actuating portions, said third portion being located intermediate said end faces when said housings are attached to each other and said tubular member being movable in said first housing between a first position in which said first actuating portion disengages said first valve element from the respective seat and a second position in which said first biasing means maintains said first valve element in sealing engagement with the respective seat; means for separably attaching said housings to each other in such positions that said second actuating portion extends through the open end of and into said second passage and disengages said second valve element from the respective seat whereby said second biasing means maintains said tubular member in said first position through the medium of said second valve element; a first elastic sealing ring surrounding said first actuating portion between said third portion and said first end face; and a second elastic sealing ring surrounding said second actuating portion between said third portion and said second end face, said sealing rings being compressible to an extent which at least equals the extent of movement of said tubular member between said first and second positions.

4,082,113

TIMING DEVICE WITH TRIPPING MECHANISM FOR FLUID VALVE

Charles P. O'Neil, Milwaukee, Wis., assignor to Amerace Corporation, New York, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,453
Int. Cl.[2] F15B *21/10*
U.S. Cl. 137—624.11 **28 Claims**

1. In a timing device for actuating a fluid valve upon expiration of a prescribed timed interval following a given event, the timing device including

a frame;

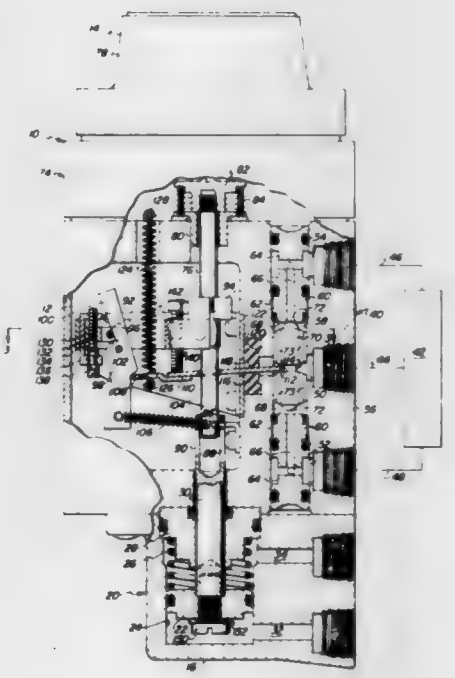
a motion transmitting member mounted in the frame for movement along a prescribed path of travel in either one of two directions between a first location and a second location;

timing means on the frame coupled with the motion transmitting member for effecting movement of the motion transmitting member at a predetermined rate in one only of said two directions to establish said timed interval between the departure of said motion transmitting member from the first location thereof and the arrival of the motion transmitting member at the second location, and permitting return movement of the motion transmitting member from the second location to the first location at an unrestricted rate;

a fluid valve having a valve seat, a valve element movable into and out of engagement with the valve seat so as respectively to close and open the fluid valve, and a valve-operating lever movable between a first position and a second position, the valve-operating lever being coupled with the valve element such that the fluid valve is open in the first position of the valve-operating lever and is closed in the second position of the valve-operating lever;

the improvement comprising:

resilient biasing means biasing the valve-operating lever toward the second position thereof with a biasing force tending to close the fluid valve;



a latch mounted upon the frame for movement between a first position, wherein the latch engages the valve-operating lever to retain the valve-operating lever in the first position thereof against the biasing force of the resilient biasing means, and a second position, wherein the latch is disengaged from the valve-operating lever to permit movement of the valve-operating lever to the second position thereof in response to the biasing force of the resilient biasing means;

a trip arm carried by the motion transmitting member for movement therewith; and

means coupling the trip arm with the latch for movement of the latch from the first position thereof toward the second position thereof in response to movement of the motion transmitting member from the first location toward the second location to place the latch at the second position thereof upon the arrival of the motion transmitting member at the second location, whereby the valve element will be biased against the valve seat by the biasing force of the resilient biasing means.

4,082,114

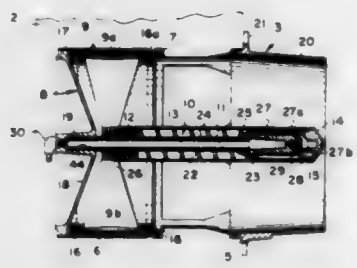
VALVE ASSEMBLY FOR USE IN AN AIR DISTRIBUTION SYSTEM

Gerhard John Hantke, La Crosse, Wis., and Harry Kenneth Ring, Jr., Houston, Minn., assignors to The Trane Company, La Crosse, Wis.

Filed Jan. 28, 1977, Ser. No. 763,735

Int. Cl.[2] F16K *31/12, 31/04;* F24F *7/00*

U.S. Cl. 137—625.37 **30 Claims**



1. A valve assembly for use in an air distribution system comprising:

a. a plenum chamber having an inlet opening and an outlet;

b. conduit means for admitting air to said plenum chamber through said inlet opening and including a generally cylindrical sleeve having at least a portion thereof disposed within said plenum chamber, said portion including aperture means passing radially therethrough for providing communication between the interior of said sleeve and the interior of said plenum chamber;

c. a closure member disposed at the end portion of said sleeve downstream from said aperture means for blocking axial air flow;

d. a generally cylindrical valve member disposed within said sleeve and including an axially extending portion adjacent the inner periphery of said sleeve, said valve member further including means for providing communication between its axial ends to thereby substantially balance the axial pressure forces to which it is subjected;

e. tubular means having a bore extending axially from said closure member into said sleeve;

f. bearing means associated with said valve member for mounting same on said tubular means for axial movement between a first position substantially coextensive with said aperture means, thereby blocking flow therethrough, and a second position substantially non-coextensive with said aperture means for permitting flow therethrough;

g. actuator means drivingly connected to said valve member for selectively positioning same between said first and second positions, said actuator means comprising

i. connecting means fastened to said valve member and extending axially therefrom to a position upstream from the end of said tubular means, terminating in a portion adapted to receive an axial force; and

ii. means for applying an axial force to said force receiving portion by way of the bore in said tubular means.

4,082,115

VALVE OPERATOR

George H. Gibb, Swampscott, and Henry A. Rabeau, Haverhill, both of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,351

Int. Cl.[2] F15B *13/10;* F16K *11/14, 31/163*

U.S. Cl. 137—630.2 **13 Claims**

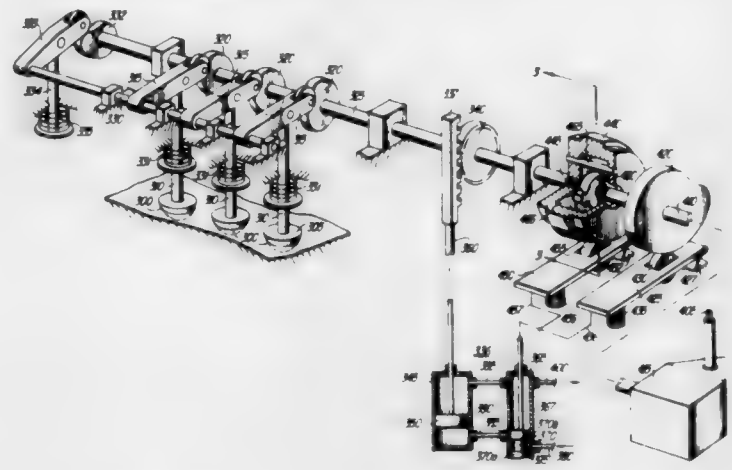
1. An operator for steam turbine inlet control valves, said operator comprising:

(a) a cam shaft having disposed thereon in axially spaced relationship a plurality of valve cams, each arranged to effect movement of one of said valves;

(b) hydraulic means for positioning said valve cams to effect opening and closing of the valves;

(c) mechanical means for positioning said valve cams to effect opening and closing of the valves;

(d) manual actuation means for actuating said hydraulic means to move said valve cams in a normal mode of operation, said manual actuation means normally being ineffective for actuating said mechanical means but automatically



becoming effective to actuate said mechanical means in a back-up mode of operation in the event of failure of said hydraulic means; and

(e) each of said cams being shaped to cause a relatively slower movement of the corresponding valve during the time of initial valve opening movement than during the remainder of the valve opening movement, thereby limiting the force required to be applied to said manual actuation means in the back-up mode of operation.

4,082,116

ELECTROMAGNETIC TWO-WAY VALVE

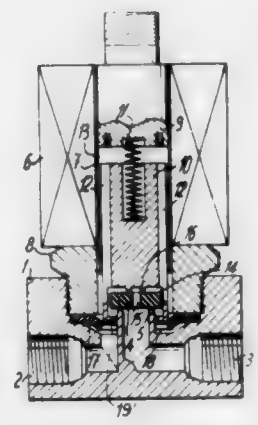
Harald Stampfli, Petit-Saconnex, Switzerland, assignor to Lucifer S.A., Carouge, Switzerland

Filed Jun. 16, 1976, Ser. No. 696,863

Claims priority, application Switzerland, Jun. 27, 1975, 8354/75

Int. Cl. F16k *31/06*

U.S. Cl. 137—630.14 **7 Claims**



1. An electromagnetic two-way valve comprising a body, a magnetic core movable under the effect of a magnetic field produced by an electrical winding, a mobile portion movable with said core, a generally disc shaped clack carried by said mobile portion and movable axially with respect thereto, an axially extending valve seat portion provided with a valve seat defining an outlet passage formed in said body in a position to be engaged by said clack, a bleeder hole centrally disposed in said clack, said mobile portion having a flange portion extending closely adjacent said seat portion to form a restricted inlet passageway from a main inlet to a lower face of the clock, said clack having an outer circumference substantially greater than that of the seat and disposed in a position to engage said flange

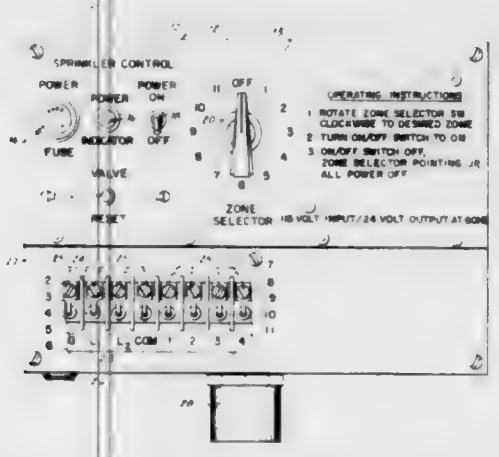
portion upon upward movement thereof, said mobile portion having an annular rib seat portion engageable with said opposite face of the clack in a position to close the bleeder hole, whereby upon initial upward movement of said core and mobile portion, the bleeder hole in the clack is first uncovered permitting a reduction of pressure in the space thereabove, and upon further upward movement, the clack is engaged by the flange portion to close said restricted passageway, at which point the inlet pressure of the incoming fluid will give an upward impulse to the clack and the mobile portion to aid the electromagnetic force in lifting the clack from its seat.

4,082,117

MANUALLY OPERATED LAWN SPRINKLING OR IRRIGATING SYSTEM

Augustus W. Peckham, 12960 Sophia Cir., Largo, Fla. 33540

Filed Jun. 18, 1976, Ser. No. 697,331
Int. Cl.[2] E03B *1/00*
U.S. Cl. 137—870 **4 Claims**



1. In combination with a system for selectively irrigating remote zones each having electromagnetically operated valves for controlling the irrigation, a control box having mounted thereon a rotary zone selector switch having a center terminal and a series of spaced terminals, and a double pole single throw switch, said control box having mounted thereon a transformer having primary and secondary windings, and terminal connection means having first and second power input terminals, a common terminal, a series of terminals for connection to said electromagnetically operated valves, and an accessory terminal, an electrical connection from said first input terminal to said primary transformer winding, an electrical connection from said second input terminal through said double pole single throw switch to said transformer primary winding, an electrical connection from said transformer secondary winding to the center terminal of said zone selector switch, an electrical connection from said transformer secondary winding to the common terminal of the terminal connection means, electrical connections from each of said series of said spaced zone selector switch terminals to said series of terminals for said valves, respectively, and an electrical connection from one said secondary transformer connection through said double pole single throw switch to said accessory terminal.

4,082,118

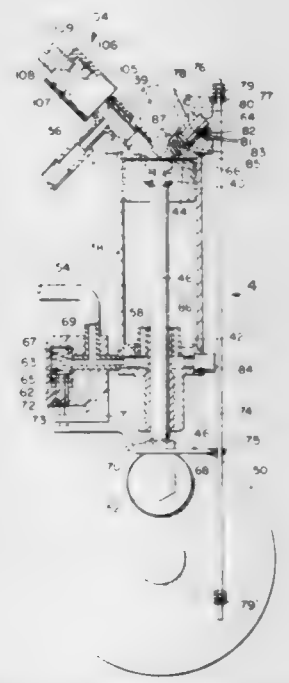
PNEUMATIC PICKING MECHANISM FOR LOOMS

Philip A. Nims, Auburn, Mass., assignor to Crompton & Knowles Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 734,144, Oct. 20, 1976, abandoned. This application May 25, 1977, Ser. No. 800,488
Int. Cl.[2] D03D *49/26*
U.S. Cl. 139—144 **4 Claims**

1. A pneumatic shuttle picking mechanism for looms comprising:

(a) a picking cylinder having an inlet end and an outlet end;
(b) a piston slidable within said picking cylinder between said inlet and outlet ends;
(c) a piston rod attached to said piston and which extends through said outlet end for picking engagement with a shuttle;
(d) a pump cylinder having an inlet end and an outlet end;
(e) a pump piston slidable within said pump cylinder between the inlet and outlet ends of said pump cylinder;
(f) a pump piston rod attached to said pump piston and which extends through the inlet end of said pump cylinder;
(g) drive means connected to the extending portion of said pump piston rod for reciprocating said pump piston rod and said pump piston;



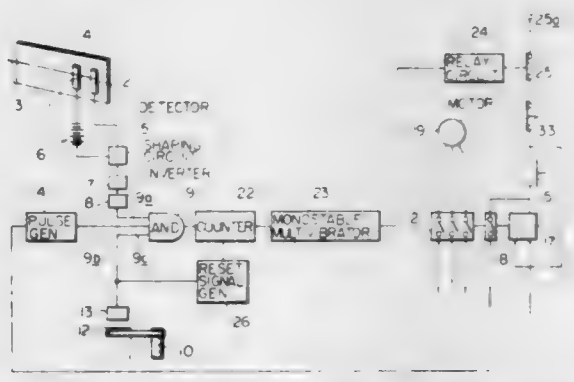
(h) a first conduit for pneumatically connecting the inlet end of said picking cylinder to the outlet end of said pump cylinder;
(i) a second conduit for pneumatically connecting the outlet end of said picking cylinder to the inlet end of said pump cylinder; and
(j) a one-way valve located at one end of said pump cylinder which allows air to enter said pump cylinder from the atmosphere when the pressure within the cylinder at said one end falls below atmospheric pressure.

4,082,119

METHOD OF AND DEVICE FOR CONTROLLING A WEAVING LOOM

Kozo Washino, Hachioji, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Nov. 22, 1976, Ser. No. 743,954
Claims priority, application Japan, Nov. 25, 1975, 50-140266
Int. Cl.[2] D03D *51/34*
U.S. Cl. 139—370.2 **13 Claims**



1. A method of controlling a weft inserting motion of a weaving loom for stopping the loom in response to failure in the weft inserting motion, which loom is equipped with detecting means provided at the opposite side with respect to a weft

yarn shooting means, and which method comprises the steps of:

monitoring the operation of the loom and producing a train of first signals at time intervals in synchronism with the motion of the loom, each of the first signals representing a detecting time period for controlling the weft inserting motion;

monitoring picks of a weft shot into a shed of warp yarns and producing a second signal representing whether the weft yarn is detected by the detecting means;

producing a train of third signals at a predetermined time intervals;

storing the third signals only if the first signal coincides with the second signal;

producing a control signal responsive to a predetermined number of the third signals stored within the detecting time period to stop the loom; and

clearing the stored third signals at the end of the detecting time period.

4,082,120

METHOD OF PRODUCING TUBULAR LATTICE REINFORCEMENT FOR REINFORCED CONCRETE TUBULAR PIPE HAVING A SOCKET AT ONE END THEREOF

Maurice Francois, Saint Dizier, France, assignor to Trefilunion, Paris, France

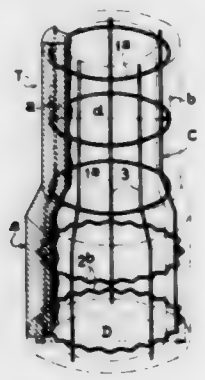
Division of Ser. No. 298,321, Oct. 17, 1972, which is a continuation of Ser. No. 109,244, Jan. 25, 1971, abandoned, which is a division of Ser. No. 808,252, Mar. 18, 1969, Pat. No. 3,578,036. This application Jan. 3, 1975, Ser. No. 538,479

Claims priority, application France, Mar. 22, 1968, 68.144908

The portion of the term of this patent subsequent to May 11, 1998, has been disclaimed.

Int. Cl.[2] B21F *27/22*

U.S. Cl. 140—107 **1 Claim**



1. A method of producing a tubular lattice reinforcement for reinforced concrete tubular pipe having a socket at one end thereof, the method comprising: providing a flat lattice of longitudinal and transverse members connected together at their crossing points, the transverse members adjacent one end of the lattice being highly ductile and stretchable, forming said lattice into a tubular member, and expanding one end of the tubular member containing the ductile and stretchable transverse members to form the socket portion of the reinforcement.

4,082,121

LIQUID DISPENSER WITH MEANS FOR AUTOMATICALLY PURGING AIR THEREFROM DURING LIQUID LOADING

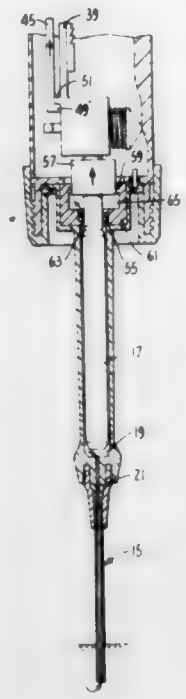
Ronald Leo Sturm, San Carlos, and James Curtis Smith, Hayward, both of Calif., assignors to Oxford Laboratories Inc., Foster City, Calif.

Filed Aug. 25, 1976, Ser. No. 717,745

Int. Cl.[2] B65B *3/12*

U.S. Cl. 141—27 **13 Claims**

1. In a liquid dispensing device that includes a piston chamber having a passage at one end for fluid flow therethrough into and out of said chamber, and a piston entering the chamber from its other end but not capable of entering said passage, means providing a fluid tight seal between said chamber and said piston, whereby movement of the piston within the piston chamber moved fluid through its said passage, an improvement for purging air from the piston chamber while it is being filled with liquid, comprising means automatically operable when the piston is moved in said piston chamber in a direction away



from its said one end for withdrawing air from said piston chamber and said passage through said chamber's other end while simultaneously drawing liquid into the chamber at its said one end from a liquid source in response to fluid displacement within the chamber of the withdrawing piston, whereby a volume of air interface between said piston and said liquid source is eliminated during the same piston stroke that draws liquid into the piston chamber and passage.

4,082,122

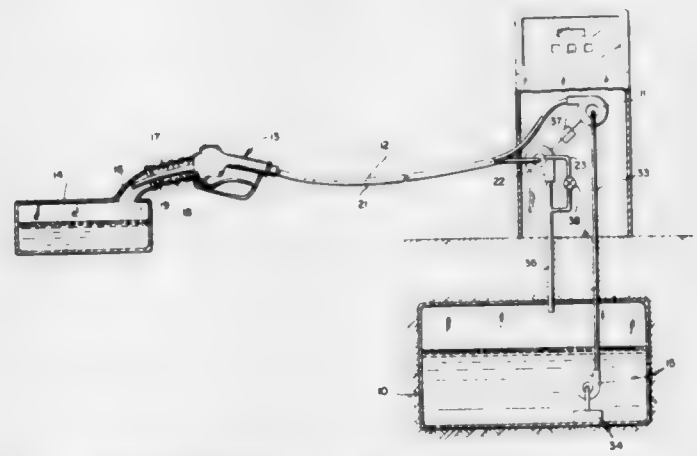
CLOSED FUEL SYSTEM WITH VACUUM ASSIST

Dean C. McGahey, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 19, 1976, Ser. No. 733,819

Int. Cl.[2] B65B *3/04*

U.S. Cl. 141—5 **9 Claims**



1. In a closed fuel system for conducting vaporizable liquid fuel from a source thereof including a storage tank, into a receiving fuel tank having a filler pipe, and for concurrently conducting a stream of vapor from said receiving tank to said storage tank during a fuel transfer operation, whereby to stabilize the closed system,

a fuel dispensing nozzle removably connected with said tank filler pipe,

a hydraulic motor having an inlet communicated with said fuel storage tank to receive a stream of liquid fuel therefrom, and having a discharge port communicated with said dispensing nozzle,

a vapor pump having an inlet port communicated with said fuel receiving tank to receive vapors displaced therefrom as liquid fuel enters said receiving tank, and having a discharge port communicated with said storage tank,

and a valved passage means communicated with said pump inlet and discharge ports respectively to permit a controlled vaporous flow through said passage means.

4,082,123

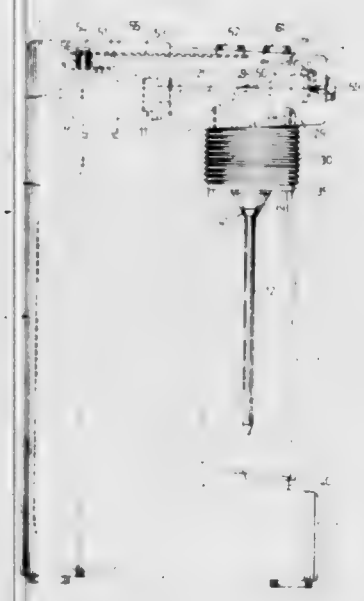
CARBONATING APPARATUS

Peter F. Haythornthwaite, and Victor K. Relf, both of Auckland, New Zealand, assignors to Sodaflo Drinks Limited, Wellington, New Zealand

Filed Oct. 26, 1976, Ser. No. 735,338

Int. Cl.[2] B65B *31/06*

U.S. Cl. 141—64 **21 Claims**



1. A carbonating apparatus comprising a stand holding a gas supply means, an injecting nozzle pivotally mounted to the stand for movement about a substantially horizontal axis, said nozzle being adapted to pass through an opening of a bottle or other container and into a liquid contained therein, said nozzle being pivotal between a first inclined position allowing the bottle or other container holding the liquid to be carbonated to be introduced into the apparatus and to be penetrated by said nozzle and a second substantially upright position, supporting means to support the bottle at said second position so that said liquid may be carbonated by gas introduced through said nozzle from said gas supply means via a gas supply system means to seal the opening of the bottle or other container while being carbonated, said means comprising a stopper on said ejecting nozzle, said stopper being slideable along the nozzle to press against the opening of the bottle or other container under the influence of biasing means.

4,082,124

HANDLING FLUENT MEDIA

David Henry Jenkins, Leamington Spa, England, assignor to The Eagle Engineering Company Limited, Warwick, England

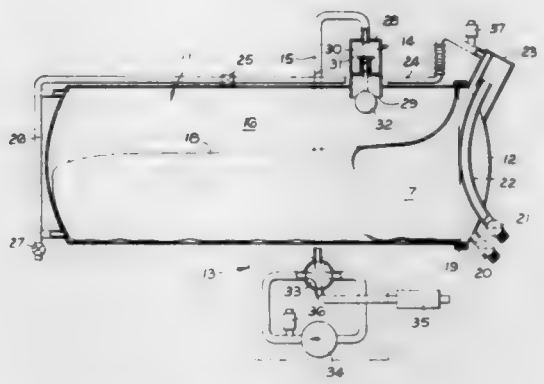
Filed Apr. 29, 1976, Ser. No. 681,558

Claims priority, application United Kingdom, May 2, 1975, 18389/75

Int. Cl.[2] B65B *31/04*

U.S. Cl. 141—65 **3 Claims**

1. A tanker vehicle for collection, transport and disposal of fluent media comprising a rigid vessel mounted on a vehicle chassis, one end wall of said vessel being formed as an openable door; a bag-shaped impervious flexiable diaphragm mounted within the vessel to divide it into respective enclosed variable volume propulsion and holding chambers, the holding chamber being bounded in part by said door, the maximum volume of either chamber being substantially the total volume of the vessel, and the two chambers changing in volume during operation in inverse relationship; an inlet duct and a discharge duct for fluent media mounted on said vessel and opening respectively into upper and lower regions of the holding chamber; an exhauster pump mounted on the vehicle and connected to be driven from a power source of the vehicle, means whereby said pump is selectively operable through a flow-reversing changeover valve connected to the propulsion chamber on the one hand to draw air from said propulsion chamber so as to



diminish its volume and lower the pressure in the holding chamber for drawing fluent media into said holding chamber through the inlet duct, and to on the other hand pressurize the propulsion chamber so as to increase its volume and expel contents of the holding chambers through said discharge duct; a purging duct linking said upper region and the propulsion chamber through an interconnecting valve permitting selective transfer of air from the holding chamber as fluent media is being drawn into said holding chamber; and cut-off valve operating automatically to isolate said exhauster pump from the propulsion chamber when the volume of the holding chamber reaches a predetermined maximum.

4,082,125

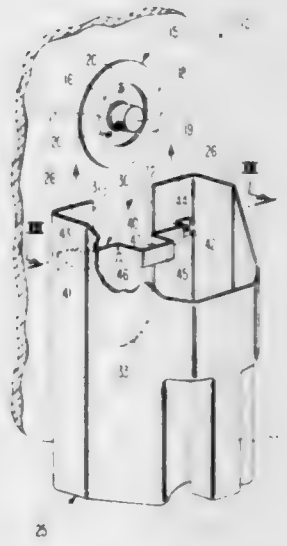
SPILLAGE COLLECTION DEVICE FOR FUEL TANKS FOR BOATS

Layton G. Wilson, 226 Yarmouth La., Media, Pa. 19063, and William Ward, IV, 8 Kershaw Rd., Wallingford, Pa. 19086

Filed Aug. 19, 1976, Ser. No. 715,929

Int. Cl.[2] B65B *3/04*

U.S. Cl. 141—86 **9 Claims**



4. A spillage collection device for a fuel tank for a boat, said fuel tank being disposed inboard of the boat hull and having an air vent extending through and externally of the hull, said device comprising:

(a) a hollow receptacle for collecting spilled fuel, said receptacle having a slot defined by opposing interior edges,

(b) a support for the receptacle, said support having an opening for engaging telescopically the externally extend-

ing portion of the air vent, said support having an inner portion disposed contiguous with the exterior surface of the hull and an outer portion spaced from the exterior surface of the hull,

(c) a space between the exterior surface of the hull and the outer portion of the support, said space providing clearance for slidably engaging the receptacle slot with the support,

(d) a retainer for mounting the receptacle on the support to position the receptacle to collect fuel spilled from the air vent, said retainer comprising an elongated flexible strap extending across the slot formed in the receptacle, and having opposite ends affixed to the interior of the receptacle, and

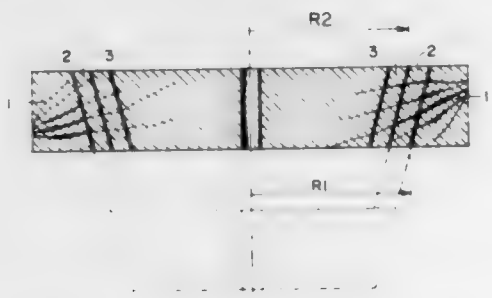
(e) locking means for detachably securing the retainer to the support, said locking means comprising spaced openings in the retainer for detachable engagement with the outer portion of the support.

4,082,126

WOOD-TURNING PROCESS FOR MAKING CYLINDROCONICAL WOOD PRODUCTS

Robert W. Bebout, 4603 N. Clark, Tampa, Fla. 33614

Filed Apr. 18, 1977, Ser. No. 788,270
Int. Cl.[2] B23B *1/00, 5/26*
U.S. Cl. 142—1 **6 Claims**



1. A wood-turning process for manufacturing cylindroconical rings for use as components of cylindroconical wood products comprising:

a. Starting with

i. a gnerally circular disc of wood material axially affixed to an end of a rotatable shaft defining a shaft side of said disc and a nonshaft side;

ii. drive means causing said shaft to rotate at a speed such that the outer edge of said disc travels at a speed of less than 26,000 inches per minute;

iii. frame means on which said drive means and rotatable shaft are mounted;

iv. a shaft-side wood-cutting bit and a nonshaft-side wood-cutting bit mounted in a bit-holding guide means with tooth ends of said bits directed toward each other, said ends being displaced from each other a distance greater than one and one-half times the thickness of said discs;

v. swivel means and first locking means for fixable adjustment of the angle between said bits and the plane of said rotating disc, said swivel means and first locking means mounted on a table means;

vi. table guide means and second locking means for fixable adjustment of the position of said table means and said bits along a radius of said rotating disc of wood material, said table means, table guide means and second locking means mounted on said frame means;

vii. bit-moving means attached to said bit-holding-guide means and said swivel means for the purpose of directing cutting movement of each of said bits through substantially one-half of the thickness of said rotatng disc; and

viii. release means for removing said bit-moving means from attachment to said bit-holding-guide means;

b. using said swivel means to set a desired cylindroconical angle between said bits and said rotating disc plane;

c. actuating said first locking means;

d. using said table guide means to position said bits to cut an outer cylindroconical surface of a first ring;

e. actuating said second locking means;

f. actuating said bit-moving means to cause bit-holding-guide means to direct said non-shaft-side bit to cut, on the non-shaft-side of said disc, a cylindroconical channel of depth approximately equal to one half of the thickness of said disc;

g. actuating said release means and causing said non-shaft-side bit to return to a position of no-contact with said disc;

h. de-actuating said release means and actuating said bit-moving means to cause said shaft-side bit to cut, on the shaft-side of said disc, a cylindroconical channel of depth sufficient to connect with previously cut cylindroconical channel;

i. actuating said release means and causing said shaft-side bit to return to a position of no-contact with said disc;

j. releasing said second locking means;

k. using said table guide means to position said bits to cut an inner cylindroconical surface of said first ring simultaneously with an outer cylindroconical surface of a second ring;

l. actuating said second locking means;

m. repeating steps (f) through (j);

n. using said table guide means to position said bits to cut an inner cylindroconical surface of said second ring;

o. actuating said second locking means; and

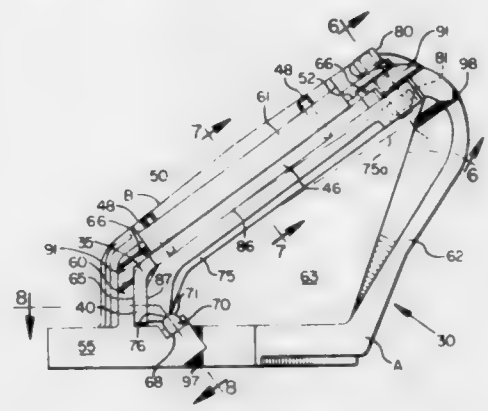
p. repeating steps (f) through (j).

4,082,127

KNIFE HOLDER IN LOG SLABBING CHIPPER

Frederick L. B. Miller, 17353 SW. Canal Cir., Lake Oswego, Oreg. 97034

Filed Apr. 22, 1977, Ser. No. 790,008
Int. Cl.[2] B27G *13/04*
U.S. Cl. 144—220 **9 Claims**



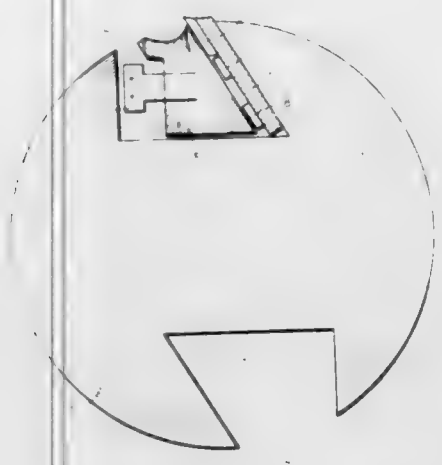
1. A holding means for a woodworking knife comprising a support member having a surface arranged to support one face of the knife, a resilient cambered clamp plate having a convex face confronting the opposite face of said knife, a wedge in said support member confronting the opposite face of said clamp plate along one side of the clamp plate, said opposite face of the clamp plate having a partial cylindrical bearing surface pivoting on a mating partial cylindrical bearing surface on said wedge, screw means in said support member at the opposite side of the clamp plate arranged to pivot the clamp plate on said wedge and flatten the clamp plate against said knife to clamp the knife against said supporting surface, and means to hold the knife in adjusted position on said supporting surface.

4,082,128

PLANING AND DISINTEGRATING APPARATUS

Heinrich Barke, and Gisela Barke, both of Felsenbachstr. 20, Siegen-32-Niederschelden, Germany (5900)

Filed Mar. 30, 1977, Ser. No. 782,758
Int. Cl.[2] B27G *13/04*; B23C *5/20*
U.S. Cl. 144—230 **6 Claims**



1. An apparatus for planing and disintegrating wood, synthetic resin and other materials, comprising

(a) a carrier,

(b) a knife replaceably mounted in the carrier, the knife having

(1) two parallel major faces defining the thickness of the knife and

(2) two parallel minor faces inclined with respect to the major faces whereby the cross section of the knife taken perpendicularly to the major faces forms a parallelogram, each of the minor faces forming a knife edge at their intersection with the major faces, and

(c) a knife support supporting the knife in the carrier, the knife support including

(1) a first transverse ledge affixed to the support and holding the knife in place with respect to the support, and

(2) a second transverse ledge affixed to the support and spaced from the knife, the second ledge having a thickness in slight excess of the thickness of the knife.

4,082,129

METHOD AND APPARATUS FOR SHAPING AND PLANING BOARDS

Donald L. Morelock, Rte. 1, Box 468, West Linn, Oreg. 97068

Filed Oct. 20, 1976, Ser. No. 734,000
Int. Cl.[2] B27C *9/04, 5/06*
U.S. Cl. 144—326 R **21 Claims**



1. An apparatus for shaping the edges of a wood paneling board having a pair of opposing end edges and a pair of opposing side edges, comprising:

(a) first shaping means for cutting a first shape in a first end edge and a first side edge of said board, sequentially, as said board is moved past said first shaping means in contact therewith;

(b) input carriage means for supporting said board and moving said first end edge thereof past said first shaping means in contact therewith, thereby shaping said first end edge;

(c) second shaping means for cutting a second shape in a second side edge and a second end edge of said board, sequentially, at it moves past said second shaping means in contact therewith;

(d) feed means for moving said first side edge of said board past said first shaping means in contact therewith, thereby shaping said first side edge, and for moving said second side edge of said board past said second shaping means in contact therewith, thereby shaping said second side edge; and

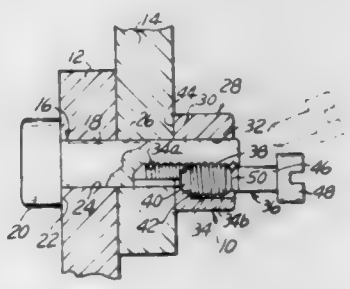
(e) output carriage means for supporting said board and moving said second end edge of said board past said second shaping means in contact therewith, thereby shaping said second end edge.

4,082,130

FASTENING MEANS

Jakob Rech, Detroit, Mich., assignor to Sheldon H. Applefield and Jerome H. Applefield, both of Southfield, Mich., part interest to each

Continuation-in-part of Ser. No. 692,888, Jun. 4, 1976, abandoned. This application Dec. 22, 1976, Ser. No. 753,517
Int. Cl.[2] F16B *19/00, 39/06*
U.S. Cl. 151—23 **11 Claims**



1. In combination, a female member and a male member including means for adjustably fastening said female member which is provided with a cylindrical first bore having a substantially smooth surface to said male member which is provided with a cylindrical body slidably engaged in said first bore, said means comprising a partially threaded circularly cylindrical second bore having an axis substantially parallel to the axis of said cylindrical body, said partially threaded second bore having an unthreaded portion extending transversely part of the way into said first bore surface and extending longitudinally from an end face of said female member to part of the way to the other end face of said female member and a threaded portion extending transversely part of the way into said male member body having a length appreciably greater than the length of said unthreaded bore portion, and a threaded member threadably engaged in said partially threaded second bore, said threaded member having an end engageable with abutment means defined by the end of said partially threaded second bore unthreaded portion, whereby rotation of said threaded member in the direction engaging the end thereof with said abutment means displaces said female member relative to said male member in one direction.

4,082,131

TIRE TREAD STRUCTURE

James I. Scheller, 18905 SW. Blamon Ct., Aloha, Oreg. 97005

Continuation-in-part of Ser. No. 477,894, Sep. 11, 1974, abandoned. This application Jan. 19, 1976, Ser. No. 650,123
Int. Cl.[2] B60C *11/14*
U.S. Cl. 152—210 **1 Claim**

1. A tire tread structure comprising a base composition of rubber or the like and garnet particles intermixed in the rubber composition, said garnet particles having a naturally irregular, multiple sided configuration with a plurality of sharpened protruding edges, whereby the irregular shape of said particles holds said particles in the tire tread with portions thereof protruding from the road engaging surface of the tire tread to engage the road surface and add traction between the tire and the road, the amount of garnet particles in said tread structure being at least 10% by weight relative to the weight of the

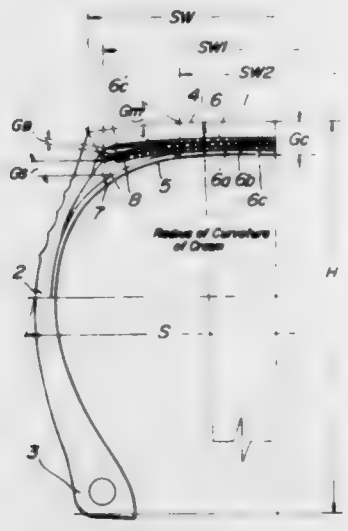
rubber composition, said garnet particles ranging in size from 177 to 841 microns.

4,082,132

LOW SECTION PROFILE PNEUMATIC RADIAL TIRE FOR HEAVY VEHICLES

Tatsuo Arai, Fuchu; Hironori Hirano, Akigawa; Hiroyuki Kajimura, Higashi-Murayama, and Masayuki Matsui, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Kyobashi, Japan

Filed Oct. 4, 1976, Ser. No. 729,240
Claims priority, application Japan, Oct. 2, 1975, 50-118234
Int. Cl.[2] B60C *9/18*
U.S. Cl. 152—361 R **5 Claims**



1. A low section profile radial tire for heavy vehicles the cross-sectional configuration uninflated defined in a metal mold of which has an aspect ratio of smaller than 0.85 and a crown flatness of larger than 2.0 and which comprises a carcass formed by plies, a number of cords of which lie in a substantially radial plane, a belt formed by a plurality of inextensible layers and superimposed about said carcass and extending over substantially the total width of a crown of a tread portion of the tire, and a cushion rubber inserted between said carcass and belt, said tire constructed to satisfy the following conditions:

1. the thickness of the tread portion which extends along the crown region is substantially uniformly distributed over 35–60% of the maximum width of the inextensible layers which comprise a tension member of said belt,
2. said cushion rubber formed of a rubber stock triangular in cross section having a thickness arranged outside both sides of the center region of the crown, said cushion rubber gradually increasing the thickness of the tread portion toward the hump portion of the tire, and
3. the thickness of said cushion rubber limited to a range of 25–50% of the thickness of that tread portion which is located at the crown center position, the thickness of said cushion rubber being defined by a distance from the the end of the inextensible layer having the maximum width to the carcass, the distance being measured on a normal line which is drawn from the end of the inextensible layer having the maximum width perpendicular to the carcass ply.

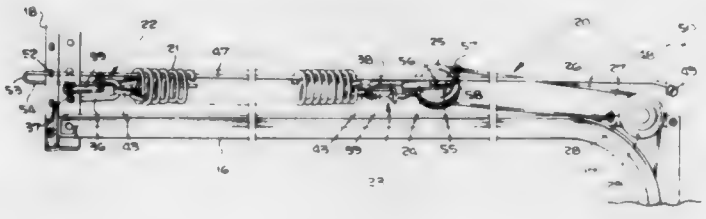
4,082,133

SECTIONAL GARAGE DOOR SPRING CONTAINER

William Halopoff, 17720 Crusader St., Cerritos, Calif. 90701

Continuation-in-part of Ser. No. 692,340, Jun. 3, 1976, abandoned. This application Apr. 7, 1977, Ser. No. 785,561
Int. Cl.[2] E05F *11/00*
U.S. Cl. 160—191 **5 Claims**

1. In a sectional garage door assembly for a building structure comprising a door opening supporting a vertical track section on each side of the opening and a horizontal overhead section of each track section extending between a front end at said vertical track section to a rear end, a door with opposite side edges slidably mounted in the respective track sections for movement between a vertical closed position and a horizontal open position, and a counterbalance spring assembly for said door comprising a coil spring mounted for action in tension and parallel to and adjacent said horizontal overhead section, said spring having a rear hook up at the rear end to the structure, a movable pulley, and a forward hook up between said pulley and the forward end of the spring, a second stationary pulley mounted on the structure adjacent said vertical track section, and a cable extending over said pulleys and having one end anchored to said structure and the other end attached to the door, the combination of a spring containment device comprising a single length of rod extending through the spring and having a forward attachment at a forward end directly to the structure adjacent said vertical track section and a rear-



ward attachment at the rearward end directly to the structure adjacent the rear hook up, said rod having a length in excess of the distance between the mounting of the stationary pulley on the structure and the rear hook up for said spring to the structure whereby foreward and rear portions of the rod protrude outward beyond the respective end of the spring, a carrier for said movable pulley having a portion in interlocked sliding engagement with said rod, said rear hook up comprising a releasable interlocked connection between the spring and the structure, said forward hook up comprising a releasable interlocked connection between the spring and the carrier and cushioning means for absorbing shock from a ruptured spring comprising a part of one of said portions of the rod adjacent the structure at one of the ends of the rod said part having the form of a loop extending laterally relative to that part of the rod which lies within the spring, whereby material of the rod comprises the cushioning means to absorb the shock.

4,082,134

COMBINED SAND CORE MACHINE

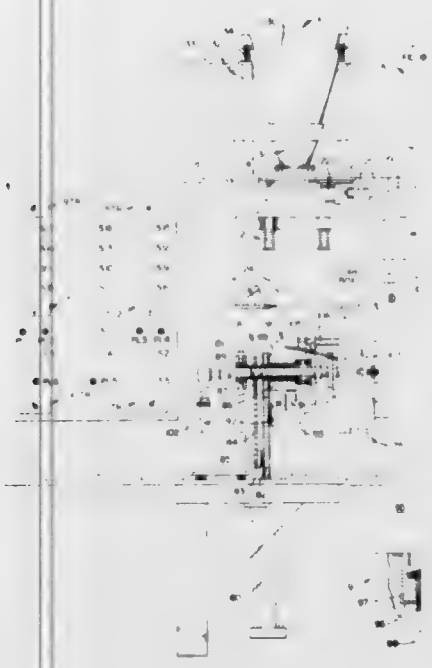
William A. Zachary, Walled Lake, Mich., assignor to International Minerals & Chemical Corporation, Detroit, Mich.

Filed Oct. 27, 1976, Ser. No. 735,950
Int. Cl.[2] B22C *13/00, 13/08*
U.S. Cl. 164—157 **30 Claims**

1. A machine for producing rigid sand cores to be used in metal casting from a molding mixture comprising a refractory granular material such as sand and a relatively small quantity of a hardenable binder, said machine comprising in combination:

a frame;
a core box having at least one opening therein for receiving the molding mixture;
support means mounted on said frame supporting said core box;
depositing means mounted on said frame adjacent said opening in said core box for depositing the molding mixture in said core box;
shell core producing means for producing hollow shell cores from the molding mixture in said core box, said shell core producing means including draining means forming part of said support means for rotating said core box to drain excess molding mixture from said core box in order to leave a thin coating of the molding mixture in said core box and heating means mounted on said support means adjacent said core box for heating said core box to cure the molding mixture in said core box;

cold box core producing means for producing cold box cores from the molding mixture in said core box, said cold box core producing means including gas means mounted on said frame to engage said core box for passing gas through said core box to cure the molding mixture in said core box and purging means connected to said gas means for purging the gas in said core box;





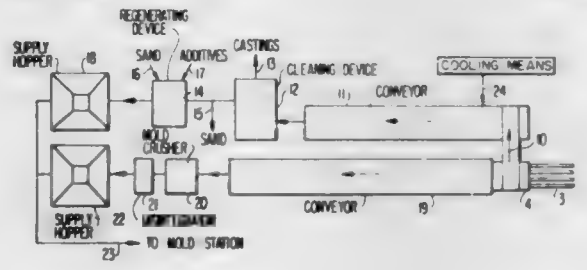
programmable control circuit means operative for automatically operating said shell core producing means and said cold box core producing means, said programmable control circuit means including selector switch means positionable for selecting one of said shell core producing means or said cold box core producing means for automatic operation to enable said machine to produce either shell cores or cold box cores during any one automatic cycle.

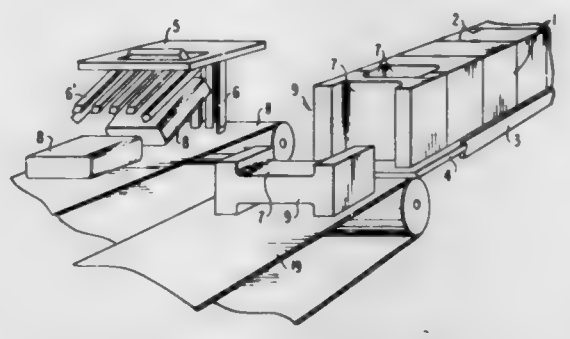
4,082,135

FOUNDRY APPARATUS FOR THE SEPARATION OF CASTINGS FROM CASTING MOULDS

Carl Herbert Petersen, Vaerlose, and Marius Gunnergaard, Lyngby, both of Denmark, assignors to Dansk Industri Syndikat A/S, Herlev, Denmark

Division of Ser. No. 438,366, Jan. 31, 1974, Pat. No. 3,958,619.
This application Jan. 30, 1976, Ser. No. 653,900
Claims priority, application Denmark, Feb. 6, 1973, 631/73
Int. Cl.[2] B22D *29/00, 17/22*
U.S. Cl. 164—404 **4 Claims**





1. Foundry apparatus for two stage separation of castings from casting moulds, comprising:

a support for the stepwise advance of the moulds to a cutting and separation station;

cutting means located at said cutting and separation station for cutting out a lump of mould material encasing a casting and for separating said lump from the remaining mould parts;

a first conveyor adjacent said cutting and separation station for receiving said remaining mould parts from said cutting and separation station and for delivering said remaining mould parts to a mould crusher;

a second conveyor adjacent said cutting and separation station for receiving said lump and for delivering said lump to a castings cleaning device; and

means connected to said cutting means for translating said cutting means between said cutting and separating station and said second conveyor for the purpose of delivering said lump to said second conveyor for delivering said lump from said cutting means to said second conveyor.

4,082,136

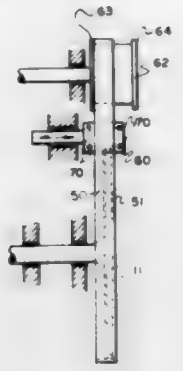
CASTING MACHINE WITH TRANSLATABLE BAND

Yves B. Bonnamour, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Nov. 15, 1976, Ser. No. 741,829
Int. Cl.[2] B22D *11/06*
U.S. Cl. 164—433 **6 Claims**

1. A rotary casting machine for continuously casting molten metal comprising a rotatable casting wheel having a peripheral groove, an imperforate endless band guided into closed relationship with an arcuate portion of said peripheral groove to form a molten metal casting mold, said endless band having a lateral width substantially greater than the width of said casting wheel and means operatively associated with said casting wheel and band for laterally moving said band and casting wheel relatively of each other so as to contact said arcuate portion of said wheel with different lateral surface areas of said

band whereby thermalcracks in the band caused by prolonged contact of the band with the molten metal in the casting mold



are distributed over a substantial portion of the lateral width of the band to thereby increase the operative life of the band.

4,082,137

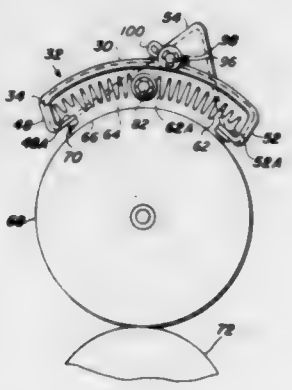
METHOD AND APPARATUS FOR FUSER ASSEMBLY COOLING IN AN ELECTROSTATOGRAPHIC MACHINE

Karl Mueller, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 214,305, Dec. 30, 1971, Pat. No. 3,493,124. This application Jun. 16, 1976, Ser. No. 696,468

Int. Cl.[2] G03G *15/12*

U.S. Cl. 165—1 **8 Claims**



1. The method of cooling a fuser assembly including a fuser roller and a pressure roller, the steps which comprise

placing heat transfer means in heat exchange relation with said pressure roller of said assembly

positioning an enclosure about said heat transfer means to form in cooperation with said heat transfer means a zone, said zone having an inlet and an outlet means thereto;

passing a heat transfer fluid through said zone about said heat transfer means; and

withdrawing said fluid from said zone to cool said fuser assembly fuser and pressure rollers.

4,082,138

HEAT REGENERATOR

Andries Rinse Miedema; Kurt Heinz Jürgen Buschow, and Jan Mulder, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

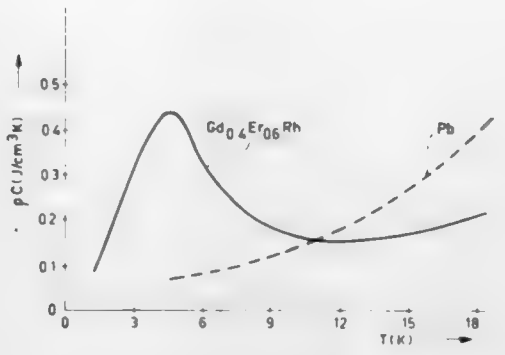
Filed Aug. 26, 1975, Ser. No. 607,793

Claims priority, application Netherlands, Sep. 2, 1974, 7411601

Int. Cl.[2] C09K *5/00*; F28D *17/00*

U.S. Cl. 165—4 **1 Claim**

1. In a low-temperature regenerator comprising a filling mass of a heat accumulating material in a housing the improvement wherein the heat accumulating material has a relatively high specific heat at temperatures below 20° K and is formed of at least one compound of the formula $A_{1-x}B_xRh_{1-y}X_y$, wherein A is at least one element selected from the group consisting of Sm, Gd, Tb and Dy, B is at least one element selected from the group consisting of Ho, Er, Tm and Yb, X is at least one element selected from the group consisting of Cu,



Zn, Ru, Pd, Ag, Re, Os, Ir, Pt and Au, $0 \leqq x \leqq 1$ and $0 \leqq y < 0.2$.

4,082,139

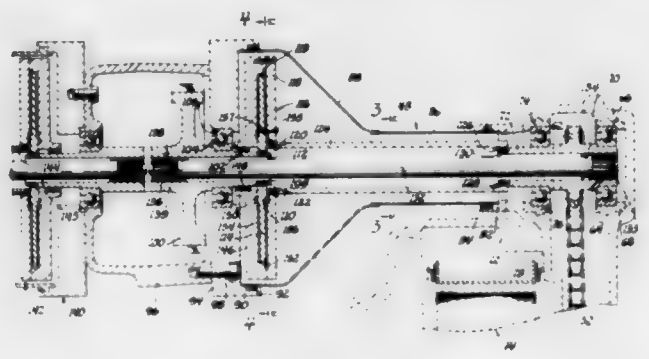
REGENERATOR DRIVE ASSEMBLY

Leonard C. Davis, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 24, 1977, Ser. No. 771,475

Int. Cl.[2] F28D *19/00*

U.S. Cl. 165—8 **4 Claims**



3. In a rotary regenerator assembly for use in gas turbine engines and having a matrix disc and regenerator seal with a friction characteristic therebetween that excites torsional vibration in the disc the combination of a matrix disc hub drive shaft having a sprocket fixedly secured to one end thereof, means for driving said sprocket including a driven roller chain and a cross shaft drive assembly, said cross shaft drive assembly including a housing, an output sprocket rotatably journaled at one end of said housing and connected to the roller chain, an elongated tubular coupling connected to the output sprocket at one end thereof and having an opposite end thereon, a torsion spring bar directed coaxially through said outer tubular coupling and having one end thereof connected to said output sprocket and having an opposite end thereon, an input shaft rotatably journaled within said housing and connected coaxially of and to the opposite end of said torsion spring bar, damper means including first and second relatively movable parts one of said movable parts connected to the opposite end of said tubular coupling and the other of said movable parts connected to the opposite end of said torsion spring bar, said first and second movable parts of said damper means having viscous fluid interposed therebetween and being operative in response to differential motion between the input shaft and the output sprocket to produce a positive damping torque to oppose matrix disc oscillations produced by friction between the rotary matrix disc and the regenerator seal, said first and second parts of said damper means being installed in parallel with said torsion spring bar with said spring bar transferring drive torque from the input shaft to the matrix disc shaft and also being flexed in response to friction induced vibration to produce a differential motion required for damper means operation.

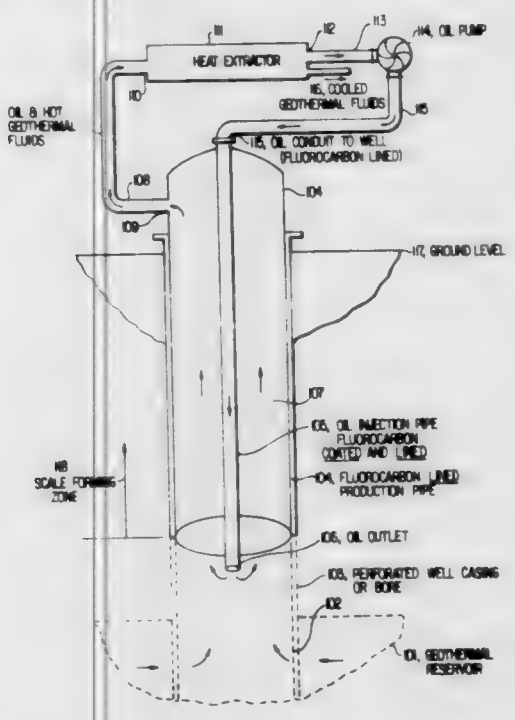
4,082,140
HEAT EXCHANGE METHOD

Ransome W. Erwin, Holtville, Calif., assignor to Austral-Erwin Engineering Company, Houston, Tex.

Continuation-in-part of Ser. No. 306,183, Nov. 14, 1972, Pat. No. 3,891,496, and Ser. No. 581,849, May 29, 1975, abandoned, which is a division of Ser. No. 306,183,. This application Jun. 20, 1975, Ser. No. 588,797

Int. Cl.[2] F28F *13/18;* B01D *3/34*

U.S. Cl. 165—45 27 Claims



1. The improvement in the method of extracting heat from mineralized aqueous fluids through a wall without adherence of precipitated mineral solids to fluid contacting surfaces of the apparatus in which the method is carried out; which improvement consists in that the cooling of the said mineralized fluid takes place in apparatus wherein the fluid contacting surfaces are (1) preferentially oil wettable and (2) substantially zero water adsorbent and are (3) continuously wetted with an organic liquid which is immiscible with the aqueous fluid being cooled.

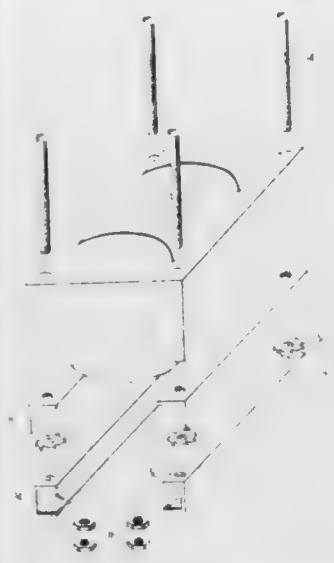
4,082,141
BALLAST VIBRATION ISOLATION SYSTEM WITH THERMAL PATH

Michael L. Perretta, Manlius, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y.

Filed Feb. 18, 1976, Ser. No. 658,962

Int. Cl.[2] F28F *7/00;* H01F *27/08*

U.S. Cl. 165—69 3 Claims



1. A ballast vibration isolation system having a thermal path comprising ballast means, mounting plate means, first heat transfer means secured to said ballast and having at least one flat surface extending outwardly at right angles thereto, second heat transfer means secured to said mounting plate means and having at least one flat surface extending outwardly therefrom at right angles, means securing said first and second heat transfer means together with said flat surfaces being disposed in intimate sliding contact with each other to provide a thermal path between said ballast means and said mounting plate means and vibration isolation means disposed between said ballast means and said mounting plate means.

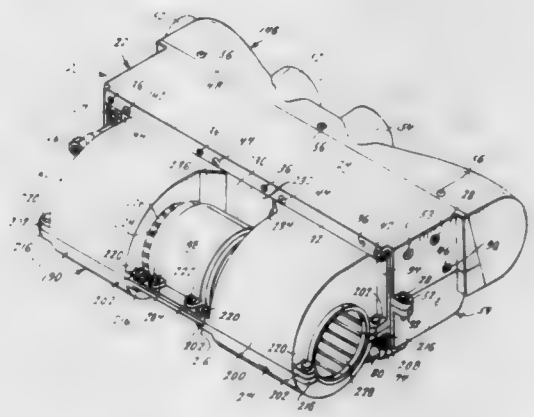
4,082,142
HOUSING FOR EXPANSION UNIT OF COOLING SYSTEM

James R. Blackburn; Dudley C. Smith; Theo B. Smith, Jr., all of Dallas, and Jerry N. Morgan, Mesquite, all of Tex., assignors to John E. Mitchell Company, Dallas, Tex.

Filed Sep. 24, 1976, Ser. No. 726,250

Int. Cl.[2] F28F *7/00*

U.S. Cl. 165—76 28 Claims



1. A housing, for an expansion unit of a cooling system, which has a bottom wall, a top wall, and end walls, said walls coacting to define a space within said housing which is dimensioned to accommodate said expansion unit, and an air-guiding member at one side of said housing, said air-guiding member having a partition thereon intermediate two scrolls for multivane blowers, said partition having those edges thereof which are adjacent said scrolls relieved to enable air, which exits from said scrolls, to move toward the longitudinal center of said partition as it passes from said air-guiding member into said space within said housing.

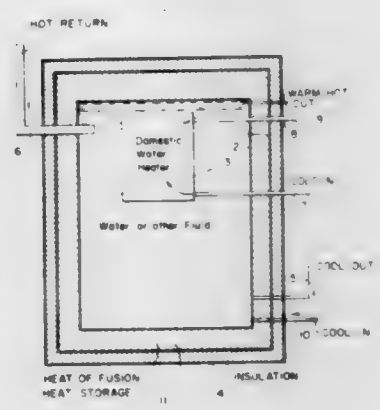
4,082,143
SOLAR ENERGY

Harry E. Thomason, 609 Cedar Ave., Fort Washington, Md. 20022

Filed Apr. 27, 1976, Ser. No. 680,672

Int. Cl.[2] F28D *21/00*

U.S. Cl. 165—104 S 3 Claims



1. Heat or cold storage apparatus comprising a first outer container, a second container in said first container, a third

tank-like container in said second container, insulation means to reduce heat or cold transfer into or out from said first outer container, heat-of-fusion heat storage material substantially filling the space between said first and said second containers, conduit means connected to said third container to introduce liquid to be heated or cooled and to provide for exit of such liquid, and conduit means connected to said second container to provide for: A. introduction of liquid and exit of liquid for heat or cold storage purposes; and B. exit of and return of liquid for removal of heat or cold from storage.

4,082,144

METHOD AND APPARATUS FOR RUNNING AND RETRIEVING LOGGING INSTRUMENTS IN HIGHLY DEVIATED WELL BORES

Gerald L. Marquis, London, England, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 1, 1976, Ser. No. 737,748
Int. Cl.[2] E21B *47/00*
U.S. Cl. 166—250 **7 Claims**



1. A method for logging the formations surrounding an earth borehole, comprising:

attaching a well logging instrument to a well logging cable;

attaching a plurality of tubular extensions to each other end to end, the lower one of said extensions being connected to said instrument, each of said extensions having a slot along its entire length to allow said cable to be placed within said extensions as said extensions are being connected together; and

causing said instrument and said plurality of extensions to traverse said borehole and to log at least a portion of the formations surrounding said borehole.

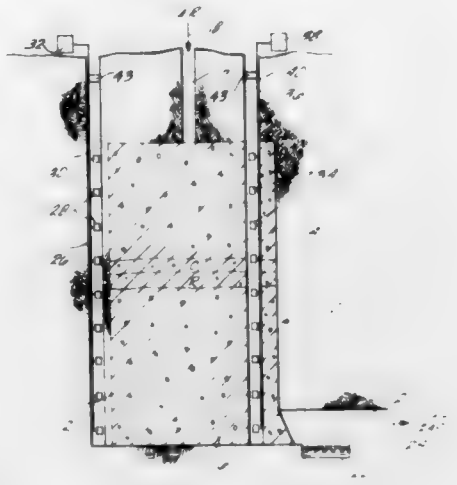
4,082,145

DETERMINING THE LOCUS OF A PROCESSING ZONE IN AN IN SITU OIL SHALE RETORT BY SOUND MONITORING

W. Brice Elkington, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed May 18, 1977, Ser. No. 798,076
Int. Cl.[2] E21B *43/24, 45/00, 47/12*
U.S. Cl. 166—251 **31 Claims**

15. A method for determining the locus of a processing zone advancing through a fragmented permeable mass of particles in an in situ oil shale retort in a subterranean formation containing oil shale, the method comprising the step of monitoring for sound produced in the processing zone, wherein monitoring



for sound is by at least one sound transducer within the fragmented mass.

4,082,146

LOW TEMPERATURE OXIDATION OF HYDROGEN SULFIDE IN THE PRESENCE OF OIL SHALE

Leslie E. Compton, Claremont, and William H. Rowan, Torrance, both of Calif., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Mar. 24, 1977, Ser. No. 780,928
Int. Cl.[2] E21B *43/24, 43/26;* E21C *41/10;* B01J *8/02*
U.S. Cl. 166—259 **41 Claims**



4. A method of decreasing hydrogen sulfide concentration of a gas comprising the steps of:

introducing a gas containing relatively higher hydrogen sulfide concentration to a fragmented permeable mass of oil shale, wherein at least a portion of the oil shale has been treated to remove organic material prior to introducing the gas to the oil shale;

reacting at a temperature less than about 650° F hydrogen sulfide in the introduced gas with oxygen in the presence of oil shale to yield gas having a hydrogen sulfide concentration relatively lower than the hydrogen sulfide concentration of the introduced gas; and

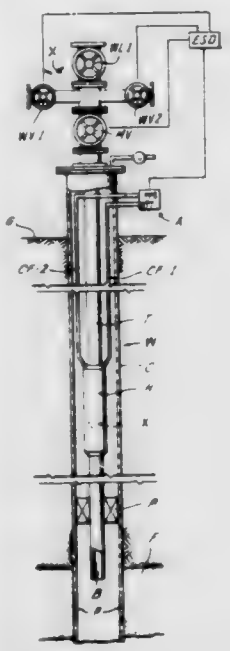
withdrawing such gas having a relatively lower hydrogen sulfide concentration from the fragmented permeable mass of oil shale.

4,082,147

METHOD AND APPARATUS FOR A SURFACE CONTROL SYSTEM FOR: SUBSURFACE SAFETY VALVES

Donny K. Wolff; James D. Mott, and Kenneth W. Colvin, all of Houston, Tex., assignors to Hydril Company, Tex.

Filed Feb. 24, 1977, Ser. No. 771,465
Int. Cl.[2] E21B *43/00, 33/03*
U.S. Cl. 166—314 **16 Claims**



1. A surface control system for use with a surface controlled subsurface safety valve in a well, including:

a controller housing;

means with said controller housing for communicating with a supply of fluid under pressure for powering the surface controller system;

means with said controller housing for communicating with an emergency shut down signal for the well thereto;

means with said controller housing for communicating with a first control fluid conduit that operably communicates with the subsurface safety valve;

means with said controller housing for communicating with a second control fluid conduit that operably communicates with the subsurface safety valve for balancing the hydrostatic head of the control fluid in the first control fluid conduit;

controller valve means mounted in said controller housing valve means for selectively communicating said first control fluid conduit with said second control fluid conduit; and

means responsive to the presence of an emergency shut down signal for maintaining said controller valve means in a closed position blocking communication of said first control fluid conduit and said second control fluid conduit, said means for maintaining said controller valve means in a closed position operable in the absence of said emergency shut down signal for enabling said valve means to open and thereby communicate said first control fluid conduit with said second control fluid conduit wherein control fluid pressure in said first and said second control fluid conduits is equalized to enable the subsurface safety valve to shut in the well.

12. A method of controlling the operation of a subsurface safety valve having two independent control fluid passages extending upwardly from the valve to a surface controller including the steps of:

increasing the control fluid pressure in one of the two independent control fluid passages to provide a pressure differential to open the subsurface safety valve to enable flow from the well;

interrupting a reference signal to the surface controller in response to the sensing of an undesired condition; and

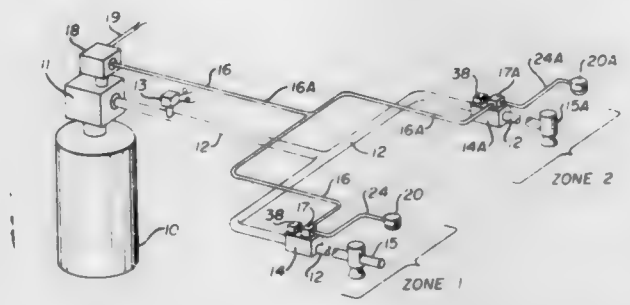
communicating the independent control fluid passages at the surface control to equalize the pressure differential in the control fluid passages to enable the subsurface safety valve to close.

4,082,148

FIRE PROTECTION SYSTEM

Charles F. Willms, Rutherford, N.J., assignor to A-T-O Inc., Willoughby, Ohio

Filed Jul. 26, 1976, Ser. No. 708,491
Int. Cl.[2] A62C *37/04, 37/06*
U.S. Cl. 169—61 **3 Claims**



1. A fire protection system for a plurality of zones comprising a temperature sensor in each of said zones and responsive to a critical temperature within said zone for providing a signal, a source of a fire extinguishing agent, distribution arranged in a main line and a plurality of secondary lines extending therefrom, each of said secondary lines extending into one of said zones, a first means for connecting said source of said fire extinguishing agent with said main line of said distribution piping, a plurality of secondary means for individually connecting said main line of said distribution piping to one of said secondary lines, said first means and one of said secondary means being simultaneously responsive in operation to a signal provided by one of said temperature sensors in one of said zones whereby said fire extinguishing agent is directed only to said one zone in which said sensor signals a critical temperature and wherein said secondary means comprises individual selector valves, each of which has a cylindrical body with inlet and outlet ends, a first valve element arranged for movement toward and away from a valve seat in said cylindrical body adjacent said outlet end thereof, spring means biasing said first valve element toward said valve seat, an annular chamber in said annular body, an annular collar on said valve element engaging said cylindrical body in said annular chamber, at least one passageway extending between said inlet end of said cylindrical body and said annular chamber, a secondary valve in said passageway in connection with one of said temperature sensors whereby opening said secondary valve permits the fire extinguishing agent to flow into said annular chamber and move said valve element to open position.

4,082,149

POWER CULTIVATOR WITH RECIPROCATING BLADES

Paul A. Grobey, R.F.D. 1, Box 586, Springfield, Vt. 05156

Division of Ser. No. 515,379, Oct. 16, 1974, Pat. No. 3,982,593, which is a continuation-in-part of Ser. No. 461,085, Apr. 15, 1974, abandoned. This application May 24, 1976, Ser. No. 689,618
Int. Cl.[2] A01B *39/10*
U.S. Cl. 172—40 **4 Claims**

1. A power cultivator comprising:

(1) a body;

(2) wheel means supporting said body during normal use;

(3) motor means having a drive shaft mounted on said body;

(4) a follower member extending transversely to the direction of travel of said cultivator;

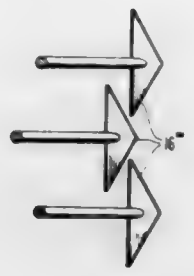
(5) a parallelogram linkage connecting said follower member to said body;

(6) transmission means coupling said drive shaft to said

follower member for reciprocating said follower member substantially perpendicular to the direction of travel of said cultivator;

(7) a plurality of blades, each having a pair of intersecting working edges;

(8) connecting means fixedly connecting each of said blades to said follower member such that when said cultivator is operated over the surface of the ground during normal



use, the blades will be uniformly reciprocated beneath the soil for loosening the soil and pulling the weeds out without cutting off their roots; and

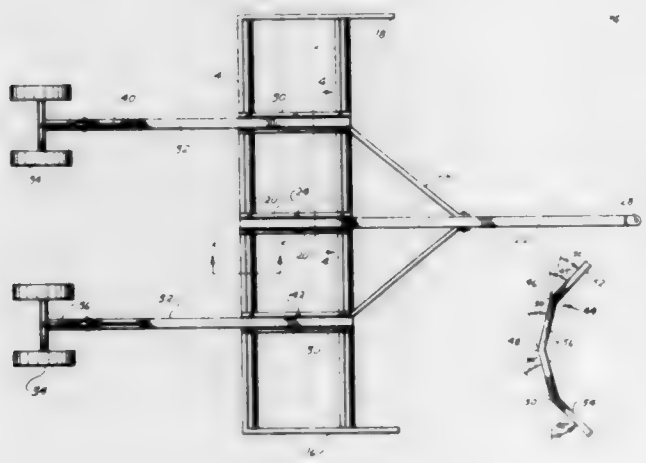
(9) each of said blades having said working edges extending rearwardly and laterally relative to the direction of travel, with the working edges of said blades overlapping whereby roots of plants draped about said working edges will move rearwardly and laterally along said working edges, and eventually drop completely off said blade.

4,082,150

LAND LEVELLING EQUIPMENT

Dwayne L. Winkles, P.O. Box 401, Farwell, Tex. 79325

Filed Apr. 14, 1977, Ser. No. 787,349
Int. Cl.[2] E02F *3/64*
U.S. Cl. 172—780 **5 Claims**



1. In a land leveler to be pulled in a direction of draft having
a. side plates aligned with the direction of draft on each side thereof,
b. front and back moldboard carriers normal to the direction of draft rigidly connected to the side plates,
c. the side plates extending forward of the front moldboard carrier,
d. widely separated wheel booms aligned with the direction of draft extending from the moldboard carriers rearwardly to adjustable wheels, and
e. a tongue aligned in the direction of draft from the moldboard carriers forward to a hitch;

THE IMPROVED STRUCTURE COMPRISING:

f. vertical upward tongue guides aligned with the direction of draft, rigidly connected to the top of the moldboard carriers,
g. said tongue bolted within the tongue guides, and
h. vertical upward boom guides aligned with the direction of draft rigidly connected to the top of the moldboard carriers,
j. said booms bolted within said boom guides, and
k. said vertical upward guides being angle irons welded to the front moldboard carrier and also to the rear moldboard carrier and extending therebetween.

5. In a land leveler to be pulled in a direction of draft having
a. side plates aligned with the direction of draft on each side thereof,
b. front and back moldboard carriers normal to the direction of draft rigidly connected to the side plates,
c. the side plates extending forward of the front moldboard carrier,
d. widely separated wheel booms aligned with the direction of draft extending from the moldboard carriers rearwardly to adjustable wheels and
e. a tongue aligned in the direction of draft from the moldboard carriers forward to a hitch,

THE IMPROVED STRUCTURE COMPRISING:

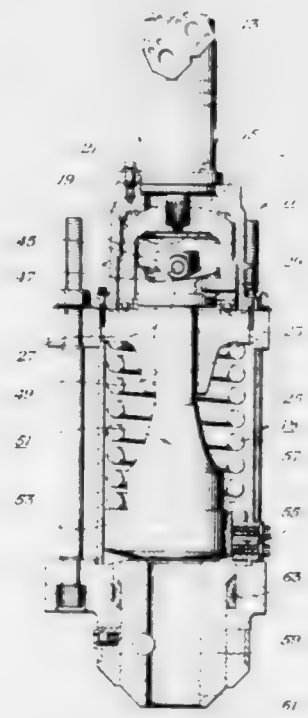
f. each of said moldboard carriers is a channel beam,
g. a moldboard being made of
(i) an integral plate of
(ii) four planar panels,
(iii) each panel is of equal width and length to each other panel and
(iv) angled about 30° to adjacent panel so that
(v) the outside panels are angled 90° to each other,
h. said moldboard attached within the carrier channel with the top and bottom panel angled about 45° from vertical, and
j. a scraper blade bolted to the bottom panel of the moldboard.

4,082,151

CAM MOUNTING FOR AN IMPACT TOOL

James L. Finney, Cranbury, N.J., assignor to Hughes Tool Company, Houston, Tex.

Filed Jan. 14, 1977, Ser. No. 759,502
Int. Cl.[2] B25D *9/00*
U.S. Cl. 173—119 **6 Claims**



1. In a motor driven cam and spring means impact tool having a housing, a driving shaft mounted in the housing for rotation relative to the housing, a hammer positioned in the housing for axial movement with respect to the driving shaft, an annular camming assembly having components including a cam and a pair of cam rollers mounted on opposite sides of the hammer for translating rotational motion of the driving shaft to reciprocal motion of the hammer, and transmission means connected to the driving shaft and to the camming assembly to

rotate one of the components with respect to the other, the non rotating component being attached to the hammer, and improved mounting for the cam comprising:

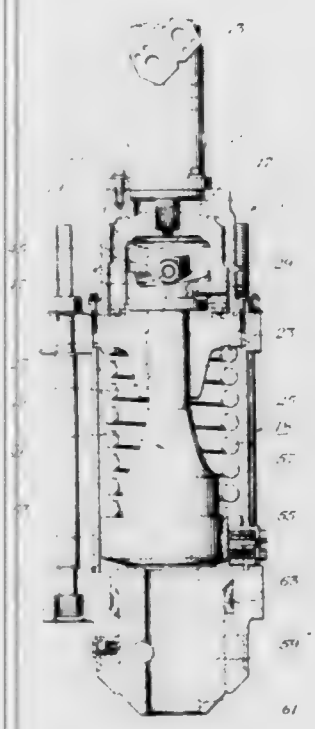
a pair of pins each having one end inserted in a bore in the cam formed transverse to the axis of the driving shaft, the other end carried selectively by the transmission means and the hammer, the pins being spaced apart 180° and each having at least one of its ends slidingly received; the cam being mounted in the housing so that it is free to tip about the axis of the pins to equalize the load imposed by the cam rollers on the cam.

4,082,152

CAM MOUNTING FOR AN IMPACT TOOL

Billie J. Whitworth, Pasadena, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jan. 14, 1977, Ser. No. 759,503
Int. Cl.[2] B25D *9/00*
U.S. Cl. 173—119 **3 Claims**



1. In a motor driven impact tool having a housing, a driving shaft mounted in the housing for rotation relative to the housing, a hammer positioned in the housing for axial movement with respect to the driving shaft, an annular cam with an inclined camming surface, a pair of cooperating cam rollers to translate rotary motion of the driving shaft to reciprocal motion of the hammer, and a spring urging the hammer in one direction to provide an impact, an improved cam mounting comprising:

a cylindrical collar, having its closed end connected to the driving shaft, its walls encircling the cam and connected to the cam by a pair of pins inserted in apertures formed in the cam transverse to the axis of the driving shaft and spaced apart substantially 180°;

an axle mounted transverse to one end of the hammer and immovable with respect to the hammer, the cam rollers being mounted on each end of the axle and in contact with the camming surface for causing the hammer to reciprocate as the cam is rotated ;

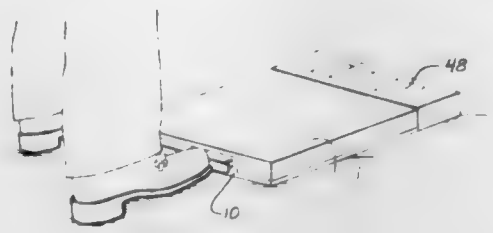
the apertures in the cam which the pins are inserted being circumferentially elongated so as to allow the cam to move a selected distance with respect to the pins in a plane substantially normal to the axis of the driving shaft for creating backlash.

4,082,153

DIGITAL TYPE FLOOR SCALE WITH WEIGH CYCLE CONTROL

Mike A. Provi, Rockford, Ill., assignor to The Brearley Company, Rockford, Ill.

Filed Mar. 2, 1977, Ser. No. 773,389
Int. Cl.[2] G01G *23/30, 3/14*
U.S. Cl. 177—177 **8 Claims**



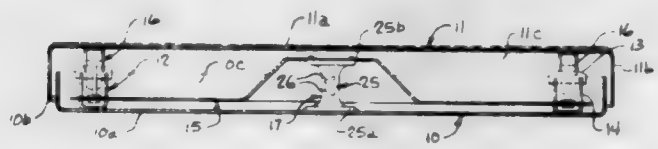
1. In a floor scale for measuring body weight including a scale base and a foot platform overlying the base and movable relative thereto in a generally vertical direction, an electronic digital weighing system including weight sensing means and digital display means responsive to said weight sensing means for producing a digital display indicative of the weight applied to the scale platform, and power means for said electronic digital display system, the improvement comprising a weigh cycle control including a kick member mounted on said scale base at one side thereof for movement relative thereto in a generally horizontal direction and adapted to be actuated by the foot of a person before stepping on the foot platform, a momentary contact switch means mounted on the scale base for actuation by the kick member and timed switch means actuated by said momentary contact switch means for controlling application of power from said power means to said electronic digital display system, said timed switch means including means operative in response to actuation of the momentary contact switch means for initiating application power from said power means to said electronic digital display means, and timer means operative to continue the application of power to said electronic digital weighing system for a preselected time interval sufficient for a weighing operation.

4,082,154

WEIGHING SCALE APPARATUS

Vernon J. Pillote, Rockford, Ill., assignor to The Brearley Company, Rockford, Ill.

Filed Mar. 17, 1977, Ser. No. 778,495
Int. Cl.[2] G01G *3/14, 3/00*
U.S. Cl. 177—211 **25 Claims**



1. A weighing scale apparatus comprising: a base scale member and a platform scale member spaced from the base scale member, a plurality of bell cranks, each having a pivot axis, bell crank pivot means mounting the several bell cranks on one of said scale members at locations angularly spaced apart about a common center for pivotal movement in planes having at least a substantial component tangent to a circle about said common center, a load summing member adapted for turning about said common center, means connecting the several bell cranks at locations vertically offset from the respective pivot axis to said load summing member at angularly spaced locations thereon for turning the load summing member about said common center, means connecting the other of said scale members to each of said cell cranks at locations horizontally offset from the pivot axes of the bell cranks in the same angular direction relative to said common center to apply a turning

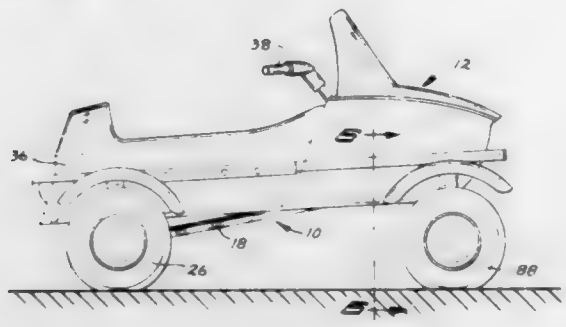
moment to said load summing member correlative with the load on the scale platform member, and means for sensing the turning moment applied to the load summing member as an indication of the load on the platform scale member.

4,082,155

WHEELED UNDERCARRIAGE FOR SNOWMOBILES

Clyde B. McCartney, Big Stone City, S. Dak., assignor to Wayne Parrow and Harold Parrow, both of Delworth, Minn., part interest to each

Filed Feb. 3, 1977, Ser. No. 765,408
Int. Cl.[2] B62M *27/00*
U.S. Cl. 180—5 R **9 Claims**



1. A wheeled undercarriage for use with a snowmobile having a body provided with an endless drive track assembly tunnel, a drive shaft in said tunnel, a steerable ski-mounting bracket and another ski-mounting bracket each extending from spaced apart forward portions of the body, said undercarriage including:

A. an undercarriage positioning bar mounted to the snowmobile body inside of the tunnel;

B. a rear wheel support frame rotatably mounted at a forward portion thereof to said positioning bar in approximate alignment with the longitudinal center of the snowmobile body, said support frame having a rear axle casing at a rear portion thereof;

C. a rear axle in said casing;

D. a pair of rear wheels each supported on an opposite end of said rear axle for rotation therewith;

E. a pair of resilient suspension assemblies each supporting one side of a rear portion of said snowmobile body on a portion of said rear support frame adjacent said rear axle casing;

F. a means for restricting transverse movement of said snowmobile body with respect to said rear wheels and rear axle casings;

G. a front axle bolster mounted with respect to the snowmobile body at the ski-mounting brackets and connected to said positioning bar;

H. a pair of steerable wheels each mounted at an opposite end of said front axle bolster;

I. means connected to said steerable ski-mounting bracket for steerably controlling said steerable wheels; and

J. means for transmitting driving power from said drive shaft to said rear axle shaft.

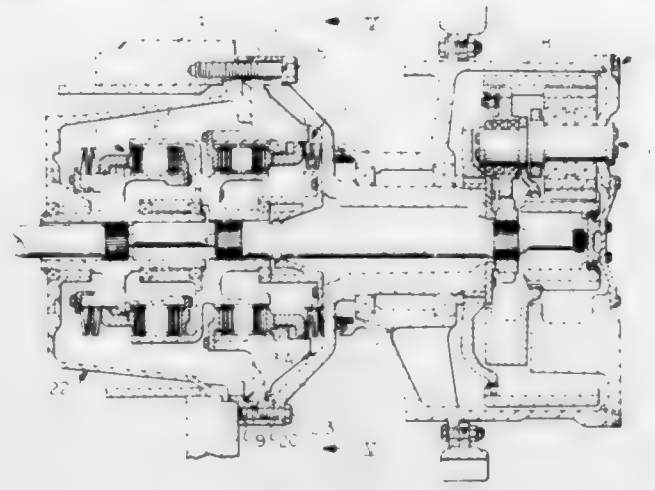
4,082,156

DRIVE MECHANISM HAVING SEPARABLE HOUSING

Ronald L. Krolak, Morton; George W. Cackley, Hanna City; Marvin G. Getz, Morton, and Arthur J. Ritter, Jr., Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 1, 1976, Ser. No. 701,704
Int. Cl.[2] B62D *55/12*
U.S. Cl. 180—9.62 **8 Claims**

1. In a drive mechanism having a mounting support, a steering clutch assembly formed of a plurality of coaxial subassemblies, a brake assembly formed of a plurality of subassemblies, and a final drive assembly, the improvement comprising: a first housing for housing said steering clutch assembly and defining a first annular flange; a second housing for housing said brake assembly and defining a second annular flange; a third housing for mounting said final drive assembly and defining a third annular flange; removable first securing means arranged in an annular array coaxially of said subassemblies for securing said



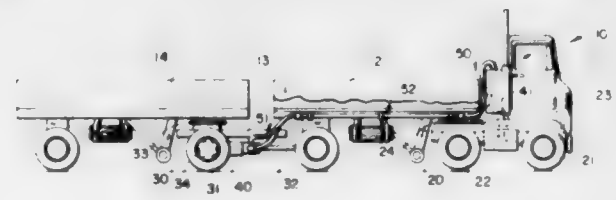
housing flanges coaxially together to cause said housings to define a unitary housing for said mechanism; and removable second securing means for securing the unitary housing from said mounting support and permitting subsequent disassembly of said unitary housing by removal of said first securing means.

4,082,157

HIGHWAY VEHICLE WITH HYDRAULICALLY DRIVEN POWER DOLLY

Ernest R. Sternberg, Rocky River, Ohio, assignor to White Motor Corporation, Cleveland, Ohio

Continuation of Ser. No. 199,290, Nov. 16, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,207
Int. Cl.[2] B62D *59/04*
U.S. Cl. 180—14 A **10 Claims**



1. A hydrostatic assist drive for a tractor trailer which drives the wheels of the trailer to assist the main tractor drive, comprising:

(a) a hydraulic pump unit;

(b) a hydraulic motor unit;

(c) conduit means for conveying fluid from the pump to the motor;

(d) means for varying the displacement of one of said units;

(e) a shiftable plural range axle drive between the trailer wheels and driven by said motor unit; and

(f) control means for shifting said axle to select the drive range of the axle drive.

4,082,158

DIFFERENTIAL PRESSURE POWER ROAD SPEED CONTROL SYSTEM

John A. Carol, Jr.; Wayne E. Paxton, both of Flint, and John W. Riddel, Fenton, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1975, Ser. No. 632,398
Int. Cl.[2] B60K *31/00*
U.S. Cl. 180—108 **5 Claims**
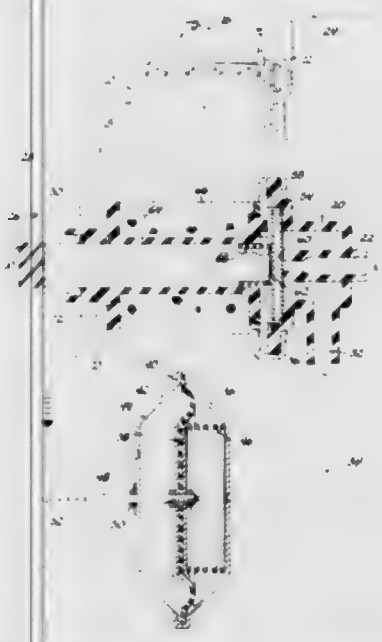
1. In an engine power control mechanism selectively maintaining a desired engine output,

a system for operating a differential pressure operated servomotor by separate first and second pressures generated to

maintain a substantially constant pressure differential therebetween throughout an operating range of engine load, said system comprising:

an engine having a control device controlling engine speed and power, said engine generating separate fluctuating first and second pressures having a substantially constant pressure differential therebetween throughout an operating range of engine load;

a servomotor having a housing, a power wall movable in said housing and dividing said housing into first and second power pressure chambers, an output member connected to said power wall and movable thereby and also connected to said engine control device to control said engine to modify engine power under selectively predetermined conditions to maintain a desired engine output;



first means connecting said first pressure to said first power chamber and having a restrictive orifice therein;

and second means including a pressure varying device responsive to said selectively predetermined conditions and to changing engine operating load demands to generate a controlled pressure from said first and second pressures, said second means connecting said controlled pressure to said second power chamber whereby said servomotor is actuated in accordance with the pressure differential across said power wall and controls the output of said engine by varying engine power to meet the changing engine operating load demands and maintain the desired engine output.

4,082,159

CERAMIC SPEAKER ENCLOSURE

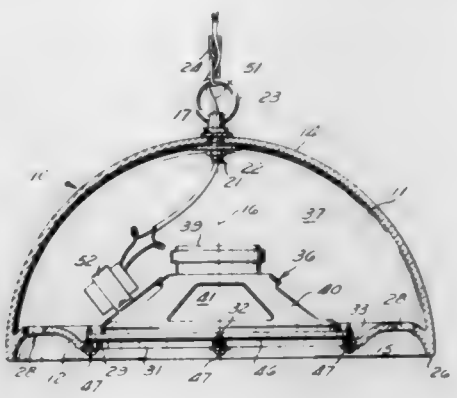
Frank Petty, Paris, Tenn., assignor to Mar-Kel Lighting, Inc., Paris, Tenn.

Filed May 24, 1976, Ser. No. 689,154

Int. Cl.[2] H05K *5/00;* **G10K** *13/00;* **A47B** *81/06*

U.S. Cl. 181—156 **3 Claims**

1. The combination comprising a speaker assembly integrally formed of ceramic material, the enclosure including a hemispheroidal shell portion and an integral flange portion, said shell portion being generally symmetrical with respect to a central axis and having an aperture at its apex, a threaded nipple element extending through said aperture, a decorative loop on the exterior of said shell portion and connected to said nipple element, a nut within said shell portion threaded onto said nipple element and retaining said nipple element and said loop on said shell portion whereby said enclosure is adapted to be suspended by said loop, nipple element, and nut, said nipple element being adapted to allow an electrical wire set to be assembled through said aperture, said flange portion extending radially inward from said shell portion at a plane adjacent an equatorial plane of said hemispheroidal shell portion, a radially inward edge of said flange portion defining a generally circular speaker aperture concentric with said axis of symmetry, a side of said flange portion facing inwardly towards the interior of said shell portion providing a planar seating surface extending substantially along the full circumferential extent of said speaker aperture, a set of notches in said speaker aperture and interrupting said planar seating surface, a plurality of acoustic ports relatively small in comparison to the diameter of said speaker aperture circumferentially spaced about said flange portion, a speaker assembly within said hemispheroidal shell



portion, said speaker assembly having a peripheral rim and including a clamp ring having a diameter greater than the diameter of said aperture and being disposed over said seating surface, said flange notches being dimensioned to permit said speaker assembly to be inserted therethrough into the interior of said shell portion, a plurality of fasteners extending through said notches and said clamp ring and engaging an area of the speaker assembly adjacent the rim to draw said clamp ring and speaker assembly axially towards said seating surface to form an acoustic seal therebetween.

4,082,160

SILENCER FOR EXHAUSTING GAS STREAMS

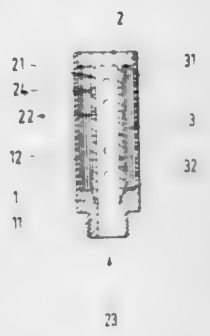
Hermann Schilling, Weinheim, and Heinz Seifert, Mannheim, both of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Apr. 8, 1976, Ser. No. 674,994

Claims priority, application Germany, Apr. 16, 1975, 2516626

Int. Cl.[2] F01N *1/08, 1/00, 3/06*

U.S. Cl. 181—258 **12 Claims**



1. A silencer for reducing the noise of an exhausting gas stream, comprising a body having a connecter portion and an air permeable portion, a sound-absorbing insert in the body and an air permeable inner component, the sound-absorbing insert comprising at least one split sheet of closed-pore foamed plastic material having a thickness of less than its average pore-size.

4,082,161

CONTINUOUS ADJUSTING SCAFFOLD

Curtis L. Johnson, Rte. 3, Box 42, Adamsville, Ala. 35005

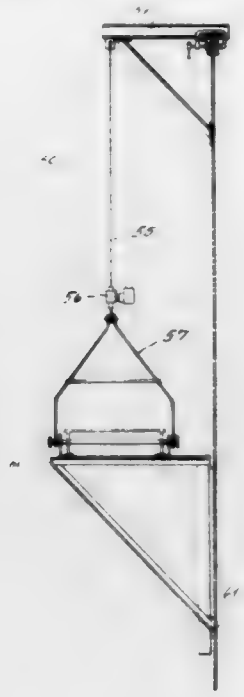
Filed Mar. 24, 1976, Ser. No. 669,965

Int. Cl.[2] E04G *3/10*

U.S. Cl. 182—82 **3 Claims**

1. A continuous adjusting scaffold comprising in combina-

tion a plurality of scaffold sections pivotally attached together, each section including a scaffold of aluminum pick board in one piece and a steel plate connector, wherein, said connector including a channel between upper and bottom steel plates,



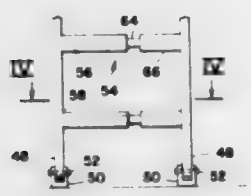
said channel at each end having means receiving a scaffold adjacently positioned thereto, wherein, a swing arm being pivotally connected to said connector and being located within one end of said channel, said swing arm being connectable to said scaffold at said one end.

4,082,162

A-FRAME LADDER EXTENDER

Richard C. Diez, Rte. 2, Box 751, San Jose, Calif. 95131

Filed Aug. 27, 1976, Ser. No. 718,132
Int. Cl.² E06C *1/22, 7/08*
U.S. Cl. 182—166 **7 Claims**



1. In combination:

an A-frame ladder which comprises a pair of main side rails having a plurality of parallel steps disposed therebetween, a pair of rear side rails pivotally secured with a top end thereof adjacent a top end of said main side rails, a platform secured atop said main and rear side rails and means for fastening said rear side rails at a fixed angle from said main side rails; and

an attachment extending the lengths of said main side rails equally so that said ladder can be stably positioned on stairs or the like, comprising:

a pair of parallel equal length extender rails;

means for attaching each extender rail, each adjacent a top end thereof, each adjacent a bottom end of a respective one of said main side rail to extend longitudinally therefrom; and

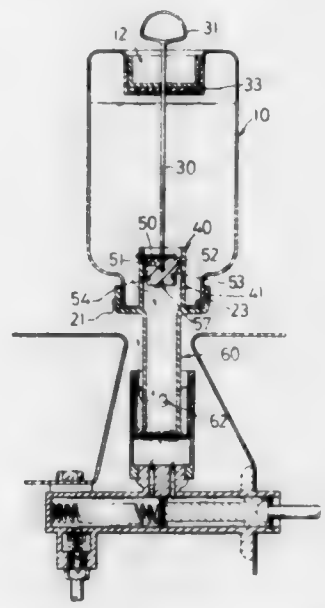
telescoping means below the bottom ends of said main side rails parallel to said steps and extending telescopically from a respective one to a respective other of said extender rail intermediate said bottom end of each of said main side rails and a bottom end of each respective one of said extender rails, said telescoping step means comprising a first rod integrally attached at a first end thereof to a first of said extender rails, said first rod having a cavity extending longitudinally thereinto from a second end thereof and a second rod integrally attached to a first end thereof to a second of said extender rails at an equal distance from the top end of said second of said extender rails as said first end of said first rod is attached from the top end of said extender rails, a second end of said second rod being sized to matingly slidably fit within said cavity, said first and second rod and said cavity being rectangular in cross-section to provide a flat stepping surface and a non-turning fit of said second end of said second rod within said cavity.

4,082,163

OIL REPLENISHING CARTRIDGE

Norikazu Takeishi, 453, Nanjo, Nirayama-cho, Tagata-gun, Shizuoka-ken, Japan

Filed Dec. 22, 1976, Ser. No. 753,174
Int. Cl.² F01M *11/06*
U.S. Cl. 184—105 R **4 Claims**



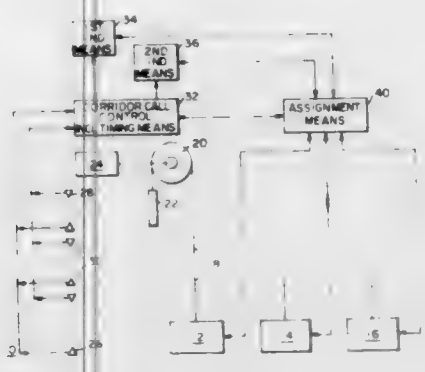
1. An oil replenishing cartridge comprising a container for oil, a valve in the container controlling the flow of oil therefrom, the valve including a tube, a valve seat at the lower end of the tube and a valve body slidably mounted in the tube, a valve operating mechanism having a lower end connected to the valve body and an upper end extending exteriorly of the container for operating the valve from the outside of the container, and an oil feeding mechanism adapted to be mounted on a reserve tank of a hydraulic system of a motor vehicle, the oil feeding mechanism including a hollow member in communication at its upper end with the valve and provided with an oil outlet at its lower end and an air intake opening between the member ends, the oil feeding mechanism functioning to feed oil through the oil outlet to a level in the reserve tank as determined by the oil level in the reserve tank relative to the air inlet.

4,082,164

ELEVATOR SYSTEM

Milton Sackin, Pittsburgh, and George T. Hummert, Oakmont, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 24, 1974, Ser. No. 463,695
Int. Cl.[2] B66B *1/22*
U.S. Cl. 187—29 R **23 Claims**



1. An elevator system for a structure having a plurality of floors, comprising:

a plurality of elevator cars,

means mounting said elevator cars for movement relative to the structure to serve the floors,

means for registering calls for elevator service for at least a predetermined direction from certain of said floors,

means canceling said calls for elevator service in response to predetermined conditions,

timing means recording the registration times of at least certain of the calls,

first indicating means identifying calls registered for a first predetermined period of time,

said timing means continuing to record the registration times of calls after they have been registered for the first predetermined period of time, at least until the calls have been registered for a second predetermined period of time,

second indicating means identifying calls registered for the second predetermined period of time,

and assignment means responsive to said calls for elevator service and to said first and second indicating means, said assignment means assigning elevator cars to serve at least certain of the calls according to a predetermined first strategy until said first indicating means indicates at least one of the calls has been registered for the first predetermined period of time, said assignment means assigning elevator cars to serve those calls registered for the first predetermined period of time according to a second predetermined strategy, at least until the second indicating means indicates at least one of the calls has been registered for the second predetermined period of time, said assignment means assigning elevator cars to serve those calls registered for the second predetermined period of time according to a third predetermined strategy, which differs from the second predetermined strategy.

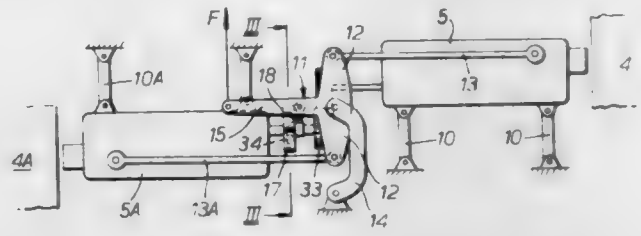
4,082,165

BRAKE ASSEMBLY INCLUDING MOUNTING, ACTUATING AND ADJUSTING STRUCTURE

Anthony William Harrison, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Jun. 8, 1976, Ser. No. 693,799
Claims priority, application United Kingdom, Jun. 9, 1975, 24695/75
Int. Cl.[2] B61H *15/00*
U.S. Cl. 188—59 **9 Claims**

1. A brake assembly comprising a plurality of brake parts, means for applying said parts in unison to respective, different rotors, said brake parts being arranged so that one only is applied to a respective rotor and each said brake part comprising a body of friction material, a separate adjustable length strut co-operating with each said body of friction material to transmit brake-actuating forces to said body of friction material and to adjust the position of said body of friction material relative to said rotor to compensate for wear, and a housing which carries both said body of friction material and said adjustable length strut therein, said housing, friction material and strut being movable in unison towards and away from the associated rotor surface to apply and release, respectively, said



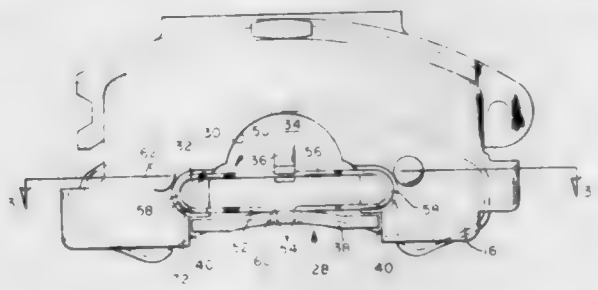
brake part; said body of friction material being supported by said housing close to its rotor surface whereby braking drag forces on said friction material are transmitted to said housing; and brake adjusting means separate from said applying means connected to each of said adjustable length struts to adjust the lengths thereof and including equalising means adapted to ensure that the lengths of all the adjustable struts are adjusted equally.

4,082,166

DISC BRAKE HAVING RETENTION DEVICE

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Feb. 1, 1977, Ser. No. 764,607
Int. Cl.[2] F16D *55/224, 65/02*
U.S. Cl. 188—73.6 **2 Claims**



1. A disc brake comprising:

a rotor;

a caliper member extending over a portion of said rotor outer periphery;

a pair of friction elements carried by said caliper member at axially opposite sides of said rotor; and

resilient retention means releasably engaging said caliper member and one of said friction elements;

said one friction element including a backing plate having a tab and a flange and said resilient retention means engaging said tab, said flange and said caliper member to yieldably secure said one friction element to said caliper member;

said resilient retention means comprising a substantially elliptical spring, said substantially elliptical spring including end projections that extend into a slot on the flange, said spring also including a cross-piece arm that engages with the tab and a pair of arms between the end projections and the cross-piece arm that yieldably engage said caliper member to releasably connect said one friction element with said caliper member.

4,082,167

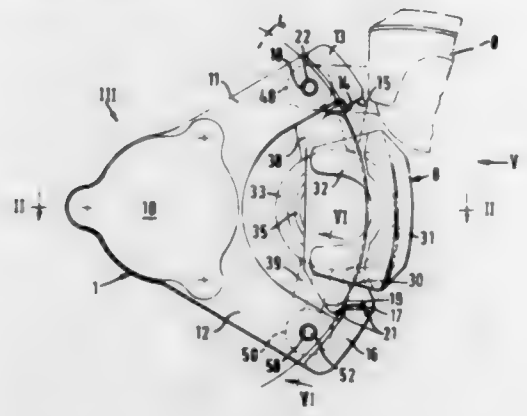
SLIDING CALIPER-TYPE DISC BRAKE AND SUPPORT STRUCTURE THEREFORE

Kenneth C. G. Einchcombe, Wickford, and Kazimierz F. Kornat, Chelmsford, both of England, assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 685,023, May 10, 1976, abandoned. This application Jun. 16, 1977, Ser. No. 806,977

Int. Cl.[2] F16D *65/02*

U.S. Cl. 188—73.6 **1 Claim**



1. A floating caliper disc brake comprising an anchor plate, a caliper, a pair of brake pads, and a brake rotor;

said anchor plate having first and second diverging arms with first and second axially extending guide portions, respectively, at the outer ends of said arms;

said guide portions extending across the periphery of said rotor;

said pair of brake pads being supported by said guide portions and disposed adjacent the braking surfaces of said rotor;

each of said pair of brake pads having a first surface in slidable engagement with said first guide portion;

each of said pair of brake pads having a second surface circumferentially spaced from said first surface;

retainer spring means interposed between said second surfaces and said second guide portion;

said caliper having a reaction portion engaging one of said brake pads;

a piston supported in said caliper and engaging the other of said brake pads;

first and second cantilever guide pins rigidly secured to said first and second of said anchor plate diverging arms, respectively, at locations radially inwardly of said first and second guide portions;

said guide pins extending in a direction away from said rotor;

said caliper having first and second support arms extending in opposite circumferential directions;

said first and second support arms of said caliper having bores that slidably engage said first and second guide pins;

said guide pins being disposed within the radial dimension of said rotor;

said first guide pin being readily disengageable from said first diverging arm of said anchor plate and said caliper being constructed to be pivoted about said second guide pin when said first guide pin is disengaged from said first diverging arm, said caliper being pivotally displaceable to a position whereby said pair of brake pads may be readily removed from their engagement with said first and second guide portions for the purpose of repair or replacement;

limit means interposed between said second guide pin and said second support arm of said caliper constructed to limit the axial displacement of said caliper;

said limit means comprising a pair of axially spaced shoulders formed on said second guide pin and a reduced diameter portion formed on said second guide pin between said shoulders;

said limit means further comprising a threaded set screw extending through said second support arm of said caliper in a radial direction with respect to the axis of said second guide pin;

the inner end of said set screw being disposed between said shoulders of said second guide pin and spaced apart from said reduced diameter portion.

4,082,168

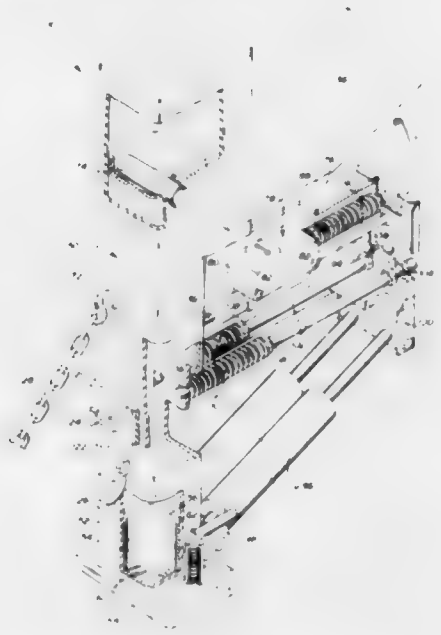
HYDRAULIC BRAKE SYSTEM FOR GOOSENECK TRAILERS

Victor L. Cole, 116 Tenth St., Sanger, Tex. 76266, and Kenneth D. Perry, 1210 Edinburgh, Denton, Tex. 76201

Filed Sep. 30, 1976, Ser. No. 728,113

Int. Cl.[2] B60T *7/20*

U.S. Cl. 188—112 R **3 Claims**



1. Apparatus for applying hydraulic trailer brakes comprising:

an upstanding post member;

means pivotally connecting the lower end of the upstanding post member to a towing vehicle;

a sleeve member telescopingly received over the post member, the upper end of said sleeve member being rigidly connected to a trailer towed by the towing vehicle;

pin means extending through the upper end of the post member and the upper end of the sleeve member for pivotally connecting the upper end of the post member to the upper end of the sleeve member;

an arm secured to the sleeve member at a point substantially above the point of pivotal connection of the post member to the towing vehicle and substantially below the point of pivotal connection of the sleeve member to the post member and extending rearwardly therefrom;

hydraulic master cylinder means for actuation to discharge hydraulic fluid;

at least one rod secured to the rearward end of the arm and extending through the arm and slidably received in the upstanding post member;

compression spring means mounted on the rod and biased against the upstanding post member for normally pivoting the arm and the sleeve member to a position relative to the upstanding post member wherein the hydraulic master cylinder means is deactuated;

shock absorber means connected between the lower end of the upstanding post member and the rearward end of the arm for damping relative pivotal movement therebetween;

said hydraulic master cylinder means comprising a housing defining a brake fluid reservoir, port means, and piston means for effecting brake fluid flow into and out of the housing through the port means;

means mounting the hydraulic master cylinder means within the arm with the housing thereof connected to the arm

and the piston engaging the upstanding post member for actuation to effect brake fluid flow in response to relative pivotal movement between the arm and the upstanding post member;

said hydraulic master cylinder mounting means further characterized by rod means slidably supporting the housing of the hydraulic master cylinder means on the arm and spring means biasing the housing of the hydraulic master cylinder means toward a position wherein the piston thereof engages the upstanding post member and accommodating relative sliding movement between the housing of the hydraulic master cylinder means and the arm in response to further relative pivotal movement between the arm and the upstanding post member following actuation of the piston of the hydraulic master cylinder means; and

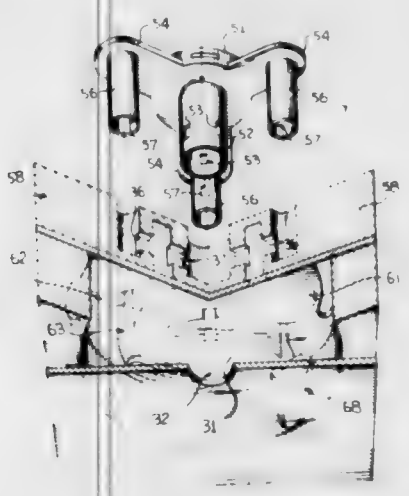
means connecting the hydraulic master cylinder means to the hydraulic brakes of the trailer.

4,082,169

ACCELERATION CONTROLLED FLUIDIC SHOCK ABSORBER

Romald E. Bowles, 2105 Sondra Ct., Silver Spring, Md. 20904

Filed Dec. 12, 1975, Ser. No. 640,186
Int. Cl.[2] F16F *9/34, 9/50*
U.S. Cl. 188—322 **6 Claims**



1. A compression valve for a shock absorber having a compression chamber said compression valve comprising a vortex chamber for controlling flow out of the compression chamber into a reservoir of the shock absorber partly filled with a compressible fluid, said vortex valve having a substantially radial fluid input and a substantially tangential fluid input, means for supplying fluid to said inputs, an accelerometer and means responsive to said accelerometer for decreasing fluid input to said tangential fluid input as a function of increasing acceleration,

said accelerometer and said last mentioned means comprising a mass, spring means for biasing said mass to a first position, first and second ports communicating with said radial and said tangential fluid inputs, respectively, said first and second ports being closed and open respectively, to fluid flow by said mass when in said first position and being increasingly opened and closed by said mass as a function of increases in acceleration,

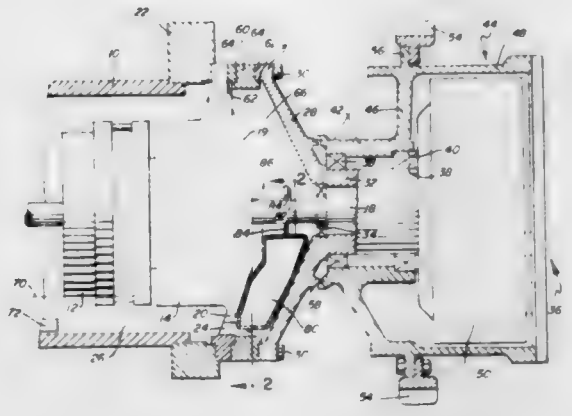
said mass comprising a central hollow tube; a body having a central cylindrical aperture for receiving said hollow tube, said body having means for communicating with said first input, said first port being an opening through said hollow tube.

4,082,170

FINAL DRIVE BLADDER

Arthur J. Ritter, Metamora, and James R. Deck, Eureka, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 14, 1977, Ser. No. 768,120
Int. Cl.[2] B60K *41/24;* **B62D** *55/12;* **F16D** *67/02*
U.S. Cl. 192—13 R **9 Claims**



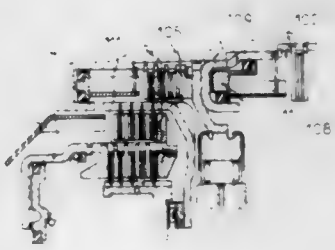
1. A final drive assembly having a housing with a cavity therein, a perforated flange supporting a cover across one end of said cavity, an end cap and a spacer bolted to the end of said housing to define a relatively large volumn open space between said end cap and said cover, said open space communicating into the cavity through the perforated flange, and means positioned in said open space to occupy a substantial portion of said open space so as to prevent excessive amounts of fluid from collecting in said open space.

4,082,171

ROTARY PLATE CARRIER DRUM FOR MULTI-PLATE CLUTCHES OR BRAKES

André Lalin, and Roger Brisabois, both of Boulogne-Billancourt, France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 21, 1976, Ser. No. 725,232
Claims priority, application France, Sep. 25, 1975, 75 29352
Int. Cl.[2] F16D *13/52*
U.S. Cl. 192—70.2 **2 Claims**



1. Rotary plate-carrier drum, notably for multi-plate clutches and brakes, which comprises at least two longitudinal slots extending on either side of a key engaging an elongated hole formed in an axial abutment member for the friction plates associated with said drum, the outer end of said key being shaped to act as a stop to said abutment member, said abutment member constituting the friction-plate bearing plate of a pair of clutches and extending both inwards and outwards of the outer peripheral cylindrical portion of said drum.

4,082,172

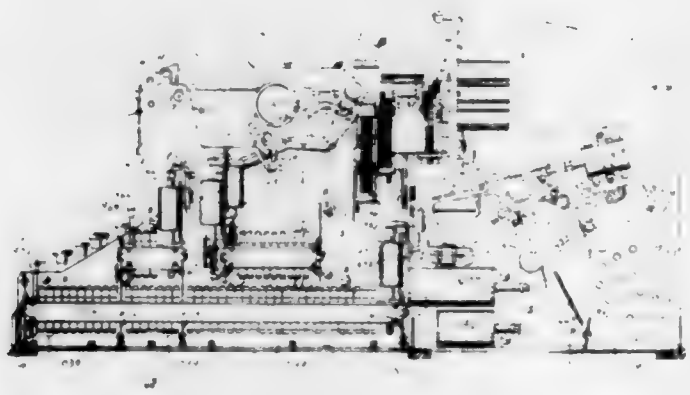
JUSTIFYING TEXT WRITING REPRODUCING MACHINE

William S. Gubelmann, deceased, late of Oyster Bay, N.Y., by Walter S. Gubelmann, executor, Palm Beach, Fla., and William R. Grier, New Vernon, N.J., assignors to Realty & Industrial Corporation, Morristown, N.J.

Division of Ser. No. 212,895, Dec. 28, 1971, Pat. No. 3,945,480. This application Dec. 16, 1975, Ser. No. 641,332

Int. Cl.[2] B41J *5/36*

U.S. Cl. 197—20 **15 Claims**



1. A text reproducing apparatus for printing successive lines of text corresponding to information encoded on a storage means,

said encoded information comprising a coded conditioning signal at a position on said storage means corresponding to the beginning of each of said lines, and a plurality of coded text reproducing signals corresponding to characters, words and character appearance information for each line to which one of said conditioning signals corresponds,

said conditioning signal comprising a single code defining a combination of initial character appearance parameters including (i) case condition, (ii) boldness of print, and (iii) print-no print conditon;

conditioning means responsive to said conditioning signal for establishing corresponding values of said parameters for text to be reproduced in each corresponding line; and

text reproducing means responsive to said conditioning means and the text reproducing signals of a corresponding line to print a corresponding line of text the characters of which have an appearance initially defined by said established parameter values, and conforming to the character appearance information contained in said text reproducing signals.

4,082,173

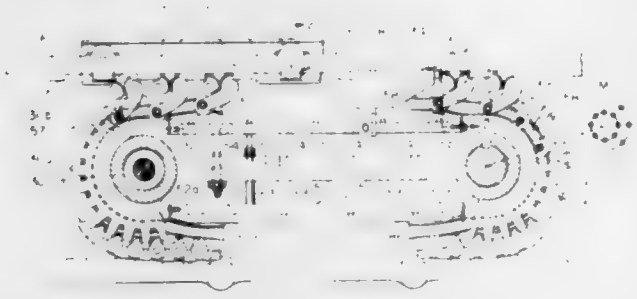
DRIVE UNIT FOR AN ENDLESS CONVEYOR

Arnulf Ivan Simon-Kochloffel, Hillside, N.J., assignor to Otis Elevator Company, New York, N.Y.

Filed Jun. 10, 1976, Ser. No. 694,865

Int. Cl.[2] B61B *13/14*

U.S. Cl. 198—330 **15 Claims**



1. For use with an endless conveyor supported on a structural member and having an endless member with a load bearing side and a non-load bearing side opposite thereof extending over a predetermined path, said non-load bearing side having teeth defining grooves between adjacent teeth, a drive unit including:

a pair of sprockets mounted on said structural member between the ends thereof, said sprockets being displaced from each other along said path;

a motor supported on said structural member rotatably driving one of said sprockets; an endless driving chain arrangement including a driving chain comprising chain links joined together by link pins, and having first bearing elements engaging each of said sprockets whereby said chain is driven on a circular path around each sprocket and on linear paths between both sprockets by said motor driven sprocket, said endless chain having second bearing elements extending outwardly from said driving chain each comprising a drive cam pivotally mounted on each alternate driving chain link pin adjacent said chain links and having a first tooth-like projection with a first bearing surface, and an idler cam cooperating with each driven cam pivotally mounted on each driving chain link pin adjacent a driving chain link pin on which a drive cam is mounted and having a second tooth-like projection with a second bearing surface, said first and second tooth-like projections of each second bearing element extending outwardly from said driving chain;

said first and second bearing surfaces of said second bearing elements disposed in an opposed relationship forming opposed bearing surfaces having a variable separation distance therebetween, each said separation distance having a first magnitude when said second bearing elements are driven around said circular paths, said first and second tooth-like projections of each second bearing element being inserted into a respective groove in said endless member during their travel on one of said circular paths; and said separation distance being increased to a second magnitude as said second bearing elements are advanced from said one circular path to one of said linear paths to urge said opposed bearing surfaces into bearing against the two opposing teeth defining the groove in which said tooth-like projections are positioned.

4,082,174

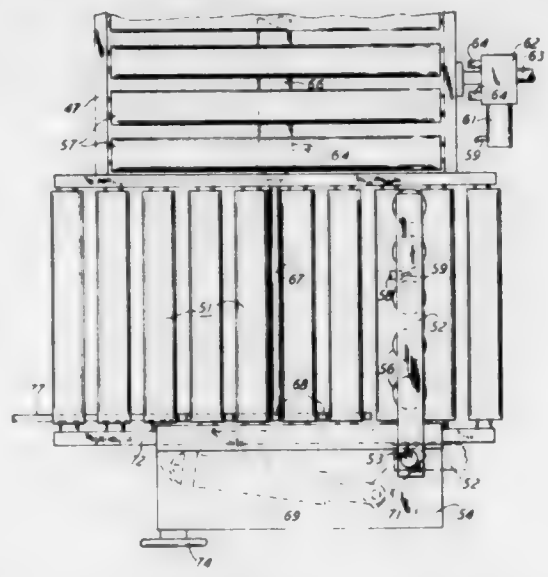
APPARATUS AND METHOD FOR HANDLING BUNDLES OF SHEETS

Walter John Stobb, R.D. 1, Box 60, Pittstown, N.J. 08867

Continuation of Ser. No. 663,826, Mar. 4, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 820,421

Int. Cl.[2] B65G *37/00*

U.S. Cl. 198—368 **2 Claims**



1. Apparatus for handling a row of bundles of sheets, comprising a first conveyor for movably supporting said bundles of sheets in an upstanding position, a second conveyor disposed adjacent said first conveyor and forming a juncture therewith and being in bundle-movement communication therewith and

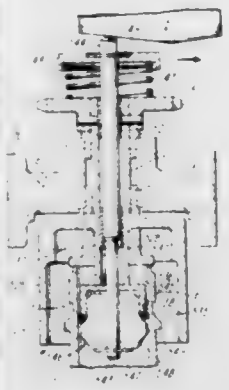
extending in a direction angulated to the direction of bundle movement for said first conveyor, said first conveyor having movable anti-friction support members for movably supporting said bundles of sheets on said first conveyor in a row relationship, a gate disposed at said juncture and being movably disposed into and out of the path of movement of said row of said bundles of sheets on said first conveyor for metering of the movement of the first one of said bundles of sheets in said row and relative to and toward said second conveyor, a brake operatively associated with said anti-friction members of said first conveyor and being spaced upstream from said gate and at a location relative to the second one of said bundles in said row for engaging said anti-friction members and retarding the movement of said anti-friction members and thereby holding all but the first one of said bundles of sheets relative to said first conveyor and against movement along said first conveyor, control mechanism operatively inter-connected with both said brake and said gate for operating said brake and said gate in synchronization whereby movement of said gate actuates said brake to interrupt movement of all but the first one of said bundles in said row of bundles, a guide mechanism connected with said control mechanism and including a powered device movable across said first conveyor in synchronization with the operation of said gate, and said powered device being disposed adjacent said first bundle and in line with said juncture to be engagable with said first of said bundles and diverting it off said first conveyor and onto said second conveyor, further said powered device includes a plurality of upstanding members, each upstanding member extending between said anti-friction members and above said first conveyor.

4,082,175

CONVEYOR COMBINED WITH COUPLING

Joseph Franz Gibbemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 17, 1977, Ser. No. 796,846
Int. Cl.[2] B65G *47/90*
U.S. Cl. 198—377 **10 Claims**



1. An improved coupling assembly for use in combination with a conveyor means to form a machine that carries an elongated hollow workpiece between workstations which machine further includes conveyor means movably mounted relative to the base of said machine for supporting at least one such coupling for repeated movement therebetween and unloading and wherein said improved coupling comprises -

(a) a carrier that is a part of said conveyor means;

(b) a support member having an upper stem portion and a lower portion, said upper portion being mounted on said carrier to revolve but not reciprocate relative to said carrier, said lower portion having internal shoulder means surrounded by a cup-shaped member, the cup being defined by an annular wall surrounding a chamber and an end wall supporting at least a portion of said internal shoulder means and connecting said stem portion to said annular wall and having an open end on the bottom of said cup opposite said end wall;

(c) a follower slidably supported in said stem portion and having the lower end of said follower substantially within said chamber, said follower being movable axially toward and away from said open end; and

(d) detent means comprising a resilient metallic annular member supported about said follower and between said follower lower end and said end wall and radially movable, respectively, in and out from the central portion of said chamber responsive to expansion and contraction respectively, from axial movement of said follower to respectively disengage and engage an internal annular portion of such workpiece

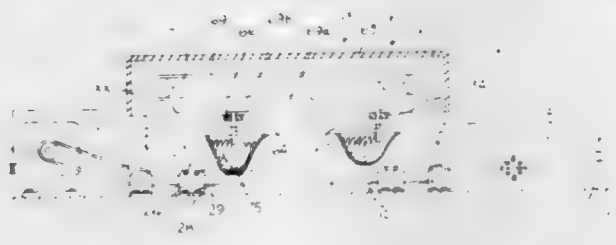
---

4,082,176

APPARATUS FOR HANDLING SNACK CHIPS

Dennis Pommer, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Jan. 19, 1976, Ser. No. 650,408
Int. Cl.[2] B65G *47/29*
U.S. Cl. 198—411 **8 Claims**



1. Apparatus for handling a column of uniformly shaped, nested, individual curvilinear snack chips, said apparatus comprising:

conveyor means including a pair of substantially parallel side wall means, a pair of parallel, spaced elongated conveying surfaces disposed between and in alignment with said pair of wall means, and elongated stationary support means disposed between said pair of belt means; and

shifting means for acting on said column of individual chips to shift the support of said column from said conveyor belt means to said stationary support means and from said stationary support means to said conveyor belt means, said shifting means comprising gate means and reciprocable driving means for moving said gate means into and out of the conveying path traversed by said column of chips,

whereby said gate means is moved into said path to change the orientation of said individual chips from a position approaching but greater than horizontal to a position approaching but less than vertical thereby shifting the support of said column from said pair of belt means to said stationary support means and whereby said gate means is moved out of said path to permit the individual chips to return to a position approaching horizontal.

4,082,177

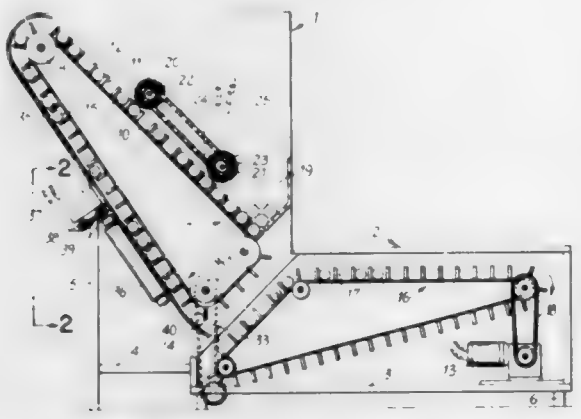
CONTAINER CONVEYING APPARATUS

Samuel S. Aidlin, 214 Beaumont St., Brooklyn, N.Y. 11235, and Stephen H. Aidlin, 934 Glenwood Rd., West Hempstead, N.Y. 11581

Filed Oct. 21, 1976, Ser. No. 734,650
Int. Cl.[2] B65G *47/12*
U.S. Cl. 198—453 **22 Claims**

1. An apparatus for conveying and positioning plastic containers as received in a random fashion, to a point for subsequent placement on to an associated container orientation apparatus, including: a frame; container conveying means mounted on said frame extending upwardly and being provided with a rotatable endless conveyor belt adapted to initially travel upwardly in a forward direction and then proceed downwardly toward a point of origin; receptacle means disposed in proximity to said conveyor belt at said point of origin, for receiving containers to be advanced on said conveyor belt; said conveyor belt being formed by web means along its entire length, having a plurality of traversely spaced cleats mounted

thereon, defining spaces for receiving said containers for travel along said conveyor belt; abutment means disposed in close proximity to the side edges of said cleats and extending in a longitudinal direction on one side of said conveyor belt; first rotatable guide means mounted on said frame, disposed above the line of travel of said belt to clear said advancing cleats, said guide means being adapted to direct individual containers within the respective cleat spaces and control movement of said containers during forward advancement on said conveyor belt; positioning means mounted to said frame in spaced relation to said conveyor belt, for maintaining the position of said



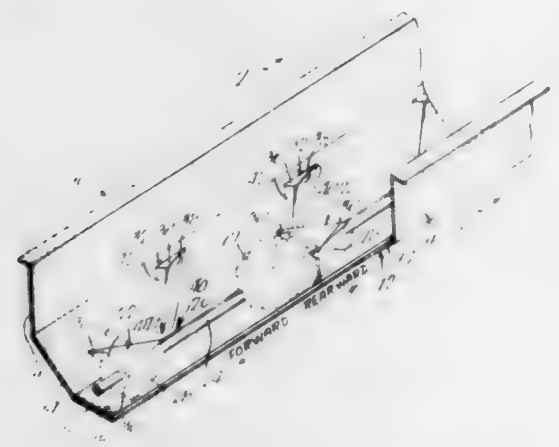
respective containers within said spaces between said cleats during downward advancement on said conveyor belt; second rotatable guide means transversely mounted with respect to the line of travel to said conveyor belt for urging said containers to move in a lateral direction within each of said cleats until container engagement with said abutment means; and container discharge means formed at the lower portion of said frame at a point proximate to said conveyor belt point of origin, for discharging each of said advancing containers positioned against said abutment means being conveyed by said conveyor belt.

4,082,178

HARPOON-TYPE CONVEYOR

Melvin Van Nocker, Kalamazoo, Mich., assignor to Prab Conveyors, Inc., Kalamazoo, Mich.

Filed Aug. 23, 1976, Ser. No. 716,428
Int. Cl.[2] B65G *25/08, 47/00*
U.S. Cl. 198—741 **14 Claims**



1. In a harpoon-type conveyor for transporting swarf-like material which includes a conveyor trough having an upstream end and a downstream end and defined by upstanding trough wall means, and a reciprocating harpoon means in said trough adapted to reciprocate between a rearward position and a forward position while urging the swarf-like material along said trough, the improvement comprising:

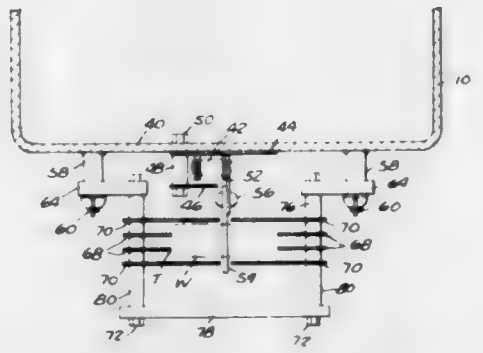
at least a pair of opposed barbs mounted inside said trough and having a rearwardly slanted retaining surface adapted for engaging and retaining a portion of said material in place as said harpoon means is moved from said forward position to said rearward position during a return stroke, and an inwardly slanting feed surface adapted for slidably passing said material thereover during a forward stroke; said slanted retaining surface extending upwardly away from the bottom of said trough in the upstream direction whereby a potentially interfering piece of material in said trough rides up said slanted retaining surface without substantial interference with said return stroke.

4,082,179

WORKPIECE ELEVATOR

Ralph E. Beyer, Fraser, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Filed Mar. 22, 1976, Ser. No. 668,825
Int. Cl.[2] B65G *15/60*
U.S. Cl. 198—801 **15 Claims**



1. In a workpiece elevator of the type including an upright housing, sprockets journalled in said housing adjacent the upper and lower ends thereof, an endless conveyor chain trained around said sprockets, the chain having a vertical run disposed along one wall of the housing and a plurality of workpiece supports secured to the chain such that on said vertical run of the chain the supports extend horizontally in a direction outwardly away from said wall of the housing, that improvement which comprises a guide rail assembly removably mounted as an integral unit on said wall of the housing, said guide rail assembly comprising a pair of laterally spaced, vertically extending support bars, a plurality of vertically spaced fastening members securing said support bars on said housing in fixed laterally spaced relation on opposite sides of the support members on said vertical run of the chain, a plurality of vertically extending guide rails mounted directly on each of said support bars by means independent of said fastening members, said guide rails forming a vertically extending trackway for guiding workpieces carried by said work supports and rigid tie bar means independent of said housing and said fastening members connecting said support bars in said fixed laterally spaced relation, said support bars forming the sole means for supporting said guide rail assembly on said housing and said fastening members forming the sole means securing the guide rail assembly to said housing, whereby, upon release of said fastening members, the assembly of said support bars, guide rails and tie bar means can be removed from said housing as an integral assembly.

4,082,180

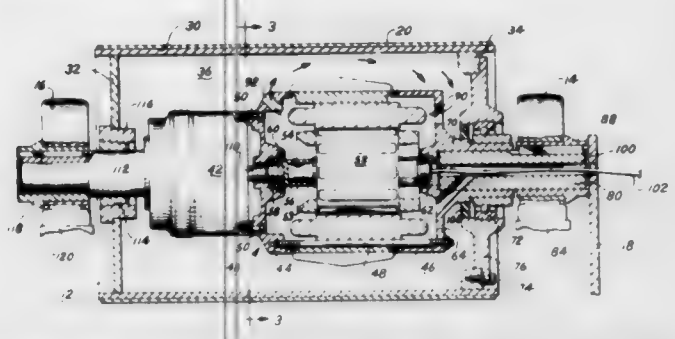
MOTORIZED CONVEYOR PULLEY

Jackson Chung, Mishawaka, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Filed Aug. 2, 1976, Ser. No. 710,683
Int. Cl.[2] B65G *23/00*
U.S. Cl. 198—835 **9 Claims**

1. A motorized conveyor pulley comprising a rim and two end discs defining a closed compartment, said end discs being secured to said rim and having axially aligned openings therethrough, an electric motor and a speed reducer disposed in said compartment, an adapter connecting said motor and reducer and having air flow openings near the periphery thereof, said

motor having an end wall disposed at the end opposite said adapter and having air flow openings therein, a nonrotatable shaft connected to said motor housing and extending outwardly through the opening in one of said end discs in axial alignment with said rim, a means connected to said shaft for preventing rotation thereof, a bearing disposed on said shaft and connected to said one end disc, means for continuously



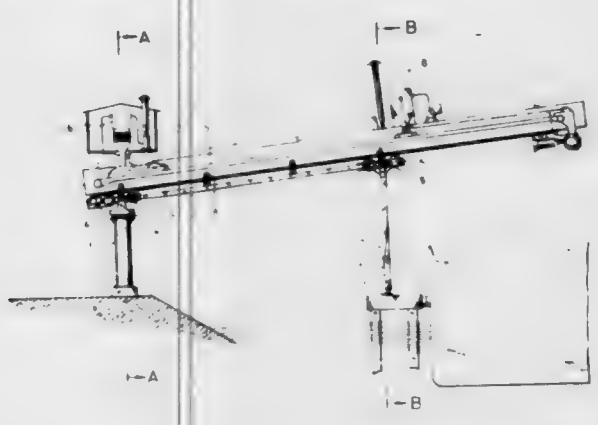
recirculating cooling air through said air flow openings between said motor and said compartment, said speed reducer having an input shaft means connected to said motor in said compartment and an output shaft means disposed in axial alignment with said first mentioned shaft and said rim and extending outwardly through the opening in the other of said end discs, and means rigidly connecting said output shaft means to said other end disc.

4,082,181

SHIP-LOADING INSTALLATION

Heinz Berthold, Willi-Gray-Str. 23, D 6672 Rohrbach/Saar, and Karl Gehring, Schrappacher Str. 8, D 6672 St. Ingbert/Saar, both of Germany

Filed Apr. 13, 1976, Ser. No. 676,651
Claims priority, application Germany, Apr. 17, 1975, 2516943
Int. Cl.[2] B65G *21/00*
U.S. Cl. 198—863 **4 Claims**



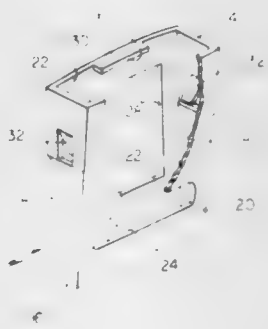
3. A ship-loading installation, which comprises
a circular track,
a column disposed at the center of said track and carrying a first rocker, which is provided with first roller means,
an outer support movable on wheels along said track and carrying a second rocker, which is provided with second roller means,
a bridge mounted for pivotal movement in a vertical plane, said bridge extending between said column and said outer support and having a length that exceeds the distance between said rockers, said bridge comprising an enclosure that extends virtually throughout the length of said bridge and defines therein a peripherally enclosed cavity, said enclosure comprising a top wall formed with a longitudinal slot which extends from a point near said column away from the latter,
a closure for selectively closing said slot,
an endless belt conveyor arranged in said cavity and adapted to be charged through said slot with material to be loaded, and
shifting means defined by driven pin teeth connected to said bridge and driving pin teeth carried by said central column and in mesh with said driven pin teeth being operable to shift said bridge in its longitudinal direction in cooperation with said rollers.

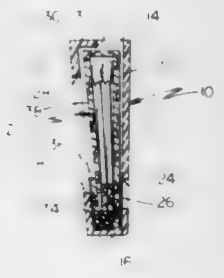
4,082,182

MATCHBOOK COVERS

Richard P. Barrette, Lancaster, Mass., assignor to Automated Molding Corporation, Westboro, Mass.

Filed Dec. 20, 1976, Ser. No. 752,401
Int. Cl.[2] A24F *27/00*
U.S. Cl. 206—107 **9 Claims**





1. In a matchbook cover comprising continuous front, back and side walls defining a generally wedge-shaped interior cavity closed at its bottom and generally open at its top and of size and shape to receive a matchbook therewithin, that improvement wherein:
a holding tab projects from the top of said back wall partially over the top of said cavity towards said front wall in position to partially overlie the top of a matchbook in said cavity and retain and prevent withdrawal of said matchbook from said cavity until said back and front walls are flexed outwardly in response to force applied to said side walls to increase the distance between said front wall and the adjacent edge of said tab to permit such withdrawal;
a striker opening is provided in said front wall adjacent the bottom thereof in position to overlie the striking surface of a matchbook positioned wholly within said cavity;
a finger opening is provided in the central portion of said back wall; and,
cover portions project inwardly from each of said side walls in position for engaging bottom portions of matchbook positioned partially within said cavity to prevent the matchbook from being removed from the cavity without at least partially destroying the cover portions of the matchbook bottom portions.

4,082,183

DEVICE FOR DISPLAYING WRIST WATCHES

Michael Sturm, Brookfield, Wis., assignor to Display Corporation International, Milwaukee, Wis.

Filed Aug. 9, 1976, Ser. No. 712,495
Int. Cl.[2] B65D *85/40, 5/50*
U.S. Cl. 206—301 **10 Claims**

1. A display device for wrist watches including a display stand capable of free standing on a support surface, said display stand comprising

a base having front and rear portions;

leg means depending from said base for supporting said display stand on the support surface with said base spaced above the support surface;

an arcuate lower member extending upwardly and integrally from the rear portion of said base and terminating in an upper edge;

a flexible, generally inverted J-shaped cuff member including a front portion extending upwardly and integrally from the front portion of said base and a rear portion



extending downwardly toward said lower member upper edge and terminating in a free end spaced from said lower member upper edge; and

means on the front portion of said cuff member for embracing the back of the watch with one portion of the watch wristband extending around the lower portion of said cuff member, said base and at least a portion of said lower member and the other portion of the watch wristband extending around the upper portion and said rear portion of said cuff member.

4,082,184

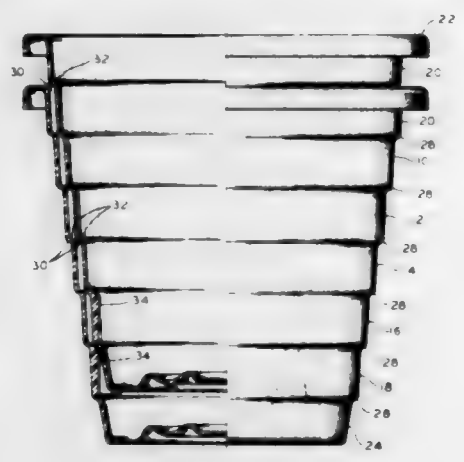
NONLOCKING NESTABLE CONTAINER

Gregory Wilton Hammer, R.R. No. 1, Hamler, Ohio 43524

Filed Jan. 24, 1977, Ser. No. 761,863

Int. Cl.[2] B65D *21/02*

U.S. Cl. 206—519 **5 Claims**



1. A molded nonlocking nestable vegetable hamper and the like capable of being removed from a one piece internal mold section, and comprising: a generally cup-shaped container having an open top and a closed bottom and sidewalls of a uniform thickness stiff enough to support other similar hampers loaded with vegetables when stacked on its upper edge, said sidewalls being stepped inwardly from top to bottom to provide a plurality of concentric segments separated by identically shaped shoulders having rounded edges, said sidewalls of each segment being tapered inwardly at an angle which causes the bottom outside rounded edge of one segment to nest into a container opposite the top inside rounded edge of the same segment of another one of the hampers, and circumferentially spaced apart stops for engaging one or more of said shoulders and formed by a thickened section of segment sidewall extending between the top and bottom of a segment with its exposed surface being vertical and the side edges of the stops being tapered to release vertically from a one piece internal male mold section, said stops holding said outside and inside rounded edges of said shoulders of nested hampers opposite each other, so that flexing of one hamper over another separates nested hampers.

4,082,185

MANUFACTURE OF DIAMOND PRODUCTS

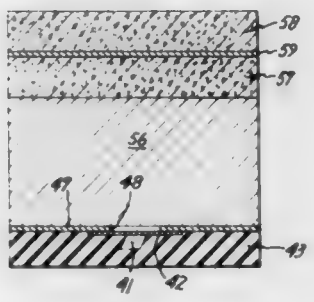
Herbert M. Strong, Schenectady, N.Y., assignor to General Electric Company, Worthington, Ohio

Division of Ser. No. 412,332, Nov. 2, 1973, Pat. No. 4,042,673.

This application Jul. 15, 1976, Ser. No. 705,547

Int. Cl.[2] C01B *31/06;* B65D *85/00*

U.S. Cl. 206—525 **19 Claims**



1. In a reaction vessel for introduction into the reaction volume of a high pressure, high temperature apparatus, said reaction vessel constituting an assembly of interfitting elements for enclosing diamond seed material and a source of substantially pure carbon separated by a mass of metallic catalyst-solvent for the diamond-making reaction disposed therebetween so as to provide a predetermined temperature gradient between said diamond seed material and said source of carbon under operating conditions of pressure and temperature in the diamond stable region of the phase diagram of carbon, said diamond seed material and said source of carbon being located in separate regions of said reaction vessel such that under said operating conditions said diamond seed material will be at a temperature near the minimum value of temperature for said temperature gradient and simultaneously said source of carbon will be at a temperature near the maximum value of temperature for said temperature gradient, the improvement comprising,

a. a layer of isolating material in combination with a layer of diamond nucleation suppressing material,

b. said isolation layer, said nucleation suppressing layer and said mass of metallic catalyst-solvent being of different materials in any given reaction vessel construction and said isolation layer being made of a material having a melting point, when in contact with diamond, that is higher than the melting point of the metallic catalyst-solvent saturated with carbon dissolved therein when in contact with diamond,

c. said isolation layer being in contact with the diamond seed material and being disposed between the said diamond seed material and the mass of metallic catalyst-solvent,

d. said nucleation suppressing layer being disposed in contact with the underside of the mass of catalyst-solvent material,

e. the metallic catalyst-solvent being disposed in separate first and second layers and

f. the source of carbon being disposed in separate third and fourth layers with said third layer located between said first and second layers and said second layer between said third and fourth layers,

g. said first layer at least containing an impurity for coloring diamond growth.

4,082,186
PORTABLE CLEANING TOOLS

Frank Chirumbolo, New York, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 31, 1977, Ser. No. 764,133
Int. Cl.[2] F41C *19/00*
U.S. Cl. 206—577 4 Claims

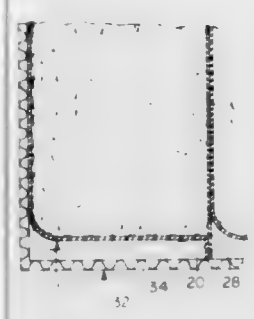


1. A portable kit of cleaning tools, comprising
a bag,
a collapsable pail of telescopic construction,
a wiper blade unit,
a broom unit, and
a foldable pole,
said bag of a size to enclose said wiper blade, broom unit, said pail in the collapsed condition, and said pole in the folded condition,
said pole shaped at one end with threaded means to engage a threaded hole in the broom unit, and shaped with a tapered section at the opposed end of the pole of a size to fit a tapered socket hole in the handle of the wiper blade.

4,082,187
MEANS AND METHOD FOR PACKAGING FRANGIBLE ARTICLES

Bayard L. Carlson, Wilsonville, Oreg., assignor to AMFAC Foods, Inc., Portland, Oreg.

Filed Nov. 5, 1976, Ser. No. 739,085
Int. Cl.[2] B65D *85/36, 81/08*
U.S. Cl. 206—585 18 Claims

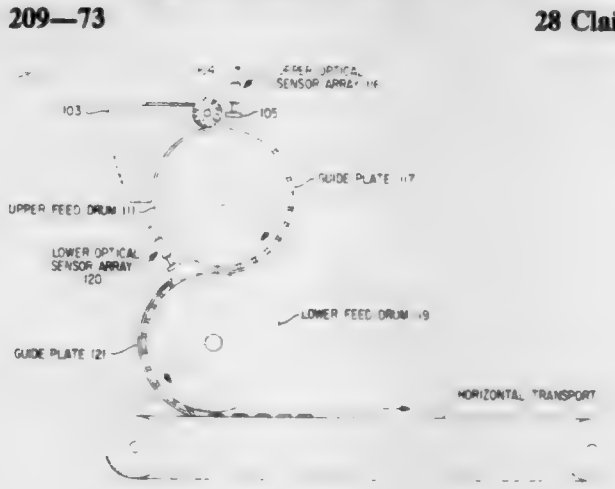


1. A packaging system for shipping frangible articles comprising:
a rigid-walled shipping container having a plurality of sidewalls and opposed top and bottom walls,
at least one package within said container, said package having a body portion containing one or more frangible articles,
said package including a shock-absorbing means for cushioning said articles during shipment to inhibit their breakage, said shock-absorbing means comprising:
flange means extending outwardly from and generally transversely of an adjacent said body portion of said package;
said body portion selected from a material and thickness of material providing a controlled flexing thereof relative to said flange means while having a self-supporting capability,
said package being arranged and supported generally on its side during shipment with its flange means engaging said bottom wall and supporting said body portion in cantilevered relationship above said bottom wall,
the cantilevered length of said body portion from its supporting flange means, and the width of said flange means being selected in relation to the total weight to be imposed on and carried by the body portion during shipment so as to provide a controlled deflection of said body portion relative to its supporting flange means toward said bottom wall without contacting said bottom wall when said container is jolted during shipment.

4,082,188
APPARATUS FOR COLOR RECOGNITION AND DEFECT DETECTION OF OBJECTS SUCH AS CAPSULES

William Charles Grimmell, Lake Hiawatha; Gilbert Carl Kaetzel, Wayne, both of N.J.; John Milton Moran, Nazareth, Pa., and George Michael Zanko, Montville, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 23, 1976, Ser. No. 698,987
Int. Cl.[2] B07C *5/342*
U.S. Cl. 209—73 28 Claims



1. Apparatus for the automated surface analysis of objects of a particular elongated geometric form and for classifying said objects into acceptable and non-acceptable categories, comprising:
(a) first means arranged to receive electromagnetic radiation from the objects and for generating electrical signals corresponding thereto;
(b) second means for effecting relative translational movement between said first means and the objects and for providing output signals which are utilized in determining the instantaneous relative location of the objects, said second means including means for orienting the objects in a first non-degenerate orientation for at least one end-on viewing by said first means and a second non-degenerate orientation for a different viewing by said first means; and
(c) third means connected to said first and second means for sampling the signals generated by said first means based at least in part on object location and processing said sampled signals into a form representative of object shape, said third means including means for storing a reference representative of the intended object shape and means for comparing the processed sampled signals with the stored reference and for generating output signals representative of the acceptability or non-acceptability of each object.

4,082,189

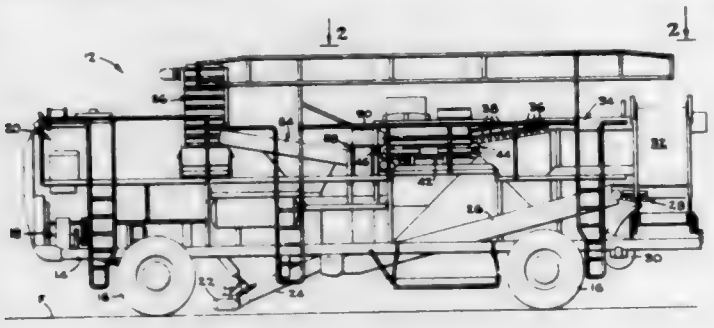
APPARATUS FOR SEPARATING FOOD ARTICLES FROM FIELD DEBRIS

Henry P. Cordes, Vacaville, Calif., assignor to Basic Vegetable Products, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 524,086, Sep. 15, 1974, abandoned. This application Jun. 28, 1976, Ser. No. 700,326

Int. Cl.[2] B07C *5/342*

U.S. Cl. 209—73 **13 Claims**



1. Apparatus for separating food articles having a first color from an admixture of said food articles with debris articles such as dirt clods and the like which have a second color different from said first color, said apparatus comprising singularizing means for forming said articles into a single file column, said singularizing means having a discharge end, transporting means in aligned receiving relation to the discharge end of said singularizing means, said transporting means operating to transport said articles at a speed in excess of said singularizing means so that said articles on said transporting means are in spaced apart relation thereon, photoelectric means disposed adjacent said transporting means for producing a signal in response to transportation of debris articles therepast, said photoelectric means including a photo cell, a lens system having an optical axis aligned with said photo cell and said transporting means, means on the same side of said transporting means as said photo cell for illuminating articles on said transporting means as the articles intersect the optical axis, said transporting means defining a slot in alignment with said optical axis so that said transporting means does not reflect light from said illuminating means along said optical axis, means defining a nonreflective surface in said optical axis on the side of said transporting means opposite said illuminating means, an opaque housing surrounding said photoelectric means and said transporting means adjacent thereto for shielding said photo cell from ambient light so that said photo cell responds only to light from said illuminating means reflected from articles on said transporting means, and means responsive to said signal for ejecting said debris articles on said transporting means upward from said transporting means.

4,082,190

DESK ORGANIZER

Eric Robert Merz, 12 Shoestring La., Brookhaven, N.Y. 11719

Filed Aug. 13, 1975, Ser. No. 604,427

Int. Cl.[2] B42F *1/00;* **A47F** *7/00*

U.S. Cl. 211—11 **8 Claims**

1. A desk-organizer for temporary storage and retrieval of letter correspondence and like matter comprising sheet material, said desk-organizer comprising:

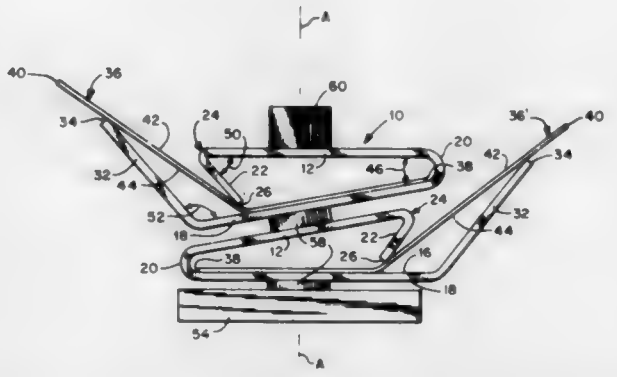
a first paper-holder mounted on base means for stable support on an extended surface, said paper-holder comprising;

(a) unitary resilient means defining a bifurcate structure having at least a first extended member facing a second extended member and joined therewith at a crotch, said bifurcate structure comprising a plurality of planar rectilinear elements,

(b) means forming an oriented-access for the insertion of said sheet material, said oriented-access comprising a first projecting member extending from the end of said first extended member remote from said crotch, said first projecting member extending towards said crotch and said second extended member,

(c) means forming a self-biased clamp for urgedly engaging sheet material inserted through said oriented-access,

and, (d) means for flexing said sheet material into a non-planar configuration having improved structural stability



along at least one axis, said means for flexing comprising a second projecting member extending from the end of said second extended member remote from said crotch, said second projecting member extending away from said crotch and having a terminal end portion positioned to interact with that portion of said sheet material remote from said crotch extending beyond said self-biased clamp.

4,082,191

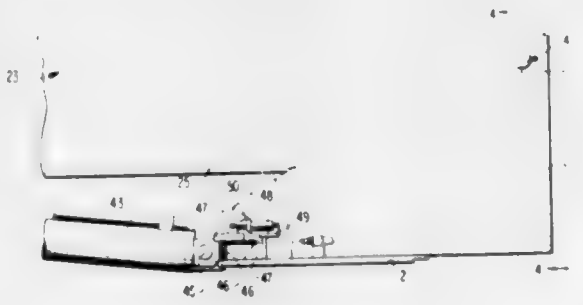
CRANE WITH LEFT CYLINDER AND JOURNAL LOCK AND RELEASE DEVICE

Reginald P. Whittingham, St. Thomas, Pa., assignor to Walter Kidde & Company, Inc., Shady Grove, Pa.

Division of Ser. No. 548,149, Feb. 7, 1975, Pat. No. 3,954,193. This application Oct. 24, 1975, Ser. No. 625,387

Int. Cl.[2] B66C *23/06*

U.S. Cl. 212—59 R **5 Claims**



1. A crane boom, a turntable, said crane boom being pivotally connected to said turntable for movement in a vertical plane, a boom lift cylinder connected between said turntable and said boom for moving said boom in the vertical plane, one end of said boom lift cylinder being pivotally connected to the boom, pivot means operatively connecting the opposite end of said lift cylinder to said turntable, said pivot means comprising a pivot element, a journal box receiving and supporting said pivot element, socket means on said turntable, said socket means having an open top portion for fixedly and releasably receiving said journal box and associated pivot element, a locking plate movably mounted between two positions on said turntable, a power extensible and retractable device connected to said locking plate for shifting said locking plate between the two positions, said locking plate being shiftable in the plane of the open top portion of said socket means to a first position engaging the top of the journal box to fixedly mount said journal box in said socket means, thereby holding said pivot means in the operative position on said turntable during normal operation of said crane boom, said locking plate being shiftable to a second position clear of the open top portion and away from the top of the journal box to release the journal box from

said socket means, thereby disconnecting said pivot means from said turntable, whereby said journal box can be lifted from said socket means; and a positive locking element movably mounted on said power device, said positive locking element being movable into the path of movement of said shiftable locking plate to prevent retraction of said shiftable locking plate from said first position to thereby assure that the locking plate is held in the operative position during the normal operation of the crane.

4,082,192

HAY BALE PICKUP AND TRANSPORT DEVICE

Randal A. Cox, R.R. 1, Van Wert, Iowa 50262

Continuation-in-part of Ser. No. 517,434, Oct. 23, 1974, Pat. No. 4,015,739. This application Jan. 26, 1976, Ser. No. 652,178

Int. Cl.[2] B66C *23/00*

U.S. Cl. 214—1 HA **8 Claims**



1. A hay bale pickup and transport device comprising,

a base assembly adapted to be mounted on a vehicle and including a power means connected to a hay bale arm for moving said arm between a horizontal lowered position and a raised position,

said hay bale arm including spaced apart parallel arm portions,

hay engaging fingers on the free ends of each of said arm portions adapted to pivot between a first position with said fingers being parallel to each other and the plane of said arm portions and extending in opposite directions and a second position with said fingers extending in directions approximately 90° to said fingers in said first position, and

stop means for selectively holding said fingers in said first position, said stop means including a first stop for limiting said fingers from pivoting downwardly from said first position and a second stop for limiting said fingers from pivoting upwardly, said second stop being moveable between locked and unlocked positions and said fingers being freely pivotable upwardly from said first position when said second stop is in said unlocked position in response to said fingers engaging a hay bale on the ground as said hay bale arm is moved to its lowered position over a hay bale.

4,082,193

PIPE HANDLING APPARATUS

J. T. Teague, Longview, Tex., assignor to LeRoy LaSalle, Carthage, Tex.

Filed Jul. 23, 1970, Ser. No. 57,640

Int. Cl.[2] E21B *19/00*

U.S. Cl. 214—2.5 **9 Claims**

9. Apparatus for handling pipe wherein the pipe is transported between a pipe rack and another location comprising:

(a) a cable;

(b) means forming a pair of pipe receiving carriages;

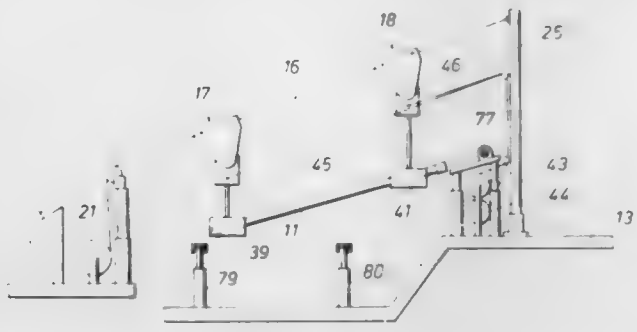
(c) means mounting said pipe receiving carriages for longitudinal movement along said cable so that they may support a pipe of specified length;

(d) moving means for moving at least one of said carriages along said cable;

(e) means anchoring one end of said cable;

(f) means controlling the tension in said cable to raise or lower said cable;

(g) said cable adapted to be positioned with part of it disposed in space in overlying relationship with respect to the pipe rack and part of it extending upwardly to be disposed in close proximity to the recited another location



so that said cable enables raising or lowering movement of said carriages;

(h) said moving means including a second cable;

(i) said second cable being attached to at least one of said carriages;

(j) means for moving said second cable to selectively position the carriage to which said cable is attached; and

(k) means forming at least one of said pipe receiving carriages for supporting a pipe, and further including means for temporarily supporting a pipe on said pipe receiving carriages during raising or lowering movement of the pipe along said cable.

4,082,194

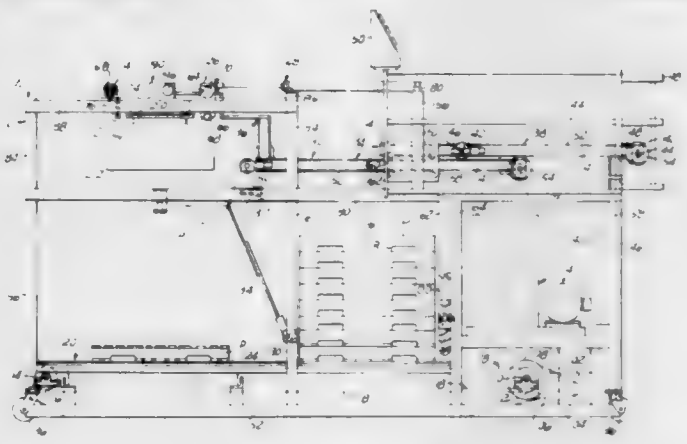
SELF-CONTAINED PALLET-ELEVATING BAG PALLETIZER

Russell T. Sheehan, 11418 Auburndale Ave., Livonia, Mich. 48150

Filed Jun. 30, 1976, Ser. No. 701,136

Int. Cl.[2] B65G *57/24*

U.S. Cl. 214—6 P **2 Claims**



1. A self-contained unitarily-movable pallet-elevating filled bag palletizer, comprising

an elongated unitarily portable palletizer frame structure having an upper portion and a lower portion and self-containedly holding and supporting all of the below-named palletizer components, as follows:

a longitudinal carriage mounted for longitudinal movement on said upper portion of said frame structure,

a transverse carriage mounted for transverse movement on said longitudinal carriage,

a rotary bag positioner rotatably mounted upon and depending from said transverse carriage,

said bag positioner having side bag entrance opening means and bottom bag discharge opening means including releasable gate means disposed across said discharge opening means,

a filled bag conveyor mounted for longitudinal movement on said frame structure and having a rearward bag-receiving portion adapted to receive bags during loading thereof and having a forward portion disposed adjacent said bag positioner and adapted to deliver bags thereto when said bag positioner entrance opening means is aligned with said forward bag conveyor portion,

a pallet elevator mounted on the lower portion of said frame structure beneath said bag positioner and having thereon a pallet support movable upward and downward relatively to said frame structure,

a pallet magazine mounted on said frame structure in spaced relationship to said pallet elevator and adapted to hold a plurality of pallets in closely-disposed relationship to one another,

a pallet conveyor mpunted on said frame structure extending from said pallet magazine to said pallet support and adapted when energized to conveyor empty pallets one-by-one from said magazine to said pallet support,

power-operated means for moving said longitudinal carriage longitudinally of said frame structure,

power-operated means for moving said transverse carriage transversely of said longitudinal carriage,

power-operated means for rotating said bag positioner,

power-operated means for actuating said bag conveyor,

power-operated means for actuating said pallet conveyor,

power-operated means mounted on said frame structure for actuating said pallet elevator,

and power-operated means for actuating said releasable gate means,

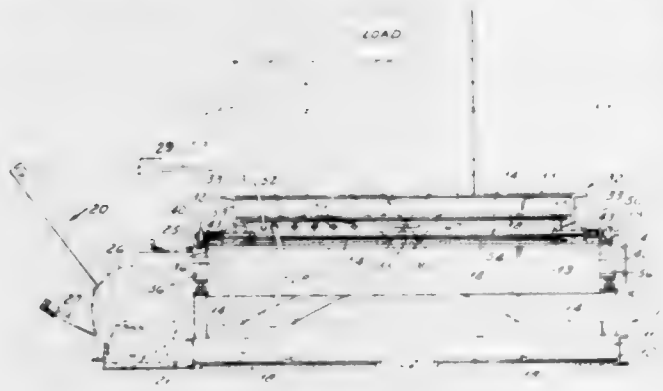
said entrance opening means of said bag positioner comprising open opposite ends thereof adapted to receive bag deliveries at either of said opposite ends from said forward bag conveyor portion in response to rotation of said bag positioner aligning either of said opposite ends with said forward bag conveyor portion.

4,082,195

HANDLING SYSTEM FOR HEAVY LOADS

Alfred B. Wnek, Livonia, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jun. 21, 1976, Ser. No. 698,445
Int. Cl.² B60P *1/60*
U.S. Cl. 214—38 BA **10 Claims**



1. An apparatus for handling heavy or bulky loads which are to be transferred from one location to another wherein said apparatus comprises:

(a) a base means having a first plurality of air bearing means affixedly attached therein interacting with a supporting surface;

(b) a first platform means affixed to a fluid powered ram operated scissors lift means wherein said lift means is fixedly attached to said base;

(c) a second platform means having a second plurality of air bearing means affixed therein coacting with said first platform means wherein said second platform means;

(d) a fluid power means connected to a control and distribution means to operate said first and second air bearing means; and

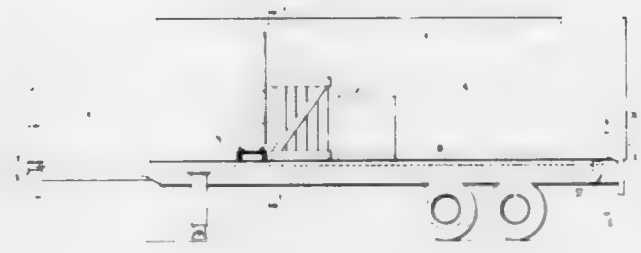
(e) adjustable support means pivotally affixed to said base means and cooperating with said first platform means.

4,082,196

LOADING AND UNLOADING APPARATUS FOR VEHICLES

David William Lutz, and David Edward Lutz, both of P.O. Box 39, Carlisle, Pa. 17013

Filed Apr. 23, 1976, Ser. No. 679,600
Int. Cl.² B60P *1/38*
U.S. Cl. 214—83.22 **41 Claims**



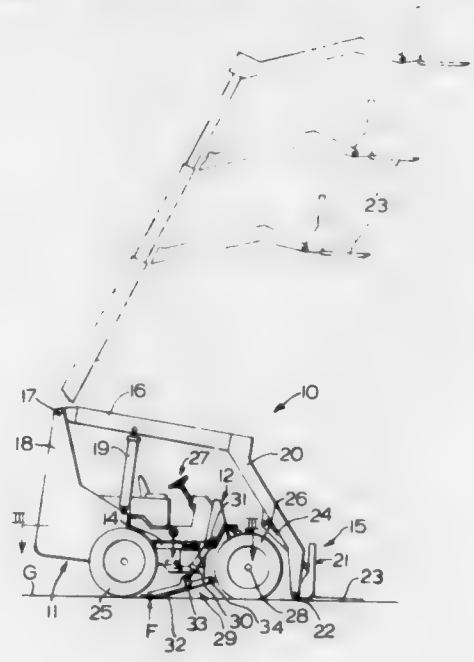
34. A loading and unloading apparatus for a vehicle having a framework, a load carrying floor mounted on said framework, said floor having front and rear ends and a top surface, a plurality of substantially endless load supporting flexible strands mounted on said floor and extending longitudinally thereof, each of said endless strands having a load supporting run and a return run, a beam connected to said strands, means for moving said beam horizontally of said vehicle, said means for moving said beam comprising a pair of drive strips mounted on said vehicle on each side of said floor and extending longitudinally thereof, said strips being fixed to the vehicle, drive means for driving engagement with each of said strips, whereby said beam and said strands are caused to move longitudinally of said vehicle.

4,082,197

ARTICULATED HIGH LIFT VEHICLE

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 12, 1976, Ser. No. 731,604
Int. Cl.² E02F *3/72*
U.S. Cl. 214—132 **12 Claims**



1. A mobile vehicle comprising:

a first frame assembly mounted on a pair of laterally spaced road wheels,

a second frame assembly mounted on a pair of laterally spaced road wheels and pivotally connected to said first frame assembly,

actuating means interconnected between said first and second frame assemblies for selectively pivoting them relative to each other,

work implement means comprising a boom having a first end thereof pivotally mounted on a bracket integrally secured to said first frame assembly and a work tool mounted on a second end of said boom,

work tool cylinder means acting between said work implement means and said first frame assembly, and

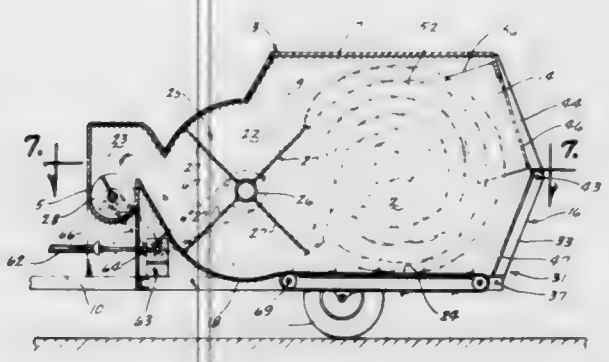
lifting means comprising a pair of double acting lift cylinders pivotally mounted on either side of said second frame assembly for storage therealong when said lift cylinders are maintained in their retracted conditions of operation and ground-engaging means pivotally mounted on said second frame assembly and pivotally attached to said lift cylinders for selectively engaging ground level upon extension of said cylinders to lift said first and second frame assemblies and to lift said first frame assembly relative to said second frame assembly which has its roadwheels maintained in engagement with ground level whereby said first frame assembly can be pivoted relative to said second frame assembly to selectively place said work implement means in an infinite number of work positions about said vehicle, said work tool being movable by action of said work tool cylinder means to a side of said second frame removed from said first frame, the center of gravity of said vehicle being disposed between said ground-engaging means and the roadwheels mounted on said second frame assembly.

4,082,198

BALE HANDLING AND SHREDDING APPARATUS

Clifton W. Anderson, Long Lake, Minn.; John J. Kubik, Des Moines, Iowa; Tom G. Pollock, Blairstown, Iowa; Larry J. Schlict, Sac City, Iowa, and Craig R. Wilcox, Vinton, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Feb. 2, 1976, Ser. No. 654,086
Int. Cl.² B02C *21/02;* B60P *1/36*
U.S. Cl. 214—519 **2 Claims**



1. Apparatus for handling and shredding a baled fibrous material comprising:

(a) a portable frame,

(b) a housing unit carried by said frame having a top wall, a bottom wall, transversely spaced side walls, a front wall and an open rear side, forming within said housing a rear bale transport chamber means, an intermediate bale shredding chamber means and a front material discharge chamber means, with one of said side walls having an outlet opening at said discharge chamber means,

(c) a conveyor means in said bale transport chamber means extended longitudinally of said bottom wall for moving a bale supported thereon forwardly into said bale shredding chamber means,

(d) a transversely extended bale shredding flail means including a transverse shaft rotatably carried on and between said side walls for rotation about a transverse axis generally vertically centered within said bale shredding chamber means and a plurality of flails axially spaced on and radially extendible from said shaft for rotation of the free ends of said flails adjacent said bottom wall,

(e) means for rotating said bale shredding flail means in a direction to move the free ends of said flails downwardly into the baled material advanced into said bale shredding chamber means by said conveyor means and forwardly along said bottom wall for movement of shredded material forwardly along said bottom wall into said discharge chamber means,

(f) a transversely extended conveyor means in said discharge chamber means for receiving shredded material from said bale shredding flail means having a discharge end at said outlet opening, and

(g) a bale lift structure movably mounted at the rear end of said frame for movement from a lowered bale loading position extended rearwardly from said frame to an elevated position for unloading a bale through said open rear side onto said conveyor means; said lift structure comprising:

(1) a pair of transversely spaced lift arm units,

(2) means pivotally supporting the front ends of said lift arm units on said frame for up and down pivotal movement of the rear ends thereof about a common axis extended transversely of the frame,

(3) a fork unit projected rearwardly from said lift arm units in the lowered positions therefor and including a pair of fork members spaced transversely of said frame,

(4) a first plate means secured to and extended between said fork members over the longitudinal lengths thereof, and

(5) a second plate means secured to and extended between said lift arm units over the longitudinal lengths thereof,

(6) said first plate means and second plate means comprising a closure for the open rear side of said housing unit when the lift structure is in the elevated position therefor.

4,082,199

LIFT TRUCK MAST STABILIZER

Larry Dean Friesen, and Richard James Johannson, both of Dallas, Oreg., assignors to Towmotor Corporation, Mentor, Ohio

Filed Jul. 6, 1976, Ser. No. 702,660
Int. Cl.² B66F *9/08*
U.S. Cl. 214—672 **6 Claims**

1. In a mast stabilizing means for a lift truck comprising a chassis, a mast having a pair of pivotally mounted, vertically extending, substantially parallel uprights carried by said chassis, stabilizing means pivotally connected to said chassis and to said uprights for stabilizing said uprights against twisting, said stabilizing means comprising a horizontally disposed "A" frame having a pair of legs pivotally connected to the pair of uprights, a vertically disposed "A" frame having a pair of legs with the spaced apart ends of said legs being pivotally connected to spaced apart parts of the chassis of the vehicle, the apexes of the horizontal "A" frame and the vertical "A" frame

being pivotally connected together for movement in a plane perpendicular to the axis of the pivotal connection between



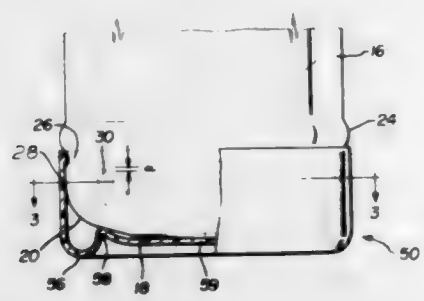
said two "A" frames whereby said "A" frames stabilize said mast relative to said chassis.

4,082,200

PLASTIC CONTAINER WITH SUPPORT BASE, AND METHOD OF ASSEMBLY

Paul Richard Guest, Orange, Conn., and Lawrence D. Ninneman, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 29, 1976, Ser. No. 700,930
Int. Cl.[2] B65D *23/00*
U.S. Cl. 215—1 C **3 Claims**



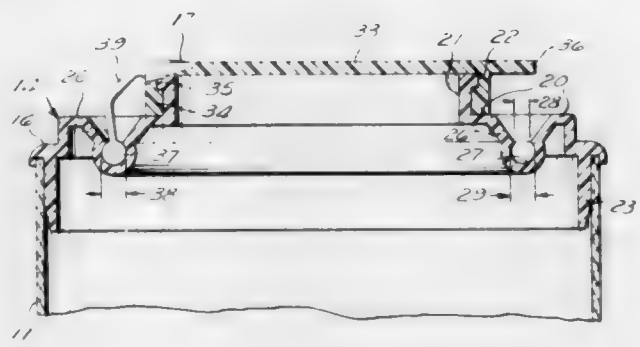
1. In a container having a finish and an endless side wall, and a base joined to the side wall at the bottom thereof, the base having a rounded bottom portion incapable of supporting the container in a stable upright position, the improvement of a continuous groove formed in said container side wall adjacent said bottom for receiving an essentially correspondingly shaped lip of a separate support member, and a slot formed on the outer periphery of the bottle base for facilitating the escape of air upon the assembly of a separate support member onto the container, with the upper margin of said slot terminating about 0.040 inch beneath the peripheral groove so that the support member lip and the peripheral groove may cooperatively define a continuous, essentially water-tight seal around the periphery of the container side wall.

4,082,201

TWO-PIECE END CLOSURE WITH ASSEMBLY DEVICE

Patricia A. Bittel, Bay Village, Ohio, assignor to Weatherchem Corporation, Twinsburg, Ohio

Filed Mar. 11, 1977, Ser. No. 776,549
Int. Cl.[2] B65D *43/14, 51/04*
U.S. Cl. 220—339 **11 Claims**



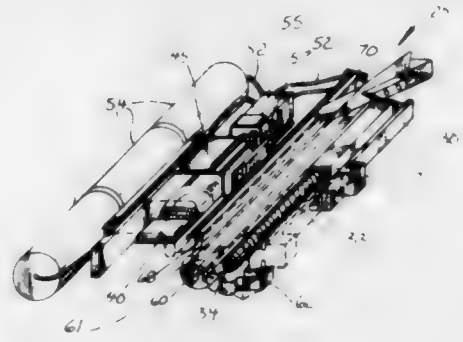
1. A two piece end closure for a container comprising a stationary base and a recloseable cap; said base including a through opening for dispensing the contents of the container and a continuous open trough extending in a circular path completely around said opening; said cap including a cover extending over said opening, and a lug attached to said cover and frictionally received in said trough.

4,082,202

CIGARETTE DISPENSER AND LIGHTER

Mary H. Newsome, 156 Stratford Dr. N.W., Atlanta, Ga. 30311

Filed Aug. 16, 1976, Ser. No. 714,368
Int. Cl.[2] A24F *15/10*
U.S. Cl. 221—147 **6 Claims**



1. A cigarette dispenser and lighter comprising a housing, an inclined ramp mounted within said housing upon which a plurality of cigarettes may be placed; a lift arm mounted adjacent the lower end of said ramp for pivotal movement between lowered and raised positions; gate means coupled with said lift arm for passing cigarettes singlely onto said lift arm from said ramp; cigarette igniting means mounted within said housing and including a resistance heating element mounted adjacent said lift arm coupled with a source of electrical current through a switch; actuator means for activating said lift arm, said switch and said gate means; and hydraulic brake means mounted adjacent said inclined ramp for braking movement of said actuator means relative said inclined ramp.

4,082,203

APPARATUS FOR HANDLING SUPERIMPOSED STACKED RECEPTACLES

Gilmore T. Schjeldahl, 4436 Marlborough Ct., Minnetonka, Minn. 55343

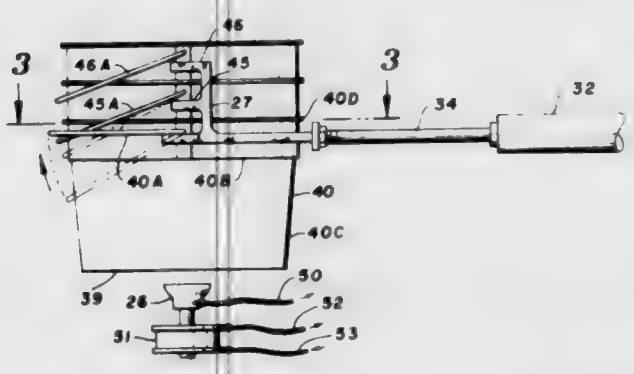
Continuation-in-part of Ser. No. 664,298, Mar. 5, 1976, abandoned. This application Feb. 15, 1977, Ser. No. 768,776
Int. Cl.[2] B65G *59/06*
U.S. Cl. 221—211 **7 Claims**

1. Container delivery means for sequentially delivering

individual containers from a nested stack, with said containers each having a frustoconical body with a base, an upper rim and an outwardly projecting stacking shoulder formed along said body and spaced from said rim, and a generally semi-circular carrying bail secured to the periphery of said container generally diametrically thereof and along said body between said stacking shoulder and said upper rim and normally engaging the exterior of said frustoconical container at an elevation between said stacking shoulder and the base thereof; said container delivery means comprising:

(a) stacking means for retaining a generally vertical column of said containers in nested relationship, means for intermittent delivery of individual containers onto a receiving surface and including a column supporting delivery control apparatus, said column supporting delivery control apparatus comprising:

(1) a container straddling yoke element having a generally "U" shaped head with a pair of laterally spaced legs arranged to receive a container therebetween and having means for reciprocatorily moving said head along a generally horizontal path between forward and retracted dispositions;



(2) the container engaging surface of said "U" shaped head being normally disposed along a plane spaced from said container receiving surface by a distance greater than the height of said container and having at least one of said legs arranged to engage said carrying bail and pivot said bail upwardly to a generally horizontal disposition for permitting vertical separation of the lowermost container of said generally vertical column; and

(3) column support means engaging said column and including vertical drive means for supporting and controllably lowering the elevation of said column by an incremental amount substantially equal to the normal vertical spacing between adjacent containers in said column so as to drop said column downwardly upon retraction of said "U" shaped yoke from said forward disposition to said retracted disposition and re-position said column vertically to provide for engagement of said legs with the carrying bail on the penultimate container in said column.

4,082,204

CONTAINER-DISPENSER FOR DESICCANT MATERIAL FOR INCLUSION IN A RACKET HANDLE

Marc Savage, 6 Horizon Rd., Fort Lee, N.J. 07024

Filed Oct. 28, 1976, Ser. No. 736,390

Int. Cl.² B65D *47/20*

U.S. Cl. 222—191 **4 Claims**

1. A dispenser for accommodation within the handle portion of an article such as a racket, or the like, said dispenser being adapted to receive a quantity of drying material and including a cup-shaped container open at one end, a two-piece closure member for sealing off said open end of said container, said closure member comprising a first member having a first plurality of radial slots formed therein, a second closure member axially aligned with said first closure member and having a second plurality of radial slots formed therein and a plurality of ribs arranged intermediate said second plurality of slots, and means in engagement with at least one of said first and second closure members to bias said one of said closure members to a first position with respect to the other of said closure members such that said first and second plurality of slots are not in registration, said second closure member being manually twist-



able against the opposition of said biasing means to a second position at which said first and second plurality of slots are in registration with one another to allow material to escape therethrough, said biasing means being effective to return said second closure member to its said first position upon the release of manual force from said second closure member.

4,082,205

BASE FOR A FINE MATERIAL CONTAINER

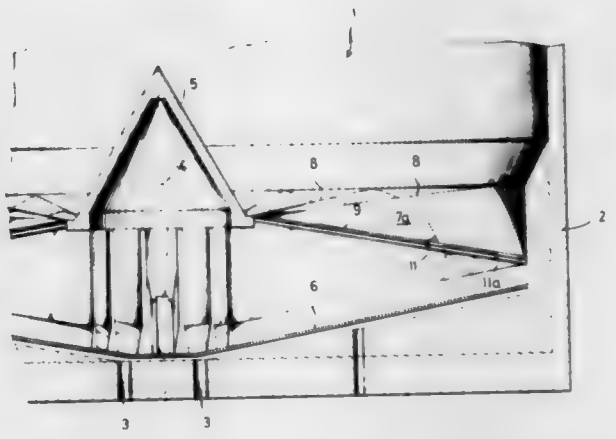
Wolfgang Kluger, Neubeckum, and Jürgen Neumann, Oelde, both of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed Jul. 2, 1976, Ser. No. 702,342

Claims priority, application Germany, Jul. 23, 1975, 7523514[U]

Int. Cl.² B67D *5/54*

U.S. Cl. 222—193 **12 Claims**



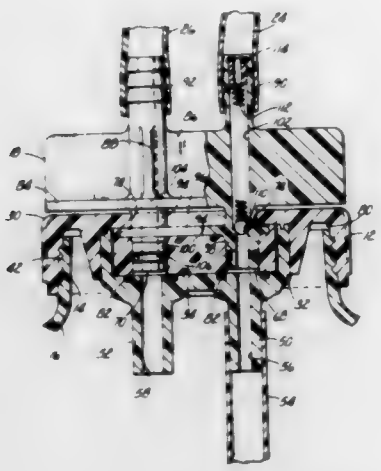
1. A circular base member for a fine material container having a floor provided with a generally centrally located outlet through which such material may be discharged, said base member comprising a bottom having a plurality of circumferentially spaced feed channels therein extending radially inwardly from the periphery of said base member and inclined downwardly toward and in communication with said outlet, the spaces between adjacent channels forming sector-like sections, and a cover interposed between each of said sections and overlying the associated channel, each of said covers being porous for the passage therethrough of aerating gas, each of said covers being inclined downwardly and radially outwardly toward the periphery of said base member, and each of said covers having therein at least one material discharge aperture adjacent the periphery of said base and in communication with the associated feed channel.

4,082,206

CAP ASSEMBLY FOR AQUEOUS AMMONIA CONTAINER

Robert C. Patzke, Prospect Heights; Thomas V. DeRyke, Libertyville, and Frederick D. Meller, Lombard, all of Ill., assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Jul. 23, 1976, Ser. No. 708,054
Int. Cl.[2] B65D *83/00*
U.S. Cl. 222—400.7 9 Claims



7. A cap assembly for use with a container for storing and supplying a volatile material, comprising:

a closure member of integral construction adapted to be releasably mounted on a dispensing opening of the container and comprising an upper lid, a lower body and a seal means provided with aperture means;

a feed outlet on the lower body for passage of said material from the container;

a drain outlet on the lower body for passage of said material to the container;

vent means provided in the lower body for venting the container in response to pressure build-up of the material in the container;

said seal means rotatably supported by the lower body for actuation between a first and a second position for positioning the aperture means into alignment with the feed and the drain outlets in response to actuation of the seal means to the second position, and positioning the aperture means out of alignment with the feed and the drain outlets in response to actuation of the seal means to the first position;

lock means on the upper lid and the seal means for maintaining the seal means in the first position during storage and shipment of the container; and

key means including opening means in alignment with the aperture means, said key means being releasably engagable with the upper lid and including projection means releasably engagable with the aperture means for selectively actuating the seal means between the first and second positions.

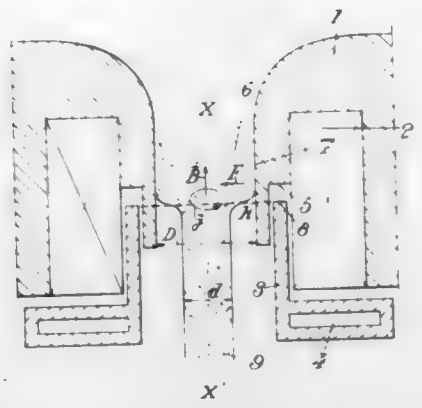
4,082,207

ELECTROMAGNETIC APPARATUS FOR CONSTRUCTION OF LIQUID METALS

Marcel A. Garnier, and René J. Moreau, both of Grenoble, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Filed Jul. 6, 1976, Ser. No. 702,399
Claims priority, application France, Jul. 4, 1975, 75 21075
Int. Cl.[2] B22D *41/08*
U.S. Cl. 222—594 11 Claims

1. Apparatus for constricting a stream of liquid metal, comprising a conduit having an open dicharge end through which the stream of liquid metal issues; an electrical winding disposed around and having a portion extending beyond the discharge end of said conduit, as considered in the direction of flow of liquid metal, means for passing through said winding a high-frequency alternating current thereby generating an overpressure in the stream of liquid metal passing through said dis-



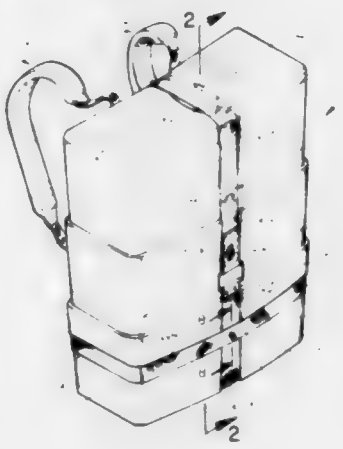
charge end; and an electrical screen including a hollow cylinder consisting of electrically conductive material, said screen being coaxial with and extending into said portion of said winding.

4,082,208

MODULAR CHEST BACK PACK

Gordon Brandon Lane, Jr., 25292 Perch Dr., Dana Point, Calif. 92629

Filed Aug. 30, 1976, Ser. No. 718,679
Int. Cl.[2] A45F *3/04*
U.S. Cl. 224—8 R 9 Claims



1. A back pack comprising:

a plurality of hollow vertically stacked containers which have openings at their upper sides and are separable from one another to allow access to the interior of the containers individually through said openings for placing items therein and removing them therefrom;

said containers being shaped similarly, with vertically successive containers peripherally engaging one another in nesting interfitting relation;

said containers having walls formed of heat insulative material to minimize heat transfer between the interior and exterior thereof;

a cover of heat insulative material for peripherally engaging and closing a top container of the stack and adapted to be opened to permit access to the interior thereof;

a first strap extending vertically about said stack of containers and said cover to secure them together and exert upward supporting force on the stack, and releasable to permit separation of the containers;

a second strap extending horizontally about the bottom container of said stack;

means on said bottom container engaging said horizontally extending strap in a relation to exert upward supporting force on the bottom container and through it the stack from said horizontally extending strap;

two shoulder straps for carrying the stack as a back pack;

means attaching upper ends of said two shoulder straps to said vertically extending strap at a location spaced above said horizontally extending strap; and

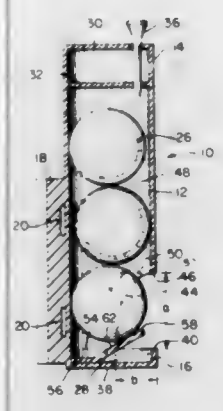
means attaching lower ends of said shoulder straps to said horizontally extending strap at opposite sides respectively of said vertically extending strap.

4,082,209

GOLF BALL HOLDER

Davis J. Sanders, 18030 4th Ave. S., Seattle, Wash. 98148

Filed Nov. 12, 1976, Ser. No. 741,210
Int. Cl.[2] B60R *9/08*
U.S. Cl. 224—29 B **3 Claims**



1. A golf ball holder adapted to be mounted to a golf club carrying device, such as a golf bag or a golf cart or the like where it is subjected to possible jostling and impacts, said holder particularly adapted to reliably hold a plurality of golf balls therein, in a manner that such golf balls can be readily inserted into and removed from the holder during actual golf play, said holder comprising:

a. an elongate, substantially rigid, tubular housing having upper and lower ends and having a generally unitary, cylindrical, circumferentially closed side wall, defining an elongate chamber having a diameter moderately larger than the golf balls to be retained, said chamber adapted to retain golf balls in a stacked arrangement at upper and lower locations therein,

b. said housing having at its lower end a forwardly facing cut-out portion, having an edge section defining a loading and dispensing opening moderately larger than the diameter of the golf balls to be inserted into and dispensed from the holder, said edge section being characterized in that it is substantially continuous and has an upper curved edge portion only moderately larger than the golf balls to be retained therein, so as to provide greater reliability in retaining golf balls adjacent said upper edge portion, lateral edge portions having a lateral spacing greater than that across the upper curved edge portion to provide lateral access to a lowermost golf ball in said holder for removal from the holder, and a lower edge portion located at a predetermined level and connecting to the lateral edge portions,

c. means to mount said holder to said golf club carrying device, and

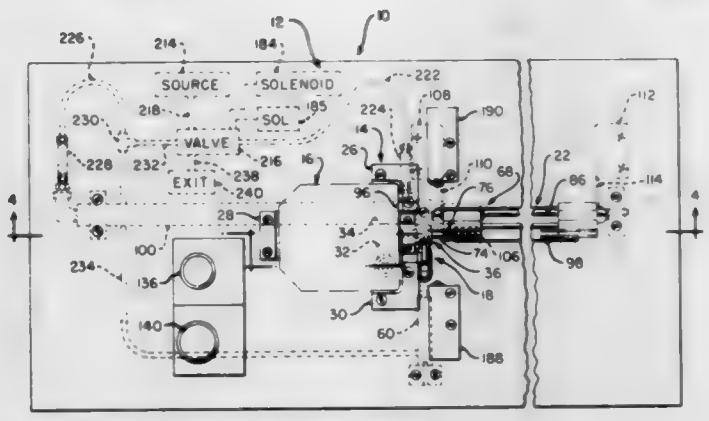
d. a resilient retaining finger cantilever mounted at a lower rear location in the holder at a location beneath the level of the lower edge portion of the loading and dispensing opening, said finger extending upwardly and forwardly to a forward location moderately above and adjacent to said lower edge portion, said finger having an upwardly and moderately rearwardly directed contact face having an upward and forward slant from said rear location to said forward location, so that said contact face engages a lower side of the lowermost positioned golf ball in its normal retained position on a slant to urge said golf ball rearwardly and away from said opening and hold said golf ball in said chamber, said finger having a forward end which in its normal position is at a distance from said edge section less than a distance equal to the diameter of the retained golf ball, whereby the edge section of the housing defining the opening coacts with the finger to retain the lowermost golf ball in the holder, said retaining finger being sufficiently resilient so as to be readily downwardly deflected to permit the lowermost golf ball to be removed forwardly through the opening or inserted into the holder through said opening.

4,082,210

APPARATUS FOR EQUALIZING TENSION IN A RIBBON CASSETTE

James A. Gottschlich, Bellbrook, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 8, 1976, Ser. No. 739,918
Int. Cl.[2] B65H *17/42*
U.S. Cl. 226—91 **7 Claims**



1. An apparatus for equalizing the tension of a ribbon in a cassette of the stuffed ribbon variety having an exit area and an entrance area between which a first portion of said ribbon is exposed, comprising:

a frame for detachably mounting said cassette thereon;

means for clamping said first portion to prevent said ribbon from being pulled out of said entrance area;

means for pulling a length of said ribbon out of said cassette by pulling said first portion between said clamping means and said exit area; and

means for driving said length of ribbon back into said cassette through said entrance area upon the release of said clamping means;

said pulling means comprising finger means to slidably engage said first portion of said ribbon; said finger means being movable between first and second positions on said frame; and

actuating means for moving said finger means from said first position to said second position to thereby pull out said length of ribbon from said cassette;

said finger means including first and second spaced fingers and said pulling means also including a post which is fixed to said frame; said post being positioned between said first and second spaced fingers when said finger means is located at said first position to enable said length of ribbon to be pulled out of said cassette in multiple sub-lengths so as to maximize said length of ribbon pulled out of said cassette as said fingers are moved from said first position to said second position.

4,082,211

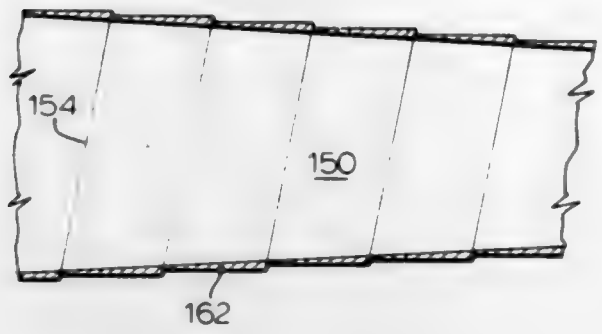
METHOD FOR FABRICATING TAPERED TUBING

Lloyd Elliott Embury, 85 Edenbridge Dr., Islington, Ontario, Canada

Division of Ser. No. 583,449, Jun. 19, 1975, which is a continuation of Ser. No. 408,254, Oct. 23, 1973, abandoned, which is a continuation of Ser. No. 213,327, Dec. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 122,136, Mar. 8, 1971, abandoned, which is a continuation of Ser. No. 738,381, Jun. 17, 1968, abandoned. This application Jun. 2, 1976, Ser. No. 691,971
Claims priority, application Canada, Jun. 16, 1967, 27966
Int. Cl.[2] B23K *31/06*
U.S. Cl. 228—145 **15 Claims**

1. A method of manufacturing tubing comprising applying pressure to each edge of flat strip-stock in turn so as to impart

alternating parallel curvature to the edges thereof in the plane of the stock, helically winding the stock and joining the adja-



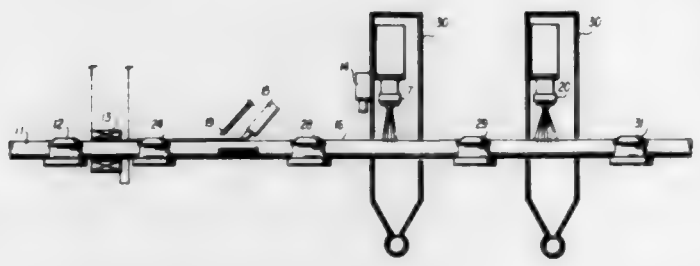
cent edges of the helically wound stock thereby to produce tubing which alternately increases and decreases in diameter.

4,082,212

GALVANIZED TUBE WELDED SEAM REPAIR METALLIZING PROCESS

J. Charles Headrick, Oceola, Ark.; R. Emory Starnes, Carrollton, Ga., and Robert C. Peel, Ranburne, Ala., assignors to Southwire Company, Carrollton, Ga.

Filed Mar. 15, 1976, Ser. No. 667,066
Int. Cl.[2] B23K *31/06*
U.S. Cl. 228—147 **8 Claims**



1. A method of manufacturing zinc coated steel tubing from zinc coated steel strip in which the zinc has been applied directly to the steel strip comprising continuously passing said zinc coated steel strip along a path and sequentially performing thereon the following steps:

a. forming said strip into tubular form and bringing the edges thereof into abutting relation,

b. welding the edges together and thereby volatilizing zinc from the weld area,

c. restoring the zinc coating to the weld area by spray atomization metallizing that area in two sequential stages, said restoring step including continuously sensing the temperature of the weld area and automatically adjusting the point of application of the sprayed coating in response to said sensed temperature,

d. the first stage comprising spraying atomized molten aluminum alloy containing from more than about 0.30 to about 0.95 weight percent iron, with associated trace elements normally present in commercially available aluminum thereon,

e. the second stage comprising spraying atomized molten zinc thereon,

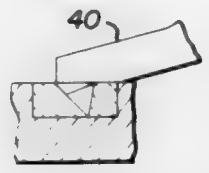
f. the combined coatings applied in steps (d) and (e) providing a coating of substantially the same thickness as the original zinc coating on the steel strip.

4,082,213

METHOD OF MOUNTING A PARTICLE ON A SUPPORT MEMBER

Alexander Rizo Rangabe, 'Stoneacre', Denmead, Portsmouth, Hampshire, England

Division of Ser. No. 526,237, Nov. 22, 1974, Pat. No. 4,001,519. This application Dec. 2, 1976, Ser. No. 747,006
Claims priority, application United Kingdom, Nov. 23, 1973, 54415/73
Int. Cl.[2] B23K *31/02*
U.S. Cl. 228—171 **13 Claims**



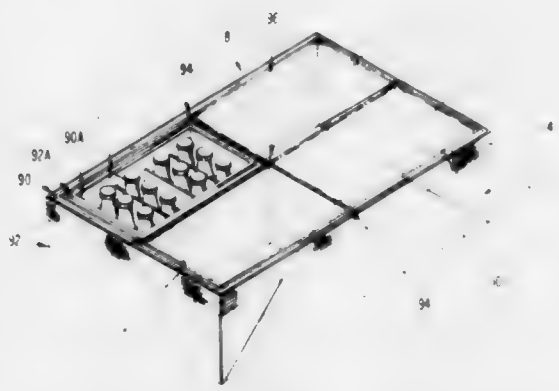
1. The method of mounting a particle of solid material on a support member comprising fixedly securing on a carrier element a mass of material from which the particle is derived, supporting the carrier element to enable machining of said mass of material from which the particle is to be formed, machining the mass of material to reduce the latter to the required particle form thus providing an assembly of the particle on the carrier element, locating the carrier element with the particle disposed in a mould cavity, filling the mould cavity with a solidifiable liquid substance with the particle at least partly immersed in the substance, causing the substance to solidify, removing at least most of the assembly exterior to the solidified substance, attaching a support member exteriorly of the solidified substance on the remaining part of the assembly, and, removing the solidified liquid substance.

4,082,214

CONTAINER ASSEMBLY AND METHOD OF USING

Howard W. Baker, Rte. No. 1, Box 11, Terra Bella, Calif. 93270

Filed May 6, 1977, Ser. No. 794,629
Int. Cl.[2] B65D *13/04*
U.S. Cl. 229—23 R **8 Claims**



1. A reusable rectangular container assembly comprising:
a master container comprising:
a base portion formed of foldable, non-metallic material and including:
a rectangular bottom wall,
a pair of side walls connected to said bottom wall so as to be foldable between a collapsed position and un upright position at opposite sides of said bottom wall,
a pair of end walls foldably connected to said bottom wall so as to be foldable between a collapsed position an un upright position at opposite ends of said bottom wall, said end and side walls defining a compartment therebetween when disposed in upright positions;
a pair of side flaps connected to opposite ends of each side wall so as to be foldable between a collapsed position and a position lying abreast of and parallel to

an adjacent upright end wall, said side flaps and side walls forming a first substantially right angle corner fold at each corner of the master container,

a pair of end flaps connected to opposite ends of each end wall so as to be foldable between a collapsed position and a position lying abreast of and parallel to an adjacent upright side wall, said end flaps and end walls forming a second substantially right angle corner fold at each corner of the master container, said first and second corner folds at each corner being disposed in upstanding, nested relationship in an erected condition of said container; and

an elastically resilient band removably positioned around upper portions of said end and side walls of said base portion to support said end and side walls in upstanding position; and

a plurality of sub-containers insertable within said master container, each sub-container comprising:

a base portion formed of foldable, nonmetallic material and including:

a rectangular bottom wall,

a pair of side walls connected to said last-named bottom wall so as to be foldable between a collapsed position and an upright position at opposite sides of said last-named bottom wall,

a pair of end walls foldably connected to said last-named bottom wall so as to be foldable between a collapsed position and an upright position at opposite ends of said last-named bottom wall, said last-named end and side walls defining a compartment therebetween when disposed in upright positions;

a pair of side flaps connected to opposite ends of each last-named side wall so as to be foldable between a collapsed position and a position lying abreast of and parallel to an adjacent upright end wall, said last-named side flaps and side walls forming a first substantially right angle corner fold at each corner of the sub-container,

a pair of end flaps connected to opposite ends of each last-named end wall so as to be foldable between a collapsed position and a position lying abreast of and parallel to an adjacent upright side wall, said last-named end flaps and end walls forming a second substantially right angle corner fold at each corner of the sub-container, said first and second corner folds at each corner being disposed in upstanding, nested relationship in an erected condition of said container; and

an elastically resilient band removably positioned around upper portions of said end and side walls of said last-named base portion to support such end and side walls in upstanding positions;

said sub-containers being insertable in side-by-side relation within said master container so that the first and second corner folds of a sub-container are nested within the first and second corner folds at each corner of said master container to provide four upright corner folds at each corner of said master container; and

said corner folds of said sub-containers being of substantially the same height as the corner folds of said master container so that said corner folds of said sub-containers and master container together form a support column for vertical support when a plurality of master containers are stacked;

said resilient band of said master container being removable to expose said sub-containers for handling and to enable said master container to be stored for reuse; said resilient band of said sub-containers being removable to enable said sub-containers to be stored for reuse.

4,082,215

CARTON FOR FRUIT AND THE LIKE

Larry L. Eichenauer, 16210 Spinnaker Dr., Crosby, Tex. 77532

Filed Jan. 7, 1977, Ser. No. 757,752

Int. Cl.[2] B65D *5/30*

U.S. Cl. 229—36 **3 Claims**



1. A carton for holding produce which is comprised of:

(a) a sheet of cardboard of an appropriate gauge of thickness, the sheet folding into a bottom portion;

(b) an end portion which stands upright relative to said bottom;

(c) an attached side portion which is perpendicular to the end portion and to the bottom portion;

(d) a lid portion appended to the side portion which folds over and covers the top of the box when assembled;

(e) a lock tab affixed to a protruding skirt portion on said lid portion which inserts into an appropriately positioned locking slot cut in the end portion and wherein the lock tab extends towards the interior of the box upon insertion;

(f) said end portion further includes a shoulder constructed of multiple layers of the cardboard;

(g) wherein said end portion includes first and second parallel end portions which fold together into a double layer and which clamp between them a folded flap attached to the side portion to secure said side portion in position, and further including a shaped top edge on said end portion and conforming top edge on said folded flap;

(h) wherein said folded flap has a bottom edge located against the bottom of the carton;

(i) a locking slot in said bottom located to receive a protruding tab on said folding flap along the bottom edge thereof;

(j) a cut and scored fold line between the first and second parallel end portions which forms a webbing across the top edge of said shoulder;

(k) wherein said webbing defines a spacing between said first and second end portions to receive said folded flap between them as a means of capturing and holding them in relative position;

(l) holes means formed in said parallel end portion and said folded flap which align to define an opening for lifting of the carton;

(m) wherein said locking slot is an L-shaped cut into the exposed parallel end portion and said lock tab inserts therethrough and is frictionally grasped by said folded flap on insertion; and

(n) wherein said L-shaped slot incorporates a top edge which is horizontal and which defines the bottom edge of a semicircular hole formed into said end portion, and said lock tab is formed into a tapered leading edge for ease of insertion.

4,082,216

CARTON AND BAG CONTAINER

John W. Clarke, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

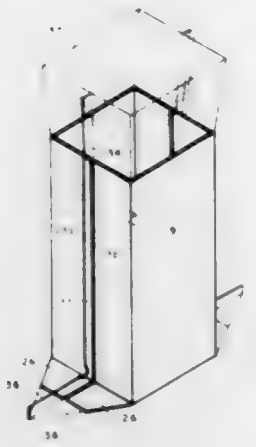
Filed Feb. 7, 1977, Ser. No. 766,274

Int. Cl.[2] B65D *33/02*

U.S. Cl. 229—55 **3 Claims**

1. The combination of an integral and collapsible interior carton and exterior plastic bag container comprising a paper-

board carton blank affixed along its entire perimeter to a film of plastic sheet material, said carton blank having a base panel with a crease line bisecting it and with front and back panels extending therefrom at opposite front and back edges, a pair of split side panels extending from opposite side edges of each of said front and back panels, first gusset panels extending from



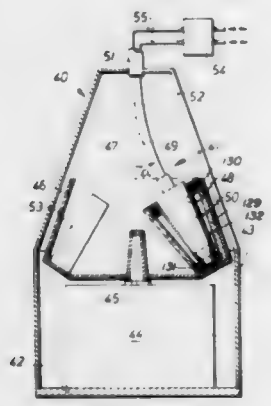
opposite side edges of said base panel, second gusset panels extending from the lower edges of said split side panels, said carton blank being creased for folding along each panel edge from which another panel extends, and said plastic sheet material being cemented together along doubled-over side edges adjacent said split side panels.

4,082,217

CENTRIFUGE APPARATUS

Johan Eric Hayden Westberg, Lidingo, Sweden, assignor to Separex SA, Chatel-Saint-Denis, Switzerland

Continuation-in-part of Ser. No. 391,537, Aug. 27, 1973, Pat. No. 3,885,735. This application Jan. 24, 1975, Ser. No. 544,002
Claims priority, application Sweden, Jan. 28, 1974, 7401046
Int. Cl.[2] B04B *9/00*
U.S. Cl. 233—25 **34 Claims**



1. Apparatus for use with a centrifuge having a rotor rotatable about a first axis for separating a liquid mixture into fractions of different densities, comprising:

(a) a hollow jacket;

(b) bearing means, adapted to be mounted on the centrifuge rotor remotely from said first axis and engaging said jacket for supporting said jacket for relative rotation with respect to the rotor about a second axis;

(c) flexible inlet and outlet conduits for liquid connected at one end to said jacket;

(d) holder means for holding said jacket against rotation about said second axis, said holder means being adapted to be held stationary by a fixed reference remote from the rotor, and being positively connected to said jacket;

(e) a separation vessel disposed in and rotatably supported by said jacket for relative rotation about said second axis and communicating with said conduit; and

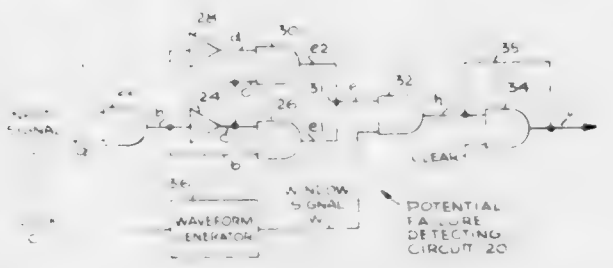
(f) orientation means acting on said vessel for maintaining it in a fixed angular position about said second axis during rotor rotation.

4,082,218

POTENTIAL FAILURE DETECTING CIRCUIT HAVING IMPROVED MEANS FOR DETECTING TRANSITIONS IN SHORT DURATION SIGNALS

Ronald Adam Paulinski, Goleta, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 27, 1976, Ser. No. 754,429
Int. Cl.[2] G06F *11/00*
U.S. Cl. 235—304 **10 Claims**



1. Potential failure detecting means for detecting the possibility of a potential failure occurring in a digital circuit while the circuit is operating in a data processing system in a normal manner without failure, said potential failure detecting means comprising:

means coupled to a communication line provided between said data processing system and said digital circuit for deriving a test signal indicative of a signal communicated between said digital circuit and said system during actual operation of said circuit in said system;

criteria establishing means for generating a potential failure criteria signal indicative of a predetermined time period;

delay means to which said test signal is applied for producing a delayed test signal;

logic means jointly responsive to said test signal and to said delayed test signal for producing an output signal when said test signal and said delayed test signal have a predetermined polarity relationship; and

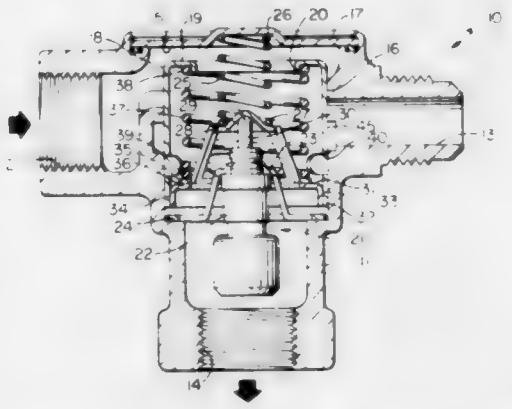
means responsive to said output signal and said criteria signal for indicating whether said output signal occurs during said predetermined time period.

4,082,219

FLUID MIXING VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME

Arden D. Rogers, Jr., and Clifford E. Goff, Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 29, 1976, Ser. No. 736,763
Int. Cl.[2] G05D *23/13*
U.S. Cl. 236—12 R **12 Claims**



2. In a fluid mixing valve construction having a housing means provided with a pair of inlets respectively interconnected by a pair of valve seats to an outlet and with valve member means operated by condition responsive means for

controlling said valve seats in accordance with the condition of the fluid passing to said outlet and sensed by said condition responsive means, a second condition responsive means being operatively interconnected to said valve member means to close one of said valve seats with said valve member means if the first-mentioned condition responsive means does not close the one valve seat with said valve member means even though the same is sensing a condition that would require the same to close said one valve seat, said condition responsive means being responsive to the temperature of the fluid that passes to said outlet, the improvement wherein said second condition responsive means comprises a fusible metallic securing means.

4,082,220

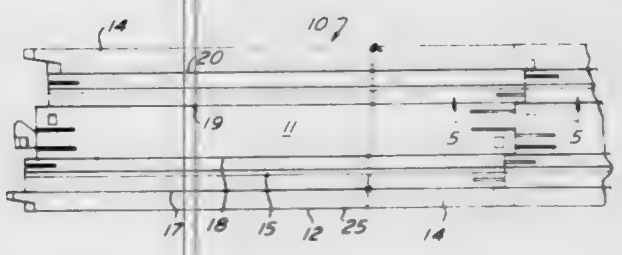
MODEL ROADWAY TRACK CONSTRUCTION

Richard C. M. Cheng, Mantua; Gene Patrick Dennis, Glassboro, both of N.J., and Robert M. Stewart, Langhorne, Pa., assignors to Tyco Industries, Inc., Moorestown, N.J.

Filed Jun. 30, 1976, Ser. No. 701,258

Int. Cl.[2] A63H *19/30*

U.S. Cl. 238—10 F **19 Claims**



1. A track section for a model vehicle, said track section comprising a generally flat elongate body having an upper surface for movement therealong of vehicles, an elongate conductor extending longitudinally along said body and exposed therefrom for contact with a moving vehicle, each end portion of said conductor extending longitudinally of said body and beyond the laterally adjacent portion of said body on one side of the conductor end portion to expose the latter in one lateral direction, and a projection extending from each longitudinal end of said body, each projection having a cam surface, one of said cam surfaces facing in a laterally outward direction toward a side edge of said body and the other of said cam surfaces facing in a laterally inward direction from said last-mentioned side edge, one of said projections having said elongate conductor disposed along a lateral surface of said one projection which is opposite the cam surface of the said one projection, the other of said projections having said elongate conductor disposed in a facing and spaced relationship to the cam surface of said other projection, whereby said track section is engageable in end-to-end relation with an additional essentially identical track section so that the cam surfaces of said first mentioned and additional track sections ride on each other to shift the laterally exposed conductor end portions into side-by-side facing engagement for intimate electrical contact and mechanical juxtaposition.

4,082,221

ROTATABLE ATOMIZER FOR SPRAYING A LIQUID

Johannes Arnold Julius Brummelhuis, Nieuwkoop, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen, Netherlands

Continuation of Ser. No. 607,820, Aug. 25, 1975, abandoned.

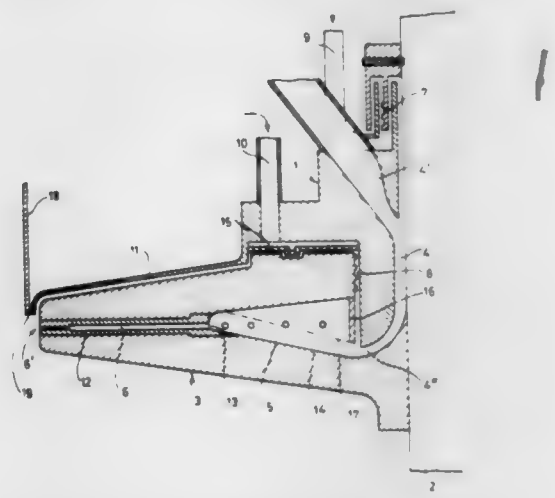
This application Nov. 4, 1976, Ser. No. 738,960

Claims priority, application Netherlands, Aug. 28, 1974, 7411471

Int. Cl.[2] B01D *1/16;* B05B *3/10*

U.S. Cl. 239—214.25 **1 Claim**

1. A rotatable atomizer for spray drying a liquid comprising a stationary supporting member, a supply channel for liquid, and an atomizer disk having an inner atomizing chamber and at least one discharge channel, the atomizer being secured to a vertical rotatable shaft, two labyrinth sealing members, one of said sealing members being placed between the supporting member and the shaft and the second of said sealing members being placed between said supporting member and the atomizer disk, said supporting member having steam supply channels opening into both labyrinths, the discharge channels of the atomizer disk having an outlet with a reduced cross section, each discharge channel comprising a stepped bore having a diameter smaller than that of the other part of the discharge channel, said discharge channels comprising inset tubes with an inwardly directed end face of each inset tube lying flush with the inner wall of the atomizing chamber, the inlet end of the liquid supplying channel being tangentially directed with respect to the shaft, the liquid supplying channel opening into the atomizing chamber at the level of the lower surface of said



chamber in a direction perpendicular to the axis of rotation of the atomizer disk, the bottom of the atomizer chamber being substantially conical, the apex of the conical surface being downwardly directed, the conical bottom extending smoothly and concavely from its periphery toward the end of the supply channel, the edge of the upper surface of the atomizing chamber adjacent to the supporting member being situated at almost the same level as the upper side of the end of the supply channel, the atomizer disk having a ring coaxially around the shaft and limiting the atomizing chamber in an inward direction, said ring extending in a downward direction as far as the upper side of the end of the supply channel, and a jacket enclosing the atomizer and extending in a downward direction to the vicinity of the circumferential edge of a cover plate.

4,082,222

ATOMIZED LIQUID DISPENSING PUMP

Michel Boris, 45 Boulevard Suchet, Paris 75016, France

Filed Jul. 23, 1976, Ser. No. 708,012

Claims priority, application France, Aug. 14, 1975, 75 25833

Int. Cl.[2] B05B *9/04*

U.S. Cl. 239—331 **6 Claims**

1. In an atomizer:

(a) means defining a first cylinder forming a pump chamber;

(b) a dip tube in communication with the pump chamber;

(c) a hollow first piston slidable within the pump chamber, said hollow piston defining a second cylinder in communication with the pump chamber and defining a valve seat;

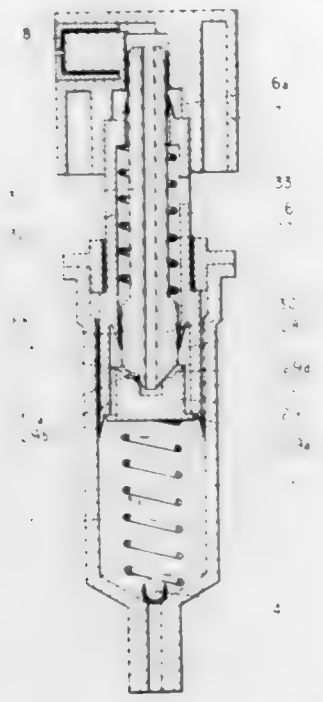
(d) a second piston slidable in said second cylinder and defining a valve member;

(e) an atomizing nozzle in open communication with the said second cylinder through a bore in said second piston said atomizing nozzle being in open communication with said second cylinder only when the valve member and the valve seat are spaced apart;

(f) first resilient means biasing the first piston towards one end of said pump body and second resilient means biasing the second piston towards the other end of said pump body and urging said valve member against said valve seat; and

(g) pressure applied to said first piston causing pressure to

build up in said pump chamber until the biasing force of said second resilient means is overcome and the valve



member and valve seat become spaced apart thus establishing said open communication between the atomizing nozzle and the said second cylinder.

4,082,223

TRIGGER TYPE SPRAYING DEVICE

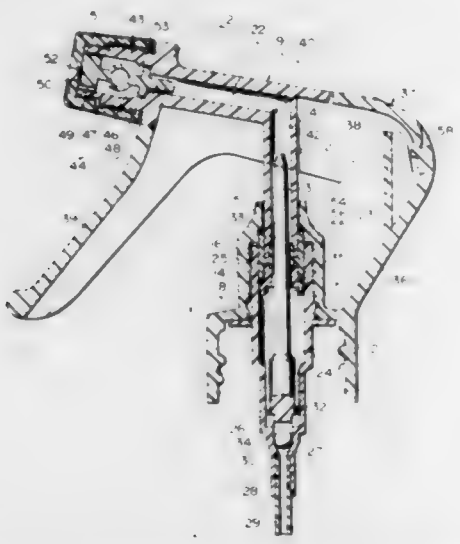
Takamitsu Nozawa, Tokyo, Japan, assignor to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1976, Ser. No. 732,096

Claims priority, application Japan, Dec. 6, 1975, 50-165534[U]; Dec. 8, 1975, 50-166135[U]

Int. Cl.[2] B05B *9/043*

U.S. Cl. 239—333 **4 Claims**



1. A trigger type spraying device, for spraying a liquid by using pump pressure, comprising:

a body portion including a cap, for threaded engagement with the neck portion of a container housing a liquid to be sprayed, and a cylindrical portion;

a cylinder member, having a pump chamber defined therein, attached to said cylindrical portion;

a bracket integrally formed with said first cylinder at one side thereof;

a crank lever pivotally mounted upon said bracket, and including an arcuately curved trigger portion and a yoke portion coupled to said trigger portion;

an injection pipe member, including a vertical pipe portion and an oblique pipe portion having a common fluid passage defined therein, disposed interiorly of said yoke;

a pin, projecting laterally from said injection pipe member, engaged in a guide groove formed upon the inside of said yoke portion and serving as a cam means for operative cooperation with said pin;

said vertical pipe portion being slidably disposed within said cylindrical portion and said cylinder member between a first, raised position, and a second, lowered position;

sealing means mounted upon said vertical pipe portion for sealing both said cylindrical portion and said cylinder member when said vertical pipe portion is in said first and second positions, respectively;

spring biasing means disposed within said pump chamber for biasing said vertical pipe portion toward said first position;

said sealing means including an inner cylindrical portion and an outer cylindrical portion, said inner and outer portions being coupled together by means of an annular member interposed therebetween so as to define upper and lower annular spaces within which the lower end of said vertical pipe portion, and the upper end of said spring biasing means, are respectively disposed;

suction valve means disposed within said pump chamber for controlling the fluid flow therein;

discharge valve means disposed within the tip of said oblique pipe portion; and

nozzle means mounted upon said tip of said oblique pipe portion.

4,082,224

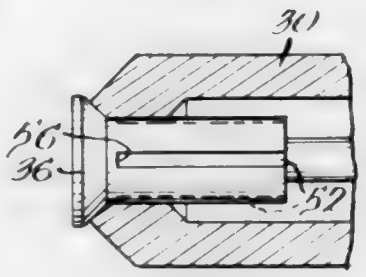
FUEL INJECTION NOZZLE

Ervin E. Mangus, Brimfield, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 7, 1976, Ser. No. 730,492

Int. Cl.[2] B05B *1/14*

U.S. Cl. 239—453 **5 Claims**



1. A fuel injection nozzle comprising:

a nozzle barrel;

means for delivering fuel to the interior of said barrel;

a fuel delivery port on one end of said barrel

a poppet valve seat on said one end of said barrel and generally concentric with said port;

said nozzle one end being adapted to be received within a combustion chamber or the like and being free of structure surrounding said valve seat;

a poppet valve seatable against said valve seat to close said port;

a valve stem extending through said port into said barrel and having said poppet valve mounted on one end of said stem;

said port slidably engaging said stem to act as a guide for said stem for reciprocating movement of said stem within said barrel; and

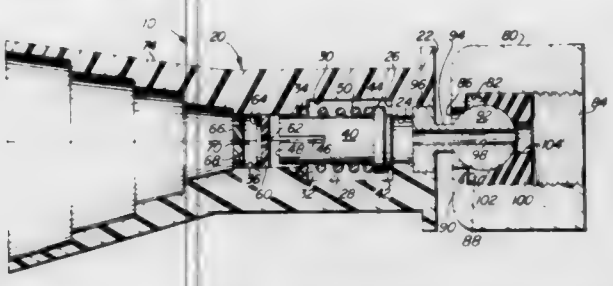
a plurality of angularly spaced longitudinal grooves in said valve stem and terminating short of said poppet valve, said grooves being dimensioned so as to extend past said valve seat when said poppet valve is opened to provide plural fuel conduits for the flow of fuel in plural streams from said barrel into a combustion chamber or the like and to be sealed by said valve and said valve seat when said valve is closed to prevent vaporization of such fuel and substantial hydrocarbon emissions, said grooves constituting the sole passageway for fuel flow past said valve seat.

4,082,225

CONSTANT VOLUME AERATED SHOWERHEAD APPARATUS

Kenneth H. Haynes, P.O. Box 12370, Santa Ana, Calif. 92712

Filed Nov. 5, 1976, Ser. No. 738,335
Int. Cl.[2] E03C *1/084*
U.S. Cl. 239—428.5 6 Claims



1. Apparatus for providing a substantially constant output of aerated water, comprising, in combination:

housing means for receiving a flow of water;

bore means including a first portion and a second portion in the housing means through which the water flows;

a metering sleeve disposed in the bore means and movable in the bore means in response to the flow of water into the housing means for controlling the flow of water through the bore means, including

an internal bore having an open end disposed in the second portion of the bore means,

a head defining a closed end of the internal bore remote from the open end disposed in the first portion of the bore means, and

slot means for providing for the flow of water from the first portion of the bore means into the internal bore and into the second portion of the bore means;

a chamber for receiving the flow of water from the bore means;

an orifice through which the water flows from the bore means into the chamber;

a disc spaced apart from the orifice and including a central portion against which the water flows from the orifice; and

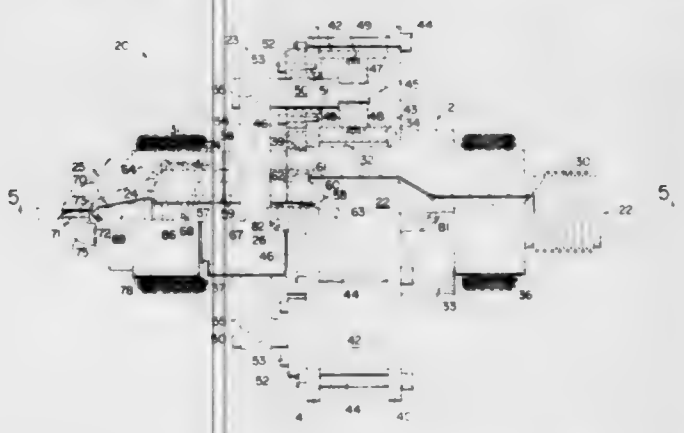
a plurality of holes extending through the disc adjacent the center portion through which air flows into the chamber for aerating the water and through which the aerated water flows out of the chamber.

4,082,226

SHUT-OFF NOZZLE

Theodore C. Appleman, Mansfield, and Wade L. Wacker, Ashland, both of Ohio, assignors to Eastside Machine & Welding, Inc., Ashland, Ohio

Filed Aug. 16, 1976, Ser. No. 714,625
Int. Cl.[2] B29F *1/03*
U.S. Cl. 239—584 7 Claims



1. A shut-off nozzle (20) for the injection molding of fluid plastics, comprising:

a nozzle body (21) with a bore (22) therethrough for the transmission of fluid plastic, a cylinder mechanism (23) carried by said nozzle body, a core plug and valve assembly (24) positioned within the outer end of nozzle bore head (25) having an outlet bore for delivery of said fluid plastic carried on the outer end of said nozzle body and pressure fluid components (26) for the selective operation of said cylinder mechanism;

said nozzle body (21) having an inner end adapted for connection to the barrel of an injection molding machine, a medial portion for the coaxial mounting of components of said cylinder mechanism and a portion axially inwardly of said nozzle head with opposed axially elongate slots (38) communicating with said nozzle bore;

said cylinder mechanism (23) including opposed radially directed axially inner and outer cap plates (40 and 41) separated by a radially outer body element (42) and fastened together coaxially around said nozzle body medial portion to provide a pressure fluid chamber (45), each said cap plate having a conduit (79 or 80) therethrough for the supply or exhaust of pressure fluid to or from said pressure fluid chamber, and an axially movable piston (47) within said pressure fluid chamber, said piston having dual opposed posts (50) projecting outwardly through said axially outer cap plate (41) and carrying a cross-link component (54) extending transversely through said nozzle body slots (38) and said bore (22);

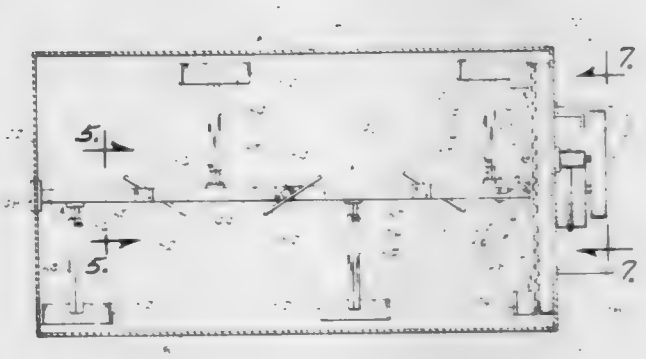
said core plug and valve assembly (24) having a forwardly opening axial bore (58) therein and opposed axially elongate slots (59) communicating with said axial bore and receiving therethrough said cylinder mechanism cross-link component (54), a bypass bore (60) radially of the said axial bore to transmit fluid plastic from said nozzle bore (22) to said nozzle head (25), a valve stem (66) slidably positioned within said axial bore and actuated by said cylinder mechanism cross-link component, and a valve body (69) carried by said valve stem for selectively opening or closing said outlet bore in said nozzle head.

4,082,227

SLURRY MIXER AND SPREADER

Merle V. McGrane, and Earl F. McGrane, both of Ionia, Iowa, assignors to Bio-Life Company, Inc., Ionia, Iowa

Filed Jul. 21, 1976, Ser. No. 707,353
Int. Cl.[2] B05B *9/00*
U.S. Cl. 239—675 11 Claims



1. A mobile slurry mixer and spreader apparatus comprising:

a mobile chassis;

a horizontally disposed cylindrical bottomed tank mounted on said chassis and having a discharge opening at the rearward end in proximity to the bottom of said tank;

valve means disposed within the opening for regulating the discharge of a slurry from said tank;

rotatable mixing means horizontally disposed within said tank, for mixing the slurry within said tank and constantly moving the slurry toward the discharge opening;

a screen drive means;

a rotatable screen attached to said screen drive means and rotated thereby, and disposed within said tank over the discharge opening, whereby debris is prevented from

entering the discharge opening and the slurry is permitted to enter the discharge opening; and

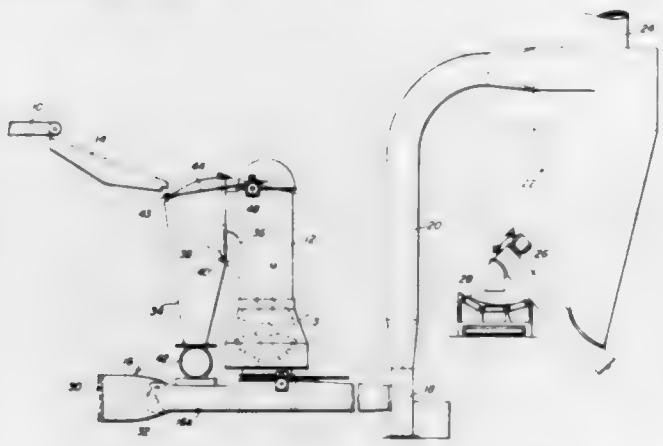
spreader means in fluid communication with the discharge opening for distributing the slurry passing through the discharge opening to the area over which said chassis travels.

4,082,228

AUTOMATIC BYPASS APPARATUS

Malcolm M. Paterson, Lee, N.H., and Ernest N. Yelle, Methuen, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 22, 1977, Ser. No. 771,051
Int. Cl.[2] B02C *23/02*
U.S. Cl. 241—34 **15 Claims**



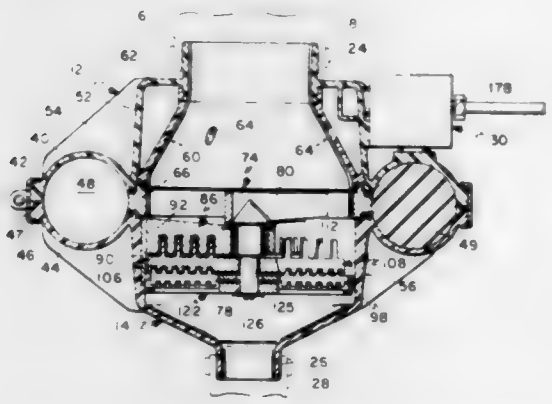
1. A material handling system comprising first material transporting means for moving material from a first location to a second location, a processing device at said second location for receiving said material and including means operable to process material therein, diverting means for detecting inoperation of said processing means and operative in response thereto to automatically divert flow of said material away from said processing device without interrupting the flow of the material from the first transporting means, second material transporting means for receiving material from said processing device and moving it to a third location, and third material transporting means adjacent said processing device, said diverting means including means for directing flow of said material from the first transporting means selectively to said second or third transporting means in bypass relation to said processing device.

4,082,229

WATER POWERED WASTE DISPOSAL UNIT

Frank Carlisle Boosman, Poway, Calif., assignor to Piranha Products, San Diego, Calif.

Filed Mar. 24, 1977, Ser. No. 780,719
Int. Cl.[2] B02C *18/40*
U.S. Cl. 241—46 B **3 Claims**



1. A water powered waste disposal unit, comprising:

a substantially cylindrical housing having an upper waste material receiving neck and a lower drain outlet;

a plurality of stacked cutters mounted in said housing, certain of said cutters being rotatable;

said housing having an annular toroidal chamber, with a stop plug blocking the chamber at one position;

a piston mounted for sliding movement around said toroidal chamber and having connection means to the rotatable cutters;

said toroidal chamber having a pair of water inlets on opposite sides of said stop plug;

a valve unit coupled to said inlets and having means for connection to a source of pressurized water;

said valve unit comprising a body having a control cylinder with a water supply inlet connected thereto, and supply outlets for connection to said toroidal chamber inlets;

said valve unit having control means for supplying water alternately to said toroidal chamber inlets to drive said piston and the connected cutters with a reciprocating rotary motion;

said control means comprising a control spool reciprocable in the control cylinder with channels for the directing supply water selectively to said supply outlets;

a servo cylinder in said body with a servo spool reciprocable therein, said serve spool having channels for directing supply water selectively to opposite ends of said control cylinder, the opposite ends of said servo cylinder being connected to said supply outlets, whereby the servo spool is responsive to differential pressure on opposite sides of said piston;

a two position detent engaging said servo spool for holding the spool at each end of its reciprocatory stroke;

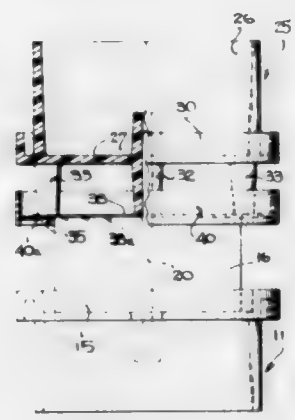
and biasing means loading said detent to prevent movement of the servo spool below a predetermined pressure differential between opposite ends of the servo cylinder.

4,082,230

CHEESE GRATER AND CONTAINER

William E. Bounds, 23790 Hawthorne Blvd., Torrance, Calif. 90505

Filed Apr. 11, 1977, Ser. No. 786,607
Int. Cl.[2] A47J *43/25*
U.S. Cl. 241—92 **8 Claims**



1. A cheese grater and storage container for use in grating a piece of cheese in a cheese grating position and storing said piece of cheese in a cheese storage position, comprising:

a base member having a side wall forming a stand, a top wall forming a tray for the piece of cheese, the top wall having means thereon for holding the piece of cheese against rotation during the grating operation, and a central post extending upwardly from the top wall normal to the surface thereof, and

a cover member having a side wall adapted to fit over the base member tray, a top wall, a central post extending normally from each of the opposite broad surfaces of said top wall of the cover member, said central posts having apertures formed therein along the longitudinal axes thereof, a grater plate and means for supporting said

grater plate on said top wall of the cover member in spaced relationship therewith and substantially parallel thereto,

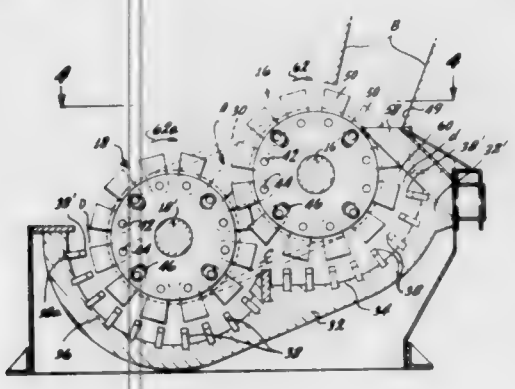
said cover member fitting on said base member with the side wall of the cover member resting on the base member and the central post of the base member fitted in the aperture of one of the central posts of the cover member, thereby forming a container for the piece of cheese in the cheese storage position, said cover member fitting on said base member with the central post of the base member fitted in the aperture of the other of the central posts of the cover member with the grater abutting against the piece of cheese in the cheese grating position.

4,082,231

APPARATUS FOR GRINDING REFUSE

Orval E. Gould, Mission Viejo, Calif. 92675

Filed Dec. 1, 1975, Ser. No. 636,689
Int. Cl.[2] B02C *13/04*
U.S. Cl. 241—187 **10 Claims**



1. An improved apparatus for grinding refuse of a heterogenous composition, said apparatus comprising:

A. a first rotating element, said element rotating about a horizontal axis and formed of a plurality of coaxial discs spaced from each other axially, each said disc being fixedly secured to an axle extending in said axis to rotate therewith, and each adjacent pair of discs carrying a plurality of hammers between them, each said hammer being rotatingly mounted near the peripheries of the adjacent discs with an arc of rotation extending both between said discs and radially outwardly beyond the peripheries of the discs, the hammers between each pair of discs being in a different angular disposition from the hammers between each adjacent pair of discs;

B. a second rotating element similar to the first element, said second element being disposed to rotate about an axis parallel to the axis of rotation of the said first rotating element, said second element being spaced from the first element both radially and axially in such manner that the hammers of the first and second elements, when said elements are driven in rotation, mesh, but none of the hammers of one element strike the periphery of any of the discs of the other element;

C. a housing, said housing extending around both said elements and therebelow, said housing further providing in conjunction with at least one of said two elements, an entrance for the refuse to be ground and an outlet for the refuse after it has been ground by the apparatus;

D. a grate bed disposed below said elements, said grate bed having a plurality of projecting grate bars, said bars extending radially inwardly toward the axis of one of said elements, the outer end of each of said grate bars being spaced by a predetermined distance from the outer ends of said hammers of each said element as said hammers swing outwardly in their respective arcs of rotation;

E. flexible means interconnecting the axles of the first and second elements to cause the second element to rotate at a predetermined speed of rotation in relation to the speed of rotation of the first element and provide a joint inertial force between said two elements:

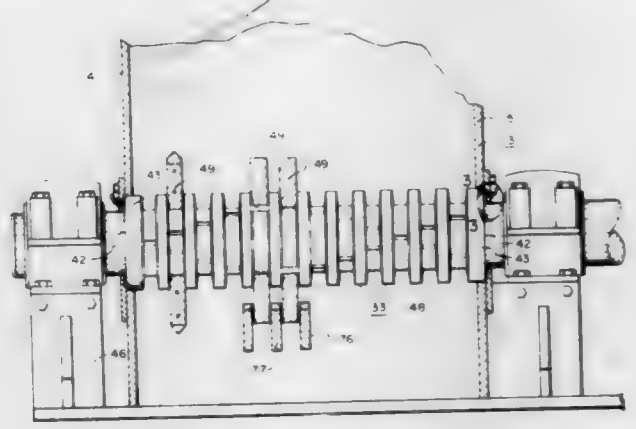
F. a separate powered driving means connected to drive in rotation each of said first and second rotating elements, each of said separate driving means driving the element to which it is connected at said predetermined speed of rotation thereby to provide said joint inertial force between said two elements.

4,082,232

SHREDDER STRUCTURE

John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah

Filed Mar. 3, 1977, Ser. No. 773,854
Int. Cl.[2] B02C *13/28*
U.S. Cl. 241—236 **9 Claims**



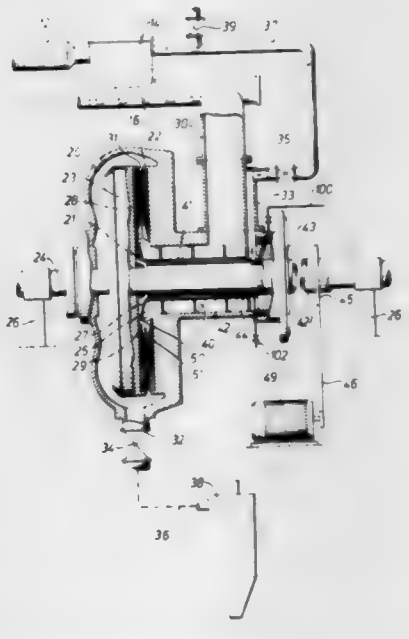
1. In combination, a rotor having a shaft of circular outer cross-section and provided with a series of mutually spaced, annular grooves, plural, mutually spaced blade means mounted upon said shaft and respectively disposed in said grooves, and wherein said grooves have side walls that diverge outwardly.

4,082,233

DISC REFINER HAVING MEANS FOR REMOVING GASEOUS MEDIA FROM PULP STOCK

Rolf Bertil Reinhall, 834, 171 Place NE., Bellevue, Wash. 98008

Filed May 28, 1976, Ser. No. 690,955
Claims priority, application Sweden, Jun. 4, 1975, 7506421
Int. Cl.[2] B02C *7/11*
U.S. Cl. 241—244 **5 Claims**



1. In a disc-type defibrating apparatus in which lignocellulose pulp stock is ground in a grinding space between the discs which are mounted on a drive shaft to rotate relatively to one another in a housing containing a pressurized gaseous medium and into which the stock is advanced in a feed-in passage from

an inlet to a feed-in opening by conveyor means rotating in a feed-in passage, the improvement which provides separation of excessive high pressure gaseous medium from the gas and stock mixture and permits discharge of the liberated purged gaseous medium without interference with the inflow of stock, said improvement comprising:

a. centrifuging means in said feed-in opening separating excessive high pressure gas from said mixture and propelling the separated stock particles towards said grinding space while purging the liberated gaseous medium;

b. channel means partitioned from said feed-in passage for withdrawing the liberated purged gaseous medium from said feed-in opening;

c. said centrifuging means comprising at least one impeller member for producing the centrifugal force required for the separation process;

d. said channel means being defined between two concentric sleeves (**42**, **44**) co-axially surrounding said drive shaft and being rotatable relative thereto: and

e. said conveyor means being supported by the outer one of said sleeves.

4,082,234

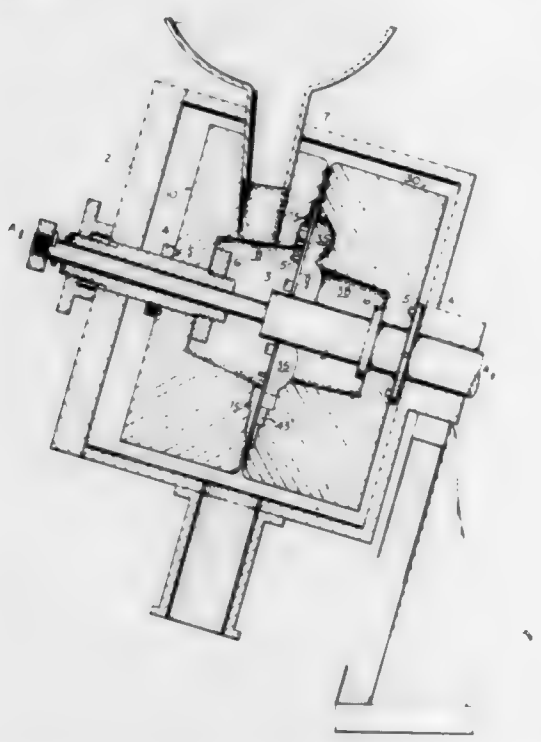
MILLING WHEELS FOR SMALL FLOUR MILLS

Douglas Hoffman, W. 3507 LaCrosse, Spokane, Wash. 99205

Filed Mar. 18, 1977, Ser. No. 779,253

Int. Cl.[2] **B02C** *7/13*

U.S. Cl. 241—248 **9 Claims**



1. In a matched pair of coaxial milling wheels for small flour mills having a stationary milling wheel adapted to be fixed relative to a transverse axis and a coaxial rotatable milling wheel adapted to be powered about the transverse axis:

said milling wheels each having:

(a) a circular disk having a central axis;

(b) first and second axially spaced radial surfaces formed on the disk and being joined by a peripheral surface;

(c) a center cavity open to the first radial surface on the disk and extending axially inward therefrom a portion of the axial distance between the first and second radial surfaces;

(d) a planar annular milling face formed on said first radial surface between the center cavity and the milling wheel periphery;

said stationary milling wheel further comprising:

(a) a feed aperture formed within the milling wheel and leading from its peripheral surface to said cavity for directing grain inward to the cavity for milling purposes;

(b) said annular milling face having a plurality of grooves having side walls slightly offset from a radian through central axis and substantially perpendicular to the plane of said milling face, said grooves being angularly spaced about the central axis and extending from the center cavity to locations spaced inwardly from the milling wheel periphery of the stationary milling wheel;

(c) each of said grooves increasing in width and decreasing in depth in a direction outward from the center cavity;

(d) said stationary milling wheel being fabricated as an inegral unit from fired stoneware, the exterior surfaces of the stationary milling wheel being glazed and fired during fabrication, and the outermost rim of the annular milling face between its grooves and wheel periphery having fired stoneware material exposed across a plane perpendicular to the central axis;

said rotatable milling wheel further comprising:

(a) said annular milling face having a plurality of tangentially curved grooves each formed in a teardrop shape, having curved walls progressively enlarged in width in a direction leading outward from the center cavity, each groove being in open communication with the center cavity of the rotatable milling wheel, said grooves being angularly spaced about the center axis and extending tangentially outward in a direction opposite to the intended direction of rotation of the rotatable milling wheel about the center axis, each groove extending from the center cavity to a location spaced inwardly from the periphery thereof;

(b) each of said grooves increasing in width and decreasing in depth in a direction outward from the center cavity;

(c) said rotatable milling wheel being fabricated as an integral unit from fired stoneware, the exterior surfaces of the rotatable milling wheel being glazed and fired during fabrication and the outermost rim of the annular milling face between the grooves and wheel periphery having fired stoneware material exposed across a plane perpendicular to the central axis.

4,082,235

POLE-LESS FISHING RIG

Hector A. Dauvergne, P.O. Box 884, San Leandro, Calif. 94577

Filed Apr. 21, 1976, Ser. No. 678,741

Int. Cl.[2] **A01K** *89/00*

U.S. Cl. 242—84.2 J **5 Claims**



1. A compact and easily transported pole-less fishing rig having:

(a) a line containing area formed by a short cylindrical section, a rear face and a flared front lip wherein the short cylindrical section is substantially narrower than the front lip;

(b) an integral, firmly attached handle for manipulation during use and for carrying on the belt; and,

(c) a central compartment area for accessory storage, formed by the flared front lip and covered by a removable plastic lid; wherein,

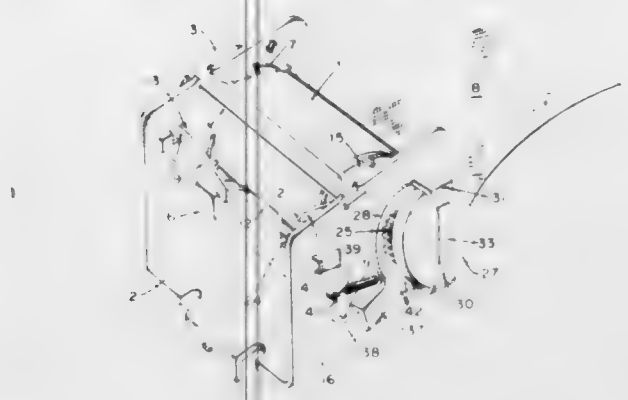
the flared front lip has an outward flare adapted to act as a control for the successive release of fishing line during casting.

4,082,236

FREE PULL WEB SENSITIVE RETRACTOR

Robert L. Stephenson, Sterling Heights, Mich., and Yogendra S. Loomba, Knoxville, Tenn., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Dec. 23, 1976, Ser. No. 753,762
Int. Cl.[2] A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 B **11 Claims**



1. In a safety belt retractor comprising a support, a reel mounted for rotation on said support, seat belt webbing attached to and wound up on said reel, at least one ratchet wheel associated with said reel, and pawl means engageable with said ratchet wheel in response to actuation by an inertial device to prevent rotation of said reel in a belt extending direction, the improvement which comprises:

(a) follower means mounted in said support and biased towards said reel, said follower means comprising:

(i) a web contact portion for contacting said webbing when said webbing is substantially fully wound up on said reel, and

(ii) a clutch contact portion; and

(b) clutch means mounted for limited rotation with said reel, said clutch means being movable to a first position upon initial extension of said webbing from said reel, to a second position upon rotation of said reel in a retracting direction subsequent to said initial extension and to a third position upon additional extension of said webbing from said reel following said rotation in a retracting directon, said clutch means comprising:

(i) a first portion engageable with said pawl means and blocking said pawl means from engaging said ratchet wheel when said clutch means is in its first position, said first portion no longer blocking said pawl means when said clutch means is in its second position; and

(ii) a second portion engageable with said clutch contact portion of said follower means when said clutch means is in its first position at which said second portion blocks said follower means from movement towards said reel, said second portion no longer blocking said follower means when said clutch means is in its second position, and said second portion engageable with said clutch contact portion when said clutch means is in its third position, thereby preventing said first portion from engaging and blocking said pawl means.

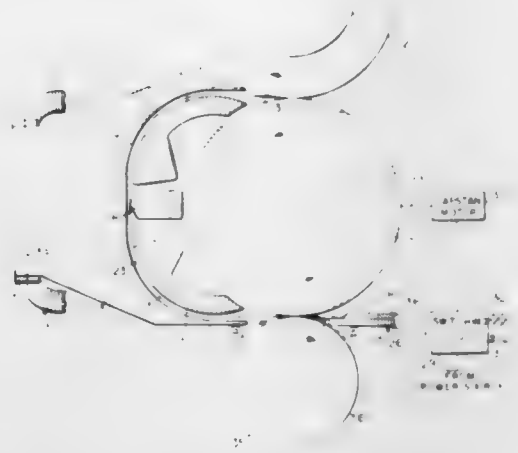
4,082,237

SAFETY PICKER FOR MAGNETIC TAPE LEADER

William A. Buchan, Newport Beach, and Gerhard Rotter, Mission Viejo, both of Calif., assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 27, 1977, Ser. No. 791,387
Int. Cl.[2] G11B *15/66*
U.S. Cl. 242—192 **7 Claims**

1. In a self-threading recording-tape transport system in which a take-up reel having a hub, is driven by surface engagement with a rotating capstan, said tape having a leader attached thereto, an arrangement for preventing accidental jamming of the tape during the threading of the tape leader onto the hub of the take-up reel, said arrangement comprising a picker disposed at a point just beyond the area of engagement between the take-up hub and the capstan, for deflecting the



leader away from the take-up hub if the leader fails to properly engage said hub.

4,082,238

AIRCRAFT CONTROL SYSTEM PROVIDING HARDOVER PROTECTION AND FULL CONTROL AUTHORITY

Gordon R. Fabian; James H. McCollum, and Leo P. Kammerer, all of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 5, 1976, Ser. No. 712,130
Int. Cl.[2] B64C *13/02*
U.S. Cl. 244—17.13 **5 Claims**



1. In a helicopter type aircraft having an autopilot and a manually operable device mechanically coupled through appropriate linkages to a mechanism for changing rotor blade pitch, the improvement comprising:

(a) servomotor means connected to said linkages so as to operate in parallel with said manually operable device, and

(b) means connected between the appropriate autopilot output and said servomotor means for causing said servomotor means, in response to a substantially step function type signal comprising an increase from a value V_0 to a sustained value $V_2 > V_0$ and occurring at said autopilot output, to (i) initially move said manually operable device at a high average rate to a predetermined position ρ_1,

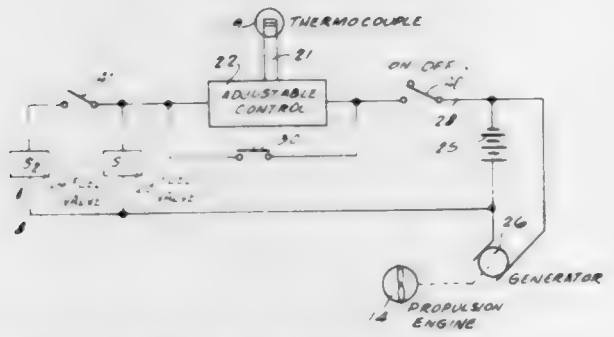
where ρ_1 is a position which would be induced by a step type increase at said autopilot output from V_0 to a sustained value V_1, where $V_0<V_1<V_2$, and (ii) thereafter move said manually operable device at an average rate less than said high initial rate to positions greater than ρ_1.

4,082,239

ALL ELECTRICAL SELF-CONTAINED FUEL CONTROL SYSTEM FOR A BURNER IN A THERMAL AIRSHIP

Douglas B. Obermoller, Sioux Falls, S. Dak., assignor to Raven Industries, Inc., Sioux Falls, S. Dak.

Filed Apr. 12, 1976, Ser. No. 675,953
Int. Cl.[2] B64B *1/62*
U.S. Cl. 244—98 **10 Claims**



1. A thermal airship comprising in combination:
an elongate gas envelope of soft flexible material being aerodynamically shaped for horizontal flight providing an outer wall for a hull for the airship;
tail members on the aft end of the airship for controlling the direction of horizontal flight;
a gondola carried below the hull for supporting a payload;
power propelling means supported by the hull for propelling the airship horizontally;
means defining a pressurized inflation opening leading into the hull;
hot air pressure generating means carried on the hull for pressurizing the soft envelope with heated air during flight including an engine continually driving a blower positioned for moving a flow of air through the opening for inflating the envelope with a superpressure;
a first controlled fuel operated burner positioned in the path of air flow heating the air passing into the envelope interior;
a valve for controlling the flow of fuel to the burner;
a thermally responsive device positioned within the envelope spaced inwardly from the envelope wall connected to control said valve and being adjustable to open and close the valve to maintain the temperature within the hull within a predetermined range to provide a predetermined free lift for carrying the payload; and
a manual override located in the gondola connected to bypass said thermally responsive device and connected to the valve to open the valve and operate the burner independently of the thermally responsive device to provide additional free lift by increasing the temperature within the envelope.

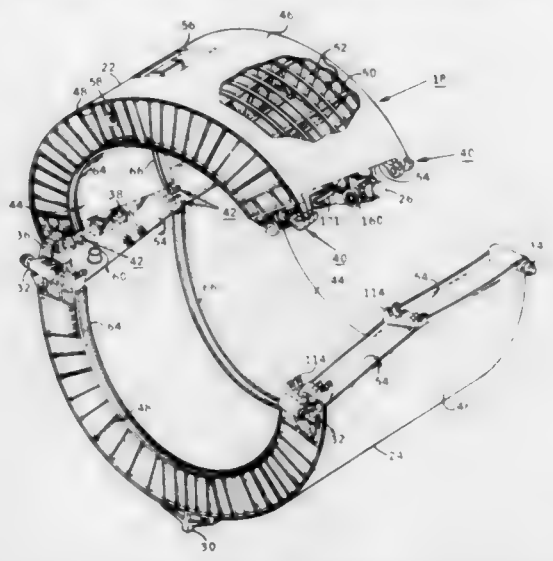
4,082,240

CONTINUOUS INTEGRATED CLAMPING HOOP SPACE VEHICLE SUPPORT SYSTEM

John H. Heathman, and Richard C. Lingley, both of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Aug. 23, 1976, Ser. No. 716,419
Int. Cl.[2] B64G *1/00*
U.S. Cl. 244—158 **3 Claims**

1. In a generally tubular cradle system for supporting a space vehicle in a cargo bay of a reusable launch vehicle during launch and for deploying the space vehicle in outer space, said cradle consisting of two longitudinally divided sections, hinged together along one edge so that one section with a space vehicle secured thereto can be rotated relative to the second section during deployment, the improvement wherein a space vehicle is supported within the closed cradle by a continuous integrated normal clamping hoop system comprising at least two spaced inwardly extending cradle rings secured to the inner surface of said cradle, a first cradle ring having a continuous concave surface groove, the cradle rings other than said first cradle ring having a generally cylindrical surface bounded by two inwardly extending shoulders, at least two



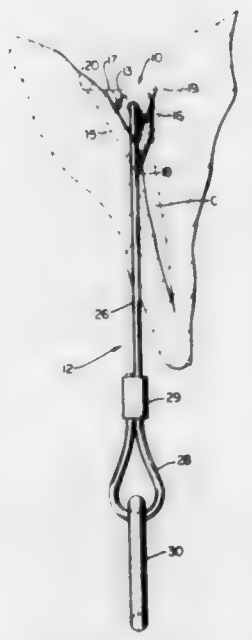
outwardly extending rings around at least a portion of said space vehicle, spaced apart a distance corresponding to the spacing of said cradle rings, a first space vehicle ring having a continuous convex ridge adapted to mate with said concave surface groove, the space vehicle rings other than said first space vehicle ring having a generally cylindrical surface which has a width less than half that of the cylindrical surface of said other cradle rings, and clamping means to press said cradle rings and vehicle rings tightly together when said cradle is closed.

4,082,241

CHOCK FOR MOUNTAIN CLIMBING

John Brent Burkey, 3360 Quivas St., Denver, Colo. 80211

Filed Jun. 17, 1976, Ser. No. 696,906
Int. Cl.[2] A47G *29/00*
U.S. Cl. 248—1 **7 Claims**



1. A mountain climbing chock comprising a body portion in the form of a truncated pyramid having a generally triangular cross-section in a plane transversely of the length of said body portion, the sides of said body portion being of unequal widths when measured at any point transversely of the length of said

body portion, a cable-receiving opening disposed along the major, longitudinal axis of said body portion, and

the adjoining corners between the sides of said body converging from one end to the opposite end of said body at substantially corresponding angles with respect to one another.

4,082,242

OMNIDIRECTIONAL SEWER HOSE SUPPORT

James B. Smith, P.O. Box 481, Fullerton, Calif. 92632

Filed Aug. 23, 1976, Ser. No. 716,389
Int. Cl.[2] F16L *3/00*
U.S. Cl. 248—83 **7 Claims**



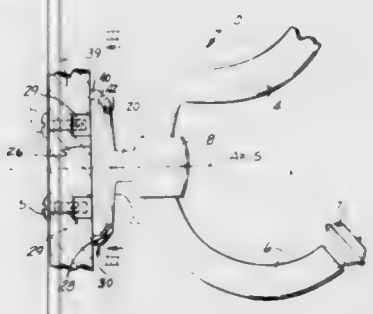
1. A drain hose support for making up vehicle-to-park facility sewer connections, said support having a vehicle connection end and a park facility connection end, and including; a series of like vertically disposed and adjacently related arches of flexible material having coplanar bottom edges adapted for ground engagement and each having a hose supporting header at a fixed height successively diminished progressing from the vehicle connection end to the park facility connection end thereof and opposite side legs depending therefrom, the endmost arches having one free side leg, and interconnecting means at alternately opposite side legs of all intermediate arches joining the series of arches for flexible separation from adjacency and into a longitudinally extended linked relation to supportably engage the drain hose disposed to decline in elevation from the vehicle-to-park facility sewer connections.

4,082,243

COLLAR ATTACHMENT FOR SUPPORT HOOK

William Doyle Watt, Jr., Grand Rapids, and Dale L. Flowerday, Holland, both of Mich., assignors to Keeler Corporation, Grand Rapids, Mich.

Filed Nov. 18, 1976, Ser. No. 743,005
Int. Cl.[2] F16B *45/00*
U.S. Cl. 248—205 R **17 Claims**



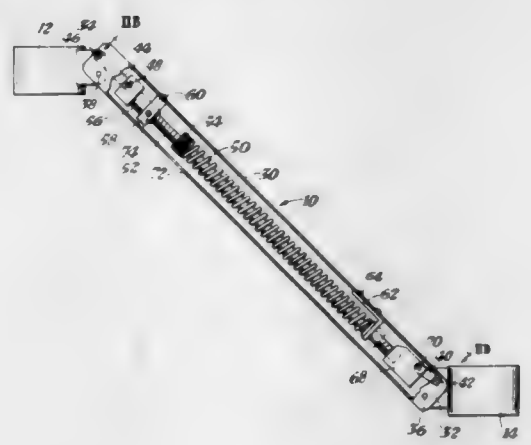
1. A support assembly comprising a support such as a hook for hanging garments and the like and attaching means for attaching said support to a supporting surface; said support including a base for engaging a supporting surface; said attaching means including a collar for holding said base against the supporting surface, said collar having a base-receiving aperture extending therethrough and securing means for securing said collar to the support surface, said collar extending continuously around said base such that said collar engages said base therearound; the length, width and diagonal dimensions of said base being greater than the corresponding dimensions of said collar aperture, at least one dimension of said base being less than one dimension of said collar aperture; said base and collar including cooperating means for initially allowing insertion of only a portion of said base through said base-receiving aperture and thereafter allowing rotation of one of said base and collar with respect to the other of said base and collar to insert the remainder of said base through said aperture behind said collar; said base having a shape corresponding to that of said collar; said collar having recess means corresponding in shape to said base for receiving said base therewithin with the rear surfaces of said base and collar being generally flush after assembly and adapted to engage the support surface whereby said collar with overlap said base after assembly to hold said base against the support surface.

4,082,244

COUNTERBALANCING SUPPORTING DEVICE

Leroy K. Groff, 3115 Oakland Shores Dr., Fort Lauderdale, Fla. 33309

Filed Nov. 1, 1976, Ser. No. 737,327
Int. Cl.[2] A47F *5/10*
U.S. Cl. 248—280 **6 Claims**



1. A counterbalanced article supporting device to provide vertical adjustment of the supported article which upon release provides a stabilized fixed position of the article comprising:

rigid, tubular encasement;

first and second knuckles pivotably connected to opposite ends of said encasement;

compression spring disposed within said encasement;

spring stop connected to one end of said spring and to said encasement;

a rod partially disposed within said spring;

a block threadably connected to one end of said rod;

a moveable first linkage arm pivotally connected at one end to said block and pivotally at its opposite end to said first knuckle;

a clevis threadably connected to the opposite end of said rod;

a clevis bearing coupled to said clevis and connected to said encasement;

a movable second linkage arm pivotally connected at one end to said clevis and pivotally to said second knuckle at its opposite end;

adjustable spring tensioning means connected to said rod and engaging one end of said spring;

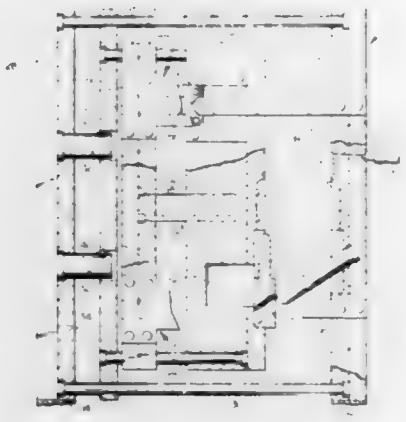
said encasement having an aperture in close proximity to said tensioning means, whereby said tensioning means is adjustably accessible from outside said encasement.

4,082,245

EJECTOR RETRACTION MECHANISM

Adelino Claudio Santos, 649 New Britian Ave., Hartford, Conn. 06106

Filed Nov. 26, 1976, Ser. No. 773,052
Int. Cl.[2] B29F *1/14*; B29C *7/00*
U.S. Cl. 249—68 22 Claims



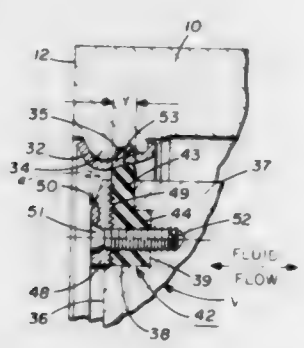
1. In a molding apparatus having a plurality of plates supported in parallel relation for relative reciprocal movement toward and away from each other and including first and second mold cavity plates movable between open and closed positions relative to each other and cooperating in a closed position to define a molding cavity, an ejector mechanism including a ejector plate supported for movement to and retraction from an ejecting position relative to the second mold cavity plate, and an ejector retraction mechanism for retracting said ejector plate before the first and second mold cavity plates move to a closed position, the improvement wherein said ejector retraction mechanism comprises an actuating member mounted in fixed position relative to said first mold cavity plate, a support member mounted in fixed position relative to said ejector plate, at least one blocking member carried by said support member and pivotally movable relative thereto between a first position wherein said one blocking member is in the path of said actuating member and a second position wherein said one blocking member is out of the path of said actuating memnber, and means for pivoting said one blocking member from its first to its second position in response to movement of said ejector mechanisms to its ejecting position, said actuating member being engageable with said blocking member in its second position to retract said ejector mechanism from its ejecting position in response to movement of said mold cavity plates toward closed position.

4,082,246

BUTTERFLY VALVE THRUPORT SEAL

Thomas F. Rothwell, Bradford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 21, 1976, Ser. No. 707,156
Int. Cl.[2] F16K *1/226*
U.S. Cl. 251—307 2 Claims



1. In a butterfly valve including a body defining a fluid passage between an inlet and an outlet, a vane including a defined recess in a face at its periphery and supported in said passage for operation between a first position in which said passage is open to fluid flow and a second position in which said passage is closed to fluid flow, an annular seat on said body extending inward of said passage and an annular gasket having an integral lateral extension on a side face thereof and supported in said vane recess for cooperating with said seat when said vane is in said second position to effect shutoff of said passage to fluid flow, the improvement comprising in combination:

a. clamping means operative for compressing said gasket in an axial direction and effective to radially enlarge said gasket into a controlled sealing interfit with said seat; said clamping means including a ring positioned with a side face bearing against said gasket and a plurality of uniformly spaced individual screw fasteners extending through said ring and gasket into said vane with each of said fasteners being tightenable for locally increasing the clamping force against said gasket;

b. constraining means comprising a first interference surface including a coarse texture on the gasket engaging side face of said ring and a second interference surface including an annular offset slot on a radially inward portion of said vane recess receiving the lateral extension of said gasket, said interference surfaces being effective in concert to radially constrain a substantial portion of said gasket in a deforming grip and interlocking engagement in response to the imposed compression of said clamping means by storing energy of compression in said gasket for substantially limiting its enlargement effect to a radial free portion thereof; and

c. means permitting locally limited canting of said ring from a plane extending generally transverse to the axis of the fastener thereat in response to the locally imposed clamping force for generally equalizing the effect of the clamping force between adjacent of said screw fasteners.

4,082,247

VALVE ACTUATOR

Thomas B. Dalton, Muskegon, Mich., assignor to Westran Corporation, Muskegon, Mich.

Filed Jan. 26, 1976, Ser. No. 652,530
Int. Cl.[2] F16k *31/53*
U.S. Cl. 251—229 2 Claims



1. A valve actuator for use in conjunction with a valve having a rotatable member, the rotation of which actuates the valve, said actuator comprising:

a drive tube disposed coaxially with and over said rotatable member,

means for drivingly connecting said drive tube and said rotatable member, said means comprising an adapter,

means for securing said adapter to said rotatable member whereby rotation of said adapter produces rotation of said rotatable member, at least one inwardly projecting, axially inwardly extending projection formed along said drive tube, said adapter having an axially extending groove receiving said projection whereby rotation of said drive tube produces rotation of said adapter and said rotatable member, and

means for rotatably driving said drive tube, said means comprising a rotatably mounted drive shaft secured to said drive tube, a vertical rotatably mounted crankshaft spaced from and parallel to said drive shaft and a gearing arrangement disposed between said crankshaft and said drive shaft whereby rotation of said crankshaft effects an opposite rotation of said drive shaft,

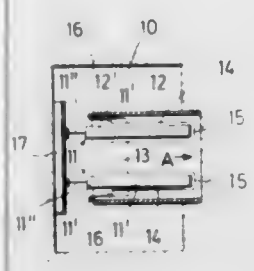
said gear arrangement comprising first and second gear wheels secured to said crankshaft, said first and second gear wheels having different diameters, and third and fourth gear wheels secured to said drive shaft, said third and fourth gear wheels having different diameters, said first and third gears being in mesh when said first and second gear wheels are in one axial position on said crankshaft and said second and fourth gears being in mesh when said first and second gear wheels are in another axial position on said crankshaft, means for fixedly attaching said first and second gears to said crankshaft in either of said axial positions whereby a first and second gear ratio of said gear arrangement is obtained when said first and second gears are respectively in said first and second axial positions on said crankshaft.

4,082,248

PIPE DRIVING APPARATUS

Gerhard Hinrichsen, Munich, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Aug. 15, 1973, Ser. No. 388,507
Claims priority, application Germany, Aug. 24, 1972, 2241695
Int. Cl.[2] E01G *3/02*
U.S. Cl. 254—29 R **3 Claims**



1. In a pipe-driving apparatus having a plurality of hydraulic rams for driving a pipe section in its longitudinal direction into the ground, the combination comprising:

a. means for supporting the rams at least partly within a pipe section to be driven, and

b. means for transmitting thrust force from the rams to said pipe section,

c. said support means having an annular body including a series of tubular components defining spaces for receiving the rams so that the rams can be disposed in an operating position substantially entirely within the pipe section,

d. said spaces being effective to receive the cylinders of the rams,

e. said support means having a plurality of location members pivotally connected to the annular support body and being movable into an operative position engaging the outer end of the pipe section to thereby transmit the force from the rams to the pipe section,

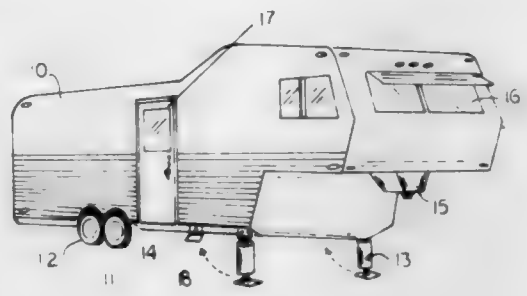
f. each location member has an arcuate-shaped jaw which serves to contact the end of the pipe section over an arcuate length which subtends at least 30° in relation to the axis of the pipe section.

4,082,249

RECREATIONAL VEHICLE LEVELING AND SUPPORT SYSTEM

Joseph M. Valdespino, 5023 Golfclub Pkwy., and Ronald A. Brandl, 3040 N. Pine Hills Rd., both of Orlando, Fla. 32808

Filed Jul. 11, 1977, Ser. No. 814,554
Int. Cl.[2] B66F *7/26*
U.S. Cl. 254—45 **15 Claims**



1. A recreational vehicle leveling and support system comprising in combination:

a source of water under pressure;

at least one water cylinder connected to a recreational vehicle in a pre-determined position, said water cylinder having an operative position and a storage position for travel;

valve means having a valve connected to said source of water under pressure and to said water cylinder for controlling said water cylinder responsive to operation of said valve means, said valve having a venturi therein connecting said water under pressure through said venturi and out a drain in one position thereof, and to said water cylinder in a second position thereof for raising and lowering a portion of said recreational vehicle; and

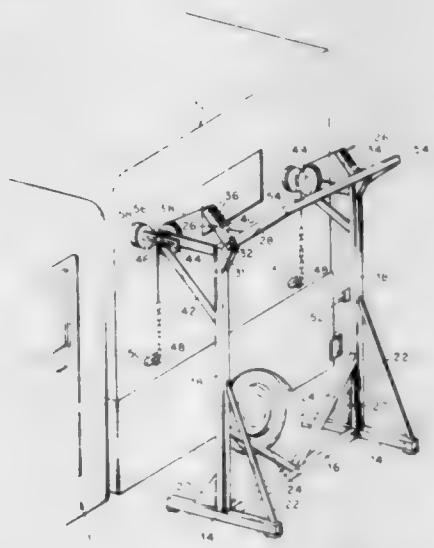
means for locking each said water cylinder in position following leveling of said recreational vehicle whereby said recreational vehicle may be supported in a level position.

4,082,250

LIFTING DEVICE

Leonard G. Allmon, 212 Pelham Rd., No. 11, Knoxville, Tenn. 37814, and Michael C. Allman, Rte. No. 26, Kern Rd., Knoxville, Tenn. 37918

Filed Aug. 30, 1977, Ser. No. 828,987
Int. Cl.[2] B66F *7/26*
U.S. Cl. 254—47 **5 Claims**



1. An apparatus for lifting and supporting heavy objects such as truck camper covers and the like comprising, a pair of base members, said base members joined by at least one cross beam member, at least one upstanding support member fixedly mounted to said base member, lever means pivotally mounted on said upstanding support member comprising an L-shaped member having a longer arm and a shorter arm, pivotally mounted at the junction of said longer arm and said shorter

arm to an offset projection at the apex of said upstanding support member whereby rotational pressure exerted on said longer arm causes vertical displacement of said shorter arm, said shorter arm of said L-shaped member having spaced attachment means included thereon whereby said load bearing means is adjusted, and having an adjustable load-bearing means coupled to said lever means and locking means pivotally secured to said upstanding support member.

4,082,251

MIXING HEAD FOR A MACHINE FOR PRODUCING MULTICOMPONENT PLASTICS

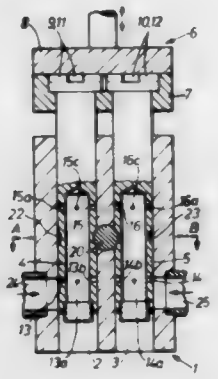
Ferdinand Althausen, Neunkirchen, and Rainer Raffel, Siegburg, both of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Germany

Filed May 8, 1975, Ser. No. 575,770

Claims priority, application Germany, May 15, 1974, 2423631

Int. Cl.[2] B01F *15/02*

U.S. Cl. 366—179 **4 Claims**



1. A mixing head for a machine for producing multicomponent plastics, comprising a housing; two hollow slides which are guided in bores in the housing between a rest position and a mixing position, and are coupled together through a yoke; a mixing chamber located between the slies, the axis of the mixing chamber being at an angle to a plane in which the slides are situated, and the lateral distance between the slides being less than the width of the mixing chamber as measured in the same direction, the mixing chamber being communicated with ejection openings of the slides when the slides are in their mixing positions; a stripping rod guided in and filling the cross-section of the mixing chamber, the rod being capable of passing between the slides when they are in their rest position by means of recesses in the slides; and feedlines for components to be mixed communicating with inlet openings in the slides.

4,082,252

METHOD AND SYSTEM FOR PROCESSING MOLTEN SLAG

Yoshio Tanaka, Anou; Tatsuo Shibata, Kitakyushu; Tatsuo Matsuo, Oita; Tadao Takashima, Oita, and Sankichi Hori, Oita, all of Japan, assignors to IRI-E Kosan Corporation, Fukuoka, Japan

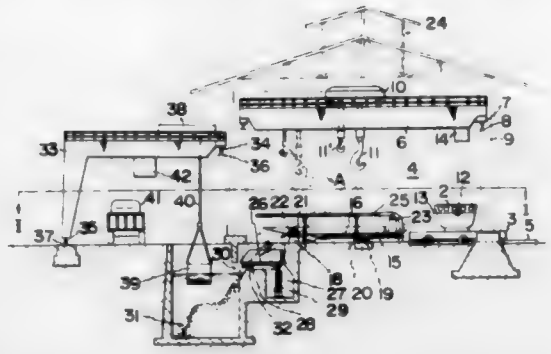
Filed Jun. 7, 1976, Ser. No. 693,443

Claims priority, application Japan, Jun. 13, 1975, 50-72217; May 11, 1976, 51-54168

Int. Cl.[2] C03B *19/08*

U.S. Cl. 266—142 **13 Claims**

1. Apparatus for processing molten slag from a steel making plant comprising means defining a covered area, a molten slag ladle movable between said steel making plant and said covered area, slag receiving means under said covered area for receiving said molten slag from said molten slag ladle, pivotal means pivotably mounting said slag receiving means, tiltable means for tilting said slag receiving means about said pivotal means, water cooling means disposed over said slag receiving means for discharging water onto said molten slag on said slag receiving means, slag bucket means disposed adjacent to said slag receiving means for receiving said slag when said slag receiving means is tilted by said tiltable means and the slag slides off of said tilted slag receiving means, a cooling water pit submergibly receiving said slag from said slag bucket means



for effecting quenching thereof, and means for transferring said quenched slag from said cooling water pit.

4,082,253

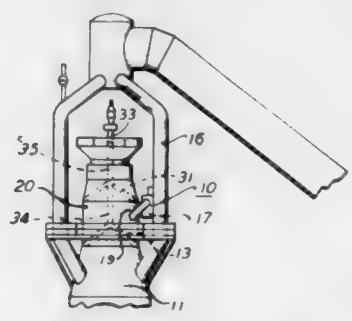
BLAST FURNACE PRESSURE EQUALIZING APPARATUS

Daniel E. Pike, Harrington Park, N.J., assignor to Air Pollution Industries, Inc., Englewood, N.J.

Filed Mar. 17, 1976, Ser. No. 667,627

Int. Cl.[2] C21B *7/00*

U.S. Cl. 266—147 **2 Claims**



1. An apparatus for equalizing the pressure exerted by top gas, generated during operation of a blast furnace, on one surface of a closing element movably mounted in the top of the blast furnace, comprising:

(a) means for cleaning the top gas in the apparatus and directing the cleaned top gas through the apparatus and into the chamber in which the closing element is movably mounted so as to exert equalizing pressure on the opposite surface of the closing element, comprising means for directing top gas from the blast furnace and for directing a liquid in a dispersed spray into the path of the top gas so that the liquid is reduced into fine droplets and so that pollutants from the top gas are impressed on such find liquid droplets, including a wall portion including flared end portions and a constricted medial portion, and in which one of the flared end portions has openings therein for injection of a liquid therethrough, means for directing the cleaned top gas and the fine liquid droplets with top gas pollutants impressed thereon from the top gas directing means and for separating the fine liquid droplets with top gas pollutants impressed thereon from the cleaned top gas, and means for directing cleaned top gas from the cleaned top gas and fine liquid droplets directing means into the chamber in which the closing element is movably mounted so as to exert equalizing pressure on the opposite surface of the closing element; and

(b) means for generating substantially continuous flow of the cleaned top gas into the chamber in which the closing element is movably mounted, including means for directing liquid in a concentrated stream through a portion of the top gas directing means of the top gas cleaning means, which extends through one of the openings in the flared end portion of the top gas directing means of the top gas

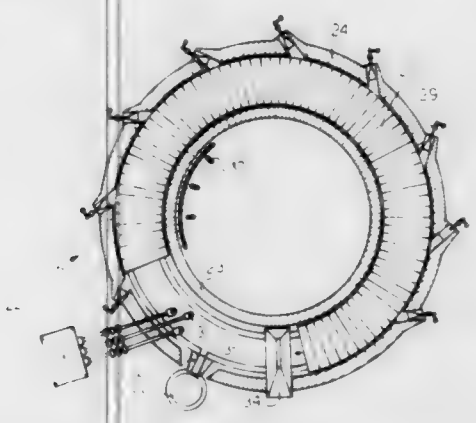
cleaning means, including an outlet portion which extends parallel to the axis of the wall of the top gas directing means of the top gas cleaning means.

4,082,254

HEAT EXCHANGER AND APPLICATION THEREOF TO REALIZE AN ORE REDUCING FURNACE

Ugo Brusa, Via Borgnis, Domodossola, Italy

Filed Aug. 20, 1976, Ser. No. 716,236
Int. Cl.² C21B *1/12*
U.S. Cl. 266—175 **5 Claims**



1. Apparatus for reduction of ores, comprising:
(a) an annular chamber having an upper portion and a lower portion;
(b) moving means in said lower portion for supporting said ore;
(c) means for rotating said ore-supporting means along the annular path of said chamber;
(d) means for introducing heat into said upper portion of said chamber for heating said ore;
(e) means for separating said upper portion from said lower portion and consisting of at least one member having an outer surface which is alternately brought into contact with said upper and lower portions of said chamber, said separating means being provided in less than the entire annular area of said chamber;
(f) means for reducing said ore, located in the non-separated region of said annular chamber;
(g) means for introducing said ore to be reduced, located in the non-separated region of said annular chamber; and
(h) means for discharging the reduced ore radially from said annular chamber and located in the non-separated region of said chamber.

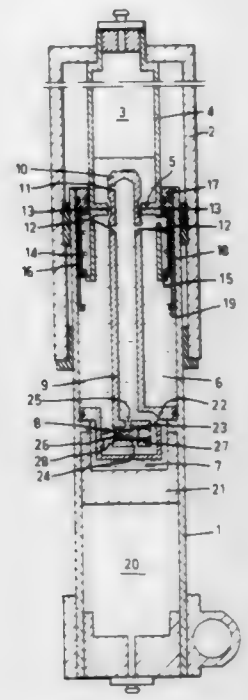
4,082,255

OLEO-PNEUMATIC DAMPER

Jean Masclet, Paris, and Jacques Veaux, Chatillon sur Bagneau, both of France, assignors to Messier-Hispano S.A., Montrouge, France

Filed Jan. 13, 1977, Ser. No. 759,017
Claims priority, application France, Jan. 15, 1976, 76 01015
Int. Cl.² F16F *9/06*
U.S. Cl. 267—64 R **6 Claims**

1. An oleo-pneumatic damper comprising: a cylinder; a hollow rod mounted for sliding movement in the cylinder; a low-pressure gas chamber within the cylinder; a first variable volume for hydraulic fluid, provided substantially in the hollow rod and disposed adjacent to the low-pressure gas chamber; a second variable volume for hydraulic fluid, in the hollow rod; a high-pressure gas chamber in the hollow rod; a valve device operatively disposed between said first and second volumes and having a closed position of separating said volumes from each other; and a resilient means disposed in said first fluid volume and operable to urge the hollow rod inwardly of the cylinder whereby the resilient means forms an anti-threshold spring means tending to reduce the minimum



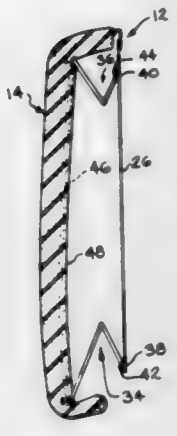
loading on the damper at which the damper commences a compression stroke movement for damping purposes.

4,082,256

SEAT ASSEMBLY

Jack C. Mandusky, Lexington, Ky., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed Oct. 26, 1976, Ser. No. 735,171
Int. Cl.² A47C *23/00*
U.S. Cl. 267—81 **6 Claims**



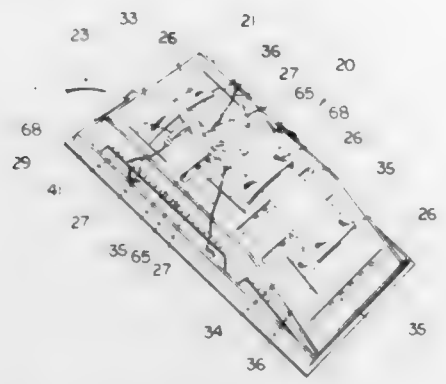
1. In a seat structure, a frame and spring assembly comprising a frame, and a plurality of wire spring members supported at their ends on the frame in generally parallel spaced relationship, the intermediate portions of said wire spring members projecting in a common direction from said frame to define a load bearing spring surface for said seat structure, and a pad supported on and covering said load bearing spring surface, said pad having an inner wall with recesses therein into which said intermediate portions are encased so as to be constrained from shifting with respect to one another, said pad being a foamed elastomer and having an external skin, said recesses being defined by said skin as channel-like structures.

4,082,257

SURGERY TABLE

James W. Strickland, 6969 Warwick Rd., Indianapolis, Ind. 46220

Filed Apr. 7, 1977, Ser. No. 785,406
Int. Cl.[2] A61G *13/00*
U.S. Cl. 269—328 **11 Claims**



1. A surgery table for use when performing a surgical procedure on a portion of the anatomy which comprises:

a support platform having a top surface, a base, and sides extending between said top surface and said base, said platform having at least one opening for drainage of fluid from the top surface;

a drain pan having a support surface upon which said support platform rests, said pan having a lip around its perimeter, said lip extending above the support surface of said pan thereby forming a reservoir capable of collecting fluid which drains through said opening from the top surface of the support platform, said lip having an aperture therein;

a flexible tube having one end connected to said aperture for draining fluid from the reservoir;

first means for securing to the top surface of said support platform a portion of the anatomy; and

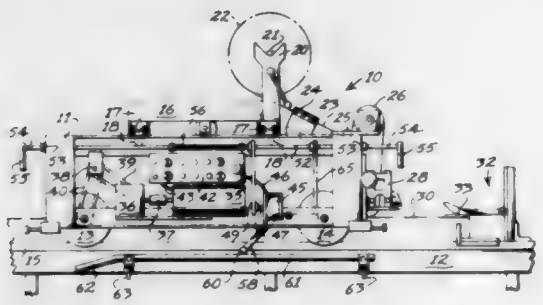
second means for holding in position pieces of the anatomy so that the pieces do not interfere with performance of a surgical procedure.

4,082,258

DRIVE SPEED CONTROL APPARATUS FOR CLOTH SPREADING MACHINE

Hoyt L. Smith, Nashville, Tenn., assignor to Cutters Machine Company, Inc., Nashville, Tenn.

Filed Dec. 27, 1976, Ser. No. 754,172
Int. Cl.[2] B65H *29/46*
U.S. Cl. 270—31 **6 Claims**



1. In a cloth spreading machine having a frame supporting a spreading mechanism adapted to spread cloth upon a spreading surface as the frame moves longitudinally reciprocably over the spreading surface, drive speed control means comprising:

a. a motor operatively connected to said frame for driving said frame over said spreading surface,

b. a speed control device operatively connected to said motor to vary the speed of said frame,

c. said speed control device having an operator element adapted to actuate said speed control device to vary the speed of said frame in response to the position of said operator element,

d. an elongated control shaft having an operator portion and an end portion,

e. means rotatably mounting said control shaft on said frame for rotation about the longitudinal axis of said control shaft,

f. a handle member fixed to said end portion of said control shaft whereby said control shaft is manually rotated,

g. first link means operatively connecting the operator portion of said control shaft to said operator element, whereby rotation of said control shaft commensurately varies the speed of said frame,

h. a driven rotary element fixed concentrically to said control shaft,

i. a trip lever pivotally mounted upon said frame,

j. a trip device fixed relative to said spreading surface at a station in the path of said trip lever for engaging and pivotally moving said trip lever as said frame moves over said station,

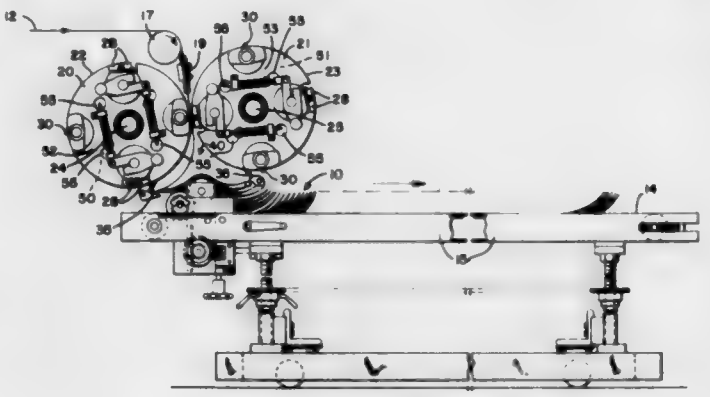
k. second link means connecting said trip lever to said driven rotary element for simultaneously rotating said control shaft to decrease the speed of said frame as said trip lever is moved by said trip device.

4,082,259

CYLINDER FOLDER

Robert John Anderson, Dayton, Ohio, assignor to Harris Corporation, Cleveland, Ohio

Filed Dec. 8, 1976, Ser. No. 748,764
Int. Cl.[2] B65H *45/16*
U.S. Cl. 270—73 **1 Claim**



1. In a high speed cylinder type folder for folding a continuous web in zig-zag fashion, the folder including a pair of substantially hollow driven cylinders having outer cylindrical walls and being mounted with their axes of rotation in parallel adjacent relation, the walls defining a nip adapted to receive the web therebetween, grippers and tucker blades mounted lengthwise in the walls of each cylinder, each gripper on one cylinder being arranged in opposed cooperating relation with a blade on the other cylinder, and vice versa, whereby the blades alternately tuck the web into the grippers on alternate cylinders at longitudinally spaced intervals along the web in response to rotation of the cylinders, the grippers being controlled such that lengths of the web are pulled away from the nip and held by the grippers in contact with portions of the associated outer cylindrical walls of first one and then the other of the cylinders before release of the grippers, and stripper means operative to guide the folded web from the grippers and cylinders upon release of the grippers, the portions of the outer walls having formed therein a series of spaced apart shallow recesses opening outwardly in a circumferential direction around each cylinder and having bottoms slightly depressed with respect to the outer cylindrical walls, the recesses being separated by relatively narrow ribs which are adapted to

contact the web and which form the sides of the recesses, the improvement comprising:

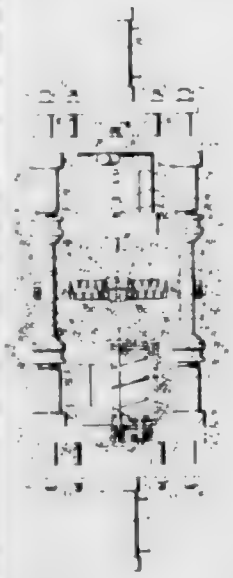
means defining openings communicating through the walls of both cylinders from the hollow interiors thereof into the bottoms of the recesses, said openings being distributed across and around each cylinder to provide for a flow of air through said openings in the region between the nip between the cylinders, the web and the web stack for aiding the release of the web as it is engaged by the stripper means and for equalizing and relieving pressure in said region as the web is being delivered to and formed into the zig-zag folded stack, and means providing passageways through the cylinder ends placing the hollow interiors thereof in communication with the surrounding atmosphere for connecting the cylinder interiors to ambient pressure and facilitating the movement of air through said end passageways and through said cylinder wall openings as the cylinders are rotated.

4,082,260

ADJUSTABLE APPARATUS FOR SEPARATING AN OUTERMOST LABEL FROM A STACK OF LABELS

Karl Östen Alf Nilsson, Spanga, and Curt Oskar Lindell, Taby, both of Sweden, assignors to Toolex Alpha AB, Sundbyberg, Sweden

Filed Sep. 21, 1976, Ser. No. 725,248
Claims priority, application Sweden, Sep. 24, 1975, 7510707
Int. Cl.[2] B65H *1/28, 3/22, 3/44*
U.S. Cl. 271—1 **12 Claims**



1. An apparatus for separating articles one by one from a stack of articles in a repeated operation comprising:

a magazine housing said stack of articles, said magazine containing a supporting plate acting on one end of said stack of articles, a resilient means for urging said supporting plate toward an open end of said magazine, and a retaining means mounted on said open end for retaining said stack of articles in said magazine against the force of said resilient means, said retaining means having a shape which allows access to the surface of the outermost article in said stack,

a pair of frictional members containing respective article engaging elements, said frictional members symmetrically located on either side of the central axis of said magazine, and being mounted on respective cam followers which are pivotally mounted and biased to keep said article engaging elements retracted away from said magazine,

a pair of cam surfaces for engagement with respective cam followers, said cam surfaces causing said cam followers when engaged therewith to move said article engaging elements against said bias toward the outermost article of said stack,

means for reciprocally moving said magazine relative to said article engaging elements including means causing said cam followers to move into engagement with said cam surfaces to thereby produce a movement of said article engaging elements into dogging contact with the outermost article of said stack, and for causing said engaging elements to move toward each other while they are in dogging contact with said outermost article to thereby slide said outermost article with respect to the next adjacent article in said stack and to bulge said outermost article away from said next adjacent article, and

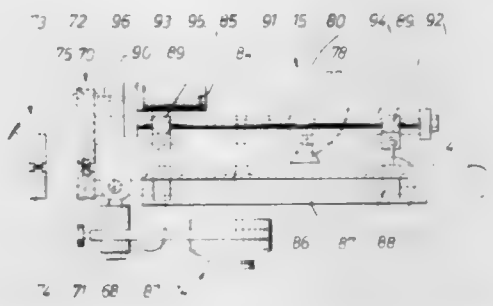
a cam positioning means for adjusting the distance which must be traveled by said cam followers before engaging the respective cam surfaces during said relative movement.

4,082,261

MACHINE FOR THE MANUFACTURE OF OBJECTS OF SHEET SHAPE

Tor Gustav Alberto Johannisson, deceased, late of Lysekil, Sweden (by Maj-Britt Johannisson, heir-at-law), and by Tom Johannisson, heir-at-law, assignors to Flodins, Industri AB, Lysekil, Sweden

Filed Feb. 26, 1976, Ser. No. 661,501
Claims priority, application Sweden, Feb. 26, 1975, 7502134
Int. Cl.[2] B65H *29/16, 29/32*
U.S. Cl. 271—69 **3 Claims**



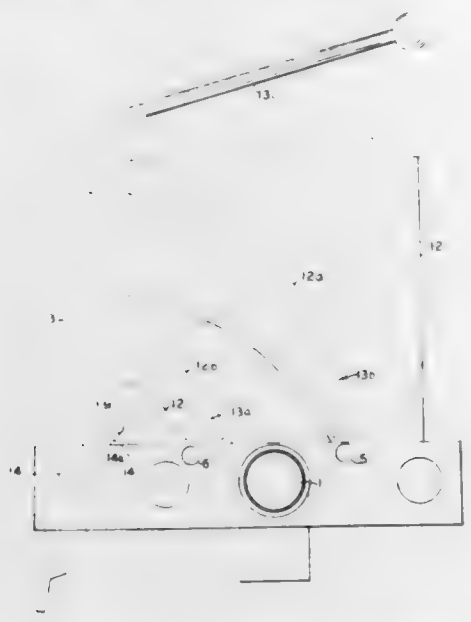
1. An apparatus for the transportation of objects formed of sheet material produced from foil webs thereof moving stepwise in a forward direction from a feed station to a discharge station at the end of a conveyor band, comprising a first power means, feeding means for providing stepwise forward movement of the conveyor band and the objects supported thereby, said feeding means, including a clamping device having upper and lower clamping elements adapted to retain said objects on the conveyor band and release same therefrom; said clamping device being moveable in said forward direction and returnable to a predetermined feeding position by said first power means connected thereto, a second power means connected to said clamping device to lower said upper clamping element for movement in the forward direction and elevate said element during its movement in the return direction, discharge means to remove said objects from the conveyor band at said discharge station, said discharge means comprising carrying means connected to said upper clamping element and moveable therewith in the same directions as the latter, said carrying means being provided with suction cups for engaging said objects on the conveyor when moving in the forward direction, means communicating said suction cups with a source of vacuum during said forward movement and disconnecting same from said source when in a position to discharge said objects, said suction cups being disposed to secure each successive object as it nears the end of the conveyor band in stepwise movement while said upper clamping element and suction cups are in a lowered position, and to release each object beyond the end of the conveyor and, at which point said suction cups are elevated with said upper clamping element and returned to a position for feeding another object in the forward direction.

4,082,262

FEEDER HOPPER FOR DOCUMENTS

Clement R. Konars, Glen Cove, and Emanuel Quinci, Dix Hills, both of N.Y., assignors to Halm Instrument Co., Inc., Glen Head, N.Y.

Filed Feb. 14, 1977, Ser. No. 768,147
Int. Cl.[2] B65H *1/02*
U.S. Cl. 271—149 3 Claims



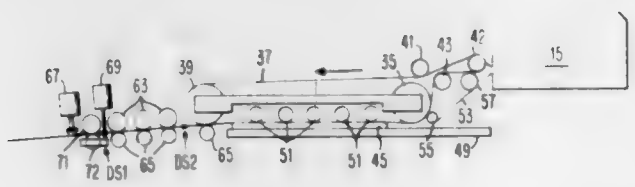
1. A feeder hopper for documents comprising,
a base member,
a pair of guide rods slidably mounted in the base member,
a rear plate mounted on the guide rods,
a second plate pivotally and slidably mounted on one side of the guide rods,
and means to push back the rear plate back from the second plate when it is desired to add a new supply of documents to the hopper.

4,082,263

DOCUMENT FEEDING APPARATUS

John G. Baumberger, Johnson City; Michael A. Gazy, Apalachin, and William C. Miller, Owega, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 591,782, Jun. 30, 1975, abandoned.
This application Feb. 4, 1977, Ser. No. 765,503
Int. Cl.[2] B65H *5/00, 5/02*
U.S. Cl. 271—266 3 Claims



1. Document handling means comprising in combination,
a document receiving station for receiving manually inserted original documents of varying lengths,
a document copying station,
document transport means for transporting said documents to and through said copying station,
document feed means at said receiving station for feeding a document from said receiving station to said transport means,
document measuring means for providing an output when said documents are greater than a predetermined length, said document measuring means comprising first and second document sensors spaced along the path of document travel from said receiving station to said copying station,
and document transport control means governed by circuit means including said first and second document sensors, said document transport means including an incrementing clutch means for operating said transport means to provide increments of motion equal to said predetermined length when said document measuring means provides said output.

4,082,264

STATIONARY EXERCISE BICYCLE

James P. Santos, 223 Rockingstone, Larchmont, N.Y. 10538

Filed Dec. 7, 1976, Ser. No. 748,198
Int. Cl.[2] A63B *69/16*
U.S. Cl. 272—73 2 Claims



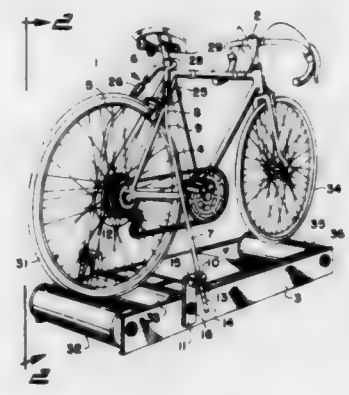
1. An exercise bicycle comprising a stationary frame, pneumatic pump means attached to said frame and including a rotatable shaft, pedals secured to said shaft for producing rotation thereof, said pneumatic pump means further including a chamber, a plurality of radial vanes secured to said shaft in said chamber, an inlet in communication with the ambient atmosphere and with said chamber, and an outlet air-restricting valve in communication with said chamber and allowing air, acted upon by said vanes in said chamber, to flow therethrough and thence to an outlet to the ambient atmosphere.

4,082,265

BICYCLE SUPPORT SYSTEM

James R. Berkes, 3572 Metropolitan Pkwy., North Royalton, Ohio 44133

Filed Jun. 26, 1975, Ser. No. 590,465
Int. Cl.[2] A63B *69/16*
U.S. Cl. 272—73 10 Claims



1. An apparatus for supporting a cycle-type vehicle on a stationary training device comprising elongate legs for supporting such vehicle on such device in a generally upright position for riding, coupling means for coupling such vehicle and such legs, connecting means for movably connecting said legs to such device, said legs, coupling means and connecting means permitting a leaning action of such vehicle with respect to such device while still providing such support, and means

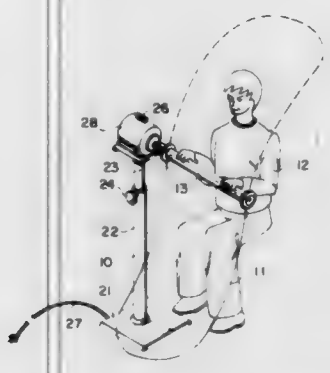
for varying the tension in said elongate legs correspondingly to vary the amount of leaning action permitted.

4,082,266

ELECTRICAL MOTOR POWERED JUMP ROPE APPARATUS

Nate Elkins, Alhambra, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 5, 1976, Ser. No. 718,782
Int. Cl.[2] A63B *5/20*
U.S. Cl. 272—75 **1 Claim**



1. A powered jump rope apparatus comprising a vertical member adapted to be supported on a horizontal surface, a stand carried by said vertical member, a motor mounted on said stand, said motor having an output drive shaft extended externally therefrom, and

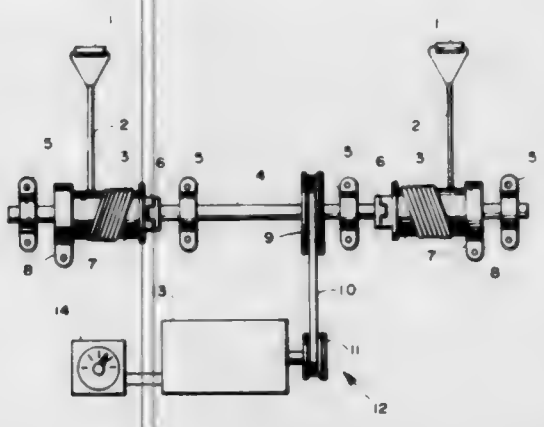
means to attach each of two ends of a flexible cable to the external section of the drive shaft, said means separated by a sleeve mounted over the drive shaft so as to freely rotate about the said shaft, said sleeve being of an external diameter to be grasped by the hands of a person using the apparatus.

4,082,267

BILATERAL ISOKINETIC EXERCISER

Evan R. Flavell, 841 Solano Ave. No. 5, Albany, Calif. 94706

Filed May 12, 1976, Ser. No. 685,446
Int. Cl.[2] A63B *21/00*
U.S. Cl. 272—125 **12 Claims**



1. Bilateral isokinetic exercising apparatus, comprising:

a plurality of limb-engageable input means for responding to a power stroke in a power direction of reciprocating movement, so that a person exercising can move each input means with one limb in the power direction,

a plurality of converting means each connected to one only of said input means for converting the reciprocating movement of each said input means into a separate rotational motion, each said converting means including its own rotatable member that is acted on by that rotational motion,

a single speed regulating means for opposing rotational movement of any and all said rotatable members with proportioned isokinetic resistance,

driving connection means for connecting all said rotatable members to said speed regulating means and including separate one-way clutch means for connecting each said rotatable member to said speed regulating means and transmitting connection means for each said clutch for providing that movement of each input means in a first power direction drives said speed regulating means, and for providing that movement of each said input means in the opposite direction is disengaged from said speed-regulating means,

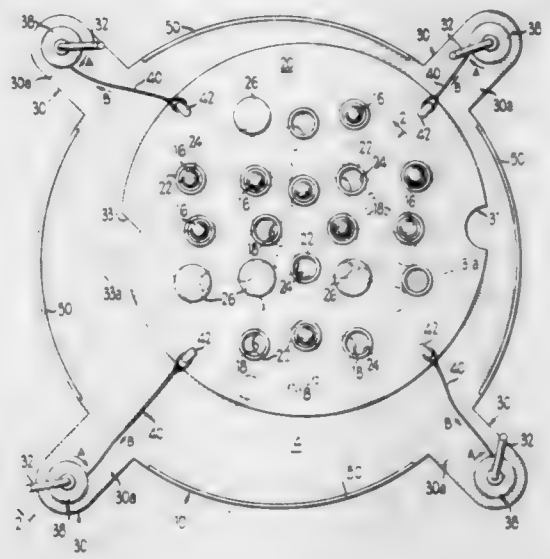
whereby motion of each input means in the power direction by the person exercising is opposed by said speed-regulating means with a resistance force proportional to the force applied by the person exercising, whereas movement of each said input means in the opposite direction is unopposed by said speed-regulating means.

4,082,268

BALL GAME WITH ALIGNABLE APERTURES

Jeffrey D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sep. 16, 1976, Ser. No. 723,796
Int. Cl.[2] A63F *7/02*
U.S. Cl. 273—1 R **23 Claims**



15. A game apparatus, comprising:

a base for positioning on a supporting surface and having means defining an upper generally flat playing surface for supporting a plurality of playing pieces for movement thereof, and including means defining a plurality of spaced recesses randomly spaced from one another for receiving the playing pieces;

a plurality of playing pieces movably supportable on said playing surface; and

a plate-like manually manipulatable member positionable on top of said playing surface for selective sliding movement thereover in all directions in the plane parallel to the plane of the playing surface, said manually manipulatable member having a plurality of apertures therein for receiving the playing pieces in gravity abutment with the playing surface, the apertures in said member being randomly spaced from the recesses in said playing surface and larger than the playing pieces whereby the playing pieces can drop through the apertures into the recesses in said playing surface when aligned therewith.

4,082,269

PROTECTIVE BASKETBALL HOOP

Robert L. Hill, Shandon Star Rte., Paso Robles, Calif. 93446

Continuation-in-part of Ser. No. 711,059, Aug. 2, 1976, abandoned. This application Jun. 30, 1977, Ser. No. 811,547
Int. Cl.[2] A63B *63/02*
U.S. Cl. 273—1.5 R 13 Claims



1. A protective basketball hoop having a netting formed from a plurality of strands and a mounting bracket, wherein said protective hoop comprises:

an annular rim member attached to said mounting bracket;

an annular net-supporting body circumfused substantially about the peripheral portion of said rim member; and

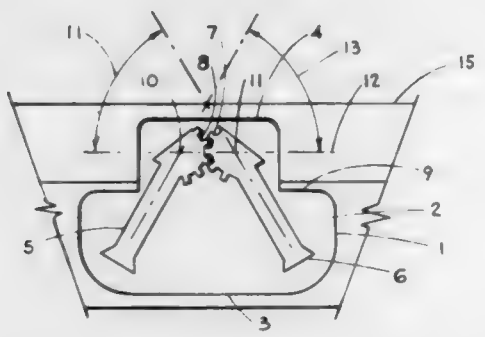
net-mounting means integrally formed to said net-supporting body, wherein said net is mounted thereto.

4,082,270

BILLIARD BANKING AID

Frederick G. Josenhans, 14020 Netherfield Dr., Midlothian, Va. 23113

Filed Apr. 29, 1976, Ser. No. 681,550
Int. Cl.[2] A63D *15/00*
U.S. Cl. 273—2 3 Claims



1. A device for training in banking skill in the game of billiards comprising:

a. a substantially flat, rigid base having at least one straight edge and two holes, said straight edge disposed in parallel relationship to the line connecting the centers of said two holes,

b. two essentially flat elongated pointers of substantially mirror-image structural identity, each rotatably supported above said base by a pivot pin engaging with one of said holes, and containing adjacent its forward pointing extremity a series of gear teeth disposed in an arcuate path whose center of curvature coincides with said pivot pin, said pointers being positioned in opposed coplanar relationship causing mating of said teeth such that, at any acute angle of the longitudinal axis of one pointer with said line, the opposed pointer will present an acute angle of equal value on the same side of said line but in the opposite direction, and

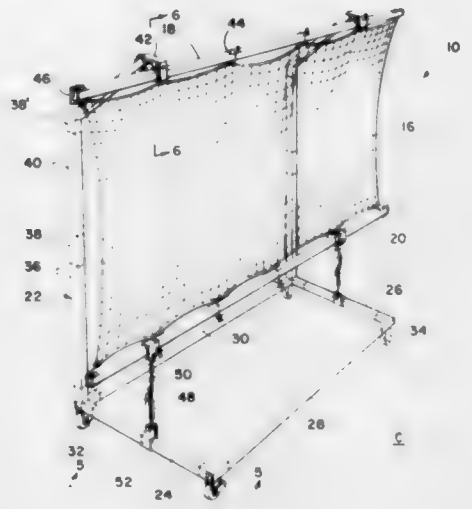
c. means for retaining said pivot pins within said holes.

4,082,271

TENNIS PRACTICE AND TEACHING REBOUNDER

Arthur Lee Martin, 2876 N. Rogers Ave., Ellicott City, Md. 21043

Filed Apr. 29, 1976, Ser. No. 681,762
Int. Cl.[2] A63B *61/00*
U.S. Cl. 273—29 A 15 Claims



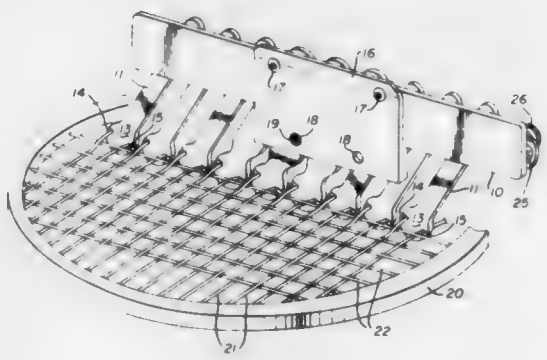
1. A tennis practice rebounder comprising: a frame, a net wall having upper and lower and end margins and a front, means for suspending the net wall by the upper margin including a first standard on the frame and means for attaching the upper margin thereto, means for adjustably tensioning the net wall between the upper and lower margin including means for pivotally adjusting the lower margin about the upper margin for setting the vertical angle of the net wall; the means for pivotally adjusting including a pair of frame portions below and in fore and aft relation to the lower margin, means for drawing the lower margin toward the frame portions including: a second standard, means for attaching the lower margin to the second standard thereby providing the second standard with net-wall-tensioning connection through the net wall with the first standard; and means for movably attaching the second standard to the respective frame portions, including respective first and second serially related length adjustments proximate each end of the second standard.

4,082,272

TENNIS RACKET STRING POSITIONING DEVICE

John P. Garver, 9450 Sharrott Rd., Poland, Ohio 44514

Filed Aug. 23, 1976, Ser. No. 716,987
Int. Cl.[2] A63B *53/14*
U.S. Cl. 273—73 A 5 Claims



1. A tennis racket string positioning device for engagement with one set of parallel strings of a tennis racket comprises an elongated body member for positioning transversely of said parallel strings, a plurality of longitudinally spaced pivots on said elongated body member and a plurality of longitudinally spaced depending elongated fingers, the upper end of each of said depending fingers being movably engaged on one of said pivots, inwardly extending notches in the opposite sides of

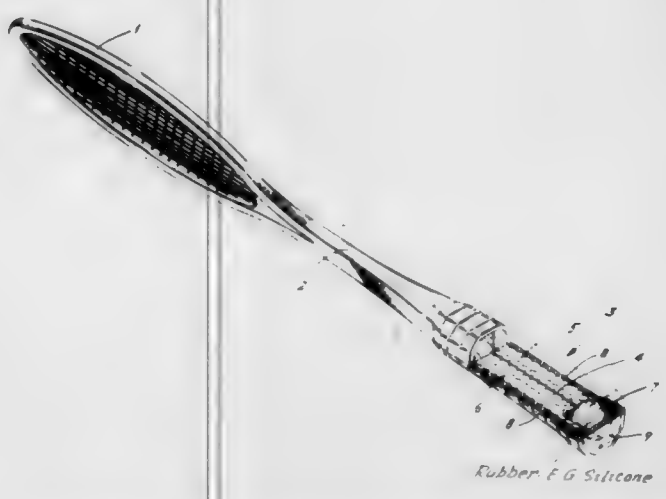
each of said depending fingers adjacent their free ends, said notches arranged for engagement with said strings when positioned therebetween whereby longitudinal movement of said elongated body member causes said pivoted ends of said depending fingers to move transversely of said strings and causes said depending fingers to move to angular positions relative to said elongated body member and means on said elongated body member for detachably engaging at least one of said elongated depending fingers so as to hold it in desired angular relation to said elongated body member.

4,082,273

STRIKING IMPLEMENTS

James M. Ellzey, Narberth, Pa., assignor to The Ellzey Company, Radnor, Pa.

Filed Feb. 19, 1976, Ser. No. 659,384
Int. Cl.[2] A63B *49/08*
U.S. Cl. 273—73 J **9 Claims**



1. A tennis racket incorporating means for minimizing shock imparted to the arm of a user, comprising:

(a) a head portion,

(b) an elongated handle affixed to said head portion and including a gripping portion near the end thereof remote from said head portion, said handle consisting of a single longitudinal slot therein lying in a plane substantially parallel to that of said head portion, extending part of the length of said handle from the end thereof farthest from said head and laterally through said handle so as to divide said handle into two unitary parts and so as to permit longitudinal movement of said parts relative to each other, and said gripping portion having a longitudinal hole in the distal end thereof remote from said head portion and extending a part of the length of said gripping portion, said hole being of substantially uniform cross section throughout its length, wherein its length is substantially the same as the length of an object inserted therein, and having bounding surfaces substantially free from obstructions so that an object inserted therein is free to move in relation to said surfaces subject only to frictional forces exerted between said surfaces and said object whenever longitudinal movement between said parts of said handle occurs when an object is struck with said racket,

(c) an insert of resilient elastic material contained in said hole, said insert having a dimension transverse to the longitudinal axis of said handle which is somewhat larger than the transverse dimension of said hole prior to insertion thereof, such as to spread the parts of said handle upon insertion, and

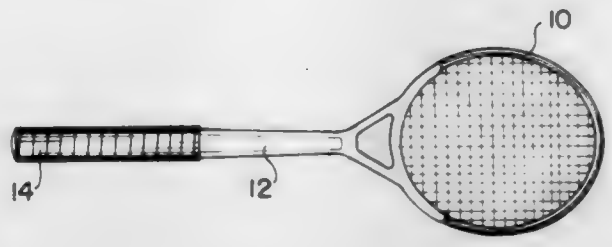
(d) a grip-enhancing binding applied to the exterior of said gripping portion in a manner to urge the parts of said handle toward each other and to compress said insert.

4,082,274

TENNIS RACKET

Robert Stevens, 552 Glorietta Ave., Newport Beach, Calif. 92660

Filed Jun. 22, 1976, Ser. No. 698,523
Int. Cl.[2] A63B *49/02*
U.S. Cl. 273—73 C **4 Claims**



1. A tennis racket comprising a frame having a loop portion and further having a co-planar integral neck portion at one end of the loop portion and extending radially outwardly from the loop portion and circumscribing an area smaller than the area circumscribed by the loop portion, and a handle comprised of two longitudinal sections formed of metal stampings, the inner ends of the two handle sections each having a configuration corresponding to the configuration of the neck portion and to the sides of the loop portion adjacent to the neck portion, said inner ends extending over the neck portion and over said sides of said loop portion of the frame adjacent to said neck portion to sandwich said neck portion and said sides of of said loop portion of said frame therebetween, said handle sections being adhesively bonded to said neck portion and to said sides of said loop portion of said frame adjacent to said neck portion.

4,082,275

SPORT RACKET

Tsai C. Soong, and Jeanne F. Soong, both of 1839 Jackson Rd., Penfield, N.Y. 14526

Filed Jul. 26, 1976, Ser. No. 708,380
Int. Cl.[2] A63B *51/06*
U.S. Cl. 273—73 D **10 Claims**



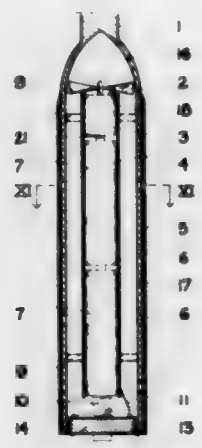
1. A sport racket having an open frame, a handle, and a network of two transversely oriented sets of tension strands joined to said frame to be tensioned across an open region of said frame for hitting a ball, said racket being characterized by the joining of said strand sets of said network to said frame along a curved region to provide said network with two oppositely oriented curvatures along two transverse directions forming a saddle shaped giving each opposite face side of said network both concave and convex curvatures so said tension strands are curved before engagement with said ball.

4,082,276

VENTILATED HANDLE FOR TENNIS RACKETS OR THE LIKE

Marius Szaflanski, 230 E. 79th St., Apt. 7C, New York, N.Y. 10021

Filed Jul. 29, 1976, Ser. No. 709,897
Int. Cl.[2] A63B 49/08
U.S. Cl. 273—75 2 Claims



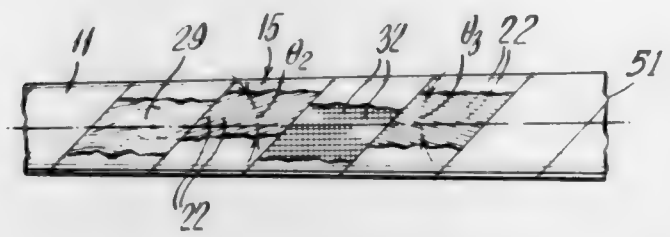
1. A handle for use with a tennis racket or the like requiring physical effort, employing ventilation system integral with said handle, said ventilation system being defined by: energizing means disposed within an interior chamber forming a portion of said handle; an outer covering of said handle defined by a plurality of perforations; said perforations being formed as continuous passages extending from said interior portion to said outer covering and air moving means associated with said energizing means for moving air through and around said perforations at said outer covering.

4,082,277

GOLF CLUB SHAFT

Richard L. Van Auken, Bridgewater, and Allwyn W. Pirtle, S. Plainfield, both of N.J.

Filed Aug. 3, 1976, Ser. No. 711,284
Int. Cl.[2] A63B 53/10
U.S. Cl. 273—80 R 10 Claims



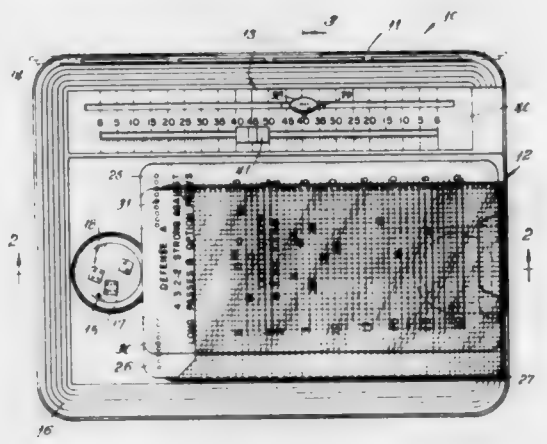
1. A graphite fiber reinforced tubular golf shaft having a tip section, body section and butt section and comprising: at least two superimposed strips of resin impregnated unidirectional continuous graphite fiber reinforcements spirally wound on a hollow metal core, each strip of resin impregnated graphite fiber material being generally quadrangular in shape, each strip disposed in an oppositely angled relationship with respect to the next adjacent strip such that the graphite fibers are oriented with respect to the longitudinal axis of the metal core at angles of $\pm 5°$ to $\pm 15°$; a layer of woven fiberglass cloth interposed between alternating layers of superimposed strips of resin impregnated graphite fiber reinforcement, said woven fiberglass cloth being positioned such that the glass fibers therein are oriented at 0° and 90° with respect to the longitudinal axis of the tubular metal core; a layer of structural metal adhesive interposed between said core and said resin impregnated unidirectional graphite fiber strips, said superimposed resin impregnated graphite fiber strips being molecularly bonded to each other and to the metal core by thermal curing of said resin and adhesive.

4,082,278

GAME DEVICE

Douglas R. Bolton, Palatine, Ill., assignor to Cadaco, Inc., Chicago, Ill.

Filed Oct. 15, 1976, Ser. No. 732,907
Int. Cl.[2] A63F 9/00
U.S. Cl. 273—94 R 14 Claims



1. Apparatus for playing a game wherein defensive action by a defensive player is effected in opposition to offensive action taken by an opponent offensive player, said apparatus comprising:

a plurality of opaque offense sheets each having thereon a different one of a plurality of different offensive plays to be selected by said offense player;

means for removably covering the selected sheet so as to prevent observation thereof by the defensive player;

a plurality of defense sheets each having thereon a different one of a plurality of different defensive plays to be selected by said defensive player; and

means for placing the selected defensive sheet in fixed overlying relationship to said selected offensive sheet with the covering means disposed therebetween, said defensive sheet being light transmissive to permit use of ambient light in the viewing of said offensive sheet through said defensive sheet upon removal of said covering means with said selected sheets mounted in said overlying relationship whereby said selected defensive play may be seen superposed on said selected offensive play for indicating the competitive result of the joint play by said offense and defense players.

4,082,279

PHONEMIC WORD GAME METHOD

Robert L. McFadden, 105 Loller Rd., Hatboro, Pa. 19040

Filed Jun. 17, 1976, Ser. No. 696,867
Int. Cl.[2] A63B 67/06; G09B 19/22
U.S. Cl. 273—272 4 Claims

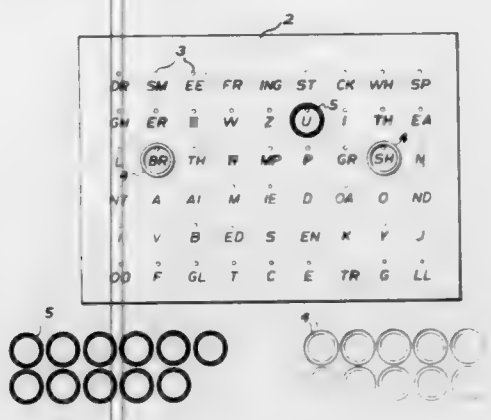
1. A method of manipulating the playing surface of a game board by at least two players, said playing surface having a plurality of game areas, each of said areas being provided with selected phonemic indicia at least a plurality of which are less than word length, said indicia also being combinable agglutinatively with selectable others of said indicia to form words or parts of words larger than the constituent indicia, said board also being provided with means for releasably confining game pieces to respective ones of said areas, said method comprising:

(a) placing by a first player of one of said game pieces on a selected one of said areas for releasable confinement thereto,

(b) then placing by another player, in his turn, of another of said game pieces on a selected other one of said areas for releasable confinement thereto,

continuing, if necessary, the placement of additional game

pieces on respective game areas by the players in turn until the phonemic indicia associated with at least some of said areas on which pieces have been placed constitute the phonemes of an intelligible word, and



(d) thereupon removing by a player all of said placed game pieces and retaining them.

4,082,280

THREE-DIMENSIONAL, LAYERED, SELF SEALING TARGET

Otis C. Lang, R.D. 1, Box 221, Pittston, Pa. 18643

Filed Dec. 3, 1975, Ser. No. 598,044
Int. Cl.² F41J *3/00*
U.S. Cl. 273—102 B **1 Claim**

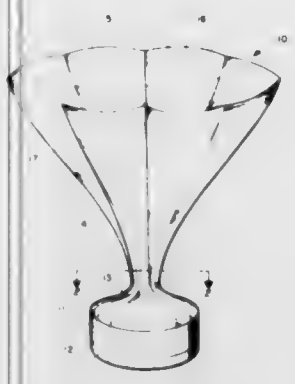
1. A resealable archery target attachable to a bale of hay comprising a paper mache sheet molding constructed and arranged in three-dimensional high relief in the size and shape of an animal; and a plurality of layers of latex rubber applied to said paper mache molding, of sufficient thickness to substantially re-seal an opening formed by an arrow shaft propelled there through, the outermost of said latex layers including concentrated tint coloring emulating the coloring of an animal.

4,082,281

SHUTTLE ARTICLE FOR GAMES

Ping F. Chen, 7445 Plum Blossom Dr., San Jose, Calif. 95129

Filed Jun. 14, 1976, Ser. No. 695,531
Int. Cl.² A63B *67/18*
U.S. Cl. 273—106 A **4 Claims**



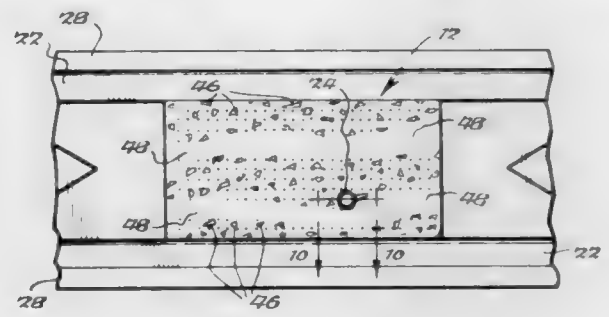
1. A shuttle article for games comprising a base member, said base member comprising a kicking surface for kicking the article into the air; and a cone-shaped chute member flaring outwardly from said base member, said chute member comprising an outer diameter at least twice that of the base member; a plurality of spaced ribs and a plurality of thinly webbed ribbed sections with at least a portion of one of said sections being removed for forming an opening extending from the outer periphery of the chute inwardly toward the base, said opening comprising substantially all of the space between at least one pair of said ribs for improving the turn-around characteristics of the article at its apogee and perigee of flight.

4,082,282

AIR CUSHION GAME

Nicholas D. Trbovich, 28 Tanglewood Dr. West, Orchard Park, N.Y. 14127

Division of Ser. No. 546,719, Feb. 3, 1975, Pat. No. 3,992,009.
This application Aug. 24, 1976, Ser. No. 717,278
Int. Cl.² A63F *7/00*
U.S. Cl. 273—126 R **4 Claims**



1. An air cushioned game comprising in combination:

an air bed means, said air bed means including a powered air source means and holes in at least a portion of the surface thereof, said air source means discharging air upwardly through said holes in the surface of said air bed means, at least one scoring area, said scoring area being adjacent to said air bed and being substantially coplanar therewith so that a playing area is formed by said air bed means and said scoring area,

at least one game piece having a shape, area and weight such that it floats upon at least a portion of said air bed means when said air source means is activated and is capable of moving over at least a portion of said air bed generally without touching it.

air escape grooves, said air escape grooves being disposed in the surface of said air bed means in communication with said holes therein so that the air cushion supporting said game piece may partially escape in a non-uniform manner when said game piece passes over said escape grooves so that the orientation and movement of said game piece is thereby distorted in an unpredictable manner.

4,082,283

THREE-DIMENSIONAL BOARD GAME

Vivian R. La Ferla, 268 Fruit Hill Ave., N. Providence, R.I. 02910; Janine E. Moreau, 14 Apple Blossom La., Coventry, R.I. 02816, and Mariano Rodrigues, 100 Friendly Rd., Cranston, R.I. 02911

Filed Sep. 7, 1976, Ser. No. 721,178
Int. Cl.² A63F *3/00*
U.S. Cl. 273—241 **9 Claims**



1. A multilevel game board for three-dimensional piece jumping games comprising, a plurality of at least three plates

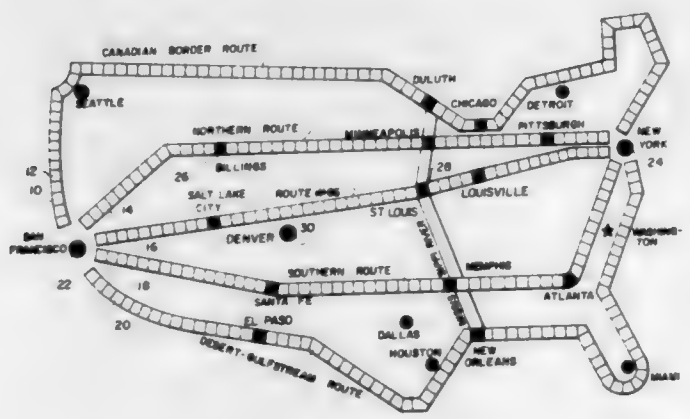
disposed in generally parallel, vertically spaced relationship to each other, each said plate having at least one playing position delineated thereon and forming a generally equiangle triangular, horizontally disposed playing surface having an apex, a base edge opposite thereto and intermediate connecting side edges, the number of playing positions provided on each such successive playing surface progressively decreasing in ascending order in accordance with the number of parallel rows of playing positions extending from the base edge to the apex provided thereon, the respective base and intermediate edges of said successive playing surfaces forming respective edge planes in turn defining at least three generally vertically disposed playing surfaces which further intersect in a pyramidal form and wherein a plurality of straight line jump paths of at least three playing positions are formed along the lines connecting the corners of each successive horizontally disposed playing surface, along lines within each of said generally vertically disposed playing surfaces and along lines within at least one of said horizontally disposed playing surfaces.

4,082,284

BOARD GAME APPARATUS

John N. Jennings, 1312 Anderson Ave., Fort Lee, N.J. 07024

Filed Jan. 8, 1976, Ser. No. 647,650
Int. Cl.[2] A63F *3/04*
U.S. Cl. 273—251 **5 Claims**



1. A game apparatus comprising in combination:
a game board provided with a playing area which simulates the geographical outline of a country and having route indicia extending across the playing area, and indicia for start, finish, cities, traps, and rivers located at strategic positions on the playing area;
two sets of opposing player tokens to be moved along said route indicia;
a die element having numerical indicia showing distance to move one of said player tokens along a selected route;
command means giving chance selected instructions to a player whose token has been captured;
escape die means to allow a captured player token to escape by casting said escape die means; and
said game apparatus having the object of moving all player tokens across the route indicia from start to finish after overcoming obstacles and evading capture by the opposite team of player tokens and at the same time providing useful geographical information to the game participants.

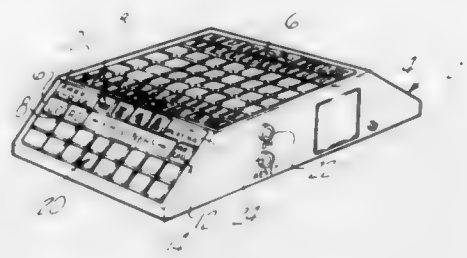
4,082,285

ELECTRONIC CHESS GAME

David B. Bathurst, 19857 Susan Ct., Mount Clemens, Mich. 48043

Filed Nov. 15, 1976, Ser. No. 741,787
Int. Cl.[2] A63F *3/02*
U.S. Cl. 273—237 **3 Claims**

1. An electronic board game comprising:
a first playing board surface made up of a number of depressible playing squares;
a first display means for displaying at each of said squares an image of any one of those playing pieces required for the game; and
logic circuitry to permit each player of the game to selectively cause said image to be automatically transferred from a first square to a second square upon sequentially pressing the first and second squares wherein said logic circuitry includes replacement means for replacing the predetermined first display image with the second image after the transfer of said first displayed image to one of a



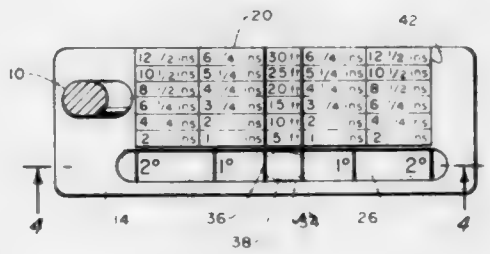
predetermined number of playing squares defining a back row of the playing surface, said replacement means including image decoder means for sensing when said first display image is transferred to one of said predetermined number of squares and wherein said logic circuitry includes indicator means responsive to said image decoder means for indicating when a player is allowed to transfer images from one square to another and when the player is allowed to replace the first predetermined display image with the second image.

4,082,286

DIRECTION AND SLOPE INDICATING PUTTER HEAD

Ferdinand J. La Breche, 412 Burchett St., Glendale, Calif. 91203

Filed Aug. 2, 1976, Ser. No. 710,821
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—162 B **4 Claims**



1. A putter for indicating the slope, level and angle at which a putt should be stroked toward a golf hole comprising:
an elongate shaft;
a handle on one end of said shaft;
an offset head on the opposite end of said elongate shaft from said handle;
said head being attached to said shaft and having a planar perpendicular surface for striking a ball;
an elongate levelling bulb in the uppermost surface of said head;
the axis of said bulb being substantially parallel with said planar surface;
indicating means on said head correlated with said levelling bulb for directly reading the direction toward which a ball should be struck with respect to the hole;
said indicating means comprising a table having a column of distance from the hole increments and a separate column for each respective degree marking; said separate columns having numbers representing the amount of offset from the center of the hole at which to strike the ball for each respective distance from the hole increment,
whereby the amount of offset to the right or left of the hole

at which to strike the ball may be determined from the position of the bubble in said levelling bulb.

4,082,287

TRAINING APPARATUS FOR IMPROVING A GOLFER'S PUTTING TECHNIQUE

George V. Berkey, Palm Desert, Calif., assignor to Mr. Putt, Incorporated, Palm Desert, Calif.

Filed Sep. 23, 1976, Ser. No. 725,688
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—186 C **15 Claims**



15. For use on a putting surface with a putter and a golf ball, a training apparatus for improving putting, comprising;

a base for placement on the putting surface adjacent the golf ball;

a cantilever extending outwardly from said base over the putting surface, said cantilever being constructed of a transparent material; and

elongated visual guide means carried by said cantilever adjacent the outer edge thereof, said guide means including an upper guide strip and a lower guide strip, said guide strips being of contrasting shades or colors and supported horizontally, one above the other, in spaced vertical relation, said upper guide strip being narrower than said lower guide strip, whereby a golfer can observe said lower guide strip on both sides of said upper guide strip when his eyes are positioned directly thereabove;

said cantilever including a series of reference lines spaced substantially periodically along the entire length thereof, said reference lines being normal to the longitudinal axes of said upper and lower guide strips;

said base, when in use, being oriented on the putting surface so that said upper and lower guide strips are positioned directly over the golf ball and so that the longitudinal axes of said guide strips are aligned with the direction in which the golf ball is to be putted;

said cantilever and said visual guide means being sized and, when in use, being spaced above the putting surface so that the head of the putter must be maintained in relatively close relation to the putting surface throughout a stroke of the golf ball and so that the head of the putter does not bear on any portion of the apparatus.

4,082,288

METHOD OF MAKING ADJUVANT FOR ELASTOMERIC COMPOSITION

Frank Stephen Martin, Cranston; Terence Melvin, North Kingstown, and Joseph Kirby Pieroni, Providence, all of R.I., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 441,716, Feb. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 284,303, Aug. 28, 1972. This application Oct. 22, 1975, Ser. No. 624,685
Int. Cl.[2] A63B *37/00*; C08L *9/00*
U.S. Cl. 273—218 **7 Claims**

1. A method of making a molding composition comprising (A) performing an adjuvant by slurrying zinc oxide in a volatile liquid medium selected from the group consisting of water and an alkanol, the concentration of zinc oxide in the slurry being from 31 to 65 percent by weight, thereafter rapidly adding to the slurry, while agitating the slurry, methacrylic acid in an amount such as to provide a zinc oxide-methacrylic acid molar ratio of at least 0.8 to 1, the methacrylic acid being added within a 30-second addition time, whereby an exothermic reaction between the zinc oxide and the methacrylic acid takes place, the said liquid medium serving to dissipate the heat liberated by the exothermic reaction, subsequently removing the volatile liquid medium from the resulting reaction product by evaporation to provide a dried product having a moisture content below 0.5% by weight, and grinding the resulting dried product at least to a fineness sufficient to pass a 200 mesh sieve, the resulting product being of white color and having an assay of at least 90% by weight of material in which zinc oxide and methacrylic acid are combined in the proportions required by basic zinc methacrylate, the product having a pH of from 6.0 to 6.25 in a water slurry, and displaying in thermogravimetric analysis a 5% weight loss between 120° and 140° C, an additional 10% loss between 180° and 240° C, and an additional 35% loss between 320° and 430° C, and displaying in differential thermal analysis a pronounced endothermic change peaking at 180° C followed by a smaller endothermic change at 235° C, and (B) thereafter uniformly mixing from 10 to 60 parts by weight of the resulting preformed adjuvant with 100 parts by weight of a free-radical crosslinkable resilient elastomer and a free-radical curing agent for the elastomer in amount sufficient to cure the elastomer.

3. A method of making a molded article comprising preparing a molding composition as in claim **1**, and subsequently molding the resulting composition in a desired shape while heating to curing temperature.

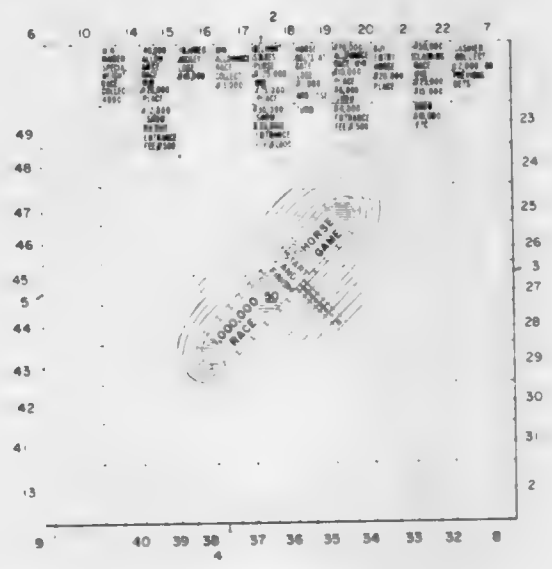
4. A method as in claim **3** in which the said molded article is a solid golf ball, and the said elastomer is cis-polybutadiene having a cis-1,4 content of at least 50%.

4,082,289

HORSERACING GAME

Ronald Merritt, Staten Island, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jun. 14, 1976, Ser. No. 695,747
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—246 **1 Claim**



1. A horseracing game, comprising

a square gameboard having four edges, four corners, four corner squares marked at the four corners thereof and **36** boxes marked along the edges, nine boxes being marked along each edge between the corner squares thereof and a race track at the center of the gameboard, said race track having a plurality of lanes having different numbers of spaces and the boxes on the gameboard containing indicia controlling the game played on the race track;

a plurality of markers shaped as miniature horses each being of a different color;

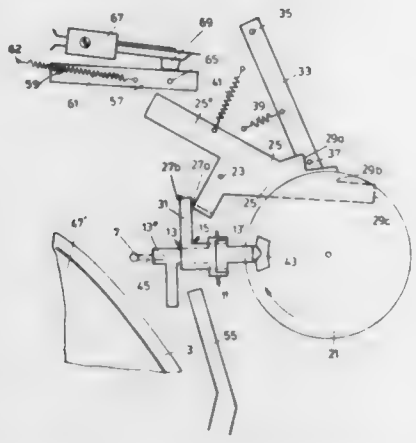
a plurality of chips of the same number and colors as the markers for keeping the places of the players in the boxes on the gameboard;
a plurality of post position cards for indicating different post positions to be assumed by players selecting them;
a plurality of dice of the same number and colors as the markers for determining the progress of the players' horses around the race track;
a pair of throwing dice for determining the movement of the players around the boxes of the gameboard;
a plurality of odds chips;
play money; and
a dice cup.

4,082,290

AUTOMATIC RECORD PLAYER MECHANISM FOR TURNTABLE SPEED AND PICK-UP ARM POSITION ADJUSTMENT

Georg Cukrowski, Berlin, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 14, 1976, Ser. No. 686,474
Claims priority, application Germany, May 16, 1975, 2521869
Int. Cl.[2] G11B *17/06, 25/04*
U.S. Cl. 274—9 A **3 Claims**



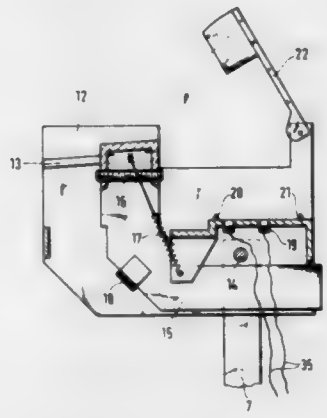
1. An automatic record player mechanism comprising:
a frame,
a shift member mounted to the frame for motion with respect to a vertical axis, and having at least one pick-up arm adjusting surface, a first arm, a second arm having stepped surfaces for defining different pick-up arm lowering positions, and a plurality of vertical adjoining lever steps,
means for moving said shift member into one of a plurality of adjusting positions in response to sensing a diameter of a record, at least two different adjusting positions corresponding to different pick-up arm lowering positions, said means comprising a sensing pin arranged for a vertical movement in response to sensing a record diameter, and a transmission lever assembly comprising a lever and a rider mounted to said frame for coaxial pivotal motion about a horizontal axis fixed with respect to said frame, said transmission lever having an extending arm disposed to engage said sensing pin so as to cause pivoting of said lever assembly responsive to vertical motion of said pin; said rider having an actuating arm extending over said transmission lever arm, and being arranged to be moved by movement of said extending arm from a standby position to a pick-up arm selecting position for engaging a selected vertical adjoining step in response to sensing of record diameter by the sensing pin, said rider arm remaining engaged by said step after the transmission lever has returned to a standby position,
a pick-up arm positioning member,
means for bringing said pick-up arm postioning member into engagement with a pick-up arm adjusting surface when said shift member is in an adjusting position so as to define a pick-up arm lowering position,
a single-arm dead-center lever pivotally mounted to the frame, having a free end arranged to be engageable with said first arm in a position to one side of dead center while said shift lever is in a first of said adjusting positions, and movable to a position to the other side of dead center in response to movement of said shift lever from said first to a second of said adjusting positions,
an over-center spring connected to said dead-center lever to urge the lever away from dead center, and
means for setting a turntable speed responsive directly to said dead-center lever position.

4,082,291

PICK-UP ARM ASSEMBLIES FOR RECORD PLAYERS

Gerhart Metzler, Offenburg; Peter Rother, Lahr, and Hans Sukopp, Orsenhausen, all of Germany, assignors to Geratewerk Lahr GmbH, Lahr, Germany

Filed Oct. 7, 1976, Ser. No. 730,582
Claims priority, application Germany, Oct. 8, 1975, 2545159
Int. Cl.[2] G11B *3/10*
U.S. Cl. 274—23 R **14 Claims**



1. A pick-up arm assembly for a record player, said assembly comprising:
a pick-up arm comprising a pick-up arm tube, a sound pick-up mounting means disposed at one end of said tube, and an insert fitting means disposed at the other end of said tube;
supporting means for supporting said pick-up arm including means for removably mounting said insert fitting means, said supporting means further comprising horizontal pivot means defining a horizontal axis and vertical pivot means defining a vertical axis;
a pick-up arm counterweight supported by said supporting means and, said supporting means including means for shiftably mounting said counterweight in a plane substantially parallel with respect to said horizontal pivot means; and,
adjusting means provided on said insert fitting means for horizontally shifting said counterweight into a position wherein said pick-up arm can be balanced within said supporting means.

4,082,292

TONE ARM LIFT MECHANISM

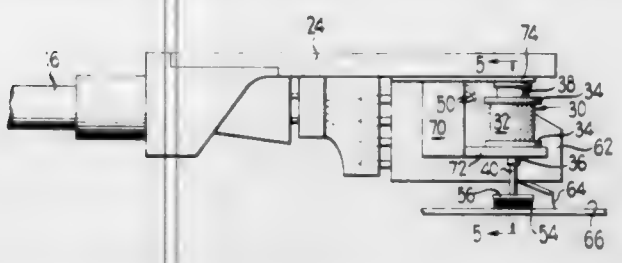
Donald K. Fletchic, Arlington Heights; Howard J. Morrison, Deerfield, both of Ill., and Ralph H. Baer, Manchester, N.H., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 4, 1976, Ser. No. 738,695
Int. Cl.[2] G11B *17/06*
U.S. Cl. 274—23 R **35 Claims**

1. A tone arm lift mechanism for a phonograph device having a turntable for supporting a record and a tone arm mounted for movement of one end over the record surface, comprising:
a selectively actuatable solenoid coil mounted on the tone arm including a solenoid armature movable with respect to the coil and oriented in position for movement gener-

ally perpendicular to the surface of a record disposed on the phonograph device;

resilient means mounted adjacent one end of said armature for engagement with the surface of said record; and



means for energizing said solenoid coil to move the resilient means into engagement with said record and lift the tone arm with respect to the record surface.

4,082,293

PHONOGRAPH RECORD PLAYER OR CHANGER

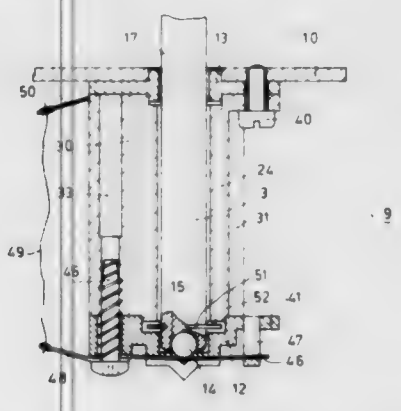
Jozef E. K. M. Schouwenaars, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1976, Ser. No. 715,139

Claims priority, application Netherlands, Aug. 29, 1975, 7510210

Int. Cl.² G11B *3/60*

U.S. Cl. 274—39 A **2 Claims**



1. A turntable drive and bearing mechanism for a phonograph record player having low wow and flutter, comprising a frame; a lower, thrust bearing mounted to the frame, and an upper sleeve bearing remote from said lower bearing and mounted to the frame; a turntable spindle having a longitudinal axis, a coaxial circular cylinder portion engaging said upper sleeve bearing, and a lower end engaging said thrust bearing; a turntable mounted on said spindle for rotation therewith about said axis, said upper bearing being between said thrust bearing and said turntable; and drive means for rotating said turntable about said axis;

wherein said drive means exerts a transverse force on the spindle; and said upper sleeve bearing has two contact regions, and surrounds said circular cylindrical portion with radial play such that bearing contact engagement with said cylindrical portion occurs at said two contact regions only, said upper bearing having a generally circular cylindrical bore, with said contact regions lying in a plane transverse to the spindle axis and extending inwardly toward the center of the bore at angularly separated locations about said spindle and so arranged that a resultant force of all transverse forces acting on the spindle has a radial angular direction between said two locations.

4,082,294

CLEANING AND STATIC-REMOVING DEVICE FOR GRAMOPHONE RECORDS

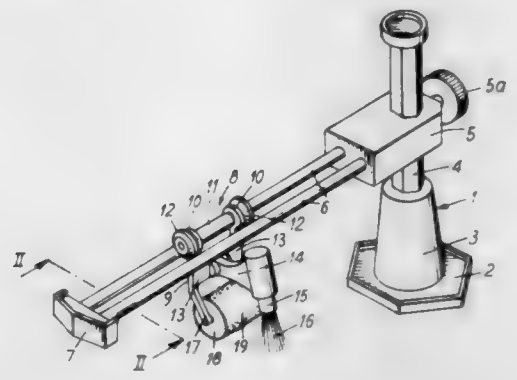
Mark Stanley Myers, London, and Richard George Bowler, Bengeo, both of England, assignors to Metrosound Audio Products Ltd., England

Filed Oct. 18, 1976, Ser. No. 733,534

Claims priority, application United Kingdom, Mar. 31, 1976, 12959/76

Int. Cl.² G11B *3/58*

U.S. Cl. 274—47 **3 Claims**



1. A device, for cleaning and removal of static electricity from a gramophone record when the record is on a record playing apparatus having a turntable rotatable with respect to a deck, comprising, in combination:

(i) a mounting post for standing or securing on the deck in a position radially beyond the edge of the turntable, said mounting post including a substantially vertical elongated stem having a longitudinal axis,

(ii) a carrier having an aperture receiving said stem, the carrier being slidable along the stem,

(iii) a pair of substantially horizontal guide rods carried by and projecting from the carrier in parallel spaced relationship normal to the axis of the stem,

(iv) a slider having a body portion which includes two upward extensions which are apertured to receive a rod on either end of which slider bearings are mounted,

(v) a cleaning element for the record grooves and an element for removal of static electricity from the record both, carried on said slider.

4,082,295

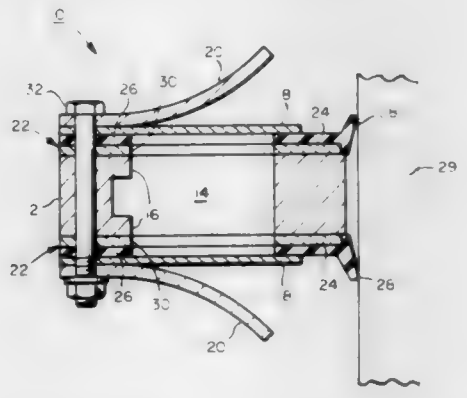
REED VALVE WITH CRANKSHAFT SEAL AND METHOD

Dean R. Bainard, Bethel Township, County of York, S.C., assignor to Garlock Inc., Rochester, N.Y.

Filed May 25, 1977, Ser. No. 800,196

Int. Cl.² F02B *75/20*

U.S. Cl. 277—1 **17 Claims**



14. A method for sealing adjacent crankcase chambers of a multi-cylinder two-stroke engine comprising: providing a reed valve, including a reed block with ports controlled by reeds, between said chambers and around a crankshaft and sealing the

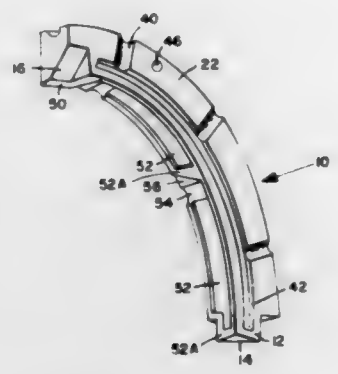
crankshaft passing through said reed block by securing a metal insert, having an elastomeric shaft sealing lip bonded to the I.D. thereof, to said reed block between said block and reeds, and positioning said sealing lip in sealing contact with the crank-shaft.

4,082,296

SEAL FOR SEALING BETWEEN A ROTATING MEMBER AND A HOUSING

Philip C. Stein, Stein Seal Company 20th St. & Indiana Ave., Philadelphia, Pa. 19132

Filed May 26, 1976, Ser. No. 690,069
Int. Cl.[2] F16J *15/16*
U.S. Cl. 277—3 **12 Claims**



1. In a rubbing seal for sealing between a rotatable member and a housing containing a fluid and having (1) a seal ring mounted for movement towards and away from the rotatable member and having a sealing face with a circumferential sealing portion sealing against the rotatable member, (2) means to bias said sealing face of the seal ring towards the rotatable member, and (3) means to limit the rotation of the seal, the improvement comprising:

a plurality of circumferential sections of the sealing face upstream of the circumferential sealing portion confronting the rotatable member, the leading portion of each of said sections with respect to the direction of relative rotation being spaced closer to the rotatable member than is the remaining portion of the section and the regions in the sealing face immediately preceding and following each section being in unrestricted communication with the interior of the housing and further removed from the rotatable member than the remaining portion of the section, to produce a negative hydrodynamic lift urging the seal ring towards the rotatable member due to the fluid flow induced by the rotation of the rotatable member.

4,082,297

BYPASS FLUSH SYSTEM EMPLOYING THERMAL BUSHING

William V. Adams, Pavilion Township, Kalamazoo County, Mich., assignor to Durametallic Corporation, Kalamazoo, Mich.

Filed Feb. 9, 1977, Ser. No. 767,169
Int. Cl.[2] F16J *15/16*
U.S. Cl. 277—15 **9 Claims**

1. In combination, comprising:

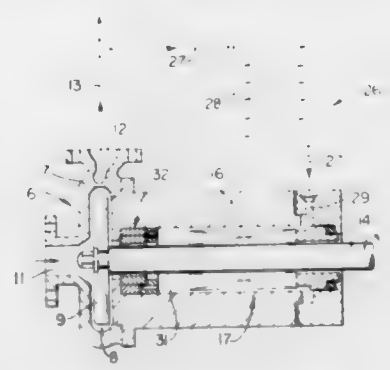
a fluid handling apparatus having housing means defining therein a fluid receiving chamber, rotatable shaft means projecting into said chamber, and fluid contacting means movably disposed within said chamber and mounted on said shaft means for rotation therewith;

a sleevelike housing structure disposed in surrounding relationship to said shaft means and fixedly connected to said housing means;

a mechanical seal assembly coacting between said shaft means and said housing structure, said mechanical seal assembly including a first annular seal member surrounding and nonrotatably connected to said shaft means and a second annular seal member surrounding said shaft means and nonrotatably mounted relative to said housing structure, said first and second annular seal members having opposed seal faces maintained in slidable sealing engagement with one another, said housing structure and said shaft means defining therebetween a seal cavity which is located between said mechanical seal assembly and said chamber; and

environmental control means for said mechanical seal assembly, said control means comprising a liquid type bypass flush system having bypass conduit means connected between the discharge of said fluid handling apparatus and said seal cavity for permitting some of the liquid discharged from said fluid handling apparatus to be supplied into said seal cavity, the improvement wherein said bypass flush system includes,

air-cooled heat exchanger means associated with said bypass



conduit means for cooling the liquid which flows therethrough.

a flow control device for permitting substantially continuous flow through said bypass conduit means into said seal cavity, said flow control device being located between said seal cavity and said chamber for restricting flow of liquid from said seal cavity into said chamber,

said flow control device comprising a thermal bushing assembly disposed in surrounding relationship to said shaft means and radially spaced therefrom to define a narrow annular flow control passage therebetween, said thermal bushing assembly comprising an inner annular sleeve of carbon material having an annular metal retainer shrunk therearound, and

holding means coacting with said thermal bushing assembly for holding same nonrotatable with respect to said housing structure.

4,082,298

INFLATABLE PACKER AND VALVE MECHANISM THEREFOR

Lawrence Sanford, 4047 Hollister, Houston, Tex. 77055

Filed Nov. 19, 1975, Ser. No. 633,404
Int. Cl.[2] F16J *15/46*
U.S. Cl. 277—34.3 **14 Claims**

1. An inflatable packer comprising:

a. a first tubular member having generally radial port means therethrough;

b. a second tubular member slidably telescopically mounted on said first tubular member, a first annular space being formed between said tubular members and in communication with said port means;

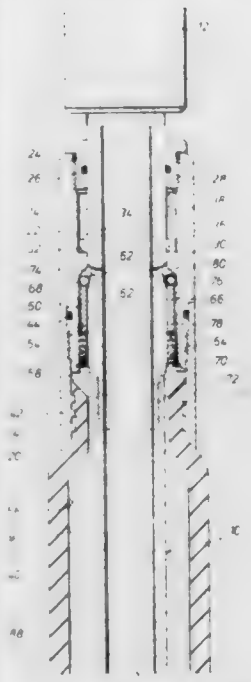
c. an inflatable packer element carried by said second tubular member, said first tubular member extending through said packer element, a second annular space being formed between said first tubular member and said packer element;

d. a valve means disposed in said first annular space, said valve means comprising

i. annular seal means operative upon the presence of a pressure differential decreasing across said seal means toward said second annular space to permit fluid flow

through said first annular space from said port means to said second annular space and inflate said packer element, and further operative upon the presence of a pressure differential decreasing across said seal means toward said port means to form a seal between said port means and said second annular space,

ii. and locking means operatively associated with said seal means, said locking means being operative upon the presence of said pressure differential decreasing across said seal means toward said port means to lock said first tubular member against movement with respect to said second tubular member in a first longitudinal direction, and releasable upon the application of a force to said first tubular member in said first longitudinal direction to permit relative longitudinal movement of said first



tubular member in said first direction to thereby break said seal and deflate said packer element;

e. wherein each of said tubular members has a respective annular shoulder within said first annular space, said shoulders facing at least partially axially and in generally opposite directions, and said tubular members having a first relative position in which said shoulders are generally opposed; wherein said locking means comprises an annular expanding spring disposed axially of said seal means; and wherein said seal means is axially movable toward said spring upon the presence of said pressure differential decreasing across said seal means toward said port means when said tubular members are in said first position to force said spring between said shoulders and into engagement with each of said shoulders.

4,082,299

SEALING MEANS AND ASSEMBLY THEREFORE

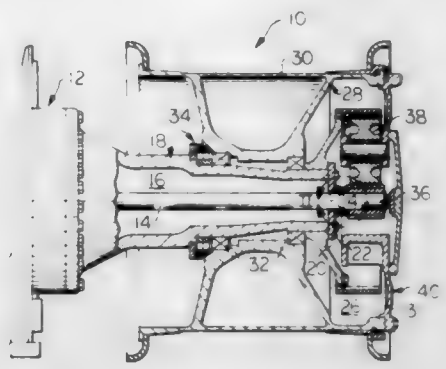
William Porter Sly, and Reginald Karl Ringel, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 3, 1975, Ser. No. 627,981
Int. Cl.² F16J *15/34*
U.S. Cl. 277—82 **9 Claims**

1. A differential-final drive arrangement for a vehicle, said arrangement comprising an axle extending from a differential to a first housing and out a hole therein removed from said differential; first abutment means on said first housing; a final drive within a second housing having gear means driven by spline means on said axle, said second housing being rotatably supported by said first housing; second abutment means on said gear means; and a wheel integral with said second housing and rotated by said gear means, a slidable seal between a first compartment defined by said differential and said first housing and a second compartment defined by said second housing, said slidable seal comprising:

(1) a sleeve thrust bearing about said axle within said second housing having a first end thereof in slidable sealing abutting relation with a respective one of said first abutment means and said second abutment means and a second end extending towards a respective other of said first abutment means and sand second abutment means;

(2) a sleeve thrust member about said axle within said second housing having a first end abutting said respective other of said first abutment means and said second abutment means and a second end fitting within said second end of said bearing;



(3) resilient toroidal sealing means compressed between said axle and said bearing, said second end of said member extending within said second end of said bearing sufficiently to contact said toroidal sealing means on sufficient compression of said spring means; and

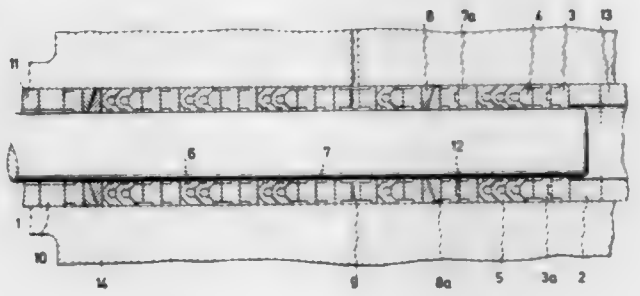
(4) compression means biasing said bearing axially away from said member, said slidable seal maintaining a first oil level in said differential, said first oil level being lower than a second oil level maintained by said slidable seal in said second housing.

4,082,300

PACKING FOR STUFFING BOXES OF PISTON PUMPS WITH METAL PLUNGER

Alfred Harbeck, Kriftel, Taunus; Dieter Rebhan, Hofheim, Taunus, and Richard Walburg, Schwalbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 21, 1976, Ser. No. 734,608
Claims priority, application Germany, Oct. 23, 1975, 2547415
Int. Cl.² F16J *15/06*
U.S. Cl. 277—123 **4 Claims**



1. A packing for stuffing boxes of piston pumps including a metal plunger and pump cylinder, receiving said plunger, in a pump case, said packing being mounted in said pump case for receiving said plunger and including a stationary mounting ring, detention rings adjacent said mounting ring, said detention rings having inner and outer circumferential surfaces each having recesses formed therein, supporting rings having plane and double-conical bearing surfaces, with the plane surface of one of said supporting rings engaging one of said mounting rings, V-shaped packing rings having inner and outer circumferential surfaces and a circumferential recess formed on their inner surfaces, with one of said packing rings receiving the double-conical bearing surface of one of said supporting rings,

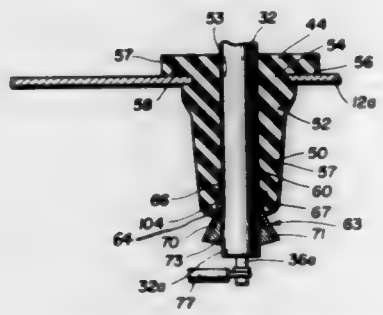
double-conical rings, a lubricating ring, and a distance ring assembled in said pump case to form a seal against said plunger.

4,082,301

MOUNTING GROMMET FOR AN ELECTRIC HEATING ELEMENT USED IN APPLIANCES AND THE LIKE

Fred G. Salinger, Baltimore, Md., assignor to Electro-Therm, Inc., Laurel, Md.

Division of Ser. No. 530,321, Dec. 6, 1974, Pat. No. 3,997,760.
This application Jul. 6, 1976, Ser. No. 702,815
Int. Cl.[2] F16J *15/06*
U.S. Cl. 277—212 F **3 Claims**



1. A mounting grommet for mounting a rod element through an aperture in a bulkhead of predetermined thickness, comprising:

a resilient body portion of a size to be forcibly urged through the aperture;

a neck portion formed integral with said resilient body portion and having an axial extent greater than the predetermined thickness of the bulkhead to receive the bulkhead, said neck portion being of a width to substantially fill the aperture formed in the bulkhead;

a head portion formed integral with said neck portion to overlie the periphery of the aperture within the bulkhead of the side opposite said resilient body portion, a passage being formed axially through said resilient body portion, said neck portion and said head portion to receive the rod element therethrough; and

seal means including a rigid annular member having a first portion inserted into said passage in said resilient body portion and a second portion generally conical in configuration extending axially of said body portion and divergent outwardly therefrom to form an annular trough about the rod element for receiving sealing adhesive therein.

4,082,302

SKI POLE

Alfred Albrecht, Riedholz, Switzerland, assignor to BFG Baumgartner Freres SA, Grenchen, Switzerland

Filed Oct. 1, 1976, Ser. No. 728,536
Claims priority, application Switzerland, Oct. 7, 1975, 12987/75
Int. Cl.[2] A63C *11/22*
U.S. Cl. 280—11.37 H **2 Claims**

1. A ski pole comprising a pole having a handle on the upper end thereof, the end of said handle which is opposite the end connected to said pole being free, a chronometer enclosed within a casing including a front wall having an opening for exposing the face of the chronometer and a back wall that is engagable with the free end of said handle, and bayonet locking means releasably securing said chronometer casing back wall to the free end of said handle and including a bayonet fitting protruding longitudinally from said handle and a cooperative bayonet fitting recessed in the back wall of said chronometer casing, whereby said casing is devoid of protrusions when the chronometer is removed from said handle.

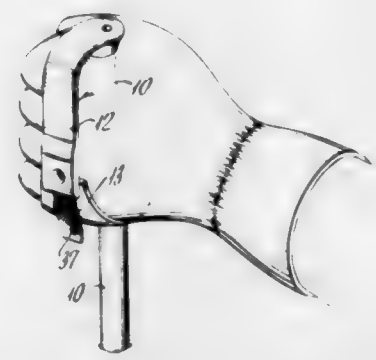


4,082,303

RELEASABLE-STRAP SKI-POLE GRIP

Robert J. Finnegan, Williston, Vt., assignor to Barreca Products Co., Subsidiary of Shelburne Industries, Inc., Shelburne, Vt.

Filed Feb. 2, 1977, Ser. No. 764,848
Int. Cl.[2] A63C *11/22*
U.S. Cl. 280—11.37 H **9 Claims**



1. A releasable-strap ski-pole grip, comprising a single injection-molded piece of flexibly yieldable material having an upstanding hand-grip body portion and upper and lower strap portions integral with said body portion, said body portion having an elongate bore for assembly to the upper end of a ski pole, said strap portions respectively extending in substantially the same radial offsetting direction from the upper and lower ends of said body portion, and said strap portions also extending longitudinally toward each other and to discrete adjacent ends, said strap portions having inner and outer relatively broad faces which are radially spaced from each other and with respect to the bore axis; and hook-and-loop releasably engageable tape-fastener means including a first tape element secured to the inner face of one of said strap portions near the longitudinally projecting end thereof, and a second tape element secured to the outer face of the other strap portion near the longitudinally projecting end thereof.

4,082,304

SKI-SLED

Carl M. Kendrena, 701 W. Windsor Ave., Phoenix, Ariz. 85007

Filed Jan. 24, 1977, Ser. No. 761,530
Int. Cl.[2] B62B *13/10*
U.S. Cl. 280—12 KL **5 Claims**

1. A ski-sled mechanism comprising:

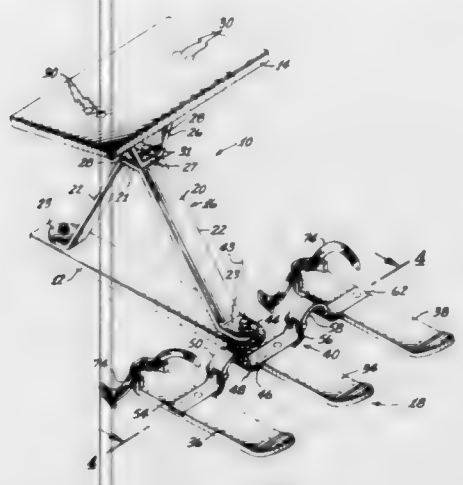
a. an elongated ski-like main runner;

b. a seat positioned above said main runner;

c. support means extending between said main runner and said seat for interconnection thereof;

d. a ski-like guide runner having its rearmost end pivotally connected to the forward end of said main runner for pivotal movement about a pivot axis which is perpendicular to said main runner;

e. a pair of ski-like outrigger runners each laterally spaced from a different opposite side of said guide runner and parallel therewith; and



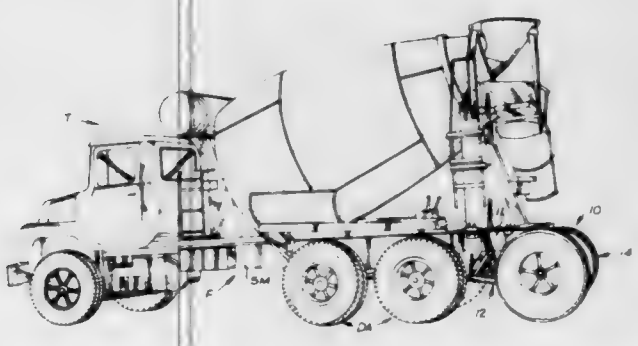
f. hinge means for rigidly interconnecting said pair of outrigger runners with said guide runner for pivotal movement therewith and for hingedly interconnecting said outrigger runners and said guide runner to allow independent movements of said outrigger runners about the longitudinal axis of said guide runner.

4,082,305

AUXILIARY AXLE ASSEMBLY

Blaine H. Allison, Charles Dr., and Richard F. Allison, Oak Harbor Cir., both of Gainesville, Ga. 30501

Filed Jul. 14, 1976, Ser. No. 705,146
Int. Cl.[2] B60G *17/00*
U.S. Cl. 280—81 R **16 Claims**



1. An auxiliary axle assembly for a wheeled vehicle having a vehicle frame and movable along its longitudinal axis comprising:

an auxiliary support frame assembly for connection to the vehicle frame;

a pair of spaced apart torque arms pivotally mounted on said support frame assembly about a common pivot axis generally normal to the longitudinal axis of the vehicle, each of said torque arms including an extending end movable in a generally vertical plane as said torque arms pivot about said common pivot axis, each of said torque arms, including a threaded stud at the extending end thereof,

a wheel and axle assembly including an axle, and a pair of wheel and tire assemblies rotatably mounted at opposite ends of said axle;

a pair of axle seat assemblies, one of said axle seat assemblies mounted on each of said torque arms for movement therewith as said torque arms pivot about said common axis, said wheel and axle assembly mounted by said pair of axle seat assemblies so that said axle is generally perpendicular to the longitudinal axis of the vehicle, each of said axle seat assemblies including a support tube slidably receivable on one of said pair of torque arms for axial movement along said torque arm and an alignment connector operatively associated with said support tube;

positioning means for selectively rotationally and resiliently positioning said torque arms about said common pivot axis; and,

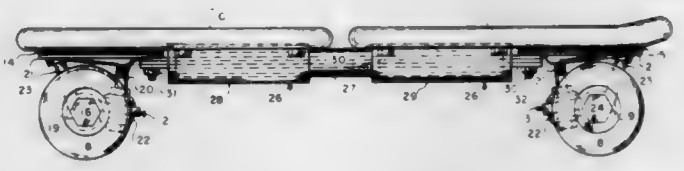
alignment adjustment means positively interconnecting each of said axle seat assemblies with said torque arm carrying said axle seat assembly for selectively positioning said axle seat assembly axially along said torque arm and longitudinally of the vehicle to adjust the orientation of said axle with respect to the longitudinal axis of the vehicle, said alignment adjustment means including an internally threaded member threadedly engaging one of said threaded studs and operatively connected to said support tube of said axle seat assembly associated with said threaded stud so that said axle seat assembly is moved along with and held by said internally threaded member as said internally threaded member is axially moved along said threaded stud when said threaded member is rotated.

4,082,306

TORSION BAR SKATEBOARD

Gregg Sheldon, 330 Sunnyside Rd., Temple Terrace, Fla. 33617

Filed Dec. 9, 1976, Ser. No. 749,022
Int. Cl.[2] A63C *1/28*
U.S. Cl. 280—87.04 A **7 Claims**



1. An improved skateboard comprising:

a. a platform means having a forward portion and a separate, spaced rear portion suitably constructed for operably mounting of,

b. a front wheel assembly secured to said forward portion,

c. a rear wheel assembly spaced from said front wheel assembly secured to said rear portion, and

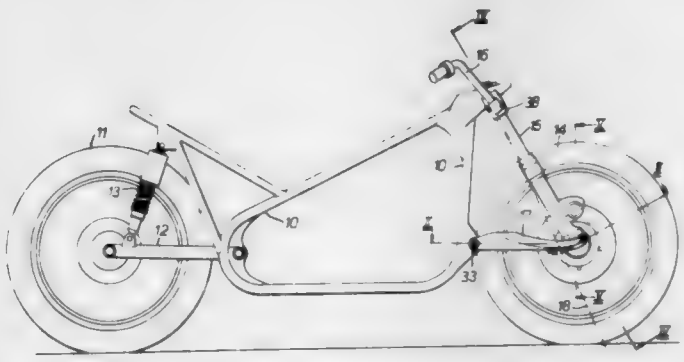
d. an elongated torsion bar mounted underneath said platform means secured to said front wheel assembly, projecting underneath said platform means and secured to said rear wheel assembly said torsion bar twisting throughout its length thereby providing for relatively different tilting movements between said front wheel assembly and said rear wheel assembly.

4,082,307

MOTORCYCLE SUSPENSION

Robert John Tait, 15 Manor Farm Rd., Tredington, England

Filed Dec. 8, 1975, Ser. No. 638,328
Int. Cl.[2] B62K *25/06*
U.S. Cl. 280—277 **6 Claims**



1. A suspension and steering assembly for the steered wheel of a motorcycle, comprising a raked telescopic fork assembly,

a pivotal connection between one end of the fork assembly and a frame of the motorcycle permitting relative rotational movement between the fork assembly and the frame about an axis normal to the plane of the frame and about an axis contained in that plane, handlebars rigidly attached to the fork assembly, a non-rotary wheel hub member secured to the other end of the fork assembly, a wheel rotationally mounted on the wheel hub member, a radius arm assembly pivoted to the frame below the pivotal connection between the fork assembly and the frame, and pivotal connection between the radius arm assembly and the hub member at a location rearwardly spaced from the axis of rotation of the wheel, the pivotal connection between the fork assembly and the frame and the pivotal connection between the radius arm assembly and the hub member together defining a steering axis which passes through said pivotal connections and passes rearwardly of the axis of rotation of the wheel.

4,082,308

BICYCLE-TRAINING APPARATUS

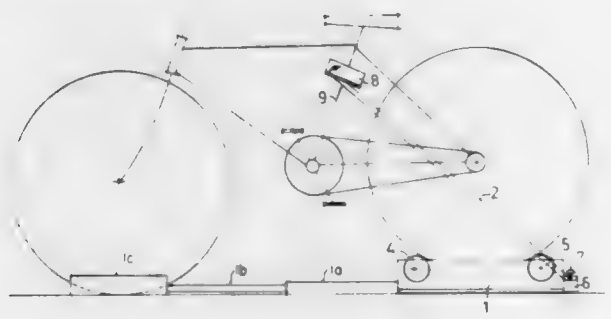
Josef H. Hug, 2 Ziefeldstrasse, Olten, Switzerland (CH-4600)

Filed Jan. 3, 1977, Ser. No. 756,440

Claims priority, application Switzerland, Jan. 19, 1976, 684/76

Int. Cl.[2] B62H *1/04*; A63B *69/16*

U.S. Cl. 280—296 **1 Claim**



1. A bicycle-training attachment for a bicycle comprising:

a disassemblable frame having a base which can be driven by the rear wheel of the bicycle, said base having a base part, side walls and two releasable support arms extending from said base part which is attached by clamping to the frame of the bicycle;

each support arm comprising a horizontal support arm which extends horizontally and protrudes perpendicularly from the base part, an oblique support arm extending obliquely upwards situated at the free end of the respective horizontal support arm, and clamping means between the oblique support arms so that the frame part of the bicycle can be clamped;

a square-sectioned socket for mounting of the horizontal support arms on the base part laterally thereof so that the horizontal support arms are inserted into the socket and said clamping means, including clamping screws for restraining of the horizontal support arms in said socket;

said base being further provided with two moveable roller elements spaced apart from each other and being fastened releasably to said base part and the frame of said bicycle;

said two rotary rollers being arranged at an adjustable spacing from one another to support the rear wheel of the bicycle;

the side walls of said base part comprising an upwardly opening U-shaped support having a plurality of bores between which said rollers are mounted at different bore locations for rotary movement imparted by driving the rear wheel of the bicycle;

an adjustable guide tube which is arranged on the base part, said guide tube being adjustable in length in telescopic fashion and carrying, at its end, a guide member for the front wheel of the bicycle.

4,082,309

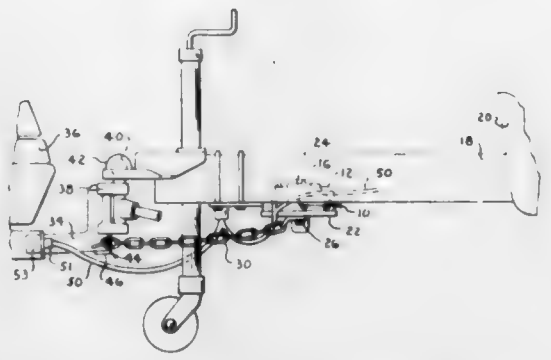
ANTI-SWAY APPARATUS FOR TRAILERS

James E. Fox, 721 N. Wells, Gary, Ind. 46403

Filed Feb. 4, 1977, Ser. No. 765,786

Int. Cl.[2] B60D *7/00*

U.S. Cl. 280—446 B **5 Claims**



1. An anti-sway apparatus for a towing and trailer vehicle combination comprising the combination of:

means on said trailer vehicle connecting said towing vehicle for braking the sway of said trailer vehicle;

means in a side of said trailer vehicle for sensing change in air pressure against said side of said trailer vehicle;

electric circuit means energized by said means in said side of said trailer vehicle, said energized electric circuit means actuating said means on said trailer vehicle to brake the sway of said trailer vehicle.

4,082,310

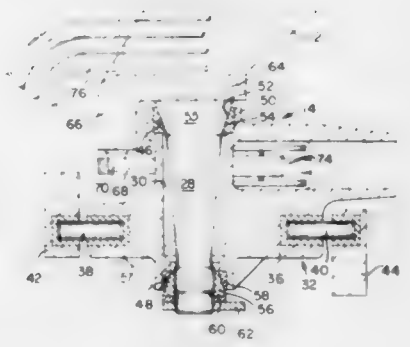
LOW PROFILE VEHICLE HITCH

Dale Wyatt Hawk, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Nov. 26, 1976, Ser. No. 745,084

Int. Cl.[2] B60D *1/00*

U.S. Cl. 280—492 **6 Claims**



1. An apparatus for connecting tractor and trailer units or similar articulated vehicles which enables limited lateral tilting and horizontal angling of the units relative to each other about horizontal and vertical axes, said apparatus comprising

means forming an elongate horizontal pivot member mounted in spaced bearing members for lateral tilting movement, said spaced bearing members being supported on a rear frame portion of said tractor unit,

said bearing members being arranged to provide a horizontal pivot axis constituting an axis of rotation for said pivot member forming means which extends at a low level relative to said rear frame portion of said tractor unit,

said pivot member forming means having a socket formation extending in a vertical plane through the axis of rotation of said means,

a vertical pivot pin secured in depending fixed relation on a member on said trailer unit which extends forwardly of said trailer unit and which is positioned in overlying relation to said rear frame portion of said tractor unit,

said vertically disposed pivot pin having a base portion of

relatively short axial extent secured in depending relation on said forward portion of said trailer unit and a shaft forming portion of substantially greater axial extent seated in rotatable relation in said socket formation, and

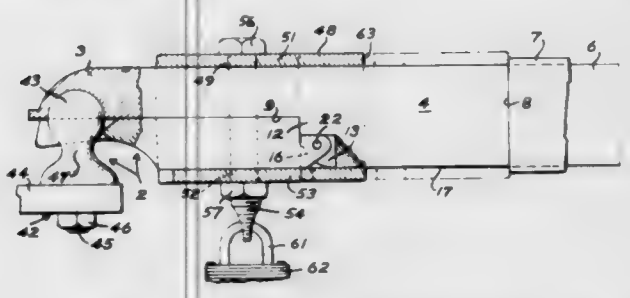
said pivot pin and said socket formation being arranged so as to support said pivot pin and to provide for rotation of said pivot pin on a vertical pivot axis.

4,082,311

TRAILER HITCH ASSEMBLY

Willdoune Hamman, 2305 Bambi La., San Jose, Calif. 95116

Filed Mar. 28, 1977, Ser. No. 781,726
Int. Cl.² B60D *1/06*
U.S. Cl. 280—507 **6 Claims**



1. A trailer hitch assembly for a vehicle adapted to be towed by a towing vehicle or tractor equipped with a ball coupling unit, the combination comprising:

(a) a bar member adapted to be attached to the tongue of a vehicle to be towed and constituting an extension thereof, said bar member including a central body portion and a forwardly projecting reduced-in-thickness connector plate portion including a semi-spherical recess therein;

(b) a lock plate pivotally mounted on said bar member and including a bifurcated forward end portion proportioned to cooperate with the ball unit of a coupling assembly to lock the trailer hitch assembly to said ball unit;

(c) a sleeve slidably disposed on said bar member and movable between a forward locking position and a rear unlocking position in which said lock plate is free to pivot in relation to said bar member, thereby enabling engagement of said trailer hitch assembly on said trailer hitch ball unit; and

(d) means interengageable with said sleeve, forwardly projecting connector plate portion and lock plate to detachably lock the trailer hitch assembly in a closed condition.

4,082,312

CROSS COUNTRY SKI BINDING

Lennart B. Johnson, Federal Hill Rd., Milford, N.H. 03055

Filed Sep. 21, 1976, Ser. No. 725,173
Int. Cl.² A63C *9/10*
U.S. Cl. 280—615 **3 Claims**



1. A cross country ski binding comprising

a toe unit adapted to be attached to the toe of a ski boot to extend longitudinally forwardly thereof and

a ski unit adapted to be attached to the upper surface of a ski, said toe unit and said ski unit carrying mating stop surfaces cooperating by surface abutment to prevent any longitudinal and transverse relative movement when one of said stop surfaces is moved longitudinally relative to the other and said surfaces are locked together, and

said toe unit and said ski unit carrying engageably cooperating locking means a portion of said locking means being movable generally perpendicularly to the longitudinal axis of said ski to lock together said stop surfaces, the rearward portion of said ski unit cooperating with the forward portion of said toe unit to transversely center said ski with forward movement of said toe unit.

4,082,313

SAFETY SKI BINDING

Jean Joseph Alfred Beyl, Boulevard Victor-Hugo, Nevers, Niévre, France

Filed Apr. 5, 1976, Ser. No. 673,720
Claims priority, application France, Apr. 11, 1975, 75 11336
Int. Cl.² A63C *9/08*
U.S. Cl. 280—618 **4 Claims**



1. In a safety ski binding having an elongated ski boot support plate rotatably mounted on a pivot adapted to be secured to the ski, and having binding means at the front and rear ends of said plate for holding the boot thereon, the combination of a fixed abutment mounted on said ski and adapted to engageably retain one end of said plate, and resilient retaining means mounted on said ski registering with the opposite end of said plate for maintaining said plate in its normal operative position while permitting movement of the plate away from the ski, said resilient retaining means comprising

a pintle mounted perpendicularly on said ski adjacent to but spaced from the opposite end of said plate,

a locking arm tiltably mounted on the upper end said pintle and at one end normally engaging the said opposite end of said plate for retaining said plate on said ski,

means forming a cam surface mounted on said ski adjacent the other end of said locking arm and

a spring-loaded piston projecting from the other end of said locking arm and engaging said cam surface,

said cam surface having two different contours being shaped to impart to said plate through the one end of said locking arm release forces of different values against both lateral rotational movement and upward pivotal movement of said locking arm.

4,082,314

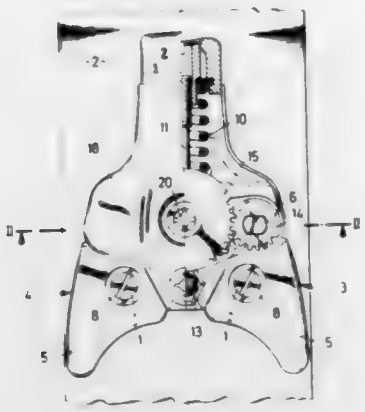
FRONT JAW FOR SAFETY SKI BINDINGS

Gerhard Sedlmair, Farchant, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

Filed Mar. 18, 1977, Ser. No. 778,970
Claims priority, application Germany, Mar. 19, 1976, 2611743
Int. Cl.² A63C *9/08*
U.S. Cl. 280—625 **2 Claims**

1. A front jaw for a safety ski binding, said jaw comprising two levers which are pivotable about respective vertical pivots and have free ends in the form of holders for retaining the sole of a ski boot against outwardly and upwardly directed movement, and spring means for influencing said levers to a normal position, each said pivot being itself rotatably but axially immovably mounted on a jaw portion that is fixed with respect to the ski and being provided with a screw-thread engaging in a tapped hole of the respective lever, characterised in that identi-

cal pinions are secured to the upper ends of the pivots, said pinions being in mesh with an intermediate gear which is



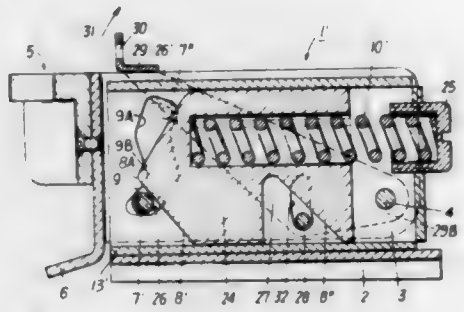
mounted on a jaw portion that is fixed with respect to the ski and which is rotatable by manual means.

4,082,315

SAFETY SKI BINDING

Erwin Krob, Vienna; Erwin Weigl, Brunn am Gebirge, and Josef Svoboda, Schwechat, all of Austria, assignors to Gertsch AG, Zug, Switzerland

Division of Ser. No. 591,032, Jun. 27, 1975, Pat. No. 4,025,087. This application Feb. 22, 1977, Ser. No. 770,452
Claims priority, application Austria, Jul. 26, 1974, 6181/74
Int. Cl.[2] A63C *9/08*
U.S. Cl. 280—631 **6 Claims**



1. A safety ski binding, comprising:

a base;

a sole holder pivotally connected to said base and movable about a pivot axis between a position of use and a release position, said pivot axis extending transversely to the longitudinal direction of a ski;

adjustable abutment means mounted on said base;

a holding element fixedly mounted on said base;

a slide member reciprocally slidably movably mounted on said base and having inclined surface means thereon, said slide member being movable toward and away from said holding element;

resilient means consisting of a single spring engaging and extending between said slide member and said adjustable abutment means for urging said slide member toward the holding element on said base;

means defining a threshold part; and
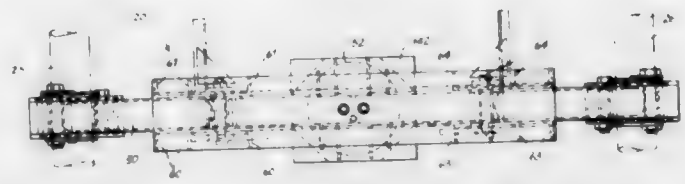
transversely extending locking pin means received in longitudinally extending slot means in said sole holder and positioned to engage said holding element and said inclined surface means at a location spaced from said threshold part when said sole holder is in said position of use, a movement of said sole holding part toward said release position effecting a movement of said locking pin means past said threshold part against the urging of said single spring resisting the separation movement between said holding element and said inclined surface means on said slide member.

4,082,316

MULTIPLE AXLE SUSPENSION WITH LOAD EQUALIZER BEAM

John E. Raidel, Rte. 9, Box 400-M, Springfield, Mo. 65804

Division of Ser. No. 555,393, Mar. 5, 1975. This application May 17, 1976, Ser. No. 687,228
Int. Cl.[2] B60G *5/04*
U.S. Cl. 280—681 **15 Claims**



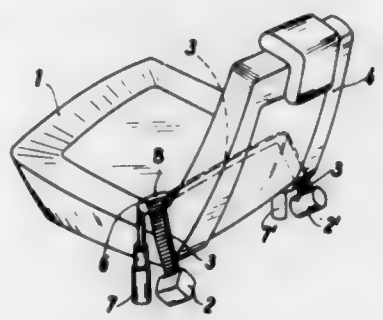
1. A suspension assembly for a vehicle comprising a first arm, means for pivotally mounting one end of said first arm from the vehicle chassis, means for mounting a vehicle axle at the other end of said first arm, a second arm, means for pivotally mounting one end of said second arm from the vehicle chassis, means for mounting another vehicle axle at the other end of said second arm, a beam extending over said first and second arms, the ends of the beam being attached to the arms at an intermediate location between the chassis mount points and the axles, one end of the beam being attached for movement with one of said arms, and the other end of the beam being attached for movement with the other of said arms, and resilient means mounted above the beam and between the beam and vehicle chassis and between the beam and said arms and attaching the beam to the vehicle chassis and the arms to resiliently support the axle load.

4,082,317

SAFETY BELT FOR MOTOR VEHICLES

Per-Olof Weman, Heverlee, Belgium, assignor to Sigmatex AG Basel, Basel, Switzerland

Division of Ser. No. 685,954, May 13, 1976, which is a division of Ser. No. 550,098, Feb. 14, 1975, Pat. No. 3,977,701, which is a division of Ser. No. 316,953, Dec. 20, 1972, Pat. No. 3,887,212. This application May 27, 1977, Ser. No. 801,445
Int. Cl.[2] B60R *21/10*
U.S. Cl. 280—745 **1 Claim**



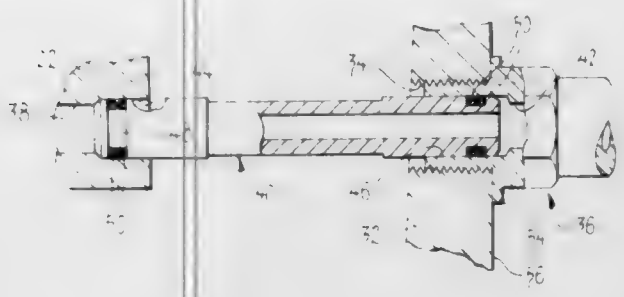
1. A safety belt apparatus for a motor vehicle comprising: a hip belt adapted to be fastened across the hips of an occupant positioned on a seat in the vehicle, said hip belt having two ends, said hip belt secured at the two ends to a fixed part of the vehicle adjacent said seat, at least one belt roller attached to an end of said hip belt, and at least one traction means which unrolls the hip belt from the belt roller when the car door is opened and releases the belt so that it can be rolled up by the belt roller to bear tightly on the body of the occupant when he is seated in a seat of the vehicle; and wherein said traction means is a telescopic tube mounted on the fixed part of the vehicle and having an extensible end slidably connected to said hip belt.

4,082,318

HYDRAULIC CONNECTION AND METHOD

Otto Mueller, Jr., Detroit, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Aug. 10, 1976, Ser. No. 713,180
Int. Cl.[2] F16L *35/00*
U.S. Cl. 285—19 8 Claims



3. A hydraulic connection for establishing a connection for transmitting fluid under pressure between a hydraulic unit and a fluid line, said connection comprising in combination:

a housing provided with a threaded aperture;

a hydraulic unit provided with a port, said hydraulic unit being fixed within said housing, and said hydraulic unit being provided with a first recess having a cylindrical surface disposed about said port and in generally concentric alignment with said threaded aperture;

a fluid line terminating in a fitting, one end of which is threaded into said threaded aperture, and said one end being provided with a second recess having a cylindrical surface; and

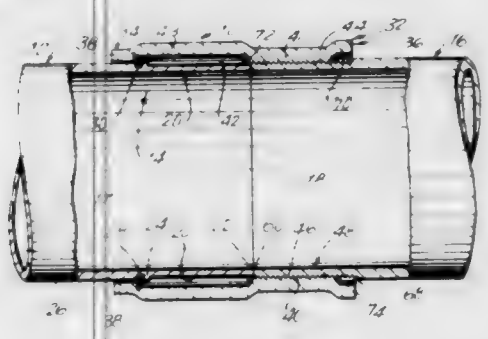
a standpipe one end of which is received within the first recess in fluid tight relationship with the cylindrical surface of said first recess and the other end of which is received within the second recess in fluid tight relationship with the cylindrical surface of the second recess.

4,082,319

COUPLING SLEEVE

Sidney Berger, Great Neck; Salvatore Buda, East Hills, and Burton Weintraub, Old Bethpage, all of N.Y., assignors to Berger Industries, Inc., Maspeth, N.Y.

Filed Jul. 6, 1976, Ser. No. 703,101
The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.
Int. Cl.[2] F16L *19/02*
U.S. Cl. 285—27 6 Claims



1. A coupling sleeve for joining a first and a second conduit section, each of said conduit sections having two ends and a length equal to at least four times its external diameter, and having circular cylindrical outer wall surfaces with an axial passage of constant cross-sectional dimensions and configurations, one end of each of said conduit sections having a flat substantially perpendicular end face and external thread means thereon and the other end of each of said conduit sections being non-threaded and having a flat substantially perpendicular end face and a length of reduced outside diameter extending axially inwardly from said flat substantially perpendicular end face at said other end of said conduit section to form a stop shoulder in said outer wall surface at said non-threaded end, and a lock ring means positioned in a lock ring groove located in said outer wall surface near and spaced axially inwardly from said stop shoulder, said lock ring means in its normal unbiased condition projecting in part above said outer wall surface, said coupling sleeve comprising:

(a) a body having an axially inward end with an end face and an axially outward end with an end face;

(b) a first radially inwardly extending flange at said axially inward end;

(c) a second radially inwardly extending flange adjacent said axially outward end, said second flange having female thread means thereon;

(d) said first flange defining a central opening of a diameter slightly greater than the diameter of said outer wall surface;

(e) said second flange defining a central opening smaller than the diameter of said outer wall surface, but slightly greater than the diameter of said length of reduced outside diameter, said central openings being in axial alignment so that said coupling sleeve may be slipped onto said other non-threaded end of said first conduit section;

(f) an axial clearance formed between said first and second flanges having an axially extending wall; and

(g) an annular undercut disposed between an axially outward face of said first flange and said wall of said axial clearance constructed and arranged to receive foreign material trapped between said axially outward face of said first flange and said lock ring means to ensure proper cooperation of said outward face with said lock ring means,

(h) at least one of said lock ring means and a cooperating surface of said first flange having camming means to constrict said lock ring means into said annular lock ring groove when said coupling sleeve is moved axially inwardly on said non-threaded end of said first conduit section;

(i) said axial clearance receiving said lock ring means when it returns to its normal unbiased position as said first flange clears said lock ring means;

(j) said axially outward face of said first flange adapted to cooperate with said lock ring means to prevent said lock ring means from being forced radially inwardly entirely into said lock ring groove so that said coupling sleeve is prevented from being pulled axially outwardly from said other non-threaded end of said first conduit section as said coupling sleeve is threaded onto said one externally threaded end of said second conduit section so as to force said end faces of said first and second conduit sections together;

(k) said length of reduced outside diameter extending axially inwardly at least the width of said second flange so that said coupling sleeve may be backed off said externally threaded end of said second conduit section after said first and second conduit sections are assembled whereby said second flange will abut said stop shoulder and said end face of said coupling sleeve will be at least flush with said flat substantially perpendicular end face of said first conduit section to permit said first conduit section to be laterally displaced from said second conduit section without longitudinal movement of either conduit section.

4,082,320

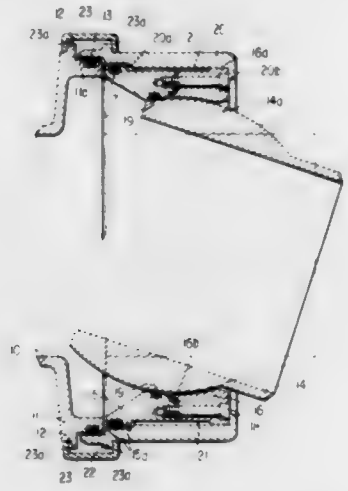
PIPE COUPLING

Karl Weinhold, Im Jagdfeld 43, D-4040 Neuss, Germany

Filed Oct. 28, 1976, Ser. No. 736,587
Claims priority, application Germany, Nov. 3, 1975, 2548978
Int. Cl.[2] F16L *27/06*
U.S. Cl. 285—31 14 Claims

1. In a pipe coupling for connecting together the ends of two pipes and composed of coupling components associated with respective pipe ends, the coupling components including two outwardly projecting annular collars each associated with a respective pipe end, a housing member associated with and

forming a sealed connection with one of the pipe ends, a plug-in member associated with and forming a sealed connection with the other pipe end and arranged to be inserted in the housing member, and a first sealing ring disposed to provide a sealing connection between the members when the plug-in member is inserted in the housing member, the coupling further including a quick release lock composed of a plurality of partial clamps each having a pair of spaced, radially inwardly directed flanges arranged to fit around the annular collars to hold the coupling in its assembled condition with the plug-in member inserted into the housing member, the improvement wherein: said coupling components associated with one of said members include two ring elements located within said one member and formed to present an inwardly directed bearing surface having the form of a spherical segment, each said ring element presenting a portion of said bearing surface, with the



bearing surface portions being spaced apart in the axial direction of said coupling, and means detachably connecting said ring elements together; said pipe end associated with one of said members is formed to present an outwardly directed bearing surface having the form of a spherical segment corresponding to that of, and in close contact with, the inwardly directed bearing surface; and said housing member is constructed to be axially displaceable relative to said one of the pipe ends in the direction away from said plug-in member and to prevent axial movement of said one of the pipe ends relative to said housing member in the direction away from said plug-in member, whereby axial displacement of said housing member away from said plug-in member enables said one of the pipe ends to be displaced laterally relative to said other pipe end without requiring axial displacement of said pipe ends relative to one another.

4,082,321

SEPARATION-PREVENTING PIPE JOINT CONSTRUCTION

Toshi Nakajima; Takao Sagara, both of Amagasaki, and Shohachiro Hagio, Nishinomiya, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

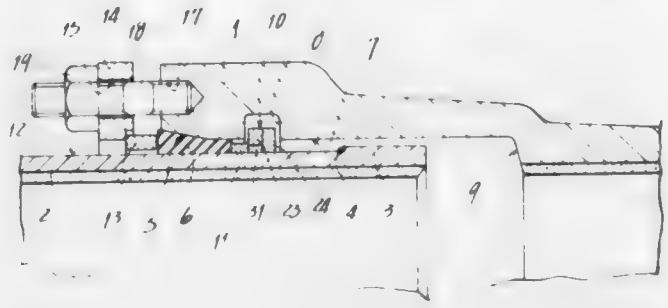
Filed May 14, 1976, Ser. No. 686,546

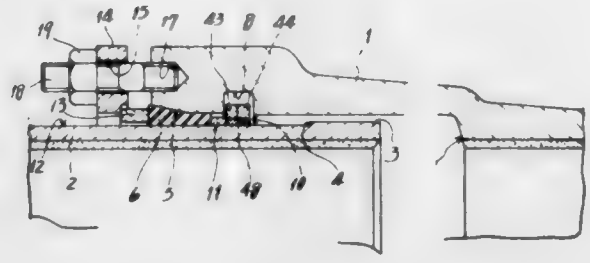
Claims priority, application Japan, May 16, 1975, 50/59087; Mar. 16, 1976, 51/28775; Mar. 16, 1976, 51/28776; Mar. 16, 1976, 51/28777

Int. Cl.² F16L *35/00*

U.S. Cl. 285—39 **10 Claims**

1. In a separation-preventing joint between the plug of one pipe and the socket of another pipe, including sealing means defined by a packing pressed between the plug and socket, and slip-off preventing means comprising a split lock ring fitted in an annular groove defined by wall means in the inner surface of the socket and engageable with a step surface formed on the front end surface of the plug, the plug and socket having radial clearance therebetween; the improvement wherein the opposite ends of said split lock ring are provided with overlap portions adapted to overlap each other axially of the pipes, at least one of said overlap portions being formed on a connection piece separate from said split lock ring, means attaching said connection piece to one end of said split lock ring for adjustment circumferentially of said split lock ring, and retaining means insertable through the radial clearance between said





socket and plug into engagement with said overlap portions for maintaining said lock ring in said groove and in contracted fitted relation with said plug so that said lock ring will abut said wall means and step surface upon attempted separation of the joint.

4,082,322

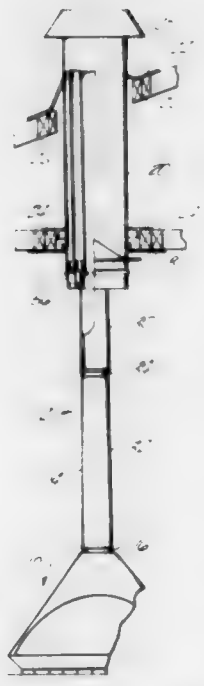
CHIMNEY CONSTRUCTION FOR HEATING FIXTURES

Paul H. Lever, Fallbrook, Calif., assignor to Fireplace Corporation of America, Walled Lake, Mich.

Filed Sep. 11, 1975, Ser. No. 612,273

Int. Cl.² F16L *39/00*; F24B *1/18*

U.S. Cl. 285—133 R **4 Claims**



1. A coupling for joining metallic circular chimney sections comprising an integral body of thin-gage sheet metal, formed to have first and second circular coaxial end segments joined by a radial step, the first end segment being shaped with an external hem formed by a reversely looped outer end portion sized to receive and engage the inside end of a first adjoining circular metallic chimney section thereover, the second end

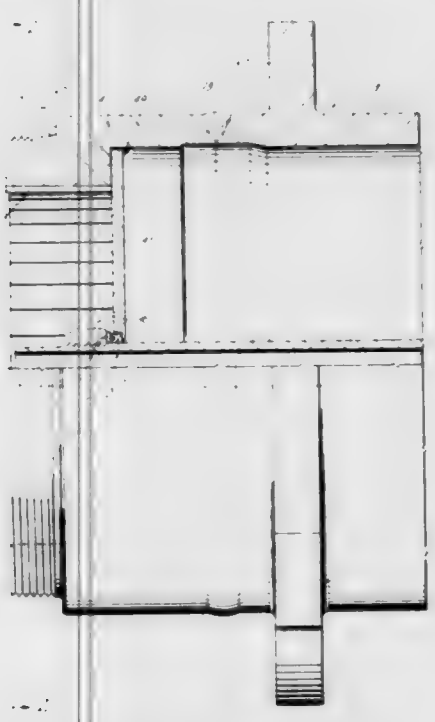
segment being shaped with an internal hem formed by a reversely looped outer end portion sized to receive and engage the outside end of a second adjoining circular metallic chimney section therein, the first end segment extending radially inwardly of the step whereby said external hem on said first end segment is radially offset with said internal hem on said second segment a distance equal to the thickness of said chimney section mating with said first end segment, and said first and second end segments are thereby radially offset a distance equal to the combined thickness of said chimney section and said reversely looped outer ends whereby said step also providing a common stop for axial travel of the first and second chimney sections when in engagement with the coupling.

4,082,323

BOX HOLE DRILL STEEL

Edgar Wray Wood, and Jerry Olympus Young, both of Midland, Tex., assignors to Smith International, Inc., Midland, Tex.

Filed Sep. 9, 1976, Ser. No. 721,828
Int. Cl.[2] F16L *39/00*
U.S. Cl. 285—133 A **6 Claims**
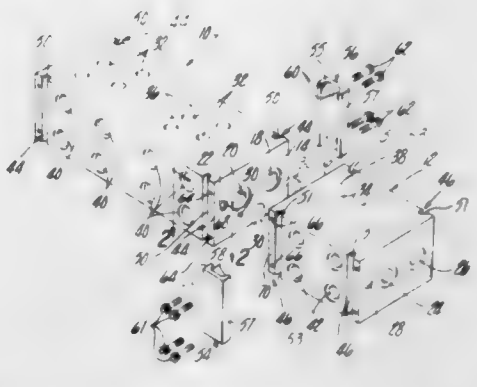


1. Dual tube box drill steel comprising:
an outer tubular metal member having connection means at each end for making connection with like steel;
said outer tubular member having a wall thickness of at least ten percent of its inner radius,
said outer tubular member having and outer circumference of the same order of magnitude as its length,
an inner metal pipe having telescopic joint means at each end for making connection with like steel,
said pipe having an outer diameter which is of a different order of magnitude than that of said tubular member, the pipe being smaller, and
support means positioning said pipe with its length extending lengthwise of the outer tubular member and with the midpoint of the pipe within said outer tubular member, said support means tending to prevent relative axial motion of the pipe and said tubular member,
said support means including elastomeric means tending to position the pipe radially relative to said tubular member to be coaxial therewith but allowing radial movement of the pipe relative to the outer tubular member to compensate for misalignment of the pipe's telescopic joint means with the telescopic joint means on the pipes of adjacent lengths of steel when the latter are made up with the first said steel.

4,082,324

CONNECTION ARRANGEMENT FOR MANIFOLD BLOCKS

Robert E. Obrecht, 805 Stephenson Hwy., Royal Oak, Mich. 48067

Filed Oct. 4, 1976, Ser. No. 729,193
Int. Cl.[2] F16L *39/00*
U.S. Cl. 285—137 R **8 Claims**



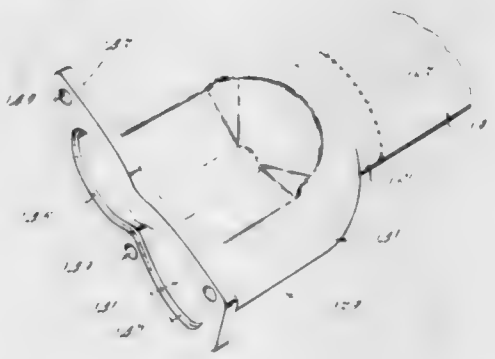
5. A stacked manifold assembly comprising: a first and second manifold block, each manifold block generally rectangular in section and having abutting end faces each formed with port openings formed therein aligned with respect to each other; a pair of elongated slots formed in said manifold blocks on a side surface adjacent said end faces, each of said slots having a sloping side wall surface extending transversely to the plane of said abutting end surfaces and extending towards said end surface; a pair of clamping elements one each engaging respective slot pairs juxtaposed to each other with said manifold blocks positioned with said end surfaces in abutting relationship with each other.

4,082,325

COUPLING DEVICE FOR CONNECTING A PLURALITY OF PORTS TO ONE PIPE

James R. Laundy, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed May 5, 1976, Ser. No. 683,560
Int. Cl.[2] F16L *41/00*
U.S. Cl. 285—155 **7 Claims**



1. A fluid flow coupling device for connecting a pair of ports in a manifold or the like to a single port comprising a body having a longitudinal axis and open at opposite ends to provide first and second open ends for the flow of fluid into one of said open ends and out of the other of said open ends, an attachment plate affixed to the body at the first end and adapted to be attached to said manifold and having an opening means therein in alignment with said pair of ports so that said body is in fluid flow communication with said ports, said body being formed of a single piece of drawn sheet metal and characterized by the absence of one or more longitudinally extending joints therein and having a first portion extending longitudinally from said first end over a substantial length of the body and a second portion extending longitudinally from said first portion over the remaining length of the body to said second end, said first

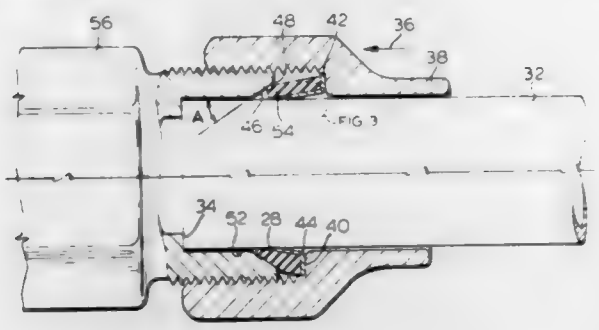
end and said first portion of the body being shaped to have a cross section that is substantially a FIG. 8 in configuration with the loop portions of the 8 spaced apart to be in substantial alignment respectively with said pair of ports, the second end of the body being substantially circular in cross section, the second portion of said body gradually changing in cross sectional shape from said circular second end to a substantially oval cross section and then merging into the FIG. 8 cross section of the first portion.

4,082,326

COMPRESSIBLE MEMBER FOR USE IN COMPRESSION JOINT PIPE CONNECTOR

Cecil Walsh Bryson, Cambridge, Canada, assignor to Canadian Brass Limited, Cambridge, Canada

Filed Aug. 30, 1976, Ser. No. 717,772
Int. Cl.[2] F16L *33/00*
U.S. Cl. 285—238 **6 Claims**



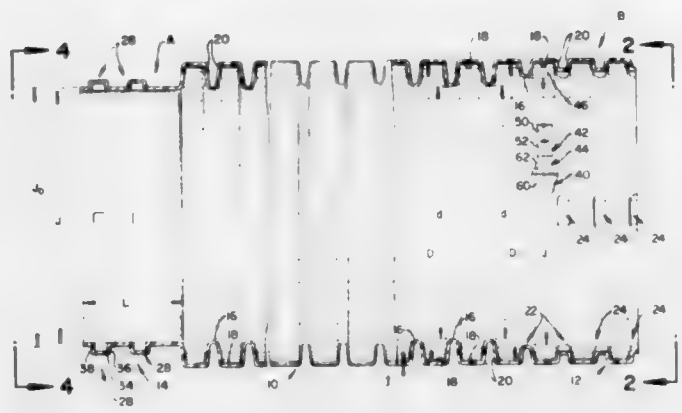
1. In a re-useable compression type pipe connector having threaded male and female portions, one of which receives a pipe end; a sealing and pipe retaining means comprising a retaining ring consisting of a resilient material and having a hollow, truncated cone shaped body portion with a plurality of circumferentially spaced apart slits which extend in an axial direction inwardly from the smaller end of said retaining ring into the body portion thereof to define a plurality of resilient gripping teeth, each having a free end, and a sealing ring consisting of an elastomeric material and having a tubular shape; said gripping teeth being disposed at a low angle relative to the pipe surface, said angle ranging from approximately 5° to 30°; the axial length of said sealing ring being substantially longer than the axial length of said body portion of said retaining ring; said sealing ring being in surrounding and contracting relationship with the outside surface of said retaining ring where said sealing ring covers said slits in said retaining ring; the threaded portion which receives such pipe end having an annular inwardly sloping surface for engaging the outside surface of said sealing ring when said connector is assembled on a pipe end, the other portion having an internal shoulder means for engaging said body portion of said retaining ring, said annular inwardly sloping surface overlapping a portion of said gripping teeth so that as said male and female portions are threadably engaged to thereby move said internal shoulder towards said annular inwardly sloping surface, said annular inwardly sloping surface engages the outside surface of said sealing ring and causes an annular portion of said sealing ring to exert an inwardly directed force on said gripping teeth therebeneath to move them into contact with a pipe surface and simultaneously the annular portion of said sealing ring beyond said gripping teeth is moved into sealing arrangement with such pipe; each gripping tooth free end having a circumferential length to provide substantially more than point contact with a pipe surface, the arrangement of said connector being such that said gripping teeth free ends are precluded from substantially marring a pipe surface when said teeth are in contact therewith whereby the connector is re-useable to form a fluid tight seal around a pipe end previously engaged by said connector.

4,082,327

CONNECTING JOINT FOR CORRUGATED PLASTIC TUBING

Donald W. Sting, and Denis P. Ott, both of Findlay, Ohio, assignors to Hancor, Inc., Findley, Ohio

Filed Aug. 20, 1976, Ser. No. 716,104
Int. Cl.[2] F16L *21/00*
U.S. Cl. 285—401 **11 Claims**



1. A joint construction for plastic pipe comprising:

a first length of corrugated, hollow and generally cylindrical plastic pipe having an internal wall surface defined by adjacent circumferentially extending, longitudinally spaced peaks and valleys with the internal diameter of said first length measured diametrically between opposite peaks between opposite valleys being equal to *d* and the internal diameter measured diametrically between opposite valleys being equal to D wherein D is greater than *d*;

a first portion of said first length defining an end therefor having an internal diameter *j* measured diametrically between opposed peaks which is greater than *d* but less than D and a maximum internal diameter measured diametrically between opposed valleys which is substantially equal to D, said first portion including at least one integral stop member and at least one integral locking member disposed in a spaced apart cooperative relationship with each other in one of the first portion valleys and extending radially inward therefrom for defining a locking area therebetween, said at least one locking member being defined by first and second inclined side walls meeting at an apex area with said first side wall having an angle of inclination less than that of said second side wall for defining a cam surface and with said second side wall defining a lock surface which comprises one side of said locking area, said first portion further including a plurality of sets of longitudinally aligned grooves formed in at least the peaks spaced from said one valley toward the outer free end of said first portion in a non-aligned relationship with said locking area;

a second length of hollow plastic pipe having a generally cylindrical corrugated portion and a smooth walled cylindrical second portion which defines an end of said second length and has an outer diameter which is slightly less than j;

at least two sets of cleat members extending outwardly from the outer surface of said second length second portion with sets axially disposed from each other therealong, said cleat members having a configuration and location to permit them to move longitudinally into the aligned grooves in the first length first portion so that a portion of said second length is received in said first length first portion with the cleat members of one set being located in said one valley and the cleat members of the other set being located in another valley of the first length first portion; and,

said cleat members and said at least one locking member being relatively dimensioned from said second length second portion and said first length first portion respectively such that there is an interface relationship therebe-

tween as said first and second lengths are rotated relative to each other after said second length second portion has been received in said first length first portion, at least one of said locking and cleat members being resiliently deformable as the associated of said cleat members engages said locking member cam surface to permit said associated cleat member to be passed into said locking area during further forced rotation between said first and second lengths until said associated cleat member is lockingly received in said locking area between said at least one stop member and said locking member lock surface, the incline of said lock surface then preventing rotation between said first and second lengths in the opposite direction unless a rotational force greater than the rotational force required to move said associated cleat member over said cam surface and into said locking area is applied thereto.

4,082,328

APPARATUS FOR JOINING UNDRAWN YARNS

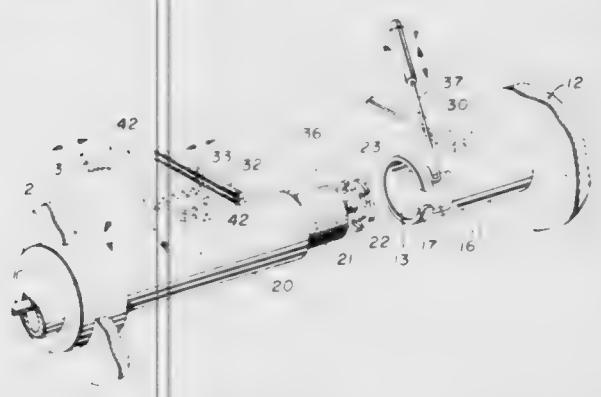
Peter Geoffrey Williams, Mitcheldean, England, assignor to Monsanto Company, Decatur, Ala.

Filed Jul. 28, 1977, Ser. No. 819,792

Claims priority, application United Kingdom, Aug. 6, 1976, 32869/76

Int. Cl.[2] A01D *59/04*; D03J *1/18*; D04G *5/00*

U.S. Cl. 289—2 **6 Claims**



1. Apparatus for tying a knot in a pair of filaments, comprising:

a. a hollow first element having an open end and an opening adjacent to said open end, said opening being connected to said open end by a slot, said opening being larger in a circumferential direction than the slot so that a filament lying over the opening under tension will extend further into the hollow element than will a filament lying over the slot,

b. a second element having a projecting portion for engaging the ends of a pair of filaments and wrapping said ends around the first element, said first and second elements being movable relative to each other,

c. means adjacent to the first and second element for clamping and holding the ends of the pair of filaments in position to be engaged by said projection and wound around the first element, and

d. hook means movably mounted on the second element for engaging that portion of the filaments lying across the opening and pulling said portions out of the hollow element to form a knot in the filaments.

4,082,329

PRIVACY LATCH FOR FOLDING AND SLIDING DOORS

Richard K. Haines, 2317 W. Lexington, Elkhart, Ind. 46514

Filed Sep. 30, 1976, Ser. No. 728,235

Int. Cl.[2] E05C *3/32*

U.S. Cl. 292—202 **4 Claims**

1. A latch for sliding and folding doors comprising a pair of latch plates mounted in confronting relation on a door jamb and a door respectively, one of said plates having an opening, an actuator pivoted to and in face contact with said first named plate adjacent said opening and including a portion overlying said opening in one pivoted position, said plate being clear of said opening in a second pivoted position, the other plate having a latching projection fitting in the opening of said first named plate when said door is closed and said actuator is in a pivoted position clear of said first plate opening, said latching



projection being undercut to receive a portion of said actuator in said first pivoted position when said door is closed, said second named plate having a thick portion and a reduced thickness portion, said reduced thickness portion receiving said actuator to accommodate contact of said first plate with the thick portion of said second plate when said door is closed.

4,082,330

DOOR LOCK VERSION

Delmer L. McWhorter, 929 Drever St., West Sacramento, Calif. 95691

Filed Oct. 8, 1976, Ser. No. 730,940

Int. Cl.[2] E05C *9/08*

U.S. Cl. 292—218 **1 Claim**



1. A door lock for locking two doors together at their surface of tangency comprising, a pair of vertically extending bars each fastened to one door near their surfaces of tangency, said bars having orthogonally disposed hasps, a pair of hasp hooks disposed between said poles at the top and bottom on a door frame surrounding said doors having a U-shaped configuration to receive and retain said hasps, a pair of arms each substantially medially fastened on each of said poles and pivotable about said poles to engage and disengage said hasps from said hasp hooks by rotating said poles, plural lock means on said doors to receive said arms and lock said arms to said doors so that said hasps are engaged with said hasp hooks and the doors cannot be opened.

4,082,331

DOOR FOR A MINE STOPPING

John M. Kennedy, and William R. Kennedy, both of P.O. Box 38, Taylorville, Ill. 62568

Filed Nov. 4, 1976, Ser. No. 738,690
Int. Cl.[2] E05C 5/00
U.S. Cl. 292—228 8 Claims



1. A door for closing a doorway in a mine stopping, said door having hinge means at an edge thereof for hingedly mounting the door to swing on an axis adjacent an edge of the doorway between a closed position engaging a face of the stopping all around the doorway and an open position swung away from the doorway, a latch for latching the door closed, said latch comprising a bar extending through an opening in the door adjacent an edge of the door from the outside toward the inside of the door and adapted to extend into the doorway, said bar having a detent portion adjacent its inner end, said bar being movable inwardly and outwardly in said opening and being swingable in said opening about an axis transverse to the bar for engagement of said detent portion behind part of the stopping to latch the door in its closed position, and spring means reacting from the door on the bar to bias the bar outwardly in the opening to ensure engagement of said detent portion behind said part of the stopping to latch the door in its closed position.

4,082,332

SECURITY APPARATUS

Wayne D. Palmer, 5622 Faulconbridge Rd., Charlotte, N.C. 28212

Filed Jan. 27, 1977, Ser. No. 762,855
Int. Cl.[2] E05C 19/00
U.S. Cl. 292—259 R 7 Claims



1. A security apparatus for overlying a door or the like to prevent the opening thereof by intruders, and characterized by the ability to minimize damage to the door and resist the release of the apparatus upon a forceable battering of the door against the apparatus, and comprising

an elongate rigid bar having a length sufficient to extend transversely across and beyond the door opening,

a pair of brackets, with each bracket having means for mounting the same to the wall along the side of the door opening, and means for selectively securing the bar to such bracket when the brackets are mounted on opposite sides of the door opening such that the bar may be selectively mounted to extend between the brackets and across the door opening,

one of said brackets being in the form of a substantially closed loop of generally rectangular cross-sectional outline and comprising an inner portion adapted to be positioned against a supporting wall surface and an outer portion which is parallel to and spaced from said inner portion,

the other of said brackets having a generally J-shaped cross-sectional outline and comprising an inner portion adapted to be positioned against a supporting wall suface and an outer flange which is parallel to and spaced from said inner portion,

said means for securing the bar to said one bracket comprising the spacing between said inner and outer portions whereby one end of the bar is adapted to be received therebetween and said means for securing the bar to said other bracket comprising the spacing between said inner portion and flange whereby the other end of said bar is adapted to be lowered between said inner portion and flange of said other bracket after said one end of the bar has been received within the closed loop of said one bracket,

said other end of said bar including abutment means of a size to preclude the same from passing through the closed loop of said one bracket, whereby the bar may be mounted between the brackets in only one orientation, and

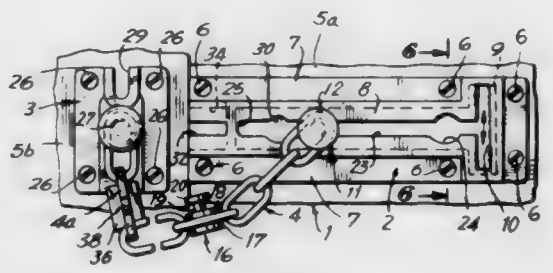
resilient means carried by said bar and extending radially outwardly therefrom so as to be adapted to at least closely approach the surface of the door when the bar is mounted between the brackets, and whereby the resilient means serves to cushion the shock of the door being forceably opened against the bar to thereby minimize damage to the door and reduce the possibility of said bracket mounting means being released upon the forceable battering of the door against the bar.

4,082,333

COMBINATION OF INTERLOCKING SECURITY ON CHAIN DOOR

Bernard C. Segal, 150-6 J. Dreiser Loop, Bronx, N.Y. 10475

Filed Apr. 27, 1976, Ser. No. 680,968
The portion of the term of this patent subsequent to Jul. 15, 1992, has been disclaimed.
Int. Cl.[2] E05C 19/00
U.S. Cl. 292—264 1 Claim



1. A chain door guard assembly for attachment to a mating door and door jamb comprising, in combination,

a bracket for attachment to the door jamb,

a chain rotatably attached to said bracket

a guard plate for attachment to the door, said guard plate having a raised main body section containing a horizon-

tally disposed elongated main slot, a first entry slot providing entry to said main slot near the end thereof adjacent to said jamb and a second entry to said main slot, and an open ended vertical slot extending above and below said main slot at the end of said main slot remote from said door jamb said main slot opens into said vertical slot, whereby a passageway is provided between said horizontal and vertical slots,

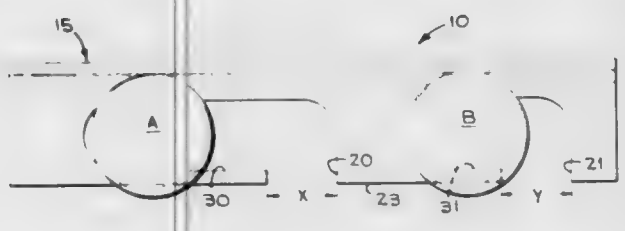
a first chain head fixed to the end of said chain remote from said bracket, said first chain head adapted to be received by said second entry slot and being retained in either said main slot on said vertical slot, and a second chain head fixed to said chain between said first chain head and said bracket, said second chain head being adaptable to be used with or without said first chain head.

4,082,334

INTERIOR SECURITY DEVICE FOR DOUBLE DOORS

Victor S. Volta, 10214 Portal Ave., Cupertino, Calif. 95014, and Joe E. Martin, 379 Howard Dr., Santa Clara, Calif. 95051

Filed Jun. 22, 1977, Ser. No. 808,723
Int. Cl.[2] E05C *19/18*
U.S. Cl. 292—288 **14 Claims**



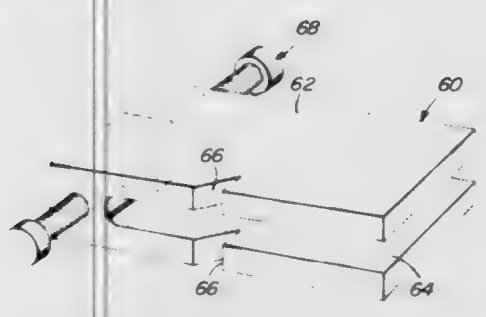
1. In combination, a security device and double doors, said double doors having adjacent door knobs, said security device comprising a rigid plate with an upper wall and lower wall and having a longitudinal direction and a transverse direction, longitudinally spaced openings formed in the lower wall of said plate to receive respectively the narrow portions of adjacent door knobs, and longitudinally spaced and longitudinally extending slots formed in said plate intermediate the upper and lower walls thereof communicating respectively with said openings formed in said plate for locating therein simultaneously the narrow portions of said adjacent door knobs, the transverse dimension of said slots being greater than the narrow portions of the respective door knobs, and lesser than the enlarged portions of the respective door knobs to prevent the opening movement of said double doors when the narrow portions of said knobs are respectively received by said slots.

4,082,335

PORTABLE DOOR SECURING DEVICE

Homer H. Smith, 90 Arden Park, Detroit, Mich. 48202

Filed Feb. 4, 1977, Ser. No. 766,051
Int. Cl.[2] E05C *19/18*
U.S. Cl. 292—291 **5 Claims**



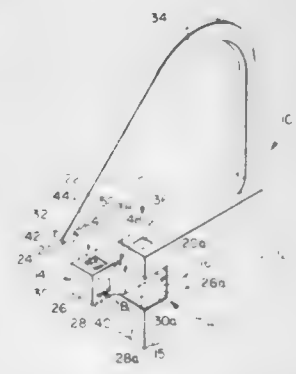
1. A portable door securing device comprising a rigid bridging member adapted to bridge the juncture between the swinging edge of a door and a door frame to prevent swinging movement of the door toward an open position, and a latch bolt adjustably secured to said member and adapted to extend between the swinging edge of the door and the door jamb, said latch bolt including a lateral extension on the end thereof adapted to be received within a recess in the door jamb defined by a keeper plate, means adjustably interconnecting the latch bolt and rigid member to enable the rigid member to be moved toward the door and door frame, and abutment means on said rigid member in opposed relation to the lateral extension on the latch bolt for maintaining the rigid member generally perpendicular to the latch bolt, said rigid member including a rigid block, said latch bolt including a threaded portion extending transversely of the block, said means adjustably connecting the latch bolt to the block including a hand manipulable nut on the threaded portion of the latch bolt for adjusting the latch bolt toward and away from the block, said block including a transversely extending groove communicating with a flat surface thereof for receiving said latch bolt thus enabling separation of the block from the latch bolt in a rapid manner in the event or emergency.

4,082,336

TAMPER PROOF SEAL

Ephraim Natkins, Jackson Heights, N.Y., assignor to American Casting & Mfg. Corporation, Plainview, N.Y.

Filed Nov. 10, 1976, Ser. No. 742,053
Int. Cl.[2] B65D *33/34*
U.S. Cl. 292—318 **2 Claims**



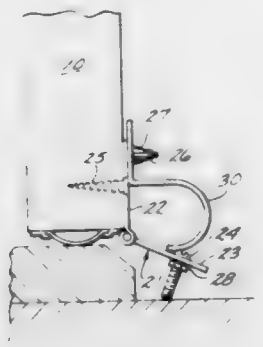
1. A seal construction comprising a main body portion comprising socket means, a tie member comprising an engaging member comprising edges extending from said main body portion, a shaftway for the tie member in said body portion with an opening in said main body portion offset to said shaftway communicating with said socket means, said shaftway continuing through and beyond said socket means and ending as a blind opening, a second body portion in the form of a plug hinged to the main body portion at a first position outside of said main body portion socket means and movable to a second position within said socket means to fit said main body portion socket means through said offset opening, said second body portion plug comprising a pair of resilient protuberances in spaced facing relationship between which the engaging member is positionable, said hinged portion being along a surface of the main body portion and at least one wall of the second body portion plug to form at least a portion of at least one wall of the main body portion when said plug is in second position, said main body portion and said second body portion being formed from a material which has the property of being deformable at the hinged portion which connects said main body portion and said second body portion, said engaging member edges of said tie member and said protuberances of said plug being formed to cooperate to complete a coupling when said second body portion plug is fitted in said socket means and said tie member is positioned through said shaftway for said tie member, and said plug and said tie member being fitted with close tolerance.

4,082,337

DOOR SECURING DEVICE

John J. Greco, 713 E. Sahara, Las Vegas, Nev. 89105

Filed May 13, 1976, Ser. No. 686,105
Int. Cl.[2] E05C *17/44*
U.S. Cl. 292—338 **1 Claim**



1. A door securing device comprising an assemblage of standard hardware items, in combination:

a hinge comprising a first and second element pivotally connected in common adapted to be secured by said first element thereof to a selected area of said door;

a conduit hanger adapted to be pivotally secured over said first element of said hinge for selective disposition relative said second element of said hinge;

said conduit hanger includes a planar segment pivotally secured over said first element and a convoluted segment extending from one edge of said planar segment, said convoluted segment being conformed to receive said second element of said hinge in a first mode and to oppose said second element in a second mode,

a wing nut mounted proximate said first element of said hinge for selective securing of said conduit hanger;

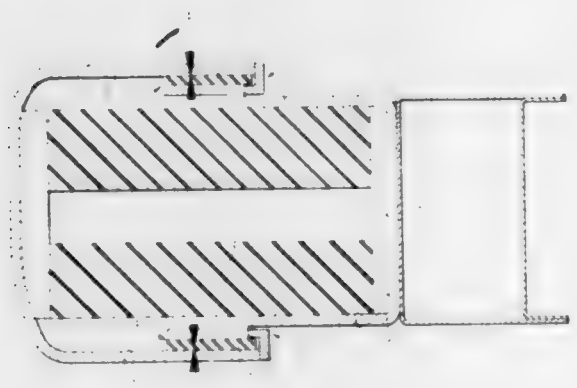
a plurality of threaded bolt assemblies secured to orthogonally extend in engaging alignment from said second element.

4,082,338

SHOCK ABSORBER FASHIONED AS AN ELASTOMERIC HOLLOW SPRING

Hubert Hutai, Grafenau; Wolfgang Klie, Korntal, and Helmut Weisshappel, Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed May 6, 1976, Ser. No. 683,827
Claims priority, application Germany, May 7, 1975, 2520327
Int. Cl.[2] B61F *19/04*
U.S. Cl. 293—85 **8 Claims**



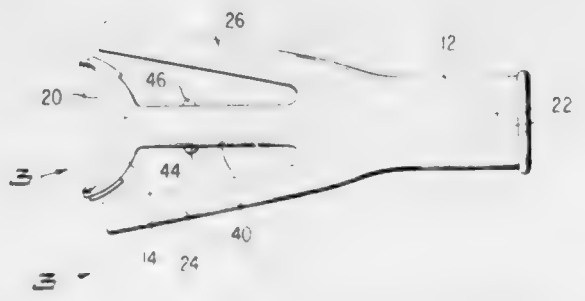
1. In a shock absorber arrangement which comprises at least one hollow elastomeric member being arranged between a vehicle bumper means and a fixed vehicle part, and socket means for accommodating said elastomeric member at an end facing said fixed vehicle part, wherein said socket means engages the elastomeric member, and wherein said socket means has outer surface portions abutting interior surfaces of said bumper means, the improvement comprising friction means inserted under prestress between said outer surface portions and said interior surfaces of said bumper means for effecting increased shock absorption capabilities, wherein angularly bent end means are provided at ends of said surfaces of said bumper means for covering said friction means from the outside, said angularly bent end means being supported at said socket means, and wherein said socket means includes a radially outwardly offset end portion pointing generally outwardly of the vehicle, said friction means being interposed between said offset end portion and said interior surfaces of said bumper means.

4,082,339

SOFT CONTACT LENS INSERTION AND REMOVAL INSTRUMENT

Joseph Ross, 14335 Sherman Way, Apt. 202, Van Nuys, Calif. 91405

Filed Jul. 18, 1977, Ser. No. 816,703
Int. Cl.[2] A61F *9/00*
U.S. Cl. 294—1 CA **14 Claims**



1. A delicate instrument for inserting and removing soft or flexible-type contact lenses, comprising:

a resilient soft contact lens holder, said holder including

a pair of wedge-shaped contact lens engaging members, said engaging members having the overall configuration of diametrically opposed segments of the circumference of a circle, with said wedge-shaped members pointing inwardly and at an acute angle above the plane of said circle; and resilient means interconnecting said two wedge-shaped lens engaging members and making an acute angle with respect to said lens engaging members, said resilient interconnecting means providing a range of movement for said lens engaging means extending from separation slightly more than the diameter of a soft contact lens, to a holding position with a separation slightly less than the diameter of said soft lens;

means for supporting said soft lens holder; and

means for selectively maintaining said lens engaging members in the holding positions, or releasing said lens engaging members from said holding position.

4,082,340

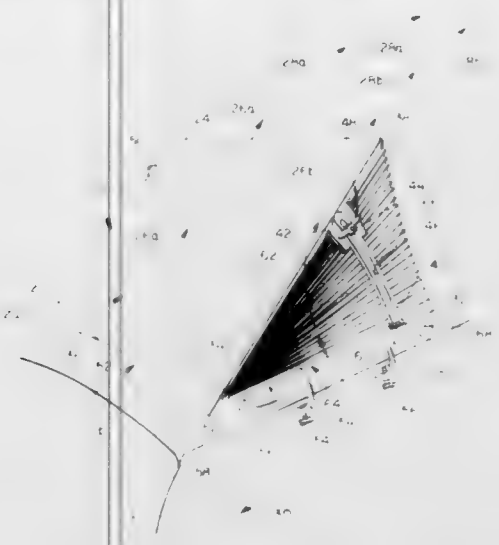
AIR CURRENT DEFLECTING DEVICE

Alexander Taylor, 855 Chapleau Dr., Pickering, Canada (L1W 1P5)

Filed Aug. 3, 1976, Ser. No. 711,247
Int. Cl.[2] B62D *35/00*
U.S. Cl. 296—1 S **7 Claims**

1. An air current deflecting device for a towing vehicle pulling a towed vehicle comprising an elongated deflecting plate spaced above the roof of the towing vehicle, the deflecting plate having a face portion with leading and trailing edges, the trailing edge normally being positioned above and rearwardly of the leading edge so that the face portion deflects a portion of the air passing over the roof of the towing vehicle, an elongated base plate hingably secured to the deflecting plate along a line extending across the width of the towing vehicle, the line being disposed intermediate the leading edge and the trailing edge, means to detachably secure the base plate in

spaced apart relationship above the roof of the towing vehicle, means to secure the deflecting plate at selected angles of inclination relative to the plane of the roof of the towing vehicle above the base plate, a pair of symmetrical pleated accordian-like side walls extended between and limited to the opening



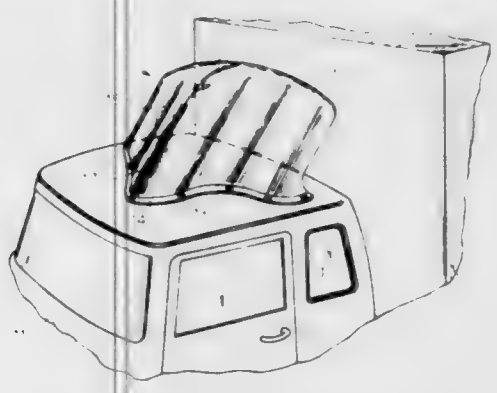
formed between adjacent marginal side edges of the base plate and the deflecting plate, said side wall having a plurality of pleats, said plurality of pleats extending angularly relative to one another intersecting at an apex located at said line, whereby said plurality of pleats accommodate disposing said deflecting plate at said selected angles.

4,082,341

VEHICLE AIR DEFLECTOR

Bobby Joe Gore, 1440 D. Cameron Ct., Wilmington, N.C. 28401

Filed Dec. 20, 1976, Ser. No. 752,475
Int. Cl.[2] B60J *9/04*
U.S. Cl. 296—1 S **5 Claims**



1. A vehicle air deflector used in combination with a tractor pulling a trailer, said tractor including a cabin roof, said trailer including a front wall located behind and extending above said tractor cabin roof, said vehicle air deflector being formed as a substantially V-shaped structure comprising:

(a) a pair of side panels each having leading, trailing and upper edges and a base, said panels converging at their leading edges to form a juncture line which is inclined rearwardly at an angle of attack "X" between **20°–30°** from the vertical, said panels diverging outwardly and rearwardly from said juncture line to their trailing edges, the front face of each said side panel having a concave-convex curvature characterized by a valley surface rearward of said juncture line and an elongated mound surface rearward of said valley surface and forward of the trailing edge, said valley surface and elongated mound surface extending substantially from the base to the upper edge of each panel **(15)**, **(16)** and having midlines substantially parallel to said juncture line, and said panels being characterized by all lines thereon which are parallel to said juncture line having an angle of attack substantially equal to said angle of attack "X"; and

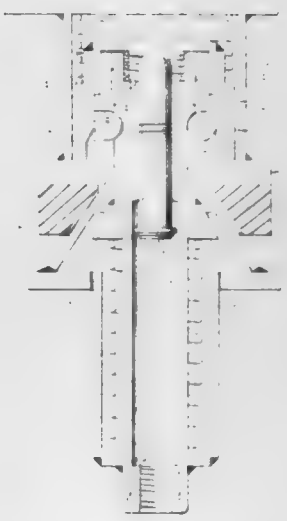
(b) means for securing the base of said side panels to the tractor cabin roof.

4,082,342

LATCHING MECHANISM

Roger Howard Ailshie, and Roy Reynolds, both of New Berlin, Wis., assignors to Applied Power, Inc., Milwaukee, Wis.

Filed Jun. 16, 1976, Ser. No. 696,591
Int. Cl.[2] B60J *1/00*
U.S. Cl. 296—28 C **11 Claims**



1. A motor vehicle having an elongated chassis member, a cab member pivotally mounted to said chassis member about an axis transverse to the longitudinal axis of said chassis member for a movement from a lowered first position to a second raised position, a releasable latching mechanism comprising,

a sheath having an outer end extending from one of said members toward the other of said members,

a housing on the other end of said members to receive said outer end,

a piston slidably received in said sheath along the longitudinal axis of said sheath,

means in said housing to support a plurality of detents for radial movement,

said sheath having on its outer surface a detent locking groove,

second means in said housing having a first position normally moving said detents into said locking groove and a second position wherein said detents are free to move out of said locking groove,

a source of hydraulic power to cause said piston to move said second means to its second position when it is desired to unlatch said members, and

third means retaining said detents radially outwardly when said members are disengaged.

4,082,343

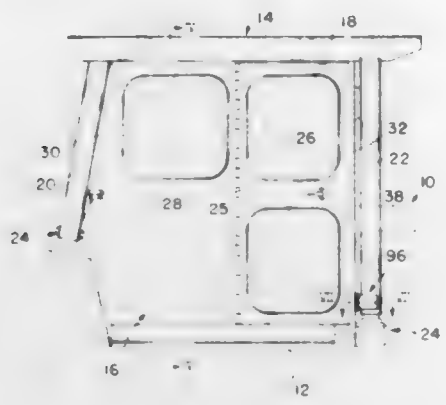
RESILIENTLY MOUNTED CAB-SIDEWALL RETAINER

William C. Hurt, II, Brimfield; Bruce W. Miers, Peoria Heights, and Eugene O. Mossner, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 563,777, Mar. 31, 1975, abandoned, which is a continuation of Ser. No. 435,754, Jan. 23, 1974, abandoned. This application Jan. 19, 1976, Ser. No. 650,528
Int. Cl.[2] B62D *27/04*
U.S. Cl. 296—28 C **8 Claims**

1. In a tractor including an operator platform, a rollover operator protection structure about and over said platform, a cab formed of a material such as sheet metal enclosing said platform and secured at its upper end to said rollover operator protection structure to be supported thereby and elongated resilient means at least partially about the lower periphery of

the cab sealingly engaging at least a corresponding portion of said platform, the improvement wherein said resilient means is resiliently secured along its length to both said platform and said cab lower periphery whereby the lower portion of the cab



cannot appreciably shift relative to the upper portion of the cab while maintaining a seal between the cab interior and exterior to preclude the entry of environmental material into said cab and minimize noise and vibration within said cab.

4,082,344

MOTOR VEHICLES

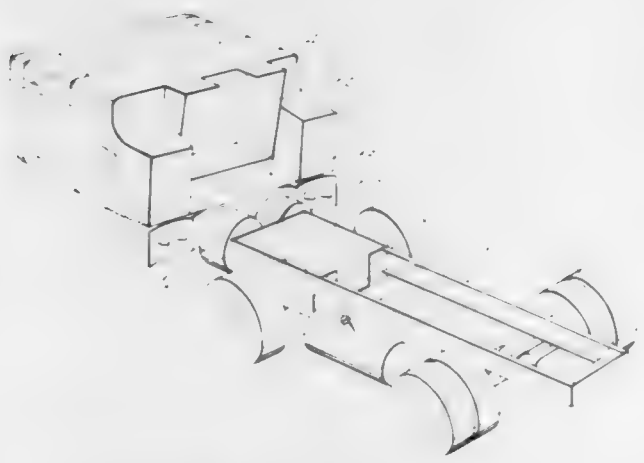
James Anderson, Preston, England, assignor to British Leyland UK Limited, London, England

Filed Jul. 9, 1976, Ser. No. 703,932

Claims priority, application United Kingdom, Jul. 18, 1975, 30158/75

Int. Cl.² B62D *33/06*

U.S. Cl. 296—28 C **10 Claims**



1. A truck comprising:

a. a chassis on which an engine is mounted;

b. a cab tiltably mounted on the chassis and in its operative position overlying the engine at least in part;

c. an enclosure surrounding the engine when the cab is in its operative position, the enclosure comprising substantially two parts, a first fixed part carried by the chassis and a second movable part carried by the cab so that when the cab is tilted the second part separates from the first part to expose at least part of the engine;

d. the engine enclosure having at least one air inlet in its leading end which is positioned in the front of the fixed part of the enclosure and therefore relatively low down and at east one air outlet located at the rear end of the enclosure in the second movable part of the enclosure and therefore relatively high up so as to promote convection currents within the enclosure for cooling the engine after it has been stopped.

4,082,345

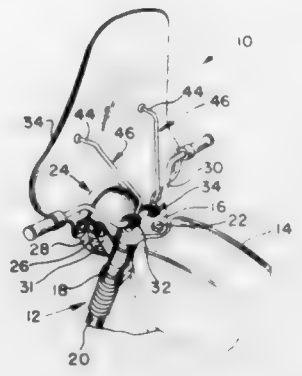
MOTORCYCLE WINDSHIELD ASSEMBLY

Barry A. Willey, 138 S. 8th Ave., Maywood, Ill. 60153

Filed May 12, 1976, Ser. No. 685,707

Int. Cl.² B62J *17/04*

U.S. Cl. 296—78.1 **4 Claims**



1. A motorcycle safety windshield assembly for attachment to a motorcycle having a frame, a seat, a fuel tank, a steering crown pivotally attached to said frame, and handlebars with at least portions thereof extending upwardly from said steering crown, said windshield assembly being adapted to direct air around a motorcycle rider sitting erect on said seat, and further adapted to provide injury protection for said rider, said windshield assembly comprising, in combination, a windshield panel having an upper portions, a lower portion for disposition adjacent said steering crown, lower fastening means for attaching said lower portions of said windshield panel to a portion of said motorcycle which moves as said steering crown is moved, and means for attaching said upper portion windshield panel to another, spaced apart portion of said motorcycle which also moves as said steering crown moves, said means for attaching said upper windshield portion including a pair of rods with lower portions having fastening means thereon for attachment to said motorcycle in the vicinity of the handlebars thereof, said rod fastening means preventing fore-and-aft movement of said rods, said rods also having intermediate portions extending substantially upwardly and forwardly of said seat, said steering crown and said rod fastening means, said rods terminating in generally forwardly directed upper end portions which are disposed in use substantially above said motorcycle tank, crown, and handlebars, each of said upper end portions including an axially extending opening therein, windshield fastening means extending through said upper portion of said windshield panel, said windshield fastening means having portions extending into and being secured within said axially extending openings and fastening said upper windshield panel portion to said upper rod ends in substantially perpendicular relation thereto so as to support said upper windshield panel against rearward movement in response to wind forces, said rods being free from upwardly and rearwardly projecting portions lying about the level of said seat, tank, and handlebars.

4,082,346

VEHICLE WINDSHIELD

Jules Perreault, and Emile Bombardier, both of Valcourt, Canada, assignors to Bombardier Limited, Valcourt, Canada

Filed Jul. 27, 1976, Ser. No. 709,095

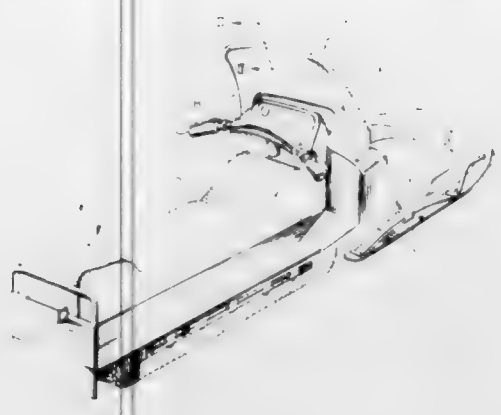
Claims priority, application Canada, Oct. 3, 1975, 237028

Int. Cl.² B60J *1/02*

U.S. Cl. 296—84 R **3 Claims**

1. A vehicle windshield comprising: a unitary contoured sheet of transparent plastics material having an upwardly and rearwardly directed central section the lateral sides of which merge into rearwardly extending side sections, the lower margin of said sheet being adapted for attachment to the vehicle, the upper edge of the central section and the rear edge of each side section being reinforced solely by a marginal area extend-

ing along said edges being sharply curved rearwardly transversely to the length of said edges through an angle of curva-



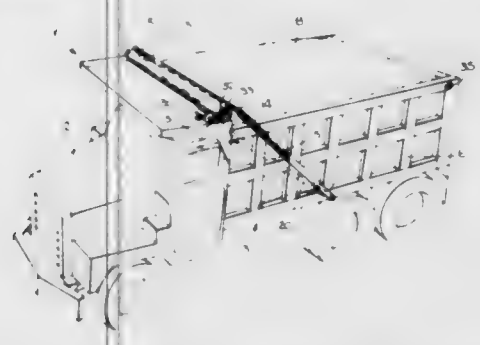
ture in excess of 90°, to provide an integral stiffening means on the windshield.

4,082,347

COVER ASSEMBLY

Raymond H. Petretti, Whitestone, N.Y., assignor to Toneray Covers, Inc., Whitestone, N.Y.

Division of Ser. No. 567,498, Apr. 14, 1975, Pat. No. 4,030,780.
This application Nov. 26, 1976, Ser. No. 745,061
Int. Cl.[2] B60J *7/06*
U.S. Cl. 296—98 **1 Claim**



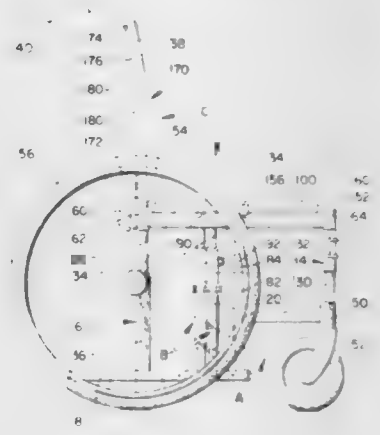
1. A cover assembly for a truck having a front cab portion and a rear tiltable open dump body, said cover assembly comprising a flexible cover, a rotatable rod at the front end of the open body, said cover being rolled around said rod and having one end mounted thereon, a cover pulling bar extending across the top of the open body and movable from one end of the open body to the other end of the open body, the other end of said cover being mounted on said pulling bar, a rotatable gear mechanism for controlling the rotation of said rod, said gear mechanism comprising a first sprocket mounted on the rotatable rod and a power source, said power source including a second sprocket and a chain connecting said first and second sprockets together, means for rotating the rotatable gear mechanism in one direction to rotate the rod in one direction to unroll the cover, means for moving the pulling bar toward the rear of the open body in one direction while the rod is being rotated in said one direction to move the cover to a body-covering position, means for rotating the rotatable gear mechanism in the opposite direction to rotate the rod in the opposite direction to roll up the cover and move the cover pulling bar toward the front of the open body, said cover pulling bar mounted on the upper ends of a pair of arms extending from opposite ends of the pulling bar along the sides of the open body, the lower ends of said arms are pivoted on a lower common shaft which extends transversely of and below the open body, said shaft being pivotally mounted below the open body, a finger extending from said lower shaft in a direction away from said arms, said finger being located below said open body, said bar-moving means comprising a spring, an adjustment bolt mounted on the forward portion of and below said open body, said spring having one end connected to said finger and its other end connected to said adjustment bolt and being spaced below said body when said cover is in its open position, the tension of the spring being adjustable by rotating the said adjustment bolt and lock clips adjacent the rear of the open body to hold the arms in the cover-closing rear position.

4,082,348

ADJUSTABLE WHEEL CHAIR

Gilbert E. Haury, Litchfield, Ohio, assignor to Invacare Corporation, Elyria, Ohio

Filed Mar. 1, 1976, Ser. No. 662,892
Int. Cl.[2] B62M *1/14*
U.S. Cl. 297—45 **13 Claims**



1. A collapsible wheel chair structure for permitting independent width and height adjustment of the seat, said wheel chair structure comprising in combination:

a pair of side frame assemblies disposed in a spaced apart side by side relationship, each of said side frame assemblies having upper and lower frame members, said front and rear frame members each being comprised of first and second portions longitudinally movable relative to each other;

first locking means cooperating between said first and second portions of said front and rear frame members for selectively locking said first and second portions in a desired longitudinal relationship with each other for varying the effective length of said front and rear frame members and the distance between said upper and lower frame members;

a front wheel disposed adjacent each of said front frame members and a rear wheel disposed adjacent each of said rear frame members, said front and rear wheels connected to said structure;

first and second cross brace assemblies pivotally connected together and extending generally transversely between said side frame assemblies intermediate said front and rear frame members, said cross brace assemblies each including first and second cross brace portions with one of said first and second cross brace portions being longitudinally movable relative to the other of said first and second cross brace portions, one end of one cross brace assembly being pivotally mounted to the lower frame member of one side frame assembly with the other end thereof extending to a position adjacent the upper frame member of the other side frame assembly and one end of the other cross brace assembly being pivotally mounted to the lower frame member of said other side frame assembly with the other end thereof extending to a position adjacent the upper frame member of said one side frame assembly, said cross brace assemblies permitting selective movement of said side frame assemblies relative to each other between a first closed position with said side frame assemblies closely spaced toward each other and a second opened position spaced apart from each other;

second locking means cooperating between the first and second cross brace portions of each cross brace assembly for selectively locking said first and second cross brace portions in a desired longitudinal relationship with each

other for varying the effective length of said cross brace assemblies and the effective distance between said first and second side frame assemblies when said assemblies are moved to said second position;

a seat extending between said side frame assemblies and having side edges operably connected to each cross brace assembly other end;

a seat back extending between said side frame assemblies at said rear frame members thereof;

means for selectively altering the size of said seat and seat back as the spacing of the side frame assemblies is altered; and,

guide means for guiding each cross brace assembly other end in a generally vertical direction as said side frame assemblies are moved between said first and second positions.

4,082,349

COMMERCIAL DUTY HIGH CHAIR

William Ballenger, Deerfield, Ill., assignor to Central Specialties, Inc., Chicago, Ill.

Filed May 12, 1976, Ser. No. 685,930
Int. Cl.[2] A47D *1/00*
U.S. Cl. 297—183 **12 Claims**



1. A long life high chair with rollers, including

a one piece molded seat, a curved skirt portion at the edge of the seat,

a looped upper frame member, having spaced side parts connected by a front part and a forwardly tilted rear part, said rear part having steering and pushing handle portions, each of the handle lower ends joined to each of the side parts and each of the handle upper ends joined to a transverse top portion, said handle and transverse portions touching a plane which forms an acute angle with a plane common to the side and front parts,

spaced unitary leg members, each leg member having a front leg and a rear leg and a connecting portion joining the tops of the legs, a caster assembly mounted to the bottom of each leg, curved side skirt portions sandwiched between the side parts of the upper frame member and the top connecting portions of the leg members in secured relationship,

a cross brace spanning the pair of aligned front legs of the unitary leg members, said cross brace engaging a forward portion of said unitary molded seat, said means fastening said cross brace to said aligned front legs, said cross brace positioned to support a forward part of the unitary molded seat along the curved skirt portion,

crotch retaining means to be secured between the central portions of said cross brace and said front part of the looped upper frame member, and

a basket member having a plurality of rigid peripheral rods and each of a pair rods being secured to adjacent legs, whereby said basket is mounted between the leg members and further braces such leg members.

4,082,350

SHELL-SHAPED CHILDREN'S SEAT FOR VEHICLES

Johann Tomforde, Magstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Division of Ser. No. 291,184, Sep. 22, 1972, Pat. No. 4,039,225.
This application Feb. 28, 1977, Ser. No. 772,680
Claims priority, application Germany, Sep. 22, 1971, 2147248
Int. Cl.[2] A47C *15/00*
U.S. Cl. 297—243 **19 Claims**



1. A shell-shaped children's seat for a vehicle, especially for a motor vehicle, which is equipped with a shell body with a seating surface means, with a backrest means terminating in a headrest means and with an impact cushion means extending substantially over a width of the shell body and resting on associated shell edge portions of the shell body within an area of the seating surface means, characterized in that the impact cushion means extends up to and is pivotally connected at a transitional area between the backrest means and headrest means, said impact cushion means being adapted to be tilted up visor-like after a disengagement of a locking means between the impact cushion means and the seating surface means for convenient boarding and leaving of the seat, the impact cushion means is provided with lateral indentations for extending therethrough the child's arms and with recesses at the bottom side thereof for extending therethrough the child's legs, the headrest means includes a force dissipating deformation member which has an approximately loop-shaped cross-section and is supported at a back wall means forming a part of the shell body, and in that a relatively fixed bracket means equipped with a footrest means having a padded bead means is provided between front and rear seats of the motor vehicle, a transverse slot means receiving a front edge of the children's seat is provided at the footrest means, and in that a detachable connection between the fixed bracket means and the back wall means of the shell body takes place by at least one rapid connecting means.

4,082,351

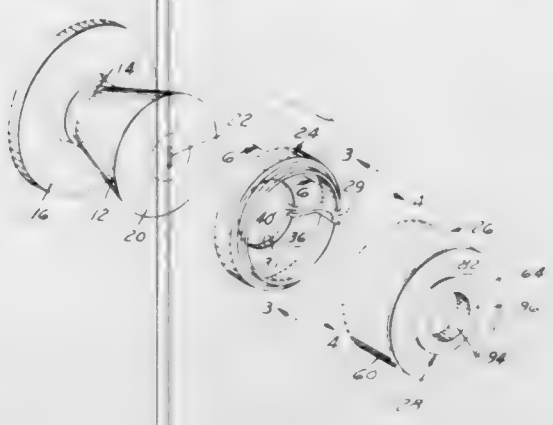
SAFETY COVER FOR A DOOR KNOB

Anthony Chrones, Warwick, R.I., assignor to Reliance Products Corporation, Woonsocket, R.I.

Filed Mar. 2, 1977, Ser. No. 773,644
Int. Cl.[2] E05C *21/00*; E05B *13/00, 1/04*
U.S. Cl. 297—347 **13 Claims**

1. A safety cover for application to a door knob which is assembled on a door and designed to complicate the opening of the door by small children comprising a pair of inner and outer annular cover parts having a hollow interior, with the inner cover part having a shank engaging rim portion surrounding a centrally located opening therein and an annular ring-like portion terminating in an annular fastening formation, a slot

extending through said rim portion and annular ring-like portion to permit the opening of said inner cover part for placement of the rim portion thereof around the shank of the door knob and said ring-like portion around and spaced from a portion of the door knob, said outer cover part including a cylindrical portion surrounding and spaced from the remaining portion of the door knob and having at one edge thereof an annular fastening formation for engaging and completely covering the fastening formation on said inner cover part, said engaged formations being hidden from view, the other edge of said cylindrical portion having a depending flexible wall portion which faces the front surface of the door knob and is provided with a centrally located opening therein, said flexible wall portion having inner and outer surfaces, a resiliently relatively thin pressure pad carried by said outer cover part and abutting the inner surface of said flexible plate portion for frictional engagement with the front surface of the door knob, said safety cover when turned rotating freely on the door knob and shank, said safety cover gripping the door knob and turning same when a sufficient force is applied to the outer surface of said flexible wall portion which urges said pressure pad against and into frictional engagement with the front surface of the door knob.

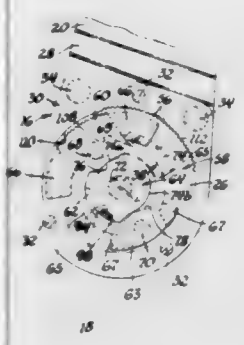


4,082,352

SEAT BACK RECLINER

Emmett R. Bales, and Randal T. Murphy, both of Morristown, Tenn., assignors to Lear Siegler, Inc., Morristown, Tenn.

Filed Jan. 13, 1977, Ser. No. 759,205
Int. Cl.[2] A47C *1/025*
U.S. Cl. 297—364 **14 Claims**



1. a seat back recliner comprising: seat back and cushion arms having plate-like ends connected to each other for movement about a pivotal axis; a plate-like locking ring positioned between the arm ends fixed to one of the arm ends encircling the pivotal axis; said locking ring including inwardly extending teeth arranged in an arcuate shape about the pivotal axis; a plate-like locking dog slidably supported on the other arm end within the locking ring between the arm ends; said locking dog having a toothed end for engaging and disengaging the ring teeth; manually operable actuating means for moving the locking dog between a locking position where the toothed end thereof engages the ring teeth to prevent pivoting of the seat back arm and a nonlocking position where the toothed end thereof is disengaged from the ring teeth to allow pivotal adjustment of the seat back arm and movement thereof to a forward easy-enter position; and blocking means operatively associated between the locking dog and the arm end on which the locking ring is fixed to prevent engagement of the toothed dog end and the locking ring during the forward extend to pivotal movement of the seat back arm to and from the easy-enter position with the actuating means manually released.

4,082,353

PAWL SEAT BACK LATCH MECHANISM

William M. Hollowell, Pacific Palisades, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.

Filed Dec. 13, 1976, Ser. No. 750,181
Int. Cl.[2] A47C *3/00*
U.S. Cl. 297—379 **4 Claims**



1. An inertia-responsive vehicle seat back latch mechanism for a vehicle seat assembly having a seat cushion support, and a seat back pivotally supported for forwardly tilting movement, said latch mechanism comprising:

first means integrally attached to said seat back for moving with said seat back; and

second means attached to said seat cushion support for being cammed free by said first means during a vehicle deceleration up to a first predetermined value, and said second means including means for lockingly engaging said first means during a vehicle deceleration greater than said first value so that said seat back is prevented from tilting forward.

4,082,354

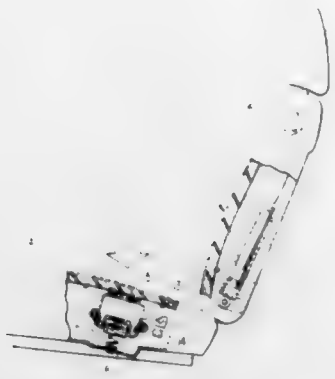
HEAD SUPPORT FOR BACKREST, ESPECIALLY OF MOTOR VEHICLES

Hermann Renner, Magstadt, and Siegfried Wacker, Schonaich, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Mar. 24, 1976, Ser. No. 669,769
Claims priority, application Germany, Mar. 25, 1975, 2513022
Int. Cl.[2] A47C *1/10*
U.S. Cl. 297—410 **15 Claims**

1. A head support for backrests which is operable to be displaced to and from a non-use position and an effective

position, characterized by control means for automatically moving the head support to said effective position in dependence on the load on and to said non-use position on removal of load from a seat means.



4,082,355

LOCKABLE BACK ON A SOFA BED

Edward M. Knabusch, and Edwin J. Shoemaker, both of Monroe, Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.

Filed Mar. 11, 1977, Ser. No. 776,501
Int. Cl.[2] A47C *4/02*
U.S. Cl. 297—440 **2 Claims**



1. In an upholstered sofa, an upholstered base frame, an upholstered back frame, said frames being separately upholstered, separable hardware on facing areas at the rear of the base frame and near the bottom of said back frame at both ends of the sofa, said separable hardware embodying a pair of slide brackets and a pair of support brackets, one support bracket secured on each end of the facing areas of the base frame, each slide bracket has the side edges reversely bent to form facing channels, said support brackets being made of two elongated strips, each having a pair of spaced conical portions at one end and a single conical portion spaced therefrom at the other end, said conical portions being joined at the smaller ends to provide a rear strip securable to the facing areas near the bottom ends of the back frame with the front strip forming slides at the side edges which extend into the facing channels of the slide bracket when moved downwardly thereover, and means on the slide bracket which engages and is secured to the support bracket for retaining the back frame in secured position on the base frame, the said strips having aligned apertures therethrough in the space between the one conical portion at one end and the two conical portions at the other end for screws and the like to secure the joined strips to the base frame, said retaining means on the slide bracket being a pivoted cam which is movable to lock the slide brackets onto the support brackets.

4,082,356

EDUCATIONAL PUZZLE CHAIR

Karin Ruth Johnson, 123 Glen Dr., Sausalito, Calif. 94965

Filed Feb. 25, 1977, Ser. No. 772,123
Int. Cl.[2] A47C *7/00*
U.S. Cl. 297—442 **6 Claims**



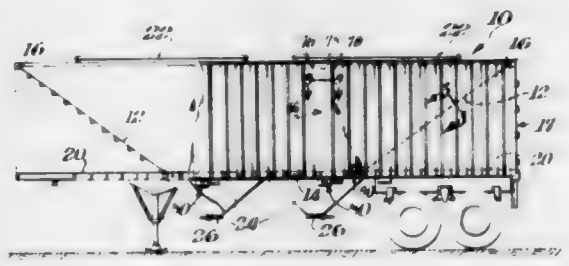
1. An educational puzzle chair, comprising the combination of two substantially square sides, a brace, two wedges, a seat, a back, and a step; the sides each have rounded corners and four slots, a lower vertical slot, a long horizontal slot, an upper vertical slot, and a short horizontal slot; the lower vertical slot is adapted to interlockingly engage one end of the brace, the long horizontal slot is adapted to interlockingly engage a vertical slot of the seat, the upper vertical slot is adapted to interlockingly engage a vertical slot of the back, and the short horizontal slot is adapted to interlockingly engage a vertical slot of the step; the wedges are adapted to interlockingly engage in two slots of the brace; all of the components are of such a size that they can be handled by pre-school children.

4,082,357

CONVERTIBLE VEHICLE BODY

George A. Schmidt, Langhorne; Ronald L. Zubko, Cornwells Heights, and Andrew Abolins, Langhorne, all of Pa., assignors to Strick Corporation, Fort Washington, Pa.

Filed Aug. 27, 1976, Ser. No. 718,106
Int. Cl.[2] B60P *1/56*
U.S. Cl. 298—27 **7 Claims**



1. A convertible vehicle body for transporting loose bulk or discrete cargo comprising a substantially rectangular floor, sidewalls, and roof forming said body, a hopper mounted below a portion of said floor for collecting and discharging bulk cargo disposed above it, the portion of said floor above said hopper comprising a grating capable of supporting said discrete cargo and having openings for permitting said loose bulk cargo to pass through it, hinge means within said body adjacent the ends of said roof, a slope sheet disposed in the ends of said body on both sides of said hopper for alternatively forming an inclined continuation of said hopper for transporting loose bulk cargo or for retraction upwardly therefrom to permit the entire length of the body to be used for transporting discrete cargo, the outer end of each of the slope sheets being rotatably connected within the body by the hinge means, flexible hoisting means connected from the roof of the body to the inner ends of each of the slope sheets for raising and lowering the inner ends from adjacent the roof of the body to the floor grating, operating means connected to the flexible hoist-

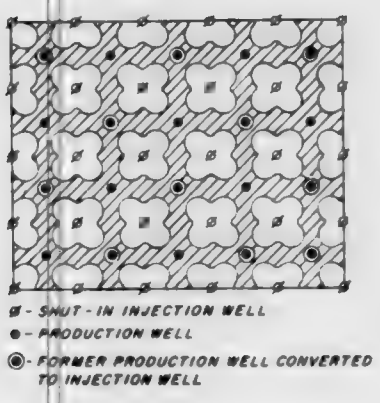
ing means for raising and lowering the inner ends of the slope sheets, latching means disposed adjacent the roof of the body and the raised inner ends of the slope sheets whereby said raised inner ends of the slope sheets are detachably secured, unlatching means connected to the latching means whereby the inner ends of the slope sheets may be released for lowering, slanting shelf channels on the inner sides of the body corresponding to the position of the sides of the slope sheets when they are in the hopper containing position, the outsides of the slope sheets being constructed and arranged for engaging the shelf channels to form a substantially tight seal therewith for preventing loose bulk cargo from passing between the sides of the slope sheets and the insides of the side walls, a pair of spools are provided for the inner end of each slope sheets which are disposed adjacent opposite sidewalls of the body, a transverse shaft extending across the top of the body and connected to each of the spools, a stub shaft extending outwardly from one of the spools, said drive means being connected to the stub shaft for rotating the spools, an operating handle is provided outside the vehicle in a position approximately under one of the spools, a chain and sprocket transmission connecting the operating handle to the stub shaft whereby the slope sheets may be raised and lowered from the outside of the body, the body has external vertical ribs, said chain and sprocket drive is disposed between a pair of said ribs, and a cover is mounted upon and across said pair of ribs to cover said chain and sprocket transmission.

4,082,358

IN SITU SOLUTION MINING TECHNIQUE

Robert P. Learmont, Feeley Township, Itasca County, Minn., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1976, Ser. No. 654,310
Int. Cl.² E21B *43/28*; E21C *41/14*
U.S. Cl. 299—4 **7 Claims**



1. Method of establishing a secondary production pattern for in situ leaching of mineral values from a formation wherein a primary leaching process has been conducted through an array of contiguous 5-spot leaching patterns of production wells and injection wells, comprising converting all the production wells in alternate rows diagonal to the original pattern to injection wells.

4,082,359

METHOD FOR THE RECOVERY OF A MATERIAL

Andrew P. Spence, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.; NM Uranium, Inc., Houston, Tex. and United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1976, Ser. No. 715,342
Int. Cl.² E21B *43/28*; E21C *41/14*
U.S. Cl. 299—4 **8 Claims**

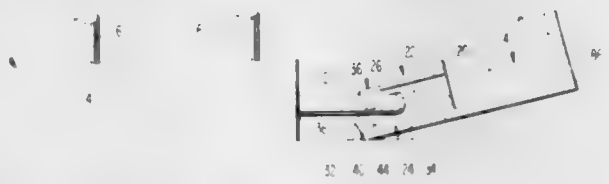
1. An improved method for the solution mining of a mineral from a subterranean formation containing same in which an injection and production well are drilled and completed within said formation, leach solution and an oxidant are injected through said injection well into said formation to dissolve said mineral, and said dissolved mineral is recovered via said production well, wherein the improvement comprises switching the functions of said wells when the oxidant concentration of the produced solution at said production well becomes greater than five parts per million, whereby said production well is utilized to inject said solution and oxidant and said injection well is utilized to recover said dissolved mineral.

4,082,360

MINING APPARATUS AND METHOD

John A. L. Campbell, Action, and Daniel J. Moynihan, Chelmsford, both of Mass., assignors to Peabody Coal Company, Belleville, Ill.

Filed Jun. 23, 1976, Ser. No. 698,885
Int. Cl.² E21D *15/48, 23/04*
U.S. Cl. 299—33 **16 Claims**



1. A chock having a base,
a ram horizontally moveable between inner and outer extremities at one side of said chock base,
an articulated conveyor support member shiftable between two conditions in the first of which conditions said support member occupies an area of relatively wide extent as measured horizontally and in the second of which conditions said support member occupies an area of relatively narrow extent as measured horizontally,
a connection between said ram and said articulated conveyor support member for moving the latter inwardly and outwardly with respect to the base, and means for shifting said support member from said first condition to said second condition upon movement of said ram from said outer extremity to said inner extremity and for shifting said support member from said second condition to the first condition upon movement of said ram from said inner extremity to said outer extremity,
said articulated conveyor support member comprising a pair of flange members, in the first of which conditions said flange members are disposed in laterally spaced relation to one another and in the second of which conditions they are disposed in vertically spaced relation to one another.

4,082,361

RACK DEVICE FOR A MINING MACHINE

Willy Lanfermann, Bochum, Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed Jul. 6, 1976, Ser. No. 702,890
Claims priority, application Germany, Jul. 10, 1975, 2530754
Int. Cl.² E21C *29/02*
U.S. Cl. 299—43 **22 Claims**



1. In combination with a mining machine, a rack device at the side wall of a face conveyor which includes a plurality of conveyor trough sections arranged end-to-end for extending along a generally horizontal path of travel by the mining machine, said rack device including, in combination:
a plurality of elongated rack segments having spaced-apart drive members along the length of each segment,

means connected with at least some of said conveyor sections to support the opposite ends of said rack segments at the side wall of the face conveyor for pivotal movement of each rack segment about horizontal axes, said means carrying the ends of adjacent rack segments in a spaced-apart relation to maintain a gap therebetween, at least some of said rack segments being coupled by said means with conveyor trough sections to bridge and maintain a gap between the ends of adjacent conveyor trough sections for unimpeded vertical movement and horizontal pivotal movement between the conveyor trough sections, and

a rotating element on said mining machine for driving engagement with the drive members of said rack segments to propel the mining machine along its course of travel.

4,082,362
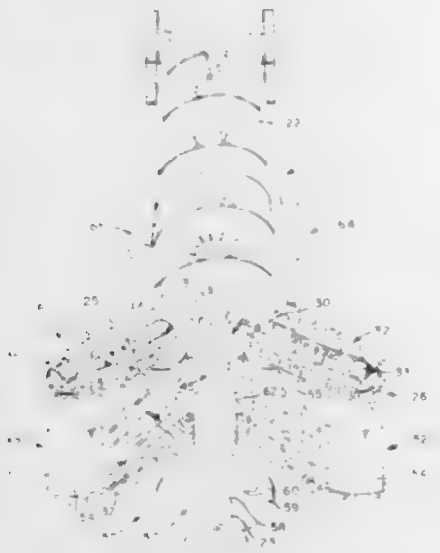
APPARATUS FOR COAL MINING IN-CUTTING AND OUT-CUTTING

James Conley Justice, and Frank A. Delli-Gatti, Jr., both of Beckley, W. Va., assignors to Coaltex, Inc., Beckley, W. Va.

Continuation-in-part of Ser. No. 649,579, Jan. 16, 1976, Pat. No. 4,003,602. This application Jan. 18, 1977, Ser. No. 760,422

Int. Cl.[2] E21C *27/22*

U.S. Cl. 299—57 **21 Claims**



1. A mining machine for cutting an in-bore and an out-bore larger than said in-bore during in-cutting and out-cutting respectively, comprising

(a) a non-rotatable body member, with stabilizing means for insuring non-rotative movement of said body member in a bore,

(b) a rotatable pilot cutting head, mounted in front of said body member, and means for rotating said pilot cutting head for cutting a generally circular in cross-section bore, said means for rotating said pilot cutting head including a rotatable shaft extending through said non-rotatable body member to said pilot head,

(c) a pair of wing-cutters pivotally mounted to said non-rotatable body member behind said pilot head in non-interfering relationship with said pilot head,

(d) conveying means mounted behind said wing-cutters in operative association with said body member, for conveying coal or the like cut by said pilot head and said wing-cutters away from the cutting site,

(e) means for pivotally moving said wing-cutters with respect to said non-rotatable body member from a first position, wherein said wing-cutters are in general alignment with said pilot cutting head and body member, during in-cutting to a second position wherein each of said wing-cutters extends outwardly with respect to said pilot cutting head, during out-cutting,

(f) means maintaining said wing-cutters in said second positions thereof during out-cutting thereby, and

(g) means for moving coal or the like cut by said wing-cutters during cutting toward the sides of the bore cut thereby, said means including (i) shield means associated with each of said wing cutters mounted for pivotal movement with said wing-cutters with respect to said body member, said shield means including a pair of shields, one associated with each wing-cutter, and disposed between said wing-cutter and said body member and said pilot head, and (ii) means surrounding said shaft for moving coal cut during in-cutting to the bore sides.

4,082,363

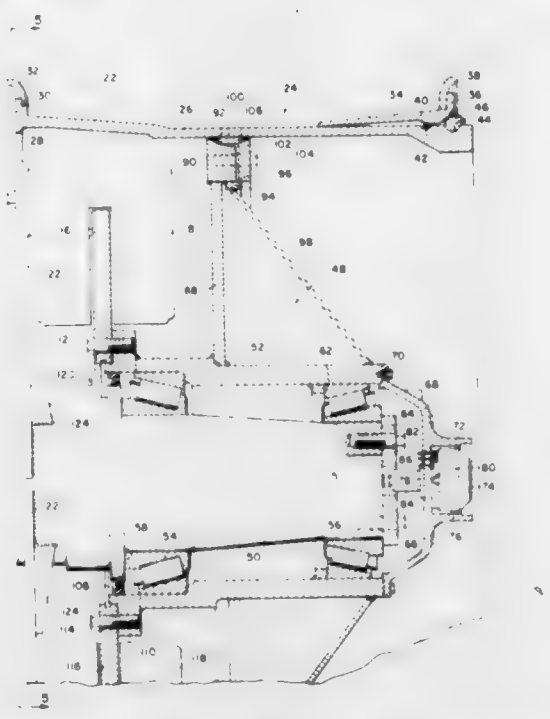
WHEEL RIM AND BRAKE DISC FOR OFF-HIGHWAY VEHICLES

Edgar R. Goodbary, Cardin, Okla., assignor to Goodbary Engineering Company, Cardin, Okla.

Filed Nov. 23, 1976, Ser. No. 744,437

Int. Cl.[2] B60T *1/06*

U.S. Cl. 301—6 CS **9 Claims**



1. In combination with a wheel rim for a vehicle, center support means removably secured within said wheel rim for rotatably and removably securing the rim to the vehicle and including rotatable means and non-rotatable means, caliper brake means secured to the non-rotatable means of the center support means, rotatable brake disc means removably secured to the rotatable means of the center support means and selectively engagable by said caliper brake means, and heat relief groove means provided on the inner periphery of the brake disc means for dissipating heat to preclude adhering of the brake disc member to the center support means.

4,082,364

METHOD AND APPARATUS FOR CHARGING BULK MATERIAL TO A PLURALITY OF RECEIVING STATIONS

Wolfgang Krambrock, Ravensburg, Germany, assignor to Waeschle Maschinenfabrik GmbH, Ravensburg, Germany

Filed Aug. 27, 1975, Ser. No. 608,218

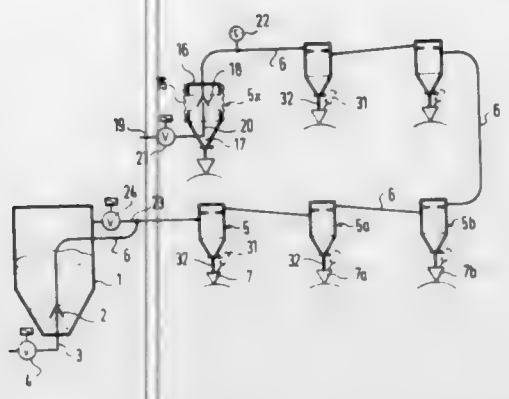
Claims priority, application Germany, Aug. 27, 1974, 2440888

Int. Cl.[2] B65G *53/04*

U.S. Cl. 302—28 **8 Claims**

1. A method of charging bulk material from a feed station to a plurality of receiving stations which are each connected in series to a pneumatic conveyor conduit by way of respective separators, comprising successively charging the individual receiving stations by way of their associated separators, each separator being substantially filled before bulk material is passed to the next successive separator, discharging exhaust air from the conveyor conduit circuit only at the most down-

stream separator, interrupting conveying by a blocking signal which is triggered when a predetermined level of material is reached in the last separator, and initiating continuation of



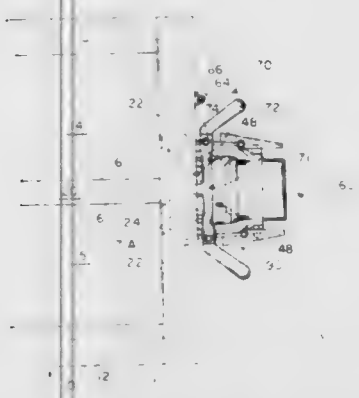
conveying only by reducing the level of material only in the most downstream separator below the level which triggers the blocking signal.

4,082,365

PNEUMATIC OUTLET OPERATING MECHANISM

Richard H. Dugge, St. Louis, and Ronald D. Van Dyke, Florissant, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation of Ser. No. 633,754, Nov. 20, 1975, abandoned.
This application May 4, 1977, Ser. No. 793,494
Int. Cl.² B65G *53/52*
U.S. Cl. 302—52 **4 Claims**



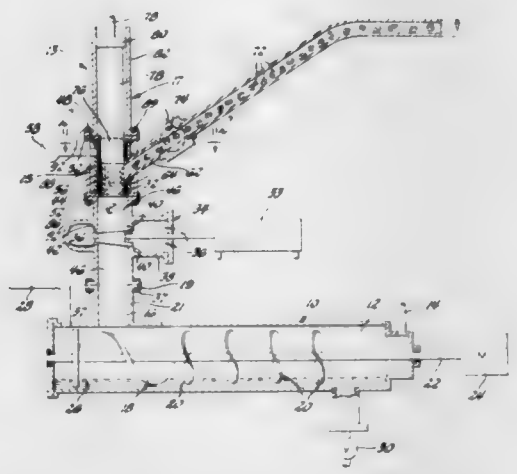
1. A pneumatic outlet comprising: side walls, end walls and a lower housing forming an interior chamber; a valve member mounted within the interior chamber for controlling the flow of lading from said outlet; a tubular conduit rotatably mounted on and extending from at least one end of said outlet and communicating at one end with the interior chamber; means interconnecting said valve member and said tubular conduit whereby rotation of the tubular conduit actuates the valve member to control the flow of lading from the outlet; said tubular conduit having a cylindrical outer surface; a hub member having at least one handle extending therefrom mounted for rotary and axially sliding movement on the cylindrical surface; clutch means on the tubular conduit and on the hub member which interengage in one axial position of the hub and disengage in another axial position of the hub whereby when the clutch means are engaged, the tubular member is connected to said hub and is rotated when said hub member is rotated by the handle, and when said clutch means are disengaged, the hub is free to rotate without rotating the tubular conduit whereby the handle and hub may be re-positioned; said conduit having at least one annular surface adapted to engage a hose coupling for discharging the outlet; a removable end cap in closed position covering said annular surface; locking means on said cap for maintaining said cap in closed position; and indexing means on said cap and said hub for insuring that when said cap is applied to the outlet said hub is in proper position for rotating said valve when limited clearance exists below said outlet.

4,082,366

FEEDING APPARATUS FOR LIGHTWEIGHT PLASTIC PARTICLES INTO A HIGH PRESSURE REACTOR

Clifford C. Duff, Warren, and Robert J. Salloum, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 18, 1977, Ser. No. 779,161
Int. Cl.² B65G *65/32*
U.S. Cl. 302—11 **1 Claim**



1. Apparatus for intermittently transferring low density plastic foam particles from a zone of substantially atmospheric pressure into a reactor operated continuously at a pressure substantially above atmospheric pressure, comprising:

a cylindrical open ended housing defining an inner chamber, an inlet to said chamber through the wall of said housing for said particles, an outlet at one of said open ends in communication with said reactor,

a sleeve retained in said chamber spaced apart from the wall of said housing extending to said outlet from at least said inlet and perforated with holes from said inlet to said outlet, said holes being sized to pass air while retaining said particles,

a piston means mounted at the other of said open ends with a piston reciprocative in said sleeve between a first position extending through said outlet and a second position remote from said outlet, said inlet located between said first and second positions,

first valve means at said inlet for controlling the admission of said particles through said inlet into said chamber,

a closable air vent from said housing synchronized to open with said inlet valve to facilitate the admission of said particles into said chamber by creating a vacuum applied at the air vent,

second valve means between said outlet and said reactor movable between open and closed positions, isolating said housing from said reactor in its closed position and permitting the movement of said particles pushed by said piston into said reactor in open position.

4,082,367

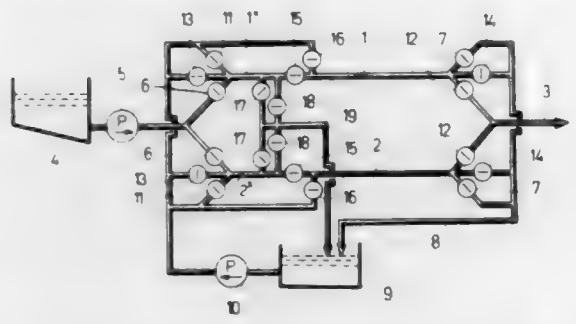
CONTINUOUSLY CHARGED PIPE-CHAMBER FEEDER PROVIDED WITH DIVIDED OR INTERMEDIATE CHAMBER FOR HYDRAULIC MATERIAL HANDLING

László Kocsanyi, Budapest, and Lajos Varga, Eger, both of Hungary, assignors to Heves Megyer Tánacsi Épitóipare Vállalat, Eger, Hungary

Filed Feb. 17, 1976, Ser. No. 658,461
Claims priority, application Hungary, Feb. 18, 1976, 680
Int. Cl.² B65G *53/30*
U.S. Cl. 302—14 **2 Claims**

1. A pipe-chamber feeder apparatus for handling of a liquid, comprising in combination:

two pipe chambers having respective first and second ends,
a delivery duct selectively connectable to the first ends of said chambers,
a liquid supply pump selectively connectable to one of said chambers for supplying the liquid thereto,
a relatively high pressure pump selectively connectable to the other of said chambers for transporting a recyclable delivery medium through one of said pipe chambers,
a basin for said medium selectively connectable to the ends of said chambers,
two intermediate chambers, each of said intermediate chambers including a section adapted to be selectively locked, and selectively connectable with one end thereof to a corresponding one of said pipe chambers, and



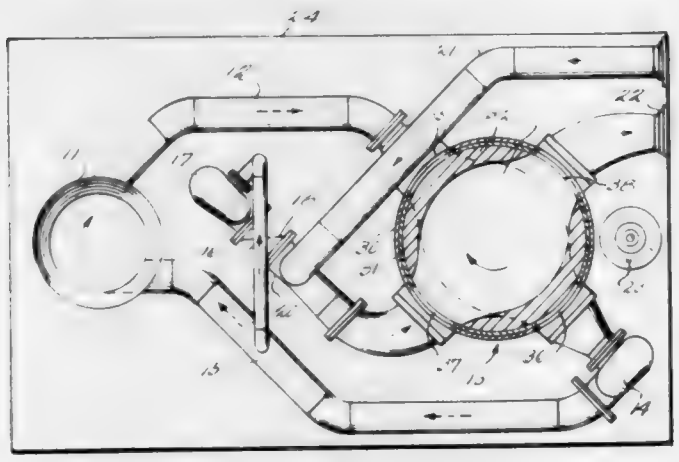
locking means for selectively connecting the ends of said intermediate chambers connectable to said pipe chambers to said basin, the other ends of said intermediate chamber being selectively connectable to one of said pumps,
whereby, upon a corresponding one of said sections being locked from a corresponding one of said pipe chambers, and upon said locking means being open to provide for the delivery medium to flow therethrough with the periodic assistance of said high pressure pump to alternately force the liquid through said pipe chambers, respectively, the liquid is supplied continuously through said supply pump to said pipe chambers in an alternate manner, and continuously discharged substantially free from pressure fluctuation through said delivery duct.

4,082,368

METHOD AND APPARATUS FOR HYDRAULIC TRANSMISSION OF COAL, OIL SHALE, MINERAL ORES, ETC. FROM THE FACE TO THE SURFACE OF UNDERGROUND MINES

Erwin D. Funk, Glens Falls, N.Y., assignor to Kamyr Inc., Glens Falls, N.Y.

Continuation-in-part of Ser. No. 489,038, Jul. 16, 1974, Pat. No. 3,982,789. This application Sep. 3, 1976, Ser. No. 720,391
Int. Cl.² B65G *53/30, 53/46*
U.S. Cl. 302—14 **4 Claims**



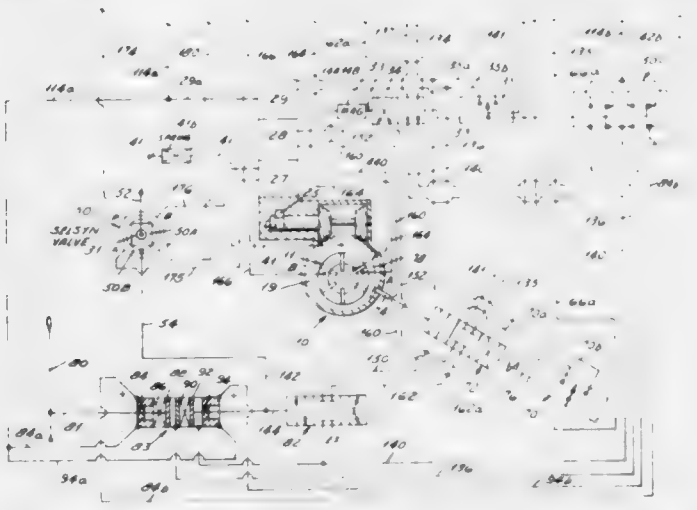
1. A process of continuously conveying mined material, such as coal or the like, from a mine site to a remote location, such as a point of utilization, said process comprising the steps of:
progressively moving a supply of mined particles from the position at which they are mined at the mine site to a supply position at the mine site,
confining a liquid within a first path including a volume defining a free surface disposed at said supply position,
progressively introducing mined particles from said supply at said supply position into the liquid within said first confined path downwardly through the free surface thereof,
maintaining a continuous flow of liquid and entrained particles from said volume into an incremental volume removal position within said first path,
confining liquid within a second path which extends from said supply position to said remote location,
continuously maintaining a flow of liquid within said second path in a direction from said supply position to said remote location by pumping the same at a pumping position,
removing successive incremental volumes of liquid and entrained particles within said first path adjacent said supply position by blocking the flow of particles above a predetermined small size at said incremental volume removal position while permitting liquid and particles less than said predetermined size to flow within said first path beyond said incremental volume removal position and communicating said succcessive removed volumes of liquid and entrained particles with the liquid flowing in said second path at a position adjacent said supply position downstream of said pumping position, and
removing a corresponding incremental volume of liquid from said second path adajacent said supply position at a position between said pumping position and said remote location for each successive incremental volume of liquid and entrained particles removed from said first path and communicating said corresponding removed incremental volumes of liquid with the liquid in said first path adjacent said supply position so that a substantially equal volumetric exchange between said paths takes place resulting in a net flow of mined particles from said first path to said second path and a substantially equal net flow of liquid from said second path to said first path.

4,082,369

ANTI-SKID AND PRESSURE BALANCED HYDRAULIC BRAKE SYSTEM

Richard D. Black, 1815 Russell, Lincoln Park, Mich. 48146, and Thomas E. Morgan, Jr., 2838 Aspen La., Bloomfield Hills, Mich. 48013

Filed Aug. 2, 1976, Ser. No. 711,110
Int. Cl.² B60T *8/02*
U.S. Cl. 303—3 **29 Claims**



1. A variable displacement rotary transmission device for use as a pump and motor in a hydraulic power system which comprises:
(a) a pump housing having a circular recess,
(b) a stator ring having a circular periphery movable in

rotation in said recess having a circular rotor recess off-center from the periphery,

(c) a rotor having radial vanes in the circular recess of said stator ring,

(d) a port plate on one side of said stator ring and rotor having inlet and outlet ports in the area of rotation of said vanes of said rotor, and

(e) means to effect relative rotation of said stator ring and said port plate to alter the spacing between the periphery of said rotor and the inner wall of said recess in said stator ring to create areas of compression and expansion for fluid around said rotor.

4,082,370

MONITORING DEVICE FOR AN ANTILOCKING BRAKE CONTROL SYSTEM

Heinz Leiber, and Udo Blasius, both of Leimen, Germany, assignors to Teldix G.m.b.H., Heidelberg, Germany

Filed Jan. 25, 1977, Ser. No. 762,454
Claims priority, application Germany, Feb. 4, 1976, 2604148
Int. Cl.[2] B60T *8/00*
U.S. Cl. 303—92 **9 Claims**



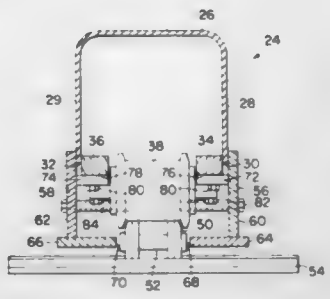
1. In the combination of an antilocking control system, including a plurality of different electrical components, for wheel brakes of a vehicle, and a monitoring device for the electrical components or groups of electrical components in said antilocking brake control system, said monitoring device including respective switching means, each connected to an associated component or group of components, for monitoring the components and for generating a signal at a respective output upon the occurrence of a malfunction, and a memory arrangement for storing any such generated signal; the improvement wherein: said switching means are associated with and monitor a plurality of different type electrical components or groups of electrical components which are located at correspondingly different points of the antilocking brake control system for malfunction; and said memory arrangement includes memory means, having a plurality of inputs, for providing at least a number of memory states which corresponds to the number of components or groups of components to be monitored, and circuit means for interconnecting the outputs of said switching means and the inputs of said memory means in such a manner that, upon occurrence of a signal indicating a malfunction, the memory state of said memory arrangement which is associated with the one of said switching means producing said signal indicating a malfunction will be actuated.

4,082,371

SUPPORT AND GUIDE FOR A TRACK OF A TRACK-LAYING VEHICLE

Gregory Keith Werner, Dubuque; Kenneth Oscar Switzer, Peosta, both of Iowa, and Raymond G. St. Laurent, Amos, Canada, assignors to Deere & Company, Moline, Ill.

Filed Aug. 2, 1976, Ser. No. 710,561
Int. Cl.[2] B62D *55/20*
U.S. Cl. 305—56 **4 Claims**



1. A track frame and track combination for a track laying vehicle comprising: a main longitudinally extending support member defining a pair of transversely spaced vertical walls having respective lower edges, a pair of longitudinal mounting bars respectively fixed to inner surface portions of the pair of walls in overlapping relationship to the respective lower edges of the walls; track support rollers connected to respective downwardly facing mounting surfaces of the pair of mounting bars at longitudinally spaced and aligned locations between the walls and having portions extending below the edges; a track drive sprocket supported at a first end of the support member; a track idler wheel supported at a second end of the support member; a track extending around the support member and thus defining upper and lower runs and including a plurality of track shoes having a width greater than the transverse dimension of said support member and being hingedly interconnected by pin assemblies including parts positioned so as to mesh with teeth of said sprocket as they travel thereover and to engage the support rollers when the track passes thereunder; track support and alignment means including first and second longitudinally extending track guide and support members including main vertical portions respectively fixed to and embracing outer surface portions of the pair of transversely spaced walls above the lower edges of the latter and extending therebelow and including respective guide and support portions extending generally horizontally above and adjacent to ground-contacting portions of the track shoes and including edge portions respectively terminating adjacent opposite ends of those of said pin assemblies located in the lower run of the track; and transverse mounting tabs fixed to the main vertical portions of the first and second track guide and support members and being releasably secured to the mounting surfaces of the pair of mounting bars.

4,082,372

NOISE REDUCING DEVICE FOR A TRACK CHAIN ARRANGEMENT

Naoto Kozuki, Sagamihara, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Nov. 18, 1976, Ser. No. 742,974
Claims priority, application Japan, Jan. 26, 1976, 51-007251
Int. Cl.[2] B62D *55/12*
U.S. Cl. 305—57 **5 Claims**

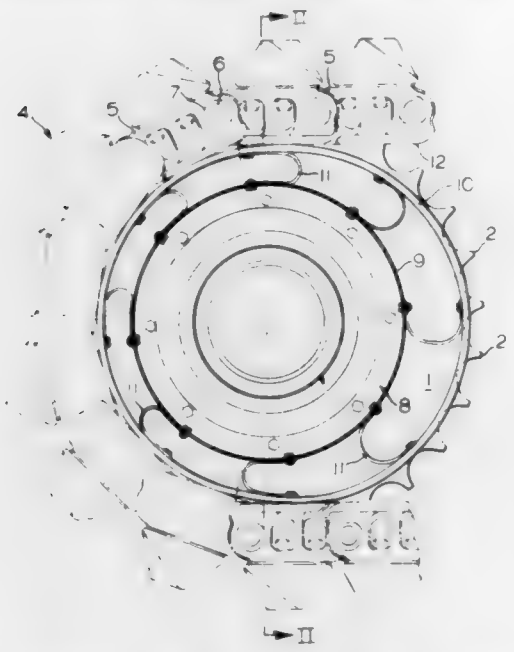
5. A noise reducing device for a track chain arrangement, the chain arrangement being of the type which includes a sprocket having a plurality of teeth provided thereon and a pair of endless track chains trained around the sprocket, each chain having an inwardly facing surface, the noise reducing device comprising:

a pair of annular supporting brackets secured to the opposite sides of the sprockets;

a plurality of curved plate springs secured to the radially

outer surfaces of said pair of annular supporting brackets; and

a pair of resilient metal hoops individually encircling and spaced outwardly from the annular supporting brackets



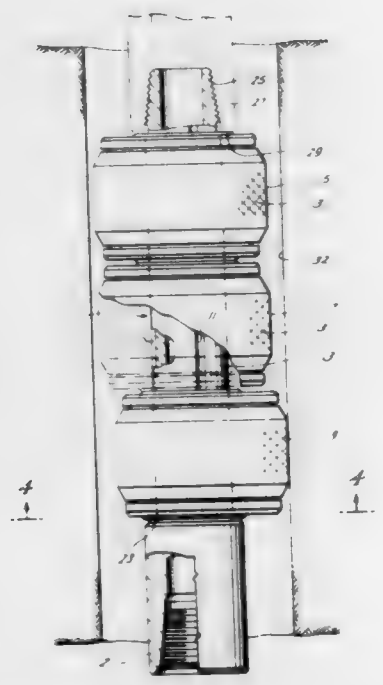
and secured to the respective curved plate springs whereby said resilient metal hoops resiliently engage the inwardly facing surface of said track chains to lessen the impact between the track chains and the sprocket teeth.

4,082,373

TANDEM ROLLER STABILIZER FOR EARTH BORING APPARATUS

Jackson M. Kellner, Midland, Tex., assignor to Smith International, Inc., Midland, Tex.

Filed Sep. 7, 1976, Ser. No. 721,090
Int. Cl.[2] E21B *17/10*
U.S. Cl. 308—4 A **7 Claims**



1. Wall contacting tool, comprising

a tubular body including a portion providing a mandrel having a generally cylindrical outer periphery,

a plurality of eccentric roller assemblies disposed in tandem along the length of the mandrel, and

orientation means for positioning said roller assemblies with their common eccentric diameters in desired azimuthal orientation about the mandrel axis,

said orientation means comprising:

a plurality of grooves of semi-circular cross-section extending axially in the outer periphery of the mandrel and being spaced azimuthally about the axis of the mandrel,

groove means of semi-circular cross-section extending axially in the inner periphery of each roller assembly,

said groove means in each roller assembly being adjacent a different one of said grooves in the mandrel and forming therewith a cylindrical opening, and

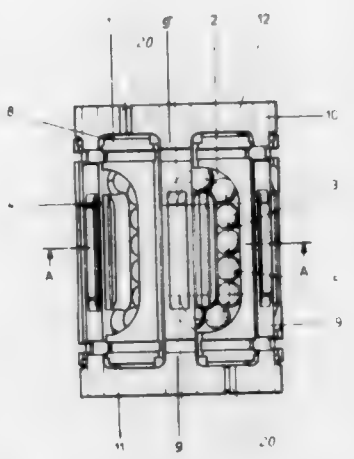
a cylindrical pin in each said opening, said pins being axiumthally spaced apart about the axis of the mandrel.

4,082,374

AXIALLY MOVABLE BEARING DEVICE

Horst Manfred Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt; Rainer Schurger, Schwanfeld; Manfred Brandenstein, Aschfeld, and Erich Burkl, Stammheim, all of Germany, assignors to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Jul. 22, 1976, Ser. No. 707,531
Claims priority, application Germany, Aug. 16, 1975, 2536658
Int. Cl.[2] F16C *27/06*
U.S. Cl. 308—6 C **2 Claims**



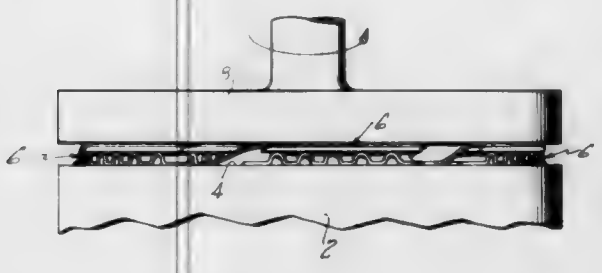
1. In an axially movable bearing including a cage having a plurality of circumferentially distributed guideways for rolling elements, each guideway including first and second axially extending channels interconnected at their ends, rolling elements in said guideways, said first channels being open radially inwardly to permit rolling elements therein to engage a shaft, and a thin-walled metal bearing housing fitted over said cage, said housing comprising (i) bridge sections aligned with said first channels, each bridge section defining a race portion engaging the rolling elements in a first channel and end portions axially beyond said race portions, (ii) slotted sections between said bridge sections through which said second channels extend radially outwardly, and (iii) means at said end portions joining said bridge sections, the improvement wherein the race portion of each bridge section has hardness substantially greater than the end portions thereof, and said end portions define a generally straight bore except for projections extending radially inward from said bore surface, said projections defining an inner diameter slightly smaller than the outer diameter of said cage, and said cage includes recesses corresponding to said projections and extending radially inward for receiving said projections, said unhardened end portions being resiliently deformable to engage said cage and recesses, whereby said housing is removably secured into said cage.

4,082,375

DUAL WEDGE FLUID THRUST BEARING INCLUDING WAVE SPRING

William E. Fortmann, West Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1976, Ser. No. 751,579
Int. Cl.[2] F16C *32/06*
U.S. Cl. 308—9 9 Claims



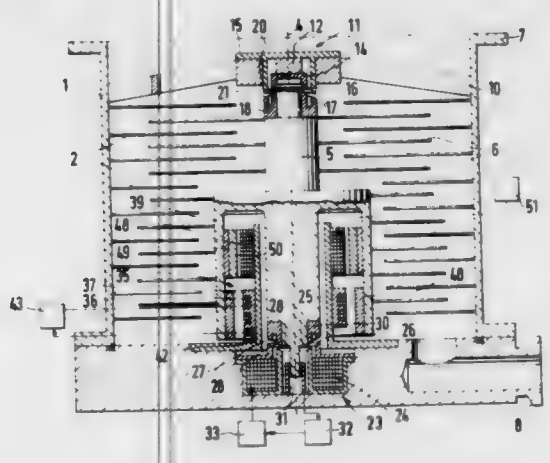
1. A thrust bearing including:
a base member having a bearing surface thereon;
a supported member above said base member and having a cooperative bearing surface spaced above the bearing surface on the base member, the members being relatively rotatable; and
a bearing insert assembly positioned between said bearing surfaces and including:
a resilient wave-shaped element resting on the first bearing surface,
a relatively thick flexible plate resting on and supported by said wave-shaped element in spaced relation to the first bearing surface, and
a relatively thin plate on said thick plate and between said thick plate and said second bearing surface, said thin plate having a leading end extending forwardly in the direction of relative rotation beyond the thick plate, and being attached at this leading end to the first bearing surface.

4,082,376

BEARING ARRANGEMENT

Heinz Wehde, Rothenberg, and Willi Becker, Braunfels, both of Germany, assignors to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Asslar and Teldix G.m.b.H., Heidelberg, both of, Germany

Filed Dec. 4, 1975, Ser. No. 637,744
Claims priority, application Germany, Dec. 6, 1974, 2457783
Int. Cl.[2] F16C *39/00*
U.S. Cl. 308—10 20 Claims



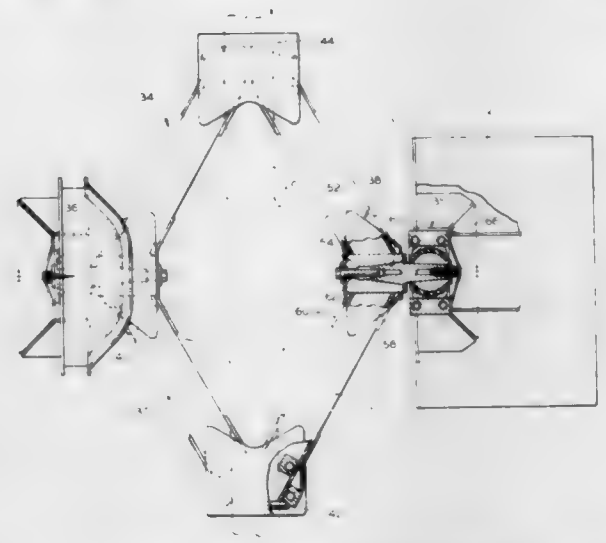
1. A device comprising: a first member; a second member disposed for rotation within, and about an axis relative to, the first member; means defining an electric motor and rotating said second member and including a motor stator on said first member; a first magnetic bearing unit composed of at least one permanent magnet mounted on one of said members and a component part of the other of said members composed at least in part of ferromagnetic material and cooperating with said permanent magnet; a second magnetic bearing unit composed of at least one actively controlled electromagnet mounted on said first member and a component part of said second member composed at least in part of ferromagnetic material and cooperating with said electromagnet; said first and second magnetic bearing units providing axial tensioning forces for said second member and having a substantially coaxial configuration to effect passive stabilization in the radial direction; a sensor disposed for sensing the axial position of said second member relative to said first member and connected to control the axial force produced by said second magnetic bearing unit; damping circuit means disposed for damping oscillations of said second member in a radial direction and including a coil mounted on said first member; wherein said second member comprises a bell-shaped portion, and said second magnetic bearing unit, said sensor, said coil of said damping circuit means and said motor stator constitute a group of components extending at least partially into said bell-shaped portion.

4,082,377

AXLE CRADLE MOUNTING HAVING ELASTOMERIC SPHERICAL BUSHINGS

Lawrence Allan Saunders, Stratford, Canada, assignor to Clark Equipment Company, Buchanan, Mich.

Filed Sep. 24, 1976, Ser. No. 726,329
Int. Cl.[2] F16C *27/02*
U.S. Cl. 308—15 6 Claims



6. A bearing for the cradle mounting assembly of a vehicle comprising a spherical bushing having an inner race and an outer race, an elastomeric interface bonded therebetween, the elastomeric interface being pre-stressed to limit oscillation between the inner race and the outer race, and the inner race of the bushing including an outwardly extending shaft portion complementary to a bore provided in the cradle, for mounting the cradle and the bushing in assembled relation.

4,082,378

DEFORMABLE BEARING SEAT

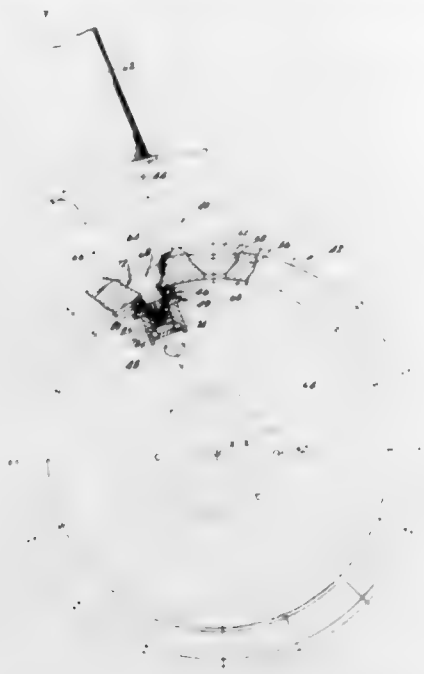
Donald A. Gries, Oregonia, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 14, 1975, Ser. No. 595,746
Int. Cl.[2] F16C *35/04, 35/06*
U.S. Cl. 308—15 9 Claims

3. In a thrust generating gas turbine engine having a blade and ring assembly mounted for rotation about a first axis, said assembly including a plurality of blades each rotatably secured to said ring for rotation about a second axis, a plurality of bearing assemblies each disposed adjacent one of said blades, means for securing said plurality of blades to said ring the combination comprising:
a deformable seating surface associated with one of said of bearing assemblies, said seating surface having a first

predetermined contour when said ring is in an undeformed mode; and

a bearing race in at least one of said bearing assemblies, said race having a first surface engaging said deformable seating surface, said seating surface in engagement with said



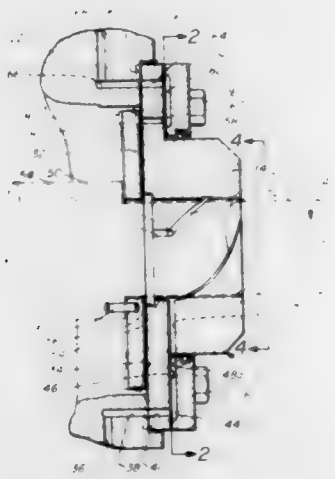
first surface over a first contact area when said ring is in said undeformed mode, said seating surface deformable from said first predetermined contour to a deformed contour when said ring is in a deformed mode, said seating surface in engagement with said first surface over a second contact area when said ring is in said deformed mode.

4,082,379

BEARING ASSEMBLY

Judson S. Swearingen, 2235 Carmelina Ave., Los Angeles, Calif. 90064

Filed Oct. 19, 1976, Ser. No. 733,874
Int. Cl.² F16C *35/08*
U.S. Cl. 308—26 **25 Claims**



1. A bearing assembly comprising:

a shaft member;

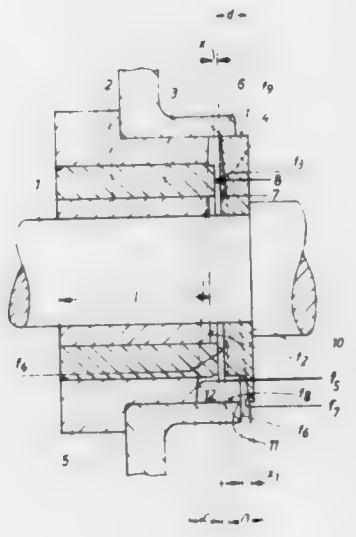
a journal bearing member having an annular journal portion receiving said shaft member for relative rotation between said two members, said journal portion and said shaft member having opposed generally cylindrical rotary bearing surfaces, and an annular flange portion extending radially outwardly from said journal portion, the effective radial rigidity of said flange portion being less than the radial rigidity of said journal portion.

4,082,380

AXIAL THRUST SLIDING BEARING FOR CENTRIFUGAL PUMPS AND COMPRESSORS

Franz Klaus, Uhlandstrasse 54, 4630 Bochum, Germany, and Franz Johann Potrykus, Bochum, Germany, assignors to said Franz Klaus, by said Franz Johann Potrykus, Bochum, Germany

Filed Sep. 2, 1976, Ser. No. 719,830
Claims priority, application Germany, Sep. 4, 1975, 2539425
Int. Cl.² F16C *17/04*
U.S. Cl. 308—163 **6 Claims**



1. In an axial thrust sliding bearing for a shaft-driven centrifugal fluid handling machine having an exterior housing, said sliding bearing having

a bearing flange carried by the exterior housing of said fluid handling machine;

a bearing support sleeve secured to said bearing flange;

a bearing bushing retained in said bearing support sleeve and secured therein against rotation, said bearing bushing having a first, radial front end thrust bearing surface; and

a bearing ring disc secured to said shaft for rotation therewith and having a second, radial thrust bearing surface for bearing against said first, radial front end thrust bearing surface, said bearing flange projecting beyond said first and second thrust bearing surfaces;

the improvement comprising the facts that;

(a) said bearing flange has an inner surface adjacent said bearing support sleeve and a portion of said bearing ring disc;

(b) said bearing bushing and said bearing ring disc are located relative to each other with a space between said first and second thrust bearing surfaces to provide non-contact accommodation of axial thrust when a pressurized fluid is introduced therein;

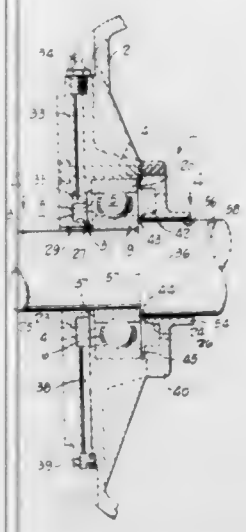
(c) said bearing support sleeve has a front end surface extending at a small angle obliquely with respect to said first and second thrust bearing surfaces; and

(d) said bearing ring disc has an axially opposite front end surface disposed outside of said second, radial thrust bearing surface, said axially opposite front end surface extending radially outwardly toward said inner surface of said bearing flange and extending at a small angle obliquely with respect to said first and second thrust bearing surfaces, said axially opposite front end surface being spaced axially beyond and away from the front end surface of the bearing flange for a portion of their circumference.

4,082,381
LUBRICATED BEARING ASSEMBLY

Frank B. Simmons, Lyndhurst; Alex Bozsvai, Solon; Louis A. Kovacs, Ashtabula, and Robert P. Gerbetz, Euclid, all of Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Filed Sep. 24, 1976, Ser. No. 726,121
Int. Cl.² F16C *1/24*
U.S. Cl. 308—187 **18 Claims**

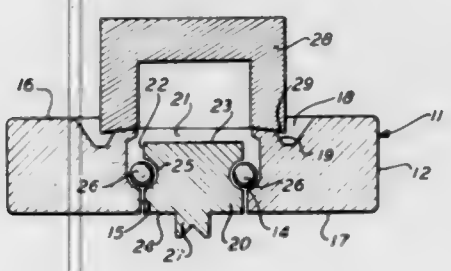


1. A lubricated bearing assembly comprising in combination,
a machine frame having an outer raceway,
a rotatable shaft having an inner raceway,
a bearing having a plurality of rollable elements disposed between and in rolling engagement with said raceways,
a first wall in said frame defining a first grease cavity on a first side of said bearing,
a second wall in said frame defining a second grease cavity on the second side of said bearing,
said first grease cavity being outboard of said second grease cavity in said machine frame,
a grease inlet passageway in said frame leading from the exterior of said frame to one of said grease cavities,
and means including vane walls defining vanes in said second cavity and including the revolution of said rollable elements for locally pressuring the grease at said vanes to move grease from said second to said first cavity.

4,082,382
METHOD FOR MANUFACTURING BALL BEARINGS; A SINTERED METAL OUTER RACE PREFORM FOR USE THEREIN; AND A BALL BEARING PRODUCED THEREBY

Nick A. Aromando, Lyndhurst, N.J., assignor to Hillside Metal Products, Inc., Newark, N.J.

Division of Ser. No. 435,683, Jan. 23, 1974, Pat. No. 4,017,951, and a continuation-in-part of Ser. No. 324,733, Jan. 18, 1973, abandoned. This application Sep. 16, 1976, Ser. No. 724,017
Int. Cl.² F16C *33/36*
U.S. Cl. 308—190 **22 Claims**

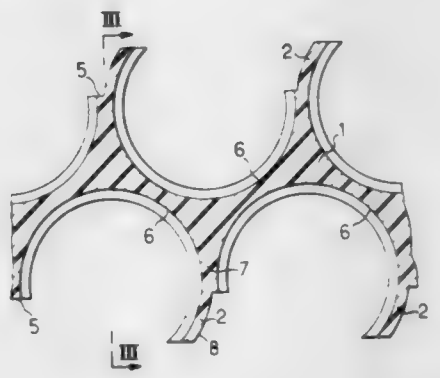


1. An annular ball bearing outer race preform having an inner annulus comprising:
(a) an integrally formed, generally annular outer race body member of molded and sintered metal powder having an annular outer face defining the rolling periphery of said bearing,
(b) an inner annular face on the outer race body member contiguous to said annulus and concentrically disposed in spaced relationship with respect to said annular outer face,
(c) radially inwardly disposed first ball bearing entrapment means on said annular inner face,
(d) a side face on the body member joining the inner and outer annular faces,
(e) a generally annular wedge-shaped flange on said face substantially concentric with the inner and outer faces,
(f) a wall on said flange straight from top to bottom, distal to said annulus extending from the side face obliquely upwards toward the said annulus, and
(g) the said flange being deformed by engagement with a deforming tool having a working face straight from side to side which tool is progressively advanced against said flange generally parallel to the axis of the annulus.

4,082,383
BALL CAGES FOR BALL BEARINGS OF THE ANGULAR CONTACT TYPE HAVING A DOUBLE ROW OF BALLS WITH OPPOSED ANGULAR CONTACTS

Jean Parmentier, Bagnolet; Jacques Saurais, Neuilly-sur-Seine, and Gérard Carre, Levallois-Perret, all of France, assignors to SKF Compagnie d'Applications Mecaniques, Clamart, France

Filed Dec. 2, 1976, Ser. No. 746,952
Claims priority, application France, Dec. 17, 1975, 75 38699
Int. Cl.² F16C *33/40*
U.S. Cl. 308—194 **2 Claims**

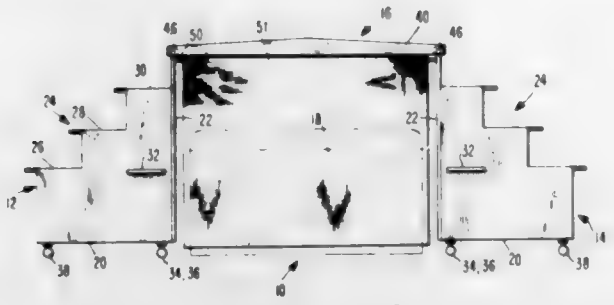


1. In a ball cage for a ball bearing of the angular contact type, said bearing including a double row of balls with opposed angular contacts, said cage permitting introduction of said balls thereinto in a direction axially of said cage and retaining said balls elastically therein and comprising a solid ce..tral portion defined between two concentric cylindrical surfaces and between two parallel planes extending perpendicular to the axis of said cylindrical surfaces, means defining cells in said solid central portion, each of said cells having a part-spherical surface for receiving one of said balls, said cells being disposed in axially directed side parts of said solid central portion, and lips projecting from said solid central portion axially beyond said parallel planes, each of said lips having a surface which forms a continuation of said part-spherical surface of one of said cells, the improvement wherein only a single one of said lips is disposed between each adjacent pair of said cells in each of said axially directed side parts, said lips in each of said axially directed side parts being similarly oriented and each lip including a base where said lip joins said central portion and means adjacent said base defining an area which lies in one of said parallel planes, said area having substantially the shape of two triangles arranged to apex with a minimum width of said area at said apices substantially midway in a radial direction of said two concentric cylindrical surfaces.

4,082,384
CASKET CANOPY

Anthony A. Dold, Richmond, Minn. 56368

Filed Jul. 19, 1976, Ser. No. 706,352
Int. Cl.[2] A47B *81/00*
U.S. Cl. 312—3 6 Claims



1. A casket canopy assembly for use in forming a backdrop for a casket to be displayed and for providing support surfaces for decorations to be placed about the casket, said casket canopy assembly comprising:

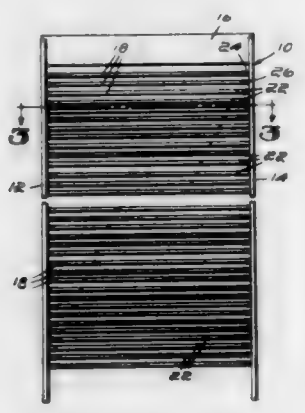
first and second spaced end wing units, each of said end wing units including a vertical inner wall and a tiered outer wall, each said tiered wall having a plurality of horizontal support shelves extending outwardly from said tiered wall perpendicularly to said inner wall, each said inner wall including an upper portion extending above an uppermost one of said horizontal shelves, each of said end wing units further including casters secured to a base portion thereof; and

a horizontal, elongated top, said top including first and second top halves, a first end of each of said top halves being secured to said upper portion of said vertical inner wall of one of said end wing units, said top halves extending perpendicularly inwardly from said vertical inner walls of said end wing units and having second end portions adjacent each other when said casket canopy assembly is in use, said vertical inner walls and said horizontal top halves cooperating to form an enclosure within which the casket is placed during use of said casket canopy assembly, said spaced end wing units being positioned at opposed ends of said casket with said vertical inner walls being parallel to each other and to the ends of said casket.

4,082,385
RECORD ALBUM FILING CABINET

James V. Morrone, 16 Forrest St., Winthrop, Mass. 02152

Filed Apr. 19, 1972, Ser. No. 245,435
Int. Cl.[2] A47B *81/06*
U.S. Cl. 312—10 5 Claims

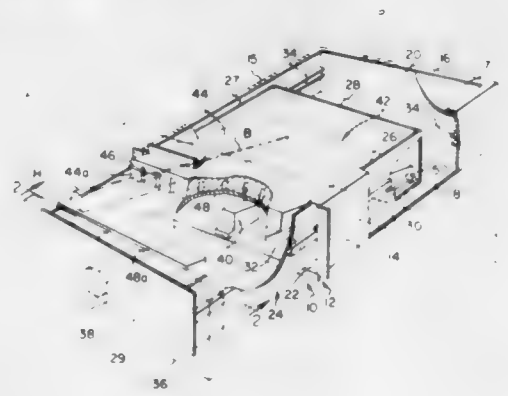


1. A cabinet for filing folders containing phonograph records which comprises a body having side walls and a top wall, and a plurality of shelves secured between the side walls in spaced relation to each other a distance apart slightly greater than the record folder to be filed, each of said shelves having an extended tab portion along the front edge, each tab from top to bottom being of slightly greater width than the preceding tab; a plurality of folders, each of said folders having a cutout portion along one edge slightly greater in length than the width of a tab on a particular shelf whereby a folder presented to the cabinet for filing will fall onto an adjacent shelf wherein the length of the cutout portion is less than the width of the tab on that shelf, thus each folder may be returned to its proper shelf after use.

4,082,386
DRAWER FOR KNIVES AND OTHER UTENSILS AND TOOLS

Onan S. Beasley, Jr., Rte. 2, Box 1823, Madras, Oreg. 97741

Filed Jul. 1, 1976, Ser. No. 701,589
Int. Cl.[2] A47B *97/00*
U.S. Cl. 312—204 10 Claims



1. A drawer assembly comprising:

a drawer casing means defining a drawer-receiving space with a front opening into said space,

a stationary riser means extending upwardly from said casing into said space,

a drawer adapted to be slidably received within said space through said front opening, said drawer including a front, a back, a top access opening and a bottom opening enabling said riser means to extend upwardly into said drawer when said drawer is both opened and closed,

a holder means within said drawer for the retention of selected items, said holder means being pivoted to said drawer rearwardly and below the top of said riser means for vertical movement about a pivot axis transverse to the direction of sliding movement of the drawer,

said holder means being supported forwardly of said pivot axis at an inclination within said drawer on said riser means in both the open and closed position of the said drawer such that when said drawer is closed, said holder means lies wholly within said drawer space and when said drawer is opened, a forward free end of said holder means lies outwardly of said front opening and projects upwardly toward the top access opening of said drawer to provide ready access to the items within said holder means.

4,082,387
VEHICLE CONSOLE FOR MOUNTING AND ENCLOSING RADIOS AND THE LIKE

Thomas R. Davis, 600 S. 45th St., Lincoln, Nebr. 68510

Filed Aug. 19, 1976, Ser. No. 715,766
Int. Cl.[2] A47B *67/02*; B60R *7/00*
U.S. Cl. 312—242 22 Claims

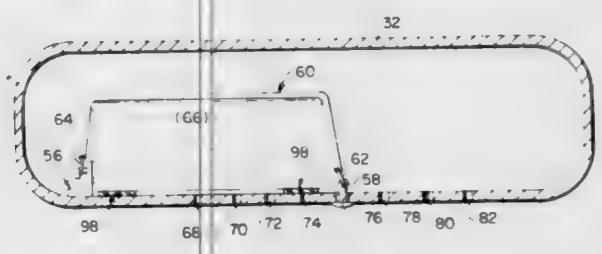
1. A vehicle console for mounting and enclosing radios and the like, comprising:

A. a vertically extending bracket having a lower flange surface for mounting upon a vehicle surface, said flange including a plurality of apertures for receiving a vehicle mounting means; and

B. a bracket extension upwardly extending from said vertically extending bracket, said extension being pivotably mounted to said bracket for an angular positioning of said extension about a horizontal axis; and

C. a housing for enclosing a radio and the like rigidly mounted to an upper surface of said bracket extension wherein said housing further comprises a closed box-like enclosure having a frontwardly facing access opening coverable by an access door, said door being downwardly pivotable upon a horizontally disposed hinge, said door including a lock means operable for maintaining the interior of said enclosure closed against unauthorized entry; and

D. means within the interior of said enclosure operable for mounting radios and the like, having frontwardly presenting control panels, therewithin, said mounting means being adapted to maintain said radio resiliently in contact with said housing interior. through an elastomeric spacer between the bottom of said radio and the lower interior surface of said enclosure, wherein said radio mounting means further comprises a fixed anchor proximate one side of said enclosure interior, a movable anchor means operable to be adjustably spaced from said fixed anchor, and an elastomeric strap operable to extend from said fixed anchor, over said radio, to said movable anchor means.

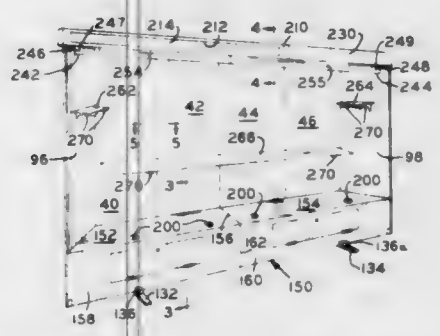


4,082,388

COLLAPSIBLE DISPLAY BOOTH

Roy F. Goeglein, 3102 E. Maple Grove Ave., Fort Wayne, Ind. 46806

Filed Nov. 17, 1976, Ser. No. 742,692
Int. Cl.[2] A47B *43/00*
U.S. Cl. 312—258 **13 Claims**



1. A collapsible booth comprising:

a plurality of transversely alignable elongate wall sections and having longitudinal edges of adjacent sections in abutting relation; a hinge member being connected between each of the abutting longitudinal edges;

each of said wall sections having upper and lower transverse edges; the respective upper transverse edges being in horizontal alignment and the respective lower transverse edges being in horizontal alignment;

an elongate channel having a U-shaped cross-section removably fitted over at least one of the upper and lower transverse edges of the wall section for supporting said wall sections in a predetermined transverse alignment;

at least one elongate stabilizer being removably fitted to a lower transverse edge and extending substantially orthogonally therefrom;

a plurality of elongate supports removably attachable to said wall sections and orthogonally projecting a predetermined distance therefrom;

a planar elongate cabinet top layable over said supports in supported orthogonal relation to said wall sections;

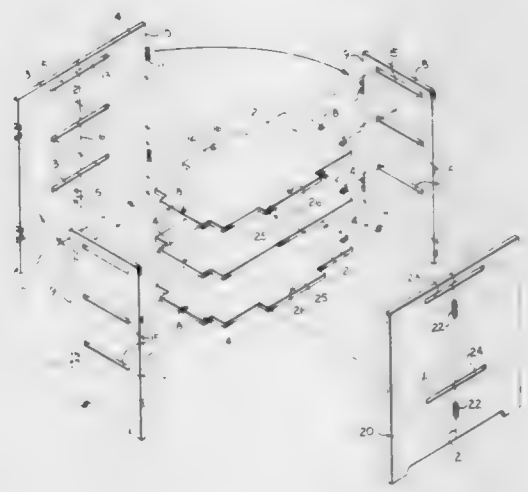
an elongate planar cabinet front having vertically spaced upper and lower longitudinal edges, said front removably fitted to said stabilizer at a lower longitudinal edge of said front and to said top at the upper longitudinal edge of said front.

4,082,389

COLLAPSIBLE CAMP SUPPLY UNIT

Glenn M. Stewart, 2929 Blakeley Ave., Eau Claire, Wis. 54701

Filed Jan. 28, 1977, Ser. No. 763,370
Int. Cl.[2] A47B *43/00, 48/00*
U.S. Cl. 312—258 **3 Claims**



1. A collapsible camp supply unit comprising four rigid rectangular panels of substantially equal height and substantially equal width, hinges joining two of said panels together along adjacent vertical edges to provide a planular back for the unit with said joint foldable frontward, the other two panels constituting end panels for the unit extending forwardly from the opposite side edges of said planular back, hinges joining the rear vertical edge of each end panel to the corresponding adjacent side edge of said back to provide for folding of said end panel inwardly against the corresponding adjacent back panel, a plurality of separate vertically spaced horizontal shelves having edge tenons extending through corresponding individual slots in said back and end panels, and removable pins extending through said tenons on the outside of said unit to secure the said panels and shelves rigidly together to provide a storage unit, said last named hinges additionally providing for outward movement of said end panels when said pins are removed to release said tenons for ready removal of said shelves and subsequent folding of said panels upon one another.

4,082,390

CONVERTIBLE TRAY CABINET

David L. Gibson, Newark, N.Y.; Lawrence J. Barrett, Glenside, Pa.; Patricia A. Moore, New York, N.Y., and David R. Butler, Westport, Conn., assignors to C. H. Stuart Inc., Newark, N.Y.

Filed Dec. 22, 1976, Ser. No. 753,285
Int. Cl.[2] B65D *25/12*
U.S. Cl. 312—284 **31 Claims**

1. A convertible tray cabinet comprising:

(a) a lid including four sidewalls and a top wall and enclosing a tray compartment inside of said lid,

(b) a base including four sidewalls, a bottom wall, and means for supporting said lid thereon,

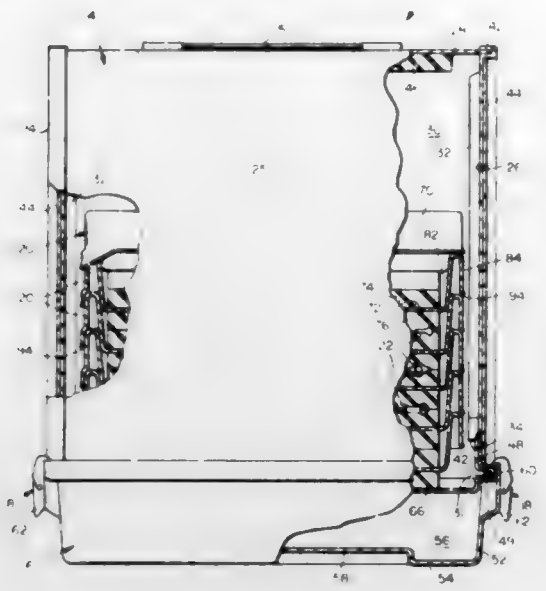
(c) means for releasably connecting said lid to said base,

(d) a plurality of trays stacked on top of each other in said tray compartment with each tray being in a horizontal orientation,

(e) said lid including a plurality of spaced-apart, vertical ribs extending inwardly from the inside surfaces of two opposite sidewalls, and

(f) each tray including means for slidably supporting the tray

on a pair of opposed ones of said ribs when said lid is placed on its side by being moved from a vertical orientation to a horizontal orientation and is supported on one of the sidewalls in-between said opposite sidewalls whereby said ribs are horizontally oriented.

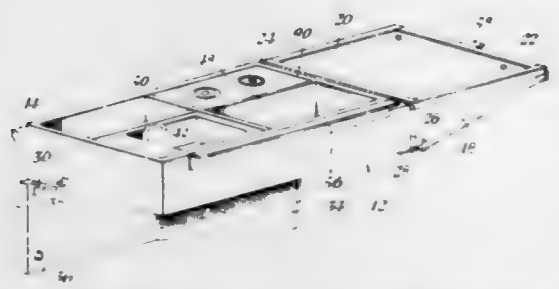


4,082,391

STOWABLE GALLEY

Roland P. Turner, 2600 S. Kanner Hwy., Apt. N1, Stuart, Fla. 33494

Filed Dec. 15, 1976, Ser. No. 750,612
Int. Cl.² A47B *77/10*
U.S. Cl. 312—314 **6 Claims**



1. A stowable galley moveable from a first horizontal, operational position to a second stowed vertical position for increasing the utilization of living space in a relatively confined area comprising:

a rigid receptacle having a height substantially less than its width;

a first pivotal receptacle mounting means connected on one side of said receptacle for pivotally connecting said receptacle to a supporting surface, said receptacle pivotal from a horizontal to a vertical position;

a receptacle closure pivotally connected to said receptacle;

a pivotal connecting means connected to one end of said receptacle and to one end of said closure;

a means for supporting said receptacle in a horizontal position connected to said receptacle;

a closure supporting means connected to one side of said receptacle and to said pivotal closure whereby said pivotal closure is moveable to an extended horizontal position beyond the end of said receptacle providing a counter top surface outside of said receptacle;

said pivotal closure including a first panel and a second panel;

a hinge means connected to said first panel and said second panel, the first panel pivotally movable relative to said second panel, said first and second panels moveable relative to said receptacle to form a counter top over one portion of said receptacle;

a sink disposed within said receptacle;

a rotatable spigot coupled within said sink, said spigot rotatable from an up position to a down position within said sink;

said pivotal supporting means including a rigid flange coupled to one edge of said receptacle; and

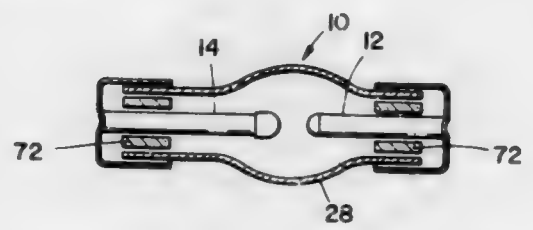
a rigid lip connected to one end of said first panel of said pivotal closure, said lip engageable with said rigid edge flange to support said second panel in a horizontal position providing a counter top outside of said receptacle.

4,082,392

GAS DISCHARGE LAMP PREPARATION PROCESS

Jeffrey R. Golin, Box 9959, Stanford, Calif. 94305

Filed Apr. 5, 1976, Ser. No. 673,476
Int. Cl.² H01J *9/38*
U.S. Cl. 316—19 **8 Claims**



1. A process for sealing a gas within an electronic tube such as a gas discharge lamp, comprising:

providing within a gas tight chamber which includes heating means, a hollow axially extending vitreous body having a vitreous tube integral with said body extending along said axis to an orifice, said hollow vitreous body further including a pair of electrodes extending axially thereinto a respective one of which extends through said tube, is not sealed thereto and has a vitreous bead in the form of a sleeve about said respective electrode in said tube formulated of a solder type of glass, said bead having a softening temperature below a softening temperature of said tube, said bead allowing gas transfer through said first tube to the interior of said body and having the ability to wet, seal and thereby close off said tube on softening;

evacuating said chamber and the interior of said body via said tube;

pressurizing said chamber with a gas and thereby pressurizing the interior of said body via said tube with said gas;

uniformly heating said entire chamber via said heating means and thereby uniformly heating said tube, said body and said bead with said tube and the interior of said body pressurized with said gas to a temperature intermediate the softening temperature of said bead and the softening temperature of said tube to soften said bead and wet, seal and thereby close off said tube therewith while sealing said bead to said respective electrode;

cooling said sealed body, tube and electrodes.

4,082,393

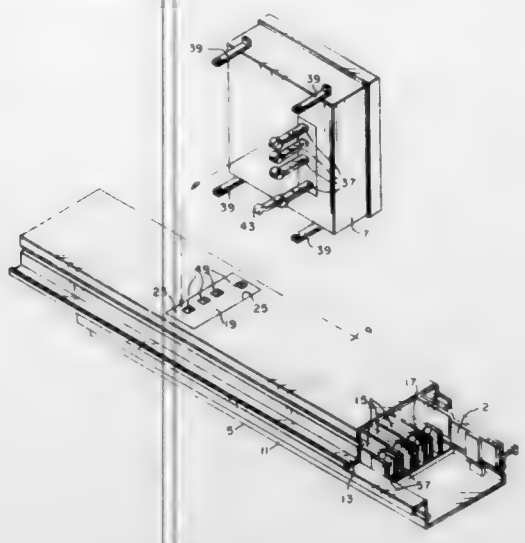
BUS DUCT ASSEMBLY

Dennis H. Gamble, Brighton Township, Beaver County, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1977, Ser. No. 763,201
Int. Cl.² H01R *3/06*
U.S. Cl. 339—14 R **3 Claims**

1. A bus duct assembly comprising a bus duct section having top and bottom walls and opposite side walls forming a housing, a plurality of multi-phase bus bars supported within the housing, a ground bar within the housing and adjacent to one side wall and substantially coextensive with the housing, means for retaining the ground bar in place against the side wall comprising a pair of reinforcement inturned ribs in said side wall, the ground bar being located between the ribs, the ground bar comprising an offset end portion, and a retaining

bracket secured on said wall and overlapping the offset end portion for holding an end portion of a ground bar of an adja-



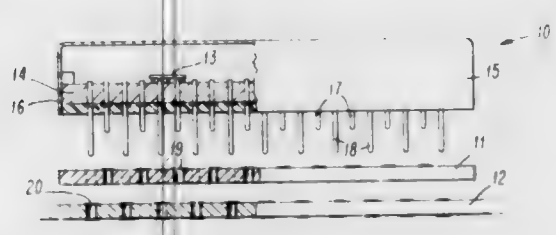
cent bus duct between the offset end portion and the side wall of the bus duct.

4,082,394

METALLIZED CERAMIC AND PRINTED CIRCUIT MODULE

Ronald Walker Gedney, Endicott, and Robert Richard Rodite, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,227
Int. Cl.² H05K *1/12*
U.S. Cl. 339—17 M **1 Claim**



1. A metallized ceramic and printed circuit module which comprises:

a plurality of integrated circuit chips;

a metallized circuit ceramic substrate on which said chips are mounted with one layer of circuit lines on the surface of said substrate being connected to said chips, the number of interconnections between said circuit lines and chips being limited because no two of said circuit lines can cross;

a plurality of I/O pins arranged on a closely spaced pin grid to provide a high I/O pin density and which pins are staggered in height to provide short pins and relatively longer pins;

a multilayer organic printed circuit carrier having a plurality of signal, ground and voltage planes and having plated thru holes connected to said planes and arranged on a pin grid corresponding to the pin grid of said module and into which said pins are plugged with said longer pins protruding out the other side of the carrier and said shorter pins ending with said carrer, said high I/O pin density allowing multichip wiring to provide said multilayer carrier with ample wireability for multichip applications, said interconnections between said short pins compensating for the lack of crossover ability in the layer of circuit lines on said ceramic substrate; and

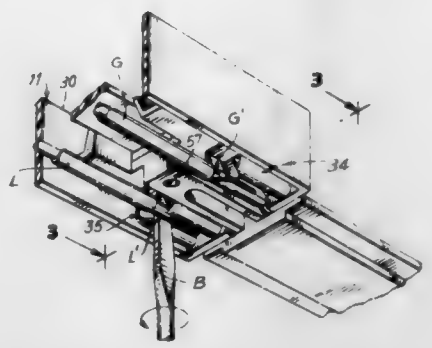
a printed circuit card having plated thru holes arranged on a low I/O pin density grid corresponding to only that of said longer pins and into which said longer pins are plugged to connect with circuitry thereon.

4,082,395

LIGHT TRACK DEVICE WITH CONNECTOR MODULE

Anthony C. Donato, Westfield, and Neil Russo, Jersey City, both of N.J., assignors to Lightolier Incorporated, Jersey City, N.J.

Filed Feb. 22, 1977, Ser. No. 770,388
Int. Cl.² H01R *9/12*
U.S. Cl. 339—21 R **6 Claims**



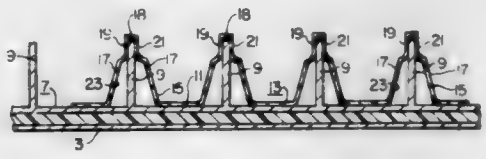
1. An electrical connector fixture adapted electrically to connect a light track with an electrical mains supply comprising an attachment module including a downwardly open mouth portion, first and second mains connector clamps mounted in said module in mutually electrically isolated relation and coupled, respectively, with the conductors of said light track, each said clamp being formed of resilient conductive material and comprising a base, a spaced pair of legs extending from each base, each said leg terminating in an inturned ledge portion overlying a portion of its base, said ledge portions terminating in distal edges spaced to define downwardly open elongate entry slots therebetween, said distal edges being inclined toward said bases, a spring retainer tab member formed integrally with each base, said tab members being directed toward said ledges and terminating in retainer edges spaced from said ledges a distance less than the thickness of a said mains lead, and cam means formed on said tab members and inclined in the direction of said entry and toward said base slots, to deflect said tab members toward said bases responsive to lateral forces exerted against said cam means by mains leads, whereby said leads are resiliently clamped between said ledges and tab members.

4,082,396

SHIELD FOR BUS BAR STABS

Kenneth R. Coley, Fairfield, and George M. Carris, Monroe, both of Conn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 28, 1977, Ser. No. 773,096
Int. Cl.² H01R *13/44*
U.S. Cl. 339—36 **7 Claims**



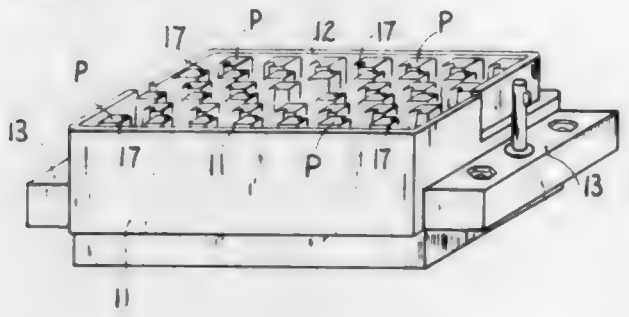
1. A shield for stabs of a loadcenter bus bar comprising a formed sheet-like member having spaced blisters extending from one side of the member, the blisters having spacings approximately equal to the spacing between the stabs of a loadcenter, each blister having dimensions sufficient to enclose a corresponding stab, and retaining means for retaining the member in place on the bus bar and stabs and comprising a blister end portion having a reduced cross section detachably clamplingly engaging an outer end portion of the stab.

4,082,397

HERMAPHRODITE HOUSING ASSEMBLY

Michiaki Tanaka, Sagamihara, and Yoshimasa Nonaka, Musashino, both of Japan, assignors to Kabushiki Kaisha Elco International, Yokohama, Japan

Filed Feb. 25, 1977, Ser. No. 772,060
Claims priority, application Japan, Sep. 21, 1976, 51-112499
Int. Cl.[2] H01R *25/02*
U.S. Cl. 339—49 R 3 Claims



1. A hermaphrodite housing assembly, the housing being made of an insulation material formed in a substantially rectangular configuration, said housing including,

a body portion having a flat base,

a first wall, having thickness and extending above said flat base, said first wall aligned with the edge of said flat base and forming one side of said body and half of the sides of said body adjacent to said one side, said flat base abutting the inside of said first wall,

a second wall, having thickness and extending above said flat base, said second wall recessed from the edge of said flat base at least the thickness of said first wall and forming the opposite side of said body from said one side and forming half of the sides of said body adjacent to said opposite side, said flat base extending outside the base of said second wall substantially the same distance from said second wall as the thickness of said first wall, said flat base, said first wall and said second wall combining for forming a receptical,

first shoulder means extending out from and along one of the sides of said body, in a plane parallel to said flat base,

pin means supported by said first shoulder and centrally positioned on said first shoulder and extending above said flat base,

second shoulder means extending out from and along the side opposite said one of the sides and said body in plane parallel to said flat base,

hole means located in said second shoulder and positioned for receiving and locating said pin means when one housing assembly is mated with another such housing assembly,

a plurality of pairs of projections extending from said flat base providing a matrix of projections,

one projection of each pair of projections positioned adjacent said second wall abutting said second wall and,

one projection of each pair of projections positioned adjacent said first wall displaced from said first wall at least the thickness of said second wall.

4,082,398

ELECTRICAL CONNECTOR WITH FRONT AND REAR INSERTABLE AND REMOVABLE CONTACTS

Normand C. Bourdon; Richard Sanford, both of Sidney, N.Y., and Raymond J. Eifler, Farmington, Mich., assignors to The Bendix Corporation, Southfield, Mich.

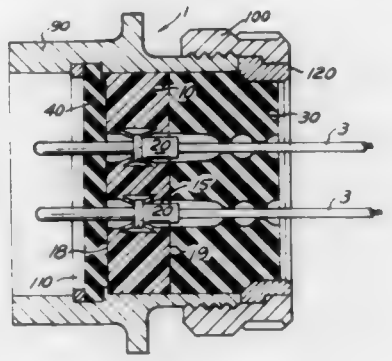
Filed Oct. 1, 1976, Ser. No. 728,820
Int. Cl.[2] H01R *9/16*
U.S. Cl. 339—59 M 12 Claims

3. An electrical connector insert comprising:

a body of molded dielectric material having a plurality of passages therethrough from a front face to a rear face for receiving a contact, each passage including a first portion deformable to a size at least large enough to allow the entire contact to pass therethrough, and the remaining portion of said passage through its length at least large enough to allow the entire contact to pass therethrough, including:

a first truncated tubular cone integral with said body and located coaxially within said passage, said cone tapering toward one of said insert faces radially inwardly from the wall of said passage to a forward free end; and

a second truncated tubular cone integral with said body



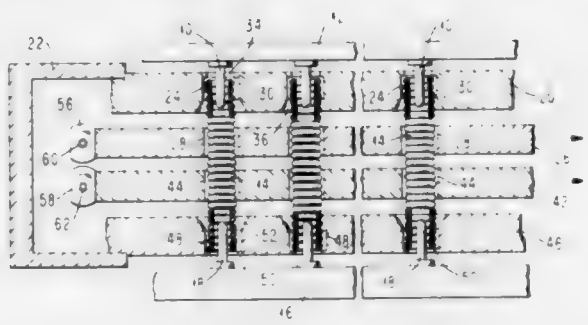
and located coaxially within said passage, said second cone tapering toward the other of said insert faces radially inwardly from the wall of said passage to a foward free end which terminates a predetermined distance from the free end of said first tubular cone, said first and second cones being resiliently deformable to at least large enough to allow the contact to pass therethrough and substantially rigid in a size less than large enough to allow the contact to pass therethrough in an axial direction when in their nonexpanded position.

4,082,399

ZERO-INSERTION FORCE CONNECTOR

Earl D. Barkhuff, Staatsburg, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 23, 1976, Ser. No. 698,972
Int. Cl.[2] H01R *13/62*
U.S. Cl. 339—75 M 10 Claims



1. A zero-insertion force connector for a multi-pin module comprising:

a plurality of short, narrow, resilient conductive contact members each having a longitudinal axis coaxial with a lengthwise opening therethrough of a diameter slightly greater than said pin so as to each receive a pin of a module with substantially zero friction;

a module locating plate located in a first plane and having a plurality of openings therein extending thru said plate perpendicular to the plane thereof, each opening containing an end of one of said contact members which extend coaxially beyond said openings from the same side of said module locating plate and each opening centered with respect to one of said pin positions and having a diameter somewhat larger than said contact member so the end of said contact member can move radially therein to adjust for pin misalignment;

an actuator plate located parallel to the plane of and adjacent the side of said module locating plate from which said

contact members extend and contacting each of said contact members so as to provide in its actuated condition bending along the longitudinal axis of said contact members,

means for actuating said actuator plate to move laterally with respect to said module locating plate thereby bending each of said contact members along its longitudinal axis so as to wipe and substantially circumferentially contact the module pin inserted in the end of said contact member within said module locating plate to make a good electrical connection therewith;

and fan-out connection means for making an electrical connection to the other end of each of said contact members.

4,082,400

MULTI-POLE PLUG-AND-SOCKET CONNECTING ARRANGEMENT

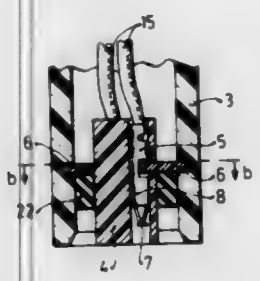
Willi Gansert, Kornwestheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 517,094, Oct. 22, 1974, abandoned. This application Oct. 12, 1976, Ser. No. 731,503

Claims priority, application Germany, Nov. 2, 1973, 2354795

Int. Cl.[2] H01R *13/40, 13/54*

U.S. Cl. 339—91 R **16 Claims**



1. A multi-pole connecting arrangement comprising, in combination, a plug connector provided with a plurality of electrical contacts arranged in at least one row, a socket connector provided with a plurality of electrical contacts arranged in at least one row corresponding to the electrical contacts of said plug connector; a mounting hook on one of said connectors and a cooperating holding portion on the other of said connectors, said mounting hook being hooked behind said holding portion for swinging movement of said plug connector relative to said socket connector from a first to a second position, said first position being a position in which not all of the contacts of said socket connector are in electrical engagement with the corresponding contacts of said plug connector, said second position being a position in which all of the contacts of said socket connector are in electrical engagement with the corresponding contacts of said plug connector, and said mounting hook and said holding portion being disconnectable from each other to permit disconnection of said plug connector from said socket connector; and a snap-latch on one of said connectors and a cooperating catch on the other of said connectors, said snap-latch and catch being so positioned that said snap-latch engages said catch with a snap action only when said plug connector is swung from said first position to said second position, and wherein said plug connector includes means securing the contacts of said plug connector in position on said plug connector, the securing means including a holding member discrete from the remainder of the plug connector, the contacts of the row of contacts of the plug connector being positioned and caused to form a row by said holding member, and said holding member being in turn positioned on and supported by the remainder of the plug connector, said holding member being a comb-shaped member having a row of comb teeth, the comb teeth of the holding member gripping behind respective ones of the row of electrical contacts of said plug connector, the holding member having ends which extend transversely of the direction in which the comb teeth row extends, said ends being located interiorly of and being confined by the adjoining portions of the plug connector, said adjoining portions of the plug connector preventing shifting of the comb-shaped holding member in the direction in which the comb teeth row extends, said comb-shaped holding member having a longitudinal edge running along the side of the holding member opposite to the side provided with the comb teeth, the remainder of the plug connector being provided with a longitudinal groove into which the said longitudinal edge can be inserted and held if and only if all the individual contacts secured by the holding member are properly positioned relative to the respective ones of the teeth of the comb-shaped holding member.

4,082,401

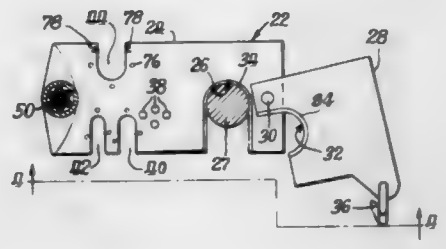
BATTERY CABLE CONNECTOR

Steve Kruszecki, Jefferson St., P.O. Box 30055, Chicago, Ill. 60630

Filed Sep. 20, 1976, Ser. No. 725,022

Int. Cl.[2] H01R *11/20*

U.S. Cl. 339—95 B **7 Claims**



1. A battery cable connector, comprising,

a main plate having a notch in one edge thereof,

a clamping plate pivotally mounted on the main plate and also having a notch in one edge thereof,

the clamping plate being swingable on the main plate between an open position in which the notch in the main plate is open and adapted to receive a binding post in position therein, and a closed position in which the notches are in register and form a closed hole surrounding a binding post so positioned,

releasable interlocking means between the plates for bringing them into tight contact engagement with the binding post,

the main plate having secondary open notches for selectively receiving a binding post, and adapted for securement with the binding post by nut means, and

the main plate having means for connecting the connector with a cable.

4,082,402

FLAT FLEXIBLE CABLE TERMINAL AND ELECTRICAL CONNECTION

Robert John Kinkaid, New Cumberland, and John Carl Asick, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 432,112, Jan. 9, 1974, abandoned. This application Jan. 6, 1975, Ser. No. 539,128

Int. Cl.[2] H01R *11/20*

U.S. Cl. 339—97 C **11 Claims**

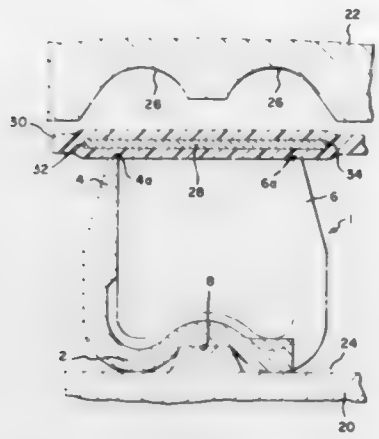
8. An electrical terminal adapted to be connected in gripped relationship with a flat elongated conductor, comprising:

a web portion having a first pair of teeth projecting from one side of said web portion and a second pair of teeth projecting from an opposite side of said web portion,

each of said pairs of teeth being bent outwardly of the plane of said web portion and defining an initial space separating said first and second pairs of teeth,

each of said teeth being wedge-shaped and defining wedged-shaped clearances between adjacent teeth,

each of said teeth having sharp slicing edges adjacent corresponding wedge-shaped clearances,
each of said teeth having a rounded and sharpened tip, and



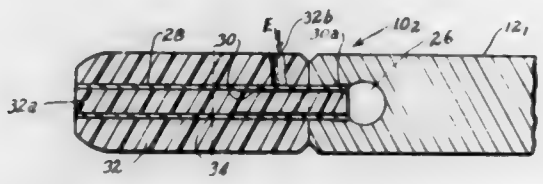
each of said teeth being chamfered to allow curling thereof upon deflection of said teeth tips toward said web portion pinching a flat elongated conductor between said teeth tips and said web portion.

4,082,403

MALE CONTACT ASSEMBLY FOR LOADBREAK USAGE

David E. Bressler, Long Valley, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Aug. 6, 1976, Ser. No. 712,386
Int. Cl.² H01R *13/52*
U.S. Cl. 339—111 **9 Claims**



1. A male contact assembly comprising:
(a) an elongate male contact of electrically conductive material;
(b) an electrically insulative member secured to said male contact and extending longitudinally therefrom, said insulative member defining a hollow interior extending at least partly therewith;
(c) electrically conductive means in said insulative member interior and connected to said male contact for electrically longitudinally extending said male contact; and
(d) a longitudinally extending layer overlying said insulative member and comprised of material generating arc-extinguishing gases upon exposure to electrical arcing, the longitudinal extent of said layer being greater than the longitudinal extent of said electrically conductive means in said insulative member.

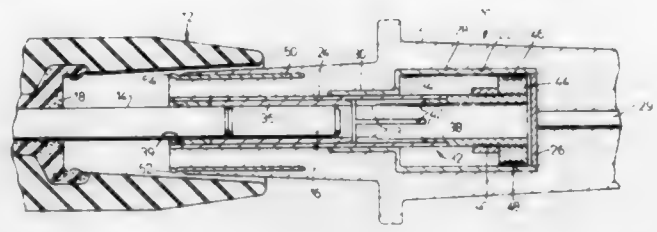
4,082,404

NOSE SHIELD FOR A GAS ACTUATED HIGH VOLTAGE BUSHING

Richard P. Flatt, Oconomowoc, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Nov. 3, 1976, Ser. No. 738,741
Int. Cl.² H01R *13/52*
U.S. Cl. 339—111 **8 Claims**

1. A high voltage bushing for terminating a high voltage cable having a cable terminator connected thereto, the terminator including a probe and a conductive insert, the bushing comprising a housing having an elongated bore and a bore contact movable in the bore in the housing and a nose shield comprising an electrically conductive member embedded within and surrounding the open end of the bore in the bushing, said member being partially exposed at one end for en-



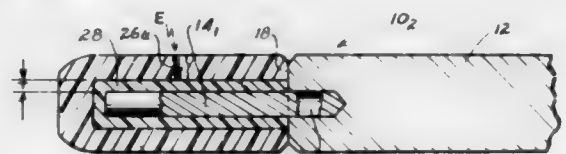
gagement with the conductive insert of the terminator on close-in of the probe with the bore contact in the bushing.

4,082,405

LOADBREAK MALE CONTACT ASSEMBLY

Frank M. Stepniak, Long Valley, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Aug. 6, 1976, Ser. No. 712,387
Int. Cl.² H01R *13/52*
U.S. Cl. 339—111 **10 Claims**



1. A male contact assembly comprising:
(a) an elongate male contact of electrically conductive material;
(b) an electrically conductive member secured to said male contact and extending longitudinally therefrom;
(c) an outer layer comprised of material generating arc-extinguishing gases upon exposure to electrical arcing; and
(d) an intermediate layer situate between said conductive member and said outer layer of greater resiliency than said outer layer; and
(e) wherein said outer layer extends longitudinally beyond said male contact to a greater extent than said intermediate layer.

4,082,406

METHOD AND APPARATUS FOR CONNECTING LEADS OF A ROTOR

Hiroyuki Kamiya, Hitachi; Ken Takahashi, Tokaimura; Seiji Watanabe, and Tomohisa Kanazawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 3, 1976, Ser. No. 738,368
Claims priority, application Japan, Nov. 15, 1975, 50-137632
Int. Cl.² H01R *13/00*
U.S. Cl. 339—112 L **7 Claims**



1. A method for connecting leads of a rotor wherein hollow axial leads each inserted in an axially extending bore in a rotary shaft for permitting a cooling medium to flow therethrough are electrically and mechanically connected to respective hollow radial leads each inserted in a bore extending radially of said rotary shaft from said axially extending bore for permitting the cooling medium to flow therethrough, comprising the steps of:
inserting a cooling medium sealing pipe in said radially

extending bore and joining the same at one end thereof to one of said axial leads inserted in said axially extending bore before one of the hollow radial leads and an insulating pipe are inserted in said radially extending bore;

fitting said hollow radial lead over the outer periphery of said cooling medium sealing pipe; and

joining the cooling medium sealing pipe at the other end thereof to said hollow radial lead.

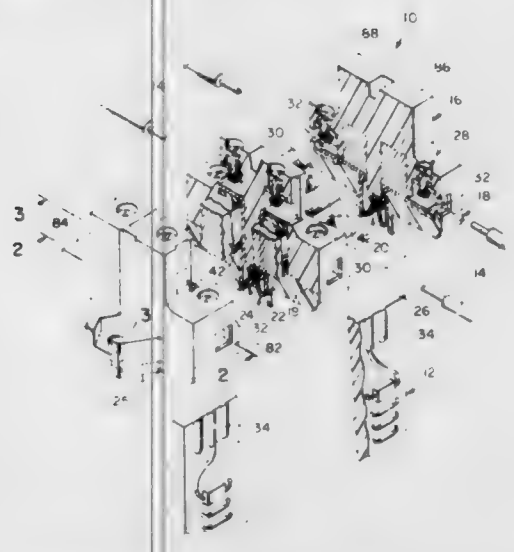
2. In an apparatus for connecting leads of a rotor wherein hollow axial leads each inserted in an axially extending bore in a rotary shaft for permitting a cooling medium to flow therethrough are electrically and mechanically connected to respective hollow radial leads each inserted in a bore extending radially of said rotary shaft from said axially extending bore for permitting the cooling medium to flow therethrough, the improvement comprising a cooling medium sealing pipe inserted in said radially extending bore and joined at one end thereof to one of said hollow axial leads and at the other end thereof to one of said hollow radial leads fitted over the outer periphery of said cooling medium sealing pipe.

4,082,407

TERMINAL BLOCK WITH ENCAPSULATED HEAT SINK

Adam Smorzaniuk, West Millington, and Paul F. Lindlau, East Orange, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed May 20, 1977, Ser. No. 798,900
Int. Cl.[2] H01R *13/00*
U.S. Cl. 339—112 R **16 Claims**



1. An electrical connector for serving as an interface between a circuit panel and a plurality of external conductors comprising:

(a) a body member of electrically insulative material having an elongated socket for receiving an edge of a circuit panel therein;

(b) at least one longitudinally extending thermally conductive member disposed in a recess in said body and being entirely surrounded by the electrically insulative material of said body;

(c) a plurality of electrical connected members in said body for receiving a corresponding plurality of external conductors;

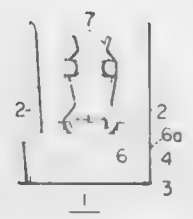
(d) a like plurality of electrical contact elements, each of said contact elements being situate in said body member such that a first portion of each one of said contact elements extends into said socket to engage a terminal on a circuit panel inserted into said socket, a second portion engages said thermally conductive member for transferring heat into and away from said thermally conductive member, and a third portion engages a corresponding one of said plurality of electrical connector members.

4,082,408

ELECTRIC FUSE HOLDER

John G. Angelis, Hampton, N.H., assignor to Gould, Inc., Newburyport, Mass.

Filed Feb. 24, 1977, Ser. No. 771,816
Int. Cl.[2] H01R *9/22*
U.S. Cl. 339—198 G **7 Claims**



1. A modular fuse holder unit comprising

a. a substantially prismatic block of a synthetic resin supporting a pair of fuse clips;

b. said block being planar on two opposite sides thereof except for a planar projection on one of said sides and a planar recess on the other of said sides, both said projection and said recess beginning at the lower edge of said block and extending in upward direction;

c. said projection slightly converging in upward direction and defining a first pair of grooves on both lateral sides thereof whose depth slightly increases in upward direction and are bounded by a first pair of ribs whose thickness slightly decreases in upward direction;

d. said recess slightly converging in upward direction and defining a second pair of grooves on both lateral sides thereof whose depth slightly decreases in upward direction and are bounded by a second pair of ribs whose thickness slightly increases in upward direction; and

e. said projection and said first pair of grooves and said recess and said second pair of grooves being complementary positives and negatives whereby said block is capable of being joined under wedge pressure with other identical blocks by engagement of said recess in one of said blocks by said projection in another of said blocks and by engagement of said second pair of grooves in one of said blocks by said first pair of ribs in another of said blocks.

4,082,409

ELECTRICAL COUPLER AND ADAPTER

James R. Bailey, Chicago, and Vernon W. Lavigne, Rolling Meadows, both of Ill., assignors to Switchcraft, Inc., Chicago, Ill.

Filed Feb. 18, 1977, Ser. No. 769,851
Int. Cl.[2] H01R *17/18*
U.S. Cl. 339—182 R **7 Claims**

1. An electrical coupler and adapter for electrical plugs of the tip and ring type comprising:

(a) an elongated electrically conducting tubular sleeve having opposing open ends,

(b) opposing electrically conducting bushings mounted in said opposing ends of (a), said bushings each having an opening therein to receive an electrical plug of the tip and ring type,

(c) a pair of complemental semi-tubular electrically insulating inserts disposed inside an intermediate portion of said sleeve and extending lengthwise between said bushings, said inserts having mounting means to hold vertically between them one or more resilient electrically conducting flat elongated contacting members portions of which are shaped to contact the tip or ring of an electrical plug of the tip and ring type, and

(d) one or more resilient electrically conducting flat elongated contacting members having central portions thereof mounted vertically in said mounting means of (c) and



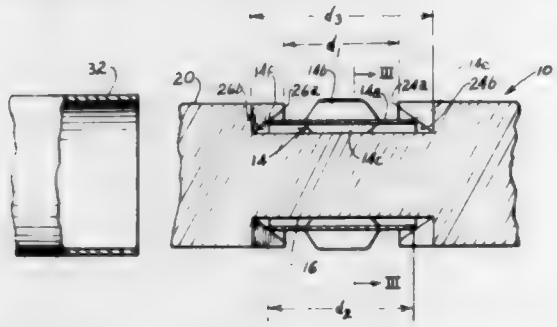
having opposing end portions shaped to contact the tip or ring of an electrical plug of the tip and ring type when said plug is inserted into said opening in said bushing of (b).

4,082,410

ELECTRICAL CONNECTORS AND CONTACT ASSEMBLIES THEREFOR

Glenn E. Storck, Long Valley, and Andrew A. Kominiak, Flanders, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed May 6, 1976, Ser. No. 683,881
Int. Cl.[2] H01R *13/06*
U.S. Cl. 339—252 R **10 Claims**



1. A contact assembly comprising:

a. a cylindrical contact element in the form of an elongate strip member having opposed surfaces extending between opposed side margins thereof and first and second contact fingers extending respectively outwardly of said opposed strip member surfaces, said strip member having an axial extent measured between the opposed side margins thereof, and

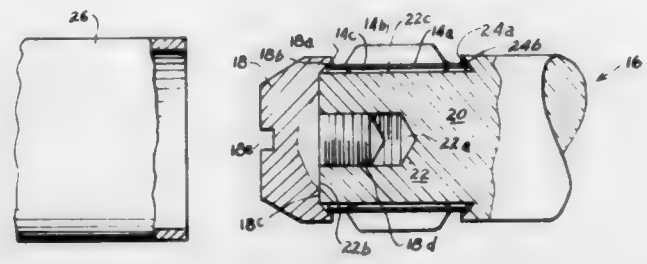
b. a terminal member defining a cylindrical contact element support surface of axial extent parallel to the axial extent of said contact element, said axial extent of said contact surface exceeding said axial extent of said contact element, said terminal member having a pair of circumferentially extending, contact element retention surfaces juxtaposed with said support surface respectively, said surfaces having respective axially facing ends spaced apart by a distance less than said axial extent of said contact element, and at least a pair of axially spaced and aligned passages extending respectively through said circumferentially extending retention surfaces, the spacing between axially distal ends of said passages exceeding said axial extent of said contact element, and wherein said passages provide entry means through which said elongate strip member may be inserted into engagement between said contact element retention surfaces and said support surface without causing distortion of said strip member and with said first contact fingers engaging said support surface and said opposed strip member side margins engaging said retention surfaces.

4,082,411

ELECTRICAL CONNECTORS AND CONTACT ASSEMBLIES THEREOF

Glenn E. Storck, Long Valley, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed May 6, 1976, Ser. No. 683,842
Int. Cl.[2] H01R *13/06*
U.S. Cl. 339—252 R **13 Claims**



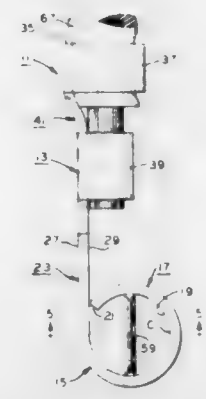
1. An electrical contact assembly having a terminal member defining a contact element support surface and a contact element engagingly supported thereby, said contact element comprising a strip member having opposed surfaces extending between margins of said strip member and first and second contact fingers extending respectively angularly outwardly of said opposed surfaces of said strip member, said first contact fingers engaging said contact element support surface, said terminal member having first and second releasably engaged parts defining first and second retention surfaces respectively engaging said strip member margins and means for providing predetermined spacing between said first and second retention surfaces whereby such engagement of said first contact fingers and said contact element support surface is maintained by said first and second retention surfaces, with said strip member being maintained substantially equidistant from said support surface throughout the extent of said strip member between said margins thereof.

4,082,412

MALE AND FEMALE TERMINAL COMBINATION

David C. Lennon, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Dec. 29, 1975, Ser. No. 645,043
Int. Cl.[2] H01R *13/12*
U.S. Cl. 339—256 SP **12 Claims**



1. The combination comprising a spade male terminal, a female terminal for receiving in electrical contacting engagement said spade male terminal in any diametral position thereof, said female terminal including a strip of electrical conductive material having a distal portion integral with another generally planar portion, said distal portion having a generally cylindric section deformed with respect to said another portion so as to be disposed generally laterally thereof and defining at least in part a bore extending generally crosswise of said strip for the electrical contacting engagement with said male terminal, and a free end on said distal portion terminating said strip including a beveled surface predeterminately placed in at least closely adjacent relation with respect to said

another portion so that said spade male terminal is received in the any diametral position thereof across said bore in the electrical contacting engagement therewith.

4,082,413

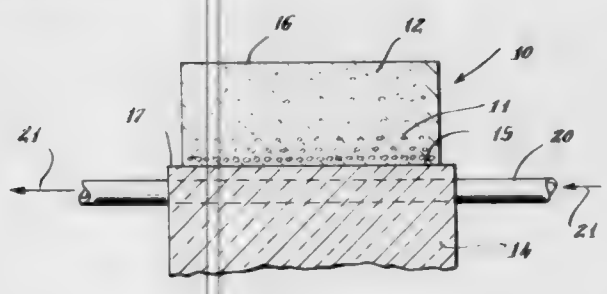
SELECTIVE RADIATION ABSORPTION DEVICES FOR PRODUCING HEAT ENERGY

Robert R. Austin, Wilton, and Roy C. Bastien, Redding, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 528,309, Nov. 29, 1974, abandoned. This application Jan. 2, 1976, Ser. No. 646,368

Int. Cl.[2] G02B *5/20*

U.S. Cl. 350—1.1 8 Claims



1. A device for producing heat energy by absorption of selected radiation wavelengths having a maximum wavelength in the range of from 0.35 to 1.5 micrometers comprising a single film having boundaries at opposite sides in its thickness direction but not intermediate thereof and composed essentially of a mixture of particles of metal and a transparent dielectric material, the relative concentrations of metal and dielectric varying in transition from a major amount of metal at one of said boundaries to a major amount of dielectric at the opposite boundary, said one boundary being bounded by material which is substantially reflective of said selected radiation wavelengths, the mixture being inhomogeneous through the film between said boundaries and substantially homogeneous at any given distance from one boundary in the film with the film being a thickness at least equal to one half the longest wavelength of said selected wavelengths, and heat transfer means adjacent said one boundary for carrying heat away from the film.

4,082,414

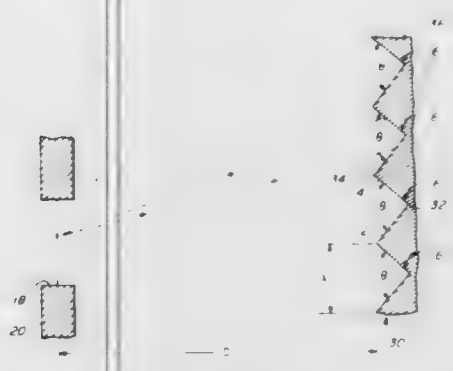
HEAT RECUPERATION

Charles A. Berg, Buckfield, Maine, assignor to Pyreflex Corporation, Sudbury, Mass.

Filed Mar. 3, 1976, Ser. No. 663,370

Int. Cl.[2] G02B *13/14, 5/124*

U.S. Cl. 350—1.7 9 Claims



1. The method of recuperating radiant heat loss from a source comprising the steps of

a. determining the solid angle into which said energy is radiated,

b. assembling an array of abutting reflecting cells, each cell comprising a plurality of reflective surfaces disposed with respect to each other at angles of about 90°, and

c. supporting said array within said solid angle at a distance from said source such that said array extends across a major fraction of said solid angle.

4,082,415

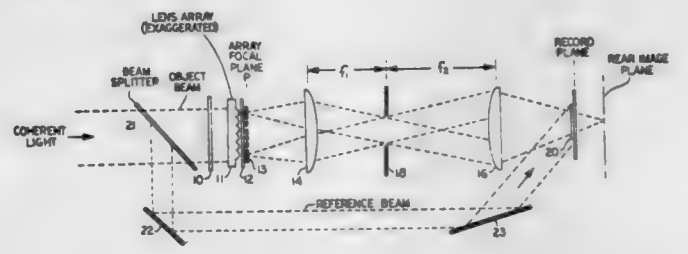
HOLOGRAPHIC LENS ARRAY AND METHOD FOR MAKING THE SAME

Robert Ellison Brooks, and Donald Charles Winter, both of Manhattan Beach, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 455,413, Mar. 27, 1974, abandoned. This application Jun. 1, 1976, Ser. No. 691,700

Int. Cl.[2] G02B *27/00*

U.S. Cl. 350—3.83 12 Claims



1. A novel hologram providing a holographic lens array prepared by the method of projecting coherent light through a refractive fly's eye lens array to provide a number of lens images on a record member along with a reference beam to simultaneously record a number of interference patterns, comprising a record member having a light beam modulating recorded interference pattern including a plurality of like areal and spatially disposed optically transformed representations of the individual lens images having given focal lengths and predetermined spacings defining an array of holographic lenses, the area of each lens is sufficiently large to minimize diffractive effects and provide a substantial signal-to-noise ratio.

4,082,416

RADIATION SCANNING SYSTEM WITH TWO SCANNERS ROTATING ABOUT PARALLEL AXES

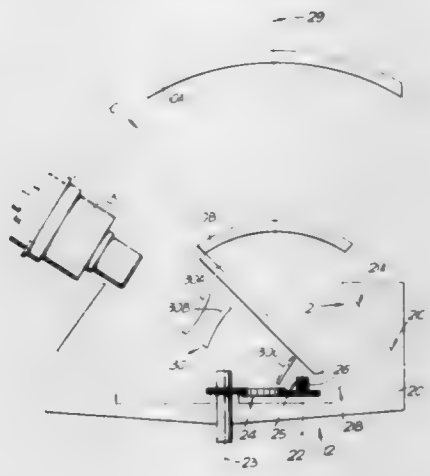
Herbert Morrison Runciman, and Peter John Berry, both of Glasgow, Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Filed Dec. 7, 1976, Ser. No. 748,327

Claims priority, application United Kingdom, Dec. 13, 1975, 51154/75

Int. Cl.[2] G02B *27/17*

U.S. Cl. 350—6.8 5 Claims



1. Apparatus for use in a radiation scanning system, comprising a radiation detector and optical means which is arranged to scan radiation from a field of view across the detector, the optical means including a radiation focussing system, a first

drum carrying a first set of reflective surfaces, the first drum being rotatable about a first axis, a second drum carrying a second set of reflective surfaces, the second drum being rotatable about a second axis parallel to said first axis, the drums being so dimensioned and located with respect to the detector that radiation transmitted by said focussing system is permitted to enter the detector after sequential reflection from reflective surfaces of said two sets of planar reflective surfaces in a manner which is independent of the position of the radiation in the field of view, wherein the first drum is annular and the first set of reflective surfaces is mounted on the inner periphery thereof, the second drum is peripherally bounded by the first drum and the second set of reflective surfaces is mounted around the second drum, the reflective surfaces forming the first set are each in the form of a pair of planar reflective members inclined at substantially right angles to each other the line of intersection of the planes containing said pair of planar reflective members being disposed at right angles to said axes of rotation, the reflective surfaces forming the second set are each planar and parallel to said axes of rotation, and the axis of the second drum is displaced by a distance which is less than the radius of the second drum from the plane containing the first axis of rotation and the axis of the radiation focussing system.

4,082,417

RADIATION SCANNING SYSTEM WITH TWO REFLECTIVE DRUMS ROTATING ABOUT PARALLEL AXES ACCORDING TO AN EQUATION

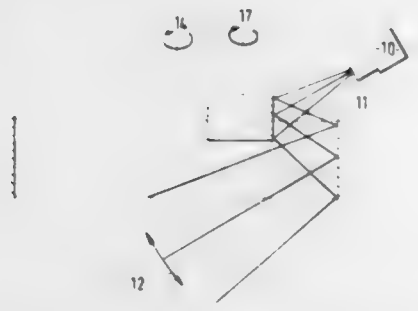
Herbert Morrison Runciman, and Peter John Berry, both of Glasgow, Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Continuation-in-part of Ser. No. 600,199, Jul. 29, 1975, Pat. No. 4,037,920. This application Feb. 9, 1977, Ser. No. 767,282

Claims priority, application United Kingdom, Oct. 26, 1974, 46424/74

Int. Cl.[2] G02B *27/17*; H01J *3/16*

U.S. Cl. 350—6.8 **5 Claims**



1. Apparatus for use in a radiation scanning system comprising an objective device forming convergent radiation from a field of view, a radiation detector, and an optical scan means which is arranged to scan convergent radiation from said field of view across said detector, said scan means comprising

a first drum which is rotatable about a first axis, a first set of optical members mounted on said first drum and defining a set of first planar reflective surfaces each of which extends perpendicular to a radius of said first drum,

a second drum which is rotatable about a second axis extending parallel to and spaced from said first axis, a second set of optical members mounted on said second drum and defining a set of second planar reflective surfaces each of which extends perpendicular to a radius of said second drum,

drive means rotating said first drum sequentially to move each of said first reflective surfaces through a first reflector station, and rotating said second drum sequentially to move each of said second reflective surfaces through a second reflector station,

said scan means being arranged with the respective reflective surfaces when in said first and second reflector stations oppositely facing and the first and second reflector stations axially spaced, whereby convergent radiation from said field of view enters said detector after sequential reflection at said first and second reflector stations, wherein said first drum is rotated at an angular speed s_1 and has n_1 number of reflective surfaces each of which is located at a perpendicular distance r_1 from the first axis of rotation, said second drum is rotated at an angular speed s_2 and has n_2 number of reflective surfaces each of which is located at a perpendicular distance r_2 from the second axis of rotation, the distance between the first and second axes in a plane perpendicular to said axes is d, and the detector is located at a distance a from the first rotational axis when measured in a plane perpendicular to the said axis such that the following conditions hold viz:

$$2a(n_1/n_2 - 1)^2 + 2d/(n_1/n_2)^2 + r_2(n_1/n_2)^2 = r_1(2n_1/n_2 - 1)^2 \quad \text{(I)}$$

$$n_1 s_1 = n_2 s_2 \quad \text{(II)}$$

4,082,418

BINOCULAR BARREL WITH ADJUSTABLE INTERPUPILLARY DISTANCE AND TARGET MARKER SUPPORT

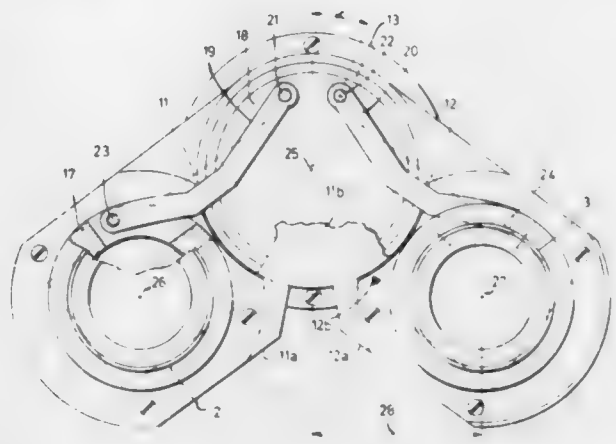
Willi Keydell, Oberkochen, and Herbert Binder, Aalen-Hofherrnweiler, both of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany

Filed Jul. 19, 1976, Ser. No. 706,202

Claims priority, application Germany, Aug. 27, 1975, 2538048

Int. Cl.[2] G02B *27/32, 21/20, 7/12*

U.S. Cl. 350—10 **6 Claims**



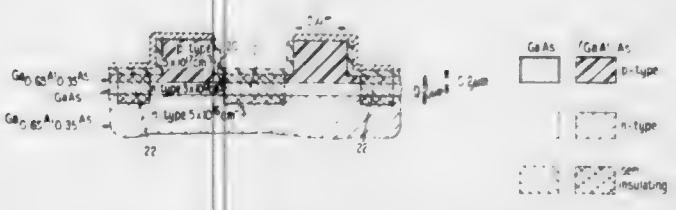
1. A single-barrel binocular-viewing system for an optical instrument, comprising frame-based structure including an elongate tube adapted to receive and pass an incident ray bundle along the tube axis, two eyepiece housings each including offset-arm housing structure rotatably connected to said tube, whereby said eyepiece housings may be adjusted for interpupilary distance, optical means for splitting the incident ray bundle for concurrent observation via eyepieces in said housings, a first target-marker support ring at the eyepiece focal plane of one of said housings and rotatable about the eyepiece axis of said one housing, means including a link of effective length equal to the rotary offset of said eyepiece axis from the axis of said tube for maintaining a constant orientation of said marker support ring with respect to said tube, said link being pinned at one end to said ring and at the other end to said framebased structure at points which are at equal-radius offset from the ring axis and from the tube axis respectively, a second target-marker support ring at the eyepiece focal plane of the other of said housings and rotatable about the eyepiece axis of said other housing, and a second similar link similarly connecting said second target-marker support ring to said frame-based structure.

4,082,419

OPTICAL WAVEGUIDE COUPLERS

George Horace Brooke Thompson, and David Francis Lovelace, both of Harlow, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 23, 1976, Ser. No. 660,560
Claims priority, application United Kingdom, Feb. 27, 1975, 8244/75
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.12 2 Claims



1. A semiconductive heterostructure optical waveguide coupler comprising:

a first layer of semiconductive material having first and second major surfaces;

a plurality of protruding ribs of semi-conductive material formed on said first surface, said ribs defining a plurality of optical waveguides for providing optical confinement to light;

means for applying a reverse bias across said ribs and said first layer to provide a depletion region within said first layer for altering the optical coupling between the waveguides; and

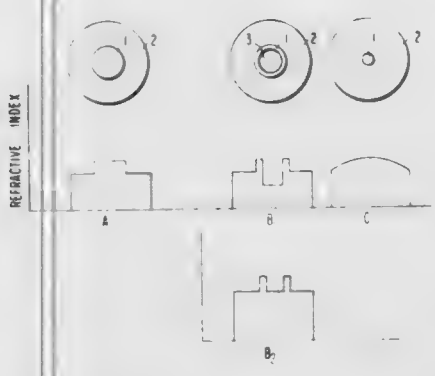
a plurality of regions of semi-insulating material within the portions of said first layer intermediate said plurality of protruding ribs.

4,082,420

AN OPTICAL TRANSMISSION FIBER CONTAINING FLUORINE

Satoshi Shiraishi; Kunio Fujiwara, and Shiro Kurosaki, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 419,011, Nov. 26, 1973, abandoned.
This application Jan. 14, 1976, Ser. No. 648,998
Claims priority, application Japan, Nov. 25, 1972, 47-118345; Nov. 25, 1972, 47-118346
Int. Cl. G02B 5/14
U.S. Cl. 350—96.31 14 Claims



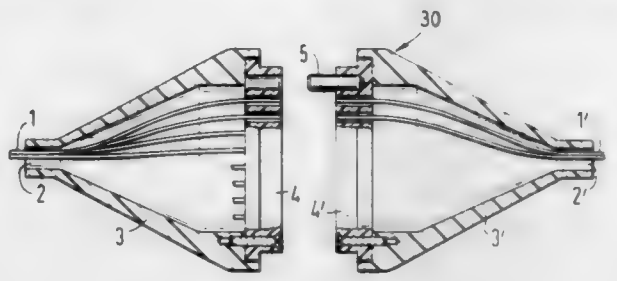
1. An optical transmission fiber wherein the refractive index varies between the periphery and the central longitudinal axis of the fiber, said variation being symmetrical with respect to the central longitudinal axis of said fiber, said fiber having at least one higher refractive index portion being made mainly of pure fused silica consisting essentially of SiO_2 and at least one lower refractive index portion being made of doped fused silica containing F, said doped fused silica consisting essentially of SiO_2 and F.

4,082,421

DEVICE FOR COUPLING TWO LIGHT CONDUCTING FIBER CABLES

Franz Auracher; Gerhard Mitterhummer, and Karl-Heinz Zeitler, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 21, 1976, Ser. No. 688,718
Claims priority, application Germany, May 22, 1975, 2522763
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.22 9 Claims



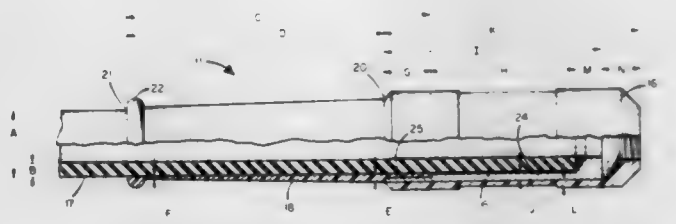
1. In a device for coupling an incoming light conducting fiber cable to an outgoing light conducting fiber cable, said device comprising a pair of housings connected together and each receiving a holder, each holder centering the fibers in one cable in relation to the fibers of the cable which are centered by the other holder with the improvements comprising each holder comprising a substrate having a first guide foil disposed on one surface and a second guide foil disposed on an opposite surface thereof, each of said first foils having a channel for each light conducting fiber of its cable, said channels in the direction leading away from the substrate possessing a cross-sectional profile decreasing to the diameter of the light conducting fiber, said second foil having a channel for each light conducting fiber aligned with the corresponding channel of the first foil, said light conducting fibers being disposed and secured in the aligned channels of the first and second foil with the end of the fibers being in the plane of the outer surface of the first foil and said device having means for optically interconnecting the ends of the light conducting fibers of one of said holders to the ends of the fibers of the other holder.

4,082,422

STRAIN-RELIEVED FIBEROPTIC CABLE

Jacobus Kloots, Sturbridge, Mass., assignor to Applied Fiberoptics, Inc., Southbridge, Mass.

Filed Jun. 21, 1976, Ser. No. 697,847
Int. Cl.[2] G02B 5/16
U.S. Cl. 350—96.23 7 Claims



1. A fiberoptic cable with integral strain-relieved termination comprising:

a. an extended bundle of optical fibers, bonded and finished at at least one end;

b. one tube of elastomeric material covering said bundle and terminating short of said one end;

c. a second tube of elastomeric material having a length in the range of 4 to 16 centimeters covering and integrally bonded to said one tube, said second tube terminating proximate said one end but short of said one tube;

d. a cylindrical sleeve overlapping and adhesively bonded to said one tube and a short portion of said second tube; and,

e. a rigid housing mechanically secured to and enclosing the

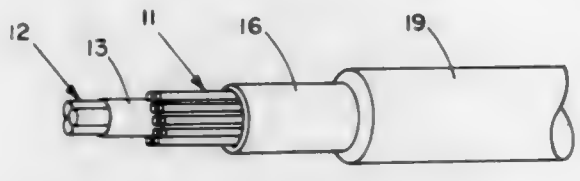
full length of said sleeve and providing an optical aperture at said one end.

4,082,423

FIBER OPTICS CABLE STRENGTHENING METHOD AND MEANS

Andrew S. Glista, Alexandria, Va., and Rodney S. Katz, Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 19, 1976, Ser. No. 715,815
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.23 **26 Claims**



1. An electrically non-conductive strengthening means for glass fiber optics bundles or other similar fiber cables capable of withstanding installation stresses as well as continuous tensile loading during service comprising:

a plurality of light energy-conducting fibers bundled together in side-by-side substantially parallel relationship with each other; and

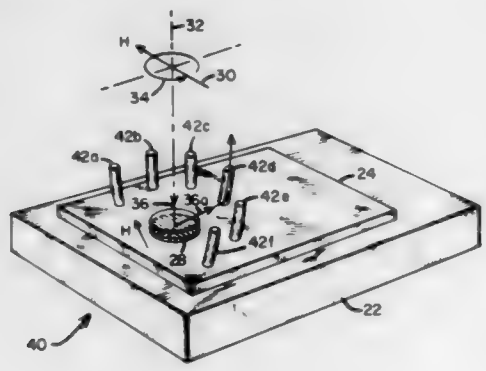
a protective binding about said bundle comprised of individual single crystal members of a compound having a high modulus of elasticity, low density and high tensile strength at environmental and substantially higher than environmental temperatures.

4,082,424

INTEGRATED OPTIC DEVICE

Gerald Francis Sauter, and George Franklin Nelson, both of St. Paul, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jul. 28, 1976, Ser. No. 709,468
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.11 **7 Claims**



1. An integrated optic device, comprising:

a substrate member;

a magnetizable film integral with said substrate member and having a plurality of parallel stripe domains aligned along a first axis in the plane thereof, said stripe domains having a substantially uniform periodicity of a width *d;*

means for directing a light beam incident to said magnetizable film;

magnetic field H means for coupling a DC external magnetic field H to said magnetizable film, said field H having a variable magnitude and polarity and a variable rotatable orientation in the plane of said magnetizable film, the variable magnitude and polarity of said field H adjustable to generate a corresponding variation in the variable width *d* of said stripe domains and a corresponding angular deflection of said light beam and said variable orientation of said field H adjustable to generate a corresponding variation in the rotatable orientation of said stripe domains and a corresponding angular rotation of said light beam;

a plurality of optic fibers oriented about a predetermined area of said magnetizable film, each oriented at a predetermined radial distance and a predetermined angular spacing and;

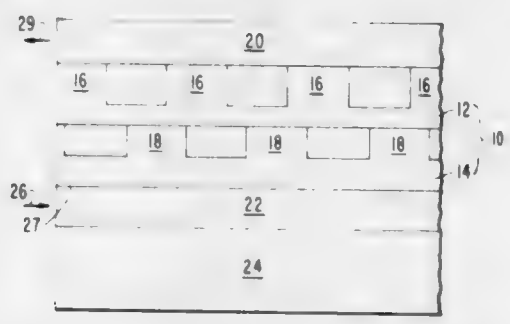
means affecting said magnetic field H means for simultaneously rotating and deflecting said light beam and directing said sorotated and deflected light beam upon a selected one of said optic fibers.

4,082,425

OPTICAL COUPLER

Arthur Miller, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 16, 1976, Ser. No. 751,169
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.17 **8 Claims**



1. In a method of making an optical coupler that couples light between a fiber and a waveguide carried by a substrate, the steps of:

providing first and second diffraction gratings that have a common spatial frequency, and respectively diffract first and second percentages of input light whereby said first grating has a first diffraction strength and said second grating has a second diffraction strength;

contiguously connecting said gratings to provide a spatially varying overlap of the bars of said first grating by the bars of said second grating;

mounting said connected gratings upon said waveguide, thereby forming a coupling assembly;

successively placing said fiber at a multiplicity of locations upon said coupling assembly where said fiber and said waveguide form a sandwich that includes said gratings;

transmitting a light beam that causes a coupling of light between said fiber and said waveguide via said coupling assembly during the successive placing of said fiber, said first and second diffraction strengths causing first and second components of an electromagnetic field of substantially equal amplitudes to extend within said substrate;

fixedly connecting said fiber at a desired one of said multiplicity of locations where said coupled light is a maximum; and

removing parts of said gratings that are not within said sandwich at said desired location.

4,082,426

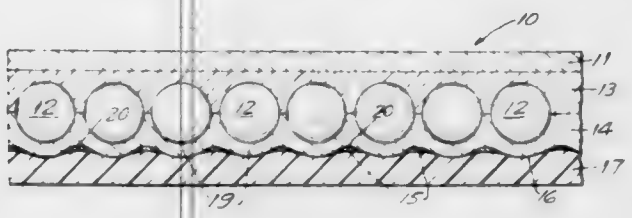
RETROREFLECTIVE SHEETING WITH RETROREFLECTIVE MARKINGS

Robert A. Brown, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 26, 1976, Ser. No. 745,401
Int. Cl.[2] G02B 5/128
U.S. Cl. 350—105 **3 Claims**

1. Reflective sheeting comprising a monolayer of microsphere-lenses adapted to receive light rays incident on the front surface of the sheeting, a spacing layer of polymeric material covering the back surfaces of the microsphere-lenses and contoured so as to generally follow those back surfaces, a specularly reflective layer coated over the spacing layer, and an

image layer disposed in an imagewise pattern between the spacing layer and specularly reflective layer; characterized in that the image layer is transparent and in that the thickness of the image layer is greater in the valleys of the spacing layer



between the microsphere-lenses than on the curved surfaces directly in back of the microsphere-lenses, whereby the 45° retroreflection from the image areas of said sheeting is at least 30 percent less than the retroreflection from nonimage areas.

4,082,427

HIGH REFRACTIVE INDEX GLASS COMPOSITIONS

Nobuyuki Nakashima, Fukuoka, Japan, assignor to Fukuoka Tokushu Garasu Kabushiki Kaisha, Japan

Continuation of Ser. No. 591,650, Jun. 30, 1975, abandoned. This application Feb. 23, 1977, Ser. No. 771,358
Claims priority, application Japan, Jul. 2, 1974, 49-75658
Int. Cl.² C03C *3/12*; G02B *5/128*
U.S. Cl. 350—105 **3 Claims**

1. Lead-free colorless and transparent glass suitable for formation at 1300° – 1500° C of colorless, transparent glass, beads having a refractive index exceeding 2.15 for use in reflex-reflective articles, and whose composition by weight percentage is:

	% Range	Combined Range
TiO_2	55 – 65	
BaO	17 – 30	
CaO	1 – 10	18 – 35%
MgO	0 – 2	
SrO	0 – 6	
ZnO	3 – 15	
MoO_3	0 – 5	0.2 – 5%
ZrO_2	0 – 5	
Na_2O	0 – 0.5	0.1 – 0.5%
K_2O	0 – 0.5	
Li_2O	0 – 0.5	
B_2O_3	0 – 2	less than 2%
SiO_2	0 – 2	
Al_2O_3	0 – 2	
P_2O_5	0 – 2	

4,082,428

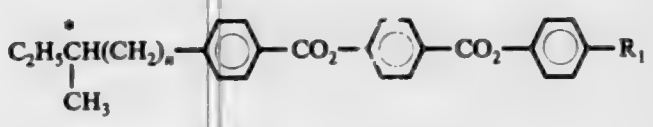
LIQUID CRYSTAL COMPOSITION AND METHOD

Ying-Yen Hsu, Mountain View, Calif., assignor to Suncrux Incorporated, Cupertino, Calif.

Continuation-in-part of Ser. No. 629,396, Nov. 6, 1975, abandoned. This application Aug. 2, 1976, Ser. No. 710,698
Int. Cl.² C09K *3/34*; G02F *1/13*
U.S. Cl. 350—350 **19 Claims**

4. A nematic field-effect liquid crystal composition comprising a solution of:

(a) at least one compound of the general formula:



wherein *n* varies from 1-5, and R_1 is a radical selected from the group consisting of an n-alkyl group, an n-alkoxy group, an n-acyloxy group, an n-alkyl carbonato group, a cyano group, and a nitro group, and

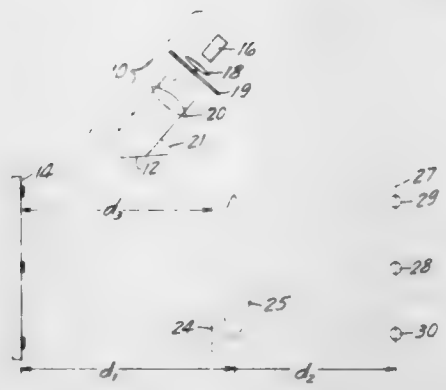
(b) a mixture of field effect esters miscible with compound (a) and having a nematic temperature range of at least 0° to 50° C and a positive dielectric anisotropy, said mixture of field-effect esters comprising a mixture of p'-substituted-p-alkyl-andp-cyanophenylbenzoates.

4,082,429

APPARATUS FOR COPYING GRAPHIC IMAGES INCLUDING THE PROCESSING OF INCOHERENT RADIATION WITH A SPATIAL FILTER

Joseph E. Ward, III, Woodbury, Minn., and John C. Huber, Hudson Twp., St. Croix County, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 570,349, Apr. 22, 1975, abandoned. This application Jun. 25, 1976, Ser. No. 699,785
Int. Cl.² G02B *5/32, 27/38*; G03H *1/16*
U.S. Cl. 350—162 SF **6 Claims**



1. In an apparatus for making copies of graphic images, said apparatus including an optical system for image processing comprising

(i) a souce of spatially incoherent light positioned for directing said light to an object containing said graphic image to provide an intensity distribution of light from said object; and

(ii) a lens for providing a processed image of said light distributed from said object at a predetermined image plane;

the improvement wherein said optical system further comprises

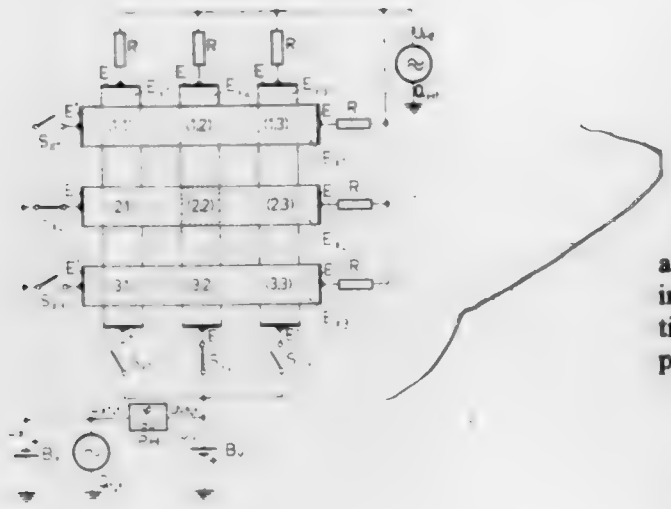
a spatial filter which is a Fourier transform hologram containing a two-dimensional point spread function and which when combined with said lens in said optical system as a lens pupil for processing incoherent light, spatially filters said light distributed from said object to attenuate predetermined spatial frequency components within an interval of spatial frequencies $0<\omega<\Omega$ and interacts with the lens to provide at the predetermined image plane processed convolution and/or correlation images of said filtered light distributed from said object, wherein within said processed convolution and/or correlation images the transmissivity or reflectivity of the hologram causes the optical transfer function to controllably attenuate spatial frequency components outside said interval of spatial frequencies and to substantially unalter the spatial components within said interval to thereby provide said graphic image at the image plane in which the higher spatial frequency components which contribute to fidelity in multi-generation copies are substantially unaltered.

4,082,430

DRIVING CIRCUIT FOR A MATRIX-ADDRESSED LIQUID CRYSTAL DISPLAY DEVICE

Peter U. Schulthess, Zurich, and Peter J. Wild, Wettingen, both of Switzerland, assignors to BBC Aktiengesellschaft Brown, Boveri & Company, Ltd., Baden, Switzerland

Division of Ser. No. 562,548, Mar. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 238,576, Mar. 27, 1972, abandoned. This application Jan. 21, 1977, Ser. No. 760,944
Claims priority, application Switzerland, Mar. 30, 1971, 4670/71
Int. Cl.[2] G02F *1/13*
U.S. Cl. 350—333 9 Claims



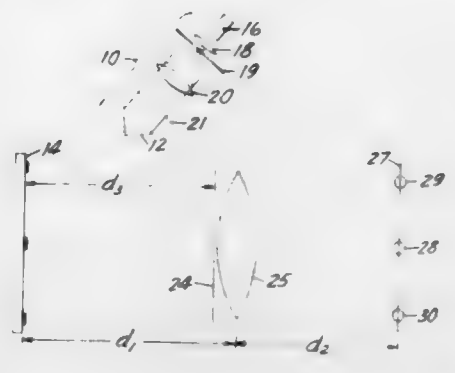
1. A driving circuit for a matrix addressed liquid crystal display device comprising a plurality of row and column electrodes forming a matrix, a liquid crystal disposed between said row and column electrodes, resistor means including a plurality of resistors, circuit means connecting one end of each row and column electrode to one end of a respective one of said resistors, further circuit means connecting the other ends of each resistor to a common point, said liquid crystal having a threshold such that low frequency voltages with a magnitude above said threshold cause dynamic scattering of light in said liquid crystal, said driving circuit further comprising first source means for providing a first electric voltage of a frequency less than a given low frequency and having a magnitude greater than the threshold voltage above which said dynamic scattering is caused, said given low frequency being in a frequency range in which the threshold of said liquid crystal means is substantially frequency independent, first means for applying said first electric voltage between selected row and selected column electrodes for causing dynamic scattering at the matrix crossings defined by said selected row and selected column electrodes, and second means including second source means for simultaneously applying a second voltage having a frequency higher than said given low frequency between said selected column and selected row electrodes and said common point so that said first and second voltage components are both present simultaneously at the crossings of non-selected electrodes with selected electrodes, said second voltage of a frequency higher than said given low frequency having a magnitude and frequency at which in combination with said first voltage the dynamic scattering is substantially completely suppressed, and the dynamic scattering due to said first electric voltage alone is not suppressed at the crossing of said selected row and selected column electrodes, whereby cross-talk is avoided.

4,082,431

IMAGE PROCESSING SYSTEM USING INCOHERENT RADIATION AND SPATIAL FILTER HOLOGRAM

Joseph E. Ward, III, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 570,957, Apr. 22, 1975, abandoned. This application Apr. 1, 1976, Ser. No. 672,614
Int. Cl.[2] G02B *5/32, 27/38;* G03H *1/16*
U.S. Cl. 350—162 SF 22 Claims



3. An apparatus for processing an original image containing a plurality of different complex patterns to provide a modified image in which at least one of said complex patterns is substantially unaltered, said apparatus including a system for image processing comprising

a source of spatially incoherent electromagnetic radiation positioned for directing said radiation to an object containing a said original image to provide an intensity distribution of electromagnetic radiation from said object; and

a lens for providing a processed image of said radiation distributed from said object at a predetermined image plane;

the improvement wherein the apparatus further comprises

a spatial filter which is a Fourier transform hologram containing therein a two-dimensional point spread function, and which when combined with said lens in said system as a lens pupil for processing incoherent electromagnetic radiation, spatially filters said radiation distributed from said object to attenuate predetermined discrete spatial frequency components within an interval of spatial frequencies $0 \leqq \omega \leqq \Omega$ to provide at the predetermined image plane processed convolution and/or correlation images of said filtered radiation distributed from said objects, wherein within said processed convolution and/or correlation images the transmissivity or reflectivity of the hologram causes the optical transfer function to controllably attenuate said predetermined discrete spatial frequency components of said original image and to substantially unalter at least one of said complex patterns.

4,082,432

HEAD-UP VISUAL DISPLAY SYSTEM USING ON-AXIS OPTICS WITH IMAGE WINDOW AT THE FOCAL PLANE OF THE COLLIMATING MIRROR

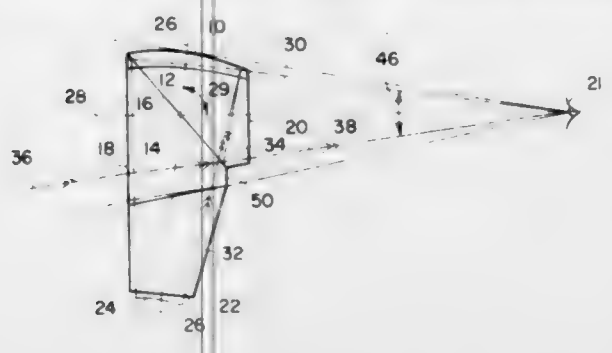
Robert Kay Kirschner, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Rockford, Ill.

Continuation-in-part of Ser. No. 539,672, Jan. 9, 1975, abandoned. This application Nov. 29, 1976, Ser. No. 745,949
Int. Cl.[2] G02B *27/14*
U.S. Cl. 350—174 26 Claims

1. An on-axis head-up optical display apparatus for use with an image generator comprising:

an image combining block including: an image window on the lower surface of said black for admitting light rays from the image generator; a generally spherical collimating mirror disposed on the upper surface of said block for collimating said generated image light rays; a front window for admitting light rays from a background view; a combining surface for combining said background view with said collimated image light rays reflected from said

collimating mirror; and a back window for viewing the combined image wherein said image window is located at



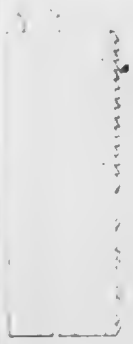
the focal plane of said collimating mirror and is generally perpendicular to the optical axis of said collimating mirror.

4,082,433

LOUVERED ECHELON LENS

Roger H. Appeldorn, Grant Township, Washington County, and Raymond H. Anderson, St. Mary's Point, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 484,619, Jul. 1, 1974, Pat. No. 3,972,593.
This application Jan. 14, 1976, Ser. No. 649,217
The portion of the term of this patent subsequent to Aug. 3, 1993, has been disclaimed.
Int. Cl.² G02B *3/08*
U.S. Cl. 350—211 **12 Claims**



1. In combination a layer of reflective material and a louvered echelon lens disposed over said reflective material and capable of transmitting improved contrast images reflected by said reflective material, said lens comprising a unitary sheet that includes

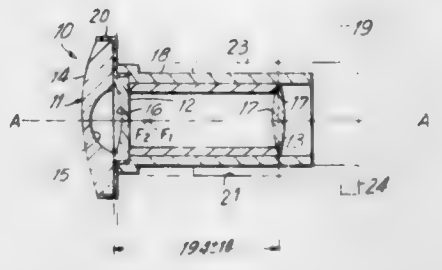
1. an optically clear layer having a major surface configured with at least one annular echelon lens that has a diameter of less than about one inch and is surrounded by nonlenticular structure; and
2. an internally louvered layer superposed in optical connection with the optically clear layer and comprising an optically clear polymeric matrix and a set of thin light absorbing linear louvers, each of the louvers being supported within the matrix at an angle to the faces of the louvered layer and aligned in spaced side-by-side relation so as to transmit light toward said configured surface while reducing light internally reflected within said lens.

4,082,434

WIDE-ANGLE OPTICAL SYSTEM FOR DOOR VIEWER

Tadaaki Hayashi, and Teruto Nakahara, both of Koganei, Japan, assignors to Kabushiki Kaisha Ka-Pu, Tokyo, Japan

Filed Sep. 17, 1976, Ser. No. 724,137
Claims priority, application Japan, Sep. 20, 1975, 50-113127; May 12, 1976, 51-53356
Int. Cl.² G02B *7/08*
U.S. Cl. 350—225 **10 Claims**



1. A wide-angle optical system for a door viewer, comprising

a concave objective lens of about 13 to 25 mm in diameter and about 3 to 5 mm in thickness, said concave objective lens having a front convex surface of about 20 to 30 mm in radius of curvature and having a rear concave surface of about 2 to 4 mm in depth, about 8 to 11 mm in diameter and about 4 to 6 mm in radius of curvature provided at the central portion of the rear surface thereof;

an intermediate concave lens of about 9 to 12 mm in diameter and about 1 to 3 mm in thickness, said intermediate concave lens having a front concave surface of about 6 to 10 mm in diameter, about 1 to 2 mm in depth and about 4 to 7 mm in radius of curvature provided at the central portion of the front surface thereof; and

a convex eyepiece lens of about 6 to 11 mm in diameter and about 1 to 2 mm in depth, said convex eyepiece lens having a convex surface of about 20 to 30 mm in radius of curvature provided at the both surfaces thereof; wherein said intermediate concave lens is positioned so that the front surface thereof contacts the rear surface of said concave objective lens to oppose said front concave surface of said intermediate concave lens to said rear concave surface of said concave objective lens and so as to align the optical axis of said intermediate concave lens with that of said concave objective lens, and

said convex eyepiece lens is positioned to the rear of said concave objective lens in such a manner that the optical axis thereof is aligned with the optical axis of said concave lenses and the distance between the center of said convex eyepiece lens and the rear surface of said concave objective lens substantially corresponds to the sum of the focal length of said convex eyepiece lens and that of the lens system composed of said concave objective lens and said intermediate concave lens.

4,082,435

OPTICAL SWITCH

Vernon Zeitz, Springfield, Vt., assignor to Johnson & Johnson, New Brunswick, N.J.

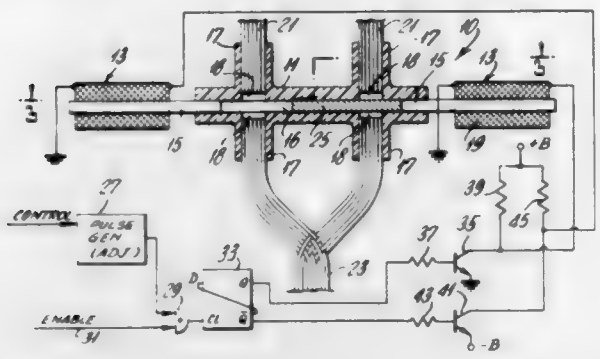
Filed Jan. 7, 1976, Ser. No. 647,285
Int. Cl.² G05D *25/00*; G03B *9/36*
U.S. Cl. 350—269 **7 Claims**

1. A switch for interrupting one of a plurality of optical paths, comprising:

a housing, said housing having a plurality of said optical paths therethrough;

means for interrupting one of said optical paths while at least one of said optical paths is uninterrupted, said interrupting and uninterruption being a logical OR operation, said

means having permanent magnetic properties and being slidably positioned within said housing; and



means for alternately attracting and repulsing said interrupting means.

4,082,436

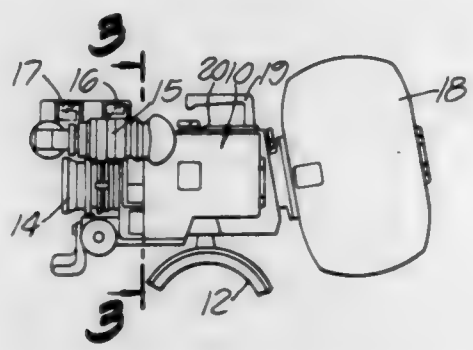
MOTION PICTURE CAMERA

Robert E. Gottschalk, 10660 Chalon Rd., Los Angeles, Calif. 90024

Division of Ser. No. 582,698, Jun. 2, 1975, which is a continuation of Ser. No. 388,630, Aug. 15, 1973, abandoned. This application Jul. 30, 1976, Ser. No. 710,164

Int. Cl.[2] G03B *23/02*

U.S. Cl. 352—72 **3 Claims**



1. In a motion picture camera, the combination of: a housing, a camera movement assembly enclosed with said housing, a support member within said housing, means for mounting the camera movement assembly on said support member, sound-absorbing connector means securing said support member to said housing, said camera movement assembly being spaced from the enclosing housing and without any contact therewith, the camera housing having an upper portion provided with a first opening and having a rearward portion provided with a second opening, means for securing a film magazine selectively over either of said openings whereby a film strip in said magazine may pass through the selected opening to the camera movement assembly, a lens mount fixed on the housing and without contact with said support member, and a closure member for closing either of said openings releasably engaging said housing and closing one of said openings.

4,082,437

GAME HAVING OPTICAL PRESENTATION AND APPARATUS THEREFOR

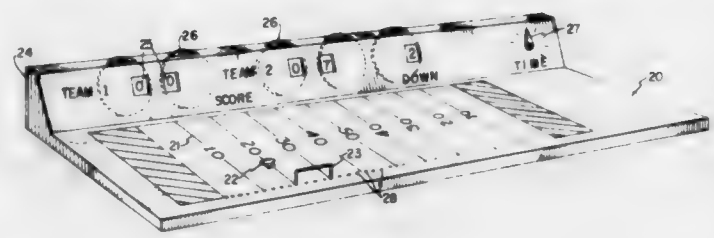
Jake Millard Williams, New York, N.Y., assignor to Nolte and Nolte, P.C., Jericho, N.Y.

Continuation of Ser. No. 293,220, Sep. 28, 1972, abandoned. This application Mar. 28, 1975, Ser. No. 563,236

Int. Cl.[2] G03B *21/04*

U.S. Cl. 352—123 **20 Claims**

1. A game simulating a sports activity, comprising a plurality of reels of film each having a plurality of equal length sequences of play of said activity regularly arranged thereon, and a selective projecting apparatus adapted to singly receive said reels for projection, said apparatus comprising means for selectively advancing film from a selected reel received thereby to project a determined sequence and for inhibiting projection of more than said determined sequence said means for selectively advancing film comprising a take-up reel having a perimeter of a length having a determined relationship to the length of said sequences, means for affixing the end of a selected reel of film to said take-up reel, and means for rotating said take-up reel to wind thereon a length of film equal to an integral number of sequences of said film, a rotatable element coupled to rotate with said take-up reel and having therein a spiral groove, pin



means engaging said groove, selector means coupled to said pin means to permit changing of the position of said pin means in said groove, means inhibiting movement of said pin means in one direction at a point at which the remainder of said groove in said direction corresponds to the length of sequence on said film, and release means for releasing said stop means to permit rotation of said take-up reel whereby said take-up reel can rotate to wind thereon a length of film corresponding only to one sequence of film.

4,082,438

ZERO-ORDER DIFFRACTIVE SUBTRACTIVE FILTER PROJECTOR

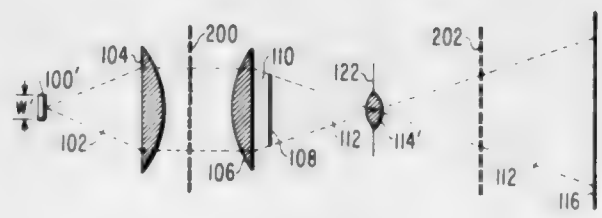
Karl Knop, Zurich, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1976, Ser. No. 682,147

Claims priority, application United Kingdom, May 30, 1975, 23629/75

Int. Cl.[2] G03B *21/14*

U.S. Cl. 353—97 **7 Claims**



1. In a zero-order diffractive subtractive filter projector comprising an imaging lens having a given aperture, and illuminating means for illuminating a diffractive subtractive filter with incident light to derive zero-order output light for imaging on a screen by said imaging lens; the improvement comprising:

a mask situated in a given plane located between said imaging lens and said screen, said mask comprising a plurality of spaced transparent regions arranged in a predetermined array with adjacent transparent regions being separated by opaque regions, and

said illuminating means including means for deriving a plurality of spaced light beams arranged in a given array corresponding with said predetermined array, said given array of light beams being situated so that, in the absence of a diffractive subtractive filter in said projector, said imaging lens substantially images said respective light beams of said given array on said respective transparent regions of said mask,

whereby in the presence of a diffractive subtractive filter in said projector said zero-order output light passes through said transparent regions of said mask, but higher diffrac-

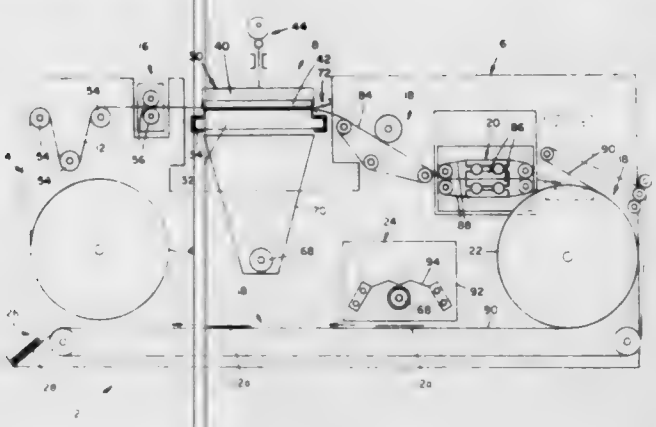
tion order output light is substantially blocked by said opaque regions of said mask.

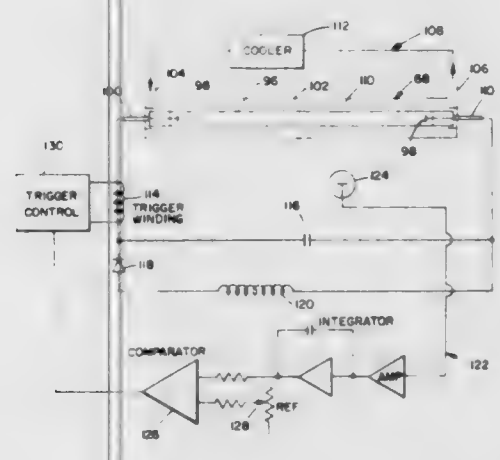
4,082,439

FILM DUPLICATOR

Paul N. Seitz, Zurich, Switzerland, assignor to Quantor Corporation, Mountain View, Calif.

Division of Ser. No. 501,590, Aug. 29, 1974, Pat. No. 3,958,142.
This application Feb. 20, 1976, Ser. No. 659,830
Int. Cl.² G03B *27/30*
U.S. Cl. 355—100 **11 Claims**





1. A microfiche duplicator comprising a transfer station including means for positioning a master-fiche at the station, means for storing a supply of copy film, means for advancing copy film into registration with the master-fiche, and exposing means for transferring an image from the master-fiche to a section of copy film registered with the master-fiche at the transfer station, the exposing means including a light source disposed on a side of the master-fiche opposite from the film section and comprising a gas discharge lamp having an inner tube enveloping spaced apart electrodes disposed in a gas atmosphere, an electrical power source for the lamp, a light transmissive tubular member surrounding the tube, and electrically conductive liquid means disposed in a space between the tube and the member acting as an external trigger device for the lamp for triggering the lamp with a relatively low trigger voltage.

4,082,440

COMPACT MICROFORM READER

Frank P. Bennett, Franklin Lakes, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Oct. 14, 1975, Ser. No. 621,984
Int. Cl.² G03B *23/12, 21/22*
U.S. Cl. 353—26 R **6 Claims**

1. A portable microform reader comprising a light tight housing, a microform holder carried by said housing for supporting therein a microform for viewing, a projection screen mounted within said housing, a projection system carried within said housing for projecting a pair of identical mono-images of a portion of said microform in side-by-side relation onto the rear side of said projection screen, said projection system including a source of illumination and means connected thereto for energizing said source of illumination, a condenser lens positioned between said source of illumination and said microform holder so as to direct a beam of illumination through a portion of a microform in said holder for viewing, a projection lens positioned for projecting an image of said portion of said microform toward said screen, and beam splitting means positioned between said projection lens and said screen for dividing the image projected by said lens into identical first and second images thereof and for reflecting said first and second images onto said screen in side-by-side relation, said projection screen supported within said housing and being translucent so that said identical pair of images may be viewed on the front side thereof, and a magnifying system having first and second magnifying lenses interocularly spaced for binocular viewing of said pair of images on the front side of said viewing screen, said screen being positioned between said magnifying system and said microform carrier, and said magnifying lenses being in optical alignment with said images on said screen for viewing an enlarged virtual mono-image thereof.

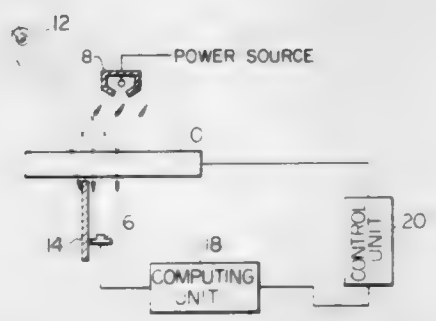


4,082,441

METHOD AND APPARATUS FOR PRODUCING AND FIXING A VISIBLE IMAGE ON A THERMOPLASTIC LAYER OF A PHOTOCONDUCTIVE MATERIAL

Yukio Yamada; Michiharu Abe, and Akiyoshi Oride, all of Tokyo, Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

Filed Dec. 1, 1975, Ser. No. 636,392
Claims priority, application Japan, Dec. 3, 1974, 49-139926
Int. Cl.² G03G *15/00*
U.S. Cl. 355—14 **11 Claims**



1. In a method of producing and fixing a visible image on a photoconductive material, the photoconductive material comprising a photoconductive layer on which a transparent thermoplastic layer is formed, the steps of:

(a) radiating a light image onto the thermoplastic layer;

(b) heating the thermoplastic layer to a softening point thereof;

(c) sensing an intensity of the light image at a point to which the light image is diffracted by the visible image being formed on the photoconductive material;

(d) automatically electronically computing the rate of change of the sensed intensity of the light image in a manner as to differentiate the sensed intensity; and

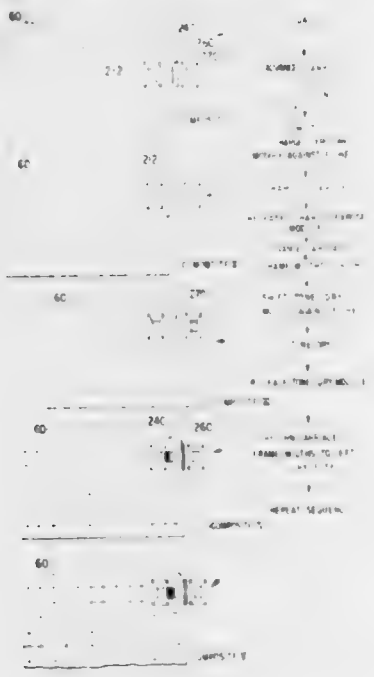
(e) automatically terminating the application of heat to the thermoplastic layer when the rate of change of intensity of the light image reaches a value substantially equal to zero.

4,082,442

ELECTROPHOTOGRAPHIC METHOD FOR PRODUCTION OF PLURAL IMAGES ON A SHEET

Frank C. Gross, Wilbraham, Mass., assignor to A. B. Dick/-Scott, South Hadley, Mass.

Division of Ser. No. 349,452, Apr. 9, 1973, Pat. No. 3,972,610.
This application Dec. 30, 1975, Ser. No. 645,429
Int. Cl.[2] G03G *13/22*
U.S. Cl. 355—3 R **30 Claims**



1. The method of microelectrophotography which includes sequentially transporting a photosensitive substrate through a series of discrete steps which comprise:

[i] forming at a first stationary position a latent electrostatic microimage on the photosenstive substrate, said substrate having been provided at said first position with a substantially uniform electrostatic charge only over the area thereof corresponding to that microimaged;

[ii] developing at a second position the said latent electrostatic image; and

[iii] fixing at a third position the said developed image.

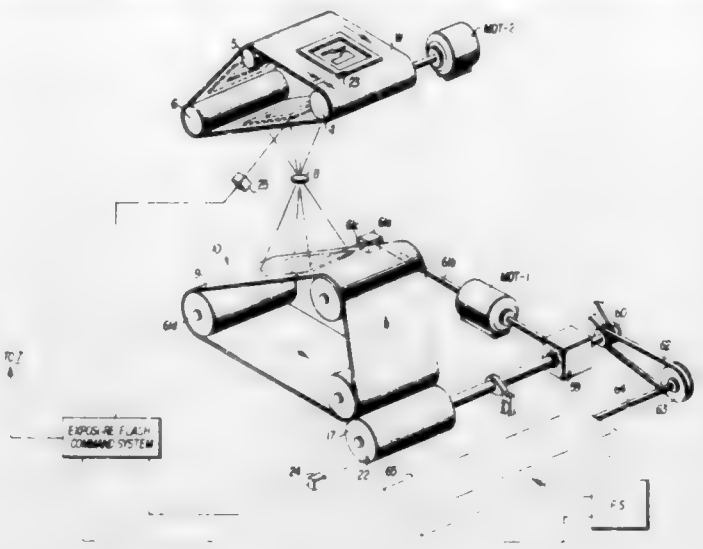
4,082,443

SYSTEM FOR SUPERPOSITION OF COLOR SEPARATION IMAGES

Vaidevutis C. Draugelis, Rochester, and Eugene D. Schafer, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 8, 1976, Ser. No. 647,470
Int. Cl.[2] G03G *15/01*
U.S. Cl. 355—4 **6 Claims**

1. A reproduction machine for processing color separation masters comprising an exposure station including a flash lamp, an imaging surface movable past said station, means for moving a plurality of said color separation masters past said exposure station successively, means for energizing said lamp to create a plurality of spaced apart electrostatic latent images on said imaging surface, means for developing said successive images with different color developer, rotatable means for successively bringing a support surface into contact with said developed images, and means for controlling the energization



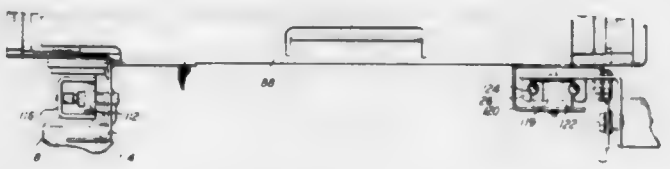
of said lamp in dependence on the position of said master to be exposed relative to the moving support surface.

4,082,444

LAMP CARRIAGE DRIVE SYSTEM

Sukumaran K. Menon, Webster, and Stephen J. Wenthe, Jr., Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 30, 1976, Ser. No. 681,956
Int. Cl.[2] G03G *15/28*
U.S. Cl. 355—8 **6 Claims**



1. An apparatus for illuminating an article, including:

a light source;

means for supporting the article in a light receiving relationship with light rays transmitted from said light source;

a carriage having said light source mounted thereon;

a drive system for moving said carriage;

a frame;

a first U-shaped member mounted on said frame;

a pair of spaced rollers mounted rotatable on one end of said carriage and disposed in said first U-shaped member;

an inner slide member secured to the other side of said carriage;

an outer slide member secured to said frame; and

a plurality of ball bearings interposed between said inner slide member and said outer slide member providing a rolling support for said carriage.

4,082,445

TONER CONTROL SYSTEM FOR AN ELECTROSTATIC REPRODUCTION MACHINE

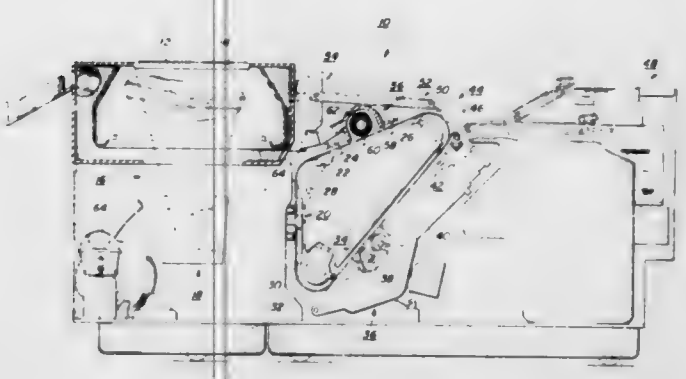
Edward L. Steiner, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 634,018, Nov. 21, 1975, abandoned.
This application Oct. 4, 1976, Ser. No. 729,334
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—14 **5 Claims**

1. In an electrostatic reproduction machine having a developing apparatus for applying toner to an electrostatic latent image of an original on a photoreceptor to develop the latent image, means for replenishing toner in the developing apparatus to compensate for toner depletion resulting from the development of a plurality of latent images, and means for produc-

ing a developed test image on the photoreceptor, an improved control system for controlling the operation of the replenishing means by comparing the difference between the amount of light reflected from an undeveloped area of the photoreceptor and the amount reflected from the developed test image to a reference value, the control system comprising:

a sensing station having a light source and a light sensitive device, means including the light source for sequentially directing light toward the undeveloped area of the photoreceptor and the test image, means including the light sensitive device for sequentially measuring the amount of light reflected from the undeveloped area and from the



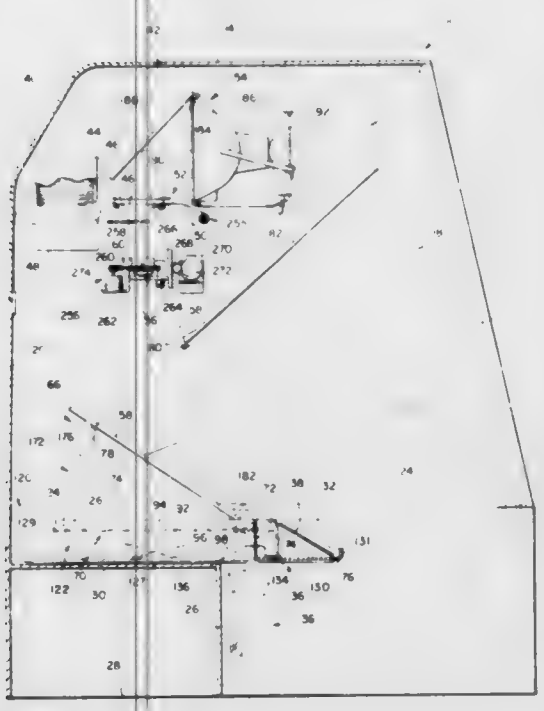
test image, means for generating a first signal which is proportional to the amount of light reflected from the undeveloped area, means for generating a second signal which is proportional to the amount of light reflected from the test image, means for measuring the difference between the first and second signals and for comparing the difference to a reference value and for generating a third signal if the difference indicates that the density of the test image does not correspond to the desired density represented by the reference value, and means including error detecting means for compensating for any toner accumulation on the sensing station by generating an error signal.

4,082,446

SLIDE VIEWER AND PHOTOGRAPHIC COPIER

John J. Driscoll, Andover; Thomas A. Svatek, Carlisle, and Richard R. Wareham, Marblehead, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 2, 1977, Ser. No. 764,719
Int. Cl.[2] G03B *27/32, 27/52*
U.S. Cl. 355—27 **4 Claims**



1. Photographic apparatus being selectively operable for projecting an image of an object onto a viewing surface for viewing and for making a photographic copy of the object utilizing a self-developing film unit of the type including an integral supply of fluid processing composition that is adapted to be distributed between predetermined. layers thereof subsequent to exposure, said apparatus comprising:

a housing;

means for releasably holding a plurality of such objects;

means being operable for moving the objects, in sequence, from said holding means to a projection position within said housing for image projection and thereafter back to said holding means;

means for illuminating the object located at said projection position;

means for locating such a self-developing film unit at an exposure position within said housing;

pressure applying means for engaging and applying a compressive pressure to the self-developing film unit subsequent to exposure to effect the distribution of the processing fluid; and

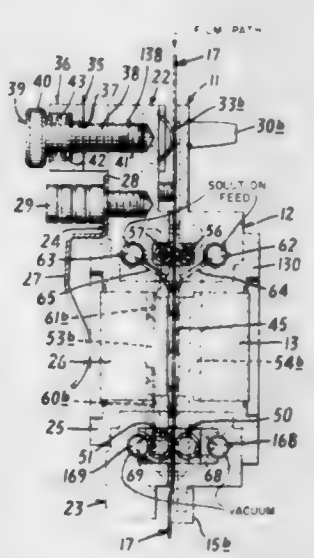
optical means being selectively operable in viewing and copy modes of operation for projecting an image of the object at said projection position onto a viewing surface for viewing when operated in said viewing mode and for projecting an image of the object at said projection position onto the self-developing film unit located at said exposure position to effect the exposure of the film unit when operated in said copy mode.

4,082,447

WET GATE EMBODIED IN A PHOTOGRAPHIC STRIP FILM PRINTER

Louis Ferdinand Pascuzzi, Mount Vernon, N.Y., assignor to Cineffects Color Laboratory Inc., New York, N.Y.

Filed Feb. 3, 1977, Ser. No. 765,085
Int. Cl.[2] G03B *27/52, 27/68*
U.S. Cl. 355—30 **5 Claims**



1. In a photographic strip film printer a wet gate assembly comprising:

(1) a pair of complementary gate halves demountably fastened together to form between opposed faces thereof a through strip film path from top entrance ends down to bottom exit ends thereof;

(2) a pair of light-transmitting optical windows having substantially aligned transverse central axes respectively fitted into one of a pair of opposed apertures separately formed in said gate halves with said windows located in transversely spaced-apart relation on opposite sides of said path to define a chamber therebetween;

(3) cooperative leakage blocking means provided on the opposed faces of said gate halves along opposite sides of said windows closing the sides of said chamber;

(4) transverse leakage blocking means cooperatively provided on the entrance ends of said gate halves for preventing leakage up out of the gate assembly chamber while

permitting strip film to be drafted down therethrough between said transversely spaced windows;

(5) a pair of transverse manifolds each provided in one of said gate halves above the window in such gate half with each manifold having means adapted to be connectable to a source of pressurized liquid and provided with transversely spaced passage outlets communicating with the upper portion of the chamber;

(6) a pair of cooperating transverse squeegee rollers each rotatably mounted at the face of and by one of said gate halves below the window therein with at least an arcuate longitudinal zone of each roller extending laterally forward beyond the face of the gate half supporting it with the opposed arcuate longitudinal zones of said rollers biased toward longitudinal contact with each other, said rollers extending laterally to cooperating positions relative to said side leakage blocking means and in cooperative sealing relation with respect to each other for closure of the bottom of the chamber; and

(7) means defining behind each of said rollers in the gate half supporting the latter a transverse channel connectable to suction means for drawing off liquid from the chamber at said rollers while substantially blocking leakage below the latter.

4,082,448

ELECTROSTATIC MODULATOR FOR CONTROL OF FLOW OF CHARGED PARTICLES

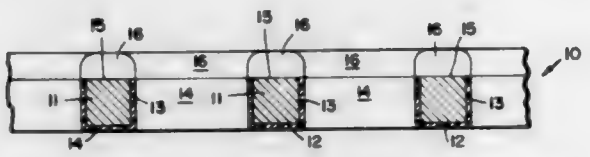
Gerald L. Pressman, Cupertino, Calif., assignor to ElectroPrint, Cupertino, Calif.

Continuation-in-part of Ser. No. 291,487, Sep. 22, 1972, Pat. No. 3,850,628, which is a division of Ser. No. 85,070, Oct. 29, 1970, Pat. No. 3,694,200. This application Nov. 25, 1974, Ser. No. 527,101

The portion of the term of this patent subsequent to Sep. 26, 1989, has been disclaimed.

Int. Cl.² G03G *15/052*

U.S. Cl. 355—3 SC **24 Claims**



1. An electrostatic modulator for controlling the flow of charged particles comprising:

An apertured screen comprising an equipotential conductive core and a coating of electrically insulative material covering said equipotential conductive core and forming substantially the entire surfaces of the screen and the inner surfaces of the aperture, that portion of the coating covering the first face of the screen having different geometric properties than the portion of the coating covering the second face of the screen so that when said first and second faces of said screens are simultaneously charged for a preselected period of time, the first face of the screen retains a different potential following completion of charging than the second face of the screen; means for simultaneously charging the coating over both faces of the screen with like charges for said preselected period of time; and means for selectively dissipating the charge across one face of the screen in accordance with a pattern to be reproduced, thereby establishing an electrostatic latent image corresponding to the pattern to be reproduced.

22. An electrostatic modulator for controlling the flow of charged particles comprising:

an apertured screen having first and second opposed faces, said screen including a coating of electrically insulative material forming substantially the entire surfaces of the screen including the inner surfaces of the apertures, that portion of the coating covering the second face of the screen having different electrical properties from the portion of the coating covering the first face of the screen, said portion of said coating covering the second face of said screen having a non-linear resistance characteristic at all voltage levels above a first pre-determined value, where said first predetermined value is less than a second predetermined voltage value which the portion of the coating covering the first face is designed to acquire during charging by charging means;

charging means located adjacent the first face of said screen for charging said faces to said predetermined voltages with charges of like polarity, said second face of the screen acquiring a surface potential smaller than the surface potential of said first face of said screen;

and means for selectively dissipating the charge across said first face of said screen in accordance with the pattern to be reproduced, thereby establishing an electrostatic latent image corresponding to the pattern to be reproduced.

4,082,449

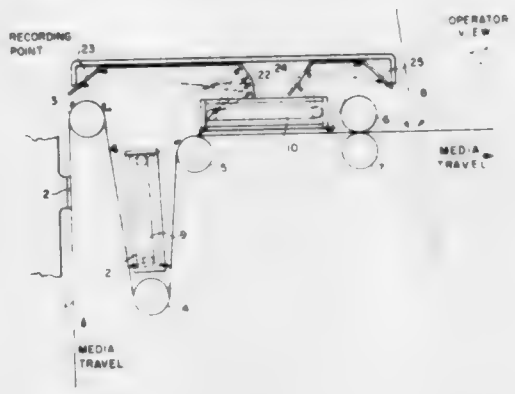
LATENSIFYING APPARATUS

Markian Lapchak, Denver, and Henry H. Curtis, Jr., Sedalia, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 28, 1976, Ser. No. 652,970

Int. Cl.² G03B *27/76, 27/54*

U.S. Cl. 355—69 **6 Claims**



1. Apparatus for latensifying images which have been recorded on direct print media comprising first and second sources of latensifying radiation, said first source being operable to expose a first transverse portion of said direct print media at a first linear position thereof, and means associated with said second source and selectively operable in an on/off mode to expose other transverse portions of said direct print media at different positions linearly displaced with respect to said first transverse portion and simultaneously with the exposure of said first portions by said first source.

4,082,450

COMPACT ILLUMINATION SYSTEM FOR OPTICALLY PROVIDING A STRUCTURED PHOTORECEPTOR CHARGE DISTRIBUTION

Richard F. Lehman, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 21, 1975, Ser. No. 634,007

Int. Cl.² G03B *27/76*

U.S. Cl. 355—71 **6 Claims**

1. A system for applying a structured radiation pattern to a charged photoreceptor surface in an electrostatographic reproduction apparatus, including:

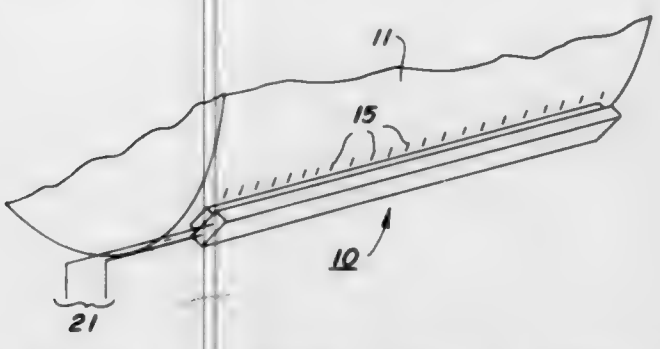
an extended source of radiation,

an apertured opaque material extending along said source between said source and said photoreceptor surface, said opaque material defining a plurality of apertures therealong,

a lenticular strip member extending along said source be-

tween said opaque material and said photoreceptor surface,

said source, said opaque material, and said lenticular strip together forming an integral pattern projector,



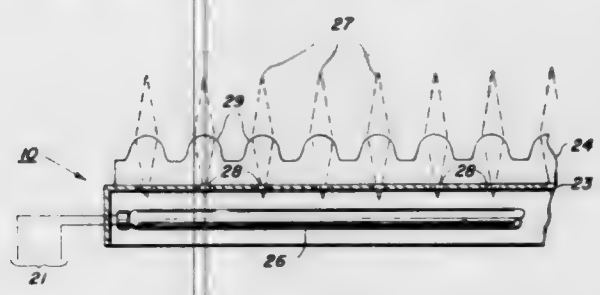
said lenticular strip including a plurality of lenselets for imaging said plurality of apertures on said photoreceptor surface to create therein a dot pattern corresponding to said plurality of apertures.

4,082,451

COMPACT ILLUMINATION SYSTEM FOR OPTICALLY PROVIDING A STRUCTURED PHOTORECEPTOR CHARGE DISTRIBUTION

Vinod Patel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 21, 1975, Ser. No. 634,017
Int. Cl.² G03B *27/76*
U.S. Cl. 355—71 **7 Claims**



1. A system for applying a structured radiation pattern to a charged photoreceptor surface in an electrostatographic reproduction apparatus, including:

an extended source of radiation,

an apertured opaque material extending along said source between said source and said photoreceptor surface, said opaque material defining a plurality of apertures therealong,

a lenticular strip member extending along said source between said opaque material and said photoreceptor surface,

said source, said opaque material, and said lenticular strip together forming an integral pattern projector,

said lenticular strip including a plurality of lenselets for imaging said plurality of apertures on said photoreceptor surface to create therein a dot pattern corresponding to said plurality of apertures,

said apertured opaque material defining a plurality of said apertures to correspond with each of said lenselets.

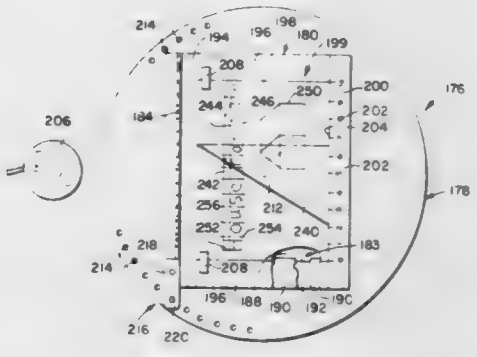
4,082,452

PHOTOPRINTING ATTACHMENT SYSTEM FOR ENLARGERS

Eugene Becker, 7348 183rd St., Flushing, N.Y. 11366

Filed Oct. 10, 1975, Ser. No. 621,473
Int. Cl.² G03B *27/58, 27/32*
U.S. Cl. 355—74 **20 Claims**

1. In a photoprinting attachment system for printing visual material from transparency means onto light sensitive means through photographic enlarging devices having means to project a light path through a transparency station toward a light sensitive means holding station: the improvement comprising easel means for positioning within a path of projected light projected by such a photographic enlarging device; comprising main frame means comprising a light sensitive holding station means, movable shield means, a layout sheet holding



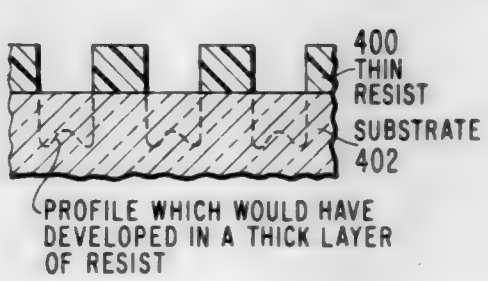
station, and registration means for selectively positioning layout sheet means on the layout sheet station in registration with light sensitive means positioned on the light sensitive means holding station, said movable shield means being movable from a first position covering said light sensitive means holding station to a second position leaving said light sensitive means holding station uncovered.

4,082,453

FABRICATION OF RECTANGULAR RELIEF PROFILES IN PHOTORESIST

Karl Knop, Zurich, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Jun. 9, 1976, Ser. No. 694,374
Claims priority, application United Kingdom, May 26, 1976, 03085/76
Int. Cl.² G02B *27/38;* G03C *5/04;* G03B *27/04, 27/02*
U.S. Cl. 355—88 **6 Claims**



1. In a master recording for use to form a stamper for embossing two of three subtractive primary colors in a single surface of a transparent plastic sheet in the fabrication of diffractive, subtractive filters, said master recording comprising a substrate supporting a developed photoresist layer which layer has a given maximum thickness; said layer defining a predetermined rectangular relief-profile diffractive structure, the improvement;

wherein said diffractive structure comprises a first diffraction grating having a first given depth corresponding to a first of said two primary colors of zero-order diffraction light and a second diffraction grating having a second given depth different from said first given depth corresponding to a second of said two primary colors of zero-order diffraction light, said second diffraction grating being at least partly superimposed on said first diffraction grating, and

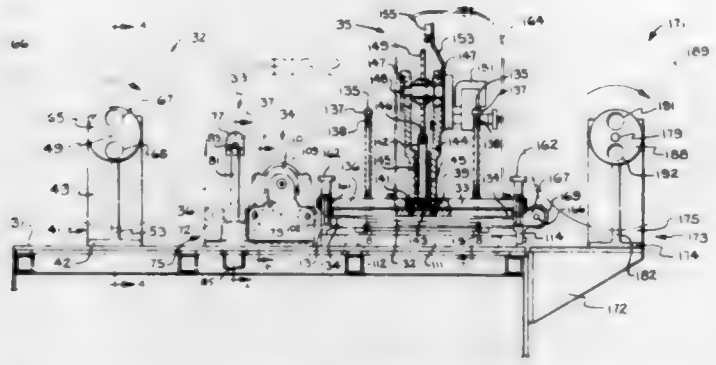
wherein said given maximum thickness of said developed photoresist layer is equal to the sum of said first and second given depths and the thickness of said developed photoresist at any point on the master recording is equal to the sum of the depths of the superimposed diffraction gratings at that point.

4,082,454

MODULAR MICROFICHE DUPLICATOR

Dean H. Putnam, Toledo, Ohio, assignor to Magnagard Equipment & Manufacturing Corporation, Toledo, Ohio

Filed Jun. 16, 1975, Ser. No. 587,082
Int. Cl.² G03B *27/04*
U.S. Cl. 355—99 **4 Claims**



1. A modular microfiche duplicator comprising a basic processing module for exposing an unexposed segment of microfilm to duplicate a master microfiche and a film advancing module, separable from said basic processing module, for drawing said segment from said basic processing module and for receiving said segment, said basic processing module including:

a film supply station, having a motor driven, rotatably mounted reel of unexposed microfilm, for supplying a continuous strip of unexposed microfilm upon which said segment is defined;

a film exposure station for exposing said master microfiche and said segment in superposition to a source of radiant energy to define on said segment an image from said master microfiche;

a film feed station intermediate said film supply station and said film exposure station having means for drawing a predetermined maximum length of said continuous strip of microfilm into said film feed station, means for indicating the length of the portion of said continuous strip of microfilm in said film feed station, and means responsive to said indicating means for turning on and off the motor driving said reel of said unexposed microfilm; and

wherein said indicating means includes microswitch actuating cam means attached to said drawing means and movable along a predetermined path between first and second positions at the respective end points of said path wherein said drawing means is responsive to a predetermined minimum length of said portion of said continuous strip of microfilm to move said microswitch actuating cam means to said first position and wherein said indication responsive means includes a first microswitch, connected between the motor driving said reel of unexposed microfilm and a motor power source, located adjacent said first position for actuation by said microswitch actuating cam means to turn on the motor to supply said continuous strip of film to said film feed station.

4,082,455

PLATE MAKING SYSTEM

Ward E. Brigham, Rutherford, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Jun. 2, 1977, Ser. No. 802,980
Int. Cl.² G03B *27/30, 27/60, 27/02*
U.S. Cl. 355—100 **22 Claims**

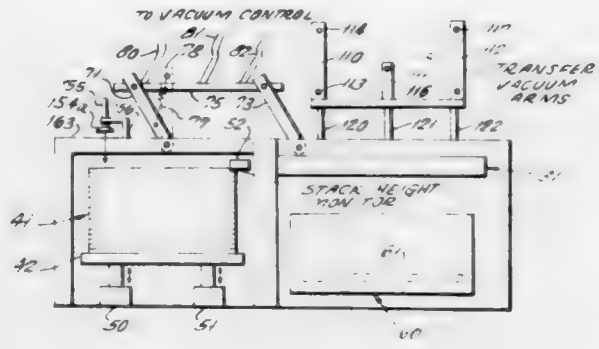
1. A plate making system comprising, in combination: means for supporting a stack of aluminum photographic plates with their emulsion side facing downward;

a film negative carrier for supporting a film negative in accurate registry with said stack; said film negative carrier having an upper surface at about the same height as the top of said stack;

plate exposure lamp means disposed beneath said film negative carrier for exposing plates disposed atop said film negative carrier through a negative fastened thereon;

output means for delivering an exposed plate from said system, with its emulsion side facing upward, to a photoprocessing unit for developing said plate;

first transfer means adapted to contact the back surface of



the uppermost plate of said stack of plates and to move said uppermost plate, with its emulsion surface facing down, onto said film negative carrier;

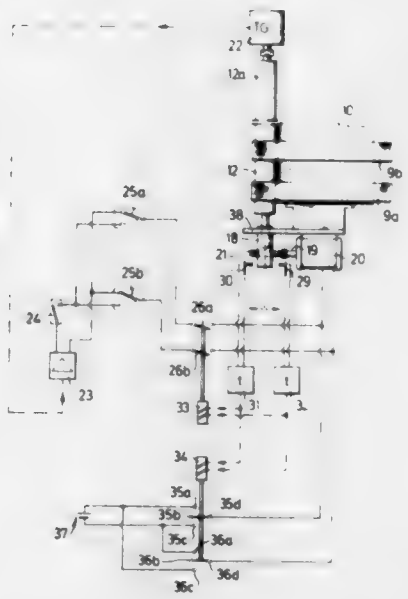
second transfer means adapted to contact the back surface of a plate on said film negative carrier and to move said plate, and invert it to have its emulsion side facing upwardly, and to deposit said plate onto said output means.

4,082,456

DEVICE FOR ADJUSTING AN ORIGINAL TO BE COPIED

Herbert Schröter, Taunusstein, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Dec. 23, 1976, Ser. No. 753,628
Claims priority, application Germany, Dec. 27, 1975, 2558874
Int. Cl.² G03B *27/12*
U.S. Cl. 355—109 **6 Claims**



1. In a device for adjusting an original to be copied, in particular an original which is repeatedly conveyed through the exposure station of a photocopying machine, including a transport mechanism with a deviatable transport band arrangement adapted to transport said original at a variable speed,

and when said original is to be copied a number of times, in a closed path, further including a device for lengthening the path on one side,

two switches positioned transversely and normal to the direction of flow and adapted to be actuated by the original whereby a switching circuit to a servomotor is closed when the leading edge of the original deviates from a correct position,

said servomotor being connected to a correcting element

adapted to change the length of the path of the original on one side of said transport band arrangement,

the improvement comprising generator means adapted to put out a first signal proportional to the transport speed of said original,

said servomotor having a rotational speed proportional to a second signal supplied thereto,

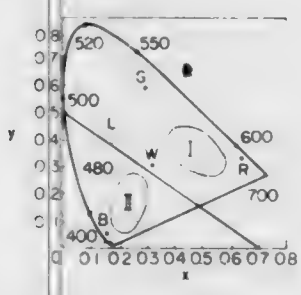
and means connecting said generator means to said servomotor by at least one transfer element adapted to proportionately transform or transduce said first signal into said second signal.

4,082,457

LEUKOCYTE DETECTOR

Hideki Kohno, Tokyo; Akihide Hashizume, and Shinji Yamamoto, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 8, 1976, Ser. No. 664,567
Claims priority, application Japan, Mar. 7, 1975, 50-27113
Int. Cl.[2] G01N *33/16*
U.S. Cl. 356—39 **1 Claim**



1. A leukocyte detector comprising:

first means for resolving the entire microscopic image of a stained blood smear, each portion of said image being simultaneously observed, into respective spectral components with different wavelengths contained within at least the wavelength ranges 420 – 440 μm and 520 – 570 μm;

second means for measuring the light quantities of said respective spectral components;

third means for making a prescribed operational calculation by using as a variable each light quantity obtained from said second means; and

fourth means for comparing the result of the calculation by said third means with a predetermined threshold limit value;

whereby the presence of leukocytes is indicated by the output from said fourth means; and wherein

said third means comprises fifth means for calculating the abscissa and ordinate on a chromaticity diagram from the determined light quantities of the respective wave lengths, and sixth means for calculating the sum of the outputs from said fifth means, and wherein the output from said sixth means is compared with said threshold limit value.

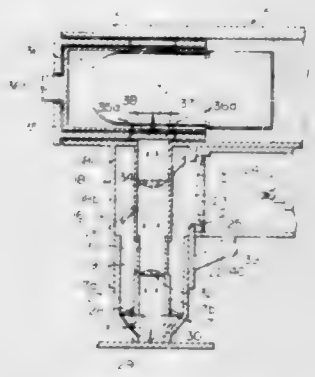
4,082,458

DENSITOMETER

Takashi Fukui, and Hirobumi Enomoto, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 8, 1976, Ser. No. 721,219
Claims priority, application Japan, Sep. 8, 1975, 50-108642
Int. Cl.[2] G01N *21/22, 21/48;* G02B *7/00*
U.S. Cl. 356—73 **10 Claims**

1. A densitometer which has a double structured lens barrel comprised of an inner cylinder and an outer cylinder extending coaxially therewith in which an annular light passage is formed between the inner and outer cylinders, a flux of light between the cylinders is condensed on the front face of a sample through a condenser optical system provided between said cylinders when reflection optical density of the sample is measured, the back face of the sample is illuminated with a flux of light from a light source located under the sample when transmission optical density of the sample is measured, and the light reflected by or transmitted through the sample is guided to a photodetector through said inner cylinder, the improvement comprising a fixed portion and a movable portion which constitute said double structured lens barrel, said movable portion being slidably engaged with the fixed portion and movable in the direction of the optical axis of lenses installed therein, said movable portion including an inner movable cylinder, an outer movable cylinder coaxially extending therewith and extending downward therebeyond and having an open lower end, said fixed portion including an inner fixed cylinder and an outer fixed cylinder extending coaxially therewith, said inner and outer movable cylinders of said movable portion being slidably engaged with said inner and outer fixed cylinders of the fixed



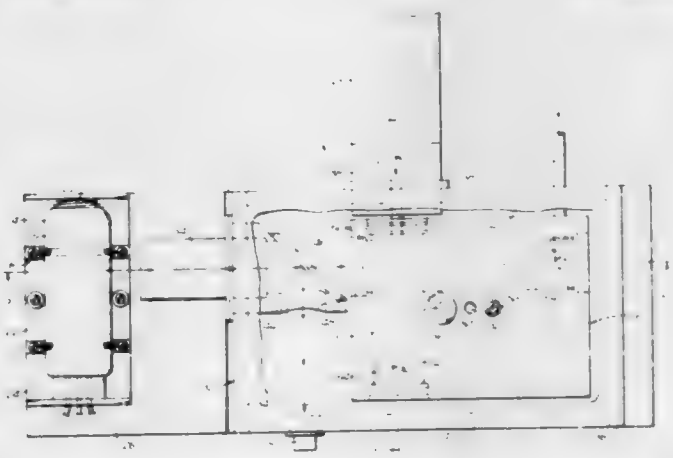
portion, a condenser optical system provided between said inner and outer movable cylinders for normally condensing a flux of parallel light therebetween to a point at the center of said open lower end of the outer movable cylinder regardless of the position of the movable portion, a collimator lens provided in said inner movable cylinder which has a focusing point at said point at the center of the open lower end of the outer movable cylinder, and a light source chamber which includes a light source for reflection density measurement connected with the fixed portion, said light source chamber including a light source and a collimator lens having an optical axis being perpendicular to the optical axis of said collimator lens in said inner movable cylinder and means for moving said open lower end of the outer movable cylinder into contact with the surface of a sample during the measurement of the optical density of the sample.

4,082,459

ANALYTICAL CELL ASSEMBLY FOR AN ANALYZER

Court Lone Wolfe, Pittsburgh, Pa., assignor to Chemed Corporation, Cincinnati, Ohio

Filed May 27, 1976, Ser. No. 690,627
Int. Cl.[2] G01N *21/52*
U.S. Cl. 356—85 **16 Claims**



1. In combination, a base member, source means mounted on said base member, a modular sample cell, means to removably mount said cell on said base member, an enclosure mounted on said base member enclosing at least said cell when it is mounted

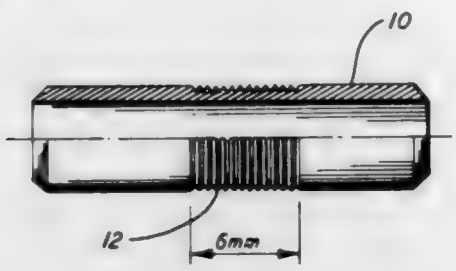
on said mounting means, means to flow sample to, through and thence out of said cell via said cell mounting means, means to direct the energy from said source means to said cell, said cell comprising a body member formed with intersecting fluid flow passageways extending through said body member, window means at an end of each passageway and light trap means at the opposite end of each passageway, heating means for said cell, and means to mount said heating means in contact with said cell.

4,082,460

GRAPHITE TUBE FOR USE IN A FLAMELESS ATOMIC ABSORPTION SPECTROMETER

Klaus Joachim Braun, Uberlingen, and Hans Gunter Gerhard Siess, Owingen, both of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen (Bodensee), Germany

Filed Nov. 3, 1976, Ser. No. 738,478
Claims priority, application Germany, Dec. 29, 1975, 2558948
Int. Cl.[2] G01N *21/54*
U.S. Cl. 356—85 **6 Claims**



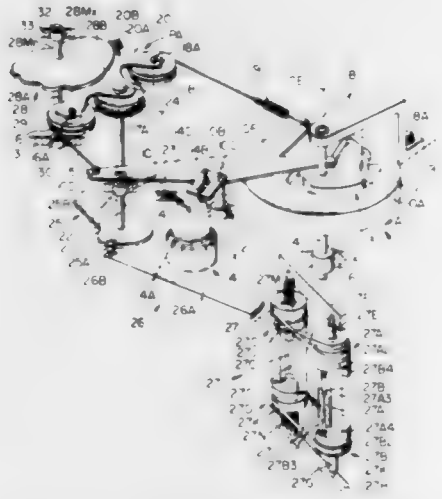
1. In an atomic absorption spectrometer for measuring the flameless absorption of samples having a graphite tube for receiving said samples, the improvement comprising a mechanically roughened area on at least a portion of the outer peripheral surface of said graphite tube for providing substantially constant emissivity for pyrometric temperature measurement.

4,082,461

OPTICAL SLIT CONTROL APPARATUS

Henry Manifold Mould, Buckinghamshire, England, assignor to Perkin-Elmer Limited, Beaconsfield, England

Filed Nov. 23, 1976, Ser. No. 744,361
Claims priority, application United Kingdom, Nov. 28, 1975, 48909/75
Int. Cl.[2] G01J *3/04*
U.S. Cl. 356—100 **18 Claims**



1. Apparatus for controlling the width of an adjustable slit in response to the product of two variable functions, one of which is programmed, comprising:

at least one adjustable optical slit means; slit width programming means for producing a first displacement that is a logarithmic function of the instantaneous slit width conforming to a predetermined program;

antilogarithm generating means for producing a second displacement that is the antilogarithm of said first displacement;

phase adjusting means for controlling the phasing between said first displacement and said second displacement;

slit width selection means operative on said phase adjusting means for controlling said phasing in accordance with a given slit width selection; and

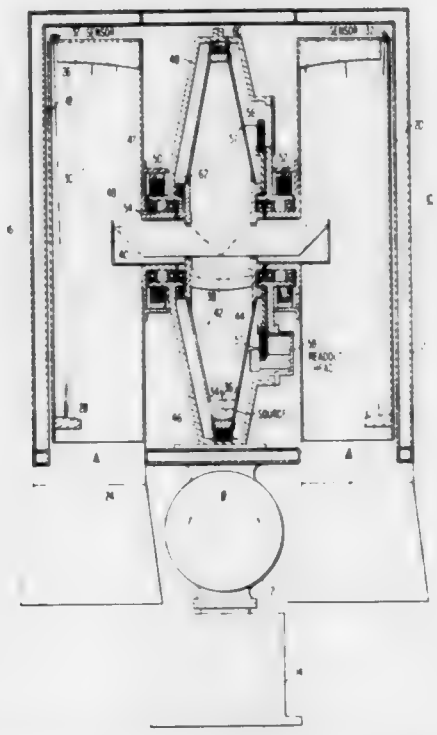
actuating means responsive to said second displacement and operative on said slit means for controlling its width.

4,082,462

AUTOMATIC SPACE SEXTANT

William J. Owen, Littleton, Colo., assignor to Martin Marietta Corporation, Rockville, Md.

Filed Feb. 23, 1976, Ser. No. 660,590
Int. Cl.[2] G01B *11/26*
U.S. Cl. 356—152 **7 Claims**



1. In an apparatus for determining position by obtaining a plurality of celestial fixes including first and second optical means gimbaled for movement about a common axis of rotation, said first optical means disposed to receive radiation emitted from a first celestial body and said second optical means disposed to receive radiation emitted from a second celestial body, first and second timing sensors associated respectively with each optical means to receive radiation from said celestial bodies, the improvement comprising:

rotating means disposed on said common axis of rotation, said rotating means carrying a source of light thereon, said source generating a collimated beam of light; and

means disposed on said rotating means to direct said collimated beam of light through said first and second optical means on to said sensors, whereby said collimated beam is utilized to generate timing signals indicative of the scalar angle between said first and second optical means.

4,082,463

CALIBRATED OPTICAL MICROMETER

Jack T. Dehait, Dayton; David C. Dietz, Xenia; Milo S. Snyder, Xenia, and Francis M. Taylor, Xenia, all of Ohio, assignors to Systems Research Laboratories, Inc., Dayton, Ohio

Filed Jan. 6, 1977, Ser. No. 757,217
Int. Cl.[2] G01B *11/00*
U.S. Cl. 356—167 **4 Claims**

1. A method of measuring the dimensions of articles placed

within the zone of measurement of an optical micrometer including the steps of

scanning a beam of light through the zone of measurement;

determining the beginning and end of each scan cycle;

generating clock pulses which are equally spaced in time;

calibrating the optical micrometer by:

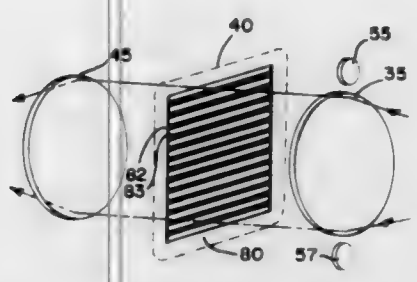
temporarily introducing a grate into the optical path within the zone of measurement, the grate having a plurality of alternate light transmitting and opaque segments spaced a predetermined distance apart;

recording the total number of clock pulses (Nt) occurring in a calibration scan cycle;

recording the number of clock pulses occurring in the interval between the beginning of the calibration scan cycle and in each segment of the grate;

thereafter measuring the dimensions of articles placed in the zone of measurement by:

temporarily recording the number of clock pulses (N1)



occurring in the interval between the beginning of the measurement scan cycle and the first edge of the article, the number of pulses (N2) occurring in the interval as the beam scans from the first to the last edge of the article, and the total number of pulses (N3) occurring in the measurement scan cycle;

determining the ratio (R) of the total pulses in the calibration scan cycle and the total pulses in the measurement scan cycle (N*t*/N3);

multiplying the ratio (R) times the numbers N1 and N2 to obtain adjusted numbers N'1 and N'2 independent of the scan speed of the beam,

comparing the numbers N'1 and N'2 with the numbers previously recorded during the calibration scan cycle to determine the position of the edges of the article relative to the location of the segments of the previously installed grate; and

determining therefrom the dimension of the article placed in the zone of measurement.

4,082,464

OPTICAL ANALYSIS SYSTEM HAVING ROTATING FILTERS

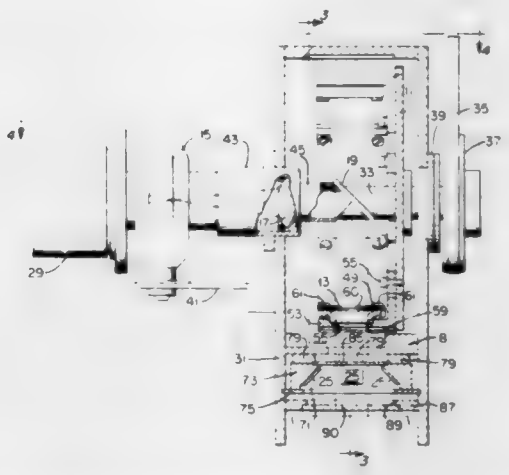
Robert Lincoln Johnson, Jr., Brattleboro, Vt., assignor to Neotec Corporation, Silver Spring, Md.

Filed Oct. 7, 1976, Ser. No. 730,677

Int. Cl.[2] G01J *3/50*

U.S. Cl. 356—188 **9 Claims**

1. An optical analysis system comprising a plurality of interference filters, means for mounting said interference filters at positions disposed generally on a cylindrical locus, each said filter having a surface disposed perpendicularly to a plane defined by said locus and facing the axis of said locus, means for rotating said filters about the axis of said locus, means for providing a beam of light passing in a radial direction through said cylindrical locus whereby said filters are rotated in sequence through said beam of light, each said filter adapted to transmit a range of wavelengths of said light as it is rotated through said beam, means for positioning a test sample in said beam of light after it has passed through said cylindrical locus, photodetecting means to detect light from said beam after said light has come into optical contact with said test sample, and to provide a signal indicative of said detected light, and means responsive to said signal only at a plurality of predetermined times as each said filter is rotated through said light beam to determine a characteristic of said sample, each said predeter-



mined time corresponding to a different wavelength within the variable wavelength range transmitted by said filter during its rotation through said light beam.

4,082,465

DETERMINATION OF EXTREME DENSITY VALUES OF PHOTOGRAPHIC ORIGINALS

Horst Bickl, Pullach; Helmut Treiber, Munich; Gunter Findeis, Sauerlach; Bernhard Knör; Bernd Payrhammer, both of Munich, and Berthold Fergg, Taufkirchen, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Continuation of Ser. No. 616,399, Sep. 24, 1975, abandoned. This application Apr. 22, 1977, Ser. No. 790,136

Claims priority, application Germany, Sep. 25, 1974, 2445831

Int. Cl.[2] G01N *21/22*; G01J *3/46*

U.S. Cl. 356—203 **7 Claims**



1. In an apparatus for determining the extreme density values of the originals in a strip of photographic originals, of the type provided with evaluating means for receiving an electric signal having a value dependent upon the density of the originals and determining extreme values of the signal, in combination, transport means for transporting the strip in a predetermined travel direction along a predetermined travel path; and electromechanical scanning means operative for scanning each original in direction transverse to said travel direction during travel of the original in said direction using a scanning spot of substantially constant surface area and generating a corresponding electrical signal having a density-dependent value, said scan-

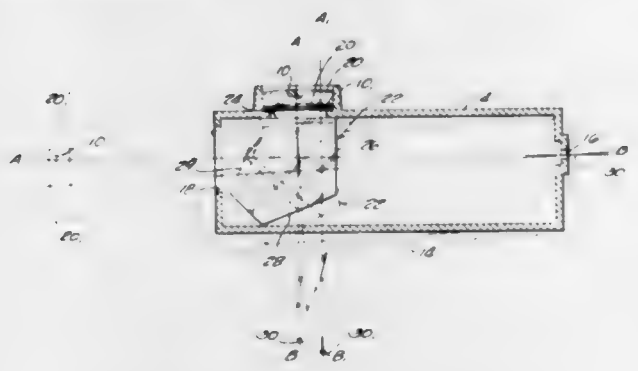
ning means comprising a light source for illuminating the original being scanned, a photoelectric transducer positioned to receive light transmitted from the illuminated original, and beam-shaping means intercepting the path of the light for determining the shape of said scanning spot, said beam-shaping means including a stationary light shield positioned in the path of light from said light source and having a slit extending in direction transverse to said travel direction for establishing the limits of a scan line to be traversed by said scanning spot, and a rotating disk provided with apertures which during rotation of said disk move through the light from said source to define a scanning spot which travels along the scan line established by said slit, said apertures being of equal angular breadth measured relative to the rotation axis of said rotating disk and being equiangularly spaced from one another, the angular spacing between adjoining ones of the apertures of the rotating disk being such that during the transitional time interval at the end of a line scan operation when the scanning spot defined by one aperture reaches and begins to disappear into one end of the scan line the scanning spot defined by the next aperture simultaneously therewith begins to appear at the other end of the scan line, adjoining apertures of the rotating disk accordingly being operative for simultaneously transmitting to the photoelectric transducer the light transmitted through the two ends of the scan line during the transitional time interval, said scanning means comprising means for rotating said disk at such a speed that each scanning spot produced by one of said apertures of said rotating disk travels from one to the other end of said scan line within a time no greater than that in which the strip is transported a distance equal to the breadth of the scanning spot as measured in said travel direction of the strip.

4,082,466

OPTICAL SIGHTING INSTRUMENT

Robert L. Underberg, Mequon, Wis., assignor to Realist, Inc., Menomonee Falls, Wis.

Filed Jun. 14, 1976, Ser. No. 695,764
Int. Cl.[2] G01C *5/02*
U.S. Cl. 356—249 **7 Claims**



1. An optical sighting instrument comprising,
a housing having a sighting aperture and an objective aperture,
a tubular spirit level mounted on the housing with the transverse centerline of the bubble in the spirit level appearing longer than the centerline parallel to the level axis,
a plurality of reflecting surfaces positioned relative to the level and to one another to reflect light passing through the level to the sighting aperture so the virtual image of the level appears intact in the view from the sighting aperture through the objective aperture and the transverse centerline of the bubble image itself indicates the desired position relative to horizontal regardless of tilt of the instrument and the bubble image moves in the direction indicative of instrument tilt.

4,082,467

MARKER AND VAPORIZABLE DISPERSIBLE DYE INKS AND PROCESS FOR USING SAME

Paul Kaplan, 57 Lee Rd., Livingston, N.J. 07039

Filed Dec. 31, 1975, Ser. No. 645,756
Int. Cl.[2] B43K *5/00;* **C09D** *11/00*
U.S. Cl. 401—199 **6 Claims**



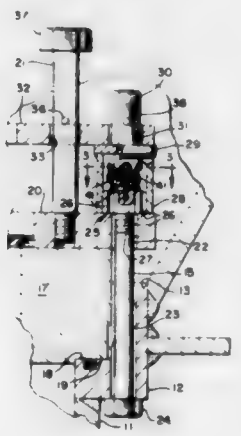
1. The combination consisting of a marker pen suitable for use with a dye dispersion composition, comprising housing means having a chamber therein and an opening means connected with said chamber for transfer of said composition therebetween, an absorptive mass in said chamber for holding and supplying said dye dispersion composition and a line-forming tip closing said end, said line-forming tip having a porosity suitable for feeding said composition at a selected rate to a surface making contact with said tip and a dye dispersion composition comprising a high boiling solvent, a resin dissolved in said solvent and a vaporizable disperse dye suspended in said solvent, the viscosity of said composition being such that said dye will be held indefinitely in suspension and said composition can flow through a felt pen readily.

4,082,468

QUICK RELEASE SLEEVE RETAINED SPLIT NUT-BOLT STRUCTURE

Robert J. von Base, Arlington, Tex., assignor to Oil States Rubber Company, Arlington, Tex.

Filed Jan. 7, 1977, Ser. No. 757,593
Int. Cl.[2] F16B *37/10*
U.S. Cl. 403—2 **10 Claims**



7. In a quick release structure: a nut and bolt combination with the bolt having bolt threads and the nut being an inter-

nally threaded nut threadingly engaging bolt threads and adjustable for tightening and loosening on said bolt threads; said nut being a segmented nut with a plurality of segments and in nut assembled form having a multi-faced exterior; a sleeve having a multi-faced interior matching the multi-faced exterior of said segmented nut and sized to be a longitudinally sliding fit on said segmented nut for quick release of said nut and bolt by drawing of said sleeve clear of said segmented nut; wherein said sleeve is provided with wrenching surface means by which said segmented nut may be adjusted and tightened; with a plurality of said nut and bolt combinations used in clamping a first structural element and a second structural element together; a lifting plate connected to the sleeve of each segmented nut of said nut and bolt combinations; and lifting means for lifting said lifting plate and each of said sleeves for quick release of said nut and bolt combinations and said first structural element from said second structural element.

4,082,469

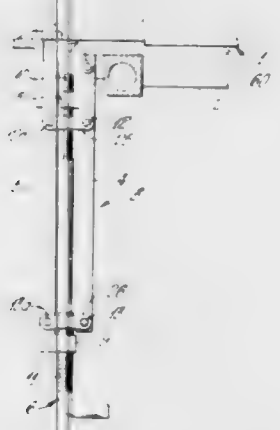
ADJUSTMENT MECHANISM

Alex P. Symborski, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 24, 1977, Ser. No. 761,744

Int. Cl.² F16B *7/06*

U.S. Cl. 403—24 **10 Claims**



1. Apparatus comprising:

(a) a first member having a threaded section:

(b) a second member spaced from said first member and having a threaded section, said first member being movably connected to said second member for constrained vertical movement, with a small are in the movement; and

(c) a screw member positioned between said first and said second member, said screw member having upper and lower threaded portions, said upper threaded portion engaging the threaded section of said first member and said lower threaded portion engaging the threaded section of said second member, the threads of said upper threaded portion having a pitch unlike the pitch of the threads of said lower threaded portion and the threads of said upper threaded portion and said lower threaded portion being of the same hand.

4,082,470

CONNECTOR

Heinrich-Albert Alberts, Mondeor, Transvaal, South Africa, assignor to Serbert Industries (Proprietary) Limited, Mondeor, Transvaal, South Africa

Filed Mar. 2, 1977, Ser. No. 773,790

Claims priority, application South Africa, Mar. 12, 1976, 76/1548

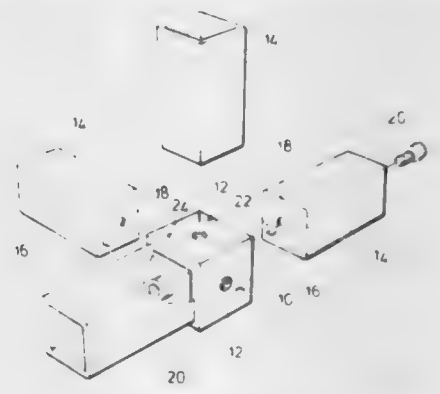
Int. Cl.² F16B *2/16*

U.S. Cl. 403—172 **1 Claim**

1. A connector for interconnecting lengths of square tubing to form frameworks comprising, in combination, a three-dimensional central body member having a plurality of facets in each of which is formed a threaded bore, and a plurality of separate connectors adapted to be releasably secured by said bores to selected facets on the body member to provide any one of a number of possible configurations, the connector members in turn being adapted to be releasably connected to the lengths of square tubing, characterized in that:

(a) each connector member is a hollow tube, of square cross section throughout its length and closed at one end by a wall;

(b) a central hole is formed in the end wall of each connector member to accept a screw by means of which the connector member may be secured to the central body;



(c) each connector member is adapted to accommodate the head of the screw within it;

(d) a recess is formed in each facet adjacent its threaded bore and radially spaced therefrom;

(e) the external face of the end wall of each connector member is formed with a complementary protuberance adapted to engage one of the recesses on the central body to prevent rotation of the connector member when secured to the central body.

4,082,471

UNIVERSAL HYDRAULIC IMPACT TOOL

Jan A. Hiszpanski, Upland, Calif., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Jan. 2, 1976, Ser. No. 646,151

Int. Cl.² E01C *19/35*

U.S. Cl. 404—133 **22 Claims**



1. A reciprocating tool for applying a force to a yieldable work, said tool comprising: a support, a work engaging means carried by said support for reciprocation in forward and reverse directions relative to said support; forward force applying means carried by said support and cooperatively associated with said work engaging means for applying a forward force to

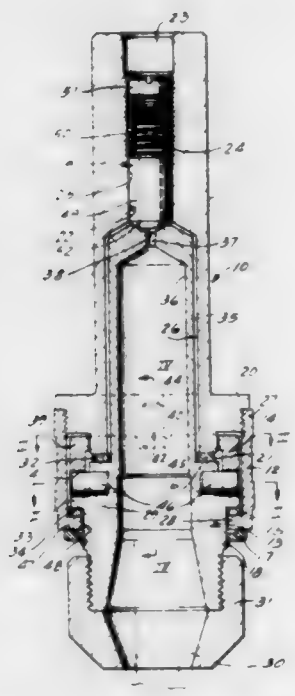
said work engaging means to drive the work engaging means in said forward direction for a preselected time; reverse force applying means carried by said support and cooperatively associated with said work engaging means for applying a reverse force to the work engaging means at the end of said preselected time irrespective of the position of said work engaging means at that time to drive the work engaging means reversely back toward a preselected retracted position, said reverse force applying means including means for decelerating the work engaging means to zero forward speed in the event the work engaging means is continuing to move forwardly against the work at the end of said preselected time; and forward force reapplying means carried by said support and acting on said work engaging means for reapplying the forward force to the work engaging means to decelerate the reversely moving work engaging means to zero rearward speed at said retracted position and initiate a subsequent forward movement cycle as set forth above to effect controlled succession of force applications by said work engaging means against the work.

4,082,472

FLOATING TOOL HOLDER

William Arno Moesner, Frankenmuth, and Gerald Edwin Mueller, Saginaw, both of Mich., assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Dec. 1, 1975, Ser. No. 636,546
Int. Cl.[2] B23B *51/06*
U.S. Cl. 408—57 **12 Claims**



1. A floating tool holder comprising:

(a) a supporting shank having an outwardly directed flange near one end thereof, said shank having a bore extending axially therethrough;

(b) an annular sleeve secured at one end to said flange and projecting in spaced relation to said shank beyond said one end thereof, and having an inwardly directed flange at its other end;

(c) a tool chuck assembly having a body aligned with said shank, said body having a tubular portion integral therewith and receptive of tooling and extending into said axial bore of said shank where the shank is adapted to be supported, there being a radial clearance between said tubular portion and said axial bore in said shank, and said tubular portion having an end aperture in said shank bore for conducting coolant from said axial bore into said body, an axially directed surface of said chuck body being adjacent to said one end of said shank, said chuck body having an outwardly directed flange within said annular sleeve adjacent to said sleeve flange for retaining said chuck body;

(d) driver means within said annular sleeve for corotatably connecting said shank to said chuck body and for enabling radial displacement therebetween; and

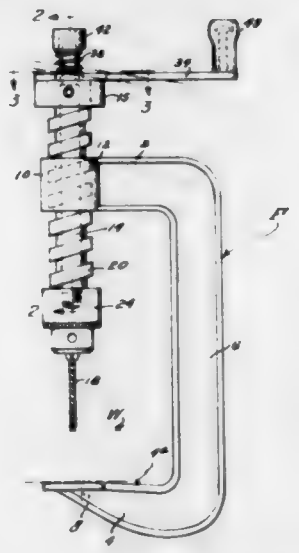
(e) a first annular bearing disposed between and having flat surfaces slidably engaging said flanges on said sleeve and said chuck body, and a second annular bearing disposed between and having flat surfaces slidably engaging said one end of said shank and said axially directed chuck body surface, said flat surfaces of said bearings being a thermal-diffusion of a metal boride.

4,082,473

MANUALLY OPERATED HAND DRILL

Theodore Bratsos, P.O. Box 638, Boston, Mass. 02102

Continuation-in-part of Ser. No. 587,645, Jun. 17, 1975, abandoned. This application Jun. 16, 1976, Ser. No. 689,121
Int. Cl.[2] B23B *45/06*
U.S. Cl. 408—101 **4 Claims**



1. Manually operable tool means comprising a frame formed with a work piece holder and a shaft housing located in spaced relation to the work piece holder, said shaft housing having an internally threaded bore, a tool supporting adapter sleeve having an external thread engageable with the threaded bore of the tool housing, and said external thread of the adapter sleeve being axially displaceable in the internally threaded bore of the shaft housing, a pressure transmitting collar secured at the upper end of the adapter shaft, a tool shaft rotatably mounted in the adapter sleeve, chuck means secured at one end of the tool shaft against which the bottom of the adapter sleeve is received, the opposite end of said shaft having flat side portions, a tool element detachably supported in the chuck means, a slotted tilting handle member slideably engaged with an opposite upper end of the said tool shaft around said flat side portions thereof for rotating the shaft and tool element, coiled spring means located around said upper end of the shaft resiliently urging the slotted tilting handle against the pressure transmitting collar, said tilting handle being angularly displaceable to form on acute angle with respect to the axis of rotation of the tool shaft to variably compress the coiled spring means and transmit a range of cutting pressures against the transmitting collar and adapter sleeve while the handle is being rotated.

4,082,474

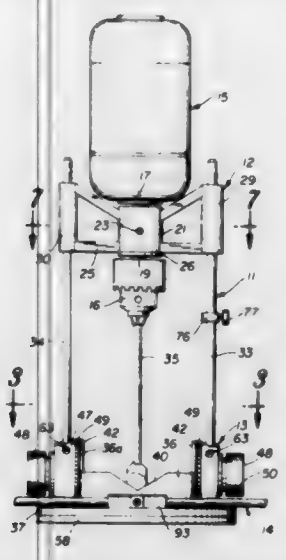
DRILL ATTACHMENT

Darrel E. Stiger, 3831 S. Ames St., Denver, Colo. 80235

Filed Jan. 7, 1977, Ser. No. 757,701
Int. Cl.[2] B23B *39/00*
U.S. Cl. 408—110 **13 Claims**

1. A position, angle and depth of hole regulating attachment for motor powered hand tool drills that provide a housing enclosing a drive motor and an output shaft for the driving rotation of drill bits that are used for cutting holes in an intended work piece comprising a frame component for attachment to said drill, a plurality of guide sleeves on said frame

disposed parallel to the axis of said output shaft, an open-centered base component for contact with said work piece, rotatably mounted trunnions on said base disposed outwardly from the center thereof, and guide rods for interconnecting said



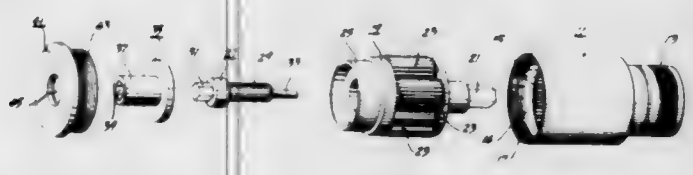
frame and the trunnions of said base component, said trunnions providing means for reciprocally receiving said guide rods whereby the drill and any drill bit attached thereto are reciprocally movable along a path defined by said guide rods toward and away from said work piece.

4,082,475

HIGH SPEED REAMER ATTACHMENT FOR COAXIAL DRIVE FASTENER GUN

Alfred W. Kuder, Placentia, Calif., assignor to Frank A. Klaus, Fullerton, Calif.

Filed Mar. 9, 1977, Ser. No. 776,089
Int. Cl.[2] B23B *47/04*
U.S. Cl. 408—125 **4 Claims**



1. An attachment for a counter-rotating coaxial drive fastener gun comprising:

A cylindrical housing having a coupling sleeve which is adapted to engage the outer drive member of a coaxial drive fastener gun, said cylindrical housing having an inner cavity within which a ring gear is fixedly attached;

A spider having a projecting end adapted to engage the inner drive member of a coaxial drive fastener gun, said spider having a plurality of identical planetary gears journaled therearound with a central opening between said planetary gears adapted to receive a central drive gear of diameter smaller than the diameter of said planetary gears and which engages each of said planetary gears, said spider and said planetary gears being positioned in said inner cavity of said cylindrical housing such that each of said planetary gears engage said ring gear and said projection end is centrally located within said coupling sleeve;

A central drive gear located within said central opening between said planetary gears of said spider and engaging each of said planetary gears, said central drive gear being adapted to be coupled to a reamer;

A reamer removably connected to said central drive gear; and

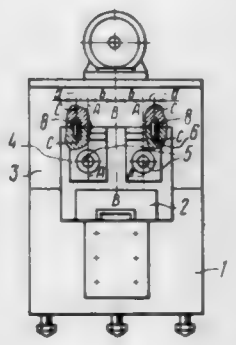
A locking mechanism adapted to be connected to a coaxial drive fastener gun for locking the outer drive member from rotating whereby the inner drive member is free to rotate said spider at the speed of rotation of the fastener gun which, in turn, through said planetary gears rotates said central drive gear and said reamer attached thereto at a higher speed of rotation.

4,082,476

MACHINE FOR PRECISION BORING OPERATIONS

Fridrikh Lvovich Kopelev, ulitsa Komsomolskaya, 43, kv.5, Odessa, U.S.S.R.

Filed Apr. 6, 1977, Ser. No. 785,285
Int. Cl.[2] B23B *47/00*
U.S. Cl. 408—234 **4 Claims**



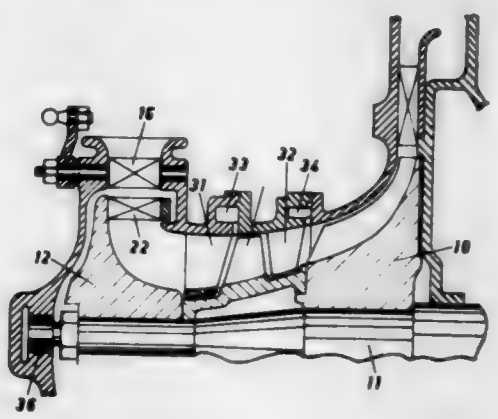
1. A machine for performing high-precision boring operations with compensation for its temperature-induced deformation, comprising: a framework; a work table adapted to have workpieces to be machined secured thereon, movable relative to said framework in the course of a boring operation; a bridge structure having a side facing said work table, mounted on said framework and having an axis of symmetry; a spindle head with a spindle having its geometrical axis; the housing of said spindle head, attached to said side of said bridge structure, facing said work table, so that the axis of the spindle of said spindle head is offset with respect to the axis of symmetry of said bridge structure; pins adapted to retain the position of said housing of said spindle head relative to said side of said bridge structure, facing said work table, pressure-fitted in said housing of said spindle head and arranged in said housing so that a plane including the geometrical axes of said pins is offset with respect to a parallel plane, including the axis of said spindle, in a direction opposite to that toward the axis of symmetry of said bridge structure.

4,082,477

COMPRESSOR HAVING TWO OR MORE STAGES

Sven-Olof Kronogard, Lomma, Sweden, assignor to United Turbine AB & Co., Sweden

Division of Ser. No. 521,540, Nov. 6, 1974, Pat. No. 3,941,499.
This application Dec. 1, 1975, Ser. No. 636,653
Int. Cl.[2] F01D *1/08, 13/00*
U.S. Cl. 415—120 **4 Claims**



1. A multi-stage compressor including a first rotor having a peripheral inlet and a central outlet;

a second rotor having a central, annular inlet and a peripheral outlet;

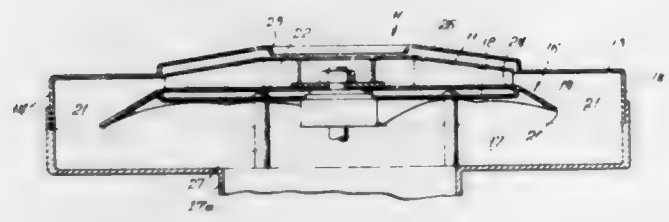
a common shaft mounting said first and second rotors;
third rotor of the axial flow type having a hub portion fitted upon said common shaft, between said first and second rotors; and
a housing enclosing said first, second and third rotors, and forming, together with said rotors, a passage-way for the fluid to be compressed, said passage being defined outwardly by said housing and inwardly by said rotors, said passage-way comprising means permitting flow substantially radially inwards past said first rotor, and substantially radially outwards past said second rotor.

4,082,478

VACUUM CLEANER FAN

Joseph Francis Schmitz, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 2, 1976, Ser. No. 702,284
Int. Cl.[2] F01D *9/00*
U.S. Cl. 415—209 **16 Claims**



1. In an air moving apparatus having a housing defining an inlet and a discharge portion provided with corner portion and defining an outlet, and rotatable air moving means in said housing inwardly adjacent said discharge portion for moving air delivered from said inlet in a radial direction for flow longitudinally outwardly through said discharge portion outlet, the improvement comprising
wall means having a midportion extending transversely across said housing at said discharge portion for preventing air flow directly longitudinally outwardly from said air moving means to said outlet and directing said air flow laterally outwardly in said housing, said wall means further defining with said housing corner portions flow restricting air flow passages for conducting the laterally directed air from said air moving means longitudinally outwardly through said passages to be discharged through said discharge portion outlet.

4,082,479

OVERSPEED SPOILERS FOR VERTICAL AXIS WIND TURBINE

Rajindar S. Rangi, and Peter South, both of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Jul. 21, 1976, Ser. No. 707,205
Claims priority, application Canada, Sep. 25, 1975, 236421
Int. Cl.[2] F03D *3/06, 7/06*
U.S. Cl. 416—23 **7 Claims**

1. An overspeed spoiler for vertical axis wind turbines of the type having airfoil blades attached to and mounted outwardly of a vertical turbine rotor shaft comprising:
(a) a relatively thin spoiler element hinge mounted at a position along the span-wise length of the airfoil blade, said element having two portions the first of which is held in a closed position generally flush against the surface of the airfoil blade towards the turbine rotor axis and the second extends outwardly from the hinge mounting and generally parallel to the center line of the said airfoil blade,
(b) spring means attached to said element and to the airfoil blade and biased such as to hold the spoiler element in the closed position, and
(c) the weight and configuration of the element and the spring strength being such that at a predetermined rotor speed the element rotates against the spring bias force because of centrifugal action and takes up an open position



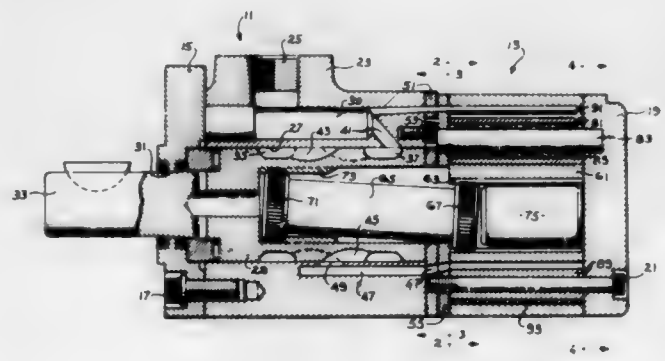
with both portions generally transverse to the air flow direction such as to cause much increased drag and provide control of overspeeding of the turbine rotor.

4,082,480

FLUID PRESSURE DEVICE AND IMPROVED GEROLER ® FOR USE THEREIN

Hugh L. McDermott, Edina, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 23, 1976, Ser. No. 716,911
Int. Cl.[2] F04B *49/00;* **F04C** *1/02*
U.S. Cl. 417—283 **21 Claims**



1. A rotary fluid pressure device, comprising:
(a) housing means defining a fluid inlet port and a fluid outlet port;
(b) an internally-toothed assembly fixedly disposed within said housing means;
(c) an externally-toothed member eccentrically disposed within said internally-toothed assembly for relative orbital and rotational movement therebetween;
(d) said internally-toothed assembly including a plurality of internal teeth, said internal teeth and said external teeth interengaging to define a plurality of expanding and contracting volume chambers during said relative movement;
(e) said housing means and said internal teeth cooperating to define a fluid chamber disposed radially therebetween, extending circumferentially about said fluid pressure device, said fluid chamber being in fluid communication with one of said fluid inlet port and said fluid outlet port; and
(f) check valve means operatively disposed between each adjacent pair of internal teeth, each check valve means including a movable check valve member normally biased radially inwardly into contact with each of said pair of

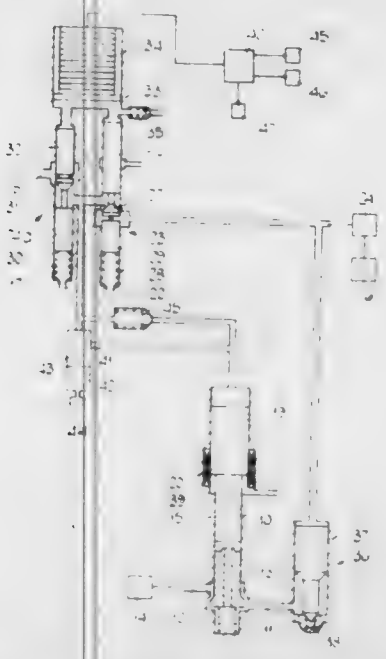
adjacent internal teeth and being operable to permit fluid to pass therethrough, into said fluid chamber, when fluid pressure in the adjacent volume chamber is greater than the fluid pressure in said fluid chamber.

4,082,481

FUEL INJECTION PUMPING APPARATUS

Ivor Fenne, Greenford, England, assignor to CAV Limited, Birmingham, England

Continuation of Ser. No. 660,927, Feb. 24, 1976, abandoned.
This application Feb. 14, 1977, Ser. No. 768,377
Int. Cl.[2] F04B *17/00*
U.S. Cl. 417—403 6 Claims



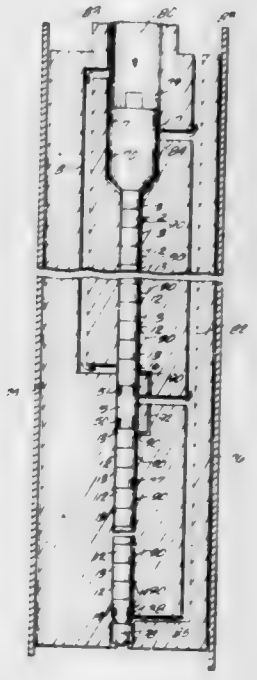
1. A fuel injection pumping apparatus comprising in combination a displacement piston located within a cylinder, an outlet from one end of the cylinder, a fluid pressure operable member mounted within a further cylinder for actuating said piston and causing fuel to be delivered through said outlet, means operable upon movement of the piston to a predetermined position in said cylinder during delivery of fuel through said outlet by the piston, to terminate flow of fuel through the outlet and valve means operable to place an end of said further cylinder in communication with a source of fluid under pressure to effect movement of the displacement piston in a direction to deliver fuel through said outlet, or with a drain to permit return motion of the piston, an adjustable orifice disposed intermediate said valve means and said one end of said further cylinder, said adjustable orifice acting to control at least the initial flow of fluid to said one end of said further cylinder thereby to control the rate of fuel supply through said outlet, and a non-return valve disposed in parallel with said orifice, said non-return valve being arranged to permit substantially unrestricted flow of liquid out of said end of the further cylinder, and in which said adjustable orifice is defined by a port formed in the wall of an additional cylinder, said port communicating with said one end of said further cylinder, an inlet to one end of said additional cylinder, and through which liquid can flow to said further cylinder by way of the port when said valve means is operated to cause delivery of fuel, a piston in said additional cylinder said piston being subjected at one end to the pressure of liquid at the inlet of the additional cylinder, said piston determining the effective size of said port and means for limiting the rate of movement of the piston in the direction to increase the effective size of said port.

4,082,482

ARTICULATED TURBINE PUMP

John W. Erickson, Huntington Beach, and Harold L. Petrie, Pasadena, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Jan. 21, 1977, Ser. No. 761,367
Int. Cl.[2] F04B *47/14*
U.S. Cl. 417—408 37 Claims



1. Articulated fluid machinery comprising:
a flexible shaft;
a plurality of rotor elements and a plurality of stator elements mounted about the shaft in adjacent, alternating relationship, the elements having connecting passages for fluid flow generally along the shaft;
an inlet at one end of the elements for introduction of fluid flowing through the passages of the elements;
an outlet at the other end of the elements for removal of fluid flowing through the passages of the elements;
each rotor element having one or more rotatable blades attached to the shaft and oriented to intercept fluid flowing through its passage and a housing segment surrounding the one or more rotatable blades and spaced outwardly therefrom to provide clearance for rotation of the one or more rotatable blades;
each stator element having one or more stationary blades unattached to the shaft and oriented to direct fluid flowing through its passage toward the rotatable blades, and a housing segment surrounding and attached to the one or more stationary blades;
journal bearing means supporting the shaft for rotation within the housing segments;
thrust bearing means supporting the shaft axially within the housing segments and permitting the shaft to shift axially relative to the housing segments when the shaft bends;
interfacing means between adjacent housing segments for sealing such adjacent housing segments when axially aligned, the interfacing means permitting such adjacent housing segments to pivot out of axial alignment when the shaft bends; and
means for preventing axial rotation between the housing segments.

4,082,483

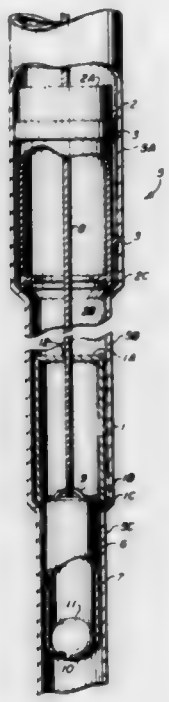
OIL WELL PUMP

Alfred Paul Sprenger, 7630 N. 4th Ave., Phoenix, Ariz. 85021

Continuation-in-part of Ser. No. 592,116, Jul. 1, 1975, abandoned. This application Aug. 24, 1976, Ser. No. 717,199

Int. Cl.[2] E21B *27/00*; F04B *21/04*

U.S. Cl. 417—554 6 Claims



1. A pump for operation in a well casing comprising:
a plunger,
a first plunger extension,
said plunger comprising an open ended hollow cylinder,
one end of said cylinder being provided for attaching to a cable,
the other end of said cylinder being provided with a valve seat interiorally thereof,
a ball captured within said cylinder for movement longitudinally thereof for seating in said valve seat during movement of said cylinder in one direction in a well casing for closing said other end of said cylinder,
said extension comprising a hollow cylindrical member mountable in a well casing at a level above said plunger and substantially closed at its upper ground level end of the well casing and open at its other end,
said closed end provided with a cable bearing aperture for receiving the cable passing from said plunger through its hollow interior and bearing aperture on the way to the top of the well casing, and
a second extension similar to said first extension but of a larger diameter than said first plunger extension and operable in a section of the well casing of a larger diameter than the section of the well casing operated in by said first extension,
whereby movement of said plunger toward the ground surface end of the well casing causes the upstream end of said plunger to frictionally engage the downstream end of said first extension and to move in unison with said first extension upwardly in the well casing until the closed end of said first extension frictionally engages the open end of said second extension capturing fluid within its hollow interior and to then move in unison with said first and second extensions upwardly toward the ground level in the well casing.

4,082,484

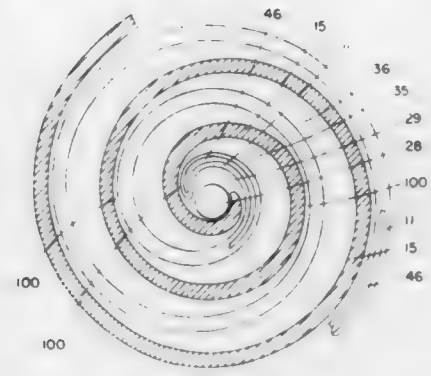
SCROLL-TYPE APPARATUS WITH FIXED THROW CRANK DRIVE MECHANISM

John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Jan. 24, 1977, Ser. No. 761,889

Int. Cl.[2] F04C *17/02, 29/10*

U.S. Cl. 418—55 19 Claims



1. In a positive fluid displacement apparatus into which fluid is introduced through an inlet port for circulation through said apparatus and subsequently withdrawn through a discharge port, and comprising a stationary scroll member having an end plate and an involute wrap and an orbiting scroll member having an end plate and an involute wrap, driving means for orbiting said orbiting scroll member with respect to said stationary scroll member whereby the side flanks along with said end plates of said involute wraps define at least-one moving pocket of variable volume and zones of different fluid pressure, coupling means to maintain said scroll members in fixed angular relationship, axial force-applying means for providing an axial force to urge said involute wrap of said stationary scroll member into axial contact with said end plate of said orbiting scroll member and said involute wrap of said orbiting scroll member into axial contact with said end plate of said stationary scroll member thereby to achieve radial sealing of said pockets, characterized in that said driving means are arranged to effect the orbiting of said orbiting scroll member such that a small clearance is maintained between said side flanks of said wrap thereby to essentially eliminate wear of said side flanks over extended periods of operation while retaining the essential integrity of said zones of different fluid pressure.

4,082,485

ROTARY VANE-TYPE PUMP

Manfred Sommer, Baden-Wurttemberg, Germany, assignor to Helmut Wolf, Germany

Filed Dec. 7, 1976, Ser. No. 748,226

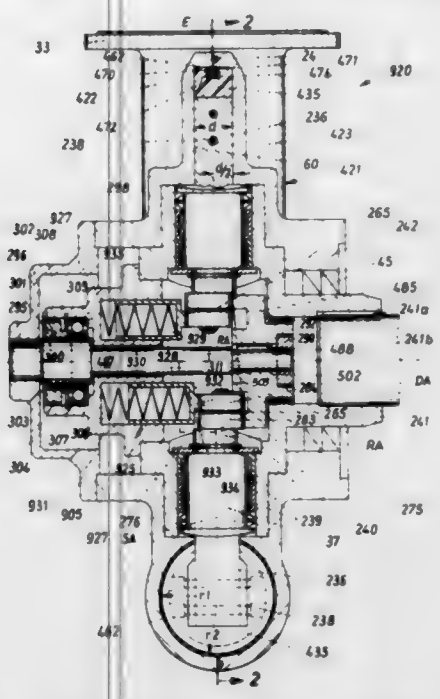
Claims priority, application Germany, Dec. 8, 1975, 2555172

Int. Cl.[2] F04C *1/00*

U.S. Cl. 418—226 7 Claims

1. A rotary pump comprising a housing defining an annular passageway and a rotor rotatably mounted in said housing coaxially with said passageway, said rotor comprising a central hollow hub portion and a plurality of vanes carried by the hub portion and disposed in said passageway for movement therein in a circular path, said vanes having the form of flat circular discs on the outer ends of shafts rotatable in said hub portion about axes disposed radially of the axis of said rotor, said passageway of said housing having a pumping portion which is of circular cross section with a diameter equal to the diameter of said circular vanes and a sealing portion of a cross section corresponding to a dimetrical cross section of said vanes with an inlet and an outlet respectively at opposite ends of said sealing portion and means for controlling rotary movement of said shafts to position said vanes orthogonally to said passageway in the pumping portion thereof and in line with said passageway in the sealing portion thereof, said control means comprising an eccentric inward extension of each of said shafts, a cam follower on each of said eccentric shaft exten-

sions, a stationary annular cam concentric with the axis of said rotor and having a single cam surface engageable with said cam follower on one side only thereof and biasing means for urging said cam follower against said cam surface, said biasing



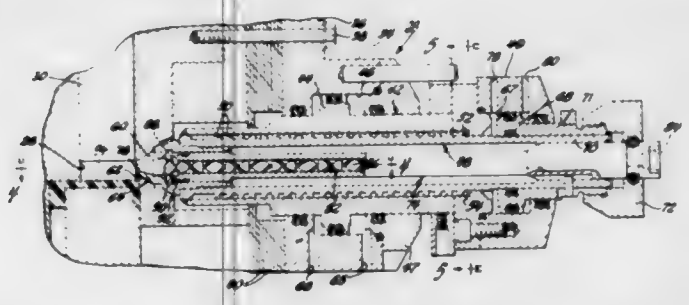
means for each vane comprising a bias applying element on said eccentric shaft portion separate from said cam follower and spring means acting between said bias applying element and a fixed seat portion of said hub.

4,082,486

APPARATUS FOR IN-THE-MOLD COATING OF MOLDED ARTICLES

Leon R. Cerano, Warren, and Mayo M. Reichardt, Milford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1976, Ser. No. 746,864
Int. Cl.² B29F *1/06*
U.S. Cl. 425—129 R **4 Claims**



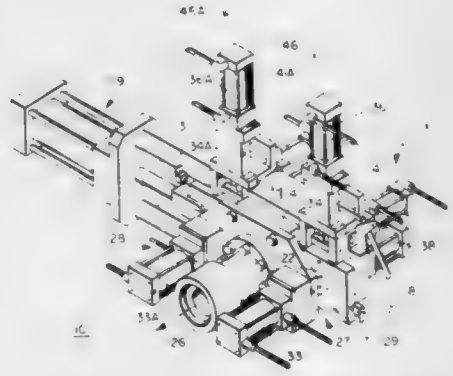
1. Apparatus for molding an article and subsequently coating one surface of such molded article, said apparatus comprising a pair of relatively movable die members which when closed form a cavity wherein an article is molded in a desired configuration, means operatively associated with said die members for moving said die members towards and away from each other into open and closed positions respectively, a chamber formed in one of said die members that communicates with said cavity and is adapted to receive a metered amount of liquid coating material, a plunger reciprocably mounted in said chamber, in inlet port formed in said one of said die members that connects with said chamber, means carried by said one of said die members and connected to the plunger for moving said plunger between a first position wherein said inlet port and said chamber communicate with said cavity and a second position wherein the plunger closes said chamber and said port from communication with said cavity, an injector device for supplying said metered amount of liquid coating material to said chamber, said injector device being carried by said one of said die members and having a body portion provided with connected concentric outer and inner sleeve members, the inner and outer sleeve members each having inner and outer ends, the inner end of the inner sleeve member being formed with a nozzle that is movable into said inlet port so as to permit said injector device to supply said metered amount of liquid coating material to said chamber when said plunger is in said first position, a feeder tube located in said inner sleeve member for said liquid coating material and having one end thereof formed with a head positioned adjacent said nozzle and the other end extending beyond the outer end of said outer sleeve member, a passage formed in said feeder tube that opens at one end adjacent said head, a static mixer located in said passage adapted to mix said liquid coating material as it flows through said passage towards said head, means connected to said outer sleeve member for retracting said nozzle from said inlet port when said plunger is in said second position, an end cap member secured to said outer end of said outer sleeve member and having an annular bore formed therein, a piston member connected to said other end of said feeder tube and located in said annular bore, and a pair of ports in said end cap member adapted to direct pressurized fluid to one side or the other of said piston member so as to selectively cause said head to open and close the nozzle so when the nozzle is open and located in said inlet port in said one of said die members the liquid coating material will flow through said feeder tube into said chamber after which said plunger moves from said first position to said second position and the liquid coating material in said chamber is supplied under pressure to said cavity onto said one surface of the molded article with said die members closed.

4,082,487

APPARATUS FOR CHANGING SCREEN DEVICES

Willard Emanuel Rapp, Franklin Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 782,148
Int. Cl.² B29F *3/00*
U.S. Cl. 425—135 **7 Claims**



1. Apparatus for changing screen devices, which apparatus is adapted for use with a plastics extrusion mechanism having a discharge end, the apparatus comprising:

a slide assembly housing adapted for mounting at the discharge end of the plastics extrusion mechanism and including a slide chamber, the slide assembly housing having an inlet opening and an outlet opening disposed along opposite surfaces of the slide chamber in linear alignment along a discharge direction, which discharge direction is disposed perpendicularly to an axis of elongation of the slide chamber, in such manner that an extruded plastic material discharged along said discharge direction from the plastics extrusion mechanism, at the discharge end of which the apparatus is adapted for mounting, may enter said inlet opening, advance through the slide chamber perpendicularly to said slide chamber axis, and exit through said outlet opening;

a slide assembly slidably movable within said slide chamber along said slide chamber axis and including first and second apertured recesses at respective first and second

spaced locations therealong for receiving a first screen device and a second screen device, respectively, therein, said first recess being located in alignment with said discharge direction between said inlet and outlet openings of the slide chamber in a first position of the slide assembly, and said second recess being located in alignment with said discharge direction between said inlet and outlet openings of the slide chamber in a second position of the slide assembly;

first, operatively associated with the slide assembly, means for sliding the slide assembly alternatingly between said first and second positions of the slide assembly;

second means, responsive to the slide assembly entering into said first position of the slide assembly, for generating a screen-change signal;

ejection means, responsive to said screen-change signal, for ejecting a used screen device from said second recess;

a screen device carrier slidably movable adjacent to said slide chamber so as to bring a new screen device into alignment with said second recess in said first position of the slide assembly;

additional sliding means operatively associated with said screen device carrier for so sliding said screen device carrier as to align said new screen device with said second recess in said first position of the slide assembly; and

introducing means, operated with said new screen device aligned with said second recess in said first position of the slide assembly, for introducing said new screen device into said second recess from said screen device carrier.

4,082,488

APPARATUS FOR THE EXTRUSION OF TEMPERATURE SENSITIVE THERMOPLASTICS

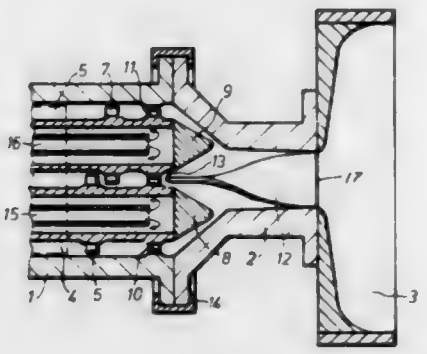
Franz-Jürgen Brinkschröder, Cologne; Axel Sandquist, Langenfeld, and Friedrich Johannaber, Lohmar, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 29, 1976, Ser. No. 745,938

Claims priority, application Germany, Dec. 5, 1975, 2554712

Int. Cl.[2] B29F *3/06, 3/08*

U.S. Cl. 425—204 **4 Claims**



1. An apparatus for the extrusion of thermoplastics, comprising a housing having an outlet and two contra-current rotatable screws arranged therein each having a core with the free ends of the cores of the screws disposed downstream of the termination of the screw threads, a deflection element disposed around each core and staggered in the direction of flow in relation to each to each other, and downstream of the deflection elements a toothed wheel disposed around each core and aligned to mesh with each other to effect a combing function, and an adaptor connected to the outlet of the housing, and having an outlet and a planar guide plate disposed therein and twisted through approximately 90° and having a straight input edge disposed between the two screws arranged substantially at right angles to the plane passing through the axes and an output edge at the outlet of the adaptor.

4,082,489

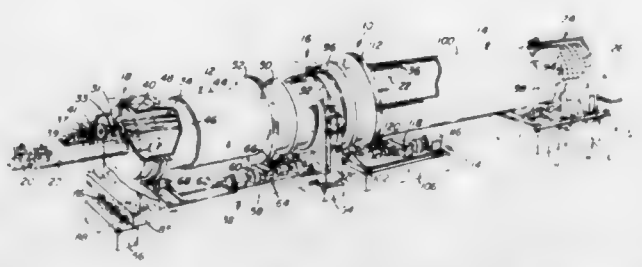
PIVOT ARRANGEMENT FOR A ROTARY DRUM ASSEMBLY

Harry James Kent, Pittsburgh, and Arthur Jacob Pietrusza, McMurray, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 28, 1976, Ser. No. 709,418

Int. Cl.[2] B01J *2/12*

U.S. Cl. 425—222 **4 Claims**



1. In a rotary drum assembly for forming an agglomerated product from agglomerative materials having,

a first cylindrical drum member with an inlet portion for receiving the agglomerative materials and an outlet portion for discharging the formed agglomerated product,

a feed end breech assembly enclosing and sealing said first cylindrical drum member inlet portion,

a second cylindrical drum member with an inlet portion for receiving the agglomerated product from the first drum member and a discharge portion for discharging the agglomerated product,

said first drum member outlet portion extending into said inlet portion of said second drum member,

a center breech assembly surrounding and sealing said first drum member outlet portion and said second drum member inlet portion,

a discharge end breech assembly surrounding and sealing said second cylindrical drum member discharge end portion, the improvement comprising;

a platform assembly positioned below one of said drum members for pivotally and rotatably supporting said drum member,

a pair of leg portions secured to and extending upwardly from said platform assembly on opposite sides of said drum member,

bores extending transversely through said leg members,

a pair of shaft members secured to said center breech assembly and extending outwardly therefrom along a transverse axis,

said shaft members extending through said bores and pivotally supporting said platform assembly, and

power actuated means operatively associated with said platform assembly for pivoting said platform assembly about said shaft members to thereby pivot drum member supported thereon relative to the other of said drum members and thereby control the rate of flow of the agglomerative materials through that drum member.

4,082,490

APPARATUS FOR MOLDING A TIRE MOLDING BLADDER

Jacques Chateau, Chatel-Guyon, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Dec. 22, 1976, Ser. No. 753,606

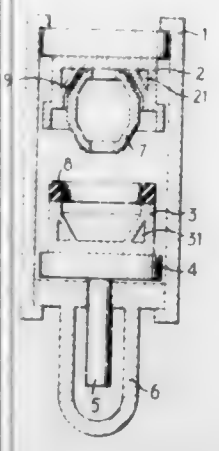
Claims priority, application France, Jan. 2, 1976, 76 00047

Int. Cl.[2] B29C *17/00;* B29H *5/18;* B29C *3/00*

U.S. Cl. 425—412 **3 Claims**

1. A press for manufacturing a sleeve which is invertible into a resulting elastic bladder for use in a tire molding and vulcanization press, said sleeve press having a core and two shells

which can be joined to each other, characterized by the fact that the outer wall of the core has raised elements in relief for



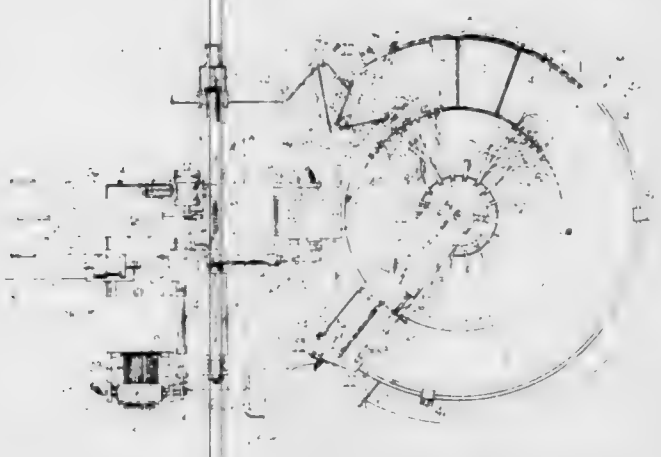
producing recessed elements in the inner face of the invertible sleeve.

4,082,491

AUTOMATED MOLDING MACHINE

Wilbur L. Clymer, Phillipsburg, N.J., and Charles J. Klara, Bethlehem, Pa., assignors to Binney & Smith Inc., Easton, Pa.

Division of Ser. No. 512,545, Oct. 7, 1974, Pat. No. 3,957,408.
This application Jan. 19, 1976, Ser. No. 650,016
Int. Cl.² B29C *5/00, 7/00*
U.S. Cl. 425—440 **8 Claims**



1. In a molding machine, a horizontally rotatable mold table containing a plurality of compartments disposed in an annular array, a plurality of mold tubes traversing vertically each compartment, fluid supply and return conduit means connected to each compartment, and a fluid distributing manifold traversed by passages communicating with said conduit means, said fluid distributing manifold having a first portion rotatable with said mold table and a second portion which is fixed relative to said first portion, a plurality of pairs of heating and cooling fluid supply and return passages in said first manifold portion juxtaposed to the respective compartments, means connecting said fluid supply and return passages of each pair to the fluid supply and return conduit means, respectively, of different adjacent compartments, and transfer passages in said second manifold portion which are arranged for communication with said fluid supply and return passages for connecting each of certain paired ones of said fluid supply and return passages together.

4,082,492

MOLD CLOSING APPARATUS

Manfred Kurreck, Bochum-Weitmar, Germany, assignor to Holstein und Kappert Aktiengesellschaft, Dortmund, Germany

Filed Jun. 3, 1976, Ser. No. 693,120
Claims priority, application Germany, Jun. 6, 1977, 2525161
Int. Cl.² B29C *1/00, 1/16*
U.S. Cl. 425—451 **5 Claims**



1. A molding apparatus comprising:

extruding means for forming an extrusion lying on a mold plane;

a pair of mold halves engageable together at said plane and having respective registrable mold cavities engageable at said plane around said extrusion;

respective pivots for said halves spacedly flanking said plane

closing means for angularly displacing said halves about their respective pivots for closing said halves together scissor-fashion on said extrusion at said plane; and,

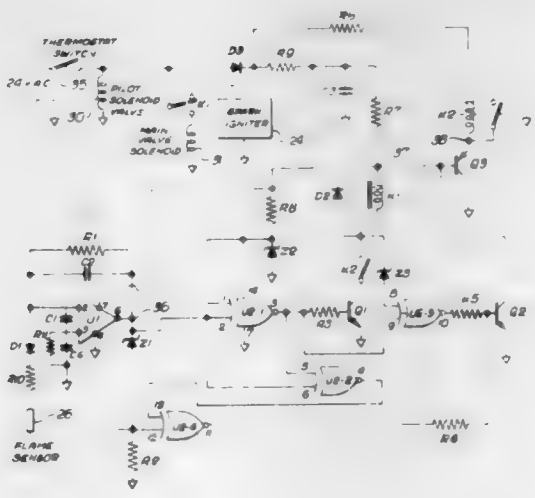
centering means for displacing each of said halves away from its respective pivot axis during at least the last stages of closing, whereby said cavities remain centered on said extrusion.

4,082,493

GAS BURNER CONTROL SYSTEM

Vincent M. F. Dahlgren, Pomona, Calif., assignor to Cam-Stat Incorporated, Los Angeles, Calif.

Filed Jan. 19, 1977, Ser. No. 760,811
Int. Cl.² F23Q *9/08*
U.S. Cl. 431—25 **16 Claims**



1. In a pilot ignition and valve control system for a gas

burner having a main burner, a main valve operated by a main solenoid for providing gas to said main burner, a pilot burner, a pilot valve operated by a pilot solenoid for providing gas to said pilot burner, a spark igniter circuit, ignition electrodes and a flame sensor adjacent said pilot burner, a pair of input terminals for connection to a power source through a thermostat switch and for connection to said pilot solenoid whereby said pilot solenoid is energized and gas is supplied to said pilot burner when the thermostat switch is closed, and a first switching circuit for connecting said spark igniter circuit to said terminals when in a first condition for igniting said pilot burner and for connecting said main solenoid to said terminals when in a second condition for supplying gas to said main burner, the improvement comprising in combination:

a first relay coil for operating said first switching circuit;

a first transistor with emitter and collector connected in series with said first relay coil across said terminals;

a first gate circuit with first and second inputs and an output connected to the base of said first transistor;

a first means connecting said first gate circuit first input to a reference voltage;

an operational amplifier with first and second inputs and an output connected to said first gate circuit second input;

second means connecting said operational amplifier first input to said flame sensor; and

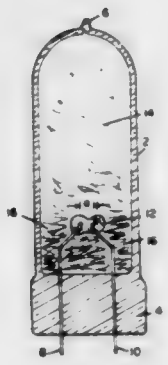
third means connecting said operational amplifier second input to circuit ground, whereby said first transistor is switched into conduction by a pilot burner flame energizing said first relay coil and supplying gas to said main burner.

4,082,494

PHOTOFLASH LAMP

John W. Shaffer, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 8, 1976, Ser. No. 748,628
Int. Cl.² F21K *5/02*
U.S. Cl. 431—95 R **10 Claims**



1. A photoflash lamp comprising:

an hermetically sealed, light-transmitting envelope having a base;

a quantity of filamentary combustible material located with said envelope;

a combustion supporting gas in said envelope;

ignition means disposed in said envelope in operative relationship with respect to said filamentary combustible material, said ignition means including a pair of lead-in wires sealed through said base and extending inside said envelope in a spaced apart relationship, and a mass of primer material covering a portion of at least one of said lead-in wires within said envelope;

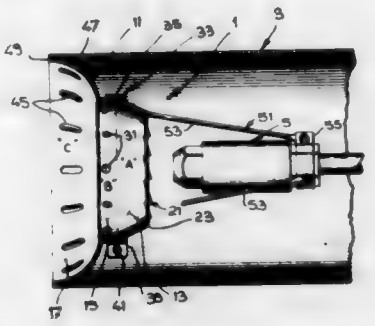
and a quantity of electrically nonconducting, non-combustible, fibrous material positioned within said envelope near said base thereof and around at least one of said lead-in wires to reduce the possibility of shorting between said wires.

4,082,495

FLAME RETENTION HEAD ASSEMBLY

Denis Lefebvre, 3354 rue Windsor, app. 4, St.-Hubert, Quebec, Canada

Filed Feb. 17, 1976, Ser. No. 658,745
Int. Cl.² F23M *9/00*
U.S. Cl. 431—183 **8 Claims**



1. A three-stage flame retention head assembly for use in the air tube of a fuel burner having a fuel nozzle mounted coaxially within the air tube, said assembly comprising:

(a) a tubular member concentrically mounted within said air tube just in front of the fuel nozzle, said tubular member comprising a conical section, a cylindrical section joined at one end thereof to the larger end of said conical section, and an outwardly flaring flage section joined at the smaller end thereof to the other end of said cylindrical section, said outwardly flaring flange section being dished to provide a convex outer surface;

(b) a spinner plate mounted in the smaller end of said conical section of said tubular member and adapted to mix and swirl air and fuel, said spinner plate having a central opening therein defined by a continuous annulus, and having vanes in its outer periphery extending outwardly from said continuous annulus;

(c) said cylindrical section of said tubular member having circumferentially spaced openings therein; and

(d) said outwardly flaring flange section having a row of circumferentially spaced, elongated slots therein, said openings and said elongated slots passing air into the tubular member when the assembly is in operation, said conical section providing a first mixing and heating chamber wherein primary combustion takes place, said cylindrical section providing a second mixing chamber, and said flange section providing a third mixing chamber.

4,082,496

CHAIN SECURED CIGARETTE LIGHTER

Manuel J. Johnson, 18442 Pinehurst, Detroit, Mich. 48221

Filed Jun. 23, 1976, Ser. No. 699,079
Int. Cl.² F23D *13/24*
U.S. Cl. 431—343 **5 Claims**



1. In combination, a cigarette lighter of a size to fit within a pocket of a vest and having a cover normally enclosing the flame area of the lighter, a flexible chain connected at one end to a part of the lighter remote from the cover and provided at

the other end with means for attachment to an object of a size to fit within a pocket of a vest, said chain having a length such that after being passed through one of the bottom holes of the vest and with the object attaching end reposing in a pocket of the vest the opposite lighter attached end of the chain may be extended to a position adjacent to the mouth of the wearer of the vest where the lighter may be used to light a cigarette held in the mouth of the wearer; and

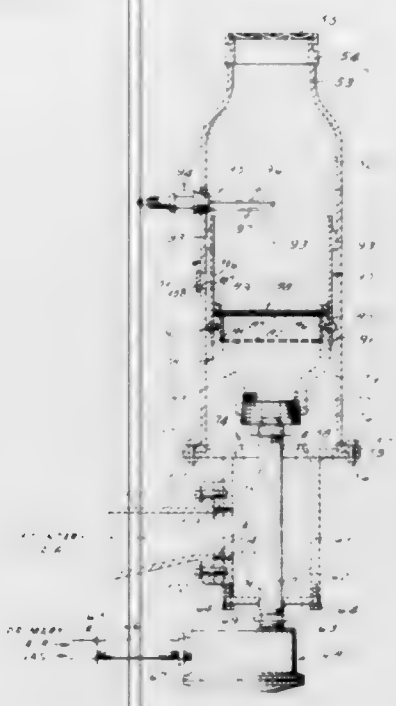
wherein the cigarette lighter has a fuel inlet into the lighter located remote from the flame area enclosing cover and sealed by a removable cap, and wherein the cigarette lighter attached end of the chain is connected directly to the removable cap for the fuel inlet of the lighter.

4,082,497

HIGH CAPACITY QUIET BURNER FOR HOT AIR HEATING SYSTEM

Duncan J. Crawford, Franklin, and Gonzalo D. Santiago, Union Lake, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Mar. 29, 1976, Ser. No. 671,685
Int. Cl.[2] F23D *15/00*
U.S. Cl. 431—158 **18 Claims**



1. A burner for a hot air heating system comprising:

(a) a tubular burner body having a chamber therein which is open at an outlet end and enclosed at an inlet end;

(b) a burner nozzle means mounted in said burner body chamber adjacent the inlet end thereof, and having a tubular combustion chamber with an axial outlet end in the burner body and an axial inlet end, a screen means over the outlet of said burner nozzle and a perforated plate spaced upstream of said screen, said tubular combustion chamber mounted about the outlet of said nozzle means;

(c) means for conveying a prior mixed, mixture of primary air and fuel axially into said burner nozzle means at the inlet end thereof.

(d) means for igniting said mixture of primary air and fuel in said burner; and,

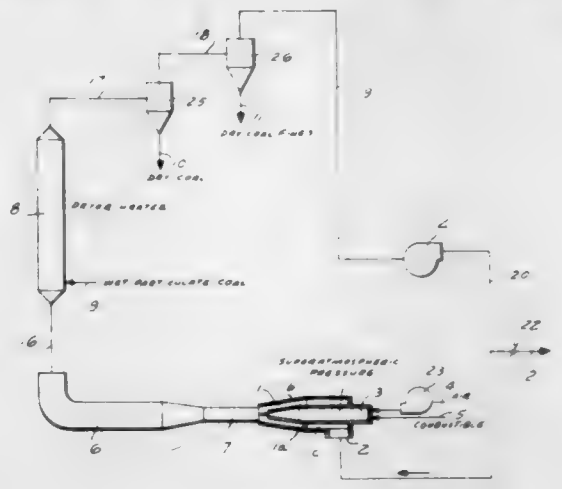
(e) a source of our above atmosphere pressure and means connected to said source for conveying secondary air under pressure into said burner body chamber for flow of all the secondary air around said burner nozzle and tubular combustion chamber and axially past the outlet end of the burner nozzle means and tubular combustion chamber for heating said secondary air, and through said burner body chamber for mixing with the combustion gases formed by the combustion of said prior mixed, mixture of primary air and fuel in said tubular combustion chamber, and for subsequent discharge through the outlet end of said burner body chamber onto an object for heating the same.

4,082,498

SYSTEM FOR DRYING AND HEATING PARTICULATE COAL

Egon Offergeld, Krefeld-Verberg, and Martin Wischniewski, Krefeld-Uerdingen, both of Germany, assignors to Buttner-Schilde-Haas Aktiengesellschaft, Krefeld, Germany

Filed Mar. 10, 1976, Ser. No. 665,380
Claims priority, application Germany, Mar. 12, 1975, 2510737
Int. Cl.[2] F27B *15/00;* F26B *3/08, 3/10*
U.S. Cl. 432—14 **10 Claims**



1. A system for drying and heating coal, said system comprising in combination:

conduit means forming a generally closed circulation path having a drying station and a mixing station;

blower means in said path for circulating a drying gas under superatmospheric pressure around said path;

means for introducing said coal into said drying station in said path and for withdrawing said coal therefrom after contacting said drying gas, whereby said coal is dried by said drying gas;

burner means for burning a combustion-supporting gas and a combustible at superatmospheric pressure and thereby producing a hot dry combustion gas under superatmospheric pressure;

injector means at said mixing station having a first inlet connected to said path downstream of said drying station, a second inlet connected to said burner means and receiving said combustion gas therefrom, and an outlet for mixing said drying gas circulating in said path with said hot dry combustion gas of said burner means at said mixing station; and

a diffuser in said path between said outlet and said drying station.

4,082,499

MULTIPURPOSE KILN SHELL GAS BURNER

Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 12, 1976, Ser. No. 741,500
Int. Cl.[2] F27D *7/00;* F27B *7/36*
U.S. Cl. 432—19 **7 Claims**

4. A method of supplying air and fuel to the combustion chamber of a rotary kiln in a direction parallel to the axis of the chamber from the exterior circumference of the kiln comprising the steps of:

inserting a shell burner pipe from the shell of the kiln into the combustion chamber;

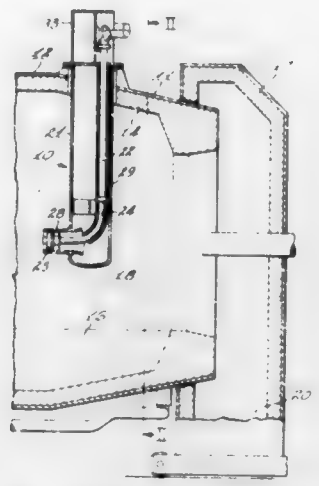
providing the inner extending end of the shell burner pipe with a nozzle to project in a direction parallel to the axis of the combustion chamber;

supporting a ring burner within the nozzle for axial position movement relative to the nozzle;

inserting a supply pipe into the shell burner pipe from the shell of the kiln;

connecting the external end of the supply pipe to a source of combustion fuel;

connecting the burner to the inner end of the supply pipe to gradually change the path of flow of the combustion fuel at the end of the supply pipe adjacent to the burner;



connecting the shell burner pipe to a source of combustion air to flow the combustion air around the burner within the nozzle into the combustion chamber.

4,082,500

PROCESS FOR IMPARTING WRINKLE RECOVERY TO COTTON FABRICS WITH VAPORS FROM GLYCIDOL

Truman L. Ward, and Ruth R. Benerito, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 6, 1977, Ser. No. 794,595
Int. Cl.[2] D06M *13/00, 1/00*
U.S. Cl. 8—120 10 Claims

1. A process for imparting improved wet and dry wrinkle recovery to fabric containing cellulosic fibers comprising

(a) modifying said fibers with diethylaminoethyl or carboxymethyl groups, and thereafter

(b) reacting said groups with glycidol vapor to form cross-links between said carboxymethyl groups or between said diethylaminoethyl groups.

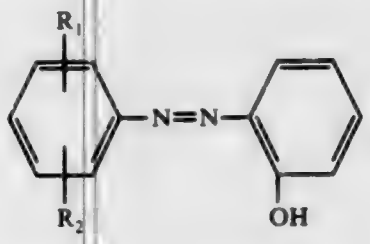
4,082,501

MIXTURES OF OIL-SOLUBLE PHENYL- AND NAPHTHYL-AZO-PHENYL DYESTUFFS

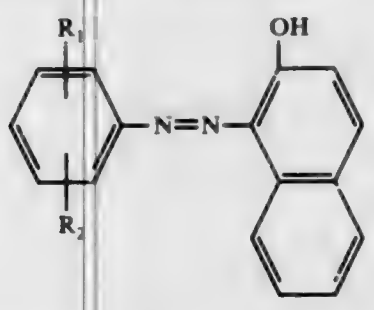
Bernhard Mees, Konigstein, Taunus, and Joachim Ribka, Offenbach am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 20, 1972, Ser. No. 308,003
Claims priority, application Germany, Nov. 20, 1971, 2157609
Int. Cl.[2] C10L *1/10;* D06P *1/00, 3/00*
U.S. Cl. 8—26 8 Claims

1. A mixture of two to ten dyestuffs of the formula



and two to ten dyestuffs of the formula



wherein R_1 and R_2 each is hydrogen, lower alkyl or lower alkoxy.

4,082,502

PROCESS FOR THE DYEING OF SYNTHETIC OR NATURAL FIBERS

Hans-Ulrich von der Eltz, Frankfurt am Main; Albert Reuther, Schwalbach, Taunus, and Hans-Joachim Wassmuth, Hattersheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 553,557, Feb. 27, 1975, abandoned, Ser. No. 442,819, Feb. 15, 1974, abandoned, Ser. No. 442,818, Feb. 15, 1974, abandoned, Ser. No. 442,813, Feb. 15, 1974, abandoned, and Ser. No. 396,515, Sep. 12, 1973, abandoned. This application Aug. 26, 1976, Ser. No. 718,098
Claims priority, application Germany, Jun. 22, 1973, 2331669; Nov. 17, 1973, 2357476; Nov. 17, 1973, 2357447; Nov. 17, 1973, 2357439; Mar. 1, 1974, 2409727
Int. Cl.[2] D06P *1/00;* D06B *9/02, 15/00*
U.S. Cl. 8—34 14 Claims

1. In a process for the dyeing of textile materials in the form of wound bodies according to the exhaust method at temperatures ranging at or above 100° C, in which process the wound bodies contained in a pressure-tight dyeing vessel are heated as well as deaerated before the actual dyeing operation and subsequently contacted with the dyeing liquor which has been separately heated to about dyeing temperature in a pressure-tight batch vessel, placed under a relative excess pressure of from 2.94 to 9.81 bars and then transferred in its total amount from said batch vessel into said dyeing vessel, and in which the dyeing operation is completed by circulation of the dyeing liquor, the improvement which comprises: exposing the wound bodies to an atmosphere of steam at about dyeing temperature prior to contact with the dyeing liquor in order to preheat and de-aerate said textile materials; and transferring the dyeing liquor by means of said relative excess pressure and towards the pressure of the air-free atmosphere of the steam into the dyeing vessel, simultaneously from both the inside and the outside of said wound bodies, thereby entirely condensing the steam in said vessel and filling it completely by the transferred liquor.

4,082,503

PROCESS FOR THE PRODUCTION OF WATER-INSOLUBLE AZO DYESTUFFS ON THE FIBER

Hasso Hertel, Muhlheim am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 3, 1976, Ser. No. 711,164
Claims priority, application Germany, Aug. 5, 1975, 2534870
Int. Cl.[2] C09B *27/00*
U.S. Cl. 8—44 1 Claim

1. A process for the preparation of a water-insoluble azo dyestuff on cellulose fiber according to the ice-color technique, which comprises using for the developing of the dyeing goods treated with the alkali metal salt of a coupling component in the neutral or slightly alkaline range, a developing bath with the diazonium compound which also contains boric acid.

4,082,504

PROCESS FOR THE CONTINUOUS DYEING OF CELLULOSE FIBERS OR MIXTURES THEREOF WITH SYNTHETIC FIBERS WITH WATER-INSOLUBLE AZO DYESTUFFS DEVELOPED ON THE FIBER

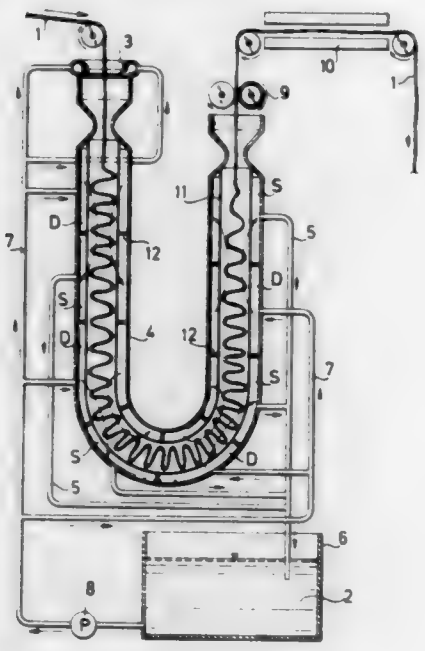
Hans-Ulrich von der Eltz, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

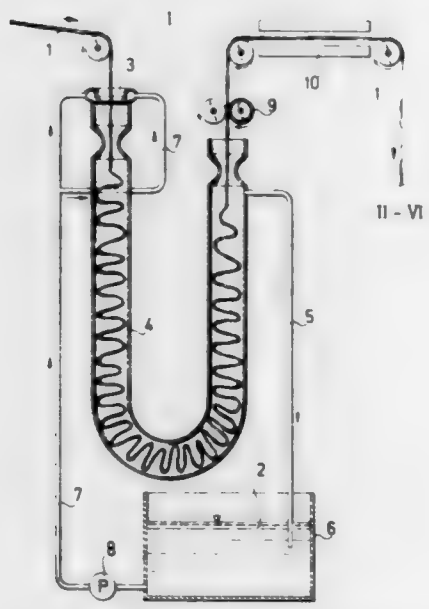
Filed Sep. 2, 1976, Ser. No. 720,070
Claims priority, application Germany, Sep. 4, 1975, 2539336
Int. Cl.[2] C09B *27/00;* D06B *1/00*
U.S. Cl. 8—44 14 Claims

1. A process for the continuous dyeing of fibers or filaments of natural or regenerated cellulose, or of a material comprising fibers or filaments of natural or regenerated cellulose, in rope form, which comprises:

applying to the rope, by means of at least two dyeing liquors, the components for producing a water-insoluble developing azo dyestuff on the fibers or filaments, the first dyeing liquor applied to the rope being an alkaline liquor containing a dyestuff coupling component and bein applied to

passing the rope through a conduit having a constriction therein and a liquor application jet or jets positioned at or





before the constriction, such that the applied liquor has an opening effect on the rope.

4,082,505

DYEING PREPARATIONS, WHICH ARE SOLUBLE IN COLD WATER, OF ANIONIC DYESTUFFS

Konrad Nonn; Karlheinz Wolf, both of Leverkusen, and Reinold Hörnle, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 10, 1975, Ser. No. 621,555

Claims priority, application Germany, Oct. 18, 1974, 2449580

Int. Cl.[2] C09B *67/08;* D06D *1/645*

U.S. Cl. 8—85 R **4 Claims**

1. Dry, particulate solid dyestuff preparation which is soluble in cold water and consists essentially of 10 to 70% by weight of the guanidinium salt of an anionic dyestuff or mixture of anionic dyestuffs having a particle size of not more than 10 microns and 10 to 90% by weight of a surface-active agent or mixture of surface-active agents.

4,082,506

PRINTING FORMULATIONS

Harvey Steven Koenig, Charleston, and Russell Harold Raines, Nitro, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 15, 1975, Ser. No. 622,614

Int. Cl.[2] C09B *67/00;* D06D *1/46*

U.S. Cl. 8—91 **3 Claims**

1. A print paste composition consisting essentially of

(A) from 0.05 to 15 weight percent of a hydroxyalkyl cellulose,

(B) from 0.1 to 5 weight percent of an ethylene oxide adduct of a mixture of C_{11} to C_{15} linear secondary alcohols, said adduct having from 2 to 15 ethyleneoxy units in the molecule,

(C) a dyestuff, and

(D) water as the balance

4,082,507

PROSTHESIS AND METHOD FOR MAKING THE SAME

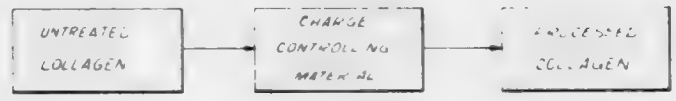
Philip N. Sawyer, 7600 Ridge Blvd., Brooklyn, N.Y. 11209

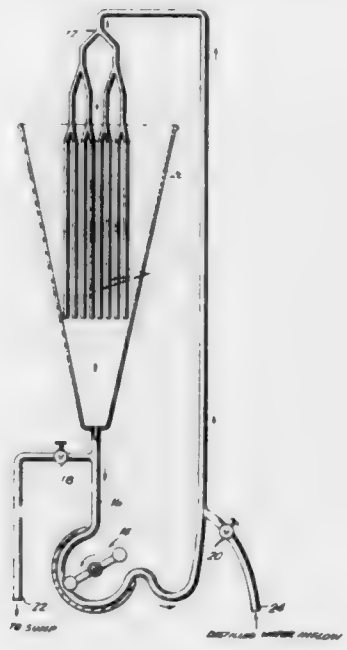
Filed May 10, 1976, Ser. No. 684,664

The portion of the term of this patent subsequent to Dec. 23, 1992, has been disclaimed.

Int. Cl.[2] A61F *1/24*

U.S. Cl. 8—94.11 **22 Claims**





1. A method for controlling thrombogenicity of a graft prosthesis comprising making a prosthesis selected from the group consisting of (a) collagen and (b) collagen prepared from ficin digested chemically modified artery or vein material and controlling the surface charge of the intimal surfaces of said prosthesis by reaction with a solution of a compound selected from the group consisting of bovine or human albumin, succinic anhydride, glyoxals, formic acid, ethoxyformic anhydride and 1-ethyl-3-(3-dimethylaminopropyl) carbodiimide.

4,082,508

TREATMENT OF TEXTILE MATERIALS

Clifford Marshall, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 831,769, Jun. 9, 1969, abandoned. This application Feb. 12, 1973, Ser. No. 331,710

Claims priority, application United Kingdom, Jun. 25, 1968, 30216/68; Apr. 16, 1969, 19457/69

Int. Cl.[2] D06B *1/08*

U.S. Cl. 8—139.1 11 Claims

1. A process for dewaxing textile material having a wax content of the fibers, the steps of which consist essentially of impregnating the textile material with a solution of a surfactant in a hydrocarbon or halogenated hydrocarbon solvent so that wax content of the fibres remains in the textile material, removing the solvent from the textile and leaving the surfactant evenly distributed throughout the textile material and then washing the surfactant-containing textile material in an aqueous medium.

4,082,509

METHOD OF STORING BLOOD AND A BLOOD STORAGE BAG THEREFOR

Thomas D. Talcott, Santa Barbara, Calif., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 5, 1976, Ser. No. 712,106

Int. Cl.[2] A61L *13/00;* A61M *1/02, 1/03, 5/14*

U.S. Cl. 21—58 3 Claims

1. A method of storing blood which comprises

compounding a curable silicone rubber with $Ca(OH)_2$ which is to preserve and extend the storage life of whole blood;

inserting the compounded silicone rubber into a blood storage bag;

subsequently infusing the bag with whole blood,

whereupon there is obtained a storage stable blood.

4,082,510

AUTOCLAVE

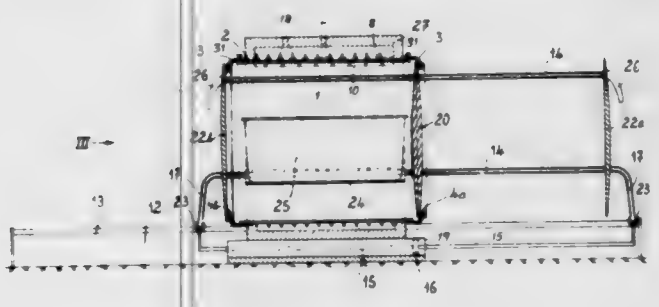
Dragomir Jovanović, 6, Impasse Jean-Moulin, Pont-de-Claix, France

Filed Jul. 20, 1977, Ser. No. 817,422

Claims priority, application France, Jul. 21, 1976, 76 23096

Int. Cl.[2] A61L *3/00;* A23L *3/00*

U.S. Cl. 21—96 10 Claims



1. An autoclave comprising:

a vessel forming a treatment chamber with two open ends, said vessel having a peripheral wall terminating at said ends in a pair of inwardly projecting annular shoulders lying in parallel planes;

a carriage displaceable perpendicularly to said planes, said carriage extending partly into said chamber and forming a support for goods to be treated therein;

a first lid parallel to said shoulders fixedly mounted on said carriage within said chamber for closing one of said ends by abutting an inner seat on the corresponding shoulder in one extreme carriage position;

a second lid parallel to said shoulders fixedly mounted on said carriage outside said chamber for closing the other of said ends by abutting an outer seat on the shoulder thereof upon said first lid abutting the opposite shoulder in said one extreme carriage position, thereby sealing said chamber, said support being located between said lids; and

control means for generating steam pressure in the chamber thus sealed, said inner seat surrounding an area larger than that surrounded by said outer seat whereby said steam pressure acts differentially upon said lids to intensify their contact with the engaged seats and prevent a shifting of said carriage during treatment of the goods in said chamber.

4,082,511

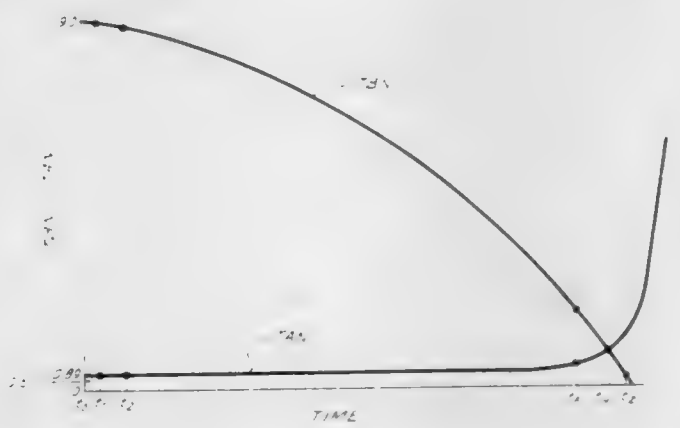
METHOD FOR PROTECTING AN INTERNAL COMBUSTION ENGINE BY DETERMINING THE CHANGE POINT OF THE LUBRICATION OIL

John E. Bedford, Houston, Tex., assignor to Pricon, Inc., Tex.

Filed Sep. 10, 1976, Ser. No. 722,084

Int. Cl.[2] G01N *33/30*

U.S. Cl. 23—230 HC 17 Claims



1. An on-site method for protecting an internal combustion engine by precisely determining the change point for the lubricating oil of the engine in the field for maximum utilization of the oil and for preventing damage to the engine, comprising the steps of:

measuring a predetermined amount of lubrication oil withdrawn from an internal combustion engine at the site in the field;

diluting the predetermined amount of lubrication oil with a predetermined amount of titration solvent;

titrating the predetermined amount of diluted lubrication oil at the site in the field with an amount of a first premixed titrating solution sufficient to reduce the pH level of the lubrication oil to a first predetermined value;

determining the Total Base Number at the site in the field from the measured amount of the first titrating solution; and

changing the lubricating oil when the Total Base Number declines to a value of from about 1.0 to 0.5.

4,082,512

MIXING HEAD FOR A REACTION INJECTION MOLDING MACHINE

Robert Dean Wingard, and Shirley Margaret Leidal, both of Akron, Ohio, assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 22, 1976, Ser. No. 753,465

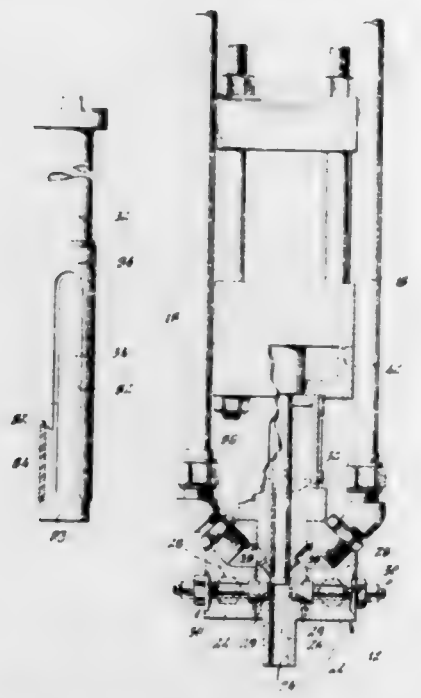
Int. Cl.[2] B28B *1/50;* B29D *27/00*

U.S. Cl. 23—252 R 7 Claims

1. In a mixing head for a reaction injection molding machine, which includes a metal block defining a bore constituting a mixing chamber, a plurality of nozzle orifices in said block opening radially into the mixing chamber, and a metal plunger received in said bore and having a plunger surface that complements said bore, at least a portion of which makes a piston fit therewith, actuating means connected to one end of said plunger for reciprocating it between a retracted position wherein the free end of the plunger is withdrawn past said

orifices to permit reactive liquid polymeric components simultaneously to enter the mixing chamber, and an extended position wherein the plunger blocks said orifices while the free end of the plunger ejects mixed components from said mixing chamber, said plunger having axially oriented by-pass channels in its surface, one each cooperating respectively with a respective nozzle orifice; the improvement comprising:

the surface of said metal plunger being formed with a first recess portion completely encompassing said plunger intermediate its ends and each of a plurality of remaining portions of said recess, equal in number to the number of by-pass channels, extending axially from said first portion and lying between adjacent by-pass channels, said recess



thereby defining a narrow land peripherally surrounding each by-pass channel and a land completely encircling the free end of said plunger; and

an antifriction, cured, polymeric-base, inorganic particulate-reinforced material disposed in the recess of the plunger surface and constituting a sleeve forming the major bearing surface of the plunger in contact with the wall of the bore, said polymeric-base material sleeve defining a plunger diameter slightly larger than the diameter of said bore prior to insertion therein but being compressed by insertion into said bore to form a close sliding seal with the wall thereof, said sleeve further being restrained against pressure-induced flow into said by-pass channels and axially of the free end of the plunger by said metal lands.

4,082,513

INTERMITTENT CATALYST ADDITION SYSTEM

Nicholaki A. Andon, Westland, and Robert I. Fleece, Detroit, both of Mich., assignors to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 543,719, Jan. 14, 1975, Pat. No. 4,018,671. This application Aug. 23, 1976, Ser. No. 716,746

Int. Cl.² B01J *8/18;* **C10G** *9/32*

U.S. Cl. 23—288 E **1 Claim**

1. Apparatus for the addition of catalyst to a fluid catalytic converter comprising in combination:

(a) a catalyst storage tank capable of operating at pressure greater than atmospheric having a valvable vent means, that permits operation of the storage tank at atmospheric pressure;

(b) an addition hopper located at a substantially lower elevation than said catalyst storage tank,

(c) a catalyst carrier air line having air or other gases moving through said line to said catalytic converter;

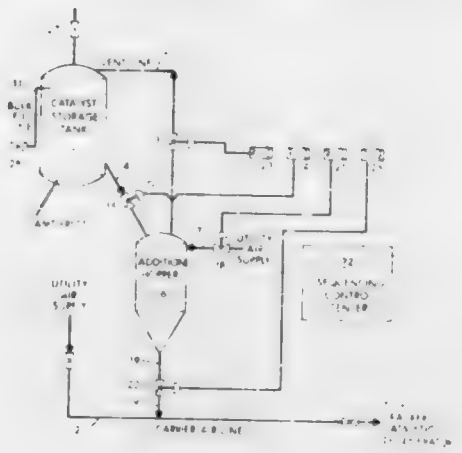
(d) a first valvable communication means between a lower portion of said storage tank and said addition hopper;

(e) a second valvable communication means between said addition hopper and said carrier air line;

(f) venting means for venting said addition hopper to said catalyst storage tank;

(g) pressurizing means for increasing the pressure of said addition hopper; and

(h) sequencing control means to which said first and second valvable communication means, said venting means and said pressurizing means are all responsive, whereby said addition hopper is vented to the pressure within said storage tank, said first valvable communication means between said storage tank and said addition hopper is opened, said second valvable communication means be-



tween said carrier air line and said addition hopper being closed so that said addition hopper is filled to a preset level and thereafter said first valvable communication means between said storage tank and said addition hopper and said venting means are closed, said pressurizing means is activated to increase the pressure in said addition hopper to a pressure at least as high as the pressure in said carrier air line and thereafter said second valvable communication means between said addition hopper and said carrier air line is opened to permit flow of catalyst from said addition hopper via said carrier air line to said fluid catalytic converter and to place the apparatus in restored condition by deactivating said pressurizing means and closing said second valvable communication means.

4,082,514

CATALYTIC CONVERTER FOR TRANSFORMING POLLUTING GASES INTO NON-POLLUTING GASES

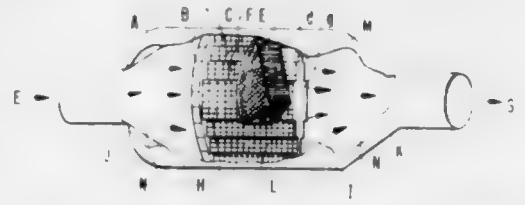
Silvestre Sanchez Torres, 30 Poniente, No. 1512, Interior 2, Puebla, Pue., Mexico

Filed Jun. 25, 1976, Ser. No. 699,755

Claims priority, application Mexico, Jun. 25, 1975, 159235

Int. Cl.² B01J *35/04;* **F01N** *3/15*

U.S. Cl. 23—288 F **5 Claims**



1. A catalytic converter for transforming polluting gases into non-polluting gases comprising:

(a) a housing having an inlet for the polluting gases and an outlet for the non-polluting gases;

(b) a silver coated grill within said housing adjacent to the housing inlet;

(c) a mesh, intermediate said silver coated grill and the housing outlet, said mesh comprising an alloy base consisting essentially of:

from 1.0% to 1.9% silicon,

from 10% to 29% chrome,

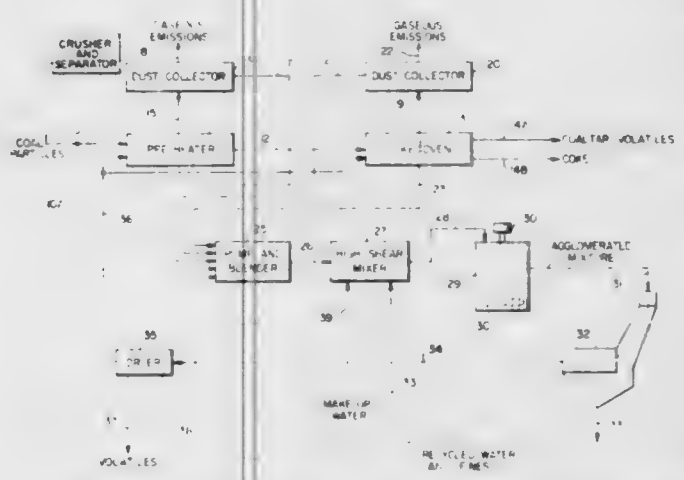
from 1% to 5.1% copper,
from 1.1% to 9.1% molybdenum,
from 0.11% to 0.5% titanium,
from 0.1% to 1.9% carbon and from 0.5% to 0.9% iron and a coating of silver or palladium on said alloy.

4,082,515

COKE OVEN SYSTEM AND AGGLOMERATING CARRYOVER FINES THEREIN

C. Edward Capes; Allen E. McIlhinney, both of Ottawa, Canada, and Leonard Messer, Pittsburgh, Pa., assignors to American Minechem Corporation, Coraopolis, Pa.

Filed Jan. 12, 1977, Ser. No. 758,651
Int. Cl.[2] B01J *1/00*; C08L *95/00*; C09C *1/58*; C10B *53/04*
U.S. Cl. 23—313 R **24 Claims**



15. A method of agglomerating coke oven carryover fines comprising the steps of:

A. collecting carryover fines and liberated coal tar from the coke oven of a coke oven system; and

B. agitating said carryover fines and liberated coal tar of the coke oven with water to form an aqueous mixture and to agglomerate the carryover fines and liberated coal tar in the aqueous mixture to form agglomerates.

4,082,516

MODIFIED STARCH CONTAINING LIQUID FUEL SLURRY

Grant W. Metzger, San Andreas, Calif., assignor to Carbonoyl Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 594,393, Jul. 9, 1975, which is a continuation-in-part of Ser. No. 446,302, Feb. 27, 1974, Pat. No. 3,907,134. This application Nov. 26, 1976, Ser. No. 745,160
Int. Cl.[2] C10L *1/32*
U.S. Cl. 44—51 **10 Claims**

1. A substantially water free, high solids content, stable and combustible fuel slurry comprising a mixture of a solid particulate carbonaceous material in from about 5 to 50 weight percent and a liquid hydrocarbon fuel having a viscosity in the range of about 50 to 300 SSU at 175° F in from about 95 to 50 weight percent, up to 5 weight percent of water based on said mixture, from about 0.05 to 0.5 weight percent based on said mixture of an anionic surfactant, and from about 0.003 to about 0.025 weight percent of said mixture of an anionic polymer grafted starch, wherein the weight ratio of the polymer to said starch is in the range of about 0.3 to 3.

4,082,517

FUEL COMPOSITION FOR REDUCING EXHAUST GAS CATALYST PLUGGING

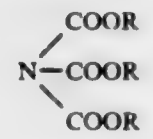
Leonard M. Niebylski, Birmingham, and Ellis B. Rifkin, Southfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 15, 1975, Ser. No. 640,682
Int. Cl.[2] C10L *1/22*
U.S. Cl. 44—68 **25 Claims**

1. As a composition of matter, a gasoline for an internal combustion engine comprising

(i) an antiknock amount of a cyclopentadienyl manganese tricarbonyl antiknock, and

(ii) an amount effective to reduce the plugging of an exhaust gas catalyst of a compound having the general formula:



wherein R is independently selected from hydrogen and hydrocarbyl radicals.

4,082,518

ADDITIVES FOR MOTOR FUELS AND LUBRICANTS

Hans D. Holtz; William T. Nelson, and Albert N. Devault, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 28, 1975, Ser. No. 571,901
Int. Cl.[2] C10L *1/22*
U.S. Cl. 44—72 **6 Claims**

1. An internal combustion fuel composition comprising a major proportion of motor fuel containing a small but effective amount, sufficient to impart detergency and reduced deposit-forming tendency to said motor fuel, of an additive which is an oil-soluble hydrogenated polymeric reaction product containing from about 0.1 to about 3 weight percent of combined nitrogen obtained upon reacting

(a) a normally liquid low molecular weight polymer of a conjugated diene with

(b) acrylonitrile to form an adduct, said diene and acrylonitrile present in an amount such that the molar ratio of conjugated diene to acrylonitrile is in the range of about 1 to 2 to about 1 to 20, and

(c) hydrogenating said adduct to remove about 55 to about 95 percent of the olefinic unsaturation and substantially all of the nitrile unsaturation.

4,082,519

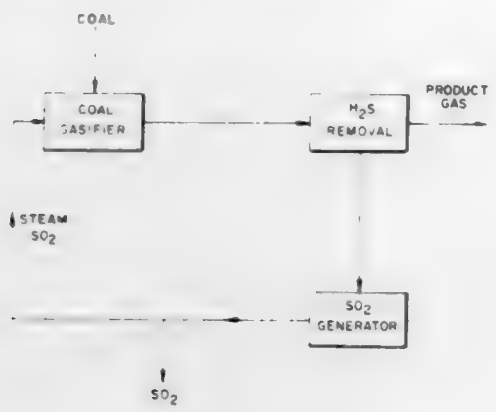
PROCESS FOR THE GASIFICATION OF COAL

Peter Steiner, Edison, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Continuation of Ser. No. 395,087, Sep. 7, 1973, abandoned. This application Jun. 29, 1976, Ser. No. 700,945
Int. Cl.[2] C10J *3/06*
U.S. Cl. 48—202 **4 Claims**

1. In a process for the gasification of coal comprising introducing particulate coal and steam into a reaction zone wherein the steam and coal react to form an ash product and a gaseous product the improvement comprising introducing sulfur dioxide into the reaction zone in an amount of from 0.1 to 20% of the volume of said steam, maintaining the reaction zone at a temperature of from 1200° F to 1450° F, removing hydrogen sulfide from said gaseous product, converting the hydrogen sulfide to sulfur dioxide, and recycling at least a portion of said

sulfur dioxide to said reaction zone, the amount of sulfur dioxide being sufficient to promote the reaction between the coal



and steam, and the temperature being less than that required for the gasification of the coal in the absence of sulfur dioxide.

4,082,520

PROCESS OF PRODUCING GASES HAVING A HIGH CALORIFIC VALUE

Gerhard Baron, Hofheim; Herbert Bierbach; Carl Hafke, both of Frankfurt am Main, and Gunter Pockrandt, Bad Homburg, all of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Germany

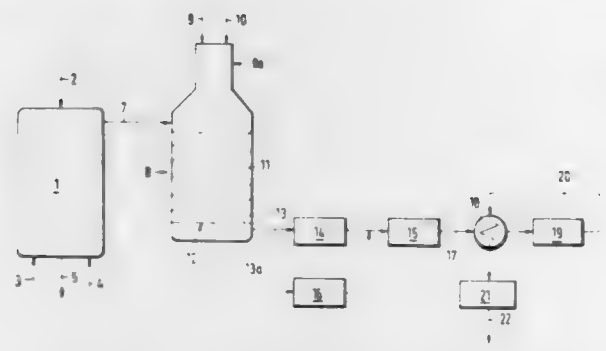
Filed Jul. 12, 1976, Ser. No. 704,709

Claims priority, application Germany, Jul. 18, 1975, 2532198

The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.

Int. Cl.² C10J *3/16*

U.S. Cl. 48—202 **13 Claims**



1. A process for the production of a gas having a high calorific value and containing more than about 50% methane by volume comprising supplying to a first reaction zone maintained under a pressure of about 5–150 bars counterflowing masses of coal and of oxygen and water vapor to produce a water vapor-containing raw gas having a temperature of about 350°–700° C, without cooling feeding said raw gas and oxygen into a second reaction zone maintained under a pressure of about 5–150 bars, said second reaction zone containing a bed of granular material of a particle size of about 3 to 80 mm and selected from the group composed of inert material and catalytic material, withdrawing from said second reaction zone an intermediate product gas having a temperature between about 600° C and 950° C, cooling said intermediate product gas, freeing it from sulfur compounds and subjecting it to methanation.

4,082,521

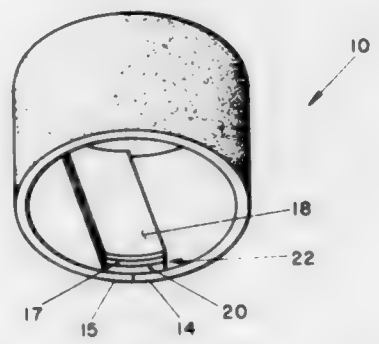
ENDLESS ABRASIVE BELT, AND LAMINATED PATCH SPLICE THEREFOR

Jarvis M. McGarvey, Grand Island, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 413,466, Nov. 7, 1973, abandoned. This application Aug. 13, 1976, Ser. No. 714,071

Int. Cl.² B24B *1/00*

U.S. Cl. 51—295 **20 Claims**



1. An endless belt of flexible sheet material having two complementary abuttingly juxtaposed ends forming a joint at an angle other than perpendicular to the running direction of the belt, wherein the improvement comprises: an integral laminated patch splice uniting said joint and comprising a straight slit woven fabric layer; a yaw preventing and heat resistant, plastic film layer having multi-directional strength; first means joining said woven fabric layer and plastic film layer into an integral laminated patch, and second means joining said patch to said sheet material, with said patch overlapping said ends and extending along said joint substantially at said angle.

4,082,522

METHOD AND APPARATUS OF CLEANING DUST-CONTAINING GASES

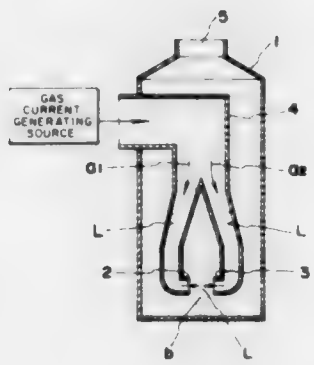
Tetsuaki Koga, Tokyo, Japan, assignor to Kokudo Doro Company Ltd., Tokyo, Japan

Filed Jul. 30, 1975, Ser. No. 600,516

Claims priority, application Japan, Jun. 9, 1975, 50-69927

Int. Cl.² B01D *47/02*

U.S. Cl. 55—95 **9 Claims**



1. A method of cleaning a gas containing dust, comprising the steps of:

directing gas in a dust collector structure into two gas currents, with at least one of said gas currents containing dust;

directing said two currents through a washing liquid;

colliding said two currents against each other by directing said currents towards each other in a directly opposing manner through two directly opposing spaced apart jetting ports;

forming a liquid film between said opposing jetting ports by the jetting gas pressure of said two colliding gas currents; and

cleaning said dust from said gas currents by pressing said at

least one gas current containing dust against said liquid film formed between said opposing jetting ports.

5. An apparatus for cleaning a gas containing dust, comprising:

a dust collector structure provided with a gas feeding inlet device;

at least one gas current generating source connected to said gas feeding inlet device;

said gas feeding inlet device being provided with channels for directing gas supplied by said generating source into two currents, with at least one of said gas currents containing dust;

said structure having a washing liquid disposed therein;

said inlet device having two directly opposing spaced apart jetting ports provided in each of said channels, said jetting ports being disposed in said washing liquid so as to provide a gas-liquid contact zone;

each of said gas currents being directed through said washing liquid and jetted out through a corresponding one of said opposing jetting ports so that said currents will collide with each other in a directly opposing manner;

a liquid film formed between said jetting ports by said colliding gas currents for cleaning said gas containing dust; and

said structure being provided with a clean gas discharge port communicating with said gas-liquid contact zone.

4,082,523

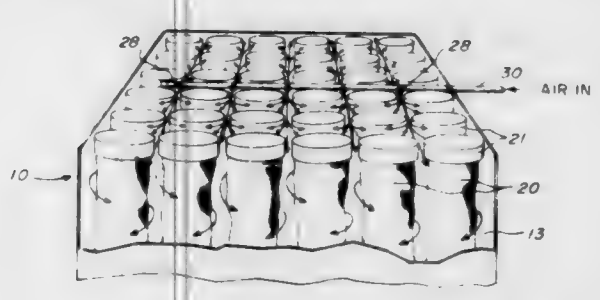
FILTER BAG CLEANING APPARATUS

Josef Pausch, 2016 Dwight La., Minnetonka, Minn. 55343

Filed Feb. 4, 1977, Ser. No. 765,783

Int. Cl.[2] B01D *46/04*

U.S. Cl. 55—293 **7 Claims**



1. In a filtration apparatus including a filter bag housing having a plurality of filter bags therein and an inlet chamber in communication with all of the bag interiors, and a dirt collection chamber in communication with the opposite end of the bag interiors, and a bag chamber in communication with an outlet and enclosing the bag exteriors, said apparatus comprising:

a. an upper isolating wall between said inlet chamber and said bag chamber, said wall having a plurality of openings therethrough, each opening in alignment with a bag interior and having a supporting surface projecting into said bag interior;

b. a lower isolating wall between said collection chamber and said bag chamber, said wall having a plurality of openings therethrough, each opening in sealable alignment with a bag interior;

c. a collar surrounding each bag exterior adjacent one of said openings in the upper isolating wall, said collar having an axial length dimension of at least four inches; and

d. a high pressure air pipe in said bag chamber and positioned proximate said upper isolating wall, said high pressure air pipe having therethrough a plurality of air jets, each air jet positioned intermediate adjacent collars and directed toward said collars to directionally couple high pressure air against said collars.

4,082,524

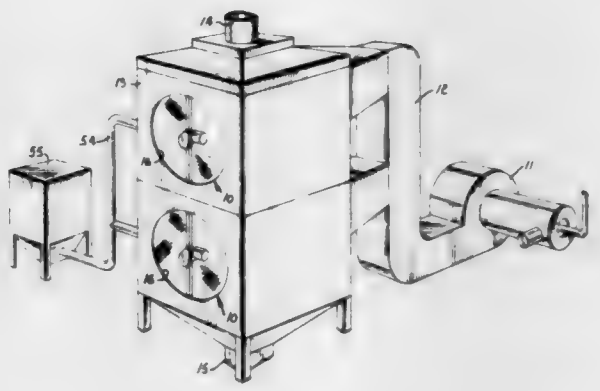
SELF-CLEANING FILTER

Richard D. Noland, 2208 W. 56th, Mission Hills, Kans. 66208

Filed Mar. 21, 1977, Ser. No. 779,354

Int. Cl.[2] B01D *46/12*

U.S. Cl. 55—294 **2 Claims**



1. A self-cleaning filter for removing particulate matter from a gas stream flowing through the discharge of a chamber housing, said filter comprising:

a circular filter mounted over the discharge of said chamber housing;

a circular track circumscribing said filter;

a drive train mounted centrally of said filter and including a rotatable drive shaft with a flexible couple positioned substantially perpendicular to said filter;

an elongate rotor having first and second ends and being centrally coupled by said flexible couple to said drive shaft to transverse said filter, said rotor including a rollable wheel mounted on said first end to engage said circular track and a reciprocally spring biased wheel mounted on said second end to engage said circular track and thereby urge to engagement said rollable wheel on said first end with said circular track, said rotor further including vacuum means associated with said first end to vacuumingly remove particulate matter from said filter; and

power means connected to said drive train to angularly rotate said rotor over said filter whereby said vacuum means continuously cleans said filter.

4,082,525

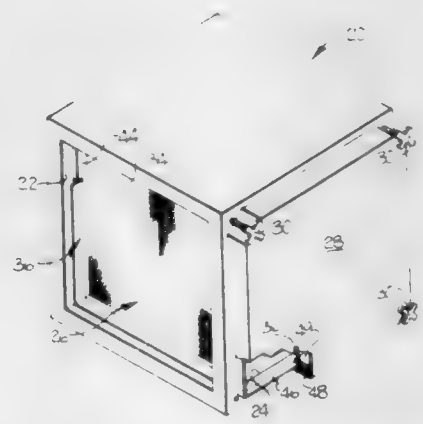
REMOVABLE FLUID SEALING MEMBER

Thomas T. Allan, San Francisco, Calif., assignor to Flanders Filters, Inc., Washington, N.C.

Filed May 13, 1976, Ser. No. 685,978

Int. Cl.[2] B01D *46/10;* F16J *15/14*

U.S. Cl. 55—355 **12 Claims**



1. A housing assembly adapted to form a part of an enclosed air flow system and utilizing a fluid sealing material therein, and characterized by the ability to remove the fluid sealing material from the system in the event of the contamination thereof, and comprising

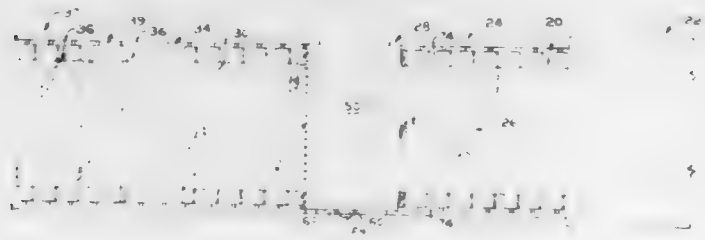
a housing having an opening therein,
a covering member disposed across said opening,
means for releasably sealing the periphery of said covering member for the periphery of said opening to preclude the passage of air therebetween while permitting the covering member to be withdrawn and removed from its position across said opening, said sealing means comprising
(a) a retainer disposed along the periphery of said opening, said retainer having a generally U-shaped cross-sectional configuration and defining at least one open channel in cross-section,
(b) a fluid substantially filling said at least one channel, said fluid having a consistency substantially the same as that of petrolatum and characterized as being subject to easy deformation at room temperature, and
(c) means for releasably and sealably interconnecting said retainer to each of said housing and covering member, and including a flange mounted to one of said housing and covering member, said flange having a peripheral outline corresponding to that of said at least one retainer channel and extending into said at least one channel and fluid to effect a seal therebetween, and a receptacle fixedly and sealably mounted to the other of said housing and covering member, said receptacle having a generally U-shaped cross-sectional configuration defining an open side, and closely receiving said retainer therein to form a seal between the receptacle and retainer, and such that the retainer may be separated from the receptacle by withdrawing the retainer through the open side of the receptacle,
whereby the retainer and fluid carried therein may be separated from the housing and covering member by withdrawing the covering member from the opening and removing the retainer.

4,082,526

METHOD OF APPLYING POWDER TO A GLASS RIBBON

Ronald L. Estes; Larry S. McGee, both of Carlisle, and Sanford M. Welton, Mount Holly Springs, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1976, Ser. No. 728,367
Int. Cl.² C03B 33/00
U.S. Cl. 65—24 **9 Claims**



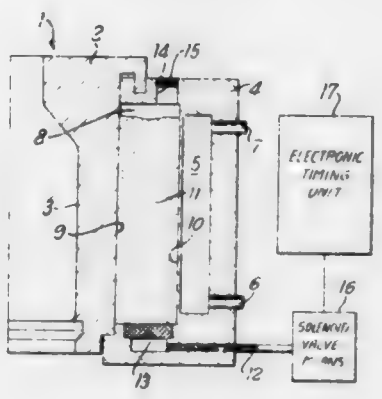
1. A method of applying a temporary protective layer of a powder to a sheet of a refractory material selected from the group consisting of glasses, ceramics and glass-ceramics, said powder being selected from the group consisting of adipic acid, benzoic acid, salicylic acid or mixture thereof, comprising the steps of:
vaporizing the powder in an applicator to produce an atmosphere comprising vaporized powder or a mixture of vaporized powder and powder; and
exposing a surface of the sheet to the atmosphere in the applicator for a time sufficient to deposit a temporary protective layer of powder from the atmosphere thereupon.

4,082,527

METHOD FOR TRANSFERRING HEAT FROM A GLASS MOLD

Stanley Peter Jones, Doncaster, and William Ferguson Watson, Shrewsbury, both of England, assignors to Emhart Limited, England

Continuation of Ser. No. 597,785, Jul. 21, 1975, abandoned. This application Dec. 16, 1976, Ser. No. 751,060
Claims priority, application United Kingdom, Jul. 22, 1974, 32311/74
Int. Cl.² C03B 9/38
U.S. Cl. 65—83 **6 Claims**



1. In a cyclic system for forming glassware in a forming mould the improvement comprising:
a. providing a fluidized bed in a cavity having a first surface defined by the mould and a second surface spaced from the first surface,
b. altering the temperature of said second surface by circulating a cooling fluid through a chamber adjacent said second surface,
c. alternately collapsing and restoring said fluidized bed by selectively supplying gas to said cavity whereby the rate of transfer of heat between said first and second surfaces is regulated.

4,082,528

GLASS MELTING TANK WITH TEMPERATURE CONTROL AND METHOD OF MELTING

Stanley Lythgoe, Parbold, and David Gelder, Parbold, near Wigan, both of England, assignors to Pilkington Brothers Limited, St. Helens, England

Continuation of Ser. No. 653,825, Jan. 30, 1976, abandoned. This application Jul. 27, 1977, Ser. No. 819,394
Claims priority, application United Kingdom, Jan. 31, 1975, 4361/75
Int. Cl.² C03B 5/22
U.S. Cl. 65—135 **14 Claims**



1. In a method of refining molten glass in a refining zone of a tank containing molten glass, which method comprises supporting molten glass on a heat conducting support material forming the base of the refining zone, heating the upper regions of the molten glass so that the temperature of the upper region is sufficient to effect refining, and enforcing flow of the glass such that the upper regions of the glass flow forwardly through the refining zone from an inlet to the refining zone towards an outlet from the refining zone while a colder return

flow takes place in the lower regions of the glass in the refining zone, the improvement comprising

establishing the depth of glass in the zone in relation to the length of the zone and the temperature difference between the glass at the inlet and outlet of the zone so that the ratio of return flow to forward flow is between 1/6th and ½; and removing heat from the lower region of the molten glass in the refining zone through said support material forming the base of the refining zone to minimize undesirable interaction of the molten glass with the support material.

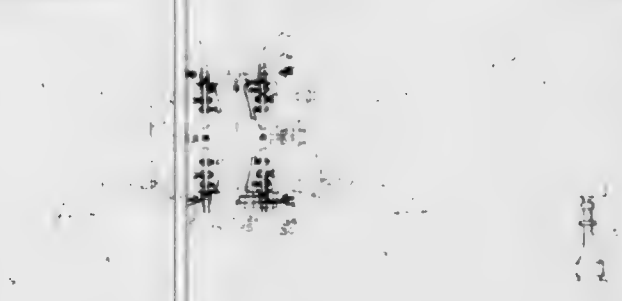
6. A glass melting tank having a melting zone at one end of the tank into which glass forming materials are fed, a conditioning zone in which molten glass is brought to a desired thermal condition prior to discharge from the tank, a refining zone with a refractory base between the melting and conditioning zones, and means for applying heat to the upper surface of the glass in the melting and refining zones, the refining zone being provided with a layer of molten metal at the base of the tank on which the molten glass is supported out of contact with said refractory base, and cooling means located below the base of the tank adjacent the refining zone for removing heat from the lower region of molten glass in the refining zone, said melting zone being arranged to hold molten glass at a greater depth than said refining zone and said conditioning zone being shallower than said refining zone and arranged so that molten glass flow through said conditioning zone is entirely in the forward direction.

4,082,529

GLASS BENDING PRESS WITH OFFSET HINGES

Joseph B. Kelly, Crestline, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 3, 1977, Ser. No. 756,210
Int. Cl.² C03B *23/02*
U.S. Cl. 65—273 **3 Claims**



1. An apparatus for press bending heat-softened glass sheets to a curvature including a line of sharp bending, comprising:

opposed male and female shaping members including opposed glass shaping surfaces of complementary curvature corresponding to the desired curvature for the glass sheets, the glass shaping surface of the male member having a protruding ridge defining a line of sharp bending flanked by areas on said male shaping surface of less severe curvature, the female shaping member including two segments, one on either side of a plane extending from said ridge on the male shaping surface and passing through the line of sharp bending in angular symmetry to said flanking areas on the male shaping surface, the two female segments being hinged together to rotate about an axis lying within said plane and obliquely intersecting the line of sharp bending, means to convey a heat-softened glass sheet into and out of a shaping station between said shaping surfaces and means to move the shaping members into and out of pressing engagement with a glass sheet in said shaping position so as to bend the glass sheet to the desired curvature.

4,082,530

PRESS BENDING APPARATUS AND METHOD OF FABRICATION

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 12, 1977, Ser. No. 758,875
Int. Cl.² C03B *23/02*
U.S. Cl. 65—273 **6 Claims**



1. Apparatus for shaping a heat-softened glass sheet comprising a relatively flexible shaping plate having a glass engaging surface correlated with the shape desired for said glass sheet, a relatively rigid adjusting plate, adjustable connecting means interconnecting spaced portions of said shaping plate to corresponding spaced portions of said adjusting plate in spaced relation therebetween and adjustable to change the shape of said shaping plate, characterized by edge reinforcing means attached to the reverse surface of said shaping plate opposite said glass engaging surface along substantially the entire length of an edge portion thereof, said reinforcing means extending longitudinally in a direction substantially aligned with said edge portion of said shaping plate.

5. A method of fabricating a press bending mold for shaping a glass sheet comprising a relatively flexible shaping plate having a glass receiving surface correlated with the shape desired for said glass sheet, a relatively rigid connecting plate and adjustable connecting means interconnecting spaced portions of said shaping plate and corresponding portions of said connecting plate, said method comprising impartng approximately the shape desired to said shaping plate, attaching edge reinforcing plate means to the back surface of said shaping plate along an edge portion thereof, cutting a tong-receiving notch through said shaping plate at an edge portion thereof which is reinforced with said edge reinforcing plate means so as to simultaneously cut through a portion of said edge reinforcing means thereby substantially avoiding distorting adjacent portions of said shaping plate, said reinforcing plate means extending inwardly from said edge portion a sufficient distance so that the notch extends into only a portion of said reinforcing plate means attaching said notched, reinforced shaping plate to said connecting plate through an array of adjustable connectors, and adjusting a selected one of said connectors to modify the shape of said shaping plate in portions thereof where adjustment is desired.

4,082,531

HOLDER FOR ROTATING GLASS BODY

Floyd W. Kolleck, Clarendon Hills, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

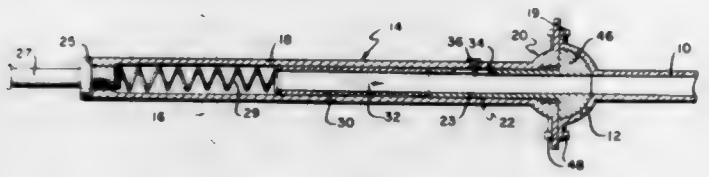
Filed Jan. 24, 1977, Ser. No. 762,226
Int. Cl.² C03B *23/04, 9/40*
U.S. Cl. 65—296 **6 Claims**

1. A device for holding a glass body wherein the glass body

has a symmetric concave end of particular configuration, comprising:

a tubular tip holder having a flange at one end thereof, a centering tip positioned in said one end of said tip holder capable of sliding into and out of said one end of said tubular holder, said tip having an end projecting from said holder of specific shape,

means capable of clamping the concave end of the body against said flange and spring means within said tip holder



for biasing said tip out said one end of said holder, said specific shape of said one end of said centering tip being matable with the concave end of the body such that with the concave end of the body clamped against said flange and said spring means thereby biasing said centering tip against the concave end of the body said tip exerts an axial force on the body opposing the force exerted on the body by said means for clamping thereby centering the concave end on the device.

4,082,532

PROCESS FOR MAKING EXTRUDED CATTLE MANURE PELLETS

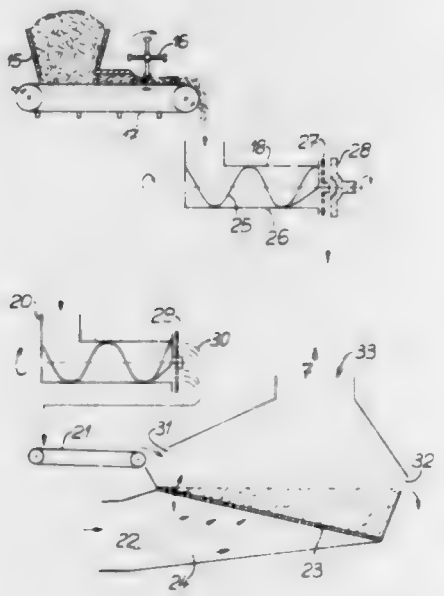
Hugo Imhof, Geneva, Switzerland, assignor to S.A.F. Societe Agricole et Fonciere S.A., Luxembourg

Continuation of Ser. No. 577,167, May 14, 1975, abandoned. This application Apr. 19, 1977, Ser. No. 788,812

Claims priority, application Switzerland, Jul. 3, 1974, 9140/74; Nov. 13, 1974, 15121/74

Int. Cl.[2] C05F *11/08, 3/00*

U.S. Cl. 71—8 **17 Claims**



1. A process for pelletizing cattle manure into pellets suitable for use as soil fertilizer comprising:

providing a substantially homogeneous coherent pulp of said cattle manure with a moisture content of from 45 to 60% by weight;

chopping said pulp until it is sufficiently fine to be extruded;

horizontally extending by extrusion said pulp immediately after chopping to form unsupported elongated frangible strands sufficiently long to break off under their own weight thereby causing said strands to break into elongated sections;

providing means defining a receiving surface beneath the falling strand sections so that the falling strand sections strike the receiving surface and further break into smaller sections upon impact; and

mechanically vibrating said smaller strand sections in a fluidizied bed, maintained by supplying a raising stream of hot gas, to further break said smaller strand sections into pellets and at least superficially dry the pellets.

7. A process according to claim 1, further comprising decanting and collecting liquids from liquid manure, spraying said liquids onto dried organic waste material, and allowing the resulting mixture to ferment until the moisture content is within the specified range.

4,082,533

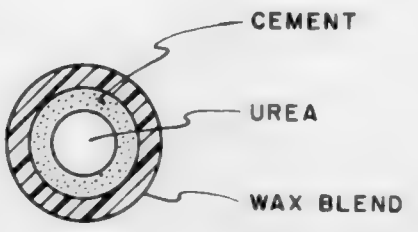
COATED CONTROLLED-RELEASE PRODUCT

Lawrence S. Wittenbrook, Marysville, and Edwin L. Scheiderer, Columbus, both of Ohio, assignors to D. M. Scott & Sons Company, Marysville, Ohio

Filed Jun. 27, 1973, Ser. No. 373,972

Int. Cl.[2] C05C *9/00*

U.S. Cl. 71—28 **21 Claims**



1. A coated product providing for the release of a water soluble fertilizer over a long period of time comprising a core containing a water soluble fertilizer in particulate form and two water insoluble coatings surrounding said core, the inner of said two coatings comprising cement.

8. The product of claim 1 in which the fertilizer is urea.

4,082,534

1H-IMIDAZO(4,5-b)PYRIDINE DERIVATIVES

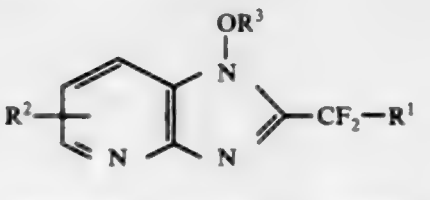
George O. P. Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 447,115, Mar. 1, 1974, Pat. No. 3,961,937, which is a division of Ser. No. 236,195, Mar. 20, 1972, Pat. No. 3,818,022, which is a continuation-in-part of Ser. No. 181,638, Sep. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 100,410, Dec. 21, 1970, abandoned. This application Mar. 29, 1976, Ser. No. 671,657

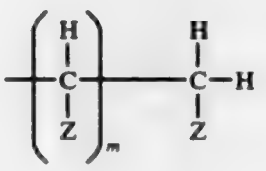
Int. Cl.[2] A01N *9/22*

U.S. Cl. 71—92 **15 Claims**

1. method which comprises applying to a plant part a growth-inhibiting amount of an active agent, said active agent being a compound of the formula:



wherein R^1 represents hydrogen, chlorine, fluorine, difluoromethyl, perfluoroalkyl of C_1–C_6, or radical of the formula:

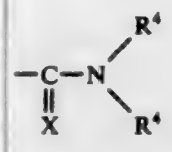


wherein each Z independently represents hydrogen or halogen and m represents 0 or 1; R^2 represents halogen, nitro, $-CF_3$, $-CF_2Cl$, $-CF_2H$, or loweralkylsulfonyl of C_1-C_4; and R^3 represents

(1) alkanoyl of C_2-C_{16};

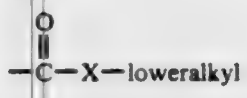
(2) alkenoyl of C_3-C_{16};

(3) carbamoyl of the formula

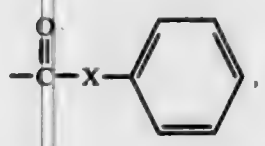


wherein X represents oxygen or sulfur; and one R^4 represents phenyl, loweralkyl of C_1-C_4, or loweralkenyl of C_2-C_4, and the other R^4 represents hydrogen, loweralkyl of C_1-C_4, or loweralkenyl of C_2-C_4, subject to the limitation that both R^4 moieties taken together do not contain more than six carbon atoms, or both R^4 moieties taken together represent straight-chain alkylene of C_2-C_6, both inclusive;

(4) radical of the formulae

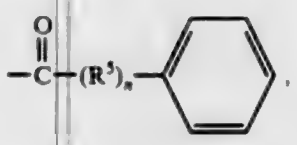


of C_1-C_4 or



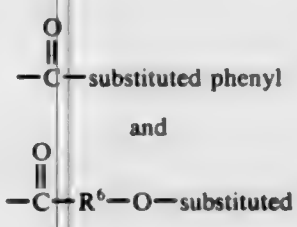
wherein X is, as above, oxygen or sulfur;

(5) radical of the formula



wherein R^5 represents methylene, ethylene, or vinylene, and n represents 0 or 1;

(6) radical of the formulae



phenyl, wherein substituted phenyl is a phenyl radical bearing from 1-3 substituents, each of which is independently amino, nitro, chloro, methyl, or methoxy, and R^6 represents loweralkylene of C_1-C_4, both inclusive; or

(7) $-SO_2-R_7$ wherein R^7 is loweralkyl as above defined, cycloalkyl of C_5-C_6, phenyl, substituted phenyl as above defined, or benzyl.

4,082,535

PYRIMIDINE DERIVATIVES

Karl Hoegerle, Basel, and Dagmar Berrer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

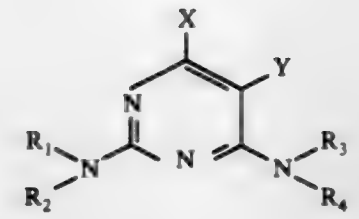
Filed Jun. 30, 1976, Ser. No. 701,322

Claims priority, application Switzerland, Jul. 7, 1975, 8836/75

Int. Cl.² A01N *9/22*; C07D *239/48*

U.S. Cl. 71—92 **10 Claims**

1. A pyrimidine derivative of the formula



in which

R_1 and R_3 independently denote C_1-C_4 alkyl; C_1-C_4 alkyl substituted by halogen, cyano, C_1-C_4 alkoxy, C_1-C_4 alkylthio, cyclopropyl or phenyl; C_2-C_4 alkenyl; C_2-C_4 alkynyl; or cyclopropyl,

R_2 and R_4 independently denote hydrogen or C_1-C_4 alkyl,

X denotes halogen; C_1-C_4 alkoxy; or C_1-C_4 alkylthio, and

Y denotes hydrogen or halogen,

with the proviso that at least one of R_1 and R_3 is cyclopropyl or cyclopropylalkyl, and an addition salt of said pyrimidine derivative with an inorganic or organic acid.

6. A herbicidal composition which comprises as active component a pyrimidine derivative according to claim **1**, and a carrier.

4,082,536

HETEROCYCLIC COMPOUNDS AND THEIR USE AS PESTICIDES

Ian Trevor Kay, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

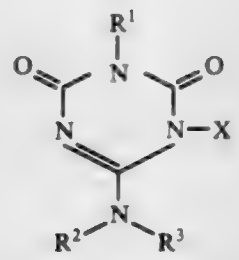
Division of Ser. No. 515,090, Oct. 15, 1974. This application Oct. 23, 1975, Ser. No. 625,138

Claims priority, application United Kingdom, Nov. 1, 1973, 50827/73; Feb. 15, 1974, 6959/74

Int. Cl.² A01N *9/22*

U.S. Cl. 71—93 **5 Claims**

1. A process of inhibiting the growth of unwanted plants, which comprises applying to plants, or to a plant growth medium, a phytotoxic amount of a triazine-dione compound of the formula:



wherein R^1 is an alkyl radical of 1 to 8 carbon atoms and either (a) R^2 is a carboxylic acyl radical of formula $R^4.CO-$ wherein R^4 is a carboxy group, an alkoxycarbonyl group, an alkoxy group of 1 to 6 carbon atoms, an alkyl group of 1 to 6 carbon atoms, or a phenyl radical and R^3 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms, or (b) R^2 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms and R^3 together with the group X, forms a divalent radical Z linking the exocyclic nitrogen atom to which R^3 is attached to the nitrogen atom in the triazine ring, so as to form a second 5- or 6-membered ring, the radical Z being selected from the group consisting of oxalyl (—CO.CO—), 1,2-dihydroxyethylene (—CH(OH)—CH(OH)—), and radicals of the formula $-CH_2NR^5CH_2-$ wherein R^5 is phenyl, an alkyl group of 1 to 10 carbon atoms or hydrogen; and X is a hydrogen atom, a salt-forming cation comprising an alkali metal, an alkaline earth metal, ammonia, or a primary, secondary, or tertiary alkyl amine in which the alkyl contains 1 to 6 carbon atoms, or an alkyl radical of 1 to 6 carbon atoms, or together with R^3 forms the divalent group Z.

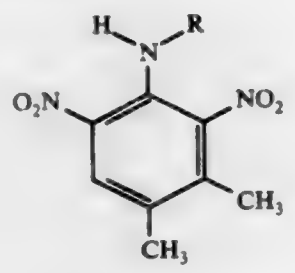
4,082,537

2,6-DINITROANILINE HERBICIDAL COMPOSITIONS

Joseph John Dudkowski, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 23, 1977, Ser. No. 780,377
Int. Cl.[2] A01N *17/00*
U.S. Cl. 71—121 7 Claims

6. A method of preventing the formation of crystals in wettable powder formulations of about 98% to 99% by weight of a compound of the formula:



wherein R is 1-ethylbutyl, 1-ethylpropyl, 1-methylpropyl or 1-methylbutyl which comprises

melting the compound at about its melting point,

adding a surfactant of 1% to about 2% by weight of a sodium dialkyl C_6–C_8 sulfosuccinate,

stirring the mixture until a homogeneous solution results, and then

cooling the melt until it resolidifies.

4,082,538

SELECTIVE WEED CONTROL WITH M-DINITROBENZENE

Dougal Harold McRae, Hatboro, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 67,199, Aug. 26, 1970, abandoned. This application Jun. 8, 1973, Ser. No. 368,374
Int. Cl.[2] A01N *9/20*
U.S. Cl. 71—125 5 Claims

1. A method of selectively controlling monocotyledonous weeds in corn or wheat which comprises applying to the surface of the growth medium, prior to the emergence of the weeds from the growth medium, m-dinitrobenzene at a rate of 0.5 to 20 lbs. per acre.

4,082,539

METHOD FOR THE PRELIMINARY TREATMENT OF MATERIALS FOR SINTERING

Kinichi Sugawara, Kitakyushu, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 1, 1976, Ser. No. 672,789
Claims priority, application Japan, Apr. 2, 1975, 50-39215
Int. Cl.[2] C22B *1/14*
U.S. Cl. 75—3 13 Claims



1. In a method for preliminarily treating sintering materials containing fine powder of a particle size of less than 125μ in the range of 15% to 35% comprising adding in a first treatment step solid carbon to a mix component consisting of powdery or fine powdery iron ore, fluxing materials, dust recovered from steel-making operations and return fines from a sintering operation and then mixing, effecting moisture adjustment, and subjecting said component to a pseudo granule formation operation, and then adding in a second treatment step solid carbon to the material resulting from said first step and thereafter effecting mixing, moisture adjustment and pseudo granule formation operations, the improvement wherein

mini-pellets at least 75% of which are of a size of 1 to 7 mm are added in the second step to said first step material in an amount of 3% to 15% by weight of the materials present other than coke, return fines and hearth layer.

4,082,540

MATERIAL FOR SINTERING EMITTING A LESSER AMOUNT OF NITROGEN OXIDE AND A METHOD FOR MANUFACTURING THE SAME

Minoru Sasaki, Yokohama; Yukihiro Hida; Tsuneo Enokido, both of Kawasaki, and Kaoru Ito, Yokohama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 537,533, Dec. 30, 1974, Pat. No. 4,001,007. This application Aug. 2, 1976, Ser. No. 710,382
Int. Cl.[2] C22B *1/08, 1/24, 1/16*
U.S. Cl. 75—3 3 Claims

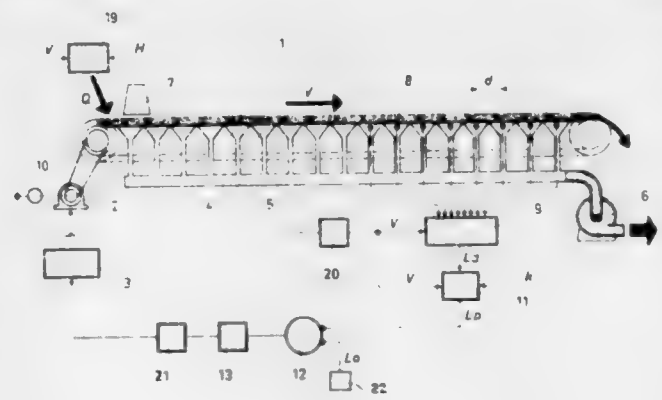
1. A pellet for preparing a sintered ore for use in iron making operations, said pellet comprising as ingredients iron ore, fines, limestone and coke in particulate form and includes S type agglomerated particles wherein coke of at least 1 mm forms a first central nucleus and around said first nucleus there are fine powders of not more than 1 mm of all said ingredients, which attach to said first central nucleus and form an outer shell layer; C type agglomerated particles wherein the said ingredients of at least 1 mm other than coke form a second central nucleus and around the second nucleus fine powders of said ingredients not more than 1 mm other than coke attach to said second central nucleus and form an intermediate layer and further around said intermediate layer fine powders of not more than 1 mm of all of said ingredients attach and form an outer shell layer, or C type agglomerated particles wherein fine powders of not more than 1 mm of all said ingredients attach to said second central nucleus and form an outer shell layer, and satisfying the formulas {the weight ratio by percent of the coke to form C type particles in the entire coke} ≧ (60 + 0.5 × {the weight ratio by percent of the coke to form S type particles in the entire coke}), and {the weight ratio by percent of the coke to form S type particles in the entire coke} ≦ 20.

4,082,541

INSTALLATION FOR THE AGGLOMERATION OF A PARTICULATE MINERAL CHARGE AND OPERATION THEREOF

Alain Didier, and Jean-Luc Letailleur, both of Metz, France, assignors to Institut de Recherches de la Siderurgie Francaise (IRSID), St. Germain-en-Laye, France

Filed Mar. 17, 1975, Ser. No. 559,140
Claims priority, application France, Mar. 27, 1974, 74 10588
Int. Cl.[2] C22B *1/08, 1/24, 1/16*
U.S. Cl. 75—5 4 Claims



1. In a method of operating an installation for the agglomeration of a particulate mineral charge on an elongate grid moving

through a treatment path, wherein a gas is passed through the charge during the agglomeration, the temperature of the gas passed through the charge is measured along the path, and the velocity of displacement of the grid is modified to maintain the point of firing of the charge at a predetermined position of the path: the steps of

(1) substantially continuously determining the position of the point of rise in the temperature of the gas passed through an element of the charge in respect of the path,

(2) generating a control signal whose instantaneous value is representative of the position of the point of firing of the charge in respect of the path,

(a) the value of the signal being calculated in accordance with the equation

$$L_p = L_a + kV$$

wherein L_p is the instantaneous value of the control signal, L_a is the position of the point of rise in the temperature of the gas, V is the velocity of displacement of the moving grid, and k is a constant, and

(3) modifying the velocity of displacement of the grid until the value of the control signal is equal to a constant value corresponding to the predetermined position of the point of firing.

4,082,542

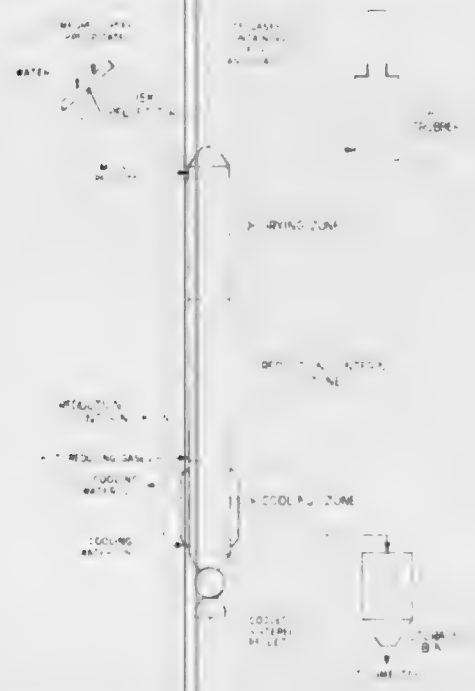
COPPER PRECIPITATE AGGLOMERIZATION PROCESS

David B. George, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 638,022, Dec. 5, 1975, abandoned. This application May 16, 1977, Ser. No. 796,972

Int. Cl.[2] C22B *15/14*

U.S. Cl. 75—5 **11 Claims**



1. A process for treating impure copper precipitates, containing from about 65 to over 95 percent by weight copper, from about 1 to 15 percent by weight oxygen, and from about 0.1 to 2 percent by weight sulfur, said oxygen and sulfur being chemically combined with the copper in the precipitates, to produce high-grade copper pellets suitable for being fed directly to smelting and refining furnaces, said process comprising mixing the precipitates with sufficient water to form a coherent, moldable mass of moist precipitates; forming pellets from the moist precipitates; drying the so-formed pellets; heating the dried pellets in a reducing atmosphere to a sintering temperature of at least 700° C, for a time sufficient to form dense, unfriable, high-grade, copper pellets containing at least about 75 percent by weight copper and having no more than about 1.0 percent by weight oxygen in the form of copper oxides and 1 percent by weight sulfur; and cooling the high-grade copper pellets in an inert or reducing atmosphere to a temperature below about 150° C.

4,082,543

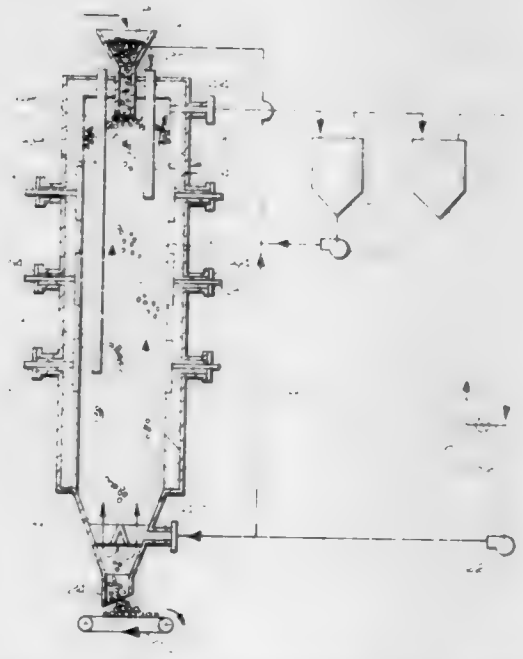
METHOD FOR REDUCING PARTICULATE IRON OXIDE TO METALLIC IRON WITH SOLID REDUCTANT

Donald Beggs, Charlotte, N.C., and Bruce G. Kelley, Fort Mill, S.C., assignors to Midrex Corporation, Charlotte, N.C.

Filed Feb. 16, 1977, Ser. No. 769,242

Int. Cl.[2] C21B *13/12*

U.S. Cl. 75—11 **14 Claims**



1. A method of reducing particulate iron oxide material to metallic iron with a solid reductant comprising:

continuously feeding particulate iron oxide and solid particulate carbonaceous fuel to a particle inlet at the top of a shaft furnace to establish a packed burden therein;

removing particulate product from a particle outlet at the bottom of said burden through said furnace;

passing an electric current through the burden to provide sufficient heat by direct resistance heating to react said carbonaceous fuel with oxygen from said particulate iron oxide to reduce said iron oxide substantially to metallic iron;

causing the reaction products to move through said burden in counterflow relation with it, and form a top gas;

removing top gas from the upper region of the shaft furnace; cooling said top gas; and

recirculating the cooled gas to the burden through a gas inlet at the lower region of said furnace.

4,082,544

ELECTRIC INDUCTION HEATING OF MATERIALS OF LOW ELECTRICAL CONDUCTIVITY

Bengt Fredrikson, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Feb. 19, 1976, Ser. No. 659,285

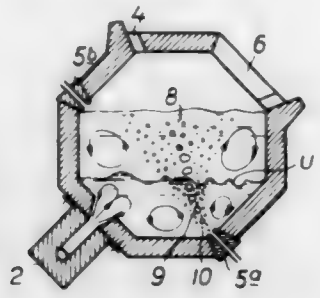
Claims priority, application Sweden, Feb. 25, 1975, 7502083

Int. Cl.[2] C21C *5/52*

U.S. Cl. 75—12 **7 Claims**

1. A method for heating fused electrically non-conductive material, comprising forming a metal melt in a furnace, pouring said material on the melt so as to form a bath of the material floating on and completely covering the melt's surface and so that the melt and bath form a coextensive interface, inductively heating the melt so that the melt heats the bath via said interface, and injecting a pneumatic blast into the melt upwardly

from the melt's lower portion towards said interface and with the blast having a force and direction causing said interface to



undulate to a degree increasing the efficiency with which the melt heats the bath.

4,082,545

REDUCTION OF IRON ORE IN FLUIDIZED BED REACTORS

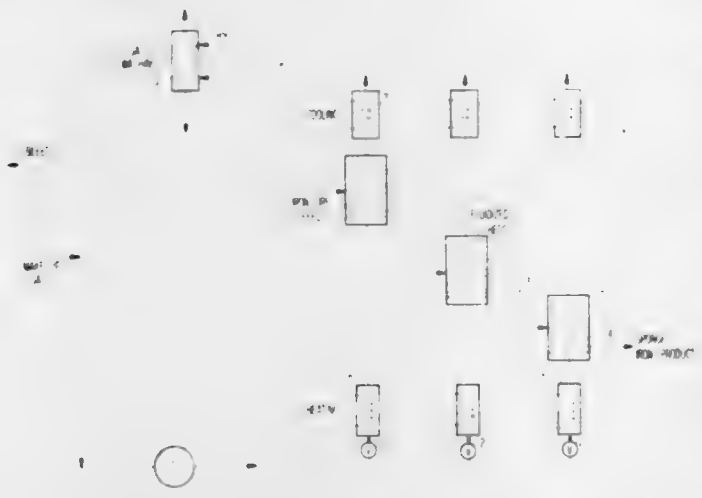
Giansilvio Malgarini; Edoardo Pasero, both of Rome; Giorgio Alitta, Genoa; Cristiano De Candida, Genoa, and Carlo Raggio, Genoa, all of Italy, assignors to Istituto di Ricerca Finsider per la Riduzione Diretta S.p.A., Rome and Italimpianti S.p.A., Genoa, both of, Italy, part interest to each

Filed Aug. 4, 1976, Ser. No. 711,458

Claims priority, application Italy, Aug. 5, 1975, 50827 A/75

Int. Cl.[2] C21B *13/02*

U.S. Cl. 75—35 **4 Claims**



1. A process for the direct reduction of iron ore, comprising establishing a plurality of fluidized beds each of which has a horizontal perforated plate at the bottom thereof, heating and progressively reducing iron ore by passing said iron ore in series through said plurality of fluidized beds, fluidizing said beds with reducing gas by passing said reducing gas up through the perforated plate of each bed, removing partially spent reducing gas from each said bed, cooling and washing said partially spent reducing gas to remove substantially all the solids thereform, heating said washed gas, and again feeding said heated fluidizing gas through a said bed from beneath the perforated plate thereof, all the fluidizing gas that passes between said beds being subjected to said washing between said beds.

4,082,546

RECOVERY OF WASTE HEAVY METALS FROM SOLUTIONS BY CEMENTATION WITH ALUMINUM

Richard A. Wallace, 3425 SW. Barbur Blvd., Portland, Oreg. 97201

Continuation-in-part of Ser. No. 644,243, Dec. 24, 1975, Pat. No. 4,008,077, which is a continuation-in-part of Ser. No. 407,740, Oct. 18, 1973, abandoned. This application Nov. 11, 1976, Ser. No. 741,082

The portion of the term of this patent subsequent to Feb. 15, 1994, has been disclaimed.

Int. Cl.[2] C22B *11/04, 15/12, 19/20, 23/04*

U.S. Cl. 75—109 **11 Claims**

1. A method for recovering metal from spent metal ion-laden solutions wherein the metal is selected from the group consisting of zinc and Groups IB and VIII of the Periodic Table of Elements of atomic number in the range of 29 to 79 which comprises:

contacting said spent metal-laden solution with finely divided mechanically worked aluminum coated with an imperfect aluminum oxide coating, whereby finely divided metal is formed; and

recovering the finely divided metal.

4,082,547

INTERMETALLIC COMPOUNDS AND METAL PURIFICATION

Uwe Berndt, Karlsruhe; Bernhard Erdmann, Lampertheim, and Cornelius Keller, Karlsruhe, all of Germany, assignors to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany

Division of Ser. No. 265,796, Jun. 23, 1972, Pat. No. 3,994,718. This application May 30, 1974, Ser. No. 474,864

Claims priority, application Germany, Mar. 30, 1972, 2215694; Mar. 30, 1972, 2215695

Int. Cl.[2] C22C *43/00*

U.S. Cl. 75—122.7 **4 Claims**

1. An intermetallic actinide compound having one of the following stoichiometric compositions: Rh_3Pa, Ir_3Pa, Pt_3Pa, Pt_5Pa, Rh_3Np, Pd_3Np, Ir_2Np, Pt_3Np, Pt_5Np, Rh_2Am, Rh_3Am, Pd_3Am, Ir_2Am, Pt_2Am, Pt_5Am, Rh_3Cm, Pd_3Cm, Ir_2Cm, Pt_2Cm, Pt_5Cm, Pd_3Cf, Ir_2Cf and Pt_5Cf.

4. An intermetallic compound according to claim 1 in admixture with an alloy phase selected from the group consisting of $Pd_{0.9}AM_{0.1}$, $Ir_{0.9}Am_{0.1}$, $Ir_{0.9}Cm_{0.1}$, $Pt_{0.95}Np_{0.05}$ and mixtures thereof.

4,082,548

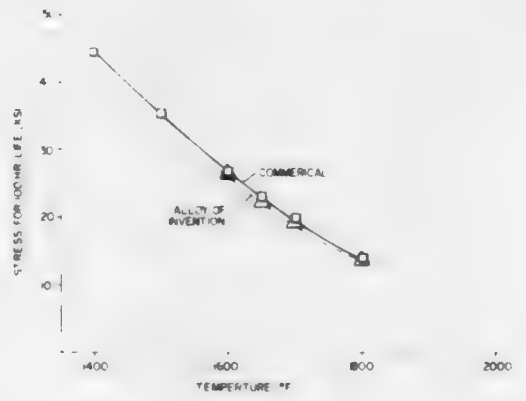
HIGHCREEP-RESISTANT COBALT-BASE ALLOY

Willi Kleemann, Media, and Cyril G. Beck, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 14, 1975, Ser. No. 595,642

Int. Cl.[2] C22C *19/07*

U.S. Cl. 75—171 **1 Claim**



1. A creep-resistance cobalt base alloy for use in gas turbine engines consisting essentially of the following elements in weight percent:

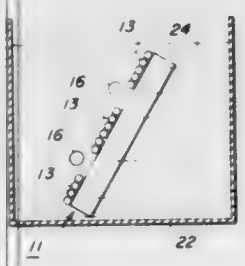
Carbon	0.55	to	0.65
Chromium	22.5	to	24.25
Nickel	9.0	to	11.0
Titanium	0.15	to	0.50
Tungsten	6.5	to	7.5
Tantalum	3.0	to	4.0
Aluminum	0.10	to	0.2
Iron	1.5	maximum	
Boron	0.010	maximum	
Silicon	0.40	maximum	
Manganese	0.10	maximum	
Zirconium	0.050	maximum	
Cobalt	balance.	—.	

4,082,549

AGGLOMERATION IMAGING PROCESS

Werner E. L. Haas, Webster; James E. Adams, Ontario, and Bela Mechlowitz, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 27, 1972, Ser. No. 301,383
Int. Cl.[2] G03G *13/00*
U.S. Cl. 96—1 R 17 Claims



1. An imaging method comprising:

(a) providing on a substrate an about 0.05 to about 5 micron thick microscopically discontinuous layer of particles having an average diameter of about 0.5 to about 5 microns and center to center particle spacings of up to about 5 microns; said particles comprising material selected from the group consisting of amorphous selenium, amorphous selenium alloys, tellurium, mixtures of amorphous selenium and crystalline selenium, arsenic, zinc, sulfur, dyed polyvinyl carbazole, gallium, cobalt tricarbonyl, thermoplastics, dyed thermoplastics, dyed waxes and dyed paraffins;

(b) imagewise exposing said discontinuous layer to radiation of about 2,000 to about 26,000 A in wavelength and at an energy of about 0.001 to about 0.3 joules/cm^2 for about 1 to about 10^4 microseconds wherein the total cross-sectional area of particles in imagewise exposed areas is decreased; and

(c) removing particles from said substrate in imagewise exposed areas.

4,082,550

HEXACHLOROCYCLOPENTENE CHEMICAL SENSITIZERS FOR HETEROGENEOUS ORGANIC PHOTOCONDUCTIVE COMPOSITIONS

William E. Yoerger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1977, Ser. No. 800,483
Int. Cl.[2] G03G *5/04*
U.S. Cl. 96—1.5 R 16 Claims

1. A heterogeneous photoconductive insulating composition comprising particles of an organic photoconductor chemically sensitized with a monomeric hexachlorocyclopentene and dispersed in a cellulose nitrate binder.

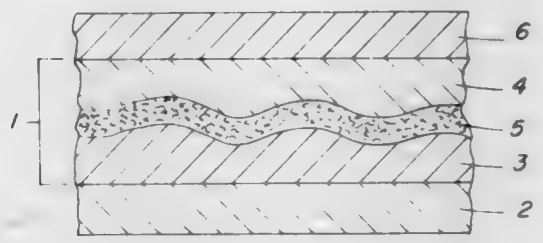
6. A heterogeneous photoconductive insulating composition comprising particles of anthracene, p-terphenyl, p-quaterphenyl, or a tetraphenylbutadiene chemically sensitized with chlorendic anhydride or chlorendic acid, and dispersed in cellulose nitrate.

4,082,551

ELECTROPHOTOGRAPHIC ELEMENT CONTAINING A MULTILAYER INTERLAYER

David J. Steklenski, and Evelio A. Perez Albuerne, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 783,365, Mar. 31, 1977, abandoned. This application May 26, 1977, Ser. No. 800,839
Int. Cl.[2] G03G *5/14*
U.S. Cl. 96—1 PC 18 Claims



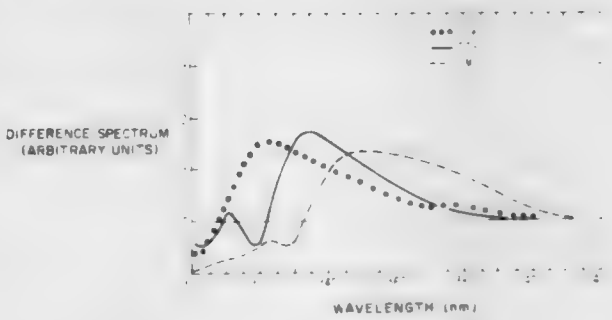
1. In a unitary photoconductive element comprising an electrically conducting layer, a photoconductive layer overlying said conducting layer, and a multilayer interlayer composition interposed between said conducting layer and said photoconductive layer, the improvement wherein said multilayer interlayer composition comprises a first layer containing an acidic polymer material, a second layer containing a basic polymer material, and at the interface of said first and second layers an acid-base reaction product zone formed by said acidic and basic polymer materials.

4,082,552

PROCESS OF OPTICALLY PRINTING HIGHLY CONDUCTIVE CHARACTER UTILIZING A MEDIUM CONTAINING A HALOGENATED HYDROCARBON PHOTOACTIVATOR AND A TETRATHIAFULVALENE OR A RELATED COMPOUND THEREOF

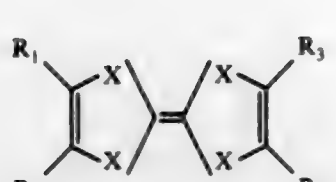
Edward Martin Engler, Wappingers Falls; Frank Benjamin Kaufman, New York, and Bruce Albert Scott, Shrub Oak, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 591,992, Jun. 30, 1975, Pat. No. 4,036,648. This application Feb. 17, 1977, Ser. No. 769,770
Int. Cl.[2] G03C *5/00*
U.S. Cl. 96—38.4 11 Claims



1. A method of producing a highly conductive image comprising the steps of:

(1) depositing an organic π-electron donor compound in a halocarbon on a substrate, said organic donor compond has the empirical formula $C_6H_4X_4R_1R_2R_3R_4$ and the structural formula



where X is selected from the group consisting of O, S, Se and Te and R_1, R_2, R_3, and R_4 is hydrogen, a halogen or an organic substituent selected from the group consisting of an alkyl group, CO_2Me, phenyl groups, and fused cyclics and substituted fused cyclics selected from the group consisting of cyclopentene, cyclohexene, benzene, furan, thiophene, dihydrofuran and dihydrothiophene

(2) exposing said layer of organic π-electron donor compound in said halocarbon to actinic radiation in a predetermined pattern, and

(3) evaporating excess halocarbon solvent, thereby obtaining a highly conductive image.

4,082,553

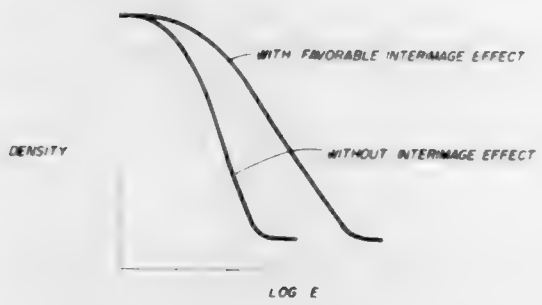
INTERIMAGE EFFECTS WITH SPONTANEOUSLY DEVELOPABLE SILVER HALIDE

Nicholas H. Groet, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 566,648, Apr. 10, 1975, abandoned. This application May 20, 1976, Ser. No. 688,445

Int. Cl.[2] G03C *1/76, 3/00, 7/00, 7/16*

U.S. Cl. 96—74 **19 Claims**



1. In a process of forming a photographic element capable of forming a reversal image comprising

providing a support, and

coating onto the support two silver halide emulsion layer units primarily responsive to a different portion of the visible spectrum upon imagewise exposure of said photographic element and positioned to permit iodide ion migration therebetween upon development,

each of said emulsion layer units containing silver halide grains capable of forming a latent image upon imagewise exposure and a hydrophilic colloid suspending said grains, and

one of said layer units being comprised of silver haloiodide latent image-forming grains,

the improvement comprising

in preparing one other of said layer units forming a blended silver halide emulsion by interspersing with said hydrophilic colloid suspended latent image-forming silver halide grains hydrophilic colloid suspended, silver halide grains which are surface fogged as though exposed to imaging radiation of maximum intensity to render them spontaneously developable independent of imagewise exposure of said photographic element.

4,082,554

DIRECT-POSITIVE SILVER HALIDE EMULSIONS

Herman Alberik Pattyn, Kapellen; Willy Joseph Vanassche, Kontich, and Herman Adelbert Philippaerts, Edegem, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Mar. 24, 1975, Ser. No. 561,658

Claims priority, application United Kingdom, Apr. 3, 1974, 14801/74

Int. Cl.[2] G03C *1/36, 1/28*

U.S. Cl. 96—101 **10 Claims**

1. A direct-positive silver halide emulsion comprising reduction- and gold-fogged silver halide grains and at least one electron accepting compound having an anodic polarographic half-wave potential and a cathodic polarographic half-wave potential, which when added together give a positive sum, wherein the silver halide grains have an average grain diameter of less than 100 nm, the silver halide grains are fogged with, per mole of silver halide, from about 0.07 to about 0.5 milliequivalents of reduction-fogging agent and from about 0.01 to about 0.1 millimole of gold fogging agent, and the emulsion comprises per mole of silver halide more than 2 g and at most 10 g of electron-accepting compound(s).

4,082,555

PHOTOTHERMOGRAPHIC MATERIALS AND PROCESS

Paul Barrett Merkel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 18, 1976, Ser. No. 715,366

Int. Cl.[2] G03C *1/02, 5/24, 1/76, 1/00*

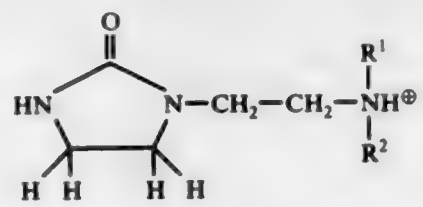
U.S. Cl. 96—114.1 **24 Claims**

24. A covering power imaging, heat developable and heat stabilizable photographic element comprising a support having thereon a layer comprising

(a) photographic silver halide,

(b) a 3-pyrazolidone silver halide developing agent,

(c) an activating concentration within the range of 0.4 to 3.0 moles per mole of silver of a development activator precursor having a pKa within the range of about 8 to 12 and represented by the formula: $A^{\oplus} \cdot B^{\oplus}$ wherein $A^{\oplus}$ is



wherein R^1 and R^2 are independently selected from the group consisting of hydrogen and alkyl containing 1 to 10 carbon atoms; and

$B^{\ominus}$ is alpha-sulfonylacetic acid, and wherein said activator precursor releases a non-volatile amine moiety at a temperature within the range of 120° to 200° C,

(d) a polymeric binder, and wherein said element (1) contains no separate post-processing image stabilizer, and (2) provides silver image development efficiency of at least 90% when heated to a temperature within the range of 120° to 200° C.

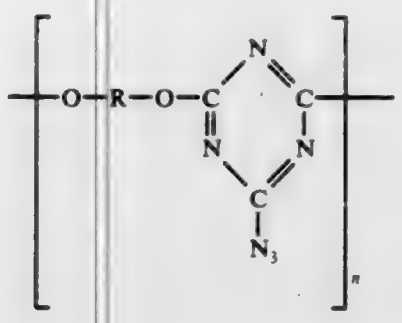
4,082,556

LIGHT-SENSITIVE POLYMERIC COMPOUNDS

Donald Noel Hunter, Great Bookham, England, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 490,724, Jul. 22, 1974, Pat. No. 3,962,241.
This application Mar. 9, 1976, Ser. No. 665,271
Claims priority, application United Kingdom, Jul. 31, 1973, 36289/73
Int. Cl.[2] G03C *1/65, 1/70*
U.S. Cl. 96—115 R 10 Claims

1. A light sensitive composition comprising a mixture of a light sensitive polymeric compound of the formula



in which formula
n is a whole number from 2 to 120
and R represents
phenylene - 1, 3
phenylene - 1, 4
1-phenylcarbonyl-phenylene - 2,4
1-phenylcarbonyl-phenylene - 2,6
2,2′ - diphenylcarbonyl
2,3′ - diphenylcarbonyl
or an
1-alkylcarbonyl-phenylene - 2,5
1-alkylcarbonyl-phenylene - 2,4 or
1-alkylcarbonyl-phenylene -2,6
in which the alkyl group contains from 1 to 4 carbon atoms,
naphthylene - 2,7
naphthylene - 2,6 or
naphthylene - 2,4 - group
wherein the phenyl groups, if desired, are substituted with one or two alkyl groups containing from 1 to 4 carbon atoms or a phenyl group and an inert organic liquid carrier therefor.

4,082,557

SILVER BASE ACTIVATING SOLUTIONS FOR ELECTROLESS COPPER DEPOSITION

Pietro Pizzio, Turin, Italy, assignor to Alfachimici S.p.A., Turin, Italy

Filed Jul. 19, 1976, Ser. No. 706,595
Claims priority, application Italy, Jul. 25, 1975, 68938 A/75
Int. Cl.[2] C23C *3/02*
U.S. Cl. 106—1.11 8 Claims

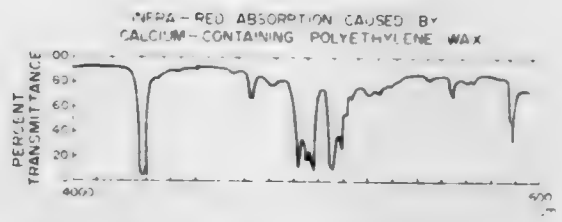
1. A silver base activating solution for activating a workpiece for the electroless deposition thereon of copper, consisting essentially of an aqueous solution containing cations of silver and anions of at least one weak oxyacid selected from the group consisting of boric acid, silicic acid, vanadic acid, arsenic acid, molybdic acid, and wolframic acid, the silver concentrations being from 0.01 g/l to 1 g/l, and the acid concentration being such that the pH of the solution is not less than 7.3, with reference to the activating solution in conditions of use.

4,082,558

NOVEL POLYOLEFIN WAXES AND AQUEOUS POLISHING EMULSIONS THEREOF

Yokoyama Nobuo, Yokohama, Japan, assignor to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1975, Ser. No. 624,216
Claims priority, application Japan, Oct. 22, 1974, 49-121000; Oct. 22, 1974, 49-121001; Dec. 13, 1974, 49-142594
Int. Cl.[2] C09G *1/08*
U.S. Cl. 106—10 13 Claims



1. In a process for preparing a metal-containing polyolefin wax comprising melting a reaction product of a starting polyolefin wax having an average molecular weight of 400 - 1,500 and an ethylenically unsaturated dibasic acid having 4 - 5 carbon atoms or anhydride thereof and reacting the melted reaction product with a metal compound in which the metal is selected from the metals of Group II of the Periodic Table, to produce an acid-modified polyolefin wax, the improvement which comprises reacting said acid-modified polyolefin wax and Group II metal compound at 100°–200° C in the presence of water or a volatile acid as a catalyst thereby to obtain the metal-containing polyolefin wax.

4,082,559

CEMENTED CARBIDE PRODUCTS AND MANUFACTURING METHOD

Minoru Mishuku, Hiratsuka; Taro Edo, Tokyo, and Nobujiro Tsuchiya, Yamato, all of Japan, assignors to Fuji Die Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1977, Ser. No. 760,961
Claims priority, application Japan, Aug. 31, 1976, 51-103187
Int. Cl.[2] C04B *35/56*
U.S. Cl. 106—43 7 Claims

1. Cemented carbide products made by a method in which a compact of virgin powder of WC-based cemented carbide and a compact of the powder reclaimed from cemented carbide scrap are united together and sintered to produce a metallic bond in the boundary zone between the two compacts, thereby perfectly integrating them into a single unit.

4,082,560

VESSEL FOR USE IN HEATING FOOD

Yutaka Otoshi, Tokyo, and Ken Ishino, Nagareyama, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1976, Ser. No. 738,050
Int. Cl.[2] C04B *33/24, 35/26, 35/16*
U.S. Cl. 106—45 4 Claims

1. A vessel for use in heating food consisting essentially of a sintered body of 4 to 40% by weight of a ferrite component of the formula MFe_2O_4 in which M is a bivalent metal selected from the group consisting of Mn, Mg, Zn, Fe, Ni and Cu, and 96 to 60% by weight of a mineral component of the formula $Li_2O.Al_2O_3.nSiO_2$ in which *n* is 4 or 8.

4,082,561

METHOD FOR EXECUTION OF QUICK HARDENING CEMENT

Koji Nakagawa, and Kenkiti Hirano, both of Niigata, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 480,067, Jun. 17, 1974, Pat. No. 3,973,978. This application Apr. 20, 1976, Ser. No. 678,569
Claims priority, application Japan, Jun. 15, 1973, 48-67448
Int. Cl.[2] C04B *7/35*
U.S. Cl. 106—89 5 Claims

1. A quick hardening agent for cement consisting essentially of a mixture of an amorphous 12 $CaO.7Al_2O_3$ and an anhydrous gypsum in a weight ratio of 1:0.5 to 1:15.

4,082,562

POROUS PARTICLES IN FROST-RESISTANT CEMENTITIOUS MATERIALS

Gerhard G. Litvan, and Peter J. Sereda, both of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Nov. 15, 1976, Ser. No. 741,792
Claims priority, application Canada, Dec. 4, 1975, 241032
Int. Cl.[2] C04B *7/02*
U.S. Cl. 106—97 12 Claims

1. A method of producing frost-resistant concrete and other cementitious materials comprising:

(a) selecting a particulate porous material having a selected particle size in the range between 290 and 850 microns, a total porosity of at least 30% and a selected pore size distribution in the range of 0.05 to 3 microns; and

(b) mixing said particulate porous material into said cementitious material in an effective amount up to 30% by weight of cement so as to produce a frost-resistant material which will withstand at least 300 freeze-thaw cycles as measured by the method of ASTM C-666 without significant change in length or modulus.

4,082,563

SAG RESISTANT MORTAR COMPOSITIONS

Jeffrey R. Ellis, Hightstown, N.J., and Herman B. Wagner, Perkasie, Pa., assignors to Tile Council of America, Princeton, N.J.

Filed Dec. 20, 1976, Ser. No. 749,946
Int. Cl.[2] C04B *7/35*
U.S. Cl. 106—90 38 Claims

1. A dry water mixable composition for forming, with water, a sag resistant hydraulic cementatious composition comprising:

a. hydraulic cement; comprising at least 20% by weight of composition;

b. at least one water soluble high molecular weight polymer comprising at least 0.2% by weight of composition.

c. at least one metal salt, said salt capable of forming a gelatinous or hydrated hydroxide in the presence of aqueous base comprising from 0.2–5.0% by weight of composition.

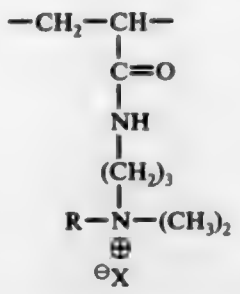
4,082,564

SUGAR DECOLORIZING QUATERNARY AMMONIUM ACRYLAMIDE RESINS

William Fries, South Hampton, and Silvia Napierski, Andalusia, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 615,144, Sep. 19, 1975, abandoned. This application Mar. 23, 1977, Ser. No. 780,618
Int. Cl.[2] C13D *3/00*
U.S. Cl. 127—46 A 8 Claims

1. A process for decolorizing aqueous sugar solutions which comprises contacting the solution with a crosslinked, macroreticular, quaternary ammonium acrylamide resin which comprises the product of a compound of the formula RX with a crosslinked, macroreticular tertiary amine, acrylamide precursor resin which comprises a copolymer of 0.1%–50% by weight of a polyethylenically unsaturated monomer and 50%–99.9% by weight of a monoethylenically unsaturated aliphatic ester of acrylic acid which has been aminolyzed with a polyamine, said resin comprising units having the chemical formula:



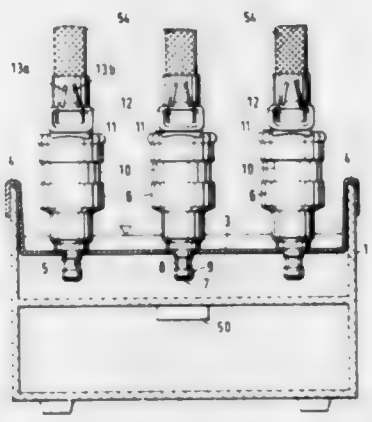
wherein R is a substituted or unsubstituted hydrocarbyl functional group containing 5–22 carbon atoms and X is an anion, either alone or in series combination.

4,082,565

METHOD AND APPARATUS FOR THE REMOVAL OF DEPOSITS FROM A FUEL INJECTION VALVE

Rino Sjölander, Slanbarsvagen 5, 442 00 Kungalv, Sweden

Filed Dec. 9, 1976, Ser. No. 749,619
Claims priority, application Sweden, Dec. 15, 1975, 7514128
Int. Cl.[2] B08B *3/12*
U.S. Cl. 134—1 6 Claims



1. A method for the removal of deposits from a fuel injection valve of the type containing a reciprocatory sprayer needle unit and a solenoid for operating said sprayer needle unit, said sprayer needle unit including a valve member, comprising the steps of immersing at least a front portion of the valve in a pool of liquid detergent, and subjecting said pool to ultrasonic vibrations while maintaining a current of a liquid detergent through the valve and maintaining a reciprocatory motion of the sprayer needle unit by supplying a periodic electric current to the solenoid of the valve.

4,082,566

MOLTEN SALT LEACH FOR REMOVAL OF INORGANIC CORES FROM DIRECTIONALLY SOLIDIFIED EUTECTIC ALLOY STRUCTURES

Ronald H. Arendt; Marcus P. Borom; Irvin C. Huseby, all of Schenectady, and Frederic J. Klug, Amsterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 9, 1977, Ser. No. 775,749
Int. Cl.[2] B08B *3/10;* B22D *29/00*
U.S. Cl. 134—2 16 Claims

1. A method for removing ceramic cores from castings of superalloy materials including the process steps of

a. preparing a molten salt bath of a leachant salt composition which is one selected from the group consisting of M_3AlF_6, M_3AlF_6 + MF, M_3AlF_6 + $M'F_2$ and M_3AlF_6 + MCl wherein

M is a chemical element selected from the group consisting of Li, Na and K, and

M′ is a chemical element which is one selected from the group consisting of Mg, Ca, Ba and Sr;

b. covering the molten salt bath with an inert atmosphere having an oxygen content of less than 50 p.p.m.;

c. immersing the casting and the ceramic core in the molten salt bath;

d. leaching the core material from the casting in the molten salt bath, and

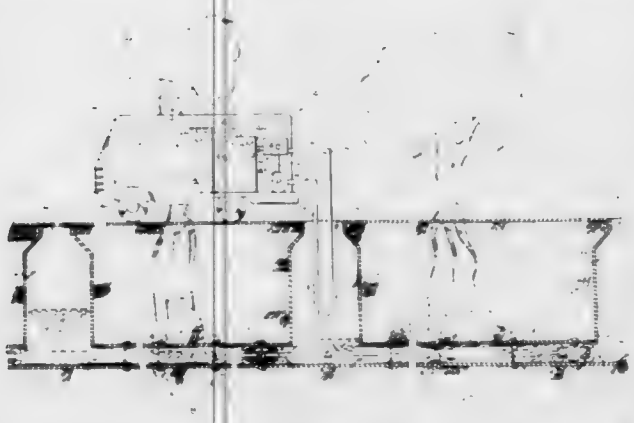
e. rinsing the casting to remove leachant products from the casting.

4,082,567

METHOD FOR THERMALLY KILLING ROOTS IN SEWER LINES

James T. Conklin, Orlando; Daniel R. Daley, Altamonte Springs, and Raymond K. Geyer, Orlando, all of Fla., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Jul. 26, 1976, Ser. No. 708,535
Int. Cl.² B08B *3/10, 9/02*
U.S. Cl. 134—10 **21 Claims**



1. A method for using a liquid to kill roots and other living matter in a sewer line, said method comprising the steps of:

a. heating the liquid external to said sewer line;

b. isolating a length of the sewer line from adjacent lengths of sewer line;

c. filling said isolated length of sewer line with said heated liquid at a temperature sufficient to transfer a temperature of at least about 140° F. to all of the natural enzymes of said roots for a lethal period of time, thereby allowing said heated liquid to act as a thermal herbicide for killing the roots and other living matter therein.

4,082,568

SOLAR CELL WITH MULTIPLE-METAL CONTACTS

Joseph Lindmayer, 1335 Piccard Dr., Rockville, Md. 20850

Filed May 10, 1977, Ser. No. 795,550
Int. Cl.² H01L *31/06*
U.S. Cl. 136—89 CC **5 Claims**

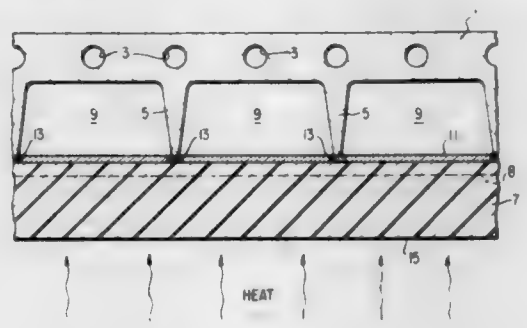
1. A solar cell comprising a body of semiconductor material and at least one contact adhered thereto for accepting and directing a flow of electricity away from said article, said contact comprising a first layer of an element from the titanium group in contiguous relationship with said article, a second layer comprising a mixture of a titanium group element and an element selected from the platinum group overlying said first layer, a third layer comprising an element from the platinum group overlying said second layer, and a body of contact metal overlying said third layer, each of said layers being in firm adherence to its adjoining layers.

4,082,569

SOLAR CELL COLLECTOR

John C. Evans, Jr., North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 22, 1977, Ser. No. 770,869
Int. Cl.² H01L *31/04, 31/06*
U.S. Cl. 136—89 CC **8 Claims**



1. A photovoltaic device having a transparent collector layer thereon, which comprises:

a photovoltaic substrate coated with a transparent, conductive mixed metal oxide collector layer containing a continuous pattern of higher conductivity metal channels therein, the metallic elements of said mixed metal oxide collector layer being the same as the metallic elements of said conductive channels.

5. A photovoltaic device having a transparent collector layer thereon comprising,

a photovoltaic substrate,

a transparent, conductive mixed metal oxide collector layer on said substrate, and

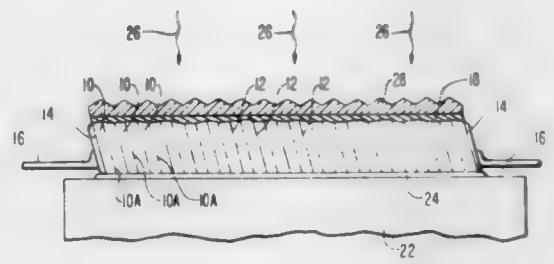
a plurality of higher conductivity metal channels contained in said collector layer, the metallic elements in said collector layer and conductive channels comprising mixtures of indium and tin, indium and arsenic, and indium and antemony.

4,082,570

HIGH INTENSITY SOLAR ENERGY CONVERTER

Robert E. House, Reading; Robert A. Irvin, and Daniel F. Kane, both of Sudbury, all of Mass., assignors to Semicon, Inc., Burlington, Mass.

Filed Feb. 9, 1976, Ser. No. 656,343
Int. Cl.² H01L *31/06*
U.S. Cl. 136—89 SJ **12 Claims**



1. A photovoltaic energy converter for converting incident radiant energy to electrical energy comprising

A. an incident radiant energy responsive slab including

i. a plurality of wafers of semiconductive material of a first conductivity type, each said wafer including

a. first and second opposed end faces,

b. a first region below the first end face having a net impurity concentration of a second conductivity type,

c. a second region below the second end face having a net impurity concentration of the first conductivity type greater than the concentration in

d. a base region located between said first and second regions, and

e. a photovoltaic junction separating said first and base regions,

ii. a plurality of electrically conductive layers,

iii. said wafers and said conductive layers being stacked in alternate layers and fused together to form said slab, the first region in each said wafers being directed toward the same end of said slab, and

iv. lower and upper opposed transverse surfaces, said photovoltaic junction in each said wafer being inclined toward the second region thereof at an angle deviating from a normal to said upper surface such that when viewed through said upper surface more of the base region and less of the first region is exposed in each said wafer, said inclined junction allowing increased spreading of the junction depletion layer at and below said upper surface upon illumination of said upper surface with radiant energy;

B. a support substrate;

C. means for mounting said slab on said substrate so that the lower transverse surface thereof is adjacent said substrate, said slab being positioned on said substrate for exposure to the incident radiant energy along a direction essentially normal to the upper transverse surface of said slab; and

D. electrical contact means contacting opposed ends of said slab.

4,082,571

PROCESS FOR SUPPRESSING PARASITIC COMPONENTS UTILIZING ION IMPLANTATION PRIOR TO EPITAXIAL DEPOSITION

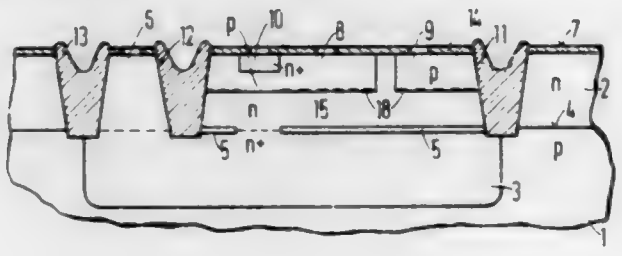
Juergen Graul, Gruenwald, and Helmuth Murrmann, Ottobrunn, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 9, 1976, Ser. No. 647,857

Claims priority, application Germany, Feb. 20, 1975, 2507366

Int. Cl.² H01L *21/265, 21/324, 21/20*

U.S. Cl. 148—1.5 **13 Claims**



1. In a process for suppressing parasitic components, in particular parasitic diodes and transistors, in circuits which possess, in particular, inversely operated transistors, in which a highly doped zone of a second conductivity is introduced into and extends to a surface of a semiconductor substrate of a first conductivity type which is opposite the second conductivity type, in which a semiconductor layer of the second conductivity type is epitaxially deposited on the surface, and in which zones of differing conductivity types are produced in the semiconductor layer to form at least one component which is electrically insulated from adjacent components, the improvement therein comprising:

prior to deposition of the semiconductor layer, forming a layer for controlling the number of charge carriers at parasitic pn junctions subsequently formed by the semiconductor layer and the zones produced therein by implanting ions into the surface of the semiconductor substrate at points suitable to suppress parasitic components while simultaneously chemically reacting the ions with the atoms of the substrate to form molecules,

controlling the implantation energy to obtain an implantation concentration at the surface of the substrate which will not impair regeneration of the crystal lattice during a following healing step, and

thermally healing the surface of the substrate.

4,082,572

PROCESS FOR MAKING ANISOTROPIC RESISTOR FOR ELECTRICAL FEED THROUGHS

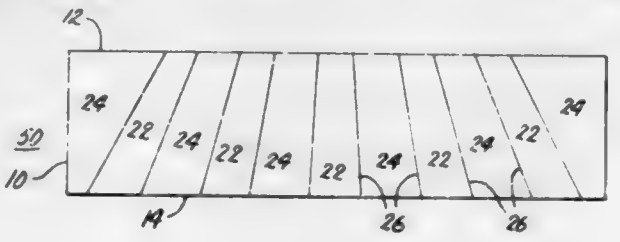
Thomas R. Anthony, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 545,482, Jan. 30, 1975, Pat. No. 4,032,960.

This application Sep. 8, 1976, Ser. No. 721,537

Int. Cl.² H01L *21/76, 21/72*

U.S. Cl. 148—1.5 **20 Claims**



1. A process for making an anisotropic resistor comprising the process steps of:

(a) selecting a body of semiconductor material having two opposed major surfaces substantially parallel to each other, at least one of the major surfaces having a preferred planar orientation which is one selected from the group consisting of (100), (110) and (111),

a first selected type conductivity, a first selected level of resistivity, a preferred material crystal structure and a vertical axis substantially aligned with a first crystal axis of the material of the body;

(b) selectively etching a selective portion of one of the major surfaces of the body to form at least one depression therein;

(c) depositing a mass of a selective metal comprising at least one dopant impurity metal suitable for imparting a second selected type conductivity and a second level of resistivity to the material of the body in the at least one depression in the one major surface of the body of semiconductor material;

(d) heating the body and the at least one mass of metal to an elevated temperature to produce a melt of metal-rich semiconductor material in each etched depression;

(e) establishing a first thermal gradient aligned substantially parallel with the vertical axis of the body;

(f) migrating the at least one melt of metal-rich semiconductor material through the body in the direction of the higher temperature of the thermal gradient from the one major surface to the other of the two major opposed surfaces to form an electrically conductive channel region of recrystallized material of the body having two opposed end surfaces, each end surface being coextensive with a respective one of the two opposed major surfaces, the recrystallized material having the at least one dopant metal impurity therein to impart a second selected type conductivity and a second selected level of resistivity thereto as determined by the level of concentration of that dopant impurity metal in the recrystallized semiconductor material of the channel region;

(g) introducing a second thermal gradient into the body while maintaining the first thermal gradient and simultaneously migrating the at least one melt of metal-rich semiconductor material through the body, the second thermal gradient being a radial thermal gradient to change the direction and cross-sectional area of each melt within the body during migration to produce at least one channel region whic has an increasing cross-sectional area with increasing distance from one major surface to the other major surface and a vertical axis which is not parallel with

the vertical axis of the body and the first crystal axis of the material of the body, and

(h) affixing an ohmic electrical contact to each end surface of each channel region.

4,082,573

HIGH TENSILE STRENGTH ALUMINUM ALLOY CONDUCTOR AND METHOD OF MANUFACTURE

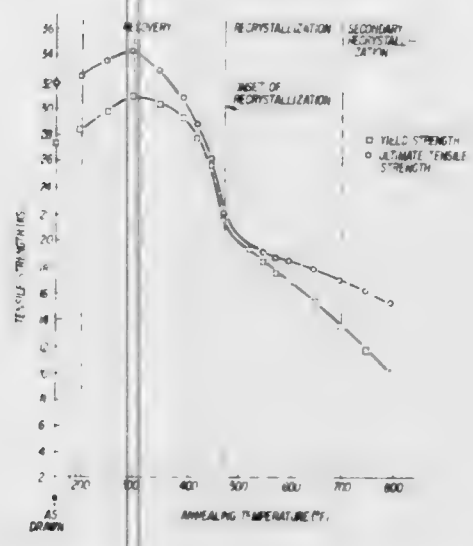
Roger J. Schoerner, and Enrique C. Chia, both of Carroll County, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 430,300, Jan. 2, 1974, Pat. No. 3,920,411, which is a continuation of Ser. No. 199,729, Nov. 17, 1971, abandoned, which is a division of Ser. No. 54,563, Jul. 13, 1970, abandoned. This application Nov. 18, 1975, Ser. No. 633,072

The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.

Int. Cl.² C22F *1/04*

U.S. Cl. 148—2 **14 Claims**



1. Method of manufacturing a high tensile strength aluminum alloy electrical conductor comprising the steps of:

a. alloying a minimum of 93.5 weight percent molten aluminum containing normal trace impurities with at least one additional alloying element in an amount effective to yield intermetallic precipitates during subsequent solidification and thermomechanical processing;

b. casting the molten aluminum alloy into a cast bar at a rate sufficient to form primary intermetallic precipitates of said alloying element from said alloyed molten aluminum;

c. hot-working the cast bar substantially immediately after casting to form rod and to break-up said primary precipitates;

d. drawing said rod through a series of wire-drawing dies, without preliminary or intermediate anneals, to form wire and to further break-up and distribute said primary precipitates throughout the aluminum matrix;

e. annealing said wire at a temperature of from 200°–400° F for a period of time sufficient to precipitate secondary intermetallic compounds of said alloying element from the solid solution; and

f. terminating said annealing step prior to primary recrystallization to permit both said primary and secondary precipitates to pin dislocation sites between adjacent subgrain boundaries and to thus increase the ultimate tensile strength and yield strength of the conductor above the as-drawn condition.

4,082,574

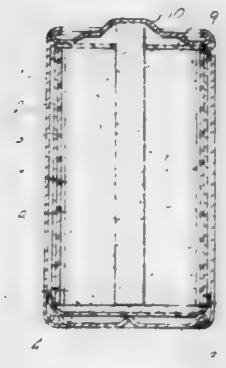
PROCESSING FOR CORROSION RESISTANCE IN ALUMINUM BASE ALLOYS CONTAINING ZINC, MAGNESIUM AND IRON

William H. Anthony, Guilford; Andrew J. Brock, and Damian V. Gullotti, both of Cheshire, all of Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 707,185, Jul. 21, 1976. This application Mar. 4, 1977, Ser. No. 774,464

Int. Cl.² C22F *1/04*

U.S. Cl. 148—2 **11 Claims**



1. A method of preparing an aluminum base alloy which is resistant to corrosion comprising the steps of:

a. casting an alloy consisting essentially of 0.2 to 1.0% by weight zinc, up to 5.0% by weight magnesium, less than 0.1% by weight iron, balance aluminum;

b. homogenizing said cast alloy for 4 to 30 hours at 1050°–1125° F;

c. rapidly cooling said homogenized alloy;

d. hot working the quenched alloy at 850° to 1000° F with a reduction of approximately 20% during each pass through the hot working station;

e. cold working the alloy with a reduction of approximately 20% during each pass through the cold working station;

f. heating the cold worked alloy for 5 to 30 minutes at 750° to 1050° F;

g. cold working said alloy down to the final desired working thickness; and

h. heating said cold worked alloy for 1 to 25 minutes at 100° to 800° F.

4,082,575

PRODUCTION OF LIQUID COMPATIBLE METALS

George Y. Eastman, Lancaster, Pa., assignor to Thermacore, Inc., Leola, Pa.

Filed Apr. 21, 1976, Ser. No. 679,038

Int. Cl.² C23F *7/04*

U.S. Cl. 148—6.35 **4 Claims**

1. A method of making a water compatible steel heat pipe which comprises:

selecting a steel with a thermal expansion rate sufficiently similar to that of aluminum oxide to prevent cracking and spalling of an aluminum oxide coating during thermal cycling and containing between one-half and five percent aluminum as an alloying metal;

performing all required forming operations to shape said steel into the casing of a heat pipe;

heating said casing within an environment of clean, dry air to a temperature of between 500° to 1000° Centigrade for between one and ten hours, diffusing the aluminum alloying metal to the surface of said casing and causing a chemical reaction to occur between the aluminum and the oxygen of the air to form a continuous adherent water compatible surface coating of aluminum oxide of approximately one micron depth; and

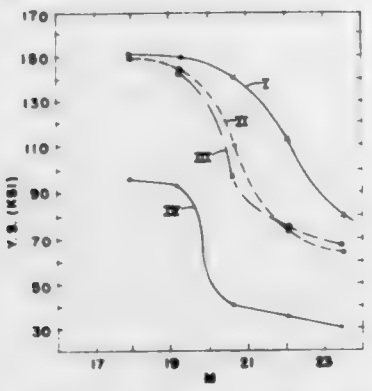
using said surface coated casing as a component of a heat pipe assembled by conventional methods.

4,082,576

ULTRA-HIGH STRENGTH LOW ALLOY TITANIUM BEARING FLAT ROLLED STEEL AND PROCESS FOR MAKING

Peter B. Lake; John J. Grenawalt, and Ronald L. Pastorek, all of Boardman Township, Mahoning County, Ohio, assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Oct. 4, 1976, Ser. No. 729,614
Int. Cl.[2] C21D *1/80*
U.S. Cl. 148—12 F 20 Claims



1. A method of producing a precipitation strengthened cold rolled steel, which method comprises:

(a) hot rolling a slab to a hot band having a finishing temperature above 1500° F;

(b) coiling said band at a temperature below 1250° F;

(c) cold reducing said band in the order of 40 to 90%; and developing a yield strength after rolling of at least 125 ksi; and

(d) annealing the cold reduced steel at a temperature and for a time, temperature-time parameter M, such that will produce a fine dispersion of strengthening precipitates in a microstructure which is at least 50% of the recovery type and no greater than 50% of the recrystallized type and is sufficient for the steel to retain a yield strength of at least 120 ksi;

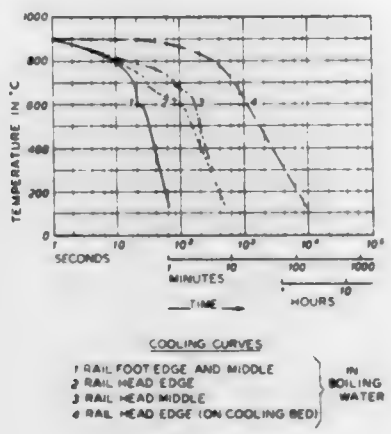
the composition of said steel consisting essentially of, in percent by weight: 0.04 - 0.15 C; 0.20 - 1.5 Mn; 0.10 - 0.32 total Ti; 0.02 - 0.20 soluble Ti; 0.01 - 0.12 Al; or other killing agent; 0 - 0.30 Si; and the balance being essentially iron and residual impurities, the total Ti to C ratio being at least 2/1.

4,082,577

PROCESS FOR THE HEAT TREATMENT OF STEEL

Wilhelm Heller, Rheinhausen, Germany, assignor to Fried. Krupp Huttenwerke AG, Bochum, Germany

Filed Aug. 14, 1975, Ser. No. 604,862
Claims priority, application Germany, Aug. 16, 1974, 2439338
Int. Cl.[2] C21D *9/04*
U.S. Cl. 148—12.1 15 Claims



1. A process for the heat treatment of a steel rail which is at a temperature which is in the austenite range, which process consists essentially of quenching at least the head portion of said rail in boiling water, maintaining the rail in said water until it reaches a temperature of 100° C and recovering a rail whose steel composition is characterized by such a very fine pearlitic structure that it cannot be resolved by a light microscope but is not bainitic in structure.

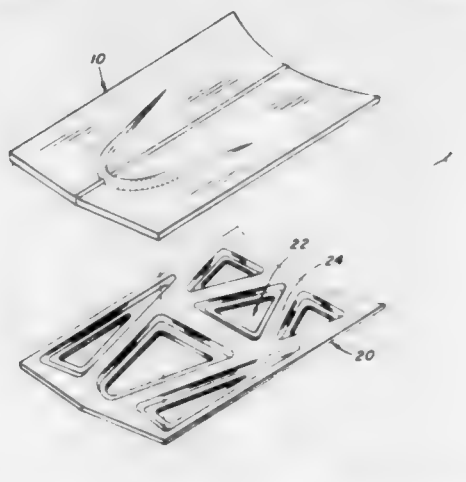
3. A process according to claim 1 wherein quenching is carried out from rolling heat.

4,082,578

ALUMINUM STRUCTURAL MEMBERS FOR VEHICLES

Joseph W. Evancho, Pittsburgh; Barrie S. Shabel, Murrysville, and William G. Truckner, Avonmore, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 5, 1976, Ser. No. 711,954
Int. Cl.[2] C22F *1/04*
U.S. Cl. 148—12.7 A 54 Claims



1. A method of producing a vehicular structural member, comprising the steps of:

(a) providing a body of aluminum base alloy consisting essentially of 0.4 to 1.2% Si, 0.4 to 1.1% Mg, 0.05 to 0.35% Fe, 0.1 to 0.6% Cu, and at least one element from the group consisting of 0.2 to 0.8% Mn, 0.1 to 0.3% Cr and 0.05 to 0.15% Zr, the balance essentially aluminum and incidental elements and impurities;

(b) working said body to produce a wrought aluminum product;

(c) solution heat treating said wrought aluminum product at a temperature within the range of 900° to 1100° F;

(d) quenching said product;

(e) aging said product to a condition having a substantially stable level of mechanical properties to provide a solution heat treated, quenched and aged product that is readily formable and has a yield strength of 12 to 35 ksi; and

(f) forming said aged product in said condition into said structural member.

4,082,579

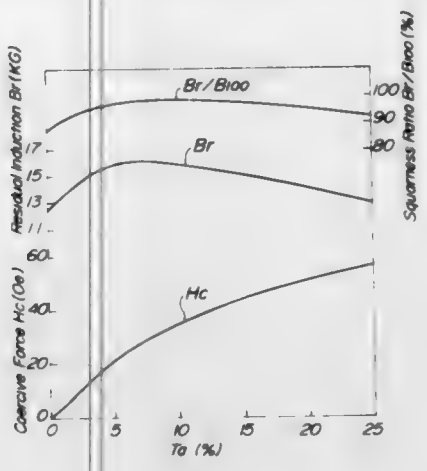
RECTANGULAR HYSTERESIS MAGNETIC ALLOY

Hakaru Masumoto, Sendai; Yuetsu Murakami, Izumi, and Naoji Nakamura, Sendai, all of Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Japan

Continuation-in-part of Ser. No. 548,977, Feb. 11, 1975, abandoned. This application Oct. 29, 1976, Ser. No. 737,054
Int. Cl.[2] C04B *35/00*
U.S. Cl. 148—31.55 9 Claims

1. A rectangular hysteresis magnetic alloy consisting of 0.5 to 25% by weight of tantalum and the balance of iron, said

alloy being cold worked and then heat treated and having a coercive force of more than 2 oersteds, a residual induction of



more than 12700 gauss and a squareness ratio of more than 80%.

4,082,580

IRON-NICKEL-MOLYBDENUM ALLOY HAVING IMPROVED STABILITY AND HIGH INITIAL PERMEABILITY

Friedrich Pfeifer, Hanau, and Günter Klein, Weinheim, both of Germany, assignors to Vacuumschmelze GmbH, Hanau, Germany

Continuation-in-part of Ser. No. 298,690, Oct. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 55,569, Jul. 16, 1970, abandoned. This application Oct. 31, 1974, Ser. No. 519,721

Claims priority, application Germany, Aug. 12, 1969, 1940923

Int. Cl.² C04B *35/00*

U.S. Cl. 148—31.55 **3 Claims**

1. A heat treated magnetic alloy consisting essentially of from 33 to 35% nickel, from 1 to 4% molybdenum and the balance essentially iron the alloy prior to the last cold working exhibiting a fine grain structure and after the final heat treatment exhibiting a completely secondarily recrystallized structure, an initial permeability in excess of 20,000 Gauss/oersted and stability preventing substantial transformation to martensite at temperatures of −320° F.

4,082,581

NICKEL-BASE SUPERALLOY

Subrata Ghosh, Southfield, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 9, 1973, Ser. No. 386,894

Int. Cl.² C22C *19/05*

U.S. Cl. 148—32 **3 Claims**

1. An alloy having a nominal composition consisting essentially of the following constituents in about the stated weight percentages:

Aluminum	6.75 - 10.00
Chromium	9.00 - 11.00
Titanium	0.80 - 2.50
Cobalt	3.00 - 4.50
Molybdenum	2.50 - 4.00
Tantalum	0.95 - 4.85
Tungsten	0. - 1.25
Columbium	0. - 0.60
Carbon	0.30 - 0.50
Boron	0.03 - 0.25
Zirconium	0. - 0.80
Rare Earths	0.02 - 0.05
Beryllium	0. - 0.05

Nickel (including incidental impurities) the balance, and wherein the alloy is particularly characterized by a room temperature gamma prime type of matrix and by the formation of a delta NiAl type of precipitate within the matrix at elevated temperatures.

4,082,582

AS - CAST PERMANENT MAGNET SM-CO-CU MATERIAL, WITH IRON, PRODUCED BY ANNEALING AND RAPID QUENCHING

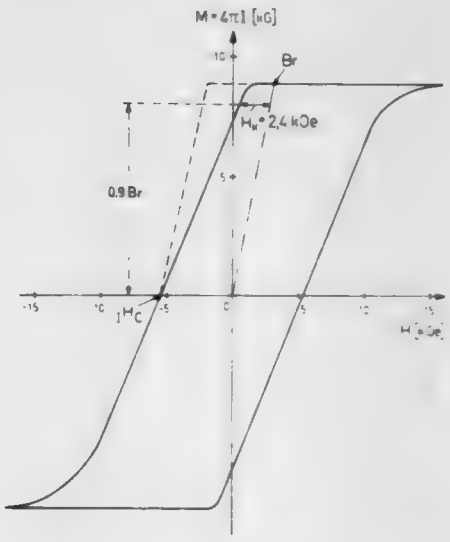
Anton Menth; Anthony J. Perry, both of Nussbaumen, and Ulrich Spinner, Aeugst, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Dec. 2, 1975, Ser. No. 637,057

Claims priority, application Switzerland, Dec. 18, 1974, 16878/74

Int. Cl.² H01F *1/02*

U.S. Cl. 148—102 **4 Claims**



1. A method of producing permanent-magnet material having the composition $Sm(Co_{1-x-y}Fe_xCu_y)_z$ wherein $0 < x < 0.2$, $0.1 < y < 0.3$ and $6.5 < z < 7.5$, which comprises:

melting together said elements in amounts according to said composition,

solidifying the melt by slowly cooling said melt,

annealing the alloy of the melted together elements at temperatures between 1150° and 1250° C,

subsequently rapidly quenching said alloy, and

further annealing said alloy at temperatures between 750 and 850° C.

4,082,583

SOLVENTLESS DOUBLE BASE PROPELLANTS AND METHOD FOR PLASTICIZING MTN NITROCELLULOSE PROPELLANTS WITHOUT USE OF SOLVENTS

Paul R. Mosher, Indian Head, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 14, 1974, Ser. No. 435,391

Int. Cl.² C06B *25/18*

U.S. Cl. 149—96 **6 Claims**

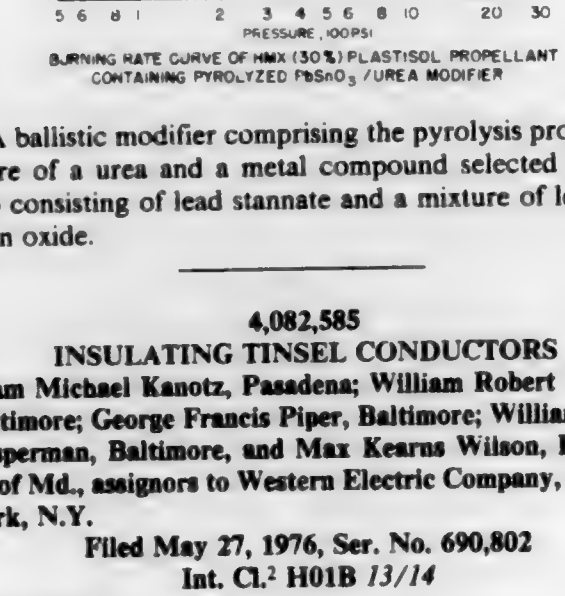
1. A metriol trinitrate plasticized double-base propellant having about 30 to about 70 weight percent nitrocellulose, an energetic plasticizer consisting of about 30 to 60 weight percent metriol trinitrate and about 2 to 20 weight percent triethylene glycol dinitrate which is prepared by the solventless process wherein the process includes slurrying any grade of nitrocellulose with warm water, adding to said slurry the desired additives, filtering or centrifuging said slurry so as to form a paste, aging said paste and milling said aged paste on a heated rolling mill so as to form a homogenous colloided propellant.

4,082,584

BALLISTIC MODIFIER

Daniel R. Satriana, Verona, and Arthur J. Bracuti, Dover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 11, 1971, Ser. No. 114,707
Int. Cl.[2] C06B *43/00*
U.S. Cl. 149—109.4 13 Claims



BURNING RATE CURVE OF HMX (30%) PLASTISOL PROPELLANT CONTAINING PYROLYZED $PbSnO_3$ /UREA MODIFIER

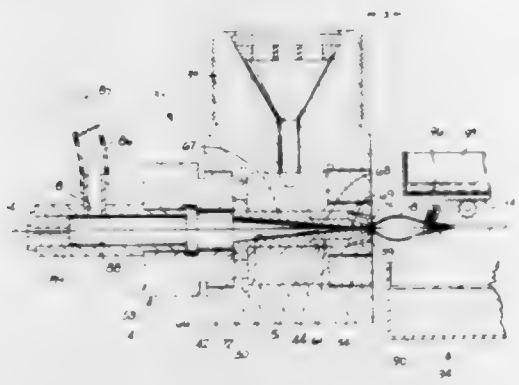
1. A ballistic modifier comprising the pyrolysis product of a mixture of a urea and a metal compound selected from the group consisting of lead stannate and a mixture of lead oxide and tin oxide.

4,082,585

INSULATING TINSEL CONDUCTORS

William Michael Kanotz, Pasadena; William Robert Lockhart, Baltimore; George Francis Piper, Baltimore; William Charles Vesperman, Baltimore, and Max Kearns Wilson, Baltimore, all of Md., assignors to Western Electric Company, Inc., New York, N.Y.

Filed May 27, 1976, Ser. No. 690,802
Int. Cl.[2] H01B *13/14*
U.S. Cl. 156—51 5 Claims



1. A method of covering a tinsel conductor with a polyether polyester thermoplastic copolymer, which includes the steps of:

advancing a tinsel conductor which includes a core and a plurality of tinsel ribbons wrapped thereabout;

extruding an insulation cover comprising a polyether polyester thermoplastic copolymer about the advancing tinsel conductor with the temperature of the extrudate being greater than but as close as possible to the melting point of the copolymer;

introducing a gas between the tinsel conductor and the extrudate to expand the extrudate outwardly from the tinsel conductor for a predetermined time prior to the proximate engagement of the extrudate with the tinsel conductor to cool the copolymer and to initiate oriented crystalline growth of the copolymer; then

drawing down the insulation cover concentrically about the tinsel conductor; while

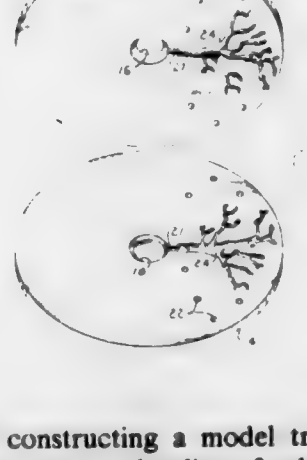
cooling further the insulation cover.

4,082,586

METHOD OF MAKING MODEL TREES AND ARTICLE

David L. Osment, 9904 W. 70th Ter., Shawnee Mission, Kans. 66203

Filed Sep. 10, 1975, Ser. No. 611,903
Int. Cl.[2] A41G *1/00*
U.S. Cl. 156—61 16 Claims



1. A method of constructing a model tree comprising a relatively thick trunk and a plurality of relatively thin limb portions from a three dimensional pattern and a mold utilizing centrifugal casting techniques, said method comprising:

forming said mold to present a mold cavity presenting said trunk and limb portions conforming to the shape of said pattern;

providing a molten metal composition comprising at least 60% by weight lead;

introducing into said mold cavity a quantity of said molten metal;

centrifugally casting said molten metal to distribute the latter throughout the mold cavity; and

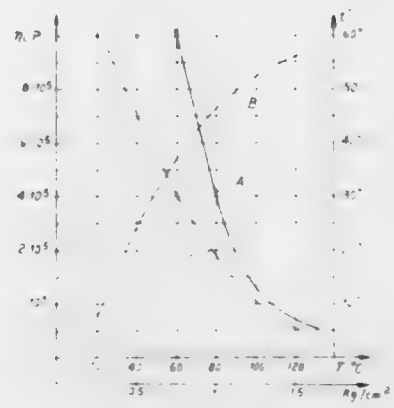
solidifying said molten metal to present a tree structure.

4,082,587

METHOD AND DEVICES FOR ROAD SURFACE MARKING

Ludwig Eigenmann, Vacallo, Ticino, Switzerland

Filed Jan. 26, 1976, Ser. No. 652,523
Claims priority, application Italy, Jan. 24, 1975, 19573 A/75
Int. Cl.[2] E01C *23/16*
U.S. Cl. 156—71 9 Claims



1. A method of forming a traffic - regulating indicium on a pavement, comprising forming a primer layer on said pavement by applying thereto a heated composition in flowable state which is of such a nature that the viscosity thereof increases as the temperature decreases from the temperature of application of said composition to said pavement, said composition having such a viscosity upon application thereof to said pavement that said composition intimately contacts said pavement, and said composition being capable of rapidly attaining a viscosity in the range of about 10^3 to 10^4 cP when said composition has a viscosity below said range upon being applied to

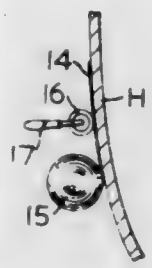
said pavement, said composition further being capable of undergoing an increase in viscosity on said pavement from said range to a higher viscosity of at least 10^5 cP within a period of about 30 seconds; and applying a marker tape to said primer layer when the viscosity thereof is substantially in said range to thereby preliminary bond said marker tape to said primer layer, said marker tape becoming more securely bonded to said primer layer as the viscosity of said primer layer increases from said range towards said higher viscosity.

4,082,588

METAL PROTECTING LEAD/PLASTIC LAMINATE

William Arthur Anderton, and Richard Benjamin Hollis Sewell, both of Victoria, Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence, Canada

Filed Jan. 19, 1977, Ser. No. 760,678
Claims priority, application Canada, Feb. 20, 1976, 246163
Int. Cl.² E04B *1/00*
U.S. Cl. 156—71 **32 Claims**



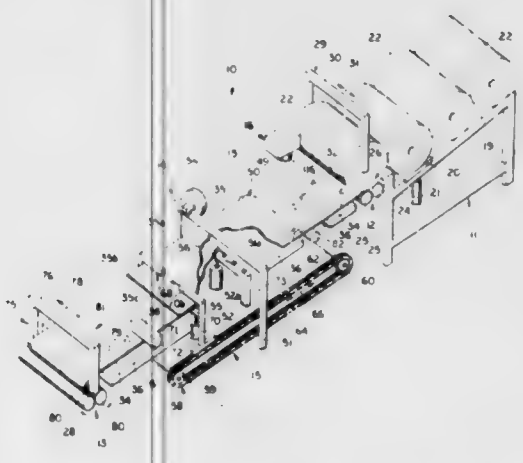
1. A method for protection against electrochemical corrosion of a metal substrate which is subject to said corrosion, said method comprising applying to said substrate a metal-plastic laminate comprising (a) a foil of corrosion-resistant lead, said foil having a thickness from about 1 to about 25 mils; (b) a plastic film of thickness ranging from 0 to about 20 mils, one surface of which is bonded to one surface of said metal foil; and (c) a coating of pressure-sensitive adhesive on the opposite surface of said lead foil; whereby said laminate is bonded to the surface of said substrate by means of said pressure-sensitive adhesive.

4,082,589

CREEL LOADING, CUTTING, AND SPLICING SYSTEM FOR SHEET MATERIAL

Thomas K. Patterson, Dublin; William O. Mitchell; Donald H. Smith, both of Vidalia, and John P. Hunter, Jr., Dunwoody, all of Ga., assignors to Oxford Industries, Inc., Alantic, Ga.

Filed Feb. 7, 1977, Ser. No. 766,240
Int. Cl.² B65H *19/22, 19/26*
U.S. Cl. 156—98 **13 Claims**



1. A process of cutting lengths of sheet material comprising moving sheet material along its length from a supply, projecting an image which includes splice positions on the sheet material and moving the projected image in timed relationship with the sheet material, and cutting the sheet material at locations on the sheet material which have splice positions projected thereon.

6. The process of claim 1 and further including a splicing process comprising the steps of moving the sheet material in a reverse direction and moving the projected image in a reverse direction until a pair of cut positions is projected on the sheet material, marking the sheet material at both of the cut positions, cutting across the sheet material at one of the marked cut positions, moving a new end of the sheet material along its length from the supply into overlapped relationship with the cut end of sheet material, and connecting the new end of sheet material to the cut end of sheet material at the other marked cut position adjacent the cut end of sheet material.

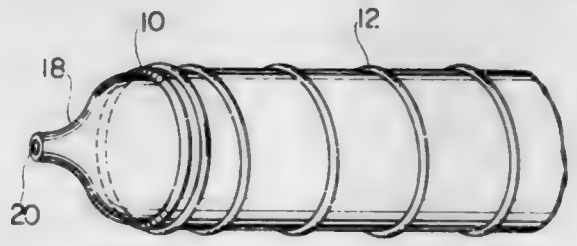
8. The process of claim 1 and further including the step of accumulating the lengths of cut sheet material on spools, and placing the spools in a creel.

4,082,590

PROCESS FOR MANUFACTURING A FLEXIBLE CYLINDRICAL BODY

Norihiko Iida, and Shigeto Gobaru, both of Kawagoe, Japan assignors to National Marineplastic Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 483,059, Jun. 25, 1974, abandoned. This application Jan. 2, 1976, Ser. No. 646,005
Claims priority, application Japan, Jun. 28, 1973, 48-73074
Int. Cl.² B32B *31/26*
U.S. Cl. 156—144 **8 Claims**



1. A process for manufacturing a flexible cylindrical body comprising: preparing an elongated flexible substantially closed preform envelope having an inlet therein for the admission of an inflation gas, said preform having an elongated cylindrical shape of predetermined diameter and being made of a non-resilient material such that when said preform is inflated it assumes a substantially unstressed cylindrical form; inserting the substantially uninflated preform into an elongated coil of an electrically conductive material which is coated on at least the inner faces of the turns thereof with an adhesive material; the diameter of said preform in its expanded condition being sufficiently large relative to the inner diameter of said coil such that it is capable of engagement with the said coil in said unstressed cylindrical form; inflating said preform into said cylindrical form within said coil and into engagement therewith in an unstressed state; applying a predetermined voltage to said coil for fusing the adhesive material thereon and to secure said coil to said cylindrical preform; and thereafter releasing the inflation gas from the cylindrical preform and obtaining a flexible substantially unstressed cylindrical article without sags or corrugations thereon.

4,082,591

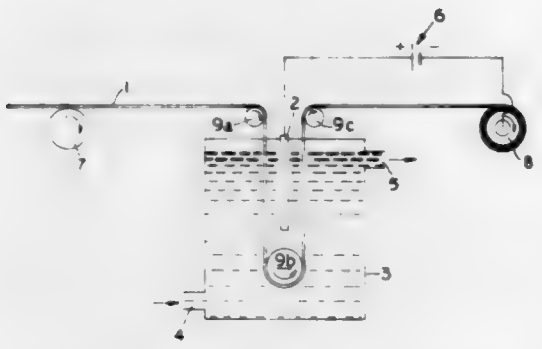
SURFACE TREATMENT PROCESS FOR COPPER FOIL

Shigeyoshi Morisaki, and Nobuo Kitamura, both of Ageo, Japan, assignors to Mitsui-Anaconda Electro Copper Sheet Co., Ltd., Japan

Filed Sep. 28, 1976, Ser. No. 727,624
Claims priority, application Japan, May 15, 1976, 51-27862
Int. Cl.² C25D *1/00*
U.S. Cl. 156—150 **5 Claims**

1. A process for the surface treatment of copper foil, com-

prising electrodepositing, in an alkaline bath containing more than 0.3 g. of Sn/l, at a current density of from about 1 to 3 A·sec/dm^2, on a shiny metallic side of copper foil a thin layer of tin to the extent that the whitish color of the deposited tin is



minimized and the reddish color of the copper surface is maintained, followed by heating the foil so produced to diffuse said tin layer into the copper layer and thereby to produce a thin layer of tin and copper alloy.

4,082,592

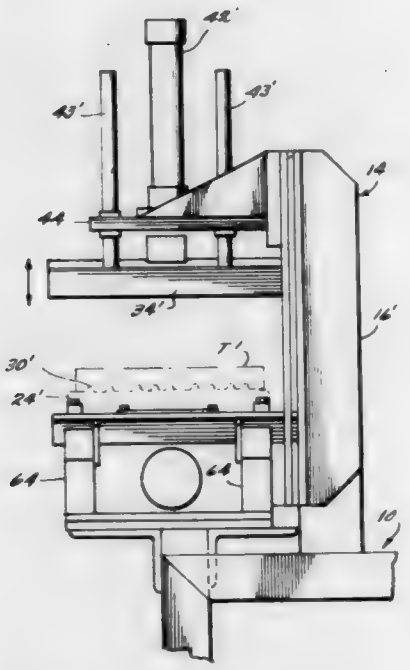
SPLICING OF TREAD STRIPS

Ralph C. Raabe, Letts; Roger G. Cleffman, and Raymond G. Stratton, both of Muscatine, all of Iowa, assignors to Bandag Incorporated, Muscatine, Iowa

Filed Jan. 15, 1976, Ser. No. 649,518

Int. Cl.^{2} B32B *31/00*; B31F *5/00*

U.S. Cl. 156—153 **3 Claims**



1. A method of splicing the ends of two strips of precured rubber tread strips having tread grooves in one surface thereof, said method comprising: transversely cutting a small length from the end of each tread strip at a preselected location along the length thereof; placing the grooved surface of each tread strip in engagement with a complementary ribbed mold element, each tread strip by virtue of the preselected cutting location and engagement of the ribs within the tread grooves being thereby positioned so that the newly exposed end surface of each tread strip projects a predetermined distance beyond its respective mold element; clamping each tread strip against its respective mold element; inserting a vulcanizable rubber-base bonding material between the projecting end surfaces of the strips; imparting relative movement of the clamped tread strips toward each other in the same plane to abut and tightly press the end surfaces of the strips together; and heating the bonding material and the ends of the strips while maintaining the pressing forces in order to effect a bond between the end surfaces of the strips.

4,082,593

PRINTING ON THE SIDES OF PAPER PADS

Roger Hadden-Wight, Chertsey, and Colin Stanley Johnson, Camberley, both of England, assignors to Irvin Bros. (Fleet Works) Limited, England

Filed Jun. 23, 1976, Ser. No. 699,209

Claims priority, application United Kingdom, Jun. 25, 1975, 26966/75

Int. Cl.^{2} B44C *1/24*

U.S. Cl. 156—230 **8 Claims**

1. A method of applying multi-colored visible matter to at least one side surface of a pad of sheet materials in a single operation comprising:

(a) placing a transfer, which comprises a substrate having a first layer of multi-colored visible inks to be applied to the pad of sheet materials and a second layer of varnish based on synthetic plastics material which is compatible with said multi-colored inks, in contact with at least one side surface of the pad of sheet materials such that the layer of varnish contacts said at least one side surface of the pad of sheet materials,

(b) heating said substrate to a temperature of 200° to 300° C and applying a pressure to said substrate of 75 to 125 pounds per square inch for a time period of 10 seconds to 1 minute so as to affix the layer of varnish and the layer of multi-colored visible inks to the adjacent side surface of the pad of sheet materials, and

(c) removing said substrate.

4,082,594

METHOD FOR MAKING A WRAPPING MATERIAL

Ernest Stonehouse, Midsomer Norton, England, assignor to Mardon Flexible Packaging Limited, England

Filed Jan. 26, 1977, Ser. No. 762,661

Claims priority, application United Kingdom, Feb. 4, 1976, 4327/76

Int. Cl.^{2} B32B *29/06*; B05D *3/12*; B32B *3/24, 15/20*

U.S. Cl. 156—253 **7 Claims**

1. A method of making a flexible wrapping material comprising the steps of

(a) applying metal in discrete form to a surface of a dry flexible paper substrate to form a layer having visually the appearance of continuous foil,

(b) and treating the resulting product to form a discontinuous metal layer to allow the substrate to reach and maintain a moisture content which is in equilibrium with the ambient air and simultaneously preserving the visual appearance of continuous foil.

4,082,595

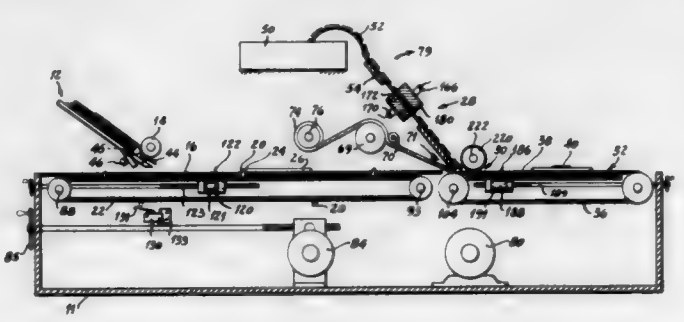
PRESSURE SENSITIVE LABEL APPLICATOR

John W. Slater, 4679 N. Ironwood La., Milwaukee, Wis. 53209

Filed Apr. 29, 1976, Ser. No. 681,865

Int. Cl.^{2} B65H *25/00*

U.S. Cl. 156—351 **4 Claims**



1. Labeling apparatus for dispensing labels from a label

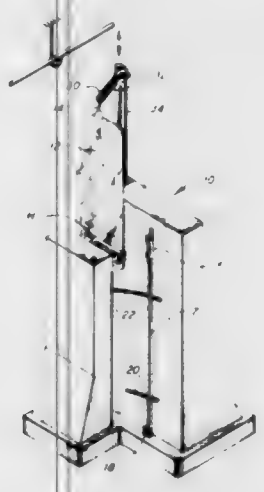
carrier web containing a plurality of spaced labels comprising an article feed conveyor, an outfeed conveyor, label feed means comprising a peel plate extending downwardly and forwardly in the direction of article feed, feed means for drawing a label carrier web along and around said peel plate, a light source located on one side of the web, light sensing means having a first mode when a label is in registry and a second mode when a gap between labels is in registry, second sensing means associated with said outfeed conveyor to sense the presence of an article to be labeled, and circuit means coupled to said first and second sensing means whereby actuation of said second sensing means by an article carried on said outfeed conveyor will cause energization of said label feed means to cause movement of the label web and wherein said first sensor will de-energize said feed means when said light sensing means is in said second mode and a gap between said labels is sensed by said first sensing means to stop movement of the label carrier web whenever a gap between labels is sensed and wherein said light sensing means is a photo transistor, and said circuit means includes a differential amplifier coupled to said phototransistor to provide an output signal when a label is in registry with said phototransistor and no output when a gap between labels is in registry and said circuit including an output switch circuit coupled to said differential amplifier and wherein, said label feed means includes a brake and clutch and said output switch circuit energizes said brake and de-energizes said clutch to stop label feed when said first sensor senses a gap between labels and said brake being de-energized and said clutch being energized when an article is sensed by said second sensing means to cause label feed.

4,082,596

GARMENT BAG SEALING MACHINE

Charles C. Vanderpool, R.D. No. 1, Waverly, N.Y. 14892

Filed Apr. 29, 1977, Ser. No. 792,352
Int. Cl.² B32B *31/00*; B65B *1/04*
U.S. Cl. 156—359 **9 Claims**



1. Apparatus for sealing a garment bag, comprising:

means for loading a hanger mounted garment onto said apparatus;

means to support said hanger mounted garment in a vertical orientation on said apparatus;

means connected to and responsive to said loading means for moving said hanger mounted bagged garment to a predetermined position relative to a sealing means; and

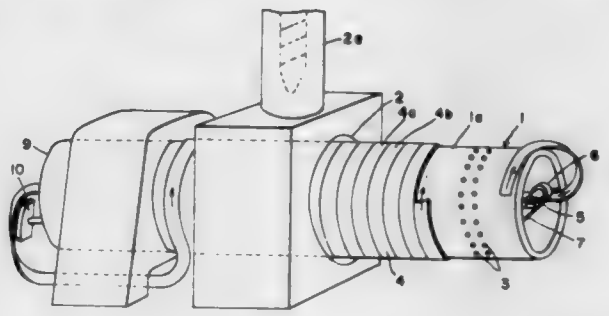
a sealing means operated in cooperation with said moving means and said supporting means and for sealing said bag covering said garment at a position on said bag determined by said garment contained therein.

4,082,597

METHOD AND APPARATUS FOR MAKING CONTINUOUS LENGTHS OF RESIN TUBES

Frede Hilmar Drostholm, 2950 Vedbaek, Denmark

Division of Ser. No. 171,921, Aug. 16, 1971, Pat. No. 3,979,250.
This application Feb. 11, 1976, Ser. No. 657,174
Claims priority, application Denmark, Aug. 21, 1970, 4315/70
Int. Cl.² B65H *81/00*
U.S. Cl. 156—429 **5 Claims**



1. Apparatus for making tubes of resin material, comprising a supporting structure and an endless carrier strip mounted on the supporting structure, the supporting structure having an external cylindrical surface for supporting the carrrier strip and having a hollow interior hollow extending axially through the supporting structure, and the carrier strip being wound around the supporting structure in a helix having a plurality of helical turns with the inside surface of the turns in engagement with said external cylindrical surface substantially throughout the circumference thereof, and the helical turns being arranged with their edges adjacent and abutting each other to provide an unbroken surface for carrying the resin material from which the tube is being formed, mechanism for advancing the carrier strip with respect to said cylindrical surface through a path one portion of which is helical and is coincident with the helical turns of said helix from the entrance end of the helical path to the delivery end thereof and another portion of which extends through the hollow interior in the supporting structure, said mechanism comprising a motor mounted on the supporting structure and having driving means engaging the carrier strip in its path from the delivery end to the entrance end of the helical path and reacting between the supporting structure and the carrier strip to exert a pulling force upon the carrier strip and advance the strip in said path helically around and with respect to the cylindrical surface of the supporting structure, and a multiplicity of rolling elements recessed into said cylindrical supporting surface and partially projecting from said surface to support the helical turns of the carrier strip throughout the helical portion of its path, said rolling elements being rotatable about axes which are perpendicular to the helical path to provide substantially frictionless travel of the carrier strip relative to the support surface.

4,082,598

APPARATUS FOR MANUFACTURING AN UNTWISTED SYNTHETIC RESIN STRING

Fusao Katagi, Sakai, Japan, assignor to Katagi Coseikagaku Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 516,958, Oct. 22, 1974, Pat. No. 3,967,038.
This application Apr. 20, 1976, Ser. No. 678,592
Int. Cl.² B32B *31/00*
U.S. Cl. 156—463 **4 Claims**



1. An apparatus for manufacturing an untwisted synthetic

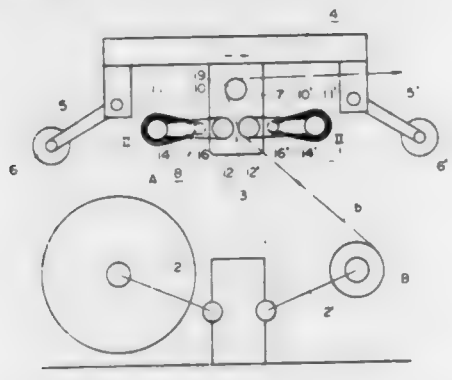
resin string comprising a stretching means for stretching a strip of thermoplastic resin film at least longitudinally thereof, a roll-forming means disposed to the rear of the stretching means for inwardly rolling only one side edge of the stretched film strip, and a heat-setting means disposed to the rear of the roll-forming means, the roll-forming means including a plurality of rolling members each having a curved rolling surface only at one end thereof and a flange at the other end thereof to prevent lateral displacement of the film strip, the rolling members being arranged side by side transversely of the direction of advance of the film strip and spaced apart by specified distances along the direction in such arrangement that the rolling surfaces are reduced in the radius of curvature thereof and positioned closer to the centerline of travel of the film strip toward the direction of advance of the film strip, the heat-setting means being so arranged that only the free edge of the untwisted rolled strip sent out from the roll-forming means and having a spiral cross section is thermally adhered to its outer layer, permitting the interior of the rolled strip to remain loose.

4,082,599

SPLICING ROLLER DEVICE FOR AUTOMATIC PAPER SPLICING APPARATUS

Yasuhiro Kozima, Odawara, Japan, assignor to Nihon Electronic Industry Co., Ltd., Odawara, Japan

Filed May 13, 1976, Ser. No. 686,800
Claims priority, application Japan, Mar. 11, 1976, 51-25543
Int. Cl.[2] B65H *19/18*
U.S. Cl. 156—504 **2 Claims**



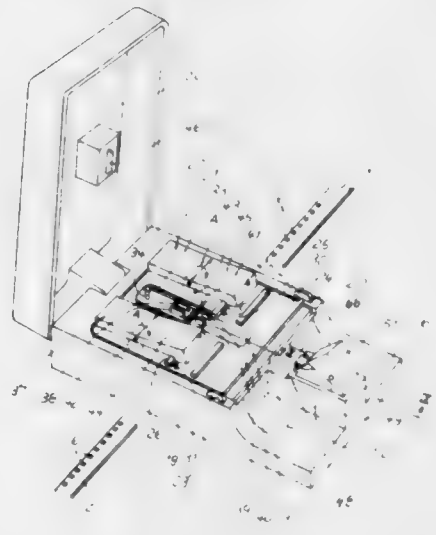
1. A splicing roller device for an automatic paper splicing apparatus of the type wherein a splicing roller is rotated in contact with a new crude paper coil to pick up a double-sided adhesive tape attached to the forward end of the new crude paper coil by the adhesion of the tape, and the crude paper picked up from the coil is adhered to another crude paper being fed to a crude paper processing line to thereby accomplish continuous feeding of crude paper, said splicing roller device comprising a plurality of splicing rollers each attached to the forward end of a rotatable arm to be movable toward and away from the outer peripheral surface of said new crude paper coil, a plurality of endless belts passed around the outer peripheral surface of each said splicing roller to extend in the direction of feeding of said another crude paper and having a width dimension corresponding to part of the length of the respective said splicing roller, the surface of each said splicing roller being made of an adhesive surface which is stickable to said tape, the surfaces of said endless belts being made of a non-adhesive surface which is not stickable to said tape, such that said tape is adhered to the surface of one of said splicing rollers is thereafter separated from said splicing roller surface by said endless belts when said splicing roller is rotated further, the surface of the adhesive tape not adhered to said one splicing roller being pressed against said another paper by the surfaces of said rollers and said endless belts, said endless belts being passed around the outer periphery of each said splicing roller such that the outer surface of each said splicing roller is covered in part by said endless belts in a stripe pattern in the length direction of the splicing roller, the length of the splicing roller surface covered by the stripe pattern being longer than the width of the adhesive tape, the width of one endless belt being smaller than the width of the adhesive tape, a return roller for each of said plurality of endless belts arranged downstream of said splicing rollers in the direction of feed of said another crude paper, the return rollers being movable into and out of engagement with each other, the pitch of said stripe pattern in said length direction of each of said splicing rollers being shifted with respect to one other, whereby when said return rollers come into contact with each other, said endless belts on one of said return rollers do not contact said endless belts on the other of said return rollers at the contact surface therebetween.

4,082,600

FILM SPLICING APPARATUS

Rudolph Hanke, Monheim, Schwaben, Germany, assignor to Hamma Hamaphot KG., Hanke & Thomas, Monheim, Schwaben, Germany

Filed Jun. 20, 1977, Ser. No. 808,193
Claims priority, application Germany, Jul. 3, 1976, 2629985
Int. Cl.[2] B31F *5/00*
U.S. Cl. 156—505 **6 Claims**



1. Apparatus for splicing together the abutting ends of two films by means of an adhesive foil having a tearoff strip and which can be folded back on itself in hairpin configuration to provide two leaves overlying the abutting ends of said films from opposite sides thereof, which adhesive foil, prior to application to said film ends, being supported on removable carrier paper strips, said apparatus comprising a base having a level top surface in which is a depression, and a projection upstanding from the bottom of said depression, a flap connected to said base for swinging movement, about a pivot axis, between an initial position lying in said depression in said base with its upper surface flush with said top surface of said base and an inverted position displaced through an angle of about 180° about said pivot axis from said initial position, a window in said flap for entry therein of said projection when said flap is in its said initial position, a film guide on said flap, upwardly-projecting prongs on said flap for engagement thereof of said adhesive foil by corresponding holes in said foil at each end of its said tear-off strip, a pin carried by said flap, said pin extending substantially parallel to said pivot axis and traversing said window, a shoulder provided on said base so as to be disposed to the side of said pivot remote from said depression, a ledge disposed on said shoulder and defining, with a substantially upright side of said shoulder, an edge which extends substantially parallel to said pivot axis, said edge being spaced from said pivot axis by a distance (M) equal to the sum of the distance (N) between said pin and said pivot axis (which distance N corresponds approximately to half of the length of said tear-off strip) together with the thickness of said adhesive foil and a slight clearance, said shoulder having an upper surface which is coplanar with the bottom surface of said depression, and said upright side and ledge serving as a stop which, upon swinging said flap, with an adhesive foil positioned on its

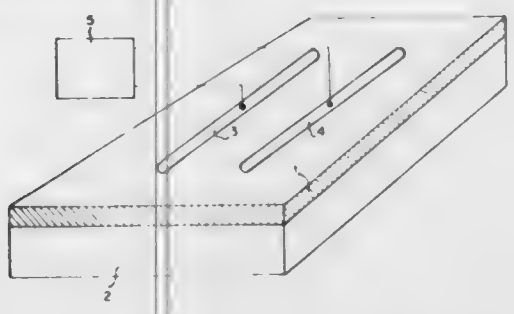
prongs, serve to cause erection of a free limb of said adhesive foil.

4,082,601

PROCESS FOR FABRICATING LI(NBTA)O_3 FILMS ONTO LITHIUM TANTALATE SINGLE CRYSTALS

Andre Maurice Regreny, Parc ar Croas, Rue Albert Camus; Michel Xavier Passaret, 20, Rue Pierre le Goffic, both of Perros Guirec, France (22700), and Loic Andre Rivoallan, Tossen Hat, Kermoroc'h, France (22140)

Filed Jan. 26, 1976, Ser. No. 652,392
Claims priority, application France, Feb. 11, 1975, 75 04768
Int. Cl.[2] B01J *17/04;* C01D *15/00*
U.S. Cl. 156—623 R 7 Claims



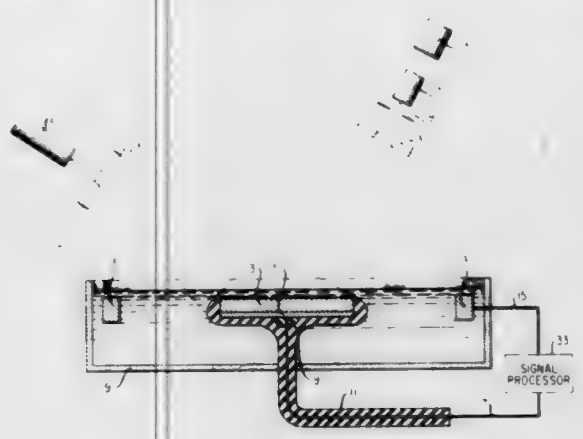
1. A process of manufacturing single crystal Li(NbTa)O_3 films on lithium tantalate single-crystals, wherein said film is grown in a pressure of about 1200 bars on the said lithium tantalate single-crystal by hydrothermal synthesis wherein the alkaline solution is heated to a temperature in the order of approximately 370° C. which is lower than the Curie point of lithium tantalate single-crystal, the mother material being a mixture of tantalum and niobium salts.

4,082,602

PHOTOVOLTAIC CELL MANUFACTURE

Kuang-Chou Chang, North Plainfield; Adam Heller, Bridgewater, and Barry Miller, Murray Hill, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 2, 1977, Ser. No. 792,580
Int. Cl.[2] H01L *21/306*
U.S. Cl. 156—627 13 Claims



1. A method for production line quality control of junction devices comprising:

selecting from time to time at least one of said junction devices;

irradiating said junction device with an intense first light source;

irradiating said junction device with a second light source; said second light source adaptable to produce light at at least one wavelength;

measuring the photovoltaic output from said junction device at at least one wavelength, said measured wavelength corresponding to said incident wavelength, said measured photovoltaic output being indicative of the presence of functional imperfections in said junction device;

comparing said measured photovoltaic output with the desired photovoltaic output; and

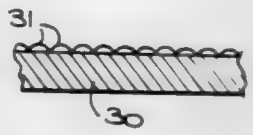
setting the processing parameters for said junction devices in accordance with said comparison.

4,082,603

ENVELOPE OPENING PROCESS

John B. McPherson, Old Lyme, and William H. Gunther, Jr., Guilford, Conn., assignors to Thor Dahl, Inc., New York, N.Y.

Filed Jul. 28, 1975, Ser. No. 599,596
Int. Cl.[2] B44C *1/22*
U.S. Cl. 156—654 1 Claim



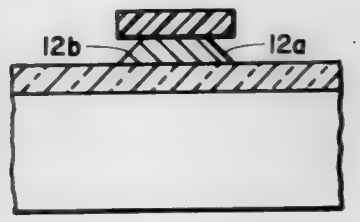
1. The process of opening an envelope which has been previously treated along three edges comprising continuously moving an edge of the envelope relative to a heating means and in contact therewith so that heat may be applied to the edge, rotating the envelope 90° so that one other edge of the envelope is placed in contact with and moved relative to the heat means, rotating the envelope another 90° so that a third edge is placed in contact with and is moved relative to the heat means, the envelope being moved relative to the heat means in batches with other similar envelopes loosely held so that the edges will drop on to the heating element and wherein a treating chemical is applied to the edges by moving the envelopes into contact with an encapsulating sheet having microscopic capsules, said encapsulated sheet being U-shaped in order to embrace three edges of the envelope, whereby the capsules therein are broken by pressure from the envelopes.

4,082,604

SEMICONDUCTOR PROCESS

Richard R. Yanez, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1976, Ser. No. 646,317
Int. Cl.[2] C23F *1/02*
U.S. Cl. 156—656 3 Claims



1. In a process for producing a semiconductor integrated circuit the steps comprising:

(a) depositing an aluminum metallization layer over an insulating layer of a semiconductor substrate,

(b) forming a conversion coating on the surface of the aluminum metallization layer by immersing the semiconductor substrate in fuming nitric acid and then subjecting the wafer to boiling water,

(c) selectively masking said aluminum metallization layer, and

(d) etching said aluminum metallization whereby said conversion coating etches more rapidly than the unconverted portion of the layer and forms a sloping etch on the unremoved aluminum layer.

4,082,605

PROCESSING PRINTED CIRCUIT BOARDS

Peter Kepets, Konigsberger Str. 2, D-6343 Frohnhausen, Germany

Filed Nov. 3, 1975, Ser. No. 628,532
Claims priority, application Germany, Nov. 19, 1974, 2454709
Int. Cl.[2] C23F *1/02*
U.S. Cl. 156—656 21 Claims



1. In a process for treating a circuit board with a liquid treating solution, the improvement which comprises the steps of:

(a) placing a liquid treating solution for a circuit board into a transparent, flexible container having an opening;

(b) inserting the circuit board into the container through the opening;

(c) sealing the container by temporarily closing the opening of the container; and

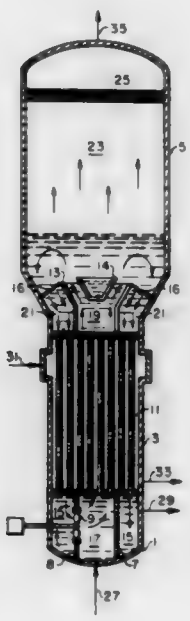
(d) contacting the circuit board with the liquid treating solution while the opening is temporarily closed.

4,082,606

EVAPORATION APPARATUS

James E. Houston, Grand Island, N.Y.; Reynard W. Gingrich, Fort Erie, Canada, and Earl A. Schilt, Kenmore, N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation of Ser. No. 429,999, Jan. 2, 1974, abandoned. This application Oct. 20, 1975, Ser. No. 624,139
The portion of the term of this patent subsequent to Aug. 24, 1993, has been disclaimed.
Int. Cl.[2] B01D *1/06*
U.S. Cl. 159—27 B 5 Claims



1. An integral forced circulation evaporation apparatus which comprises an evaporating chamber having a lower liquid space region containing heated liquid and an upper vapor space region containing vapors flashed off from the heated liquid in the lower liquid space region, a heating zone containing vertically disposed heat exchange tubes, and a liquid receiving chamber, said lower liquid space region of the evaporating chamber being surmounted on said heating zone in direct communication with the upper ends of each of said heat exchange tubes, said liquid receiving chamber being surmounted by said heating zone in direct communication with the lower ends of said heat exchange tubes; pump means disposed within said liquid receiving chamber for the circulation of liquid through said evaporator apparatus, partition means disposed wihin said liquid receiving chamber so as to form, within said liquid receiving chamber, a first section containing the intake side of said pump means and a second section containing the discharge side of said pump means, said partition means further being positioned such that the lower ends of a portion of the heat exchange tubes are in direct communication with only that section containing the intake side of the pump means and the lower ends of the remaining heat exchange tube having direct communication with only that section containing the discharge side of the pump means, and a second partition means disposed within said lower liquid space region of the evaporating chamber positioned so as to form within said evaporating chamber, a first section in direct communication with the upper ends of those heat exchange tubes whose lower ends are in direct communication with the intake side of the pump means and a second section in direct communication with the upper ends of those heat exchange tubes whose lower ends are in direct communication with the discharge side of the pump means, said second partition means being formed so as to prevent liquid flow between said sections in the evaporating chamber at a point immediately adjacent the upper ends of said heat exchange tubes while permitting liquid flow between said sections in the evaporating chamber at a point above the upper end of said second partition means, and further being positioned so that it is below the level of the liquid in the lower liquid space region of the evaporating chamber, said second partition means being substantially funnel shaped and disposed in the lower liquid space region of said evaporating chamber and positioned in the central part thereof so as to form a central, inner section, and an outer section surrounding said inner section, and a conically shaped member disposed within the upper portion of said second partition means, and spaced apart therefrom, so as to form an annular channel for the distribution of liquid flow.

4,082,607

FUEL SUBASSEMBLY LEAK TEST CHAMBER FOR A NUCLEAR REACTOR

Charles J. Divona, Santa Ana, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 30, 1976, Ser. No. 728,360
Int. Cl.[2] G21C *17/00*
U.S. Cl. 176—19 LD 4 Claims

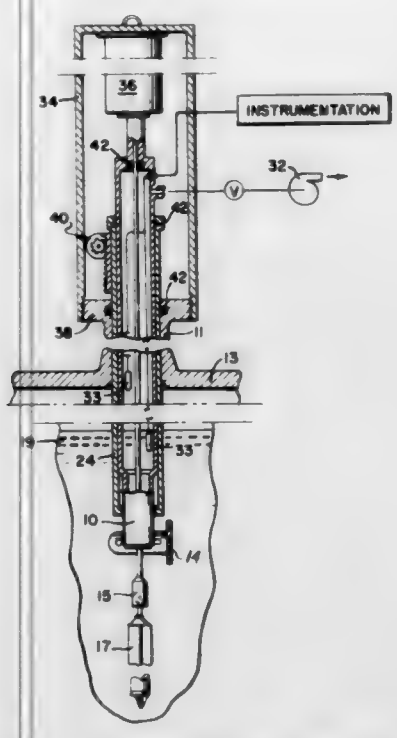
1. A test chamber for isolating fuel subassemblies inside the primary tank of a nuclear reactor to detect leakage of fission products therefrom comprising:

a cylindrical container pipe having an open end, means for drawing a vacuum in the pipe and means for sealably extending a gripper through the container pipe,

an actuator pipe surrounding the container pipe and slidable thereon, the surface of the container pipe acting as a bearing for the actuator pipe, said actuator pipe being small enough in diameter to be inserted into the primary tank through a pipe nozzle in the cover thereof,

a shutter valve consisting of a circular disc for sealing the open end of the container pipe, and

means connected to said actuator pipe and operable thereby for operating the shutter valve to allow the gripper to lift



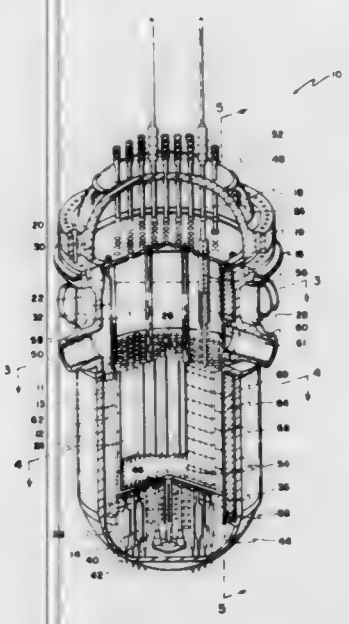
a fuel assembly into the container pipe and to seal the container pipe.

4,082,608

COOLING OF PRESSURIZED WATER NUCLEAR REACTOR VESSELS

Harvey Donald Curet, Idaho Falls, Id., assignor to Energy, Inc., Idaho Falls, Id.

Filed Oct. 14, 1976, Ser. No. 732,254
Int. Cl.[2] G21C *15/00*
U.S. Cl. 176—61 **3 Claims**



1. A pressurized water nuclear reactor vessel comprising:

a generally cylindrical outer shell having closed ends, core coolant means being disposed adjacent one of said ends, said core coolant means being constructed and arranged to cause coolant to flow from adjacent second end into the reactor core,

a generally cylindrical core barrel being of lesser diameter than the shell and being disposed centrally to the outer shell thereby forming an annular space between the barrel and the outer shell, said barrel carrying a plurality of core rod assemblies internal thereto.

a plurality of coolant inlets carried by the shell and communicating coolant to an influent portion of the annular space, and

a plurality of coolant outlets communicating coolant between the core coolant means of the core barrel and the exterior of the shell,

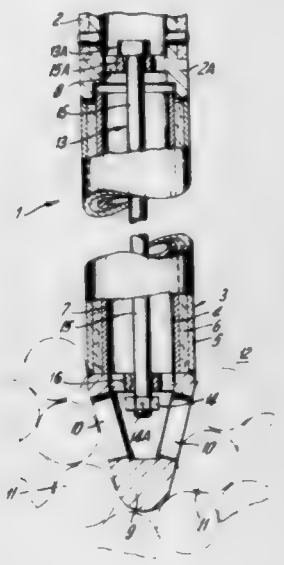
structure to prevent core over heating during a loss of coolant accident comprising a plurality of generally parallel channels substantially arcuate in cross section, substantially equally sized and shaped and contiguous one with the next, said channels essentially filling said annular space, each channel extending longitudinally the full distance between said influent portion and the core coolant means at one end of the outer shell thereby substantially dividing the coolant into equal volumes of flow and directing each to the core barrel, the cross-sectional area of each channel being substantially constant throughout its length and means physically separating all structure in which coolant flows into the core barrel from all structure in which coolant flows from the core barrel.

4,082,609

CONTROL ROD FOR GAS-COOLED NUCLEAR REACTORS

Fritz Schweiger, Hagen, Germany, assignor to Hochtemperatur-Kernkraftwerk GmbH, Gemeinsames Europaisches Unternehmen, Uentrop, Unna, Germany

Continuation-in-part of Ser. No. 592,882, Jul. 3, 1975, abandoned, which is a continuation of Ser. No. 517,630, Oct. 24, 1974, abandoned, which is a continuation of Ser. No. 391,022, Aug. 23, 1973, abandoned, which is a continuation of Ser. No. 233,052, Mar. 13, 1972, abandoned. This application Apr. 28, 1976, Ser. No. 680,924
Claims priority, application Germany, Mar. 16, 1971, 2112471
Int. Cl.[2] G21C *7/10*
U.S. Cl. 176—86 R **8 Claims**



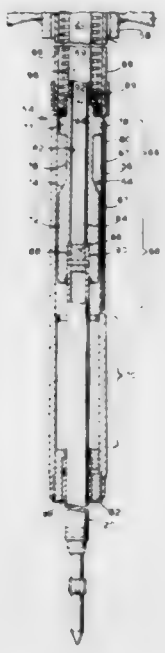
1. In a gas-cooled pebble bed nuclear reactor, wherein the poison part of a control rod having upper and lower end portions and having an interior cooling fluid channel is movable into and away from a bed of spherical fuel elements, the improvement which comprises a control rod security device which, upon fracture of said control rod intermediate its end portions facilitates removal of the fractured control rod from said reactor, said security device including an oblong member located and extending within said channel and being slack relative to said control rod, said oblong member having opposite ends, first means attached to said one of said opposite ends for preventing a fall of said oblong member into said lower portion, second means attached to the other of said opposite ends for preventing portions of said control rod from falling into said bed of fuel elements upon fracture of said control rod intermediate said end portions, said oblong member being sufficiently strong so as to hold said upper and lower end portions together upon fracture of said control rod whereby, upon fracture of said control rod intermediate its upper and lower portions, said upper and lower end portions remain interconnected through said security device.

4,082,610

SNUBBER ASSEMBLY FOR A CONTROL ROD DRIVE

John C. Matthews, Lancaster, Ohio, assignor to Diamond Power Specialty Corporation, Lancaster, Ohio

Filed May 16, 1975, Ser. No. 578,437
Int. Cl.[2] G21C *7/08, 9/00;* F16F *9/18*
U.S. Cl. 176—365 10 Claims



1. A three-portion snubber assembly for decelerating a control rod dropping into a Liquid Filled nuclear reactor comprising:

piston means mounted proximate to an end of a leadscrew of the control rod drive to be movable with the leadscrew;

enclosure means extending partially around the leadscrew to allow said piston means to move therein, said enclosure means being locatable within the Liquid Filled nuclear reactor whenever the control rod drive is mounted thereto; and

said enclosure means having a first portion providing a series of openings to allow any liquid within the control rod drive to be exhausted therethrough in response to movement of said piston means through the first portion of said enclosure means, a second portion formed next to said first portion to provide a predetermined clearance for the movement of said piston means therein and a third portion formed proximately to said second portion to provide a decreased clearance less than the predetermined clearance of said second portion for the movement of said piston means therein.

4,082,611

CONTINUOUS FERMENTATION PROCESS

Neil Trevor Cotton, St. Agnes near Truro, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 30, 1976, Ser. No. 746,015
Int. Cl.[2] C12B *1/00*
U.S. Cl. 195—28 R 9 Claims

1. A fermentation process for continuously culturing micro-organisms in a culture medium containing a source of assimilable carbon and inorganic nutrients which comprises the steps of continuously withdrawing a proportion of the culture from the main body thereof, treating the withdrawn culture to kill microorganisms present therein and returning the treated culture to the main body of the culture, the proportion of the microorganisms killed being such that, when the fermentation is proceeding in its steady state, 20 to 70% of the microorganisms present in the main body of the culture are dead.

4,082,612

PLASMINOGEN ACTIVATOR COMPLEX

Kenneth C. Robbins, Chicago, and Louis Summaria, Villa Park, both of Ill., assignors to Michael Reese Research Foundation, Chicago, Ill.

Filed Sep. 24, 1976, Ser. No. 726,142
Int. Cl.[2] C07G *7/026;* A61K *37/48*
U.S. Cl. 195—62 32 Claims

1. A plasmin light (B) chain separated from the heavy (A) chain in its parent plasmin, said light (B) chain having proteolytic activity and having a serine protease active site.

4,082,613

PROCESS FOR THE PRODUCTION OF INSULIN BY GENETICALLY TRANSFORMED FUNGAL CELLS

Mandayam J. Thirumalachar; Mandayam J. Narasimhan, both of Bangalore, India, and John A. Anderson, St. Paul, Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Apr. 23, 1976, Ser. No. 679,565
Int. Cl.[2] C12D *13/02*
U.S. Cl. 195—76 6 Claims

1. A process for the production of insulin by genetically transformed fungal cells which comprises:

A. selectively growing insulin producing beta-epithelioid cells from a pancreas and serially sub-culturing the cells under aerated cell growth conditions in a nutrient amino acid-rich medium,

B. inoculating the rapid growth fungus Pseudosaccharomycete TC-1176 with genomic material extracted from the sub-culture cells and incubating in the presence of an anti-fungal membrane permeability agent to incorporate the functional genome into the fungal cell structure,

C. incubating the resultant bio-transformed fungal cells in a carbohydrate-nitrogen-rich medium under cell growth conditions, and

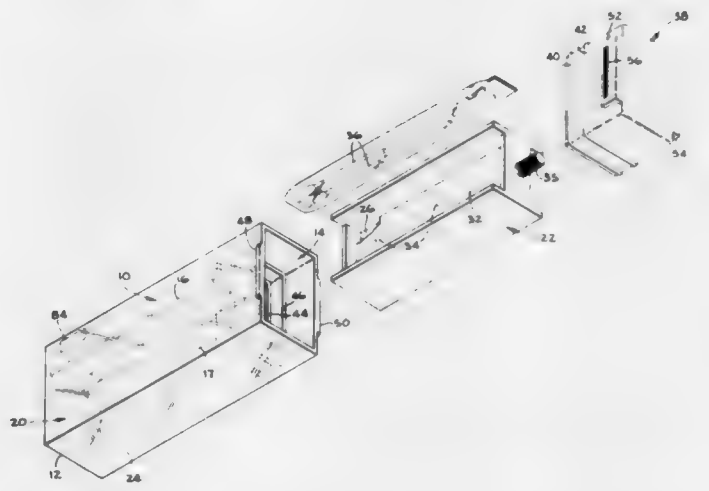
D. separating the fungal cells from the media and extracting the insulin from the cells and supernatant media.

4,082,614

MEANS FOR CONVEYING PATHOLOGICAL SPECIMENS SAFELY TO PLACES OF IDENTIFICATION

Donald H. DeVaughn, San Francisco, Calif., assignor to Bio-Syn, Inc., San Francisco, Calif.

Filed Dec. 10, 1975, Ser. No. 639,156
Int. Cl.[2] C12B *1/00*
U.S. Cl. 195—139 4 Claims



1. A portable culturing device for both obligate and facultative micro-organisms comprising an elongated enclosure of transparent heat resistant material having an open end; partitioning means dividing said enclosure into two vertically aligned compartments one of which contains a tool for transferring specimens; a carrier structure having a flat area containing layers of nutrient slidably received in the other one of said compartments through the open end of said enclosure, said

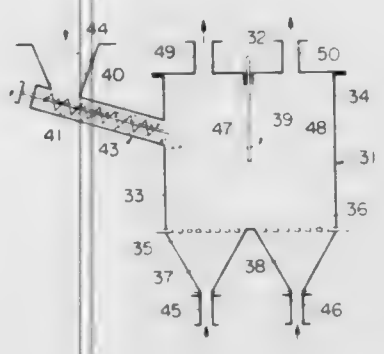
carrier structure being of H-shaped cross-sectional contour with the upper and lower areas of the cross bar of the H forming culturing areas and with all opposed edges in slidable contact with the walls of said second compartment; closure means adapted to hermetically seal said enclosure; and means within said closure means operable to bind free oxygen within said enclosure and to generate carbon dioxide to replace the oxygen removed by the oxygen binding means.

4,082,615

THERMAL DECOMPOSITION PROCESS AND APPARATUS FOR ORGANIC SOLID MATERIALS

Takeo Komuro; Yukio Saito, and Mizuno Hirato, all of Hitachi, Japan, assignors to The Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 12, 1976, Ser. No. 666,357
Claims priority, application Japan, Mar. 13, 1975, 50-29584
Int. Cl.[2] C10B *9/00, 49/10, 49/22, 53/02*
U.S. Cl. 201—12 **4 Claims**



1. A method for thermally decomposing organic solid materials for extracting usable components, comprising the steps of:

delivering the unprocessed organic solid material into a thermal decomposition zone;

fluidizing the organic solid material in the decomposition zone with a basically nonoxidizing gas;

heating the fluidized organic solid material within the decomposition zone to a temperature at least sufficient to thermally extract usable gaseous and liquid components from said organic solid material;

transferring the thus thermally decomposed organic solids while in the fluidized state to a combustion zone;

fluidizing and burning the transferred decomposed organic solids with oxidizing gas within the combustion zone;

maintaining said decomposition and combustion zones laterally adjacent each other and separated by a partition which extends at least partially into the fluidized bed of both zones and leaves an area of free fluidized bed communication between both zones beneath the lower end of said partition to permit said step of transferring and further the transfer of heat of combustion from the combustion zone to the decomposition zone as a part of said step of heating;

removing the product gases from the thermal decomposition zone separately from the gases in the combustion zone; and

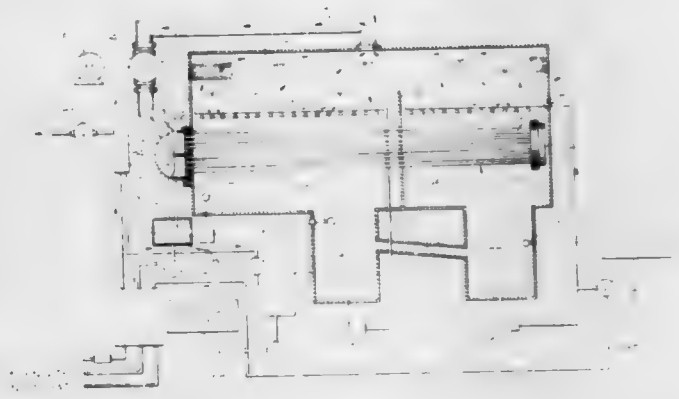
controlling the temperature within the thermal decomposition zone by adjusting the extent that the partition extends into the fluidized beds between the zones to correspondingly adjust the area of free fluidized communication between the zones and corrrespondingly adjust the quantity of solid material that will transfer from the thermal decomposition zone to the combustion zone for combustion.

4,082,616

VAPOR COMPRESSION DISTILLER

Arthur P. Antony, Shorewood, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Jul. 23, 1975, Ser. No. 598,407
Int. Cl.[2] B01D *3/42*
U.S. Cl. 203—3 **15 Claims**



1. A method of concentrating liquids comprising the steps of delivering a liquid to be concentrated to a first liquid circulating system and mixing the same with a partially concentrated liquid therein for providing a first liquid mixture,

contacting a first outer surface area of a plurality of a heat exchange tubes with said first liquid mixture,

delivering a portion of said first liquid mixture to a second liquid circulating system containing a second mixture of said liquid which is more heavily concentrated than the first liquid mixture,

delivering said second liquid mixture to a different surface area of said heat exchange tubes,

passing compressed vapor uninterruptedly through the interior of said heat exchange tubes and in heat exchange relation with interior surfaces of said tubes corresponding to the first and different surface areas thereof for condensing said vapor and for simulaneously evaporating at least a portion of said first and second liquid mixtures as the same contacts said first and different surface areas of said heat exchange tubes,

separately collecting the unevaporated portions of said first liquid mixture in a first container of said first liquid circulating system and said second liquid mixture in a second liquid container of said second liquid circulating system,

collecting the evaporated portions of said first and second liquid mixtures and compressing the same for delivery to the interiors of said heat exchange tubes.

4,082,617

RECOVERY OF CHEMICAL COMPONENTS OF CELLULOSIC REGENERATING SOLUTION

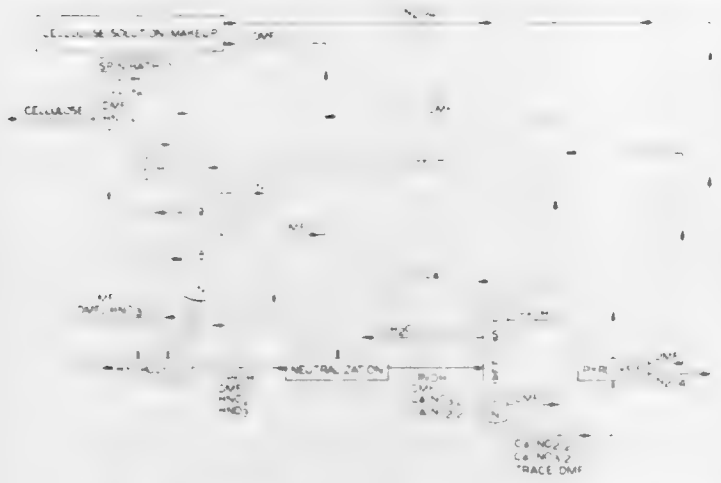
Norman A. Portnoy, Hopatcong, N.J., and David Paul Anderson, Amherst, Mass., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 18, 1976, Ser. No. 715,422
Int. Cl.[2] B01D *3/34;* C08B *5/04, 5/12*
U.S. Cl. 203—28 **11 Claims**

1. A process for the separation and recovery of the alcoholic component of a cellulosic regenerating solution containing a lower dialkylacylamide solvent, a lower aliphatic monohydric alcohol selected from the group consisting of methanol, ethanol, propanol and isopropanol, a corresponding nitrite of said alcohol and nitric acid, said process comprising

distilling the solution to separate the alcohol therefrom, said

distillation occurring in the presence of a chemical complex between said dialkylacylamide solvent and said nitric



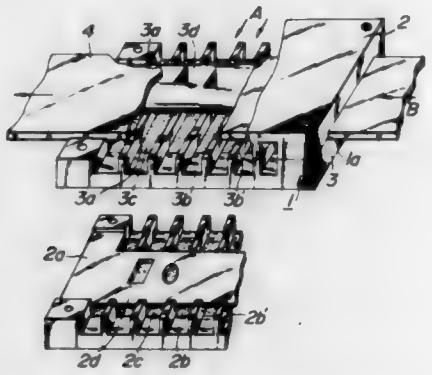
acid, said complex having a substantially higher boiling point than said alcohol or said nitrite of said alcohol, and recovering the alcohol from said distillation.

4,082,618

METHOD FOR ELECTROLYTIC TREATMENT

Kiyoto Furuya, Yokohama, Japan, assignor to Daiichi Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 596,184, Jul. 15, 1975, Pat. No. 4,014,773.
This application Nov. 26, 1976, Ser. No. 745,365
Claims priority, application Japan, Jul. 31, 1974, 49-86911
Int. Cl.[2] C25D *5/02, 7/06*
U.S. Cl. 204—15 **7 Claims**



1. A method of electrolytic treating elongated materials such as hoop materials, rods and wires comprising:

providing at least one insulating shield for shielding portions not to be treated of at least one material simultaneously to be treated,

supplying a treating liquid to be confined in at least one flow path with a supplying direction transversely of a direction of feeding said material and substantially in a plane including said material whereby said treating liquid flows transversely past substantially an entire surface of said material,

causing electric current to flow through said confined liquid in said flow path to said unshielded material, and

feeding said material past said flow path.

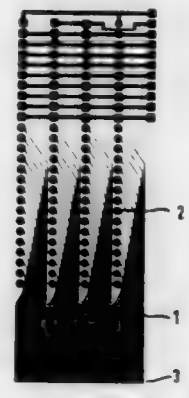
4,082,619

METHOD OF FORMING A COMB-LIKE ELECTRODE STRUCTURE

Heinz Dehnert, Am Bahnhof, D-7801 Hugstetten-March, Germany

Filed Dec. 29, 1976, Ser. No. 755,291
Claims priority, application Germany, Jan. 7, 1976, 2600340
Int. Cl.[2] C25D *5/02, 5/12, 7/06*
U.S. Cl. 204—15 **2 Claims**

1. The method of fabricating a recording instrument of the type comprising a comb-like electrode arrangement having individual electrodes which can be driven independently to effect a current flow between each individual electrode and a counter electrode to produce a mark on a record medium moving under the electrode arrangement, said method comprising the steps of fabricating a planar platen by photochemically processing a copper foil layer on a non-conductive support plate to provide a conductive pattern of copper on said support plate consisting of a comb-like region of generally parallel, spaced, closely adjacent elongated copper tracks having corresponding first ends thereof interconnected to one another adjacent one edge of said support plate by a strip of copper extending transverse to the directions of elongation of said tracks, thereafter electrolytically coating said comb-like region of said copper pattern with a layer of nickel, thereafter electrolytically coating said nickel layer with a further layer of



metal from the group consisting of chromium and iron, and, following said coating steps, severing the portion of said support plate having said strip of copper thereon from the remainder of said support plate to leave said first corresponding ends of said elongated tracks in separated spaced relation to one another along said one edge of said platen, beveling the rear side of said platen along said one edge of said platen into a wedge shape, removably placing said platen in a mounting structure with said beveled edge of said platen being positioned in line contact with a coated paper record medium the plane of which is disposed at an angle of between 20° and 30° to the plane of said platen, and positioning a soft rubber roller below the line of contact between said record medium and said platen to resiliently urge said record medium into forcible engagement with the beveled edge of said platen.

4,082,620

PROCESS FOR CHROMATING METALLIC SURFACES

Peter Kenny Skurkiss, Short Hills, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 29, 1977, Ser. No. 792,246
Int. Cl.[2] C25D *5/02, 11/00, 11/38*
U.S. Cl. 204—15 **18 Claims**

1. A process for electrolytically producing a layer on a metallic surface said layer consisting essentially of at least 90 percent chromium and oxygen chemically combined together, including the step of passing electrical current through an anode, aqueous solution and cathode said aqueous solution comprising chromium-containing ions capable of yielding said layer on electrolysis in which the metal surface comprises at least 50 percent by weight of at least one metal selected from the group consisting of copper, nickel, and iron CHARACTERIZED IN THAT the pH of the solution is less than 7 and the solution contains ammonium ions in the concentration range from 0.005 molar to saturation and the layer is used as a mask in an electroplating process involving the plating of a metal selected from the group consisting of gold, copper, nickel and solder.

4,082,621

PLATING METHOD WITH LEAD OR TIN SUBLAYER

Nicholas J. Spiliotis, Parsippany, N.J.; William R. Schevey, Honesdale, and Donald W. Himler, Easton, both of Pa., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Jan. 3, 1977, Ser. No. 756,158
Int. Cl.[2] C25D 5/12, 5/56
U.S. Cl. 204—38 B 13 Claims

1. A method of forming an electroplated article from a substrate, said substrate being a non-conductive plastic, comprising the steps:

(a) depositing a thin film of conductive metal on said non-conductive plastic to form a metal surface;

(b) electrolytically plating on said metal surface a metal sublayer having predominantly a metal selected from the group consisting of lead, tin and mixtures thereof on said surface from an electrolytic bath containing lead cations, tin cations or both;

(c) electrolytically plating a second layer having predominantly a metal selected from the group consisting of nickel, cobalt and mixtures thereof directly onto said metal sublayer from an electrolytic bath containing nickel fluoborate, cobalt fluoborate or both; and

(d) electrolytically plating chromium onto said second layer.

4,082,622

ELECTRODEPOSITION OF RUTHENIUM

Bodo G. Gebauer, Algonquin, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 20, 1977, Ser. No. 789,176
Int. Cl.[2] C25D 5/10, 7/00
U.S. Cl. 204—40 4 Claims

1. A process for electroplating a surface of a metal article with ruthenium which comprises:

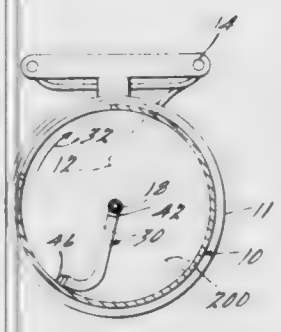
pulse current plating a layer of gold on the surface of said metal article, and electroplating a ruthenium layer on said gold layer.

4,082,623

METHOD OF ELECTROPLATING SMALL PARTS WITH CHROME SUBSTITUTE TIN ALLOYS AND ELECTROPLATING BARREL THEREFOR

Alan Jon Musbach, Rochester, Mich., assignor to M.C.P. Industries, Inc., Troy, Mich.

Filed Aug. 26, 1976, Ser. No. 717,985
Int. Cl.[2] C25D 3/56, 3/60, 17/20
U.S. Cl. 204—43 S 10 Claims



1. An electroplating means for applying a chrome substitute metal plating, comprising,

a rotatable electroplating barrel with an entry-exit door disposed therein,

support means for supporting the barrel and for raising and lowering it in and out of a chrome substitute plating solution, selected from at least one of the group consisting of a tin-cobalt plating solution, a tin-nickel-cobalt plating solution, or a tin-nickel plating solution,

a special cathode dangler assembly within said barrel and including,

a central bar member which generally runs the length of the barrel and which is generally fixed and non-rotatable during plating,

at least three dangler members attached to and depending radially downwardly from said central bar, with said dangler members being of a length sufficient to contact and partially overlay the inner surface of said barrel and being generally flexed in a direction in which the barrel rotates due to the contact with said barrel,

said dangler member being made of a flexible metal strand electrical cable material which has a metal contact head at one end thereof,

said metal strand material being sheathed in a flexible plastic sheath member, and the other end of said dangler member being a fitting means readily connectable to said central bar.

6. A method of manufacturing electroplated parts with a chrome substitute metal plating thereon, comprising the steps of:

placing the parts to be plated in a rotatable electroplating barrel through an entry-exit door disposed therein, said barrel including a central bar member which generally runs the length of the barrel and which is generally fixed and non-rotatable during plating, at least three dangler members attached to and depending radially downwardly from said central bar, with said dangler members being of a length sufficient to contact and partially overlay the inner surface of said barrel and being generally flexed in a direction in which the barrel rotates due to the contact with said barrel, said dangler member being made of a flexible metal strand electrical cable material which has a corrosion resistant metal contact head at one end thereof which is submersed in the parts being plated, said metal strand material being sheathed in a flexible plastic sheath member, and the other end of said dangler member being a fitting means readily connectable to said central bar,

submerging said barrel in a chrome substitute plating solution selected from at least one of the group consisting of a tin-cobalt plating solution, a tin-nickel-cobalt plating solution, or a tin-nickel plating solution, to thereby complete an electrical circuit for carrying out the electroplating,

rotating said barrel during said electroplating in a direction of rotation which will maintain said dangler members at optimum immersion in said parts being plated,

said submerging being carried out for a time period of between about ½ and about 25 minutes, and

with a plating current being applied during said submerging of between about ½ and about 60 amperes per square foot.

removing the barrel from the plating solution and rinsing the parts.

4,082,624

ARTICLES ELECTRODEPOSITED WITH RUTHENIUM AND PROCESSES OF PRODUCING SUCH ARTICLES

Adam Heller, Bridgewater; Barry Miller, Murray Hill, and Richard George Vadimsky, Somerville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 3, 1976, Ser. No. 747,239
Int. Cl.[2] C25D 3/50; C01B 9/02
U.S. Cl. 204—47 11 Claims

1. An article electrodeposited with ruthenium from an aqueous plating solution of the ruthenium compound $K_3[Ru_2N(H_2O)_2Cl_8]$ of the composition and structure resulting from the method comprising refluxing an aqueous solution of ruthenium chloride and NH_2SO_3H said mixture having approximately 0.5 moles of sulphamic acid for each mole of ruthenium and precipitating said compound by adding KCl and HCl to said mixture.

4. A process of preparing a solution of $K_3[Ru_2N(H_2O)_2Cl_8]$ for the electrodeposition of ruthenium comprising the steps of refluxing a mixture of hydrated ruthenium chloride and NH_2SO_3H, said mixture having approximately 0.5 moles of

sulphamic acid for each mole of ruthenium and precipitating said $K_3[Ru_2N(H_2O)_2Cl_8]$ by adding KCl and HCl to said mixture.

5. A method of electrodepositing an article with ruthenium comprising the steps of placing an aqueous solution of the compound prepared by the process of claim 4 into electroplating apparatus, said apparatus having anode and cathode compartments, and cathodically depositing ruthenium on said article.

4,082,625

ELECTRODEPOSITION OF RUTHENIUM

Jeffrey Norman Crosby, Kidderminster, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Jun. 1, 1977, Ser. No. 802,437

Claims priority, application United Kingdom, Jun. 8, 1976, 23653/76

Int. Cl.² C25D *3/50*

U.S. Cl. 204—47 **21 Claims**

13. A bath for the electrodeposition of ruthenium comprising an aqueous solution of a ruthenium compound in which the ruthenium is present in a cationic complex of the formula

$$[Ru_2N(NH_3)_8X_2]^{3+}$$

where X is chlorine, bromine or iodine.

4,082,626

PROCESS FOR FORMING A SILICATE COATING ON METAL

Rudolf Hradcovsky, 27 W. Beach St., Long Beach, Long Island, N.Y. 11561

Filed Dec. 17, 1976, Ser. No. 751,252

Int. Cl.² C25D *11/02, 11/06, 11/34*

U.S. Cl. 204—56 R **28 Claims**

1. A method of coating a rectifier metal selected from the group consisting of aluminum, tantalium, niobium and alloys thereof, and alloys of aluminum with copper and zinc, to produce a hard, glassy, adherent and corrosion-resistant layer, comprising: (a) immersing said metal in an electrolyte bath consisting essentially of concentrated aqueous solution of potassium silicate,

(b) immersing a metal which is cathodic with respect to said rectifier metal in said bath,

(c) causing electric current to flow between said rectifier metal and said cathode until a visible spark is discharged at the surface of said rectifier metal, and

(d) increasing the voltage potential between said rectifier metal and said cathode to about 300 volts and maintaining said voltage at about 300 volts until the desired layer thickness is deposited on said rectifier metal.

4,082,627

ELECTROLYTIC REDUCTION OF DIHYDROBENZOPYRANOXANTHENONES

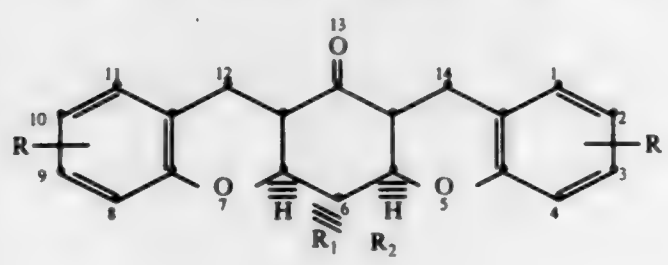
David A. Hall, Indianapolis, and Richard E. Heiney, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 26, 1977, Ser. No. 800,674

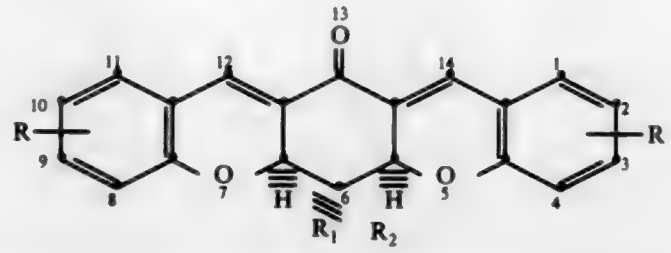
Int. Cl.² C25B *3/04*

U.S. Cl. 204—59 R **14 Claims**

1. A process for preparing a compound of the formula



which comprises electrolytically reducing a compound of the formula



in which, in any of the above, each R is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, cyano, or halo, and both R groups are identical and are symmetrically located; R_1 is C_1–C_3 alkyl and R_2 is methyl, or R_1 and R_2 taken together are $—(CH_2)_n$ in which n is an integer from 4 to 6; such electrolytic reduction being carried out at a temperature of from about 5° C. to about 80° C. in an organic or an aqueous-organic medium at a mercury cathode in the presence of a proton source having pKa values of from about 2 to about 6 and in the presence of an electrolyte selected from the group consisting of alkali metal salts, quaternary ammonium salts having a total of about 10 to about 28 carbon atoms in the cation moiety, and tertiary amine salts having a total of about 7 to about 21 carbon atoms in the cation moiety.

4,082,628

METHOD OF ADJUSTING THE HARDNESS OF A TITANIUM METAL

Shin-ichi Tokumoto; Eiji Tanaka, both of Yokohama; Tatsuo Kikuchi, Hoya; Kenji Ogisu, Yokohama, and Toshiro Tsumori, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 26, 1976, Ser. No. 690,058

Claims priority, application Japan, May 27, 1975, 50-63738

Int. Cl.² C25C *3/28*

U.S. Cl. 204—64 T **8 Claims**

1. In the method of electrodepositing a substantially flat deposit of titanium metal onto a cathode from a fused salt electrolyte containing titanium chloride and at least one chloride salt of alkaline and alkaline-earth metals; the improvement of increasing the hardness of the electrodeposited titanium metal by dissolving in said fused salt electrolyte about 0.07 wt.%, based on the balance of the electrolyte, of at least titanium oxide from the group consisting of titanium oxide and oxides of alkaline and alkaline-earth metals, and adding to the fused electrolyte about 1.12 wt.% of potassium fluoride for increasing the solubility of each said oxide in the fused electrolyte so that, during the electrodeposition, the dissolved oxide is contacted with the surface of said cathode for distributing interstitial oxygen within the electrodeposited titanium metal and thereby increasing the hardness of the latter, as measured by the micro Vicker's method, to the range of from bout 140 to about 200, while providing the electrodeposited titanium metal with a lattice constant of about $a=2.9505$A and about C=4.6853A to 4.6887A.

4,082,629

HYDROMETALLURGICAL PROCESS FOR TREATING METAL SULFIDES CONTAINING LEAD SULFIDE

Edward F. G. Milner, Warfield; Ernest G. Parker, and Godefridus M. Swinkels, both of Rossland, all of Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Feb. 28, 1977, Ser. No. 772,630

Int. Cl.² C25C *3/34*; C22B *1/02, 11/04*

U.S. Cl. 204—66 **22 Claims**

1. A process for the treatment of complex lead sulfide-containing concentrates additionally containing at least one metal of the group consisting of iron, copper, zinc, silver, arsenic, antimony, bismuth and gold which comprises the steps of:

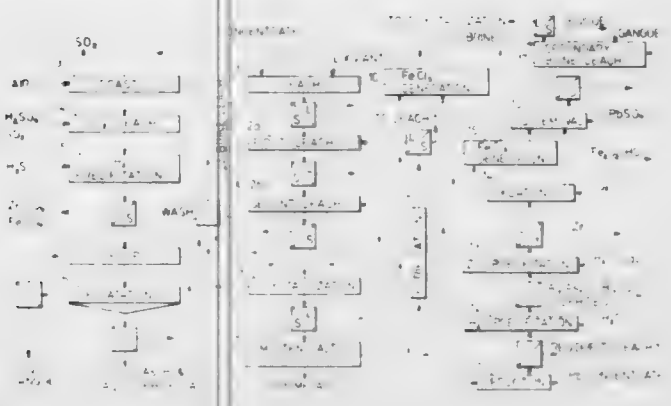
(1) selectively leaching concentrate with an iron-containing

lixiviant for converting lead sulfide in said concentrate to lead chloride to produce a leach residue and a leach solution;

(2) subjecting said leach residue to a two-stage, countercurrent, hot brine leach to dissolve lead chloride in a brine-leach solution and to form a brine-leach residue;

(3) subjecting the brine-leach solution to crystallization by evaporative cooling to lower the temperature of the said solution to the range of 20° to 30° C. for the separate recovery of crystallized lead chloride, residual brine and crystallization condensate, and returning said residual brine to the brine leach of step (2);

(4) subjecting crystallized lead chloride in admixture with about 8% by weight of sodium chloride to electrolysis in



a fused bath at a temperature in the range of 410° to 500° C. for production of lead and evolution of chlorine;

(5) sequentially washing the brine-leach residue from step (2) in two or more stages with crystallization condensate to remove lead chloride from said residue, returning condensate from said washing stages to step (3) and recovering said washed residue;

(6) dividing leach solution from step (1) into two or more portions;

(7) absorbing chlorine in a first portion of the leach solution from step (1) for the generation of ferric chloride-containing solution; and

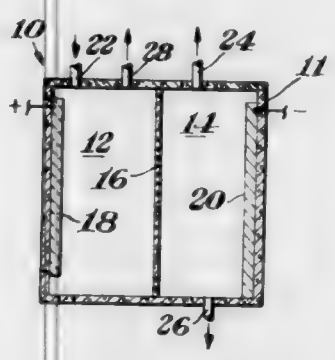
(8) treating a second portion of leach solution for the recovery of contained values.

4,082,630

ELECTROLYTIC CELL BRINE FEED SYSTEM

A. C. Wiley, Jr., and Otis C. Taylor, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 28, 1975, Ser. No. 572,542
Int. Cl.² C25B *1/16, 1/26, 15/08*
U.S. Cl. 205—98 **10 Claims**



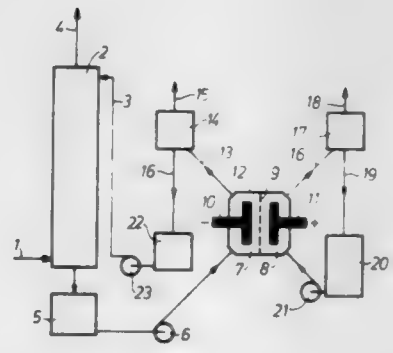
1. In a process to produce chlorine and an alkali metal hydroxide in an electrolytic diaphragm cell system by feeding an alkali metal chloride containing brine to an anode compartment and passing alkali metal ions through the diaphragm into a cathode chamber, supplying sufficient electrical energy to an anode positioned in the anode compartment and to a cathode positioned in the cathode compartment to release gaseous chlorine at the anode and form an alkali metal hydroxide in the cathode compartment, and recovering the chlorine and alkali metal hydroxide, the improvement comprising suitably adjusting the lengths of secondary conduits connected to the anode compartment to feed a substantially uniform volume of an aqueous slurry containing an alkali metal particulate through each of the secondary conduits in a unit time period; feeding the slurry through at least one primary conduit and then through the secondary conduits into the anode compartment, the secondary conduits having an interior cross-sectional area of up to about 0.2 square inch and less than the interior cross-sectional area of the primary conduit; and controlling the flow of the slurry through the primary and the secondary conduits at a linear velocity of at least about 6.5 feet per second.

4,082,631

ABSORPTION OF CHLORINE GAS

Eberhard Zirngiebl, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 17, 1976, Ser. No. 724,121
Claims priority, application Germany, Oct. 9, 1975, 2545342
Int. Cl.² C25B *1/26*
U.S. Cl. 204—128 **6 Claims**



1. A process for the absorption of chlorine from a chlorine-containing gas, comprising contacting the chlorine-containing gas with an aqueous solution containing about 1 to 400 g/l of iron(II)chloride and about 0.1 to 10 g/l of a salt of at least one of copper(I) and copper(II), the chlorine being absorbed by conversion to chloride ion and with conversion of the iron(II)-chloride into iron(III)chloride, thereafter electrolyzing the iron(III)chloride to form chlorine and iron(II)chloride and recycling the iron(II)chloride for the absorption of additional chlorine.

4,082,632

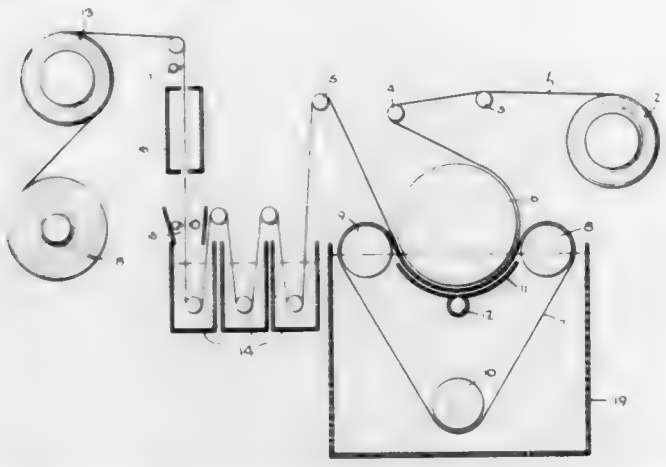
PRODUCTION OF PERFORATED METAL FOIL

John Edward Whittle, Sutton Coldfield, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation of Ser. No. 715,534, Aug. 18, 1976, abandoned.
This application Apr. 21, 1977, Ser. No. 789,689
Claims priority, application United Kingdom, Aug. 26, 1975, 35178/75
Int. Cl.² C25F *3/14, 3/02*
U.S. Cl. 204—129.65 **7 Claims**

1. A process for the production of a continuous length of perforated metal foil comprising passing a continuous length of foil through an electrolytic etching bath wherein one face of the foil contacts a surface which is inert with respect to the electrolyte and the other face of the foil is in contact with an endless perforated titanium mask simultaneously moving together with the foil while in the bath, and applying a potential

difference of up to 10 volts across the foil and a cathode immersed in the bath, whereby the portions of the foil exposed to



the bath through the perforated mask are anodically etched away.

4,082,633

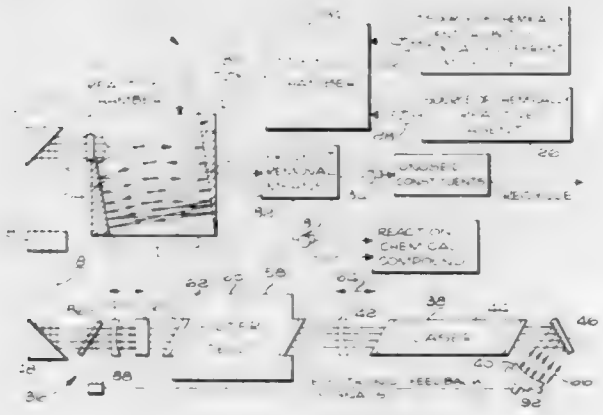
HIGH MASS ISOTOPE SEPARATION PROCESS AND ARRANGEMENT

Jozef Willem Eerkens, 1342 Lachman La., Pacific Palisades, Calif. 90272

Continuation-in-part of Ser. No. 262,661, Jun. 14, 1972. This application Dec. 11, 1975, Ser. No. 639,977

Int. Cl.[2] B01J *1/10;* B01K *1/00*

U.S. Cl. 204—157.1 R **72 Claims**



1. In a process for obtaining a predetermined isotope by separating predetermined isotopic molecules of the predetermined isotope from a mixture of chemically identical but isotopically different molecules, to obtain an enhanced concentration of the predetermined isotopic molecules, and wherein the molecules comprising the mixture of chemically identical but isotopically different molecules have photon-inducible transitions between a lower molecular energy state of rovibrational levels and a higher molecular energy state of rovibrational levels, thereby defining a rovibrational photon absorption band, and wherein said molecules of said higher molecular energy state have a predetermined molecular vibration, and wherein said absorption band of the chemically identical but isotopically different molecules containing the predetermined isotope are frequency-shifted with respect to the absorption band of the other chemically identical but isotopically different molecules, and said absorption band having predetermined regions wherein the absorption cross-section of said predetermined isotopic molecules is larger than the absorption cross-section of the other isotopic molecules at a predetermined frequency within said predetermined region, the improvement comprising the steps of:

generating a beam of photons having a frequency corresponding to said predetermined frequency;

maintaining the mixture of chemically identical but isotopically different molecules at a predetermined pressure and a predetermined temperature;

irradiating the mixture of chemically identical but isotopically different molecules with said photons at said predetermined frequency to cause transitions of said chemically identical but isotopically different molecules to said higher molecular energy state, and said photons having a flux density to provide a rate of said transitions greater than the collisional de-excitation rate of the predetermined molecular vibration, thereby providing a population of molecules having said predetermined molecular vibration of said higher molecular energy state greater than the population of said molecules having said predetermined molecular vibration of said lower molecular energy state;

providing a chemically reactive agent to said mixture of chemically identical but isotopically different molecules, for preselected reaction therewith, and said chemically reactive agent having a reaction rate with said molecules in said higher energy state having said predetermined molecular vibration greater than the reaction rate of said agent with molecules at said lower energy state, and said reaction providing a chemical compound in a predetermined physicochemical state different from the physiocochemical state of said mixture of chemically identical but isotopically different molecules in said lower molecular energy state;

selectively removing said chemical compound; and

selectively recovering said predetermined isotope.

4,082,634

METHOD OF CURING B-STAGE POLYURETHANES

Wen-Hsuan Chang, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 141,434, May 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 746,740, Jul. 23, 1968, abandoned. This application Nov. 14, 1972, Ser. No. 307,270

Int. Cl.[2] C08F *8/00*

U.S. Cl. 204—159.15 **11 Claims**

1. A method of producing a cured polyurethane which comprises subjecting a layer of a curable polyurethane composition to ionizing radiation or actinic light sufficient to cure said layer, said curable polyurethane composition consisting essentially of

A. the reaction product of

a. a polyester polyol,

b. an organic isocyanate, and

c. a hydroxyl-containing ester having a terminal acrylyl or alpha-substituted acrylyl group,

wherein the number of isocyanate groups of the reactants is not greater than the number of hydroxyl groups of the reactants; and

B. up to 25 percent based on the total weight of (A) and (B) of a radiation-sensitive monoethylenically unsaturated monomer.

4,082,635

ULTRAVIOLET LIGHT-CURABLE DIACRYLATE HYDANTOIN ADHESIVE COMPOSITIONS

André Fritz, and Barbara Lee Dunn, both of Okemos, Mich., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

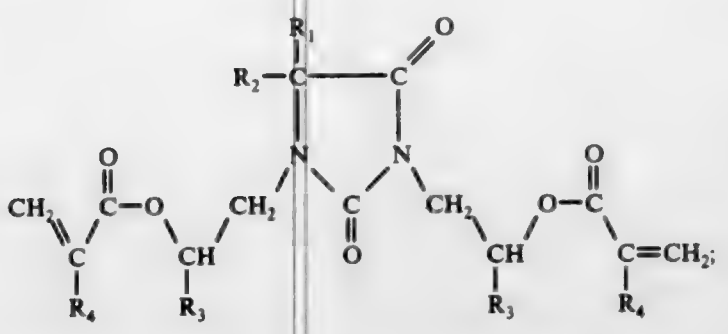
Filed Aug. 2, 1976, Ser. No. 711,002

Int. Cl.[2] C08F *2/46, 30/08*

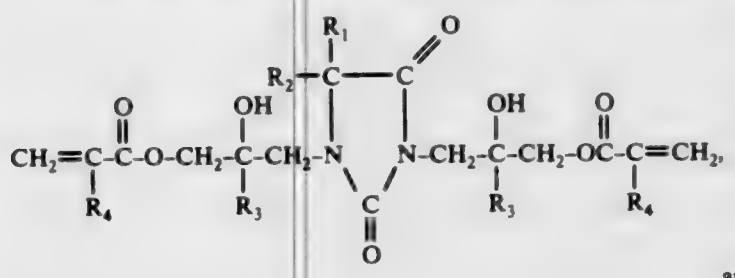
U.S. Cl. 204—159.23 **4 Claims**

1. An ultraviolet light-curable adhesive composition comprising:

(a) from 25–75 parts of a diacrylate of the formula

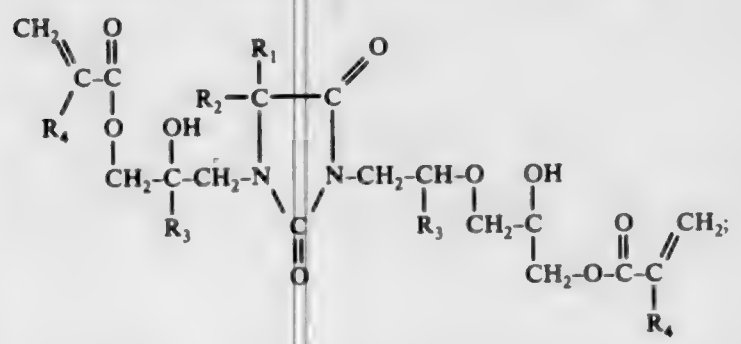


(b) from 25–75 parts of a diacrylate comprising
(1) from 80 to 100 parts of a compound of the formula



and

(2) from 0 to 20 parts of a compound of the formula



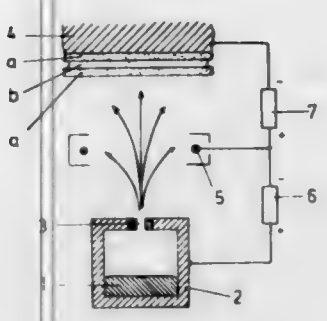
(c) from 0.01 to 2 parts of an organosilane adhesion promoter; and
(d) from 0.01 to 3 parts of a light sensitizer wherein each of R_1 and R_2 is hydrogen, alkyl of 1 to 8 carbon atoms, cycloalkyl of 5 or 6 carbon atoms, or phenyl or together R_1 and R_2 is tetramethylene or pentamethylene; and R_3 and R_4 are hydrogen or methyl.

4,082,636

ION PLATING METHOD

Toshinori Takagi, Nagaokakyo, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 12, 1976, Ser. No. 648,296
Claims priority, application Japan, Jan. 13, 1975, 50-6666; Jan. 13, 1975, 50-7304[U]
Int. Cl.² C23C *15/00*
U.S. Cl. 204—192 N **6 Claims**



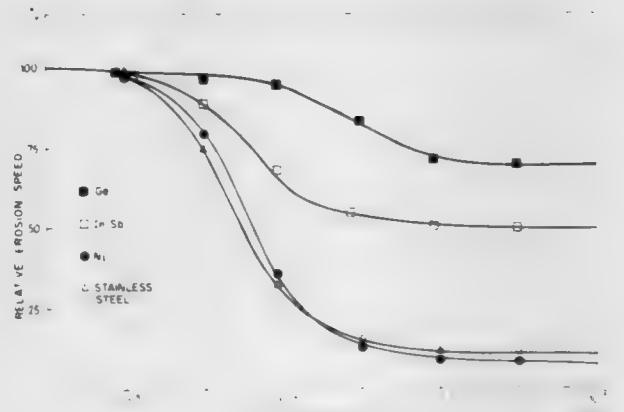
1. An ion plating method comprising the steps of:
preparing an ion plating device which comprises an ionization electrode assembly for ionizing material to be deposited, an ion accelerator electrode assembly for accelerating the ionized particles of the material and a substrate on which the ionized particles together with neutral particles are deposited;
applying a first variable-voltage power source between the ionization electrode assembly and the ion accelerator electrode assembly;
applying a second variable-voltage power source between the ion accelerator electrode assembly and the substrate;
varying the output of the first and second variable-voltage power sources to regulate the ratio of ionized particles to neutral particles, which are incident on the substrate, thereby forming a multi-layer structure of deposited films.

4,082,637

PROCESS FOR MANUFACTURING SEMICONDUCTOR STRUCTURES BY SPUTTER ETCHING

Carlo Misiano; Karl Heinz Diedrich, and Enrico Simonetti, all of Rome, Italy, assignors to Selenia-Industrie Elettroniche Associate S.p.A., Naples, Italy

Filed Oct. 7, 1976, Ser. No. 730,542
Claims priority, application Italy, Nov. 24, 1975, 52375 A/75
Int. Cl.² C23C *15/00*
U.S. Cl. 204—192 E **12 Claims**



1. A process for manufacturing a semiconductor monocrystalline structure by sputter etching a semiconductor substrate material having a masking material thereon, said process comprising sputter etching said substrate material with an electric discharge at a higher rate than said masking material is etched, in a rarefied atmosphere of:
(a) Argon and hydrogen; or
(b) Argon and H_2O; or
(c) an inert gas and a gas developing hydrogen ions to thereby reduce surface contamination of said substrate material by back scattering of said masking material.

4,082,638

APPARATUS FOR INCREMENTAL ELECTRO-PROCESSING OF LARGE AREAS

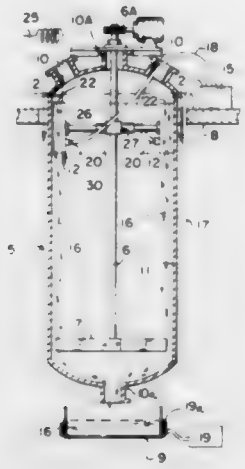
John F. Jumer, 16 W. 131 Timber Trails Dr., Elmhurst, Ill. 60126

Division of Ser. No. 507,534, Sep. 9, 1974, Pat. No. 4,001,094. This application Dec. 21, 1976, Ser. No. 753,002
Int. Cl.² C25F *3/16*; B23P *1/12*; C25D *17/12, 21/10*
U.S. Cl. 204—213 **4 Claims**

1. Apparatus for incrementally electropolishing the interior metal surface of a stationary vertically oriented vessel having closed ends and a sidewall generally concentric about its vertical axis with at least one of said closed ends having an access port, said vessel including an agitator therein positioned on a shaft which is adapted for rotation, and said shaft being mounted along at least a portion of the vertical axis of said vessel, said apparatus comprising:
an extensible arm including a collar adapted to be mounted on said shaft to extend generally horizontally therefrom, said collar mounting being detachable for selectively changing the vertical position of said arm on said shaft;

processing chamber means mounted on the distal ends of said arm, and including a first face opening thereon for sequentially masking increments of said metal surface to be electro-polished, said face opening including a sealing means at the edges thereof for substantially sealingly engaging an incremental area of said metal surface, and said chamber means including a substantially open top portion thereof;

an ungrounded electrode being positioned in said processing



chamber means, said electrode including a portion thereof which is positioned substantially parallel to and spatially related with said first face opening;

a reservoir capable of holding a supply of electrolyte;

pump means including means for moving an electrolyte from said reservoir to said processing chamber means, and means for returning electrolyte to said reservoir; and

a source of electrical current capable of supplying same to said electrode.

4,082,639

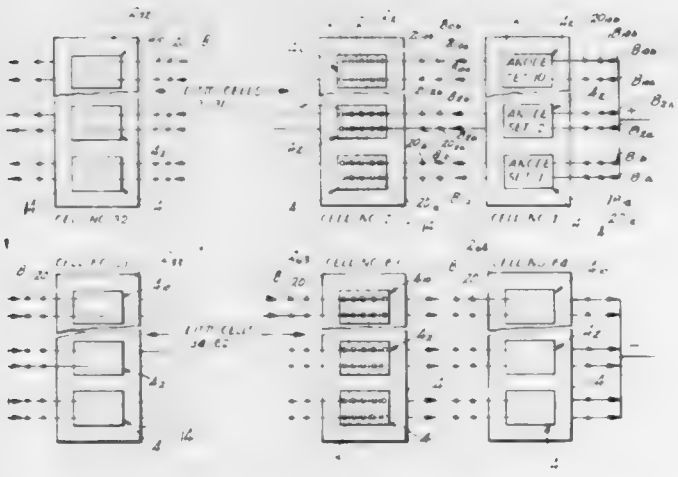
METHOD AND APPARATUS FOR MERCURY CELL ANODE ADJUSTMENT

Richard W. Ralston, Jr., and George K. Ames, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 22, 1976, Ser. No. 725,918

Int. Cl.[2] C25B *15/04, 9/04*

U.S. Cl. 204—219 **24 Claims**



1. In a mercury cell circuit having a plurality of liquid cathode electrolytic cells in series, each of said cells having at least one anode, at least one motor means associated with each cell for raising at least one anode of said associated cell and a plurality of anode buses, the improvement comprising:

a. signal generator means for generating signals from two spaced apart paired taps on each anode bus of each cell,

b. first and second solid state multiplexer means associated with a first and second one of said cells, respectively, and independently simultaneously operable for fast scanning the signals from each anode bus of said first and second cell, respectively, and continuously and simultaneously transmitting a pair of signals from each of said cells, said pair of signals including sequential portions of the paired signals from each anode bus of that cell in sequence,

c. converter means for simultaneously converting each pair of said transmitted multiplexed signals into a single analog signal proportional to the anode bus currents of the cell from which said converted multiplexed signals originated,

d. overcurrent circuit means for simultaneously modifying said converted multiplexed single signal of each of said multiplexers to produce an overcurrent signal when an overcurrent exists in an anode bus of at least one of said cells, and

e. transmitter means for simultaneously transmitting said overcurrent signal of each multiplexer to the motor means associated with the anode bus from which the converted multiplexed single signal was generated so as to be able to simultaneously adjust anodes of a plurality of said cells.

4,082,640

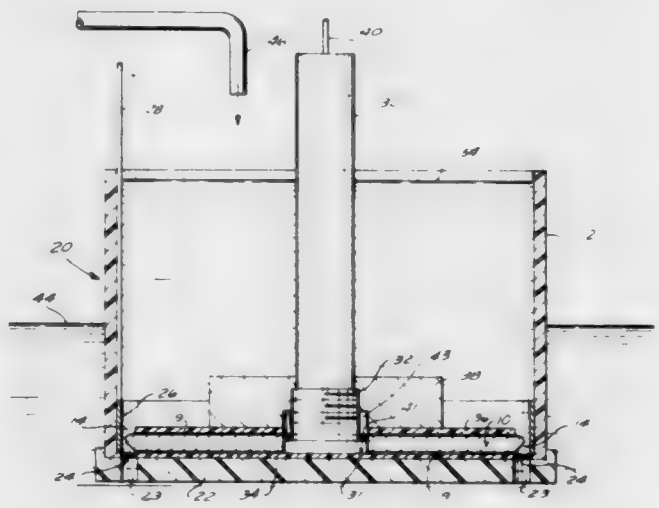
APPARATUS FOR FORMING AN ELECTROPLATED ABRASIVE TOOL

William M. Haack, St. Louis, Mo., assignor to Keene Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 545,984, Jan. 31, 1975, Pat. No. 3,957,593. This application May 7, 1976, Ser. No. 684,005

Int. Cl.[2] C25D *17/06, 17/18*

U.S. Cl. 204—279 **2 Claims**



1. Apparatus useful in the initial application by electroplating of abrasive particles in substantially single layer thickness to the working surface formed around the peripheral area of a disc-shaped abrasive wheel blank which comprises:

a first tank formed with an impervious side wall enclosure slightly larger in diameter than the diameter of the abrasive wheel blank and a base having openings therethrough adjacent the periphery of the container and having a porous mesh portion extending across such openings, the said mesh being smaller in size than the size of the abrasive particles to be applied to the working surface;

a fixture for supporting the wheel blank in the first tank with its working surface spaced from the side wall enclosure and from the porous mesh portion to define a narrow space bounded by the side wall enclosure, the working surface and the mesh portion;

the said space being adapted to receive a mass of abrasive particles surrounding the working surface with abrasive particles in contact with all portions thereof and to provide an area for a concentrated flow of plating solution downwardly through the said space, mesh, and base openings;

means for supporting metal plating material inside the side wall enclosure and adjacent the working surface and for connecting it as an anode and for connecting the working surface of the blank as a cathode in an electroplating circuit when the plating solution is flowed downwardly

over the working surface and through the mass of particles in contact with both the working surface and the metal plating anode; and

means for feeding the electrolyte solution into the said first tank.

4,082,641

REUSABLE INTEGRATED CATHODE UNIT

Ronald Parkinson, Thornhill, and Richard Allan Sinton, Toronto, both of Canada, assignors to Falconbridge Nickel Mines Limited, Toronto, Canada

Filed Nov. 2, 1976, Ser. No. 738,148

Claims priority, application United Kingdom, Apr. 1, 1976, 13340/76

Int. Cl.² C25D *1/10, 1/20;* C25C *7/02*

U.S. Cl. 204—281 **7 Claims**





1. A rectangular reusable cathode unit having two working faces for the simultaneous batch electrodeposition thereon of a multiplicity of discrete metal deposits, the cathode unit comprising an integrated whole of two interlocking parts, a substantially ridid slab of non-conductive material with a conductive metal assembly embedded therein, said assembly having projections at spaced locations that penetrate the surface of the slab thereby forming an array of solid, conductive metal islands, each metal island having a surface area of less than about 0.2 square inches and more than about 0.02 square inches and being flush with or raised above the surface of the slab and separated from each other sufficiently for the electrodeposition of discrete metal deposits thereon, each of which has a basal area several times larger than that of the island on which it is deposited.

4,082,642

MEASURING ARRANGEMENT

Helmut Hönig, Seebachergasse 10, 8010 Graz, Austria

Continuation of Ser. No. 340,318, Mar. 12, 1973, abandoned. This application Nov. 3, 1975, Ser. No. 628,121

Claims priority, application Austria, Mar. 13, 1972, 2074/72

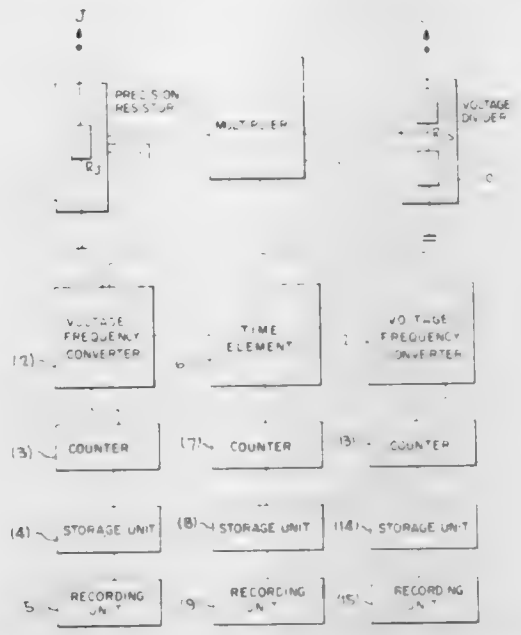
Int. Cl.² C25D *13/00, 13/06*

U.S. Cl. 204—299 EC **7 Claims**

1. An arrangement for measuring electrical parameters of binders subjected to an electrodeposition current, said arrangement comprising, in combination

resistor means for providing a voltage proportional to said electrodeposition current;

converter means connected to said resistor means for producing a sequence of impulses having a frequency proportional to said voltage;



counter means connected to said converter means for counting said impulses, and having an output for providing a cumulative count of said impulses; and

recording means connected to said output for recording at a predetermined rate said cumulative count, whereby the charge yield of said binder is recorded.

4,082,643

PROCESS FOR THE LIQUEFACTION OF COAL AND SEPARATION OF SOLIDS FROM THE PRODUCT STREAM

John G. Gatsis, and Gim Tan, both of Des Plaines, Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 536,680, Dec. 26, 1974, Pat. No. 3,997,425. This application Dec. 14, 1976, Ser. No. 750,481

Int. Cl.² C10G *1/06*

U.S. Cl. 208—8 **5 Claims**

1. A process for producing hydrocarbonaceous liquid products from coal which comprises the steps of:

(a) contacting the coal, at a temperature of from about 150° to about 450° C. and a pressure of from about 10 to about 300 atmospheres with a hydrogenated coal oil solvent having been hydrogenated to remove at least about 80% of the asphaltenes, and hydrogen;

(b) separating gas from the resultant mixture to provide a liquid phase comprising coal extract, a hydrogen-depleted liquefaction zone effluent solvent and finely divided solid particles;

(c) supplying said liquid phase including substantially all of said hydrogen-depleted liquefaction zone effluent solvent, to a pre-mix zone and therein commingling the same with from about 10 weight percent to about 1000 weight percent of a light aromatic solvent selected from the group consisting of benzene, toluene and xylene and with from about 0.1 weight percent to about 1000 weight percent of fresh hydrogenated coal oil solvent having been hydrogenated to remove at least about 80% of the asphaltenes at a temperature of from about 10° to about 150° C. and a pressure of from about atmospheric to about 25 atmospheres;

(d) introducing the mixture from the pre-mix zone to a separation zone and therein separating a solid ash from the admixed liquids;

(e) thereafter removing said light aromatic solvent from said admixed liquids in a solvent recovery zone;
(f) removing an ash-free hydrocarbon stream from said solvent recovery zone and hydrogenating at least a portion thereof to form a hydrogenated coal oil, said coal oil having been hydrogenated to remove at least about 80% of the asphaltenes; and
(g) supplying at least a portion of said hydrogenated coal oil to step (a) and (c) as said hydrogenated coal oil solvent.

4,082,644

PROCESS FOR THE LIQUEFACTION OF COAL AND SEPARATION OF SOLIDS FROM THE PRODUCT STREAM

John G. Gatsis, and Gim Tan, both of Des Plaines, Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 536,680, Dec. 26, 1974, Pat. No. 3,997,425. This application Dec. 14, 1976, Ser. No. 750,482
Int. Cl.² C10G *1/06*
U.S. Cl. 208—8 **6 Claims**

1. A process for producing hydrocarbonaceous liquid products from coal which comprises the steps of:
(a) contacting the coal, at a temperature of from about 150° to about 450° C. and a pressure of from about 10 to about 300 atmospheres with a hydrogenated coal oil solvent, said coal oil solvent having been hydrogenated to remove at least about 80% of the asphaltenes, hydrogen and a light aromatic solvent;
(b) separating gas from the resultant mixture to provide a liquid phase comprising coal extract, solvent and finely divided solid particles;
(c) supplying said liquid phase, including substantially all of said coal oil solvent, to a pre-mix zone and therein commingling the same with from about 5 weight percent to about 1000 weight percent of a light aromatic solvent selected from the group consisting of benzene, toluene and xylene at a temperature of from about 10° to about 150° C. and a pressure of from about atmospheric to about 25 atmospheres;
(d) introducing the mixture from the pre-mix zone to a separation zone and therein separating a solid ash from the admixed liquids;
(e) thereafter removing said light aromatic solvent from said admixed liquids in a solvent recovery zone;
(f) removing an ash-free hydrocarbon stream from said solvent recovery zone and hydrogenating at least a portion thereof to form a hydrogenated coal oil, said coal oil having been hydrogenated to remove at least about 80% of the asphaltenes; and
(g) supplying at least a portion of said hydrogenated coal oil to step (a) as said hydrogenated coal oil solvent.

4,082,645

RECOVERY OF HYDROCARBON VALUES BY CONTROLLED EDUCTION AND OXIDATION OF OIL SHALE

John H. Knight, Littleton; Lewis A. St. Cyr, Evergreen, both of Colo., and Omer L. Wilson, Houston, Tex., assignors to The Superior Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 567,546, Apr. 14, 1975, abandoned. This application Dec. 14, 1976, Ser. No. 750,409
Int. Cl.² C10G *1/02*
U.S. Cl. 208—11 R **8 Claims**

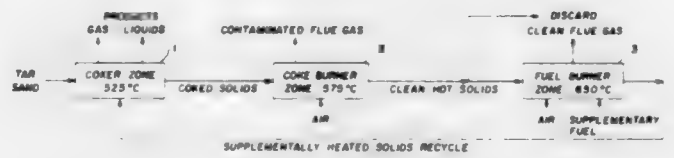
1. In the process for recovering oil from oil shale wherein hot reducing or inert gases are passed in cross-flow fashion through a moving quiescent bed of crushed shale in a direction normal to the direction of travel of said bed to heat the shale particles in said bed to oil-educing temperatures and strip the oils from the shale, leaving a non-vaporizable carbonaceous residue in the spent shale, the improvement which comprises:
in a first zone, passing hot reducing or inert gases through said moving bed at a temperature and flow rate sufficient to heat only a portion of the layers of particles at the gas inlet side of the bed to oil educing temperatures and to establish within said bed a temperature range below that at which adverse chemical reactions involving the shale would occur;
thereafter, prior to the time when the particles in those regions of the bed which are farthest from the gas inlet side have reached oil-educing temperatures but while the particles at the gas inlet side remain above oil educing temperatures, transferring said bed to a second zone;
in said second zone, directing oxygen-containing gases through the bed from said gas inlet side, whereby a substantial portion of the carbonaceous residue in the spent shale regions of the bed is oxidized, producing and transferring heat to the deeper regions within said bed,
the oxygen mass flow rate of said oxygen-containing gases being initially set and thereafter incrementally adjusted at downstream locations such that as the bed proceeds through said second zone, the carbonaceous residue in the remaining portions of the bed continues to be oxidized through to the gas outlet side of the bed while at the same time the temperature profile of the bed is maintained within the temperature range established in the first zone.

4,082,646

COKING OF BITUMINOUS SOLIDS WITH HOT SOLIDS RECYCLE

Peter Charles Flynn, Edmonton, Canada, assignor to Petro-Canada Exploration Inc., Calgary; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; Ontario Energy Corporation; Imperial Oil Limited, both of Toronto; Canada-Cities Service, Ltd., Calgary and Gulf Oil Canada Limited, Toronto, all of, Canada

Filed Jun. 17, 1977, Ser. No. 807,349
Int. Cl.² C10G *1/02*
U.S. Cl. 208—11 R **3 Claims**



1. In the process wherein a feed stock comprising naturally occurring hydrocarbons associated with mineral solids, such as bituminous sands, are thermally cracked in a coking reaction zone, and coked solids produced therefrom are introduced into a burning zone wherein the coke is burned from the solids, supplemental fuel addition to said burning zone being required to maintain heat balance, and part or all of the produced hot clean solids, having a required heat content, is recycled to the coking reaction zone to supply heat thereto,
the improvement comprising:
burning substantially all the coke of the coked solids in a coke burning zone with air or oxygen and the minimum amount of supplemental fuel needed, to produce clean hot solids and flue gas containing a relatively high concentration of pollutant compounds and fine solids;
introducing at least part of the clean hot solids into a fuel burning zone and combusting a further portion of supplemental fuel needed to maintain heat balance and air or oxygen in said zone to further heat the solids, thereby producing clean supplementally heated solids, having the heat content required for the coking reaction zone, and flue gas containing a relatively low concentration of pollutant compounds and fine solids; and
recycling supplementally heated solids to the coking reaction zone for heating.

4,082,647

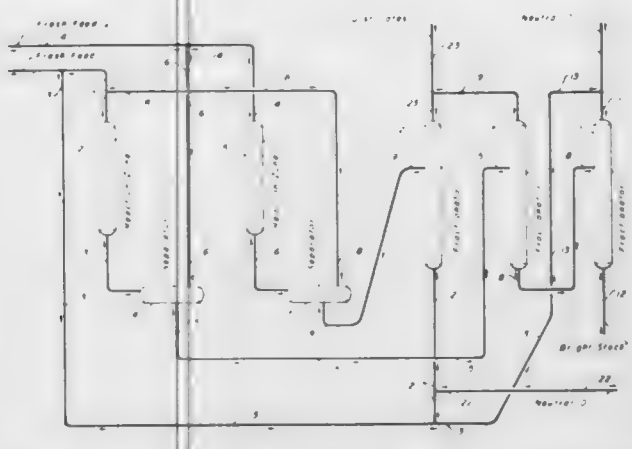
SIMULTANEOUS AND CONTINUOUS HYDROCRACKING PRODUCTION OF MAXIMUM DISTILLATE AND OPTIMUM LUBE OIL BASE STOCK

Le Roi E. Hutchings, Mt. Prospect, and Thomas E. Sahlin, Elmhurst, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 9, 1976, Ser. No. 749,138

Int. Cl.[2] C10G *13/04, 37/02, 41/00*

U.S. Cl. 208—78 **5 Claims**



1. A process for producing hydrocarbon distillates and lubricating oil base stock which comprises the steps of:

(a) subjecting a first hydrocarbon charge stock and hydrogen to hydrocracking in a first hydrocracking reaction zone, at hydrocracking conditions, in contact with a first hydrocracking catalyst containing at least one metallic component selected from Groups VIB and VIII of the Periodic Table;

(b) separating the resulting first zone effluent in a first separation zone, to provide a first principally vaporous phase and a first principally liquid phase consisting essentially of hydrocarbon distillate and lubricating oil;

(c) subjecting said first vaporous phase and a second, lower boiling hydrocarbon charge stock in a second hydrocracking reaction zone to hydrocrack said lower boiling hydrocarbon to a distillate possessing a lesser boiling point than said lower boiling hydrocarbon in contact with a second hydrocracking catalyst containing at least one metallic component selected from Groups VIB and VIII of the Periodic Table at hydrocracking conditions;

(d) separating the resulting second zone effluent in a second separation zone, to provide a second principally vaporous phase and a second principally liquid phase consisting essentially of hydrocarbon distillates and lubricating oil;

(e) separating said first liquid phase in a second fractionation zone to recover said distillate as the overhead effluent and said lubricating oil as the bottoms effluent; and

(f) separating said second liquid phase in a first fractionation zone to recover said distillate as the overhead effluent and said lubricating oil as the bottoms effluent.

4,082,648

PROCESS FOR SEPARATING SOLID ASPHALTIC FRACTION FROM HYDROCRACKED PETROLEUM FEEDSTOCK

James R. Murphy, Houston, Tex., assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 3, 1977, Ser. No. 765,141

Int. Cl.[2] C10G *31/06, 31/10, 13/00, 23/00*
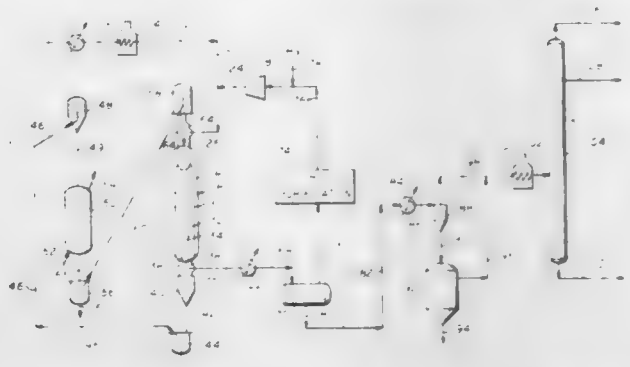
U.S. Cl. 208—97 **12 Claims**

1. A process for upgrading a petroleum feedstock having at least 5 ppm metals and a Conradson carbon residue of from about 2.0 weight percent to about 25.0 weight percent, comprising the steps of:

(a) contacting the feedstock in a mild hydrocracking zone in the presence of 700 to 3000 psig partial pressure of hydrogen at a temperature of from about 750° F to about 850° F with a cracking catalyst;

(b) separating the mildly hydrocracked feedstock from the cracking catalyst;

(c) cooling the mildly hydrocracked feedstock to a temperature below about 600° F to precipitate a solid asphaltic fraction from the mildly hydrocracked feedstock; and



(d) separating the solid asphaltic fraction from the mildly hydrocracked feedstock so that the portion of the mildly hydrocracked feedstock remaining after separation of the asphaltic fraction is a substantially upgraded feedstock.

4,082,649

HYDROCRACKING HYDROCARBONS OVER TRI-METALLIC CATALYST

Ernest L. Pollitzer, Skokie, and John C. Hayes, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 715,813, Aug. 19, 1976, Pat. No. 4,013,548, which is a division of Ser. No. 672,183, Mar. 31, 1976, Pat. No. 4,003,954, which is a continuation-in-part of Ser. No. 538,240, Jan. 2, 1975, Pat. No. 3,957,624. This application Jan. 27, 1977, Ser. No. 763,270

Int. Cl.[2] C10G *13/06;* **B01J** *26/06, 29/12*

U.S. Cl. 208—111 **3 Claims**

1. A process for hydrocracking a hydrocarbonaceous charge stock into lower molecular weight hydrocarbons, which process comprises reacting said charge stock with hydrogen at hydrocracking conditions, and in contact with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.5 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % germanium and about 0.1 to about 3.5 wt. % halogen, wherein the platinum group metal, cobalt and germanium are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state, wherein substantially all of the germanium is present in an oxidation state above that of the elemental metal, and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states, and separating the resulting reaction zone effluent to recover said lower molecular weight hydrocarbons.

4,082,650

MANUFACTURE OF PETROLEUM COKE WITH FINES RECYCLING

Ke Wen Li, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 640,827, Nov. 28, 1975, abandoned, which is a continuation of Ser. No. 485,174, Jul. 2, 1974, abandoned. This application Jan. 7, 1977, Ser. No. 757,426

Int. Cl.[2] C10G *9/14*

U.S. Cl. 208—131 **4 Claims**

1. In a process for producing delayed petroleum coke comprising introducing a normally liquid hydrocarbon coker feedstock into a delayed coking drum under delayed coking conditions to produce delayed coke therein, the improvement wherein coke fines are added to said coking drum prior to introduction of said coker feedstock thereto, and said coke fines are preheated to approximately the temperature of said

coker feedstock after being added to said coking drum but prior to introduction of said coker feedstock into said coking drum.

4,082,651

HYDROCARBON CONVERSION WITH A SULFIDED ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 684,812, May 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 555,648, Mar. 5, 1975, Pat. No. 3,956,103. This application Mar. 25, 1977, Ser. No. 781,388
The portion of the term of this patent subsequent to May 11, 1993, has been disclaimed.
Int. Cl.[2] C10G *35/08*
U.S. Cl. 208—139 **14 Claims**

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with a sulfided acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, about 0.01 to about 2 wt. % rhenium, about 0.1 to about 3.5 wt. % halogen, and about 0.01 to about 1 wt. % sulfur; wherein the platinum or palladium, rhodium and rhenium are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum or palladium is present in a sulfided state or in a mixture of the sulfided state and the elemental metallic state; wherein substantially all of the rhenium and rhodium are present in a sulfided state or in the elemental metallic state or in a reducible oxide state or in a mixture of these states; and wherein the composite has been sulfided, prior to contact with the hydrocarbon and after substantially all of at least the platinum or palladium contained therein has been reduced to the elemental metallic state, by treatment with a sulfiding gas at conditions selected to incorporate about 0.01 to about 1 wt. % sulfur.

4,082,652

PROCESS FOR IMPROVED CARBON-SUPPORTED HYDRODESULFURIZATION CATALYSTS

John Davidson Voorhies, New Canaan, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 562,524, Mar. 27, 1975, abandoned. This application Jan. 15, 1976, Ser. No. 649,374
Int. Cl.[2] C10G *23/02;* B01J *27/02*
U.S. Cl. 208—216 **10 Claims**

1. A process for preparing an improved hydrodesulfurization catalyst for petroleum fractions which comprises:

(1) depositing upon a carbon support sufficient of a molybdenum compound capable of being converted to MoS_2 to provide a support after said conversion containing from about 5 to about 25 weight percent MoS_2, based on the weight of said support;

(2) treating the support obtained from step (1) to convert said molybdenum compound to MoS_2;

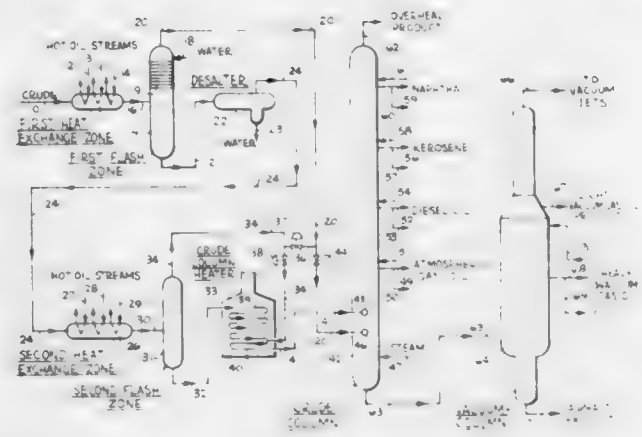
(3) depositing upon the support obtained from step (2) in at least one step sufficient of a molybdenum compound capable of being converted to MoS_2 to increase the content of MoS_2 on said support after said conversion to a total of about 10 to about 25 weight percent, based on the weight of said support, and sufficient of a metal compound selected from the group consisting of nickel and cobalt compounds capable of being converted to corresponding metal sulfide to provide from about 0.4 to 8.0 weight percent of said metal compound, based on the weight of said support.

4,082,653

CRUDE OIL DISTILLATION PROCESS

Richard Raymond DeGraff, 1505 E. Central Rd., Arlington Heights, Ill. 60005

Filed Nov. 17, 1976, Ser. No. 742,415
Int. Cl.[2] C10G *7/00, 31/08, 34/00*
U.S. Cl. 208—251 R **18 Claims**



1. Process for separation of a hydrocarbon crude oil into a plurality of product fractions which comprises:

(a) Passing a hydrocarbon crude oil containing water soluble contaminants into a first heat exchange zone at a first elevated pressure and a first temperature;

(b) Heating said crude oil within said heat exchange zone to a second temperature above said first temperature;

(c) Passing heated crude oil into a first flash zone maintained under conditions sufficient to separate said heated crude oil into a first flash vapor and a first flash liquid, said conditions including a second elevated pressure below said first elevated pressure;

(d) Contacting said first flash vapor with water under conditions sufficient to remove water soluble contaminants therefrom and thereby produce water containing water soluble contaminants;

(e) Passing said first flash liquid and said water containing water soluble contaminants, into a separation zone maintained under conditions sufficient to remove water soluble contaminants from said first flash liquid; and,

(f) Passing at least a portion of first flash liquid having substantial freedom from water soluble contaminants, into a crude oil fractionation zone.

4,082,654

FRACTIONATION TO REMOVE A HIGH-BOILING MATERIAL AND A DISSOLVED SUBSTANCE

Steve A. Gewartowski, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 583,740, Jun. 4, 1975, Pat. No. 4,008,150. This application Oct. 29, 1976, Ser. No. 737,127
The portion of the term of this patent subsequent to Feb. 15, 1994, has been disclaimed.
Int. Cl.[2] B01D *3/06;* C01G *7/00*
U.S. Cl. 208—352 **6 Claims**

1. A method for removing a high-boiling material and a volatile dissolved substance chosen from the group consisting of hydrogen sulfide, nitrogen, sulfur dioxide, helium, carbon monoxide, carbon dioxide, ammonia, acetylene, ethylene, propylene, boron trifluoride, hydrogen fluoride and carbon tetrachloride from a naphtha feed stream comprising hydrocarbons having boiling points in the range of about 40° C. to about 260° C. which comprises the steps of:

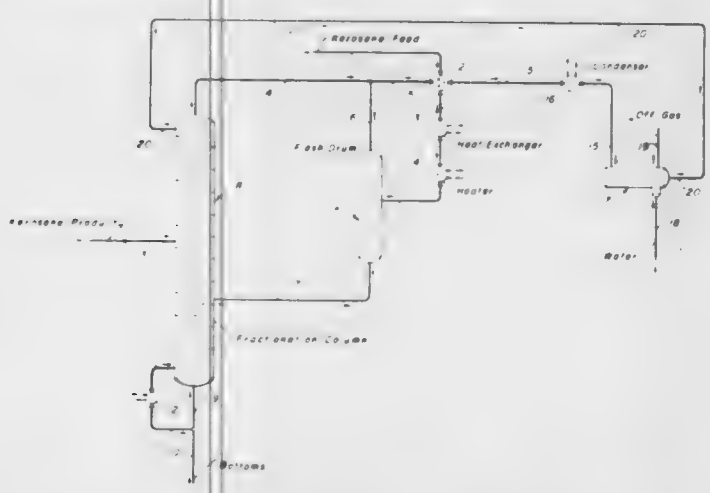
(a) passing said feed stream into a flash zone and effecting the vaporization of about 25 to 75 vol.% of said feed stream and the formation of a single flash vapor stream comprising substantially all of the volatile dissolved substances and a single flash liquid stream comprising substantially all of the high-boiling material;

(b) passing said single flash liquid stream into a fractionation

column at a first intermediate point and effecting the fractional distillation of said single flash liquid stream;

(c) removing an overhead vapor stream from said fractionation column, and passing said overhead vapor stream through a condensation zone and into an overhead receiver to remove at least a portion of the volatile dissolved substances therein and to condense said overhead vapor stream;

(d) passing said single flash vapor stream through a condensation zone and into said overhead receiver to remove at least a portion of said volatile dissolved substances before charge to said fractionation column and to condense said single flash vapor stream to a liquefied flash stream;



(e) removing a reflux stream comprising an admixture of said condensed overhead stream and said liquefied flash stream from said overhead receiver and passing said reflux stream into an upper portion of said fractionation column;

(f) removing a vapor stream comprising said dissolved substances from said overhead receiver;

(g) removing a substantially dissolved volatile and high-boiling material free product stream from the fractionation column at a second intermediate point located above the first intermediate point; and,

(h) removing a bottoms liquid stream comprising the high-boiling material from the fractionation column.

4,082,655

PECAN-WORM SEPARATOR PROCESS AND APPARATUS

Romeo T. Toledo, Athens, Ga., assignor to Tracy-Luckey Co., Inc., Harlem, Ga.

Filed Aug. 23, 1976, Ser. No. 716,634
Int. Cl.[2] B03D *1/14*
U.S. Cl. 209—173 **13 Claims**

1. The method of separating pecan nut meats from pecan weevil larvae therewith, which comprises the steps of:

(a) providing a trough having a bottom opening at one end;

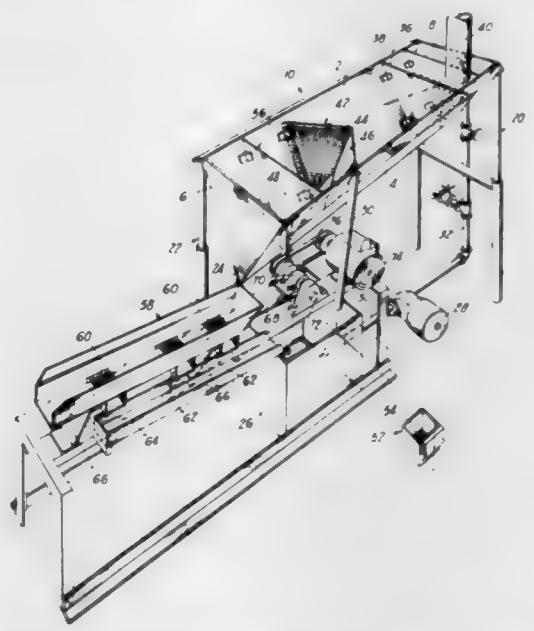
(b) effecting a continuous flow through said trough of a liquid medium which is a mixture of water and alcohol acceptable as a food additive by continuously discharging the liquid medium through said bottom opening at said one end of the trough while continuously introducing the liquid medium into the other end of said trough at a rate sufficient to entrain and carry along said pecan meats while maintaining a selected level of the liquid medium within said trough;

(c) introducing pecan nut meats containing said larvae into said liquid medium adjacent said other end of the trough;

(d) adjusting the ratio of alcohol and water in said medium to obtain a specific gravity of the liquid medium which is within the range 0.91 to 0.95 and which specific gravity is effective to float substantially all of said larvae and only a negligible amount of said pecan nut meats on the surface of said liquid medium while allowing substantially all of the pecan meats to sink;

(e) intercepting and removing the entrained floating material at a region between the region of introduction of step (c) and said one end of the trough while simultaneously directing the entrained sunken material toward said bottom opening;

(f) continuously discharging the liquid material with entrained sunken material from said bottom opening onto a porous conveyor and recirculating the liquid medium passing through the conveyor back for introduction into the trough in step (b); and



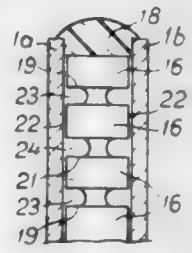
(g) continuously recovering the pecan meats from the conveyor and drying them to obtain an edible product.

4,082,656

FILTER DISC FOR MAGNETIC SEPARATOR

Per Hedvall, and Per Strandberg, both of Vesteras, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Dec. 3, 1975, Ser. No. 637,408
Claims priority, application Sweden, Jan. 9, 1975, 75001941
Int. Cl.[2] B03C *1/02*
U.S. Cl. 209—222 **4 Claims**



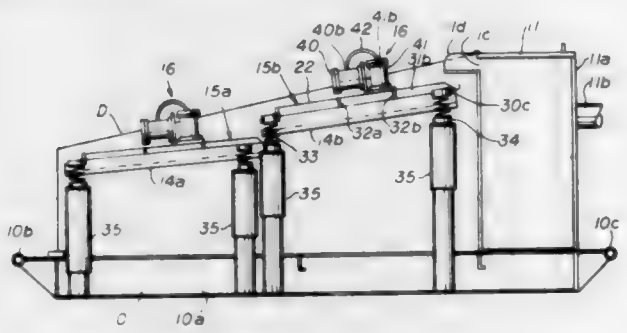
1. Filter disc for magnetic separator comprising two wall discs and a layer of parallelepipedal permanent magnets arranged between them, each permanent magnet having sides facing the wall discs and adjacent permanent magnets abutting each other along parallel sides, said permanent magnets being fixed to the wall discs by a layer of glue, said permanent magnets having bevelled edges perpendicular to the surfaces facing the wall discs to form holes at the corners of adjacent magnets, said holes containing glue projecting into them from the layer of glue.

4,082,657

SEPARATOR APPARATUS

Ernest L. Gage, Box 1687, Monahans, Tex. 79756

Filed Jan. 19, 1976, Ser. No. 650,286
Int. Cl.[2] B07B *1/28*
U.S. Cl. 209—311 **5 Claims**



1. A separating device for separating particulate from a fluid stream, comprising:

a frame adapted for positioning over a recovery area;

a plurality of screen units, each of said screen units including a screen for receiving such fluid stream and separating particulate therefrom as said fluid stream passes through said screen to such recovery area;

a plurality of screen units mounting assemblies mounting each of said screen units;

vibration mount means mounting each of said screen unit mounting assemblies for vibratory motion with respect to said frame;

fluid inlet means mounted with said frame for receiving said fluid stream and directing said fluid stream over said vibrating screen units;

each of said screen unit mounting assemblies having release means for releasably mounting one of said screen units for vibratory motion, said release means including inflatable means movable between a screen unit holding position when inflated, in which position said inflatable means engages and holds said screen unit for vibration, and a screen unit releasing position when deflated, in which said screen unit is released from engagement with said screen unit mounting assembly so that said screen unit is easily removed;

vibrating means mounted with each of said screen unit mounting assemblies for vibrating such screen unit mounting assembly and said screen unit mounted therein by said release means for vibratory movement in mutually perpendicular directions;

said vibration mount means including a plurality of posts mounted with said frame for each screen unit, means mounting each of said screen mounting assemblies on a plurality of said posts, said posts having height adjustment means for adjusting the height of said posts in order to adjust the angular position of each of said screen mounting assemblies and screen units mounted therewith;

said height adjustment means including a cap mounted over said posts for vertical movement with respect thereto; and

means for vertically adjusting said cap with respect to said post.

4,082,658

HOLLOW FIBER MEMBRANES OF ETHYLENE COPOLYMERS AND PROCESS FOR USE

Alfred Keith Fritzsche, Cary, N.C., and Richard L. Leonard, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 9, 1977, Ser. No. 767,096
Int. Cl.[2] B01D *13/00, 31/00*
U.S. Cl. 210—22 R **22 Claims**

1. A hollow fiber membrane consisting of a copolymer of ethylene with from 5 to 20 weight percent of a copolymerized vinyl monomer having an outside diameter of from 50 to 1000 microns, a wall thickness having a ratio of from 0.1 to 0.4 of said outside diameter and having a intrinsic permeability of phenol determined in a dilute aqueous solution of phenol at about 70° C of from about 5 to about 100 $\times$ 10^{-8} cc's per cm thickness per second per square centimeter per volume fraction differential.

10. The process for the separation of phenols from aqueous solutions of phenols comprising contacting an aqueous solution of phenols with a first surface of a hollow fiber membrane consisting of a copolymer of ethylene and from 5 to 20 weight percent of a copolymerized vinyl monomer, said membrane having an intrinsic permeability to phenol determined in a dilute aqueous solution of phenol at about 70° C of from about 5 to about 100 $\times$ 10^{-8} cc's per cm thickness per second per square centimeter per volume fraction differential, maintaining a second and opposite surface of said hollow fiber membrane at a lower chemical potential than said first surface, permeating a portion of said phenols into and through the hollow fiber membrane, and withdrawing at the second surface phenols at a higher concentration than the phenols concentration in said aqueous solution.

4,082,659

PROCESS FOR CONCENTRATING LATICES

Christoph Heinze, Burghausen, Salzach; Kasimir Ruchlak, Burgkirchen, Alz, and Holm Steude, Emmerting, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 571,227, Apr. 24, 1975, abandoned. This application Nov. 11, 1976, Ser. No. 741,042
Claims priority, application Germany, Apr. 30, 1974, 2420922
Int. Cl.[2] B01D *13/00;* C08F *14/06*
U.S. Cl. 210—23 F **3 Claims**

1. In a process for concentrating latices which are prepared by emulsion polymerization of vinyl chloride or of vinyl chloride and monomers copolymerizable with vinyl chloride by ultrafiltration by means of a semipermeable membrane of polyacrylonitrile, polymethylmethacrylate or polyamide having a partition cut at a molecular weight of from 10,000 to 50,000, the improvement which comprises the treatment of the membrane, prior to the ultrafiltration, with an aqueous solution having 0.5 to 70 weight % of one or more emulsifiers which are suitable for the emulsion polymerization of vinyl chloride or of vinyl chloride and monomers copolymerizable with vinyl chloride.

4,082,660

METHOD OF PURIFICATION

Eugéne Papirer, Pfastatt, and Jean-Baptiste Donnet, Didenheim, both of France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly-sur-Seine, France

Continuation of Ser. No. 579,210, May 20, 1975, abandoned, which is a continuation of Ser. No. 412,126, Nov. 2, 1973, abandoned. This application Feb. 25, 1976, Ser. No. 661,347
Claims priority, application France, Nov. 3, 1972, 72.38973
Int. Cl.[2] C02B *9/02*
U.S. Cl. 210—36 **7 Claims**

1. A method for the removal of hydrocarbons from water polluted with same comprising contacting said polluted water with an effective amount of a purification agent comprising particles of a pulverulent mineral solid selected from the group consisting of silica, silicates, silicoaluminates, metallic carbonates and oxides of zinc, titanium and aluminum, the surface of said particles having fixed thereon chains of polymer selected from the group consisting of macro-molecular paraffins and their derivatives, polyvinyl derivatives, polydienes, polyolefins and polystyrenes, said chains of polymer being fixed to the surface of said particles by graft reaction of said polymer with the surface of said particles, whereby the hydrocarbon is absorbed by the polymer, the purification agent being then recovered.

4,082,661

ACTIVATED CARBON AND PREPARATION THEREOF

Takao Aoki, Fuchu; Yuji Kako, Ichikawa; Toyoji Kikuga, and Keizo Hatano, both of Fujieda, all of Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Jul. 29, 1975, Ser. No. 600,030
Claims priority, application Japan, Aug. 1, 1974, 49-87553
Int. Cl.[2] B01D *15/00*
U.S. Cl. 210—40 10 Claims

7. In the process of purifying aqueous liquids contaminated with impurities selected from the group consisting of phenol, live bacilli, pyrogen, and water-soluble organic dyestuffs, which comprises filtering the contaminated liquid with an inorganic filter and contacting the contaminated liquid with activated carbon, the improvement which comprises employing as said filter and activated carbon an inorganic porous article impregnated with a non-oxidatively carbonized cured phenolic resin, said filter containing at least about 2 percent by weight activated carbon and having a main capillary radii distribution between about 100 and 50,000 Angstrom units, and an average capillary volume between about 0.05 ml./g. and about 0.5 ml./g.

4,082,662

LIQUID WASTE TREATMENT APPARATUS

Jack E. Prince; Franklin E. Terry, both of 2927 31st St., Port Arthur, Tex. 77640, and William H. Mullins, 230 W. Kings Hwy., San Antonio, Tex. 78212

Division of Ser. No. 580,521, Jun. 23, 1975, Pat. No. 3,996,139, which is a continuation-in-part of Ser. No. 329,441, Feb. 5, 1973, abandoned. This application Sep. 30, 1976, Ser. No. 727,904
Int. Cl.[2] C02B *3/08*
U.S. Cl. 210—63 R 5 Claims

1. A method for pretreating liquid waste consisting of the following steps:

a. pumping said liquid waste through a pipe into an aerator;
b. horizontally discharging said liquid waste from a reduced diameter nozzle inside said aerator into an elongated, uniform cross section mixing chamber;
c. first breaking up of organic solids in said liquid waste to release entrained gas by shearing action upon said horizontally discharging through said reduced diameter nozzle;
d. aspirating air into said mixing chamber around said nozzle;
e. first mixing of said air and liquid waste by turbulence inside said mixing chamber; and
f. second mixing of said air and liquid waste and second breaking up of organic solids to further release entrained gas by an abrupt termination of said mixing chamber into a larger cross sectional area at ambient pressure.

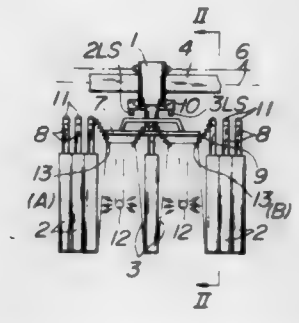
4,082,663

METHOD OF POSITIONING A FILTER CAKE DISCHARGE DEVICE FOR A FILTER PRESS

Nobuo Sato, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Dec. 27, 1976, Ser. No. 754,842
Claims priority, application Japan, Jan. 7, 1976, 51-1737
Int. Cl.[2] B01D *23/24*
U.S. Cl. 210—79 3 Claims

1. A method of positioning a filter cake discharge device for a filter press travelling above filter plates in a moving direction of said filter plates, comprising determining a relative position of said filter cake discharge device with respect to said filter plates by utilizing each signal from a switch provided on said discharge device for detecting a position of said filter cake discharge device and a pair of switches provided on said discharge device for detecting a condition of said filter plates,



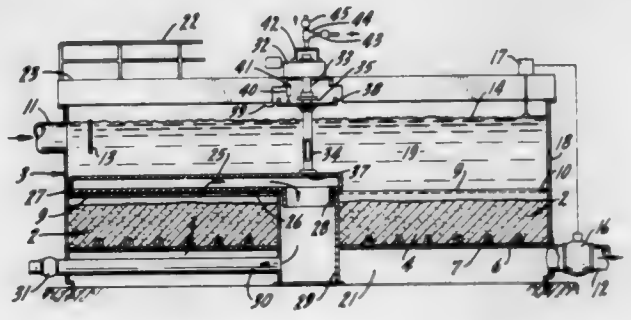
wherein said switches are operated by protrusions provided on the top end of said filter plates.

4,082,664

FILTER AND METHOD

Anders Lindstol, Oakville, Canada, assignor to Ecodyne Corporation, Lincolnshire, Ill.

Continuation-in-part of Ser. No. 699,775, Jul. 22, 1976, abandoned. This application Jun. 2, 1977, Ser. No. 802,927
Int. Cl.[2] B01D *23/24*
U.S. Cl. 210—80 57 Claims



8. A multibed liquid filter comprising a container having an inlet and an outlet, means in said container supporting filter material and defining therebeneath a filtered liquid chamber communicating with said outlet, a wall of said container extending above said filter material so as to define a chamber for unfiltered liquid, partitions extending upwardly from said material supporting means so as to divide said filter material into a plurality of beds, the upper terminal edge of each partition extending above said beds into said unfiltered liquid chamber, said upper edges providing sealable surfaces, a backwash isolation hood for sealing with the sealable surfaces provided by the partitions which define any of said beds, a backwash outlet connected to the underside of said hood, means for moving said hood from one bed to another, means connecting the underside of said hood to a source of pressurized gas for floating said hood out of sealing engagement with said partitions, and means for venting the underside of said hood so as to release gas pressure and cause said hood to move into sealing engagement with said sealing surfaces.

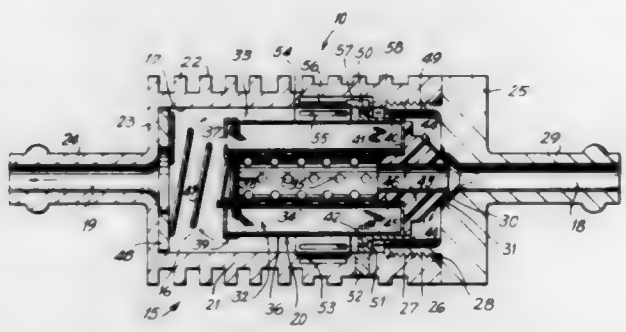
17. A process for filtration of a liquid in a multiunit filter having a movable hood that isolates individual filter units during backwashing, comprising: passing liquid through said units until at least one unit requires backwashing, moving said hood into sealing engagement isolating said unit in need of backwashing from the other units, backwashing said unit by flowing backwashing liquid therethrough, forcing gas under pressure between said hood and unit so as to evacuate sufficient liquid from between said hood and unit to cause said hood to float above said unit and out of sealing engagement therewith, and moving said hood to another unit in need of backwashing.

4,082,665

FLUID FILTER DEVICE FOR AUTOMOTIVE POWER STEERING SYSTEM

Manuel Schneider, 231 Beach 131 St., Belle Harbor, N.Y. 11694, and Emil J. Novak, 111 Stewart Ave. West, Garden City, N.Y. 11530

Filed Jul. 1, 1976, Ser. No. 701,818
Int. Cl.[2] B01D *27/10*
U.S. Cl. 210—91 **26 Claims**



1. A fluid filter device comprising a casing defining a chamber with a cylindrical wall surface and having an axial inlet passage terminating in an opening into said chamber at one end of the latter with a valve seat extending around said opening, and an axial outlet passage extending from said chamber at the opposite end of the latter; an elongated filter element axially movable in said chamber and including a foraminous cylindrical side wall constituting a primary filter and being spaced from said wall surface to provide an annular clearance therebetween communicating with said outlet passage, an end wall closing the filter element at the end of the latter directed toward said outlet passage, and a valve member fixed at the end of said filter element directed toward said inlet passage for engagement with said valve seat, said valve member having an axial bore through which fluid from said inlet passage can enter said filter element for normal filtration through said foraminous side wall while said valve member is engaged with said valve seat; spring means yieldably urging said filter element axially in the direction to engage said valve member with said valve seat, the force of said spring means being selected to be overcome for unseating said valve member and permitting by-passing of said primary filter when clogging of said foraminous side wall results in a predetermined buildup in the pressure differential between fluid entering at said inlet passage and fluid exiting at said outlet passage; and a secondary filter annulus extending around said filter element adjacent the end of the latter at which said valve member is fixed and slidably engaging said wall surface of the chamber so that, upon said unseating of the valve member due to clogging of said foraminous side wall, the fluid bypassing said primary filter is further filtered by said secondary filter annulus in flowing from said inlet passage to said outlet passage by way of said annulur clearance.

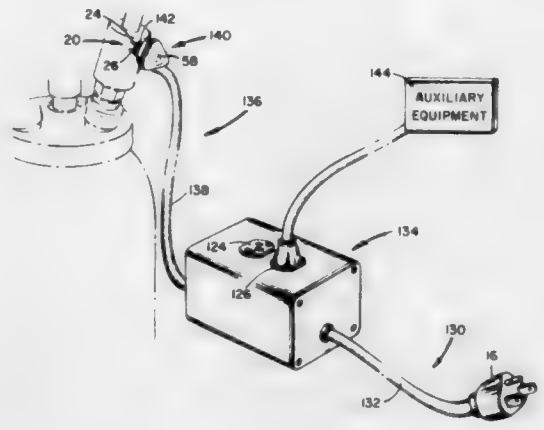
4,082,666

END POINT QUALITY CONTROL LIGHT CIRCUIT

Charles L. Jones, and Dominic Aradio, both of El Paso, Tex., assignors to Continental Water Conditioning Corporation, El Paso, Tex.

Filed Aug. 20, 1976, Ser. No. 716,150
Int. Cl.[2] C02B *1/76*
U.S. Cl. 210—93 **32 Claims**

1. An apparatus for indicating the end point quality of a liquid such as water wherein the liquid is generally non-conductive when of a high quality and becomes more conductive when its quality falls, the apparatus comprising: first and second conductive probe means spaced apart from one another, and adapted to reside within said liquid; excitation means for applying electrical energy across said first and second probe means; isolation means for electrically isolating said excitation means from said probe means; sensor means for sensing the conductivity of said liquid by monitoring current flow between said first and second probe means; means for developing an electrical indicator signal representative of the conductivity of said liquid; threshold means for developing an electrical threshold signal; comparator means for comparing said indicator signal to said threshold signal and for issuing one or the other of two output signals depending upon the magnitude of



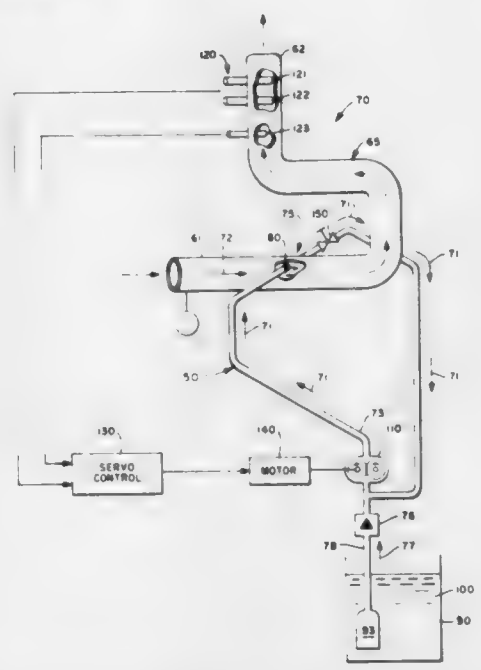
said indicator signal relative to said threshold signal; indicator means having two states, one of which indicates acceptable liquid quality, and the other of which indicates unacceptable liquid quality; and switch means responsive to the output signals issued by said comparator means for switching said indicator means between said two states depending upon the output signal issued by said comparator means.

4,082,667

PROPORTIONING SYSTEM

William Seiler, Jr., Van Nuys, Calif., assignor to David Kopf Systems, Tujunga, Calif.

Filed Oct. 11, 1977, Ser. No. 841,103
Int. Cl.[2] B01D *31/00*
U.S. Cl. 210—96 M **1 Claim**



1. In a proportioning system used in an artificial kidney machine for mixing concentrate stored in a concentrate storage jug with water in predetermined proportions having a first conduit through which concentrate flows at a controlled pressure, a second conduit through which water flows, the surface of said first conduit having an orifice through which a portion of said concentrate flowing through said first conduit is discharged into said second conduit at a mixing point with the remainder of said concentrate continuing to flow in said first conduit past said orifice, and control means cooperating with said measuring means for controlling the rate at which concentrate passes through said orifice, thereby maintaining the de-

sired mix proportions of water and concentrate, the improvement comprising:

a recirculation loop formed by said first conduit,

a concentrate supply line connecting said concentrate storage jug with said recirculation loop, and

a check valve in said concentrate supply line which opens at a predetermined pressure in said recirculation loop, whereby concentrate flows from said concentrate storage jug to said recirculation loop when said check valve opens.

4,082,668

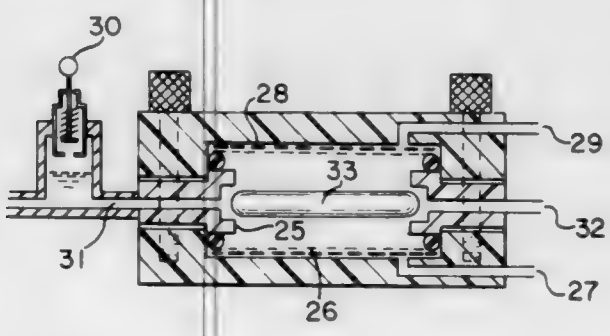
ULTRA FILTRATION APPARATUS AND METHOD

Rashid Ayoub Zeineh, 5742 W. Dakin St., Chicago, Ill. 60634, and Richard Arthur Finley, 2306 E. Honeysuckle Ct., Lindenhurst, Ill. 60046

Filed Sep. 4, 1973, Ser. No. 394,260

Int. Cl.[2] B01D *13/00*

U.S. Cl. 210—129 **6 Claims**



1. An instrument for ultrafiltration of proteins and macromolecules in solution comprising a unit of three parts including upper, middle and lower elements secured together by retaining means, said upper part comprising a membrane holder having a membrane filter, a porous disc support and an outlet for ultrafiltrate, said middle part including a magnetic stirrer bar assembly and having sample inlet and outlet ports, said lower part comprising a second membrane holder having a second membrane filter and a second porous disc and a second ultrafiltrate outlet port, said magnetic stirrer bar being driven to rotate by means of an external motorized magnetic bar under the lower element, said magnetic stirrer bar being located in proximity to the two said membrane filters but out of contact therewith during rotation of the stirrer bar, and sealing means between said middle part and said membrane filters, said membrane filters being of relatively large diameter and spaced relatively close together separated by said middle part.

4,082,669

SEPARATOR OF OIL AND WATER

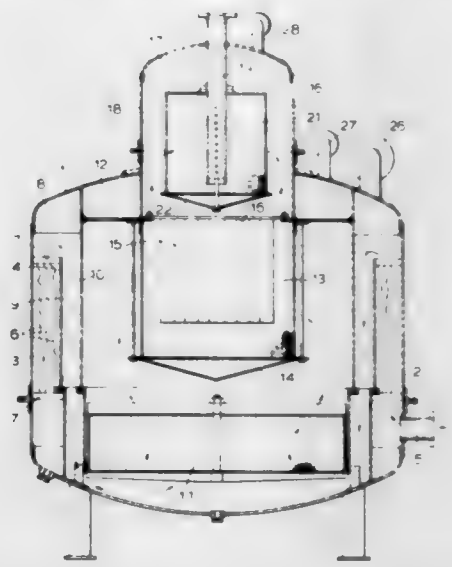
Cuthbert Angus Bainbridge, Birmingham, England, assignor to Barton Hydraulic Engineering Company Limited, Birmingham, England

Filed Jul. 6, 1976, Ser. No. 702,464

Int. Cl.[2] B01D *21/00*

U.S. Cl. 210—184 **5 Claims**

1. A separator for oil and water in which an oil and water mixture is caused to flow successively through a plurality of separating stages adapted to separate from the water oil particles of progressively decreasing size, wherein the separator comprises a cylindrical vertical container housing the successive separating stages in concentric chambers defined by the wall of the container and internal annular partitions, each chamber having at its upper end a collecting zone for separated oil, a first separating stage comprising a plurality of annular radially spaced shells of which at least portions are inclined to the verticle and which are located in an annular chamber open at the top and bottom between the wall of the container and a concentric partition and means for feeding liquid to be treated to the lower end of said chamber, a second separating stage comprising a coagulator located adjacent to the lower end of said container, means for directing liquid leaving the upper end of said annular chamber of the first stage to the lower end of said coagulator, a third separating stage comprising a filter located within an annular foraminous screen above said coagulator, said screen being in direct communication with the upper end of said coagulator and being fine enough to remove from



the water leaving the second stage oil of molecular dimensions, a central chamber in direct communication with the upper end of said filter, means for withdrawing clean water from the upper end of said central chamber above said filter and means for drawing off oil from said collecting zones at the upper ends of said concentric chambers.

4,082,670

HOLLOW FIBER PERMEABILITY APPARATUS

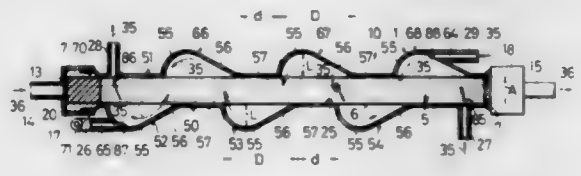
Yasushi Joh, c/o Nippon Zeon Co., Ltd. 2-6-1 Marunouchi, Chiyoda-ku, Tokyo, Japan

Filed Jan. 29, 1976, Ser. No. 653,351

Claims priority, application Japan, Feb. 1, 1975, 50-13563; Feb. 15, 1975, 50-19355; Mar. 10, 1975, 50-28845; Jun. 20, 1975, 50-76355; Oct. 29, 1975, 50-130201

Int. Cl.[2] B01D *31/00*

U.S. Cl. 210—195 R **33 Claims**



1. A hollow-fibre permeability apparatus, comprising:

a housing defining an interior including a permeating region;

a bundle of permeable-wall hollow fibres disposed at least in said permeating region of said housing;

a first inlet and means for causing a first fluid to flow into said first inlet and through said housing adjacent the exterior wall surfaces of said fibres;

a first outlet for passage of said first fluid out of said housing;

a second inlet and means for causing a second fluid to flow into said second inlet and through said housing inside said fibres such that materials selectively permeate through the walls of said fibres; and

at least one portion of said housing in said permeating region being of enlarged cross-section relative to said bundle to define a space between said bundle and a wall of said housing into which at least part of said first fluid passes during its passage from said first inlet to said first outlet, the width of said enlarged cross-section portion being substantially co-extensive with the width of said housing whereby the bundle is exposed across its width to fluid in said enlarged cross-section portion, and across a section of

its length determined by the length of said enlarged cross-section portion, the shape of said enlarged cross-section portion promoting cross-flow of said first fluid relative to the length of said fibres, said shape of said enlarged cross-section portion being formed in accordance with the following formula:

$\frac{1}{4} A \leqq L \leqq 4A$, and

$A \leqq D \leqq 12A$

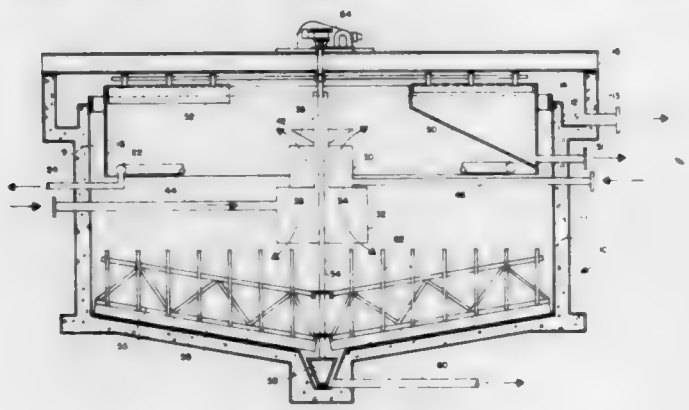
where A represents one cross-sectional dimension of said bundle, L the length of said enlarged cross-section portion in the direction perpendicular to the lengthwise direction of said bundle, and D the length of said enlarged cross-section portion in the lengthwise direction of said bundle, said length L and length D varying gradually in a direction parallel to the lengthwise direction of said bundle whereby the cross-section in said parallel direction of said enlarged cross-section portion is defined by tapered side walls.

4,082,671

SLUDGE THICKENING APPARATUS

Earl M. Kelly, Hillsborough, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.

Filed Sep. 30, 1976, Ser. No. 728,480
Int. Cl.[2] C02B *3/00*
U.S. Cl. 210—195 S **10 Claims**



1. An apparatus for the concomitant treatment of primary and secondary sewage sludges comprising:

a. a tank having an open top and generally upstanding sidewall to contain a body of liquid;

b. an upper feedwell mounted in said tank and first feed means connected in liquid flow communication with said upper feedwell for introducing aerated secondary sludge thereinto for distribution by said upper feedwell into said tank, said upper feedwell being an upright tubular means open at its top and closed at its bottom;

c. a lower feedwell mounted in said tank below said upper feedwell and second feed means connected in liquid flow communication with said lower feedwell for introducing primary sludge thereinto for distribution by said lower feedwell into said tank below the aerated secondary sludge introduced through said upper feedwell, said lower feedwell being an upright tubular means closed at its top and open at its bottom;

d. a continuous, upstanding partition wall mounted in said tank generally concentric and radially outward of said upper feedwell to define a confined liquid zone surrounding said upper feedwell and to define a generally annular space between said partition wall and said tank sidewall;

e. means mounted on said sidewall for drawing liquid from the surface of the body of liquid contained in said annular space to maintain a predetermined liquid level in said tank;

f. float collection means mounted within said confined liquid zone for collecting solids floating on the surface of the liquid within said confined zone; and

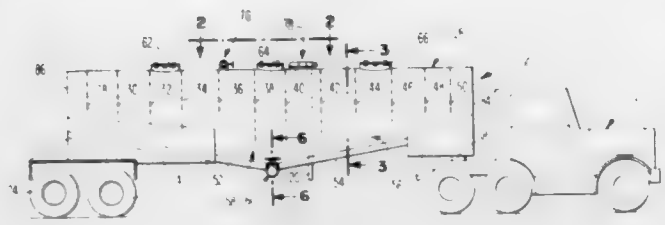
g. sediment collection means connected in communication with the bottom of said tank for collecting and discharging sediment from said tank.

4,082,672

MOBILE SLUDGE TRAILER AND METHOD OF FILLING AND EMPTYING SAME

Alex Petroski, Springfield, Pa., assignor to Liquid Removal Service Co., Inc., Broomall, Pa.

Filed Aug. 16, 1976, Ser. No. 714,973
Int. Cl.[2] C02C *1/02, 3/00*
U.S. Cl. 210—205 **5 Claims**



1. A trailer for receiving, transporting and unloading sludges which are at least partly biodegradable, comprising:

(a) a frame;

(b) a tank mounted on said frame, said tank being a double-frusto conical tank of substantially ovate cross-section mounted on said frame so that it may be bisected into two bilateral symmetric portions by a substantially vertical plane; said plane describing at least two intersecting lines disposed near the lower end of said ovate cross-section, said lines slopping downwards to their point of intersection, and said discharge means being disposed substantially at the point of intersection of said lines, said tank further comprising a substantially planar floor extending along said lines for the entire length of said tank and a plurality of parallel, substantially circular ring-shaped baffles disposed within said tank, said baffles extending from the top peripheral edge of said tank around said tank to points substantially parallel and spaced apart from said floor and having straightened lower edges parallel to said floor extending between said points to form at least one discharge chute defined between said baffles, opposing portions of the walls of said tank and said floor;

(c) loading means for introducing sludge into said tank;

(d) discharge means disposed at the bottom of said tank for allowing sludge to discharge from said tank;

(e) pressurization means for pressurizing the head space of said tank to thereby increase the pneumatic and hydraulic pressure at said discharge means to facilitate more efficient discharge of the sludge therefrom; and

(f) ejection means for ejecting fluid into said tank at the point of intersection of said tank and said discharge means, said ejection means injecting fluid under pressure into said tank toward said discharge means in the direction of discharge of sludge through said discharge means whereby said sludge is entrained in said fluid for discharge through said discharge means.

4,082,673

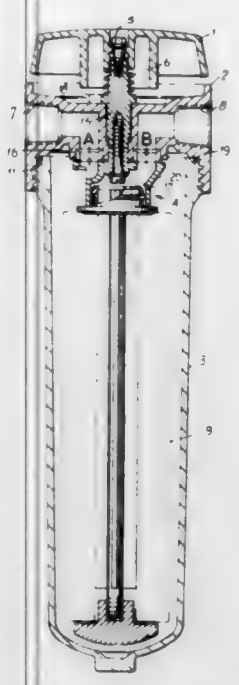
FILTER ASEMBLY WITH INTEGRAL SERVICE SHUT-OFF VALVE

Guido D. Cilento, Dryden, N.Y., assignor to AMF Incorporated, White Plains, N.Y.

Continuation-in-part of Ser. No. 477,720, Jun. 10, 1974, abandoned. This application May 30, 1975, Ser. No. 582,568
Int. Cl.[2] B01D *27/00*
U.S. Cl. 210—234 **9 Claims**

1. A filter assembly for use in in-line fluid flow applications including: a filter body having a closure portion associated therewith; fluid inlet means; fluid outlet means; each of said means being integral of said closure portion; handle means affixed to and communicating with said closure portion, said

handle means being movable in concert with valve means disposed between said inlet and outlet means, said valve means being positioned in cooperative working relation with respect



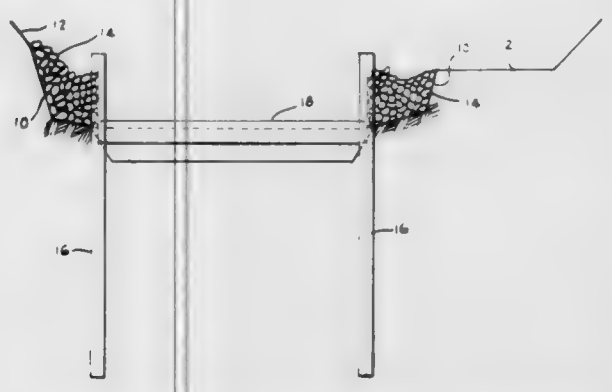
to said closure to thereby control the flow of fluid into said body member by rotation of said handle means; and vent means integrally formed of said closure portion for releasing internal pressure entrapped in said assembly.

4,082,674

BUOY TYPE OIL GATE

Francis J. Dalli, Old Bedford Rd., Lincoln, Mass. 01773

Filed Apr. 30, 1976, Ser. No. 681,981
Int. Cl.² B01D *17/02*
U.S. Cl. 210—242 S **6 Claims**



1. A buoy type oil gate for a body of water channeled at its sides and bottom and having variable levels and flow comprising

channel means secured at the sides of the body of water, and

floatable means extending thereacross into said channel means and also extending above and below the surface of said body of water,

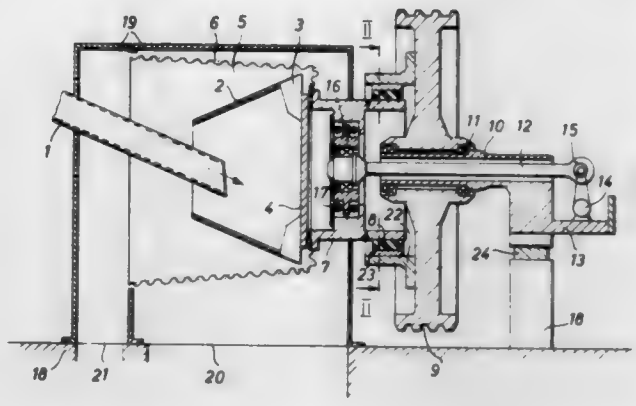
the ends of said floatable means in engagement with said channel means having the downstream portion thereof in a sealing engagement over an area with said channel means due to the pressure of the flow of said stream against said floatable means, said ends being trimmed to reduce friction in said channels for facile movement in the vertical plane while inhibiting freezing of said floatable means to said channels.

4,082,675

VIBRATING CENTRIFUGE

Wolfgang Heckmann, Bergisch-Gladbach, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Aug. 9, 1972, Ser. No. 279,237
Claims priority, application Germany, Aug. 14, 1971, 2140841; Jun. 15, 1972, 2229114
Int. Cl.² B01D *33/02*
U.S. Cl. 210—360 R **10 Claims**



1. A vibrating centrifuge for the separation of water from finely grained material comprising in combination:

a rotatable centrifugal basket oscillatable in an axial direction;

a rotary drive for the basket;

an oscillating drive connected to the basket for driving in oscillatable axial motion;

an annular support body holding the centrifugal basket;

a drive sleeve connected to the rotary drive concentrically surrounding the annular support body;

a plurality of thrust springs arranged circumferentially and extending radially between said support body and said drive sleeve for elastic connection therebetween;

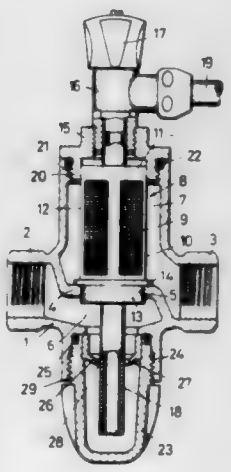
and adjusting elements for the thrust springs adjusting the radial height of the thrust springs and pretensioning the springs radially and operative to change the spring tension in a radial direction for assembly purposes.

4,082,676

DIRT FILTER FOR WATER PIPES

Viktor Dulger, Ludolf-Krehl-Strasse, 8 Heidelberg, Germany (6900)

Filed Mar. 16, 1977, Ser. No. 778,034
Claims priority, application Germany, Apr. 10, 1976, 2615922
Int. Cl.² B01D *35/02*
U.S. Cl. 210—447 **3 Claims**



1. A dirt filter for water pipes defining a housing with lower and upper chambers having an inlet and an outlet respectively, a dividing wall with an opening therein separating said chambers, a lid closing the upper side of said upper chamber, said lid having a cylindrical collar with outer threads, a dirt collecting

container below said lower chamber and having outer threads at its upper part, said housing defining internally threaded collars for threaded connection with said lid and said container, a cylindrical filter insert in said upper chamber having a carrier with an upper ring in sealing engagement with said collar of said lid and a lower ring engaging said dividing wall, the interior of said filter insert being in fluid communication with said lower chamber, said housing defining a dirt egress opening in its lower wall providing fluid communication between said lower chamber and said dirt collecting container, and an annularly shaped baffle insert having a central opening and being positioned in the upper part of said dirt collecting container.

4,082,677

DRIED PHOSPHORIC ACID PRODUCT AND PROCESS

Leland H. Zollar, Fresno, Calif., and Edward W. Moore, Frontenac, Kans., assignors to Harvest Industries, Inc., Los Angeles, Calif.

Filed Feb. 25, 1974, Ser. No. 445,274
Int. Cl.[2] C09K *7/00*
U.S. Cl. 252—8.5 B **30 Claims**

1. A process of producing a dehydrated phosphoric acid compound comprising mixing an aqueous phosphoric acid solution and an absorbent organic carrier, dehydrating the mix, to form a dry, dehydrated phosphoric acid compound, and recovering the dried compound.

4,082,678

FABRIC CONDITIONING ARTICLES AND PROCESS

Hans Joachim Pracht, Osthofen, Germany, and Louis Fay Wong, Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 10, 1976, Ser. No. 740,441
Int. Cl.[2] D06M *13/46*
U.S. Cl. 252—8.6 **25 Claims**

1. A fabric conditioning article especially designed for conditioning fabrics in a clothes washer comprising:

(A) a closed receptacle, at least a part of one wall of said receptacle comprising a water soluble/dispersible material;

(B) an effective amount of a fabric conditioning composition, said composition being contained within the receptacle of (A);

(C) an amount of an agent selected from the group consisting of electrolytes, pH control agents and mixtures thereof sufficient to make the receptacle of (A) water insoluble-/indispersible in the volume of wash water in which it is used; and

(D) a second closed, flexible receptacle, at least a part of one wall of said receptacle comprising a water soluble/dispersible or porous, water insoluble/indispersible material, said second receptacle enclosing the receptacle of (A) and component (C).

4,082,679

LIGHT STABILIZED TEXTILE MINERAL OIL

Rufus K. Rhodes, New York, N.Y., assignor to Witco Chemical Corporation, New York, N.Y.

Filed Mar. 10, 1977, Ser. No. 776,158
Int. Cl.[2] D06M *13/34*
U.S. Cl. 252—8.8 **18 Claims**

1. A light stabilized mineral oil comprising, a technical white mineral oil and from 50 to about 250 ppm of a 2-aryl -4,5 arylo-1,2,3-triazole.

4,082,680

GEAR OIL COMPOSITIONS

Bill Mitacek, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 12, 1976, Ser. No. 676,260
Int. Cl.[2] C10M *1/19*
U.S. Cl. 252—59 **5 Claims**

1. Shear-stable, gear oil compositions comprising a mineral lubricating oil containing a shear-stabilizing amount of a soluble hydrogenated butadiene-styrene copolymer dissolved therein, said copolymer having a butadiene content of about 30 to about 44 weight percent with the remainder being styrene and a weight average molecular weight within the range of from about 12,000 to about 20,000.

4,082,681

MAGNETIC DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY AND PROCESS FOR PREPARATION THEREOF

Hiroshi Takayama, Moriguchi, and Tatsuo Aizawa, Osaka, both of Japan, assignors to Mita Industrial Company, Osaka, Japan

Filed Nov. 4, 1975, Ser. No. 628,823
Int. Cl.[2] G03G *9/08, 9/14*
U.S. Cl. 252—62.1 P **21 Claims**

1. A developer for electrostatic photography consisting essentially of a dry blend of

(A) substantially spherical particles of a composition comprising a binder resin and a fine powder of a magnetic material dispersed in the binder resin so that the magnetic material is distributed predominantly in the surface layer of the spherical particles to form a crater-like rough surface; and

(B) a finely divided solid conducting agent comprising electrically conductive carbon black and having a particle size smaller than 1/10 of the size of the spherical particles (A), the solid conducting agent being stuck to spherical particles (A) through the crater-like rough surfaces thereof without being embedded by the dry blending of spherical particles (A) and solid conducting agent (B), and being present in an amount of up to 2% by weight, based on spherical particles (A), the dry blend having a volume resistivity of not higher than 1×10^{11} Ω-cm.

4,082,682

DETERGENT COMPOSITION CONTAINING DISTINCTIVE, COLORED, NON-STAINING SOAP PARTICLES

Jack Thomas Inamorato, Westfield, and Leo Augustus Salmen, North Bergen, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 241,515, Apr. 6, 1972, abandoned. This application Jan. 23, 1974, Ser. No. 435,650
Int. Cl.[2] C11D *3/40, 9/44, 13/08, 17/06*
U.S. Cl. 252—92 **7 Claims**

1. A detergent composition of distinctive appearance which comprises from 90 to 99.7% of substantially round unidimensional detergent particles which have particles sizes within the range of 0.1 to 1 mm in diameter, said detergent particles being white or lightly colored, and comprising from 5 to 40% of synthetic organic anionic detergent, 2 to 20% synthetic nonionic organic detergent, 10 to 50% of water softening builder salt selected from the group consisting of alkali metal polyphosphates, alkali metal silicates, alkali metal carbonates, alkali metal borates, alkali metal bicarbonates, citrates, diglucolates, gluconates, ethylene diamine tetracetates and nitrilodiacetates, 1 to 50% of a filler salt selected from the group consisting of sulfates, citrates, gluconates, carbonates and borates, 0 to .20% moisture and 0.25% of adjuvants; and from 0.3 to 10% of elongated soap particles having diameters in the range of 0.4 to 1.6 mm and length to diameters ratios within the range of 3:1 to 10:1 and being colored with 0.1 to 2% of a non-substantive

colorant producing in the particle a color of a Munsell chrona greater than 4 and a Munsell value of about 4 to 7 selected from the group consisting of C.I. Acid Blue 80, C.I. solvent Green 7 and mixtures thereof and which comprise over 50% of A C_{16} to C_{18} saturated fatty acid soap and from 3 to 20% of moisture; the builder salt, upon dissolving of such detergent particules in water containing hardness ions, assisting in preventing such hardness from reacting with the soap of the elongated particles, which is slower to dissolve, thereby inhibiting production of soap curd in the wash water and aiding in prevention of colorant from being held to insoluble soap that would otherwise be produced and deposited on materials washed with the detergent.

4,082,683

CLEANING OF HARD SURFACES

Wilhelmus Gerardus Galesloot, Haaften, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Sep. 10, 1976, Ser. No. 722,254

Claims priority, application United Kingdom, Sep. 19, 1975, 38550/75

Int. Cl.[2] C11D *7/54*

U.S. Cl. 252—105 **4 Claims**

1. A dithionite composition which upon admixture with water forms a solution of pH 5 to 9 consisting essentially of:

a. 20–60% by weight of a dithionite selected from the group consisting of alkali metal dithionites and zinc dithionites;

b. 10–50% by weight of a water soluble sulfite selected from the group consisting of alkali metal sulfites and ammonium sulfite;

c. 5–30% by weight of a metal-complexing agent selected from the group consisting of nitrilotriacetic acid; the alkali metal salts of nitrilotriacetic acid, ethylene diamine tetraacetic acid; the alkali metal salts of ethylene diamine tetraacetic acid; citric acid; the alkali metal salts of citric acid; gluconic acid; the alkali metal salts of gluconic acid;

d. 0.3–5% by weight of an activator for said dithionite, wherein said activator is selected from the group consisting of OH^-, Cl^-, Br^- or NO^-_2 substituted benzoquinone; OH^-, Cl^-, Br^- or NO^-_2 substituted naphthoquinone, and SO_3H^- or OH^- substituted anthraquinone;

e. 1–15% by weight of a thickening agent in an amount sufficient to result in said composition having a viscosity of about 20 to about 100 centipoises when admixed with water, said thickening agent being selected from the group consisting of derivatives of polysaccharides and hydroxyethylcellulose; and

f. optionally 0–10% by weight of an anionic or nonionic organic surface active agent, and 0–40% by weight of sodium sulfate.

4,082,684

LIQUID DETERGENT

Pieter Hubertus Kreischer, Schiedam, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 28, 1976, Ser. No. 680,953

Claims priority, application United Kingdom, Apr. 29, 1975, 17789/75

Int. Cl.[2] C11D *15/04, 3/06*

U.S. Cl. 252—109 **6 Claims**

1. An aqueous, built, liquid detergent composition comprising:

a. 3 to 12 percent of anionic detergent consisting potassium alkylbenzenesulphonate wherein the alkyl is a 10 to 18 carbon, branched or straight alkyl chain;

b. 2 to 8 percent of soap consisting of a potassium salt of a fatty acid derived from an 8 to 22 carbon saturated or unsaturated fatty acid or polymer thereof;

c. 0.5 to 5 percent of nonionic detergent consisting of an alkyleneoxide condensation product of an organic hydrophobic radical;

d. 0.1 to 2 percent of copolymer consisting of the copolymer of maleic anhydride with a compound selected from the group consisting of vinyl methyl ether, ethylene, and styrene, wherein said copolymer has a specific viscosity of 0.1 to 4.5 as a one percent weight/volume solution of said copolymer in methylethylketone at 25° C.; and

e. 1 to 25 percent of detergent builder consisting of an alkali metal tripolyphosphate wherein said alkali metal is selected from the group consisting of sodium and potassium; and wherein at least 50 percent of said builder is sodium tripolyphosphate;

wherein said copolymer has been partially esterified with 2 to 250 percent, by weight of said copolymer, of said nonionic detergent and subsequently neutralized.

4,082,685

PROCESS FOR THE PRODUCTION OF ALUMINUM CHLOROHYDROXIDES

Bruno Notari, and Luigi Rivola, both of San Donato Milanese, Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Filed Mar. 27, 1975, Ser. No. 562,782

Claims priority, application Italy, Mar. 28, 1974, 49835/74

Int. Cl.[2] C01F *7/00, 7/22*

U.S. Cl. 252—187 R **3 Claims**

1. The process of producing aluminum chlorohydroxide represented by the formula: $Al_2(OH)_xCl_y$, wherein x y range from 1 to 4 and 5 to 2, respectively, which consists in reacting hydrochloric acid with an amount of aluminum oxide or aluminum hydroxide which is equal to or slightly greater than the stroichiometric amount for obtaining aluminum trichloride, in the temperature range of from 160° to 270° C and in the pressure range of from 0.1 to 50 kg/cm^2.

4,082,686

LIQUID CRYSTAL COMPOSITION

Hiroshi Tatsuta, Neyagawa; Masakazu Fukai, Nishinomiya, and Hiroaki Takahashi, Nagasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

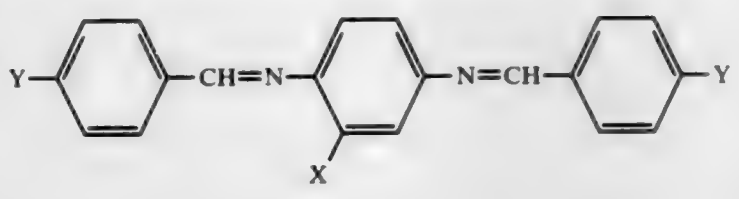
Filed Aug. 4, 1975, Ser. No. 601,343

Claims priority, application Japan, Aug. 6, 1974, 49-90473; Aug. 6, 1974, 49-90474; Sep. 2, 1974, 49-101141; Sep. 11, 1974, 49-105405; Sep. 11, 1974, 49-105406; Nov. 19, 1974, 49-133996

Int. Cl.[2] C09K *3/34;* **G02F** *1/13*

U.S. Cl. 252—299 **5 Claims**

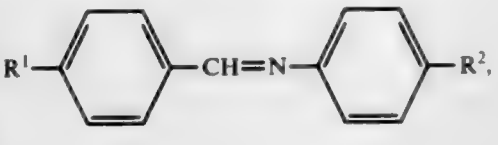
1. A nematic liquid crystal composition comprising at least one of the compounds having the formula,



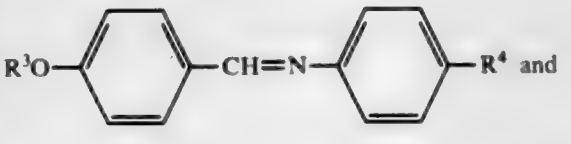
wherein X is methyl and Y is a normal - C_nH_{2n+1} group wherein n is an integer of 2 to 8, and

at leat one of the compounds selected from the group consisting of the compounds having the general formula,

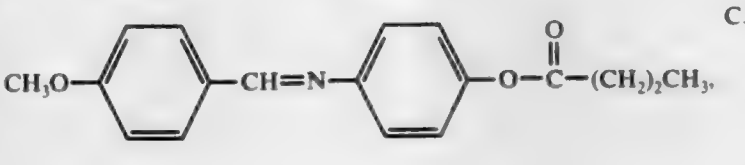
A.



B.

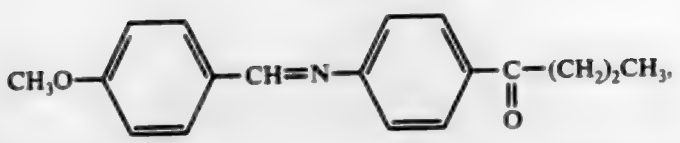


C.



-continued

D.



wherein in the compound A, R^1 is an alkyl group having 1 to 3 carbon atoms and R^2 is an alkyl group having 2 to 5 carbon atoms; and in the compound B, R^3 is an alkyl group having 1 to 4 carbon atoms and R^4 is an alkyl group having 3 to 10 carbon atoms.

4,082,687

MANGANESE ACTIVATED ALKALINE EARTH TUNGSTATE PHOSPHORS AND METHOD OF PREPARING THE SAME

Dominic T. Palumbo, deceased, late of Towanda, Pa. (by Frances A. Palumbo, administratrix), and Francis N. Shaffer, Towanda, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jun. 9, 1977, Ser. No. 805,002
Int. Cl.[2] C09K *11/38*
U.S. Cl. 252—301.4 F **10 Claims**

1. A luminescent composition consisting essentially of a manganese-activated alkaline earth tungstate represented by the formula, $M_{3+x}WO_{6+x}: yMn+4$, wherein M is an alkaline earth metal selected from barium, calcium and strontium, x has a a value of from 0 to about 0.4, y has a value of from about 0.00005 to about 0.05 said luminescent composition emitting deep red emission when excited by long wave length ultraviolet light.

4,082,688

PROCESS FOR PRODUCING MICROCAPSULES

Setsuya Egawa; Masahiro Sakamoto, both of Naka, and Toshihiko Matsushita, Hiratsuka, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 409,110, Oct. 24, 1973, abandoned.
This application Jun. 18, 1976, Ser. No. 697,586
Claims priority, application Japan, Dec. 14, 1972, 47-125738
Int. Cl.[2] B01J *13/02*
U.S. Cl. 252—316 **2 Claims**

1. A process for preparing mononucleic capsules having chemically hardened walls of hydrophilic polymeric material and an average diameter of less than about five microns consisting essentially of the steps of:

(a) establishing, at a pH less than 7.0, an agitating aqueous system of mononucleic capsules having an average diameter of less than about five microns and capsule walls comprising a gelled complex coacervate combination of gelatin and a negatively-electrically charged hydrophilic polymeric material;

(b) adding to the system, once established, from 5 to 10 percent, by weight, of the amount of the gelatin present in the system, of a relatively slow acting chemical hardening agent for the capsule walls selected from the group consisting of formaldehyde, glyoxal, and 2,3-dihydroxy-1,4-dioxane;

(c) after completion of the addition of step (b), adding to the system from 80 to 200 percent, by weight, of the amount of gelatin present in the system, of a negatively-electrically charged hydrophilic polymeric material selected from the group consisting of gum arabic, poly(vinylmethylether-co-maleic anhydride), poly(styrene-co-maleic anhydride), poly(acrylic acid-co-maleic anhydride), poly(vinylacetate-co-maleic anhydride), poly(ethylene-co-maleic anhydride), carboxymethyl cellulose, sodium alginate and carrageenan;

(d) after completion of the addition of step (c), adding to the system from 5 to 10 percent, by weight, of the amount of gelatin present in the system, of a relatively rapid acting chemical hardening agent for the capsule walls selected from the group consisting of glutaraldehyde, acrolein and 2-methylglutaraldehyde; and

(e) after completion of the addition of step (d), raising the pH of the system to greater than 8.0.

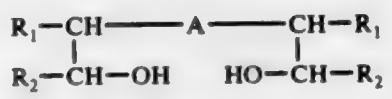
4,082,689

ANTIFOAM COMPOSITIONS AND PROCESS WITH BIS-α-HYDROXYAMINE DERIVATIVES

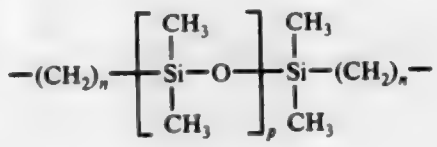
Rudi Heyden, Erkrath; Adolf Asbeck, Dusseldorf; Michael Eckelt, Dusseldorf; Manfred Petzold, Dusseldorf, and Günter Uphues, Dusseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Germany

Filed Dec. 20, 1976, Ser. No. 752,243
Claims priority, application Germany, Dec. 22, 1975, 2558040
Int. Cl.[2] B01D *17/04*
U.S. Cl. 252—321 **17 Claims**

1. A process for the control of foam in a foamable liquid comprising adding to said foamable liquid an antifoam effective amount of a bis-α-hydroxyamine derivative of the formula



wherein A is a member selected from the group consisting of —NHCO—R_3—CONH— and —NHCONH—R_3—NHCONH—, R_1 and R_2 are members selected from the group consisting of hydrogen and alkyl having from 1 to 22 carbon atoms, at least one of R_1 and R_2 being alkyl and the sum of the carbon atoms in $R_1 + R_2$ is from 8 to 22, and R_3 is a bivalent member selected from the group consisting of alkylene having 2 to 10 carbon atoms, phenylene, alkylphenylene having from 1 to 3 carbon atoms in the alkyl and polysiloxane of the formula



where n is an integer from 2 to 3 and p is an integer from 2 to 20.

4,082,690

ANTIFOAM PROCESS FOR NON-AQUEOUS SYSTEMS

Kenneth W. Farminer, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 7, 1977, Ser. No. 766,171
Int. Cl.[2] B01D *19/04*
U.S. Cl. 252—321 **8 Claims**

1. A method for reducing and/or preventing foam in a non-aqueous system which comprises adding to said system a composition consisting essentially of (1) about 30 to 45 percent by weight of a polydimethylsiloxane fluid, (2) about 1 to 5 percent by weight of a siloxane resin composed of $(CH_3)_3SiO_{\frac{1}{2}}$ units and SiO_2 units in which resin the ratio of $(CH_3)_3SiO_{\frac{1}{2}}$ units to SiO_2 units is in the range of 0.4:1 to 1.2:1, and (3) about 50 to 69 percent by weight of a hydrocarbon solvent for said fluid and resin.

4,082,691

ORGANO SILICON/SILICA DEFOAMER COMPOSITIONS

Paul Daniel Berger, Missouri City, Tex., assignor to Witco Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 433,622, Jan. 16, 1974, abandoned. This application Nov. 24, 1976, Ser. No. 744,480

Int. Cl.[2] B01D *19/04*

U.S. Cl. 252—358 11 Claims

1. A defoamer silica composition comprising about 1–15% of a hydrophobic precipitated silica in a water-immiscible inert liquid carrier, said hydrophobic silica having been rendered hydrophobic by reaction of a hydrophylic precipitated silica in said suspension with a trichloro-organosilane and a dichloro-organosilane, and adding each of said chlorosilanes in an amount in the range of 10–50% based on the silica and in a molecular proportion of 1:1 to 1:5 respectively.

4,082,692

POLYMERIZATION CATALYST

Brian Peter Forsyth Goldie, Cheam, England, assignor to The British Petroleum Company Limited, London, England

Filed Aug. 9, 1976, Ser. No. 712,949

Claims priority, application United Kingdom, Aug. 21, 1975, 34759/75

Int. Cl.[2] C08F *4/02, 4/64*

U.S. Cl. 252—429 B 12 Claims

1. In a process for the production of a supported Ziegler catalyst comprising adding a compound having the general formula $M(OR)_nX_{4-n}$ wherein M is titanium, X is halogen, R is a hydrocarbon radical and $0 \leqq n < 4$, to a fluidized bed of a magnesium-containing Ziegler support material, the improvement of adding from 0.5 to 5.0 moles of alcohol or phenol per gram atom of titanium to the titanium treated support material at a temperature up to about 100° C., and removing excess alcohol or phenol.

4,082,693

CURE MATERIAL FROM LIQUID POLYTHIOPOLYMERCAPTAN POLYMERS FOR DENTAL IMPRESSION TAKING

Henry A. Kessler, Succasunna, and Phyllis Ying, Morris Plains, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 8, 1976, Ser. No. 739,410

Int. Cl.[2] B01J *31/26*

U.S. Cl. 252—430 9 Claims

1. An accelerator composition for setting liquid polysulfide polymer for dental impression comprising in combination 5% to 30% by weight of 2,2′ dithiobisbenzothiazole, 0.05% to 20% by weight of 2-mercaptobenzothiazole, and 20% to 75% by weight of zinc peroxide, the remainder being inert fillers.

4,082,694

ACTIVE CARBON PROCESS AND COMPOSITION

Arnold N. Wennerberg, Chicago, and Thomas M. O'Grady, Chicago Heights, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 644,095, Dec. 24, 1975, abandoned. This application Jun. 16, 1976, Ser. No. 696,634

Int. Cl.[2] B01J *21/18;* C01B *31/08, 31/12*

U.S. Cl. 252—444 6 Claims

1. A process consisting essentially of:

a. substantially dehydrating an agitated combination of solid potassium hydroxide containing between about 2 and about 25 weight percent water and a carbonaceous material comprising coal coke, petroleum coke or a mixture thereof by heating said combination in a weight ratio said hydroxide to said substance between about ½ to 1 and 5 to 1 below about 900° F.;

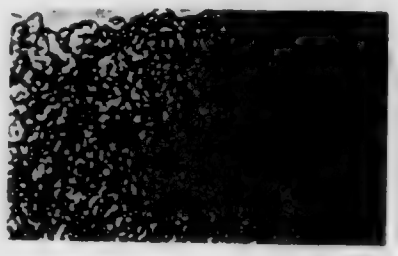
b. activating the product of (a) by heating between about 1,300° F. and about 1,800° F.; and

c. cooling the product of (b) and removing essentially all the inorganic material therefrom by water washing to form a high surface area active carbon.

5. Active carbon derived from a carbonaceous material comprising coal coke, petroleum coke or mixtures thereof



FIG. 1



having a cage-like structure exhibiting microporosity which contributes to over 80 percent of its surface and which has an effective BET surface area of greater than about 2,700 square meters per gram and a bulk density greater than about twenty-five hundredths grams per cubic centimeter.

4,082,695

CATALYST FOR RESIDUA DEMETALATION AND DESULFURIZATION

Edward J. Rosinski, Pedricktown; Thomas R. Stein, and Ronald H. Fischer, both of Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 542,523, Jan. 20, 1975, abandoned, which is a division of Ser. No. 392,730, Aug. 29, 1973, Pat. No. 3,876,523. This application Jul. 22, 1976, Ser. No. 707,790

Int. Cl.[2] B01J *21/04, 23/84, 23/88*

U.S. Cl. 252—465 6 Claims

1. Hydrometalation-desulfurization catalyst comprising: a hydrogenating component comprising the oxides or sulfides of at least one metal selected from the group consisting of Group VI B and Group VIII composited with an alumina base, said alumina base comprising theta or delta phase alumina, and said composite catalyst having not less than about 60% of its pore volume in pores with diameters of about 100A to about 200A, and not less than about 5% of its pore volume in pores greater than 500A in diameter, said composite catalyst being further characterized as having a surface area of less than 110 m^2/g.

4,082,696

METHOD OF CATALYST MANUFACTURE

Delmar W. Robinson, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 603,838, Aug. 11, 1975, abandoned. This application Sep. 23, 1976, Ser. No. 725,801

Int. Cl.[2] B01J *21/04, 23/42, 23/74*

U.S. Cl. 252—466 B 6 Claims

1. A method of catalyst manufacture which comprises:

(a) preparing a calcined tin-containing refractory inorganic oxide carrier material;

(b) impregnating said carrier material with an acid solution of a platinum precursor compound and a cobalt precursor compound, said precursor compounds being convertible to oxide form on heating in an oxidizing atmosphere;

(c) maintaining the impregnated carrier material in an agitated state at a temperature up to about 195° C. over an extended period, and drying said carrier material to a volatile content of not greater than about 12.6 wt. % as determined by weight loss on ignition at 900° C., said extended period being equivalent to at least about 0.5 hours per 100 pounds of impregnated carrier material on a volatile-free basis, and not less than 2 hours; and

(d) heating the dried impregnated carrier material in an oxidizing atmosphere at a temperature of from about 450° to about 675° C. and thereafter in a reducing atmosphere at a temperature of from about 300 to about 675° C.

4,082,697

CATALYST CARRIER, ITS METHOD OF PREPARATION AND A REFORMING CATALYST SUPPORTED ON THE CARRIER

Paul W. Tamm, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 496,788, Aug. 12, 1974, which is a continuation-in-part of Ser. No. 387,100, Aug. 9, 1973, abandoned. This application Aug. 23, 1976, Ser. No. 716,924

Int. Cl.[2] B01J *21/04, 23/60, 23/62, 23/64*

U.S. Cl. 252—466 PT **15 Claims**

1. A method for preparing a porous catalyst carrier which comprises:

(a) treating a peptizable particulate solid comprising predominantly alpha-alumina monohydrate sized in the range below about 500 microns by admixing the solid with an aqueous solution of at least one acid selected from the group consisting of nitric, hydrochloric, hydrofluoric and hydrobromic acids, said solution containing an amount of the acid in the range from about 0.02 ot 0.20 equivalent per formula weight of the alumina;

(b) neutralizing at least a portion of the admixed acid by admixing into the treated solid an aqueous solution of a nitrogen base selected from the group of the formula R_3N and the corresponding hydroxide R_3HNOH, wherein said R groups are the same or different and are selected from the group consisting of hydrogen and of alkyl groups having a carbon atom content in the range from 1 to 3, inclusive, said solution containing an amount of the base in the range from about 0.1 to 1.2 equivalents per equivalent of said acid;

(c) shaping the neutralized or partially neutralized solid; and

(d) drying and calcining the shaped solid in a dry or humid atmosphere at a temperature in the range from about 150° to 1700° F, said dried and calcined carrier having (1) a pore volume of at least 0.5 cc/g, (2) a content of micropores in the range between about 80 and 150 A in diameter constituting at least 70% of said pore volume, and (3) a content of pores having a diameter greater than 1000 A constituting from about 0.1 to less than 3% of said pore volume, said pore-sizes corresponding to sizes determined by the mercury porosimetry method.

4,082,698

CATALYST COMPOSITIONS ESPECIALLY USEFUL FOR PREPARATION OF UNSATURATED ACIDS

Wilfrid G. Shaw, Lyndhurst, and David B. Terrill, Bedford Height, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 646,224, Jan. 2, 1976, Pat. No. 4,051,180. This application Jul. 26, 1976, Ser. No. 708,812

Int. Cl.[2] B01J *23/16, 23/22, 23/28, 23/72*

U.S. Cl. 252—469 **3 Claims**

1. A catalyst composition having the empirical formula:

$$Mo_aV_bCu_cX_dO_e$$

wherein X is a metal selected from the group consisting of antimony or the combination of antimony and germanium, and wherein

a is a number from 6 to about 18;

b, c, and *d* each are about 0.1 to about 6; and

e is the number of oxygens required to satisfy the valence requirements of the other metals present.

4,082,699

METHOD OF PREPARING CATALYTIC STRUCTURES FROM COLLOIDAL PLATINUM COMPOUNDS AND SUCH CATALYTIC STRUCTURES

Henry G. Petrow, Watertown, and Robert J. Allen, Saugus, both of Mass., assignors to Prototech Company, Newton, Mass.

Continuation-in-part of Ser. No. 535,031, Dec. 20, 1974, Pat. No. 3,992,331, and a continuation-in-part of Ser. No. 534,731, Dec. 20, 1974, Pat. No. 4,044,193. This application Sep. 22, 1976, Ser. No. 725,428

Int. Cl.[2] B01J *23/42*

U.S. Cl. 252—472 **7 Claims**

1. In the method of preparing a catalytic structure suitable for high temperature operation, the steps of oxidizing the ligand of an oxidizable-ligand-containing complex platinum compound by adding thereto an aqueous solution of a non-complexing oxidant to produce a colloidal platinum-containing sol; applying said sol to a substrate so that the particles of the substrate act both as nuclei and as mechanical support for the colloidal particles of the applied sol; and reducing the colloidal particles on said substrate, thereby depositing platinum metal particles uniformly throughout the surface of the substrate as a result of such nucleation.

4,082,700

VULCANIZABLE RUBBER COMPOSITIONS AND VULCANIZED RUBBERS OBTAINED THEREFROM

Masao Onizawa, Kunitachi, Japan, assignor to Sanyo Trading Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1975, Ser. No. 625,106

Claims priority, application Japan, Oct. 29, 1974, 49-124032

Int. Cl.[2] C08G *65/32;* **C08J** *3/24;* **C08K** *5/09*

U.S. Cl. 260—2 A **2 Claims**

1. A vulcanizable composition which comprises (1) an epichlorohydrin rubber selected from the group consisting of an epichlorohydrin homopolymer, a copolymer of epichlorohydrin and ethylene oxide, a copolymer of epichlorohydrin and allylglycidyl ether, and a copolymer of epichlorohydrin, ethylene oxide and allylglycidyl ether, and (2) 0.01 to 50 parts by weight per 100 parts by weight of the epichlorohydrin rubber of at least one amino acid selected from the group consisting of arginine, lysine, hydroxylysine, ornithine, asparagine, glutamine and citrulline.

4,082,701

SUGAR DECOLORIZING QUATERNARY AMMONIUM ACRYLAMIDE RESINS

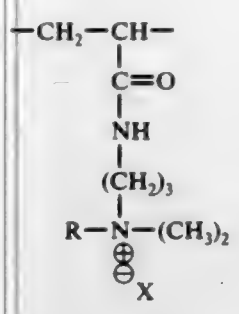
William Fries, Southampton, and Silvia Napierski, Elkins Park, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 615,144, Sep. 9, 1975, abandoned. This application May 13, 1977, Ser. No. 796,590

Int. Cl.[2] C13D *3/14*

U.S. Cl. 260—2.1 E **18 Claims**

1. A crosslinked, macroreticular, quaternary ammonium acrylamide resin which comprises the product from the reaction of a compound of the formula RX with a crosslinked, macroreticular tertiary amine, acrylamide precursor resin which comprises a copolymer of 0.1% - 50% by weight of a polyethylenically unsaturated monomer and 50% - 99.9% by weight of a monoethylenically unsaturated aliphatic ester of acrylic acid which has been aminolyzed with a polyamine, said resin comprising units having the chemical formula:



wherein R is a substituted or unsubstituted hydrocarbyl functional group containing 5 – 22 carbon atoms and $X\ominus$ is an anion.

4,082,702

FLAME RETARDANT RIGID POLYURETHANE SYNTACTIC FOAM

Jack R. Harper, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 614,465, Sep. 18, 1975, abandoned. This application Mar. 1, 1976, Ser. No. 662,384

Int. Cl.[2] C08G *18/14*

U.S. Cl. 260—2.5 AK **15 Claims**

1. A rigid polyurethane syntactic foam consisting of a cured product obtained from a mixture consisting essentially of the composition obtained by mixing an organic polyol, a polyisocyanate, microballoons, a catalyst for the reaction between the organic polyol and polyisocyanate, and a substantially colorless, compatible flame retardant having a viscosity less than 100 centipoise at 23.9° C., having a volatility such that the flame retardant does not evaporate from the exotherm generated by reacting ingredients and said flame retardant is nonreactive in the mixture to the extent that the physical properties of the foam are not substantially changed compared to the physical properties of the foam without the flame retardant present, a combination of the organic polyol and the polyisocyanate being a liquid at 25° C., there being present in the mixture a sufficient amount of microballoons to provide a non-castable mixture in the absence of the flame retardant and the amount of flame retardant present in the mixture being sufficient to provide a castable mixture which will flow in a mold cavity to the extent that mold details are filled, and the mixture cures to a rigid polyurethane syntactic foam which is flame retardant.

4,082,703

POLYURETHANE PREPOLYMERS, REBONDED POLYURETHANE FOAM AND METHODS OF FORMING THE SAME

Robert Donovan Duffy, Summersville, and Eldon Charles Stout, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 565,950, Apr. 7, 1975, abandoned. This application Apr. 5, 1976, Ser. No. 673,808

Int. Cl.[2] C08G *18/14, 18/48, 18/76*

U.S. Cl. 260—2.5 BE **21 Claims**

1. A polyurethane prepolymer consisting of the reaction product of (a) an isocyanate selected from the group consisting of tolylene diisocyanate, tolylene diisocyanate residue, diphenylmethane diisocyanate, polymethylene poly(phenyleneisocyanates), and blends thereof and (b) a polyoxyalkylene polyol having an oxyethylene content of from about 30 to 100 percent by weight, the oxyalkylene groups in the polyol being oxyethylene groups or oxyethylene groups and oxypropylene groups and said prepolymer having a free NCO content of from about 2 to 20 percent by weight, with the proviso that when the oxyethylene content of the polyol is 100 percent by weight the isocyanate is other than tolylene diisocyanate or diphenylmethane diisocyanate and with the further proviso that the prepolymer is a homogeneous solution except when the diisocyanate is diphenylmethane diisocyanate.

14. A rebonded polyurethane foam comprising a block of foam particles having dimensional stability and said particles being bonded together by a cured polyurethane prepolymer, said prepolymer consisting of the reaction product of (a) an isocyanate selected from the group consisting of tolylene diisocyanate, tolylene diisocyanate residue, diphenylmethane diisocyanate, polymethylene poly(phenyleneisocyanates), and blends thereof and (b) a polyoxyalkylene polyol having an oxyethylene content of from about 30 to 100 percent by weight, the oxyalkylene groups in the polyol being oxyethylene groups or oxyethylene groups and oxypropylene groups and said prepolymer having a free NCO content, prior to curing, of from about 2 to 20 percent by weight and being present in an amount of no more than about 6 percent based on the total weight of the block constituent including the prepolymer.

4,082,704

POLYURETHANE FOAM OF INCREASED RIGIDITY

Bernard Rudner, Ridgewood, and Thomas M. Noone, Little Ferry, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Jul. 6, 1976, Ser. No. 702,872

Int. Cl.[2] C08G *18/14*; C08J *9/42*

U.S. Cl. 260—2.5 A **10 Claims**

1. A process for the manufacture of a polyurethane foam of increased rigidity which comprises impregnating a flexible polyurethane foam with at least one thermosetting melamine, urea or benzoguanamine resin and at least one cross-linker selected from the group consisting of polycarboxylic acids which contain at least three carboxyl groups, and polyanhydrides which contain at least two carboxylic acid anhydride groups per molecule, and then reacting the resin with the cross-linker.

10. The foam of increased rigidity produced in accordance with the process of claim 1.

4,082,705

PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

Charles H. Beede, and Theodore Blumig, both of East Brunswick, N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

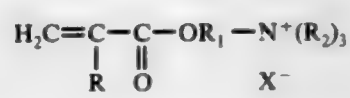
Filed Feb. 5, 1976, Ser. No. 655,602

Int. Cl.[2] C08L *33/08, 23/20, 9/00*

U.S. Cl. 260—4 R **8 Claims**

1. An improved pressure sensitive adhesive composition comprising from about 82 to about 97.5 parts by weight of a pressure sensitive adhesive polymer and, correspondingly, from about 2.5 to about 18 parts by weight of a non-tacky, cross-linked, hydrophilic random interpolymer, said interpolymer comprising:

(A) from about 10 to about 90 parts by weight of a monomeric ester of an α,β-olefinically unsaturated carboxylic acid and a monohydric or polyhydric alcohol having a terminal quaternary ammonium group, said ester having the structure:

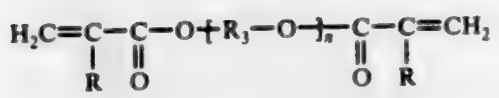


wherein R is selected from the group consisting of hydrogen and C_1 to C_4 alkyl; R_1 is selected from the group consisting of C_1 to C_4 alkylene and hydroxy substituted C_1 to C_4 alkylene; each R_4 is selected from the group consisting of C_1 to C_4 alkyl; and X^- is an anion sufficiently acidic to form a salt with amino nitrogen;

(B) correspondingly, from about 90 to about 10 parts by weight of an α,β-olefinically unsaturated comonomer; and

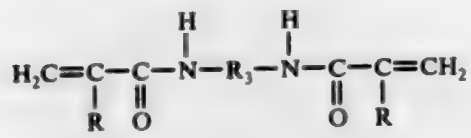
(C) at least 0.02 part by weight of a cross-linking agent comprising a difunctional monomer selected from the esters and amides of α,β-olefinically unsaturated acids

selected from the group consisting of the compounds defined by structural formulas I, II and III below:



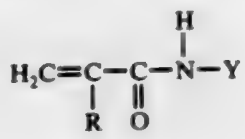
I

wherein R is hydrogen or C_1 to C_4 alkyl; R_3 is C_1 to C_6 alkylene; and n is an integer from 1 to 3;



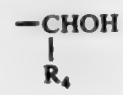
II

wherein R is hydrogen or C_1 to C_4 alkyl; and R_3 is C_1 to C_6 alkylene; and

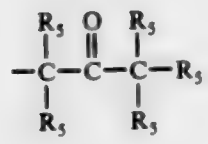


III

wherein R is hydrogen or C_1 to C_4 alkyl; and Y is selected from the group consisting of



and



wherein R_4 is selected from the group consisting of hydrogen and C_1 to C_5 alkyl; and each R_5 is selected from the group consisting of hydrogen and $—CH_2OH$; provided, however, that at least one R_5 is $—CH_2OH$;

said comonomer comprising (a) at least 10% by weight of the total weight of monomers (A) and (B) of an acid comonomer or (b) at least 20% by weight of the total weight of monomers (A) and (B) of an amide comonomer, or (C) at least 10% by weight of the total weight of monomers (A) and (B) of a combination of acid and amide comonomers, said combination containing at least 5% by weight of the total weight of monomers (A) and (B) of an acid comonomer.

4,082,706

NON-STAINING ANTIOZONANT ENAMINES

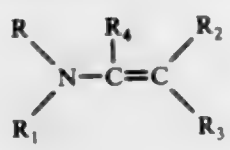
Arthur C. Danielson, Royal Oak, Mich., assignor to Uniroyal, Inc., New York, N.Y.

Filed Jun. 13, 1975, Ser. No. 586,829

Int. Cl.[2] C08L *7/00*

U.S. Cl. 260—5 **21 Claims**

1. A non-staining white-wall tire stock with improved ozone resistance comprising natural rubber, styrene-butadiene rubber, ethylene-propylene-non-conjugated diene terpolymer rubber, and as the antiozonant, an enamine of the formula



wherein R and R_1 are each primary or secondary, saturated or unsaturated alkyl groups with 1 to 8 carbon atoms, or together with the nitrogen form a cyclic ring structure having 4 to 6 carbon atoms; R_2 and R_3 are each hydrogen, an alkyl group with 1 to 6 carbon atoms, or joined together to form a cyclic ring structure having 5 to 7 carbon atoms; and R_4 is hydrogen or a primary or secondary alkyl group with 1 to 4 carbon atoms.

4,082,707

2-(4-ISOBUTYLPHENYL)-PROPIOHYDROXAMIC ACID AND A PROCEDURE FOR ITS PREPARATION

Giovanni Orzalesi, and Renato Selleri, both of Florence, Italy, assignors to Societa Italo-Britannica L. Manetti-H. Roberts & Co., Florence, Italy

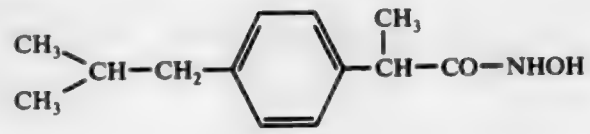
Continuation of Ser. No. 428,835, Dec. 27, 1973, abandoned. This application Oct. 26, 1976, Ser. No. 735,525

Claims priority, application Italy, Jan. 8, 1973, 47550 A/73; Jul. 5, 1973, 51249 A/73

Int. Cl.[2] C07C *83/10*

U.S. Cl. 260—500.5 H **1 Claim**

1. The compound 2-(4-isobutylphenyl)-propriohydroxamic acid having the structural formula



4,082,708

ADHESIVE SYSTEMS COMPRISING A BISAMINO PIPERAZINE-CONTAINING POLYAMIDE

Ramesh Mehta, Roseville, Minn., assignor to H. B. Fuller Company, St. Paul, Minn.

Filed Sep. 20, 1976, Ser. No. 725,012

Int. Cl.[2] C08G *59/44*

U.S. Cl. 260—18 N **18 Claims**

3. A two-part thermosettable epoxy adhesive system comprising a curable epoxy resin and a polyamide curing agent therefor, said system comprising:

in a first part, a liquid curable epoxy resin having an epoxide equivalent weight greater than 60, said curable epoxy resin being capable of being cured with a solid polyamide curing agent when said solid polyamide curing agent is heated to a temperature above its softening point; and

in a second part, a polyamide curing agent for said curable epoxy resin, said polyamide being solid at room temperature and having a softening point above 65° C., said polyamide containing at least 20 mole % terminal groups which are residues of 1,4-bisalkylamino piperazine, said polyamide comprising the residue of a polycarboxylic acid or functional equivalent thereof, linked by amido linkages to the residue of an amine having a plurality of amine groups; said residue of said amine having been derived from a polyamine comprising 20–90 amine equivalent percent of said 1,4-bisalkylamino piperazine; said residue of said polycarboxylic acid comprising the residue of an aliphatic dicarboxylic acid selected from the group consisting of: a dimerized unsaturated fatty acid; a straight-chain, saturated aliphatic dicarboxylic acid; and mixtures thereof.

4,082,709

LOW LEACHING ANTIFOULING ORGANOMETALLIC POLYESTERS

Edward J. Dyckman, Sunderland; Jean A. Montemarano, Annapolis, and Eugene C. Fischer, Arnold, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

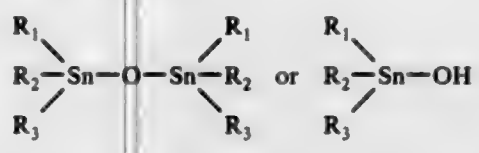
Continuation-in-part of Ser. No. 438,313, Jan. 31, 1974, Pat. No. 3,979,354. This application Jun. 24, 1976, Ser. No. 699,745

Int. Cl.[2] C09D *3/68, 5/14, 5/16*

U.S. Cl. 260—22 CB **17 Claims**

1. A composition of matter for preventing the growth of

fouling organisms on a marine structure, said composition being characterized by a low leaching rate of the antifouling agent from the composition and comprising an organotin containing polymer, said polymer being the reaction product of an unsaturated alkyd resin and an unsaturated compound capable of cross-linking said resin and having as a substituent a carboxylic acid group which has bonded thereto an organotin compound selected from the group consisting of tin oxides and tin hydroxides of the formula:



wherein R_1, R_2 and R_3 may be the same or different and are selected from the group consisting of propyl, butyl, phenyl, and benzyl, and wherein said bonding results from the reaction of said carboxylic acid group with said organotin compound.

4,082,710

ISOCYANATE-MODIFIED ACRYLIC COMPOSITIONS

August Vrancken, Dworp; Paul Dufour, Ruisbroek, both of Belgium; Jacques Noat, Versailles, and Jean Holderic, Asnieres, both of France, assignors to U C B, Societe Anonyme, Brussels, Belgium

Division of Ser. No. 469,891, May 14, 1974, Pat. No. 3,952,032. This application Dec. 3, 1975, Ser. No. 637,480

Claims priority, application United Kingdom, May 15, 1973, 23083/73

Int. Cl.² C08L *91/00*

U.S. Cl. 260—23 TN **12 Claims**

1. Isocyanate-modified compounds consisting of the reaction products of an organic isocyanate with compounds with multiple acrylic radicals, the average composition of which corresponds to the formula

$$X—Y—(Z)_{m\text{-}p}]_n$$

wherein X is the radical derived by removing the OH groups from the carboxyl groups of an organic carboxylic acid containing *n* COOH groups and the number of carbon atoms of which is between 14 and 90,

Y is the radical derived by removing m-p hydrogen atoms from the hydroxyl groups of an organic compound containing *m* OH groups,

Z is the monovalent radical derived by removing the OH group from the carboxyl group of a monocarboxylic acid having at least one terminal $CH_2=CH-COO-$ radical,

n is a whole number from 1 to 6,

m is a whole number from 2 to 8,

p is a number of from 0 to 2.5 and greater than 0, with the proviso that *m-p-l* is a positive number different from zero and that *n(m-p-l)* is between 2 and 15.

4,082,711

SHAPED ARTICLES ON THE BASIS OF VINYL CHLORIDE POLYMERS HAVING AN INCREASED WHITE FRACTURE EFFECT

Hans-Joachim Andrascheck, Burgkirchen, Alz; Otfried Lörcher, Burghausen, Salzach, and Erich Zentner, Burgkirchen, Alz, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 19, 1976, Ser. No. 733,760

Claims priority, application Germany, Oct. 24, 1975, 2547612

Int. Cl.² B29C *17/00;* B31F *23/10;* C08K *5/10, 5/53*

U.S. Cl. 260—23 X A **8 Claims**

1. In the process for the manufacture of shaped articles, especially films or sheets, with a white fracture effect from a molding composition of

(a) a vinyl chloride polymer having at least 50% polymerized vinyl chloride by weight of the total polymer, and

(b) an elastomer of a acrylonitrile/butadiene/styrene, methylmethacrylate/butadiene/styrene or methylmethacrylate/acrylonitrile/butadiene/styrene resin in an amount of from 5 to 25% by weight of the total molding composition, the improvement which comprises adding as plasticizer to said molding composition a phosphoric, phtalic, di- or tricarboxylic, fatty or alkylsulfonic acid ester or an epoxidized oil in an amount of from 3 to 10% by weight of the total molding composition.

4,082,712

PROCESS FOR CURING SULFHYDRYL-TERMINATED THIOETHER POLYMERS

Bobby F. Dannels, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 554,816, Mar. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 535,632, Dec. 23, 1974, Pat. No. 3,992,274. This application Dec. 30, 1976, Ser. No. 755,885

Int. Cl.² C08L *91/00*

U.S. Cl. 260—28 R **11 Claims**

1. In the process of preparing a thioether elastomer by reaction of an organic peroxy compound with a liquid sulfhydryl-terminated monosulfide thioether polymer substantially devoid of ethylenic and acetylenic unsaturation having a functionality of 2 to 3 sulfhydryl substituents per molecule which is curable therewith, the improvement which comprises carrying out the reaction in the presence of a curing amount, corresponding to at least about 5 parts by weight per one hundred parts by weight of he liquid thioether polymer, of tertiary butyl perbenzoate as the organic peroxy compound.

4,082,713

PRODUCTION OF A COLOR DEVELOPING RECORD SHEET CONTAINING METAL-MODIFIED NOVOLAK RESIN PARTICLES

Russell D. Kelley, Waverly, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 575,055, May 5, 1975, Pat. No. 4,034,128. This application Mar. 21, 1977, Ser. No. 779,307

Int. Cl.² C08L *61/06;* B41M *5/12, 5/16*

U.S. Cl. 260—29.3 **9 Claims**

1. A rheologically stable aqueous dispersion of metal-modified novolak resin comprising up to about 58% by weight of particles of said metal-modified novolak resin having an average particle size of below about 10 microns, at least about 1.5% by weight based on the weight of said resin particles of an anionic polymeric dispersing agent and at least about 0.2% by weight based on the weight of said resin particles of an organo-phosphorus compound, said organo-phosphorus compound containing two or more phosphonic acid or alkali metal phosphonate groups per molecule.

4,082,714

PROCESS FOR THE EMULSION POLYMERIZATION OF CONJUGATED DIENES

Enzo Lo Scalzo, Milan; Franco Ferré, Gorla Minore (Varese), and Gianfranco Cantoni, Busto Arsizio (Varese), all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 413,061, Nov. 5, 1973, abandoned. This application Nov. 25, 1975, Ser. No. 635,193

Claims priority, application Italy, Nov. 30, 1972, 32269/72

Int. Cl.² C08L *9/10, 9/02, 9/06*

U.S. Cl. 260—29.7 R **21 Claims**

1. A process for the production of a low viscosity polybutadiene latex by emulsion polymerization, the latex having a solids content of greater than 40%, uniform particle sizes with average diameters being between about 1800 A and 2500 A, the latex exhibiting no gel formation and being formed in the absence of any agglomeration of the polybutadiene, including the steps of

(a) adding butadiene monomer with a chain regulator and an emulsifier to an aqueous reaction medium containing a dispersing agent, said butadiene monomer being added in an amount of about 20 to 40% by weight of the total butadiene monomer employed in the process,

(b) conducting an initial polymerization stage in the presence of the butadiene monomer as a phase separate from the polymer being formed, this initial stage being completed before gel formation begins,

(c) conducting an intermediate state in which butadiene monomer is added in quantities such that the conversion of the butadiene monomer at the end of each individual addition exceeds 45%, the additions occurring when the ratio of monomer to polymer is less than about 0.65:1 but not less than about 0.25:1, and the additions continuing until the polymer concentration in the reaction medium reaches about 50 wt.%, and

(d) conducting a final stage such that the reaction is continued to a conversion of about 75 to 95% of the butadiene monomer.

4,082,715

CRYSTALLIZATION OF POLYCARBONATES

Jean-Pierre Mercier, Kessel Lo Belgique, Belgium, assignor to Unibra S.A., Brussels, Belgium

Filed Nov. 13, 1975, Ser. No. 631,608

Claims priority, application France, Nov. 14, 1974, 74 37546

Int. Cl.[2] C08L *67/00*

U.S. Cl. 260—30.6 R **10 Claims**

1. A moulding composition comprising a polycarbonate polymer from 2.5 to 20% by weight of a plasticizer for said polycarbonate, and from 0.01 to 20% by weight of a finely divided nucleating agent selected from the group consisting of metal salts of polymers carrying lateral carboxylic groups.

4,082,716

HIGH IMPACT POLYPROPYLENE RESINS CONTAINING PHTHALIDE

Ivor R. Fielding, Naperville, and Wassily Poppe, Lombard, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 27, 1976, Ser. No. 652,878

Int. Cl.[2] C08K *5/09*; C08L *23/12, 23/14*

U.S. Cl. 260—30.4 R **10 Claims**

1. A composition having improved impact and flow properties comprising a resinous polymer of propylene containing at least 75 percent by weight propylene and phthalide in a concentration of 0.5 to 15 parts by weight per each 100 parts by weight resinous polymer of propylene.

4,082,717

PREPARATION OF GAMMA-PYRONES

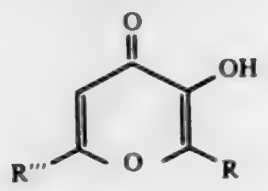
Thomas M. Brennan, Old Lyme; Daniel P. Brannegan, Pawcatuck; Paul D. Weeks, and Donald E. Kuhla, both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 710,901, Aug. 2, 1976, abandoned. This application Sep. 9, 1976, Ser. No. 721,885

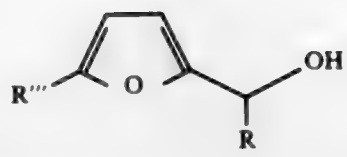
Int. Cl.[2] C07D *309/22*

U.S. Cl. 260—345.9 R **14 Claims**

1. A process for preparing a gamma-pyrone of the formula



which comprises contacting a furfuryl alcohol of the formula



wherein R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or benzyl and R''' is hydrogen or alkyl of 1 to 4 carbon atoms in aqueous solution at a temperature of −50° to 50° C with at least two equivalents of a halogen oxidant selected from the group consisting of chlorine, bromine, bromine chloride, hypochlorous acid, hypobromous acid or mixtures thereof and heating the formed 4-halo-dihydropyran until hydrolysis is substantially complete.

4,082,718

TAP HOLE MIX

Teiichi Ando, and Hidenobu Itoi, both of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 24, 1976, Ser. No. 688,999

Claims priority, application Japan, May 30, 1975, 50-64911; May 30, 1975, 50-64912

Int. Cl.[2] C08K *5/05*

U.S. Cl. 260—33.4 R **7 Claims**

1. In a tap hole mix for a blast furnace composed of refractory materials and a binder, the improvement which comprises said binder consisting essentially of a novolak phenol resin (A) having a mean molecular weight from 200 to 800, a substance which produces formaldehyde by thermal decomposition when subjected to the furnace heat and an alcoholic solvent, the amount of resin being from 3 to 30 percent based on the total mix, the amount of solvent being from 4 to 15 percent based on the total mix, the amount of formaldehyde producing substance being from 0.5 to 10 percent based on the resin and the remainder of the mix being refractory material.

4,082,719

SILICONE EPOXY CURABLE COMPOSITIONS

Donald T. Liles, and Keith W. Michael, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 23, 1976, Ser. No. 660,572

Int. Cl.[2] C08L *63/02, 83/06*; C08G *59/02*

U.S. Cl. 260—37 SB **29 Claims**

1. A substantially anhydrous composition comprising

(A) an organosilicon compound containing at least one silicon-bonded hydroxyl group;

(B) a compound containing an average of more than one epoxy group;

(C) a catalytic amount of an aluminum compound selected from the group consisting of aluminum trihydroxide, aluminum alcoholates, aluminum acylates, salts of aluminum acylates and alcoxides aluminosiloxy compounds and aluminum chelates, and

(D) an organohydriosilicon compound containing at least one silicon-bonded hydrogen atom per molecule in an amount sufficient to provide no more than 0.1 percent by weight silicon-bonded hydrogen based on the combined weight of (A) and (B), said organosilicon compound (A) being present in an amount sufficient to provide at least 0.1 silicon-bonded hydroxy groups per epoxy group present in (B), and said substantially anhydrous composition being curable to a hard resinous material.

4,082,720

PROCESS FOR FORMING POLYMERIC COMPOSITIONS

Terence John Henman, Haslingfield, and Graham Williams, Runcorn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 257,143, May 26, 1976, Pat. No. 4,000,111. This application Oct. 31, 1975, Ser. No. 627,775

Claims priority, application United Kingdom, May 28, 1971, 17712/71; Aug. 27, 1971, 40273/71

The portion of the term of this patent subsequent to Dec. 28, 1993, has been disclaimed.

Int. Cl.[2] C08K *3/24, 7/14, 9/06;* C08L *23/00*

U.S. Cl. 260—42.15 14 Claims

1. A process of forming a polymeric composition by mixing (a) at least one compound which is a carboxylic acid or a carboxylic acid anhydride selected from the group consisting of (I) benzoic acid, (II) lactic acid, (III) polycarboxylic acids which contain not more than four carboxylic acid groups and not more than one atom of an element other than carbon, hydrogen or oxygen in the molecule, and (IV) anhydrides of acids of groups I, II or III, with (b) a graft copolymer of an unsaturated dicarboxylic acid or the anhydride of an unsaturated dicarboxylic acid and a propylene polymer in such proportions that 1 to 90% of the functions



contained in the acid and/or anhydride groups of (a) and (b) are present in the acid or anhydride component of the graft copolymer.

4,082,721

1,4-BIS(1-CYANO-CARBOCYCLIC-UNSATURATER HYDROCARBYL) DYE COMPOSITIONS

Johannes George Jacobus Kok; Rudolf van Moorselaar, and Aart Noordermeer, all of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

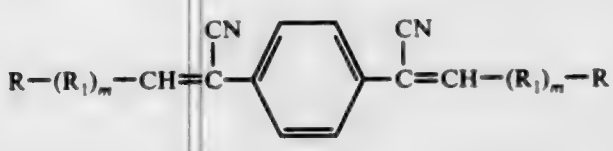
Continuation of Ser. No. 462,760, Apr. 22, 1974, abandoned, which is a division of Ser. No. 264,788, Jun. 21, 1972, abandoned. This application Feb. 3, 1976, Ser. No. 654,751

Claims priority, application Netherlands, Jun. 25, 1971, 7108768

Int. Cl.[2] C08K *5/45, 5/15;* C09D *3/80*

U.S. Cl. 260—42.21 24 Claims

1. A synthetic resin dyed by a compound of the formula



wherein R is phenyl or phenyl substituted with at least one moiety selected from the group consisting of halo, hydroxy, nitro, cyano, alkyl of up to 18 carbon atoms, alkoxy of up to 18 carbon atoms, cycloalkyl of up to 18 carbon atoms, amino, mono- and dialkyl substituted amino wherein each alkyl has up to 18 carbon atoms, R_1 is alkenylene of 2 *n* carbon atoms and *n* conjugated double carbon to carbon bonds when $n = 1$ to 5, alkyl substituted derivatives thereof wherein the alkyl is of 1 or 2 carbon atoms, phenyl substituted derivatives thereof and alkyl and phenyl substituted derivatives thereof.

4,082,722

PRE-MIXED DENTAL COMPOSITION FOR THE PREPARATION OF A DENTAL SILICATE CEMENT

Werner Schmitt, Prinzenweg 10; Robert Purrmann, Riemerschmidstrasse 18, both of Starnberg; Peter Jochum, An der Beermahd, 8031 Hechendorf; Wolf-Dieter Zahler, Graf Toerring-Strasse 19, Hechendorf, and Rainer Grimm-Lenz, Munchener Strasse 9, Seefeld, Upper Bavaria, all of Germany

Continuation-in-part of Ser. No. 404,886, Oct. 10, 1973, Pat. No. 3,986,998, which is a continuation-in-part of Ser. No. 213,829, Dec. 29, 1971, abandoned. This application Sep. 8, 1976, Ser. No. 721,443

Claims priority, application Germany, Jan. 15, 1971, 2101889

Int. Cl.[2] C08K *3/34*

U.S. Cl. 260—42.43 5 Claims

1. A pre-mixed dental composition for the preparation of a dental silicate cement, when mixed with water, which consists essentially of an aluminum fluorosilicate glass powder and a solid polymeric material selected from the group consisting of homopolymer of an ethylenically unsaturated alpha, beta-dicarboxylic acid of 4–5 carbon-atoms, copolymer of said acids with each other, and copolymer of said acids with less than 10 mole percent of an ethylenically unsaturated monocarboxylic acid, methacrylic ester whose ester moiety is alkyl of 1-4 carbon atoms or methacrylic amide, the weight ratio of said powder to said polymer being 1.5:1 to 20:1.

4,082,723

AZA-ADAMANTANE COMPOUND STABILIZERS FOR ORGANIC POLYMER COMPOSITIONS

Norbert Mayer, Gersthofen; Gerhard Pfahler, Augsburg, and Hartmut Wiezer, Gersthofen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

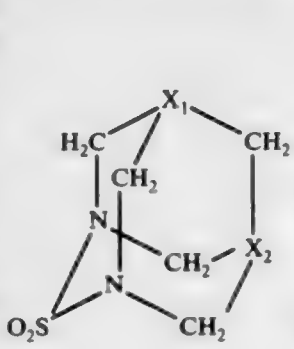
Filed Oct. 4, 1976, Ser. No. 729,483

Claims priority, application Germany, Oct. 9, 1975, 2545292

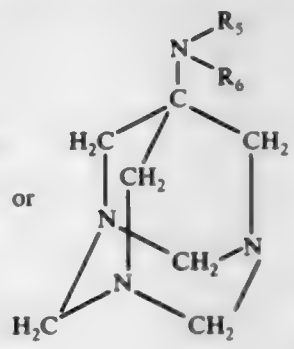
Int. Cl.[2] C08K *5/34, 5/35*

U.S. Cl. 260—45.8 N 3 Claims

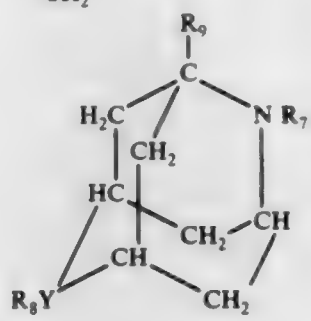
1. Organic polymer-containing plastics molding composition having as stabilizer for the polymer against decomposition by light and heat 0.01–5% by weight of the polymer of one or more aza-adamantane compounds of the formula



or



or



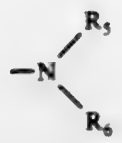
wherein

X_1 is nitrogen, phosphorus, phosphoryl, thiophosphoryl, methine, or methine substituted by phenyl or methyl;

X_2 is nitrogen, methine, or methine substituted by aryl;

R_5 is hydrogen, hydroxyl or methyl;

R_6 is hydrogen, alkyl of 1–30 carbons or aryl;



may optionally be nitro;

Y is nitrogen;

R_7 and R_8 each are hydrogen, methyl, benzyl, oxygen or tosyl;

R_9 is hydrogen, halogen, hydroxyl or amino; and

R_8-Y< may optionally be methylene or oxygen.

4,082,724

PRODUCTION OF AROMATIC POLYESTERS OF IMPROVED COLOR

Warren Hewertson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 877,503, Nov. 17, 1969, Pat. No. 3,830,775. This application May 24, 1974, Ser. No. 473,249

Claims priority, application United Kingdom, Dec. 3, 1968, 57269/68

The portion of the term of this patent subsequent to Aug. 20, 1991, has been disclaimed.

Int. Cl.[2] C08G *63/02, 63/76*

U.S. Cl. 260—45.75 B **4 Claims**

1. A polyethylene terephthalate composition comprising highly polymeric polyethylene terephthalate and in an amount sufficient to prevent color degradation of said polyethylene terephthalate (1) a trihalide or tri(pseudohalide) of antimony, and (2) an organic oxo compound of phosphorus.

4,082,725

FLAME RETARDANT PLASTIC COMPOSITIONS

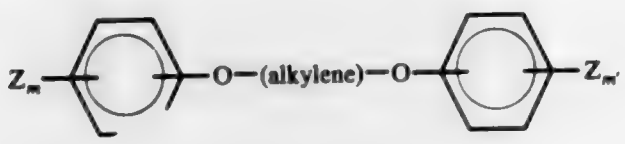
Arnold L. Anderson, Alma, Mich., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation of Ser. No. 330,779, Feb. 8, 1973, abandoned, and a continuation-in-part of Ser. No. 260,240, Jun. 6, 1972, abandoned. This application Nov. 8, 1976, Ser. No. 739,461

Int. Cl.[2] C08K *5/06*

U.S. Cl. 260—45.75 B **17 Claims**

1. A plastic composition comprising an elastomer having incorporated therein an effective amount of a bis-phenoxy compound, which functions as a flame retardant for said composition, having the formula



wherein (a) Z is bromine; (b) m and m' are independent and are integers having a value of from 1 to 5; and (c) alkylene is a straight or branched chain alkylene group having from one to six carbon atoms.

4,082,726

CURABLE ORGANOPOLYSILOXANE COMPOSITIONS WITH IMPROVED ADHESION

Katsutoshi Mine, and Masuo Yokoyama, both of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Aug. 18, 1976, Ser. No. 715,363

Claims priority, application Japan, Aug. 19, 1975, 50-99768

Int. Cl.[2] C08G *77/04*

U.S. Cl. 260—46.5 UA **10 Claims**

1. A curable organopolysiloxane composition consisting essentially of a mixture of

A. an organopolysiloxane containing at least two lower alkenyl groups bonded to silicon atoms which are in the same molecule,

B. an organopolysiloxane containing at least two hydrogen atoms bonded to silicon atoms which are in the same molecule,

wherein the total number of lower alkenyl groups and hydrogen atoms bonded to silicon in the mixture is at least 5,

C. a catalyst,

the improvement comprising, adding to the components (A), (B) and (C), a fourth component

(D) an organosilicon compound having at least one $Q(R''O)_2Si$- group and at least one lower alkenyl group or hydrogen atom bonded to silicon atoms which are in the same molecule, wherein Q is a monovalent hydrocarbon radical containing at least one epoxy group and R'' is a lower alkyl group.

4,082,727

METHOD FOR MANUFACTURE OF NON-COAGULATIVE ORGANOSILICONE POLYMER

Akira Nagata, Kawanishi, and Jun Iyoda, Ikeda, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. 19, 1976, Ser. No. 734,011

Claims priority, application Japan, Oct. 21, 1975, 50-127004

Int. Cl.[2] C08G *77/04*

U.S. Cl. 260—46.5 G **8 Claims**

1. A method for the manufacture of a non-coagulative organosilicone polymer, which comprises reacting an isocyanate group-containing organosilicon compound of the formula, $OCN(CH_2)_3SiR_m(OR')_{3-m}$, wherein R denotes an alkyl or aryl group, R' denotes a group selected from the class consisting of alkyl, aryl, alkoxyalkyl, and acyl groups, and m is the integer having the value of 0, 1 or 2, with a heparin compound soluble in organic solvents, to which are dissolved in a non-protonic organic solvent and held therein at a temperature in the range of from 20° to 80° C for a period of from 0.5 to 24 hours thereby affording a reaction product containing therein an organosilicon compound containing a heparin residue wherein there is 1/30 to ½ silicon atom per hexose ring of the heparin backbone; subsequently separating said heparin residue-containing organosilicon compound from said reaction product and purifying the separated compound; and causing the purified heparin residue-containing organosilicon compound to react, in the presence of water, with an organosilicone resin intermediate which is also capable of readily undergoing hydrolysis in the presence of water and consequently forming a siloxane linkage via copolycondensation of silanol intermediates.

4,082,728

XYLENE-FORMALDEHYDE RESIN COMPOSITIONS AND PROCESS

Walid Y. Aziz, Warrensville; Lawrence E. Ball, Cuyahoga Falls, and Irving Rosen, Warrensville Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 23, 1976, Ser. No. 716,545

Int. Cl.[2] C08G *10/02*

U.S. Cl. 260—67 A **11 Claims**

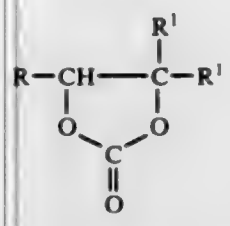
1. The process for preparing solid light colored, containing less than 2% oxygen by weight thermoplastic xylene-formaldehyde polymers having a molecular weight greater than 20,000 comprising reacting formaldehyde or a formaldehyde producing material with m-xylene in the presence of an acid catalyst at an elevated temperature in a closed reactor from which air is excluded during the reaction.

4,082,729
PROCESS FOR THE PREPARATION OF OXYMETHYLENE POLYMERS

Karlheinz Burg, Naurod, Taunus, and Helmut Schlaf, Fischbach, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 31, 1976, Ser. No. 719,078
Claims priority, application Germany, Sep. 2, 1975, 2538954
Int. Cl.² C08G *2/24, 2/10*
U.S. Cl. 260—67 FP **4 Claims**

1. In a process for the preparation of oxymethylene polymers by the homopolymerization of trioxane or copolymerization of trioxane and acetal compounds copolymerizable therewith in the presence of a cationically active salt-like initiator, the improvement which comprises using the initiator in the form of a solution in a liquid cyclic carbonic acid ester of the formula



wherein R is selected from hydrogen, phenyl, and alkyl of 1 to 3 carbon atoms, and R^1 is selected from hydrogen and unsubstituted alkyl of 1 to 3 carbon atoms.

4,082,730
GLYOXAL MODIFIED POLY (BETA-ALANINE) STRENGTHENING RESINS FOR USE IN PAPER

Terence W. Rave, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 521,002, Nov. 4, 1974, abandoned. This application Jan. 21, 1976, Ser. No. 651,374
Int. Cl.² C08I *33/26*
U.S. Cl. 260—72 R **2 Claims**

1. A cationic water-soluble resin which comprises the reaction product of a cationic branched water-soluble poly(β-alanine) having a molecular weight in the range of from about 500 to about 10,000 with from about 10 to about 100 mole %, based on the amide repeating units of the poly(β-alanine) of glyoxal said cationic branched water-soluble poly(β-alanine) having been produced by the anionic polymerization of acrylamide in a suitable organic reaction medium inert to the reaction conditions in the presence of a basic catalyst and a free-radical inhibitor and then the reaction of the polymerized acrylamide with sufficient dimethylamine and formaldehyde to introduce from about 2 to about 15 mole % of cationic groups, based on amide repeating units.

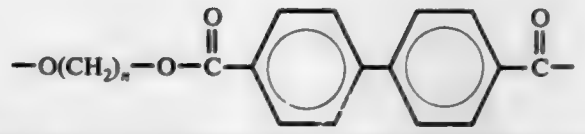
4,082,731
METHOD FOR PRODUCING A HIGH MODULUS POLYESTER YARN

William N. Knopka, Medford, N.J., assignor to Avtex Fibers Inc., Valley Forge, Pa.

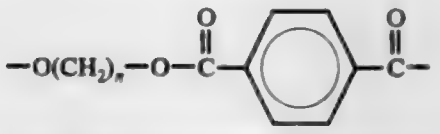
Continuation-in-part of Ser. No. 331,652, Feb. 12, 1973, abandoned. This application Dec. 29, 1975, Ser. No. 644,388
Int. Cl.² C08G *63/12*
U.S. Cl. 260—75 T **12 Claims**

1. Method for producing a high modulus yarn from a copolyester resin which yarn is heat-settable without tension comprising:

a. forming filaments from a copolyester resin consisting of at least 15 to 50 mole percent of an interpolymerized randomly repeating unit having the formula:



and from 85 to 50 percent of an interpolymerized randomly repeating unit having the formula:

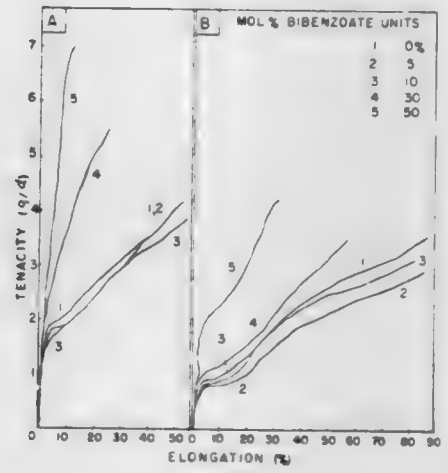


wherein *n* for both units is an integer of from 2 to 10, the fiber resin having an intrinsic viscosity of at least about 0.55 as determined in a 60 weight percent phenol and 40 weight percent tetrachloroethane solution at 30° C;

b. combining the resulting filaments into a yarn;

c. uniformly orienting the resulting yarn by drawing the yarn at a temperature of about 20° C higher than its glass transition temperature and at 75% of its break-draw ratio, and

d. heat-setting the oriented yarn by passing it through a heat zone maintained about 125° to 185° C for a time ranging from 1 to 10 minutes, while in a free-to-relax condition, said heat-setting being conducted without tensioning of said yarn.



4,082,732
DEBLOCKING PROTEIN FRACTION RECOVERY METHOD AND PRODUCT

Lawrence Burton, Commack, and Frank Friedman, New York, both of N.Y., assignors to Immunology Research Foundation, Inc., Great Neck, N.Y.

Filed Jul. 29, 1975, Ser. No. 600,026
Int. Cl.² A23J *1/06*
U.S. Cl. 260—112 B **10 Claims**

1. A process for the isolation of DPF comprising:

(a) suspending blood serum in a nearly neutral buffered pH solution (b) centrifuging the resultant suspension at 5400–10,000g to isolate a first supernatant (c) centrifuging the first supernatant at 5400–10,000g to give a second supernatant (d) centrifuging the second supernatant at 23,000–48,000g to give a third supernatant (e) centrifuging the third supernatant at 269–369 $\times$ 10^3g to give a first sediment and a fourth supernatant (f) extracting the fourth supernatant with ethyl ether and retaining the aqueous phase (g) heating the aqueous phase to 55° C.–60° C. and centrifuging at 35–42 $\times$ 10^3g, giving a second sediment and a fifth supernatant which is a clear, substantially colorless liquid (h) centrifuging the fifth supernatant liquid at 1.05–2.69 $\times$ 10^5g yielding DPF as the sediment.

4,082,733

BLOCKING PROTEIN FRACTION RECOVERY METHOD AND PRODUCT

Lawrence Burton, Commack, and Frank Friedman, New York, both of N.Y., assignors to Immunology Research Foundation, Inc., Great Neck, N.Y.

Filed Jul. 29, 1975, Ser. No. 600,028
Int. Cl.[2] A23J *1/06*
U.S. Cl. 260—112 B **7 Claims**

1. A process for the isolation of BPF which comprises:
(a) suspending whole blood in a buffer solution of nearly neutral pH
(b) centrifuging the whole blood suspension at 5400–10,000g to obtain a first supernatant
(c) centrifuging the first supernatant at 20,000 to 25,000g to give a BPF sediment
(d) optionally purifying the BPF sediment by resuspending it in an alkaline buffer and centrifuging at 20,000–25,000g to give a supernatant containing relatively pure BPF.

4,082,734

PRODUCTION OF INTRAVENOUSLY APPLICABLE NATIVE HUMAN IMMUNE GLOBULIN HAVING A NORMAL HALF-LIFE

Wolfgang Stephan, Dreieichenhain, Germany, assignor to Biotest-Serum-Institut GmbH, Frankfurt am Main-Niederrad, Germany

Filed May 19, 1976, Ser. No. 687,842
Claims priority, application Germany, Jun. 18, 1975, 2527064
Int. Cl.[2] A23J *1/06*
U.S. Cl. 260—112 B **5 Claims**

1. A method of preparing an intravenously applicable native-human immune globulin of substantially unchanged half-life and antibody activity but free from anti-complement activity, comprising heating human plasma or human serum for about 2 to 4 hours at about 50° to 56° C, and then fractionating, the heating having been long enough within the recited parameters so that the product upon fractionation is substantially free from anti-complement activity.

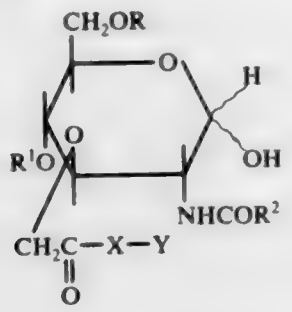
4,082,735

NOVEL IMMUNOLOGICAL ADJUVANT COMPOUNDS AND METHODS OF PREPARATION THEREOF

Gordon H. Jones, Cupertino; John G. Moffatt, Los Altos, and John J. Nestor, Jr., Sunnyvale, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 26, 1976, Ser. No. 680,260
Int. Cl.[2] C07C *103/52*; A61K *37/00*
U.S. Cl. 260—112.5 R **50 Claims**

1. A compound selected from those of the formula:



(I)

wherein
each of R and R^1 are the same or different and are selected from the group consisting of hydrogen or an acyl radical containing from 1 to 22 carbon atoms;
R^2 is selected from the group consisting of an unsubstituted or substituted alkyl radical containing from 1 to 22 carbon atoms, or an unsubstituted or substituted aryl radical containing from 6 to 10 carbon atoms;
X is an aminoacyl moiety selected from the group consisting of
L-alanyl,
L-valyl,
L-leucyl,
L-isoleucyl,
L-α-aminobutyryl,
L-seryl,
L-threonyl,
L-methionyl,
L-cysteinyl,
L-phenylalanyl,
L-tyrosyl,
L-tryptophanyl,
L-lysyl,
L-ornithyl,
L-arginyl,
L-histidyl,
L-glutamyl,
L-glutaminyl,
L-aspartyl,
L-asparaginyl,
L-prolyl, or
L-hydroxyprolyl;
Y is an amino acid moiety selected from the group consisting of D-isoasparagine and D-isoglutamine; and
the wavy lines (ξ) represent the α- or β-configuration or mixtures thereof, with the proviso that when one wavy line is α, the other is β.

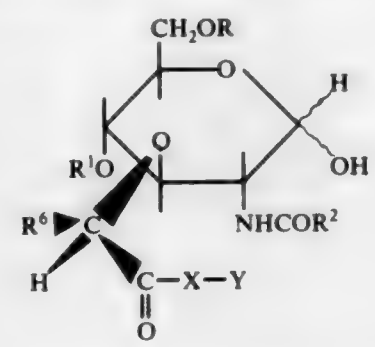
4,082,736

NOVEL IMMUNOLOGICAL ADJUVANT COMPOUNDS AND METHODS OF PREPARATION THEREOF

Gordon H. Jones, Cupertino; John G. Moffatt, Los Altos, and John J. Nestor, Jr., Sunnyvale, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 26, 1976, Ser. No. 680,618
Int. Cl.[2] C07C *103/52*; A61K *37/00*
U.S. Cl. 260—112.5 R **51 Claims**

1. A compound selected from those of the formula:



(I)

wherein each of R and R^1 are the same or different and are selected from the group consisting of hydrogen or an acyl radical containing from 1 to 22 carbon atoms;
R^2 is selected from the group consisting of an unsubstituted or substituted alkyl radical containing from 1 to 22 carbon atoms, or an unsubstituted or substituted aryl radical containing from 6 to 10 carbon atoms;
R^6 is selected from the group consisting of an alkyl radical containing from 1 to 4 carbon atoms;
X is an aminoacyl moiety selected from the group consisting of

L-valyl,	L-phenylalanyl,
L-leucyl,	L-tyrosyl,
L-isoleucyl,	L-tryptophanyl,
L-α-aminobutyryl,	L-lysyl,
L-threonyl,	L-ornithyl,
L-methionyl,	L-arginyl,
L-cysteinyl,	L-histidyl,
L-glutamyl,	L-asparaginyl,
L-glutaminyl,	L-prolyl, or
L-aspartyl,	L-hydroxyprolyl;

Y is an amino acid moiety selected from the group consisting of

D-isoasparagine and D-isoglutamine; and the wavy lines (≷) represent the α- or β-configuration or mixtures thereof, with the proviso that when one wavy line is α, the other is β.

4,082,737

STABILIZED THYMOSIN COMPOSITION AND METHOD

Weldon Courtney McGregor, Montville; Harold Leon Newmark, Maplewood, and Armin Hermann Ramel, Mountain Lakes, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 22, 1977, Ser. No. 770,480
Int. Cl.² C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 R **7 Claims**

1. A solid stable endotoxin and pyrogen free form of thymosin fraction 5 comprising in combination:

A. A major amount of thymosin fraction 5; and minor, effective amounts each of

B. a phenolic type antimicrobial agent, selected from the group consisting phenol cresols and the pharmaceutically acceptable esters of para hydroxy benzoic acids and

C. a buffering agent in an amount sufficient to provide a pH of 7–8 on reconstitution.

4,082,738

CYANOCOBALAMIN DERIVATIVES

Gordon Dean Niswender, and James M. Hudson, both of Fort Collins, Colo., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 552,919, Feb. 25, 1975, Pat. No. 3,981,863.
This application May 24, 1976, Ser. No. 689,280
Int. Cl.² A23J *1/08, 1/06*
U.S. Cl. 260—121 **2 Claims**

1. A vitamin B_{12} protein conjugate in which a protein selected from bovine serum albumin, sheep serum albumin, rabbit serum albumin, goat serum albumin, polysine, thyroglobulin or gamma-globulin is covalently bonded through one of the $CH_2CH_2CONH_2$ or $—CH_2CONH_2$ groups initially present in one of the pyrrole nucleus of the vitamin B_{12} molecule.

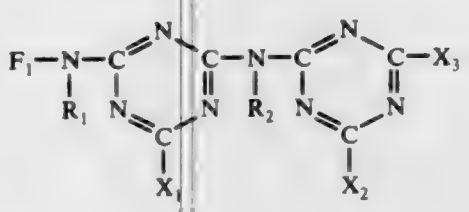
4,082,739

FIBRE-REACTIVE DYESTUFF CONTAINING A BIS-TRIAZINYLAMINO

Karl Seitz, Oberwil, Basel-land, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 208,412, Dec. 15, 1971, abandoned.
This application Dec. 26, 1973, Ser. No. 427,896
Int. Cl.² C09B *62/06, 62/08;* D06P *1/382, 3/66*
U.S. Cl. 260—146 T **6 Claims**

1. A dyestuff of the formula



wherein F_1 is an azo dyestuff radical, R_1 is hydrogen, lower alkyl, or phenyl, R_2 is hydrogen, lower alkyl, chloro-lower alkyl, bromo-lower alkyl, cyano-lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, benzyl or phenyl, X_1 and X_2 each is chloro, bromo or fluoro, and X_3 is chloro, bromo, fluoro, lower alkyl, phenyl, lower alkylthio, phenylthio, lower alkoxy, phenoxy, amino, lower alkyl-amino, di-(lower alkyl-)amino, phenylamino, phenyl(lower alkyl)-amino, benzylamino, hydroxylamino, hydrazino, phenyl hydrazino, morpholino, piperidino, piperazino or $—N(R_3)—F_2$, wherein R_3 is hydrogen, lower alkyl, or phenyl, and F_2 is an azo dyestuff radical.

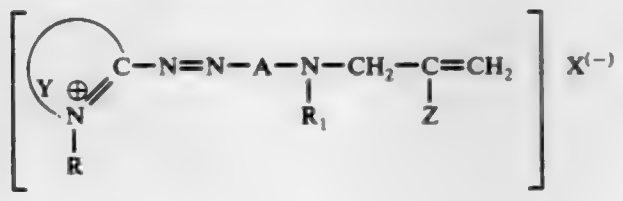
4,082,740

QUATERNARY BASIC AZODYESTUFFS CONTAINING A PROPENYL AMINO RADICAL

Reinhard Mohr, Offenbach am Main; Eberhard Mundlos, Heusenstamm, and Kurt Hohmann, Neu-Isenburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

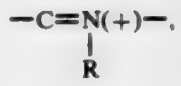
Continuation of Ser. No. 642,671, Dec. 19, 1975, abandoned.
This application Nov. 15, 1976, Ser. No. 741,661
Claims priority, application Germany, May 17, 1975, 2522174
Int. Cl.² C09B *29/00, 45/12;* D06P *1/08, 1/10*
U.S. Cl. 260—146 R **10 Claims**

1. A basic azo dyestuff which is free from sulfonic acid groups and has the formula



wherein

Y, together with



is thiazolyl, benzothiazolyl, pyrazolyl, indazolyl, triazolyl, guanazolyl, quinolinyl or pyridinyl,

A is phenylene or phenylene substituted by chlorine, methyl, ethyl, methoxy, ethoxy, carboxylic acid alkyl ester having from 2 to 5 carbon atoms, or acetylamino;

R and R_1 are identical or different and each represent hydrogen, alkyl having from 1 to 4 carbon atoms, beta-cyanoethyl, beta-hydroxyethyl, beta-chloroethyl, beta-chloro-γ-hydroxypropyl, beta-acetoxyethyl or benzyl,

Z is hydrogen or methyl, and

$X^{(-)}$ is an anion.

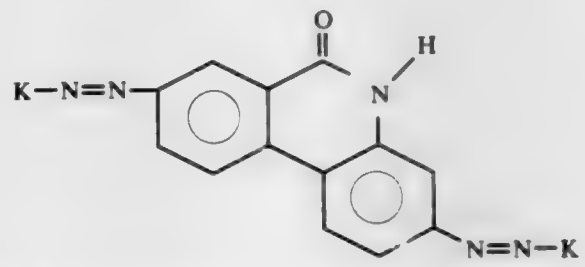
4,082,741

DISAZO PIGMENTS DERIVED FROM 3,8-DIAMINO-PHENANTHRIDONE-(10)

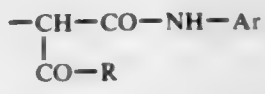
Klaus Hunger, and Dieter Weber, both of Kelkheim, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 16, 1976, Ser. No. 751,072
Claims priority, application Germany, Dec. 20, 1975, 2557555
Int. Cl.² C09B *33/12, 33/14;* D06P *1/44, 1/52*
U.S. Cl. 260—154 **10 Claims**

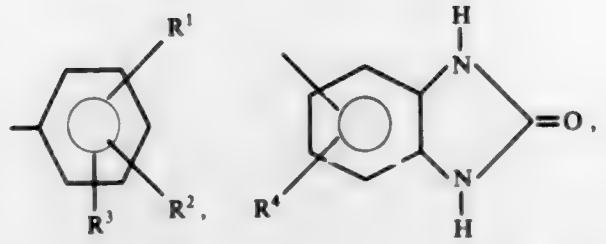
1. A compound of the formula

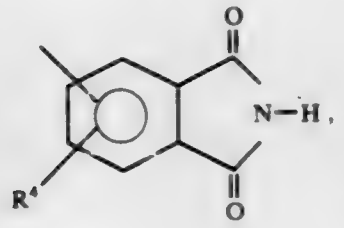
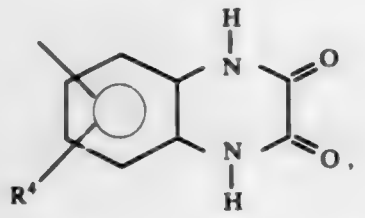
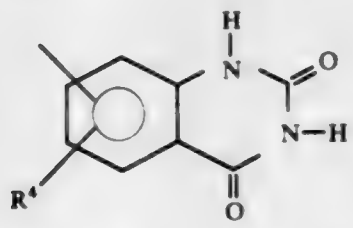
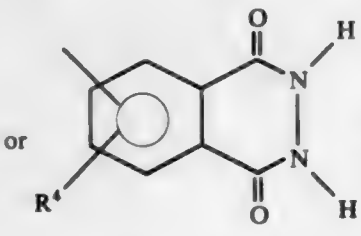


wherein K stands for the same or different groups of the formula

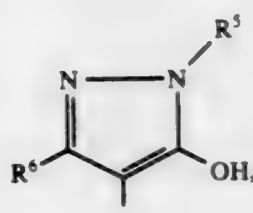
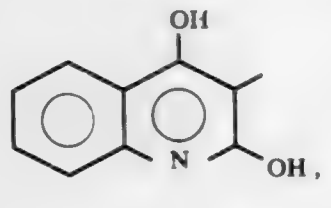


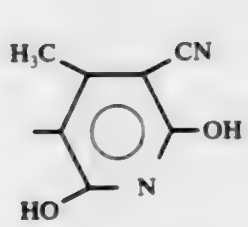
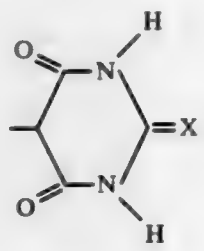
in which R is methyl or phenyl and Ar is a group of the formula






or


wherein R^1, R^2 and R^3, which are the same or different, are hydrogen, chlorine, bromine, lower alkyl, lower alkoxy, lower alkanoylamino, benzoylamino, nitro, trifluoromethyl or cyano; R^4 is hydrogen, chlorine, bromine, lower alkyl, lower alkoxy, lower carboalkoxy or nitro, or K is a group of the formula


or


wherein R^5 is phenyl, tolyl or chlorophenyl; R^6 is methyl, lower carboalkoxy or lower alkanoylamino and X is oxygen, sulfur or =NH.

4,082,742

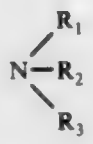
PROCESS FOR PREPARING AN AQUEOUS DISAZO DYE CONCENTRATE

George Franklin Eastlack, Pennsville, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 17, 1973, Ser. No. 389,196
Int. Cl.[2] C09B *31/08*
U.S. Cl. 260—187 **4 Claims**

1. A process for making an aqueous disazo dye concentrate, consisting essentially of

(i) reacting an aminonaphthalene compound with benzoyl chloride at about 0° to 50° C. in an aqueous medium in the presence of an amount of tertiary amine sufficient to maintain pH at between about 4 and 7, the tertiary amine having the formula



wherein R_1 is a hydroxyalkyl radical of 2 to 4 carbons and R_2 and R_3 are independently alkyl radicals of 1 to 4 carbons or hydroxyalkyl of 2 to 4 carbons, thereby forming the benzamide derivative of the aminonaphthalene compound,

(ii) diazotising p-(p-aminophenylazo)benzene sodium sulfonate in aqueous media at about 0° to 35° C., and isolating the product diazonium salt; and

(iii) coupling the product of (i) to the product of (ii) at a temperature between about 15° C. to 30° C. in the presence of a viscosity-reducing agent and sufficient of the tertiary amine to maintain the pH of the reaction mass at between about 5 and 7.

4,082,743

PROCESS FOR THE PRODUCTION OF DIALDEHYDE CELLULOSE FROM CELLULOSE

William Montgomery Hearon, Portland, Oreg.; John F. Witte, and Cheng Fan Lo, both of Vancouver, Wash., assignors to Boise Cascade Corporation, Portland, Oreg.

Filed Jan. 28, 1975, Ser. No. 544,849
Int. Cl.[2] C08B *15/00*
U.S. Cl. 536—30 **10 Claims**

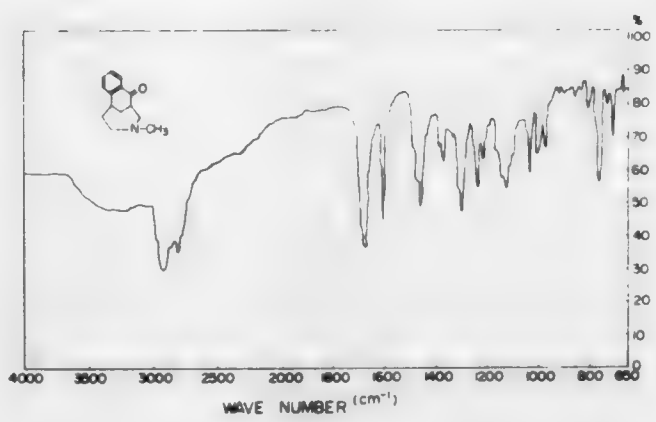
1. The process for the production of dialdehyde cellulose which comprises: reacting cellulose in aqueous medium with meta periodate ion using from 1.2 to 12 moles meta periodate ion per mole cellulose at a temperature of from 36° to 60° C. and a pH of between 2 and the pH at which periodic acid is converted in aqueous medium to a substantially water insoluble paraperiodate, for a time sufficient to convert the cellulose substantially completely to dialdehyde cellulose, and separating the dialdehyde cellulose product from the reaction mixture.

4,082,744

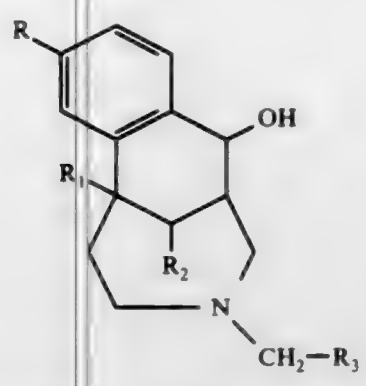
4-BENZAZONINE DERIVATIVES AND PROCESS FOR PREPARATION THEREOF

Masao Ikeda; Shigeo Miyamoto; Thutomu Nozawa; Akira Kurobe, all of Toyama, and Osamu Futsukaichi, Shinminato, all of Japan, assignors to Nihon Iyakuhin Kogyo Co., Ltd., Japan

Division of Ser. No. 467,520, May 6, 1974, Pat. No. 4,008,219. This application Jul. 21, 1976, Ser. No. 707,276
Claims priority, application Japan, May 8, 1973, 48-51458; May 8, 1973, 48-51459; May 8, 1973, 48-51460; May 8, 1973, 48-51461; Jan. 16, 1974, 49-7683; Feb. 5, 1974, 49-15281, Feb. 5, 1974, 49-15282
Int. Cl.[2] C07D *225/08*
U.S. Cl. 260—239 BB **16 Claims**



1. A compound selected from the group consisting of a 4-benzazonine of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein

R is hydrogen, hydroxy or alkoxy of up to 3 carbon atoms;

R_1 is hydrogen or alkyl of up to 3 carbon atoms;

R_2 is hydrogen, methyl or ethyl; and

R_3 is hydrogen, straight or branched alkyl of up to 4 carbon atoms, straight or branched alkenyl of up to 4 carbon atoms, mono- or dihydroxyalkyl of up to 2 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, or phenylmethyl.

4,082,745

PROCESS FOR THE PREPARATION OF PHOSPHORUS DERIVATIVES OF SECONDARY AMMONIUM SALTS OF PENAM AND CEPHEM COMPOUNDS

Poul Borrevang, Rodovre; Erling Guddal, Skovlunde; Henning Borge Petersen, Lyngby; Peter Faarup, Frederiksberg, and Jorgen Ilum Nielsen, Farum, all of Denmark, assignors to Novo Industri A/S, Bagsvaerd, Denmark

Filed Mar. 22, 1976, Ser. No. 669,048

Claims priority, application United Kingdom, Mar. 26, 1975, 12788/75; Jun. 24, 1975, 26826/75

Int. Cl.[2] C07D *499/14, 501/04*

U.S. Cl. 260—239.1 **6 Claims**

1. In the conversion of 6-amino-penicillanic acid to secondary ammonium salt phosphite amides thereof, the improvement which comprises the steps of reacting 6-aminopenicillanic acid with a member selected from the group consisting of:

2-diethylamino-1,3,2-dioxaphospholane

2-diisopropylamino-1,3,2-dioxaphospholane

2-diethylamino-4-methyl-1,3,2-dioxaphospholane

2-diethylamino-1,3,2-dioxaphosphorinane,

the phosphite group reacting with the 6-amino group and the dialkyl amino group reacting with acid group to form the desired secondary ammonium salt.

4,082,746

1,3-DIPHENYL-4 OR 5-SULPHOALKYL PYRAZOLINES

Ivan Joseph Bolton, Bingley, and Alec Victor Mercer, Leeds, both of England, assignors to Sandoz Ltd., Basel, Switzerland

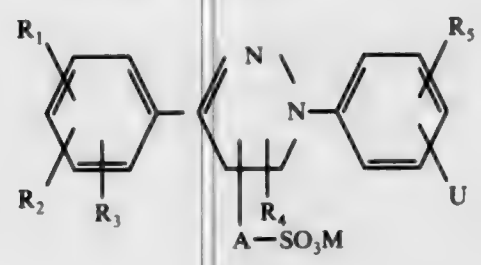
Division of Ser. No. 601,279, Aug. 4, 1975, Pat. No. 3,997,556. This application Sep. 23, 1976, Ser. No. 725,853

Claims priority, application United Kingdom, Aug. 9, 1974, 35129/74; Feb. 10, 1975, 5523/75; May 12, 1975, 1978/75

Int. Cl.[2] C07D *231/06*

U.S. Cl. 260—239.9 **11 Claims**

1. A compound, of formula I,



I

in which

R_1, R_2 and R_3, independently, signify hydrogen, chlorine, fluorine, C_{1-4}alkyl or C_{1-4}alkoxy,

R_4 signifies hydrogen, C_{1-4}alkyl or phenyl,

A signifies a straight C_{1-3}alkylene chain, unsubstituted or substituted by methyl,

R_5 signifies hydrogen, chlorine, C_{1-4}alkyl or C_{1-4}alkoxy, and

U signifies hydrogen, cyano, chlorine, $-SO_2R_6$, $-CO_2R_7$, $-SO_2NR_8R_9$ or $-CONR_8R_9$, in which R_6 signifies hydrogen or C_{1-4}alkyl, unsubstituted or mono-substituted by —COOM, C_{1-4}alkoxycarbonyl, aminocarbonyl or cyano,

R_7 signifies hydrogen or C_{1-4}alkyl, unsubstituted or mono-substituted by C_{1-4}alkoxy, and

R_8 and R_9, independently, signify hydrogen, phenyl, unsubstituted alkyl or alkyl mono-substituted by hydroxy, and

M signifies a hydrogen atom or a non-chromophoric cation selected from the group consisting of alkali metal cations, alkaline-earth metal cations and ammonium cations of the formula $R_{10}R_{11}R_{12}NH^{\oplus}$ where R_{10}, R_{11} and R_{12}, independently signify hydrogen or C_{1-4}alkyl unsubstituted or substituted by one or two hydroxy radicals.

4,082,747

CHEMICAL PROCESS

Jong C. Chen, St. Louis, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Oct. 1, 1975, Ser. No. 618,706

Int. Cl. C07j *19/00*

U.S. Cl. 260—239.57 **3 Claims**

1. In a process for coupling tyrosine or tyrosine methyl ester to 3-carbodigoxigenin glycine, 3-hemiadipyl digoxigenin or digoxigenin-12-acetate-3-hemisuccinate in an inert solvent utilizing an agnet to affect coupling, the improvement comprising utilizing as the agent dicyclohexylcarbodiimide.

4,082,748

PROCESS FOR PRODUCTION OF OXAZINE DIONES

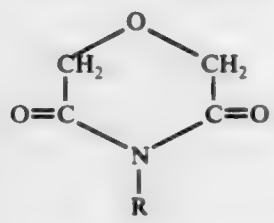
George D. Shier, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 27, 1976, Ser. No. 718,292

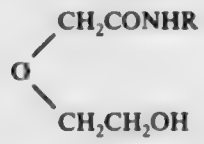
Int. Cl.[2] C07D *265/00, 273/00, 295/00*

U.S. Cl. 544—98 **4 Claims**

1. A process for making a compound having the formula



wherein R is a hydrocarbon group of 1–8 carbon atoms, which process comprises dehydrogenating by contacting a compound of the formula



with a reduced copper dehydrogenation catalyst in the presence of hydrogen at a temperature of about 200°–300° C.

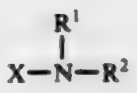
4,082,749

PROCESS FOR THE PRODUCTION OF AMINES

Hans-Juergen Quadbeck-Seeger, Ludwigshafen, and Peter Tonne, Neustadt, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Germany

Filed Jun. 3, 1974, Ser. No. 475,577
Int. Cl.[2] C07C *85/153*
U.S. Cl. 260—250 BN 8 Claims

1. A process for the production of an amine from a carboxamide by reaction with a hypohalite in an aqueous medium, wherein the carboxamide is reacted with an alkali metal hypochlorite in the presence of a catalyst selected from the group consisting of bromine, iodine, and a compound of the formula (I):



(I)

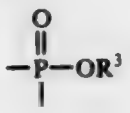
in which

R^1 is a sulfo group, a sulfonate radical or a sulfonamide group;

R^2 is hydrogen, an aliphatic radical, chlorine or bromine;

X is chlorine, bromine or hydrogen;

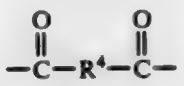
R^1 and R^2 together with the adjacent nitrogen atom may also be members of a heterocyclic radical which contains adjacent to the nitrogen atom at least one sulfonyl group or a phosphonyl group of the formula:



in which

R^3 is hydrogen or alkali metal;

or R^1 and R^2 together may also be the radical



in which R^4 is alkylene, the radical



in which R^5 is hydrogen, chlorine or bromine and R^6 is an aliphatic radical, in an amount of from 0.0001 to 0.1 mole of catalyst per mole of starting carboxamide and in the presence of 1 to 2.1 moles, not including the alkali contained in the hypochlorite molecule, of an alkali metal hydroxide, based on 1 mole of starting carboxamide and any carbamoyl groups in the carboxamide molecule, and wherein said catalyst is added to the reaction mixture prior to or simultaneously with the initiation of the carboxamide-hypochlorite reaction.

4,082,750

TRINITRO-11H-INDENO[1,2-b]QUINOXALINE-11-ONE AND PROCESS FOR PREPARING SAME

Masafumi Ohta, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1976, Ser. No. 734,183
Claims priority, application Japan, Oct. 27, 1975, 50-128366
Int. Cl.[2] C07D *241/42*
U.S. Cl. 260—250 Q 3 Claims

1. A method for preparing trinitro-11H-indeno[1,2-b]quinoxaline-11-one which comprises the steps of dissolving 11H-indeno[1,2-b]quinoxaline-11-one in a first mixture of fuming nitric acid and concentrated sulfuric acid to form a first solution, maintaining the first solution at about 70° to 80° C for a period of time effective to form a first nitrated reaction product, precipitating said first reaction product, recovering the resulting first precipitate, dissolving the first precipitate in a second mixture of fuming nitric acid and concentrated sulfuric acid to form a second solution, maintaining said second solution at about 90° to 92° C for a period of time effective to form trinitro-11H-indeno[1,2-b]-quinoxaline-11-one as a final reaction product and recovering the resulting second precipitate.

3. Trinitro-11H-indeno[1,2-b]quinoxaline-11-one.

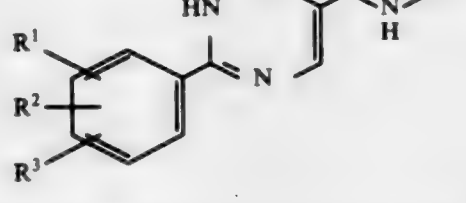
4,082,751

THERAPEUTIC AGENTS

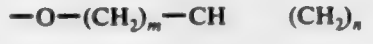
Peter Frederick Juby, Jamesville, and Richard Anthony Partyka, Liverpool, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 657,787, Feb. 13, 1976, abandoned. This application Dec. 8, 1976, Ser. No. 748,851
Int. Cl.[2] C07D *403/04, 403/14;* A61K *31/505*
U.S. Cl. 260—256.4 C 39 Claims

1. A compound of the formula



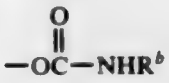
wherein R^1, R^2 and R^3 which may be the same or different are each hydrogen, halogen, (lower)alkyl, (lower)alkenyl, (lower-)alkoxy, —0—(lower)alkenyl,



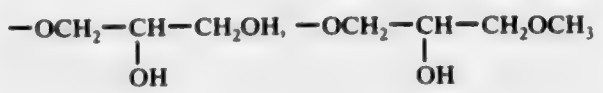
in which m is 0 or an integer from 1 to 6 and *n* is an integer from 2 to 7, $—OCH_2(CH_2)_xO(CH_2)_yCH_3$ in which *x* is 0 or an integer from 1 to 6 and y is 0 or an integer from 1 to 6, CF_3, $—OCF_3$, $—OCH_2CF_3$, hydroxy, (lower)alkylthio, amino, nitro,



in which *r* is 4 or 5, (lower)-alkylamino, di(lower)alkylamino, carboxyl, -$C0_2$-(lower)alkyl, $—O(CH_2)_uCO_2R^a$ in which u is an integer from 1 to 6 and R^a is hydrogen or (lower)alkyl, R^c-CO— in which R^c is (lower)alkyl, R^c-CONH- in which R^c is (lower)alkyl, R^c-COO- in which R^c is (lower)alkyl,



in which R^b is (lower)alkyl, $-O(CH_2)_kOH$ in which k is an integer from 2 to 6,



or $-OCH_2C_6H_5$, and pharmaceutically acceptable salts thereof, with the proviso that R^1, R^2 and R^3 may not all be alike except in the case where they represent (lower)alkoxy.

4,082,752

PROCESS FOR FLUORINATION OF URACIL

Takao Takahara, Mishima, and Susumu Misaki, Minoo, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 29, 1977, Ser. No. 792,223
Claims priority, application Japan, Apr. 29, 1976, 51-49163
Int. Cl.[2] C07D *239/54*
U.S. Cl. 260—260 10 Claims

1. A process for fluorination of uracil which comprises treating uracil with fluorine at a temperature of −10° to 15° C in a 50 to 85% by weight aqueous solution of hydrofluoric acid as the reaction medium to form 5-fluorouracil.

4,082,753

PENNICLAVINE ACETONIDE

Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 658,439, Feb. 17, 1976, which is a continuation-in-part of Ser. No. 603,408, Aug. 11, 1975, Pat. No. 3,968,112, which is a division of Ser. No. 494,147, Aug. 2, 1974, Pat. No. 3,929,796. This application Jun. 17, 1977, Ser. No. 807,459
Int. Cl.[2] C07D *457/10*
U.S. Cl. 260—285.5 1 Claim

1. Penniclavine acetonide.

4,082,754

DES-N-METHYLVINDOLINE

Donald R. Brannon, Pittsboro, and Norbert Neuss, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 398,724, Sep. 19, 1973, Pat. No. 3,989,593. This application Dec. 4, 1975, Ser. No. 637,908
Int. Cl.[2] C07D *401/02*
U.S. Cl. 260—287 P 1 Claim

1. Des-N-methylvindoline.

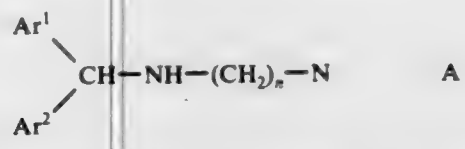
4,082,755

1-[(DIARYLMETHYL)AMINOALKYL]PIPERIDIMES

Ineke van Wijngaarden; Willem Soudijn, both of Oud-Turnhout; Jan Vandenberk, Beerse, and Jozef Fr. Hens, Nijlen, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed Feb. 14, 1977, Ser. No. 768,527
Int. Cl.[2] C07D *401/04*
U.S. Cl. 260—293.6 5 Claims

1. A chemical compound selected from the group consisting of a piperidine derivative having the formula



A

and the pharmaceutically acceptable acid addition salts thereof, wherein:

Ar^1 and Ar^2 are each independently selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl being phenyl having from 1 to 2 substituents independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl;

n is the integer 2 or 3; and

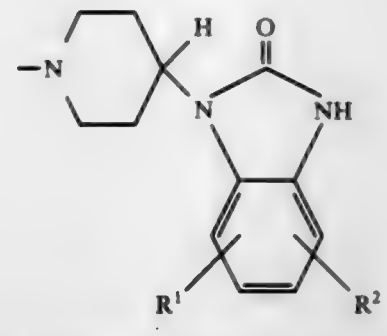
the radical



A

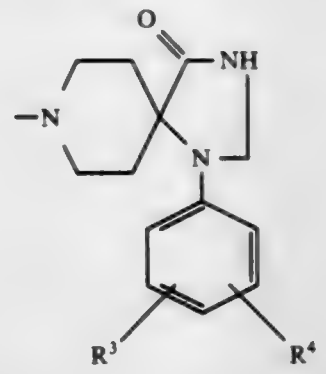
is a member selected from the group consisting of the following:

a. a radical of the formula



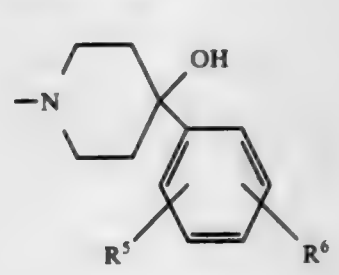
wherein R^1 and R^2 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and lower alkyloxy;

b. a radical of the formula



wherein R^3 and R^4 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, lower alkyloxy and trifluoromethyl; and

c. a radical of the formula



wherein R^5 is selected from the group consisting of hydrogen and methyl; and R^6 is selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl.

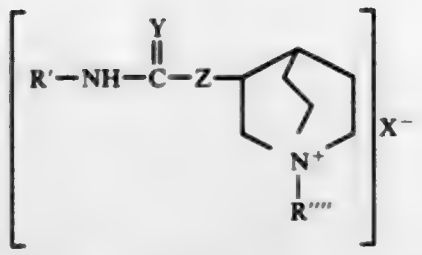
4,082,756

QUATERNARY QUINUCLIDINIUM CARBAMATES AND THIOCARBAMATES

Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 134,827, Apr. 16, 1971, Pat. No. 3,956,479, which is a division of Ser. No. 712,968, Mar. 14, 1968, Pat. No. 3,621,048, which is a continuation-in-part of Ser. No. 578,981, Sep. 16, 1966, abandoned. This application Feb. 20, 1976, Ser. No. 659,625
Int. Cl.[2] C07D *211/42, 211/54*
U.S. Cl. 260—293.53 6 Claims

1. A chemical compound represented by the formula:



where R′ is selected from the group consisting of an alkyl group containing 1–4 carbon atoms, a phenyl group and a phenyl group substituted by a halogen selected from the group consisting of chlorine and bromine; R″″ is an alkyl group containing 10–16 carbon atoms; Y is selected from the group consisting of oxygen and sulfur; Z is selected from the group consisting of oxygen and sulfur; and X is a compatible anion selected from the group consisting of chloride, bromide, iodide and methosulfate.

4,082,757

AMIDES OF 4-HYDROXY-6H-THIENO[2,3-b]THIOPYRAN-5-CARBOXYLIC ACID-7,7-DIOXIDE

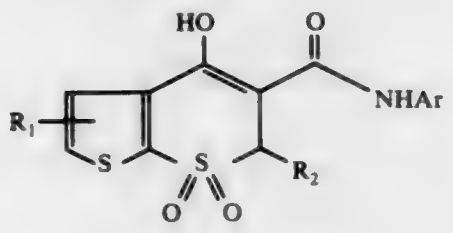
Jagadish C. Sircar, Dover; Stephen J. Kesten, Morris Plains, and Harold Zinnes, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 10, 1976, Ser. No. 749,491

Int. Cl.[2] C07D *495/04*

U.S. Cl. 260—294.8 C **3 Claims**

1. A compound of the Formula I:



I

wherein R_1 is hydrogen, halogen or lower alkyl; R_2 is hydrogen, lower alkyl or phenyl; and Ar is phenyl or pyridyl; and its pharmaceutically acceptable salts.

4,082,758

SUBSTITUTED-(AMINOSULFONYLAMINO) PYRIDINE THIOCARBOXYLIC ACIDS AND DERIVATIVES THEREOF

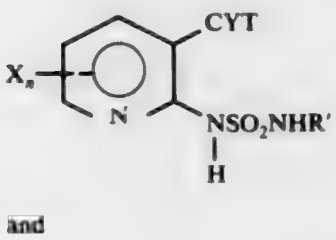
Lennon H. McKendry, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 676,591, Apr. 13, 1976, Pat. No. 4,014,888, which is a continuation-in-part of Ser. No. 572,024, Apr. 28, 1975, abandoned, which is a division of Ser. No. 412,944, Nov. 5, 1973, Pat. No. 3,920,641. This application Dec. 3, 1976, Ser. No. 747,266

Int. Cl.[2] C07D *213/83*

U.S. Cl. 260—294.8 F **7 Claims**

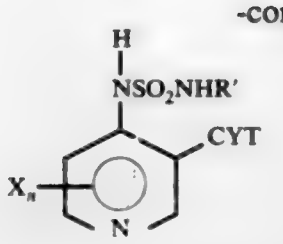
1. A compound of the formulae:



III

and

-continued



IV

wherein:

each X independently represents loweralkyl, of 1 to 6 carbon atoms, haloloweralkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, SR^5, OR^5, aryl wherein aryl is phenyl, halophenyl or tolyl, $—NR^3R^4$, halo or nitro;

n represents an integer of 0 to 3, inclusive;

Y represents sulfur;

T represents a member selected from the group consisting of hydroxy or alkoxy of 1 to 3 carbon atoms;

R′ represents hydrogen, loweralkyl of 1 to 6 carbon atoms, haloloweralkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, haloalkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, haloalkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, loweralkoxyalkyl wherein each of alkoxy and alkyl are of from 1 to 6 carbon atoms, dialkylaminoalkyl wherein each alkyl is of from 1 to 6 carbon atoms or $—C(CH_3)_2C{\equiv}N$;

each of R^3 and R^4 independently represent hydrogen or loweralkyl of 1 to 6 carbon atoms;

R^5 represents loweralkyl of 1 to 6 carbon atoms.

4,082,759

SUBSTITUTED-(AMINOSULFONYLAMINO)PYRIDINE THIOCARBOXYLIC ACIDS AND DERIVATIVES THEREOF

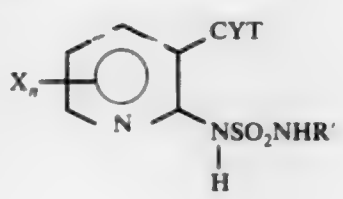
Lennon H. McKendry, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 676,591, Apr. 13, 1976, Pat. No. 4,014,888, which is a continuation-in-part of Ser. No. 572,024, Apr. 28, 1975, abandoned, which is a division of Ser. No. 412,944, Nov. 5, 1973, Pat. No. 3,920,641. This application Dec. 6, 1976, Ser. No. 747,672

Int. Cl.[2] C07D *213/55*

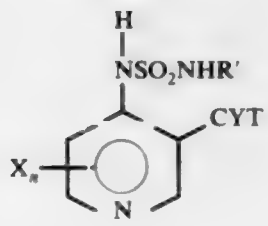
U.S. Cl. 260—294.8 E **2 Claims**

1. A compound of the formulae:



III

and



IV

wherein:

each X independently represents loweralkyl, of 1 to 6 carbon atoms, halooweralkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, SR^5, OR^5, aryl wherein aryl is phenyl, halophenyl or tolyl, $—NR^3R^4$, halo or nitro;

n represents an integer of 0 to 3, inclusive;

Y represents sulfur;

T represents a member selected from the group consisting of hydroxy or alkoxy of 1 to 3 carbon atoms;

R′ represents aryl wherein aryl is phenyl, halophenyl, tolyl or benzyl;

each of R^3 and R^4 independently represent hydrogen or loweralkyl of 1 to 6 carbon atoms;
R^5 represents loweralkyl of 1 to 6 carbon atoms.

4,082,760
DERIVATIVES OF 2H,3H-BENZIMIDAZO(1,2-b)OXAZOLE

Fulvio Benigni, Milan, and Lucio Trevisan, Ferrara, both of Italy, assignors to Italchemi S.p.A. Istituto Chimico Farmaceutico, Milan, Italy

Filed Dec. 5, 1975, Ser. No. 638,038
Int. Cl.[2] C07D *498/14*
U.S. Cl. 260—307 FA **3 Claims**

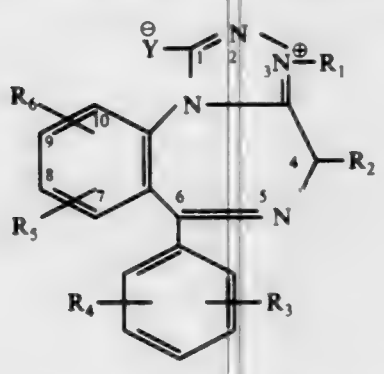
1. 2H,3H-benzimidazo-(1,2-b)oxazole.
2. 2-hydroxymethyl-2H,3H-benzimidazo-(1,2-b)oxazole.
3. 2-carbethoxy-3-methyl-2H,3H-benzimidazo-(1,2-b)oxazole.

4,082,761
TRIAZOLO[4,3-a][1,4]BENZODIAZEPINIUM QUATERNARY SALTS

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 4, 1973, Ser. No. 393,940
The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.
Int. Cl.[2] C07D *487/04*
U.S. Cl. 260—308 R **17 Claims**

1. An inner salt compound of the formula



IV, V, IX, X, XI

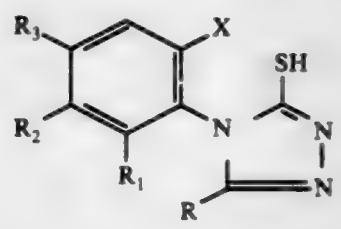
wherein Y is selected from the group consisting of hydroxy, mercapto and monosubstituted amino having an electronegative substituent selected from the group consisting of (1) arylamino wherein the aryl moiety is selected from the group consisting of phenyl and naphthyl, (2) alkanoylamino of 2 through 4 carbon atoms, (3) aroylamino wherein the aroyl moiety is selected from the group consisting of benzoyl and naphthoyl, (4) alkanesulfonamido of 1 through 3 carbon atoms and (5) arylsulfonamido wherein the aryl moiety is selected from the group consisting of phenyl and naphthyl; R_1 is lower alkyl of 1 through 3 carbon atoms; R_2 is selected from the group consisting of hydrogen and lower alkyl of 1 through 3 carbon atoms; R_3, R_4, R_5 and R_6 are selected from the group consisting of hydrogen, lower alkyl of 1 through 3 carbon atoms, halogen, nitro, trifluoromethyl, cyano, lower alkoxy of 1 through 3 carbon atoms and lower alkylthio of 1 through 3 carbon atoms, $\ominus$ appearing above Y indicates that the compound is an inner salt; $\oplus$ is the cation of the compound.

4,082,762
4-(2-HALOPHENYL)-1,2,4-TRIAZOLE-3-THIOL COMPOUNDS

Charles J. Paget, Indianapolis, and James H. Wikel, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 607,848, Aug. 25, 1975, Pat. No. 4,008,242, which is a division of Ser. No. 449,141, Mar. 7, 1974, Pat. No. 3,937,713. This application Nov. 5, 1976, Ser. No. 739,158
Int. Cl.[2] C07D *249/12*
U.S. Cl. 260—308 R **7 Claims**

1. A 4-(o-halophenyl)-1,2,4-triazole-3-thiol compound of the formula



wherein
R is hydrogen, C_1–C_{11} alkyl, cyclopropyl or trifluoromethyl;
R_1 is hydrogen, bromo, chloro or fluoro;
R_2 and R_3 are independently hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, bromo, chloro, fluoro or trifluoromethyl with the limitation that at least one of R_2 and R_3 is hydrogen;
X is bromo, chloro or fluoro;
subject to the further limitation that when R_1 is halogen, R is other than hydrogen and R_2 is hydrogen.

4,082,763
PROCESS FOR PRODUCING 3-HYDRAZINO-4-AMINO-5-MERCAPTO-1,2,4-TRIAZOLE

Gerhard Meyer, and Anton Toth, both of Obernburg, Main, Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jul. 7, 1975, Ser. No. 593,572
Claims priority, application Germany, Jul. 13, 1974, 2433746
Int. Cl.[2] C07D *249/12*
U.S. Cl. 260—308 R **9 Claims**

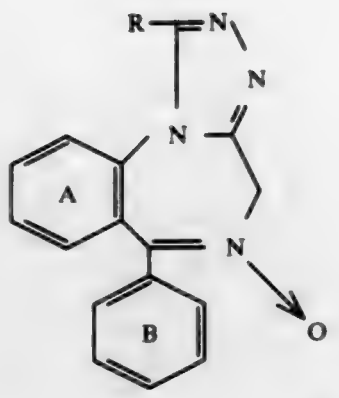
1. A process for the selective production of 3-hydrazino-4-amino-5-mercapto-1,2,4-triazole which comprises heating hydrazinium-dithiocarbazinate with 4 to 6 mols of hydrazine hydrate for each mol of hydrazinium-dithiocarbazinate at about 50° C. to 85° C. and under a sufficiently reduced pressure to separate off byproduct hydrogen sulfide, and recovering said triazole as the primary reaction product from the reaction mixture in a yield of about 87.7 to 99.5%.

4,082,764
METHODS FOR THE PRODUCTION OF 4H-s-TRIAZOLO[4,3-a][1,4]BENZODIAZEPINE 5N-OXIDES

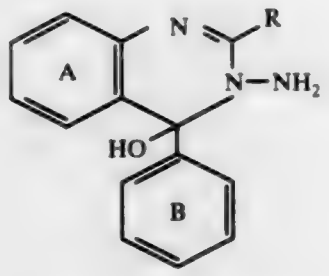
Yutaka Kuwada, Ashiya; Kanji Meguro, Takarazuka, and Hiroyuki Tawada, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 482,798, Jun. 24, 1974, Pat. No. 3,927,015, which is a continuation of Ser. No. 255,993, May 23, 1972, abandoned. This application Sep. 12, 1975, Ser. No. 612,745
Claims priority, application Japan, Jun. 5, 1971, 50/39700
Int. Cl.[2] C07D *487/04*
U.S. Cl. 260—308 R **3 Claims**

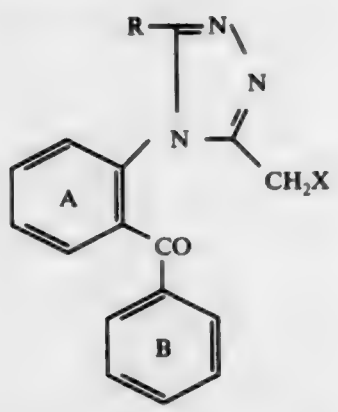
1. A method for the production of a compound of the formula



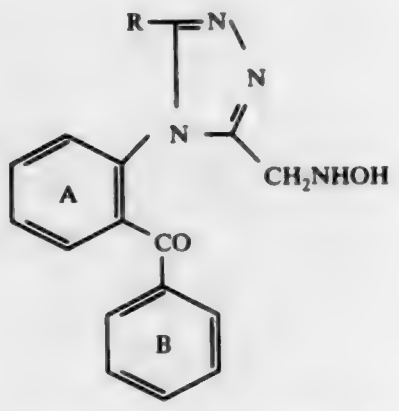
wherein R represents hydrogen or lower alkyl, and the rings A and/or B are unsubstituted or substituted by a member selected from the group consisting of halogen, nitro, trifluoromethyl, lower alkyl and lower alkoxy, which comprises reacting a compound of the formula



wherein R and the rings A and B have the same meanings as above, with a monohaloacetic acid halide or anhydride, to give a corresponding halogenoacetyl derivative, reacting the resulting halogenoacetyl derivative with a weak acid selected from the group consisting of formic acid, acetic acid, monochloroacetic acid, dichloroacetic acid, propionic acid, butyric acid, benzoic acid, salicyclic acid and phenylacetic acid, to give a compound of the formula



wherein R and the rings A and B have the same meanings as above, and X represents halogen, reacting the resulting compound with hydroxylamine to give a compound of the formula



wherein R and the rings A and B have the same meanings as above, and subjecting a solution of the resulting compound to a temperature from about 10° C to the reflux temperature of the solution to effect ring closure.

4,082,765

COMBATING INSECTS AND MITES WITH 1-CARBAMYL-4H-1,2,4-TRIAZOLIN-5-ONES AND THIONES

Joel L. Kirkpatrick, Overland Park, Kans., assignor to Gulf Research & Development Co., Pittsburgh, Pa.

Division of Ser. No. 660,090, Feb. 23, 1976, which is a continuation-in-part of Ser. No. 508,476, Sep. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 295,318, Oct. 5, 1972, abandoned. This application May 16, 1977, Ser. No. 796,947

Int. Cl.[2] A01N *9/12, 9/22;* **C07D** *249/12, 401/04*

U.S. Cl. 260—308 C **36 Claims**

1. 3-tert.butyl-1-(N,N-dimethylcarbamyl)-4-methyl-4H-1,2,4-triazoline-5-thione.

4,082,766

PROCESS FOR PREPARING N-CHLOROPHTHALIMIDE

Ta-Sen Chou, and James R. Burgtorf, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 27, 1976, Ser. No. 690,471

Int. Cl.[2] C07D *209/34, 209/48*

U.S. Cl. 260—326 HL **9 Claims**

1. A process for preparing N-chlorophthalimide which comprises contacting an alkali metal salt of phthalimide with chlorine under substantially non-aqueous conditions in the presence of a halogenated aliphatic hydrocarbon and at a temperature of from about −10° C. to about +40° C.

4,082,767

PRODUCTION OF ALPHA-AMINO ACIDS

Takeshi Yamahara, Itami, and Shun Inokuma, Takatsuki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

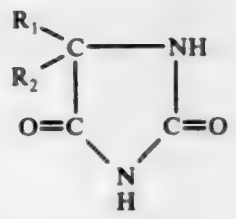
Filed Mar. 30, 1976, Ser. No. 671,984

Claims priority, application Japan, Apr. 3, 1975, 50-41010

Int. Cl.[2] C07C *99/08, 121/43;* **C07D** *209/20*

U.S. Cl. 260—326.14 T **9 Claims**

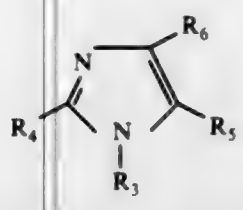
1. A process for preparing an α-amino acid, which comprises catalytically hydrolyzing a hydantoin compound of the formula (I)



(I)

wherein R_1 and R_2 are individually selected from the group consisting of (1) hydrogen, (2) C_1 – C_6 alkyl which may be unsubstituted or substituted by C_1 – C_2 alkoxy, hydroxyl, C_1 – C_2 alkylthio, mercapto, carbonyl, carboxyl, amino, cyano or indolyl, (3) C_5 – C_7 cycloalkyl which may be unsubstituted or substituted by C_1 – C_2 alkoxy, hydroxyl, carbonyl or C_1 – C_2 alkylthio, (4) C_2 – C_6 alkenyl, having one double bond in the molecule, which may be unsubstituted or substituted by C_1 – C_2 alkoxy, hydroxyl or carbonyl, (5) C_7 – C_9 aralkyl which may be unsubstituted or substituted by C_1 – C_2 alkoxy, hydroxyl, C_1 – C_2 alkylthio or mercapto, and (6) C_6 – C_8 aryl which may be unsubstituted or substituted by C_1 – C_2 alkoxy, hydroxyl, C_1 – C_2 alkylthio or mercapto,

in admixture with, as catalyst, (A) an imidazole compound of the formula (II)



(II)

wherein R_3 is selected from the group consisting of (1) hydroge, (2) C_1 – C_5 alkyl which may be unsubstituted or substituted by carboxyl, amino, mercapto or hydroxyl, (3) C_2 – C_5 alkenyl which may be unsubstituted or substituted by amino, carboxyl, mercapto or hydroxyl, (4) C_7 – C_9 aralkyl which may be unsubstituted or substituted by amino, carboxyl, mercapto or hydroxyl, and (5) C_6 – C_8 aryl which may be unsubstituted or substituted by amino, carboxyl, mercapto or hydroxyl, and R_4, R_5 and R_6 are individually selected from the group consisting of halogen and the groups set forth above with respect to the definition of R_3, or (B) a compound containing the formula (II) in its molecule selected from the group consisting of a homopolymer of N-vinylimidazole, a homopolymer of 5-vinylimidazole, a homopolymer of polyvinylimidazole, a copolymer of vinylimidazole and an acrylic ester, a copolymer of vinylimidazole, an acrylic ester and vinyl acetate, a copolymer of vinylimidazole and divinylbenzene, and a compound prepared by reacting a copolymer of 4-vinylpyridine and divinylbenzene with 2,4-dinitrochlorobenzene and further reacting the resultant compound with an amine.

4,082,768

NEW IMIDES OF UNSATURATED DICARBOXYLIC ACIDS, PROCESSES FOR THEIR MANUFACTURE, AND THEIR USE

Alfred Renner, Munchenstein, and Theobald Haug, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 381,328, Jul. 20, 1973, Pat. No. 3,960,812. This application May 19, 1976, Ser. No. 687,791

Int. Cl.[2] C07D *403/112, 403/14*

U.S. Cl. 260—326.26 **3 Claims**

1. A bis-imide or tris-imide selected from the group consisting of the N,N′-bis-maleimide of 4,4′-diaminotriphenyl phosphate, the N,N′-bis-citraconimide of 4″-tertbutyl-4,4′-diaminotriphenyl phosphate, the N,N′-bis-maleimide of 3,3′-diamino-3″-dimethylaminotriphenyl phosphate, the N,N′-bis-itaconimide of bis-(4-aminophenyl)-bisphenylyl phosphate, the N,N′-bis-maleimide of bis-(4-aminophenyl)-2-naphthyl phosphate, the N,N′,N″-tris-maleimide of tris(4-aminophenyl) phosphate, the N,N′,N″-tris-citraconimide of tris-(4-aminophenyl)phosphate, the N,N′-bis-maleimide of 4,4′-diaminotriphenyl phosphite, the N,N′-bis-maleimide of diaminotriphenyl thiophosphate, the N,N′,N″-tris-maleimide of tris-(4-aminophenyl) phosphite, the N,N′,N″-tris-maleimide of tris-(4-aminophenyl) thiophosphate and the N,N′,N″-trismaleimide of tris-(4-aminophenyl) thiophosphate.

4,082,769

BENZOTHIOXANTHENES

Otto Fuchs, Frankfurt am Main, and Helmut Troster, Konigstein, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

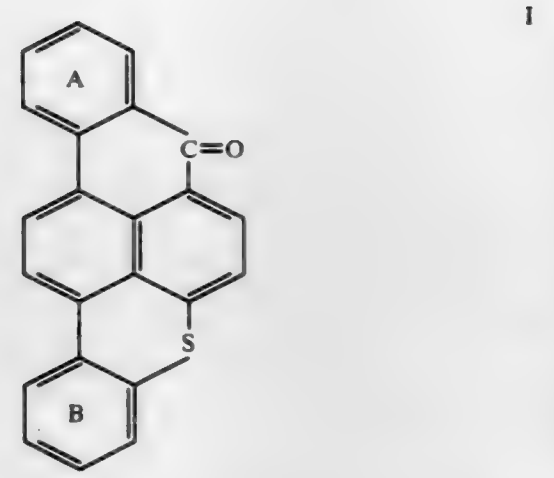
Filed Feb. 25, 1977, Ser. No. 772,269

Claims priority, application Germany, Feb. 27, 1976, 2607966

Int. Cl.[2] C07D *335/04*

U.S. Cl. 260—328 **13 Claims**

1. A compound of the formula



I

in which the nuclei marked A and B can be substituted by halogen, alkyl or alkoxy of 1 to 6 carbon atoms or phenyl.

4,082,770

BENZO(B)THIOPHENE DERIVATIVES

Peter Johannes Stoss, Wildtal; Manfred Franz Reinhold Herrmann, Gundelfingen, and Gerhard Satzinger, Denzlingen, all of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

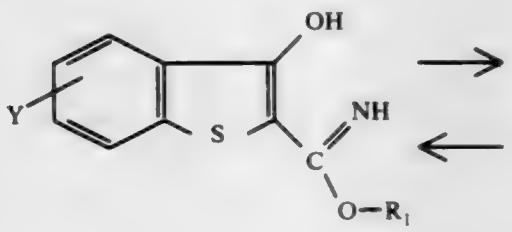
Division of Ser. No. 685,600, May 12, 1976, Pat. No. 4,018,793, which is a division of Ser. No. 566,469, Apr. 9, 1975, Pat. No. 3,971,814, which is a division of Ser. No. 419,305, Nov. 27, 1973, Pat. No. 3,907,826. This application Apr. 8, 1977, Ser. No. 785,809

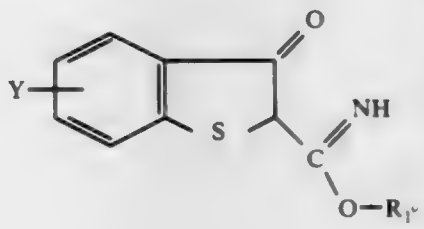
Claims priority, application Germany, Nov. 27, 1972, 2258036

Int. Cl.[2] C07D *333/64*

U.S. Cl. 260—330.5 **2 Claims**

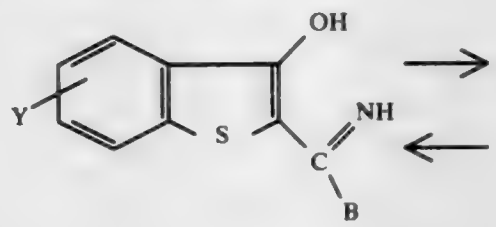
1. A compound of the formula:

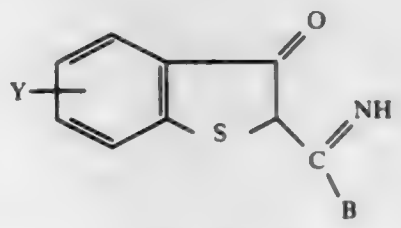




wherein Y is hydrogen; and R_1 is $-C_6H_{11}$.

2. A compound of the formula:





wherein Y is hydrogen; and B is selected from the group consisting of

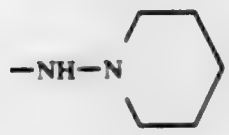
$-NH\ C_6H_{11}$

$-NH(CH_2)_2C_6H_5$

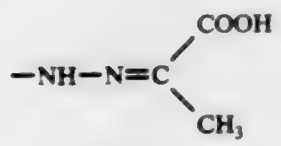
$-NHOH$

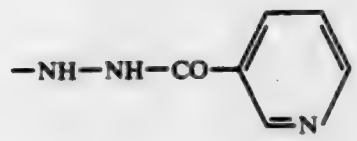
$-NH-NHC_6H_5$

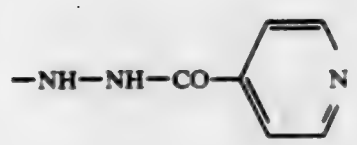
$-NH-H(CH_3)_2$



$-NH-N=C-(CH_3)_2$







$-NH-NH-COH$

$-NH-NH-CO-CH_3$

$-NH-NH-CO-C_6H_5$

$-NH-NH-CO-CH_2-C_2H_5$.

4,082,771

ACYLAMINO DERIVATIVES

Delme Evans, Chalfont St. Peter; Michael Ralph John Jolley, Camberley; William James Ross, Lightwater, and Brian Picton Swann, Camberley, all of England, assignors to Lilly Industries Limited, London, England

Filed Jun. 1, 1976, Ser. No. 691,961

Claims priority, application United Kingdom, Jun. 5, 1975, 24223/75

Int. Cl.[2] C07D *333/24;* A01N *9/00*

U.S. Cl. 260—332.2 R **4 Claims**

1. A compound of formula (I):



wherein Z represents sulphur; R is hydrogen, or C_{1-4} alkyl; R^1 is C_{1-7} alkyl, C_{3-6} alkenyl, or C_{3-6} alkynyl and R^2 is C_{3-10} cycloalkyl.

4,082,772

THIOPHENE ETHANOLAMINES

Jehan F. Bagli, Kirkland, and Eckhardt Ferdinandi, St. Laurent, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 569,509, Apr. 18, 1975, Pat. No. 4,024,156. This application Feb. 16, 1977, Ser. No. 768,937

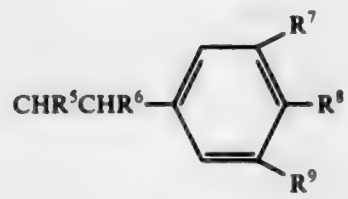
Int. Cl.[2] C07D *333/32;* A01N *9/00*

U.S. Cl. 260—332.3 H **6 Claims**

1. A compound of the formula

$ArCHOR^1CHR^2NR^3R^4$

in which Ar is selected from the group consisting of 2-thienyl, 5-(lower alkyl)-2-thienyl, 5-phenyl-2-thienyl and 4,5-dichloro-2-thienyl; R^1 is hydrogen or lower alkyl; R^2 is hydrogen or lower alkyl; R^3 is hydrogen or lower alkyl; and R^4 is a substituted phenethyl of the formula



wherein R^5 is hydrogen or lower alkyl, R^6 is hydrogen or hydroxy, R^7 and R^8 are joined to form a methylenedioxy radical and R^9 is hydrogen; and the acid addition salts thereof with pharmaceutically acceptable acids.

4,082,773

TRICYCLIC TETRAHYDRO NAPHTHALENEOLS AND RELATED COMPOUNDS

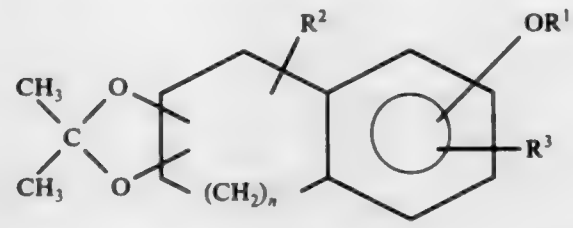
Frederic Peter Hauck, Somerville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 3, 1972, Ser. No. 268,300

Int. Cl.[2] C07D *317/46;* A61L *1/00*

U.S. Cl. 260—340.5 R **2 Claims**

1. A compound having the structure:



wherein R^1 is hydrogen, aryl-lower alkyl, or acyl; R^2 is hydrogen, lower alkyl, or aryl-lower alkyl; R^3 is hydrogen, acyl, lower alkyl, aryl-lower alkyl, lower alkoxy having up to 8 carbon atoms, carboxy, halo, alkenyl having 3 to 8 carbon atoms, nitro, cycloalkyl having 3 to 6 carbon atoms, amino, acylamino, $R^2O(CH_2)_n2$ wherein R^2 is as defined above, and n^2 is 0, 1 or 2, or dihydroxy-lower alkyl; and n is 0, 1 or 2; wherein the term lower alkyl refers to alkyl groups having up to 8 carbon atoms; wherein the term acyl refers to acyl groups derived from carboxylic acids having up to 15 carbon atoms; and wherein the term aryl refers to phenyl or phenyl substituted with lower alkyl, halogen, nitro or methoxy.

4,082,774

METHYLENEDIOXYBENZENE -- IMPROVED METHOD OF PREPARATION

John A. Kirby, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 11, 1974, Ser. No. 487,490

Int. Cl.[2] C07D *317/50*

U.S. Cl. 260—340.5r **9 Claims**

1. In the process wherein the dianion of catechol is reacted with a methylene dihalide under alkaline conditions to form

methylenedioxybenzene, the improvement which comprises conducting said reaction under protic alkaline conditions by adding the dianion in a heated medium comprising one volume of water and about 1 to 10 volumes of dimethyl sulfoxide to a heated solution of a methylene dihalide in dimethyl sulfoxide.

4,082,775

PREPARATION OF D, L-PANTOLACTONE

Pierre Couderc, Bethune, and Serge Hilmoine, Aire sur la Lys, both of France, assignors to Societe Chimique des Charbonnages, Paris, France

Filed Jul. 1, 1976, Ser. No. 701,586

Claims priority, application France, Jul. 7, 1975, 75 21270

Int. Cl.[2] C07D *307/32*

U.S. Cl. 260—343.6 **2 Claims**

1. In a process for the preparation of D, L- pantolactone by the reaction of hydroxypivaldehyde with hydrocyanic acid produced in situ to yield cyanohydrin, subsequent hydrolysis in a high acid medium of the cyanohydrin to produce pantolactone and separation and purification of the pantolactone, the improvement comprising:

(a) using isoamyl alcohol as a single solvent during both reactions;

(b) using a temperature of between 10 and 20° C and pH of 8.2 to 9.2 for the reaction of hydroxypivaldehyde with hydrocyanic acid produced in situ with the pH being adjusted within that range by the addition of hydrochloric acid at the same time as the addition of alkaline cyanide, said additions being carried out over a period of between approximately 60 and 70 minutes to provide an excess of approximately 10% hydrocyanic acid with respect to the stoichiometry of said reaction; and

(c) the acid hydrolysis reaction being carried out with an excess of concentrated hydrochloric acid at a temperature of 100° to 105° C and for a period of between about 20 and 30 minutes.

4,082,776

6-ALKOXY-4α-HYDROXY-2β-TETRAHYDROPYRANACETIC ACID γ-LACTONES

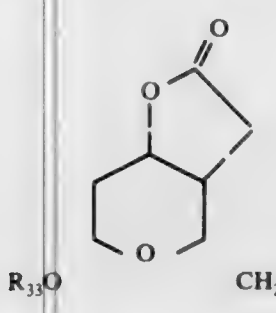
Robert C. Kelly, Kalamazoo, and Norman A. Nelson, Galesburg, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 676,890, Apr. 14, 1976, Pat. No. 4,020,173. This application Feb. 22, 1977, Ser. No. 770,817

Int. Cl.[2] C07D *493/04*

U.S. Cl. 260—343.6 **2 Claims**

1. A thromboxane intermediate of the formula



wherein R_{33} is alkyl of one to 5 carbon atoms, inclusive.

4,082,777

GLYCIDOL PROCESS

Warren C. Fisher, Darien, Conn.; Seymour M. Linder, Baltimore, Md.; Ralph L. Pelley, Linthicum Heights, Md., and Hsiang-Peng Liao, Glen Burnie, Md., assignors to FMC Corporation, Philadephia, Pa.

Continuation of Ser. No. 41,675, May 22, 1970, which is a continuation-in-part of Ser. No. 519,841, Jan. 11, 1966, abandoned. This application Feb. 19, 1976, Ser. No. 659,451

Int. Cl.[2] C07D *301/14*

U.S. Cl. 260—348.25 **4 Claims**

1. A process for epoxidizing allyl alcohol to produce glycidol in high yields comprising (a) in a reaction zone, epoxidizing allyl alcohol at a temperature between 25° and 100° C., with peracetic acid in solution in a substantially anhydrous, inert, organic solvent containing between 5 to 40% peracetic acid, the ratio of allyl alcohol to peracetic acid being more than 1 and less than 5 until at least 70 to about 95% of the peracetic acid is reacted to produce a reaction mixture containing glycidol, allyl alcohol, peracetic acid, co-product acetic acid and said solvent; (b) removing the reaction mixture from the reaction zone; (c) diluting the reaction mixture with a diluent and (d) subjecting the diluted reaction mixture to a sequence of continuous fractional distillations at reduced pressure to rapidly and continuously separate (A) said solvent overhead and (B) then separate (1) a mixture of co-product acetic acid with allyl alcohol from (2) a mixture of glycidol and said diluent said solvent being more volatile in said distillations than said diluent and said mixture (1) being more volatile in said distillations than said mixture (2), said solvent having a boiling point in the range of about 45 to 180° C. and said diluent being xylene, monochlorobenzene, ethylbenzene, pseudocumene or diisobutylketone.

4,082,778

ARYLAMINOANTHRAQUINONES

Max Jost, Oberwil, and Arnold Wick, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

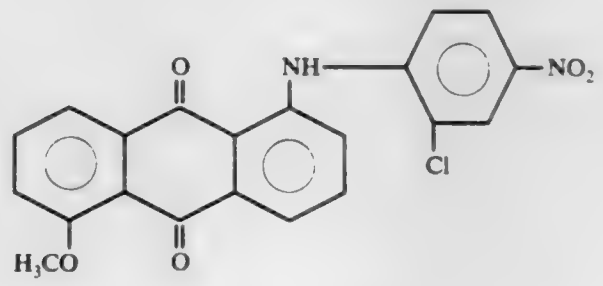
Filed Jul. 12, 1976, Ser. No. 704,609

Claims priority, application Switzerland, Jul. 23, 1975, 9622/75

Int. Cl.[2] C09B *1/16, 1/50*

U.S. Cl. 260—378 **4 Claims**

1. An arylaminoanthraquinone of the formula



4,082,779

ACYLATION PROCESS FOR THE PREPARATION OF STEROID PHENOLIC N-DISUBSTITUTED CARBAMATE ESTERS, AND ION PAIR SOLUTION FOR USE IN THE PROCESS

Hans Jacob Fex; Sten Krister Kristensson, and Anders Robert Stamvik, all of Helsingborg, Sweden, assignors to Aktiebolaget Leo, Helsingborg, Sweden

Filed Jun. 24, 1976, Ser. No. 699,216

Claims priority, application United Kingdom, Jul. 7, 1975, 28604/75; Mar. 17, 1976, 10824/76

The portion of the term of this patent subsequent to Mar. 28, 1995, has been disclaimed.

Int. Cl.[2] C07J *1/00*

U.S. Cl. 260—397.5 **11 Claims**

1. An organic solvent solution containing an ion-pair consist-

ing of a quaternary ammonium or phosphonium cation and the anion of a phenolic estra-1,3,5(10)-triene, diphenyl-substituted ethane, or diphenyl-substituted ethene.

10. Tetraalkyl ammonium estra-1,3,5(10)-trien-17β-ol-3-olate or a 17α-ethynyl derivative thereof.

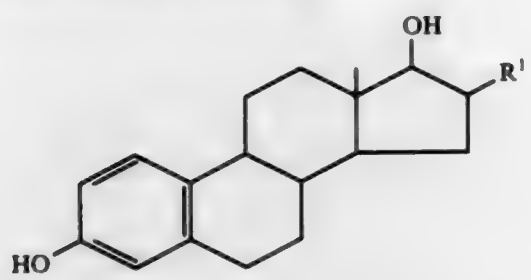
4,082,780

ESTRADIOL DERIVATIVES

Takuichi Miki, Amagasaki; Kentaro Hiraga, Nagaokakyo, and Giichi Goto, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 22, 1976, Ser. No. 744,185
Claims priority, application Japan, Nov. 27, 1975, 50-142509
Int. Cl.[2] C07J *1/00*
U.S. Cl. 260—397.5 **15 Claims**

1. A compound of the formula



wherein R^1 is an alkyl group of two to four carbon atoms, allyl, or 3-butenyl.

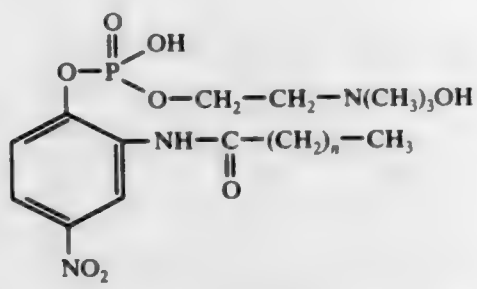
4,082,781

SYNTHESIS OF 2-ALKANOYLAMINO-4-NITROPHENYL PHOSPHORYLCHOLINE-HYDROXIDE

Andrew E. Gal, Vienna, Va., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

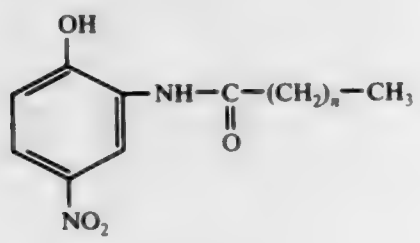
Filed Jun. 4, 1976, Ser. No. 692,915
Int. Cl.[2] A23J *7/00*; C07F *9/02*
U.S. Cl. 260—403 **10 Claims**

1. A method for synthesizing a sphingomyelinase-specific chromogenic artificial substrate consisting of 2-alkanoylamino-4-nitrophenyl phosphorylcholine-hydroxide having the formula



wherein n is an integer from 10 to 18, inclusive, said method comprising the steps of:

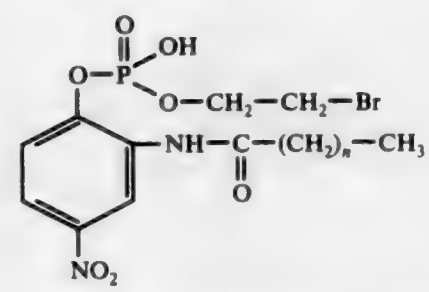
(a) reacting 2-amino-4-nitrophenol with a C_{12}–C_{20} alkanoyl halide to form a 2′-hydroxy-5′-nitroalkananilide having the formula



wherein n is an integer from 10 to 18, inclusive;

(b) alkalinizing said 2′-hydroxy-5′-nitroalkananilide to form the alkali phenolate salt thereof;

(c) phosphorylating said alkali phenolate salt with β-bromoethylphosphoryl dichloride and admixing the phosphorylation reaction products with water, thereby forming a precipitate comprising primarily a mono-alkananilide phosphoric acid ester having the formula



wherein n is an integer from 10 to 18, inclusive, and separating said precipitate from the reaction mixture mother liquor;

(d) extracting said mono-alkananilide phosphoric acid ester from said precipitate with sodium acetate buffer (pH 5.0);

(e) quaternizing said mono-alkananilide phosphoric acid ester by reacting it with trimethylamine, thereby forming a 2-alkanoylamino-4-nitrophenyl phosphorylcholine-bromide trimethylamine quaternary salt; and

(f) treating said quaternary salt with a mixture of weak acidic and weak basic ion exchange resins to thereby convert it into said 2-alkanoylamino-4-nitrophenyl phosphorylcholine-hydroxide.

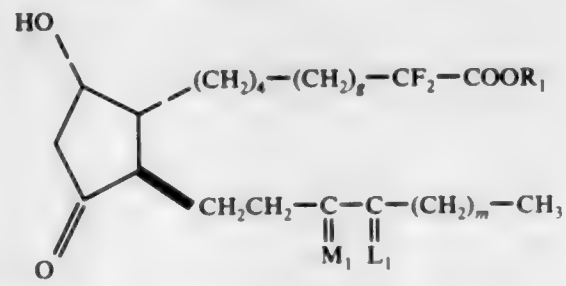
4,082,782

13,14-DIHYDRO-PGD$_1$, ANALOGS

Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184.
This application Dec. 30, 1976, Ser. No. 756,098
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—408 **49 Claims**

1. A prostaglandin analog of the formula



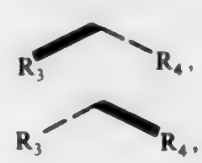
wherein g is one, 2, or 3;
wherein M_1 is



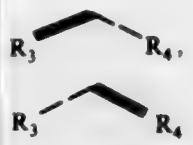
or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is

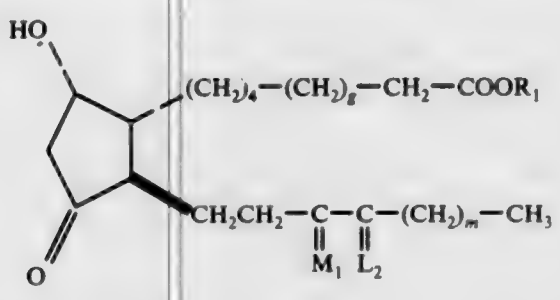


or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein m is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

19. A prostaglandin analog of the formula



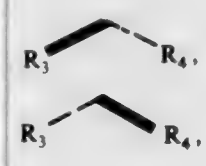
wherein g is one, 2, or 3;
wherein M_1 is



or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_2 is



or a mixture of

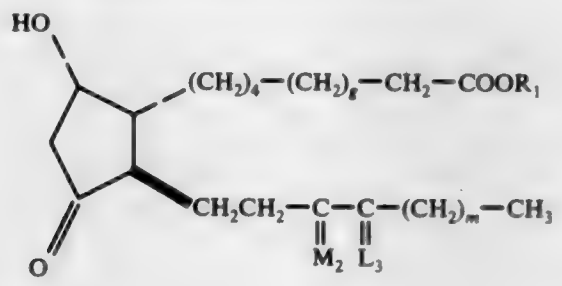


and



wherein R_3 and R_4 are hydrogen or fluoro, being the same or different, with the proviso that at least one of R_3 and R_4 is fluoro;
wherein m is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substitutes with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

30. A prostaglandin analog of the formula



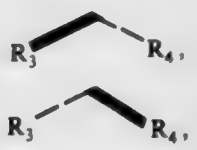
wherein g is one, 2, or 3;
wherein M_2 is



or



wherein L_3 is



or a mixture of

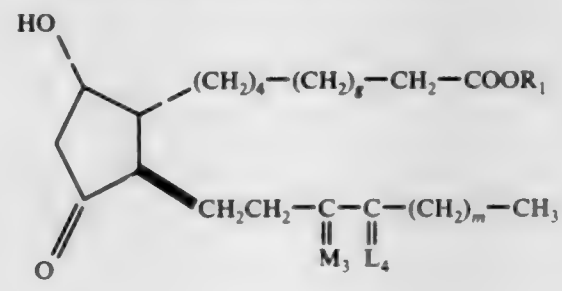


and



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein m is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

37. A prostaglandin analog of the formula



wherein g is one, 2, or 3;
wherein M_3 is



or



wherein R_5 is hydrogen or methyl; wherein L_4 is





or a mixture of



and

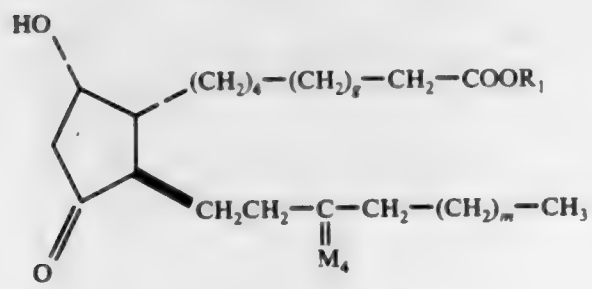


wherein R_3 and R_4 are hydrogen or methyl, being the same or different, with the proviso that one of R_3 and R_4 is methyl;

wherein *m* is one to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

48. A prostaglandin analog of the formula



wherein *g* is one, 2, or 3;

wherein M_4 is



or



wherein *m* is one to 5; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

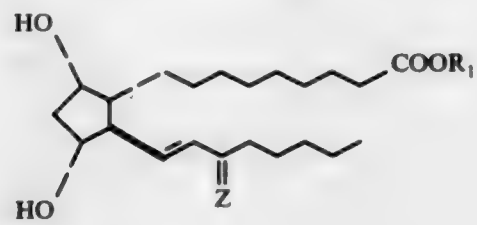
4,082,783

2A,2B-DIHOMO-15-ALKYL $PGF_1\alpha$ ANALOGS

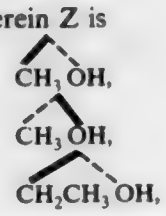
Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 511,220, Oct. 2, 1974, Pat. No. 3,974,195.
This application Mar. 3, 1976, Ser. No. 663,362
Int. Cl.[2] C11C *3/02*
U.S. Cl. 260—410.9 R **7 Claims**

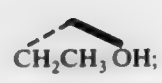
1. An optically active compound of the formula:



wherein Z is

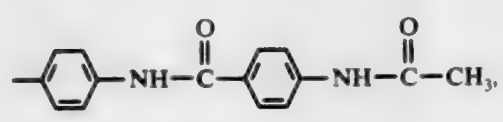


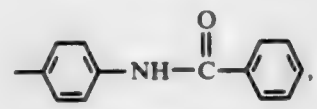
or

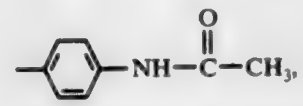


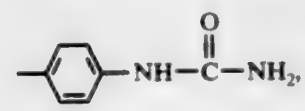
and

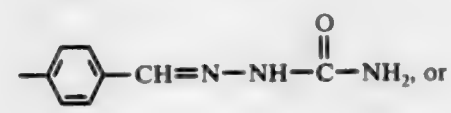
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive,

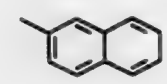












or pharmacologically acceptable salts thereof when R_1 is hydrogen.

4. 2a,2b-Dihomo-15(S)-15-methyl-$PGF_{1\alpha}$, methyl ester, a compound according to claim **2**, wherein R_1 is methyl.

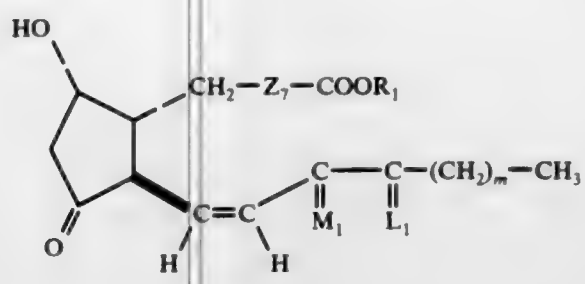
4,082,784

CIS-13-PGD_1 COMPOUNDS

Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184.
This application Dec. 30, 1976, Ser. No. 756,099
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—413 **9 Claims**

1. A prostaglandin analog of the formula



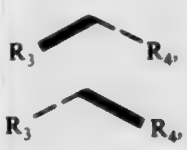
wherein m is one to 5, inclusive;
wherein M_1 is



or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one of 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and
wherein Z_7 is;
(1) $-(CH_2)_3-(CH_2)_g-CF_2-$, or
(2) $-(CH_2)_3-(CH_2)_g-CH_2-$,
wherein g is one, 2, or 3.

4,082,785

MANUFACTURE OF ACRYLONITRILE FROM PROPYLENE, AMMONIA AND OXYGEN

Vittorio Fattore, and Bruno Notari, both of San Donato Milanese, Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Filed Jan. 25, 1972, Ser. No. 220,712
Claims priority, application Italy, Jan. 25, 1971, 19723 A/71
Int. Cl.[2] C07C *120/14*
U.S. Cl. 260—465.3 **4 Claims**

1. A process for the manufacture of acrylonitrile characterized in that a mixture of propylene, ammonia and oxygen or a gas containing molecular oxygen is contacted in the presence of a catalyst, in a fixed or fluidized bed, at a temperature between 300° C and 550° C, said catalyst consisting essentially of a catalytic mixture of oxygen containing compounds represented by the empirical formula:

$$U_a Te_b Mo_c Me_d O_e$$

wherein U is uranium, Te is tellurium, Mo is molybdenum, Me is an activator element selected from the group consisting of phosphorus, arsenic, antimony and boron, O is oxygen and wherein, for *a* equal to 1, *b* is from 1 to 8, *c* is from 0.1 to 0.5, *d* is 0 to 5, and *e* is a number taken to satisfy the oxidation state of the elements in said catalyst.

4,082,786

PROCESS OF PRODUCTION OF AROMATIC NITRILES

Masao Saito; Mamoru Onozawa; Kaoru Sasagawa, and Takamasa Kawakami, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 11, 1976, Ser. No. 741,114
Claims priority, application Japan, Dec. 16, 1975, 50-149884
Int. Cl.[2] C07C *120/14*
U.S. Cl. 260—465 C **15 Claims**

1. In a process for producing aromatic nitriles by subjecting a mixture of an aromatic hydrocarbon, ammonia and molecular oxygen to fluid catalytic reaction in the presence of a fluid catalyst, the improvement characterized by filling cylindrical wire netting (wire netting rings) into a fluidized bed reactor.

4,082,787

METHYL ISOCYANATE PROCESS

Robert James Bassett, Hockessin; Walter John Cordes, and Julius Jakob Fuchs, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 3, 1977, Ser. No. 756,554
Int. Cl.[2] C07C *118/00*
U.S. Cl. 260—453 P **24 Claims**

1. A process for making methyl isocyanate comprising thermally dehydrochlorinating a solution of methyl carbamyl chloride in an aprotic non-polar solvent at a temperature above the boiling point of methyl carbamyl chloride; initially condensing the reaction gases thereby formed at a temperature above the boiling point of methyl isocyanate so as to liquify at least part of the gases which are condensable at said temperature and thereby provide an initial liquid condensate consisting essentially of a solution of methyl isocyanate and methyl carbamyl chloride in said solvent wherein the ratio of methyl isocyanate to methyl carbamyl chloride is greater than it is in said reaction solution; separating said initial liquid condensate from the gases remaining after said initial condensation; separating methyl isocyanate from said initial condensate; and separating HCl from said remaining gases.

4,082,788

ESTERIFICATION AND EXTRACTION PROCESS

Samuel S. Mims, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Continuation-in-part of Ser. No. 766,476, Oct. 10, 1968. This application Aug. 19, 1969, Ser. No. 851,445
The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.
Int. Cl.[2] C07C *67/48*
U.S. Cl. 260—465.4 **7 Claims**

1. In a continuous process for the treatment of aqueous solutions which contain mixtures of at least two difficultly separable aliphatic carboxylic acids which have appreciable water solubility and which are convertible to extractable esters, the improved process which comprises:
(a) continuously contacting said aqueous solution with a water-miscible esterifying liquid selected from the group consisting of lower alkyl alcohols, alkylene glycols, their ether derivatives and mixtures thereof, at a temperature of from 25° C. to the boiling point of the solvent used and in

a sufficient amount to esterify at least two of the aliphatic acids present and in the presence of an esterification catalyst to form an esterifying mixture;

(b) continuously contacting said esterifying mixture countercurrently simultaneously with the esterification reaction, with a substantially water-immiscible organic solvent selected being from the group consisting of aromatic hydrocarbons, aliphatic hydrocarbons, halogenated aliphatic hydrocarbons, halogenated aromatic hydrocarbons, cycloaliphatic hydrocarbons and mixtures thereof, in a sufficient amount to extract the esters formed into said organic solvent substantially as they are formed; said countercurrent contact being carried out by passing said esterifying mixture into at least one extractor and passing said organic solvent into at least one said extractor countercurrent to said esterifying mixture and continuing said contact for a sufficient time to extract the esters formed into said organic solvent; (c) removing the resulting mixture from the said at least one extractor, passing to at least one settler and permitting the mixture to layer out and form an organic phase and an aqueous phase, said organic phase containing esters of the said aliphatic acids dissolved in said water-immiscible organic solvent and said aqueous phase containing water, any excess water-miscible esterifying liquid, any unesterified aliphatic acids and esterification catalysts;

(d) separating said organic phase and said aqueous phase and passing said organic phase and aqueous phase to separate distillation stages;

(e) distilling said organic phase to remove the water-immiscible organic solvent and recycling said organic solvent to at least one of said extractors, and recovering the organic esters of the aliphatic acids;

(f) distilling the aqueous phase to remove any excess water-miscible esterifying liquid and any unesterified aliphatic acids;

(g) recycling said water-miscible esterifying liquid and unesterified aliphatic acids to the initial esterification step.

4,082,789

PROSTAGLANDINS C_2

Robert L. Jones, Edinburgh, Scotland, assignor to The University Court of the University of Edinburgh, Edinburgh, Scotland

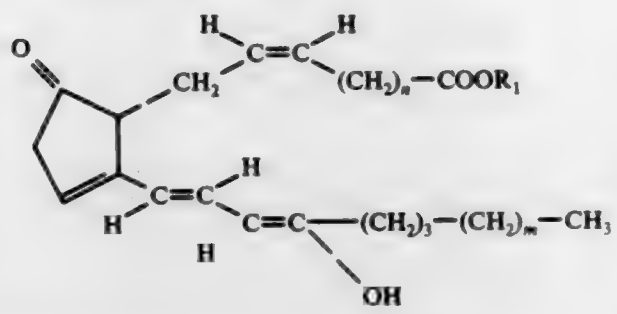
Continuation of Ser. No. 510,076, Sep. 27, 1974, abandoned, which is a continuation of Ser. No. 345,347, Mar. 27, 1973, abandoned. This application Mar. 1, 1976, Ser. No. 662,637

Claims priority, application United Kingdom, Mar. 28, 1972, 14520/72; May 17, 1972, 23135/72

Int. Cl.[2] C07C *177/00*; C11C *1/00*

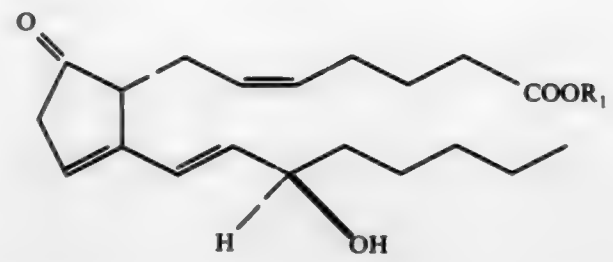
U.S. Cl. 560—121 **9 Claims**

1. An optically active compound of the formula:



wherein *m* is 0, 1, 2, or 3 and *n* is 2, 3, 4, or 5, and wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

6. An optically active compound of the formula:



wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

4,082,790

METHOD OF PREPARING MERCAPTANS

John L. Speier, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 531,831, Dec. 11, 1974, abandoned. This application Mar. 10, 1975, Ser. No. 557,214

Int. Cl.[2] C07F *7/08, 7/18*

U.S. Cl. 260—448.8 R **10 Claims**

1. A method of producing mercaptans which comprises reacting (A) a halide of the formula RX_a with a mixture of (B) ammonia or a hydrocarbyl amine containing one N atom, no more than 6 carbon atoms and being free of aliphatic unsaturation and having a K_a of less than 1×10^{-9} in aqueous solution, and H_2S, in the mole ratio of at least one mole of H_2S and one mole of (B) per mole of halogen in (A), at a temperature of from 0° to 175° C. under autogenous pressure whereby a compound of the formula

$R(SH)_a$ is formed, in which process

R is selected from the group consisting of aliphatic, cycloaliphatic or aralkyl hydrocarbon radicals free of aliphatic unsaturation, such hydrocarbon radicals substituted with alkoxy, keto, carboxy, hydroxyl, $—COOR^3$ or $—OOCR^3$ radicals in which R^3 is a monovalent hydrocarbon radical free of aliphatic unsaturation, and silylated hydrocarbon radicals of the formula $(R''O)_yR'''_{3-y}SiR^4—$ or $(O_{3-d/2})R'''_dSiR^4—$ in which

R'' is an alkyl or an alkoxyalkyl radical of 1 to 6 carbon atoms,

R''' is a monovalent hydrocarbon radical free of aliphatic unsaturation, a haloaryl radical or $R_fCH_2CH_2—$ in which R_f is a perfluoroalkyl radical,

R^4 is a divalent, trivalent or tetravalent, aliphatic, cycloaliphatic or aralkyl hydrocarbon radical free of aliphatic unsaturation,

y is 1 to 3 and

d is 0 to 2,

X is bromine or chlorine, and

a is 1 to 3.

4,082,791

INTERMEDIATES FOR VITAMIN A

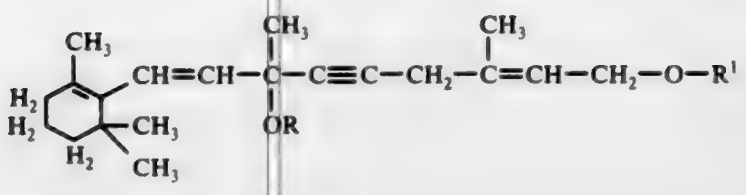
William Oroshnik, Plainfield, N.J., assignor to SCM Corporation, New York, N.Y.

Division of Ser. No. 566,982, Apr. 10, 1975, which is a division of Ser. No. 353,215, Apr. 23, 1973, Pat. No. 3,949,006, which is a continuation-in-part of Ser. No. 246,939, Apr. 24, 1972, abandoned. This application Feb. 17, 1976, Ser. No. 658,186

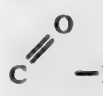
Int. Cl.[2] C07C *175/00*

U.S. Cl. 560—260 **5 Claims**

1. A compound having the formula:



in which R is lower alkyl, lower alkenyl, phenyl, or aralkyl of up to 10 carbon atoms, and R^1 is hydrogen or



R^2 being lower alkyl, phenyl or aralkyl of up to 10 carbon atoms.

4,082,792

METHOD OF PREPARING SECONDARY ALKYLAMMONIUM 3-SECONDARY ALKYLAMINOALKANOATES

Jack H. Kolaian, Wappingers Falls; John A. Patterson, Fishkill, and Frank K. Ward, Hopewell Junction, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 494,590, Aug. 5, 1974, Pat. No. 3,976,682. This application Apr. 12, 1976, Ser. No. 676,024

Int. Cl.² C07C *101/24*

U.S. Cl. 260—501.11 **16 Claims**

1. A method of preparing a secondary alkylammonium 3-secondary alkylaminoalkanoate which comprises contacting a secondary alkyl primary amine or mixtures thereof having 6 to 25 carbon atoms and a 2-alkenoic acid having 3 to 9 carbon atoms in the presence of a primary or secondary alkanol having 1 to 10 carbon atoms at a temperature of from about 50° to 180° C. and a pressure of from atmospheric to 200 p.s.i.g. utilizing a mole ratio of acid to amine to alkanol of between about 1:1.3:2.0 and 1:3.0:20.

4,082,793

AROMATIC PHOSPHINIC ACIDS CONTAINING SULFONE LINKAGE

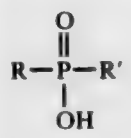
Piero L. Nannelli, King of Prussia, and Harold G. Monsimer, East Norriton, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1977, Ser. No. 767,095

Int. Cl.² C07F *9/30*; C08G *79/04*

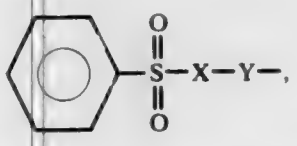
U.S. Cl. 260—502.4 R **68 Claims**

1. A phosphinic acid of the formula



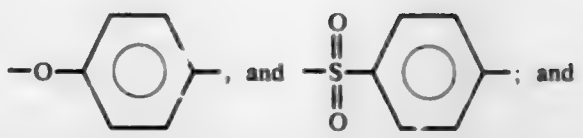
wherein

(a) R has the formula



(1) *x* is select from the group consisting of 3-phenylene and 4-phenylene, and

(2) *y* is select from the group consisting of a direct bond,



(b) R′ is selected from the group consisting of R, lower alkyl of from 1 to 3 carbon atoms, 4-biphenylyl, and phenyl.

4,082,794

INTER-OXA-PGD$_1$ COMPOUNDS

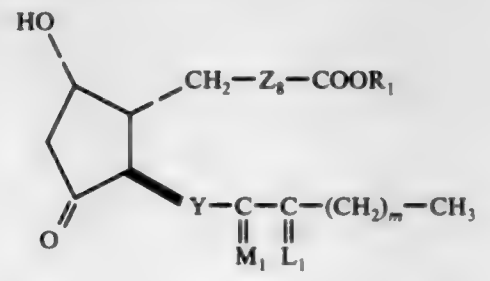
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 755,987

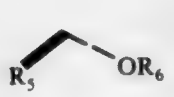
Int. Cl.² C07C *177/00*

U.S. Cl. 260—514 D **33 Claims**

1. A prostaglandin analog of the formula



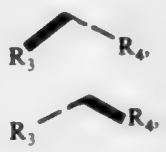
wherein Y is cis-CH=CH— or trans-CH=CH—;
wherein *m* is 1 to 5, inclusive;
wherein M_1 is



or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to

3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_g is

(1) $-CH_2-O-CH_2-(CH_2)_g-CH_2-$,

(2) $-(CH_2)_2-O-(CH_2)_g-CH_2-$, or

(3) $-(CH_2)_3-O-(CH_2)_g-$,

wherein g is 1, 2, or 3.

4,082,795

PERFLUOROALKYLTHIO NORBORNANE COMPOUNDS

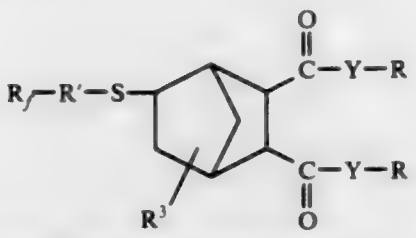
Neal O. Brace, Wheaton, Ill., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 608,932, Aug. 29, 1975, Pat. No. 3,989,725. This application Nov. 1, 1976, Ser. No. 737,363

Int. Cl.² C07C *61/32, 61/12*

U.S. Cl. 260—544 F **4 Claims**

1. A compound of the formula



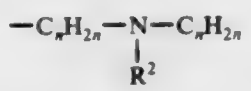
II

and an isomeric mixture thereof, wherein

R is a halogen

R′ is a divalent radical of the formula

$-C_nH_{2n}-$, $-C_nH_{2n}-S\,C_nH_{2n}-$, $-C_nH_{2n}-O-C_nH_{2n}-$ or



where n is 1 to 12 and R^2 is hydrogen or alkyl of 1 to 6 carbon atoms, R_f is a straight or branched chain perfluoroalkyl of 1 to 18 carbon atoms or said perfluoroalkyl substituted by a perfluoroalkoxy group of 2 to 6 carbon atoms, and R^3 is hydrogen or methyl.

4,082,796

PROCESS FOR PREPARING CYANOFORMAMIDE

Wilhelm Riemenschneider, Frankfurt am Main, and Peter Wegener, Konigstein, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 19, 1975, Ser. No. 642,398

Claims priority, application Germany, Dec. 21, 1974, 2460779

Int. Cl.² C07C *51/44*

U.S. Cl. 260—545 R **12 Claims**

1. A process for preparing cyanoformamide which comprises reacting cyanogen with water in a catalyst solution at a temperature of 0° to 80° C. to form cyanoformamide, said solution containing one or more carboxylic acids selected from formic, acetic, propionic and butyric acids, from 0.025 to 1.0 moles per liter of copper(II) salt as a catalyst and water in an amount up to 5% by weight of said solution, adding water to said solution as the reaction proceeds while maintaining the molar ratio of water to cyanogen at a value no greater than 1:1, and recovering the cyanoformamide from said solution.

4,082,797

METHOD FOR THE CONDENSATION OF CARBAMMATE IN UREA-SYNTHESIS INSTALLATIONS

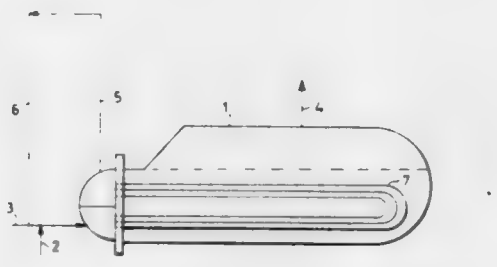
Umberto Zardi, San Donato Milanese (Milan); Vincenzo Lagana', Milan; Andrea Bonetti, San Donato Milanese (Milan), and Giorgio Schmid, Lodi, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Filed Apr. 20, 1976, Ser. No. 678,635

Claims priority, application Italy, Apr. 23, 1975, 22615 A/75

Int. Cl.² C07C *126/00, 126/02*

U.S. Cl. 260—555 A **6 Claims**



1. A process for synthesizing urea which includes producing vapors of $NH_2 + CO_2 + H_2O$ through a high pressure distillation stage and feeding a mixture of said vapors and a carbonate solution which is rich in H_2O to a carbonate condenser provided with a jacket through which water is circulated for the recovery of the heat of condensation by the production of steam and having a condensation zone where said vapors are condensed to produce a carbamate solution for recycle to a urea reactor, wherein the improvement comprises forming said condensation zone of a horizontal-tube-bundle and maintaining said condensation zone under a static head (ΔP) in the range between 0.5 and 5 atmospheres.

4,082,798

PERFLUOROALKYLTHIO NORBORNANE COMPOUNDS

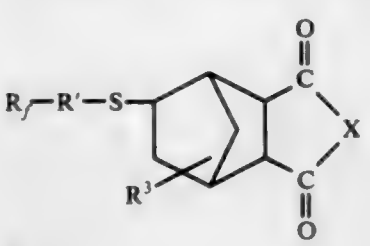
Neal O. Brace, Wheaton, Ill., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 608,932, Aug. 29, 1975, Pat. No. 3,989,725. This application Nov. 1, 1976, Ser. No. 737,866

Int. Cl.² C07C *103/19;* C07D *209/02*

U.S. Cl. 260—557 B **7 Claims**

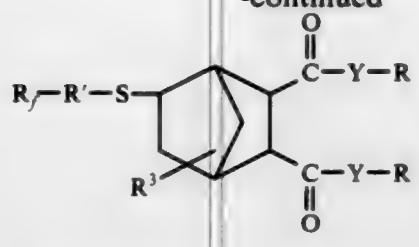
1. A compound having the formula



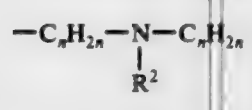
I

or

-continued



and an isomeric mixture thereof,
wherein
X is the group >NR,
Y is the group >NR,
R is independently hydrogen or alkyl of 1 to 24 carbons
R′ is a divalent radical of the formula $-C_nH_{2n}-$, $-C_nH_{2n}-S-C_nH_{2n}-$, $-C_nH_{2n}-O-C_nH_{2n}-$ or



where *n* is 1 to 12 and R^2 is hydrogen or alkyl of 1 to 6 carbon atoms, R_f is a straight or branched chain perfluoroalkyl of 1 to 18 carbon atoms or said perfluoroalkyl substituted by a perfluoroalkoxy group of 2 to 6 carbon atoms, and R^3 is hydrogen or methyl.

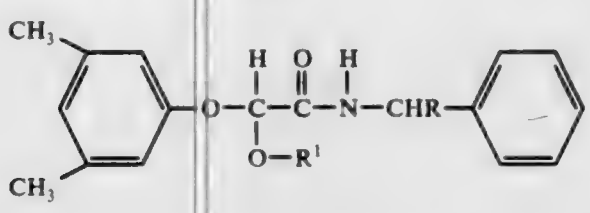
4,082,799

N-BENZYL-2-(3,5-DIMETHYL PHENOXY)-2-ALKOXY AMIDES AND THEIR USE AS HERBICIDES

Don R. Baker, Orinda, and Francis H. Walker, Mill Valley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 591,686, Jun. 30, 1975, Pat. No. 4,050,923. This application Jun. 13, 1977, Ser. No. 805,682
Int. Cl.² C07C *103/76*
U.S. Cl. 260—559 B **3 Claims**

1. Compounds of the formula



in which R is hydrogen or alkyl having 1 to 4 carbon atoms and R^1 is alkyl having 1 to 4 carbon atoms.

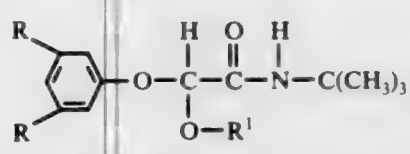
4,082,800

N-T-BUTYL-2-(3,5-DICHLORO OR DIMETHYL PHENOXY)-2-ALKOXY AMIDES AND THEIR USE AS HERBICIDES

Don R. Baker, Orinda, and Francis H. Walker, Mill Valley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 591,687, Jun. 30, 1977, Pat. No. 4,049,424. This application Jun. 13, 1977, Ser. No. 805,683
Int. Cl.² C07C *103/76*
U.S. Cl. 260—559 B **5 Claims**

1. Compounds of the formula



in which R is halogen or alkyl having 1 to 4 carbon atoms and R^1 is alkyl having 1 to 4 carbon atoms.

4,082,801

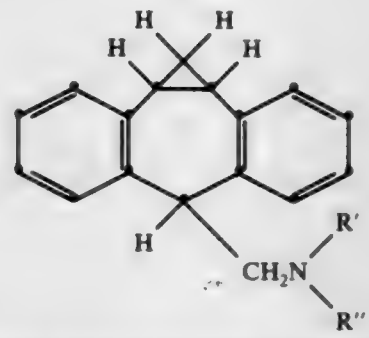
II

4-AMINOMETHYLDIBENZOBICYCLO[5.1.0]OCTANES

David C. Remy, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 309,832, Nov. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 827,038, May 22, 1969, abandoned, which is a continuation-in-part of Ser. No. 663,930, Aug. 24, 1967, abandoned. This application Oct. 1, 1976, Ser. No. 728,676
Int. Cl.² C07C *87/28*
U.S. Cl. 260—570.9 **3 Claims**

1. A compound of the formula:



and the non-toxic pharmaceutically acceptable acid addition salts thereof wherein R′ and R″ are each hydrogen or lower alkyl.

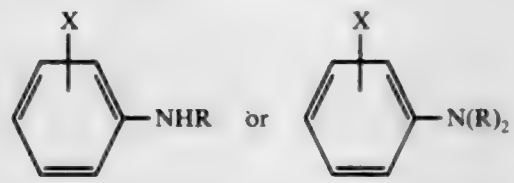
4,082,802

PROCESS FOR THE PREPARATION OF AROMATIC SECONDARY OR TERTIARY AMINO COMPOUNDS

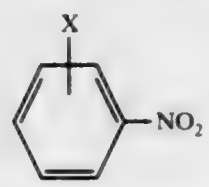
Masataka Nakagawa, Yamatotakada; Tadasu Iga, Suita, and Akira Fukura, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 134,071, Apr. 14, 1971, abandoned. This application Dec. 11, 1973, Ser. No. 423,702
Claims priority, application Japan, Apr. 28, 1970, 45-37013
Int. Cl.² C07C *91/16, 87/52*
U.S. Cl. 260—574 **5 Claims**

1. A process for producing aromatic secondary or tertiary amino compounds with the formula,



wherein X is a hydrogen atom, a methyl group or a methoxy group, and R is methyl, ethyl, n-propyl isopropyl, n-butyl, isobutyl or sec.-butyl, which comprises reacting hydrogen, an aromatic nitro compound of the formula,



wherein X is as defined above, and an alcohol of the formula,
ROH

wherein R is as defined above, in the presence of a catalyst of copper chromite consisting essentially of copper chromite of the formula $CuOCuCr_2O_4$, or a catalyst of copper chromite consisting essentially of as a main ingredient copper chromite of the formula $CuOCuCr_2O_4$ and as a promoter at least one member selected from the group consisting of Fe, Ni, Ba, Mg and Mn.

4,082,803

PROCESS FOR PREPARING 4-CHLORO-2,5-DIMETHOXY ANILINE

Emmerich Paszthory, Hofheim, Taunus; Bernhard Mees, Konigstein, Taunus, and Ernst Hille, Rossert, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 24, 1975, Ser. No. 634,634
Claims priority, application Germany, Nov. 25, 1974, 2455704
Int. Cl.[2] C07C *93/14*
U.S. Cl. 260—575 11 Claims

1. In a process for the preparation of 4-chloro-2,5-dimethoxy-aniline by catalytic hydrogenation of 4-chloro-2,5-dimethoxy nitrobenzene, the improvement comprising comminuting the nitro compound until the median particle size is below 100 μ and performing the hydrogenation with the comminuted nitro compound in the form of an aqueous slurry and in the presence of a nickel catalyst at a temperature of 30° to 80° C and a pressure of 10 to 100 atms.

4,082,804

PROCESS FOR PREPARING 2-AMINO-1-BUTANOL BY REACTION OF THE TARTARATE WITH AN ALKALINE EARTH METAL COMPOUND

Yataro Ichikawa, Fuchu; Toru Sawaki, Iwakuni, and Yuitsu Honda, Kawasaki, all of Japan, assignors to Teijin Limited, Minamihonmachi, Japan

Filed Oct. 28, 1976, Ser. No. 736,683
Int. Cl.[2] C07C *89/04, 91/04*
U.S. Cl. 260—584 R 18 Claims

1. In a method for the production of 2-amino-1-butanol by the reaction of the L-tartarate of 2-amino-1-butanol with an alkaline earth metal compound to produce a crystalline precipitate of the L-tartarate of the alkaline earth metal and a filtrate containing recoverable 2-amino-1-butanol, the improvement comprising:

gradually adding an aqueous slurry of the alkaline earth metal compound to said L-tartarate of 2-amino-1-butanol so as always to maintain said L-tartarate of 2-amino-1-butanol present in excess in the reaction system during the reaction, the rate of addition of said alkaline earth metal compound into contact with said L-tartarate of 2-amino-1-butanol being from about 0.15 to less than 1.0 mol of said alkaline earth metal compound per mol of said L-tartarate of 2-amino-1-butanol per hour,

to precipitate crystals of the L-tartarate of said alkaline earth metal having dimensions of at least about 40μ thick $\times$ 50μ long.

4,082,805

PRODUCTION OF ALIPHATIC AMINES UTILIZING A CRYSTALLINE ALUMINOSILICATE CATALYST OF ZSM-5, ZSM-11 OR ZSM-21

W. W. Kaeding, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 1, 1974, Ser. No. 520,069
Int. Cl.[2] C07C *85/02*
U.S. Cl. 260—585 B 10 Claims

1. A process for the selective production of primary aliphatic amines over secondary and tertiary amines by reaction of an ether characterized by the formula R—O—R′ where R and R′ are independently alkyl of 2 to 5 carbon atoms, with ammonia in the presence of a crystalline aluminosilicate catalyst of ZSM-5, ZSM-11 or ZSM-21 at a temperature between about 300° and about 500° C; a pressure between about 14.7 and 1000 psig with the relative feed rates, expressed in grams per hour of (1) ether and (2) ammonia being within the range of 1:1 to 5:1.

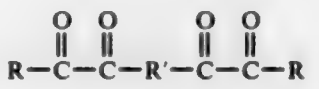
4,082,806

PREPARATION OF TETRAKETONES

Frank W. Harris, Xenia, and Bruce A. Reinhardt, Dayton, both of Ohio, assignors to Wright State University, Dayton, Ohio

Filed Dec. 18, 1975, Ser. No. 641,958
Int. Cl.[2] C07C *49/76*
U.S. Cl. 260—590 D 10 Claims

1. The method of preparing a tetraketone having the formula



wherein R′ is selected from the group consisting of phenyl, diphenyl ether, diphenyl methane, pyridine, diphenyl sulfoxide, and xylene radicals and R is selected from the group consisting of phenyl, substituted phenyl, and pyridyl radicals from a diketone selected from the group consisting of 1,4-bis (phenylacetyl) benzene, 4,4′-bis(phenylacetyl) diphenyl ether, 1,3-diphenacylbenzene, 4,4′-bis(phenylacetyl)diphenylmethane, 2,6-diphenacylpyridine, 1,3-bis(2-pyridylacetyl) benzene, 4,4′-bis(phenylacetyl)diphenylsulfoxide, 1,3-bis(4-methylphenylacetyl)benzene, 1,4-bis(5-fluoro-2-nitrophenylacetyl)benzene, and α,α'-dibenzoyl-para-xylene, comprising oxidizing said diketone to said tetraketone with dimethylsulfoxide and a halogenating agent selected from the group consisting of cupric halide and hydrogen bromide.

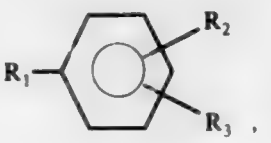
4,082,807

PROCESS FOR THE MANUFACTURE OF AROMATIC 1,3-DIKETONES

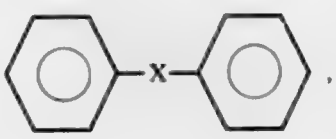
Kurt Eiglmeier, Idstein, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 491,476, Jul. 22, 1974, Pat. No. 3,937,737.
This application Jul. 30, 1975, Ser. No. 600,207
Claims priority, application Germany, Jul. 23, 1973, 2337396
Int. Cl.[2] C07C *49/76*
U.S. Cl. 260—590 R 12 Claims

1. A process for the preparation of an aromatic 1,3-diketone which comprises reacting acetoacetylfluoride, or an acetoacetylfluoride substituted at the gamma-position by up to three halogens selected from the group consisting of fluorine, chlorine and bromine, with an aromatic compound selected from the group consisting of naphthalene; naphthalene substituted by up to three substituents selected from the group consisting of alkyl of from 1 to 4 carbon atoms and alkoxy of from 1 to 4 carbon atoms; naphthalene with one or more condensed rings thereon having in total up to 20 carbon atoms; naphthalene with one or more condensed rings thereon and substituted by up to three sustituents selected from the group consisting of alkyl of 1 of 4 carbon atoms and alkoxy of from 1 to 4 carbon atoms, having in total up to 20 carbon atoms; benzene of the formula



wherein R_1, $R_2$and R_3 each is hydrogen, alkyl of up to 12 carbon atoms, alkoxy of up to 12 atoms, alkylthio of up to 12 carbon atoms or benzyloxy or R_1 is phenyloxy, substituted phenyloxy, phenylthio, substituted phenylthio or halogen, or wherein R_1 and R_2 together form alkylene of 4 carbon atoms; diphenyl of the formula



wherein X is O, S or alkylene of up to 4 carbon atoms; dibenzofurane; dibenzo-p-dioxane; thiophene; monoalkylthiophene; dialkylthiophene; benzothiophene; 2,2' -dimethoxy diphenyl ether; 3-chloro-pyrene; and 2-anisyl-chloracetic acid ester, at a temperature of about −30°C. to about +20° C. in the presence of anhydrous hydrogen fluoride or hydrofluoric acid having a minimum amount of hydrogen fluoride of about 90% by weight.

4,082,808

THIOBIS-2,6-DISUBSTITUTED PHENOL

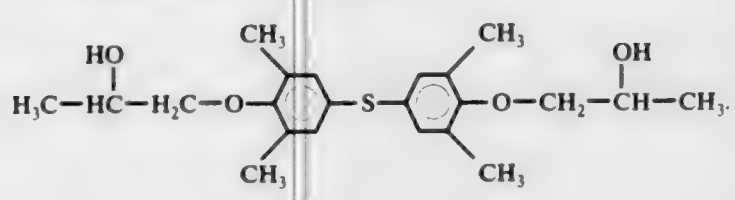
Allan S. Hay, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 484,995, Jul. 1, 1974, Pat. No. 3,953,519. This application Jan. 19, 1976, Ser. No. 650,011

Int. Cl.² C07C *149/36, 121/20, 43/20*

U.S. Cl. 260—609 F **2 Claims**

1. A thiobisphenol of the formula:



4,082,809

P-BENZOQUINONE DIKETALS

Rudolf Pistorius, Benniehausen, and Hans Millauer, Eschborn, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

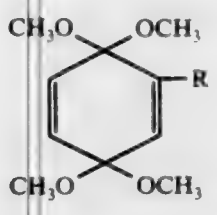
Division of Ser. No. 642,397, Dec. 19, 1975. This application Apr. 19, 1977, Ser. No. 788,808

Claims priority, application Germany, Dec. 21, 1974, 2460754

Int. Cl.² C07C *41/00*

U.S. Cl. 260—611 R **2 Claims**

1. p-Benzoquinone diketals of the formula



wherein R is an alkyl group having of from 1 to 4 carbon atoms, Cl or F.

4,082,810

BULKY TRIALKYLBOROHYDRIDES

Herbert C. Brown, West Lafayette, Ind., assignor to Aldrich-Boranes, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 114,084, Feb. 9, 1971, abandoned. This application Oct. 16, 1975, Ser. No. 622,985

Int. Cl.² C07F *5/02*

U.S. Cl. 260—606.5 B **9 Claims**

1. A borohydride of the formula:



wherein R is an alkyl group containing 3 to 6 carbon atoms and attached to the boron by a secondary or tertiary carbon atom.

4,082,811

RECOVERY OF METAL AND TRIARYLBORANE CATALYST COMPONENTS FROM OLEFIN HYDROCYANATION RESIDUE

Howard Everett Shook, Jr., Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 23, 1977, Ser. No. 771,064

Int. Cl.² C07F *5/02, 15/04;* C01C *31/11;* C07C *120/02*

U.S. Cl. 260—606.5 B **4 Claims**

1. A process for the recovery of catalyst components from a catalyst residue which residue is obtained from the hydrocyanation of olefins using a catalyst comprising zero-valent nickel complex promoted with a triarylborane and comprises nickel cyanide, triarylborane and complexes of the foregoing, said process comprising contacting said residue with an aqueous solution containing at least 10 moles of nitrogen-containing base per mole of boron plus nickel while maintaining the concentration of said base at at least 6% to maintain the nickel in solution and to form and precipitate the basic adduct of said triarylborane and thereafter separating the precipitate from the resultant solution.

2. The process of claim 1 wherein the base is ammonia and the moles of ammonia per mole of boron plus nickel are maintained in the range 15–50.

4,082,812

CHLORINATED CYCLOPENTADIENE PEROXIDES

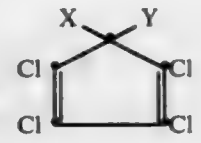
Donald W. Wood, San Pablo, Calif., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,521

Int. Cl.² C07C *179/08;* A01N *9/24*

U.S. Cl. 260—610 R **5 Claims**

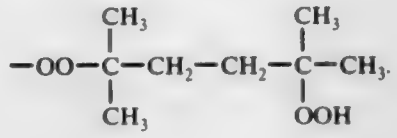
1. An organic peroxide of the formula



wherein X and Y are both selected from the same one of the following two subparagraphs:

(a) each of X and Y is the same and is a peroxy alkyl group of the structure —OOR in which R is a t-alkyl group of 4–8 carbon atoms;

(b) X is chlorine and Y has the structure



4,082,813

3-IODA-α-ETHYNYL BENZHYDROL

Edit Toth; Jozsef Törley; Sandor Gorög; Laszlo Szporny; Eva Palosi, and Szabolcz Szeberenyi, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Division of Ser. No. 495,846, Aug. 8, 1974, Pat. No. 3,965,179. This application Nov. 10, 1975, Ser. No. 630,512

Claims priority, application Hungary, Aug. 15, 1973, RI 520

Int. Cl.² C07C *33/06*

U.S. Cl. 260—618 B **1 Claim**

1. 3-iodo-α-ethynyl-benzyhydrol.

4,082,814

GROWTH INHIBITORS FOR MOSQUITO LARVAE

Leonard Jurd, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 594,168, Jul. 8, 1975, Pat. No. 3,973,040. This application Apr. 27, 1976, Ser. No. 680,644
Int. Cl.[2] C07C *39/12*
U.S. Cl. 260—619 R 3 Claims

1. The compound 2,6-di-t-butyl-4-cinnamylphenol.

4,082,815

ACYCLIC MONOOLEFIN DOUBLE-BOND ISOMERIZATION USING A NONACIDIC SUPPORTED NICKEL, IRON OR COBALT CATALYST WITH EITHER ANTIMONY OR ARSENIC

Marvin M. Johnson; Donald C. Tabler, and Gerhard P. Nowack, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 574,824, May 5, 1975, Pat. No. 4,020,119, which is a division of Ser. No. 390,799, Aug. 23, 1973, Pat. No. 3,900,526, which is a division of Ser. No. 249,726, May 2, 1972, Pat. No. 3,787,511, which is a division of Ser. No. 44,665, Jun. 8, 1970, Pat. No. 3,697,448, which is a continuation-in-part of Ser. No. 6,971, Jan. 29, 1970, abandoned. This application Nov. 5, 1976, Ser. No. 739,157
Int. Cl.[2] C07C *5/24*
U.S. Cl. 260—683.2 8 Claims

1. A method for the double bond isomerizatin of acyclic monoolefins without substantial hydrogenation of monoolefins which comprises contacting a feedstream containing acyclic monoolefins with hydrogen and a catalyst comprising a nonacidic support and a metal selected from the group consisting of nickel, iron, and cobalt and a material selected from the group consisting of antimony and arsenic under conditions including temperature, pressure, and contact time sufficient to cause the double bond isomerization of said acylic monoolefins without significant hydrogenation of said monolefins to saturates, said catalyst being in a reduced state.

4,082,816

CAPROLACTONE POLYMERS FROM UNSATURATED MONOMERS

William W. Fisk, and Howard J. Wright, both of Kansas City, Mo., assignors to Cook Paint and Varnish Company, Kansas City, Mo.

Division of Ser. No. 289,638, Sep. 18, 1972, abandoned. This application May 3, 1974, Ser. No. 466,845
Int. Cl.[2] C08G *63/08;* C08L *61/26*
U.S. Cl. 260—855 1 Claim

1. A process for preparing a composition comprising (a) a caprolactone-modified vinyl polymer and (b) a melamine-formaldehyde, said process comprising polymerizing caprolactone with a mixture of vinyl monomers including (1) from 60–98% by weight of a monomer selected from the group consisting of styrene, α-substituted lower alkyl styrenes, lower alkyl esters of acrylic and methacrylic acids, acrylonitrile, methacrylonitrile, acrylamide and mixtures thereof and (2) from 40–2% by weight of at least one monomer containing a —COOH and/or —OH group, the monomer containing said —COOH or —OH group being selected from the group consisting of hydroxy alkyl acrylates and methacrylates, acrylic acid, methacrylic acid, fumaric acid, crotonic acid, itaconic acid and maleic acid and the amount of caprolactone being in the range of 0.25–15 moles per —OH and —COOH equivalent in the monomer mixture and thereafter adding said melamine-formaldehyde to the resulting polymer.

4,082,817

PROCESS FOR PRODUCING MALEIC ANHYDRIDE ADDUCT OF HIGH MOLECULAR WEIGHT 1,2-POLYBUTADIENE

Fumitake Imaizumi; Isao Nagaoka; Mitsuo Kurokawa, all of Yokohama, and Koei Komatsu, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 554,151, Feb. 28, 1975, abandoned. This application Mar. 29, 1976, Ser. No. 671,147
Claims priority, application Japan, Mar. 2, 1974, 49-24478
Int. Cl.[2] C08F *8/46*
U.S. Cl. 260—879 12 Claims

1. A process for producing a virtually gel free maleic anhydride adduct of high molecular weight 1,2-polybutadiene having a number average molecular weight of more than 10,000 and up to 200,000 and a crystallinity of up to 50%, consisting essentially in contacting maleic anhydride with said high molecular weight 1,2-polybutadiene at a reaction temperature of 50° to 260° C in the absence of a radical initiator in at least one halogenated aromatic hydrocarbon solvent thereby adding maleic anydride to the polymer, the concentration of the polymer dissolved in the halogenated aromatic hydrocarbon being up to 10% by weight.

4,082,818

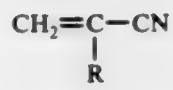
MERCAPTAN ACTIVATION BY ACID IN THE COPOLYMERIZATION OF ACRYLONITRILE

Gerald P. Coffey, Cleveland Heights, and Herbert F. Mazeke, Warrensville Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed May 17, 1976, Ser. No. 687,151
Int. Cl.[2] C08L *51/04;* C08F *4/00, 220/44*
U.S. Cl. 260—879 9 Claims

1. The process comprising polymerizing in an aqueous medium with a free radical generating polymerization initiator at a temperature of from about 0 to 100° C in the substantial absence of molecular oxygen 100 parts by weight of

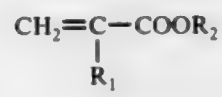
(A) from 60 to 90% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

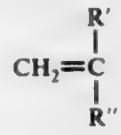
(B) from 10 to 40% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of

(1) an ester having the structure



wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

(2) an alpha-olefin having the structure



wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

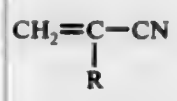
(3) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,

(4) vinyl acetate, and

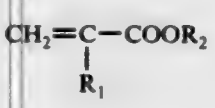
(5) styrene,

in the presence of from 0 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene, a nitrile monomer having the structure



wherein R has the foregoing designation, and an ester having the structure



wherein R_1 and R_2 have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer wherein the polymerization is carried out in the presence of from 0.01 to 3% by weight based on the combined weight of (A) and (B) of a mercaptan at a pH no greater than 6.5.

4,082,819

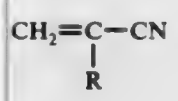
RUBBER-MODIFIED ACRYLONITRILE-VINYL ETHER-INDENE POLYMERS

George S. Li, Aurora, Ohio, and Gary W. Dirks, Scottsdale, Ariz., assignors to The Standard Oil Company, Cleveland, Ohio

Filed Mar. 2, 1977, Ser. No. 773,531
Int. Cl.[2] C08F *279/02*
U.S. Cl. 260—879 **6 Claims**

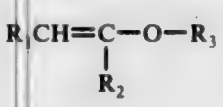
1. The polymeric composition resulting from the polymerization of 100 parts by weight of

(A) from about 60 to 90% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen,

(B) from about 5 to 39% by weight of a vinyl ether having the structure



wherein R_1 and R_2 independently are hydrogen or a lower alkyl group having from 1 to 4 carbon atoms, and R_3 is an alkyl group having from 1 to 6 carbon atoms, and

(C) from about 1 to 15% by weight of at least one member selected from the group consisting of indene and coumarone

wherein the given percentages of (A), (B) and (C) are based on the combined weight of (A), (B) and (C), in the presence of from 1 to 40 parts by weight of

(D) a rubbery polymer of at least 50% by weight of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and up to 50% by weight of at least one member selected from the group consisting of styrene, acrylonitrile, and ethyl acrylate.

4,082,820

HIGH SOFTENING MALEIC ANHYDRIDE COPOLYMERS

George S. Li, Aurora, and Richard J. Jorkasky, II, Walton Hills, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 15, 1977, Ser. No. 806,576
Int. Cl.[2] C08F *279/02*
U.S. Cl. 260—879 **4 Claims**

1. The polymeric composition resulting from the polymerization of 100 parts by weight of

(A) from about 0 to 80% by weight of styrene,

(B) from about 1 to 50% by weight of maleic anhydride, and

(C) from about 1 to 60% by weight of indene,

wherein the given percentages of (A), (B) and (C) are based on the combined weight of (A) plus (B) plus (C), in the presence of from 1 to 40 parts by weight of

(D) a rubbery polymer of at least 50% by weight of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and up to 50% by weight of at least one member selected from the group consisting of styrene, alpha-methyl styrene, the vinyl toluenes, acrylonitrile, methacrylonitrile, ethyl acrylate, the propyl acrylates, the butyl acrylates, and the butyl methacrylates.

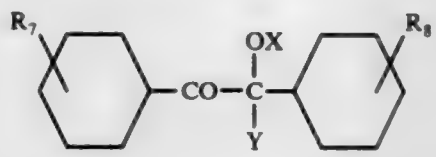
4,082,821

1-OXO-2-(PHOSPHONA)-1,2-DIPHENYLETHANES

Andreas Schmidt, Reinach, and Rudolf Kirchmayr, Munchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 19, 1975, Ser. No. 642,230
Claims priority, application Switzerland, Dec. 24, 1974, 17285/74; Nov. 26, 1975, 15304/75
Int. Cl.[2] C07F *9/40*; C08F *2/50*
U.S. Cl. 260—946 **10 Claims**

1. A compound of formula I



(I)

wherein X represents hydrogen, alkyl of 1 to 4 carbon atoms, hydroxyalkyl of 2 to 3 carbon atoms, haloalkyl of 2 to 3 carbon atoms, alkoxyalkyl of 3 to 8 carbon atoms, alkenyl of 3 to 4 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, aralkyl of 7 to 8 carbon atoms, phenyl, halogenophenyl, alkylphenyl or alkoxyphenyl;

Y represents phosphonoalkyl of the formula $-CH(R_5)\text{-}CH(R_6)P(O)(OR_3)(OR_4)$ or phosphonoalkoxy of the formula $-O\text{-}(CH_2)_n\text{-}P(O)(OR_3)(OR_4)$;

each of R_3 and R_4 are independently represents alkyl of 1 to 4 carbon atoms, haloalkyl of 2 to 3 carbon atoms, alkoxyalkyl of 3 to 8 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, aralkyl of 7 to 8 carbon atoms, phenyl, halogenophenyl, alkylphenyl or alkoxyphenyl, or R_3 and R_4 together represent a branched or unbranched alkylene of 2 to 7 carbon atoms;

each of R_5 and R_6 independently represents hydrogen, alkyl of 1 to 4 carbon atoms or phenyl;

each of R_7 and R_8 independently represents hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen or phenyl; and

n is 2 or 3.

4,082,822
PREPARATION OF DITHIOPHOSPHORIC ACID ESTER DIHALIDES

Hans-Joachim Diehr, and Hermann Arold, both of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 12, 1976, Ser. No. 704,254
Claims priority, application Germany, Jul. 19, 1975, 2532396
Int. Cl.² C07F *9/20, 9/58, 9/65*
U.S. Cl. 260—972 **10 Claims**

1. A process for the preparation of a dithiophosphoric acid ester dihalide of the formula

$$R-S-\overset{\overset{S}{\|}}{P}X_2$$

in which

X is chlorine, bromine, fluorine or iodine, and

R is an alkyl radical with up to 15 carbon atoms optionally substituted by halogen, by alkoxy or by alkylthio, a cycloaliphatic radical with 5 or 6 ring members, an aralkyl radical with 7 to 15 carbon atoms or an aryl or heterocyclic radical,

comprising reacting a thiol compound of the formula

$$R-SH$$

with a thiophosphoryl halide of the formula

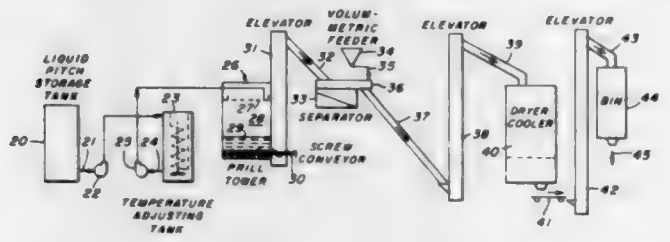
$$PSX_3$$

in the presence of a catalyst selected from the group consisting of a metal, an anhydrous metal halide, a Lewis acid, a nitrogen-alkylated lactam or an N,N-disubstituted carboxylic acid amide or phosphoric acid amide at a temperature of about 0° to 170° C.

4,082,823
PROCESS FOR FORMING COATED PITCH PRILLS

Harry G. Augustine; Kenneth C. Krupinski, both of Pittsburgh, and Frank A. Smith, Franklin Township, Westmoreland County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1975, Ser. No. 637,262
Int. Cl.² B01J *2/06*
U.S. Cl. 264—7 **7 Claims**



1. In a process for forming coated pitch prills useful as binders for making electrodes for use in electrochemical processes comprising

(a) forming droplets of molten pitch,

(b) rapidly cooling the liquid droplets to form prills by contacting the prills with an aqueous cooling bath,

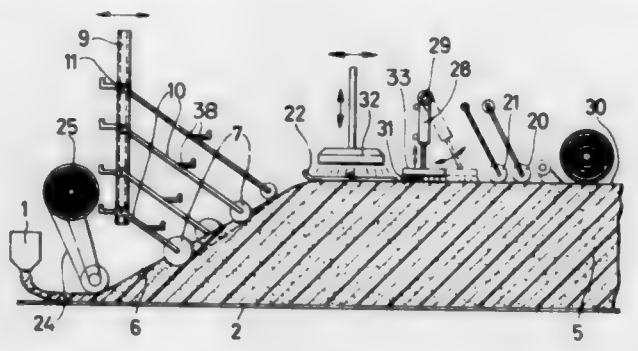
(c) separating the prills from the cooling bath, and

(d) drying the prills using heat and agitation, the improvement comprising following step (c) intimately mixing the prills which have been separated from the cooling bath while still wet with a finely divided carbonaceous material to produce a surface coating adherently bonded to the prills which resist caking or fusion of the prills at ordinary shipping and storage temperatures and pressures and which coating reduces the dusting tendency of the prill during handling.

4,082,824
METHOD OF PRODUCING CONTINUOUS PLANAR EXPANDED POLYURETHANE BLOCKS

Bernardo Del Carpio, Madrid, Spain, assignor to Planiblock, S.A., Madrid, Spain

Division of Ser. No. 514,275, Oct. 11, 1974, Pat. No. 3,984,195.
This application Mar. 4, 1976, Ser. No. 663,970
Claims priority, application Spain, Feb. 20, 1974, 423.434; Apr. 26, 1974, 425.717; May 27, 1974, 426.668
Int. Cl.² B29D *27/00*
U.S. Cl. 264—46.3 **9 Claims**



1. A continuous free foam expansion process wherein a blowing gas is generated in a foamable resinous fluid comprising the steps of:

a. continuously depositing said foamable resinous fluid upon an inner mold lining;

b. continuously moving said inner mold lining and said foamable resinous fluid away from the place where it is deposited;

c. covering the top of said foamable resinous fluid with a gas impermeable separating material;

d. permitting said foamable resinous fluid to expand while moving away from the place where it is deposited;

e. applying mechanical pressure to the top of said foamable resinous fluid through said separating material during expansion;

f. said pressure being applied by pressure applying means at a plurality of fixed locations downstream of said place where said foamable resinous fluid is deposited and in the location where said expansion occurs and at each of said fixed locations said pressure being applied through means lying in a substantially straight line of contact transverse to the axis of the motion of said deposited fluid and in a plane rigid and fixed with respect to an axis taken along the transverse surface of said foamable resinous fluid and flexible in planes normal to said axis;

g. said pressure applying means at said plurality of fixed locations superposing substantially the entire transverse dimension of said foamable resinous fluid at least twice; and

h. permitting said foamable resinous fluid to expand to substantially its full dimension.

2. The method of claim 1 further comprising heating said separating material whereby adhesion between the separating material and said resultant foamed block is achieved.

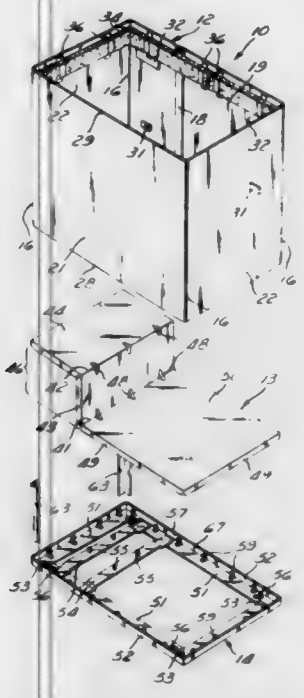
4,082,825
METHOD OF CONSTRUCTING A REFRIGERATION CABINET

Richard L. Puterbaugh, St. Cloud, Minn., assignor to Franklin Manufacturing Company, St. Cloud, Minn.

Division of Ser. No. 374,276, Jun. 27, 1973, Pat. No. 3,948,407.
This application Nov. 19, 1975, Ser. No. 633,433
Int. Cl.² B29D *27/04*
U.S. Cl. 264—46.5 **6 Claims**

1. A method of constructing a refrigeration cabinet comprising the steps of wrapping a single sheet into a rectangular outer shell tube by joining two of its ends at a seam such that the single sheet forms four exterior walls of the cabinet, securing one end of the formed tube to an end wall and a rigid perimeter

frame to form a rigid box-like shell assembly, providing an open-faced, box-like liner having dimensions somewhat smaller than the corresponding dimensions of the shell tube assembly, positioning the liner in the shell tube assembly in spaced relationship to it and with its open face at the open end of the shell tube assembly opposite said one tube end, securing



a thermal breaker member to such shell and liner across the peripheral space between the shell and liner at their open ends, and injecting and foaming a rigid polyurethane insulation foam in place in the space between the liner and the shell assembly to secure said tube, end wall, liner and thermal breaker member together.

4,082,826

PROCESS FOR PRODUCING HIGHLY ION-CONDUCTIVE PORCELAIN

Sigeru Iijima, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed May 19, 1977, Ser. No. 798,719
Claims priority, application Japan, May 19, 1976, 51-57598
Int. Cl.[2] C04B *35/10*
U.S. Cl. 264—65 **10 Claims**

1. A process for producing a highly ion-conductive procelain with a low specific resistivity not more than 10 ohm-cm at 300° C and with good stability in air, which comprises

(a) mixing about 87 to about 95% by weight of Al_2O_3 of a particle size of about 0.3 to about 5 microns with about 5 to about 13% by weight, as Na_2O, of a sodium salt of a particle size of about 5 to about 50 microns, wherein the sodium salt is a compound which decomposes to Na_2O at a temperature higher than about 700° C;

(b) heat-treating the mixture obtained in (a) at a temperature of about 900° to about 1500° C in an oxidizing atmosphere for a time of from about 10 minutes to about 7 hours to produce a powder which in the X-ray powder diffraction pattern has a β-Al_2O_3/β''-Al_2O_3 ratio such that the ratio of $I\beta$:$I\beta''$ is about 1.0 to about 0.25:1 where $I\beta$ is the peak intensity of β-Al_2O_3 in the (017) planes with $d=2.69$ A and $I\beta''$ is the peak intensity of β''-Al_2O_3 in the (01,11) planes with $d=2.60$ A in which d is the lattice distance;

(c) mixing 100 parts by weight of the resulting heat-treated powder obtained in (b) with 0.2 to about 3 parts by weight, as the oxide, of at least one compound capable of providing a monovalent or divalent metal ion, said ion increasing the ion conductivity of the sintered β-alumina in step (e) in combination with the Na ion in the alkaline atmosphere used in step (e);

(d) molding the mixture obtained in (c); and

(e) sintering the molding in Na_2O alkaline atmosphere at a temperature of about 1500° to about 1750° C for about 5 to about 90 minutes.

4,082,827

PROCESS FOR BLOW MOLDING OF A SPOUT CONTAINER

Walter K. Chlystun, 327 St. James Dr., Spartanburg, S.C.

Filed Feb. 9, 1976, Ser. No. 656,644
Int. Cl.[2] B29C *17/07*
U.S. Cl. 264—98 **9 Claims**



1. An improved process for blow molding a container comprising the steps of:

(a) providing a pliant plastic parison between mold sections, said mold sections having blow mold cavities defined therein;

(b) bringing said mold sections into registry and entrapping said plastic parison therebetween, a portion of said parison being held within said cavities in said mold sections that define an article to be produced therein;

(c) simultaneously engaging another portion of said parison outside said mold cavities adjacent an end thereof with matching compression mold die portions of said mold sections which are angularly offset from a center line through said blow mold cavities, and forcing said another portion of said parison into said angularly offset die portions and entrapping same therebetween, thereby compression molding an appendage to said end of said container with a central opening defined therein, said appendage being positioned at an angle with respect to a plane tangent to an upper portion of said ends of said container; and

(d) thereafter injecting a blow fluid internally of said plastic parison portion whereby said plastic parison portion is forced outwardly into conformity with said blow mold cavities to produce the container therein.

4,082,828

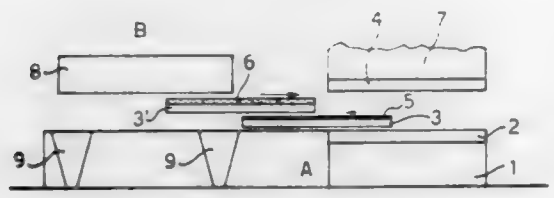
METHOD FOR PRODUCING THIN PARTICLE BOARD

Bruno Zulli, Via Mercatovecchio 19, 33100 Udine, Italy

Continuation of Ser. No. 477,341, Jun. 7, 1974, abandoned. This application Mar. 8, 1976, Ser. No. 664,476
Claims priority, application Italy, Jun. 7, 1973, 83386 A/73; Jun. 7, 1973, 83387 A/73
Int. Cl.[2] B29J *5/00*
U.S. Cl. 264—119 **4 Claims**

1. A method for producing particle board, having a thickness of from 1–10 mm, from particulate material, consisting primarily of wood chips, and heat-curable resin, using a filling machine, a press having an upper pressing plate and a lower pressing plate, wherein at least the upper pressing plate is heatable to a temperature above that of the curing of the resin, and a first heatable platform which moves back and forth directly between the upper pressing plate and the lower pressing plate, comprising the steps of:

(1) filling the first heatable platform in the filling machine with the particulate material and the resin to form a mat of wood chips mixed with the resin, the first heatable platform, during said filling step, having already been heated to a temperature above ambient temperature and below the temperature of curing of the resin;
(2) shuttling the first heated platform with the mat directly to the press between the upper pressing plate and the lower pressing plate;
(3) pressing the mat between said plates without removing the mat from the first heated platform and heating the mat to a temperature sufficient to effect the curing of the resin of the mat, in order to form the particle board and to reheat the first heated platform;



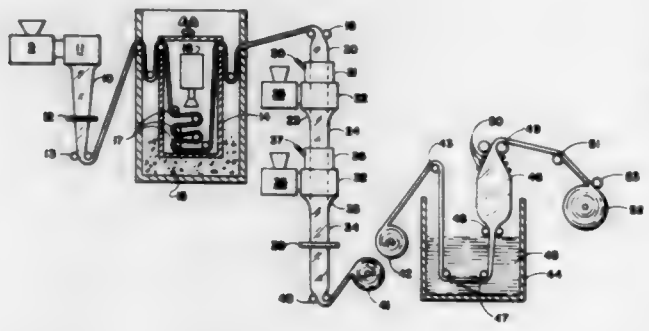
(4) opening the press;
(5) discharging the particle board from the heated platform; and
(6) returning immediately the first heated platform directly to the filling machine,
whereby during said steps (4) and (5) the first heated platform naturally reduces its temperature in a way that the reduced temperature is retained during said first and second steps above the ambient temperature but below the temperature of curing of the resin according to step (1) and the heated platform gives up the heat to the mat during said first and second steps.

4,082,829

PROCESS FOR MELT EXTRUDING COATING GRADE SARAN

Harri J. Brax; Joseph F. Porinchak, both of Spartanburg, and Alan S. Weinberg, Greenville, all of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 344,005, Mar. 22, 1973, Pat. No. 3,953,557, which is a division of Ser. No. 129,501, Mar. 30, 1971, Pat. No. 3,741,253. This application Jan. 2, 1976, Ser. No. 646,110
Int. Cl.[2] C08F *214/08*
U.S. Cl. 264—209 **3 Claims**



1. A method of forming a film from a copolymer of vinylidene chloride and vinyl chloride having a vinyl chloride content of 5–15 weight percent, said copolymer comprising from 5 to 100 weight percent of a liquid coating grade polymer having a lower melt viscosity than copolymers of vinylidene chloride and vinyl chloride normally used in melt extrusion processes, comprising the steps of:
introducing said copolymer into an extruder;
extruding said copolymer through an annular die to form a tubular film having a thickness of 1–5 mils; and
cooling said film to form a self-supporting film, the barrell on said extruder being maintained in the temperature range of 200°–320° F and the extrusion die being maintained in the temperature range of 280°–340° F.

4,082,830

PROCESS OF FORMING A PROTECTIVE COATING AND SHIPPING THE COATING FROM THE SURFACE BEING PROTECTED WHEN NO LONGER REQUIRED

Joseph A. Cogliano, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 251,880, May, 1972, Pat. No. 3,823,024. This application Apr. 23, 1974, Ser. No. 463,340
Int. Cl.[2] B29D *7/02*
U.S. Cl. 264—213 **2 Claims**

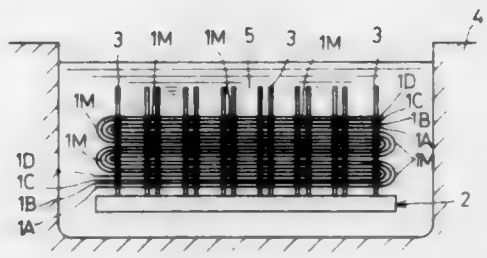
1. The process of stripping a coating on a substrate which comprises forming a coating by simultaneously impinging on said substrate two streams under ambient conditions, the first stream being a latex of a high polymer, said polymer particles in said latex being electrically charged and a second stream being a coagulant charged oppositely to that of the particles in said latex and after drying adding to the interface between said coating and said substrate an external debonding agent consisting essentially of a substantially non-volatile additive which is adhesive to at least one of either the substrate or coagulated coating, more soluble in water than in the coagulated latex polymer component and having a solubility parameter at least 2 $(\text{calories/cc.})^{1/2}$ higher than the coagulated latex polymer component and thereafter stripping said coating from said substrate.

4,082,831

METHOD OF MAKING A MULTI-LEVEL FLOWER SUPPORTING NET ASSEMBLY

Chiaki Hase, Hazu, Japan, assignor to Daito Seimo Coshi Kaisha, Oaza-Ishiki, Japan

Filed May 23, 1977, Ser. No. 799,335
Int. Cl.[2] B29C *17/02*; B29D *9/00, 7/22*
U.S. Cl. 264—249 **4 Claims**



1. A method of making a multi-level flower supporting net assembly, which comprises the steps, in combination, of:
laying one upon another a plurality of flexible nets made of string of thermally contractible synthetic resin and having a predetermined width, each of said nets being elongate and having mesh openings which are somewhat greater than the ultimately desired mesh dimensions to provide allowance for thermal contraction;
placing one end of said nets on a frame in such a manner that the mesh openings of one net are correctly aligned with those of another, and extending said nets along the length of said frame;
folding said nets in a vertically zigzag pattern and holding them on said frame;
immersing said nets, together with said frame, for a predetermined length of time in a heating medium maintained at a predetermined temperature to allow said nets to undergo thermal contraction and be placed under tension across said frame to obtain said ultimately desired mesh dimensions;
removing said nets, together with said frame, from said medium and allowing said nets to cool down to ambient temperature; and

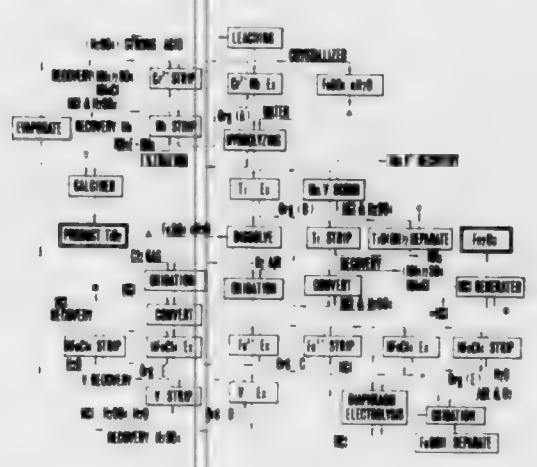
removing said nets from said frame, while maintaining said nets substantially in said zigzag pattern.

4,082,832

TREATMENT OF RAW MATERIALS CONTAINING TITANIUM

Morio Watanabe, Amagasaki, and Sanji Nishimura, Kyoto, both of Japan, assignors to Solex Research Corporation, Osaka, Japan

Filed Apr. 27, 1976, Ser. No. 680,928
Claims priority, application Japan, May 6, 1975, 50-55048; Jul. 21, 1975, 50-89433; Dec. 4, 1975, 50-144861; Jan. 16, 1976, 51-3939
Int. Cl.² C01G *23/04*
U.S. Cl. 423—70 7 Claims



1. In a method for obtaining titanium dioxide from titanium-containing raw materials wherein the materials are dissolved in sulfuric acid to form an aqueous solution of sulfuric acid containing dissolved titanium and other metals selected from the group consisting of iron, V, Mn, Cr, and Nb, and then forming a precipitate of $FeSO_4.nH_2O$ and the titanium in the solution is isolated and subsequently recovered as titanium dioxide from the aqueous solution, the improvement which comprises:

1. extracting Cr^{3+} and Nb^{5+} ions from the aqueous solution by contacting the aqueous solution with a first organic solvent selected from the group consisting of primary, secondary, tertiary and quaternary amines;
2. separating the aqueous solution resulting from step (1) and separating a major portion of the titanium ion in the solution by hydrolysis;
3. separating the aqueous solution resulting from the hydrolysis treatment of step (2) and extracting the titanium ions remaining in the aqueous solution with a second organic solvent selected from the group consisting of alkyl phosphoric acids mixed with from 2 to 5 percent higher alcohols and aromatic, aliphatic or paraffinic hydrocarbons as a diluent;
4. separating the aqueous solution resulting from the extraction of step (3), oxidizing the Fe^{+2} ions therein to Fe^{+3} ions and then extracting the Fe^{+3} ions with a third organic solvent selected from the group consisting of alkyl phosphoric acids in combination with from 2 to 5 percent higher alcohols and aromatic, aliphatic or paraffinic hydrocarbons as a diluent;
5. separating the aqueous solution resulting from step (4) and extracting the vanadium ions and other remaining heavy metal ions with a fourth organic solvent selected from the group consisting of primary, secondary, tertiary or quaternary amines in combination with from 2 to 5 percent higher alcohols and aromatic, aliphatic or paraffinic hydrocarbons as a diluent; and then
6. recovering, regenerating and concentrating the sulfuric acid remaining in the aqueous solution resulting from step (5).

4,082,833

CLAY HALOGENATION PROCESS

Ronald Wyndham, New Orleans, and John Christopher Terry, Metairie, both of La., assignors to Toth Aluminum Corporation, New Orleans, La.

Filed Jan. 6, 1976, Ser. No. 646,889
Int. Cl.² C01G *15/00*
U.S. Cl. 423—135 10 Claims

1. In a method of carbo-chlorinating clay to produce aluminum chloride and silicon chloride comprising the steps of: mixing and calcining clay and a solid carbonaceous reductant to form a reaction mass; and carbo-chlorinating the clay to produce aluminum chloride and silicon chloride by exposing the calcined reaction mass to a chlorinating agent; the improvement comprising the steps of: adding at least one sulfur containing member selected from the group consisting of elemental sulfur and functionally equivalent sulfur containing compounds to the clay and heating the at least one sulfur containing member and the clay before carbo-chlorination, with carbon being present in essentially stoichiometric proportion as the carbonaceous reductant; and adding at least one sulfur containing member consisting of elemental sulfur and functionally equivalent sulfur containing compounds to the calcined reaction mass and heating the at least one sulfur containing member and the clay during carbo-chlorination, the at least one sulfur containing member added before and during carbo-chlorination being present other than as a major reducing agent or reactant and in an amount to increase the yield and rate of formation of aluminum chloride and silicon chloride.

4,082,834

PROCESS FOR GETTERING MOISTURE AND REACTIVE GASES

Leonard N. Grossman, Livermore, and Douglas R. Packard, Sunol, both of Calif., assignors to General Electric Company, San Jose, Calif.

Division of Ser. No. 343,268, Mar. 21, 1973, abandoned, which is a division of Ser. No. 74,471, Sep. 22, 1970, abandoned. This application Dec. 18, 1975, Ser. No. 642,124
Int. Cl.² B01D *53/34*
U.S. Cl. 423—210 7 Claims

1. A method of stoichiometrically removing moisture and gases selected from the group consisting of hydrogen, nitrogen, carbon monoxide, carbon dioxide and oxygen from an enclosed region at temperatures in the range of about 200° to about 650° C comprising the step of contacting the moisture and gases in the enclosed region with an alloy having the essential components of zirconium, nickel and titanium present in amounts of from about 3 to about 12 weight percent nickel, from about 3 to about 30 weight percent titanium and the balance being zirconium, so that said alloy stoichiometrically reacts and combines with said moisture and gases.

4,082,835

REMOVAL OF SO_2 FROM GASES

Frederick P. Chlanda, Rockaway; Krishnamurthy Nagasubramanian, Parsippany, and Kang-Jen Liu, Somerville, all of N.J., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Jun. 27, 1975, Ser. No. 590,777
Int. Cl.² C01B *17/00;* B01K *5/00;* C01B *17/22, 17/48*
U.S. Cl. 423—242 25 Claims

1. A method for removing SO_2 from a gas which comprises:
(a) absorbing SO_2 from said gas by contact with a basic aqueous solution thereby forming an aqueous SO_2-containing salt solution in which soluble sulfites and bisulfites are present;
(b) dividing said solution into two streams A and B;
(c) subjecting said streams to electrodialytic water splitting in a two-compartment water splitter comprised of alternating cation and bipolar membranes wherein one of said streams is introduced into the water splitter compartments

between the cation membranes and the anion sides of the bipolar membranes;

(d) introducing the other stream, A, into the compartments of said splitter between the cation sides of the bipolar membranes and the cation membranes;

(e) passing a direct current through the water splitter thereby effecting the acidification of the stream A and the basicification of the stream B and the transfer of cations from stream A to stream B and producing an aqueous SO_2 containing solution derived from stream A and a solution comprised of base capable of absorbing SO_2 derived from stream B.

4,082,836

PROCESS FOR THE PURIFICATION OF PHOSPHORIC ACID BY EXTRACTION

Fernando Ore, Whittier, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 592,460, Jul. 2, 1975, abandoned. This application Apr. 13, 1976, Ser. No. 676,522

Int. Cl.[2] C01B *25/16*

U.S. Cl. 423—321 S **19 Claims**

1. A process for purifying an aqueous phosphoric acid phase which comprises the steps of:

a. contacting an unpurified aqueous phosphoric acid phase containing from 5% to about 55% P_2O_5 by weight and at least ionic metallic impurities comprising dissolved calcium, magnesium, iron (II) and (III) and aluminum compounds with an organic extractant phase containing a water immiscible organic sulfonic acid in its H^+ form in the volumetric ratio of organic extractant phase to aqueous phosphoric acid phase of about 1 to 1 to about 100 to 1 at a temperature of about 20° C to about 65° C to form:

i. an organic extractant phase containing the organic sulfonic acid, at least a portion of said ionic metallic impurities and extracted P_2O_5 values, and

ii. a purified aqueous phosphoric acid phase;

b. separating the purified aqueous phosphoric acid phase from the organic extractant phase;

c. contacting the organic extractant phase from (b) with a wash phase in the volumetric ratio of organic extractant phase to wash phase of from about 1 to 1 to about 100 to 1 at a temperature of from about 20° C to about 65° C, said wash phase consisting essentially of water or dilute phosphoric acid containing from about 10 grams/liter of P_2O_5, wherein said wash phase preferentially separates P_2O_5 from the ionic metallic impurities in said extractant phase, to form

i. a loaded wash phase enriched with the P_2O_5 values extracted from the organic extractant phase, and

ii. an organic phase containing the organic sulfonic acid, extracted metallic impurities and residual P_2O_5 values; and

d. separating the loaded wash phase from the organic extractant phase of step (c).

4,082,837

PROCESS FOR THE SELECTIVE CATALYTIC OXIDATION OF PARTIALLY OXIDIZED INORGANIC COMPOUNDS

James M. Whelan, La Canada, Calif., assignor to University of Southern California, Los Angeles, Calif.

Division of Ser. No. 556,670, Mar. 10, 1975, Pat. No. 3,976,599, which is a division of Ser. No. 194,769, Oct. 8, 1971, Pat. No. 3,885,020. This application Aug. 5, 1976, Ser. No. 712,002

Int. Cl.[2] C01B *21/24*

U.S. Cl. 423—405 **1 Claim**

1. A process for the selective oxidation of ammonia in the presence of elemental nitrogen with minimal oxidation thereof, which comprises combining the ammonia with a predetermined amount of oxygen containing gas to give at least a 1% stoichiometric excess of oxygen for the oxidation of the ammonia to nitric oxide; and passing the resulting mixture over a ceramic catalyst of the following empirical formula at an elevated temperature:

$$W_kX_nJ_{(1-k-n)}ZO_{(3\pm m)}$$

wherein

W is Zirconium, Tin or Thorium or mixtures thereof;

X is an alkaline earth metal or mixture thereof;

J is Scandium, Yttrium, a rare-earth element or mixture thereof;

Z is a metal of the first transition series or a mixture thereof, at least 0.01% of said metal having an oxidation state other than +3;

k is a number having a value between 0 and about 0.1;

m is a number having a value of from 0 to about 0.26; and

n is a number having a value from 0 to about 0.51, provided when *n* has a value of 0, *k* has a value between 0 and about 0.05.

4,082,838

PROCESS FOR PREPARING HYDRAZINE

John A. Pursley, 333 Woodley Ct., Santa Barbara, Calif. 93105

Continuation-in-part of Ser. No. 823,261, Jun. 26, 1959, Pat. No. 3,034,861, which is a continuation-in-part of Ser. No. 306,694, Aug. 27, 1952, abandoned. This application May 10, 1962, Ser. No. 194,755

Int. Cl.[2] C01B *21/16*

U.S. Cl. 423—408 **16 Claims**

1. A continuous cyclic process for preparing hydrazine comprising the step of:

(a) contacting in a non-aqueous medium at least one haloamine of the formula NH_2—X, where X is a halogen, with at least one material selected from the group consisting of the metals of Groups IA and IIA and the amides thereof to provide an anhydrous mixture containing hydrazine and a metal halide;

(b) separating said hydrazine from said anhydrous mixture;

(c) subjecting the hydrazine-poor residue of step (b) to direct current electrolysis to separate the metal component and the halogen component of said metal halide from each other; and

(d) recycling said metal for reaction with fresh haloamine in step (a).

4,082,839

PREPARATION OF SULFUR FLUORIDES

Richard Elmer Eibeck, Orchard Park, and Robert Edwin Booth, Hamburg, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

Continuation-in-part of Ser. No. 592,444, Jul. 2, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 782,142

Int. Cl.[2] C01D *3/02*; C01B *17/45, 7/22, 7/02*

U.S. Cl. 423—489 **18 Claims**

1. A process for preparing a sulfur fluoride component which is sulfur tetrafluoride, sulfur chloride pentafluoride or mixtures thereof comprising:

reacting under anhydrous conditions a sulfur chloride component selected from sulfur monochloride, sulfur dichloride, sulfur tetrachloride and mixtures thereof, with a fluorine containing component selected from nitrosyl fluoride, nitrosyl fluoride-hydrogen fluoride complexes and mixtures thereof, at a temperature above the highest melting point of any compound in the reaction mixture of sulfur chloride component and fluorine containing component;

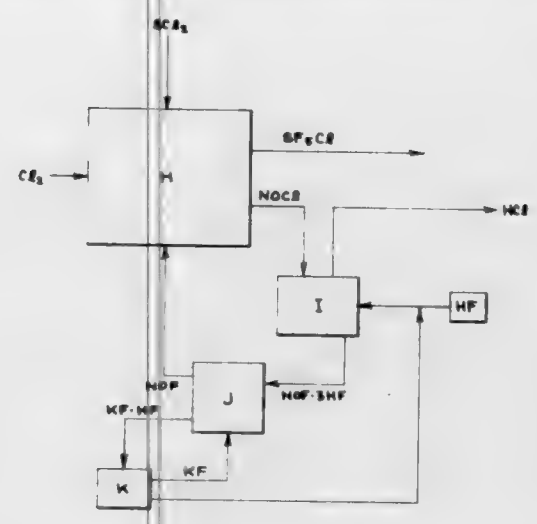
sulfur tetrafluoride being the predominant sulfur fluoride component when nitrosyl fluoride-hyrogen fluoride complex is the predominant fluorine containing component and sulfur chloride pentafluoride being the predominant sulfur fluoride component when nitrosyl fluoride is the predominant fluorine containing component and elemental chlorine is present;

thereby forming a mixture of said sulfur fluoride component and nitrosyl chloride; and

thereafter recovering from said mixture said sulfur fluoride component as the principal reaction product.

5. The process of claim 1 wherein nitrosyl fluoride is selected as the fluorine containing compound and excess Cl_2 is added to the reactant mixture to form sulfur chloride pentafluoride as the predominant sulfur fluoride.

6. The process of claim 5 wherein nitrosyl chloride is formed as a by-product and said nitrosyl chloride is reacted with hydrogen fluoride to form nitrosyl fluoride-hydrogen fluoride complex which complex is decomposed to regenerate nitrosyl fluoride which is recycled to the reactant mixture.



7. The process of claim 6 wherein nitrosyl fluoride-hydrogen fluoride complex is decomposed to regenerate nitrosyl fluoride by contacting said complex with potassium fluoride or sodium fluoride to form nitrosyl fluoride and potassium fluoride-hydrogen fluoride or sodium fluoride-hydrogen fluoride complex.

8. The process of claim 7 wherein the resulting potassium fluoride-hydrogen fluoride complex or sodium fluoride-hydrogen fluoride complex is heated to free hydrogen flouride which is recycled to form nitrosyl fluoride-hydrogen fluoride complex by reaction with nitrosyl chloride and to free the potassium fluoride or sodium fluoride for reuse in decomposing the nitrosyl fluoride-hydrogen fluoride complex.

4,082,840

BONE SEEKING TECHNETIUM 99M COMPLEX

Norman Adler, Arlington, and Leopoldo Lazaro Camin, Lexington, both of Mass., assignors to New England Nuclear Corporation, Ind.

Division of Ser. No. 410,086, Oct. 27, 1973, Pat. No. 4,016,249, which is a division of Ser. No. 288,577, Sep. 13, 1972, Pat. No. 3,851,044. This application Feb. 13, 1976, Ser. No. 657,923

Int. Cl.[2] A61K *43/00, 29/00*

U.S. Cl. 424—1 **29 Claims**

1. A composition for forming a complex with technetium-99m for radioactive scanning, comprising a stannous-phosphate complex, the phosphate moiety of which comprises pyrophosphate, said phosphate moiety containing no more than 25% of linear polyphosphates of formulation $P_nO_{3n+1}^{-(n+2)}$ having a polyphosphate moiety of molecular weight greater than pyrophosphate, the weight ratio of stannous to pyrophosphate moiety ranging from 10^{-3} to 0.50.

4,082,841

DENTIFRICE

Morton Pader, West Engelwood, N.J., assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 621,331, Oct. 10, 1975, abandoned, which is a continuation of Ser. No. 479,914, Jun. 17, 1974, abandoned, which is a continuation of Ser. No. 308,079, Nov. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 214,497, Dec. 30, 1971, abandoned, which is a continuation of Ser. No. 24,882, Apr. 1, 1970, abandoned. This application Oct. 29, 1976, Ser. No. 737,260

Int. Cl.[2] A61K *7/18, 7/28*

U.S. Cl. 424—50 **12 Claims**

1. A fluoride-free toothpaste composition capable of reducing dental plaque and calculus consisting essentially of by weight:

Dental Polishing Agent	1% - 70%
Humectant and water	30% - 80%
Foaming Agent	0% - 5%
Non-enzyme bound, pharmaceutically acceptable zinc salt of acetate, benzoate, borate, carbonate, citrate, dl-lactate trihydrate, phenolsulfonate, silicate, an alkanoate having 8 to 18 carbon atoms, salicylate, stannate, sulfate, tannate or titanate;	0.1% - 20%
Protease, carbohydrase or lipase enzyme preparation	0.1% - 20%

4,082,842

MEDICANT COMPOSITION FOR THE TREATMENT OF DIABETES

Armando Nahle, 828 Richard Dr., El Paso, Tex. 79907

Filed Feb. 21, 1975, Ser. No. 551,992

Int. Cl.[2] A61K *31/635, 31/375, 31/18*

U.S. Cl. 424—229 **5 Claims**

1. A composition effective for treating diabetes mellitus when administered in daily dosages of about 650 to 3900 milligrams, said composition comprising 65 to 85 weight percent of a hypoglycemic of the sulfonylurea type, 10 to 30 weight percent of sulfamethoxypyridazine, and 5 to 10 weight percent ascorbic acid.

4,082,843

3-(3-(3-SUBSTITUTED AMINO-2-HYDROXYPROPOXY)PHENYL)-6-HYDRAZINO PYRIDAZINES AND THEIR USE AS VASODILATORS AND β-ADRENERGIC BLOCKING AGENTS

William John Coates, Welwyn Garden City; Anthony Maitland Roe, Hatfield; Robert Antony Slater, Letchworth, and Edwin Michael Taylor, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

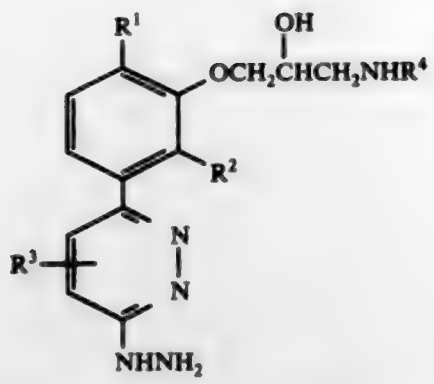
Continuation of Ser. No. 635,476, Nov. 26, 1975, abandoned. This application Dec. 15, 1975, Ser. No. 640,666

The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.

Int. Cl.[2] C07D *237/20;* **A61K** *31/50*

U.S. Cl. 424—250 **12 Claims**

1. A compound of the formula



wherein D R^1 or R^2 is hydrogen, the other group being hydrogen, methyl, fluoro, chloro, bromo, hydroxy, methoxy, hydroxymethyl, cyano, nitro or amino;

R^3 is hydrogen or methyl; and

R^4 is isopropyl, tertiary butyl or phenylethyl; or a pharmaceutically acceptable salt thereof.

12. A method of concomitantly inhibiting β-adrenergic receptors and producing vasodilatation which comprises administering a compound of claim 1 internally to an animal in need thereof in an amount sufficient to block said receptors and produce vasodilatation.

4,082,844

6-CHLORO-2-(1-PIPERAZINYL)PYRAZINE

William C. Lumma, Jr., Pennsburg, and Walfred S. Saari, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 656,664, Feb. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 570,052, Apr. 21, 1975, abandoned. This application Jun. 15, 1976, Ser. No. 696,255

The portion of the term of this patent subsequent to Mar. 28, 1995, has been disclaimed.

Int. Cl.² A61K *31/495*; C07D *241/10*

U.S. Cl. 424—250 **3 Claims**

1. 6-Chloro-2-(1'-piperazinyl)pyrazine, or N-oxide or a pharmaceutically acceptable salt thereof.

3. A method of producing an anorexic effect which comprises administering to a patient in need of such treatment an effective amount of 6-chloro-2-(1'-piperazinyl)pyrazine or N-oxide, or a pharmaceutically acceptable salt thereof.

4,082,845

3-(1-PIPERAZINYL)-PYRIDO[2,3-b]PYRAZINES

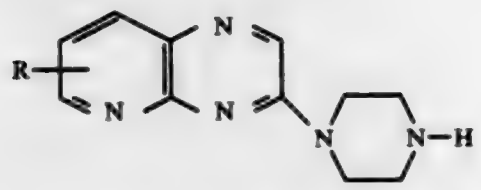
Walfred S. Saari, Lansdale, and William C. Lumma, Jr., Pennsburg, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 25, 1977, Ser. No. 790,362

Int. Cl.² A61K *31/495*; C07D *295/12*

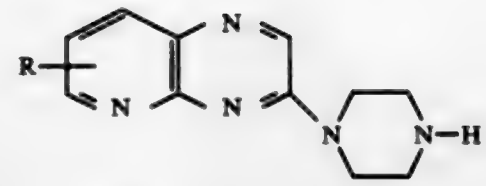
U.S. Cl. 424—250 **5 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen, halo, trifluoromethyl, lower alkyl having from 1 to 3 carbon atoms, lower alkylthio having from 1 to 3 carbon atoms, lower alkoxy having from 1 to 3 carbon atoms or cyano.

5. A pharmaceutical anorectic composition comprising a pharmaceutical carrier and an effective amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen, halo, trifluoromethyl, lower alkyl having from 1 to 3 carbon atoms, lower alkylthio having from 1 to 3 carbon atoms, lower alkoxy having from 1 to 3 carbon atoms or cyano.

4,082,846

METHOD FOR TREATING PSORIASIS

Lealand L. Clark, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Nov. 18, 1976, Ser. No. 743,015

Int. Cl.² A61K *31/455*

U.S. Cl. 424—266 **3 Claims**

1. A method for treating psoriasis comprising the steps of:

topically applying a composition containing about 0.5% to 10.0%, by weight of isoniazid in an effective amount to the psoriasis; and

repeating the applying step as necessary to effect treatment of the psoriasis.

4,082,847

SUBSTITUTED AMINOETHANOLS AND PHARMACEUTICAL USE

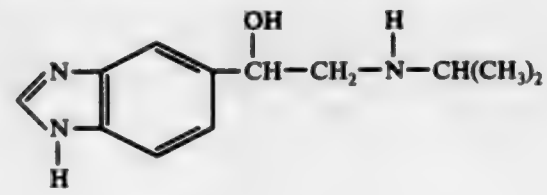
Carroll D. Arnett, Durham, N.C.; Jeremy Wright, Baltimore, and Nicolas Zenker, Lutherville, both of Md., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 6, 1976, Ser. No. 747,661

Int. Cl.² A61K *31/415*; C07D *235/08*

U.S. Cl. 424—273 R **11 Claims**

1. An R- or S- isomer having the formula



or mixtures of said isomers or pharmaceutically acceptable salts thereof.

9. A pharmaceutical composition for reducing ocular hypertension or for effecting bronchodilatation comprising an effective amount of compound of claim 1 in a suitable dosage form.

4,082,848

2-HIGHER ALKYL-3-HYDROXY-1,4-NAPHTHOQUINONE CARBOXYLIC ACID ESTERS

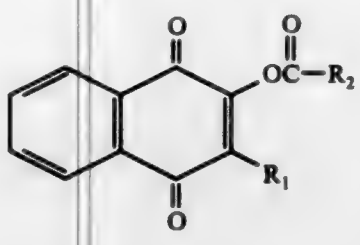
Russell Frank Bellina, Wilmington, and Dennis Lynn Fost, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 613,553, Sep. 15, 1975, Pat. No. 4,055,661, which is a continuation-in-part of Ser. No. 531,483, Dec. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 494,294, Aug. 2, 1974, abandoned, which is a continuation-in-part of Ser. No. 468,692, May 10, 1974, abandoned. This application Apr. 29, 1976, Ser. No. 681,594

Int. Cl.² A01N *9/20, 9/22, 9/24*; C07C *49/68*

U.S. Cl. 424—273R **11 Claims**

1. Compound of the formula:



wherein,

R_1 is alkyl of 12 to 14 carbon atoms which are straight chain, and

R_2 is methyl or ethyl.

9. A composition for the control of mites consisting essentially of a miticidally effective amount of the compound of claim 1 and a compound selected from the group consisting of chlorodimeform, formetanate, propargite, tetradifon and benomyl.

4,082,849

HALOGENATED N-(3,5-DIHALOPHENYL)CYCLOPROPANEDICARBOXIMIDES

Nobuyuki Kameda, Takarazuka; Yoshio Hisada, Kawanishi; Toshiro Kato, Ibaraki, and Akira Fujinami, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

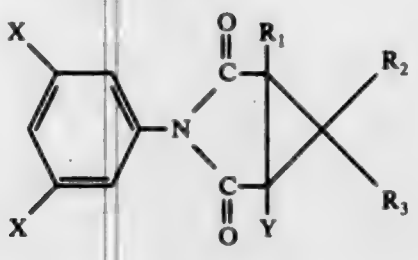
Filed Oct. 8, 1976, Ser. No. 730,984

Claims priority, application Japan, Oct. 15, 1975, 50-124670

Int. Cl.[2] C07D *209/52;* A61K *31/40*

U.S. Cl. 424—274 **8 Claims**

1. A compound of the formula:



wherein X and Y are each a chlorine atom or a bromine atom and R_1, R_2 and R_3 are individually a hydrogen atom or a methyl group.

6. A method for controlling fungi which comprises applying a fungicidally effective amount of the compound according to claim 1 to the fungi.

4,082,850

METHOD OF TREATING DERMAL INFLAMMATIONS

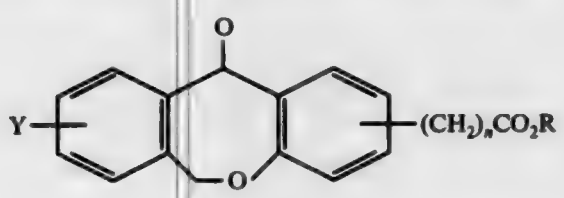
Howard B. Lassman, Flemington, and William J. Novick, Jr., Lebanon, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Apr. 16, 1976, Ser. No. 677,544

Int. Cl.[2] A61K *31/335*

U.S. Cl. 424—278 **23 Claims**

1. A method of treating dermal inflammation which comprises topically administering to the inflamed area of a patient an effective amount of a compound of the formula



wherein Y is hydrogen, alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, halogen or trifluoromethyl; R is hydrogen or straight or branched chain alkyl of from 1 to 6 carbon atoms; and *n* is an integer of from 1 to 7, or a physiologically tolerable salt thereof.

4,082,851

SULPHONAMIDES, COMPOSITIONS CONTAINING THE SAME AND METHODS FOR USING THE SAME IN THE TREATMENT OF HYPERTENSION OR ODEMEAS

Peter Werner Feit, Gentofte; Ole Bent Tvaermose Nielsen, Vanlose; Herta Bruun, Malov, and Claus Aage Svensgaard Bretting, Copenhagen, all of Denmark, assignors to Leo Pharmaceutical Products Ltd., Ballerup, Denmark

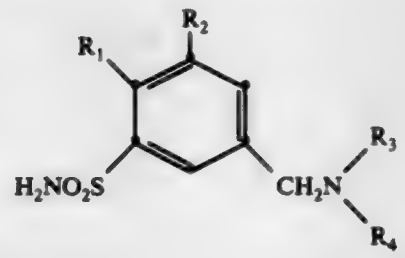
Filed Jun. 16, 1976, Ser. No. 696,547

Claims priority, application United Kingdom, Jul. 8, 1975, 28770/75; Jul. 8, 1975, 28775/75; Jul. 8, 1975, 28774/75; Jul. 8, 1975, 28773/75; Jul. 8, 1975, 28772/75

Int. Cl.[2] A61K *31/18, 31/135;* C07C *143/80, 143/78*

U.S. Cl. 424—300 **28 Claims**

1. A compound of the formula I



(I)

in which

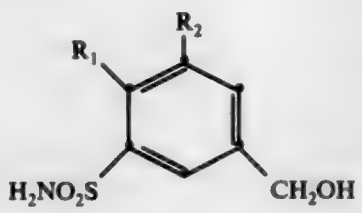
R_1 stands for an unsubstituted or substituted phenoxy or phenylthio radical;

R_2 stands for a $—YR_2'$ radical, in which Y represents —O—, —S—, or —NH—, and R_2', which may be unsubstituted or substituted, represents C_1-C_6-alkyl, C_2-C_6-alkenyl or -alkynyl; or methyl or ethyl substituted with phenyl radical;

R_3 and R_4 which can be the same or different, and unsubstituted or substituted, stand for hydrogen or for a straight or branched C_1-C_8-alkyl, C_2-C_8-alkenyl or -alkynyl radical, a C_5-C_7-cycloalkyl or a phenyl radical, or for a C_1-C_3 alkyl radical substituted with phenyl; and

R_4 furthermore stands for a lower carbalkoxy radical, a C_1-C_6 alkanoyl radical, or a benzoyl radical; and salts thereof with pharmaceutically acceptable acids wherein when substituted the substituents of R_1, R_2', R_3, and R_4 are selected from the group consisting of halogen atoms, lower alkyl, halo-lower alkyl, nitro and amino groups, mono- or dialkylamino or acylamino groups, hydroxy groups, hydroxy groups, lower alkoxy groups or hydroxy groups esterified with lower aliphatic carboxylic acids, and lower alkylthio or phenylthio radicals.

18. A compound of formula III



(III)

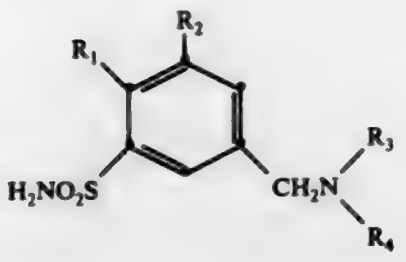
in which R_1 stands for an unsubstituted or substituted phenoxy or phenylthio radical;

R_2 stands for a $—YR_2'$ radical, in which Y represents —NH—, and R_2', which may be unsubstituted or substituted, represents C_1-C_6-alkyl, C_2-C_6-alkenyl or -alkynyl; or methyl or ethyl substituted with a phenyl radical;

wherein when substituted the substitutuents of R_1 and R_2' are selected from the group consisting of halogen atoms, lower alkyl, halo-lower alkyl, nitro and amino groups, mono- or dialkylamino or acylamino groups, hydroxy groups, lower alkoxy groups or hydroxy groups esterified

with lower aliphatic carboxylic acids, and lower alkylthio or phenylthio radicals.

19. A compound of the formula I



(I)

in which

R_1 stands for a phenoxy, phenylthio or benzyl radical;

R_2 stands for a $—YR_2'$ radical, in which Y represents —O—, —S—, or —NH—, and R_2', represents C_1-C_6-alkyl, C_2-C_6-alkenyl or -alkynyl; or methyl or ethyl substituted with phenyl radical;

R_3 and R_4 which can be the same or different, stand for hydrogen or for a straight or branched C_1-C_8-alkyl, C_2-C_8-alkenyl or -alkynyl radical, a C_5-C_7-cycloalkyl or a phenyl radical, or for a C_1-C_3 alkyl radical substituted with phenyl; and

R_4 furthermore stands for a lower carbalkoxy radical, a C_1-C_6 alkanoyl radical, or a benzoyl radical; and salts thereof with pharmaceutically acceptable acids.

28. A method of treating patients suffering from oedematous conditions and from hypertension, comprising administering to adult patients from 0.25 to 100 mg per day of a compound of formula I of claim 1 or an equivalent amount of a salt thereof as defined in claim 1.

4,082,852

COMPOSITION FOR SANITIZING OF SURFACES

Florian Heiss, Heidstucken 27, 2000 Hamburg 71, Germany

Filed Aug. 24, 1973, Ser. No. 390,377

Claims priority, application Switzerland, Aug. 22, 1972, 12441/72; Germany, May 16, 1973, 2324587

Int. Cl.² A01N *9/24*; A61L *9/04*

U.S. Cl. 424—317 **21 Claims**

1. A composition suitable for sanitizing the surface of a material which comes into contact with the human body comprising

(A) a substantially water insoluble bacteriostatic halogen substituted phenol,

(B) a bactericide which comprises a water soluble aldehyde,

(C) an unsubstituted aliphatic alcohol with 1 to 5 carbon atoms in the molecule and

(D) water.

4,082,853

METHOD FOR COAGULATING MILK PROTEINS

Maria Szadkowska, Warsaw; Jerzy Pisarek, Pruszkow; Boleslaw Dzik, Ilawa; Elzbieta Staniak, Garwolin; Danuta Lipniewska, and Franciszek Bijok, both of Warsaw, all of Poland, assignors to Instytut Przemyslu Mleczarskiego, Warsaw, Poland

Continuation-in-part of Ser. No. 578,897, May 19, 1975, abandoned. This application Feb. 7, 1977, Ser. No. 766,560

Int. Cl.² A23C *19/02*

U.S. Cl. 426—36 **8 Claims**

1. A method for coagulating milk proteins to produce curd comprising adding calcium, a quantity of proteolytic-coagulating enzyme in insufficient quantity to cause milk coagulation to milk plus a starter culture to milk at an acidity of °SH 6.0 to 8.5 at a first temperature ranging from about 0° C. to about 32° C., maintaining the milk at said first temperature for from 1 to 24 hours, then raising the temperature of the milk to a second, higher, temperature ranging from about 20° C. to about 45° C., and adding another proteolytic-coagulating enzyme to the milk at said second temperature range and at a second, higher, acidity of from about 7.0 °SH to about 12.5 °SH, and maintaining the milk at said second temperature range for about 5 to 120 minutes until curd is formed.

4,082,854

PACKAGING MATERIALS HAVING EXCELLENT GAS PERMEATION RESISTANCE AND PROCESS FOR PREPARATION THEREOF

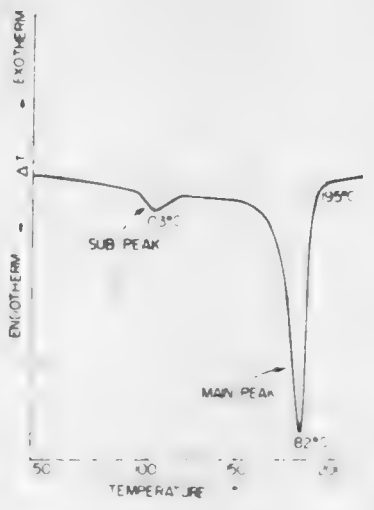
Muneki Yamada, Ebina; Sadao Hirata, Yokohama; Akira Kishimoto, Yokohama; Shunsaku Hirata, Yokohama; Toru Suzuki, Yokosuka, and Fumio Kano, Kamakurashidai, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed Feb. 23, 1976, Ser. No. 660,003

Claims priority, application United Kingdom, Mar. 3, 1975, 8809/75

Int. Cl.² B65D *85/00*; C08G *41/04*; B32B *27/08*

U.S. Cl. 426—106 **14 Claims**



1. A packaging material having an improved gas permeation resistance, which comprises at least one layer composed of (A) an ethylene-vinyl alcohol copolymer having a vinyl alcohol content of 50 to 75 mole % and a residual vinyl ester content of up to 4 mole % based on the sum of the vinyl alcohol and vinyl ester or (B) a blend of said ethylene-vinyl alcohol copolymer with 25 to 150% by weight, based on said copolymer, of at least one thermoplastic polymer selected from the group consisting of polyolefins and carbonyl group-containing polymers, said ethylene-vinyl alcohol copolymer having a main endothermic peak satisfying substantially the following requirement:

$$Y^1 = 1/64\ X + 68.0$$

wherein Y_1 stands for the main endothermic peak temperature (° C.) in the differential thermal analysis, and X stands for the vinyl alcohol content (mole %) in the ethylene-vinyl alcohol copolymer.

and at least one subsidary endothermic peak satisfying substantially the following requirement:

$$0.67\ X + 76/7^2 = Y_2^2 = 0.40\ X + 40.0$$

preferably

$$0.67\ X + 76/7^2 = Y_2^2 = 0.34\ X + 88.0$$

wherein Y_2 stands for the subsidary endothermic peak temperature (° C.) in the differential thermal analysis, and X is as defined above.

the ratio (Rs) of the subsidary endothermic peak area to the main endothermic peak area being at least 2.5%.

14. A packaging material as set forth in claim 1 wherein said carbonyl group-containing polymer has a carbonyl group at a concentration of 120 to 1400 meq/100 g of the polymer.

4,082,855

PROCESS FOR PRODUCING A FRENCH FRIED POTATO PRODUCT

James E. Citti, St. Louis Park, and Carl S. Dienst, Edina, both of Minn., assignors to Ore-Ida Foods, Inc., Boise, Id.

Filed Jun. 15, 1973, Ser. No. 370,430

Int. Cl.[2] A23L *1/27, 1/10;* A23B *4/04*

U.S. Cl. 426—250 **6 Claims**



1. A process for producing an elongate potato product simulating a French fry but having superior crispness, comprising preparing an extrudable potato dough containing mashed blanched potatoes and an emulsifier and having a moisture content within the range of about 60% to about 75% by weight; extruding said dough in hot condition within a temperature range of about 100° F. to about 175° F. through a die having a cavity in approximately the form of a Maltese cross wherein the arms of the cross diverge in their extension outwardly and their outer ends have acute angle corners, so as to produce an elongate extrusion having a plurality of longitudinal ridges alternating with longitudinal valleys, said ridges breaking transversely of their lengths at frequent intervals during extrusion to provide serrations therealong as a multiplicity of individual projections; and frying the extrusion.

4,082,856

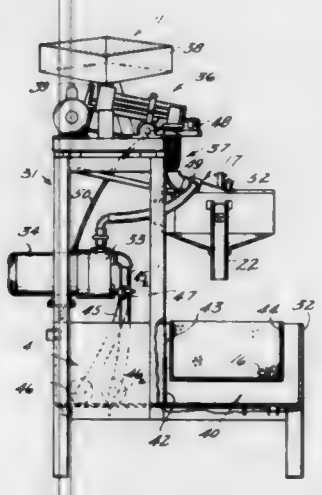
PROCESS AND APPARATUS FOR SHELLING EGGS

Theodore Carl Zwiep; Donn G. Newhouse, both of Grand Rapids, and Jerry D. Craner, Jenison, all of Mich., assignors to Country Queen Foods, Inc., Grand Rapids, Mich.

Filed Feb. 26, 1976, Ser. No. 661,737

Int. Cl.[2] A23L *1/32;* A23N *5/00*

U.S. Cl. 426—299 **13 Claims**



4. A process for continuously shelling hard cooked eggs comprising the steps of:

presenting a continuous succession of hard cooked eggs to a progressive cracking of the shell under vibration in an inclined plane;

flagellating said eggs in successive continuity through a resilient annulus while subjecting said eggs to a jet stream of fluid;

gravity conveying said eggs onto a final wash station;

subjecting said eggs to a final spray wash, said spray moving said eggs through a prearranged path;

separating said shells from said eggs; and

recycling fluid for reuse.

4,082,857

GELATIN COMPOSITION

Ronald John Croome, Cardiff, Wales, assignor to P. Leiner & Sons Limited, Treforest, Wales

Filed Oct. 18, 1976, Ser. No. 733,033

Claims priority, application United Kingdom, Oct. 21, 1975, 43212/75

Int. Cl.[2] A23L *1/06, 1/04*

U.S. Cl. 426—573 **15 Claims**

1. An acidic dessert gel in which the gel-forming ingredients consist essentially of a polysaccharide gelling agent and a chemically modified gelatin gelling agent, the isoelectric point of said chemically modified gelatin gelling agent being below the pH of the gel.

4,082,858

SWEETENING COMPOUND, METHOD OF RECOVERY, AND USE THEREOF

Toyoshige Morita, Takatsuki; Isamu Fujita, Kashihara, and Junichi Iwamura, Yao, all of Japan, assignors to F. K. Suzuki International, Inc., Arlington Heights, Ill.

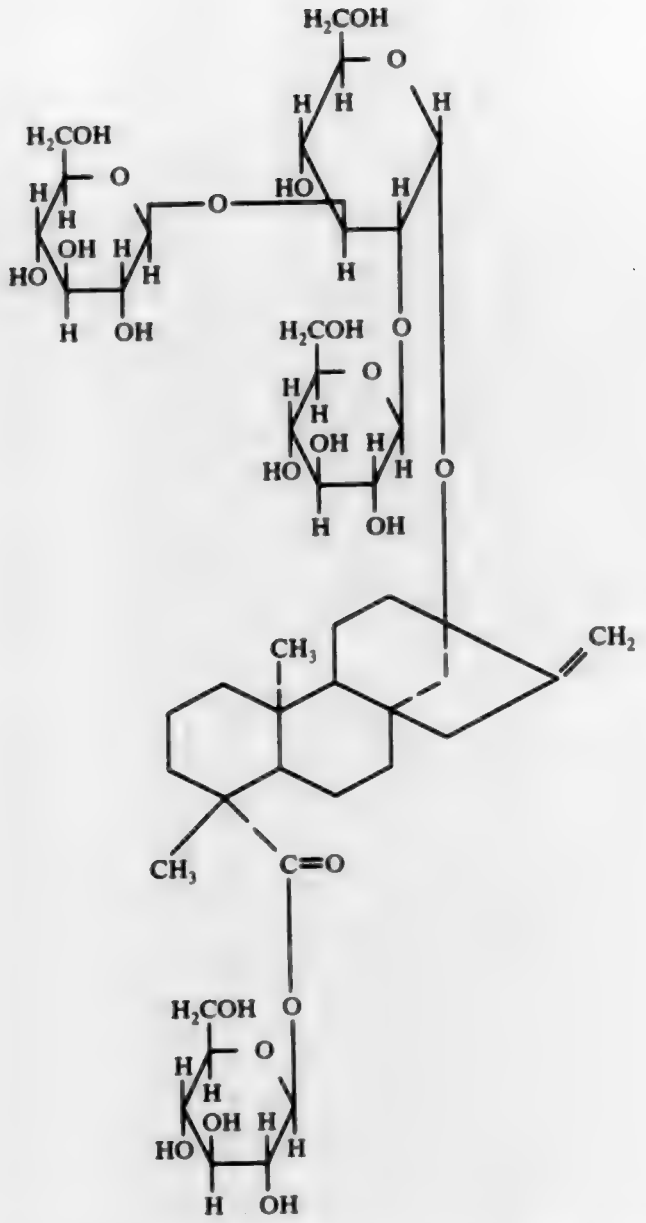
Filed Jun. 2, 1976, Ser. No. 692,218

Claims priority, application Japan, Jun. 4, 1975, 50-067335

Int. Cl.[2] A23C *3/00;* C07H *15/00*

U.S. Cl. 426—597 **6 Claims**

1. A substantially pure sweetening compound in the form of colorless crystals, said compound having the structural formula:



2. A sweetened product for oral ingestion which comprises a foodstuff and an effective amount of the sweetening compound of claim 1 admixed therewith.

4,082,859

CONVERSION OF CELLULOSE AND LIGNIN ORGANIC WASTE MATERIAL INTO A MORE DIGESTIBLE AND MANAGEABLE FORM

Sol Katzen, Hanasi St. No. 62, Herzilya Pituach, Israel

Filed Jul. 1, 1975, Ser. No. 592,227
Int. Cl.² A23K *1/12*
U.S. Cl. 426—636 **12 Claims**

1. A process for the conversion of cellulose and lignin organic waste material into a more digestible and manageable form which consists of the steps:

(a) reducing said cellulose or lignin organic waste material to a size less than 2 inches to facilitate further handling, when said organic waste material has a size greater than 2 inches, said cellulose or lignin organic waste material being selected from the group consisting of straw, stover, wood shavings, bagesse, corn cobs, peanut hulls, peat, tobacco stems, cocoa shells, rice hulls and soybean hulls;

(b) admixing an acid selected from the group consisting of phosphoric acid, hydrochloric acid, sulfuric acid, and mixtures thereof with about 40 to 60 percent by weight of said organic waste material;

(c) admixing, before, after or simultaneously with step (b), a base selected from the group consisting of calcium hydroxide, sodium hydroxide, potassium hydroxide, ammonium hydroxide and mixtures thereof with the remainder of said organic waste material; (d) mixing and reacting said acidified organic waste material with said basified organic waste material, a more digestible form of said organic waste material resulting, about 80 to 120 parts by weight of said acidified organic waste material being used per 100 parts by weight of said basified organic waste material, said reaction mixture contains about 20 to 60 percent by weight of water based on the total weight of said reaction mixture, said water level being achieved whenever said water level is not present by drying said starting cellulose or lignin organic waste material or adding water to said cellulose or lignin organic waste material or portion thereof used in step (b) or step (c), whereupon part of said water in said reaction mixture converted to steam by exothermic heat produced as said reaction progresses, and whereby said organic waste material is converted into a substantially dry, more digestible form; and

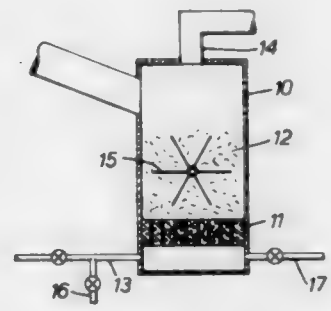
(e) forming the reacted mixture of the step (d) into pellets, cubes, blocks or other similar forms.

4,082,860

ELECTROSTATIC DEPOSITION OF FINE VITREOUS ENAMEL

Roger Patrick Corbett, Bassett; Trevor Robert Gilson, Hythe; Terence Patrick Nealon, Cardiff, and Patrick John Hendra, Crawley, near Winchester, all of England, assignors to Edward Curran Engineering Limited, Cardiff, England

Filed Mar. 14, 1975, Ser. No. 558,453
Int. Cl.² B05B *5/02*
U.S. Cl. 427—27 **4 Claims**



1. A method of applying a coating of a vitreous enamel to a conducting base surface, using a powder comprising small particles of an alkali-boro silicate vitreous enamel frit, between 5μ and 200μ in size, which have been surface treated by exposure to a chloro-silane compound of the formula

$$R_n - SiCl_{4-n}$$

where R is an aklyl, phenyl or vinyl group and n is 1,2, or 3, and also reacted with water vapor to give increased particle surface resistivity of at least 10^{12} ohm meters, the method comprising the stages of charging the particles electrostatically and subjecting the particles to an electric field causing the said particles to migrate towards and adhere as a coating to said conducting base surface, and the said powder coating is subjected to a thermal fusing operation causing said powder to vitrefy.

4,082,861

CONTINUOUS TONE IMAGING FILM

Masatsuga Izu, Birmingham, and Stanford R. Ovshinsky, Bloomfield Hills, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sep. 23, 1976, Ser. No. 725,926
Int. Cl.² B95C *5/00*; G03C *5/16, 5/04*
U.S. Cl. 427—56 **41 Claims**

1. A continuous tone dry process imaging film comprising a substrate, a solid, high optical density and substantially opaque film of a dispersion imaging material deposited on said substrate, said substantially opaque film of the dispersion imaging material, upon application of energy in an amount sufficient to increase the absorbed energy in the material above a certain

critical value, being capable of changing to a substantially fluid state in which the surface tension of the material acts to cause the substantially opaque film where subject to said energy to disperse and change to a discontinuous film comprising openings and deformed material which are frozen in place following said application of energy and through which openings light can pass, and means associated with said film of imaging material for retarding the change to the discontinuous film, caused by the surface tension, and for controlling the amount of such change in accordance with the intensity of the applied energy above said certain critical value to increase the amount of said change and the area of the openings in the film and decrease the area of the deformed material in the film and, therefore, the optical density of the film in accordance with the intensity of the applied energy above said certain critical value for providing continuous tone imaging of the dry process imaging film.

4,082,862

PROCESS FOR THE PRODUCTION OF RUBBER ARTICLES HAVING IMPROVED SLIP COATING

Pascal E. Esemplare, Mountainside, N.J., and Dennis Beeferman, Brooklyn, N.Y., assignors to Sutures Inc., Coventry, Conn.

Division of Ser. No. 589,677, Jun. 24, 1975, Pat. No. 4,027,060, which is a continuation-in-part of Ser. No. 405,863, Oct. 12, 1973, Pat. No. 3,919,442. This application Oct. 18, 1976, Ser. No. 733,399

The portion of the term of this patent subsequent to Jun. 29, 1993, has been disclaimed.

Int. Cl.[2] B32B *25/08*

U.S. Cl. 427—133 **7 Claims**

1. In a process for the production of rubber articles having a slip coating on at least one surface thereof, wherein a form is first coated with a release agent, a slip coating composition is provided on said release agent coated form and a rubber substrate is thereafter formed over said slip coating, the improvement which comprises eliminating the need for said coating of release agents by selecting as said slip coating composition a mixture of polymeric resins consisting essentially of about 5 to 95% by weight of a film-forming, non-elastomeric synthetic polymer component (1) having an elongation of at least about 200% and about 95 to 5% by weight of a normally solid, non-elastomeric, synthetic polymer component (2) exhibiting an elongation of below about 20% and a coefficient of friction of up to about 0.20, said slip coating having an elongation of at least about 200 up to 700%, a coefficient of friction of up to about 0.25 and a thickness of below about 0.005 inch.

4,082,863

FABRICATION OF CERAMIC HEAT PIPES

Edna A. Dancy, Beaconsfield, and James H. Vansant, Chambly, both of Canada, assignors to Hydro-Quebec, Canada

Filed Sep. 29, 1976, Ser. No. 727,707

Claims priority, application Canada, Sep. 28, 1976, 262251

Int. Cl.[2] B05D *7/22, 1/36, 3/02*

U.S. Cl. 427—181 **24 Claims**

1. A method of forming a porous capillary layer of a metal oxide ceramic material onto a metal oxide ceramic substrate, which comprises covering the surface of the substrate with an aqueous slurry of a powdered mixture comprising the metal oxide of the ceramic substrate, silica and an alkali metal or alkaline-earth metal oxide, said powdered mixture having a maximum particle size of about 44 microns, removing excess slurry, depositing onto the wet surface a layer of granular ceramic material having a particle size of about 250 to about 500 microns, said granular ceramic material being applied in excess relative to the powder of the aqueous slurry to insure that a porous capillary structure will be obtained and causing the slurry to be drawn up between the particles so as to absorb substantially all the slurry, and firing the coated surface at a temperature to effect bonding of the ceramic layer, the powdered constituents of said mixture being proportioned to provide liquid phases at about 200°–300° C above the firing temperature.

4,082,864

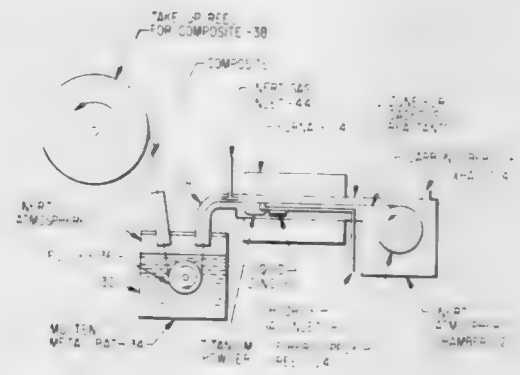
REINFORCED METAL MATRIX COMPOSITE

Ernest G. Kendall, El Segundo, Calif., and Roger T. Pepper, Cape Elizabeth, Me., assignors to Fiber Materials, Inc., Biddeford, Me.

Filed Jun. 17, 1974, Ser. No. 480,090

Int. Cl.[2] C09K *1/66;* C23C *1/08;* B44D *1/16*

U.S. Cl. 427—248 B **17 Claims**



1. The process of improving the wettability of multifilament carbon fibers by molten metal by coating the fibers with titanium boride comprising:

admixing in a reaction zone a gaseous atmosphere of a chloride of titanium, boron chloride and zinc vapor;

heating the reaction zone;

and subjecting the carbon fibers to the atmosphere within the reaction zone whereby a titanium boride is formed on the surfaces of the multifilament fibers.

7. Method of forming a fiber-metal composite, comprising the steps of:

forming a coating of titanium boride on a plurality of carbon fibers;

immersing the coated fibers into a body of molten metal selected from the group consisting of magnesium, lead, zinc, copper, aluminum, tin and alloys of said metals until said metal substantially fills the interstices between said fibers; and

cooling the metal body with said coated fibers embedded therein to a temperature at which said metal solidifies.

17. The method of forming a fiber-metal composite comprising the steps:

subjecting a plurality of carbon fibers to an atmosphere including a gaseous compound of titanium, a gaseous compound of boron, and zinc vapor, said atmosphere being at an elevated temperature at which the both said compounds are normally reduced by the zinc vapor, said fibers being subjected to said atmosphere for a time sufficient to render them wettable by a molten metal; thereafter,

immersing the carbon fibers in a body of molten metal selected from the group consisting of magnesium, lead, zinc, copper, aluminum, tin, and alloys of said metals, until said metal substantially fills the interstices among said fibers; and

cooling the metal filled fibers to a temperature at which said metal solidifies.

4,082,865

METHOD FOR CHEMICAL VAPOR DEPOSITION

Vladimir Sinisa Ban, Hopewell, N.J., and Stephen Lee Gilbert, Concord, Vt., assignors to RCA Corporation, New York, N.Y.

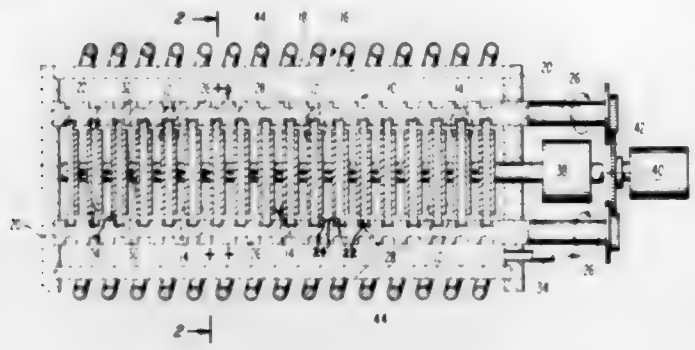
Continuation-in-part of Ser. No. 743,317, Nov. 19, 1976. This application Mar. 21, 1977, Ser. No. 779,679

Int. Cl.[2] B05D *5/12*

U.S. Cl. 427—253 **7 Claims**

1. In a method of chemically vapor-depositing a material

onto the surfaces of a plurality of substrates within a reaction chamber wherein said substrates are heated while contacting said surfaces with a gaseous compound of said material to be deposited, the improvement in said method comprising the steps of:



supporting said substrates within said chamber in a stack-like arrangement wherein said surfaces are substantially parallel to each other and are separated by spacings, and

directing a flow of gas from a plurality of gas nozzles into said spacings between said surfaces while simultaneously rotating said substrates each about its own axis.

4,082,866

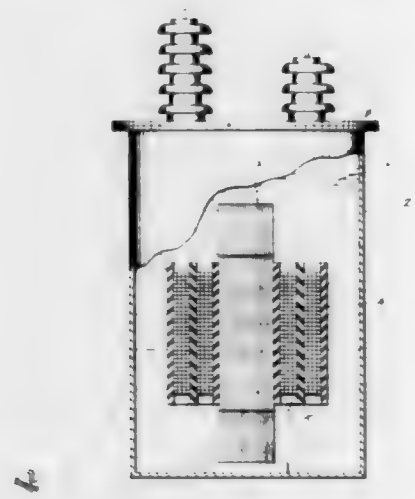
METHOD OF USE AND ELECTRICAL EQUIPMENT UTILIZING INSULATING OIL CONSISTING OF A SATURATED HYDROCARBON OIL

Edwin A. Link, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Continuation-in-part of Ser. No. 599,372, Jul. 28, 1975, which is a continuation of Ser. No. 433,053, Jan. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 292,670, Sep. 27, 1972, abandoned. This application Sep. 25, 1975, Ser. No. 616,673

Int. Cl.[2] H01B *3/22*; C10G *23/00*

U.S. Cl. 427—294 **9 Claims**



1. The method of minimizing the detrimental effects that can result in oil filled electrical apparatus during high fault conditions which comprises employing as an insulating oil in such electrical apparatus a relatively nonflammable and biodegradable oil consisting essentially of a saturated hydrocarbon oil having an average molecular weight of about 500 to about 700 and a fire point above 200° C, which oil is liquid throughout the temperature range of 0° to 40° C.

4,082,867

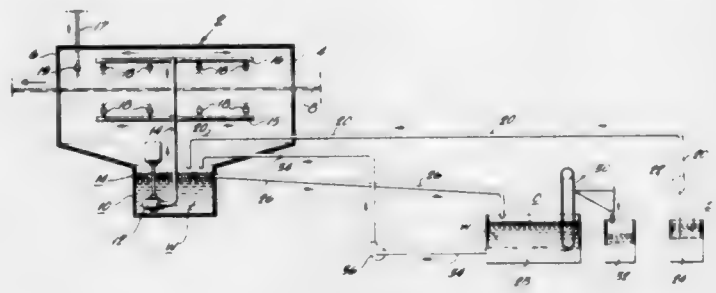
OIL EMULSION REMOVAL AND RECOVERY OF OIL

Thomas D. Henley, Broomall, and Richard F. Reeves, Roslyn, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Division of Ser. No. 483,754, Jun. 27, 1974, abandoned. This application Aug. 12, 1976, Ser. No. 713,806

Int. Cl.[2] C23G *5/00*

U.S. Cl. 427—327 **20 Claims**



1. A continuous process in which a plurality of moving articles with metallic surfaces having an oil emulsion thereon are first cleaned and then coated comprising:

(A) removing said oil emulsion from said surfaces by contacting them with an aqueous solution consisting essentially of wash water and an oil insoluble demulsifier under conditions which form a turbulent mixture of said wash water, demulsifier and oil emulsion;

(B) collecting said turbulent mixture containing said demulsifier which is effective in breaking said oil emulsion to liberate oil therefrom;

(C) allowing said oil to separate thereby forming a distinct upper oil phase and a distinct lower wash water and demulsifier phase and removing said oil of said upper phase from said wash water and demulsifier of said lower phase in a quiescent stage, whereby oil is recovered;

(D) recycling said wash water and demulsifier having said oil removed therefrom by contacting other of said articles with said wash water and demulsifier; and thereafter

(E) applying to said metallic surfaces coating solution which forms thereon coatings to which siccative finishes adhere.

4,082,868

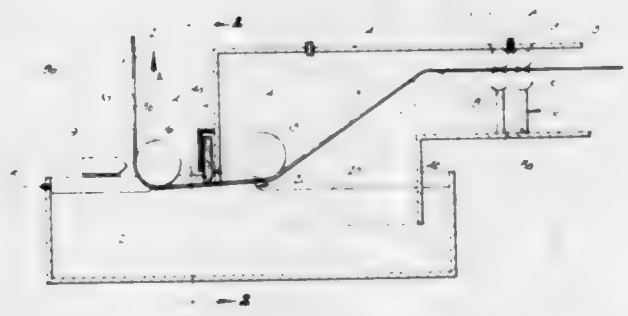
METHOD FOR CONTINUOUSLY CONTACT-COATING ONE SIDE ONLY OF A FERROUS BASE METAL STRIP WITH A MOLTEN COATING METAL

Paul E. Schnedler, Middletown; Marvin B. Pierson, Franklin; Hart F. Graff, Middletown; Thomas A. Compton, Middletown, and William R. Leasure, Middletown, all of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Mar. 18, 1976, Ser. No. 668,241

Int. Cl.[2] C23C *1/08, 1/06, 1/02*

U.S. Cl. 427—329 **24 Claims**



1. A process of producing a ferrous base metal strip coated with a coating metal on one side only, the other side of said strip remaining free of said coating metal, said ferrous base metal strip having been treated to bring it to a coating temperature sufficiently high to prevent casting of said coating metal thereon and low enough to prevent excess coating metal - base metal alloying and to render its surfaces clean and free of oxide, said process comprising the steps of providing means for

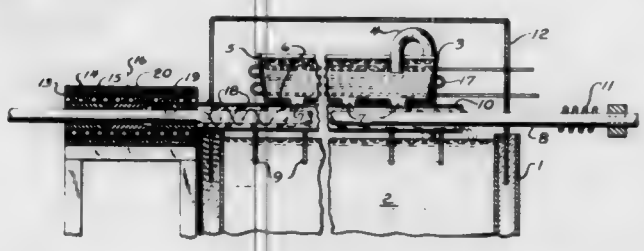
containing a molten bath of said coating metal having an upper surface formed by said containing means, conducting said strip to a position above said upper surface of said bath such that the surface tension and wetting characteristics of said molten coating metal will permit the formation of a meniscus at said upper surface of said bath contacting that side of said strip facing said bath, forming said meniscus, maintaining said meniscus and continuously contact coating said one side only of said strip therewith, maintaining said oxide-free strip in a protective, non-oxidizing atmosphere at least until said one side of said strip has been initially contacted by said meniscus and finishing said coated side of said strip by removing excess coating metal therefrom.

4,082,869

SEMI-HOT METALLIC EXTRUSION-COATING METHOD

Anthony J. Raymond, 20429 Attica Rd., Olympia Fields, Ill. 60461

Filed Jul. 8, 1976, Ser. No. 703,532
Int. Cl.[2] B05D *1/00;* B05C *3/04*
U.S. Cl. 427—357 **9 Claims**



1. A method of providing a uniform metallic coating on a moving work piece, comprising the steps of:

moving a said workpiece in a fixed path, including passage through a splash tube;

surrounding the work piece with molten metal during said movement;

containing the molten metal in close proximity to the work piece throughout its coating movement within the splash tube;

agitating progressively the contained molten metal with a series of spiral ribs positioned toward the exit end of the splash tube;

cooling the molten metal to approach a plastic state as it moves in the direction of work piece movement past the splash tube; and

uniformly confining the thickness of the molten metal in its plastic state around the work piece as it cools to extrude a sized, stable coating on the work piece.

4,082,870

METHOD FOR COATING NONSYMMETRICAL OBJECTS

Donald McKelvie Yenni, Indianapolis, Ind., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1975, Ser. No. 645,040
Int. Cl.[2] B05D *1/02, 1/08*
U.S. Cl. 427—425 **6 Claims**

1. A method for coating objects comprising

(a) rotating said object about a longitudinal axis;

(b) rotating said longitudinal axis about a second axis spaced from and parallel to said longitudinal axis so as to provide translation and rotation of said objects;

(c) correlating the speed and direction of rotation of said longitudinal axis and said second axis;

(d) providing a spray coating device in proximity to said objects for depositing coating material thereon;

(e) depositing coating material on said object as it moves past said spray coating device;

(f) continuing the translation and rotation of said object past said spray coating device until the desired coating is achieved.

4,082,871

METHOD FOR FORMING A DECORATIVE NOVELTY DEVICE

Alan Peters, 28 Westhampton Dr., Weston, Ontario, Canada

Filed Jan. 5, 1977, Ser. No. 756,875
Int. Cl.[2] B44C *1/16*
U.S. Cl. 428—15 **7 Claims**

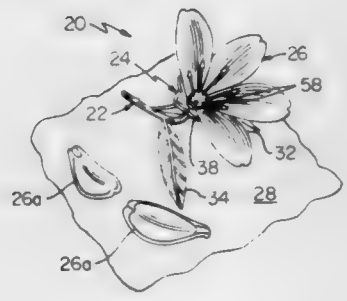
5. A decorative novelty article comprising a washed stone substrate, said stone having at least one thin coating of clear polyurethane solution applied thereto, a decorative element selected from a water soluble decal or a silk screen printing affixed to said polyurethane solution coated stone and at least one thin coating of said clear polyurethane solution applied to said stone over said decorative element.

4,082,872

FLOWER DECORATION

James L. Hughes, 4946 Duebber Dr., Cincinnati, Ohio 45238

Filed Sep. 30, 1976, Ser. No. 728,314
Int. Cl.[2] A41G *1/00*
U.S. Cl. 428—24 **3 Claims**



1. A flower decoration comprising a base including a stem and a pair of leaves attached thereto and extending outwardly therefrom, one end of said stem and said leaves forming a three-position support, a cup-shaped bell portion representative of the sepal of a flower, and securing means for securing said bell portion to the other end of said stem, said stem extending upwardly from said one end wherein said base, bell portion and securing means are illustrative of a flower, said securing means including a head portion and a spacer portion, said spacer portion engaging the inside bottom surface of said cup-shaped bell portion wherein said head portion is held in spaced relationship to the bottom of said bell portion, a plurality of petal-like members, one end of each of said petal members if formed with a projecting lip, said petal members being positionable at said one end thereof between said bell portion and said head portion, means for holding each of said petal members in detachable fashion wherein said petal members may be individually removed from said bell portion, and in which said holding means is a plurality of indentations formed on the bottom surface of said head portion for receiving said projecting petal lip portion which cooperatively engages said indentation.

4,082,873

SWITCH-PROOF LABEL

Frederick P. Williams, Kettering, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Nov. 2, 1976, Ser. No. 737,950
Int. Cl.[2] B32B *3/18, 7/10, 7/12;* C09J *7/02*
U.S. Cl. 428—40 **6 Claims**

1. A laminated label comprising:

(a) a flexible transparent or translucent plastic film,

(b) having reverse printing on one side thereof in an information containing pattern, and

(c) a layer of pressure sensitive adhesive bonded to the printed side of said plastic film, where

(d) the printed information containing pattern having a greater affinity for the pressure sensitive adhesive than the plastic film,

(e) so that when the laminated label has been mounted upon an object, attempted removal causes delamination of the plastic film and the pressure sensitive adhesive with at least a tamper indicating amount of the printed information pattern remaining adhered to at least a portion of the pressure sensitive adhesive which remains on the object.

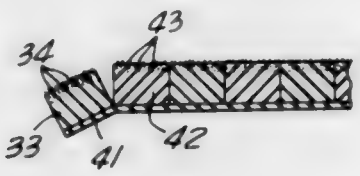
4. A laminated label, as in claim 1, wherein the affinity of the adhesive for the surface to which the laminated label is adhered and to the printed pattern is greater than the affinity of the printed pattern for the outer sheet.

4,082,874

CARPETING AND METHOD AND APPARATUS FOR MAKING CARPETING

Fling Armstrong Traylor, Jr., Hacienda Heights, Calif., assignor to El-Do, Inc., Los Angeles, Calif.

Filed Mar. 14, 1977, Ser. No. 777,128
Int. Cl.[2] B65D *71/00*
U.S. Cl. 428—54 **28 Claims**



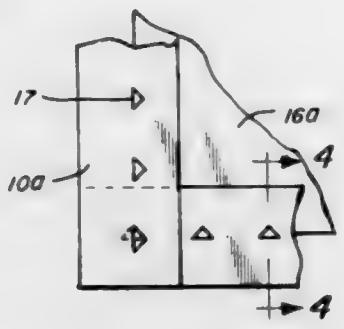
28. Carpeting comprising a plurality of cured, rubber-based elements arrayed in side-to-side relationship and having filaments embedded therein, with some of said filaments projecting upwardly from, and forming a pile on, the upper surface of said elements, and each cured, rubber-based element being bonded by vulcanization along its bottom surface to the surface of a vulcanized, rubber-based sheet with substantially no rubber from the rubber-based sheet projecting between the sides of the rubber-based elements and with some of said filaments projecting downwardly from the bottom surface of the cured, rubber-based elements and penetrating into the surface of said vulcanized, rubber-based sheet.

4,082,875

TAPE HAVING A LONGITUDINAL STRIP OF ADHESIVE WHICH IS USEFUL AS A MEANS FOR FRAMING SHEETS

Samuel Citron, 67 Kemble St., Boston, Mass. 02119

Filed Sep. 23, 1976, Ser. No. 725,980
Int. Cl.[2] A47G *1/08*; B32B *3/10, 7/14*; C09J *7/02*
U.S. Cl. 428—134 **11 Claims**



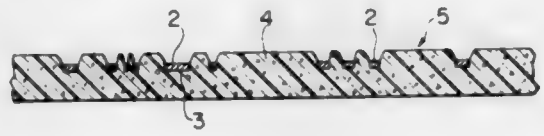
1. A tape for use in attaching a sheet to a surface, said tape including an adhesive coat on one face that extends the full length thereof and from one edge part way across said one face with the uncoated portion of said one face to overlie a margin of said sheet, and said tape having a series of indicia extending lengthwise of the tape, each of said indicia a figure including at least one angle providing an apex that represents a particular point lengthwise of the line of demarcation between said coated and uncoated portions of said one face, said indicia located relative to said line to enable said line to be oriented through the tape with respect to reference lines or reference lines to be established with reference to said line, said tape having an adhesive coat along but one side of said extended series of indicia.

4,082,876

METHOD FOR PRODUCING FOAMED BODY HAVING CHEMICAL EMBOSSED PATTERNS AND RESULTANT PRODUCT

Nobuo Miura, Kashiwa, Japan, assignor to Lonseal Corporation, Tokyo, Japan

Filed Feb. 18, 1976, Ser. No. 659,104
Claims priority, application Japan, Feb. 20, 1975, 50-21655
Int. Cl.[2] B29D *27/00*
U.S. Cl. 428—159 **6 Claims**



1. A method for producing a foamed body having chemically embossed patterns which comprises: forming a composition containing a plasticized polyvinyl chloride resin, a synthetic rubber material capable of forming sulphur bridges, a blowing agent selected from the group consisting of dinitrosopentamethylene tetramine and azobisdicarbonimide, sulphur as the vulcanization agent and a curing asistant into a sheet; printing an ink containing a vulcanization accelerator selected from the group consisting of 2-mercaptobenzothiazole, the zinc salt of 2-mercaptobenzothiazole, the sodium salt of 2-mercaptobenzothiazole, tetramethylthiuram monosulfide, tetramethylthiuram disulfide, piperidine pentamethylene dithiocarbamate, zinc diethyl dithiocarbamate and zinc-dibutylxanthate onto said sheet in a desired configuration; drying and curing the printed sheet by heating said printed sheet to a temperature of 90°–100° C for at least 20 hours; and heating said dried sheet to a temperature of 180°–210° C to cause foaming of said sheet thereby generating a sheet having said chemically embossed patterns therein.

3. An embossed foamed body prepared by the method of claim 1.

4,082,877

UNORIENTED COMPOSITE LAMINAR FILM WITH AN ELASTOMERIC LAYER AND SEALABLE LAYER

Robert James Shadle, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Feb. 14, 1975, Ser. No. 550,074
Int. Cl.[2] B65D *33/00, 33/04, 85/30, 85/34*
U.S. Cl. 428—35 **31 Claims**

1. A substantially unoriented composite laminar film having a 10 percent tensile secant modulus of from about 1,000 to about 30,000 pounds per square inch which comprises:

a first layer of elastomeric polymeric composition; and

a sealable layer of a polymeric composition comprising an interpolymer of ethylene and alkenoic acid; and wherein,

said elastomeric polymeric composition comprises a material selected from the group consisting of elastomeric interpolymer of ethylene with an alpha-mono-olefin having from 3 to about 8 carbon atoms per molecule, elastomeric interpolymers of styrene with a conjugated diene, elastomeric interpolymers of ethylene and a vinyl ester of carboxylic acid having from 2 to about 5 carbon atoms per molecule, elastomeric polyurethanes, elastomeric polyes-

ters, elastomeric polyethers, and mixtures thereof; and wherein

said alkenoic acid interpolymer is selected from ionomeric salts of interpolymers of ethylene and an alpha, beta-ethylenically unsaturated carboxylic acid having from 3 to about 10 carbon atoms.

2. The film of claim 1 further including a second sealable layer of a polymeric composition comprising an interpolymer of ethylene and alkenoic acid with said first layer disposed intermediate the sealable layers.

4,082,878

ABSORBENT TEXTILE SHEET MATERIAL

Hans Boe, Augsburg, Germany; Ralf Hoehn, Chelmsford, Mass.; Bohuslav Tecl, Weinheim, and Wilhelm Kirsch, Birkenau, both of Germany, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Germany

Continuation-in-part of Ser. No. 712,979, Aug. 9, 1976, abandoned. This application Oct. 26, 1976, Ser. No. 735,713

Claims priority, application Germany, Aug. 16, 1975, 2536440

Int. Cl.[2] B32B *3/30*

U.S. Cl. 428—195 **7 Claims**

1. An absorbent textile sheet material suitable for use as a cleaning cloth, skid-resistant underlayment or the like, comprising a consolidated nonwoven fabric coated on from about 30% to about 70% of both surfaces with a coagulated foamed dispersion comprising rubber and present as a three-dimensionally superelevated printed pattern providing a squeegee-like action when wiped over a wet surface.

4,082,879

STABILIZED TRANSPARENT RECEPTOR SHEET

Terrence M. Conder, Stillwater, and Kevin P. O'Leary, Arden Hills, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

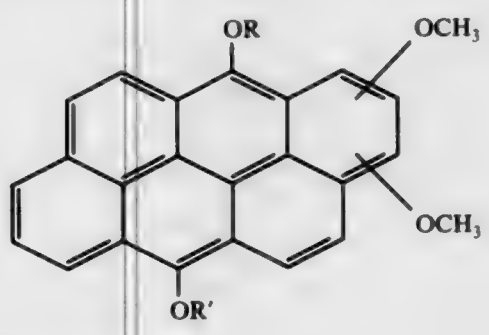
Continuation-in-part of Ser. No. 601,717, Aug. 4, 1975, abandoned. This application Jul. 6, 1976, Ser. No. 702,849

Int. Cl.[2] B32B *27/08, 27/36*

U.S. Cl. 428—219 **10 Claims**

1. In an imageable receptor sheet comprising a transparent backing having a coating thereover including a film-forming binder, reducible metal soap and an organic reducing agent, the improvement comprising including in said coating from about 0.00007 to 0.005 parts by weight per part of reducible metal soap of a polycyclic aromatic dye compound for the purpose of stabilizing the imaged sheet against background darkening upon prolonged exposure to heat and light, said polycyclic aromatic dye compound exhibiting a development characteristic of at least 150 seconds.

3. The improvement in accordance with claim 1, wherein said dye compound is of the formula



where R and R' are lower alkyl.

4,082,880

PAPER-LIKE THERMOPLASTIC FILM

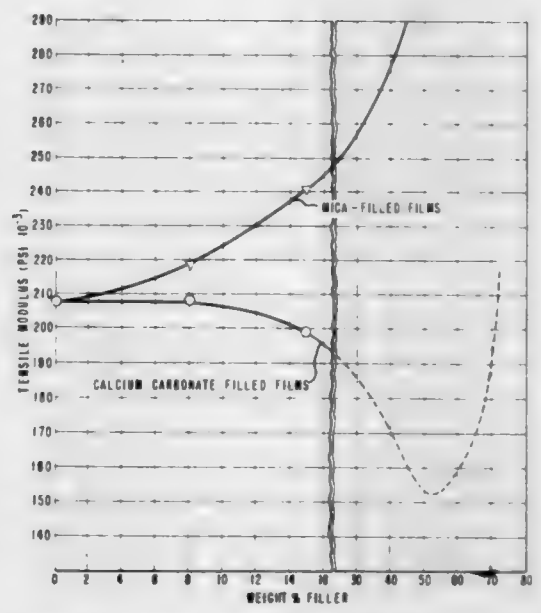
Vaclav George Zboril, Kingston, Canada, assignor to du Pont of Canada Limited, Montreal, Canada

Continuation of Ser. No. 642,054, Dec. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 499,215, Aug. 21, 1974, abandoned. This application May 23, 1977, Ser. No. 799,434

Claims priority, application Canada, Nov. 22, 1973, 186508

Int. Cl.[2] B05D *3/00, 7/00*

U.S. Cl. 428—220 **18 Claims**



1. A paper-like, voidless, thermoplastic film having a thickness of from 0.3 mil to 10 mil, said film having been made by a process consisting essentially of the steps of extruding a mixture of

a. 70–98% by weight of a polyethylene having a maximum melt flow index of 5 decigrams per minute, and a density in the range of 0.945 to 0.970 grams per cubic centimeter, and

b. 2–30% by weight of inorganic lamellar filler particles, the largest dimension of said particles being less than 150 microns and said particles having a minimum particle diameter to particle thickness ratio of about 5:1,

through a circular die, in the form of a seamless tubing, continuously withdrawing the tubing from the point of extrusion, expanding and simultaneously cooling the tubing while in the plastic formative state to a blow up ratio in the range of from 1.2:1 to 10.1.

4,082,881

TOPICAL AND OTHER TYPE PHARMACEUTICAL FORMULATIONS CONTAINING ISOSORBIDE CARRIER

James Ling Chen, East Brunswick, and Jean M. Battaglia, North Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

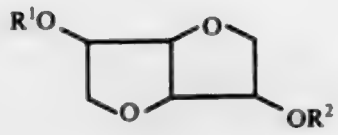
Filed Dec. 23, 1976, Ser. No. 753,969

Int. Cl.[2] A61K *31/58*

U.S. Cl. 424—241 **15 Claims**

1. A pharmaceutical composition comprising a pharmaceutical which is a steroid selected from the group consisting of 21-chloro-9α-fluoro-Δ^4-pregnene-11β,16α,17α-triol-3,20-dione and its 16,17-acetonide; 21-chloro-9-fluoro-2',3'-dihydro-11α-hydroxy-5'-phenylpregna-1,4-dieno[16α, 17-b] [1,4]-dioxin-3,20-dione:acetone solvate and dichloromethane solvate (1:1); 9α-fluoro-11β,16α,17,21-tetrahydroxy-pregna-1,4-diene-3,20-dione 16,17-acetonide, 21-(acetyloxy)-9-fluoro-1',2',3',4'-tetrahydro-11β-hydroxypregna-1,4-dieno[16α,17-b]naphthalene-3,20-dione, progesterone, and Δ'-testololactone or a member selected from the group consisting of econazole or salts thereof, nystatin, neomycin, miconazole, gramicidin, halcinonide, triamcinolone acetonide, griseofulvin or mixtures

thereof, and an isosorbide vehicle in which said pharmaceutical is at least partially soluble said isosorbide having the formula



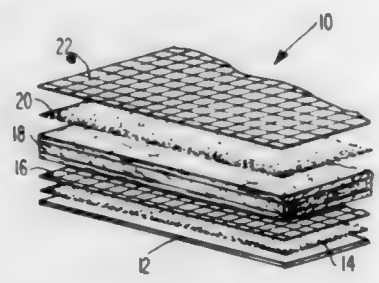
wherein R^1 and R^2 are the same or different and are selected from the group consisting of hydrogen or lower alkyl containing 1 to 5 carbons, at least one of R^1 and R^2 being lower alkyl.

4,082,882

FIBERGLASS REINFORCED PLYWOOD STRUCTURAL SANDWICH WITH ACRYLIC FACING ON ONE OR BOTH SIDES THEREOF

Hyman Weinstein, Cherry Hill, N.J., and Kurt Adler, Erdenheim, Pa., assignors to Delta Truck Body Company, Inc., Montgomeryville, Pa.

Filed Aug. 13, 1975, Ser. No. 604,433
Int. Cl.² B32B *7/00*
U.S. Cl. 428—246 **6 Claims**



1. A sandwich for use as a structural wall of a truck, trailer, van or intermodal container comprised of a consolidated unit including a layer in the form of a sheet of an alkyl methacrylate polymer having all acrylic multiple stage modifiers, the polymer being sequentially produced and characterized by a non-elastomeric hard first stage, an intermediate elastomeric stage and final relatively hard stage, a polyester resin bonded to said acrylic sheet, a ply of fiberglass in the form of a waffle weave of woven roving embedded in and covered by said resin and plywood bonded to said resin on the side of said fiberglass opposite said layer of acrylic composition.

4,082,883

HOT MELT SIZE, YARN SIZED THEREWITH, AND PACKAGES AND FABRICS OF SIZED YARN

Robert C. Malpass, High Point; Walter F. Illman, Greensboro, and Delano M. Conklin, Burlington, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 286,946, Sep. 7, 1972, abandoned. This application Mar. 16, 1977, Ser. No. 778,080
Int. Cl.² C08K *5/05, 5/10, 5/13;* C08L *67/02*
U.S. Cl. 428—253 **24 Claims**

1. A quick-setting non-aqueous water-extractable textile melt size composition comprising an intimate admixture of a water-soluble film-forming meltable thermoplastic polymer and a melt-miscible, solid modifier selected from the class consisting of aliphatic and aromatic carboxylic acids, partial esters thereof, non-polymeric polyhydric alcohols, phenolic acids, and polyhydric phenols, wherein the proportion of polymer to modifier is about 90:10 to about 50:50 on a weight basis, said size capable of being applied as a melt to textile yarns, with quick setting when exposed to ambient conditions, and capable of being removed from the yarns by aqueous or alkali extraction.

4,082,884

METHOD OF REDUCING FOULING OF MARINE STRUCTURES AND COATED STRUCTURE THEREOF

Charles F. De Long, Washington, D.C., assignor to United States Trading International, Inc., Washington, D.C.

Filed Sep. 19, 1975, Ser. No. 614,927
Int. Cl.² B05D *3/02, 3/04;* B32B *7/00*
U.S. Cl. 428—262 **15 Claims**

1. A marine structure protected against fouling by marine organisms consisting of a watercraft or stationary marine structure coated below the water line with a hard-surface leaching-type anti-fouling paint and overcoated with an anti-fouling composition consisting essentially of an aqueous solution or dispersion of a carboxylated hydrophilic acrylic polymer, a cross-linking agent for the carboxylated hydrophilic acrylic polymer, polyethylenimine or a hydrophilic polyethylenimine derivative and an effective amount of an ultraviolet-absorbing agent.

8. A method of reducing the fouling tendency of watercraft and stationary underwater structures consisting of applying below the water line of the watercraft or underwater structure precoated with hard-surface leaching-type anti-fouling paint an anti-fouling composition consisting essentially of an aqueous solution or dispersion of a carboxylated hydrophilic acrylic polymer, a cross-linking agent for the carboxylated hydrophilic acrylic polymer, polyethylenimine or a hydrophilic polyethylenimine derivative and an effective amount of an ultraviolet-absorbing agent.

4,082,885

FIRE RESISTANT ASPHALT ROOFING SHINGLES

Sheikh A. Rashid, Chicago; Hugh S. Bray, Mount Prospect, and Edward J. Bourini, Arlington Heights, all of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Continuation of Ser. No. 537,286, Dec. 30, 1974, abandoned. This application Jul. 1, 1976, Ser. No. 701,841
Int. Cl.² E04D *1/00*
U.S. Cl. 428—281 **6 Claims**

3. A fire resistant and weathering resistnat shingle or surface covering material ecologically desirable in its utilization of disposable glass, said shingle comprising a felt base sheet saturated with a bitumen and coated on at least one side with a filled asphalt coating, said asphalt coating prior to its filling having a penetration of from 5 to 40 mm. at 77° F. and a softening point of from 180° F. to 250° F., said filled asphalt having a combination of granular glass and non-glass granular mineral filler therein in an amount of from 10 to 55% by weight, based on the weight of the asphalt, said granular glass and said non-glass granular mineral filler each having a particle size distribution of

Sieve Analysis (U.S. Std. Screen) Cumulative	Wt. % Range
60 mesh	.2 to 20
on 80 mesh	2 to 29
on 100 mesh	4 to 35
on 140 mesh	14 to 46
on 200 mesh	34 to 61
on 325 mesh	70 to 90
through 325 mesh	remainder,

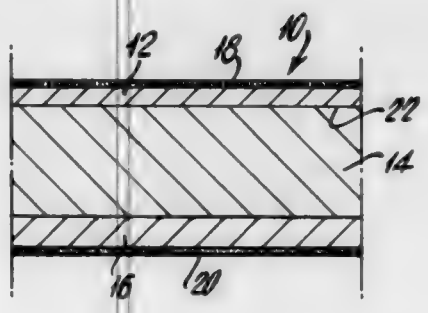
said granular glass comprising a major portion by weight of the combination of granular glass and non-glass granular mineral filler, and said filled asphalt coating comprising from about 25% to about 45% by weight of the finished shingle.

4,082,886

LIQUID ABSORBENT FIBROUS MATERIAL AND METHOD OF MAKING THE SAME

George A. M. Butterworth, Western Springs, and Robert T. Elias, Downers Grove, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Aug. 15, 1977, Ser. No. 824,380
Int. Cl.[2] B32B *3/00*
U.S. Cl. 428—284 31 Claims



1. A high loft, low density, nonwoven fibrous material having good wet strength, softness, abrasion resistance, and liquid absorbency and retention which comprises a plurality of irregularly arranged, intersecting, overlapping, mechanically interengaged, loosely assembled fibers including both natural wood pulp fibers and synthetic wood pulp fibers, said two types of fibers being present in different proportions in various regions positioned parallel to the median plane of the material, said regions including a first facing region in which synthetic wood pulp fibers are present in an amount from about 6 percent to about 30 percent by weight of the fibers, a second absorbent reservoir region in which synthetic wood pulp fibers are present in a smaller proportion than the proportion of synthetic wood pulp fibers in said first region, and a third capillary distribution network region in which synthetic wood pulp fibers are present in a proportion greater than the proportion of synthetic wood pulp fibers in said second region but less than the proportion of synthetic wood pulp fibers in said first region, said first and third regions being located on opposite sides of said second region, the melting point of said synthetic wood pulp fibers being lower than the melting point of all other fibers in said fibrous material, segments of said synthetic wood pulp fibers being heat fused with other segments of synthetic wood pulp fibers and with segments of other fibers at a plurality of junctures throughout said fibrous material to form a self-supporting fibrous structure which does not require any additional binder.

4,082,887

COATING COMPOSITION FOR A FIBROUS NONWOVEN SHEET OF POLYOLEFIN

Don Mayo Coates, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 14, 1976, Ser. No. 686,509
Int. Cl.[2] C09D *3/00*
U.S. Cl. 428—289 12 Claims

1. A coating composition which when applied on a fibrous nonwoven sheet of polyolefin and dried provides a sheet having antistatic properties, high water barrier and antislip properties, said composition consisting essentially of

(a) an effective amount of a water-insoluble wax which is dispersable in water at a concentration of 10% by weight based on the total amount of wax and water, said wax requiring for dispersion in water only a nonionic surfactant or a mixture of two or more nonionic surfactants in an amount of at least 15% and not more than 100% by weight based on the amount of wax, said nonionic surfactant having a hydrophilic-lipophilic balance of from about 6–10, said wax providing said water barrier properties;

(b) an effective amount of an antistat having the formula $M_nR_{3-n}PO_4$ where M is selected from the group consisting of lithium, sodium, potassium and ammonium ions, R represents an alkyl group containing from 3 to 5 carbon atoms, and *n* is selected from the integers 1 and 2;

(c) a nonionic surfactant having a hydrophilic-lipophilic balance of from about 6–10, said surfactant being present in an amount of from about 15–100% by weight based on the amount of wax;

(d) a water-insoluble binder resin capable of wetting the polyolefin sheet, having a Tg of from about 20°–50° C and which, in the form of an aqueous dispersion, does not coagulate in the presence of the antistat; and

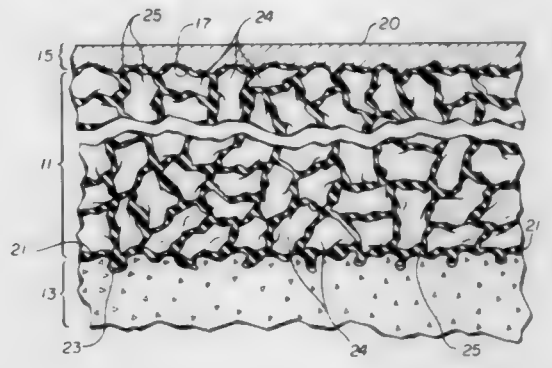
(e) water; solids being present in said composition in an amount of from about 10–40% by weight.

4,082,888

CUSHIONED PROTECTIVE SURFACE

Henry E. Portin, 1834 N. 183rd, Seattle, Wash. 98133

Filed Apr. 16, 1976, Ser. No. 677,744
Int. Cl.[2] B32B *5/16*
U.S. Cl. 428—327 8 Claims



1. A base surface coated with a composition comprising:

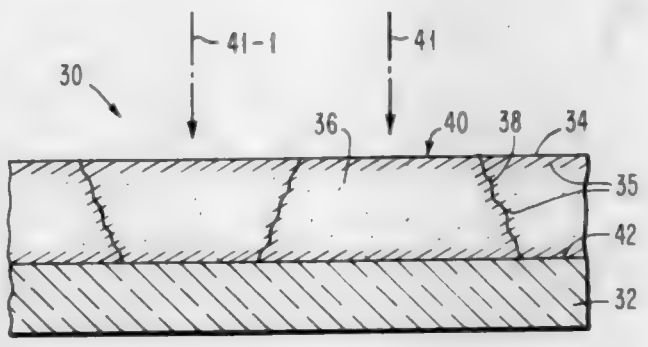
a catalyst-free mixture of (1) particles of resiliently deformable vulcanized rubber particles between 1/10 millimeter and 6 millimeters in size, wherein said particles comprise between 55 and 65% of said mixture by weight, and (2) an aqueous latex solution comprising elastic rubber solids dissolved in water, wherein said resilient rubber solids comprise between 55 and 65% of said latex solution by weight.

4,082,889

LUMINESCENT MATERIAL, LUMINESCENT THIN FILM THEREFROM, AND OPTICAL DISPLAY DEVICE THEREWITH

Thomas Herman DiStefano, Tarrytown, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1976, Ser. No. 652,962
Int. Cl.[2] B32B *5/16*
U.S. Cl. 428—328 32 Claims



1. A polycrystalline semiconductor material comprising individual grains each one of which contains an impurity or impurities arranged especially such that they dope the grain to provide majority carriers of a given density distribution,

said grain of semiconductor material containing dopant

producing charge carriers of substantially one conductivity type, and

said density of majority carriers being substantially higher in the immediate, finite region near the grain surface than in the region near the center of the grain, and

said grains being of average size smaller than the minority carrier diffusion length in bulk semiconductor material of the same type and doping density as the material in the center of the grain.

4,082,890

DECORATIVE SHEET MATERIAL

Arthur Burton, Denton, and David Robert Reed, Hyde, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 10, 1975, Ser. No. 630,686

Claims priority, application United Kingdom, Nov. 27, 1974, 51363/74

Int. Cl.² B32B *5/16*

U.S. Cl. 428—328 **5 Claims**

1. A decorative sheet material having a decorative surface and a working surface, the working surface being provided with a coating of a water-activatable adhesive, the improvement comprising providing on the adhesive coating a coating of a dry powdered deliquescent material, said powdered deliquescent material having an average particle size of less than 200 microns.

4,082,891

POLYCARBONATE COATED WITH PHOTOCURABLE POLYTHIOL AND DIFFERENT POLYENES

Herbert Leard Curry, Lenox, Mass., and Walter Lawrence Hall, Mount Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed May 4, 1976, Ser. No. 683,065

Int. Cl.² B32B *27/36*

U.S. Cl. 428—412 **7 Claims**

1. A coated polycarbonate article having a coating thereon containing:

(a) a polythiol represented by the general formula:

$$R_1\text{—}\left(\overset{O}{\overset{\|}{C}}\text{—}R_2SH\right)_a$$

wherein R_1 and R_2 are organic moieties containing no reactive carbon-to-carbon unsaturation and a is 2 to 4;

(b) a polyene represented by the general formula:

$$R_3\text{—}\left(\overset{O}{\overset{\|}{C}}OR_4\text{—}CH{=}CH_2\right)_b$$

wherein R_3 and R_4 are organic moieties containing no reactive carbon-to-carbon unsaturation and b is 2 or greater; and

(c) a polyene represented by the general formula:

$$HO\text{—}R_6\text{—}\left[\overset{O}{\overset{\|}{C}}NC\text{—}OR_7\text{—}CH{=}CH_2\right]_c$$

wherein R_6 and R_7 are organic moieties containing no reactive carbon-to-carbon unsaturation and c is 1 or greater, and wherein (a) and (b) plus (c) are used in stoichiometric amounts.

4,082,892

TEMPERATURE SENSITIVE GLASS ASSEMBLY HAVING AN AQUEOUS INTERLAYER OF AN OXAZOLINE SOLUTION

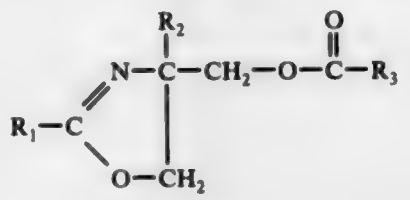
John Adams Frump, Terre Haute, Ind., assignor to IMC Chemical Group, Inc., Terre Haute, Ind.

Filed Oct. 12, 1976, Ser. No. 731,079

Int. Cl.² B32B *17/06*

U.S. Cl. 428—332 **10 Claims**

1. A temperature responsive combination for transmitting or reflecting light comprising a double-paned glass assembly and lying between said panes a temperature sensitive aqueous solution of from 10 to 50 percent by weight of a compound or mixture of compounds having the general formula



wherein

R_1 is a lower alkyl of from 1 to 3 carbon atoms, R_2 is selected from the group consisting of hydrogen, methyl, ethyl and hydroxymethyl, and R_3 is selected from the group consisting of methyl, ethyl, propyl and methylethenyl.

4,082,893

POROUS POLYTETRAFLUOROETHYLENE TUBINGS AND PROCESS OF PRODUCING THEM

Koichi Okita, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 17, 1976, Ser. No. 751,876

Claims priority, application Japan, Dec. 24, 1975, 50-155226; Apr. 29, 1976, 51-49671

Int. Cl.² D02G *3/00*

U.S. Cl. 428—376 **10 Claims**



1. A porous polytetrafluoroethylene tubing having a microporous structure comprising fibers of and nodes of the polytetrafluoroethylene connected with each other and wherein the microporous structure differs between the inner surface portion of said tubing and the outer surface portion of said tubing.

4,082,894

POLYCARBONATE RESIN SHAPED ARTICLES HAVING IMPROVED ABRASION RESISTANCE

Motoaki Yoshida, Takarazuka, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Mar. 26, 1976, Ser. No. 670,867

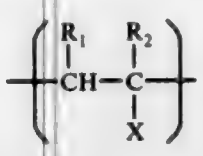
Claims priority, application Japan, Mar. 26, 1975, 50-37237

Int. Cl.² B05D *1/38, 7/02;* B32B *27/08*

U.S. Cl. 428—335 **14 Claims**

1. A polycarbonate resin shaped article having a cured coating of a melamine-type resin on its surface through a primer layer resulting from the solidification or curing, in the presence or absence of a crosslinking agent and a crosslinking catalyst, of a primer comprising

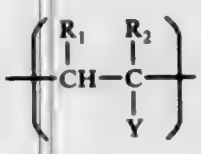
(A) a polymer containing at least 5 mole% of a recurring structural unit of the formula



(I)

wherein R_1 and R_2, independently from each other, represent a hydrogen atom or a lower alkyl or carboxyl group, and X represents a side chain containing a carboxyl or carbamoyl group, or

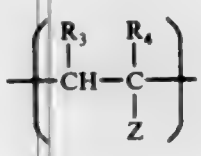
(B) a polymer containing at least 2.5 mole% each of a recurring structural unit of the formula



(II)

wherein R_1 and R_2 are the same as defined above and Y represents a hydroxyl-containing side chain,

and a recurring structural unit of the formula



(III)

wherein R_3 and R_4, independently from each other, represent a hydrogen atom or a lower alkyl or carboxyl group, and Z represents a side chain containing a carboxyl group, an amino group, a substituted amino group, an epoxy group or a tetrahydrofuryl group.

4,082,895

LAYERED COMPOSITE OF OVERPOLYMER RUBBERS AS TOUGHENERS AND THERMOSET AND THERMOPLASTIC MOLDING COMPOSITIONS

Richard Harold Backderf, Richfield, and Clifford Dale Guiley, Jr., Medina, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 628,994, Nov. 5, 1975, Pat. No. 4,026,970. This application Dec. 27, 1976, Ser. No. 754,776

Int. Cl.² B32B *27/36, 27/38, 27/08*

U.S. Cl. 428—412 **11 Claims**

1. A composition comprising (A) a thermoplastic or thermoset resin molding compound and (B) from about 0.5 part to about 15 parts by weight based on 100 parts by weight of the resin of an overpolymer comprised of (1) a hard graft-linked core having a Tg value of over about 20° C. and comprised of interpolymerized units of from about 50 percent to about 80 percent by weight of acrylonitrile, from about 19 percent to about 40 percent by weight of a copolymerizable vinylidene monomer, and from about 0.1 percent to about 10 percent by weight of a graft-linking monomer, (2) a cross-linked rubbery shell having a Tg value of below about 0° C. containing from about 0.1 percent to about 10 percent by weight based on the total weight of the shell of a crosslinking monomer, and (3) a hard overcoat having a Tg value of over about 20° C.; said core, shell, and overcoat present in a weight ratio of from about 1:0.7 to 5.0:0.4 to 4.0 based on the core.

4,082,896

ABRASION RESISTANT COATINGS

Arthur A. Wegwerth, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 561,705, Mar. 25, 1975, abandoned. This application Mar. 10, 1976, Ser. No. 665,412

Int. Cl.² B32B *27/38;* **C08L** *1/14, 1/28*

U.S. Cl. 428—413 **12 Claims**

1. A cured, thermoset composition comprising the product of an epoxy-terminated silane cured in the presence of from 0.05 to 5% by weight of a polymer from the group consisting of polyvinyl butyral, polyvinyl formal, polyvinyl pyrrolidone, ethylcellulose, cellulose acetate propionate, cellulose acetate butyrate, and polyvinylchloride, said composition comprising at least 15% by weight of a cured epoxy-terminated silane and exhibiting no more than 30% haze according to ASTM D-968-51.

2. A cured, thermoset composition bonded to a substrate, said composition comprising the product of an epoxy-terminated silane cured in the presence of from 0.05 to 5% by weight of a polymer from the group consisting of polyvinyl butyral, polyvinyl formal, polyvinyl pyrrolidone, ethylcellulose, cellulose acetate propionate, cellulose acetate butyrate, and polyvinylchloride wherein said composition was bonded to said substrate during cure of said composition, said composition comprising at least 15% by weight of a cured epoxy-terminated silane and exhibiting no more than 30% haze according to ASTM D-968-51.

4,082,897

GLASS LAMINATION UTILIZING CYCLIC PHOSPHONATES

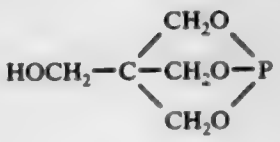
Ingenuin Hechenbleikner, West Cornwall, Conn., assignor to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 694,580, Jun. 10, 1976, which is a division of Ser. No. 565,699, Apr. 7, 1975, Pat. No. 3,978,166. This application Jun. 21, 1977, Ser. No. 808,632

Int. Cl.² B32B *17/06*

U.S. Cl. 428—426 **8 Claims**

1. A process of preparing a cross-linked polymeric phosphonate and laminating glass therewith consisting essentially of heating at 160 to 250° C pentaerythritol phosphite monomer of the formula



without another alcohol until it self-polymerizes to form said phosphonate and laminating two glass surfaces together with said polymer.

4,082,898

ELECTROLESS DEPOSITION OF ELECTRICALLY NONCONDUCTIVE COPPER-BORON COATINGS ON NONMETALLIC SUBSTRATES

Richard G. Miller, Pittsburgh, and Roy L. Cavitt, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 23, 1975, Ser. No. 589,108

Int. Cl.² B32B *9/00, 17/06*

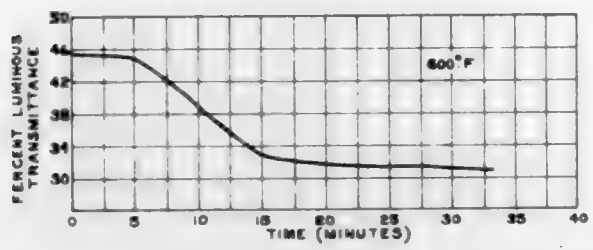
U.S. Cl. 428—427 **18 Claims**

1. A method of depositing an electrically nonconductive copper boron film onto a non-metallic substrate comprising the steps of:

a. sensitizing a surface of the substrate, and

b. contacting the sensitized surface of the substrate with an alkaline aqueous solution comprising a copper salt and an alkali metal borohydride at a pH of at least about 12 in the

presence of a complexing agent for copper in sufficient amount to deposit a copper boron film in about 30 seconds



to about 3 minutes at a temperature between about 70° F. and 120° F. (about 20° C. to 50° C.).

4,082,899

METHOD OF APPLYING CATALYSTS FOR ELECTROLESS DEPOSITION AND ARTICLE

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Filed Sep. 7, 1976, Ser. No. 720,588

Int. Cl.[2] C23C *3/02*

U.S. Cl. 428—457 **11 Claims**

1. A method for preparing a substrate prior to electroless (chemical) metal deposition comprising the step of treating said substrate with a catalytic composition comprising a sensitizer and a catalytic metal and wherein said sensitizer comprises aged tin(IV) and tin(II) and wherein said tin(IV) in said aged tin(IV) is in excess relative to tin(II).

4,082,900

CHEMICAL APPARATUS FREE FROM CREVICE CORROSION

Kazutoshi Shimogori, Kobe; Hiroshi Sato, Suita, and Haruo Tomari, Takasago, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Mar. 15, 1976, Ser. No. 666,562

Claims priority, application Japan, Mar. 14, 1975, 50-31708; Mar. 14, 1975, 50-31709

Int. Cl.[2] B32B *15/04*

U.S. Cl. 428—469 **5 Claims**

1. In a chemical apparatus subject to crevice corrosion, having inner surfaces at least partly constituted by titanium material, the improvement which comprises:

a coating firmly bonded to at least the crevice positions of said inner surfaces by means of an anti-corrosive metal of a mixed oxide layer at least 0.01 microns thick and comprising an oxide of the platinum group and an oxide of an anti-corrosive metal; wherein,

the platinum group metal is selected from the group consisting of platinum, iridium, osmium, palladium, rhodium and ruthenium,

the anti-corrosive metal is selected from the group consisting of titanium, tantalium, zironium, niobium, silicon and aluminum,

the molar ratio of said platinum group oxide to said anti-corrosion metal oxide is within the range of from 1:99 to 95:5, and

said mixed oxide layer covers at least 1/1000 of the surface layer of said titanium material.

4,082,901

THERMOGRAPHIC MATERIAL

Urbain Leopold Laridon, Wilrijk; Albert Lucien Poot, Kontich, and Jozef Frans Willems, Wilrijk, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

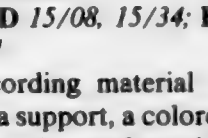
Division of Ser. No. 457,547, Apr. 3, 1974, Pat. No. 3,996,397. This application Dec. 5, 1975, Ser. No. 637,967

Claims priority, application United Kingdom, Apr. 4, 1973, 16166/73; Jun. 19, 1973, 29073/73

Int. Cl.[2] B32B *5/00;* **B41M** *5/18*

U.S. Cl. 428—480 **9 Claims**

1. A thermographic light insensitive recording material comprising a support and uniformly carried on said support a reducing compound according to one of the following general formulae I or II and a reducible noble metal salt that is generally non-light-sensitive in the temperature range of 50° to 200° C, said compounds being mutually interreactive in an oxidation-reduction reaction to at least one visible distinct reaction product when heated together at a temperature above 60° C:

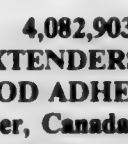


(I)

wherein:

R_1 represents hydrogen, an aliphatic group containing up to about four carbon atoms; and

R_2 represents an alkoxy group containing up to 18 carbon atoms, an aryloxy group, an amino group of the formula



in which R_3 and R_4 (same or different) represent hydrogen, an aliphatic group or an aromatic group, or R_3 and R_4 represent together the necessary atoms to close a 5- or 6-membered heterocyclic nitrogen containing nucleus; and

(II)

wherein:

R_5 is an aromatic group, said organic reducing compound being present in an effective amount to reduce said salt when said heat pattern has a temperature of at least about 60° C.

4,082,902

SPARK-RECORDING TYPE PRINTING METHOD AND SPARK-RECORDING MATERIAL FOR USE THEREOF

Akira Suzuki; Keiji Kubo; Suguru Kunitake, and Fumiaki Arai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Sep. 10, 1974, Ser. No. 504,709

Claims priority, application Japan, Sep. 18, 1973, 48-10525; Sep. 26, 1973, 48-107611; Sep. 26, 1973, 48-107612; Oct. 3, 1973, 48-110502; Oct. 3, 1973, 48-110503; Nov. 26, 1973, 48-131730; Dec. 3, 1973, 48-134260

Int. Cl.[2] G01D *15/08, 15/34;* **B41N** *1/00;* **B41C** *1/10*

U.S. Cl. 428—457 **14 Claims**

1. A spark-recording material for use in offset printing, which comprises a support, a colored layer based on oleophilic resin and colorant, a layer of metal deposited by vacuum evaporation, a protective layer based on either (a) hydrophilic polymer or (b) polymer and acid-soluble polyvalent metal compound, and a desensitized layer based on desensitizing substance.

4,082,903

TREE FOLIAGE EXTENDERS AND FILLERS FOR WOOD ADHESIVES

Suezone Chow, Vancouver, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Feb. 25, 1977, Ser. No. 771,992

Claims priority, application Canada, Feb. 27, 1976, 246732

Int. Cl.[2] C08L *1/02*

U.S. Cl. 428—514 **14 Claims**

1. An adhesive composition for bonding wood comprising (a) a wood adhesive, and

(b) finely divided tree foliage as extender or as extender-plus-filler.

4,082,904

CONTROL OF PRECURE IN COMPOSITION BOARD MANUFACTURE

Leopold F. Bornstein, Tucker, Ga., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Apr. 26, 1976, Ser. No. 680,598
Int. Cl.[2] B32B *21/02, 27/42;* C08L *61/20*
U.S. Cl. 428—528 20 Claims

5. A cured composition board having improved surface and strength characteristics, said board comprising comminuted cellulosic materials bonded into a unitary mass by a thermoset amine-aldehyde resin, said resin having added thereto, at least in the regions adjacent to the surface of said board, a water soluble thiosulfate salt selected from the group consisting of sodium thiosulfate, potassium thiosulfate, and ammonium thiosulfate in an amount from about 1 to about 5% by weight of the resin to prevent surface precure of said resin.

4,082,905

PRODUCTION OF IRON OXIDE PIGMENTS WITH IMPROVED RESISTANCE TO OXIDATION

Bernd Stephan, Bederkesa; Franz Hund, and Wilhelm Holznagel, both of Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 16, 1977, Ser. No. 797,154
Claims priority, application Germany, Jun. 4, 1976, 2625106
Int. Cl.[2] C09C *1/24*
U.S. Cl. 428—538 9 Claims

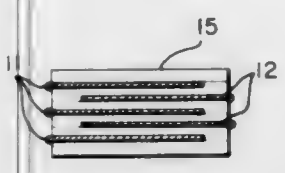
1. An Fe_3O_4 iron oxide black pigment having incorporated therein up to about 50 mole percent of γ-Fe_2O_3 plus $MeFe_2O_4$ (wherein Me is at least one of magnesium, manganese, cobalt, nickel, aluminum, chromium, titanium, copper, zinc and cadmium) having a specific surface according to BET of greater than about 12 m^2/g, up to about 10% by weight of a substantially insoluble inorganic compound as coating and a stability to oxidation with air under standardized conditions of greater than about 130° C.

4,082,906

LOW TEMPERATURE FIRED CERAMIC CAPACITORS

Rajnikant B. Amin, Valencia, Calif.; Harlan Urie Anderson, Rolla, Mo., and Charles E. Hodgkins, Lake View Terrace, Calif., assignors to San Fernando Electric Manufacturing Company, San Fernando, Calif.

Filed Feb. 14, 1977, Ser. No. 768,182
Int. Cl.[2] H01B *3/12;* H01G *1/01;* C04B *35/46*
U.S. Cl. 428—539 7 Claims



1. A multi layer ceramic capacitor comprising, in combination:

(a) a plurality of ceramic tape pieces;

(b) electrodes on the surfaces of the pieces with some of the pieces having electrodes terminating adjacent to their front edges and the remaining pieces having the electrodes terminating adjacent to their rear edges, the pieces with the electrodes terminating adjacent to their front edges being sandwiched between said remaining pieces to provide a stack;

(c) top and bottom ceramic pieces without any electrodes positioned on the top and bottom of said stack to provide a multi layer ceramic capacitor with buried electrodes, the ceramic composition of each of said ceramic tape pieces including, by weight:

(1) at least 50% barium titanate, and

(2) from 0.25% to 10% lithium fluoride, and the electrode composition of each of the buried electrodes including, by weight, at least 50% silver.

6. A process of making a multi-layer ceramic capacitor including the steps of:

(a) forming a ceramic tape composition of, by weight, at least 50% barium titanate and from 0.25% to 10% lithium fluoride;

(b) cutting the ceramic tape to provide a plurality of ceramic tape pieces;

(c) forming an electrode composition of silver and palladium in which there is provided at least 50% by weight of silver;

(d) silkscreening said electrode composition on the surfaces of the tape pieces with some of the pieces having the electrodes terminating adjacent to their front edges and the remaining pieces having the electrodes terminating adjacent to their rear edges;

(e) sandwiching the pieces with the electrodes terminating adjacent to their front edges between the remaining pieces to provide a stack;

(f) affixing ceramic pieces without any electrodes on the top and bottom of said stack to provide a multi-layer ceramic capacitor with buried electrodes; and

(g) sintering the composition at a temperature between 750° C and 1250° C.

4,082,907

THIN MOLYBDENUM COATINGS ON ALUMINUM FOR SOLAR ENERGY ABSORPTION

Daniel Joseph Schardein, and Ruth Diane Lloyd, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 615,245, Sep. 22, 1975, abandoned. This application Jun. 3, 1977, Ser. No. 803,292
Int. Cl.[2] B32B *15/20*
U.S. Cl. 428—640 9 Claims

1. A thin, adherent coating on a panel made from aluminum and alloys thereof, comprising a near-monatomic layer of molybdenum and oxides thereof that is highly absorptive to solar energy and has a low emissivity for thermal energy, said panel being a structural element of a solar energy collector and said coating having an absorptivity of about 0.91 in sunlight and an emissivity of about 0.16 at 300° F.

4,082,908

GOLD PLATING PROCESS AND PRODUCT PRODUCED THEREBY

John J. Vanaglash, Jr., Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.

Filed May 5, 1976, Ser. No. 683,337
Int. Cl.[2] B32B *15/00;* C22C *19/03*
U.S. Cl. 428—672 11 Claims

1. A metal plating process independent of application of electrical power to the workpiece comprising the steps of:

a. providing a workpiece having a nickel based finish, said finish being at least 85% by weight nickel; and

b. treating said workpiece with a bath comprising a plating source component and a buffering component, said plating source component comprising one or more gold containing compounds wherein said gold is capable of alloying with said nickel of said nickel based finish, said treating being conducted for a time and at a temperature sufficient to provide a layer on said workpiece, said layer comprising an alloy of nickel and gold, said layer having a molecular ratio of nickel to gold of from 1:1 to 6:1, and wherein the source of said nickel in said layer is the nickel from said nickel based finish.

4,082,909

RUBBER COMPOSITION CONTAINING METAL SALT OF HYDROXY BENZOIC ACID

Yuichi Sugiyama; Hiroyuki Kaido, and Tsuneo Koyama, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Company, Limited, Tokyo, Japan

Filed Mar. 26, 1976, Ser. No. 670,758
Claims priority, application Japan, May 22, 1975, 50-60199
Int. Cl.[2] C08K *5/13*
U.S. Cl. 526—4 5 Claims

1. A vulcanized rubber product reinforced with metallic cords which comprises rubber composition comprising 0.5 - 20 wt. parts of a metal salt of hydroxybenzoic acid per 100 wt. parts of a rubber.

4,082,910

MULTI-STAGE ISOLATION OF HIGH PRESSURE POLYETHYLENE

Oskar Buechner, Dudenhofen; Gottfried Schlichthaerle, Neustadt, and Friedrich Urban, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 19, 1976, Ser. No. 687,873
Claims priority, application Germany, May 31, 1975, 2524204
Int. Cl.[2] C08F *6/26, 6/28*
U.S. Cl. 528—481 5 Claims

1. In a process for the manufacture of ethylene polymers by the continuous homopolymerization or copolymerization of ethylene in a polymerization zone at pressures of from 500 to 5,000 bars and at temperatures of from 50° to 450° C, followed by the isolation of the resulting polymer from the reaction mixture, the improvement which comprises: isolating the resulting ethylene polymer in a two-stage isolation zone at pressures in the first stage of the isolation zone of from 100 to 500 bars and pressures in the second stage of the isolation zone of from 1 to 10 bars and at from 100° to 400° C, wherein the mean product residence time in the isolation zone is varied during the continuous process within the range of from 0.5 to 60 minutes, long residence times within the range of from 0.5 to 60 minutes in the isolation zone being used to achieve a low molecular weight ethylene polymer and short residence times within the range of from 0.5 to 60 minutes being used to achieve a high molecular weight ethylene polymer.

4,082,911

PROCESS FOR THE PREPARATION OF NUCLEOSIDES

Helmut Vorbruggen, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Feb. 23, 1976, Ser. No. 660,675
Claims priority, application Germany, Feb. 24, 1975, 2508312
Int. Cl.[2] C07H *19/06, 19/16*
U.S. Cl. 536—23 11 Claims

1. In a process for preparing a nucleoside by catalytically condensing a silylated organic base convertible to a nucleoside with a 1-O-acyl, 1-O-alkyl or 1-halo derivative of a masked sugar convertible to a nucleoside to form a nucleoside of said base and said sugar, the improvement which comprises:

employing a catalyst for said condensation consisting essentially of a trialkylsilyl ester of an esterifiable mineral acid or of a strong sulfonic acid, each alkyl being of 1–6 carbon atoms and said acid having a $-H_o$ constant of at least 12.00, whereby a nucleoside of said base is formed containing principally the β-derivative of said sugar.

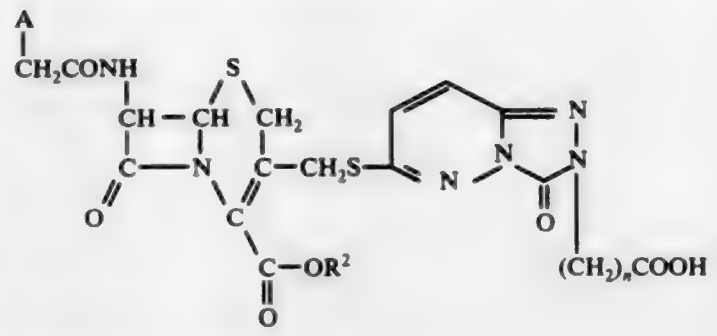
4,082,912

CERTAIN 7-ACYLAMIDO-3-(2-CARBOXYALKYL-2,3-DIHYDRO-S-TRIAZOLO[4,3-b]PYRIDAZIN-3-ON-6-YLMETHYL-3-CEPHEM-4-CARBOXYLIC ACIDS THEIR SALTS AND EASILY HYDROLYZED ESTERS

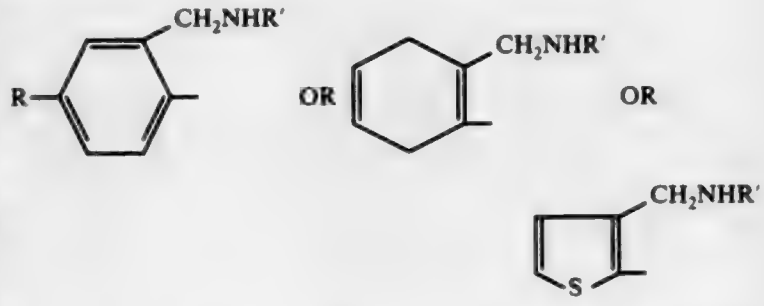
Takayuki Naito, Kawasaki; Jun Okumura, Yokohama; Hajime Kamachi, Ichikawa; Seiji Iimura, Tokyo; Hideaki Hoshi, Ichikawa, and Masahisa Oka, Yokohama, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 701,443, Jun. 30, 1976, abandoned. This application Apr. 5, 1977, Ser. No. 784,885
Int. Cl.[2] C07D *501/20;* A61K *31/545*
U.S. Cl. 544—26 36 Claims

1. A compound having the formula



wherein n is one or two and A represents



wherein R is hydrogen, hydroxy or methoxy; R′ is hydrogen or methyl; and R^2 is hydrogen, pivaloyloxymethyl, acetoxymethyl, methoxymethyl, acetonyl, phenacyl, p-nitrobenzyl, β,β,β-trichloroethyl, 3-phthalidyl or 5-indanyl.

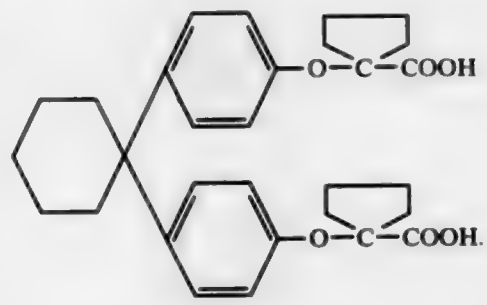
4,082,913

PHENOXYALICYCLIC CARBOXYLIC ACID DERIVATIVES

Yoshio Suzuki, Itami; Masayoshi Minai, Moriyama; Noritaka Hamma, Sakai; Eiichi Murayama, Takarazuka, and Shunji Aono, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 30, 1973, Ser. No. 365,277
Claims priority, application Japan, Jun. 1, 1972, 47-54849
Int. Cl.[2] C07C *69/76*
U.S. Cl. 560—102 1 Claim

1. A compound of the formula,

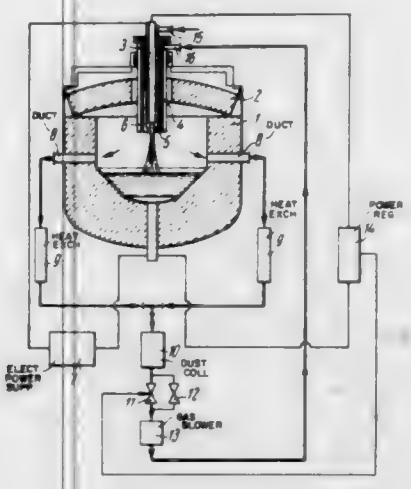


4,082,914

METHOD OF STABILIZING ARC VOLTAGE IN PLASMA ARC FURNACE AND APPARATUS FOR EFFECTING SAME

Nikolai Iosifovich Bortnichuk, ulitsa Ermolovoi, 17, kv. 23, Moscow; Valery Pavlovich Davydov, ulitsa Mayakovskogo, 18A, kv. 7, Elektrougli Moskovskoi oblasti; Mikhail Mironovich Krutyansky, Leninsky prospekt, 91, kv. 412, Moscow; Vladimir Sergeevich Malinovsky, prospekt Mira, 14, kv. 24, Khimki Moskovskoi oblasti, and Vladimir Alexeevich Khotin, Zelenodolskaya ulitsa, 14, korpus 2, kv. 65, Moscow, all of U.S.S.R.

Continuation-in-part of Ser. No. 468,546, May 9, 1974, abandoned. This application May 21, 1976, Ser. No. 688,941
Claims priority, application U.S.S.R., May 14, 1973, 1914193
Int. Cl.[2] H05H *1/24;* H01J *37/305*
U.S. Cl. 13—2 P 5 Claims



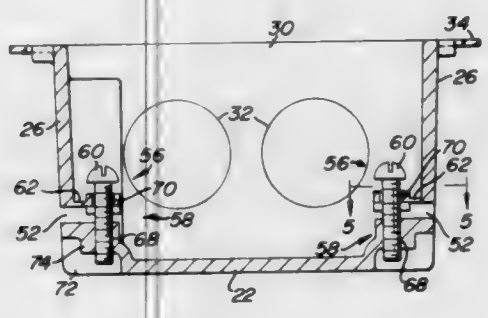
3. A plasma-arc apparatus comprising a furnace; at least one plasmatron within said furnace and including a housing, an axially extending electrode and a nozzle located within said housing; means for supplying a plasma-arc generating gas between said electrode and said nozzle; an annular passage between said nozzle and said housing; at least one duct connected to said furnace for the withdrawal of the furnace gas therefrom; a heat exchanger connected to said duct for cooling the withdrawn gas; conduit means connecting said heat exchanger with said annular passage; and means for withdrawing the furnace gas through said duct and said heat exchanger to and through said annular passage, to thereby cool a peripheral area of said plasmatron and enable the maintenance of an increased plasma-arc voltage.

4,082,915

ELECTRICAL JUNCTION BOX

Harry Silver, 1844 Meadowbrook Rd., Abington, Pa. 19001

Filed Dec. 21, 1976, Ser. No. 753,068
Int. Cl.[2] H02G *3/08*
U.S. Cl. 174—51 14 Claims



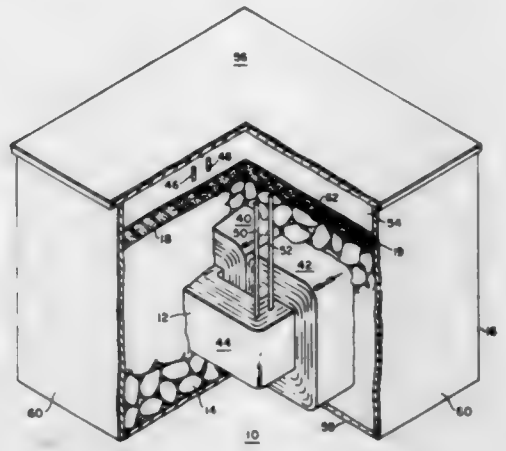
1. An electrical connection box comprising a hollow, integrally formed housing having at least one wall, said wall including an opening therein configured to receive an electrical conductor therethrough and into the interior of the box and tightenable clamping means disposed adjacent to said opening for clamping said conductor in place, said clamping means including a contact shoe integrally formed with said housing and being breakable therefrom at a break point when said conductor is to be clamped to enable the shoe to be brought into clamping engagement with said conductor upon the tightening of said clamping means.

4,082,916

ENCAPSULATED ELECTRICAL INDUCTIVE APPARATUS

Albin Jaklic, Jr., Sharon, and Donald S. Stephens, Sharpsville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1976, Ser. No. 751,782
Int. Cl.[2] H01F *27/22*
U.S. Cl. 174—52 PE 16 Claims



1. An encapsulated electrical inductive apparatus comprising:
an electrical inductive apparatus;
a case surrounding said electrical inductive apparatus;
an infusible, thermal conductive mixture filling the space between said case and said electrical inductive apparatus;
said thermal conductive mixture comprised of at least first and second inert, inorganic, particulate materials cohesively joined by a binder material; the average size of said particles of said first material being substantially larger than the average size of said particles of said second material;
said binder material coating said particles of said second material only, so as to cohesively join said particles of said second material to contiguous particles of said first and second materials only at their points of contact such that interstices are formed between the non-contacting portions of said particles of said first and second materials.

4,082,917

SPACER FOR AERIAL CABLES

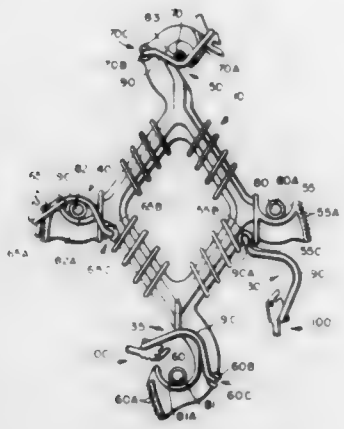
William Louis Hendrix, Amherst, N.H., assignor to Hendrix Wire & Cable Corporation, Milford, N.H.

Filed Jul. 27, 1977, Ser. No. 819,367
Int. Cl.[2] H02G *7/12;* H01B *17/16;* F16G *11/00*
U.S. Cl. 174—146 12 Claims

1. In a spacer for aerial cables comprising,
a body,
at least one generally concave seat on said body, said seat being adapted to receive a conductor cable,
first generally arcuate ratchet tooth means on said body located outwardly from said concave seat,
first generally arcuate retaining means adapted to engage a surface of a conductor cable positioned in said seat, and
first pivot means adjacent to one end of said retaining means for maintaining a pivotal connection between said one end of the retaining means and said body, said pivot means being located adjacent to the side of said seat which is opposite to said first ratchet tooth means,
the improvement comprising,
toggle means comprising second ratchet tooth means on

one surface thereof and third ratchet tooth means which is generally arcuate and extends from one end of said second ratchet tooth means, and

second pivot means adjacent to the other end of said retaining means for maintaining a pivotal connection between said other end of the retaining means and said toggle means,



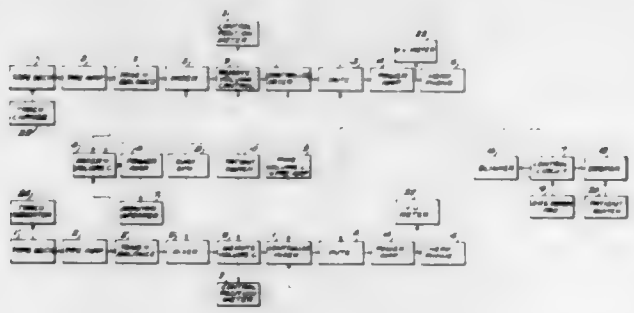
whereby upon rotation of said toggle means about said second pivot means in one direction, the teeth of said third ratchet tooth means first engage some of the teeth of said first ratchet tooth means and then the teeth of the second ratchet tooth means engage other teeth of said first ratchet tooth means and thereby said second ratchet tooth means is adapted to hold a conductor cable in said concave seat.

4,082,918

AUDIO ANALGESIC UNIT

Roland Wan-chan Chang, 17700 NW. 12 Ave., Miami, Fla. 33169, and Charles A. Graves, 251 E. Park Ave., Lake Wales, Fla. 33853

Filed Jan. 21, 1977, Ser. No. 760,838
Int. Cl.[2] A61B *19/00*; A61N *1/00*
U.S. Cl. 179—1 AA **2 Claims**



1. Apparatus for relaxing a patient while being treated comprising:

a housing unit with an internal electronic circuit means and means to connect the circuit means to a source to energize it,

first music signal means to generate a sound and including amplifier means,

a first speaker for the dentist, said first speaker being connected to the first music signal means and said amplifier means,

a set of earphones, each including speaker means to be worn by the patient and including means to connect to the first signal means and amplifier means,

control means for the first speaker for the dentist to control the volume of the first speaker,

hand-held control means for the patient to control the volume of the speaker means of the headset,

a first beeper means on the unit,

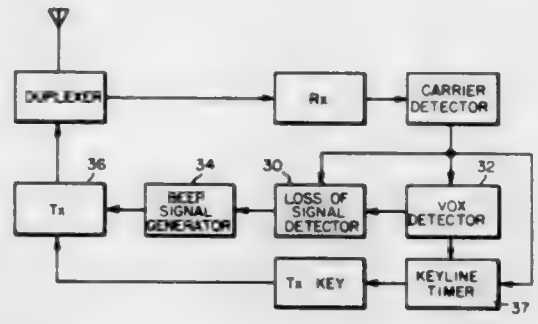
said apparatus also including switch means in series with the speaker means of said earphones to change the volume of music and signal to the earphones and to cause a signal from the beeper to indicate mode change.

4,082,919

INTERCONNECT CONTROL FOR AUTOMATICALLY CONNECTING A SIMPLEX OR HALF-DUPLEX RADIO NETWORK TO A STANDARD TELEPHONE SYSTEM

Willis E. Day, Pittsford, N.Y.; Glenn S. Danford, Oklahoma City, Okla., and Kenneth C. Johnson, Beaverton, Oreg., assignors to IEC Electronics Corporation, Newark, N.Y.

Filed Oct. 27, 1976, Ser. No. 736,357
Int. Cl.[2] H04Q *7/04*
U.S. Cl. 179—2 EA **4 Claims**



1. A control circuit for effecting a connection between a telephone system of the full duplex type and a radio signalling system of the kind in which the parties to a connection cannot each send and receive simultaneously comprising:

a. means for terminating a subscriber station telephone line and for selectively and alternately placing on hook and off hook signals on the line,

b. means for receiving signals from the receiver portion and applying signals to the transmitter portion of a selected transceiver in the radio system,

c. means for applying signals received from said receiver portion to the telephone line, and for applying signals received from the telephone line to said transmitter portion,

d. a beep signal generator connected to an input of said transmitter portion for broadcasting beep signals, and

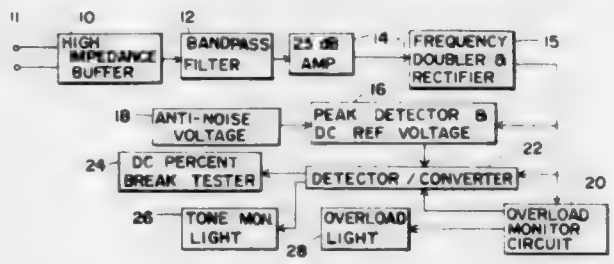
e. audio signal responsive means for activating said beep signal generator at the end of a predetermined interval following the loss of an audio signal from the telephone line.

4,082,920

TELEPHONE TESTING EQUIPMENT

Cordell V. Castleman, Bloomington, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Jul. 9, 1976, Ser. No. 703,909
Int. Cl.[2] H04M *11/06*
U.S. Cl. 179—2 DP **12 Claims**



1. An adapter for converting AC tone bursts to DC pulses of length generally equal to the length of the tone burst comprising:

input means adapted to receive the tone bursts;

reference means operable to generate a reference voltage of about half the magnitude of the average peak voltage of the tone bursts;

detecting means connected to said input means and said

reference means and operable to detect when the voltage of said tone bursts exceeds said reference voltage; and

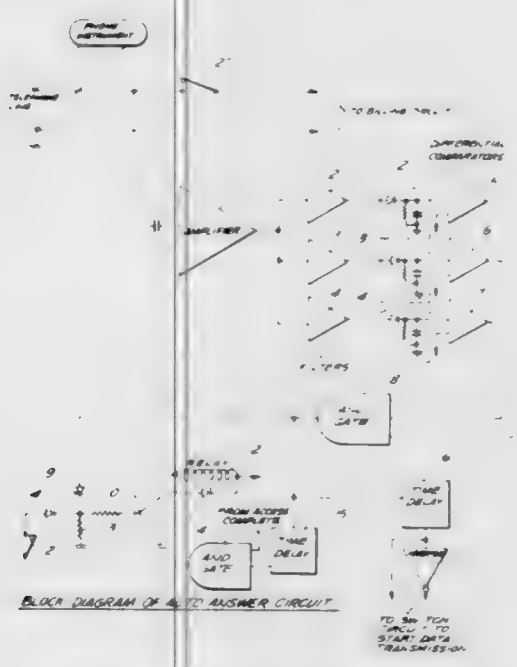
DC output switching means connected to said detecting means and operable in response to said detecting means to break said DC output substantially from the time when the tone burst first exceeds said reference voltage to the time when the tone burst last falls below said reference voltage.

4,082,921

AUTOMATIC SUBSCRIBER INTERROGATION SYSTEM

Marc Chomet, East Northport, N.Y., assignor to Teleglobe Pay-TV System, Inc., Rego Park, N.Y.

Filed Apr. 14, 1977, Ser. No. 787,363
Int. Cl.[2] H04M *11/00*; H04Q *9/12*
U.S. Cl. 179—2 A **7 Claims**



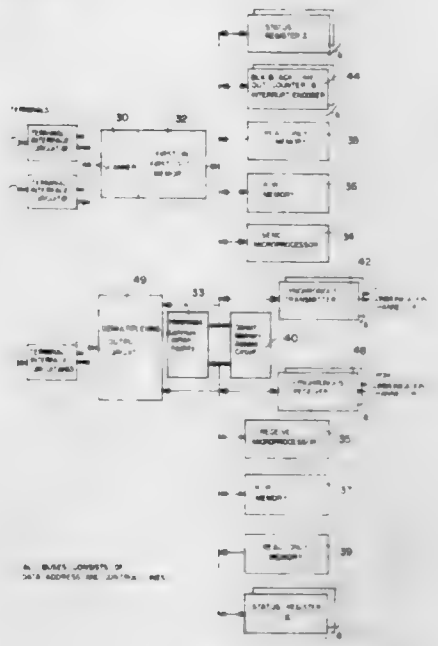
1. Interrogation system for automatically connecting and disconnecting subscriber equipment from a terminal of a communications network, comprising, in combination, central computer means at a sending location; transmitter means connected to said central computer means for sending a plurality of identification signals together identifying said equipment through said communications network to said terminal; at said terminal: connect signal furnishing means permanently connected to said terminal for furnishing a connect pulse only in response to reception of all of said identification signals; connection means having a first pair of contacts for connecting said subscriber equipment to said communications network when closed, a second pair of contacts, and control means for maintaining said first and second pair of contacts in a closed or open state when, respectively, energized or deenergized; means for connecting said control means to said connect signal furnishing means for energization by said connect pulse; time delay means connected to said connect signal furnishing means and said subscriber equipment, for furnishing a "data transmit" signal to said subscriber equipment a predetermined time interval following receipt of said connect signal, thereby initiating data transmission from said subscriber equipment to said central computer means; wherein said subscriber equipment is adapted to furnish an "access complete" signal when said data transmission has been completed; and further comprising holding circuit means connected to said control means through said second pair of contacts and connected to said subscriber equipment, for maintaining the energization of said control means following the end of said connect pulse and discontinuing said energization upon receipt of said "access complete" signal.

4,082,922

STATISTICAL MULTIPLEXING SYSTEM FOR COMPUTER COMMUNICATIONS

Wesley W. Chu, 16794 Charmel La., Pacific Palisades, Calif. 90272

Filed Feb. 22, 1977, Ser. No. 770,672
Int. Cl.[2] H04J *6/00*
U.S. Cl. 179—15 BA **16 Claims**



1. An asynchronous time division statistical multiplexing system for transmitting user messages from a plurality of terminals to at least one remote point over at least one common communication channel, said system including buffer means, scanning means for selectively introducing messages from the terminals to the buffer means, said buffer means including a first memory means which receives and stores the messages from the individual terminals and which appends an origin address to each of the messages to form corresponding addressed data characters, and in which said buffer means includes a second memory means which receives the addressed data characters from the first memory and forms the addressed data characters into data blocks; transmitter means coupled to the second memory means for transmitting the data blocks from the second memory means over the common communication channel to the remote point; a send microprocessor means connected to said first and second memory means and to said transmitter means for causing the second memory means to form the addressed data characters from a common terminal into sub-blocks, to cause each of the sub-blocks to be formed into a data block when the sub-block reaches a prescribed maximum size, and for controlling the flow of signals between said terminals, said buffer means and said transmitter means; receiver means coupled to the common communication channel for receiving data blocks from the remote point over the common communication channel for distribution to the terminals; a demultiplexing output circuit interposed between the receiver means and the terminals; and a receive microprocessor means connected to said receiver means and to said demultiplexing output circuit for controlling the flow of signals between said receiver means, said demultiplexing output circuit and said terminals.

4,082,923

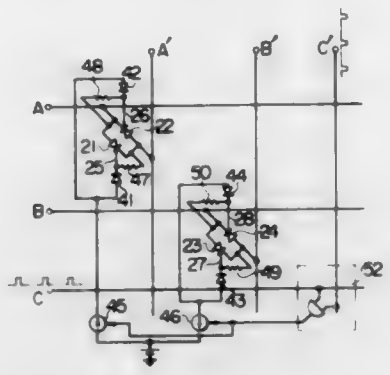
SEMICONDUCTOR SPEECH PATH SWITCH

Shinzi Okuhara, Fujisawa, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 22, 1974, Ser. No. 517,003
Claims priority, application Japan, Oct. 27, 1973, 48-120414
Int. Cl.[2] H04Q *3/52*
U.S. Cl. 179—18 GF **17 Claims**

1. A semiconductor speech path switch comprising semiconductor switches of gate control type having gate terminals,

each being connected between two lines serving as speech paths; constant-current regulated power supplies having high impedances and connected with said gate terminals of said semiconductor switches; and selecting circuits to render said constant-current regulated power supplies on and off, said selecting circuits controlling said constant-current regulated power supplies to intermittently render said constant-current regulated power supplies on and off at a repetition rate higher than the frequency of the current flowing through speech paths so that the speech paths at any desired cross-point may be closed.



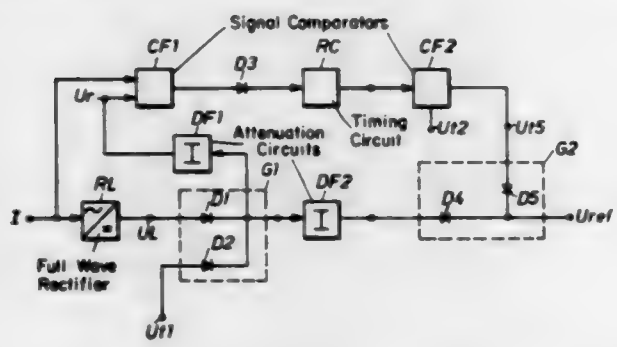
7. A semiconductor speech path switch comprising light-sensitive semiconductor switches, each being connected between two lines serving as speech paths; luminescent elements disposed near said switches; memory circuits to keep said luminescent elements in their on or off states; and selecting circuits to set and reset said memory circuits, wherein said luminescent elements are rendered on and off by setting and resetting said memory circuits so that the speech paths at any desired cross-point may be closed and opened.

4,082,924

REFERENCE SIGNAL CIRCUIT IN A RECEIVER FOR DETECTING TWO FREQUENCIES IN A MULTIFREQUENCY TONE SIGNAL

Bengt Roland Carlqvist, Stockholm, and Anders Gunnar Eriksson, Johanneshov, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 30, 1976, Ser. No. 755,826
Claims priority, application Sweden, Feb. 9, 1976, 7601387
Int. Cl.² H04M *1/50*
U.S. Cl. 179—84 VF **4 Claims**



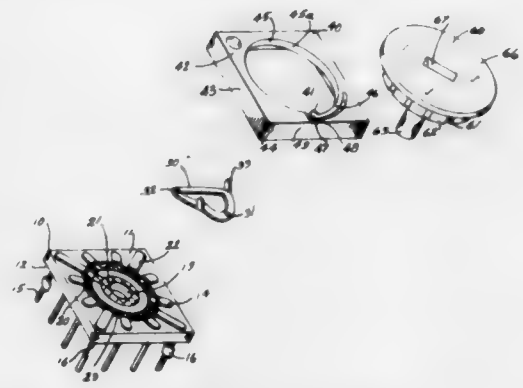
1. A reference signal circuit in a MFC-signalling receiver for the detection of two voice frequencies in a tone signal independent of short duration disturbing signals, the receiver including a number of parallel signal paths equal to the number of possible voice frequencies in the incoming tone signal, each signal path consisting of a bandpass filter, a rectifier device and an analogue signal comparator for comparison of the signal obtained from the rectifier device with a reference signal, said reference signal circuit comprising: input means for receiving the incoming tone signal; a first signal path, said first signal path including a full wave rectifier means having an input connected to said input means and an output, a first source of a first threshold voltage, a first gating means having a first input connected to the output of said full wave rectifier means, a second input connected to said first source and an output for producing a first intermediate reference signal in dependence on the amplitude of the incoming tone signal; a second signal path, said second signal path having a timing comparator means having a first input connected to said input means, a second input connected to the output of said first gating means and an output for generating a second intermediate reference signal in dependence on the duration of the incoming tone signal and the amplitude of the first intermediate reference signal, a second source of a second threshold voltage, an amplitude comparator means having a first input connected to said second source, a second input connected to the output of said timing comparator means and an output for emitting a signal which switches from a high level which is greater than the greatest level of the incoming signal to low level when the level of the signal from said timing comparator means exceeds the level of the second intermediate reference signal; and second gating means having a first input connected to the output of said amplitude comparator means, a second input connected to the output of said first gating means and an output for emitting an output reference signal having a level which is related to the level of the higher level signal received at its inputs.

4,082,925

ROTARY SWITCH

James N. Hufford, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Mar. 31, 1976, Ser. No. 672,468
Int. Cl.² H01H *19/54*; G05G *5/00*
U.S. Cl. 200—11 G **16 Claims**

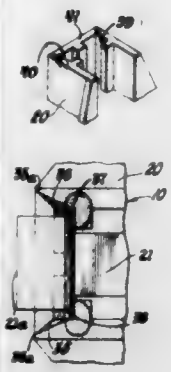


1. A rotary switch comprising a housing defining a cavity, the housing comprising a resilient side wall, an electrically nonconducting base having a first surface and a second surface and secured to the housing, a plurality of spaced contacts disposed on the first surface at predetermined angular positions, the base being provided with a plurality of terminal apertures communicating from the first surface to the second surface, a plurality of pins secured in the apertures, a plurality of conductors disposed on the first surface and electrically connecting the contacts to the pins for connection to an external circuit, a nonconducting glass film adheringly disposed on the first surface and interposed between the spaced contacts, the base provided with a centrally disposed aperture, a rotor provided with a shaft, the shaft being received in the centrally disposed aperture and rotatably secured to the base, a contactor constrained to rotate with the rotor and wipably engaging the contacts, a cam disposed on the rotor, the cam being provided with a plurality of spaced indentations about the periphery of the rotor, and an arm integral with the housing, one end of the arm being secured to the housing and the other end of the arm engageable with the rotor and receivable in the indentations, the other end of the arm being disposed between the cam and the resilient wall and movable between the rotor and the resilient side wall whereby upon rotation of the rotor the other end of the arm engaged by the cam tensilely strains the resilient portion of the side wall of the housing.

4,082,926
IGNITION DISTRIBUTOR ROTOR WITH CORONA GENERATING POINTS OF ELECTRICALLY CONDUCTIVE PAINT

Stephen W. Marks, and Robert E. Marsh, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 29, 1976, Ser. No. 709,786
Int. Cl.[2] H01H *19/10;* F02P *1/00*
U.S. Cl. 200—19 DR 4 Claims



1. In an ignition distributor rotor of the type adapted to be rotated about its axis within a distributor cap having a plurality of output terminals circumferentially disposed about the rotor axis of rotation and including

a body member of an electrical insulating material;

a segment member of an electrically conductive material supported by said body member and having an output tip portion that traces a circular path radially inwardly from said circumferentially disposed distributor cap output terminals by a predetermined arc gap while said segment member is rotated with said body member and

a pair of electrical conductor members of an electrically conductive paint in electrical contact with said body and segment members radially inwardly from said output tip portion of said segment member and supported by said body member in a plane axially displaced from and substantially parallel to said circular path traced by said output tip portion, the improvement comprising:

respective depressions in said body member that are filled by said electrically conductive paint, are shaped to form the said electrically conductive paint contained therein into respective sharp terminating points, are so positioned that the said electrically conductive paint contained therein extends outwardly toward said output tip portion and are so oriented that said sharp terminating points define a pair of circumferentially displaced sharp corona generating points in bracketing relationship with said output tip portion.

4,082,927
ELECTRICAL MAGNETIC SWITCH ADAPTABLE FOR USE IN DIGITAL WRISTWATCHES

John R. Beckwith, 480 Lassen St., Los Altos, Calif. 94022

Filed Sep. 22, 1976, Ser. No. 725,386
Int. Cl.[2] H01H *35/14;* G04B *19/30;* G04C *23/10*
U.S. Cl. 200—52 R 22 Claims

1. An electrical magnetic switch comprising:

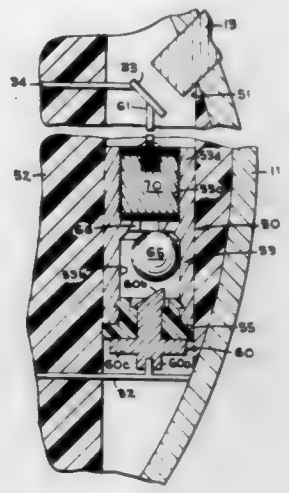
(a) a first fixed electrical contact formed with a first and second bore therein disposed in longitudinally spaced relation;

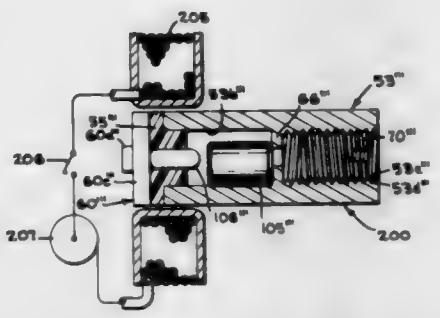
(b) a second fixed electrical contact disposed adjacent to one end of said bore of said first fixed contact with a portion thereof extending into said bore;

(c) insulating means interposed between said second fixed contact and said first fixed contact;

(d) a movable armature disposed in said first bore for movement between a first position spaced from said portion of said second fixed contact and a second position in contact with both said portion of said second fixed contact and said first fixed contact to establish an electrical connection therebetween via said armature;

(e) magnetic attraction means in said second bore of said first fixed contact for providing a magnetic force with said movable armature for normally retaining said movable armature in said first position, the movement of said movable armature against the urgency of the magnetic force into engagement with said portion of said second fixed





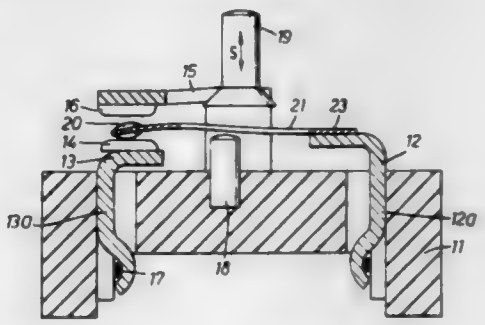
contact and said first fixed contact establishes an electrical connection therebetween via said armature; and

(f) means interengaging said first fixed contact and said magnetic attraction means for adjustably positioning said magnetic attraction means in said second bore relative to the path of travel of said movable armature for regulating the magnetic forces between said magnetic attraction means and said movable armature.

4,082,928
ELECTIC SNAP SWITCH, PARTICULARLY MINIATURE SWITCH

Jens Nicolai Andresen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Mar. 23, 1976, Ser. No. 669,670
Claims priority, application Germany, Mar. 25, 1975, 2513011
Int. Cl.[2] H01H *35/34*
U.S. Cl. 200—67 DA 3 Claims



1. An electric snap switch unit comprising housing means and abutment means attached thereto, a knife edge bearing formed on said abutment means, a pair of spaced apart fixed contacts attached to said abutment means, a three- dimensional

bowed snap action element formed as a generally G-shaped sheet metal strip of a spring material having a midportion extending between said fixed contacts, a movable contact attached to said strip midportion for alternate engagement with said fixed contacts, one end of said strip being fixedly attached to said abutment means and the other end of said strip being pivotally mounted in said knife edge bearing, said strip having a spring arm extending radially inwardly from said other end of said strip for creating a storage spring, and actuating means extending and being movable transversally of said strip for engaging said arm to flex said strip and thereby move said movable contact in the opposite direction.

4,082,929

ELECTRIC SWITCH ACTUATED IN DEPENDENCE ON PRESSURE, PARTICULARLY AN EVAPORATOR THERMOSTAT FOR REFRIGERATORS

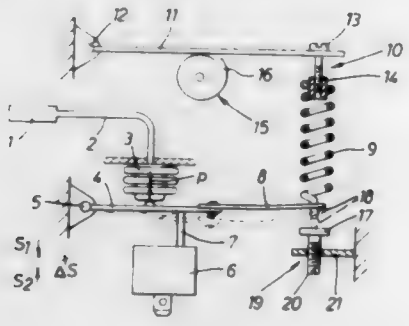
Niels Peter Thorsen, Sonderborg, Germany, assignor to Danfoss A/S, Nordborg, Denmark

Filed Aug. 17, 1976, Ser. No. 715,123

Claims priority, application Germany, Aug. 12, 1975, 2535874

Int. Cl.[2] H01C *35/32*

U.S. Cl. 200—83 SA **3 Claims**



1. An electric assembly of the type operated by a thermostatic bellows, comprising, a hinged swing arm, a microswitch having a displaceable operating element attached to said arm for movement therewith, said operating element having a first position for closing and a second position for opening the contacts of said microswitch, spring means including a main spring and a differential spring in series connected at one end to said swing arm and at the other end to adjustable anchor means, said bellows biasing said swing arm in a switch closing direction and said spring means biasing said swing arm in a switch opening direction, abutment means for arresting the movement of said differential spring at a set point when said operating element is at a corresponding point between its said closing and opening positions, first adjustment means on said abutment means for adjusting the arresting point of said differential spring to adjust said closing position of said microswitch, and second adjustment means for said anchor means to adjust the stress of said spring means to adjust said opening position of said microswitch.

4,082,930

LIQUID LEVEL SENSOR

Denny L. Peeples, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1976, Ser. No. 660,170

Int. Cl.[2] H01H *35/18*

U.S. Cl. 200—84 C **3 Claims**

1. A liquid level sensor for a liquid reservoir comprising

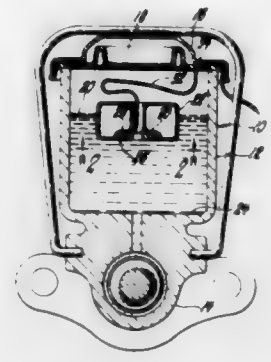
a first member having fixedly secured thereto a magnetically actuable reed switch,

a magnet secured to the first member at a fixed distance from the reed switch,

a second member comprising a body of magnetic material normally spaced from the first member so that the magnetic field of the magnet and its influence on the reed switch is altered according to the proximity of the first and second member,

means for mounting one of the said members at a position corresponding to a certain liquid level in the reservoir, and

means for moving the other of the members according to liquid level, so that the spacing between the members varies as the liquid level changes,



whereby the reed switch is in one state when the spacing between the members exceeds a certain amount and the reed switch is in another state when the spacing between the members is less than the certain amount so that the state of the reed switch depends on the liquid level.

4,082,931

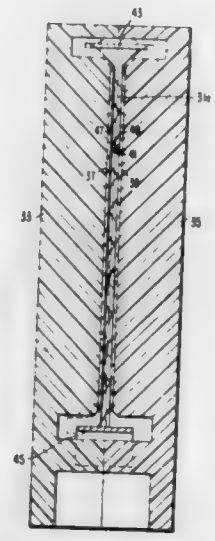
ARC CHUTE

Matthew N. Hayes, Amherst, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 12, 1976, Ser. No. 676,181

Int. Cl.[2] H01H *33/08*

U.S. Cl. 200—144 C **1 Claim**



1. An arc chute comprising a heat resistant electrically insulating material comprising a melamine-formaldehyde resin, at least a portion of the surface being covered with a coating of an arc resistant ceramic material selected from the group consisting of calcium oxide and chromic oxide.

4,082,932

HIGH-VOLTAGE ELECTRIC EQUIPMENT CELL

Paul Rozier; Pierre Niel, both of Chalon sur Saone, and Jean Ferlay, Lyon, all of France, assignors to Delle-Alsthom S.A., Villeurbanne, France

Filed Mar. 18, 1976, Ser. No. 668,257

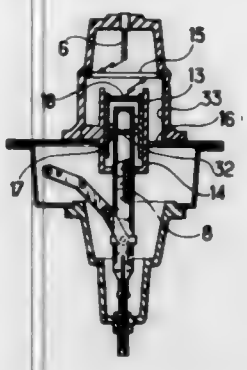
Claims priority, application France, Jan. 26, 1976, 76 02257; Mar. 25, 1975, 75 09323

Int. Cl.[2] H01H *33/88*

U.S. Cl. 200—148 R **8 Claims**

1. Electric equipment cell of the air insulated type, which comprises a switch in a dielectric fluid and crossing a wall to connect a first plug, which is live, situated on a first side of the wall to a second plug situated on the other side of the wall, the improvement wherein the switch comprises a first bell-shaped

insulator receiving the first plug and containing the contacts of the switch and a second bell-shaped insulator receiving the second plug, a metallic tank fixed on the wall and assembling said two bell-shaped insulators, the first bell-shaped insulator comprising an integral dielectric screen connected to ground



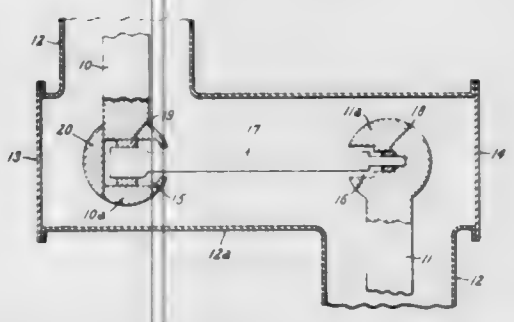
and situated between the contacts of the switch in the open position, so that in the open position of the switch, a person who is on the said other side of the wall cannot come into contact with a live part, by direct contact or by the effect of an overvoltage causing contingent spark-over in the switch.

4,082,933

STAB CONNECTOR FOR ENCLOSED ELECTRIC BUS APPARATUS

Roy Nakata, Pittsfield, Mass., and Arthur Leo Bohlinger, Newtown Square, Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Mar. 22, 1976, Ser. No. 669,794
Int. Cl.[2] H01H *1/38*
U.S. Cl. 200—163 **5 Claims**



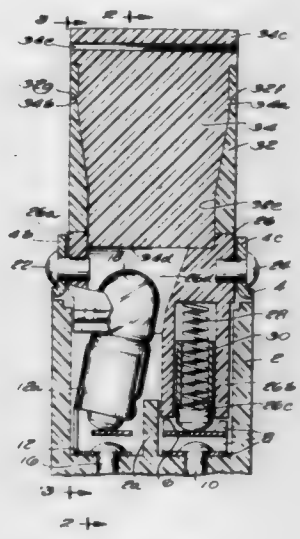
1. Enclosed electric bus apparatus comprising: a linear bus conductor having a substantially spherical terminal end provided with a through passage transverse to the axis of said linear bus conductor, fixed contact means within said passage, a second bus conductor laterally spaced from said linear bus conductor and having a contact socket in spaced apart axial alignment with one end of said transverse passage, an enclosing sheath for said bus conductors having an opening in spaced apart axial alignment with the other end of said transverse passage, a removable closure member for said sheath opening, a movable contact rod having two contact making terminal ends, one engageable with said contact socket and the other engageable with said contact means and terminating within said transverse passage when said one terminal end is in contact-making engagement with said contact socket, said rod being axially movable through said transverse passage and sheath opening to make and break electrical connection between said bus conductors, and a removable closure cap for said other end of said transverse passage forming a portion of said spherical terminal end of said linear bus conductor while said contact rod has one terminal end in contact-making engagement with said contact socket.

4,082,934

SWITCH WITH ILLUMINATED HANDLE TIP

Earl T. Piber, Oconomowoc, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Jun. 17, 1976, Ser. No. 697,232
Int. Cl.[2] H01H *9/16*
U.S. Cl. 200—315 **8 Claims**



1. An electric switch comprising:
a housing having an opening;
contact means mounted in said housing;
an actuator pivotally mounted to said housing at said opening and extending internally of said housing for actuating said contact means;
a stationary light source mounted in said housing and having a light emitting surface proximate the pivotal axis of said actuator at said opening;
an operating handle rigidly mounted to said actuator at said opening and extending externally of said housing, and having an elongated tunnel formed therethrough extending from an outer tip thereof longitudinally inwardly to communicate with said light source; and
an elongated rigid light-transmissive insert extending through, complementally configured to, and mounted in said tunnel to have an externally visible outer end at said outer tip and an inner end closely facing said light emitting surface and defining an arc of substantially constant radius thereabout during pivoting of said handle and said actuator, said inner end of said insert extending inwardly beyond the inner edge of said tunnel to direct otherwise divergent light rays into said tunnel, guiding and transmitting such rays therethrough, in addition to those light rays going straight through said tunnel, thereby providing increased intensity of illumination at said outer tip of said handle.

4,082,935

APPARATUS AND METHOD FOR MAKING WHEEL RIM BLANKS AND THE LIKE

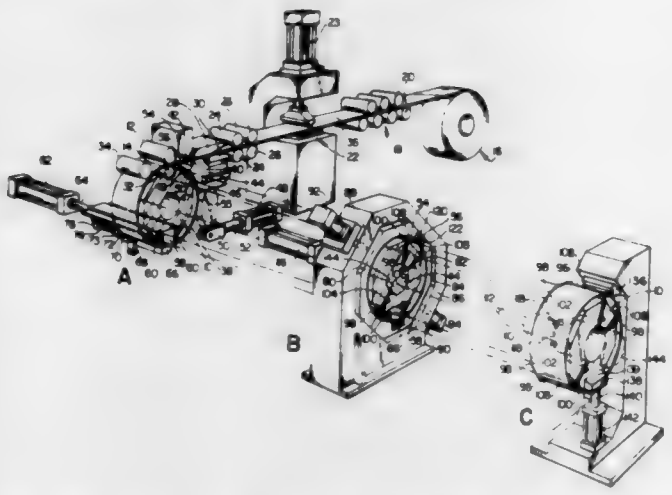
Bernard P. Lampietti, Goshen, and Erman V. Cavagnero, Torrington, both of Conn., assignors to Torin Corporation, Torrington, Conn.

Filed Jul. 19, 1976, Ser. No. 706,831
Int. Cl.[2] B21H *1/10*; B21K *1/38*; B23K *31/06, 13/02*
U.S. Cl. 219—9.5 **40 Claims**

32. Apparatus for making generally cylindrical wheel rim blanks and the like from lengths of linear stock, said apparatus comprising coiling, welding and machining stations arranged in spaced generally axially aligned relationship along a longitudinally extending horizontal path, an elongated mandrel with its axis arranged to extend horizontally and longitudinally along said path, stock feeding mechanism arranged successively to advance lengths of stock in a linear and transversely extending path of movement to said coiling station, at least one coiling tool at said coiling station operable to engage succes-

sively advanced lengths of stock whereby to cause the same to be coiled to a generally cylindrical configuration, transfer means engageable with coiled blanks at the coiling station and operable successively to advance the same along and about said mandrel to the welding station, at least two arcuate clamps at the welding station at least one of which is intermittently movable inwardly successively to engage blanks at the station, welding mechanism at said station operable to weld together the contiguous ends of successive blanks engaged by the clamps, said transfer means thereafter advancing the welded blanks in succession longitudinally along the mandrel to said machining station, at least one tool at said machining station for successively engaging and machining the blanks at their welded areas, said transfer means also advancing the machined blanks in succession longitudnally along the mandrel for discharge.

34. Apparatus for making generally cylindrical wheel rim blanks and the like from lengths of linear stock, said apparatus comprising coiling, welding and machining stations arranged in spaced generally axially aligned relationship along a longitudinally extending horizontal path, an elongated mandrel with its axis arranged to extend horizontally and longitudinally



along said path, stock feeding mechanism arranged successively to advance lengths of stock in a linear and transversely extending path of movement to said coiling station, at least one coiling tool at said coiling station operable to engage successively advanced lengths of stock whereby to cause the same to be coiled to generally cylindrical configuration, transfer means engageable with coiled blanks at the coiling station and operable successively to advance the same along and about said mandrel to the welding station, at least two arcuate clamps at the welding station at least one of which is intermittently movable inwardly successively to engage blanks at the station, high frequency current penetration welding mechanism at said station comprising a proximity conductor and an associated conductor means and power source operable to weld together the contiguous ends of successive blanks engaged by the clamps, said transfer means thereafter advancing the welded blanks in succession longitudinally along the mandrel to said machining station, at least one tool at said machining station for successively engaging and machining the blanks at their welded areas, said transfer means also advancing the machined blanks in succession longitudinally along the mandrel for discharge.

4,082,936

DEVICE AND METHOD FOR HEATING DIE

Sethuo Aoki, Noda, and Yoshiaki Sogo, Kawasaki, both of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jun. 22, 1976, Ser. No. 698,637
Claims priority, application Japan, Jun. 24, 1975, 50-77883
Int. Cl.[2] H05B *9/02*
U.S. Cl. 219—10.41 **8 Claims**

1. Apparatus for rapid and uniform pre-heating of a die used for hot extrusion of aluminum alloys, said die having a cylindrical shape with a flat surface and a radial surface, which has a radius which is greater than its thickness and having its extrusion axis along the longitudinal center of said cylinder, comprising:

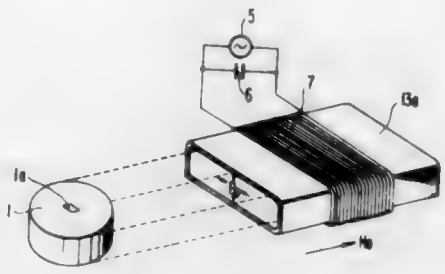
a hollow rectangular bobbin having a longitudinal axis, wherein the short side of said rectangular bobbin is less than the diameter of said die and the long side is greater than the diameter of said die;

an induction coil wound upon said bobbin around said longitudinal axis and upon the sides of said rectangular bobbin;

a source of power connected to said induction coil for producing a magnetic flux field which is parallel to the longitudinal axis of said bobbin;

whereby said die can only be placed in said bobbin with the flat surface of said die parallel to the long side of said bobbin; and

whereby said extrusion axis is perpendicular to the longitudinal axis of said coil and perpendicular to said flux field.



5. A method of uniform pre-heating of a die which is used for hot extrusion of aluminum alloys, said die having a cylindrical shape with a flat surface and a radial surface, which has a radius which is greater than its thickness and has an extrusion axis along the longitudinal center of said cylinder, comprising the steps of:

winding an induction heating coil around the longitudinal axis of a rectangular bobbin and upon the sides of said rectangular bobbin, wherein the short side of said rectangular bobbin is less than the diameter of said die and the long side is greater than the diameter of said die;

applying a source of A.C. power to said induction heating coil for producing a magnetic flux which is parallel to the longitudinal axis of said bobbin;

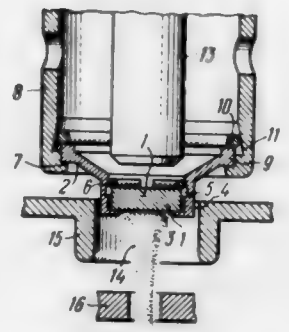
placing said die in said bobbin such that said die extrusion axis is perpendicular to the longitudinal axis of said bobbin and between the ends of said bobbin.

4,082,937

CATHODE ASSEMBLY OF ELECTRON BEAM WELDING GUN

Evgeny Ivanovich Istomin, ulitsa Oktyabrskoi revoljutsii, 22/7, kv. 20; Alexandr Fedorovich Ivanenko, ulitsa Zodchikh, 62, kv. 339; Leonid Pavlovich Strekal, ulitsa Gorkogo, 138, kv. 8; Adolf Alfonsovich Vasiliev, ulitsa Erevanskaya, 8a, kv. 36, and Boris Denisovich Vaskin, Andreevsky spusk, 2, kv. 26, all of Kiev, U.S.S.R.

Filed May 10, 1977, Ser. No. 795,503
Int. Cl.[2] B23K *9/00*
U.S. Cl. 219—121 EB **1 Claim**



1. A cathode assembly of an electron beam welding gun, comprising: a current lead; a holder having a sleeve secured in

said current lead; a disc cathode secured in said holder's sleeve; a heating cathode arranged in said current lead, coaxially therewith; said sleeve of said holder having a central orifice in its bottom, whereon there is placed said disc cathode; a cone-shaped recess provided on the internal surface of said sleeve, on the side opposite to the disc cathode, said recess widening towards said disc cathode; a split ring of a refractory material, received in said cone-shaped recess and pressing said disc cathode to said bottom of said holder's sleeve.

4,082,938

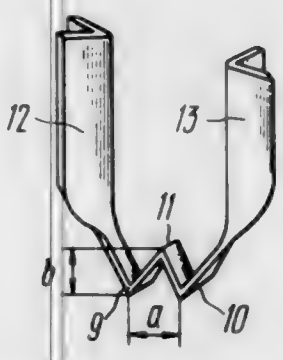
THERMIONIC HEATER CATHODE ASSEMBLY OF ELECTRON-BEAM GUN

Igor Vladimirovich Shergov, Festivalnaya ulitsa, 75, kv. 108; Vladimir Danilovich Slavinsky, Kharkovskaya ulitsa, 1, korpus 4, kv. 767; Lev Moiseevich Fridlender, Volgogradsky prospekt, 157, korpus 2, kv. 37; Valery Ivanovich Zharinov, Vrachebny proezd, 10, korpus 1, kv. 175, and Arkady Filippovich Kozhaev, ulitsa 26 Bakinskikh komissarov, 18, korpus 6, kv. 28, all of Moscow, U.S.S.R.

Filed May 10, 1977, Ser. No. 795,507

Int. Cl.[2] B23K *9/00*

U.S. Cl. 219—121 EB **1 Claim**



1. A thermionic heater cathode assembly of an electron-beam gun comprising: a disc cathode made of a highly-emissive material; a metal ribbon filament of the cathode, with a thermionic portion disposed near said disc cathode; said thermionic portion having a W shape, the distance between two apices being 0,6 to 0,8 of the diameter of said disc cathode and the depth of the valley between the apices being 0,5 to 0,6 of said diameter.

4,082,939

VEHICULAR COFFEE HEATER

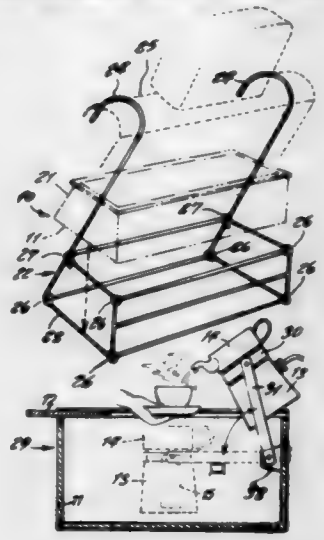
Adolbert F. Walters, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007, and George Spector, New York, N.Y., assignors to Adolbert Fitzgerald Walters, Brooklyn, N.Y.

Filed Oct. 22, 1974, Ser. No. 516,972

Int. Cl.[2] H05B *1/02;* A47C *7/62;* A47F *5/08*

U.S. Cl. 219—202 **2 Claims**

1. The combination of a vehicular coffee heater, carrying case and a wire basket rack for supporting the case on a seat back rest, wherein the rack comprises a collapsible basket and integral spaced rear members forming part of and extending from the rear side of the basket, said members extending upwardly vertically inclined to upper ends having hooks thereat for engaging to the top of the backrest, said members being pivotally connected at their lower end to the bottom and sides of the basket, said basket being formed of hinged wires whereby the wires are pivotable to a flat collapsed position, in combination with a case having an inclined rear wall conforming to the inclination of the said members, said case being dimensioned to fit snugly within the basket when said basket is open, in further combination with an electrically heated coffee vessel adapted to fit in said case, including a bracket on said vessel and a laterally sliding cover mounted over a top opening in said case to close said opening and provide access to said case and vessel including an arm pivotally secured to the bracket at one end and to the case at the other end, for pivoting movement of the arm from a horizontal position in the case to vertically upward position wherein a portion of said arm and the attached bracket extends out of said case, whereby the



vessel is within said case when said arm is in the horizontal position and the vessel can be raised outside of said case for pouring when the arm is vertically upward.

4,082,940

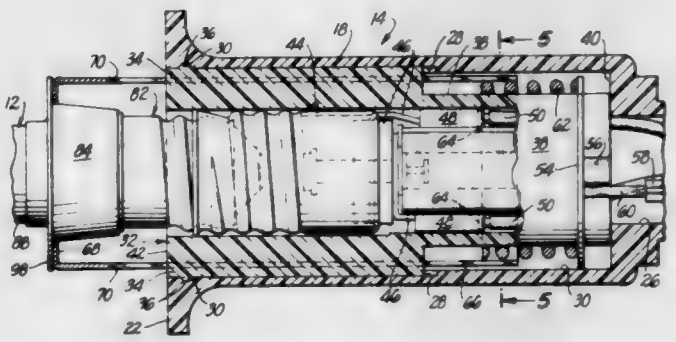
SOLDERING IRON WITH REPLACEABLE HEATING ELEMENT AND A GROUNDED HANDLE AND COMPONENTS THEREOF

Alvis R. Knowles, Carson, and Harold S. Foster, Huntington Beach, both of Calif., assignors to Eldon Industries, Inc., Hawthorne, Calif.

Filed Mar. 11, 1976, Ser. No. 666,062

Int. Cl.[2] B23K *3/02;* H01R *3/02;* H05B *1/00*

U.S. Cl. 219—239 **14 Claims**



1. In the combination of first and second parts, cooperating connection means located on said parts for establishing an electrical connection through said parts by twisting said parts relative to one another about an axis and for detachably mounting said parts together and cooperating grounding means located on said parts for establishing a ground connection between said parts, the improvement which comprises:

said grounding means on said first part comprising a metal flange located in a plane perpendicular to said axis around said axis so as to extend outwardly from and around said first part adjacent to said connection means on said first part,

said grounding means on said second part including an electrically conductive member mounted on said second part so as to extend therefrom adjacent to said connection means on said second part and so as to be capable of being moved parallel to said axis relative to said second part and also including spring means on said second part resiliently engaging said member and biasing said member outwardly away from said second part,

said connection means on said parts are adapted to be twisted together so as to establish an electrical connection and so as to mount said parts together,

said member serving to establish a ground connection with

said flange through physical engagement with said flange when said parts are secured through said connection means, said member engaging said flange as said parts are secured through said connection means and twisted so as to tend to remove any accumulations of material from between said member and said flange.

4,082,941

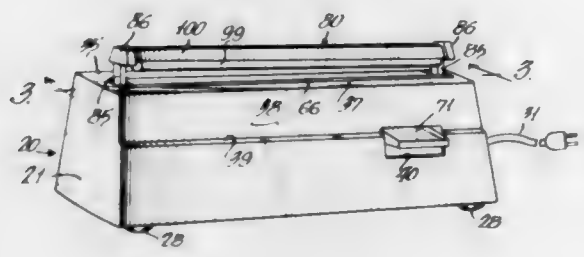
BAG SEALER

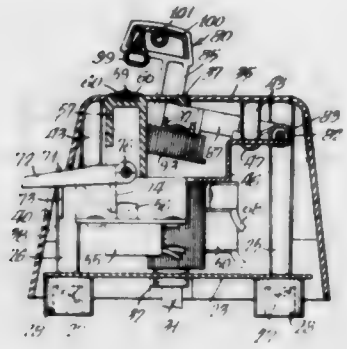
Daniel L. Sukow, Grafton; Richard A. Smith, and James B. Cockroft, both of Wauwatosa, all of Wis., assignors to Oster Corporation, Milwaukee, Wis.

Filed Jul. 13, 1976, Ser. No. 704,901

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—243 **6 Claims**





1. A bag sealer comprising a housing, an electrically heated wire supported on a fixed portion of said housing, a sealing member hingedly mounted on said housing for pivoting movement downwardly toward said wire about an axis disposed rearwardly of said wire, and a combination solenoid and transformer disposed in said housing with a primary coil being connected to a source of power through a manually actuated switch, with a secondary coil being connected in series with said wire, and with an armature being mounted on said hingedly mounted sealing member in spaced alignment with said coils, whereupon actuation of said switch, when unsealed edges of a plastic bag to be sealed are supported along said wire, causes (1) downward movement of said armature toward said coils and accompanying downward movement of said sealing member into sealing engagement with said bag edges and (2) the passage of current through said wire, heating same sufficiently to effect sealing of said bag edges.

4,082,942

PROCESS CONTROL SYSTEM WITH SIGNAL CONVERSION TO STANDARD INTERMEDIATE SIGNALS CARRYING DATA AS A FUNCTION OF TIME DURATION

Osamu Tada; Mutsuaki Nakagawa; Hiroshi Mori; Yutaka Wakasa; Koju Katsoka; Tadanari Inoue, and Hisayuki Uchike, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Continuation of Ser. No. 618,268, Sep. 30, 1975, abandoned. This application Jul. 1, 1977, Ser. No. 812,060

Int. Cl.[2] H03K *13/20*; G05D *27/02*

U.S. Cl. 364—111 **1 Claim**

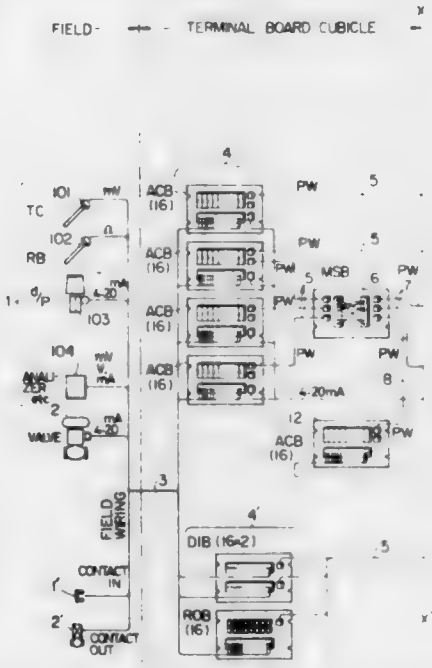
1. In a process control system arranged to accept varied forms of analog sensing signals from a plurality of field sensing devices, to process data represented thereby both digitally and in analog fashion, and to supply varied forms of analog control signals to a plurality of analog field control devices, the improvement which comprises:

an input signal converter means for each field sensing device for converting data from (a) the varied analog forms generated by the field sensing devices to (b) first input intermediate signals in a standard form arranged to carry data as a function of time duration;

isolator means for each of said input signal converter means and having an input and an output section; means for directing the first input intermediate signal developed by each input signal converter to a respective input section, the associated output section being arranged to provide a second input intermediate signal corresponding directly to the first input intermediate signal fed to said input section but conductively isolated therefrom;

an input digital interface and storage means for each field sensing device for converting data from (a) the corresponding second input intermediate signal to (b) input digital signals in a form for use by digital data processing means, and for storing the input digital signals for use on demand by the data processing means;

an output digital interface and storage means for each field control device for storing output digital signals supplied by the data processing means and for converting the output digital signals into first output intermediate signals in a standard form arranged to carry data as a function of time duration;



analog data processing means; means for converting data derived from said second input intermediate signals into input analog signals for use by said analog processing means; means for converting output analog signals from said analog data processing means into an additional set of said first output intermediate signals;

isolator means for each of said output signal converter means and having an input section and an output section; means for directing the first output intermediate signals to respective input sections of said isolator means, the output section of each isolator means being arranged to provide a second output intermediate signal corresponding directly to the intermediate signal fed to the input section thereof but conductively isolated therefrom;

conductively-isolated power supply means supplying power to (1) said input sections of said isolator means for said input signal converter means and (2) said output sections of said isolator means for said output signal converter means;

an output signal converting means for each field control device for converting said second output intermediate

signals into the varied forms of output analog control signals required by the field control devices; and

signal path editing means comprising a plurality of separate input terminal means and a plurality of separate output terminal means; means interconnecting selected input terminal means to selected output terminal means to provide a preselected set of signal paths between certain of said input terminal means and certain of said output terminal means; said interconnecting means providing for ready alteration of said preselected set of signal paths to any of a number of different sets of signal paths to accommodate variation in required signal transmissions; means connecting predetermined output sections of said isolator means to corresponding ones of output terminal means; and means connecting each of said output terminal means to said input digital interface and storage means.

4,082,943

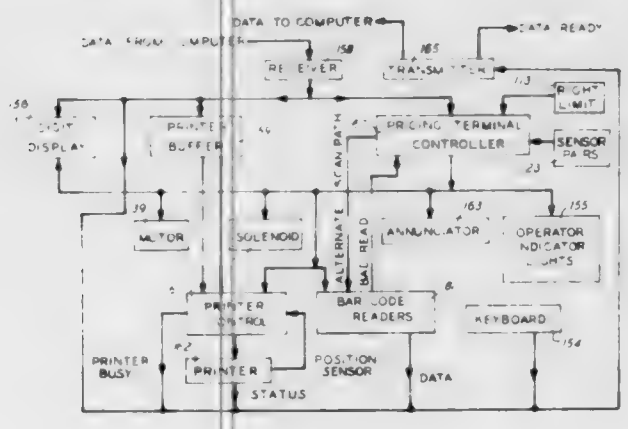
METHOD AND APPARATUS FOR READ AND PRINT DATA

Gerald A. Jensen, Wayzata; Ronald B. Harvey, Minneapolis; Patrick J. Caulfield, Wayzata; Dwayne H. Putzke, Brooklyn Center, and Gerald R. Strunc, Maple Grove, all of Minn., assignors to Pako Corporaton, Minneapolis, Minn.

Filed Aug. 13, 1976, Ser. No. 714,174

Int. Cl.[2] G06F *11/00*; G06K *1/12*

U.S. Cl. 235—303.1 **17 Claims**



1. A system for reading machine-readable information from a carrier and printing information onto the carrier, said system comprising:

guide path defining means for defining a guide path for the carrier,

motive means for moving the carrier along the guide path,

reader means disposed along the guide path for reading the machine readable information from the carrier as the carrier is moved along the guide path past the reader means and indicating whether the reading of the machine readable information was successful or unsuccessful,

storage means for storing information to be printed on the carrier depending on the machine-readable information on the carrier which is read by the reader means,

printer means disposed along the guide path for printing information from the storage means,

enable means for enabling the printer means to print the information from the storage means when the reader means indicates it has successfully read the machine readable information, and

read-repeat means for causing the motive means again to move the carrier along the guide path and causing the reader means to re-read the machine-readable information if the reader means indicates that a previous attempt to read the same has been unsuccessful.

4,082,944

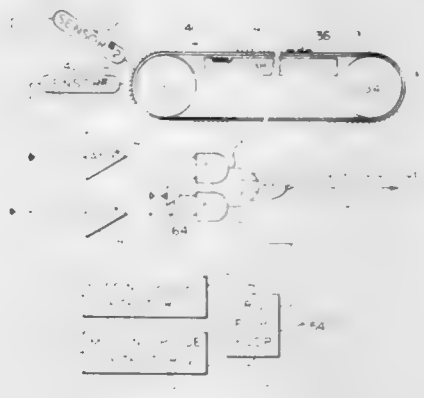
BAND TIMING GENERATOR

Robert Snyder, Melbourne, Fla., assignor to Documation, Inc., Melbourne, Fla.

Filed Oct. 12, 1976, Ser. No. 731,652

Int. Cl.[2] G06K *15/08*

U.S. Cl. 235—309 **12 Claims**



1. A method for reading periodic timing marks from a moving printing band and for generating synchronous timing signals during the passage of a missing timing mark on the printing band, said method comprising the steps of:

(a) detecting the passage of each of said timing marks at a first location adjacent the printing band and generating a timing pulse responsive thereto;

(b) detecting the passage of each of said timing marks at a second location adjacent the printing band and generating a timing pulse responsive thereto, said second location spaced from said first location in a direction opposite the direction of motion of said timing belt;

(c) detecting the passage of said missing timing mark adjacent said second location; and

(d) switching an output normally coupled to the detector at said first location for receiving said timing pulses therefrom to the detector at said second location responsive to detecting the passage of said missing timing mark adjacent said second location, whereby the output will continue to receive said timing pulses as said missing timing mark passes said first location.

4,082,945

DOCUMENT PROCESSING DEVICE

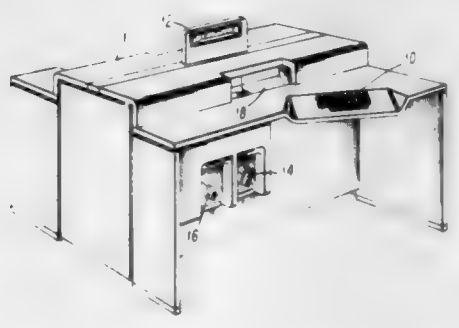
Adrianus Johannes van de Goor, Wilnis; Hans Pijlman, Nieuwveen, and Bernard Evert van der Vleugel, Harmelen, all of Netherlands, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1977, Ser. No. 799,629

Claims priority, application Netherlands, Jun. 30, 1976, 7607250

Int. Cl.[2] G06F *7/02*; G06K *3/12, 7/08*; B65H *5/22*

U.S. Cl. 235—419 **11 Claims**



1. A document processing device for performing individual operations on at least two different kinds of documents, such as bills, and associated vouchers or instructions for payment such as checks, provided with transport means for carrying documents of the first kind, the bills, continuously past at least a

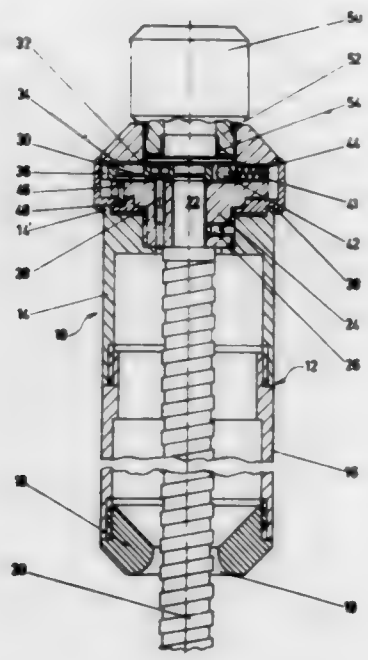
reading station, and with transport means for incrementally moving documents of the second kind, the checks, past at least an encoding station, characterized in that a single transport path for at least two kinds of documents is provided, which is equipped with a single transport drive for selectively, continuously or intermittently moving documents past processing stations disposed along the transport path, such as a reading station, an encoding station, a printing station and an endorsing station, and a control unit for selectively controlling, in dependence on the alternately different documents introduced, the various processing stations and the associated movement of the documents.

4,082,946

APPARATUS FOR CONTROLLING THE ILLUMINATION OF OPTICAL EXAMINATION DEVICES

Helmut A. Heine; Otto H. Schmidt, both of Herrsching, and Helmut W. Rosenbusch, Weilheim, all of Germany, assignors to Propper Manufacturing Co., Inc., Long Island City, N.Y.

Filed Jul. 8, 1976, Ser. No. 703,573
Int. Cl.[2] F21L *1/00, 25/00*
U.S. Cl. 362—32 **5 Claims**



1. An apparatus for controlling the illumination of optical examination devices adapted to be coupled to a source of light through a light conducting cable connected at its near end to said source of light, said apparatus comprising:

a housing coupled to said light conducting cable at the distal end thereof;

a plurality of filters; and

means within said housing for mounting said filters for selective movement into and out of the path of light eminating from the distal end of said light conducting cable; positioning means mounted to said housing for movement relative thereto; and

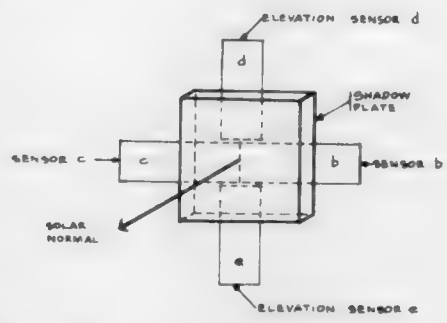
means for coupling the movement of said positioning means to said filter mounting means so that said filters can be moved in and out of said light path by moving said positioning means.

4,082,947

SOLAR COLLECTOR AND DRIVE CIRCUITRY CONTROL MEANS

George Lewis Haywood, South Rockwood, Mich., and Wesley Joseph Haywood, Harvard, Mass., assignors to The George L. Haywood Co., Flat Rock, Mich.

Filed Mar. 25, 1976, Ser. No. 670,402
Int. Cl.[2] G01J *1/20;* **H01J** *39/12*
U.S. Cl. 250—203 R **7 Claims**



1. A Solar Collector Controller comprising a solar sensor array, an electronic data processor and amplifier, a drive motor, a gear train, and means for mounting the controller on a gimbaled solar collector, said sensor array being a set of four sensors oriented in pairs at a 90° angle, each pair being oriented perpendicular to its neighbor so as to form a sensitive surface consisting of four sensor surfaces arranged to produce electrical signals, each pair of signals being summed differentially to produce an error signal having phase and amplitude proportional to the orientation of the sensor pair with respect to the incident solar flux, said sensor pairs being oriented parallel to and orthogonal to the diurnal path of the sun, said orientation providing an electrical signal proportional to azimuth and elevation of the solar normal in its cycle, said sensor array being placed below a shadow plate, said plate having an area smaller than the area of the sensor array so that a portion of the array is thereby shaded, said shading being equal when the sensor joint normal is parallel to the solar normal, said array then producing a null output, otherwise the relative solar angle produces an error signal proportional to the angle, an amplifier with a variable gain receiving said error signal, a fifth solar cell for controlling said variable gain connected in a feedback path across the amplifier, said amplifier output being applied to drive a motor and gear train mounted so as to position the solar collector carrying the radiation sensor array, the amplifier means arranged so as to drive the solar collector to reduce the relative solar angle to a null position for maximizing solar collector efficiency, control circuit means connected to said amplifier means for restoring the solar collector orientation to an easterly position when the solar irradiance on the sensor array falls below a pre-set threshold after sunset.

4,082,948

GENERATOR MONITORING APPARATUS

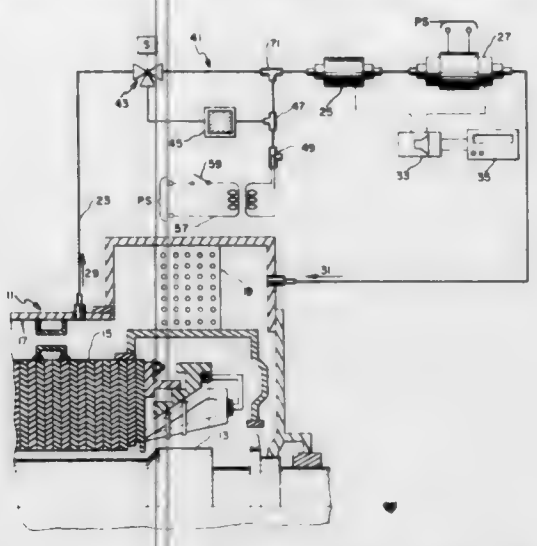
Sterling C. Barton, Scotia; Chester C. Carson, Ballston Spa, and Federico S. Echeverria, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1977, Ser. No. 783,772
Int. Cl.[2] G01N *31/00;* **G01T** *1/18*
U.S. Cl. 250—304 **6 Claims**

1. A monitoring system for a gas cooled dynamoelectric machine of the type having parts therein coated with selected materials which will decompose into submicron pyrolysate particles at elevated temperatures to become entrained in the machine gas coolant; the monitoring system connectable to the dynamoelectric machine for withdrawing a sample of the machine gas coolant and comprising:

a first detector apparatus consisting of an ion chamber detector at ambient temperature receiving at least a portion of said machine gas sample and providing a first output signal based upon the conductivity of the ionized gas sample;

a second detector apparatus consisting of a heated ion chamber detector receiving at least a portion of said machine gas sample and providing a second output signal based upon the conductivity of the ionized gas sample; and,



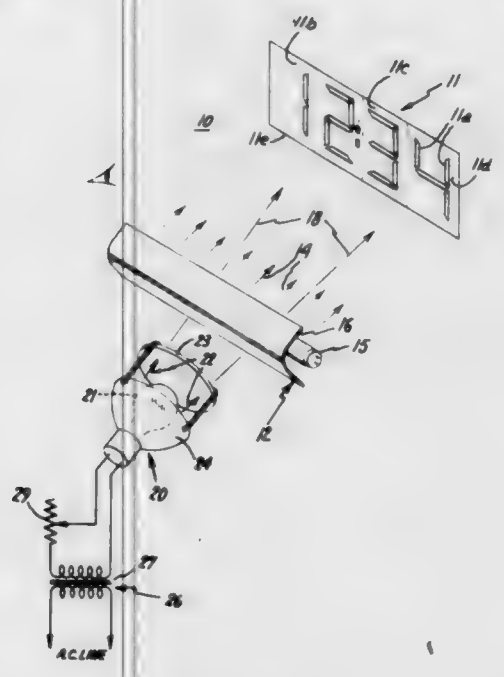
means receiving said first and second output signals, said receiving means enabling a comparison between said first and second output signals whereby the presence of pyrolysate particles may be validated.

4,082,949

VARIABLE INTENSITY FLUORESCENT DISPLAY

John E. Bigelow, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 8, 1976, Ser. No. 739,748
Int. Cl.[2] G03B *21/00*
U.S. Cl. 250—329 **11 Claims**



1. A variable intensity fluorescent display comprising:

display means for direct viewing of indicia, said display means having at least one selectable indicia formed permanently thereon of a material fluorescing at visible wavelengths responsive to excitation by radiation of a first range of wavelengths;

first means for illuminating said at least one indicia with a substantially constant magnitude of radiation of said first wavelength range to establish a maximum brightness of said indicia; and

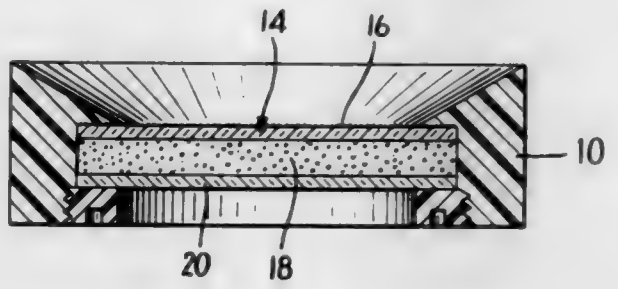
second means for illuminating said at least one indicia with an adjustably varying magnitude of radiation of a second range of wavelengths differing from said first wavelength range and selected to produce a variable quenching action in all of said indicia to variably reduce the brightness of the visible wavelength fluorescence therefrom.

4,082,950

CALIBRATION ASSEMBLY FOR INFRARED MOISTURE ANALYZER

Leighton L. Chen, Greensboro, N.C., assignor to Loew's Theatres, Inc., New York, N.Y.

Filed Feb. 10, 1977, Ser. No. 767,658
Int. Cl.[2] G01D *18/00*
U.S. Cl. 250—343 **6 Claims**



1. A calibration assembly for an infrared moisture analyzer for measuring the moisture content of tobacco leaf by reflection of infrared radiation which comprises:

(a) a housing having means for mounting in the moisture analyzer;

(b) a glass window which is transparent to infrared radiation, said window being etched on both faces and secured within the housing;

(c) a layer of a particulate material contained within the housing beneath the window, said material having an average particle size in the range of about 50–100 microns;

(d) means to retain the particulate material layer within the housing; and

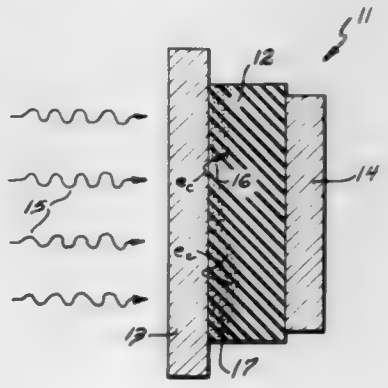
(e) said assembly having a reflectivity from the window thereof with respect to the infrared wavelengths employed in said analyzer comparable to the reflectivity of tobacco, and providing a predominantly diffuse reflection from the window.

4,082,951

COMPTON EFFECT THERMALLY ACTIVATED DEPOLARIZATION DOSIMETER

Paul R. Moran, Madison, Wis., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 23, 1975, Ser. No. 598,276
Int. Cl.[2] G01T *1/00*
U.S. Cl. 250—336 **10 Claims**



1. A Compton effect dosimetry method for high-energy gamma and X-radiation comprising:

a. forming a Compton effect dosimeter by placing a thin film of a dielectric material between a back electrode and a radiation-receiving electrode composed of a metal of such

an atomic number so as to serve as a Compton-electron radiator;

b. short-circuiting the two electrodes of the dosimeter;

c. annealing the short-circuited dosimeter;

d. exposing the short-circuited dosimeter to the radiation so that the radiation impinges on the radiation-receiving electrode, whereby the gamma or X-radiation interacts with the metal, electrons are produced by the Compton effect, the Compton effect electrons are emitted preferentially in the direction in which the radiation is traveling, a portion of the Compton effect electrons becomes trapped in the dielectric material, and consequently an electrical polarization is induced in the dielectric material;

e. subsequently heating the short-circuited dosimeter to the point of onset of ionic conductivity, whereby the dielectric material depolarizes;

f. measuring the depolarization signal emitted as current versus temperature as the dosimeter is gradually heated, whereby the integrated current is proportional to the dose of radiation received by the dosimeter.

4,082,952

ION DETECTOR

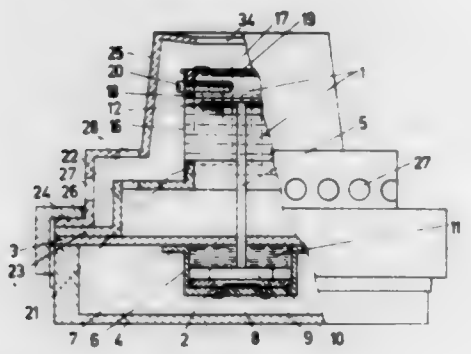
Jacques Depoitier, and Romain Vinchent, both of Wanfercee-Baulet, Belgium, assignors to Institut National des Radio-elements - Nationaal Instituut voor Radio-elementen, en abrege: "I.R.E.", Brussels, Belgium

Filed Jul. 12, 1976, Ser. No. 704,601

Claims priority, application Belgium, Jul. 11, 1975, 831296

Int. Cl.[2] G01T *1/18*

U.S. Cl. 250—381 **7 Claims**



1. An ion detector comprising:

a printed circuit plate,

axially aligned conductive metal cylindrical members on opposite sides of said printed circuit plate

one of said cylindrical members forming a first measuring chamber and the other forming a second, reference chamber,

a plate closing off the end of the measuring chamber remote from said printed circuit plate and forming the first electrode of said measuring chamber,

the bottom of said other cylindrical member forming the first electrode of said reference chamber,

radio-active sources mounted to said first electrode of respective chambers,

the cylindrical member forming said first measuring chamber being at least partly apertured,

said radio-active sources being laid inside respective chambers and in contact with the plate and the bottom wall of said first chamber and second chamber cylindrical members,

a rod projecting through said printed circuit plate and coaxial with said first and second cylindrical members and terminating short of said plate closing off said first chamber cylindrical member and the bottom of said second chamber cylindrical member,

second electrodes for said chambers mounted respectively at the ends of said rod and facing said radio-active sources respectively, and wherein the second electrode of said first chamber comprises a flat apertured portion in parallel with the plate overlying the end of said first cylindrical member remote from said printed circuit plate, and wherein said first cylindrical member plate defines a flat surface.

4,082,953

DENTAL X-RAY DIAGNOSTIC DEVICE

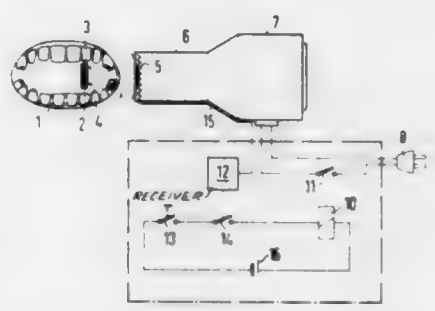
Hartmut Krause, Erlangen, and Ulrich Grassmé, Nuremberg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 29, 1976, Ser. No. 681,527

Claims priority, application Germany, May 2, 1975, 2519640; United Kingdom, Jan. 8, 1976, 00706/76

Int. Cl.[2] H05G *1/30*

U.S. Cl. 250—413 **8 Claims**



1. A dental X-ray diagnostic device for preparation of X-ray film pictures comprising, in combination, X-ray radiation means with an X-ray tube and high-voltage supply therefor exterior to a patient; film holding means insertable into the mouth of the patient; means for setting the exposure time and having switching means for switching off the X-ray tube high voltage upon reaching the dosage corresponding to optimum blackening of film in said film holding means; said setting means comprising automatic exposure means for measuring the exposure time and having a radiation detector attached to said film holding means, a wireless transmitter connected to said film holding means, and an antenna for receiving signals from said transmitter, and a receiver connected to said antenna and controlling said switching means for switching off the X-ray tube high voltage supply.

4,082,954

X-RAY DIAGNOSTIC GENERATOR

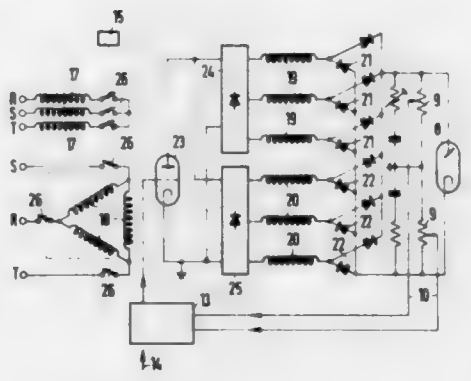
Kurt Franke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 20, 1975, Ser. No. 624,169

Claims priority, application Germany, Oct. 23, 1974, 2450428

Int. Cl.[2] H05G *1/56*

U.S. Cl. 250—421 **1 Claim**



1. In an X-ray diagnostic generator including a high-voltage transformer; a high-voltage rectifier for supplying the X-ray tube of said generator being connected to the output of said high-voltage transformer; a regulating rectifier for the X-ray tube voltage being arranged in the high-voltage circuit; a comparator for the actual and reference values of the X-ray

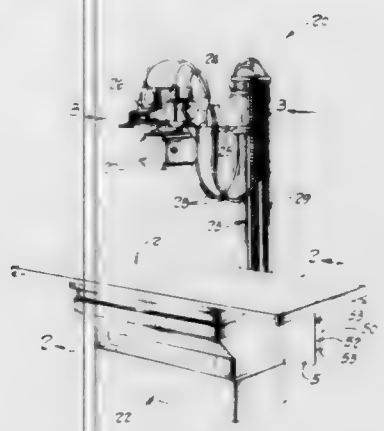
tube voltage being connected to a control electrode of said regulating rectifier; and switch means for the automatic determination of the starting time for the X-ray tube, the improvement comprising: said switch means being located in the primary circuit of said high-voltage transformer; Polyphase alternating current high-voltage transformer in a twelve-pulse connection including two secondary winding groups each having three secondary windings and two polyphase alternating current rectifier bridges each connected to one of the ends of the secondary windings of a secondary winding group, both rectifier bridges being connected in series and supplying said X-ray tube; and a further polyphase alternating current rectifier being provided for each said secondary winding group and connected to the second ends of the corresponding secondary windings, the positive poles of the direct-current branches of said rectifiers being connected to the anode and the negative poles being connected to the cathode of said regulating rectifier.

4,082,955

X-RAY APPARATUS

Leslie James Sell, Orangeville, Canada, assignor to Picker Corporation, Cleveland, Ohio

Filed Aug. 11, 1975, Ser. No. 603,264
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—445 T **35 Claims**



1. An X-ray apparatus operable selectively and one at a time for radiography and tomography, comprising:

a. an X-ray source device providing a beam of X-radiation;

b. an X-ray imaging device responsive to incident X-radiation;

c. a patient support for positioning portions of a patient between said devices;

d. structure extending between and mounting said devices for independent movement relative to each other and relative to the support;

e. drive means for selectively interconnecting and driving said devices through coordinated movements for tomography; and,

f. the drive means being housed within and shielded by the structure and including means for automatic interconnection.

4,082,956

X-RAY FILM CHANGER FOR SERIAL RADIOGRAPHY

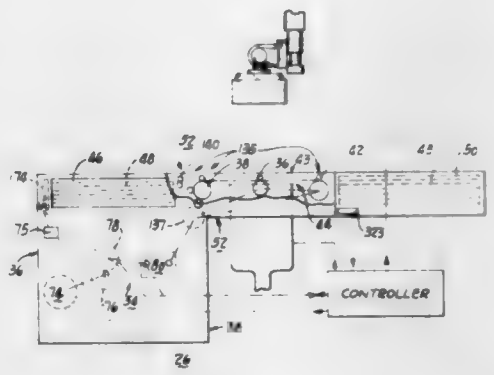
Tamas A. Vepy, Mississauga, Canada, assignor to Picker Corporation, Cleveland, Ohio

Filed Sep. 26, 1975, Ser. No. 617,102
Int. Cl.[2] G03D *13/08, 13/10*
U.S. Cl. 250—480 **22 Claims**

1. In a radiographic system for exposing X-ray film, the combination comprising:

a. a film pack including a pouch, at least one intensifying screen and a sheet of X-ray film disposed in the pouch, the pouch having an opening through which the sheet may be inserted and removed; and

b. force-applying means including mechanism for engaging the pouch to force the screen into surface engagement with the sheet and to clamp portions of the pouch near the



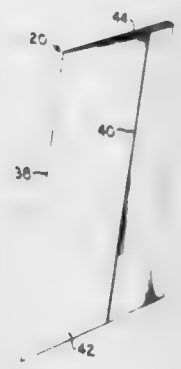
opening to provide a releasable, largely airtight contact, the contact continuing during X-ray exposure of the sheet.

4,082,957

X-RAY ABSORBING WEDGE FOR IMPROVING SOFT TISSUE OUTLINE

Alva F. Morlan, 8044 Pawnee, Prairie Village, Kans. 66208

Filed Apr. 29, 1976, Ser. No. 681,556
Int. Cl.[2] G03B *11/00*
U.S. Cl. 250—482 **15 Claims**



1. An X-ray cassette for use in dental and medical X-ray equipment, said cassette comprising:

a film-receiving compartment,

a thin, plate-like member of X-ray absoring material, and

means mounting said member in ray-filtering relationship to X-ray radiation incident on a portion of a film in said compartment,

said member extending partially across the cassette to a featheredge of the member beyond which the radiation will be unfiltered, said featheredge being sufficiently thin to prevent a visible line of demarcation from appearing between the filtered and unfiltered areas of a resulting radiograph, and said member being tapered toward said featheredge to present absorptive material of progressively increased thickness away from said featheredge to thereby provide progressively increased soft tissue resolution away from said featheredge in said portion of a film

---

4,082,958

APPARATUS INVOLVING PULSED ELECTRON BEAM PROCESSING OF SEMICONDUCTOR DEVICES

Allen R. Kirkpatrick, Chelmsford, Mass., assignor to Simulation Physics, Inc., Bedford, Mass.

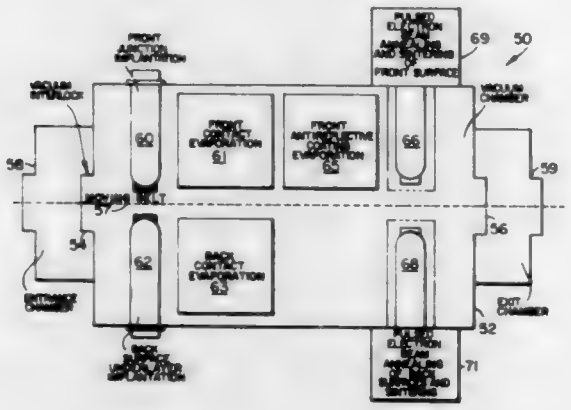
Continuation of Ser. No. 636,055, Nov. 28, 1975, abandoned.
This application Apr. 27, 1977, Ser. No. 791,499
Int. Cl.[2] H01J *37/30*
U.S. Cl. 250—492 B **5 Claims**

1. An apparatus for thermal processing of selected localized regions of a semiconductor, said apparatus comprising:

(a) beam generator means for generating a short duration pulsed electron beam, said electron beam having a pulse

duration in the range of 10^{-9} to 10^{-1} second, fluence in the range of 10^{-3} to 10^{2} cal/cm^2 and electron energy which is sufficiently high to permit thermal processing of the semiconductor and is sufficiently low as not to create atomic displacements in the semiconductor; and

(b) position means on which the semiconductor is supported,



said semiconductor being disposed in a path along which said electron beam propagates, said short duration pulse impacting upon the selected regions of the semiconductor and momentarily elevating the temperature of the selected regions above a temperature at which the thermal processing effects occurs for a time period of less than one second.

4,082,959

LIQUID LEVEL DETECTOR

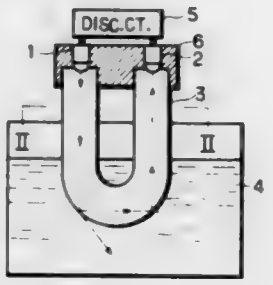
Noriyuki Nakashima, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 24, 1976, Ser. No. 699,607

Claims priority, application Japan, Jun. 27, 1975, 50-80176; Jul. 23, 1975, 50-90662

Int. Cl.² G01N *21/26*

U.S. Cl. 250—577 **6 Claims**



1. An optical detector comprising:

a U-shaped transparent glass bar having an incidence light path portion having an open end, a reflected light path portion having an open end and an intermediate bent portion connecting said incidence and reflected light path portions circularly at a predetermined detection position within a container for holding a liquid to be detected, said incidence light path portion and said reflected light path portion being separated and extending parallel to each other to allow said liquid to fill the space therebetween;

light emitting means for emitting light toward the open end of said incidence light path portion;

lens means, coupled to said incidence light path portion to deform the open end of said light path portion to be either concave or convex, for rendering the light emitted from said light emitting means to be transmitted to said intermediate bent portion through said incidence light path portion in parallel with the axis of said incidence light path portion;

light receiving means for receiving the light reflected by said intermediate bent portion and transmitted through said reflected light path portion; and

discriminating means for discriminating whether the level of said liquid has reached said predetermined position in accordance with the quantity of the reflected light received by said light receiving means at the open end of said reflected light path portion.

4,082,960

PNEUMATICALLY OPERATED PRESSURE SWITCH, PARTICULARLY FOR VEHICLE TIRE SUPERVISION

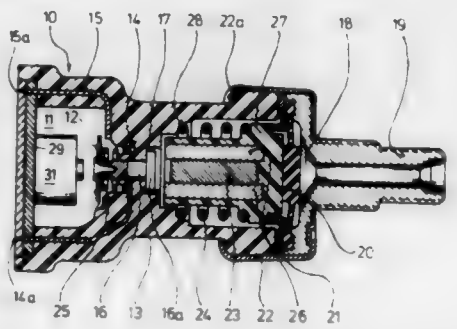
Jean Denamps, Ausnieres, and Jean LeCossec, Esbly, both of France, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 7, 1976, Ser. No. 730,634

Claims priority, application Germany, Nov. 3, 1975, 2549010

Int. Cl.² H01H *35/34*

U.S. Cl. 307—118 **13 Claims**



1. Pressure operated switch to change state when the pressure of a pressure fluid drops below a predetermined level, having

housing means (13) defining a switching chamber (11);

a fixed terminal (15) within the switching chamber (11);

a slidable, movable terminal (12) within the switching chamber (11);

a membrane (20) separating the pressure fluid from the switching chamber (11);

a permanent magnet (23) located to move upon deflection of the membrane when subjected to fluid pressure

a pair of pole shoes (26) located adjacent the permanent magnet (23);

a non-magnetic holder (27) surrounding the permanent magnet (23) and the pole shoes to transfer movement thereof to transfer movement of the holder (27) in accordance with changes in pressure of the pressure fluid to the movable terminal (12)

comprising

a first spring (24) acting on said non-magnetic holder (27) and between a shoulder in the housing means (13) to press the permanent magnet (23) and its holder (27) against the membrane (20) and to bias the permanent magnet in a direction counter the deflection of the membrane (20) when subjected to fluid pressure;

and a second spring (25) weaker than said first spring engaging the movable terminal (12) the movable terminal having an armature (16a) located in magnetic attractive relation to said permanent magnet;

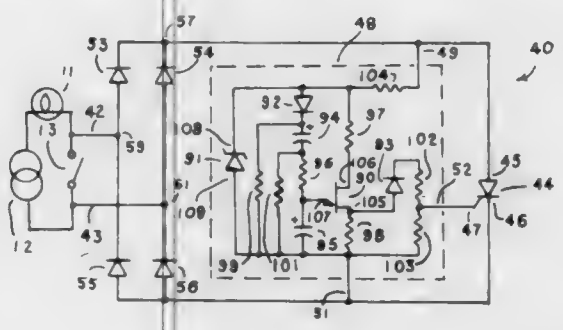
the membrance (20) and said springs (24, 25) being dimensioned to deflect under operating pressure which is greater than said predetermined pressure and in a direction counter the force of the first spring (24) to effect attraction of the armature and hence the movable terminal and ultimate engagement thereof and holding thereof by magnetic force overcoming thereby the force of the second spring (25), and, upon drop in pressure below said predetermined level, cause separating movement of the permanent magnet (23) under force of the first spring (24) permitting the second spring (25) to snap away the movable terminal (12) and effect positive snap action of the movable terminal.

4,082,961

LIGHT SWITCH WITH DELAYED TURNOFF

Luther L. Genuit, 6231 Calle Del Paisano, Phoenix, Ariz. 85251

Filed Nov. 3, 1975, Ser. No. 627,898
Int. Cl.² H01H *7/00, 43/00*
U.S. Cl. 307—141 **18 Claims**



1. A two-terminal delay network for connection across a mechanical switch comprising:

a switching element having first and second power electrodes and a gate electrode,

a phase-delay to zero conduction control circuit having first and second control input terminals and an output terminal,

first and second delay network terminals,

said first delay network terminal being connected to said first power electrode and to said first control input terminal,

said second delay network terminal being connected to said second power electrode and to said second control input terminal,

said output terminal being connected to said gate electrode,

means for directly connecting said first delay network input terminal to a first terminal of the mechanical switch, and

means for directly connecting said second delay network input terminal to a second terminal of the mechanical switch,

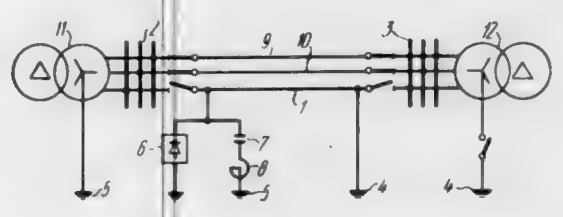
whereby the mechanical switch, while it is closed, carries the load current to a light or other load and upon the opening of the mechanical switch said control circuit supplies turn-on signals to said gate electrode during each cycle of alternating current voltage supplied to a light or other load controlled by the mechanical switch causing said switching element to be conductive and to carry current to the light or other load for a limited period of time following the opening of the mechanical switch.

4,082,962

DEVICE FOR MELTING THE ICING BY DIRECT CURRENT ON CONDUCTORS OF OVERHEAD POWER TRANSMISSION LINE

Vladimir Vladimirovich Burgsdorf, ulitsa Krasina, 19, kv. 129, Moscow; Georgy Andreevich Genrikh, ulitsa Chekistov, 10, kv. 3, Lvov; Leonid Alexeevich Nikonets, Khasanskaya ulitsa, 8, kv. 4, Lvov; Valery Vasilievich Mishin, ulitsa Suvorova, 25, kv. 42, Lvov; Viktor Yakovlevich Kuznetsov, ulitsa Popovicha, 110, kv. 20, and Anatoly Dmitrievich Kondratiev, ulitsa Mira, 182, kv. 25, both of Juzhno-Sakhalinsk, all of U.S.S.R.

Filed Jul. 11, 1977, Ser. No. 814,277
Int. Cl.² H02B *1/00*
U.S. Cl. 307—147 **16 Claims**



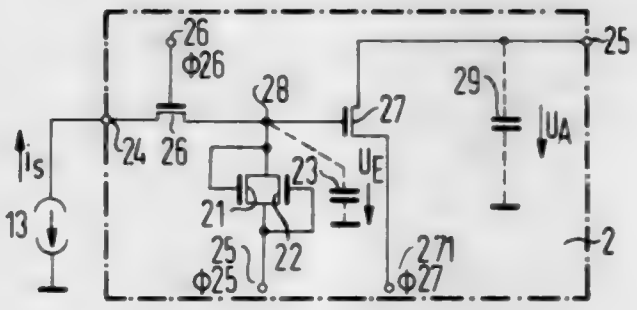
1. A device for melting icing by direct current through the conductors of an overhead power transmission line featuring transformers with grounded neutral wires connected thereto, comprising: a rectifier connected for the ice melting period by its direct-current voltage lead-out wires to at least one disconnected conductor of the power transmission line and a grounding circuit; and a commercial frequency circuit filter connected parallel to the direct-current voltage lead-outs of said rectifier.

4,082,963

REGENERATING AMPLIFIER FOR CCD ARRANGEMENTS

Kurt Hoffmann, Taufkirchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 25, 1976, Ser. No. 717,703
Claims priority, application Germany, Sep. 3, 1975, 2539205
Int. Cl.² H01L *29/78;* **G11C** *19/28*
U.S. Cl. 307—221 D **4 Claims**



1. Regenerating amplifier, in particular for use in CCD registers, comprising a first and a second transistor cross-connected to one another, two source (or drain) terminals of these transistors connected to one another, and the two drain (or source) terminals of these transistors being connected to one another, the gate terminal of the first transistor being connected to the drain (or source) terminals of the two transistors, and the gate terminal of the second transistor being connected to the two source (or drain) terminals of the two transistors, a first point at which the two source (or drain) terminals are connected to one another being connected via a third transistor to the input of said regenerating amplifier, said third transistor being controllable via its gate terminal, a second point at which the drain (or source) terminals of the first two transistors are combined representing a terminal to which a pulse train can be connected to said second point, said first point being connected to the gate terminal of a fourth transistor, the source (or drain) terminal of the fourth transistor being connected to the output of said regenerating amplifier, the drain (or source) terminal of said fourth transistor being connected to a terminal to which a timing potential may be connected, said first point being connected to a capacitance, and the output being connected to a second capacitance.

4,082,964

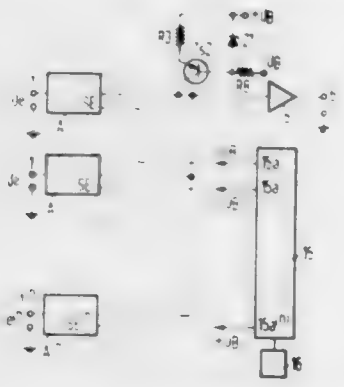
DIODE SWITCH

Johannes Gies, Holzkirchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 25, 1977, Ser. No. 772,098
Claims priority, application Germany, Feb. 27, 1976, 2608117
Int. Cl.² H03K *17/00*
U.S. Cl. 307—259 **10 Claims**

1. A diode switch for the optional switch-through of an input-end signal to an output comprising a four-pole having a series arm which includes a first diode and a second diode oppositely poled to one another and a shunt arm which includes at least one diode connected to said series arm between said first and second diodes, an input impedance transformer having a relatively low output resistance ahead of said four-pole, an output impedance transformer having a relatively high input resistance connected to the output end of said second diode of said four-pole, the different switching states being determined by the conductive state of said diodes, a first con-

stant current source connected between a positive voltage source and said connection between the output end of said second diode and an output terminal, a second constant current source connected between the nodal point between said first and second diodes and a negative voltage source, a control voltage terminal, said second constant current source having means for rendering it conductive by a control voltage applied



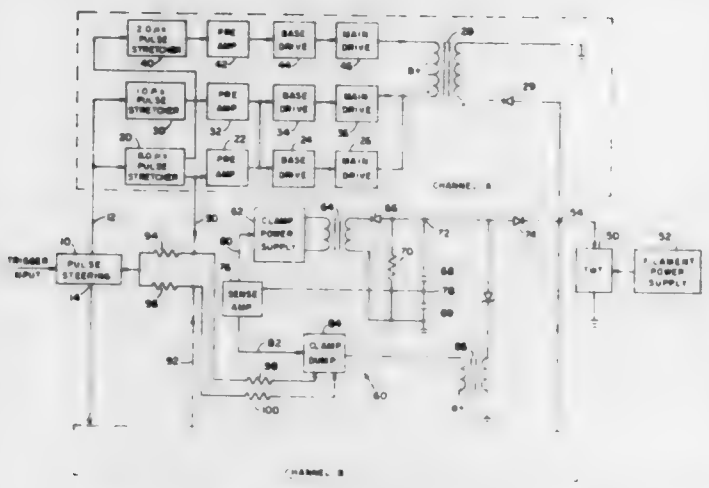
from said control voltage terminal, a third constant current source connected between said nodal point and said positive voltage source, said third constant current source having means for rendering it non-conductive by a control voltage applied from said control voltage terminal, and circuit means for maintaining said first constant current means conducting at all times.

4,082,965

HIGH VOLTAGE PULSER

Donald W. Hornbeck, Pelham, N.H., and James P. O'Loughlin, Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 27, 1976, Ser. No. 754,302
Int. Cl.² H03K *17/00*
U.S. Cl. 307—260 **6 Claims**



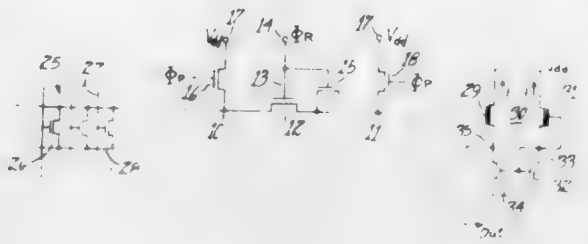
1. A high voltage pulser for cathode driving a traveling wave tube, comprising: first and second channels for driving said traveling wave tube, a pulse steering circuit for receiving high pulse repetition frequency input signals and coupling the outputs at one-half the input repetition frequency to said first and second channels alternately, and a clamp circuit coupled across said traveling wave tube for clamping excess voltage levels coupled to said traveling wave tube from said first and second channels.

4,082,966

MOS DETECTOR OR SENSING CIRCUIT

Perry W. Lou, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 27, 1976, Ser. No. 754,473
Int. Cl.² H03K *5/18, 17/60;* G11C *13/08, 17/04*
U.S. Cl. 307—362 **12 Claims**



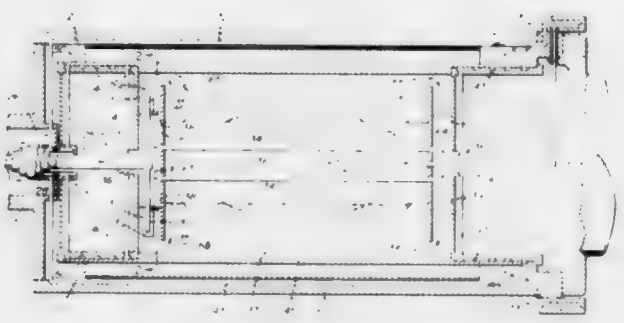
1. A circuit for detecting a voltage on an input node and providing a high level voltage change on a sense node, comprising: a transistor having a source-drain path connected in series between the input node and the sense node and having a gate; a gated capacitor separate from the inherent capacitance of the transistor connected between the gate of the transistor and the sense node, the gated capacitor switching from a very low capacitance mode to a high capacitance mode when the voltage across it exceeds a threshold value; means to apply a read clock pulse of a given voltage level to the gate of the transistor; the output on said sense node after said read clock pulse being two-valued, one value occurring when the voltage on the input node is no more than said threshold value different from said given voltage level and the other occurring when the voltage on the input node is more than said threshold value different from the given voltage level.

4,082,967

UNIFORMLY-COOLED SUPERCONDUCTING ROTOR

Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 31, 1976, Ser. No. 672,272
Int. Cl.² H02K *1/32*
U.S. Cl. 310—64 **13 Claims**



1. A cryogenic coolant flow circuit for a rotor having three axially-adjacent chambers therein, each chamber being open to its adjacent chamber through openings in a common wall therebetween and with superconductive windings situated within the inner chamber, said flow circuit comprising:

means for delivering liquefied cryogenic coolant into a first outer one of said chambers, said liquefied coolant flowing into said inner chamber and thence to the second outer one of said chambers through said openings;

first and second thermal distance extensions situated within said rotor axially outward of said first and second outer chambers, respectively, each of said thermal distance extensions being in gaseous communication with said first and second outer chamber, respectively, so as to receive vaporized coolant therefrom; and

heat exchanger means situated circumferentially about said rotor radially outward of said three chambers, said heat exchanger means being in gaseous communication with

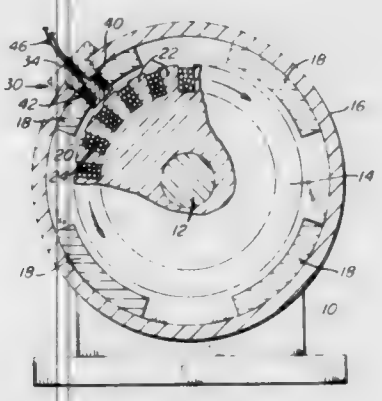
the radially-central region of said inner chamber so as to receive released by coolant boiling in said inner chamber.

4,082,968

SPEED DETECTOR FOR USE ON A DC MOTOR

Donald H. Jones, Pittsburgh, Pa., assignor to Contraves-Goerz Corporation, Pittsburgh, Pa.

Filed Nov. 23, 1976, Ser. No. 744,395
Int. Cl.[2] H02K *11/00*
U.S. Cl. 310—68 B **12 Claims**



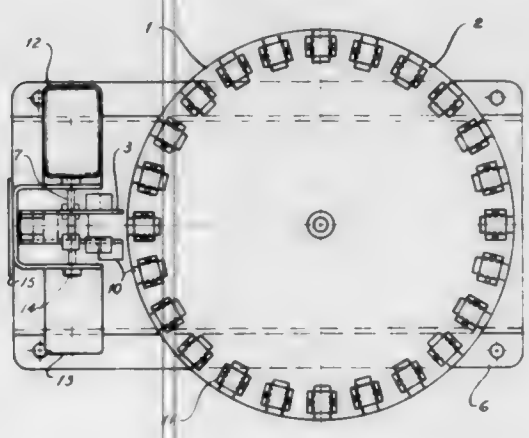
1. A permanent magnet motor comprising:
a stationary housing;
a plurality of permanent magnets supported within said stationary housing;
a rotor disposed within said stationary housing partially surrounded by said plurality of permanent magnets and being supported for rotational movement;
a plurality of rotor teeth formed on the outer surface of said rotor having armature windings disposed therebetween;
one of said permanent magnets having an opening formed therethrough;
a pickup stud formed of a magnetizable material connected to said housing and extending through the opening formed in said permanent magnet to a position in close proximity to said rotor; and,
a pickup winding wound around a portion of said pickup stud for sensing a signal from the rotor teeth as said rotor revolves.

4,082,969

MAGNETIC TORQUE CONVERTER

Donald A. Kelly, 58-06 69th Pl., Maspeth, New York, N.Y. 11378

Filed Sep. 7, 1977, Ser. No. 831,269
Int. Cl.[2] H02K *49/06*
U.S. Cl. 310—103 **10 Claims**



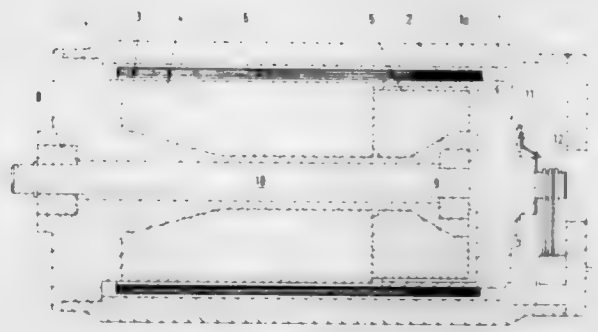
1. A magnetic torque converter comprising two basic rotating components,
a large flat non-magnetic disc containing multiple equally spaced identical permanent magnets arrayed so that their common poles (N) are exposed at the periphery,
a driving helical non-magnetic rotor containing identical equally spaced permanent magnets arrayed so that their common opposite poles (S) are exposed at the outer helical surface,
arrangement of said large flat non-magnetic disc and said driving helical non-magnetic rotor on a common centerline with rotating axes at a right angle to each other,
support means for said large flat non-magnetic disc including an elongate base and shaft with ball bearing means,
support means for said driving helical non-magnetic rotor including supporting brackets and shaft with ball bearing-means, securing of said supporting brackets onto said elongate base,
securing and locking means for each of said equally spaced permanent magnets onto said large flat non-magnetic disc and said driving helical non-magnetic rotor,
electric motor drive means for the shaft of said driving helical non-magnetic rotor, a coupling securing said electric motor to said shaft of the driving helical non-magnetic rotor,
a coupling secured to the shaft of said large flat non-magnetic disc.

4,082,970

DIRECT-CURRENT MOTOR-GENERATOR

Jean-Claude Girardin, La Chaux-de-Fonds, Switzerland, assignor to Portescap, La Chaux-de-Fonds, Switzerland

Filed Jul. 26, 1976, Ser. No. 708,425
Claims priority, application Switzerland, Aug. 12, 1975, 10457/75
Int. Cl.[2] H02K *47/04*
U.S. Cl. 310—113 **9 Claims**



1. A direct-current motor-generator which comprises at least one stationary magnetic circuit including a permanent magnet and having an air gap of substantially cylindrical shape, and a generally cup shaped rotor bearing a motor winding and a generator winding, wherein the spatial arrangement of the magnetic circuit and of the windings is such that during operation one of the windings cuts one portion of a magnetic flux path of the magnetic circuit and the other of the windings cuts another portion of said flux path.

4,082,971

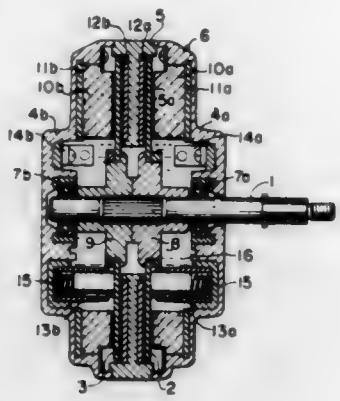
PRINTED MOTOR

Shiuichi Miyake, Washimiya, and Takao Saito, Tokyo, both of Japan, assignors to Nihon Radiator Co., Ltd. (Nihon Rajieeta Kabushiki Kaisha), Tokyo, Japan

Filed Feb. 10, 1977, Ser. No. 767,429
Int. Cl.[2] H02K *21/10*
U.S. Cl. 310—114 **1 Claim**

1. A printed motor, comprising two sheets of disk-shaped armatures (2, 3) mounted on a rotary shaft (1), which is borne by casing pieces (4*a*, 4*b*) provided with yokes (11*a*, 11*b*) on the sides confronting to the armatures (2, 3), a metallic intermedi-

ate ring (5) having a plate-shaped portion (5*a*) provided with yokes (12*a*, 12*b*) on both sides thereof and inserted between the



armatures (2, 3), said intermediate ring (5) being connected between the casing pieces (4*a*, 4*b*) to form a casing (6).

4,082,972

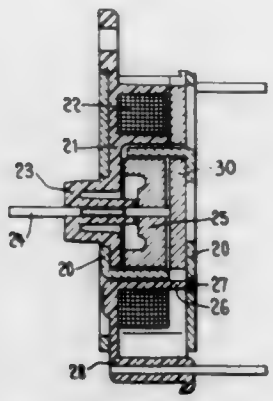
SMALL SYNCHRONOUS ELECTRIC MOTOR

Hermann Gerber, Courgevaux, and Michel Johner, Kerzers, both of Switzerland, assignors to Ebauches SA, Neuchatel, Switzerland

Continuation of Ser. No. 356,309, May 2, 1973, abandoned. This application Jul. 23, 1975, Ser. No. 598,148

Int. Cl.[2] H02K *19/00*

U.S. Cl. 310—162 **5 Claims**



1. A small synchronous electric motor, comprising:

(a) a stator casing formed by a pair of opposed identical stator casing pieces having magnetic properties

(b) each stator casing piece being a sheet metal stamping having a flat substantially circular central portion, and each piece being positioned with respect to each other so that the central portions are disposed in parallel spaced relation and form the outer casing surface

(c) a coil carrier assembly disposed within and supported by the stator casing and including an annular coil

(d) a rotor disposed within the annular coil of the coil carrier assembly and having a shaft which extends axially and outwardly through the stator casing

(e) first and second groups of poles extending from the central portion of each stator casing piece which occupy opposed sectors along a circle having a center which coincides with the shaft of the rotor and a diameter such that the poles are disposed adjacent the annular coil

(f) the length and width of the poles and their spacing being such as to permit interleaving of the first and second group of poles of one stator casing piece with the second and first group of poles respectively of the second stator casing piece

(g) an inverting axis passing through the circle center between each sector and having a fixed angular relation at one end with respect to the nearest pole of each group of poles

(h) an axis of symmetry passing through the circle center perpendicular to the inverting axis

(i) an assembly lug section on each stator casing piece within the sector of one group of poles extending axially to the central portion and symmetrically disposed to the axis of symmetry

(j) assembly lug section receiving means disposed on the central portion within the sector of the other group of poles diametrically opposite and in alignment with the assembly lug section for receiving and supporting the assembly lug sections

(k) the assembly lug section and the assembly lug receiving means when joined providing a magnetic return path between interleaved groups of poles on opposite stator casing pieces

(l) the length, shape and position of the lug assembly section and the assembly lug section receiving means being such as to provide accurate spacing between the plates as well as positioning such that the poles of both elements are readily positioned in both the axial and circumferential directions.

4,082,973

SYNCHRONOUS ELECTRIC MOTOR

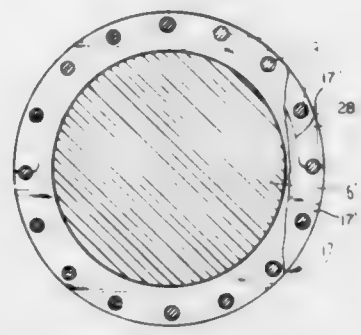
Lodewijk Schiethart, Dordrecht, Netherlands, assignor to Heemaf B.V., Hengelo, Netherlands

Filed Apr. 13, 1976, Ser. No. 676,515

Claims priority, application Netherlands, Apr. 29, 1975, 7505113; Apr. 29, 1975, 7505114; Apr. 29, 1975, 7505115

Int. Cl.[2] H02K *19/00*

U.S. Cl. 310—162 **8 Claims**



1. In a synchronous motor comprising a housing, a stator within said housing, a.c. winding means associated with said stator for producing a rotating magnetic field, d.c. winding means associated with said stator for producing a stationary magnetic field, a rotor journalled in said housing, a cage winding carried by said rotor and including a plurality of circumferentially spaced rods, and a plurality of pole pieces carried by said cage winding, said pole pieces including portions penetrated by some of said rods and other portions underlying other of said rods whereby said other rods are unsupported between their ends, the improvement which comprises:

connecting means disposed between said pole pieces for supporting said other rods between their ends.

4,082,974

GAP WINDING TYPE DYNAMO-ELECTRIC MACHINE

Hiroe Yamamoto, Tohkai; Noriyoshi Takahashi, and Miyoshi Takahashi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 27, 1976, Ser. No. 680,866

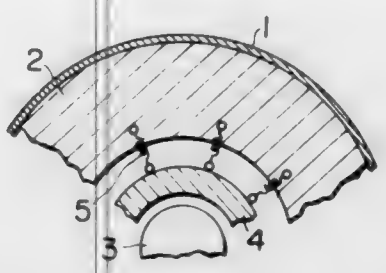
Claims priority, application Japan, May 12, 1975, 50-54543

Int. Cl.[2] H02K *1/00*

U.S. Cl. 310—179 **20 Claims**

1. A gap winding type dynamo-electric machine comprising a rotor mounted on a rotatably supported shaft, a slotless annular stator concentrically surrounding said rotor and being spaced therefrom to form an annular gap with the outer periphery of said rotor, and an armature winding located in said

annular gap along the inner periphery of said stator, support means for supporting said armature winding from said stator while permitting displacement of said armature winding relative to said stator in the circumferential direction; wherein said support means includes support members provided at circum-



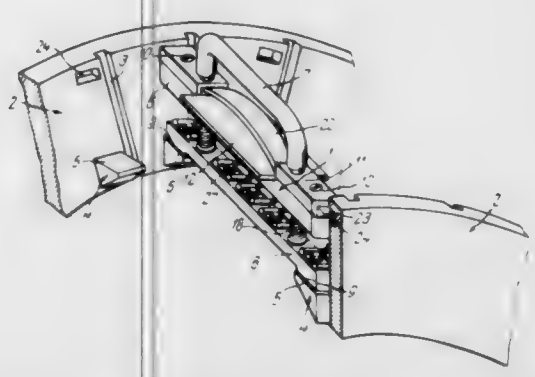
ferentially spaced positions in an axially central portion and opposite end portions of said stator; and wherein each support member of said supporting means is directly secured at one end to said armature winding and supported at the other end by said stator via an elastic member.

4,082,975

BRUSH MOUNTING DEVICE FOR DYNAMOELECTRIC MACHINE

Evgeny Mikhailovich Azarov, Zagorodny prospekt, 45, kv. 22; Valery Nikolaevich Andrushev, Novo-Izmailovsky prospekt 44, korpus 1, kv. 6, and Garri Mikhailovich Khutoretsky, Altaiskaya ulitsa 2, kv. 5, all of Leningrad, U.S.S.R.

Filed Mar. 11, 1976, Ser. No. 665,875
Int. Cl.[2] H02K *13/10*
U.S. Cl. 310—239 **5 Claims**



1. A brush mounting device for a dynamoelectric machine comprising,

a pair of stationary current-conducting plates spaced apart substantially parallel to each other and rigidly connected together;

a pair of plate contact members, each plate contact member fixedly secured to each stationary current-conducting plate, said plate contact members having generally planar contact surfaces, wherein said contact surfaces are substantially perpendicular to the current-conducting plate;

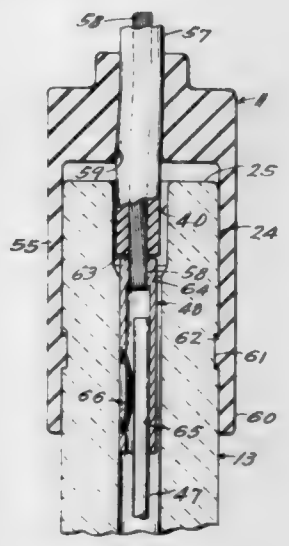
a removable brush unit for mounting between said stationary current-conducting plates comprising a housing, contact brushes mounted to said housing, a handle means for moving said brush unit between said pair of stationary current-conducting plates, a brush unit contact member having a generally planar contact surface, means for connecting said brush unit contact member to said housing, contact brush retaining means for retaining said brushes in said housing when said brush unit is removed from said current-conducting plates and for releasing said contact brushes from said housing when said brush unit is mounted between said current-conducting plates, wherein when said brush unit is mounted between said current-conducting plates, the contact surfaces of said plate contact member and said brush unit contact member are aligned in the same plane in contact making engagement, and securing means for securing said brush unit between said current-conducting plates.

4,082,976

SPARK PLUG DESIGN HAVING TWO ELECTRICALLY ISOLATED CENTER ELECTRODES

Lawrence R. Lentz, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Jun. 21, 1976, Ser. No. 699,847
Int. Cl.[2] H01T *13/04*
U.S. Cl. 313—135 **5 Claims**



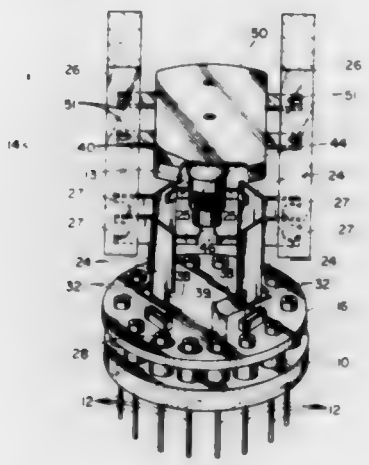
1. A spark plug and connector assembly for use in an internal combustion engine comprising, in combination, a cylindrical insulator having two bores extending therethrough substantially parallel to its axis and between first and second insulator ends, each of the bores having a first section adjacent the first end of said insulator and a second section adjacent the second end of said insulator, the first bore section having a predetermined diameter and the second bore section having a predetermined larger diameter, a generally tubular shell mounting said insulator, said shell having a threaded end circumjacent the first bore sections for engaging the internal combustion engine, two electrodes each having a terminal end within one of the second bore sections extending through one of the first bore sections projecting from the first end of said insulator and having a firing end outside said insulator, the firing ends of said electrodes being in spark gap relationship with one another, and the terminal ends of each of said electrodes having a diameter smaller than the predetermined diameter of the second bore sections, means mounting each of said electrodes within said insulator, two insulated high-voltage ignition cables, and two connectors, one connector attached to and in electrical contact with an end of each of said cables, each of said connectors and an adjacent portion of the attached one of said insulated cables being entirely within one of the bores of said insulator, and each of said connectors including a generally tubular metal housing having an internal opening of a diameter greater than that of the terminal ends of said electrodes and an external diameter smaller than the predetermined diameter of the second bore sections, each of said housings being entirely within one of the second bore sections and each of the terminal ends of said electrodes being within one of said housings, and a spring projecting inwardly into the internal opening of each of said housings, and resiliently engaging an electrode terminal end.

4,082,977

ELECTRON GUN FOR CATHODE RAY TUBE DETACHABLE FROM BASE SUPPORT

Horst H. Blumenberg, Elmwood Park, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed May 24, 1976, Ser. No. 689,611
Int. Cl.[2] H01J *29/02, 29/82*
U.S. Cl. 313—457 **1 Claim**



1. For use in a television cathode ray tube having a neck terminated by a base, and including adjacent to the base an electron gun having at least one cathode for generating at least one electron beam and having beam focusing electrodes supported as a coherent unit in spaced tandem succession along the gun's central axis by a plurality of elongated, axially oriented structural beads, with said base having therethrough a plurality of electrical lead-in pins to convey applied operating voltages to said cathode and electrodes, said gun having a gun support plate rigidly supported closely adjacent to said base by said lead-in pins, the combination including quick-mount gun mounting means for rapidly and rigidly interconnecting said gun and said support plate, said quick-mount mounting means including male-female socket components, said gun having one socket component including means embedded in at least one of said beads, said plate having means defining the other socket component said socket component for said gun comprising a support standard having a portion transverse to said central axis embedded in said bead, and a portion parallel to said axis which cooperates with said means defining said other socket component in said plate, said socket components providing for facile and secure plugging together of said gun and said base, and wherein said combination includes electrically conductive means connected between at least one of said lead-in pins and one of said electrodes, said male-female socket components providing also for the facile and secure plugging together of electrical conductive paths between one of said electrical lead-in pins and one of said electrodes to transmit electrical voltages or currents therebetween, and wherein one of said electrically conductive paths comprises a printed electrical conductor on said gun support plate between said lead-in pin and said socket components.

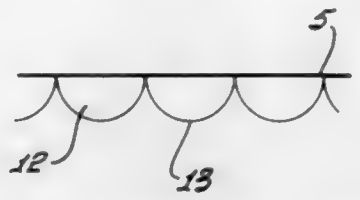
4,082,978

COLOR TELEVISION, HAVING SUPERIMPOSED COLORS

Peter Schwarz, 1501 Rexford Drive, Los Angeles, Calif. 90035

Continuation of Ser. No. 401,263, Sep. 27, 1973, which is a division of Ser. No. 36,294, May 11, 1970, Pat. No. 3,763,389. This application Apr. 11, 1975, Ser. No. 567,057
Int. Cl.[2] H01J *29/28, 29/32*
U.S. Cl. 313—474 **5 Claims**

1. In color television, the method of forming a picture on a screen consisting of groups of 2 or more dots emitting differently colored light forward and backward in combination with



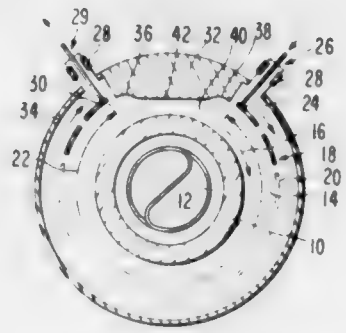
the step of reflecting an inverted image of each group back to its group, utilizing the backward light.

4,082,979

METHOD AND APPARATUS FOR REDUCING NOISE IN CROSSED-FIELD AMPLIFIERS

George K. Farney, and Fred A. Feulner, both of Boxford, Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 29, 1976, Ser. No. 727,722
Int. Cl.[2] H01J *25/34*
U.S. Cl. 315—39.3 **22 Claims**



1. A method of operating a crossed field amplifier at a low noise level, said amplifier comprising:

an extended reentrant passage for a recirculating stream of electrons,

cathode means adjacent said passage over most of its extent,

slow-wave circuit means adjacent said passage and opposite said cathode means, extending over an interaction section of said passage,

non-propagating drift electrode means adjacent said passage and opposite said cathode means, extending over a drift section of said passage,

said method including:

applying a magnetic field generally parallel to said cathode means and perpendicular to the extend of said passage,

applying a first electric field strength between said cathode means and said circuit means, and

applying between said cathode means and a portion of said drift electrode means inwardly from both ends of said drift section a second electric field strength higher than said first strength.

4,082,980

SPARK PLUG CAP PROVIDING A CAPACITOR IN PARALLEL WITH THE SPARK CAP

Masazi Yoshikawa, and Tomoe Sawada, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan, a part interest

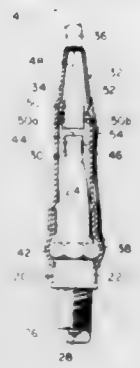
Filed Feb. 9, 1976, Ser. No. 656,723
Claims priority, application Japan, Feb. 13, 1975, 50-21425[U]; May 15, 1975, 50-65019[U]; Feb. 17, 1975, 50-66088[U]; Jun. 12, 1975, 50-81296[U]
Int. Cl.[2] H01T *13/04, 13/40*
U.S. Cl. 315—59 **22 Claims**

1. A spark plug cap for electrically and mechanically connecting a spark plug to an ignition current supply cord to intensify sparking across the gap between central and ground electrodes of the spark plug, which comprises:

an insulating body, said insulating body including means for

mechanically connecting said cap to said spark plug and terminal means adapted to be connected to said supply cord;

electrically conductive means extending through said insulating body to electrically connect said terminal means to said central electrode of said spark plug; and



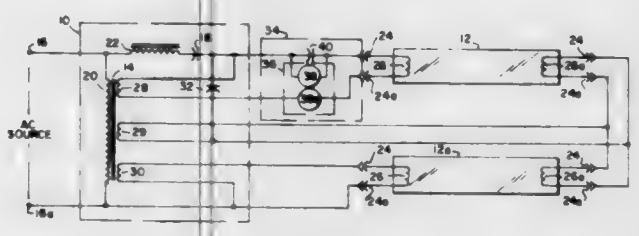
at least one capacitor unit embedded essentially entirely within said body and electrically connected in parallel to said spark gap, said capacitor unit comprising an essentially flat capacitor having a flat dielectric base and a pair of electrodes attached on the opposite sides of said dielectric base.

4,082,981

ENERGY SAVING DEVICE FOR A STANDARD FLUORESCENT LAMP SYSTEM

Edward W. Morton, Bronx, N.Y., and John F. Gilmore, Verona, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 28, 1977, Ser. No. 772,790
Int. Cl.[2] H05B *41/40*; H01J *17/34*
U.S. Cl. 315—97 **6 Claims**



1. In combination with a rapid-start type ballast for two low-pressure mercury-discharge fluorescent lamps comprising an autotransformer adapted to be connected across an AC energizing source, said lamps connected in series circuit relationship with ballasting capacitor means with the series combination connected across the primary and the secondary of said autotransformer, said lamps each having two contacts at each end thereof connecting to electrodes operatively positioned proximate the ends of said lamps, additional heater windings in transformer relationship with the primary of said autotransformer and connecting to each of said lamp contacts to preheat said lamp electrodes upon energization of said ballast, and a starting capacitor connected in parallel with one of said lamps to facilitiate series-sequence starting of said lamps, the improvement which comprises:

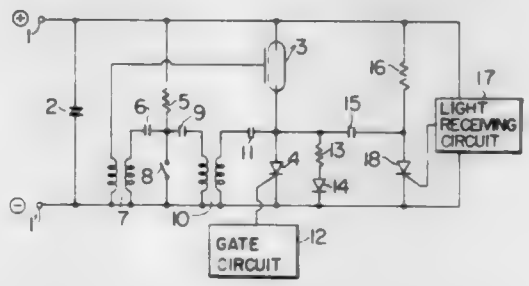
a power reducing means included in series relationship with the two contacts at one end of said lamps, said power reducing means comprising switch means which initially upon energization has a low impedance state to permit current flow and then switches to a high impedance state, said switch means comprising a first switch member in series with one of said contacts at said one end of said one lamp, a second switch member connected in series with the other of said contacts at said one end of said one lamp, and a current limiting capacitor means of predetermined capacitance connected in parallel circuit arrangement across one of said switch members, whereby when the circuit is initially energized, said switch means permits preheating of said lamp electrode connecting to said contacts at said one end of said one lamp, and thereafter upon response to current flow said switch means switches and causes the lamp current to pass through said current limiting capacitor means and decrease by a predetermined amount the current through said normally operating lamps.

4,082,982

AUTOMATIC ELECTRONIC FLASH DEVICE

Shinji Hirata, Osaka, Japan, assignor to West Electric Company, Ltd., Osaka, Japan

Filed Feb. 17, 1977, Ser. No. 769,710
Claims priority, application Japan, Feb. 19, 1976, 51-17652
Int. Cl.[2] H05B *41/30, 41/36*
U.S. Cl. 315—151 **3 Claims**



1. An automatic electronic flash device comprising:

a series connection of a first switching element which includes an anode, a cathode and a control electrode and a flash discharge tube,

a main discharge capacitor which is connected in parallel with said series connection and is adapted to be charged to high voltage,

a trigger circuit which includes a trigger capacitor and a trigger transformer, the charged energy of said trigger capacitor being discharged through the primary winding of said trigger transformer thereby to generate a high voltage pulse through the secondary winding of said trigger transformer, and said high voltage pulse being fed to the trigger electrode of said flash discharge tube,

a gate circuit which supplies a gate voltage to said control electrode of said first switching element,

a light receiving circuit which receives light reflected from an object to be photographed and supplies a flash stopping signal when the amount of the received light reaches a predetermined value,

a second switching element which is turned on in response to said flash stopping signal,

a commutation capacitor which is made to discharge in response to said second switching element being turned on and supplies a reverse current between said anode and said cathode of said first switching element thereby to turn off said first switching element, and

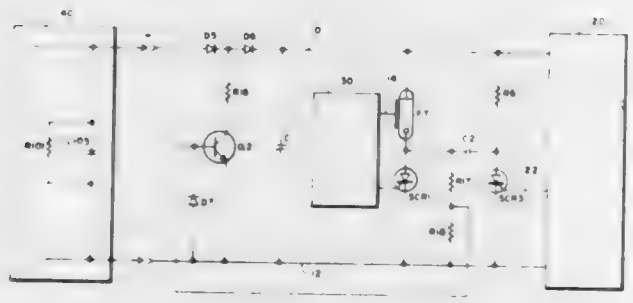
a high voltage supply circuit which generates a high voltage in synchronism with the operation of said trigger circuit so that the generated voltage is superposed on the charging voltage of said main discharge capacitor and the resulting voltage is applied across the main electrodes of said flash discharge tube.

4,082,983

CAPACITOR CHARGING SYSTEM FOR ELECTRONIC FLASH APPARATUS

James R. Adams, Jr., Littleton, Colo., assignor to Rollei of America, Inc., Littleton, Colo.

Continuation of Ser. No. 589,220, Jun. 23, 1975, abandoned.
This application Dec. 9, 1976, Ser. No. 748,785
Int. Cl.[2] H05B *41/32*
U.S. Cl. 315—241 P **20 Claims**



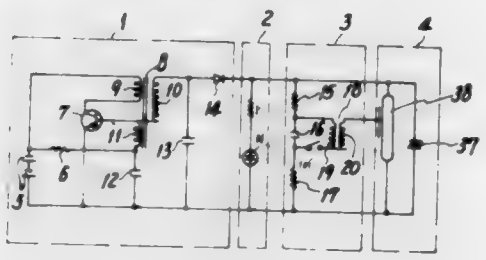
1. Electronic flash apparatus comprising:
flash tube means for producing a light flash;
first capacitor means for providing electrical current to the flash tube means;
second capacitor means for discharging during the light flash, the second capacitor means being recharged from the first capacitor means subsequent to the termination of the light flash;
first capacitor charging means for charging the first capacitor means; and
control means for sensing when the second capacitor means is being recharged and causing the first capacitor charging means to begin charging the first capacitor means.

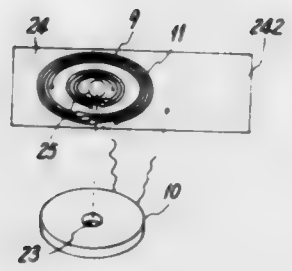
4,082,984

ELECTRIC FLASH DEVICE WITH PRINTED COIL TRANSFORMER

Hiroshi Iwata, Osaka, Japan, assignor to West Electric Company, Ltd., Osaka, Japan

Filed May 5, 1976, Ser. No. 683,614
Claims priority, application Japan, May 12, 1975, 50-56591
Int. Cl.[2] H05B *41/32*
U.S. Cl. 315—241 P **10 Claims**





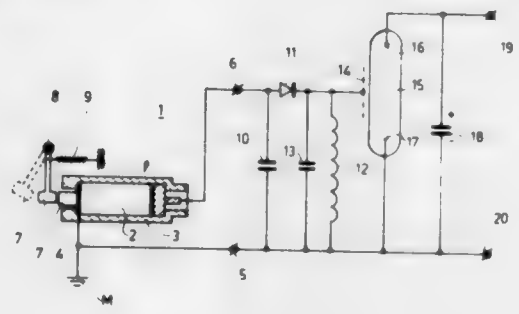
1. An electric flash device comprising
a battery,
a transistorized DC-DC converter for converting D.C. output voltage of said battery to an output of an elevated D.C. voltage, which converter includes an oscillating transistor, at least one resistor, capacitors, a convertor transformer and a rectifying diode,
a capacitor connected across the output terminals of said converter for accumulating said elevated voltage D.C. output of said DC-DC converter,
a gas-discharge lamp connected across both ends of said capacitor so as to produce a flash of light when said charge accumulated in said capacitor is discharged upon receiving a trigger pulse and
a trigger circuit comprising a trigger transformer for generating said trigger pulse to be impressed to said gas discharge lamp,
wherein the improvement is that said converter transformer comprises at least one printed coil formed on an insulation substrate as a printed coil, at least one output coil formed by winding fine insulated wire and a magnetic core inserted in both center holes of said printed coil and said output coil, said printed coil and said output coil being disposed electromagnetically to couple to each other.

4,082,985

GAS DISCHARGE FLASH LAMP WITH PIEZOELECTRIC TRIGGER GENERATOR

Pieter Jan Bolhuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1977, Ser. No. 765,527
Claims priority, application Netherlands, Feb. 10, 1976, 7601312
Int. Cl.[2] H05B *41/32*; G03B *15/03*
U.S. Cl. 315—241 P **5 Claims**

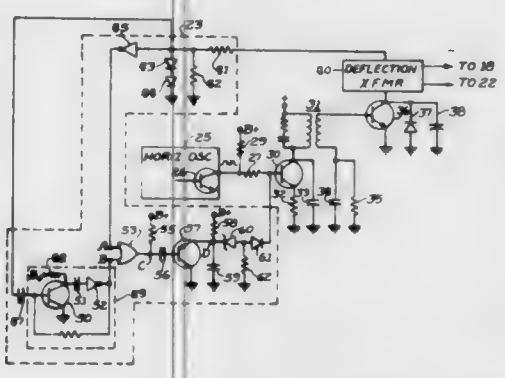


1. A device provided with a gas discharge flash lamp having a discharge tube provided with two internal main electrodes and an external starting electrode, the device comprising two input terminals intended for connection to a mechanically operable piezo-electric element which, when operated mechanically supplies in its electrically unloaded state mainly one starting pulse of a non-changing polarity for igniting the lamp, a voltage produced by means of the piezo-electric element being applied — via the input terminals — between the starting electrode and a first main electrode of the lamp, means connecting the main electrodes to an electric supply source, characterized in that the input terminals are interconnected by a series circuit of a rectifier and a parallel arrangement of an inductive and a capacitive impedance, wherein said parallel arrangement constitutes an undercritically damped circuit, and wherein a connection from the starting electrode to the first main electrode of the lamp comprises the inductive impedance but is free from the rectifier, the pass direction of the rectifier being chosen such that it passes a pulse produced at the input terminals with the same polarity as the starting pulse of the piezo-electric element.

4,082,986
HIGH VOLTAGE SHUTDOWN CIRCUIT FOR A TELEVISION RECEIVER

Paul Gamboa, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 27, 1976, Ser. No. 662,190
Int. Cl.[2] H01J *29/70*
U.S. Cl. 315—411 9 Claims

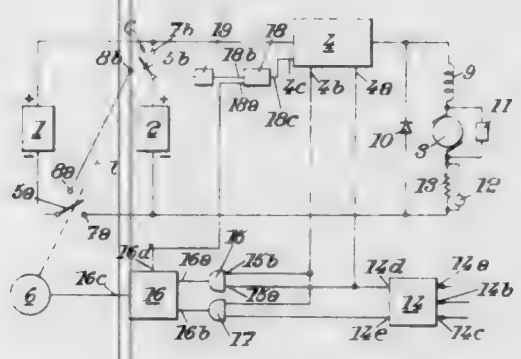


1. In a television receiver including: a cathode ray tube requiring a high DC operating potential; a deflection system generating scansion voltages at line and field frequency rates including oscillator means producing an oscillatory signal in synchronism with the line synchronizing components in a received television signal; yoke means mounted adjacent said cathode ray tube for scanning an electron beam in said cathode ray tube across the viewing screen thereof; transformer means developing line scansion currents from said oscillatory signal for application to said yoke means, said transformer means developing retrace pulses at said line frequency rate; means developing said high DC potential from said retrace pulses; and deflection system disabling means including pulse producing means for producing a standard pulse of a predetermined duration responsive to occurrence of a retrace pulse and a comparator for comparing the duration of said retrace pulses with the predetermined duration of said standard pulse.

4,082,987
METHOD AND CONTROL DEVICE FOR SWITCH MEANS ADAPTED TO MODIFY THE COUPLING OF GROUPS OF ELEMENTS OF AN ELECTROCHEMICAL GENERATOR SUPPLYING AN ELECTRIC MOTOR

Jean Cadiou, Paris, France, assignor to Societe Anonyme Automobiles Citroen, France

Filed Sep. 13, 1973, Ser. No. 396,804
Int. Cl.[2] H02P *7/06*
U.S. Cl. 318—139 9 Claims



1. Apparatus for controlling a power supply for an electric motor comprising:

at least two groups of electromechanical generating means for supplying electrical energy to said motor;

means for monitoring at least one operating condition of said motor;

chopper means coupled between the output of said at least two groups of generating means and an input of said motor for supplying pulse signals to energize said motor;

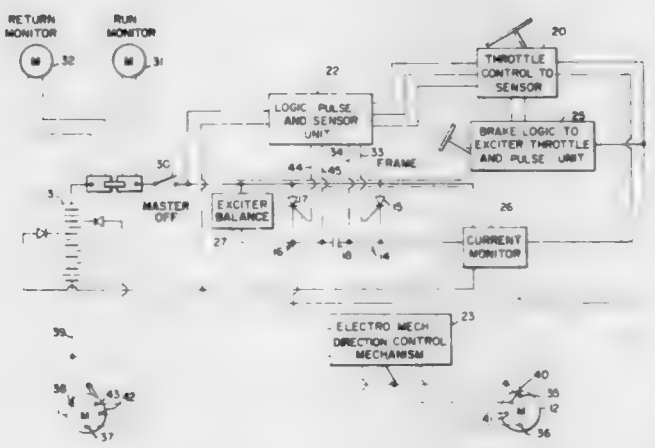
commutation means coupled to said at least two groups of electrochemical generating means for switching the coupling of said at least two groups between series and parallel coupling as a function of said operating condition of said motor; and

control means coupled to outputs of said monitoring means and chopper means and to an input of said commutation means for synchronizing the switching of said commutation means with the pulse producing operation of said chopper means.

4,082,988
ELECTRIC POWER PLANT FOR MOTOR DRIVEN VEHICLES

Roy O. Reime, San Jose, and Byron C. Stewart, Campbell, both of Calif., assignors to Richard Dorst, Atherton, Calif.

Continuation-in-part of Ser. No. 347,103, Apr. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 157,203, Jun. 28, 1971, abandoned. This application May 5, 1975, Ser. No. 574,666
Int. Cl.[2] H02P *7/28*
U.S. Cl. 318—139 20 Claims



1. A battery operated electric power system for a motor driven operator controlled vehicle comprising:

electric motor means for driving the vehicle;

electric generator means driven by motion of the vehicle for providing a battery charging voltage;

means for alternating operating said motor means and said generator means during motion of the vehicle to define a repetititve system operating cycle having a motor portion and a generator portion; and

means for varying the relative duration of said motor portion of said cycle and said generator portion of said cycle said varying means including power demand means controllable by said operator.

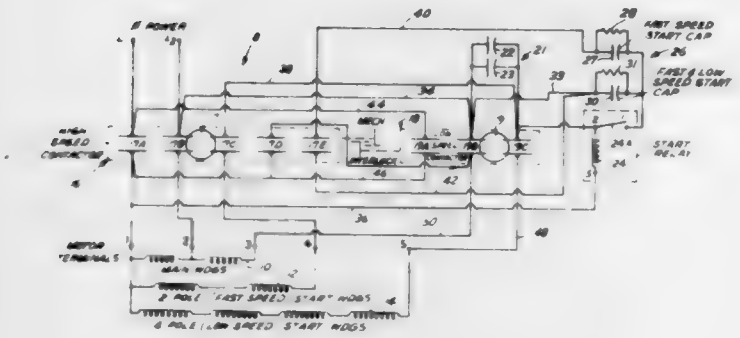
4,082,989
SWITCHING CONTACTOR CIRCUIT FOR FIVE-LEAD TWO-SPEED SINGLE-PHASE MOTOR

David M. Pfarrer, Hurst, Tex., assignor to Lennox Industries, Inc., Marshalltown, Iowa

Filed Jan. 13, 1976, Ser. No. 648,623
Int. Cl.[2] H02P *1/44*
U.S. Cl. 318—224 A 9 Claims

1. A motor control circuit for a single-phase two-speed motor including main windings, high speed start windings and low speed start winding, said circuit including high speed contactor means, low speed contactor means, start capacitor means, run capacitor means, and start relay means, with the improvement characterized by said start capacitor means including a high speed start capacitor and a low speed start capacitor in parallel therewith, said start relay means, includ-

ing a start relay coil and a normally closed contact disposed between the start windings and the start capacitors, whereby during high speed motor operation, both start capacitors are in



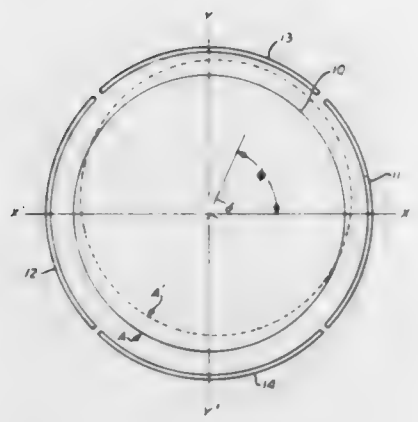
the circuit until the start relay contact is opened, and during low speed motor operation only the low speed start capacitor is in the circuit until the start relay contact is opened.

4,082,990

ELECTROSTATIC PICKOFF AND TORQUER

John Callender Stiles, Morris Plains, and Lincoln Stark Ferriss, Lincoln Park, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Sep. 29, 1976, Ser. No. 727,888
Int. Cl.[2] G05B *1/06*
U.S. Cl. 318—662 **11 Claims**



1. An electrostatic pickoff and torquer usable for sensing and controlling the position of the moving element of an instrument, comprising:

a moving element capable of motion in any direction in the plane defined by orthogonal X and Y axes and movable simultaneously along both of said X and Y axis,

a first pair of electrodes mounted on one end of said moving element parallel to said X axis,

a second pair of electrodes mounted orthogonally to said first pair of electrodes on said end of said moving element parallel to said Y-axis,

a plurality of fixed plate electrodes oriented parallel to the plane of said moving element and overlying said electrodes of said moving element in predetermined positions of motion of said moving element said fixed plate electrodes separated by a narrow gap from said moving element, and

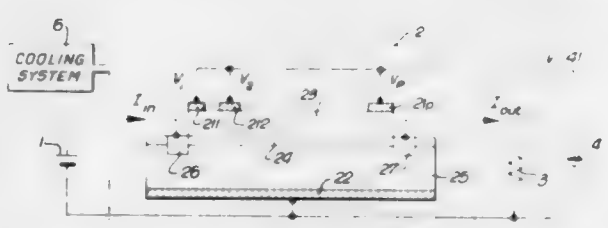
means for sensing changes in capacitance between said fixed plate electrodes and moving element because of a change in the area of said fixed plate electrodes overlying said moving element.

4,082,991

SUPERCONDUCTING ENERGY SYSTEM

James Nickolas Constant, 1603 Danbury Dr., Claremont, Calif. 91711

Continuation-in-part of Ser. No. 487,597, Jul. 11, 1974, abandoned. This application Oct. 23, 1975, Ser. No. 625,188
Int. Cl.[2] H02J *15/00*; G11C *11/44*
U.S. Cl. 320—1 **13 Claims**



8. A method of cryogenic energy storage comprising the steps of:

connecting a plurality of charge coupled energy storage elements capable of storing electromagnetic energy in the form of charges in commercial power amounts, such as kilowatts, in an array of elements, including input, output, and intermediate elements;

cooling said elements to cryogenic temperatures;

feeding a source of electrical energy to the input elements;

forming charges in the elements;

propagating charges through the array of elements by applying a source of one of a transfer control current and voltage to selected elements to move charges from element to element; and

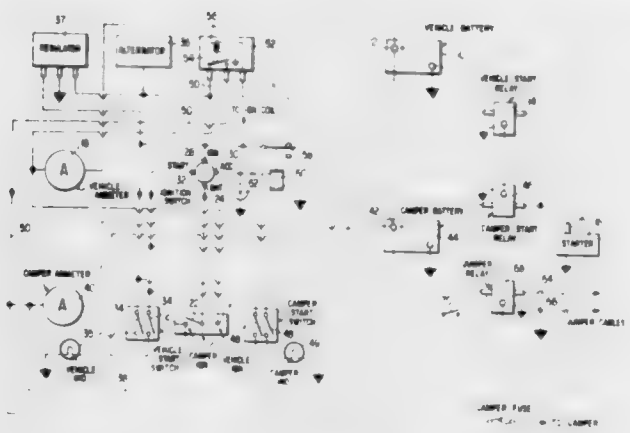
recovering the charges from the output elements.

4,082,992

TWIN IGNITION AND TWIN ELECTRICAL START SYSTEM FOR A VEHICLE

Oliver E. Day, R.R. No. 3, Box 414, Bonner Springs, Kans. 66012

Filed Jan. 18, 1977, Ser. No. 760,280
Int. Cl.[2] H02J *7/14*
U.S. Cl. 320—6 **4 Claims**



1. An electrical circuit arrangement for a vehicle which permits the starting voltage and/or the ignition voltage for the vehicle engine to be derived from the vehicle battery or from an attached camper battery, and which permits simultaneous charging of both batteries comprising in combination:

a vehicle battery having one terminal connected to ground;

a vehicle starter relay; a starter motor having one terminal connected to ground and its other terminal connected via the controlled current path of said vehicle starter relay to the other terminal of said vehicle battery; a vehicle alternator having is output connected to said other terminal of said vehicle battery; a conventional vehicle ignition switch having a battery voltage input terminal and at least an ignition voltage output terminal which is connected to the ignition coil, and a starter control voltage output terminal; a first switch connecting said starter control voltage output terminal of said ignition switch to the control terminal of said vehicle starter relay; a camper battery having one terminal connected to ground; first circuit means, including the controlled current path of a further starter relay, for connecting the other terminal of said camper battery to said other terminal of said starter motor; a second switch connecting said starter control voltage terminal of said ignition switch to the control terminal of said further starter relay; a single pole double throw switch means, having its movable contact connected to said battery voltage input terminal of said ignition switch, for selectively connecting said battery voltage input terminal to said other terminal of said vehicle battery or said other terminal of said camper battery, whereby the position of said switch means determines which of the batteries supplies the voltage for the vehicle motor ignition coil and for control of said starter relays and the closure of one or both of said first and second switches determines which one or both of the batteries supplies the starter voltage; and, second circuit means for connecting said output of said alternator to said other terminal of said camper battery only when an output voltage is present at said ignition voltage output terminal of said ignition switch and no output voltage is present at said starter control voltage output terminal of said ignition switch.

4,082,993

GAS APPLIANCE VALVE AND ADAPTOR

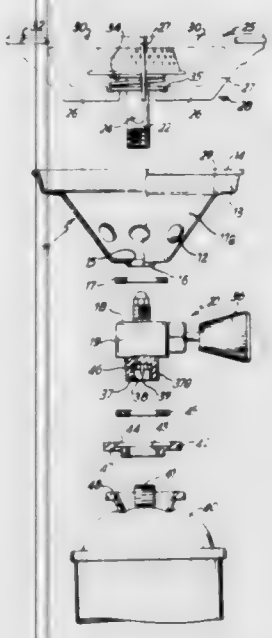
Malcolm Campbell Oakes, Wilmslow, England, assignor to Taymar Limited, Stockport, England

Filed May 28, 1976, Ser. No. 691,208

Claims priority, application United Kingdom, May 30, 1975, 23558/75

Int. Cl.[2] F16L *37/28*; F23D *13/04*

U.S. Cl. 137—322 **5 Claims**



1. An adaptor in combination with a control valve of the type having a pin for cooperating with a self-sealing outlet valve in a gas container having an externally threaded connection for adapting the control valve for use with a refillable gas container having an internally threaded connection, the combination comprising a body having a through passage with an inlet portion and an outlet portion for gas flow therethrough, valve means located in said body operative to open and close said through passage, the inlet portion of the valve body being in the form of a boss having internal and external threads concentrically surrounding said pin, and an adaptor element having an axial bore therethrough and an externally threaded portion engageable with the internal threads of said inlet portion and having a projection extending away from said externally threaded portion of said adaptor element for operating a self-sealing outlet valve of the refillable gas container having an internally threaded connection when the external inlet threads on the valve body are engaged with said internal threads of the connection of the gas container.

4,082,994

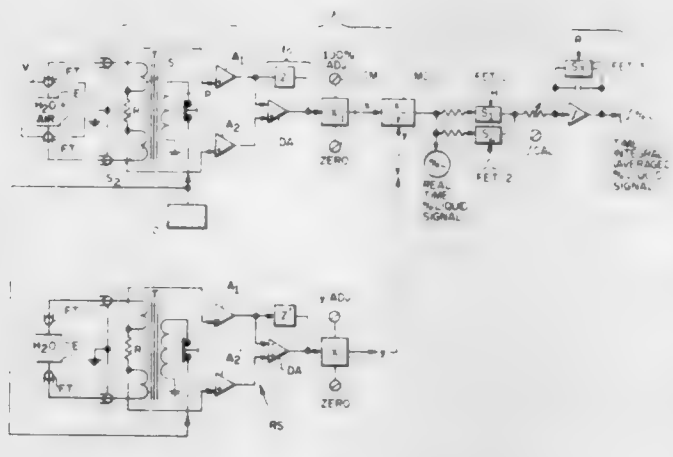
VAPOR/LIQUID FRACTION DETERMINATION

Robert E. Newton, Tewksbury, Mass., assignor to Auburn International, Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 719,196, Aug. 31, 1976. This application Sep. 10, 1976, Ser. No. 722,168

Int. Cl.[2] G01N *27/42*

U.S. Cl. 324—30 R **9 Claims**



1. Method of determining liquid and vapor fractions in a resistive conductive fluid comprising completing multiple electrical current loops through the fluid by applying a 1–30 kiloherz oscillating voltage to multiple poled electrode pairs immersed in the fluid and measuring the absolute value of an electrical parameter, variable as a function of admittance through each said loop as affected by the admittance of the fluid between electrodes of each such pair, as a measure of the liquid fraction at the time of measurement, while isolating reactive and resistive cross conduction between the said current loops and further isolating external common mode noise and

further comprising, generating a similar reference parameter measurement in a bath of 100% liquid fluid related to the fluid to be measured for fraction wherein the fraction parameter measurement is automatically divided by the reference (100% liquid) parameter measurement to establish a quotient related electrical signal.

4,082,995

CIRCUIT TESTER WITH RELIABLE INDICATION MEANS

John M. Rhude, Providence, R.I., assignor to General Electric Company, New York, N.Y.

Filed Mar. 31, 1976, Ser. No. 672,204

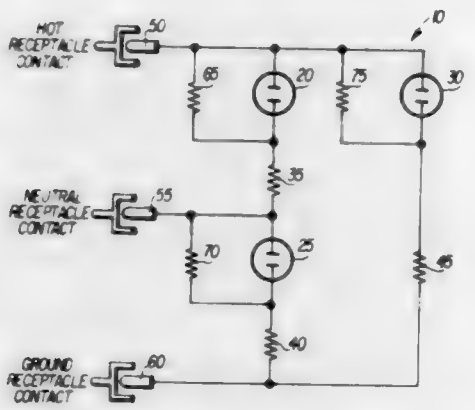
Int. Cl.[2] G01R *31/02, 19/16*

U.S. Cl. 324—51 **1 Claim**

1. In a receptacle tester of the type having hot, neutral and ground terminals for connection to the hot, neutral and ground contacts of a three-wire ground type electrical receptacle, for testing the wired condition of the receptacle, the improvement comprising:

first, second, and third glow lamps, said first and third glow lamps being connected to said hot terminal of the receptacle tester and said second glow lamp being connected to said neutral terminal of the receptacle tester;

first, second and third series resistors, said first series resistor being connected between said first glow lamp and the neutral terminal, said second series resistor being connected between said second glow lamp and the ground



terminal and said third series resistor being connected between said third glow lamp and the ground terminal; and

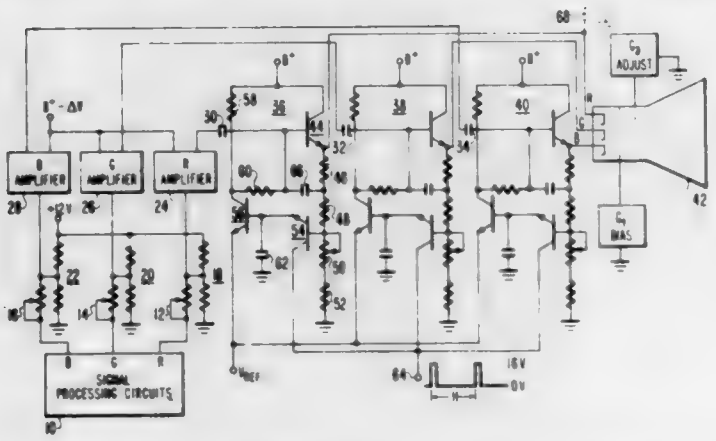
first, second and third shunt resistors associated with and connected across said first, second and third glow lamps, respectively, each of said shunt resistors serving to prevent the firing of an associated glow lamp when full line voltage is impressed across a series combination of any two of said associated glow lamps.

4,082,996

VIDEO AMPLIFIER INCLUDING AN A-C COUPLED VOLTAGE FOLLOWER OUTPUT STAGE

Werner Hinn, Zollikerberg, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Sep. 27, 1976, Ser. No. 727,044
Int. Cl.[2] H04N *5/68, 9/18*
U.S. Cl. 358—242 **8 Claims**



1. Video amplifier apparatus suitable for providing amplified image-representative signals to an image reproducing device having a capacitive input impedance component, the apparatus comprising:

a first wideband amplifier stage for providing a video signal voltage gain greater than unity; and

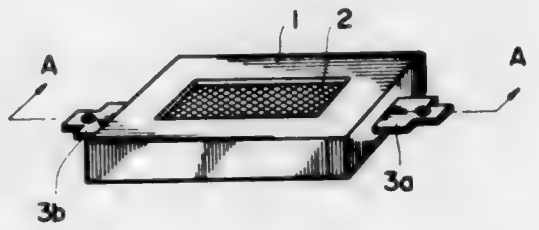
a second wideband amplifier stage for providing approximately unity video signal voltage gain, said second stage comprising at least one amplifying device having input, output and common terminals, an output load circuit comprising at least first and second resistors coupled in series relation between said output and common terminals, means for coupling amplified signals from said output terminal to said image reproducing device, a first capacitor for coupling amplified signals from said first stage to said input terminal of said second stage, and a second capacitor coupled from said input terminal to a junction between said first and second resistors for coupling video signal excursions of a polarity tending to reduce conduction of said amplifying device to said output terminal.

4,082,997

OIL DETECTING DEVICE

Takao Ohtsu; Yukinobu Nakamura, and Akira Sugimoto, all of Yokohama, Japan, assignors to Japan Gasoline Co., Ltd., Japan

Filed Jun. 23, 1975, Ser. No. 589,538
Claims priority, application Japan, Jun. 25, 1974, 49-73047
Int. Cl.[2] G01R *27/02;* **H01C** *8/00;* **B01D** *13/00, 39/00*
U.S. Cl. 324—65 R **4 Claims**



1. An oil detecting element comprising:

a container having one opening therein;

a water repellent, oil passing filter member closing said opening; and

an electrically conductive particle layer made of particles which are formed from a material selected from the group consisting of carbon, metal oxides and metal provided in said container whereby when said particle layer is soaked with oil which has passed through said filtering member, the oil comes in contact with the conductive particles and interposes between particles and causes the electrical resistance of said particle layer to increase.

4,082,998

DUAL SLOPE INTEGRATION CIRCUIT

Joe E. Marriott, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 591,266, Jun. 30, 1975, abandoned.
This application Mar. 14, 1977, Ser. No. 777,297
Int. Cl.[2] G01R *17/06;* **H03K** *1/02, 13/02*
U.S. Cl. 324—99 D **5 Claims**

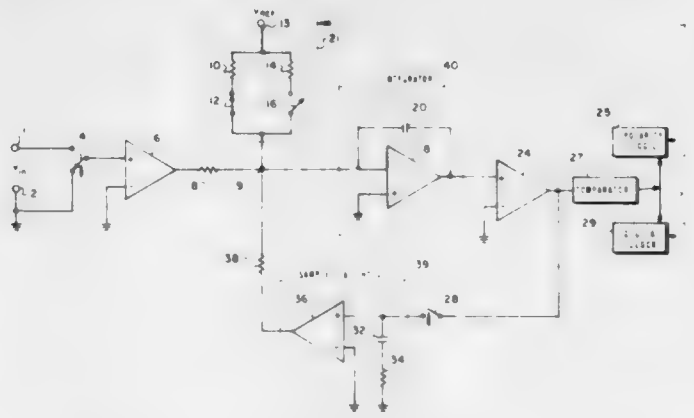


Figure 1

3. A dual slope integration circuit for operating on an input voltage of either positive or negative polarity, the circuit comprising:

input means having an input for receiving the input signal and operable in first and second operating modes for selectively producing either a reference output current or an output current responsive to the input signal during operation in the first and second operating modes, respectively:

single polarity step variable current source means for con-

trollably supplying an output current having one non-zero amplitude during initial operating of the input means in the first and second operating modes and having an amplitude which is selectively less than or greater than the one non-zero amplitude during subsequent operation of the input amplifier means in the first operating mode;

current integration means having an input coupled to receive the output currents from said input means and from said source means for producing an output signal representative of the time integral of currents applied to the input thereof;

sample holding means coupled to said current integration means for selectively sampling the output signal produced therefrom during operation of said input means in the first operating mode and for concurrently and subsequently applying to the input of said current integration means a feedback current in response to the output signal selectively sampled which alters the output signal produced by said current integration means to substantially equal a reference value during the selective sampling;

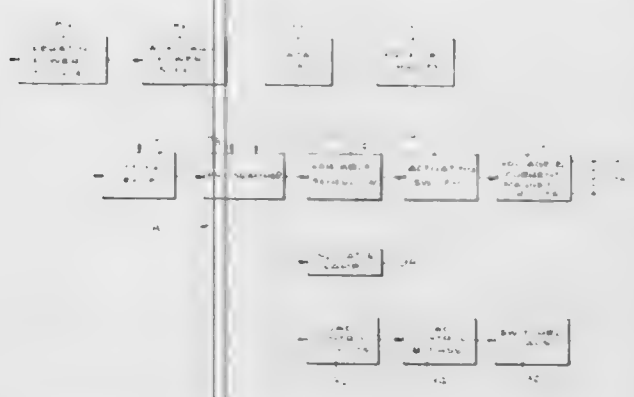
logic means cooperating with said current integration means, cooperating with said input amplifier means, cooperating with said source means and cooperating with said sample holding means for controlling the operations thereof in first and second operating modes and for establishing a relationship between the durations of such modes which is representative of the value of the input signal.

4,082,999

PROGRAMMABLE VARIABLE-RATE ELECTRIC ADAPTING DEVICE FOR WATT-HOUR METERS

Anthony Gail Staker, 23526 Oxnard St., Woodland Hills, Calif. 91364

Filed Jun. 30, 1976, Ser. No. 701,369
Int. Cl.[2] G01R *15/08, 1/04*
U.S. Cl. 324—116 **1 Claim**



1. A programmable variable-rate electric adapting device for watt-hour meters comprising:

first terminals for connecting to the contact jaws of a watt-hour meter socket receptacle;

second terminals for connecting to the blades of a watt-hour meter; and

a variable rate circuit coupled to said first and second terminals so as to be in parallel with the line voltage measuring coil of the watt-hour meter, said variable rate circuit comprising:

a digital clock for generating signals establishing the time;

a programmer coupled to said digital clock to receive said signals establishing the time, to select a predetermined scaling rate stored in said programmer based upon the time, and to provide an output signal that is indicative of said selected predetermined scaling rate;

a variable generator coupled to said programmer to receive said selected predetermined scaling rate output signal and to generate switch drive signals corresponding to said selected predetermined scaling rate; and

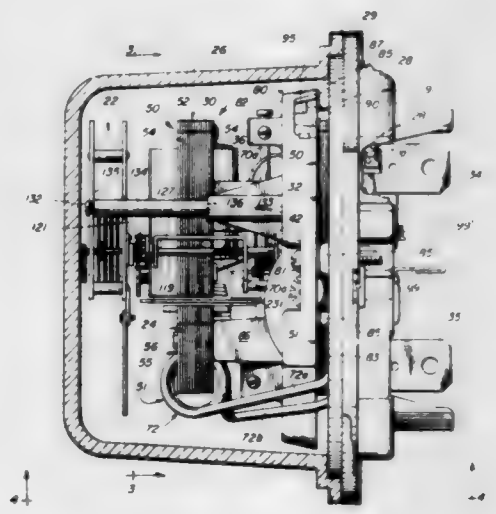
a solid state actuating switch coupled to said variable generator and coupled to the line voltage measuring coil of the watt-hour meter when said variable-rate circuit is coupled to said second terminal, said actuating switch responding to said switch drive signals to either allow current from the line to flow through the line voltage measuring coil during an on cycle or to prevent current from flowing through said line voltage measuring coil during an off cycle.

4,083,000

ROTATING DISC MULTIELEMENT POLYPHASE METER

Dale F. Becker, Seneca, S.C., assignor to Sangamo Weston, Inc., Springfield, Ill.

Filed Sep. 7, 1976, Ser. No. 720,602
Int. Cl.[2] G01R *11/04, 11/06*
U.S. Cl. 324—137 **6 Claims**



1. A polyphase watthour meter for measuring electrical power consumption for an electrical circuit, a base plate having an inner concave surface; a supporting frame member comprising a casting of non-magnetic, electroconductive material; said casting having a generally disc-shaped body portion extending parallel to said base plate and including a first concave surface disposed adjacent to said concave surface of said base plate and cooperating therewith to define a cavity, and a second surface facing the front of said meter; first fastener means for securing said supporting frame to said base plate; first and second electromagnetic means each having an air gap, said first and second electromagnetic means each having a longitudinal axis; said casting providing first spacer means extending toward said base plate, second spacer means extending from said second surface thereof toward the front of said meter, third spacer means extending from said second surface thereof and located outside said second spacer means, a pair of diametrically spaced projections on said second surface, and a housing on said second surface; second fastener means for mounting said first electromagnetic means to said first spacer means and in said cavity; third fastener means for mounting said second electromagnetic means to said second spacer means with the longitudinal axes of said first and second electromagnetic means located respectively in first and second parallel spaced planes which extend parallel to said base plate with associated air gaps in alignment in a third plane which extends perpendicular to said first and second planes; a shaft rotatably mounted to said projections on said frame casting; an electroconductive disc mounted on said shaft for rotation about an axis extending substantially perpendicular to said third plane and through the aligned air gaps; winding means for each of said electromagnetic means effective when energized to establish a shifting magnetic field in the associated air gap to apply a torque to said disc for rotating said disc in correspondence with power consumption by said circuit; damper magnet means mounted in said housing of said frame casting; a register; fourth fastener means for securing said register to said third spacer means of said frame casting in a forward portion of the meter; and a coupling gear box assembly mounted on said frame casting in operative relationship

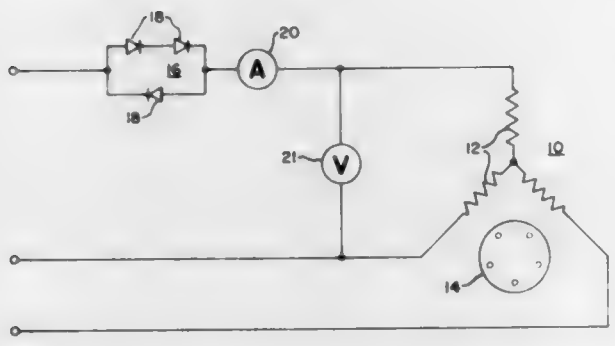
with said register for coupling said shaft to said register to permit said register to be driven in correspondence with the revolutions of said disc.

4,083,001

MEASUREMENT OF MOTOR WINDING TEMPERATURE

Derek A. Paice, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 29, 1976, Ser. No. 755,381
Int. Cl.[2] G01R *31/06, 27/02*
U.S. Cl. 324—158 MG **10 Claims**



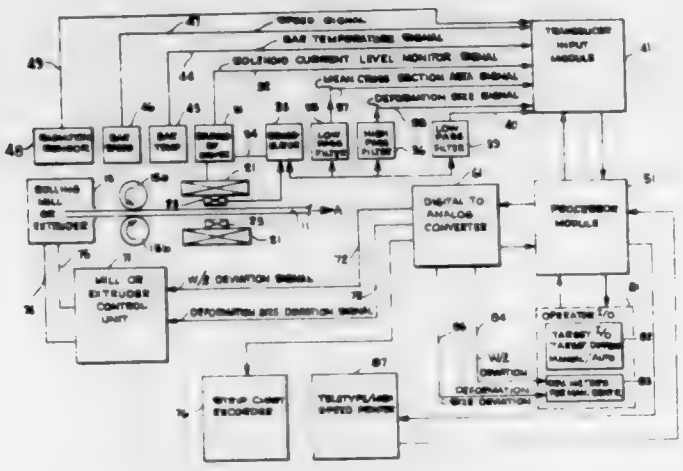
1. In combination, an electric motor having a winding with terminals for application of alternating current thereto, said winding characterized by increasing resistance with increasing temperature, means for developing a small direct current component from the applied alternating current and introducing said direct current component into the circuit of said motor winding along with said alternating current, and means responsive to said direct current component for determining the resistance of the winding.

4,083,002

METHOD AND APPARATUS FOR MEASURING CROSS SECTIONAL AREA AND WEIGHT PER UNIT LENGTH OF ELONGATED, CONDUCTIVE MATERIAL BY MAGNETIC FIELD DISPLACEMENT

John J. Allport, 12298 Candy Ct., Saratoga, Calif. 95070

Filed Feb. 17, 1976, Ser. No. 658,247
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—227 **11 Claims**



1. Apparatus for determining instantaneous cross sectional area of moving elongated, conductive material comprising,

first solenoid means axially surrounding a length of elongated, conductive material for generating an alternating magnetic field parallel to the length of the material, said field having a first frequency and a second, different frequency such that said field is substantially restrained from penetrating said material at selected material temperatures,

at least one second solenoid means within said first solenoid means axially surrounding said material for sampling said magnetic field generated by said first solenoid means and producing a first output signal representative of said magnetic field through said second solenoid when said material is respectively removed and inserted axially into said second solenoid means and

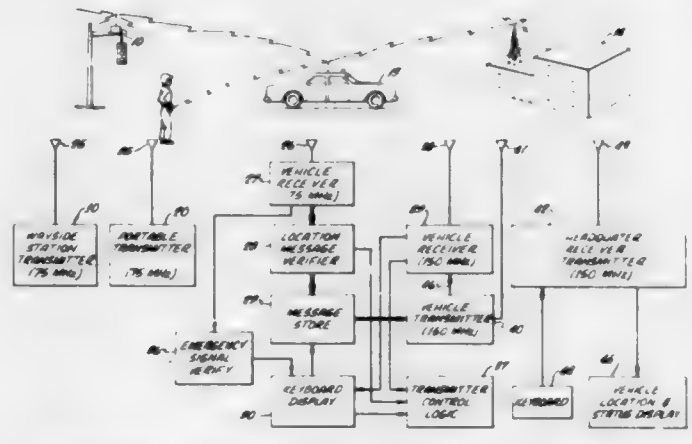
a processor module means connected to said second solenoid means for computing the ratio of said first output signal induced in said second solenoid means when said material is present in said second solenoid with a second signal induced in said second solenoid means when said material is absent in an area determining comparison relying on magnetic field displacement caused by the presence and absence of said material in said field, said processor means computing material cross sectional area at first and second frequencies for obtaining a true material cross sectional area independent of temperature.

4,083,003

VEHICLE LOCATION SYSTEM

Adrian B. Haemmig, Silverado, Calif., assignor to Products of Information Technology, Inc., Costa Mesa, Calif.

Division of Ser. No. 413,039, Nov. 5, 1973, Pat. No. 3,984,807.
This application Apr. 8, 1976, Ser. No. 675,031
Int. Cl.[2] G08G *1/12;* H04B *1/00*
U.S. Cl. 325—6 **2 Claims**



1. In a vehicle location system wherein stationary wayside stations at field locations are used to reference the field location of said vehicle at a given point in time and wireless paths are used for transmitting digitally encoded messages between said stationary wayside stations and said vehicle, the improvement comprising:

a radio transmitter located at said field location for re-transmitting said digitally encoded message over a radio channel from said field location to a remote site,

transmitter control means located at said field location for automatically turning on said radio transmitter upon receipt of said digitally encoded message over said wireless path,

a radio receiver located at said field location and tuned to the channel over which said messages are transmitted from said field location to said remote site, and

means located at said field location and responsively coupled to said receiver and operatively coupled to said transmitter control means for automatically delaying transmission of said encoded message to said remote site until said channel is clear so that simultaneous automatic transmissions on the same radio frequency channel are avoided.

4,083,004

EXPENDABLE REPEATER EMPLOYING HARMONIC MIXING

Marvin Cohn, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jun. 8, 1976, Ser. No. 693,987
Int. Cl.[2] H04B *7/14*
U.S. Cl. 325—6 **11 Claims**

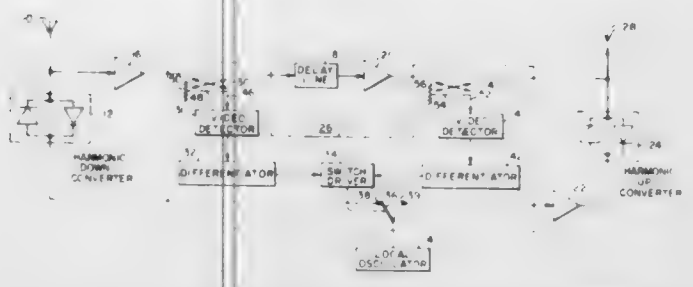
1. A signal repeater for providing a transmitted signal in response to a received signal, said repeater comprising:

an oscillator for providing a heterodyning signal;

means for down-converting the received signal by mixing the received signal with a harmonic of the fundamental heterodyning signal of said oscillator to provide an intermediate frequency signal;

means for delaying the propagation of said intermediate frequency signal for a predetermined time;

means for up-converting the intermediate frequency signal by mixing the intermediate frequency signal with a harmonic of the heterodyning signal of said oscillator to provide the transmitted signal having a frequency which is substantially equal to the frequency of the received signal; and



means for switching the heterodyning signal of said oscillator between said down-converting means and said up-converting means in response to the propagation of said intermediate frequency signal between said down-converting means and said up-converting means.

4,083,005

THREE-LEVEL SERIAL DIGITAL DATA COMMUNICATION SYSTEM

Floyd William Looschen, Laguna Beach, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 1, 1976, Ser. No. 737,732
Int. Cl.[2] H04L *3/00*
U.S. Cl. 325—38 A **10 Claims**



1. A serial three-level digital data communication channel comprising:

a two-wire transmission line;

encoding and driving means for encoding a binary input signal into a three-level signal having high, low and intermediate levels and for coupling said three-level signal to one end of said transmission line for transmission thereby, said encoding being such that one binary digit is encoded as a transition of two levels in a direction toward said high level if the previous level of said three-level signal is at said low level or by a transition of one level in a direction toward said low level if the previous level is at either said high or intermediate level, and the other binary digit is encoded as a transition of two 1 levels in a direction toward said low level if the previous level of said three-level signal is at said high level or by a transition of one level in a direction toward said high level if the previous level of said three-level signal is at either said low or intermediate level;

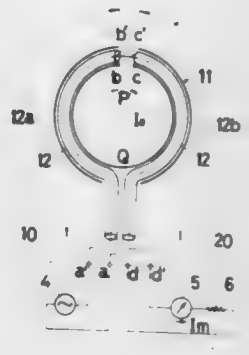
receiving and decoding means coupled to the other end of said transmission line for receiving the transmitted three-level signal, deriving a clock signal therefrom, and then employing the derived clock signal for decoding the received three-level signal into binary form.

4,083,006

LOOP TYPE STANDARD MAGNETIC FIELD GENERATOR

Ichiro Yokoshima, Tokyo, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation-in-part of Ser. No. 487,198, Jul. 10, 1974, abandoned. This application Feb. 17, 1976, Ser. No. 658,769
Claims priority, application Japan, Jul. 10, 1973, 48-77091; Jul. 28, 1973, 48-84578
Int. Cl.[2] H04B *1/04*
U.S. Cl. 325—125 **8 Claims**



1. A loop type standard magnetic field generator comprising:

a loop having two paired signal feeding points formed by cutting away a portion thereof;

a two-wire feeding line, one end of each wire of said feeding line being connected to one end of one of said paired signal feeding points of said loop;

a signal generation circuit, a first terminal of said signal generation circuit being connected to the other end of one wire of said feeding line and a second terminal of said signal generation circuit being connected to the other end of the other wire of said feeding line and composed of an oscillator supplying a signal to said loop to generate a loop current;

a two-wire transmission line, one end of each wire of said transmission line being connected to the other end of the other of said paired signal feeding points of said loop;

a compensation circuit composed of a compensation resistor and an indicator for measuring the loop current supplied from said signal generation circuit, a first terminal of said compensation circuit being connected to the other end of one wire of said transmission line;

one end and the other end of the other wire of said transmission line being respectively connected to the one end of the other wire of said feeding line and to a second terminal of said compensation circuit;

the length of said transmission line and the resistance value of said compensation resistor being selected so that the frequency characteristic of a ratio of the indicated value of said indicator to the loop current flowing through said loop is cancelled by the frequency characteristic of a ratio of the loop current to a magnetic field strength at a given point.

4,083,007

RADAR TRANSMITTER TEMPORAL NOISE REDUCTION SYSTEM

Arnold M. Levine, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

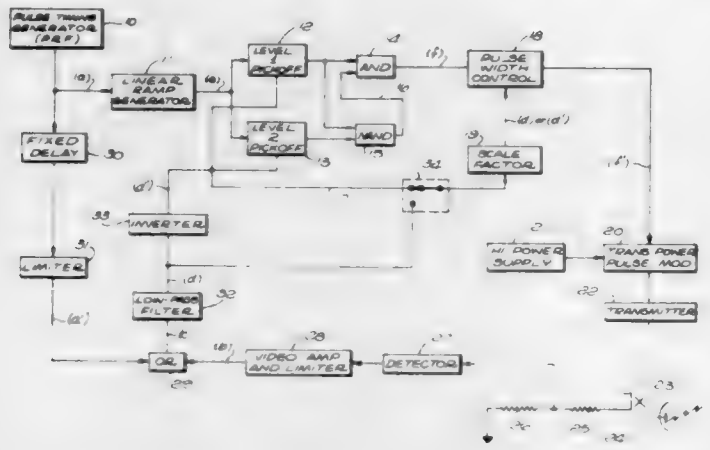
Filed Sep. 20, 1976, Ser. No. 724,278
Int. Cl.[2] H03K *13/02*
U.S. Cl. 325—159 **10 Claims**

1. A pulsed radar transmitting system, including a timing pulse source operating at a predetermined pulse repetition frequency, a pulse modulator controlled by said timing pulse source, a radio frequency transmitter pulsed by said modulator, to produce a corresponding radio frequency pulse and a power supply having ripple frequency components in its output, said

power supply being connected as the power source for said pulse modulator, comprising:

first means responsive to said timing pulse source and preceding said pulse modulator for providing a time position controlled initiating pulse to said pulse modulator, said first means being also responsive to a first control signal therefor;

second means for sampling said radio frequency pulse generated by said transmitter and for producing a video pulse



substantially in time coincidence with the envelope of said radio frequency pulse;

and third means responsive to said video pulse and said timing pulse for generating said first control signal as a function of the difference of starting time and duration between said video pulse, and for applying said first control signal to said first means in a polarity so as to vary the position of said initiating pulse to tend to compensate for variations in the time of occurrence of said radio frequency pulse.

4,083,008

METHOD AND CIRCUIT FOR GENERATION OF DIGITALLY FREQUENCY-SHIFTABLE ELECTRIC SIGNALS

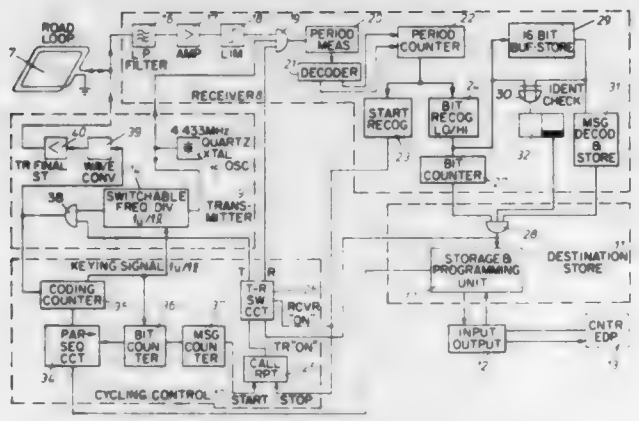
Bernd Eschke, Detfurth, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Apr. 9, 1976, Ser. No. 675,318

Claims priority, application Germany, Apr. 10, 1975, 2515660; Apr. 14, 1975, 2516242

Int. Cl.[2] H04B *1/04*

U.S. Cl. 325—163 **22 Claims**



18. A method of generating frequency-shift code signals for a system for automatic exchange of coded information, with an oscillator shiftable between predetermined frequencies, a repetitive function generator circuit and an output stage, comprising the steps of:

generating electrical digital signals by means of said oscillator at at least two predetermined frequencies in a sequence of single-frequency emissions;

producing, by using current from a direct current source, in said function generator circuit, in response to said digital signals, a repeated stepped wave formed of a succession of intervals of a constant non-zero voltage level of the same polarity of which the highest and the lowest levels are maintained for twice as long as each of the others and the different voltage levels succeed each other in steps alternately rising from the lowest to the highest and descending from the highest to the lowest;

reversing the polarity of the wave produced in the preceding step at the middle of each interval of said lowest voltage level to produce an output wave;

filtering the wave produced in the preceding step to smooth out the stepped structure, and

shifting the frequency at which said electrical digitalsignals are generated from time to time but only at times coinciding with a polarity reversal which reverses the polarity of said output wave in a predetermined sense.

4,083,009

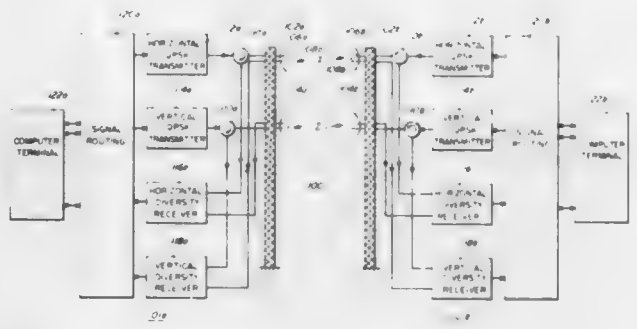
HIGH RELIABILITY DIVERSITY COMMUNICATIONS SYSTEM

William J. Bickford, Weston; William L. Hatton, Wellesley Hills; Colin J. Pallemaerts, Dover; Paul J. Tanzi, Wayland, and Carson K. H. Tsao, Middlesex, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 483,756, Jun. 27, 1974, abandoned. This application Jun. 4, 1976, Ser. No. 693,251

Int. Cl.[2] H04B *1/06, 7/02*

U.S. Cl. 325—304 **17 Claims**



1. In combinaton:

a plurality of diversity receiving means for receiving transmitted digital signals, each of said transmitted signals comprising a local timing signal, each of said transmitted signals being received by a separate one of said receiving means;

means for producing a composite timing signal from the received local timing signals; and

means for coupling a selected one of said diversity receiving means to utilizing means, selection of the said selected one of said receiving means occurring without loss of data to said utilizing means, said selection occurring in synchronism with a composite timing signal, transitions of said composite timing signal occurring at the average of the transition times of local timing signals at each of said receiving means.

4,083,010

RECEIVING MEANS FOR USE IN A DIGITAL DATA COMMUNICATION SYSTEM

Floyd William Looschen, Laguna Beach, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 1, 1976, Ser. No. 737,730

Int. Cl.[2] H04L *25/40*

U.S. Cl. 325—321 **7 Claims**

1. A balanced differential receiver for use in receiving a digital signal from a two-wire transmission line, said receiver comprising: first and second differential amplifiers each having positive and negative

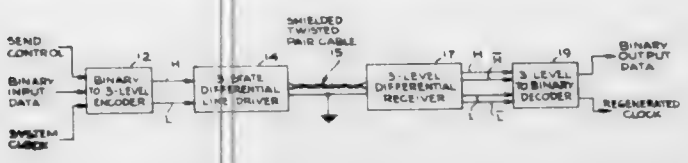
differential inputs and each providing a binary output signal;

means coupling one input of said first differential amplifier to one wire of

said two-wire transmission line and coupling a like polarity input of

said second differential amplifier to the other wire of said two-wire transmission line;

first and second biasing means respectively coupled between



opposite polarity inputs of said first and second differential amplifiers; and

constant current means for applying a constant current to each of said biasing means, said constant current being chosen in conjunction with said biasing means for providing thresholds for said differential amplifiers for detecting a plurality of levels of a digital signal received from said transmission line.

4,083,011

BATTERY HOLDER AND CONNECTOR FOR A RADIO RECEIVER OR THE LIKE

Sherwood W. Ferrell, Rustburg; Friedrich H. Mann, and Henry A. Schaefer, both of Lynchburg, all of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Jul. 26, 1976, Ser. No. 708,866
Int. Cl.² H04B *1/03*
U.S. Cl. 325—352 **10 Claims**



1. In a radio receiver or the like, an improved arrangement for removably holding and connecting a battery for powering said radio receiver or the like comprising:

a. an elongated member for receiving and holding a battery;

b. said elongated member comprising a metallic portion having retaining means at one end thereof;

c. first metallic means fastened to said metallic portion of said elongated member for attaching said elongated member to a radio receiver or the like, and for connecting said metallic portion to said radio receiver or the like;

d. a closure plate comprising a metallic portion having means for engaging said retaining means of said elongated member and removably attaching said closure plate to said elongated member, said closure plate extending across said one end of said elongated member for retaining said battery therein, said metallic portion of said closure plate being configured to engage one terminal of said battery at one end thereof and to connect said one terminal of said battery to said first metallic means fastened to said metallic portion of said elongated member;

e. a metallic contact;

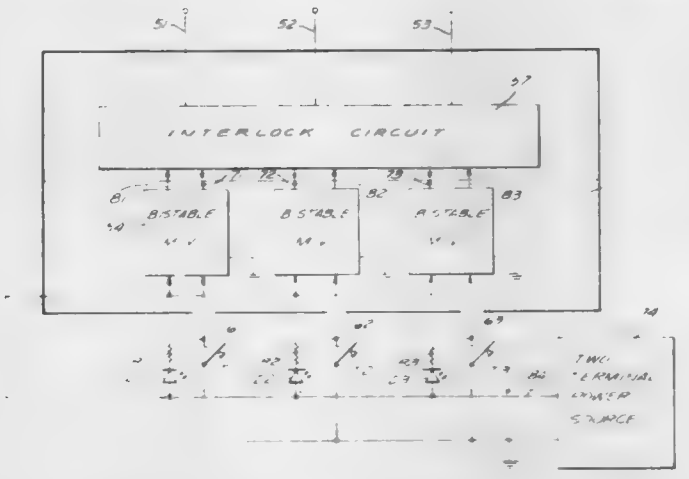
f. and second metallic means fastened to said contact for attaching said contact to said radio receiver or the like and for connecting said metallic contact to said radio receiver or the like, said metallic contact being positioned in the vicinity of the other end of said elongated member so that the other end and the other terminal of said battery engages said metallic contact when said battery is positioned within said elongated member and retained by said closure plate.

4,083,012

AUTOMATIC FUNCTION SETTING AND INDICATION ARRANGEMENT FOR A COMMUNICATIONS RECEIVER

Willy Kanow, Berlin, Germany, assignor to Loewe-Opta GmbH, Kronach, Germany

Filed Feb. 10, 1977, Ser. No. 767,377
Claims priority, application Germany, Feb. 17, 1976, 2606227
Int. Cl.² H03H *5/12*
U.S. Cl. 325—455 **5 Claims**



1. An arrangement connectable to a two-terminal power source for simultaneously (a) providing an activating signal for a selected one of first and second functional settings in a communications receiver, (b) providing a visual indication of the selected setting and (c) disabling any activating signal and visual indication then present for the non-selected setting, the arrangement comprising, in combination, first and second selection keys, first and second electrically activated illuminating means, first and second bistable multivibrators each having a first switching terminal and a complementary second switching terminal, the respective first ones of the keys, illuminating means and multivibrators being individually associated with the first setting and the respective second ones of the keys, illuminating means and multivibrators being associated with the second setting, means associating each of the multivibrators with a first terminal of the power source for establishing a relatively low impedance between the first switching terminal of the multivibrator and the first terminal of the power source upon the application of a prescribed switching voltage to the first switching terminal of the multivibrator and for establishing a relatively high impedance between the first switching terminal and the first terminal of the power source upon the application of the switching voltage to the second switching terminal of the multivibrator, means for individually coupling each illuminating means between the other terminal of the power source and the first switching terminal of the associated multivibrator, means individually connecting each key between the first terminal of the source and the first switching terminal of the associated multivibrator for simultaneously applying the switching voltage to the first switching terminal of the associated multivibrator and for activating the associated illuminating means when the key is actuated, first and second gating means each having a trigger input and at least first and second outputs which are actuated in parallel when the trigger input thereof is excited, the first output of each gating means exhibiting the switching voltage when the associ-
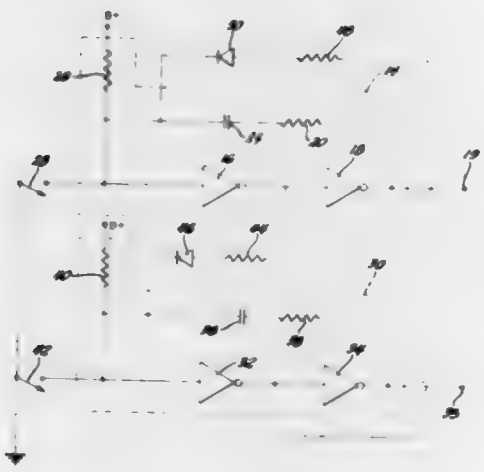
ated trigger input is excited, means coupling the second switching terminal of the first multivibrator to the trigger input of the first gating means for exciting said trigger input when the switching voltage is applied to the first switching terminal of the first multivibrator, means coupling the second switching terminal of the second multivibrator to the trigger input of the second gating means for exciting said trigger input when the prescribed switching voltage is applied to the first switching terminal of the second multivibrator, means for coupling the first output of the first gating means to the second switching terminal of the second multivibrator, and means for coupling the first output of the second gating means to the second switching terminal of the first multivibrator, the second outputs of the first and second gating means individually constituting the activating signals for the first and second settings, respectively.

4,083,013

MONOSTABLE MULTIVIBRATOR TIMER CIRCUITS WITH RESET

Frederick K. Schultz, Bringhurst, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 19, 1977, Ser. No. 760,565
Int. Cl.[2] H03K *3/10*
U.S. Cl. 328—207 **2 Claims**



1. A system for selectively providing a timed output signal at one of at least two output terminals characterized in that selectively providing a timed output signal at one of the output terminals is effective to terminate an existing timed output signal at the remaining output terminals, the system comprising:

a voltage source, the low voltage side of the voltage source defining a point of reference potential:

at least first and second monostable multivibrators, each of said multivibrators including amplifying means having an input terminal, a noninverting output terminal and an inverting output terminal, a timing capacitor coupled between the input terminal and the noninverting output terminal, a timing resistor coupled between the high voltage side of the voltage source and the input terminal, the noninverting output terminal being normally set by the voltage source to a high voltage and the inverting output terminal being normally set by the voltage source to the reference potential, and a selectively operable switch means effective when operated to apply a reference potential pulse to the input terminal so as to shift the noninverting output terminal from the high voltage to reference potential and shift the inverting output terminal from the reference potential to the high voltage, said noninverting and inverting output terminals remaining at the reference potential and high voltage, respectively, during the period of the reference potential pulse and thereafter for a specified time duration determined by the time constant of the timing capacitor and the timing resistor to provide the timed output signal at the inverting and noninverting output terminals; and

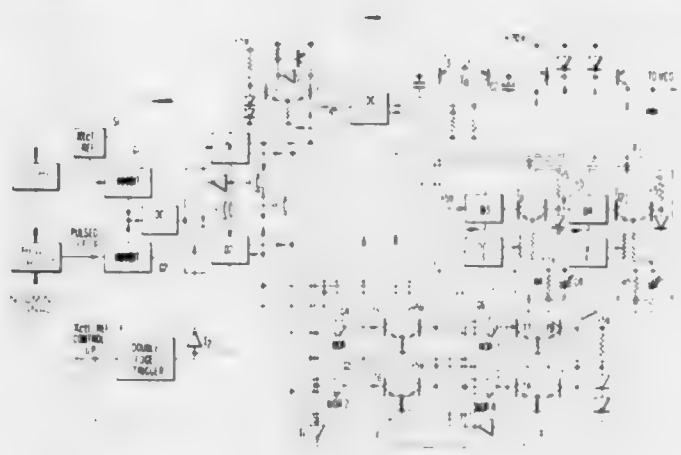
circuit means coupled between the inverting output terminal of the amplifying means in each of the monostable multivibrators to the input terminals of the remaining ones of the monostable multivibrators so that selective operation of a switch means associated with one of the monostable multivibrators is effective to quickly charge the timing capacitor of another one of the monostable multivibrators providing a timed output signal so as to terminate the last mentioned timed output signal.

4,083,014

FREQUENCY LOCK LOOP

Ashley W. Guest, Bristol, England, assignor to British Aircraft Corporation Limited, London, England

Filed Oct. 12, 1976, Ser. No. 731,860
Claims priority, application United Kingdom, Oct. 17, 1975, 42615/75
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—1 A **6 Claims**



1. A frequency lock loop for adjusting the frequency of a signal to a desired frequency, comprising:

storage means for storing a signal value representative of the said desired frequency;

a first square wave generator connected to be clocked by the signal to be adjusted and defining thereby the initiation and termination of a first pulse period which is inversely proportional to the frequency of the said signal;

a second square wave generator connected to be responsive to the said signal to initiate the generation of a second pulse period substantially simultaneously with the initiation of the first pulse period by the first square wave generator and responsive to the signal value stored by the storage means to terminate the said second pulse period after an interval, from its initiation, inversely proportional to the said desired frequency;

a comparator for comparing the first and second pulse periods defined by the first and second square wave generators to derive a correcting signal varying with the difference in the durations of the said pulse periods; and

a feedback circuit responsive to the said correcting signal for adjusting the frequency of the said given signal in a sense such as to reduce the difference in the durations of the two said square waves.

4,083,015

FAST SWITCHING PHASE LOCK LOOP SYSTEM

Alfred E. Popodi, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 678,802, Apr. 21, 1976, abandoned. This application Jul. 22, 1977, Ser. No. 817,931
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—4 **6 Claims**

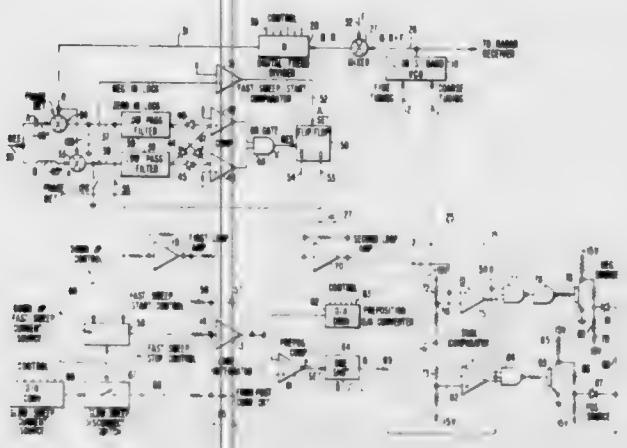
1. A phase lock loop system for decreasing the phase settling time for phase coherency with a reference frequency immedi-

ately after lock when switching from one desired frequency to another desired frequency, comprising:

a voltage controlled oscillator for generating at its output a frequency signal that varies as a function of its input voltage;

phase comparator means to generate at its output an alternating output signal that decreases in frequency to provide a frequency modulation ramp as the difference between the oscillator frequency and the reference frequency decreases;

a low pass filter means responsive to the frequency modulation of the phase comparator means output to generate at its output a single pulse of a predetermined theshold value, said filter having a response time matching a predetermined frequency modulation rate of the phase comparator means output such that the duration of one period of the filter cut-off frequency is substantially equal to the duration of the predetermined frequency modulation rate of the phase comparator means to generate said single pulse



at a precise time substantially in the center of the capture range,

tuning loop means when connected coupling electrically the output of the phase comparator means to the input of the oscillator, said tuning loop means also including means operative to generate a constant voltage output when the phase comparator means output is at zero error potential to lock the phase of the oscillator frequency to the phase of the reference frequency;

a normally inactive current sweep source operative when activated to change the input voltage to the oscillator at a predetermined rate to provide such predetermined frequency modulation rate at the output of the comparator means;

first circuit means responsive to a change to a desired frequency to activate the current sweep source and disconnect the tuning loop means from the oscillator input; and

second circuit means responsive to said single pulse to deactivate the current sweep source and connect the tuning loop means to the oscillator substantially simultaneously.

4,083,016

COUPLED-CAVITY MICROWAVE OSCILLATOR

Donald Roy Zangrando, Los Altos, Calif., and Clifford Herrol Kelley, Jr., San Jose, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

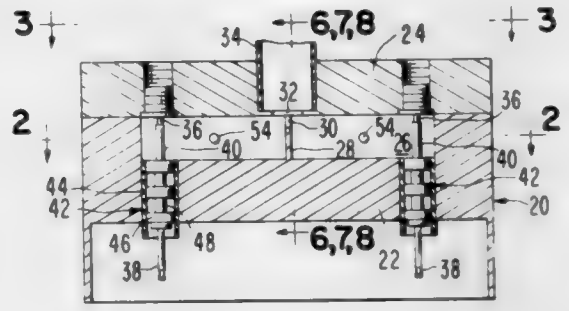
Filed Dec. 27, 1976, Ser. No. 754,867
Int. Cl.[2] H03B *7/14, 9/12*
U.S. Cl. 331—56 **18 Claims**

1. An oscillator comprising:

a conductive cavity resonator structure comprising two resonant hollow cavities electromagnetically coupled together by a coupling iris in a common wall separating said cavities,

two equal sets of negative-resistance semiconductive devices, each of said sets being coupled to the electromagnetic field in a separate one of said cavities,

each of said devices having a first and second terminal for connection to a source of dc bias, means for applying dc bias to said devices comprising conductive lead means insulated from said cavity resonator structure connecting to said first terminal of each device, and



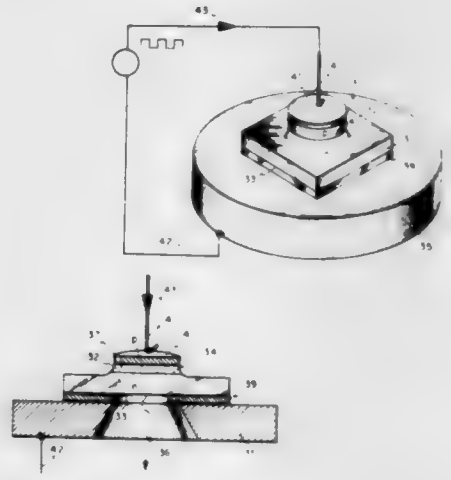
means for coupling electromagnetic energy from said cavities into a useful load, said means for coupling comprising an output iris overlaying said coupling iris, said output iris coupling into an output waveguide.

4,083,017

OPTICAL MASER

Joseph L. Birman, Bayside, and Sumner Mayburg, New York, both of N.Y., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 12, 1963, Ser. No. 294,766
Int. Cl.[2] H01S *3/19*
U.S. Cl. 331—94.5 H **2 Claims**



1. An optical maser comprising

a. an optical cavity formed from a wafer of gallium arsenide having first and scond contiguous *p* and *n* type regions with resistivities in the range 10^{-3} to 10^{-1} ohm-centimeter, said *p* region being centrally located and having an area less than the area of said *n* region, the surfaces of said *n* region remote from and opposite said *p* region being parallel to said *p* region and optically flat,

b. a first metallic layer secured directly to the *n* region of said wafer on the surface remote from said *p* region, said first metallic layer being in ohmic contact with said *n* region and surrounding the optically flat portion of said *n* region,

c. a second metallic layer secured directly to the *p* region of said wafer and being in ohmic contact therewith,

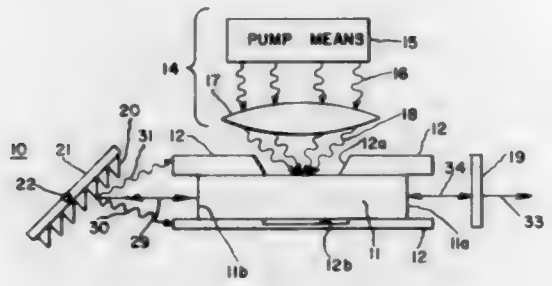
d. first and second electrodes attached to said first and second metallic layers respectively, and

e. means for producing a current through said optical cavity having a direction of flow from the *p* to the *n* region and having a magnitude sufficient to produce stimulated emission, coherent radiation being emitted from the optically flat portion of the *n* region of said gallium wafer in a direction perpendicular to the boundary between said contiguous *p* and *n* regions.

4,083,018
TUNABLE LASER SYSTEM

Kei-Hsiung Yang, Schenectady, and John A. De Luca, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 6, 1976, Ser. No. 703,093
Int. Cl.[2] H01S *3/16*
U.S. Cl. 331—94.5 F **21 Claims**



1. A laser system tunable over one of a plurality of wavelength ranges in the overall wavelength range of about 1650 angstroms to about 3300 angstroms, comprising:

a crystal of a host material containing the fluoride of at least a column IIIb metal and having the lattice thereof activated by at least one lanthanide-series element;

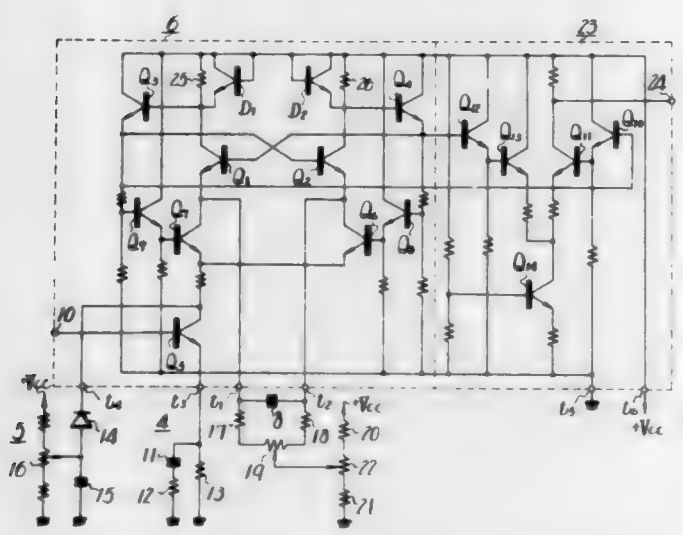
excitation means for pumping said crystal with energy having wavelengths of about 1600 A in the vacuum-ultraviolet region of the electromagnetic spectrum to cause said crystal to fluoresce over the selected one of said plurality of wavelength ranges; and

optical means comprising an optical cavity and including means for selecting a particular wavelength within said selected wavelength range.

4,083,019
CURRENT CONTROLLED EMITTER COUPLED MULTIVIBRATOR

Takeshi Hamada; Yoshio Ishigaki, both of Tokyo, and Masayuki Hongu, Komae, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 542,719, Jan. 21, 1975, abandoned. This application Dec. 1, 1976, Ser. No. 546,757
Claims priority, application Japan, Jan. 29, 1974, 49-12393
Int. Cl.[2] H03K *3/282, 7/06*
U.S. Cl. 331—113 R **14 Claims**



1. A circuit comprising a frequency controllable multivibrator comprising:

A. first and second transistors each including a base electrode, an emitter electrode and a collector electrode, said collector electrodes of said first and second transistors being coupled to said base electrodes of said second and first transistors, respectively;

B. voltage supply means for supplying a voltage;

C. first and second load elements connecting respective ones of said collector electrodes of said first and second transistors to said voltage supply means;

D. a capacitor connected between said emitter electrodes of said first and second transistors for enabling conduction of the latter alternately;

E. a pair of current controlling devices each including input, output and common electrodes, said input and output electrodes of each of said pair of current controlling devices being connected respectively to said collector and emitter electrodes of a respective one of said first and second transistors for controlling said devices with output signals of said first and second transistors;

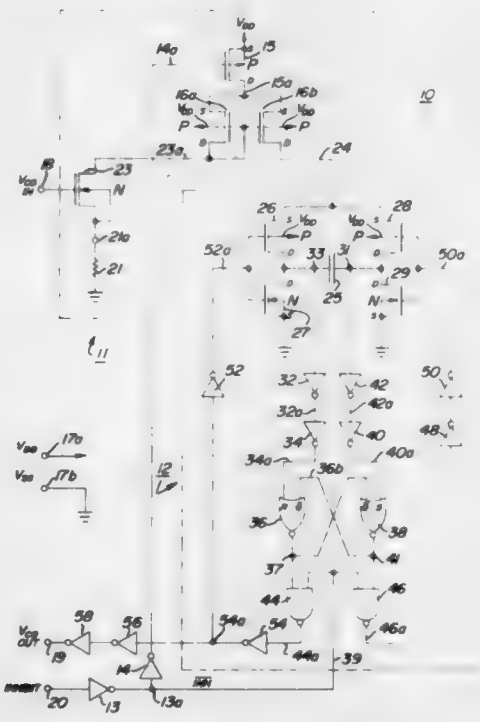
F. a common main current source comnecting said common electrodes of said pair of current controlling devices to said voltage supply means and through which a relatively large main current is fed from said pair of current controlling devices alternately; and

G. a common by-pass current control means connected to each side of said capacitor and through at least a portion of which a relatively small controllable portion of said relatively large current to be supplied to said common main current source is fed for minimizing lost power, said common by-pass current control means also controlling another current to said capacitor for determining an oscillation characteristic of said multivibrator circuit.

4,083,020
VOLTAGE CONTROLLED OSCILLATOR

Mitchell J. Goldberg, Lansdale, Pa., assignor to Solid State Scientific Inc., Montgomeryville, Pa.

Filed Mar. 17, 1977, Ser. No. 778,796
Int. Cl.[2] H03K *3/282*
U.S. Cl. 331—113 R **13 Claims**



1. A voltage controlled oscillator whose frequency is a function of an input voltage comprising

means for supplying current of value which is a function of said input voltage,

a storage device having a first and a second terminal,

a first and a second pair of switching devices coupled respectively to said first and second terminals of said storage device, each pair having a first and a second switching device, one terminal of each of said first switching devices being connected to said current supplying means and one terminal of each second switching device being connected to a reference potential,

first and second cross-connected gating devices,

first and second inverter means coupled respectively be-

tween said first and second storage device terminal and an input of said first and second gating devices,

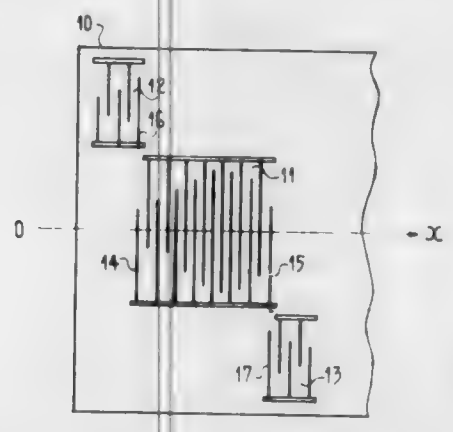
third and fourth inverter means coupled between an output of said first and second gating devices respectively and an input of said first and second pair of switching devices for controlling said switching devices to couple one of said storage device terminals to said current supplying means and the other storage device terminal to said reference potential and upon state transition to first couple said one storage device terminal to said reference potential before switching said other storage device terminal to said current supplying means.

4,083,021

TRANSDUCER FOR SURFACE WAVE FILTERS WITH REDUCED DIFFRACTION

Jean Michel Autran, and Bernard Epsztein, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 12, 1976, Ser. No. 731,651
Claims priority, application France, Oct. 17, 1975, 75 31901
Int. Cl.[2] H03H *9/04, 9/26, 9/32;* H01L *41/10*
U.S. Cl. 333—72 **5 Claims**



1. A transducer for a surface wave filter with a transfer function T(F) of which the inverse Fourier transform is a function I(*t*) having maxima of which the amplitudes vary within wide limits, comprising at least two elemental transducers with interdigital electrodes disposed on a common piezoelectric substrate so as to transmit, acoustic waves along two parallel propagation paths, the first of these two transducers having a pulse response $I_1(t)$ comprising the high-amplitude maxima of the function I(*t*) and being fed by the high-frequency signal to be filtered, and the second of these two transducers having a pulse response $I_2(t)$ comprising maxima equal to *n* times the low-amplitude maxima of the function I(*t*) and being fed by a signal equal to the 1/*n* of said signal to be filtered, the two said elemental transducers being staggered in the propagation direction O*x* of the waves which they transmit in such a way that the maxima of their respective pulse responses are disposed along the time axis, as are the maxima of I(*t*).

4,083,022

PLANAR PI MULTI-FILTER HAVING A FERRITE INDUCTANCE FOR PIN FILTERS IN ELECTRICAL CONNECTORS

John Peter Nijman, West Hill, Canada, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 12, 1976, Ser. No. 731,125
Int. Cl.[2] H03H *7/04, 13/00;* H01R *17/10, 13/66*
U.S. Cl. 333—79 **14 Claims**

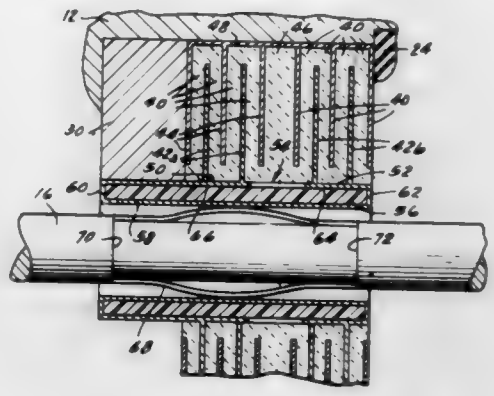
4. An electrical connector assembly comprising:

a metal connector shell;

a dielectric member carried in said shell and including at least one contact passageway extending therethrough;

an electrical contact extending through and mounted in said passageway;

an inductance within said shell surrounding and electrically connected to said electrical contact; and



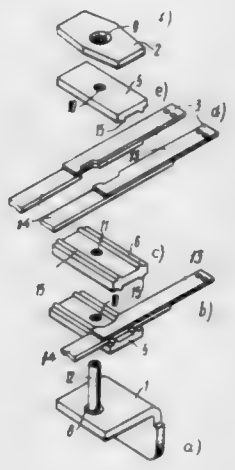
a pair of planar capacitances each including radially extending plates surrounding said inductance, each said capacitance electrically connected between a respective end of said inductance and said shell to form a pi filter.

4,083,023

CONTACT SPRING PILE-UP ASSEMBLY

Iosif Semenovich Cherny, ulitsa Zernovaya 6/1, kv. 85, and Mikhail Vasilievich Mischenko, ulitsa Kirgizskaya 5a, kv. 3, both of Kharkov, U.S.S.R.

Filed Apr. 5, 1976, Ser. No. 673,477
Claims priority, application U.S.S.R., Apr. 7, 1975, 2122529
Int. Cl.[2] H01H *63/10*
U.S. Cl. 335—135 **3 Claims**



1. A relay contact pile-up assembly comprising: metallic fastenings with holes; contact springs placed between said fastenings; plates of thermoplastic material provided with holes and having projections running the length of the surface facing said contact springs, said plates insulating said contact springs from one another; a bush extending through said holes in said fastenings and said plates and connecting all said parts of the assembly; the height of said projections being chosen so that when the assembly is compressed in the process of assembly, said contact springs are depressed against said projections until they come in contact with the surface of said plate.

4,083,024

MINIATURE RELAY

Jack T. Rover, Boring, Oreg., assignor to Datron Systems, Inc., Thomaston, Conn.

Filed Oct. 7, 1976, Ser. No. 730,338
Int. Cl.[2] H01H *51/02*
U.S. Cl. 335—136 **8 Claims**

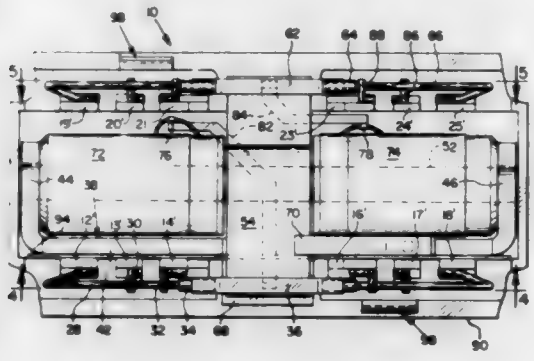
1. A miniature relay comprising:

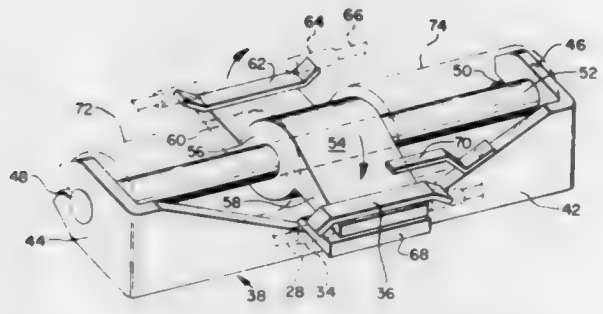
a pair of actuating coils each provided with magnetically permeable core means,

a rotatable armature formed of magnetically permeable

material and positioned between first ends of said core means to form a magnetic circuit therewith, said armature being rotatable about a fixed axis joining said first ends of said core means and including a hub contiguous with said first ends of said core means forming a magnetic extension thereof,

a magnetically permeable frame disposed between second ends of said core means and providing a pole piece, said





armature including an arm portion joined to said hub and extending adjacent said pole piece to be attracted by said pole piece for rotating said armature when said operating coils are energized,

means for energizing said actuating coils to provide magnetic flux through said core means and said frame in opposite directions for additively combining between said armature and said pole piece,

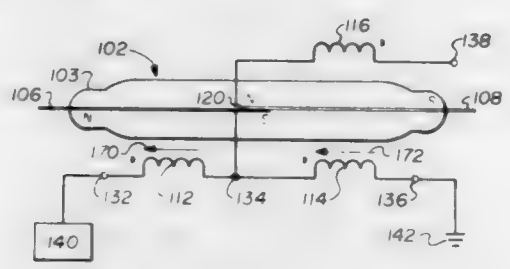
and contact means operated by said armature.

4,083,025

WINDINGS FOR MAGNETIC LATCHING REED RELAY

Von W. Meuller, Elk Grove, and Ronald A. Foerster, Carol Stream, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 25, 1976, Ser. No. 689,882
Int. Cl.² H01H *51/27*
U.S. Cl. 335—153 **13 Claims**



1. A relay having a pair of remanently magnetic members with free ends movable with respect to each other to close an electrical path when the members are each magnetized in the same direction and to open the electrical path when the members are each magnetized in an opposite direction, comprising:

first means for establishing a first magnetic direction with respect to a first one of the members;

second means for establishing the first magnetic direction with respect to a second one of the members;

third means for establishing a second magnetic direction with respect to the second member, the second magnetic direction being opposite from the first magnetic direction;

said second means being selectively energizable with said first means so that a first single concurrent application of energy only to said first and said second means produces said first magnetic direction with respect to the first and second members thereby causing the first and second members to attract and close the electrical path; and

said third means being selectively energizable with said first means so that a second single application of energy only to said first and said third means produces the first magnetic direction with respect to the first member and the second magnetic direction with respect to the second member thereby causing the first and second members to release and open the electrical path.

4,083,026

ARRANGEMENT WITH INDUCTIVE VOLTAGE TRANSFORMERS

Gerhard Kleen, Burgfrauenstr. 79, 1000 Berlin 28; Heinz Schiemann, Quellweg 38, 1000 Berlin 13, and Karl Allmendinger, Altonaer Str. 41, 1000 Berlin 20, all of Germany

Filed Nov. 22, 1976, Ser. No. 744,158
Claims priority, application Germany, Nov. 28, 1975, 2554142
Int. Cl.² H01F *15/14, 27/00*
U.S. Cl. 336—70 **13 Claims**



1. A transformer arrangement comprising:

a plurality of inductive voltage transformers within a metal capsule, each of which comprises:

an insulating body having a high potential winding disposed therein;

and a bushing laterally joined to said insulating body;

the bushing of each of said voltage transformers having a high voltage conductor therein; said bushings extending through said capsule in a substantially parallel arrangement;

and the remaining portion including the insulating body of each one of said voltage transformers being arranged in a space defined by the bushing corresponding to that one transformer, the bushing following said corresponding bushing in the circumferential direction and included in the voltage transformer adjacent said one voltage transformer, and by the area between said corresponding and following bushings which lies adjacent said capsule.

4,083,027

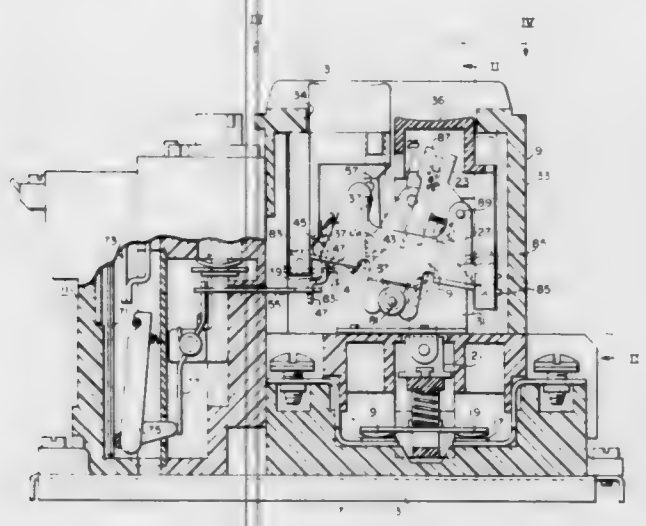
PUSHBUTTON ELECTRIC SWITCH

Stephen S. Dobrosielski, Beaver; Edward L. Richards, Aliquippa, and Paul Skalka, Beaver, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 634,729, Nov. 24, 1975, abandoned, which is a continuation of Ser. No. 573,370, Oct. 9, 1974, abandoned. This application Jan. 6, 1977, Ser. No. 757,547

Int. Cl.[2] H01H *71/16*

U.S. Cl. 337—66 7 Claims



1. A circuit interrupting device comprising a switch mechanism, a frame, and an electrically insulating housing therefor, the switch mechanism comprising relatively movable contacts and operating means for moving the contacts between open and closed positions, the operating means comprising an overcenter toggle and a switch lever, the overcenter toggle including a toggle spring, a releasable arm operable to effect tripping of the movable contacts, one end of the switch lever being pivotally mounted on the frame and the toggle spring being secured to the other end, one end of the releasable arm being pivotally mounted on the frame and movable between tripped and latched positions, a latch lever releasably connected to the other end of the releasable arm for retaining said arm in the latched position, means responsive to a current overload condition for actuating the latch lever to the tripped position, an operating lever pivotally mounted on the frame and secured to the switch lever, said housing having an opening, a first pushbutton extending through the opening and engaging the operating lever to move the contacts to the open position, and a second pushbutton extending through the opening and engaging the operating lever to move the contacts to the closed position.

4,083,028

PAD-MOUNTED DOUBLE-FUSED VACUUM SWITCHGEAR

Harold D. Haubein; George D. Allen; Robert W. Harmon; Edgar J. Ramsey, Jr., all of Centralia, and Ronald C. Pehle, Mexico, all of Mo., assignors to A.B. Chance Company, Centralia, Mo.

Filed Dec. 15, 1975, Ser. No. 640,916

Int. Cl.[2] H01H *71/20*

U.S. Cl. 337—144 13 Claims

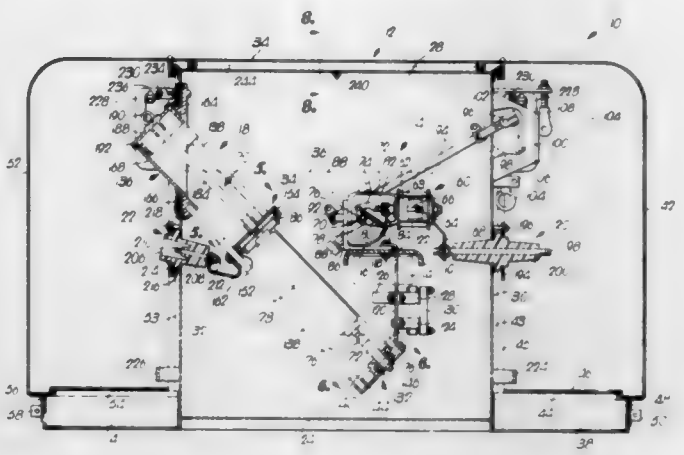
1. High voltage, double-fused switchgear apparatus, comprising:

a tank adapted to hold a supply of fluid dielectric material;

a switch element positioned within said tank below the normal level of dielectric therein and including separable electrical contacts and mechanism for selectively opening and closing the contacts for interrupting and establishing a current path through the switch element as desired;

a fuse assembly including a current limiting fuse, an expulsion-type fuse link, and means electrically connecting the fuse link and current limiting fuse in series;

means for mounting said fuse assembly in series with said switch element in said tank below the normal dielectric



level therein and in relatively close physical proximity to the switch element.

4,083,029

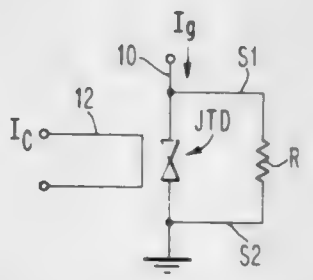
THIN FILM RESISTORS AND CONTACTS FOR CIRCUITRY

Syamal K. Lahiri, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 429,461, Dec. 28, 1973, Pat. No. 3,913,120. This application Jul. 28, 1975, Ser. No. 599,803

Int. Cl.[2] H01L *39/12*

U.S. Cl. 338—32 S 28 Claims



1. A circuit having a first conductor which contacts a second conductor of different composition, said first and second conductors being comprised of the same multi-component solid solution or compound, which exists as a stable phase in each of said conductors.

4,083,030

ELECTRIC HYGROMETER

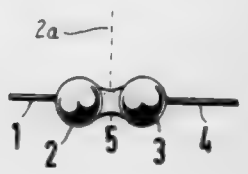
Markus Gröninger, Neuenhof, Switzerland, assignor to Howag AG, Wohlen, Switzerland

Filed Oct. 14, 1976, Ser. No. 732,391

Claims priority, application Switzerland, Oct. 15, 1975, 13348/75

Int. Cl.[2] H01L *7/00*

U.S. Cl. 338—35 19 Claims



1. In an electric hygrometer, particularly for measurement of relative humidity of gaseous media, a combination comprising spaced-apart first and second conductors; a body of liquid hygroscopic electrolyte intermediate said conductors; and means for supporting the electrolyte in moisture-exchanging contact with a medium whose relative humidity requires determination and in conductive contact with said conductors

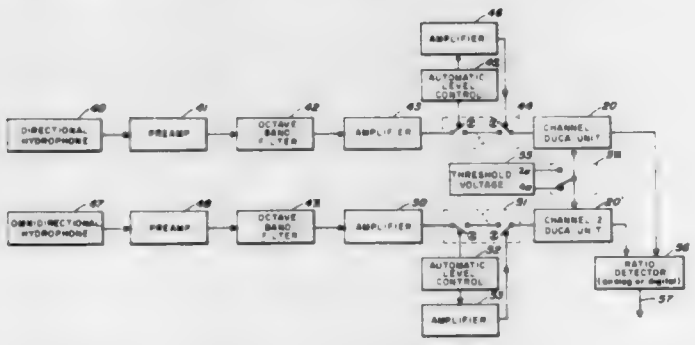
whereby the impedance between said conductors varies with relative humidity of said medium, said supporting means comprising a plurality of spaced-apart electrolyte carriers and said carriers constituting the sole means for maintaining the electrolyte in suspended condition therebetween and in conductive contact with said conductors.

4,083,031

ACOUSTIC PRESENCE DETECTION METHOD AND APPARATUS

Lawrence C. Pharo, Jr., State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 23, 1970, Ser. No. 64,910
Int. Cl.[2] G08B *13/00*
U.S. Cl. 340—5 R **12 Claims**



1. A passive acoustic detection system for detecting noise radiating devices in a noise environment comprising:

a first acoustic transducer responsive to acoustic signals in its environment;

a source of acoustic signals producing signals representative of noise in the environment of said first transducer;

a first octave-band frequency filter connected to said first transducer for permitting passage of only one band of frequencies;

a second octave-band frequency filter connected to said source of acoustic signals for permitting passage of only one band of frequencies;

a first automatic level control circuit responsive to the output signal from said first band filter to provide a constant root mean square level for the output signal from said first band filter;

a second automatic level control circuit responsive to the output signal from said second band filter to provide a constant root mean square level for the output signal from said second band filter;

a first pulse-forming clamp circuit, having a selectably variable threshold level, responsive to the output of said first level control circuit for providing a pulse whenever said threshold level is exceeded;

a first means responsive to the output of said first pulse-forming clamp circuit to provide a constant amplitude pulse signal every time said first pulse-forming circuit generates a pulse;

a second pulse-forming clamp circuit, having a selectable variable threshold level, responsive to the output of said second level control circuit for providing a pulse whenever said threshold level is exceeded;

a second means responsive to the output of said second pulse-forming clamp circuit to provide a constant amplitude pulse signal every time said second pulse-forming circuit generates a pulse;

a ratio detector responsive to the output of said first and second means for measuring the ratio of the pulses from said first means to the pulses from said second means;

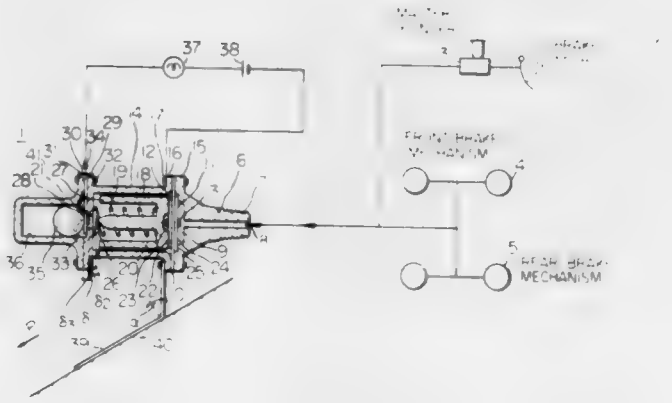
whereby a presence is detected if the ratio of pulses from said first means to said second means equals or exceeds a predetermined amount.

4,083,032

SPEED-DECELERATION WARNING SYSTEM FOR MOTOR VEHICLES

Hiroyuki Nakamura, Gotenba; Hiroshi Kawaguchi, and Kiyoshi Nishiwaki, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 462,381, Apr. 19, 1974. This application Mar. 8, 1976, Ser. No. 664,816
Claims priority, application Japan, Nov. 21, 1973, 48-130931
Int. Cl.[2] G08B *21/00*; B60Q *1/26*
U.S. Cl. 340—71 **11 Claims**



2. A braking deceleration warning system for installation in a motor vehicle having a source of electrical power and braking means actuated by fluid under pressure, the warning system comprising:

an electrically actuated device adapted to warn an operator of the vehicle of abnormal vehicle deceleration when the brakes are applied;

a first electrical contact;

a second electrical contact that is normally spaced out of electrical connection with the first contact;

means adapted to connect the first and second contacts in circuit with a source of electrical power and the warning device for actuating the warning device only in the event that the first contact makes electrical connection with the second contact;

means connected to the first contact and adapted to be connected to the braking fluid system of a motor vehicle, said means being responsive to the pressure of the braking fluid for moving the first contact from a first position to a second position as the fluid pressure increases to above a predetermined pressure normally effective to produce a predetermined deceleration of the vehicle, the first contact being unable to make electrical connection with the second contact unless the first contact reaches at least said second position; and

means responsive to deceleration of the vehicle for moving the second contact away from an initial position if the resulting vehicle deceleration attains at least the predetermined deceleration corresponding to said predetermined braking fluid pressure, the second position of the first contact being electrically connected with the initial position of the second contact, such that the first contact will make electrical connection with the second contact if, and only if, the applied braking fluid pressure at least equals said predetermined normal pressure, and the resulting vehicle deceleration is less than a predetermined normal rate of speed reduction corresponding to the predetermined braking fluid pressure.

4,083,033

TRAFFIC CONTROL ELEMENT

Jack H. Kulp, San Juan Capistrano, Calif., and James M. Florsheim, Northbrook, Ill., assignors to Royal Industries, Inc., Pasadena, Calif.

Filed May 7, 1976, Ser. No. 684,448
Int. Cl.[2] E01F *9/00*; E04H *17/00*; G08B *23/00*
U.S. Cl. 340—114 R 50 Claims



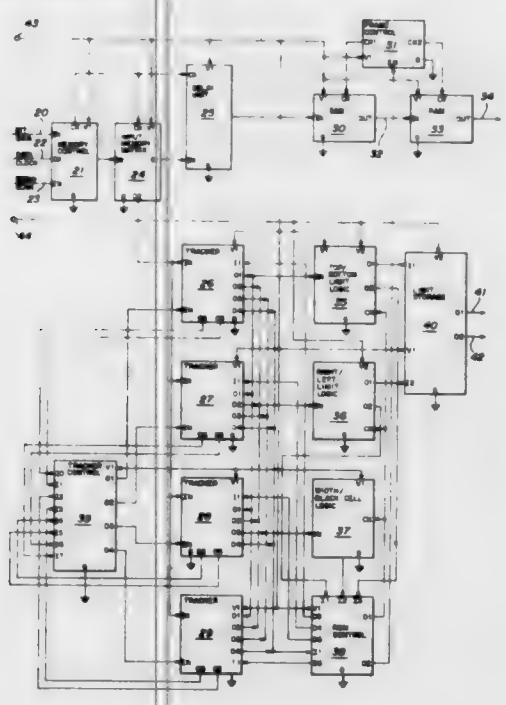
1. A traffic channelization element comprising an element having a D-shaped configuration for temporarily mounting on a surface in an upright position for traffic signaling and channelization, said element having a barrel-like appearance with a hollow D-shaped cross-sectional configuration and being constructed of a resilient plastic material and is defined to have a stepped configuration wherein the smaller dimension of the element is at the free end of the element when mounted in an upright position.

4,083,034

PLURAL TRACKER CHARACTER DETECTION AND BOUNDARY LOCATION SYSTEM

James Ray Hicks, Irving, Tex., assignor to Recognition Equipment Incorporated, Dallas, Tex.

Filed Oct. 4, 1976, Ser. No. 729,540
Int. Cl.[2] G06K *9/00*
U.S. Cl. 340—146.3 H 11 Claims



1. A character detection and location system receiving a binary information stream from a sensor scanning characters printed on a document surface for centering valid character information in a memory mosaic, which comprises:

(a) data synchronization means receiving said binary information stream for synchronizing the information rate to the processing rate of said system;

(b) shift register memory means in electrical communication with said synchronization means for providing responses to said binary information stream passing through registration with selected memory cells;

(c) plural tracker means receiving said responses from said memory means for concurrently tracing plural character segments each comprised of said responses satisfying an adjacency condition, each tracker means including means receiving said responses for signaling when said adjacency condition is satisfied;

(d) tracker control means in electrical communication with said memory means for selectively activating an inactive one of said plural tracker means when one of said responses satisfies a start condition; and

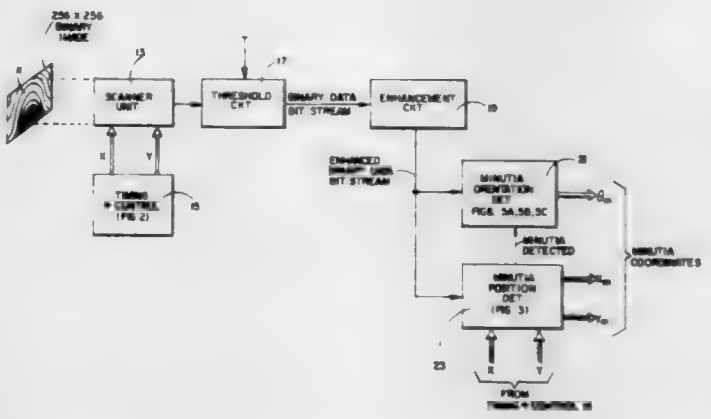
(e) data evaluation means in electrical communication with said plural tracker means for detecting the position and boundaries of valid character information in said binary information stream, said data evaluation means including means in electrical communication with said plural tracker means for determining if a character segment represents valid character information.

4,083,035

BINARY IMAGE MINUTIAE DETECTOR

John P. Riganati, Yorba Linda, and Visvaldis A. Vitols, Orange, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 10, 1976, Ser. No. 722,307
Int. Cl.[2] G06K *9/12*
U.S. Cl. 340—146.3 E 6 Claims



1. A machine method for detecting minutiae in two-dimensional binary data derived from a pattern image, said method comprising the steps of:

enhancing the binary data;

detecting the relative positions of minutiae in the enhanced binary data as a function of the relative locations of first preselected patterns of data in the enhanced binary data;

identifying ridge angle flow lines in the enhanced binary data as a function of the detection of second preselected patterns in the enhanced binary data;

determining the vector average of the ridge angle flow lines for each of a plurality of predetermined areas of the two-dimensional enhanced binary data in order to identify the orientation angle common to all of the minutiae detected in each said predetermined area; and

correlating the vector average of the ridge angle flow lines with the relative positions of minutiae in each corresponding predetermined area to derive the same relative orientation angle for each of the relative positions of minutiae in that corresponding predetermined area.

4,083,036
ARRANGEMENT FOR PRODUCING PULSE-SHAPED SIGNALS

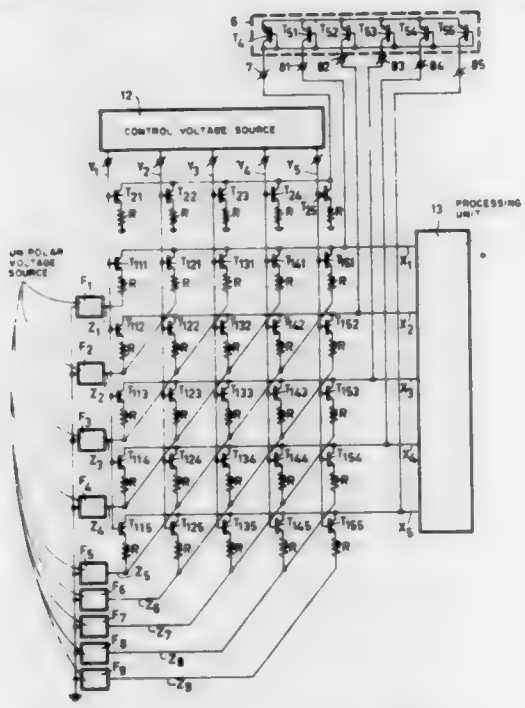
Johannes P. M. Bahlmann, and Wilhelmus A. J. M. Zwijsen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 20, 1976, Ser. No. 707,035

Claims priority, application Netherlands, Jul. 23, 1975, 7508772

Int. Cl.[2] G11C *7/00*

U.S. Cl. 340—166 R 14 Claims



1. An arrangement for producing pulse-shaped signals whose amplitude is determined by a control voltage, comprising a first transistor connected to operate as a current source and having an output electrode, a main electrode and a control electrode, means for applying the control voltage across the input circuit of said transistor, an output terminal for said arrangement, means for transferring the transistor output current, which is determined by the control voltage, to the output terminal in a pulsating fashion, a second transistor connected to operate as a current source and having an output electrode, a main electrode and a control electrode, means for applying the control voltage across the input circuit of the second transistor, and a current amplifier having an input terminal and an output terminal through which input and output terminals currents can flow in a mirror-inverted sense which currents bear a fixed ratio to each other, current amplifier to the output terminal of the means connecting the output terminal of the arrangement and also to the output electrode of one of said transistors, and means connecting the input terminal of the current amplifier to the output electrode of the other transistor.

4,083,037
DETECTION CIRCUIT

Larry D. Larsen, Palatine, Ill., assignor to Patent Development & Management Company, Elgin, Ill.

Filed Dec. 8, 1975, Ser. No. 638,843

Int. Cl.[2] G08B *17/10*

U.S. Cl. 340—237 S 21 Claims

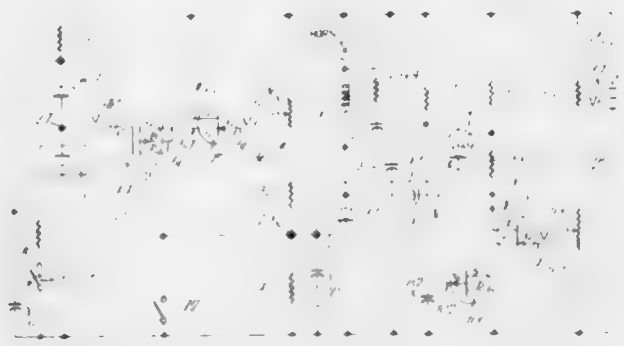
1. In a circuit having a source of power, a voltage divider connected across the power source having an output and a sensing element with an impedance variable in accordance with a phenomenon sensed thereby, variation of said impedance causing a corresponding variation in a sensing voltage at said output, a detection circuit, comprising:

a pair of complementary voltage-responsive switches each having a pair of transconductive terminals and a control terminal and being switchable between conductive and nonconductive states;

means for connecting the transconductive terminals in series across the power source;

means for applying a preselected detection voltage to the control input of one of said switches, said preselected voltage being proportional to the power source voltage;

means for applying the sensing voltage to the control input



of the other of said pair of complementary switches, both of said switches being biased in a nonconductive state and both of said switches assuming a conductive state when the sensing voltage value assumes a value substantially equal to said preselected detection voltage; and

means responsive to said switches assuming a conductive state for providing an indication of detection.

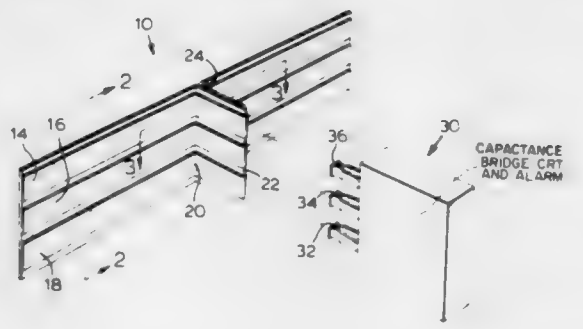
4,083,038
CONDENSER PLATE ASSEMBLY

Leonard Klebanoff, Willowdale, Canada, assignor to Elkay Electronics Ltd., Agincourt, Canada

Continuation-in-part of Ser. No. 584,741, Jun. 9, 1975, abandoned. This application Nov. 29, 1976, Ser. No. 745,843

Int. Cl.[2] G08B *21/00*

U.S. Cl. 340—244 R 3 Claims



1. A condenser plate assembly for an electronic alarm circuit of a liquid level sensor comprising:

a web of flexible non-conducting material;

electrically conducting condenser plates in the form of elongated strips of foil material disposed along the length of the web in parallel relation to each other and secured to said web to form probe condenser means with an open dielectric space between adjacent strips;

said web and secured condenser plates being folded to cause a portion of each condenser plate to be in upstanding relation with respect to the portion immediately adjacent thereto, said upstanding portion being a connector tab; and

said web having an adhesive on the opposite face to said condenser plates and being mountable on the wall of a container for a flowable dielectric material.

2. An improved sensor and alarm device for sensing the level of a liquid in a non-conductive container, the device including a condenser plate assembly to be secured to the container for optimal capacitive coupling to its liquid contents and further including an electronic capacitive bridge circuit connectable to said condenser plate assembly and operative to actuate an

alarm circuit when the sensed level is reached by the liquid, the improvement comrpising:

in said condenser plate assembly a flexible web of non-conducting material having adhesive on one side for securing the web to follow the surface contour of the container, and multiple electrically conductive flexible condenser plates fixed to the other side of said web and extending along the web in mutually transversely spaced relationship, said web and said condenser plates being folded along plural transverse lines so that one portion of the web and the plates overlap with another adjacent portion thereof to form a connector tab extending in upstanding relationship with respect to a remaining portion of the web which is secured to the container; and

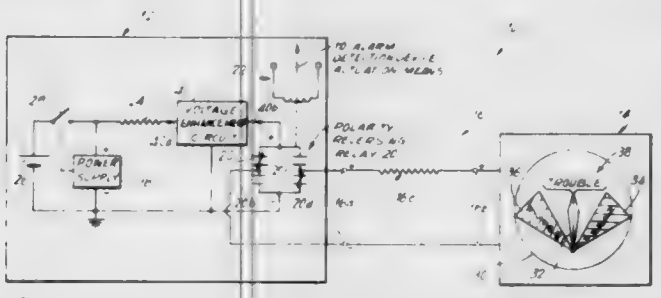
a cooperative connector and circuit means including a housing for containing said capacitive bridge circuit, the housing supporting multiple electrical contacts disposed in mutually transversely spaced relationship and operative to mate with and grip said tab and secure the housing thereon, and each contact being located respectively to align with and connect to one of said condenser plates, the contacts being coupled within the housing to the bridge circuit which is located in close proximity to the contacts, and the contacts providing low mutual capacity coupling between the plates and the bridge circuit.

4,083,039

VOLTAGE ENHANCEMENT CIRCUIT FOR CENTRAL STATION MONITORED ALARM SYSTEMS

Theodore Simon, 9 Maplewood Dr., Plainview, N.Y., assignor to Theodore Simon and Barry Schweiger, both of Garden City, N.Y. 11803

Filed Oct. 23, 1975, Ser. No. 625,084
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—248 R **10 Claims**



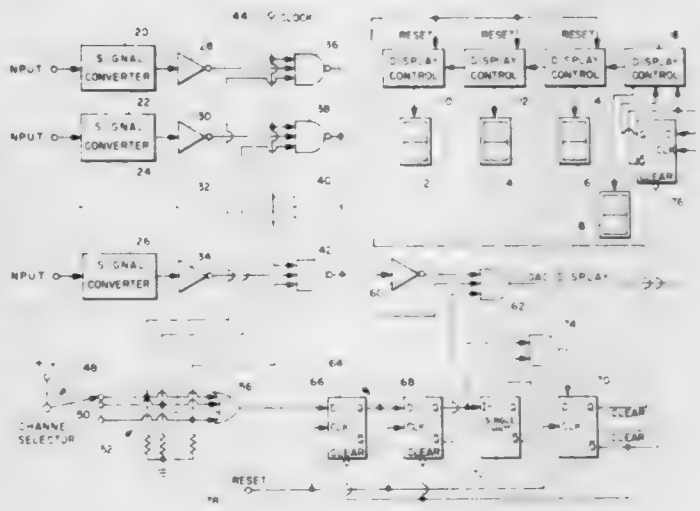
1. In combination with a centrally monitored alarm system of the type having at least one alarm detection device at a first location, an alarm monitoring panel at a second location, and electrically conductive lines interconnecting said device and said panel, the lines having an input terminal at said first location and an output terminal at said second location, the lines having an internal resistance between said terminals which is a function of the distance between said locations and therefore a function of the length of the lines, the detection device having a source of voltage of substantially fixed or constant magnitude or level which is applied to the input terminals of the lines in one condition of the alarm detection device, a portion of the voltage applied to said input terminals being dropped across said internal resistance and an output portion of the voltage applied to said input terminals appearing at said output terminals, and the monitoring panel including indicator means for providing an indication of said one condition of the alarm detection device when said output voltage portion at said output terminal has a magnitude above a minimum detectable level; and voltage enhancement means interposed between said source of voltage and said line input terminal for increasing the magnitude or level of said voltage source at said input terminal to at least partially compensate for said voltage portion dropped across said line internal resistance, whereby the voltage at said output terminal may be increased to at least said minimum detectable level irrespective of the length of the interconnecting lines.

4,083,040

TRACE LOCATOR FOR A MULTI-TRACE RECORDER

Paul A. Diddens, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Mich.

Filed Apr. 30, 1976, Ser. No. 682,021
Int. Cl.[2] G08B *5/36*; G01D *7/00*; G06M *3/06*
U.S. Cl. 340—248 A **7 Claims**



1. A trace locator circuit for identifying a record trace location on a recording medium in a recorder having a multi-element layered recording head comprising

input signal converter means for converting an input signal to be recorded to a corresponding recording head energizing signal, said converter means concurrently developing an output signal defining a time period representative of the amplitude of said energizing signal,

display means arranged to display a representation of a sum of a succession of input signals applied to said display means,

signal gate means connected between said converter means and said display means and being responsive to said output signal and to a gating signal to pass gate input signals through said gate means as input signals to said display means,

clock signal terminal means arranged to be connected to a source of clock signals and being connected to said gate means to apply the clock signals to said gate means as said gate input signals and

display enabling means connected to said gate means and to said display means to periodically apply said gating signal in combination with said output signal to said gating means to enable said gating means to pass said gate input signals and to clear said display means between said periodic applications of said gating signals to said gating means.

4,083,041

GROUND CIRCUIT MONITOR

Richard L. Bennice, Danielson, Conn., assignor to InterRoyal Corporation, New York, N.Y.

Continuation of Ser. No. 533,100, Dec. 16, 1974, abandoned.
This application May 13, 1976, Ser. No. 685,956
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—255 **12 Claims**

1. A hospital bed system comprising:

an electrically conducting hospital bed frame,

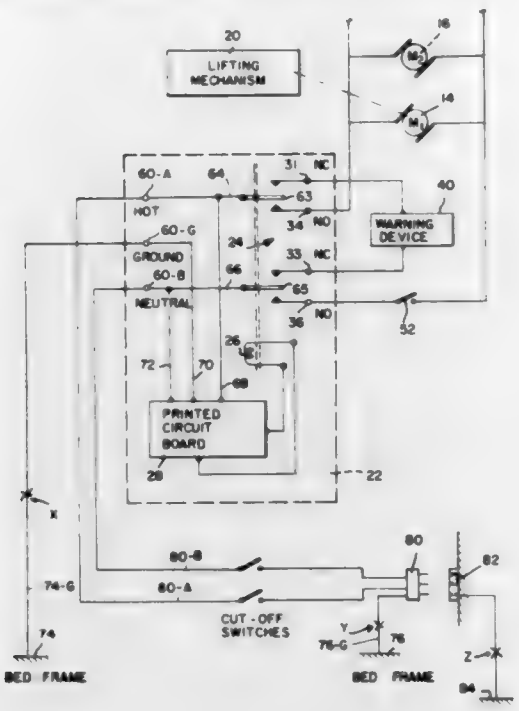
an electrical device associated with the frame in spatially adjacent disposition thereto and normally maintained out of electrical contact therewith,

disconnectable coupling means for electrically connecting the electrical device to a power supply source connecting line means having a power line, a neutral line and a ground line,

means for connecting the frame to the ground in series

through the ground line of the power supply source connecting line means, and

monitor means electrically connected between the power supply source connecting line means and the frame and



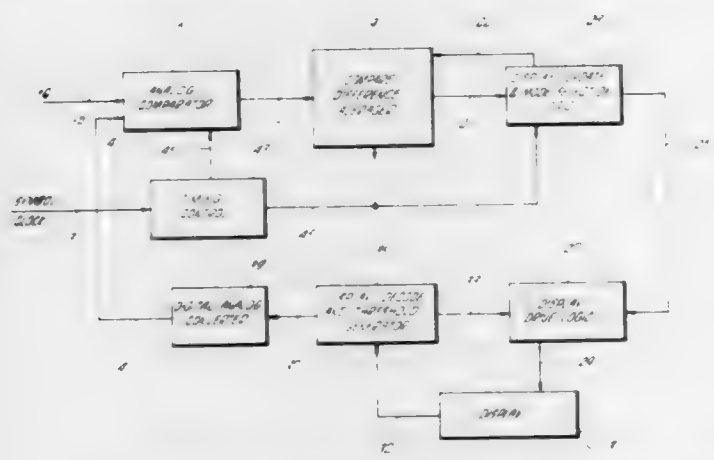
normally continuously energized by the power supply source for controlling the coupling means to disconnect the electrical device from both the power line and neutral line of the power supply source connecting line means upon interruption of the grounding of the frame.

4,083,042

CONTINUOUS QUANTITATIVE SIGNAL-DISPLAY SYSTEM USING LIGHT-EMITTING ELEMENTS

George Raymond Kushin, Plantation, and Ming-Luh Kao, Miami, both of Fla., assignors to Milgo Electronic Corporation, Miami, Fla.

Filed Jun. 23, 1975, Ser. No. 589,467
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 M **26 Claims**



1. A continuous, quantitative analog-signal-display system, using a serial string of light-emitting elements, said system comprising:

means for generating an analog signal representative of the illuminated elements;

means for continuously comparing the analog signal from said generating means with the analog signal to be displayed; and

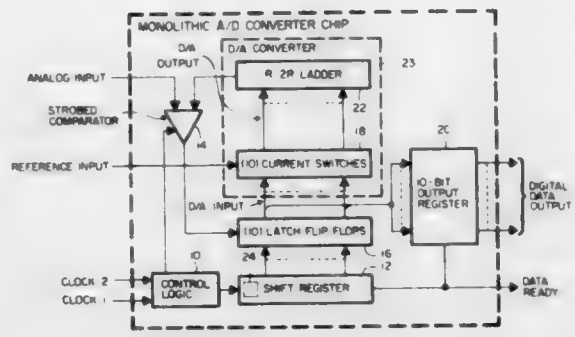
means for changing the illumination of said light-emitting elements in response to the output from said comparing means.

4,083,043

HIGH SPEED MONOLITHIC A/D CONVERTER UTILIZING STROBE COMPARATOR

David R. Breuer, Malibu, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 18, 1976, Ser. No. 658,974
Int. Cl.² H03K *13/02*
U.S. Cl. 340—347 AD **2 Claims**



1. An analog-to-digital converter of the type using a successive approximation algorithm to quantize an analog input signal comprising:

clock means providing a first clock signal characterized by a first frequency and a second clock signal characterized by a second frequency that is greater than said first frequency;

shift register means having a plurality of register terminals and being responsive to said first clock signal and operative to sequentially shift a portion of said first clock signal through said register such that said portion of said first clock signal is sequentially applied to said register terminals at said second frequency;

latch means comprised of current-mode differential logic that is required to be driven by a binary digital signal having a relatively high voltage, said latch means being responsive to the signal applied on said register terminals and said binary digital signal and operative to store *n* bits of information regarding the state of said binary digital signal, where *n* is an integer, to develop *n* sequencing signals starting with the most significant bit and ending with the least significant bit and further to produce a binary output signal corresponding to said *n* bits of stored information when said shift register has been sequenced through said plurality of register terminals, said binary output signal being representative of the magnitude of the analog input signal;

digital-to-analog converter means responsive to said sequencing signals and operative to sequentially and cyclically provide *n* reference signals, each being representative of a predetermined voltage in accordance with the binary weighted value of the sequencing signals; and

comparator means including a first input terminal for receiving the analog input signal, a second input terminal for sequentially receiving each said reference signal, a control terminal for receiving said second clock signal and an output terminal and being switchable between a first and a second electrical configuration in response to said second clock signal, said first configuration having a relatively low amplification factor and serving to develop an intermediate signal when the magnitude of said reference signal exceeds that of said analog input signal, said second configuration having a relatively large amplification factor and including positive feedback, said second configuration being responsive to said intermediate signal and operative to amplify said intermediate signal so as to provide said binary digital signal on said output terminal, said positive feedback serving to latch said binary digital signal independent of the signals applied to said first and second input terminals, thereby rendering said second configuration insensitive to said analog input signal and said reference signal, said binary digital signal serving to drive said latch means, said latch means serving to store said infor-

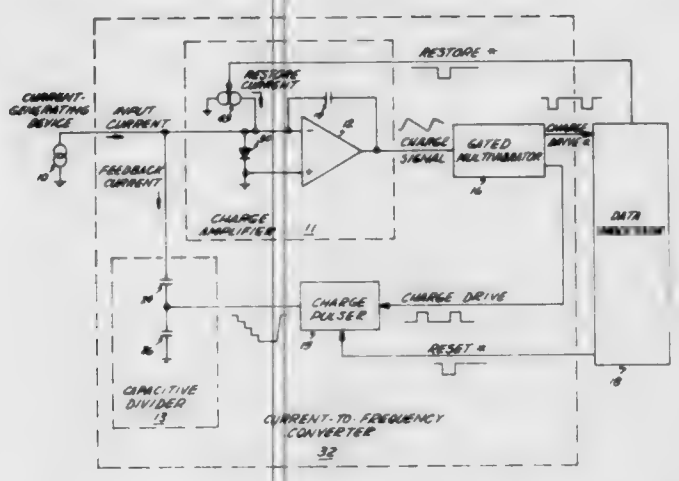
mation regarding the state of said binary digital signal and to produce said binary output signal representative of the magnitude of said analog input voltage.

4,083,044

UNIPOLAR WIDE-RANGE CURRENT-TO-FREQUENCY CONVERTER

J. Howard Marshall, III, Pasadena, and Timothy M. Harrington, Sierra Madre, both of Calif., assignors to MDH Industries Inc., Monrovia, Calif.

Filed Mar. 10, 1976, Ser. No. 665,385
Int. Cl.[2] H03K *13/20*
U.S. Cl. 340—347 AD **8 Claims**



1. For use in combination in a circuit for digitizing unipolar signal currents, an improved current-to-frequency converter comprising:

(a) amplifier means, adapted to receive an input current having a signal current, a restoration current and repetitive discrete feedback charge pulses, for providing a comparison between the charge arising from the signal plus restoration currents and the total discrete feedback charge, and for producing an output voltage proportional to the difference between the total feedback charge and the total charge produced by the signal and restoration currents;

(b) charge-generating means, connected to the output of the amplifier means, for producing known amounts of charge at a charge output whenever the amplifier means indicates that the feedback charge has a smaller absolute magnitude than the signal plus restoration charges, and for producing at those times output pulses whose repetition rate becomes an output frequency signal;

(c) capacitive-divider means, connected between the charge output of the charge-generating means and the input to the amplifier means, for attenuating the charge generated by the charge-generating means, to produce said repetitive discrete feedback charge pulses;

(d) pulse-generating means connected to the charge-generating means, said pulse-generating means producing pulses which cause the capacitive-divider means to be discharged in such a fashion that the current-to-frequency converter establishes its own zero level; and

(e) restoration-current means; connected to the input of the amplifier means, said restoration-current means generating on command a current flowing in the same direction as the signal current;

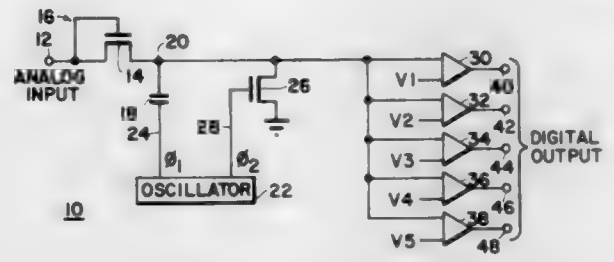
whereby, analog-to-digital conversion is accomplished by producing a train of pulses at the frequency output with a repetition frequency related in a known way to the total current applied to the input of the current-to-frequency converter.

4,083,045

MOS ANALOG TO DIGITAL CONVERTER

William Walter Lattin, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 3, 1975, Ser. No. 593,074
Int. Cl.[2] H03K *13/00*
U.S. Cl. 340—347 AD **6 Claims**



1. An analog to digital converter circuit comprising:

(a) enhanced capacitor means having a first terminal and a second terminal;

(b) buffer circuit means coupled to said first terminal, said buffer circuit means responsive to an analog input signal;

(c) digital comparator means having a first input terminal coupled to said first terminal and having a second input terminal coupled to a reference voltage, said digital comparator means producing a first logical state when said first input terminal is at a greater potential than said second input terminal and said digital comparator means producing a second logical output state when said first input terminal is at a lesser potential than said second input terminal;

(d) circuit means coupled to said second capacitor terminal for producing a voltage pulse at said second capacitor terminal, thereby inducing a derived voltage pulse at said first capacitance terminal said derived voltage pulse establishing input conditions at said first input terminal to produce a digital output signal proportional to said analog input signal, and

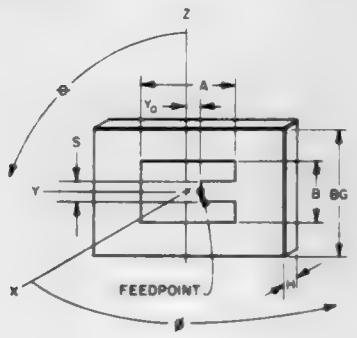
(e) MOSFET switching means coupled to said first capacitor terminal and coupled to said circuit means, said MOSFET switching means responsive to said circuit means for establishing initial voltage conditions at said first capacitor terminal.

4,083,046

ELECTRIC MONOMICROSTRIP DIPOLE ANTENNAS

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 10, 1976, Ser. No. 740,694
Int. Cl.[2] H01Q *1/38*
U.S. Cl. 343—700 MS **60 Claims**



1. A notched fed electric monomicrostrip dipole antenna structure comprising:

a. a dielectric substrate;

b. a thin rectangular radiating element disposed on one side of said dielectric substrate;

c. a thin non-radiating ground plane conductor disposed on

the other side of said dielectric substrate directly opposite to said radiating element;

d. said ground plane being identical in length to the length of said radiating element; said ground plane and said radiating element being aligned lengthwise;

e. said ground plane extending in width on each side beyond the width of said radiating element to cause a mismatch such that the ground plane will not be excited;

f. said radiating element operable to be excited to radiate about both the element and the ground plane side of the antenna in a near isotropic manner; the fields on both sides of the antenna being in phase;

g. the length of said radiating element determining the resonant frequency of the antenna;

h. said radiating element having a feed point located along the centerline of the length thereof;

i. said radiating element having a notch extending into the element along the centerline of the length from one end thereof to said feed point;

j. the antenna input impedance being variable to match most practical impedances as said feed point is moved along the element centerline without affecting the radiation pattern;

k. the antenna bandwidth being variable with the width of said radiating element and the spacing between the radiating element and said ground plane, the width of said notch being a factor as to the effective width of said radiating element, said spacing between the radiating element and the ground plane having somewhat greater effect on the bandwidth than the width of said radiating element.

4,083,047

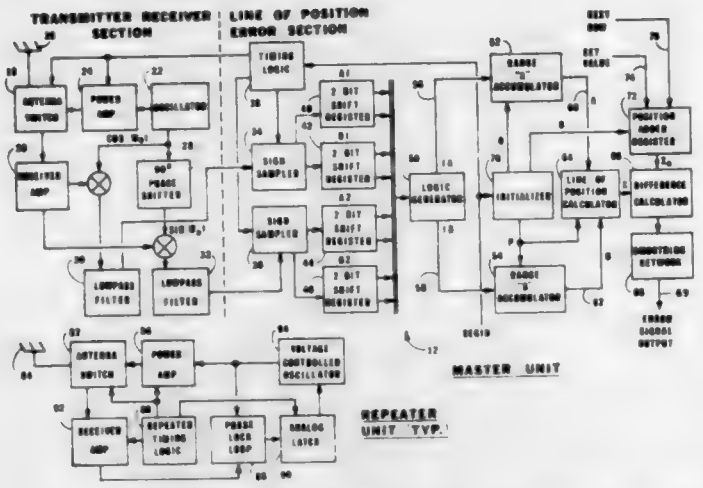
VEHICLE GUIDANCE SYSTEM

Rudolph D. Schalow, Fort Wayne, Ind., assignor to Energystics, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 494,564, Aug. 5, 1974, abandoned. This application Dec. 16, 1975, Ser. No. 641,163

Int. Cl.² G01S *9/56*

U.S. Cl. 343—7 VM **20 Claims**



1. A system for guiding a vehicle along a selected one of a plurality of spaced, straight line and parallel paths, the system comprising first and second radio signal repeaters, said repeaters being positioned a selected distance apart on a line transverse to said paths, said repeaters including means for receiving a burst of radio signals having a predetermined frequency and alternately retransmitting said bursts in a predetermined time sequence, a mobile unit including means for cyclically and repetitively generating and transmitting said bursts of radio signals, means for receiving and demodulating said retransmitted bursts from said repeaters in sequence, and incremental range signal generating means connected to said receiving and demodulating means for generating first and second incremental range signals proportional to the incremental movement of said mobile unit with respect to said first and second repeaters, respectively, computing circuit means connected to receive said incremental range signals for arithmetically combining same to generate an incremental error signal when said movement deviates from a said selected path and error indicating means connected to receive said incremental error signal for continuously generating an indication of the magnitude of said incremental error signal.

4,083,048

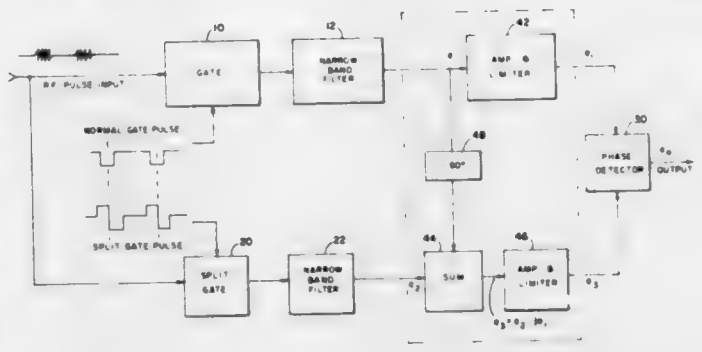
TIME ALIGNMENT ERROR SENSOR SYSTEM FOR RANGE TRACKING

Robert J. DeRosa, Sudbury, and Robert T. Campbell, Acton, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 20, 1976, Ser. No. 752,505

Int. Cl.² G01S *9/14*

U.S. Cl. 343—7.3 **2 Claims**



1. An error sensor system for range tracking comprising: first and second narrow band filters each having an input and an output; first and second radio frequency gating circuits having inputs disposed to receive a common input signal and having respective outputs coupled to respective inputs of said filters; phase detection means having first and second inputs and an output; first and second amplifier-limiter circuits having respective inputs coupled to receive respective outputs of said first and second filters, and having respective outputs coupled to said first and second inputs of said phase detector means, said phase detector means output being disposed for providing an output voltage signal; a summing circuit having first and second inputs and an output, said first input being coupled to the output of said second filter, the output being coupled to the input of said second limiter-amplifier circuit; and a phase shifter coupled between the output of said first filter and the second input of said summing circuit for providing a phase-shifted signal input thereto.

4,083,049

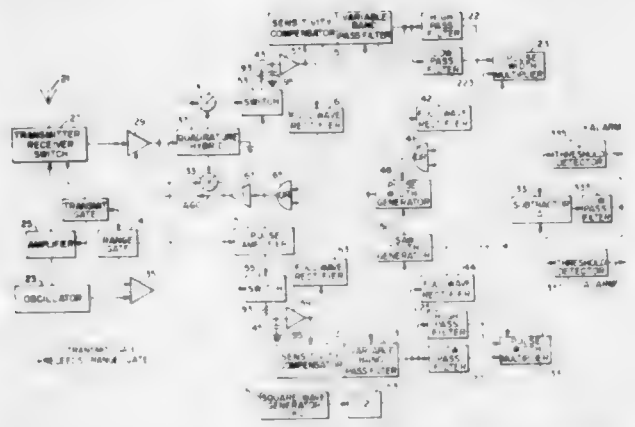
MOVING TARGET RADAR

John Mattern, Baltimore, and Earnest R. Harrison, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 28, 1971, Ser. No. 166,919

Int. Cl.² G01S *9/42*

U.S. Cl. 343—7.7 **12 Claims**



1. The method of suppressing clutter in the operation of a moving-target radar, said clutter being produced by an object

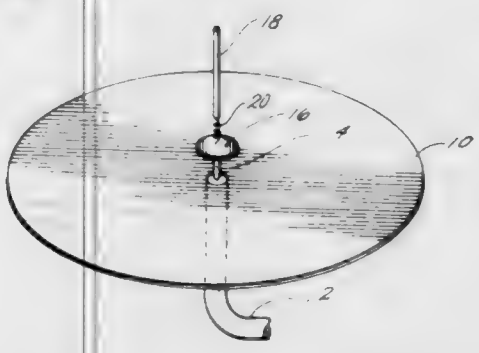
which moves backward and forward about a fixed position, the received signal of said radar being converted into quadrature signals, herein called an I signal and a Q signal, the said method comprising, converting the I signal into quadrature signals, herein called I3 and I4 signals, I3 lagging I4 by 90°, converting the Q signal into quadrature signals, herein called Q3 and Q4, Q3 lagging Q4 by 90°, deriving at least one of the products I3Q4 or I4Q3 and producing responsive to said product an indication of the target and the direction of movement of the target while suppressing the clutter.

4,083,050

DUAL BAND MONOPOLE OMNI ANTENNA

Roger D. Hall, Encino, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed Sep. 1, 1976, Ser. No. 719,488
Int. Cl.² H01Q *9/38*
U.S. Cl. 343—729 **6 Claims**



1. A wide-band high-frequency antenna for reception over separated frequency bands including

mounting and support means,

a coaxial connector fastened to said mounting and support means,

an upstanding member of dielectric material carried on said mounting and support means and a conductor track on the surface of said member constituting the radiating element of said antenna electrically connected to the center conductor of said coaxial connector including, connected in series, a highfrequency stub element, a capacitive loading member for said stub element at the higher of said frequency bands, an inductive member having very high impedance at the higher of said frequency bands and low impedance at the lower of said frequency bands, and a monopole element aligned with said stub, said capacitive element and said inductive element, the combined length of said elements being such as to provide a one-quarter wave length monopole antenna at the lower of said frequency bands.

4,083,051

CIRCULARLY-POLARIZED ANTENNA SYSTEM USING TILTED DIPOLES

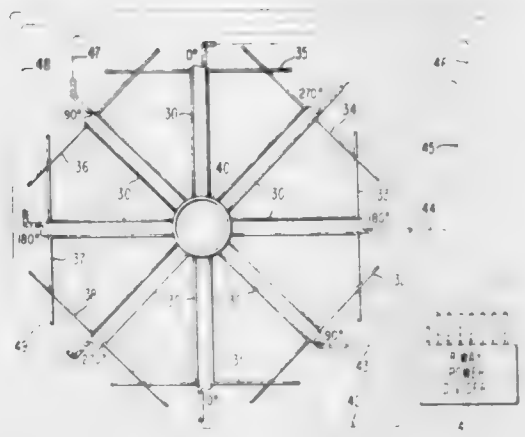
Oakley McDonald Woodward, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 2, 1976, Ser. No. 702,341
Int. Cl.² H01Q *21/26, 21/00*
U.S. Cl. 343—797 **5 Claims**

1. An omnidirectional circular polarization antenna system comprising:

a plurality of dipoles equally spaced from one another about a conductive support mast with the dipoles equally spaced from the mast with their centers lying on a circle in a plane orthogonal to said mast, each of said dipoles having dipole halves with the one dipole half extending above and the other dipole half extending below said plane and the dipole halves being tilted at the same acute angle with respect to said plane,

means for exciting said dipoles in rotating phase where the mode number equal to the number of 360° phase changes about the ring of said dipoles is an integer other than zero, said tilt angle being determined to radiate from said antenna system circularly polarized waves omnidirectionally broadside said mast.

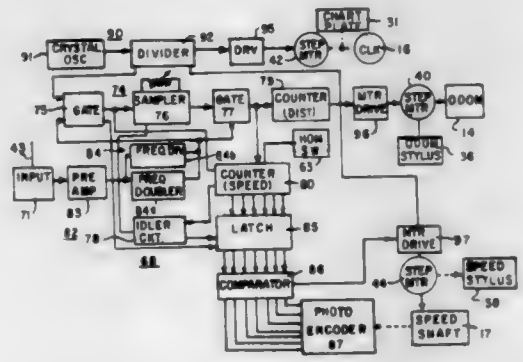


4,083,052

ELECTRONIC TACHOGRAPH

Wilbur F. Metcalf, Springfield, Ill., assignor to Sangamo Electric Company, Springfield, Ill.

Filed Jun. 16, 1976, Ser. No. 696,814
Int. Cl.² G01D *9/30, 5/244*; G01P *1/08*
U.S. Cl. 346—18 **30 Claims**



1. In an electronic tachograph including recording means for recording at least indications of the distance travelled by a vehicle and the speed of the vehicle, the combination comprising input means for providing distance pulses indicative of the distance travelled by a vehicle, timing means operable to provide timing pulse, first means for deriving from said timing pulses a first output indicative of time, adjustable means responsive to said timing pulses for periodically sampling said distance pulses during sampling periods of a preselected duration to provide a predetermined number of distance pulses at an output thereof during a given sampling period for a predetermined distance of travel by said vehicle, second means responsive to said predetermined pulses for deriving a second output indicative of the speed of said vehicle, and third means responsive to said predetermined pulses to provide a third output indicative of the distance travelled by said vehicle, said recording means being responsive to said first, second and third outputs for recording said indications of distance and speed for said vehicle in relation to time.

4,083,053

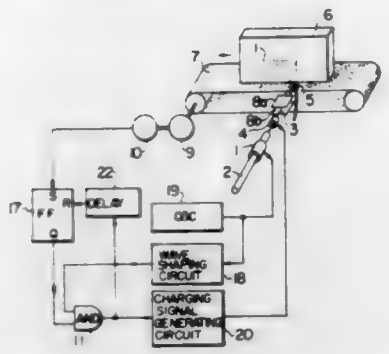
INK JET RECORDING METHOD AND APPARATUS

Yoshio Ouchi, Mito, and Takatoshi Ikeda, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 17, 1976, Ser. No. 667,468
Claims priority, application Japan, Mar. 19, 1975, 50-32354
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **3 Claims**

2. An ink jet recording method including the steps of gener-

ating ink droplets continuously at constant intervals, deflecting said ink droplets in a direction, moving a record medium in a right angle to said direction thereby forming a picture on the record medium in the form of dot matrices, wherein said method further comprises the steps of: establishing ink droplets



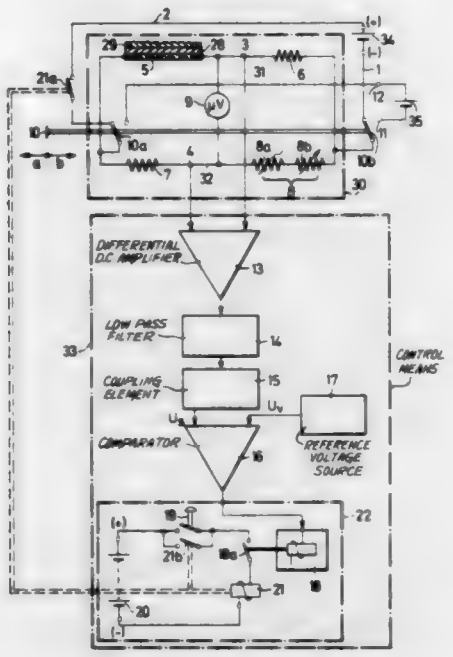
which do not correspond to picture elements, between an ink droplet corresponding to a last picture element on a scanning line and an ink droplet corresponding to a first picture element on a following scanning line; and changing the number of said ink droplets which do not correspond to the picture elements depending on the moving velocity of said record medium.

4,083,054

RECORDING OR ERASURE OF IMAGES ON THERMOPLASTIC MATERIAL

Roland Moraw, Naurod, and Kurt Dryczynski, Wallau, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 21, 1975, Ser. No. 634,057
Claims priority, application Germany, Nov. 25, 1974, 2455742
Int. Cl.² G01D *15/10*
U.S. Cl. 346—151 **19 Claims**



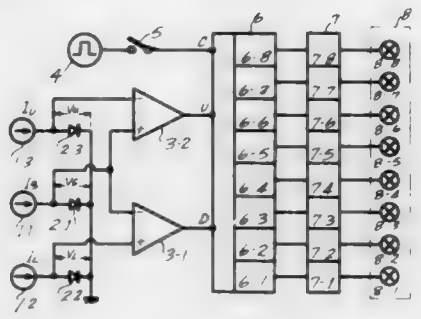
1. A method of recording or erasing an image on thermoplastic recording material comprising the steps of supplying an adjustable quantity of heat for reaching a required temperature for thermal development or erasure, said adjustable quantity of heat supplied in accordance with the temperature of the recording material at the time of supplying the heat, and resupplying said adjustable quantity of heat for a subsequent recording process during the cooling of the recording material when said recording material has reached that temperature which is just below the deformation temperature necessary for thermal development wherein the quantity of heat required for a new recording process is supplied at a temperature which is 7° to 15° C lower than the deformation temperature.

4,083,055

EXPOSURE INFORMATION QUANTIZING CIRCUIT UTILIZING SHIFT REGISTER

Yukiyasu Nishikawa, Kawagoe, and Takuo Itagaki, Wako, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1976, Ser. No. 667,533
Claims priority, application Japan, Mar. 20, 1975, 50-33862
Int. Cl.² G03B *7/08*
U.S. Cl. 354—23 D **9 Claims**



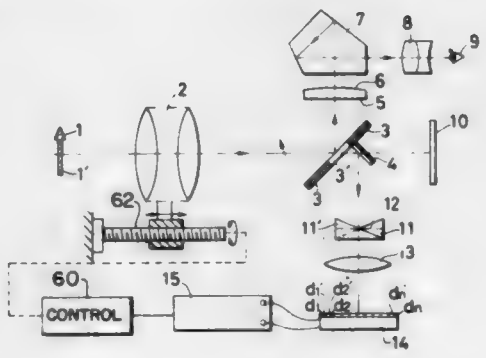
1. An exposure information quantizing circuit for photographic cameras comprising a signal current source for generating a signal current to be quantized; a bidirection shift register having a series of multiple bits corresponding in turn to the ranges of division required in the expected variation in range of the signal, and which is so arranged that an index is always present only at one bit; a first reference current source for producing a current corresponding to one end of the range of the bit having the index; a second reference current source for producing a current corresponding to the other end of said range; logarithmic compression elements connected respectively to the signal current source, the first reference current source and the second reference current source to respectively obtain a signal voltage, a first reference voltage and a second reference voltage, which are respectively proportional to the logarithm of the corresponding current values; a voltage comparator for forming a shift control signal for said bidirection shift register in accordance with comparison thereby of the magnitude of the signal voltage with that of the first reference voltage or the second reference voltage; and a pulse generator for providing clock pulses for said bidirection shift register.

4,083,056

FOCUS DETECTING DEVICE FOR SINGLE-LENS REFLEX CAMERAS

Kazuo Nakamura, Asaka; Katsuhiko Miyata, Tsurugashima, and Seijiro Tokutomi, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1976, Ser. No. 717,821
Claims priority, application Japan, Sep. 9, 1975, 50-109114; Sep. 26, 1975, 50-116786; Sep. 27, 1975, 50-132258
Int. Cl.² G03B *7/08*
U.S. Cl. 354—25 **11 Claims**



1. In a single lens reflex camera of the type having a reflecting mirror for directing light towards a finder optical system during pre-photography operation, a focusing plate positioned to receive said reflected light, a pentaprism positioned to re-

ceive light passing through said focusing plate, and a finder optical system positioned to receive light reflected from the surfaces of said pentaprism, whereby said camera can be focused by a photographer adjusting a lens system and observing an object's image through the finder optical system, the improvement characterized by,

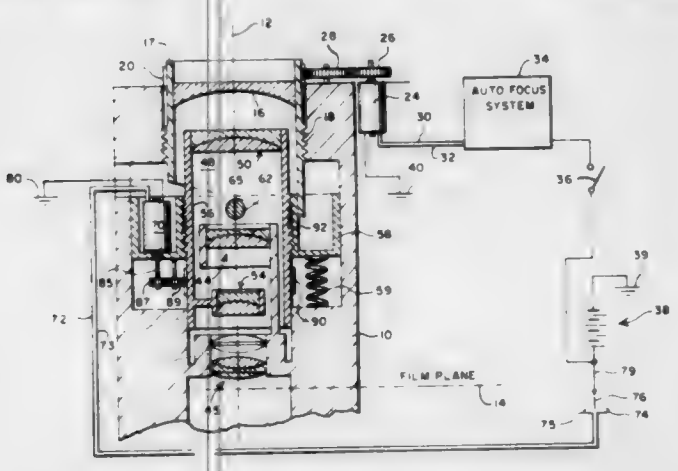
a group of light detecting elements positioned in said camera to receive said object's image, said group of light detecting elements comprising a plurality of photodiodes interconnected to have the photo currents from adjacent ones combined subtractively providing a plurality of discrete contrast indicating difference currents, whereby a maximum of the sum of the absolute values of said contrast currents occurs when an in-focus condition is reached, processing means connected to said group of light detecting elements for detecting a sum of the absolute values, raised to a preselected power, of said difference currents and for providing an indication for a photographer when said sum is above a predetermined level.

4,083,057

FOCUS SIZE COMPENSATION

Peter T. Quinn, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 8, 1976, Ser. No. 739,664
Int. Cl.² G03B *3/00, 7/08, 13/02*
U.S. Cl. 354—25 **15 Claims**



1. Apparatus for use in an optical system having an image plane and lens means movable along an axis to provide a focused image of an object at the image plane, and wherein movement of said lens means may produce a change of magnification of the image at the image plane, the improvement comprising:

zoom means movable along the axis to provide changes in magnification of the image of the object; and

characterized means connected to said lens means and to said zoom means so that movement of said lens means along said axis is accompanied by movement of said zoom means along said axis, the characterization of said characterized means being so chosen that the amount of movement of said zoom means accompanying a given amount of movement of said lens means is such as to substantially off-set the change of magnification produced by the movement of said lens means.

4,083,058

FLASH AND CAMERA APPARATUS HAVING A PLURALITY OF FLASH AND DAYLIGHT OPERATION MODES

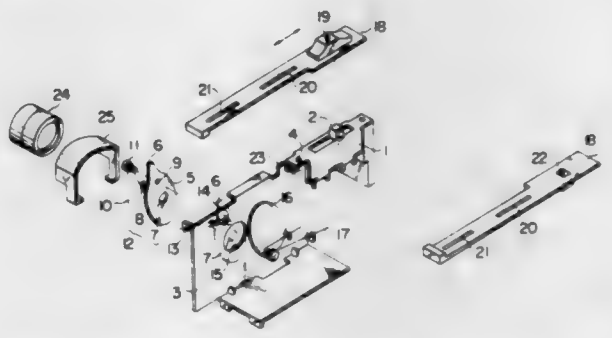
Hiroshi Iwata, Osaka, and Yu Tsuzuki, Hirakata, both of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Apr. 12, 1976, Ser. No. 675,756
Claims priority, application Japan, Apr. 17, 1975, 50-47129
Int. Cl.² G03B *15/05*
U.S. Cl. 354—128 **5 Claims**

1. In a flash and camera apparatus integrally incorporating a photographic camera device with a fixed focus lens system and an electronic flash device having a flash discharge tube which emits flash light by discharging energy stored in a main discharge capacitor, the improvement comprising

an aperture member comprising part of said photographic camera device and having a first aperture therein, the size of said first aperture being suitable for photographing an object, using flash-mode photography, which is located at a relatively long distance from said camera device,

an iris vane positioned adjacent said apertured member and having a second aperture therein, the size of said second



aperture being less than that of said first aperture and suitable for photographing an object, using flash-mode photography, which is located at a relatively short distance from said camera device, said second aperture also being suitable for daylight mode photography;

mode switching means for coupling a power switch for said electronic flash device to said iris vane so that operation of said power switch causes movement of said iris vane; and

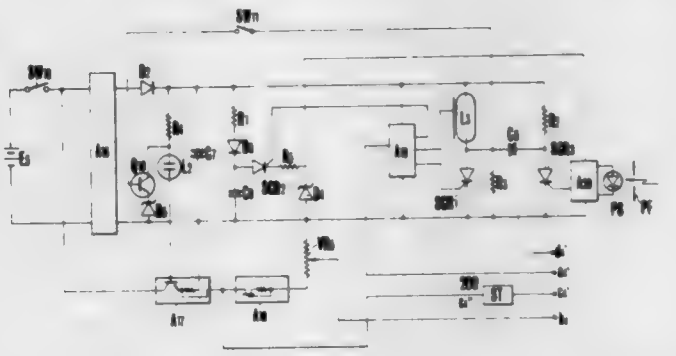
holding means for holding said iris vane in a first position wherein said vane blocks said first aperture so that light entering said camera passes through said second aperture.

4,083,059

AUTOMATIC EXPOSURE CONTROL SYSTEM FOR FLASH PHOTOGRAPHY

Tokuichi Tsunekawa, Yokohama; Zenso Nakamura, Urawa; Tetsuya Taguchi, Kawasaki; Masanori Uchidoi, Yokohama; Hiroshi Aizawa, Machida, and Takashi Uchiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 615,365, Sep. 22, 1975, abandoned. This application Aug. 26, 1976, Ser. No. 717,950
Claims priority, application Japan, Sep. 26, 1974, 49-111302
Int. Cl.² G03B *15/03*
U.S. Cl. 354—149 **28 Claims**



1. In an automatic exposure control apparatus for a camera of the type provided with a day-light exposure range and with a flash exposure range;

a. shutter time setting means arranged to provide a range of shutter times wider than a possible flash exposure time range,

b. first timing means cooperative with said shutter time setting means for generating voltage capable of attaining a critical level in a time interval equal to the shutter time preselected on said shutter time setting means,

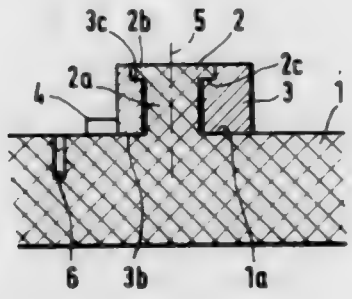
c. second timing means for generating voltage capable of attaining said critical level in a time interval equal to the faster limit of said flash exposure time range,
d. third timing means for generating voltage capable of attaining said critical level in a time interval equal to the slower limit of said flash exposure time range,
e. shutter control means selectively responsive to the outputs of said first, said second and said third timing means for controlling the period of actuation of the shutter of said camera,
f. selecting means responsive to the setting of said shutter time setting means to a shutter time either within, or on the faster side of, or on the slower side of said flash exposure time range for selecting either said first, or said second, or said third timing means respectively for operative connection with said shutter control means, whereby a correct flash exposure is made with automatic selection of a shutter time within said flash exposure time range regardless of the selected position of said shutter time setting means.

4,083,060

CAMERA MECHANISM PROVIDING FOR RELATIVE MOVEMENT OF COMPONENTS AGAINST FRICTIONAL RESISTANCE

Karl Heinz Lange, Bunde, Germany, assignor to Balda-Werke Photographische Gerate & Kunststoff GmbH. & Co. KG, Bunde, Germany

Filed Aug. 28, 1975, Ser. No. 608,793
Claims priority, application Germany, Sep. 26, 1974, 2445990
Int. Cl.[2] G03B *17/12*
U.S. Cl. 354—286 **9 Claims**



1. Camera mechanism comprising a camera body, a metal component associated with said camera body, a plastic component injection-molded about said metal component, said metal component being movably held in said plastic component, said plastic component having opposing surfaces and said metal component having a surface engaging said opposing surfaces of said plastic component for relative motion therebetween, said plastic component applying a compressive force to said metal component as the result of the greater shrinkage of plastic than metal subsequent to injection molding, whereby frictional resistance to movement of said metal component relative to said plastic component is generated, said frictional resistance being great enough to prevent accidental movement of said metal component relative to said plastic component.

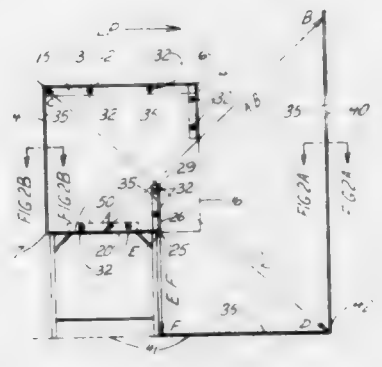
4,083,061

PORTABLE DARKROOM

George H. Barrows, 1279 Bassett, Louisville, Ky. 40204

Filed Apr. 26, 1976, Ser. No. 680,147
Int. Cl.[2] G03D *17/00*
U.S. Cl. 354—307 **6 Claims**

1. A portable darkroom, the combination of a box having a closed top, bottom, back, sides and a partially open front, the improvement of a light trap in the front which comprises:
A. an accessible opening in the front of said box defined by,
1. a bottom baffle extending upwardly from the bottom of said box,
2. a top baffle extending downwardly from the front edge of the top of said box in spaced apart and parallel relation to said bottom baffle and forward thereof, said top of said box extending forward of the bottom baffle and,
3. a non-reflective surface on the inside surface of said box to exclude reflections of light within said box, and,



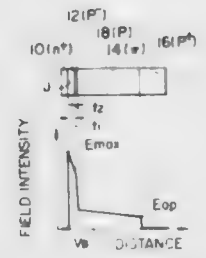
B. a non-reflective surface removably attached to the floor and wall portions adjacent to said opening to eliminate reflective light from entering said opening.

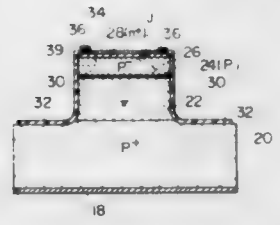
4,083,062

AVALANCHE PHOTODIODE WITH REDUCED AVALANCHE BREAKDOWN VOLTAGE

Hirobumi Ohuchi; Sumio Kawakami, and Masahiro Okamura, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 8, 1977, Ser. No. 766,724
Claims priority, application Japan, Feb. 21, 1976, 51-18310
Int. Cl.[2] H01L *29/90*
U.S. Cl. 357—13 **21 Claims**





1. An avalanche photodiode with a reduced avalanche breakdown voltage comprising:
(a) a semiconductor body comprising
a first semiconductor layer of one conductivity type,
a second semiconductor layer of the opposite conductivity type, adjoining the first layer, forming a rectification barrier with said first layer, said barrier being biased in the reverse direction when a predetermined voltage is applied thereto,
a third semiconductor layer of the opposite conductivity type, adjoining said second layer, having a higher doping concentration than said second layer,
a fourth semiconductor layer of the opposite conductivity type, adjoining said third layer, having a lower doping concentration than said second layer, and
a fifth semiconductor layer of the opposite conductivity type, adjoining said fourth layer, and having a higher doping concentration than said third layer;
(b) a first electrode in ohmic contact with said first layer;
(c) a second electrode in ohmic contact with said fifth layer;
(d) a film, which covers a light-receiving surface defined in the surface of one of said first and fifth layers, for prevent-

ing reflection of a light signal applied to said light-receiving surface; and

(e) a protecting film which covers the end face of said barrier extended to the surface of said semiconductor body for protecting said barrier from ambient influences.

4,083,063

GATE TURNOFF THYRISTOR WITH A PILOT SCR

Rosendo U. Yu, Auburn, N.Y., assignor to General Electric Company, Auburn, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,494

Int. Cl.[2] H01L *29/74*

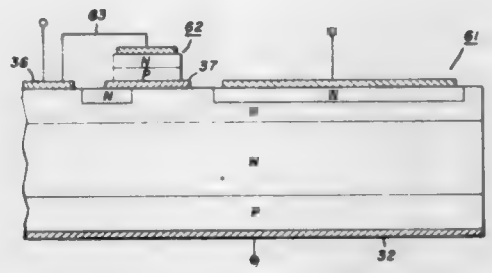
U.S. Cl. 357—38 **14 Claims**

1. A thyristor comprising:

gate terminal means for receiving triggering signals;

a pilot semiconductor controlled rectifier comprising pilot contact means, said pilot semiconductor controlled rectifier being for selectively controlling current flow through said pilot contact means in response to triggering signals received by said gate terminal means;

a primary semiconductor controlled rectifier formed in the same body of semiconductor material as said pilot semiconductor controlled rectifier and comprising primary contact means, said primary semiconductor controlled rectifier being for selectively controlling current flow through said primary contact means in response to current flow through said pilot contact means; and



auxiliary gate terminal means directly coupled to the gate region of said primary semiconductor controlled rectifier for selectively withdrawing current therefrom so as to render said primary semiconductor controlled rectifier non-conductive.

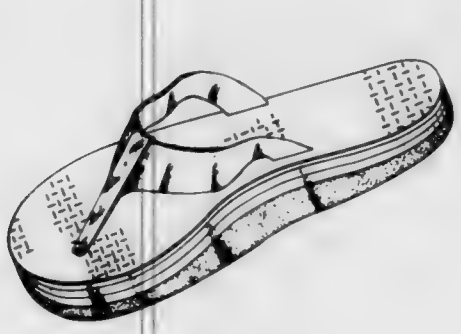
DESIGNS

APRIL 4, 1978

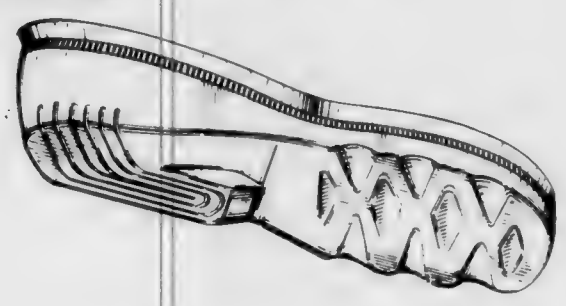
247,656
CONFECTIONERY FOOD PRODUCT
Kathleen Dillon, Houston, Tex., assignor to Jack E. Dillon, a part interest
Filed Apr. 7, 1976, Ser. No. 674,854
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—16



247,657
THONG SANDAL
Harold D. York, Jr., 3952 Bluff St., Torrance, Calif. 90505
Filed Feb. 20, 1976, Ser. No. 659,962
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—270



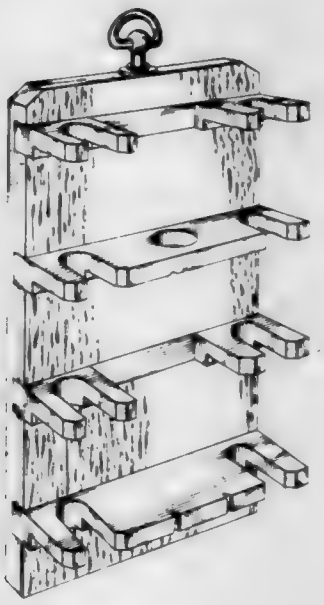
247,658
UNIT SOLE
Peter Charles Keen, Cincinnati, Ohio, assignor to United States Shoe Corporation, Cincinnati, Ohio
Filed Feb. 6, 1976, Ser. No. 655,699
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



247,659
SUPPORT FOR HANGING POTTED PLANTS
Linden P. Kearney, 8801 Tobias Ave., Apartment 4, Panorama City, Calif. 91402
Filed Jul. 25, 1977, Ser. No. 818,470
Term of patent 14 years
Int. Cl. D6—*06;* D25—*01*
U.S. Cl. D6—28



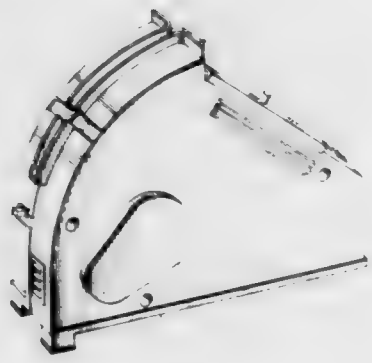
247,660
WINE RACK
Michael A. Tortorici, 3190 Fletcher, Simi Valley, Calif. 93065
Filed May 3, 1976, Ser. No. 682,394
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—71



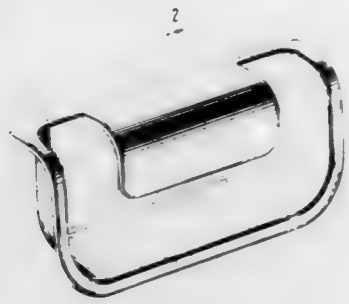
247,661
BARBECUE GRILL
Allen D. Willard, 16 Bellevue Rd., Wellesley Hills, Mass. 02181, and Mario A. Genovese, 10 Lincoln St., South Natick, Mass. 01760
Filed May 10, 1976, Ser. No. 684,785
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—107



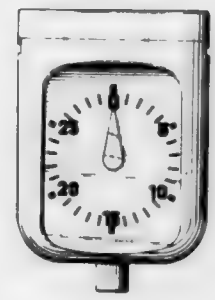
247,662
RECORD CLEANING DEVICE
John S. Doyel, 110 W. 20th St., New York, N.Y. 10011
Filed Sep. 23, 1976, Ser. No. 725,937
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—161



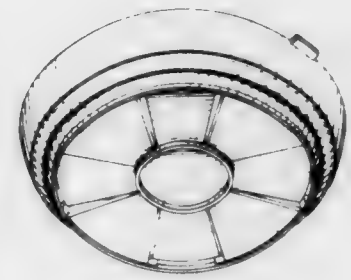
247,663
HANDLE FOR FURNITURE DOORS, DRAWERS OR THE LIKE
Roland Spellier, Lemgo, Germany, assignor to Firma Richard Heinze GmbH & Co. KG, Herford, Germany
Filed Jan. 30, 1976, Ser. No. 653,852
Claims priority, application Germany, Aug. 1, 1975, 6 AR 138/75
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—313



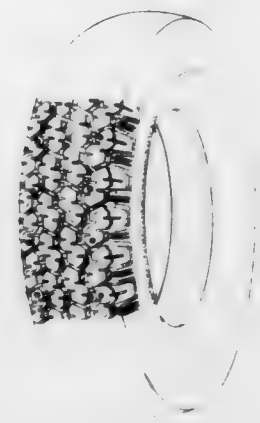
247,664
RAIN GAUGE
Carl Arne Breger, Torup, Sweden, assignor to AB Filip Linden, Varnamo, Sweden
Filed Apr. 21, 1976, Ser. No. 678,944
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—101



247,665
FIRE ALARM HOUSING
Larry D. Larsen, Palatine, Ill., assignor to Patent Development & Management Company, Elgin, Ill.
Filed Feb. 23, 1976, Ser. No. 660,254
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—121



247,666
TIRE
Yvon Maurice Dartois, La Garenne Colombes, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, France
Filed Sep. 22, 1976, Ser. No. 725,655
Claims priority, application France, Apr. 5, 1976, 39.092
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



247,667

FILM REEL

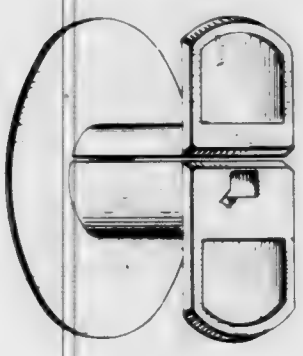
James G. Balmer, Jr., Bloomfield Hills, Mich., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 28, 1975, Ser. No. 626,392

Term of patent 14 years

Int. Cl. D14—*99*

U.S. Cl. D14—11



247,668

HOUSING FOR A MICROPHONE OR SIMILAR ARTICLE

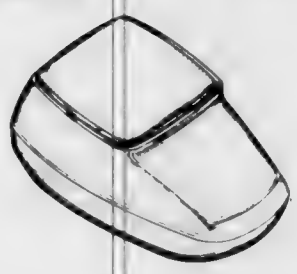
Norman Roland Furst, Lombard, and Masaru Tokiyama, Bloomingdale, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1976, Ser. No. 670,506

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—12





247,669

COMBINED TRANSCEIVER REMOTE-CONTROL MICROPHONE

Tsutomu Murakami, Neyagawa, and Benito Mishiro, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 22, 1977, Ser. No. 780,179

Claims priority, application Japan, Sep. 28, 1976, 38549/76

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—12



247,670

TELEPHONE OR SIMILAR ARTICLE

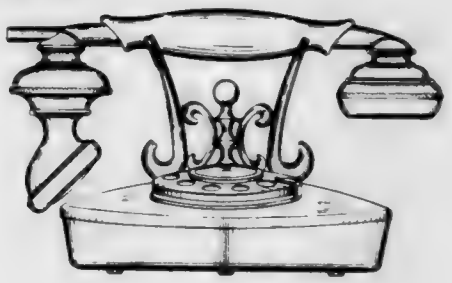
Paul R. Brown, New York, N.Y., assignor to United States Telephone Company, New York, N.Y.

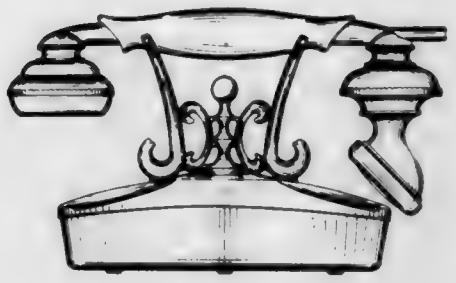
Filed Apr. 30, 1976, Ser. No. 681,881

Term of patent 14 years

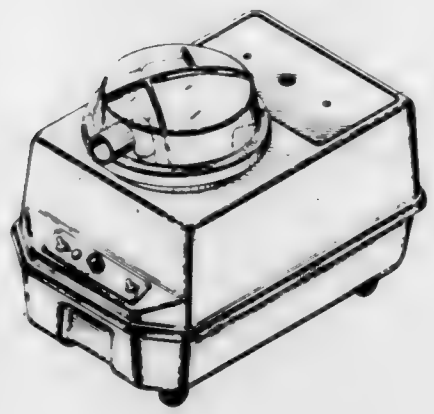
Int. Cl. D14—*03*

U.S. Cl. D14—53

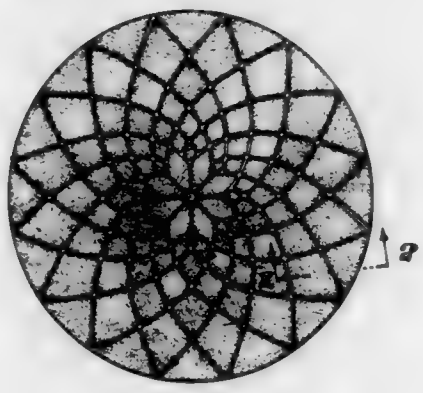




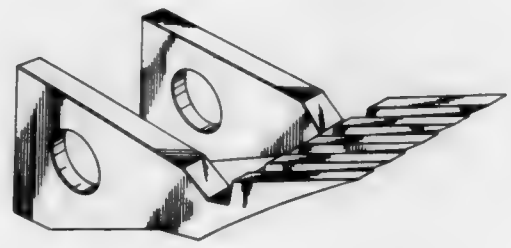
247,671
HOT-WATER EXTRACTION UNIT
Thomas M. Laule, Sparks; Carl Parise, Reno; James M. Wimsatt, Carson City, and R. Eugene Blackman, Reno, all of Nev., assignors to Parise & Sons, Inc., Reno, Nev.
Filed May 25, 1976, Ser. No. 689,871
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—52



247,672
GRINDING WHEEL
James Allen Kruse, 22937 Ostronic Dr., Woodland Hills, Calif. 91364
Filed Apr. 1, 1976, Ser. No. 672,634
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126

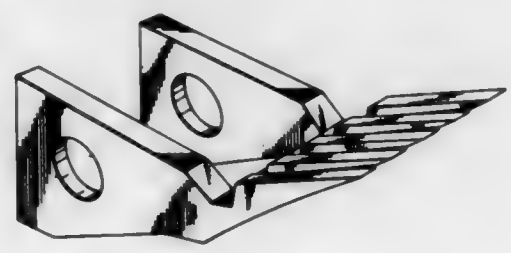


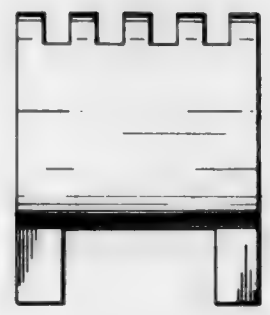
247,673
STRIPPER PAD
Eugene Behun, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 13, 1976, Ser. No. 750,096
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32



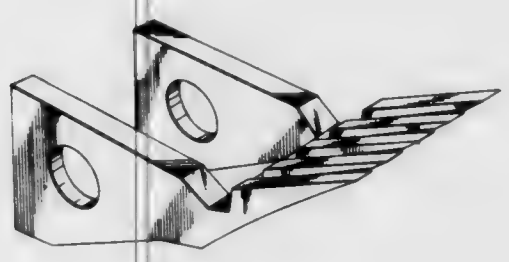


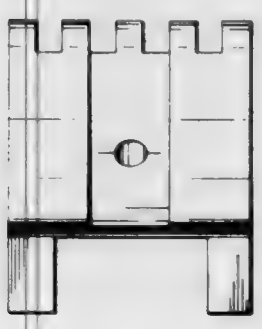
247,674
STRIPPER PAD
Eugene Behun, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 13, 1976, Ser. No. 750,098
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32



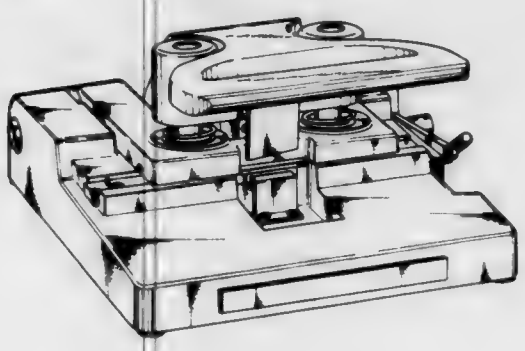


247,675
STRIPPER PAD
Eugene Behun, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 13, 1976, Ser. No. 750,099
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32

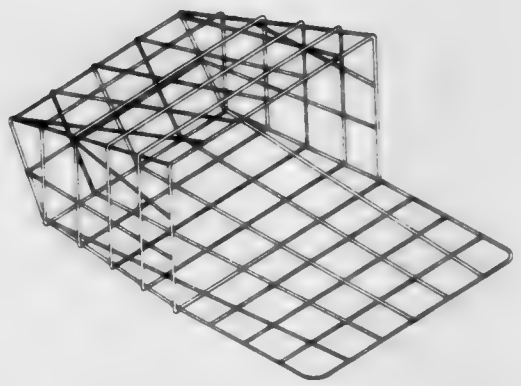




247,676
SPLICER
Kozo Nakahata, Tama, Japan, assignor to Marusho Industrial Co., Ltd., Tokyo, Japan
Filed Jun. 22, 1976, Ser. No. 698,635
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—41



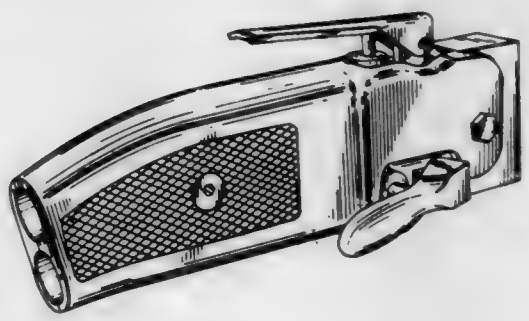
247,677
CRAB TRAP
Albert Bockhorn, 452 48th St., Pennsauken, N.J. 08110
Filed Jan. 3, 1977, Ser. No. 756,014
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



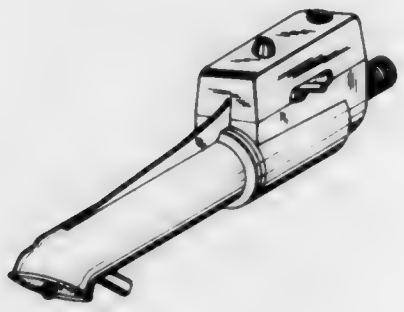
247,678
FISH LURE
Paul E. Brokaw, 292 Overlook Park Dr., Cleveland, Ohio 44110
Filed Aug. 16, 1976, Ser. No. 714,642
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



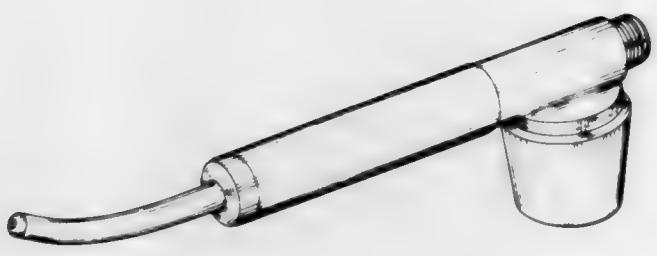
247,679
SPRAY GUN HANDLE
Thomas J. McMullen, 5529 Park Ave. South, Minneapolis, Minn. 55417
Filed Apr. 28, 1976, Ser. No. 681,187
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—17



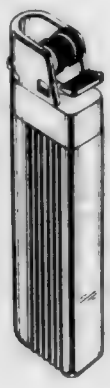
247,680
SHOWER HEAD
Alexandre José Antonio Lorenzetti, 1230 President Wilson Avenue, Sao Paulo, Brazil
Filed May 4, 1976, Ser. No. 683,024
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



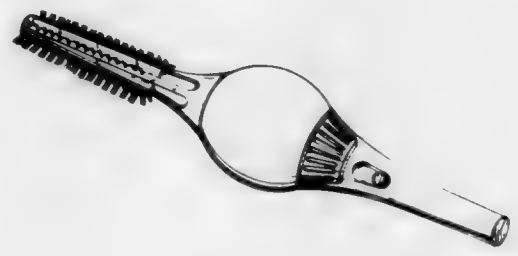
247,681
DOUCHE APPARATUS
William T. Hemphill, 2702 Craig St., Fort Myers, Fla. 33901
Filed Mar. 12, 1976, Ser. No. 666,253
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—61



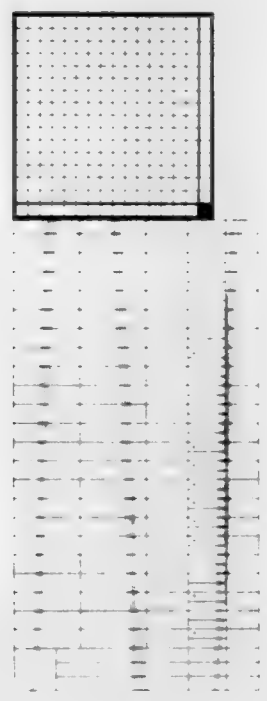
247,682
DISPOSABLE CIGARETTE GAS LIGHTER
Tomio Nitta, 2181-7, Enokiyato Kitahassaku-cho, Midori-ku, Yokohama-shi, Japan
Filed Aug. 31, 1976, Ser. No. 719,141
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



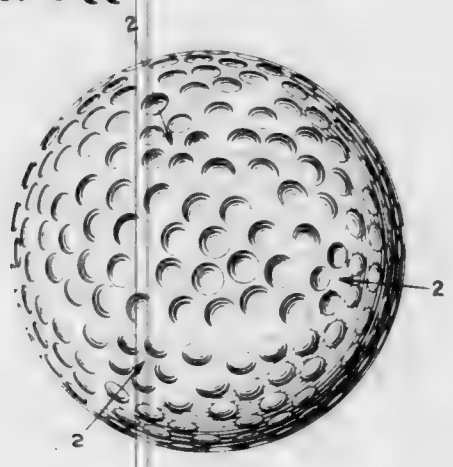
247,683
ELECTRIC HAIR DRYER
William J. Rakocy, Nutley, and Masao Tsuji, North Plainfield, both of N.J., assignors to North American Philips Corporation, New York, N.Y.
Filed Apr. 26, 1976, Ser. No. 680,109
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13



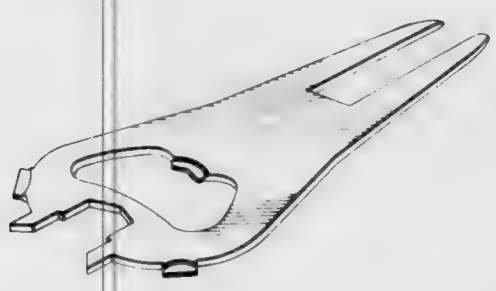
247,684
SCORE SHEET
Lee W. Tiffany, New York, N.Y., assignor to Selchow & Righter Company, Bay Shore, N.Y.
Filed Sep. 11, 1975, Ser. No. 612,323
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 MM



247,685
GOLF BALL
Robert Christopher Haines, Huddersfield, and Michael Shaw, Ryhill, near Wakefield, both of England, assignors to Dunlop Limited, England
Filed Feb. 19, 1976, Ser. No. 659,566
Claims priority, application United Kingdom, Sep. 6, 1975, 972471/75
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 QQ



247,686
TOOL FOR GOLF PLAYER
Adrien Desjardins, 4545 Blvd. Rosemont, Appt. 18, Montreal, Quebec, Canada (H1T 2E2)
Filed Jul. 8, 1976, Ser. No. 703,645
Claims priority, application Canada, Jan. 20, 1976, 2001762
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



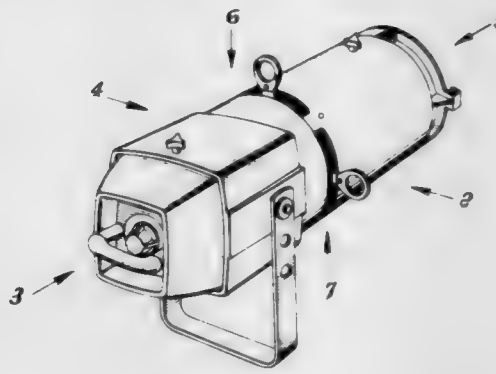
247,687
HEADGEAR TOY FOR HOOP WHIRLING OR THE LIKE
Bernadette C. Roland, 16856 Alisal Ct., San Lorenzo, Calif. 94580
Filed Jan. 10, 1977, Ser. No. 757,815
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 HP



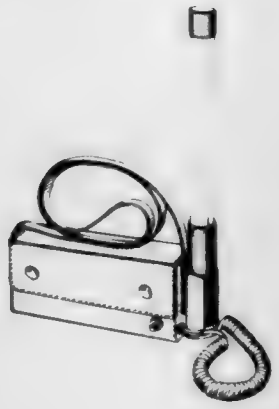
247,688
TOY MUSIC BOX
Shinroku Nakao, Yokohama, and Yoshiyasu Ishii, Tokyo, both of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Dec. 9, 1976, Ser. No. 748,853
Claims priority, application Japan, Jul. 29, 1976, 51-29704
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C



247,689
LUMINAIRE
Craig LeVasseur, Calabasas, Calif., assignor to Berkey-Colortran, Inc, Burbank, Calif.
Filed Nov. 18, 1976, Ser. No. 742,894
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20 K



247,690
COMBINED PORTABLE FLUORESCENT LIGHT AND POWER PACK THEREFOR
Thomas Zelina, Erie, Pa., assignor to Lighting Systems, Inc., Erie, Pa.
Filed Mar. 22, 1976, Ser. No. 669,180
The portion of the term of this patent subsequent to Jul. 22, 1989, has been disclaimed.
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF APRIL, 1978

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick/Scott: *See—*
Gross, Frank C., 4,082,442, Cl. 355-3.00R.

A-T-O Inc.: *See—*
Willms, Charles F., 4,082,148, Cl. 169-61.000.

AB Ziristor: *See—*
Sjostrand, Uno Roland, 4,081,944, Cl. 53-51.000.

Abe, Michiharu: *See—*
Yamada, Yukio; Abe, Michiharu; and Oride, Akiyoshi, 4,082,441, Cl. 355-14.000.

Abolins, Andrew: *See—*
Schmidt, George A.; Zubko, Ronald L.; and Abolins, Andrew, 4,082,357, Cl. 298-27.000.

ACF Industries, Incorporated: *See—*
Dugge, Richard H.; and Van Dyke, Ronald D., 4,082,365, Cl. 302-52.000.
Hammonds, James C.; and Holt, Jan D., 4,082,043, Cl. 105-182.00R.
Morrison, Bertram L., 4,081,891, Cl. 29-157.10R.

Acumeter Laboratories, Inc.: *See—*
McIntyre, Donald B.; and McIntyre, Frederic S., 4,082,059, Cl. 118-407.000.

Adams, James E.: *See—*
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,082,549, Cl. 96-1.00R.

Adams, James R., Jr., to Rollei of America, Inc. Capacitor charging system for electronic flash apparatus. 4,082,983, Cl. 315-241.00P.

Adams, William V., to Durametallic Corporation. Bypass flush system employing thermal bushing. 4,082,297, Cl. 277-15.000.

Addressograph Multigraph Corporation: *See—*
Patzke, Robert C.; DeRyke, Thomas V.; and Meller, Frederick D., 4,082,206, Cl. 222-400.700.
Schutt, Elmer F.; Thornton, Bryce G.; and Bentivegna, Charles R., Jr., 4,082,039, Cl. 101-450.000.

Adler, Kurt: *See—*
Weinstein, Hyman; and Adler, Kurt, 4,082,882, Cl. 428-246.000.

Adler, Norman; and Camin, Leopoldo Lazaro, to New England Nuclear Corporation. Bone seeking technetium 99m complex. 4,082,840, Cl. 424-1.000.

Agence Nationale de Valorisation de la Recherche: *See—*
Papirer, Eugene; and Donnet, Jean-Baptiste, 4,082,660, Cl. 210-36.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Garnier, Marcel A.; and Moreau, Rene J., 4,082,207, Cl. 222-594.000.

Agency of Industrial Science & Technology, The: *See—*
Komuro, Takeo; Saito, Yukio; and Hirato, Mizuno, 4,082,615, Cl. 201-12.000.
Nagata, Akira; and Iyoda, Jun, 4,082,727, Cl. 260-46.50G.
Yanagihara, Shigeru, 4,082,067, Cl. 123-32.00H.
Yokoshima, Ichiro, 4,083,006, Cl. 325-125.000.

AGFA-Gevaert, A.G.: *See—*
Bickl, Horst; Treiber, Helmut; Findeis, Gunter; Knor, Bernhard; Payrhammer, Bernd; and Fergg, Berthold, 4,082,465, Cl. 356-203.000.
Schmidt, Manfred, 4,082,112, Cl. 137-614.030.

AGFA-GEVAERT N.V.: *See—*
Laridon, Urbain Leopold; Poot, Albert Lucien; and Willems, Jozef Frans, 4,082,901, Cl. 428-480.000.
Pattyn, Herman Alberik; Vanassche, Willy Joseph; and Philipparts, Herman Adelbert, 4,082,554, Cl. 96-101.000.

Aidlin, Samuel S.; and Aidlin, Stephen H. Container conveying apparatus. 4,082,177, Cl. 198-453.000.

Aidlin, Stephen H.: *See—*
Aidlin, Samuel S.; and Aidlin, Stephen H., 4,082,177, Cl. 198-453.000.

Ailshie, Roger Howard; and Reynolds, Roy, to Applied Power, Inc. Latching mechanism. 4,082,342, Cl. 296-28.00C.

Air Pollution Industries, Inc.: *See—*
Pike, Daniel E., 4,082,253, Cl. 266-147.000.

Aizawa, Hiroshi: *See—*
Tsunekawa, Tokuichi; Nakamura, Zenso; Taguchi, Tetsuya; Uchidoi, Masanori; Aizawa, Hiroshi; and Uchiyama, Takashi, 4,083,059, Cl. 354-149.000.

Aizawa, Tatsuo: *See—*
Takayama, Hiroshi; and Aizawa, Tatsuo, 4,082,681, Cl. 252-62.10P.

A.B. Chance Company: *See—*
Haubein, Harold D.; Allen, George D.; Harmon, Robert W.; Ramsey, Edgar J., Jr.; and Pehle, Ronald C., 4,083,028, Cl. 337-144.000.

Aktiebolaget Leo: *See—*
Fex, Hans Jacob; Kristensson, Sten Krister; and Stamvik, Anders Robert, 4,082,779, Cl. 260-397.500.

Akzona Incorporated: *See—*
Meyer, Gerhard; and Toth, Anton, 4,082,763, Cl. 260-308.00R.

Alberts, Heinrich-Albert, to Serbert Industries (Proprietary) Limited. Connector. 4,082,470, Cl. 403-172.000.

Albrecht, Alfred, to BFG Baumgartner Freres SA. Ski pole. 4,082,302, Cl. 280-11.37H.

Albuerne, Evelio A. Perez: *See—*
Steklenski, David J.; and Albuerne, Evelio A. Perez, 4,082,551, Cl. 96-1.0PC.

Aldrich-Boranes, Inc.: *See—*
Brown, Herbert C., 4,082,810, Cl. 260-606.50B.

Alfachimici S.p.A.: *See—*
Pizzio, Pietro, 4,082,557, Cl. 106-1.110.

Alitta, Giorgio: *See—*
Malgarini, Giansilvio; Pasero, Edoardo; Alitta, Giorgio; De Candida, Cristiano; and Raggio, Carlo, 4,082,545, Cl. 75-35.000.

Allan, Thomas T., to Flanders Filters, Inc. Removable fluid sealing member. 4,082,525, Cl. 55-355.000.

Allen, George D.: *See—*
Haubein, Harold D.; Allen, George D.; Harmon, Robert W.; Ramsey, Edgar J., Jr.; and Pehle, Ronald C., 4,083,028, Cl. 337-144.000.

Allen, Herbert, to Carmeron Iron Works, Inc. Valve stem packing assembly with temperature responsive seal. 4,082,105, Cl. 137-72.000.

Allen, Robert J.: *See—*
Petrow, Henry G.; and Allen, Robert J., 4,082,699, Cl. 252-472.000.

Allied Chemical Corporation: *See—*
Chlanda, Frederick P.; Nagasubramanian, Krishnamurthy; and Liu, Kang-Jen, 4,082,835, Cl. 423-242.000.
Eibeck, Richard Elmer; and Booth, Robert Edwin, 4,082,839, Cl. 423-489.000.
Hentschel, Robert Carl, Jr.; and Gignilliat, William McIntosh, 4,082,003, Cl. 73-422.00R.
Long, E. David, 4,082,066, Cl. 123-32.0EA.
Spiliotis, Nicholas J.; Schevey, William R.; and Himler, Donald W., 4,082,621, Cl. 204-38.00B.
Stephenson, Robert L.; and Loomba, Yogendra S., 4,082,236, Cl. 242-107.40B.

Allis-Chalmers Corporation: *See—*
Rossi, Eugene F., 4,082,499, Cl. 432-19.000.

Allison, Blaine H.; and Allison, Richard F. Auxiliary axle assembly. 4,082,305, Cl. 280-81.00R.

Allison, Richard F.: *See—*
Allison, Blaine H.; and Allison, Richard F., 4,082,305, Cl. 280-81.00R.

Allman, Michael C.: *See—*
Allmon, Leonard G.; and Allman, Michael C., 4,082,250, Cl. 254-47.000.

Allmendinger, Karl: *See—*
Kleen, Gerhard; Schiemann, Heinz; and Allmendinger, Karl, 4,083,026, Cl. 336-70.000.

Allmon, Leonard G.; and Allman, Michael C. Lifting device. 4,082,250, Cl. 254-47.000.

Allport, John J. Method and apparatus for measuring cross sectional area and weight per unit length of elongated, conductive material by magnetic field displacement. 4,083,002, Cl. 324-227.000.

Alpha Nova Development Corporation: *See—*
Sigler, Thelma G., 4,081,906, Cl. 30-276.000.

Althausen, Ferdinand; and Raffel, Rainer, to Maschinenfabrik Hennecke GmbH. Mixing head for a machine for producing multicomponent plastics. 4,082,251, Cl. 366-179.000.

Aluminum Company of America: *See—*
Evancho, Joseph W.; Shabel, Barrie S.; and Truckner, William G., 4,082,578, Cl. 148-12.70A.

Amchem Products, Inc.: *See—*
Henley, Thomas D.; and Reeves, Richard F., 4,082,867, Cl. 427-327.000.

Amerace Corporation: *See—*
Bressler, David E., 4,082,403, Cl. 339-111.000.
Dieme, Hilmar K., 4,082,058, Cl. 118-319.000.
O'Neil, Charles P., 4,082,113, Cl. 137-624.110.
Smorzaniuk, Adam; and Lindlau, Paul F., 4,082,407, Cl. 339-112.00R.
Stepniak, Frank M., 4,082,405, Cl. 339-111.000.
Storck, Glenn E.; and Kominiak, Andrew A., 4,082,410, Cl. 339-252.00R.
Storck, Glenn E., 4,082,411, Cl. 339-252.00R.

American Casting & Mfg. Corporation: *See—*
Natkins, Ephraim, 4,082,336, Cl. 292-318.000.

American Cyanamid Company: *See—*
Dudkowski, Joseph John, 4,082,537, Cl. 71-121.000.
Voorhies, John Davidson, 4,082,652, Cl. 208-216.000.

American Hoechst Corporation: *See—*
Lassman, Howard B.; and Novick, William J., Jr., 4,082,850, Cl. 424-278.000.
American Home Products Corporation: *See—*
Bagli, Jehan F.; and Ferdinandi, Eckhardt, 4,082,772, Cl. 260-332.30H.
American Industrial Products, Inc.: *See—*
Break, Douglas G., 4,081,986, Cl. 72-320.000.
American Minechem Corporation: *See—*
Capes, C. Edward; McIlhinney, Allen E.; and Messer, Leonard, 4,082,515, Cl. 23-313.00R.
American Safety Equipment Corporation: *See—*
Hollowell, William M., 4,082,353, Cl. 297-379.000.
Ames, George K.: *See—*
Ralston, Richard W., Jr.; and Ames, George K., 4,082,639, Cl. 204-219.000.
AMF Incorporated: *See—*
Cilento, Guido D., 4,082,673, Cl. 210-234.000.
AMFAC Foods, Inc.: *See—*
Carlson, Bayard L., 4,082,187, Cl. 206-585.000.
Amin, Rajnikant B.; Anderson, Harlan Urie; and Hodgkins, Charles E., to San Fernando Electric Manufacturing Company. Low temperature fired ceramic capacitors. 4,082,906, Cl. 428-539.000.
AMP Incorporated: *See—*
Kinkaid, Robert John; and Asick, John Carl, 4,082,402, Cl. 339-97.00C.
Andersen, Edward O., to General Electric Company. Method of making an electric switch. 4,081,897, Cl. 29-622.000.
Anderson, Arnold L., to Velsicol Chemical Corporation. Flame retardant plastic compositions. 4,082,725, Cl. 260-45.75B.
Anderson, Clifton W.; Kubik, John J.; Pollock, Tom G.; Schlict, Larry J.; and Wilcox, Craig R., to Iowa State University Research Foundation, Inc. Bale handling and shredding apparatus. 4,082,198, Cl. 214-519.000.
Anderson, David Paul: *See—*
Portnoy, Norman A.; and Anderson, David Paul, 4,082,617, Cl. 203-28.000.
Anderson, Harlan Urie: *See—*
Amin, Rajnikant B.; Anderson, Harlan Urie; and Hodgkins, Charles E., 4,082,906, Cl. 428-539.000.
Anderson, James, to British Leyland UK Limited. Motor vehicles. 4,082,344, Cl. 296-28.00C.
Anderson, John A.: *See—*
Thirumalachar, Mandayam J.; Narasimhan, Mandayam J.; and Anderson, John A., 4,082,613, Cl. 195-76.000.
Anderson, Raymond H.: *See—*
Appeldorn, Roger H.; and Anderson, Raymond H., 4,082,433, Cl. 350-211.000.
Anderson, Richard B.: *See—*
McQuinn, Ted M.; and Anderson, Richard B., 4,082,011, Cl. 74-862.000.
Anderson, Robert John, to Harris Corporation. Cylinder folder. 4,082,259, Cl. 270-73.000.
Anderton, William Arthur; and Sewell, Richard Benjamin Hollis, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Metal protecting lead/plastic laminate. 4,082,588, Cl. 156-71.000.
Andis Clipper Co.: *See—*
Urbush, Richard L., 4,081,905, Cl. 30-221.000.
Ando, Teiichi; and Itoi, Hidenobu, to Nippon Steel Corporation. Tap hole mix. 4,082,718, Cl. 260-33.40R.
Andon, Nicholaki A.; and Fleece, Robert I., to Marathon Oil Company. Intermittent catalyst addition system. 4,082,513, Cl. 23-288.00E.
Andrascheck, Hans-Joachim; Lorcher, Otfried; and Zentner, Erich, to Hoechst Aktiengesellschaft. Shaped articles on the basis of vinyl chloride polymers having an increased white fracture effect. 4,082,711, Cl. 260-23.0XA.
Andresen, Jens Nicolai, to Danfoss A/S. Electic snap switch, particularly miniature switch. 4,082,928, Cl. 200-67.0DA.
Andrushev, Valery Nikolaevich: *See—*
Azarov, Evgeny Mikhailovich; Andrushev, Valery Nikolaevich; and Khutoretsky, Garri Mikhailovich, 4,082,975, Cl. 310-239.000.
Angelis, John G., to Gould, Inc. Electric fuse holder. 4,082,408, Cl. 339-198.00G.
Anthony, Thomas R.; and Cline, Harvey E., to General Electric Company. Process for making anisotropic resistor for electrical feed throughs. 4,082,572, Cl. 148-1.500.
Anthony, William H.; Brock, Andrew J.; and Gullotti, Damian V., to Swiss Aluminium Ltd. Processing for corrosion resistance in aluminum base alloys containing zinc, magnesium and iron. 4,082,574, Cl. 148-2.000.
Antony, Arthur P., to Aqua-Chem, Inc. Vapor compression distiller. 4,082,616, Cl. 203-3.000.
Antos, George J., to UOP Inc. Hydrocarbon conversion with a sulfided acidic multimetallic catalytic composite. 4,082,651, Cl. 208-139.000.
Aoki, Sethuo; and Sogo, Yoshiaki, to Fuji Electric Co., Ltd. Device and method for heating die. 4,082,936, Cl. 219-10.410.
Aoki, Takao; Kako, Yuji; Kikuga, Toyoji; and Hatano, Keizo, to Sumitomo Durez Company, Ltd. Activated carbon and preparation thereof. 4,082,661, Cl. 210-40.000.
Aono, Shunji: *See—*
Suzuki, Yoshio; Minai, Masayoshi; Hamma, Noritaka; Murayama, Eiichi; and Aono, Shunji, 4,082,913, Cl. 560-102.000.
Appeldorn, Roger H.; and Anderson, Raymond H., to Minnesota Mining and Manufacturing Company. Louvered echelon lens. 4,082,433, Cl. 350-211.000.
Apple, Merrill K. Finger puppets. 4,081,925, Cl. 46-116.000.
Applefield, Jerome H.: *See—*
Rech, Jakob, 4,082,130, Cl. 151-23.000.
Applefield, Sheldon H.: *See—*
Rech, Jakob, 4,082,130, Cl. 151-23.000.
Appleman, Theodore C.; and Wacker, Wade L., to Eastside Machine & Welding, Inc. Shut-off nozzle. 4,082,226, Cl. 239-584.000.
Applied Fiberoptics, Inc.: *See—*
Kloots, Jacobus, 4,082,422, Cl. 350-96.230.
Applied Power, Inc.: *See—*
Ailshie, Roger Howard; and Reynolds, Roy, 4,082,342, Cl. 296-28.00C.
Aqua-Chem, Inc.: *See—*
Antony, Arthur P., 4,082,616, Cl. 203-3.000.
Aradio, Dominic: *See—*
Jones, Charles L.; and Aradio, Dominic, 4,082,666, Cl. 210-93.000.
Arai, Fumiaki: *See—*
Suzuki, Akira; Kubo, Keiji; Kunitake, Suguru; and Arai, Fumiaki, 4,082,902, Cl. 428-457.000.
Arai, Tatsuo; Hirano, Hironori; Kajimura, Hiroyuki; and Matsui, Masayuki, to Bridgestone Tire Company Limited. Low section profile pneumatic radial tire for heavy vehicles. 4,082,132, Cl. 152-361.00R.
Arendt, Ronald H.; Borom, Marcus P.; Huseby, Irvin C.; and Klug, Frederic J., to General Electric Company. Molten salt leach for removal of inorganic cores from directionally solidified eutectic alloy structures. 4,082,566, Cl. 134-2.000.
Argus Chemical Corporation: *See—*
Wood, Donald W., 4,082,812, Cl. 260-610.00R.
Armco Steel Corporation: *See—*
Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., 4,082,868, Cl. 427-329.000.
Armstrong, James Eubank, to Pool Company. Platform crane. 4,081,932, Cl. 52-111.000.
Arneborn, Anders: *See—*
Hertsius, Lars-Olov; and Arneborn, Anders, 4,082,023, Cl. 83-293.000.
Arnett, Carroll D.; Wright, Jeremy; and Zenker, Nicolas, to Merck & Co., Inc. Substituted aminoethanols and pharmaceutical use. 4,082,847, Cl. 424-273.00R.
Arnold, Lee Fern. Clevis. 4,081,954, Cl. 59-86.000.
Arold, Hermann: *See—*
Diehr, Hans-Joachim; and Arold, Hermann, 4,082,822, Cl. 260-972.000.
Aromando, Nick A., to Hillside Metal Products, Inc. Method for manufacturing ball bearings; a sintered metal outer race preform for use therein; and a ball bearing produced thereby. 4,082,382, Cl. 308-190.000.
Arthur D. Little, Inc.: *See—*
McCullough, John E., 4,082,484, Cl. 418-55.000.
Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH: *See—*
Wehde, Heinz; and Becker, Willi, 4,082,376, Cl. 308-10.000.
Artzberger, Thomas G., to Kelley Company, Inc. Hydraulic dockboard system. 4,081,874, Cl. 14-71.700.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Nakamura, Kazuo; Miyata, Katsuhiko; and Tokutomi, Seijiro, 4,083,056, Cl. 354-25.000.
Nishikawa, Yukiyasu; and Itagaki, Takuo, 4,083,055, Cl. 354-23.00D.
Asbeck, Adolf: *See—*
Heyden, Rudi; Asbeck, Adolf; Eckelt, Michael; Petzold, Manfred; and Uphues, Gunter, 4,082,689, Cl. 252-321.000.
ASEA Aktiebolag: *See—*
Fredrikson, Bengt, 4,082,544, Cl. 75-12.000.
Gustafsson, Sven-Goran; Nilsson, Jan; and Syvakari, Pertti, 4,081,984, Cl. 72-60.000.
Hedvall, Per; and Strandberg, Per, 4,082,656, Cl. 209-222.000.
Ash, Richard Graham. Infant's cradle holder. 4,081,869, Cl. 5-105.000.
Asick, John Carl: *See—*
Kinkaid, Robert John; and Asick, John Carl, 4,082,402, Cl. 339-97.00C.
Atlantic Richfield Company: *See—*
Spence, Andrew P., 4,082,359, Cl. 299-4.000.
Auburn International, Inc.: *See—*
Newton, Robert E., 4,082,994, Cl. 324-30.00R.
Augustine, Harry G.; Krupinski, Kenneth C.; and Smith, Frank A., to United States Steel Corporation. Process for forming coated pitch prills. 4,082,823, Cl. 264-7.000.
Auracher, Franz; Mitterhummer, Gerhard; and Zeitler, Karl-Heinz, to Siemens Aktiengesellschaft. Device for coupling two light conducting fiber cables. 4,082,421, Cl. 350-96.220.
Aurora, Ravi P.; and Farmer, Glyen D., to Farmer Foundation Company, Inc. Apparatus for load testing foundation shafts. 4,081,992, Cl. 73-84.000.
Austin, Robert R.; and Bastien, Roy C., to Perkin-Elmer Corporation, The. Selective radiation absorption devices for producing heat energy. 4,082,413, Cl. 350-1.100.
Austral-Erwin Engineering Company: *See—*
Erwin, Ransome W., 4,082,140, Cl. 165-45.000.
Automated Building Components, Inc.: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, 4,081,893, Cl. 29-432.000.
Automated Molding Corporation: *See—*
Barrette, Richard P., 4,082,182, Cl. 206-107.000.

Automatic Material Handling, Inc.: *See—*
Keller, Alex J.; Dellinger, Keith Sidney; Ray, James Lester, Jr.; Cherry, Thomas Adrian; and Fechner, Erhard A., 4,081,949, Cl. 57-53.000.
Autran, Jean Michel; and Epsztein, Bernard, to Thomson-CSF. Transducer for surface wave filters with reduced diffraction. 4,083,021, Cl. 333-72.000.
Avtex Fibers Inc.: *See—*
Knopka, William N., 4,082,731, Cl. 260-75.00T.
Azarov, Evgeny Mikhailovich; Andrushev, Valery Nikolaevich; and Khutoretsky, Garri Mikhailovich. Brush mounting device for dynamoelectric machine. 4,082,975, Cl. 310-239.000.
Aziz, Walid Y.; Ball, Lawrence E.; and Rosen, Irving, to Standard Oil Company, The. Xylene-formaldehyde resin compositions and process. 4,082,728, Cl. 260-67.00A.
B. F. Goodrich Company, The: *See—*
Backderf, Richard Harold; and Guiley, Clifford Dale, Jr., 4,082,895, Cl. 428-412.000.
Babcock & Wilcox Company, The: *See—*
Russell, John X.; and Liske, Kenneth T., 4,082,018, Cl. 82-2.500.
Bach, Nicholas J.: *See—*
Kornfeld, Edmund C.; and Bach, Nicholas J., 4,082,753, Cl. 260-285.500.
Backderf, Richard Harold; and Guiley, Clifford Dale, Jr., to B. F. Goodrich Company, The. Layered composite of overpolymer rubbers as toughenes and thermoset and thermoplastic molding compositions. 4,082,895, Cl. 428-412.000.
Baer, Ralph H.: *See—*
Fletchic, Donald K.; Morrison, Howard J.; and Baer, Ralph H., 4,082,292, Cl. 274-23.00R.
Bagli, Jehan F.; and Ferdinandi, Eckhardt, to American Home Products Corporation. Thiophene ethanolamines. 4,082,772, Cl. 260-332.30H.
Baglin, Yves. Display unit. 4,082,046, Cl. 108-106.000.
Bahlmann, Johannes P. M.; and Zwijsen, Wilhelmus A. J. M., to U.S. Philips Corporation. Arrangement for producing pulse-shaped signals. 4,083,036, Cl. 340-166.00R.
Bailey, James R.; and Lavigne, Vernon W., to Switchcraft, Inc. Electrical coupler and adapter. 4,082,409, Cl. 339-182.00R.
Bainard, Dean R., to Garlock Inc. Reed valve with crankshaft seal and method. 4,082,295, Cl. 277-1.000.
Bainbridge, Cuthbert Angus, to Barton Hydraulic Engineering Company Limited. Separator of oil and water. 4,082,669, Cl. 210-184.000.
Baker, Don R.; and Walker, Francis H., to Stauffer Chemical Company. N-benzyl-2-(3,5-dimethyl phenoxy)-2-alkoxy amides and their use as herbicides. 4,082,799, Cl. 260-559.00B.
Baker, Don R.; and Walker, Francis H., to Stauffer Chemical Company. N-t-butyl-2-(3,5-dichloro or dimethyl phenoxy)-2-alkoxy amides and their use as herbicides. 4,082,800, Cl. 260-559.00B.
Baker, Howard W. Container assembly and method of using. 4,082,214, Cl. 229-23.00R.
Baker, Jack M.; Clark, Gordon W.; Harper, Douglas M.; and Tomlinson, Leroy O., to General Electric Company. Combined gas turbine and steam turbine power plant. 4,081,956, Cl. 60-39.18B.
Balda-Werke Photographische Gerate & Kunststoff GmbH. & Co. KG: *See—*
Lange, Karl Heinz, 4,083,060, Cl. 354-286.000.
Bales, Emmett R.; and Murphy, Randal T., to Lear Siegler, Inc. Seat back recliner. 4,082,352, Cl. 297-364.000.
Ball, Lawrence E.: *See—*
Aziz, Walid Y.; Ball, Lawrence E.; and Rosen, Irving, 4,082,728, Cl. 260-67.00A.
Ballenger, William, to Central Specialties, Inc. Commercial duty high chair. 4,082,349, Cl. 297-183.000.
Balogh, Richard L., to General Motors Corporation. Engine speed governor with improved peak load control. 4,082,073, Cl. 123-140.00R.
Ban, Vladimir Sinisa; and Gilbert, Stephen Lee, to RCA Corporation. Method for chemical vapor deposition. 4,082,865, Cl. 427-253.000.
Bandag Incorporated: *See—*
Raabe, Ralph C.; Cleffman, Roger G.; and Stratton, Raymond G., 4,082,592, Cl. 156-153.000.
Barke, Gisela: *See—*
Barke, Heinrich; and Barke, Gisela, 4,082,128, Cl. 144-230.000.
Barke, Heinrich; and Barke, Gisela. Planing and disintegrating apparatus. 4,082,128, Cl. 144-230.000.
Barkhuff, Earl D., to International Business Machines Corporation. Zero-insertion force connector. 4,082,399, Cl. 339-75.00M.
Baron, Gerhard; Bierbach, Herbert; Hafke, Carl; and Pockrandt, Gunter, to Ruhrgas Aktiengesellschaft. Process of producing gases having a high calorific value. 4,082,520, Cl. 48-202.000.
Barr & Stroud Limited: *See—*
Runciman, Herbert Morrison; and Berry, Peter John, 4,082,416, Cl. 350-6.800.
Runciman, Herbert Morrison; and Berry, Peter John, 4,082,417, Cl. 350-6.800.
Barreca Products Co., Subsidiary of Shelburne Industries, Inc.: *See—*
Finnegan, Robert J., 4,082,303, Cl. 280-11.37H.
Barrett, Lawrence J.: *See—*
Gibson, David L.; Barrett, Lawrence J.; Moore, Patricia A.; and Butler, David R., 4,082,390, Cl. 312-284.000.
Barrette, Richard P., to Automated Molding Corporation. Matchbook covers. 4,082,182, Cl. 206-107.000.
Barrows, George H. Portable darkroom. 4,083,061, Cl. 354-307.000.
Barry, Leonard D. Overhead container transfer system. 4,082,042, Cl. 104-18.000.
Barton Hydraulic Engineering Company Limited: *See—*
Bainbridge, Cuthbert Angus, 4,082,669, Cl. 210-184.000.
Barton, Sterling C.; Carson, Chester C.; and Echeverria, Federico S., to General Electric Company. Generator monitoring apparatus. 4,082,948, Cl. 250-304.000.
BASF Aktiengesellschaft: *See—*
Buchan, William A.; and Rotter, Gerhard, 4,082,237, Cl. 242-192.000.
Buechner, Oskar; Schlichthaerle, Gottfried; and Urban, Friedrich, 4,082,910, Cl. 528-481.000.
Quadbeck-Seeger, Hans-Juergen; and Tonne, Peter, 4,082,749, Cl. 260-250.0BN.
Basic Vegetable Products, Inc.: *See—*
Cordes, Henry P., 4,082,189, Cl. 209-73.000.
Basiulis, Algerd: *See—*
Sun, Tsu-Hung; and Basiulis, Algerd, 4,082,109, Cl. 137-340.000.
Bassett, Robert James; Cordes, Walter John; and Fuchs, Julius Jakob, to Du Pont de Nemours, E. I., and Company. Methyl isocyanate process. 4,082,787, Cl. 260-453.00P.
Bastien, Roy C.: *See—*
Austin, Robert R.; and Bastien, Roy C., 4,082,413, Cl. 350-1.100.
Bathurst, David B. Electronic chess game. 4,082,285, Cl. 273-237.000.
Battaglia, Jean M.: *See—*
Chen, James Ling; and Battaglia, Jean M., 4,082,881, Cl. 424-241.000.
Baugh, Benton F., to Vetco, Inc. Gauge flange. 4,082,002, Cl. 73-756.000.
Baugh, Edward D., to General Motors Corporation. Mechanical engine governor with variable limiting speed setting. 4,082,074, Cl. 123-140.0FG.
Bauman, Robert Andrew, to Colgate-Palmolive Company. Quaternary quinuclidinium carbamates and thiocarbamates. 4,082,756, Cl. 260-293.530.
Baumberger, John G.; Gazy, Michael A.; and Miller, William C., to International Business Machines Corporation. Document feeding apparatus. 4,082,263, Cl. 271-266.000.
Baxter, Ernest W. Rotary internal combustion engine. 4,082,065, Cl. 123-219.000.
Bayer Aktiengesellschaft: *See—*
Brinkschroder, Franz-Jurgen; Sandquist, Axel; and Johannaber, Friedrich, 4,082,488, Cl. 425-204.000.
Diehr, Hans-Joachim; and Arold, Hermann, 4,082,822, Cl. 260-972.000.
Nonn, Konrad; Wolf, Karlheinz; and Hornle, Reinold, 4,082,505, Cl. 8-85.00R.
Stephan, Bernd; Hund, Franz; and Holznagel, Wilhelm, 4,082,905, Cl. 428-538.000.
Zirngiebl, Eberhard, 4,082,631, Cl. 204-128.000.
BBC Aktiengesellschaft Brown, Boveri & Company, Ltd.: *See—*
Schulthess, Peter U.; and Wild, Peter J., 4,082,430, Cl. 350-333.000.
BBC Brown, Boveri & Company, Limited: *See—*
Menth, Anton; Perry, Anthony J.; and Spinner, Ulrich, 4,082,582, Cl. 148-102.000.
Beasley, Onan S., Jr. Drawer for knives and other utensils and tools. 4,082,386, Cl. 312-204.000.
Bebout, Robert W. Wood-turning process for making cylindroconical wood products. 4,082,126, Cl. 142-1.000.
Beck, Cyril G.: *See—*
Kleemann, Willi; and Beck, Cyril G., 4,082,548, Cl. 75-171.000.
Becker, Dale F., to Sangamo Weston, Inc. Rotating disc multielement polyphase meter. 4,083,000, Cl. 324-137.000.
Becker, Eugene. Photoprinting attachment system for enlargers 4,082,452, Cl. 355-74.000.
Becker, Willi: *See—*
Wehde, Heinz; and Becker, Willi, 4,082,376, Cl. 308-10.000.
Beckwith, John R. Electrical magnetic switch adaptable for use in digital wristwatches. 4,082,927, Cl. 200-52.00R.
Bedford, John E., to Pricon, Inc. Method for protecting an internal combustion engine by determining the change point of the lubrication oil. 4,082,511, Cl. 23-230.0HC.
Beede, Charles H.; and Blumig, Theodore, to Johnson & Johnson. Pressure sensitive adhesive compositions. 4,082,705, Cl. 260-4.00R.
Beeferman, Dennis: *See—*
Esemplare, Pascal E.; and Beeferman, Dennis, 4,082,862, Cl. 427-133.000.
Beer, Wolfgang: *See—*
Rautenbach, Robert; Hoeck, Horst; and Beer, Wolfgang, 4,081,914, Cl. 34-92.000.
Beggs, Donald; and Kelley, Bruce G., to Midrex Corporation. Method for reducing particulate iron oxide to metallic iron with solid reductant. 4,082,543, Cl. 75-11.000.
Bell Telephone Laboratories, Incorporated: *See—*
Chang, Kuang-Chou; Heller, Adam; and Miller, Barry, 4,082,602, Cl. 156-627.000.
Heller, Adam; Miller, Barry; and Vadimsky, Richard George, 4,082,624, Cl. 204-47.000.
Skurkiss, Peter Kenny, 4,082,620, Cl. 204-15.000.
Bellina, Russell Frank; and Fost, Dennis Lynn, to Du Pont de Nemours, E. I., and Company. 2-Higher alkyl-3-hydroxy-1,4-naphthoquinone carboxylic acid esters. 4,082,848, Cl. 424-273.000.
Bendix Corporation, The: *See—*
Bourdon, Normand C.; Sanford, Richard; and Eifler, Raymond J., 4,082,398, Cl. 339-59.00M.
Hall, Roger D., 4,083,050, Cl. 343-729.000.
Ritsema, Irving R., 4,082,166, Cl. 188-73.600.
Bendler, Hellmut; and Bretfeld, Anton, to Dynamit Nobel Aktiengesell-

schaft. Apparatus for the thermal and electrical initiation of fire protection devices. 4,081,964, Cl. 60-636.000.

Benerito, Ruth R.: *See—*
Ward, Truman L.; and Benerito, Ruth R., 4,082,500, Cl. 8-120.000.

Benigni, Fulvio; and Trevisan, Lucio, to Italchemi S.p.A. Istituto Chimico Farmaceutico. Derivatives of 2H,3H-benzimidazo(1,2-b)oxazole. 4,082,760, Cl. 260-307.0FA.

Bennett, Frank P., to GAF Corporation. Compact microform reader. 4,082,440, Cl. 353-26.00R.

Bennice, Richard L., to InterRoyal Corporation. Ground circuit monitor. 4,083,041, Cl. 340-255.000.

Benson, Jerrel W. Cryosurgical system. 4,082,096, Cl. 128-303.100.

Bentivegna, Charles R., Jr.: *See—*
Schutt, Elmer F.; Thornton, Bryce G.; and Bentivegna, Charles R., Jr., 4,082,039, Cl. 101-450.000.

Berg, Charles A., to Pyreflex Corporation. Heat recuperation. 4,082,414, Cl. 350-1.700.

Bergee, Mark A.; and Gilchrist, William K. Protective helmet and ventilating system therefor. 4,081,865, Cl. 2-425.000.

Berger Industries, Inc.: *See—*
Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, 4,082,319, Cl. 285-27.000.

Berger, Paul Daniel, to Witco Chemical Corporation. Organo silicon/-silica defoamer compositions. 4,082,691, Cl. 252-358.000.

Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, to Berger Industries, Inc. Coupling sleeve. 4,082,319, Cl. 285-27.000.

Bergwerksverband GmbH: *See—*
Leonhardt, Joachim; and Klein, Hans-Dieter, 4,081,993, Cl. 73-88.00R.

Berkes, James R. Bicycle support system. 4,082,265, Cl. 272-73.000.

Berkey, George V., to Mr. Putt, Incorporated. Training apparatus for improving a golfer's putting technique. 4,082,287, Cl. 273-186.00C.

Berndt, Uwe; Erdmann, Bernhard; and Keller, Cornelius, to Gesellschaft fur Kernforschung m.b.H. Intermetallic compounds and metal purification. 4,082,547, Cl. 75-122.700.

Bernier, Richard: *See—*
Toepelt, Werner; and Bernier, Richard, 4,081,882, Cl. 24-205.00R.

Berrer, Dagmar: *See—*
Hoegerle, Karl; and Berrer, Dagmar, 4,082,535, Cl. 71-92.000.

Berry, Peter John: *See—*
Runciman, Herbert Morrison; and Berry, Peter John, 4,082,416, Cl. 350-6.800.
Runciman, Herbert Morrison; and Berry, Peter John, 4,082,417, Cl. 350-6.800.

Bertacchi, Ralph; and Gorell, Frederick R. Standoff insulated panel mounting. 4,081,938, Cl. 52-410.000.

Berthold, Heinz; and Gehring, Karl. Ship-loading installation. 4,082,181, Cl. 198-863.000.

Bevilacqua, Albert J.: *See—*
Page, Dennis M.; and Bevilacqua, Albert J., 4,082,086, Cl. 128-2.06E.

Beyer, Ralph E., to F. Jos. Lamb Company. Workpiece elevator. 4,082,179, Cl. 198-801.000.

Beyl, Jean Joseph Alfred. Safety ski binding. 4,082,313, Cl. 280-618.000.

BFG Baumgartner Freres SA: *See—*
Albrecht, Alfred, 4,082,302, Cl. 280-11.37H.

Bickford, William J.; Hatton, William L.; Pallemaerts, Colin J.; Tanzi, Paul J.; and Tsao, Carson K. H., to Raytheon Company. High reliability diversity communications system. 4,083,009, Cl. 325-304.000.

Bickl, Horst; Treiber, Helmut; Findeis, Gunter; Knor, Bernhard; Payrhammer, Bernd; and Fergg, Berthold, to AGFA-Gevaert, A.G. Determination of extreme density values of photographic originals. 4,082,465, Cl. 356-203.000.

Bierbach, Herbert: *See—*
Baron, Gerhard; Bierbach, Herbert; Hafke, Carl; and Pockrandt, Gunter, 4,082,520, Cl. 48-202.000.

Bigelow, John E., to General Electric Company. Variable intensity fluorescent display. 4,082,949, Cl. 250-329.000.

Bijok, Franciszek: *See—*
Szadkowska, Maria; Pisarek, Jerzy; Dzik, Boleslaw; Staniak, Elzbieta; Lipniewska, Danuta; and Bijok, Franciszek, 4,082,853, Cl. 426-36.000.

Binder, Herbert: *See—*
Keydell, Willi; and Binder, Herbert, 4,082,418, Cl. 350-10.000.

Bindicator Company: *See—*
Levine, Walter E., 4,081,889, Cl. 29-25.350.

Binks Manufacturing Company: *See—*
Krohn, Duane D.; and Culbertson, Samuel W., 4,081,904, Cl. 30-128.000.

Binney & Smith Inc.: *See—*
Clymer, Wilbur L.; and Klara, Charles J., 4,082,491, Cl. 425-440.000.

Bio-Life Company, Inc.: *See—*
McGrane, Merle V.; and McGrane, Earl F., 4,082,227, Cl. 239-675.000.

Bio-Syn, Inc.: *See—*
DeVaughn, Donald H., 4,082,614, Cl. 195-139.000.

Biotest-Serum-Institut GmbH: *See—*
Stephan, Wolfgang, 4,082,734, Cl. 260-112.00B.

Birman, Joseph L.; and Mayburg, Sumner, to GTE Laboratories Incorporated. Optical maser. 4,083,017, Cl. 331-94.50H.

Bittel, Patricia A., to Weatherchem Corporation. Two-piece end closure with assembly device. 4,082,201, Cl. 220-339.000.

Black, Richard D.; and Morgan, Thomas E., Jr. Anti-skid and pressure balanced hydraulic brake system. 4,082,369, Cl. 303-3.000.

Blackburn, James R.; Smith, Dudley C.; Smith, Theo B., Jr.; and Morgan, Jerry N., to John E. Mitchell Company. Housing for expansion unit of cooling system. 4,082,142, Cl. 165-76.000.

Blasius, Udo: *See—*
Leiber, Heinz; and Blasius, Udo, 4,082,370, Cl. 303-92.000.

Blaupunkt-Werke GmbH: *See—*
Eschke, Bernd, 4,083,008, Cl. 325-163.000.

Bluhm, Elmer; and Vaas, Frederick T., Jr., to General Motors Corporation. Method of forming an injector valve nut seal. 4,081,890, Cl. 29-157.00C.

Blumenberg, Horst H., to Zenith Radio Corporation. Electron gun for cathode ray tube detachable from base support. 4,082,977, Cl. 313-457.000.

Blumig, Theodore: *See—*
Beede, Charles H.; and Blumig, Theodore, 4,082,705, Cl. 260-4.00R.

Boarini, Edward J.: *See—*
Rashid, Sheikh A.; Bray, Hugh S.; and Boarini, Edward J., 4,082,885, Cl. 428-281.000.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Braun, Klaus Joachim; and Siess, Hans Gunter Gerhard, 4,082,460, Cl. 356-85.000.

Boe, Hans; Hoehn, Ralf; Tecl, Bohuslav; and Kirsch, Wilhelm, to Carl Freudenberg, Firma. Absorbent textile sheet material. 4,082,878, Cl. 428-195.000.

Bohlinger, Arthur Leo: *See—*
Nakata, Roy; and Bohlinger, Arthur Leo, 4,082,933, Cl. 200-163.000.

Boise Cascade Corporation: *See—*
Hearon, William Montgomery; Witte, John F.; and Lo, Cheng Fan, 4,082,743, Cl. 536-30.000.

Bolhuis, Pieter Jan, to U.S. Philips Corporation. Gas discharge flash lamp with piezoelectric trigger generator. 4,082,985, Cl. 315-241.00P.

Bolton, Douglas R., to Cadaco, Inc. Game device. 4,082,278, Cl. 273-94.00R.

Bolton, Ivan Joseph; and Mercer, Alec Victor, to Sandoz Ltd. 1,3-Diphenyl-4 or 5-sulphoalkyl pyrazolines. 4,082,746, Cl. 260-239.900.

Bombardier, Emile: *See—*
Perreault, Jules; and Bombardier, Emile, 4,082,346, Cl. 296-84.00R.

Bombardier Limited: *See—*
Perreault, Jules; and Bombardier, Emile, 4,082,346, Cl. 296-84.00R.

Bonetti, Andrea: *See—*
Zardi, Umberto; Lagana', Vincenzo; Bonetti, Andrea; and Schmid, Giorgio, 4,082,797, Cl. 260-555.00A.

Boni, Richard R.; and Janubetz, Joseph J., to McGraw-Edison Company. Method of forming covers for electrical equipment. 4,081,900, Cl. 29-624.000.

Bonnamour, Yves B., to Southwire Company. Casting machine with translatable band. 4,082,136, Cl. 164-433.000.

Boosman, Frank Carlisle, to Piranha Products. Water powered waste disposal unit. 4,082,229, Cl. 241-46.00B.

Booth, Robert Edwin: *See—*
Eibeck, Richard Elmer; and Booth, Robert Edwin, 4,082,839, Cl. 423-489.000.

Borg-Warner Corporation: *See—*
Hechenbleikner, Ingenuin, 4,082,897, Cl. 428-426.000.

Boris, Michel. Atomized liquid dispensing pump. 4,082,222, Cl. 239-331.000.

Bornstein, Leopold F., to Georgia-Pacific Corporation. Control of precure in composition board manufacture. 4,082,904, Cl. 428-528.000.

Borom, Marcus P.: *See—*
Arendt, Ronald H.; Borom, Marcus P.; Huseby, Irvin C.; and Klug, Frederic J., 4,082,566, Cl. 134-2.000.

Borrevang, Poul; Guddal, Erling; Petersen, Henning Borge; Faarup, Peter; and Nielsen, Jorgen Ilum, to Novo Industri A/S. Process for the preparation of phosphorus derivatives of secondary ammonium salts of penam and cephem compounds. 4,082,745, Cl. 260-239.100.

Bortnichuk, Nikolai Iosifovich; Davydov, Valery Pavlovich; Krutyansky, Mikhail Mironovich; Malinovsky, Vladimir Sergeevich; and Khotin, Vladimir Alexeevich. Method of stabilizing arc voltage in plasma arc furnace and apparatus for effecting same. 4,082,914, Cl. 13-2.00P.

Bosshold, Barry L. Letter opener device. 4,081,907, Cl. 30-294.000.

Bounds, William E. Cheese grater and container. 4,082,230, Cl. 241-92.000.

Bourdon, Normand C.; Sanford, Richard; and Eifler, Raymond J., to Bendix Corporation, The. Electrical connector with front and rear insertable and removable contacts. 4,082,398, Cl. 339-59.00M.

Bourns, Inc.: *See—*
Fry, Stanley Eugene; and Hurd, Claude Calvert, 4,082,093, Cl. 128-142.200.

Bowler, Richard George: *See—*
Myers, Mark Stanley; and Bowler, Richard George, 4,082,294, Cl. 274-47.000.

Bowles, Romald E. Acceleration controlled fluidic shock absorber. 4,082,169, Cl. 188-322.000.

Boyd, Larry G.: *See—*
Grindley, C. Ronald; and Boyd, Larry G., 4,082,037, Cl. 101-425.000.

Bozsvai, Alex: *See—*
Simmons, Frank B.; Bozsvai, Alex; Kovacs, Louis A.; and Gerbetz, Robert P., 4,082,381, Cl. 308-187.000.

Brace, Neal O., to Ciba-Geigy Corporation. Perfluoroalkylthio norbornane compounds. 4,082,795, Cl. 260-544.00F.

Brace, Neal O., to Ciba-Geigy Corporation. Perfluoroalkylthio norbornane compounds. 4,082,798, Cl. 260-557.00B.

Bracuti, Arthur J.: *See—*
Satriana, Daniel R.; and Bracuti, Arthur J., 4,082,584, Cl. 149-109.400.

Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., to Bush Universal, Inc. Technique and articles for forming shoe shanks. 4,081,917, Cl. 36-76.00R.

Brandenstein, Manfred: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; Schurger, Rainer; Brandenstein, Manfred; and Burkl, Erich, 4,082,374, Cl. 308-6.00C.

Brandl, Ronald A.: *See—*
Valdespino, Joseph M.; and Brandl, Ronald A., 4,082,249, Cl. 254-45.000.

Brannegan, Daniel P.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,082,717, Cl. 260-345.90R.

Brannon, Donald R.; and Neuss, Norbert, to Eli Lilly and Company. Des-N-methylvindoline. 4,082,754, Cl. 260-287.00P.

Bratsos, Theodore. Manually operated hand drill. 4,082,473, Cl. 408-101.000.

Braun, Klaus Joachim; and Siess, Hans Gunter Gerhard, to Bodenseewerk Perkin-Elmer & Co., GmbH. Graphite tube for use in a flameless atomic absorption spectrometer. 4,082,460, Cl. 356-85.000.

Brax, Harri J.; Porinchak, Joseph F.; and Weinberg, Alan S., to W. R. Grace & Co. Process for melt extruding coating grade saran. 4,082,829, Cl. 264-209.000.

Bray, Donald L.: *See—*
Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., 4,081,917, Cl. 36-76.00R.

Bray, Hugh S.: *See—*
Rashid, Sheikh A.; Bray, Hugh S.; and Boarini, Edward J., 4,082,885, Cl. 428-281.000.

Break, Douglas G., to American Industrial Products, Inc. Wide-range sheet material bending brake. 4,081,986, Cl. 72-320.000.

Brearley Company, The: *See—*
Pillote, Vernon J., 4,082,154, Cl. 177-211.000.
Provi, Mike A., 4,082,153, Cl. 177-177.000.

Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., to Pfizer Inc. Preparation of gamma-pyrones. 4,082,717, Cl. 260-345.90R.

Breslow, Jeffrey D.; and Jaworski, Eugene, to Marvin Glass & Associates. Ball game with alignable apertures. 4,082,268, Cl. 273-1.00R.

Bressler, David E., to Amerace Corporation. Male contact assembly for loadbreak usage. 4,082,403, Cl. 339-111.000.

Bretfeld, Anton: *See—*
Bendler, Hellmut; and Bretfeld, Anton, 4,081,964, Cl. 60-636.000.

Bretting, Claus Aage Svensgaard: *See—*
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; Bruun, Herta; and Bretting, Claus Aage Svensgaard, 4,082,851, Cl. 424-300.000.

Breuer, David R., to TRW Inc. High speed monolithic A/D converter utilizing strobe comparator. 4,083,043, Cl. 340-347.0AD.

Brewer, John C., to Garbalizer Corporation of America. Shredder structure. 4,082,232, Cl. 241-236.000.

Bridgestone Tire Company Limited: *See—*
Arai, Tatsuo; Hirano, Hironori; Kajimura, Hiroyuki; and Matsui, Masayuki, 4,082,132, Cl. 152-361.00R.

Brigham, Ward E., to Sun Chemical Corporation. Plate making system. 4,082,455, Cl. 355-100.000.

Brinkschroder, Franz-Jurgen; Sandquist, Axel; and Johannaber, Friedrich, to Bayer Aktiengesellschaft. Apparatus for the extrusion of temperature sensitive thermoplastics. 4,082,488, Cl. 425-204.000.

Brisabois, Roger: *See—*
Lalin, Andre; and Brisabois, Roger, 4,082,171, Cl. 192-70.200.

Bristol-Myers Company: *See—*
Juby, Peter Frederick; and Partyka, Richard Anthony, 4,082,751, Cl. 260-256.40C.
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,082,912, Cl. 544-26.000.

British Aircraft Corporation Limited: *See—*
Guest, Ashley W., 4,083,014, Cl. 331-1.00A.

British Leyland UK Limited: *See—*
Anderson, James, 4,082,344, Cl. 296-28.00C.

British Petroleum Company Limited, The: *See—*
Goldie, Brian Peter Forsyth, 4,082,692, Cl. 252-429.00B.
Harvey, Lawrence, 4,082,082, Cl. 126-271.000.

Brock, Andrew J.: *See—*
Anthony, William H.; Brock, Andrew J.; and Gullotti, Damian V., 4,082,574, Cl. 148-2.000.

Brodsky, Larry: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, 4,081,893, Cl. 29-432.000.

Brooks, Robert Ellison; and Winter, Donald Charles, to TRW Inc. Holographic lens array and method for making the same. 4,082,415, Cl. 350-3.830.

Brown, Daniel Maitland, to University of California, Regents of the. Neuston net apparatus. 4,082,055, Cl. 114-245.000.

Brown, Herbert C., to Aldrich-Boranes, Inc. Bulky trialkylborohydrides. 4,082,810, Cl. 260-606.50B.

Brown, Robert A., to Minnesota Mining and Manufacturing Company. Retroreflective sheeting with retroreflective markings. 4,082,426, Cl. 350-105.000.

Brummelhuis, Johannes Arnold Julius, to Stork Amsterdam B.V. Rotatable atomizer for spraying a liquid. 4,082,221, Cl. 239-214.250.

Bruner, Frank D. Docking and mooring device for a boat. 4,082,054, Cl. 114-230.000.

Brunswick Corporation: *See—*
Hale, David Jerry, 4,082,068, Cl. 123-41.020.

Brusa, Ugo. Heat exchanger and application thereof to realize an ore reducing furnace. 4,082,254, Cl. 266-175.000.

Bruun, Herta: *See—*
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; Bruun, Herta; and Bretting, Claus Aage Svensgaard, 4,082,851, Cl. 424-300.000.

Bryson, Cecil Walsh, to Canadian Brass Limited. Compressible member for use in compression joint pipe connector. 4,082,326, Cl. 285-238.000.

Buchan, William A.; and Rotter, Gerhard, to BASF Aktiengesellschaft. Safety picker for magnetic tape leader. 4,082,237, Cl. 242-192.000.

Buda, Salvatore: *See—*
Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, 4,082,319, Cl. 285-27.000.

Budzich, Tadeusz. Load responsive fluid control valve. 4,082,111, Cl. 137-596.000.

Buechner, Oskar; Schlichthaerle, Gottfried; and Urban, Friedrich, to BASF Aktiengesellschaft. Multi-stage isolation of high pressure polyethylene. 4,082,910, Cl. 528-481.000.

Bunker Ramo Corporation: *See—*
Nijman, John Peter, 4,083,022, Cl. 333-79.000.

Burg, Karlheinz; and Schlaf, Helmut, to Hoechst Aktiengesellschaft. Process for the preparation of oxymethylene polymers. 4,082,729, Cl. 260-67.0FP.

Burgsdorf, Vladimir Vladimirovich; Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Mishin, Valery Vasilievich; Kuznetsov, Viktor Yakovlevich; and Kondratiev, Anatoly Dmitrievich. Device for melting the icing by direct current on conductors of overhead power transmission line. 4,082,962, Cl. 307-147.000.

Burgtorf, James R.: *See—*
Chou, Ta-Sen; and Burgtorf, James R., 4,082,766, Cl. 260-326.0HL.

Burkey, John Brent. Chock for mountain climbing. 4,082,241, Cl. 248-1.000.

Burkl, Erich: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; Schurger, Rainer; Brandenstein, Manfred; and Burkl, Erich, 4,082,374, Cl. 308-6.00C.

Burlington Industries, Inc.: *See—*
Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., 4,082,883, Cl. 428-253.000.

Burr-Brown Research Corporation: *See—*
Vanaglash, John J., Jr., 4,082,908, Cl. 428-672.000.

Burroughs Corporation: *See—*
Looschen, Floyd William, 4,083,005, Cl. 325-38.00A.
Looschen, Floyd William, 4,083,010, Cl. 325-321.000.
Paulinski, Ronald Adam, 4,082,218, Cl. 235-304.000.

Burton, Arthur; and Reed, David Robert, to Imperial Chemical Industries Limited. Decorative sheet material. 4,082,890, Cl. 428-328.000.

Burton, Lawrence; and Friedman, Frank, to Immunology Research Foundation, Inc. Deblocking protein fraction recovery method and product. 4,082,732, Cl. 260-112.00B.

Burton, Lawrence; and Friedman, Frank, to Immunology Research Foundation, Inc. Blocking protein fraction recovery method and product. 4,082,733, Cl. 260-112.00B.

Busch, Rudolf; Ganter, Wolfgang; and Ginter, Albert, to Gebruder Junghans GmbH. Watch module for use with separate power source. 4,081,952, Cl. 58-50.00R.

Buschow, Kurt Heinz Jurgen: *See—*
Miedema, Andries Rinse; Buschow, Kurt Heinz Jurgen; and Mulder, Jan, 4,082,138, Cl. 165-4.000.

Bush Universal, Inc.: *See—*
Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., 4,081,917, Cl. 36-76.00R.

Butcher, Alan George, to Dresser Europe S. A. Air eliminator valve. 4,082,106, Cl. 137-174.000.

Butler, David R.: *See—*
Gibson, David L.; Barrett, Lawrence J.; Moore, Patricia A.; and Butler, David R., 4,082,390, Cl. 312-284.000.

Butterworth, George A. M.; and Elias, Robert T., to Johnson & Johnson. Liquid absorbent fibrous material and method of making the same. 4,082,886, Cl. 428-284.000.

Buttner-Schilde-Haas Aktiengesellschaft: *See—*
Offergeld, Egon; and Wischniewski, Martin, 4,082,498, Cl. 432-14.000.

BWG Bergwerk- und Walzwerk-Maschinenbau GmbH: *See—*
Manthey, Willi Bruno; and Deiwick, Horst, 4,082,100, Cl. 134-76.000.

C. H. Heist Corporation: *See—*
Keeney, Joseph G., 4,082,104, Cl. 137-71.000.

C. H. Stuart Inc.: *See—*
Gibson, David L.; Barrett, Lawrence J.; Moore, Patricia A.; and Butler, David R., 4,082,390, Cl. 312-284.000.

Cackley, George W.: *See—*
Krolak, Ronald L.; Cackley, George W.; Getz, Marvin G.; and Ritter, Arthur J., Jr., 4,082,156, Cl. 180-9.620.

Cadaco, Inc.: *See—*
Bolton, Douglas R., 4,082,278, Cl. 273-94.00R.

Cadiou, Jean, to Societe Anonyme Automobiles Citroen. Method and control device for switch means adapted to modify the coupling of groups of elements of an electrochemical generator supplying an electro motor. 4,082,987, Cl. 318-139.000.

Calvert, Rodney K.; and Landrum, Charles Rabun, to Mead Corporation, The. Packaging machine for use with cartons of different sizes with minimum adjustment. 4,081,945, Cl. 53-186.000.

Cam-Stat Incorporated: *See—*
Dahlgren, Vincent M. F., 4,082,493, Cl. 431-25.000.
Camin, Leopoldo Lazaro: *See—*
Adler, Norman; and Camin, Leopoldo Lazaro, 4,082,840, Cl. 424-1.000.
Campbell, John A. L.; and Moynihan, Daniel J., to Peabody Coal Company. Mining apparatus and method. 4,082,360, Cl. 299-33.000.
Campbell, Robert T.: *See—*
DeRosa, Robert J.; and Campbell, Robert T., 4,083,048, Cl. 343-7.300.
Canada-Cities Service, Ltd.: *See—*
Flynn, Peter Charles, 4,082,646, Cl. 208-11.00R.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Anderton, William Arthur; and Sewell, Richard Benjamin Hollis, 4,082,588, Cl. 156-71.000.
Canadian Brass Limited: *See—*
Bryson, Cecil Walsh, 4,082,326, Cl. 285-238.000.
Canadian General Electric Company Limited: *See—*
Szymanis, Edward, 4,081,947, Cl. 56-13.300.
Canadian Patents and Development Limited: *See—*
Chow, Suezone, 4,082,903, Cl. 428-514.000.
Litvan, Gerhard G.; and Sereda, Peter J., 4,082,562, Cl. 106-97.000.
Rangi, Rajindar S.; and South, Peter, 4,082,479, Cl. 416-23.000.
Canon Kabushiki Kaisha: *See—*
Tsunekawa, Tokuichi; Nakamura, Zenso; Taguchi, Tetsuya; Uchidoi, Masanori; Aizawa, Hiroshi; and Uchiyama, Takashi, 4,083,059, Cl. 354-149.000.
Cantoni, Gianfranco: *See—*
Lo Scalzo, Enzo; Ferre, Franco; and Cantoni, Gianfranco, 4,082,714, Cl. 260-29.70R.
Capes, C. Edward; McIlhinney, Allen E.; and Messer, Leonard, to American Minechem Corporation. Coke oven system and agglomerating carryover fines therein. 4,082,515, Cl. 23-313.00R.
Carbonoyl Company: *See—*
Metzger, Grant W., 4,082,516, Cl. 44-51.000.
Carborundum Company, The: *See—*
Conklin, James T.; Daley, Daniel R.; and Geyer, Raymond K., 4,082,567, Cl. 134-10.000.
McGarvey, Jarvis M., 4,082,521, Cl. 51-295.000.
Carl Freudenberg, Firma: *See—*
Boe, Hans; Hoehn, Ralf; Tecl, Bohuslav; and Kirsch, Wilhelm, 4,082,878, Cl. 428-195.000.
Schilling, Hermann; and Seifert, Heinz, 4,082,160, Cl. 181-258.000.
Carl Zeiss-Stiftung: *See—*
Keydell, Willi; and Binder, Herbert, 4,082,418, Cl. 350-10.000.
Carlqvist, Bengt Roland; and Eriksson, Anders Gunnar, to Telefonaktiebolaget L M Ericsson. Reference signal circuit in a receiver for detecting two frequencies in a multifrequency tone signal. 4,082,924, Cl. 179-84.0VF.
Carlson, Bayard L., to AMFAC Foods, Inc. Means and method for packaging frangible articles. 4,082,187, Cl. 206-585.000.
Carmeron Iron Works, Inc.: *See—*
Allen, Herbert, 4,082,105, Cl. 137-72.000.
Carol, John A., Jr.; Paxton, Wayne E.; and Riddel, John W., to General Motors Corporation. Differential pressure power road speed control system. 4,082,158, Cl. 180-108.000.
Carr, Robert Joseph: *See—*
Hermanson, Gerald Peter; Rickel, David Murray; and Carr, Robert Joseph, 4,081,894, Cl. 29-433.000.
Carre, Gerard: *See—*
Parmentier, Jean; Saurais, Jacques; and Carre, Gerard, 4,082,383, Cl. 308-194.000.
Carris, George M.: *See—*
Coley, Kenneth R.; and Carris, George M., 4,082,396, Cl. 339-36.000.
Carson, Chester C.: *See—*
Barton, Sterling C.; Carson, Chester C.; and Echeverria, Federico S., 4,082,948, Cl. 250-304.000.
Castillo, Adolfo: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, 4,081,893, Cl. 29-432.000.
Castleman, Cordell V., to Magnetic Controls Company. Telephone testing equipment. 4,082,920, Cl. 179-2.0DP.
Caterpillar Mitsubishi Ltd.: *See—*
Kozuki, Naoto, 4,082,372, Cl. 305-57.000.
Caterpillar Tractor Co.: *See—*
Krolak, Ronald L.; Cackley, George W.; Getz, Marvin G.; and Ritter, Arthur J., Jr., 4,082,156, Cl. 180-9.620.
Mangus, Ervin E., 4,082,224, Cl. 239-453.000.
Ritter, Arthur J.; and Deck, James R., 4,082,170, Cl. 192-13.00R.
Sly, William Porter; and Ringel, Reginald Karl, 4,082,299, Cl. 277-82.000.
Stedman, Robert N., 4,082,197, Cl. 214-132.000.
Caulfield, Patrick J.: *See—*
Jensen, Gerald A.; Harvey, Ronald B.; Caulfield, Patrick J.; Putzke, Dwayne H.; and Strunc, Gerald R., 4,082,943, Cl. 235-303.100.
CAV Limited: *See—*
Fenne, Ivor, 4,082,481, Cl. 417-403.000.
Cavagnero, Erman V.: *See—*
Lampietti, Bernard P.; and Cavagnero, Erman V., 4,082,935, Cl. 219-9.500.
Cavitt, Roy L.: *See—*
Miller, Richard G.; and Cavitt, Roy L., 4,082,898, Cl. 428-427.000.
Ceel-Co: *See—*
Van Ausdall, James G., 4,081,941, Cl. 52-726.000.
Central Specialties, Inc.: *See—*
Ballenger, William, 4,082,349, Cl. 297-183.000.
Centre Experimental de Recherches et d'Etudes du Batiment et des Travaux Publics: *See—*
Majcherczyk, Richard, 4,081,989, Cl. 73-9.000.
Cerano, Leon R.; and Reichardt, Mayo M., to General Motors Corporation. Apparatus for in-the-mold coating of molded articles. 4,082,486, Cl. 425-129.00R.
Champion Spark Plug Company: *See—*
Lentz, Lawrence R., 4,082,976, Cl. 313-135.000.
Chang, Kuang-Chou; Heller, Adam; and Miller, Barry, to Bell Telephone Laboratories, Incorporated. Photovoltaic cell manufacture. 4,082,602, Cl. 156-627.000.
Chang, Roland Wan-chan; and Graves, Charles A. Audio analgesic unit. 4,082,918, Cl. 179-1.0AA.
Chang, Wen-Hsuan, to PPG Industries, Inc. Method of curing B-stage polyurethanes. 4,082,634, Cl. 204-159.150.
Change, Nicholas D.; and Riggs, Michael T., to PCB Piezotronics, Inc. Pressure transducer calibration. 4,081,988, Cl. 73-4.00R.
Chappatte, Jean-Maurice, to Ebauches S.A. Calendar mechanism for timepiece. 4,081,950, Cl. 58-4.00R.
Charles Churchill Limited: *See—*
Hodgson, Brian; Fairnington, Robert; Thorneycroft, Malcolm; and Grant, Ronald Malcolm, 4,082,031, Cl. 90-4.000.
Chatagnier, John C. Hydraulic pipe testing apparatus. 4,081,990, Cl. 73-40.50R.
Chateau, Jacques, to Compagnie Generale des Etablissements Michelin. Apparatus for molding a tire molding bladder. 4,082,490, Cl. 425-412.000.
Chemcast Corporation: *See—*
Rubright, Phillip L., 4,081,879, Cl. 16-2.000.
Chemed Corporation: *See—*
Wolfe, Court Lone, 4,082,459, Cl. 356-85.000.
Chen, James Ling; and Battaglia, Jean M., to E. R. Squibb & Sons, Inc. Topical and other type pharmaceutical formulations containing isosorbide carrier. 4,082,881, Cl. 424-241.000.
Chen, Jong C., to Mallinckrodt, Inc. Chemical process. 4,082,747, Cl. 260-239.570.
Chen, Leighton L., to Loew's Theatres, Inc. Calibration assembly for infrared moisture analyzer. 4,082,950, Cl. 250-343.000.
Chen, Ping F. Shuttle article for games. 4,082,281, Cl. 273-106.00A.
Cheng, Richard C. M.; Dennis, Gene Patrick; and Stewart, Robert M., to Tyco Industries, Inc. Model roadway track construction. 4,082,220, Cl. 238-10.00F.
Cherny, Iosif Semenovich; and Mischenko, Mikhail Vasilievich. Contact spring pile-up assembly. 4,083,023, Cl. 335-135.000.
Cherry, Thomas Adrian: *See—*
Keller, Alex J.; Dellinger, Keith Sidney; Ray, James Lester, Jr.; Cherry, Thomas Adrian; and Fechner, Erhard A., 4,081,949, Cl. 57-53.000.
Chevron Research Company: *See—*
Tamm, Paul W., 4,082,697, Cl. 252-466.0PT.
Chia, Enrique C.: *See—*
Schoerner, Roger J.; and Chia, Enrique C., 4,082,573, Cl. 148-2.000.
Chirumbolo, Frank, to Raymond Lee Organization, Inc., The, a part interest. Portable cleaning tools. 4,082,186, Cl. 206-577.000.
Chlanda, Frederick P.; Nagasubramanian, Krishnamurthy; and Liu, Kang-Jen, to Allied Chemical Corporation. Removal of SO_2 from gases. 4,082,835, Cl. 423-242.000.
Chlystun, Walter K. Process for blow molding of a spout container. 4,082,827, Cl. 264-98.000.
Chomet, Marc, to Teleglobe Pay-TV System, Inc. Automatic subscriber interrogation system. 4,082,921, Cl. 179-2.00A.
Chou, Ta-Sen; and Burgtorf, James R., to Eli Lilly and Company. Process for preparing n-chlorophthalimide. 4,082,766, Cl. 260-326.0HL.
Chow, Suezone, to Canadian Patents and Development Limited. Tree foliage extenders and fillers for wood adhesives. 4,082,903, Cl. 428-514.000.
Chrones, Anthony, to Reliance Products Corporation. Safety cover for a door knob. 4,082,351, Cl. 297-347.000.
Chrysler Corporation: *See—*
Ghosh, Subrata, 4,082,581, Cl. 148-32.000.
Kuusik, Uno, 4,082,103, Cl. 137-54.000.
Chu, Wesley W. Statistical multiplexing system for computer communications. 4,082,922, Cl. 179-15.0BA.
Chung, Jackson, to Reliance Electric Company. Motorized conveyor pulley. 4,082,180, Cl. 198-835.000.
Ciba-Geigy AG: *See—*
Seitz, Karl, 4,082,739, Cl. 260-146.00T.
Ciba-Geigy Corporation: *See—*
Brace, Neal O., 4,082,795, Cl. 260-544.00F.
Brace, Neal O., 4,082,798, Cl. 260-557.00B.
Fritz, Andre; and Dunn, Barbara Lee, 4,082,635, Cl. 204-159.230.
Hoegerle, Karl; and Berrer, Dagmar, 4,082,535, Cl. 71-92.000.
Jost, Max; and Wick, Arnold, 4,082,778, Cl. 260-378.000.
Renner, Alfred; and Haug, Theobald, 4,082,768, Cl. 260-326.260.
Schmidt, Andreas; and Kirchmayr, Rudolf, 4,082,821, Cl. 260-946.000.
Cilento, Guido D., to AMF Incorporated. Filter asembly with integral service shut-off valve. 4,082,673, Cl. 210-234.000.
Cincinnati Milacron Inc.: *See—*
Gibbemeyer, Joseph Franz, 4,082,175, Cl. 198-377.000.

Cineffects Color Laboratory Inc.: *See—*
Pascuzzi, Louis Ferdinand, 4,082,447, Cl. 355-30.000.
Citron, Samuel. Tape having a longitudinal strip of adhesive which is useful as a means for framing sheets. 4,082,875, Cl. 428-134.000.
Citti, James E.; and Dienst, Carl S., to Ore-Ida Foods, Inc. Process for producing a french fried potato product. 4,082,855, Cl. 426-250.000.
Clark Equipment Company: *See—*
Saunders, Lawrence Allan, 4,082,377, Cl. 308-15.000.
Clark, Gordon W.: *See—*
Baker, Jack M.; Clark, Gordon W.; Harper, Douglas M.; and Tomlinson, Leroy O., 4,081,956, Cl. 60-39.18B.
Clark, Lealand L., to University of Utah. Method for treating psoriasis. 4,082,846, Cl. 424-266.000.
Clarke, John W., to Eli Lilly and Company. Carton and bag container. 4,082,216, Cl. 229-55.000.
Clarke, William Leslie. Wall constructions. 4,081,969, Cl. 61-39.000.
Cleffman, Roger G.: *See—*
Raabe, Ralph C.; Cleffman, Roger G.; and Stratton, Raymond G., 4,082,592, Cl. 156-153.000.
Cline, Harvey E.: *See—*
Anthony, Thomas R.; and Cline, Harvey E., 4,082,572, Cl. 148-1.500.
Clymer, Wilbur L.; and Klara, Charles J., to Binney & Smith Inc. Automated molding machine. 4,082,491, Cl. 425-440.000.
Coaltex, Inc.: *See—*
Justice, James Conley; and Delli-Gatti, Frank A., Jr., 4,082,362, Cl. 299-57.000.
Coates, Don Mayo, to Du Pont de Nemours, E. I., and Company. Coating composition for a fibrous nonwoven sheet of polyolefin. 4,082,887, Cl. 428-289.000.
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, to Smith Kline & French Laboratories Limited. 3-(3-(3-Substituted amino-2-hydroxypropoxy)phenyl)-6-hydrazino pyridazines and their use as vasodilators and β-adrenergic blocking agents. 4,082,843, Cl. 424-250.000.
Coats & Clark, Inc.: *See—*
Toepelt, Werner; and Bernier, Richard, 4,081,882, Cl. 24-205.00R.
Coca-Cola Company, The: *See—*
Day, Gerald Glynn, 4,082,044, Cl. 105-376.000.
Cockroft, James B.: *See—*
Sukow, Daniel L.; Smith, Richard A.; and Cockroft, James B., 4,082,941, Cl. 219-243.000.
Coffey, Gerald P.; and Mazeke, Herbert F., to Standard Oil Company, The. Mercaptan activation by acid in the copolymerization of acrylonitrile. 4,082,818, Cl. 260-879.000.
Cogliano, Joseph A., to W. R. Grace & Co. Process of forming a protective coating and shipping the coating from the surface being protected when no longer required. 4,082,830, Cl. 264-213.000.
Cohn, Marvin, to Westinghouse Electric Corporation. Expendable repeater employing harmonic mixing. 4,083,004, Cl. 325-6.000.
Cole, Victor L.; and Perry, Kenneth D. Hydraulic brake system for gooseneck trailers. 4,082,168, Cl. 188-112.00R.
Coley, Kenneth R.; and Carris, George M., to Westinghouse Electric Corporation. Shield for bus bar stabs. 4,082,396, Cl. 339-36.000.
Colgate-Palmolive Company: *See—*
Bauman, Robert Andrew, 4,082,756, Cl. 260-293.530.
Inamorato, Jack Thomas; and Salmen, Leo Augustus, 4,082,682, Cl. 252-92.000.
Colvin, Kenneth W.: *See—*
Wolff, Danny K.; Mott, James D.; and Colvin, Kenneth W., 4,082,147, Cl. 166-314.000.
Cominco Ltd.: *See—*
Milner, Edward F. G.; Parker, Ernest G.; and Swinkels, Godefridus M., 4,082,629, Cl. 204-66.000.
Compagnie Generale des Etablissements Michelin: *See—*
Chateau, Jacques, 4,082,490, Cl. 425-412.000.
Compton, Leslie E.; and Rowan, William H., to Occidental Oil Shale, Inc. Low temperature oxidation of hydrogen sulfide in the presence of oil shale. 4,082,146, Cl. 166-259.000.
Compton, Thomas A.: *See—*
Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., 4,082,868, Cl. 427-329.000.
Conder, Terrence M.; and O'Leary, Kevin P., to Minnesota Mining and Manufacturing Company. Stabilized transparent receptor sheet. 4,082,879, Cl. 428-219.000.
Conklin, Delano M.: *See—*
Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., 4,082,883, Cl. 428-253.000.
Conklin, James T.; Daley, Daniel R.; and Geyer, Raymond K., to Carborundum Company, The. Method for thermally killing roots in sewer lines. 4,082,567, Cl. 134-10.000.
Constant, James Nickolas. Superconducting energy system. 4,082,991, Cl. 320-1.000.
Continental Oil Company: *See—*
Li, Ke Wen, 4,082,650, Cl. 208-131.000.
Continental Water Conditioning Corporation: *See—*
Jones, Charles L.; and Aradio, Dominic, 4,082,666, Cl. 210-93.000.
Contraves-Goerz Corporation: *See—*
Jones, Donald H., 4,082,968, Cl. 310-68.00B.
Conver Ingenieur-Technik GmbH & Co., KG: *See—*
Looks, Arnold, 4,082,052, Cl. 114-75.000.
Cook Paint and Varnish Company: *See—*
Fisk, William W.; and Wright, Howard J., 4,082,816, Cl. 260-855.000.
Corbett, Roger Patrick; Gilson, Trevor Robert; Nealon, Terence Patrick; and Hendra, Patrick John, to Edward Curran Engineering Limited. Electrostatic deposition of fine vitreous enamel. 4,082,860, Cl. 427-27.000.
Cordes, Henry P., to Basic Vegetable Products, Inc. Apparatus for separating food articles from field debris. 4,082,189, Cl. 209-73.000.
Cordes, Walter John: *See—*
Bassett, Robert James; Cordes, Walter John; and Fuchs, Julius Jakob, 4,082,787, Cl. 260-453.00P.
Cormier, Joseph Tilmon. Cable stripper. 4,081,903, Cl. 30-90.600.
Cotton, Neil Trevor, to Imperial Chemical Industries Limited. Continuous fermentation process. 4,082,611, Cl. 195-28.00R.
Couderc, Pierre; and Hilmoine, Serge, to Societe Chimique des Charbonnages. Preparation of D, L-pantolactone. 4,082,775, Cl. 260-343.600.
Country Queen Foods, Inc.: *See—*
Zwiep, Theodore Carl; Newhouse, Donn G.; and Craner, Jerry D., 4,082,856, Cl. 426-299.000.
Cox, George Benjamin, Jr., to United Technologies Corporation. Premixed combustor. 4,081,957, Cl. 60-39.360.
Cox, Randal A. Hay bale pickup and transport device. 4,082,192, Cl. 214-1.0HA.
Craig, Paul George, to Dresser Industries, Inc. Removable drill bit nozzle. 4,082,015, Cl. 76-108.00A.
Craner, Jerry D.: *See—*
Zwiep, Theodore Carl; Newhouse, Donn G.; and Craner, Jerry D., 4,082,856, Cl. 426-299.000.
Crawford, Duncan J.; and Santiago, Gonzalo D., to Ex-Cell-O Corporation. High capacity quiet burner for hot air heating system. 4,082,497, Cl. 431-158.000.
Crimpfil Limited: *See—*
Holden, Gordon Alan, 4,081,887, Cl. 28-271.000.
Crompton & Knowles Corporation: *See—*
Nims, Philip A., 4,082,118, Cl. 139-144.000.
Croome, Ronald John, to P. Leiner & Sons Limited. Gelatin composition. 4,082,857, Cl. 426-573.000.
Crosby, Jeffrey Norman, to International Nickel Company, Inc., The. Electrodeposition of ruthenium. 4,082,625, Cl. 204-47.000.
Crouse-Hinds Company: *See—*
Perretta, Michael L., 4,082,141, Cl. 165-69.000.
Crutcher, William C., to Timex Corporation. Hybrid horological display using space modulation. 4,081,953, Cl. 58-50.00R.
CTS Corporation: *See—*
Hufford, James N., 4,082,925, Cl. 200-11.00G.
Cukrowski, Georg, to U.S. Philips Corporation. Automatic record player mechanism for turntable speed and pick-up arm position adjustment. 4,082,290, Cl. 274-9.00A.
Culbertson, Samuel W.: *See—*
Krohn, Duane D.; and Culbertson, Samuel W., 4,081,904, Cl. 30-128.000.
Culpepper & Associates, Inc.: *See—*
Culpepper, Bertram C., Jr.; and Wilson, Richard C., 4,081,939, Cl. 52-535.000.
Culpepper, Bertram C., Jr.; and Wilson, Richard C., to Culpepper & Associates, Inc. Siding panel backerboard and method of manufacturing same. 4,081,939, Cl. 52-535.000.
Curet, Harvey Donald, to Energy, Inc. Cooling of pressurized water nuclear reactor vessels. 4,082,608, Cl. 176-61.000.
Curry, Herbert Leard; and Hall, Walter Lawrence, to General Electric Company. Polycarbonate coated with photocurable polythiol and different polyenes. 4,082,891, Cl. 428-412.000.
Curtis, Henry H., Jr.: *See—*
Lapchak, Markian; and Curtis, Henry H., Jr., 4,082,449, Cl. 355-69.000.
Cutler-Hammer, Inc.: *See—*
Piber, Earl T., 4,082,934, Cl. 200-315.000.
Cutters Machine Company, Inc.: *See—*
Smith, Hoyt L., 4,082,258, Cl. 270-31.000.
D. M. Scott & Sons Company: *See—*
Wittenbrook, Lawrence S.; and Scheiderer, Edwin L., 4,082,533, Cl. 71-28.000.
Daclon, Ferruccio: *See—*
Germano, Giovanni; Losciale, Francesco; Falesiedi, Roberto; Daclon, Ferruccio; and Merzagora, Nicola, 4,081,895, Cl. 29-573.000.
Dahlgren, Vincent M. F., to Cam-Stat Incorporated. Gas burner control system. 4,082,493, Cl. 431-25.000.
Daiichi Denshi Kogyo Kabushiki Kaisha: *See—*
Furuya, Kiyoto, 4,082,618, Cl. 204-15.000.
Daikin Kogyo Co., Ltd.: *See—*
Takahara, Takao; and Misaki, Susumu, 4,082,752, Cl. 260-260.000.
Dailey, Calvin L. Locking device for intravenous insert. 4,082,094, Cl. 128-214.00R.
Daimler-Benz Aktiengesellschaft: *See—*
Hutai, Hubert; Klie, Wolfgang; and Weisshappel, Helmut, 4,082,338, Cl. 293-85.000.
Renner, Hermann; and Wacker, Siegfried, 4,082,354, Cl. 297-410.000.
Saufferer, Helmut; and Willmann, Karl, 4,082,070, Cl. 123-119.00E.
Tomforde, Johann, 4,082,350, Cl. 297-243.000.
Daito Seimo Coshi Kaisha: *See—*
Hase, Chiaki, 4,082,831, Cl. 264-249.000.
Daley, Daniel R.: *See—*
Conklin, James T.; Daley, Daniel R.; and Geyer, Raymond K., 4,082,567, Cl. 134-10.000.
Dalli, Francis J. Buoy type oil gate. 4,082,674, Cl. 210-242.00S.
Dalton, Thomas B., to Westran Corporation. Valve actuator. 4,082,247, Cl. 251-229.000.

Dancy, Edna A.; and Vansant, James H., to Hydro-Quebec. Fabrication of ceramic heat pipes. 4,082,863, Cl. 427-181.000.
Danford, Glenn S.: *See—*
Day, Willis E.; Danford, Glenn S.; and Johnson, Kenneth C., 4,082,919, Cl. 179-2.0EA.
Danfoss A/S: *See—*
Andresen, Jens Nicolai, 4,082,928, Cl. 200-67.0DA.
Stove, Flemming, 4,081,963, Cl. 60-528.000.
Thorsen, Niels Peter, 4,082,929, Cl. 200-83.0SA.
Danielson, Arthur C., to Uniroyal, Inc. Non-staining antiozonant enamines. 4,082,706, Cl. 260-5.000.
Dannels, Bobby F., to Hooker Chemicals & Plastics Corporation. Process for curing sulfhydryl-terminated thioether polymers. 4,082,712, Cl. 260-28.00R.
Dansk Industri Syndikat A/S: *See—*
Petersen, Carl Herbert; and Gunnergaard, Marius, 4,082,135, Cl. 164-404.000.
Datron Systems, Inc.: *See—*
Rover, Jack T., 4,083,024, Cl. 335-136.000.
Dauvergne, Hector A. Pole-less fishing rig. 4,082,235, Cl. 242-84.20J.
David Kopf Systems: *See—*
Seiler, William, Jr., 4,082,667, Cl. 210-96.00M.
Davis, Leonard C., to General Motors Corporation. Regenerator drive assembly. 4,082,139, Cl. 165-8.000.
Davis, Thomas R. Vehicle console for mounting and enclosing radios and the like. 4,082,387, Cl. 312-242.000.
Davis, William F., to Motorola, Inc. Input quarter cycle timing circuit. 4,082,075, Cl. 123-148.00E.
Davydov, Valery Pavlovich: *See—*
Bortnichuk, Nikolai Iosifovich; Davydov, Valery Pavlovich; Krutyansky, Mikhail Mironovich; Malinovsky, Vladimir Sergeevich; and Khotin, Vladimir Alexeevich, 4,082,914, Cl. 13-2.00P.
Dawson, Raymond B., to Super Stud Products, Inc. Locking fastener assembly. 4,081,979, Cl. 70-58.000.
Day, Gerald Glynn, to Coca-Cola Company, The. Adjustable fluid dunnage system. 4,082,044, Cl. 105-376.000.
Day, Oliver E. Twin ignition and twin electrical start system for a vehicle. 4,082,992, Cl. 320-6.000.
Day, Willis E.; Danford, Glenn S.; and Johnson, Kenneth C., to IEC Electronics Corporation. Interconnect control for automatically connecting a simplex or half-duplex radio network to a standard telephone system. 4,082,919, Cl. 179-2.0EA.
Dayron Corporation: *See—*
Hermanson, Gerald Peter; Rickel, David Murray; and Carr, Robert Joseph, 4,081,894, Cl. 29-433.000.
De Candida, Cristiano: *See—*
Malgarini, Giansilvio; Pasero, Edoardo; Alitta, Giorgio; De Candida, Cristiano; and Raggio, Carlo, 4,082,545, Cl. 75-35.000.
Deck, James R.: *See—*
Ritter, Arthur J.; and Deck, James R., 4,082,170, Cl. 192-13.00R.
Deere & Company: *See—*
Werner, Gregory Keith; Switzer, Kenneth Oscar; and St. Laurent, Raymond G., 4,082,371, Cl. 305-56.000.
deGeus, Arie M. Solar operated turbine power generator. 4,081,965, Cl. 60-641.000.
deGeus, Arie M. Solar operated closed system power generator. 4,081,966, Cl. 60-641.000.
deGeus, Arie M. Closed cycle solar generator. 4,081,967, Cl. 60-641.000.
DeGraff, Richard Raymond. Crude oil distillation process. 4,082,653, Cl. 208-251.00R.
Dehait, Jack T.; Dietz, David C.; Snyder, Milo S.; and Talor, Francis M., to Systems Research Laboratories, Inc. Calibrated optical micrometer. 4,082,463, Cl. 356-167.000.
Dehnert, Heinz. Method of forming a comb-like electrode structure. 4,082,619, Cl. 204-15.000.
Deiwick, Horst: *See—*
Manthey, Willi Bruno; and Deiwick, Horst, 4,082,100, Cl. 134-76.000.
Del Carpio, Bernardo, to Planiblock, S.A. Method of producing continuous planar expanded polyurethane blocks. 4,082,824, Cl. 264-46.300.
Del Castillo, Juan M.: *See—*
Rumer, David Orville, Jr.; Findlay, Donald James; Neumann, Arthur E.; and Del Castillo, Juan M., 4,082,029, Cl. 84-484.000.
Delle-Alsthom S.A.: *See—*
Rozier, Paul; Niel, Pierre; and Ferlay, Jean, 4,082,932, Cl. 200-148.00R.
Delli-Gatti, Frank A., Jr.: *See—*
Justice, James Conley; and Delli-Gatti, Frank A., Jr., 4,082,362, Cl. 299-57.000.
Dellinger, Keith Sidney: *See—*
Keller, Alex J.; Dellinger, Keith Sidney; Ray, James Lester, Jr.; Cherry, Thomas Adrian; and Fechner, Erhard A., 4,081,949, Cl. 57-53.000.
De Long, Charles F., to United States Trading International, Inc. Method of reducing fouling of marine structures and coated structure thereof. 4,082,884, Cl. 428-262.000.
Delta Truck Body Company, Inc.: *See—*
Weinstein, Hyman; and Adler, Kurt, 4,082,882, Cl. 428-246.000.
De Luca, John A.: *See—*
Yang, Kei-Hsiung; and De Luca, John A., 4,083,018, Cl. 331-94.50F.
Denamps, Jean; and LeCossec, Jean, to Robert Bosch GmbH. Pneumatically operated pressure switch, particularly for vehicle tire supervision. 4,082,960, Cl. 307-118.000.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Nakagawa, Koji; and Hirano, Kenkiti, 4,082,561, Cl. 106-89.000.
Denman, Stephen A.: *See—*
Mendelson, Barry; and Denman, Stephen A., 4,082,095, Cl. 128-235.000.
Dennis, Gene Patrick: *See—*
Cheng, Richard C. M.; Dennis, Gene Patrick; and Stewart, Robert M., 4,082,220, Cl. 238-10.00F.
Depoitier, Jacques; and Vinchent, Romain, to Institut National des Radio-elements - Nationaal Instituut voor Radio-elementen, en abrege: "I.R.E.". Ion detector. 4,082,952, Cl. 250-381.000.
DeRosa, Robert J.; and Campbell, Robert T., to United States of America, Army. Time alignment error sensor system for range tracking. 4,083,048, Cl. 343-7.300.
DeRyke, Thomas V.: *See—*
Patzke, Robert C.; DeRyke, Thomas V.; and Meller, Frederick D., 4,082,206, Cl. 222-400.700.
Desco Corporation: *See—*
Lenken, Thomas J., 4,081,999, Cl. 73-343.00R.
Deutsch, Ralph, to Nippon Gakki Seizo Kabushiki Kaisha. Sliding overtone generation in a computor organ. 4,082,028, Cl. 84-1.240.
DeVaughn, Donald H., to Bio-Syn, Inc. Means for conveying pathological specimens safely to places of identification. 4,082,614, Cl. 195-139.000.
Devault, Albert N.: *See—*
Holtz, Hans D.; Nelson, William T.; and Devault, Albert N., 4,082,518, Cl. 44-72.000.
Diamond Power Specialty Corporation: *See—*
Matthews, John C., 4,082,610, Cl. 176-365.000.
Diddens, Paul A., to Honeywell Inc. Trace locator for a multi-trace recorder. 4,083,040, Cl. 340-248.00A.
Didier, Alain; and Letailleur, Jean-Luc, to Institut de Recherches de la Siderurgie Francaise (IRSID). Installation for the agglomeration of a particulate mineral charge and operation thereof. 4,082,541, Cl. 75-5.000.
Diedrich, Karl Heinz: *See—*
Misiano, Carlo; Diedrich, Karl Heinz; and Simonetti, Enrico, 4,082,637, Cl. 204-192.00E.
Diehr, Hans-Joachim; and Arold, Hermann, to Bayer Aktiengesellschaft. Preparation of dithiophosphoric acid ester dihalides. 4,082,822, Cl. 260-972.000.
Dieme, Hilmar K., to Amerace Corporation. Apparatus for producing locking patches on magnetic screws. 4,082,058, Cl. 118-319.000.
Dienst, Carl S.: *See—*
Citti, James E.; and Dienst, Carl S., 4,082,855, Cl. 426-250.000.
Dietz, David C.: *See—*
Dehait, Jack T.; Dietz, David C.; Snyder, Milo S.; and Talor, Francis M., 4,082,463, Cl. 356-167.000.
Diez, Richard C. A-frame ladder extender. 4,082,162, Cl. 182-166.000.
Dingwall, Andrew Gordon Francis, to RCA Corporation. Method of making a substrate contact for an integrated circuit. 4,081,896, Cl. 29-590.000.
Dininio, Thomas, to Maul Technology Corporation. Valve block. 4,082,108, Cl. 137-269.500.
Dirks, Gary W.: *See—*
Li, George S.; and Dirks, Gary W., 4,082,819, Cl. 260-879.000.
Display Corporation International: *See—*
Sturm, Michael, 4,082,183, Cl. 206-301.000.
DiStefano, Thomas Herman, to International Business Machines Corporation. Luminescent material, luminescent thin film therefrom, and optical display device therewith. 4,082,889, Cl. 428-328.000.
Divona, Charles J., to United States of America, Energy. Fuel subassembly leak test chamber for a nuclear reactor. 4,082,607, Cl. 176-19.0LD.
Dobrosielski, Stephen S.; Richards, Edward L.; and Skalka, Paul, to Westinghouse Electric Corporation. Pushbutton electric switch. 4,083,027, Cl. 337-66.000.
Dr. Carl Hahn, GmbH: *See—*
Johst, Wolfgang; Friese, Axel; and Simon, Stefan, 4,081,884, Cl. 28-119.000.
Documation, Inc.: *See—*
Snyder, Robert, 4,082,944, Cl. 235-309.000.
Doherty, George O. P., to Eli Lilly and Company. 1H-Imidazo(4,5-b)pyridine derivatives. 4,082,534, Cl. 71-92.000.
Dold, Anthony A. Casket canopy. 4,082,384, Cl. 312-3.000.
Donato, Anthony C.; and Russo, Neil, to Lightolier Incorporated. Light track device with connector module. 4,082,395, Cl. 339-21.00R.
Donnet, Jean-Baptiste: *See—*
Papirer, Eugene; and Donnet, Jean-Baptiste, 4,082,660, Cl. 210-36.000.
Dornfeld, Kenneth A.; Marlow, Jerry R.; and Sanders, Robert K., to General Motors Corporation. Hydrostatic transmission control. 4,082,013, Cl. 74-866.000.
Dorst, Richard: *See—*
Reime, Roy O.; and Stewart, Byron C., 4,082,988, Cl. 318-139.000.
Dow Chemical Company, The: *See—*
McKendry, Lennon H., 4,082,758, Cl. 260-294.80F.
McKendry, Lennon H., 4,082,759, Cl. 260-294.80E.
Shier, George D., 4,082,748, Cl. 544-98.000.
Wiley, A. C., Jr.; and Taylor, Otis C., 4,082,630, Cl. 205-98.000.
Dow Corning Corporation: *See—*
Farminer, Kenneth W., 4,082,690, Cl. 252-321.000.
Harper, Jack R., 4,082,702, Cl. 260-2.5AK.
Liles, Donald T.; and Michael, Keith W., 4,082,719, Cl. 260-37.0SB.
Speier, John L., 4,082,790, Cl. 260-448.80R.
Talcott, Thomas D., 4,082,509, Cl. 21-58.000.

Dowse, Brian Edward Wesley, to Golder Hoek and Associates Limited. Underwater structure. 4,081,970, Cl. 61-88.000.
Draugelis, Vaidevutis C.; and Schafer, Eugene D., to Xerox Corporation. System for superposition of color separation images. 4,082,443, Cl. 355-4.000.
Dravo Corporation: *See—*
Kent, Harry James; and Pietrusza, Arthur Jacob, 4,082,489, Cl. 425-222.000.
Dresser Europe S. A.: *See—*
Butcher, Alan George, 4,082,106, Cl. 137-174.000.
Dresser Industries, Inc.: *See—*
Craig, Paul George, 4,082,015, Cl. 76-108.00A.
Marquis, Gerald L., 4,082,144, Cl. 166-250.000.
Rothwell, Thomas F., 4,082,246, Cl. 251-307.000.
Driscoll, John J.; Svatek, Thomas A.; and Wareham, Richard R., to Polaroid Corporation. Slide viewer and photographic copier. 4,082,446, Cl. 355-27.000.
Drostholm, Frede Hilmar. Method and apparatus for making continuous lengths of resin tubes. 4,082,597, Cl. 156-429.000.
Dryczynski, Kurt: *See—*
Moraw, Roland; and Dryczynski, Kurt, 4,083,054, Cl. 346-151.000.
du Pont of Canada Limited: *See—*
Zboril, Vaclav George, 4,082,880, Cl. 428-220.000.
Dudkowski, Joseph John, to American Cyanamid Company. 2,6-Dinitroaniline herbicidal compositions. 4,082,537, Cl. 71-121.000.
Duff, Clifford C.; and Salloum, Robert J., to General Motors Corporation. Feeding apparatus for lightweight plastic particles into a high pressure reactor. 4,082,366, Cl. 302-11.000.
Duffy, Robert Donovan; and Stout, Eldon Charles, to Union Carbide Corporation. Polyurethane prepolymers, rebonded polyurethane foam and methods of forming the same. 4,082,703, Cl. 260-2.5BE.
Dufour, Paul: *See—*
Vrancken, August; Dufour, Paul; Noat, Jacques; and Holderic, Jean, 4,082,710, Cl. 260-23.0TN.
Dugge, Richard H.; and Van Dyke, Ronald D., to ACF Industries, Incorporated. Pneumatic outlet operating mechanism. 4,082,365, Cl. 302-52.000.
Dulger, Viktor. Dirt filter for water pipes. 4,082,676, Cl. 210-447.000.
Dunn, Barbara Lee: *See—*
Fritz, Andre; and Dunn, Barbara Lee, 4,082,635, Cl. 204-159.230.
Du Pont de Nemours, E. I., and Company: *See—*
Bassett, Robert James; Cordes, Walter John; and Fuchs, Julius Jakob, 4,082,787, Cl. 260-453.00P.
Bellina, Russell Frank; and Fost, Dennis Lynn, 4,082,848, Cl. 424-273.000.
Coates, Don Mayo, 4,082,887, Cl. 428-289.000.
Eastlack, George Franklin, 4,082,742, Cl. 260-187.000.
Shook, Howard Everett, Jr., 4,082,811, Cl. 260-606.50B.
Durametallic Corporation: *See—*
Adams, William V., 4,082,297, Cl. 277-15.000.
Dwyer, Robert M., to Massey-Ferguson Inc. Articulated vehicle steering system. 4,081,961, Cl. 60-386.000.
Dyckman, Edward J.; Montemarano, Jean A.; and Fischer, Eugene C., to United States of America, Navy. Low leaching antifouling organometallic polyesters. 4,082,709, Cl. 260-22.0CB.
Dynamit Nobel Aktiengesellschaft: *See—*
Bendler, Hellmut; and Bretfeld, Anton, 4,081,964, Cl. 60-636.000.
Dzik, Boleslaw: *See—*
Szadkowska, Maria; Pisarek, Jerzy; Dzik, Boleslaw; Staniak, Elzbieta; Lipniewska, Danuta; and Bijok, Franciszek, 4,082,853, Cl. 426-36.000.
E. R. Squibb & Sons, Inc.: *See—*
Chen, James Ling; and Battaglia, Jean M., 4,082,881, Cl. 424-241.000.
Hauck, Frederic Peter, 4,082,773, Cl. 260-340.50R.
Eagle Engineering Company Limited, The: *See—*
Jenkins, David Henry, 4,082,124, Cl. 141-65.000.
Eastlack, George Franklin, to Du Pont de Nemours, E. I., and Company. Process for preparing an aqueous disazo dye concentrate. 4,082,742, Cl. 260-187.000.
Eastman, George Y., to Thermacore, Inc. Production of liquid compatible metals. 4,082,575, Cl. 148-6.350.
Eastman Kodak Company: *See—*
Groet, Nicholas H., 4,082,553, Cl. 96-74.000.
Merkel, Paul Barrett, 4,082,555, Cl. 96-114.100.
Steklenski, David J.; and Albuerne, Evelio A. Perez, 4,082,551, Cl. 96-1.0PC.
Yoerger, William E., 4,082,550, Cl. 96-1.50R.
Eastside Machine & Welding, Inc.: *See—*
Appleman, Theodore C.; and Wacker, Wade L., 4,082,226, Cl. 239-584.000.
Eaton Corporation: *See—*
German, Dale F., 4,082,056, Cl. 116-34.00R.
McDermott, Hugh L., 4,082,480, Cl. 417-283.000.
Ebauches SA: *See—*
Gerber, Hermann; and Johner, Michel, 4,082,972, Cl. 310-162.000.
Hersberger, Pierre, 4,081,951, Cl. 58-23.00R.
Ebauches S.A.: *See—*
Chappatte, Jean-Maurice, 4,081,950, Cl. 58-4.00R.
Eber, David Henry, to Trane Company, The. Air cooled centrifugal refrigeration machine with provision to prevent evaporator freezing. 4,081,971, Cl. 62-216.000.
Echeverria, Federico S.: *See—*
Barton, Sterling C.; Carson, Chester C.; and Echeverria, Federico S., 4,082,948, Cl. 250-304.000.
Eckel, Emery, to Eckel Manufacturing Co. Power operated drill pipe tongs. 4,082,017, Cl. 81-57.160.
Eckel Manufacturing Co.: *See—*
Eckel, Emery, 4,082,017, Cl. 81-57.160.
Eckelt, Michael: *See—*
Heyden, Rudi; Asbeck, Adolf; Eckelt, Michael; Petzold, Manfred; and Uphues, Gunter, 4,082,689, Cl. 252-321.000.
Ecodyne Corporation: *See—*
Lindstol, Anders, 4,082,664, Cl. 210-80.000.
Edeus, James A., to National Manufacturing, Co. Lower guide for horizontally sliding door. 4,081,880, Cl. 16-90.000.
Edo, Taro: *See—*
Mishuku, Minoru; Edo, Taro; and Tsuchiya, Nobujiro, 4,082,559, Cl. 106-43.000.
Edward Curran Engineering Limited: *See—*
Corbett, Roger Patrick; Gilson, Trevor Robert; Nealon, Terence Patrick; and Hendra, Patrick John, 4,082,860, Cl. 427-27.000.
Eerkens, Jozef Willem. High mass isotope separation process and arrangement. 4,082,633, Cl. 204-157.10R.
Egawa, Setsuya; Sakamoto, Masahiro; and Matsushita, Toshihiko, to NCR Corporation. Process for producing microcapsules. 4,082,688, Cl. 252-316.000.
Ehrhart, Philip J., to Sperry Rand Corporation. Header suspension and lift means. 4,081,946, Cl. 56-14.400.
Eibeck, Richard Elmer; and Booth, Robert Edwin, to Allied Chemical Corporation. Preparation of sulfur fluorides. 4,082,839, Cl. 423-489.000.
Eichenauer, Larry L. Carton for fruit and the like. 4,082,215, Cl. 229-36.000.
Eifler, Raymond J.: *See—*
Bourdon, Normand C.; Sanford, Richard; and Eifler, Raymond J., 4,082,398, Cl. 339-59.00M.
Eigenmann, Ludwig. Method and devices for road surface marking. 4,082,587, Cl. 156-71.000.
Eiglmeier, Kurt, to Hoechst Aktiengesellschaft. Process for the manufacture of aromatic 1,3-diketones. 4,082,807, Cl. 260-590.00R.
Einchcombe, Kenneth C. G.; and Kornat, Kazimierz F., to Ford Motor Company. Sliding caliper-type disc brake and support structure therefore. 4,082,167, Cl. 188-73.600.
El-Do, Inc.: *See—*
Traylor, Fling Armstrong, Jr., 4,082,874, Cl. 428-54.000.
El Paso Products Company: *See—*
Mims, Samuel S., 4,082,788, Cl. 260-465.400.
Eldon Industries, Inc.: *See—*
Knowles, Alvis R.; and Foster, Harold S., 4,082,940, Cl. 219-239.000.
Eldridge, Albert M. Sundial. 4,081,911, Cl. 33-270.000.
Electro-Therm, Inc.: *See—*
Salinger, Fred G., 4,082,301, Cl. 277-212.00F.
ElectroPrint: *See—*
Pressman, Gerald L., 4,082,448, Cl. 355-3.0SC.
Eli Lilly and Company: *See—*
Brannon, Donald R.; and Neuss, Norbert, 4,082,754, Cl. 260-287.00P.
Chou, Ta-Sen; and Burgtorf, James R., 4,082,766, Cl. 260-326.0HL.
Clarke, John W., 4,082,216, Cl. 229-55.000.
Doherty, George O. P., 4,082,534, Cl. 71-92.000.
Hall, David A.; and Heiney, Richard E., 4,082,627, Cl. 204-59.00R.
Kirby, John A., 4,082,774, Cl. 260-340.500.
Kornfeld, Edmund C.; and Bach, Nicholas J., 4,082,753, Cl. 260-285.500.
Paget, Charles J.; and Wikel, James H., 4,082,762, Cl. 260-308.00R.
Elias, Robert T.: *See—*
Butterworth, George A. M.; and Elias, Robert T., 4,082,886, Cl. 428-284.000.
Elkay Electronics Ltd.: *See—*
Klebanoff, Leonard, 4,083,038, Cl. 340-244.00R.
Elkington, W. Brice, to Occidental Oil Shale, Inc. Determining the locus of a processing zone in an in situ oil shale retort by sound monitoring. 4,082,145, Cl. 166-251.000.
Elkins, Nate, to Raymond Lee Organization, Inc., The. Electrical motor powered jump rope apparatus. 4,082,266, Cl. 272-75.000.
Ellis, Jeffrey R.; and Wagner, Herman B., to Tile Council of America. Sag resistant mortar compositions. 4,082,563, Cl. 106-90.000.
Ellzey Company, The: *See—*
Ellzey, James M., 4,082,273, Cl. 273-73.00J.
Ellzey, James M., to Ellzey Company, The. Striking implements. 4,082,273, Cl. 273-73.00J.
Embury, Lloyd Elliott. Method for fabricating tapered tubing. 4,082,211, Cl. 228-145.000.
Emhart Limited: *See—*
Jones, Stanley Peter; and Watson, William Ferguson, 4,082,527, Cl. 65-83.000.
Energy Conversion Devices, Inc.: *See—*
Izu, Masatsuga; and Ovshinsky, Stanford R., 4,082,861, Cl. 427-56.000.
Energy, Inc.: *See—*
Curet, Harvey Donald, 4,082,608, Cl. 176-61.000.
Energystics: *See—*
Schalow, Rudolph D., 4,083,047, Cl. 343-7.0VM.
Engler, Edward Martin; Kaufman, Frank Benjamin; and Scott, Bruce Albert, to International Business Machines Corporation. Process of optically printing highly conductive character utilizing a medium containing a halogenated hydrocarbon photoactivator and a tetrathiafulvalene or a related compound thereof. 4,082,552, Cl. 96-38.400.

Englund, Gosta Roland, to Svenska Dataregister AB. High speed printer having segmented drum. 4,082,035, Cl. 101-93.040.

Enokido, Tsuneo: *See—*
Sasaki, Minoru; Hida, Yukihiro; Enokido, Tsuneo; and Ito, Kaoru, 4,082,540, Cl. 75-3.000.

Enomoto, Hirobumi: *See—*
Fukui, Takashi; and Enomoto, Hirobumi, 4,082,458, Cl. 356-73.000.

Envirotech Corporation: *See—*
Kelly, Earl M., 4,082,671, Cl. 210-195.00S.

Epsztein, Bernard: *See—*
Autran, Jean Michel; and Epsztein, Bernard, 4,083,021, Cl. 333-72.000.

Erdley, Harold F., to Teledyne Industries, Inc. Spin coupled, angular rate sensitive inertial sensors with mounting structure and method of fabricating and mounting same. 4,082,005, Cl. 73-505.000.

Erdmann, Bernhard: *See—*
Berndt, Uwe; Erdmann, Bernhard; and Keller, Cornelius, 4,082,547, Cl. 75-122.700.

Erecto-Pat Company: *See—*
Hughes, Robert S., 4,081,940, Cl. 52-712.000.

Erickson, John W.; and Petrie, Harold L., to Kobe, Inc. Articulated turbine pump. 4,082,482, Cl. 417-408.000.

Erickson, Lloyd A., to Illinois Tool Works, Inc. Plastic screw grommet. 4,082,030, Cl. 85-80.000.

Eriksson, Anders Gunnar: *See—*
Carlqvist, Bengt Roland; and Eriksson, Anders Gunnar, 4,082,924, Cl. 179-84.0VF.

Ernest Scragg & Sons Limited: *See—*
Parker, Walter, 4,081,948, Cl. 57-34.0HS.

Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; Schurger, Rainer; Brandenstein, Manfred; and Burkl, Erich, to SKF Industrial Trading & Development Company B.V. Axially movable bearing device. 4,082,374, Cl. 308-6.00C.

Erwin, Ransome W., to Austral-Erwin Engineering Company. Heat exchange method. 4,082,140, Cl. 165-45.000.

Eschke, Bernd, to Blaupunkt-Werke GmbH. Method and circuit for generation of digitally frequency-shiftable electric signals. 4,083,008, Cl. 325-163.000.

Esemplare, Pascal E.; and Beeferman, Dennis, to Sutures Inc. Process for the production of rubber articles having improved slip coating. 4,082,862, Cl. 427-133.000.

Estes, Ronald L.; McGee, Larry S.; and Welton, Sanford M., to PPG Industries, Inc. Method of applying powder to a glass ribbon. 4,082,526, Cl. 65-24.000.

Ethyl Corporation: *See—*
Niebylski, Leonard M.; and Rifkin, Ellis B., 4,082,517, Cl. 44-68.000.

Evancho, Joseph W.; Shabel, Barrie S.; and Truckner, William G., to Aluminum Company of America. Aluminum structural members for vehicles. 4,082,578, Cl. 148-12.70A.

Evans, Delme; Jolley, Michael Ralph John; Ross, William James; and Swann, Brian Picton, to Lilly Industries Limited. Acylamino derivatives. 4,082,771, Cl. 260-332.20R.

Evans, John C., Jr., to United States of America, National Aeronautics and Space Administration. Solar cell collector. 4,082,569, Cl. 136-89.0CC.

Ex-Cell-O Corporation: *See—*
Crawford, Duncan J.; and Santiago, Gonzalo D., 4,082,497, Cl. 431-158.000.
Wnek, Alfred B., 4,082,195, Cl. 214-38.0BA.

F. Jos. Lamb Company: *See—*
Beyer, Ralph E., 4,082,179, Cl. 198-801.000.

F. K. Suzuki International, Inc.: *See—*
Morita, Toyoshige; Fujita, Isamu; and Iwamura, Junichi, 4,082,858, Cl. 426-597.000.

Faarup, Peter: *See—*
Borrevang, Poul; Guddal, Erling; Petersen, Henning Borge; Faarup, Peter; and Nielsen, Jorgen Ilum, 4,082,745, Cl. 260-239.100.

Fabian, Gordon R.; McCollum, James H.; and Kammerer, Leo P., to Rockwell International Corporation. Aircraft control system providing hardover protection and full control authority. 4,082,238, Cl. 244-17.130.

Fabricant, Norman. Yo-yo toy carrying an additional member. 4,081,924, Cl. 46-61.000.

Fabrique Nationale Herstal S.A.: *See—*
Theys, Andre, 4,081,973, Cl. 66-64.000.

Fairnington, Robert: *See—*
Hodgson, Brian; Fairnington, Robert; Thorneycroft, Malcolm; and Grant, Ronald Malcolm, 4,082,031, Cl. 90-4.000.

Falconbridge Nickel Mines Limited: *See—*
Parkinson, Ronald; and Sinton, Richard Allan, 4,082,641, Cl. 204-281.000.

Falesiedi, Roberto: *See—*
Germano, Giovanni; Losciale, Francesco; Falesiedi, Roberto; Daclon, Ferruccio; and Merzagora, Nicola, 4,081,895, Cl. 29-573.000.

Farmer Foundation Company, Inc.: *See—*
Aurora, Ravi P.; and Farmer, Glyen D., 4,081,992, Cl. 73-84.000.

Farmer, Glyen D.: *See—*
Aurora, Ravi P.; and Farmer, Glyen D., 4,081,992, Cl. 73-84.000.

Farminer, Kenneth W., to Dow Corning Corporation. Antifoam process for non-aqueous systems. 4,082,690, Cl. 252-321.000.

Farney, George K.; and Feulner, Fred A., to Varian Associates, Inc. Method and apparatus for reducing noise in crossed-field amplifiers. 4,082,979, Cl. 315-39.300.

Fattore, Vittorio; and Notari, Bruno, to Snamprogetti, S.p.A. Manufacture of acrylonitrile from propylene, ammonia and oxygen. 4,082,785, Cl. 260-465.300.

Fechner, Erhard A.: *See—*
Keller, Alex J.; Dellinger, Keith Sidney; Ray, James Lester, Jr.; Cherry, Thomas Adrian; and Fechner, Erhard A., 4,081,949, Cl. 57-53.000.

Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; Bruun, Herta; and Bretting, Claus Aage Svensgaard, to Leo Pharmaceutical Products Ltd. Sulphonamides, compositions containing the same and methods for using the same in the treatment of hypertension or odemeas. 4,082,851, Cl. 424-300.000.

Feldstein, Nathan. Method of applying catalysts for electroless deposition and article. 4,082,899, Cl. 428-457.000.

Fenne, Ivor, to CAV Limited. Fuel injection pumping apparatus. 4,082,481, Cl. 417-403.000.

Ferdinandi, Eckhardt: *See—*
Bagli, Jehan F.; and Ferdinandi, Eckhardt, 4,082,772, Cl. 260-332.30H.

Fergg, Berthold: *See—*
Bickl, Horst; Treiber, Helmut; Findeis, Gunter; Knor, Bernhard; Payrhammer, Bernd; and Fergg, Berthold, 4,082,465, Cl. 356-203.000.

Ferlay, Jean: *See—*
Rozier, Paul; Niel, Pierre; and Ferlay, Jean, 4,082,932, Cl. 200-148.00R.

Ferre, Franco: *See—*
Lo Scalzo, Enzo; Ferre, Franco; and Cantoni, Gianfranco, 4,082,714, Cl. 260-29.70R.

Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., to General Electric Company. Battery holder and connector for a radio receiver or the like. 4,083,011, Cl. 325-352.000.

Ferriss, Lincoln Stark: *See—*
Stiles, John Callender; and Ferriss, Lincoln Stark, 4,082,990, Cl. 318-662.000.

Fester, Amos M. Automatic doughnut making machine. 4,082,033, Cl. 99-406.000.

Feulner, Fred A.: *See—*
Farney, George K.; and Feulner, Fred A., 4,082,979, Cl. 315-39.300.

Fex, Hans Jacob; Kristensson, Sten Krister; and Stamvik, Anders Robert, to Aktiebolaget Leo. Acylation process for the preparation of steroid phenolic n-disubstituted carbamate esters, and ion pair solution for use in the process. 4,082,779, Cl. 260-397.500.

Fiat-Allis Construction Machinery, Inc.: *See—*
Hawk, Dale Wyatt, 4,082,310, Cl. 280-492.000.

Fiber Materials, Inc.: *See—*
Kendall, Ernest G.; and Pepper, Roger T., 4,082,864, Cl. 427-248.00B.

Fielding, Ivor R.; and Poppe, Wassily, to Standard Oil Company (Indiana). High impact polypropylene resins containing phthalide. 4,082,716, Cl. 260-30.40R.

Findeis, Gunter: *See—*
Bickl, Horst; Treiber, Helmut; Findeis, Gunter; Knor, Bernhard; Payrhammer, Bernd; and Fergg, Berthold, 4,082,465, Cl. 356-203.000.

Findlay, Donald James: *See—*
Rumer, David Orville, Jr.; Findlay, Donald James; Neumann, Arthur E.; and Del Castillo, Juan M., 4,082,029, Cl. 84-484.000.

Finley, Richard Arthur: *See—*
Zeineh, Rashid Ayoub; and Finley, Richard Arthur, 4,082,668, Cl. 210-129.000.

Finnegan, Robert J., to Barreca Products Co., Subsidiary of Shelburne Industries, Inc. Releasable-strap ski-pole grip. 4,082,303, Cl. 280-11.37H.

Finney, James L., to Hughes Tool Company. Cam mounting for an impact tool. 4,082,151, Cl. 173-119.000.

Fireplace Corporation of America: *See—*
Lever, Paul H., 4,082,322, Cl. 285-133.00R.

Fischer, Eugene C.: *See—*
Dyckman, Edward J.; Montemarano, Jean A.; and Fischer, Eugene C., 4,082,709, Cl. 260-22.0CB.

Fischer, Ronald H.: *See—*
Rosinski, Edward J.; Stein, Thomas R.; and Fischer, Ronald H., 4,082,695, Cl. 252-465.000.

Fisher, Warren C.; Linder, Seymour M.; Pelley, Ralph L.; and Liao, Hsiang-Peng, to FMC Corporation. Glycidol process. 4,082,777, Cl. 260-348.250.

Fisk, William W.; and Wright, Howard J., to Cook Paint and Varnish Company. Caprolactone polymers from unsaturated monomers. 4,082,816, Cl. 260-855.000.

Flanders Filters, Inc.: *See—*
Allan, Thomas T., 4,082,525, Cl. 55-355.000.

Flatt, Richard P., to RTE Corporation. Nose shield for a gas actuated high voltage bushing. 4,082,404, Cl. 339-111.000.

Flavell, Evan R. Bilateral isokinetic exerciser. 4,082,267, Cl. 272-125.000.

Fleece, Robert I.: *See—*
Anden, Nicholaki A.; and Fleece, Robert I., 4,082,513, Cl. 23-288.00E.

Fletchic, Donald K.; Morrison, Howard J.; and Baer, Ralph H., to Marvin Glass & Associates. Tone arm lift mechanism. 4,082,292, Cl. 274-23.00R.

Flexicore Co., Inc., The: *See—*
Wise, Mark J., 4,081,936, Cl. 52-301.000.

Flodins Industri AB: *See*—
Johannisson, Tor Gustav Alberto, deceased; and Johannisson, Tom, heir-at-law, 4,082,261, Cl. 271-69.000.
Florsheim, James M.: *See*—
Kulp, Jack H.; and Florsheim, James M., 4,083,033, Cl. 340-114.00R.
Flow Industries, Inc.: *See*—
Mercer, John E., 4,081,892, Cl. 29-421.00R.
Flowerday, Dale L.: *See*—
Watt, William Doyle, Jr.; and Flowerday, Dale L., 4,082,243, Cl. 248-205.00R.
Flynn, Peter Charles, to Petro-Canada Exploration Inc.; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity; Ontario Energy Corporation; Imperial Oil Limited; Canada-Cities Service, Ltd.; and Gulf Oil Canada Limited. Coking of bituminous solids with hot solids recycle. 4,082,646, Cl. 208-11.00R.
FMC Corporation: *See*—
Fisher, Warren C.; Linder, Seymour M.; Pelley, Ralph L.; and Liao, Hsiang-Peng, 4,082,777, Cl. 260-348.250.
Foerster, Ronald A.: *See*—
Meuller, Von W.; and Foerster, Ronald A., 4,083,025, Cl. 335-153.000.
Ford Motor Company: *See*—
Einchcombe, Kenneth C. G.; and Kornat, Kazimierz F., 4,082,167, Cl. 188-73.600.
Fortmann, William E., to United Technologies Corporation. Dual wedge fluid thrust bearing including wave spring. 4,082,375, Cl. 308-9.000.
Fost, Dennis Lynn: *See*—
Bellina, Russell Frank; and Fost, Dennis Lynn, 4,082,848, Cl. 424-273.000.
Foster, Beatrice D. Vacuum cabinet and gas venting shield. 4,082,092, Cl. 128-139.000.
Foster, Harold S.: *See*—
Knowles, Alvis R.; and Foster, Harold S., 4,082,940, Cl. 219-239.000.
Foster Wheeler Energy Corporation: *See*—
Steiner, Peter, 4,082,519, Cl. 48-202.000.
Foundation: The Research Institute of Electric and Magnetic Alloys, The: *See*—
Masumoto, Hakaru; Murakami, Yuetsu; and Nakamura, Naoji, 4,082,579, Cl. 148-31.550.
Fox, James E. Anti-sway apparatus for trailers. 4,082,309, Cl. 280-446.00B.
Francois, Maurice, to Trefilunion. Method of producing tubular lattice reinforcement for reinforced concrete tubular pipe having a socket at one end thereof. 4,082,120, Cl. 140-107.000.
Franetzki, Manfred; Korn, Volker; and Prestele, Karl, to Siemens Aktiengesellschaft. Apparatus for determination of respiratory passageway resistance. 4,082,088, Cl. 128-2.080.
Franke, Kurt, to Siemens Aktiengesellschaft. X-ray diagnostic generator. 4,082,954, Cl. 250-421.000.
Franklin Manufacturing Company: *See*—
Puterbaugh, Richard L., 4,082,825, Cl. 264-46.500.
Franson, David C.: *See*—
Hoffman, Robert K.; and Franson, David C., 4,082,107, Cl. 137-195.000.
Franz, Helmut, to PPG Industries, Inc. Seasonably adjustable window. 4,081,934, Cl. 52-171.000.
Fraser, Lawrence J., to Xerox Corporation. Multi-color development system. 4,082,061, Cl. 118-645.000.
Fredrikson, Bengt, to ASEA Aktiebolag. Electric induction heating of materials of low electrical conductivity. 4,082,544, Cl. 75-12.000.
Fridlender, Lev Moiseevich: *See*—
Shergov, Igor Vladimirovich; Slavinsky, Vladimir Danilovich; Fridlender, Lev Moiseevich; Zharinov, Valery Ivanovich; and Kozhaev, Arkady Filippovich, 4,082,938, Cl. 219-121.0EB.
Fried. Krupp Huttenwerke AG: *See*—
Heller, Wilhelm, 4,082,577, Cl. 148-12.100.
Friedman, Frank: *See*—
Burton, Lawrence; and Friedman, Frank, 4,082,732, Cl. 260-112.00B.
Burton, Lawrence; and Friedman, Frank, 4,082,733, Cl. 260-112.00B.
Fries, William; and Napierski, Silvia, to Rohm and Haas Company. Sugar decolorizing quaternary ammonium acrylamide resins. 4,082,564, Cl. 127-46.00A.
Fries, William; and Napierski, Silvia, to Rohm and Haas Company. Sugar decolorizing quaternary ammonium acrylamide resins. 4,082,701, Cl. 260-2.10E.
Friese, Axel: *See*—
Johst, Wolfgang; Friese, Axel; and Simon, Stefan, 4,081,884, Cl. 28-119.000.
Friesen, Larry Dean; and Johannson, Richard James, to Towmotor Corporation. Lift truck mast stabilizer. 4,082,199, Cl. 214-672.000.
Fritz, Andre; and Dunn, Barbara Lee, to Ciba-Geigy Corporation. Ultraviolet light-curable diacrylate hydantoin adhesive compositions. 4,082,635, Cl. 204-159.230.
Fritz, Galen F.: *See*—
Taylor, James B., Jr.; and Fritz, Galen F., 4,081,898, Cl. 29-622.000.
Fritzsche, Alfred Keith; and Leonard, Richard L., to Monsanto Company. Hollow fiber membranes of ethylene copolymers and process for use. 4,082,658, Cl. 210-22.00R.
Frump, John Adams, to IMC Chemical Group, Inc. Temperature sensitive glass assembly having an aqueous interlayer of an oxazoline solution. 4,082,892, Cl. 428-332.000.
Fry, Stanley Eugene; and Hurd, Claude Calvert, to Bourns, Inc. Compensator valve. 4,082,093, Cl. 128-142.200.
Fuchs, Julius Jakob: *See*—
Bassett, Robert James; Cordes, Walter John; and Fuchs, Julius Jakob, 4,082,787, Cl. 260-453.00P.
Fuchs, Otto; and Troster, Helmut, to Hoechst Aktiengesellschaft. Benzothioxanthenes. 4,082,769, Cl. 260-328.000.
Fuji Die Co., Ltd.: *See*—
Mishuku, Minoru; Edo, Taro; and Tsuchiya, Nobujiro, 4,082,559, Cl. 106-43.000.
Fuji Electric Co., Ltd.: *See*—
Aoki, Sethuo; and Sogo, Yoshiaki, 4,082,936, Cl. 219-10.410.
Fuji Photo Film Co., Ltd.: *See*—
Fukui, Takashi; and Enomoto, Hirobumi, 4,082,458, Cl. 356-73.000.
Yamashina, Toshiro; and Sakaki, Hirokazu, 4,082,040, Cl. 101-456.000.
Fujinami, Akira: *See*—
Kameda, Nobuyuki; Hisada, Yoshio; Kato, Toshiro; and Fujinami, Akira, 4,082,849, Cl. 424-274.000.
Fujita, Isamu: *See*—
Morita, Toyoshige; Fujita, Isamu; and Iwamura, Junichi, 4,082,858, Cl. 426-597.000.
Fujitsu Fanuc Limited: *See*—
Shichida, Hiromichi; Toyoda, Kenichi; and Nakano, Jiro, 4,082,019, Cl. 82-36.00A.
Fujiwara, Kunio: *See*—
Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, 4,082,420, Cl. 350-96.310.
Fukai, Masakazu: *See*—
Tatsuta, Hiroshi; Fukai, Masakazu; and Takahashi, Hiroaki, 4,082,686, Cl. 252-299.000.
Fukui, Takashi; and Enomoto, Hirobumi, to Fuji Photo Film Co., Ltd. Densitometer. 4,082,458, Cl. 356-73.000.
Fukuoka Tokushu Garasu Kabushiki Kaisha: *See*—
Nakashima, Nobuyuki, 4,082,427, Cl. 350-105.000.
Fukura, Akira: *See*—
Nakagawa, Masataka; Iga, Tadasu; and Fukura, Akira, 4,082,802, Cl. 260-574.000.
Funk, Erwin D., to Kamyr Inc. Method and apparatus for hydraulic transmission of coal, oil shale, mineral ores, etc. from the face to the surface of underground mines. 4,082,368, Cl. 302-14.000.
Furuya, Kiyoto, to Daiichi Denshi Kogyo Kabushiki Kaisha. Method for electrolytic treatment. 4,082,618, Cl. 204-15.000.
Futsukaichi, Osamu: *See*—
Ikeda, Masao; Miyamoto, Shigeo; Nozawa, Thutomu; Kurobe, Akira; and Futsukaichi, Osamu, 4,082,744, Cl. 260-239.0BB.
GAF Corporation: *See*—
Bennett, Frank P., 4,082,440, Cl. 353-26.00R.
Gage, Ernest L. Separator apparatus. 4,082,657, Cl. 209-311.000.
Gal, Andrew E., to United States of America, Health, Education and Welfare. Synthesis of 2-alkanoylamino-4-nitrophenyl phosphorylcholine-hydroxide. 4,082,781, Cl. 260-403.000.
Galesloot, Wilhelmus Gerardus, to Lever Brothers Company. Cleaning of hard surfaces. 4,082,683, Cl. 252-105.000.
Gambarov, Vitaly Stepanovich: *See*—
Minin, Vladilen Fedorovich; Gambarov, Vitaly Stepanovich; Kachan, Mikhail Samuilovich; Okladnikov, Vladlen Alexeevich; Troinin, Boris Leonidovich; and Trishin, Jury Alexeevich, 4,081,982, Cl. 72-56.000.
Gamble, Dennis H., to Westinghouse Electric Corporation. Bus duct assembly. 4,082,393, Cl. 339-14.00R.
Gamboa, Paul, to Zenith Radio Corporation. High voltage shutdown circuit for a television receiver. 4,082,986, Cl. 315-411.000.
Gansert, Willi, to Robert Bosch GmbH. Multi-pole plug-and-socket connecting arrangement. 4,082,400, Cl. 339-91.00R.
Ganter, Wolfgang: *See*—
Busch, Rudolf; Ganter, Wolfgang; and Ginter, Albert, 4,081,952, Cl. 58-50.00R.
Gantier, Pierre. Device for rotational transmission of mechanical power depending on an angular speed selector which functions as a result of the resistance which it meets. 4,082,010, Cl. 74-800.000.
Garbalizer Corporation of America: *See*—
Brewer, John C., 4,082,232, Cl. 241-236.000.
Garcia, Francisco G. Orthodontic pliers. 4,081,909, Cl. 32-66.000.
Garcia, Luis: *See*—
Leasure, William C.; and Garcia, Luis, 4,081,943, Cl. 53-26.000.
Garlock Inc.: *See*—
Bainard, Dean R., 4,082,295, Cl. 277-1.000.
Garnier, Marcel A.; and Moreau, Rene J., to Agence Nationale de Valorisation de la Recherche (ANVAR). Electromagnetic apparatus for construction of liquid metals. 4,082,207, Cl. 222-594.000.
Garrett Corporation, The: *See*—
Schelp, Helmut R., 4,081,958, Cl. 60-39.51R.
Garver, John P. Tennis racket string positioning device. 4,082,272, Cl. 273-73.00A.
Gatsis, John G.; and Tan, Gim, to UOP Inc. Process for the liquefaction of coal and separation of solids from the product stream. 4,082,643, Cl. 208-8.000.
Gatsis, John G.; and Tan, Gim, to UOP Inc. Process for the liquefaction of coal and separation of solids from the product stream. 4,082,644, Cl. 208-8.000.
Gazy, Michael A.: *See*—
Baumberger, John G.; Gazy, Michael A.; and Miller, William C., 4,082,263, Cl. 271-266.000.

Gebauer, Bodo G., to GTE Automatic Electric Laboratories Incorporated. Electrodeposition of ruthenium. 4,082,622, Cl. 204-40.000.
Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See*—
Lanfermann, Willy, 4,082,361, Cl. 299-43.000.
Gebruder Junghans GmbH: *See*—
Busch, Rudolf; Ganter, Wolfgang; and Ginter, Albert, 4,081,952, Cl. 58-50.00R.
Gedney, Ronald Walker; and Rodite, Robert Richard, to International Business Machines Corporation. Metallized ceramic and printed circuit module. 4,082,394, Cl. 339-17.00M.
Gehring, Karl: *See*—
Berthold, Heinz; and Gehring, Karl, 4,082,181, Cl. 198-863.000.
Gelder, David: *See*—
Lythgoe, Stanley; and Gelder, David, 4,082,528, Cl. 65-135.000.
General Dynamics Corporation: *See*—
Heathman, John H.; and Lingley, Richard C., 4,082,240, Cl. 244-158.000.
General Electric Company: *See*—
Andersen, Edward O., 4,081,897, Cl. 29-622.000.
Anthony, Thomas R.; and Cline, Harvey E., 4,082,572, Cl. 148-1.500.
Arendt, Ronald H.; Borom, Marcus P.; Huseby, Irvin C.; and Klug, Frederic J., 4,082,566, Cl. 134-2.000.
Baker, Jack M.; Clark, Gordon W.; Harper, Douglas M.; and Tomlinson, Leroy O., 4,081,956, Cl. 60-39.18B.
Barton, Sterling C.; Carson, Chester C.; and Echeverria, Federico S., 4,082,948, Cl. 250-304.000.
Bigelow, John E., 4,082,949, Cl. 250-329.000.
Curry, Herbert Leard; and Hall, Walter Lawrence, 4,082,891, Cl. 428-412.000.
Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., 4,083,011, Cl. 325-352.000.
Gibb, George H.; and Rabeau, Henry A., 4,082,115, Cl. 137-630.200.
Gries, Donald A., 4,082,378, Cl. 308-15.000.
Grossman, Leonard N.; and Packard, Douglas R., 4,082,834, Cl. 423-210.000.
Hay, Allan S., 4,082,808, Cl. 260-609.00F.
Laskaris, Evangelos T., 4,082,967, Cl. 310-64.000.
Lennon, David C., 4,082,412, Cl. 339-256.0SP.
Losert, Gerhard K., 4,081,997, Cl. 73-168.000.
Nakata, Roy; and Bohlinger, Arthur Leo, 4,082,933, Cl. 200-163.000.
Rhude, John M., 4,082,995, Cl. 324-51.000.
Strong, Herbert M., 4,082,185, Cl. 206-525.000.
Thornton, Roy F.; and Weininger, Joseph L., 4,081,899, Cl. 29-623.200.
Yang, Kei-Hsiung; and De Luca, John A., 4,083,018, Cl. 331-94.50F.
Yu, Rosendo U., 4,083,063, Cl. 357-38.000.
General Mills, Inc.: *See*—
Pommer, Dennis, 4,082,176, Cl. 198-411.000.
General Motors Corporation: *See*—
Balogh, Richard L., 4,082,073, Cl. 123-140.00R.
Baugh, Edward D., 4,082,074, Cl. 123-140.0FG.
Bluhm, Elmer; and Vaas, Frederick T., Jr., 4,081,890, Cl. 29-157.00C.
Carol, John A., Jr.; Paxton, Wayne E.; and Riddel, John W., 4,082,158, Cl. 180-108.000.
Cerano, Leon R.; and Reichardt, Mayo M., 4,082,486, Cl. 425-129.00R.
Davis, Leonard C., 4,082,139, Cl. 165-8.000.
Dornfeld, Kenneth A.; Marlow, Jerry R.; and Sanders, Robert K., 4,082,013, Cl. 74-866.000.
Duff, Clifford C.; and Salloum, Robert J., 4,082,366, Cl. 302-11.000.
Haka, Raymond J., 4,081,960, Cl. 60-289.000.
Lentz, Carl A., 4,082,009, Cl. 74-731.000.
Marks, Stephen W.; and Marsh, Robert E., 4,082,926, Cl. 200-19.0DR.
McQuinn, Ted M.; and Anderson, Richard B., 4,082,011, Cl. 74-862.000.
Peeples, Denny L., 4,082,930, Cl. 200-84.00C.
Schaefer, Robert H.; and McQuinn, Ted M., 4,082,012, Cl. 74-864.000.
Schultz, Frederick K., 4,083,013, Cl. 328-207.000.
Wortham, Otis W.; and Sundstrom, John A., 4,081,975, Cl. 68-18.0FA.
Genrikh, Georgy Andreevich: *See*—
Burgsdorf, Vladimir Vladimirovich; Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Mishin, Valery Vasilievich; Kuznetsov, Viktor Yakovlevich; and Kondratiev, Anatoly Dmitrievich, 4,082,962, Cl. 307-147.000.
Genuit, Luther L. Light switch with delayed turnoff. 4,082,961, Cl. 307-141.000.
George, David B., to Kennecott Copper Corporation. Copper precipitate agglomerization process. 4,082,542, Cl. 75-5.000.
George L. Haywood Co., The: *See*—
Haywood, George Lewis; and Haywood, Wesley Joseph, 4,082,947, Cl. 250-203.00R.
Georgia-Pacific Corporation: *See*—
Bornstein, Leopold F., 4,082,904, Cl. 428-528.000.
Geratewerk Lahr GmbH: *See*—
Metzler, Gerhart; Rother, Peter; and Sukopp, Hans, 4,082,291, Cl. 274-23.00R.
Gerber, Hermann; and Johner, Michel, to Ebauches SA. Small synchronous electric motor. 4,082,972, Cl. 310-162.000.
Gerbetz, Robert P.: *See*—
Simmons, Frank B.; Bozsvai, Alex; Kovacs, Louis A.; and Gerbetz, Robert P., 4,082,381, Cl. 308-187.000.
German, Dale F., to Eaton Corporation. Pressure change indicator. 4,082,056, Cl. 116-34.00R.
Germano, Giovanni; Losciale, Francesco; Falesiedi, Roberto; Daclon, Ferruccio; and Merzagora, Nicola, to Snamprogetti, S.p.A. Method for constructing a thermoelectric module and the module so obtained. 4,081,895, Cl. 29-573.000.
Gertsch AG: *See*—
Krob, Erwin; Weigl, Erwin; and Svoboda, Josef, 4,082,315, Cl. 280-631.000.
Gesellschaft fur Kernforschung m.b.H.: *See*—
Berndt, Uwe; Erdmann, Bernhard; and Keller, Cornelius, 4,082,547, Cl. 75-122.700.
Getz, Marvin G.: *See*—
Krolak, Ronald L.; Cackley, George W.; Getz, Marvin G.; and Ritter, Arthur J., Jr., 4,082,156, Cl. 180-9.620.
Gewartowski, Steve A., to UOP Inc. Fractionation to remove a high-boiling material and a dissolved substance. 4,082,654, Cl. 208-352.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Hinrichsen, Gerhard, 4,082,248, Cl. 254-29.00R.
Geyer, Raymond K.: *See*—
Conklin, James T.; Daley, Daniel R.; and Geyer, Raymond K., 4,082,567, Cl. 134-10.000.
Ghosh, Subrata, to Chrysler Corporation. Nickel-base superalloy. 4,082,581, Cl. 148-32.000.
Gibb, George H.; and Rabeau, Henry A., to General Electric Company. Valve operator. 4,082,115, Cl. 137-630.200.
Gibbemeyer, Joseph Franz, to Cincinnati Milacron Inc. Conveyor combined with coupling. 4,082,175, Cl. 198-377.000.
Gibson, David L.; Barrett, Lawrence J.; Moore, Patricia A.; and Butler, David R., to C. H. Stuart Inc. Convertible tray cabinet. 4,082,390, Cl. 312-284.000.
Gies, Johannes, to Siemens Aktiengesellschaft. Diode switch. 4,082,964, Cl. 307-259.000.
Gignilliat, William McIntosh: *See*—
Hentschel, Robert Carl, Jr.; and Gignilliat, William McIntosh, 4,082,003, Cl. 73-422.00R.
Gilbert, Stephen Lee: *See*—
Ban, Vladimir Sinisa; and Gilbert, Stephen Lee, 4,082,865, Cl. 427-253.000.
Gilchrist, William K.: *See*—
Bergee, Mark A.; and Gilchrist, William K., 4,081,865, Cl. 2-425.000.
Gilmore, John F.: *See*—
Morton, Edward W.; and Gilmore, John F., 4,082,981, Cl. 315-97.000.
Gilson, Trevor Robert: *See*—
Corbett, Roger Patrick; Gilson, Trevor Robert; Nealon, Terence Patrick; and Hendra, Patrick John, 4,082,860, Cl. 427-27.000.
Gingrich, Reynard W.: *See*—
Houston, James E.; Gingrich, Reynard W.; and Schilt, Earl A., 4,082,606, Cl. 159-27.00B.
Ginter, Albert: *See*—
Busch, Rudolf; Ganter, Wolfgang; and Ginter, Albert, 4,081,952, Cl. 58-50.00R.
Girardin, Jean-Claude, to Portescap. Direct-current motor-generator. 4,082,970, Cl. 310-113.000.
Girling Limited: *See*—
Harrison, Anthony William, 4,082,165, Cl. 188-59.000.
Glista, Andrew S.; and Katz, Rodney S., to United States of America, Navy. Fiber optics cable strengthening method and means. 4,082,423, Cl. 350-96.230.
Gobaru, Shigeto: *See*—
Iida, Norihika; and Gobaru, Shigeto, 4,082,590, Cl. 156-144.000.
Goeglein, Roy F. Collapsible display booth. 4,082,388, Cl. 312-258.000.
Goff, Clifford E.: *See*—
Rogers, Arden D., Jr.; and Goff, Clifford E., 4,082,219, Cl. 236-12.00R.
Goldberg, Mitchell J., to Solid State Scientific Inc. Voltage controlled oscillator. 4,083,020, Cl. 331-113.00R.
Golder Hoek and Associates Limited: *See*—
Dowse, Brian Edward Wesley, 4,081,970, Cl. 61-88.000.
Goldie, Brian Peter Forsyth, to British Petroleum Company Limited, The. Polymerization catalyst. 4,082,692, Cl. 252-429.00B.
Golin, Jeffrey R. Gas discharge lamp preparation process. 4,082,392, Cl. 316-19.000.
Goodbary, Edgar R., to Goodbary Engineering Company. Wheel rim and brake disc for off-highway vehicles. 4,082,363, Cl. 301-6.0CS.
Goodbary Engineering Company: *See*—
Goodbary, Edgar R., 4,082,363, Cl. 301-6.0CS.
Gore, Bobby Joe. Vehicle air deflector. 4,082,341, Cl. 296-1.00S.
Gorell, Frederick R.: *See*—
Bertacchi, Ralph; and Gorell, Frederick R., 4,081,938, Cl. 52-410.000.
Gorog, Sandor: *See*—
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcz, 4,082,813, Cl. 260-618.00B.
Goto, Giichi: *See*—
Miki, Takuichi; Hiraga, Kentaro; and Goto, Giichi, 4,082,780, Cl. 260-397.500.
Gottschalk, Robert E. Motion picture camera. 4,082,436, Cl. 352-72.000.
Gottschlich, James A., to NCR Corporation. Apparatus for equalizing tension in a ribbon cassette. 4,082,210, Cl. 226-91.000.

Gould, Inc.: *See*—
Angelis, John G., 4,082,408, Cl. 339-198.00G.
Gould, Orval E. Apparatus for grinding refuse. 4,082,231, Cl. 241-187.000.
Graff, Hart F.: *See*—
Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., 4,082,868, Cl. 427-329.000.
Grant, Ronald Malcolm: *See*—
Hodgson, Brian; Fairnington, Robert; Thorneycroft, Malcolm; and Grant, Ronald Malcolm, 4,082,031, Cl. 90-4.000.
Grassme, Ulrich: *See*—
Krause, Hartmut; and Grassme, Ulrich, 4,082,953, Cl. 250-413.000.
Graul, Juergen; and Murrmann, Helmuth, to Siemens Aktiengesellschaft. Process for suppressing parasitic components utilizing ion implantation prior to epitaxial deposition. 4,082,571, Cl. 148-1.500.
Graves, Charles A.: *See*—
Chang, Roland Wan-chan; and Graves, Charles A., 4,082,918, Cl. 179-1.0AA.
Greco, John J. Door securing device. 4,082,337, Cl. 292-338.000.
Green, Glen R.: *See*—
Hodges, Joseph L.; and Green, Glen R., 4,082,024, Cl. 83-402.000.
Grenawalt, John J.: *See*—
Lake, Peter B.; Grenawalt, John J.; and Pastorek, Ronald L., 4,082,576, Cl. 148-12.00F.
Grier, William R.: *See*—
Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., 4,082,172, Cl. 197-20.000.
Gries, Donald A., to General Electric Company. Deformable bearing seat. 4,082,378, Cl. 308-15.000.
Griffith, Glen R.; Sandusky, Zane A.; and Watson, George A., to Rockwell International Corporation. Apparatus and method for extrapolating the angular position of a rotating body. 4,081,995, Cl. 73-116.000.
Grimm-Lenz, Rainer: *See*—
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; Zahler, Wolf-Dieter; and Grimm-Lenz, Rainer, 4,082,722, Cl. 260-42.430.
Grimmell, William Charles; Kaetzel, Gilbert Carl; Moran, John Milton; and Zanko, George Michael, to Hoffmann-La Roche Inc. Apparatus for color recognition and defect detection of objects such as capsules. 4,082,188, Cl. 209-73.000.
Grindley, C. Ronald; and Boyd, Larry G. Apparatus for removing dusting powder in offset presses. 4,082,037, Cl. 101-425.000.
Grobey, Paul A. Power cultivator with reciprocating blades. 4,082,149, Cl. 172-40.000.
Groet, Nicholas H., to Eastman Kodak Company. Interimage effects with spontaneously developable silver halide. 4,082,553, Cl. 96-74.000.
Groff, Leroy K. Counterbalancing supporting device. 4,082,244, Cl. 248-280.000.
Groninger, Markus, to Howag AG. Electric hygrometer. 4,083,030, Cl. 338-35.000.
Gross, Frank C., to A. B. Dick/Scott. Electrophotographic method for production of plural images on a sheet. 4,082,442, Cl. 355-3.00R.
Grossman, Leonard N.; and Packard, Douglas R., to General Electric Company. Process for gettering moisture and reactive gases. 4,082,834, Cl. 423-210.000.
Grundstrom, Erik Hilding; Grundstrom, Gote Einar; and Waleij, Ivar. Planting dibble. 4,082,048, Cl. 111-2.000.
Grundstrom, Gote Einar: *See*—
Grundstrom, Erik Hilding; Grundstrom, Gote Einar; and Waleij, Ivar, 4,082,048, Cl. 111-2.000.
GTE Automatic Electric Laboratories Incorporated: *See*—
Gebauer, Bodo G., 4,082,622, Cl. 204-40.000.
Meuller, Von W.; and Foerster, Ronald A., 4,083,025, Cl. 335-153.000.
GTE Laboratories Incorporated: *See*—
Birman, Joseph L.; and Mayburg, Sumner, 4,083,017, Cl. 331-94.50H.
GTE Sylvania Incorporated: *See*—
Palumbo, Dominic T., deceased; and Shaffer, Francis N., 4,082,687, Cl. 252-301.40F.
Shaffer, John W., 4,082,494, Cl. 431-95.00R.
Gubelmann, Walter S., executor: *See*—
Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., 4,082,172, Cl. 197-20.000.
Gubelmann, William S., deceased; by Gubelmann, Walter S., executor; and Grier, William R., to Realty & Industrial Corporation. Justifying text writing reproducing machine. 4,082,172, Cl. 197-20.000.
Guddal, Erling: *See*—
Borrevang, Poul; Guddal, Erling; Petersen, Henning Borge; Faarup, Peter; and Nielsen, Jorgen Ilum, 4,082,745, Cl. 260-239.100.
Guest, Ashley W., to British Aircraft Corporation Limited. Frequency lock loop. 4,083,014, Cl. 331-1.00A.
Guest, Paul Richard; and Ninneman, Lawrence D., to Owens-Illinois, Inc. Plastic container with support base, and method of assembly. 4,082,200, Cl. 215-1.00C.
Guiley, Clifford Dale, Jr.: *See*—
Backderf, Richard Harold; and Guiley, Clifford Dale, Jr., 4,082,895, Cl. 428-412.000.
Gulf Oil Canada Limited: *See*—
Flynn, Peter Charles, 4,082,646, Cl. 208-11.00R.
Gulf Research & Development Co.: *See*—
Kirkpatrick, Joel L., 4,082,765, Cl. 260-308.00C.
Gullotti, Damian V.: *See*—
Anthony, William H.; Brock, Andrew J.; and Gullotti, Damian V., 4,082,574, Cl. 148-2.000.
Gunnergaard, Marius: *See*—
Petersen, Carl Herbert; and Gunnergaard, Marius, 4,082,135, Cl. 164-404.000.
Gunther, William H., Jr.: *See*—
McPherson, John B.; and Gunther, William H., Jr., 4,082,603, Cl. 156-654.000.
Gustafson, Inc.: *See*—
Weber, Joseph A.; and Wenshau, Hugo, 4,082,004, Cl. 73-422.00R.
Gustafsson, Sven-Goran; Nilsson, Jan; and Syvakari, Pertti, to ASEA Aktiebolag. Protective coating for removable liner of press for hydrostatic extrusion. 4,081,984, Cl. 72-60.000.
Gwyn, John E., to Shell Oil Company. Mining oil shale and backfilling with mechanically compressed spent shale. 4,081,968, Cl. 61-35.000.
H. B. Fuller Company: *See*—
Mehta, Ramesh, 4,082,708, Cl. 260-18.00N.
Haack, William M., to Keene Corporation. Apparatus for forming an electroplated abrasive tool. 4,082,640, Cl. 204-279.000.
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, to Xerox Corporation. Agglomeration imaging process. 4,082,549, Cl. 96-1.00R.
Hadden-Wight, Roger; and Johnson, Colin Stanley, to Irvin Bros. (Fleet Works) Limited. Printing on the sides of paper pads. 4,082,593, Cl. 156-230.000.
Haemmig, Adrian B., to Products of Information Technology, Inc. Vehicle location system. 4,083,003, Cl. 325-6.000.
Hafke, Carl: *See*—
Baron, Gerhard; Bierbach, Herbert; Hafke, Carl; and Pockrandt, Gunter, 4,082,520, Cl. 48-202.000.
Hagio, Shohachiro: *See*—
Nakajima, Toshi; Sagara, Takao; and Hagio, Shohachiro, 4,082,321, Cl. 285-39.000.
Haines, Richard K. Privacy latch for folding and sliding doors. 4,082,329, Cl. 292-202.000.
Haka, Raymond J., to General Motors Corporation. Air flow control valve. 4,081,960, Cl. 60-289.000.
Hale, David Jerry, to Brunswick Corporation. V-engine cooling system particularly for outboard motors and the like. 4,082,068, Cl. 123-41.020.
Hall, David A.; and Heiney, Richard E., to Eli Lilly and Company. Electrolytic reduction of dihydrobenzopyranoxanthenones. 4,082,627, Cl. 204-59.00R.
Hall, Larry Baker, to Lockheed Corporation. Curling punch. 4,081,987, Cl. 72-389.000.
Hall, Roger D., to Bendix Corporation, The. Dual band monopole omni antenna. 4,083,050, Cl. 343-729.000.
Hall, Walter Lawrence: *See*—
Curry, Herbert Leard; and Hall, Walter Lawrence, 4,082,891, Cl. 428-412.000.
Halm Instrument Co., Inc.: *See*—
Konars, Clement R.; and Quinci, Emanuel, 4,082,262, Cl. 271-149.000.
Halopoff, William. Sectional garage door spring container. 4,082,133, Cl. 160-191.000.
Hamada, Takeshi; Ishigaki, Yoshio; and Hongu, Masayuki, to Sony Corporation. Current controlled emitter coupled multivibrator. 4,083,019, Cl. 331-113.00R.
Hamma Hamaphot KG., Hanke & Thomas: *See*—
Hanke, Rudolph, 4,082,600, Cl. 156-505.000.
Hamma, Noritaka: *See*—
Suzuki, Yoshio; Minai, Masayoshi; Hamma, Noritaka; Murayama, Eiichi; and Aono, Shunji, 4,082,913, Cl. 560-102.000.
Hamman, Willdoune. Trailer hitch assembly. 4,082,311, Cl. 280-507.000.
Hammer, Gregory. Nonlocking nestable container. 4,082,184, Cl. 206-519.000.
Hammond, H. Jack. Shut height gauge and method of using same. 4,081,910, Cl. 33-181.00R.
Hammonds, James C.; and Holt, Jan D., to ACF Industries, Incorporated. Fabricated railway car truck. 4,082,043, Cl. 105-182.00R.
Hancor, Inc.: *See*—
Sting, Donald W.; and Ott, Denis P., 4,082,327, Cl. 285-401.000.
Hanke, Rudolph, to Hamma Hamaphot KG., Hanke & Thomas. Film splicing apparatus. 4,082,600, Cl. 156-505.000.
Hantke, Gerhard John; and Ring, Harry Kenneth, Jr., to Trane Company, The. Valve assembly for use in an air distribution system. 4,082,114, Cl. 137-625.370.
Harbeck, Alfred; Rebhan, Dieter; and Walburg, Richard, to Hoechst Aktiengesellschaft. Packing for stuffing boxes of piston pumps with metal plunger. 4,082,300, Cl. 277-123.000.
Harmon, Robert W.: *See*—
Haubein, Harold D.; Allen, George D.; Harmon, Robert W.; Ramsey, Edgar J., Jr.; and Pehle, Ronald C., 4,083,028, Cl. 337-144.000.
Harper, Douglas M.: *See*—
Baker, Jack M.; Clark, Gordon W.; Harper, Douglas M.; and Tomlinson, Leroy O., 4,081,956, Cl. 60-39.18B.
Harper, Jack R., to Dow Corning Corporation. Flame retardant rigid polyurethane syntactic foam. 4,082,702, Cl. 260-2.5AK.
Harrigan, Roy Major. Mechanical cardiac resuscitator. 4,082,090, Cl. 128-51.000.
Harrington, Timothy M.: *See*—
Marshall, J. Howard, III; and Harrington, Timothy M., 4,083,044, Cl. 340-347.0AD.
Harris Corporation: *See*—
Anderson, Robert John, 4,082,259, Cl. 270-73.000.
Harris, Frank W.; and Reinhardt, Bruce A., to Wright State University. Preparation of tetraketones. 4,082,806, Cl. 260-590.00D.

Harrison, Anthony William, to Girling Limited. Brake assembly including mounting, actuating and adjusting structure. 4,082,165, Cl. 188-59.000.

Harrison, Earnest R.: *See—*
Mattern, John; and Harrison, Earnest R., 4,083,049, Cl. 343-7.700.

Harvest Industries, Inc.: *See—*
Zollar, Leland H.; and Moore, Edward W., 4,082,677, Cl. 252-8.50B.

Harvey, Lawrence, to British Petroleum Company Limited, The. Solar energy collector. 4,082,082, Cl. 126-271.000.

Harvey, Ronald B.: *See—*
Jensen, Gerald A.; Harvey, Ronald B.; Caulfield, Patrick J.; Putzke, Dwayne H.; and Strunc, Gerald R., 4,082,943, Cl. 235-303.100.

Hase, Chiaki, to Daito Seimo Coshi Kaisha. Method of making a multi-level flower supporting net assembly. 4,082,831, Cl. 264-249.000.

Hasegawa, Katsumi; Nakanishi, Toru; and Oka, Toshihiko, to Toray Industries, Inc. Apparatus for producing compact yarn package. 4,081,888, Cl. 28-285.000.

Hashizume, Akihide: *See—*
Kohno, Hideki; Hashizume, Akihide; and Yamamoto, Shinji, 4,082,457, Cl. 356-39.000.

Hatano, Keizo: *See—*
Aoki, Takao; Kako, Yuji; Kikuga, Toyoji; and Hatano, Keizo, 4,082,661, Cl. 210-40.000.

Hatton, William L.: *See—*
Bickford, William J.; Hatton, William L.; Pallemaerts, Colin J.; Tanzi, Paul J.; and Tsao, Carson K. H., 4,083,009, Cl. 325-304.000.

Haubein, Harold D.; Allen, George D.; Harmon, Robert W.; Ramsey, Edgar J., Jr.; and Pehle, Ronald C., to A.B. Chance Company. Pad-mounted double-fused vacuum switchgear. 4,083,028, Cl. 337-144.000.

Hauck, Frederic Peter, to E. R. Squibb & Sons, Inc. Tricyclic tetrahydro naphthaleneols and related compounds. 4,082,773, Cl. 260-340.50R.

Haug, Theobald: *See—*
Renner, Alfred; and Haug, Theobald, 4,082,768, Cl. 260-326.260.

Haury, Gilbert E., to Invacare Corporation. Adjustable wheel chair. 4,082,348, Cl. 297-45.000.

Hawk, Dale Wyatt, to Fiat-Allis Construction Machinery, Inc. Low profile vehicle hitch. 4,082,310, Cl. 280-492.000.

Hay, Allan S., to General Electric Company. Thiobis-2,6-disubstituted phenol. 4,082,808, Cl. 260-609.00F.

Hayashi, Tadaaki; and Nakahara, Teruto, to Kabushiki Kaisha Ka-Pu. Wide-angle optical system for door viewer. 4,082,434, Cl. 350-225.000.

Hayes, John C.: *See—*
Pollitzer, Ernest L.; and Hayes, John C., 4,082,649, Cl. 208-111.000.

Hayes, Matthew N., to Westinghouse Electric Corporation. Arc chute. 4,082,931, Cl. 200-144.00C.

Hayes, Tom F., to Tenneco Chemicals, Inc. Apparatus for spraying interior surface of vessels. 4,082,057, Cl. 118-9.000.

Haynes, Kenneth H. Constant volume aerated showerhead apparatus. 4,082,225, Cl. 239-428.500.

Haythornthwaite, Peter F.; and Relf, Victor K., to Sodaflo Drinks Limited. Carbonating apparatus. 4,082,123, Cl. 141-64.000.

Haywood, George Lewis; and Haywood, Wesley Joseph, to George L. Haywood Co., The. Solar Collector and drive circuitry control means. 4,082,947, Cl. 250-203.00R.

Haywood, Wesley Joseph: *See—*
Haywood, George Lewis; and Haywood, Wesley Joseph, 4,082,947, Cl. 250-203.00R.

Hazelett, Robert William; and Wood, John Frederick Barry, to Hazelett Strip-Casting Corporation. Coolant nozzle apparatus in twin-belt continuous casting machines. 4,082,101, Cl. 134-127.000.

Hazelett Strip-Casting Corporation: *See—*
Hazelett, Robert William; and Wood, John Frederick Barry, 4,082,101, Cl. 134-127.000.

Headrick, J. Charles; Starnes, R. Emory; and Peel, Robert C., to Southwire Company. Galvanized tube welded seam repair metallizing process. 4,082,212, Cl. 228-147.000.

Hearon, William Montgomery; Witte, John F.; and Lo, Cheng Fan, to Boise Cascade Corporation. Process for the production of dialdehyde cellulose from cellulose. 4,082,743, Cl. 536-30.000.

Heathman, John H.; and Lingley, Richard C., to General Dynamics Corporation. Continuous integrated clamping hoop space vehicle support system. 4,082,240, Cl. 244-158.000.

Hechenbleikner, Ingenuin, to Borg-Warner Corporation. Glass lamination utilizing cyclic phosphonates. 4,082,897, Cl. 428-426.000.

Heckmann, Wolfgang, to Klockner-Humboldt-Deutz Aktiengesellschaft. Vibrating centrifuge. 4,082,675, Cl. 210-360.00R.

Hedvall, Per; and Strandberg, Per, to ASEA Aktiebolag. Filter disc for magnetic separator. 4,082,656, Cl. 209-222.000.

Heemaf B.V.: *See—*
Schiethart, Lodewijk, 4,082,973, Cl. 310-162.000.

Heine, Helmut A.; Schmidt, Otto H.; and Rosenbusch, Helmut W., to Propper Manufacturing Co., Inc. Apparatus for controlling the illumination of optical examination devices. 4,082,946, Cl. 362-32.000.

Heiney, Richard E.: *See—*
Hall, David A.; and Heiney, Richard E., 4,082,627, Cl. 204-59.00R.

Heinze, Christoph; Ruchlak, Kasimir; and Steude, Holm, to Hoechst Aktiengesellschaft. Process for concentrating latices. 4,082,659, Cl. 210-23.00F.

Heiss, Florian. Composition for sanitizing of surfaces. 4,082,852, Cl. 424-317.000.

Heller, Adam; Miller, Barry; and Vadimsky, Richard George, to Bell Telephone Laboratories, Incorporated. Articles electrodeposited with ruthenium and processes of producing such articles. 4,082,624, Cl. 204-47.000.

Heller, Adam: *See—*
Chang, Kuang-Chou; Heller, Adam; and Miller, Barry, 4,082,602, Cl. 156-627.000.

Heller, Wilhelm, to Fried. Krupp Huttenwerke AG. Process for the heat treatment of steel. 4,082,577, Cl. 148-12.100.

Hendra, Patrick John: *See—*
Corbett, Roger Patrick; Gilson, Trevor Robert; Nealon, Terence Patrick; and Hendra, Patrick John, 4,082,860, Cl. 427-27.000.

Hendrix, William Louis, to Hendrix Wire & Cable Corporation. Spacer for aerial cables. 4,082,917, Cl. 174-146.000.

Hendrix Wire & Cable Corporation: *See—*
Hendrix, William Louis, 4,082,917, Cl. 174-146.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Heyden, Rudi; Asbeck, Adolf; Eckelt, Michael; Petzold, Manfred; and Uphues, Gunter, 4,082,689, Cl. 252-321.000.

Henley, Thomas D.; and Reeves, Richard F., to Amchem Products, Inc. Oil emulsion removal and recovery of oil. 4,082,867, Cl. 427-327.000.

Henman, Terence John; and Williams, Graham, to Imperial Chemical Industries Limited. Process for forming polymeric compositions. 4,082,720, Cl. 260-42.150.

Hens, Jozef Fr.: *See—*
van Wijngaarden, Ineke; Soudijn, Willem; Vandenberk, Jan; and Hens, Jozef Fr., 4,082,755, Cl. 260-293.600.

Hentschel, Robert Carl, Jr.; and Gignilliat, William McIntosh, to Allied Chemical Corporation. Pellet sampler and method of sampling pellets. 4,082,003, Cl. 73-422.00R.

Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity: *See—*
Flynn, Peter Charles, 4,082,646, Cl. 208-11.00R.

Hercules Incorporated: *See—*
Rave, Terence W., 4,082,730, Cl. 260-72.00R.

Hermanson, Gerald Peter; Rickel, David Murray; and Carr, Robert Joseph, to Dayron Corporation. Method for attaching a workpiece to a continuous length of line. 4,081,894, Cl. 29-433.000.

Herrmann, Manfred Franz Reinhold: *See—*
Stoss, Peter Johannes; Herrmann, Manfred Franz Reinhold; and Satzinger, Gerhard, 4,082,770, Cl. 260-330.500.

Hersberger, Pierre, to Ebauches SA. Electronic timepiece. 4,081,951, Cl. 58-23.00R.

Hertel, Hasso, to Hoechst Aktiengesellschaft. Process for the production of water-insoluble azo dyestuffs on the fiber. 4,082,503, Cl. 8-44.000.

Hertsius, Lars-Olov; and Arneborn, Anders, to Telefonaktiebolaget L M Ericsson. Cable cutter. 4,082,023, Cl. 83-293.000.

Hester, Jackson B., Jr., to Upjohn Company, The. Triazolo[4,3-a][1,4]benzodiazepinium quaternary salts. 4,082,761, Cl. 260-308.00R.

Heuer, Hans Herbert. Sunshade—foldable and hand-transportable. 4,082,102, Cl. 135-5.00R.

Heves Megyer Tanacsi Epitoipare Vallalat: *See—*
Kocsanyi, Laszlo; and Varga, Lajos, 4,082,367, Cl. 302-14.000.

Hewertson, Warren, to Imperial Chemical Industries Limited. Production of aromatic polyesters of improved color. 4,082,724, Cl. 260-45.75B.

Hewlett-Packard Company: *See—*
Marriott, Joe E., 4,082,998, Cl. 324-99.00D.

Heyden, Rudi; Asbeck, Adolf; Eckelt, Michael; Petzold, Manfred; and Uphues, Gunter, to Henkel Kommanditgesellschaft auf Aktien. Antifoam compositions and process with bis-α-hydroxyamine derivatives. 4,082,689, Cl. 252-321.000.

Hicks, James Ray, to Recognition Equipment Incorporated. Plural tracker character detection and boundary location system. 4,083,034, Cl. 340-146.30H.

Hida, Yukihiro: *See—*
Sasaki, Minoru; Hida, Yukihiro; Enokido, Tsuneo; and Ito, Kaoru, 4,082,540, Cl. 75-3.000.

Hightower, Tafari. Electric security lock. 4,081,980, Cl. 70-92.000.

Hill, Robert L. Protective basketball hoop. 4,082,269, Cl. 273-1.50R.

Hille, Ernst: *See—*
Paszthory, Emmerich; Mees, Bernhard; and Hille, Ernst, 4,082,803, Cl. 260-575.000.

Hillside Metal Products, Inc.: *See—*
Aromando, Nick A., 4,082,382, Cl. 308-190.000.

Hilmoine, Serge: *See—*
Couderc, Pierre; and Hilmoine, Serge, 4,082,775, Cl. 260-343.600.

Himler, Donald W.: *See—*
Spiliotis, Nicholas J.; Schevey, William R.; and Himler, Donald W., 4,082,621, Cl. 204-38.00B.

Hinn, Werner, to RCA Corporation. Video amplifier including an A-C coupled voltage follower output stage. 4,082,996, Cl. 358-242.000.

Hinrichsen, Gerhard, to Gewerkschaft Eisenhutte Westfalia. Pipe driving apparatus. 4,082,248, Cl. 254-29.00R.

Hiraga, Kentaro: *See—*
Miki, Takuichi; Hiraga, Kentaro; and Goto, Giichi, 4,082,780, Cl. 260-397.500.

Hirano, Hironori: *See—*
Arai, Tatsuo; Hirano, Hironori; Kajimura, Hiroyuki; and Matsui, Masayuki, 4,082,132, Cl. 152-361.00R.

Hirano, Kenkiti: *See—*
Nakagawa, Koji; and Hirano, Kenkiti, 4,082,561, Cl. 106-89.000.

Hirata, Sadao: *See—*
Yamada, Muneki; Hirata, Sadao; Kishimoto, Akira; Hirata, Shunsaku; Suzuki, Toru; and Kano, Fumio, 4,082,854, Cl. 426-106.000.

Hirata, Shinji, to West Electric Company, Ltd. Automatic electronic flash device. 4,082,982, Cl. 315-151.000.
Hirata, Shunsaku: *See—*
Yamada, Muneki; Hirata, Sadao; Kishimoto, Akira; Hirata, Shunsaku; Suzuki, Toru; and Kano, Fumio, 4,082,854, Cl. 426-106.000.
Hirato, Mizuno: *See—*
Komuro, Takeo; Saito, Yukio; and Hirato, Mizuno, 4,082,615, Cl. 201-12.000.
Hisada, Yoshio: *See—*
Kameda, Nobuyuki; Hisada, Yoshio; Kato, Toshiro; and Fujinami, Akira, 4,082,849, Cl. 424-274.000.
Hiszpanski, Jan A., to Imperial-Eastman Corporation. Universal hydraulic impact tool. 4,082,471, Cl. 404-133.000.
Hitachi, Ltd.: *See—*
Kamiya, Hiroyuki; Takahashi, Ken; Watanabe, Seiji; and Kanazawa, Tomohisa, 4,082,406, Cl. 339-112.00L.
Kohno, Hideki; Hashizume, Akihide; and Yamamoto, Shinji, 4,082,457, Cl. 356-39.000.
Ohuchi, Hirobumi; Kawakami, Sumio; and Okamura, Masahiro, 4,083,062, Cl. 357-13.000.
Okuhara, Shinzi, 4,082,923, Cl. 179-18.0GF.
Ouchi, Yoshio; and Ikeda, Takatoshi, 4,083,053, Cl. 346-75.000.
Yamamoto, Hiroe; Takahashi, Noriyoshi; and Takahashi, Miyoshi, 4,082,974, Cl. 310-179.000.
Hitachi Printing Co. Ltd.: *See—*
Ueno, Tadayoshi; and Itaya, Akio, 4,082,038, Cl. 101-425.000.
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Ishii, Shigeki, to Nippon Gakki Seizo Kabushiki Kaisha. Electronics musical instrument. 4,082,027, Cl. 84-1.010.
Hochtemperatur-Kernkraftwerk GmbH, Gemeinsames Europaisches Unternehmen: *See—*
Schweiger, Fritz, 4,082,609, Cl. 176-86.00R.
Hodges, Joseph L.; and Green, Glen R., to Ore-Ida Foods, Inc. Potato strip cutter. 4,082,024, Cl. 83-402.000.
Hodgkins, Charles E.: *See—*
Amin, Rajnikant B.; Anderson, Harlan Urie; and Hodgkins, Charles E., 4,082,906, Cl. 428-539.000.
Hodgson, Brian; Fairnington, Robert; Thorneycroft, Malcolm; and Grant, Ronald Malcolm, to Charles Churchill Limited. Gear hobbing machines. 4,082,031, Cl. 90-4.000.
Hoechst Aktiengesellschaft: *See—*
Andrascheck, Hans-Joachim; Lorcher, Otfried; and Zentner, Erich, 4,082,711, Cl. 260-23.0XA.
Burg, Karlheinz; and Schlaf, Helmut, 4,082,729, Cl. 260-67.0FP.
Eiglmeier, Kurt, 4,082,807, Cl. 260-590.00R.
Fuchs, Otto; and Troster, Helmut, 4,082,769, Cl. 260-328.000.
Harbeck, Alfred; Rebhan, Dieter; and Walburg, Richard, 4,082,300, Cl. 277-123.000.
Heinze, Christoph; Ruchlak, Kasimir; and Steude, Holm, 4,082,659, Cl. 210-23.00F.
Hertel, Hasso, 4,082,503, Cl. 8-44.000.
Hunger, Klaus; and Weber, Dieter, 4,082,741, Cl. 260-154.000.
Mayer, Norbert; Pfahler, Gerhard; and Wiezer, Hartmut, 4,082,723, Cl. 260-45.80N.
Mees, Bernhard; and Ribka, Joachim, 4,082,501, Cl. 8-26.000.
Mohr, Reinhard; Mundlos, Eberhard; and Hohmann, Kurt, 4,082,740, Cl. 260-146.00R.
Moraw, Roland; and Dryczynski, Kurt, 4,083,054, Cl. 346-151.000.
Paszthory, Emmerich; Mees, Bernhard; and Hille, Ernst, 4,082,803, Cl. 260-575.000.
Pistorius, Rudolf; and Millauer, Hans, 4,082,809, Cl. 260-611.00R.
Riemenschneider, Wilhelm; and Wegener, Peter, 4,082,796, Cl. 260-545.00R.
Schroter, Herbert, 4,082,456, Cl. 355-109.000.
von der Eltz, Hans-Ulrich; Reuther, Albert; and Wassmuth, Hans-Joachim, 4,082,502, Cl. 8-34.000.
von der Eltz, Hans-Ulrich, 4,082,504, Cl. 8-44.000.
Hoeck, Horst: *See—*
Rautenbach, Robert; Hoeck, Horst; and Beer, Wolfgang, 4,081,914, Cl. 34-92.000.
Hoegerle, Karl; and Berrer, Dagmar, to Ciba-Geigy Corporation. Pyrimidine derivatives. 4,082,535, Cl. 71-92.000.
Hoehn, Ralf: *See—*
Boe, Hans; Hoehn, Ralf; Tecl, Bohuslav; and Kirsch, Wilhelm, 4,082,878, Cl. 428-195.000.
Hoffman, Douglas. Milling wheels for small flour mills. 4,082,234, Cl. 241-248.000.
Hoffman, Robert K.; and Franson, David C., to Parker-Hannifin Corporation. Automatic drain valve for a compressed air system. 4,082,107, Cl. 137-195.000.
Hoffmann, Kurt, to Siemens Aktiengesellschaft. Regenerating amplifier for CCD arrangements. 4,082,963, Cl. 307-221.00D.
Hoffmann-La Roche Inc.: *See—*
Grimmell, William Charles; Kaetzel, Gilbert Carl; Moran, John Milton; and Zanko, George Michael, 4,082,188, Cl. 209-73.000.
McGregor, Weldon Courtney; Newmark, Harold Leon; and Ramel, Armin Hermann, 4,082,737, Cl. 260-112.50R.
Hohmann, Kurt: *See—*
Mohr, Reinhard; Mundlos, Eberhard; and Hohmann, Kurt, 4,082,740, Cl. 260-146.00R.
Holden, Gordon Alan, to Crimpfil Limited. Production of bulky, continuous filament yarn. 4,081,887, Cl. 28-271.000.
Holderic, Jean: *See—*
Vrancken, August; Dufour, Paul; Noat, Jacques; and Holderic, Jean, 4,082,710, Cl. 260-23.0TN.
Hollowell, William M., to American Safety Equipment Corporation. Pawl seat back latch mechanism. 4,082,353, Cl. 297-379.000.
Holstein und Kappert Aktiengesellschaft: *See—*
Kurreck, Manfred, 4,082,492, Cl. 425-451.000.
Holt, Jan D.: *See—*
Hammonds, James C.; and Holt, Jan D., 4,082,043, Cl. 105-182.00R.
Holtz, Hans D.; Nelson, William T.; and Devault, Albert N., to Phillips Petroleum Company. Additives for motor fuels and lubricants. 4,082,518, Cl. 44-72.000.
Holznagel, Wilhelm: *See—*
Stephan, Bernd; Hund, Franz; and Holznagel, Wilhelm, 4,082,905, Cl. 428-538.000.
Honda, Yuitsu: *See—*
Ichikawa, Yataro; Sawaki, Toru; and Honda, Yuitsu, 4,082,804, Cl. 260-584.00R.
Honeywell Inc.: *See—*
Diddens, Paul A., 4,083,040, Cl. 340-248.00A.
Lapchak, Markian; and Curtis, Henry H., Jr., 4,082,449, Cl. 355-69.000.
Quinn, Peter T., 4,083,057, Cl. 354-25.000.
Hongu, Masayuki: *See—*
Hamada, Takeshi; Ishigaki, Yoshio; and Hongu, Masayuki, 4,083,019, Cl. 331-113.00R.
Honig, Helmut. Measuring arrangement. 4,082,642, Cl. 204-299.0EC.
Hooker Chemicals & Plastics Corporation: *See—*
Dannels, Bobby F., 4,082,712, Cl. 260-28.00R.
Houston, James E.; Gingrich, Reynard W.; and Schilt, Earl A., 4,082,606, Cl. 159-27.00B.
Hoover Ball and Bearing Company: *See—*
Mandusky, Jack C., 4,082,256, Cl. 267-81.000.
Hori, Sankichi: *See—*
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,082,252, Cl. 266-142.000.
Horn, Charles F.; Lerch, Arthur L.; Turckes, Raymond J.; and Nagel, Ronald P., to Vulcan Tool Company, The. Tube cutting apparatus. 4,082,022, Cl. 83-82.000.
Hornbeck, Donald W.; and O'Loughlin, James P., to United States of America, Army. High voltage pulser. 4,082,965, Cl. 307-260.000.
Horne, Monroe D. Non-polluting tar kettle assembly. 4,082,083, Cl. 126-343.50A.
Hornle, Reinold: *See—*
Nonn, Konrad; Wolf, Karlheinz; and Hornle, Reinold, 4,082,505, Cl. 8-85.00R.
Hoshi, Hideaki: *See—*
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,082.912, Cl. 544-26.000.
Hoshijima, Tokitaro: *See—*
Yamawaki, Takeshi; Hoshijima, Tokitaro; and Mizushima, Kiyoshi, 4,081,994, Cl. 73-95.000.
Houdaille Industries, Inc.: *See—*
Mossner, William Arno; and Mueller, Gerald Edwin, 4,082,472, Cl. 408-57.000.
House, Robert E.; Irvin, Robert A.; and Kane, Daniel F., to Semicon, Inc. High intensity solar energy converter. 4,082,570, Cl. 136-89.0SJ.
Houston, James E.; Gingrich, Reynard W.; and Schilt, Earl A., to Hooker Chemicals & Plastics Corporation. Evaporation apparatus. 4,082,606, Cl. 159-27.00B.
Howag AG: *See—*
Groninger, Markus, 4,083,030, Cl. 338-35.000.
Howmedica, Inc.: *See—*
Upshaw, Jackson E.; and Meisch, Charles Edward, 4,081,866, Cl. 3-1.911.
Howson, David C., to Isis Medical Instruments. Body contact electrode structure for deriving electrical signals due to physiological activity. 4,082,087, Cl. 128-2.06E.
Hradcovsky, Rudolf. Process for forming a silicate coating on metal. 4,082,626, Cl. 204-56.00R.
Hsu, Ying-Yen, to Suncrux Incorporated. Liquid crystal composition and method. 4,082,428, Cl. 350-350.000.
Huang, Kwang Ta: *See—*
Liu, Francis C.; and Huang, Kwang Ta, 4,081,962, Cl. 60-501.000.
Huber, John C.: *See—*
Ward, Joseph E., III; and Huber, John C., 4,082,429, Cl. 350-162.0SF.
Hudson, James M.: *See—*
Niswender, Gordon Dean; and Hudson, James M., 4,082,738, Cl. 260-121.000.
Hufford, James N., to CTS Corporation. Rotary switch. 4,082,925, Cl. 200-11.00G.
Hug, Josef H. Bicycle-training apparatus. 4,082,308, Cl. 280-296.000.
Hughes Aircraft Company: *See—*
Sun, Tsu-Hung; and Basiulis, Algerd, 4,082,109, Cl. 137-340.000.
Hughes, James L. Flower decoration. 4,082,872, Cl. 428-24.000.
Hughes, Robert S., to Erecto-Pat Company. System and apparatus for interconnecting structural members, and method of utilizing same. 4,081,940, Cl. 52-712.000.
Hughes Tool Company: *See—*
Finney, James L., 4,082,151, Cl. 173-119.000.
Whitworth, Billie J., 4,082,152, Cl. 173-119.000.
Hull, James R. Article of furniture. 4,081,868, Cl. 5-12.00R.
Hummert, George T.: *See—*
Sackin, Milton; and Hummert, George T., 4,082,164, Cl. 187-29.00R.
Humphrey, Norman J. Advertising folder. 4,081,921, Cl. 40-120.000.

Hund, Franz: *See—*
Stephan, Bernd; Hund, Franz; and Holznagel, Wilhelm, 4,082,905, Cl. 428-538.000.
Hunger, Klaus; and Weber, Dieter, to Hoechst Aktiengesellschaft. Disazo pigments derived from 3,8-diamino-phenanthridone-(10). 4,082,741, Cl. 260-154.000.
Hunter, Donald Noel, to U.S. Philips Corporation. Light-sensitive polymeric compounds. 4,082,556, Cl. 96-115.00R.
Hunter, John P., Jr.: *See—*
Patterson, Thomas K.; Mitchell, William O.; Smith, Donald H.; and Hunter, John P., Jr., 4,082,589, Cl. 156-98.000.
Hurd, Claude Calvert: *See—*
Fry, Stanley Eugene; and Hurd, Claude Calvert, 4,082,093, Cl. 128-142.200.
Hurt, William C., II; Miers, Bruce W.; and Mossner, Eugene O. Resiliently mounted cab-sidewall retainer. 4,082,343, Cl. 296-28.00C.
Huseby, Irvin C.: *See—*
Arendt, Ronald H.; Borom, Marcus P.; Huseby, Irvin C.; and Klug, Frederic J., 4,082,566, Cl. 134-2.000.
Hutai, Hubert; Klie, Wolfgang; and Weisshappel, Helmut, to Daimler-Benz Aktiengesellschaft. Shock absorber fashioned as an elastomeric hollow spring. 4,082,338, Cl. 293-85.000.
Hutchings, Le Roi E.; and Sahlin, Thomas E., to UOP Inc. Simultaneous and continuous hydrocracking production of maximum distillate and optimum lube oil base stock. 4,082,647, Cl. 208-78.000.
Hydril Company: *See—*
Wolff, Danny K.; Mott, James D.; and Colvin, Kenneth W., 4,082,147, Cl. 166-314.000.
Hydro-Quebec: *See—*
Dancy, Edna A.; and Vansant, James H., 4,082,863, Cl. 427-181.000.
Iannucci, Anthony. Bolster for physical therapy. 4,081,870, Cl. 5-340.000.
Ichikawa, Kiyoshi: *See—*
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Ishii, Shigeki, 4,082,027, Cl. 84-1.010.
Ichikawa, Yataro; Sawaki, Toru; and Honda, Yuitsu, to Teijin Limited. Process for preparing 2-amino-1-butanol by reaction of the tartarate with an alkaline earth metal compound. 4,082,804, Cl. 260-584.00R.
Idel, Vladimir Viktorovich. Wheelhead. 4,082,014, Cl. 76-43.000.
IEC Electronics Corporation: *See—*
Day, Willis E.; Danford, Glenn S.; and Johnson, Kenneth C., 4,082,919, Cl. 179-2.0EA.
Iga, Tadasu: *See—*
Nakagawa, Masataka; Iga, Tadasu; and Fukura, Akira, 4,082,802, Cl. 260-574.000.
Iida, Norihika; and Gobaru, Shigeto, to National Marineplastic Co., Ltd. Process for manufacturing a flexible cylindrical body. 4,082,590, Cl. 156-144.000.
Iijima, Sigeru, to NGK Spark Plug Co., Ltd. Process for producing highly ion-conductive porcelain. 4,082,826, Cl. 264-65.000.
Iimura, Seiji: *See—*
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,082,912, Cl. 544-26.000.
Ikeda, Masao; Miyamoto, Shigeo; Nozawa, Thutomu; Kurobe, Akira; and Futsukaichi, Osamu, to Nihon Iyakuhin Kogyo Co., Ltd. 4-Benzazonine derivatives and process for preparation thereof. 4,082,744, Cl. 260-239.0BB.
Ikeda, Takatoshi: *See—*
Ouchi, Yoshio; and Ikeda, Takatoshi, 4,083,053, Cl. 346-75.000.
Illinois Tool Works, Inc.: *See—*
Erickson, Lloyd A., 4,082,030, Cl. 85-80.000.
Illman, Walter F.: *See—*
Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., 4,082,883, Cl. 428-253.000.
Imaizumi, Fumitake; Nagaoka, Isao; Kurokawa, Mitsuo; and Komatsu, Koei, to Japan Synthetic Rubber Co., Ltd. Process for producing maleic anhydride adduct of high molecular weight 1,2-polybutadiene. 4,082,817, Cl. 260-879.000.
IMC Chemical Group, Inc.: *See—*
Frump, John Adams, 4,082,892, Cl. 428-332.000.
Imhof, Hugo, to S.A.F. Societe Agricole et Fonciere S.A. Process for making extruded cattle manure pellets. 4,082,532, Cl. 71-8.000.
Immunology Research Foundation, Inc.: *See—*
Burton, Lawrence; and Friedman, Frank, 4,082,732, Cl. 260-112.00B.
Burton, Lawrence; and Friedman, Frank, 4,082,733, Cl. 260-112.00B.
Imperial Chemical Industries Limited: *See—*
Burton, Arthur; and Reed, David Robert, 4,082,890, Cl. 428-328.000.
Cotton, Neil Trevor, 4,082,611, Cl. 195-28.00R.
Henman, Terence John; and Williams, Graham, 4,082,720, Cl. 260-42.150.
Hewertson, Warren, 4,082,724, Cl. 260-45.75B.
Kay, Ian Trevor, 4,082,536, Cl. 71-93.000.
Marshall, Clifford, 4,082,508, Cl. 8-139.100.
Imperial-Eastman Corporation: *See—*
Hiszpanski, Jan A., 4,082,471, Cl. 404-133.000.
Imperial Oil Limited: *See—*
Flynn, Peter Charles, 4,082,646, Cl. 208-11.00R.
Inamorato, Jack Thomas; and Saimen, Leo Augustus, to Colgate-Palmolive Company. Detergent composition containing distinctive, colored, non-staining soap particles. 4,082,682, Cl. 252-92.000.
Inokuma, Shun: *See—*
Yamahara, Takeshi; and Inokuma, Shun, 4,082,767, Cl. 260-326.14T.
Inoue, Tadanari: *See—*
Tada, Osamu; Nakagawa, Mutsuaki; Mori, Hiroshi; Wakasa, Yutaka; Kataoka, Koju; Inoue, Tadanari; and Uchiike, Hisayuki, 4,082,942, Cl. 364-111.000.
Institut de Recherches de la Siderurgie Francaise (IRSID): *See—*
Didier, Alain; and Letailleur, Jean-Luc, 4,082,541, Cl. 75-5.000.
Institut National des Radio-elements - Nationaal Instituut voor Radio-elementen, en abrege: "I.R.E.": *See—*
Depoitier, Jacques; and Vinchent, Romain, 4,082,952, Cl. 250-381.000.
Instytut Przemyslu Mleczarskiego: *See—*
Szadkowska, Maria; Pisarek, Jerzy; Dzik, Boleslaw; Staniak, Elzbieta; Lipniewska, Danuta; and Bijok, Franciszek, 4,082,853, Cl. 426-36.000.
International Business Machines Corporation: *See—*
Barkhuff, Earl D., 4,082,399, Cl. 339-75.00M.
Baumberger, John G.; Gazy, Michael A.; and Miller, William C., 4,082,263, Cl. 271-266.000.
DiStefano, Thomas Herman, 4,082,889, Cl. 428-328.000.
Engler, Edward Martin; Kaufman, Frank Benjamin; and Scott, Bruce Albert, 4,082,552, Cl. 96-38.400.
Gedney, Ronald Walker; and Rodite, Robert Richard, 4,082,394, Cl. 339-17.00M.
Lahiri, Syamal K., 4,083,029, Cl. 338-32.00S.
Miller, Lewis F., 4,081,901, Cl. 29-630.00R.
van de Goor, Adrianus Johannes; Pijlman, Hans; and van der Vleugel, Bernard Evert, 4,082,945, Cl. 235-419.000.
International Harvester Company: *See—*
Jennings, Marvin D.; and Schmidgall, Rolf E., 4,081,996, Cl. 73-141.00A.
International Minerals & Chemical Corporation: *See—*
Zachary, William A., 4,082,134, Cl. 164-157.000.
International Nickel Company, Inc., The: *See—*
Crosby, Jeffrey Norman, 4,082,625, Cl. 204-47.000.
Whittle, John Edward, 4,082,632, Cl. 204-129.650.
International Shoe Machine Corporation: *See—*
Vornberger, Walter; and Vornberger, Karl F., 4,082,060, Cl. 118-411.000.
International Standard Electric Corporation: *See—*
Thompson, George Horace Brooke; and Lovelace, David Francis, 4,082,419, Cl. 350-96.120.
International Telephone and Telegraph Corporation: *See—*
Levine, Arnold M., 4,083,007, Cl. 325-159.000.
Portnoy, Norman A.; and Anderson, David Paul, 4,082,617, Cl. 203-28.000.
InterRoyal Corporation: *See—*
Bennice, Richard L., 4,083,041, Cl. 340-255.000.
Intra-Pipe, Inc.: *See—*
Jones, Garnett E., 4,081,930, Cl. 51-411.000.
Invacare Corporation: *See—*
Haury, Gilbert E., 4,082,348, Cl. 297-45.000.
Iowa State University Research Foundation, Inc.: *See—*
Anderson, Clifton W.; Kubik, John J.; Pollock, Tom G.; Schlict, Larry J.; and Wilcox, Craig R., 4,082,198, Cl. 214-519.000.
IRI-E Kosan Corporation: *See—*
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,082,252, Cl. 266-142.000.
Irvin Bros. (Fleet Works) Limited: *See—*
Hadden-Wight, Roger; and Johnson, Colin Stanley, 4,082,593, Cl. 156-230.000.
Irvin, Robert A.: *See—*
House, Robert E.; Irvin, Robert A.; and Kane, Daniel F., 4,082,570, Cl. 136-89.0SJ.
Ishigaki, Yoshio: *See—*
Hamada, Takeshi; Ishigaki, Yoshio; and Hongu, Masayuki, 4,083,019, Cl. 331-113.00R.
Ishii, Shigeki: *See—*
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Ishii, Shigeki, 4,082,027, Cl. 84-1.010.
Ishii, Susumu; and Suzuki, Tuneo, to Yoshida Kogyo K.K. Locking slider for sliding clasp fasteners. 4,081,883, Cl. 24-205.14R.
Ishino, Ken: *See—*
Otoshi, Yutaka; and Ishino, Ken, 4,082,560, Cl. 106-45.000.
Isis Medical Instruments: *See—*
Howson, David C., 4,082,087, Cl. 128-2.06E.
Istituto di Ricerca Finsider per la Riduzione Diretta S.p.A.: *See—*
Malgarini, Giansilvio; Pasero, Edoardo; Alitta, Giorgio; De Candida, Cristiano; and Raggio, Carlo, 4,082,545, Cl. 75-35.000.
Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich. Cathode assembly of electron beam welding gun. 4,082,937, Cl. 219-121.0EB.
Itagaki, Takuo: *See—*
Nishikawa, Yukiyasu; and Itagaki, Takuo, 4,083,055, Cl. 354-23.00D.
Italchemi S.p.A. Istituto Chimico Farmaceutico: *See—*
Benigni, Fulvio; and Trevisan, Lucio, 4,082,760, Cl. 260-307.0FA.
Italimpianti S.p.A.: *See—*
Malgarini, Giansilvio; Pasero, Edoardo; Alitta, Giorgio; De Candida, Cristiano; and Raggio, Carlo, 4,082,545, Cl. 75-35.000.
Itaya, Akio: *See—*
Ueno, Tadayoshi; and Itaya, Akio, 4,082,038, Cl. 101-425.000.

Ito, Kaoru: *See—*
Sasaki, Minoru; Hida, Yukihiro; Enokido, Tsuneo; and Ito, Kaoru, 4,082,540, Cl. 75-3.000.

Itoi, Hidenobu: *See—*
Ando, Teiichi; and Itoi, Hidenobu, 4,082,718, Cl. 260-33.40R.

Ivanenko, Alexandr Fedorovich: *See—*
Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,082,937, Cl. 219-121.0EB.

Ivey, Hollis L. Mobile radio security device. 4,081,978, Cl. 70-58.000.

Iwamura, Junichi: *See—*
Morita, Toyoshige; Fujita, Isamu; and Iwamura, Junichi, 4,082,858, Cl. 426-597.000.

Iwata, Hiroshi, to West Electric Company, Ltd. Electric flash device with printed coil transformer. 4,082,984, Cl. 315-241.00P.

Iwata, Hiroshi; and Tsuzuki, Yu, to West Electric Company, Ltd. Flash and camera apparatus having a plurality of flash and daylight operation modes. 4,083,058, Cl. 354-128.000.

Iwersen, Gunter. Machine for identifying and counting coins or the like. 4,082,099, Cl. 133-3.00R.

Iyoda, Jun: *See—*
Nagata, Akira; and Iyoda, Jun, 4,082,727, Cl. 260-46.50G.

Izu, Masatsuga; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Continuous tone imaging film. 4,082,861, Cl. 427-56.000.

Jacuzzi Bros., Inc.: *See—*
Raab, Alfred, 4,082,091, Cl. 128-66.000.

Jaffe, Wolfgang; and Lukawich, Joseph James, to Singer Company, The. Knitting machine carriage with hall effect detecting means. 4,081,974, Cl. 66-75.200.

Jaklic, Albin, Jr.; and Stephens, Donald S., to Westinghouse Electric Corporation. Encapsulated electrical inductive apparatus. 4,082,916, Cl. 174-52.0PE.

Janssen Pharmaceutica N.V.: *See—*
van Wijngaarden, Ineke; Soudijn, Willem; Vandenberk, Jan; and Hens, Jozef Fr., 4,082,755, Cl. 260-293.600.

Janubetz, Joseph J.: *See—*
Boni, Richard R.; and Janubetz, Joseph J., 4,081,900, Cl. 29-624.000.

Japan Gasoline Co., Ltd.: *See—*
Ohtsu, Takao; Nakamura, Yukinobu; and Sugimoto, Akira, 4,082,997, Cl. 324-65.00R.

Japan Synthetic Rubber Co., Ltd.: *See—*
Imaizumi, Fumitake; Nagaoka, Isao; Kurokawa, Mitsuo; and Komatsu, Koei, 4,082,817, Cl. 260-879.000.

Jardin, Hans, to Webasto-Werk W. Baier GmbH & Co. Sunroof. 4,081,926, Cl. 49-210.000.

Jarvis, George A.: *See—*
Marfatia, Anil C.; and Jarvis, George A., 4,082,077, Cl. 126-197.000.

Jaworski, Eugene: *See—*
Breslow, Jeffrey D.; and Jaworski, Eugene, 4,082,268, Cl. 273-1.00R.

Jenkins, David Henry, to Eagle Engineering Company Limited, The. Handling fluent media. 4,082,124, Cl. 141-65.000.

Jennings, John N. Board game apparatus. 4,082,284, Cl. 273-251.000.

Jennings, Marvin D.; and Schmidgall, Rolf E., to International Harvester Company. Force-measuring devices. 4,081,996, Cl. 73-141.00A.

Jensen, Gerald A.; Harvey, Ronald B.; Caulfield, Patrick J.; Putzke, Dwayne H.; and Strunc, Gerald R., to Pako Corporaton. Method and apparatus for read and print data. 4,082,943, Cl. 235-303.100.

Jochum, Peter: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; Zahler, Wolf-Dieter; and Grimm-Lenz, Rainer, 4,082,722, Cl. 260-42.430.

Joh, Yasushi. Hollow fiber permeability apparatus. 4,082,670, Cl. 210-195.00R.

Johannaber, Friedrich: *See—*
Brinkschroder, Franz-Jurgen; Sandquist, Axel; and Johannaber, Friedrich, 4,082,488, Cl. 425-204.000.

Johannisson, Maj-Britt, heir-at-law: *See—*
Johannisson, Tor Gustav Alberto, deceased; and Johannisson, Tom, heir-at-law, 4,082,261, Cl. 271-69.000.

Johannisson, Tom, heir-at-law: *See—*
Johannisson, Tor Gustav Alberto, deceased; and Johannisson, Tom, heir-at-law, 4,082,261, Cl. 271-69.000.

Johannisson, Tor Gustav Alberto, deceased (by Johannisson, Maj-Britt, heir-at-law); and by Johannisson, Tom, heir-at-law, to Flodins Industri AB. Machine for the manufacture of objects of sheet shape. 4,082,261, Cl. 271-69.000.

Johannson, Richard James: *See—*
Friesen, Larry Dean; and Johannson, Richard James, 4,082,199, Cl. 214-672.000.

John E. Mitchell Company: *See—*
Blackburn, James R.; Smith, Dudley C.; Smith, Theo B., Jr.; and Morgan, Jerry N., 4,082,142, Cl. 165-76.000.

Johner, Michel: *See—*
Gerber, Hermann; and Johner, Michel, 4,082,972, Cl. 310-162.000.

Johns-Manville Corporation: *See—*
Wise, Harry Honon, 4,081,935, Cl. 52-236.800.

Johnson, Colin Stanley: *See—*
Hadden-Wight, Roger; and Johnson, Colin Stanley, 4,082,593, Cl. 156-230.000.

Johnson, Curtis L. Continuous adjusting scaffold. 4,082,161, Cl. 182-82.000.

Johnson, Elias J. Double fish pole jigger. 4,081,922, Cl. 43-19.200.

Johnson & Johnson: *See—*
Beede, Charles H.; and Blumig, Theodore, 4,082,705, Cl. 260-4.00R.
Butterworth, George A. M.; and Elias, Robert T., 4,082,886, Cl. 428-284.000.
Zeitz, Vernon, 4,082,435, Cl. 350-269.000.

Johnson, Karin Ruth. Educational puzzle chair. 4,082,356, Cl. 297-442.000.

Johnson, Kenneth C.: *See—*
Day, Willis E.; Danford, Glenn S.; and Johnson, Kenneth C., 4,082,919, Cl. 179-2.0EA.

Johnson, Kenneth R., to Rexham Corporation. Machine and method for filling, introducing steam into, and sealing flexible pouches. 4,081,942, Cl. 53-22.00B.

Johnson, Lennart B. Cross country ski binding. 4,082,312, Cl. 280-615.000.

Johnson, Lloyd E. Sealing in fuel injection pumps. 4,082,072, Cl. 123-139.0AA.

Johnson, Manuel J. Chain secured cigarette lighter. 4,082,496, Cl. 431-343.000.

Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., to Phillips Petroleum Company. Acyclic monoolefin double-bond isomerization using a nonacidic supported nickel, iron or cobalt catalyst with either antimony or arsenic. 4,082,815, Cl. 260-683.200.

Johnson, Robert Lincoln, Jr., to Neotec Corporation. Optical analysis system having rotating filters. 4,082,464, Cl. 356-188.000.

Johst, Wolfgang; Friese, Axel; and Simon, Stefan, to Dr. Carl Hahn, GmbH. Method for making dimensionally stable articles. 4,081,884, Cl. 28-119.000.

Jolley, Michael Ralph John: *See—*
Evans, Delme; Jolley, Michael Ralph John; Ross, William James; and Swann, Brian Picton, 4,082,771, Cl. 260-332.20R.

Jones, Charles L.; and Aradio, Dominic, to Continental Water Conditioning Corporation. End point quality control light circuit. 4,082,666, Cl. 210-93.000.

Jones, Donald H., to Contraves-Goerz Corporation. Speed detector for use on a dc motor. 4,082,968, Cl. 310-68.00B.

Jones, Garnett E., to Intra-Pipe, Inc. Arrangement for cleaning a conduit. 4,081,930, Cl. 51-411.000.

Jones, George F.; and Leliaert, Raymond M., to Wheelabrator-Frye, Inc. Vibratory mill with drainage and classifying means. 4,081,929, Cl. 51-163.200.

Jones, Gordon H.; Moffatt, John G.; and Nestor, John J., Jr., to Syntex (U.S.A.) Inc. Novel immunological adjuvant compounds and methods of preparation thereof. 4,082,735, Cl. 260-112.50R.

Jones, Gordon H.; Moffatt, John G.; and Nestor, John J., Jr., to Syntex (U.S.A.) Inc. Novel immunological adjuvant compounds and methods of preparation thereof. 4,082,736, Cl. 260-112.50R.

Jones, Oscar F. Engine vent vapor filter and method of constructing same. 4,082,071, Cl. 123-119.00B.

Jones, Robert L., to University of Edinburgh, The University Court of the. Prostaglandins C_2. 4,082,789, Cl. 560-121.000.

Jones, Stanley Peter; and Watson, William Ferguson, to Emhart Limited. Method for transferring heat from a glass mold. 4,082,527, Cl. 65-83.000.

Jorkasky, Richard J., II: *See—*
Li, George S.; and Jorkasky, Richard J., II, 4,082,820, Cl. 260-879.000.

Josenhans, Frederick G. Billiard banking aid. 4,082,270, Cl. 273-2.000.

Jost, Max; and Wick, Arnold, to Ciba-Geigy Corporation. Arylaminoanthraquinones. 4,082,778, Cl. 260-378.000.

Jovanovic, Dragomir. Autoclave. 4,082,510, Cl. 21-96.000.

Juby, Peter Frederick; and Partyka, Richard Anthony, to Bristol-Myers Company. Therapeutic agents. 4,082,751, Cl. 260-256.40C.

Jumer, John F. Apparatus for incremental electro-processing of large areas. 4,082,638, Cl. 204-213.000.

Jung, Rolf, to Krauss u. Reichert, Spezialmaschinenfabrik GmbH & Co. Horizontal splitting apparatus. 4,082,021, Cl. 83-4.000.

Jurd, Leonard, to United States of America, Agriculture. Growth inhibitors for mosquito larvae. 4,082,814, Cl. 260-619.00R.

Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, to Automated Building Components, Inc. Methods for forming wooden joints. 4,081,893, Cl. 29-432.000.

Justice, James Conley; and Delli-Gatti, Frank A., Jr., to Coaltex, Inc. Apparatus for coal mining in-cutting and out-cutting. 4,082,362, Cl. 299-57.000.

Kabushiki Kaisha Elco International: *See—*
Tanaka, Michiaki; and Nonaka, Yoshimasa, 4,082,397, Cl. 339-49.00R.

Kabushiki Kaisha Ka-Pu: *See—*
Hayashi, Tadaaki; and Nakahara, Teruto, 4,082,434, Cl. 350-225.000.

Kabushiki Kaisha Ricoh: *See—*
Suzuki, Akira; Kubo, Keiji; Kunitake, Suguru; and Arai, Fumiaki, 4,082,902, Cl. 428-457.000.

Kachan, Mikhail Samuilovich: *See—*
Minin, Vladilen Fedorovich; Gambarov, Vitaly Stepanovich; Kachan, Mikhail Samuilovich; Okladnikov, Vladlen Alexeevich; Troinin, Boris Leonidovich; and Trishin, Jury Alexeevich, 4,081,982, Cl. 72-56.000.

Kaeding, W. W., to Mobil Oil Corporation. Production of aliphatic amines utilizing a crystalline aluminosilicate catalyst of ZSM-5, ZSM-11 or ZSM-21. 4,082,805, Cl. 260-585.00B.

Kaetzel, Gilbert Carl: *See—*
Grimmell, William Charles; Kaetzel, Gilbert Carl; Moran, John Milton; and Zanko, George Michael, 4,082,188, Cl. 209-73.000.

Kaido, Hiroyuki: *See—*
Sugiyama, Yuichi; Kaido, Hiroyuki; and Koyama, Tsuneo, 4,082,909, Cl. 526-4.000.

Kajimura, Hiroyuki: *See—*
Arai, Tatsuo; Hirano, Hironori; Kajimura, Hiroyuki; and Matsui, Masayuki, 4,082,132, Cl. 152-361.00R.

Kako, Yuji: *See—*
Aoki, Takao; Kako, Yuji; Kikuga, Toyoji; and Hatano, Keizo, 4,082,661, Cl. 210-40.000.

Kaloi, Cyril M., to United States of America, Navy. Electric monomicrostrip dipole antennas. 4,083,046, Cl. 343-700.0MS.

Kamachi, Hajime: *See—*
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,082,912, Cl. 544-26.000.

Kameda, Nobuyuki; Hisada, Yoshio; Kato, Toshiro; and Fujinami, Akira, to Sumitomo Chemical Company, Limited. Halogenated N-(3,5-dihalophenyl)cyclopropanedicarboximides. 4,082,849, Cl. 424-274.000.

Kamiya, Hiroyuki; Takahashi, Ken; Watanabe, Seiji; and Kanazawa, Tomohisa, to Hitachi, Ltd. Method and apparatus for connecting leads of a rotor. 4,082,406, Cl. 339-112.00L.

Kammerer, Leo P.: *See—*
Fabian, Gordon R.; McCollum, James H.; and Kammerer, Leo P., 4,082,238, Cl. 244-17.130.

Kamyr Inc.: *See—*
Funk, Erwin D., 4,082,368, Cl. 302-14.000.

Kanazawa, Tomohisa: *See—*
Kamiya, Hiroyuki; Takahashi, Ken; Watanabe, Seiji; and Kanazawa, Tomohisa, 4,082,406, Cl. 339-112.00L.

Kane, Daniel F.: *See—*
House, Robert E.; Irvin, Robert A.; and Kane, Daniel F., 4,082,570, Cl. 136-89.0SJ.

Kano, Fumio: *See—*
Yamada, Muneki; Hirata, Sadao; Kishimoto, Akira; Hirata, Shunsaku; Suzuki, Toru; and Kano, Fumio, 4,082,854, Cl. 426-106.000.

Kanotz, William Michael; Lockhart, William Robert; Piper, George Francis; Vesperman, William Charles; and Wilson, Max Kearns, to Western Electric Company, Inc. Insulating tinsel conductors. 4,082,585, Cl. 156-51.000.

Kanow, Willy, to Loewe-Opta GmbH. Automatic function setting and indication arrangement for a communications receiver. 4,083,012, Cl. 325-455.000.

Kao, Ming-Luh: *See—*
Kushin, George Raymond; and Kao, Ming-Luh, 4,083,042, Cl. 340-324.00M.

Kaplan, Paul. Marker and vaporizable dispersible dye inks and process for using same. 4,082,467, Cl. 401-199.000.

Katagi Coseikagaku Kabushiki Kaisha: *See—*
Katagi, Fusao, 4,082,598, Cl. 156-463.000.

Katagi, Fusao, to Katagi Coseikagaku Kabushiki Kaisha. Apparatus for manufacturing an untwisted synthetic resin string. 4,082,598, Cl. 156-463.000.

Kataoka, Koju: *See—*
Tada, Osamu; Nakagawa, Mutsuaki; Mori, Hiroshi; Wakasa, Yutaka; Kataoka, Koju; Inoue, Tadanari; and Uchiike, Hisayuki, 4,082,942, Cl. 364-111.000.

Kato, Toshiro: *See—*
Kameda, Nobuyuki; Hisada, Yoshio; Kato, Toshiro; and Fujinami, Akira, 4,082,849, Cl. 424-274.000.

Katz, Rodney S.: *See—*
Glista, Andrew S.; and Katz, Rodney S., 4,082,423, Cl. 350-96.230.

Katzen, Sol. Conversion of cellulose and lignin organic waste material into a more digestible and manageable form. 4,082,859, Cl. 426-636.000.

Kaufman, Frank Benjamin: *See—*
Engler, Edward Martin; Kaufman, Frank Benjamin; and Scott, Bruce Albert, 4,082,552, Cl. 96-38.400.

Kawaguchi, Hiroshi: *See—*
Nakamura, Hiroyuki; Kawaguchi, Hiroshi; and Nishiwaki, Kiyoshi, 4,083,032, Cl. 340-71.000.

Kawakami, Sumio: *See—*
Ohuchi, Hirobumi; Kawakami, Sumio; and Okamura, Masahiro, 4,083,062, Cl. 357-13.000.

Kawakami, Takamasa: *See—*
Saito, Masao; Onozawa, Mamoru; Sasagawa, Kaoru; and Kawakami, Takamasa, 4,082,786, Cl. 260-465.00C.

Kay, Ian Trevor, to Imperial Chemical Industries Limited. Heterocyclic compounds and their use as pesticides. 4,082,536, Cl. 71-93.000.

Keeler Corporation: *See—*
Watt, William Doyle, Jr.; and Flowerday, Dale L., 4,082,243, Cl. 248-205.00R.

Keene Corporation: *See—*
Haack, William M., 4,082,640, Cl. 204-279.000.

Keeney, Joseph G., to C. H. Heist Corporation. Pressure relief valve. 4,082,104, Cl. 137-71.000.

Keiper KG: *See—*
Kluting, Bernd, 4,082,008, Cl. 74-531.000.

Keller, Alex J.; Dellinger, Keith Sidney; Ray, James Lester, Jr.; Cherry, Thomas Adrian; and Fechner, Erhard A., to Automatic Material Handling, Inc. Doffer with pneumatic control system. 4,081,949, Cl. 57-53.000.

Keller, Cornelius: *See—*
Berndt, Uwe; Erdmann, Bernhard; and Keller, Cornelius, 4,082,547, Cl. 75-122.700.

Kelley, Bruce G.: *See—*
Beggs, Donald; and Kelley, Bruce G., 4,082,543, Cl. 75-11.000.

Kelley, Clifford Herrol, Jr.: *See—*
Zangrando, Donald Roy; and Kelley, Clifford Herrol, Jr., 4,083,016, Cl. 331-56.000.

Kelley Company, Inc.: *See—*
Artzberger, Thomas G., 4,081,874, Cl. 14-71.700.

Kelley, Russell D., to Mead Corporation, The. Production of a color developing record sheet containing metal-modified novolak resin particles. 4,082,713, Cl. 260-29.300.

Kellner, Jackson M., to Smith International, Inc. Tandem roller stabilizer for earth boring apparatus. 4,082,373, Cl. 308-4.00A.

Kelly, Donald A. Magnetic torque converter. 4,082,969, Cl. 310-103.000.

Kelly, Earl M., to Envirotech Corporation. Sludge thickening apparatus. 4,082,671, Cl. 210-195.00S.

Kelly, Joseph B., to PPG Industries, Inc. Apparatus for grinding a rabbet in an edge of a glass sheet. 4,081,927, Cl. 51-101.00R.

Kelly, Joseph B., to PPG Industries, Inc. Glass bending press with offset hinges. 4,082,529, Cl. 65-273.000.

Kelly, Robert C.; and Nelson, Norman A., to Upjohn Company, The. 6-Alkoxy-4α-hydroxy-2β-tetrahydropyranacetic acid γ-lactones. 4,082,776, Cl. 260-343.600.

Kendall, Ernest G.; and Pepper, Roger T., to Fiber Materials, Inc. Reinforced metal matrix composite. 4,082,864, Cl. 427-248.00B.

Kendrena, Carl M. Ski-sled. 4,082,304, Cl. 280-12.0KL.

Kennecott Copper Corporation: *See—*
George, David B., 4,082,542, Cl. 75-5.000.

Kennedy, John M.; and Kennedy, William R. Door for a mine stopping. 4,082,331, Cl. 292-228.000.

Kennedy, William R.: *See—*
Kennedy, John M.; and Kennedy, William R., 4,082,331, Cl. 292-228.000.

Kent, Harry James; and Pietrusza, Arthur Jacob, to Dravo Corporation. Pivot arrangement for a rotary drum assembly. 4,082,489, Cl. 425-222.000.

Kepets, Peter. Processing printed circuit boards. 4,082,605, Cl. 156-656.000.

Kessler, Henry A.; and Ying, Phyllis, to Warner-Lambert Company. Cure material from liquid polythiopolymercaptan polymers for dental impression taking. 4,082,693, Cl. 252-430.000.

Kesten, Stephen J.: *See—*
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,082,757, Cl. 260-294.80C.

Keydell, Willi; and Binder, Herbert, to Carl Zeiss-Stiftung. Binocular barrel with adjustable interpupillary distance and target marker support. 4,082,418, Cl. 350-10.000.

Khotin, Vladimir Alexeevich: *See—*
Bortnichuk, Nikolai Iosifovich; Davydov, Valery Pavlovich; Krutyansky, Mikhail Mironovich; Malinovsky, Vladimir Sergeevich; and Khotin, Vladimir Alexeevich, 4,082,914, Cl. 13-2.00P.

Khutoretsky, Garri Mikhailovich: *See—*
Azarov, Evgeny Mikhailovich; Andrushev, Valery Nikolaevich; and Khutoretsky, Garri Mikhailovich, 4,082,975, Cl. 310-239.000.

Kiely, William L.: *See—*
Pedersen, Kristen I.; and Kiely, William L., 4,081,872, Cl. 9-8.00P.

Kikuchi, Tatsuo: *See—*
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,082,628, Cl. 204-64.00T.

Kikuga, Toyoji: *See—*
Aoki, Takao; Kako, Yuji; Kikuga, Toyoji; and Hatano, Keizo, 4,082,661, Cl. 210-40.000.

Kinkaid, Robert John; and Asick, John Carl, to AMP Incorporated. Flat flexible cable terminal and electrical connection. 4,082,402, Cl. 339-97.00C.

Kinnebrew, Gerald P.; Watkins, Bobby Mack; and Texas Instruments Incorporated. Silicon slice carrier block and plug assembly. 4,081,928, Cl. 51-131.000.

Kirby, John A., to Eli Lilly and Company. Methylenedioxybenzene -- improved method of preparation. 4,082,774, Cl. 260-340.500.

Kirchmayr, Rudolf: *See—*
Schmidt, Andreas; and Kirchmayr, Rudolf, 4,082,821, Cl. 260-946.000.

Kirkpatrick, Allen R., to Simulation Physics, Inc. Apparatus involving pulsed electron beam processing of semiconductor devices. 4,082,958, Cl. 250-492.00B.

Kirkpatrick, Joel L., to Gulf Research & Development Co. Combating insects and mites with 1-carbamyl-4H-1,2,4-triazolin-5-ones and thiones. 4,082,765, Cl. 260-308.00C.

Kirsch, Wilhelm: *See—*
Boe, Hans; Hoehn, Ralf; Tecl, Bohuslav; and Kirsch, Wilhelm, 4,082,878, Cl. 428-195.000.

Kirschner, Robert Kay, to Sundstrand Data Control, Inc. Head-up visual display system using on-axis optics with image window at the focal plane of the collimating mirror. 4,082,432, Cl. 350-174.000.

Kishimoto, Akira: *See—*
Yamada, Muneki; Hirata, Sadao; Kishimoto, Akira; Hirata, Shunsaku; Suzuki, Toru; and Kano, Fumio, 4,082,854, Cl. 426-106.000.

Kitamura, Nobuo: *See—*
Morisaki, Shigeyoshi; and Kitamura, Nobuo, 4,082,591, Cl. 156-150.000.

Klara, Charles J.: *See—*
Clymer, Wilbur L.; and Klara, Charles J., 4,082,491, Cl. 425-440.000.

Klaus, Frank A.: *See—*
Kuder, Alfred W., 4,082,475, Cl. 408-125.000.

Klaus, Franz; and Potrykus, Franz Johann, to said Franz Klaus, by said Franz Johann Potrykus. Axial thrust sliding bearing for centrifugal pumps and compressors. 4,082,380, Cl. 308-163.000.

Klebanoff, Leonard, to Elkay Electronics Ltd. Condenser plate assembly. 4,083,038, Cl. 340-244.00R.

Kleemann, Willi; and Beck, Cyril G., to Westinghouse Electric Corporation. Highcreep-resistant cobalt-base alloy. 4,082,548, Cl. 75-171.000.

Kleen, Gerhard; Schiemann, Heinz; and Allmendinger, Karl. Arrangement with inductive voltage transformers. 4,083,026, Cl. 336-70.000.

Klein, Gunter: *See—*
Pfeifer, Friedrich; and Klein, Gunter, 4,082,580, Cl. 148-31.550.

Klein, Hans-Dieter: *See—*
Leonhardt, Joachim; and Klein, Hans-Dieter, 4,081,993, Cl. 73-88.00R.

Klie, Wolfgang: *See—*
Hutai, Hubert; Klie, Wolfgang; and Weisshappel, Helmut, 4,082,338, Cl. 293-85.000.

Kling-Tecs, Inc.: *See—*
Roberts, John S., 4,081,886, Cl. 28-251.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Heckmann, Wolfgang, 4,082,675, Cl. 210-360.00R.

Kloots, Jacobus, to Applied Fiberoptics, Inc. Strain-relieved fiberoptic cable. 4,082,422, Cl. 350-96.230.

Klug, Frederic J.: *See—*
Arendt, Ronald H.; Borom, Marcus P.; Huseby, Irvin C.; and Klug, Frederic J., 4,082,566, Cl. 134-2.000.

Kluger, Wolfgang; and Neumann, Jurgen, to Polysius AG. Base for a fine material container. 4,082,205, Cl. 222-193.000.

Kluting, Bernd, to Keiper KG. Positioning mechanism for automotive seat, window or similar part. 4,082,008, Cl. 74-531.000.

Knabusch, Edward M.; and Shoemaker, Edwin J., to La-Z-Boy Chair Company. Lockable back on a sofa bed. 4,082,355, Cl. 297-440.000.

Knight, John H.; St. Cyr, Lewis A.; and Wilson, Omer L., to Superior Oil Company, The. Recovery of hydrocarbon values by controlled eduction and oxidation of oil shale. 4,082,645, Cl. 208-11.00R.

Knop, Karl, to RCA Corporation. Zero-order diffractive subtractive filter projector. 4,082,438, Cl. 353-97.000.

Knop, Karl, to RCA Corporation. Fabrication of rectangular relief profiles in photoresist. 4,082,453, Cl. 355-88.000.

Knopka, William N., to Avtex Fibers Inc. Method for producing a high modulus polyester yarn. 4,082,731, Cl. 260-75.00T.

Knor, Bernhard: *See—*
Bickl, Horst; Treiber, Helmut; Findeis, Gunter; Knor, Bernhard; Payrhammer, Bernd; and Fergg, Berthold, 4,082,465, Cl. 356-203.000.

Knowles, Alvis R.; and Foster, Harold S., to Eldon Industries, Inc. Soldering iron with replaceable heating element and a grounded handle and components thereof. 4,082,940, Cl. 219-239.000.

Knuth, Everett F. Electrician's wire stripping tool. 4,081,871, Cl. 7-107.000.

Kobe, Inc.: *See—*
Erickson, John W.; and Petrie, Harold L., 4,082,482, Cl. 417-408.000.

Kobe Steel, Ltd.: *See—*
Shimogori, Kazutoshi; Sato, Hiroshi; and Tomari, Haruo, 4,082,900, Cl. 428-469.000.

Koch, Kevin Errol. Vehicle sun-shade. 4,081,937, Cl. 52-309.100.

Kocsanyi, Laszlo; and Varga, Lajos, to Heves Megyer Tanacsi Epitoipare Vallalat. Continuously charged pipe-chamber feeder provided with divided or intermediate chamber for hydraulic material handling. 4,082,367, Cl. 302-14.000.

Koenig, Harvey Steven; and Raines, Russell Harold, to Union Carbide Corporation. Printing formulations. 4,082,506, Cl. 8-91.000.

Koga, Tetsuaki, to Kokudo Doro Company Ltd. Method and apparatus of cleaning dust-containing gases. 4,082,522, Cl. 55-95.000.

Kohno, Hideki; Hashizume, Akihide; and Yamamoto, Shinji, to Hitachi, Ltd. Leukocyte detector. 4,082,457, Cl. 356-39.000.

Kok, Johannes George Jacobus; van Moorselaar, Rudolf; and Noordermeer, Aart, to U.S. Philips Corporation. 1,4-Bis(1-cyano-carbocyclic-unsaturater hydrocarbyl) dye compositions. 4,082,721, Cl. 260-42.210.

Kokudo Doro Company Ltd.: *See—*
Koga, Tetsuaki, 4,082,522, Cl. 55-95.000.

Kolaian, Jack H.; Patterson, John A.; and Ward, Frank K., to Texaco Inc. Method of preparing secondary alkylammonium 3-secondary alkylaminoalkanoates. 4,082,792, Cl. 260-501.110.

Kolleck, Floyd W., to United States of America, Energy. Holder for rotating glass body. 4,082,531, Cl. 65-296.000.

Komatsu, Koei: *See—*
Imaizumi, Fumitake; Nagaoka, Isao; Kurokawa, Mitsuo; and Komatsu, Koei, 4,082,817, Cl. 260-879.000.

Kominiak, Andrew A.: *See—*
Storck, Glenn E.; and Kominiak, Andrew A., 4,082,410, Cl. 339-252.00R.

Komuro, Takeo; Saito, Yukio; and Hirato, Mizuno, to Agency of Industrial Science & Technology, The. Thermal decomposition process and apparatus for organic solid materials. 4,082,615, Cl. 201-12.000.

Konars, Clement R.; and Quinci, Emanuel, to Halm Instrument Co., Inc. Feeder hopper for documents. 4,082,262, Cl. 271-149.000.

Kondratiev, Anatoly Dmitrievich: *See—*
Burgsdorf, Vladimir Vladimirovich; Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Mishin, Valery Vasilievich; Kuznetsov, Viktor Yakovlevich; and Kondratiev, Anatoly Dmitrievich, 4,082,962, Cl. 307-147.000.

Kopelev, Fridrikh Lvovich. Machine for precision boring operations. 4,082,476, Cl. 408-234.000.

Korn, Volker: *See—*
Franetzki, Manfred; Korn, Volker; and Prestele, Karl, 4,082,088, Cl. 128-2.080.

Kornat, Kazimierz F.: *See—*
Einchcombe, Kenneth C. G.; and Kornat, Kazimierz F., 4,082,167, Cl. 188-73.600.

Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. Penniclavine acetonide. 4,082,753, Cl. 260-285.500.

Kotlar, Daniel. Pendant, earring or piece of jewelry. 4,081,972, Cl. 63-31.000.

Kovacs, Louis A.: *See—*
Simmons, Frank B.; Bozsvai, Alex; Kovacs, Louis A.; and Gerbetz, Robert P., 4,082,381, Cl. 308-187.000.

Koyama, Tsuneo: *See—*
Sugiyama, Yuichi; Kaido, Hiroyuki; and Koyama, Tsuneo, 4,082,909, Cl. 526-4.000.

Kozhaev, Arkady Filippovich: *See—*
Shergov, Igor Vladimirovich; Slavinsky, Vladimir Danilovich; Fridlender, Lev Moiseevich; Zharinov, Valery Ivanovich; and Kozhaev, Arkady Filippovich, 4,082,938, Cl. 219-121.0EB.

Kozima, Yasuhiro, to Nihon Electronic Industry Co., Ltd. Splicing roller device for automatic paper splicing apparatus. 4,082,599, Cl. 156-504.000.

Kozuki, Naoto, to Caterpillar Mitsubishi Ltd. Noise reducing device for a track chain arrangement. 4,082,372, Cl. 305-57.000.

Krambrock, Wolfgang, to Waeschle Maschinenfabrik GmbH. Method and apparatus for charging bulk material to a plurality of receiving stations. 4,082,364, Cl. 302-28.000.

Krause, Hartmut; and Grassme, Ulrich, to Siemens Aktiengesellschaft. Dental X-ray diagnostic device. 4,082,953, Cl. 250-413.000.

Krauss u. Reichert, Spezialmaschinenfabrik GmbH & Co.: *See—*
Jung, Rolf, 4,082,021, Cl. 83-4.000.

Kreischer, Pieter Hubertus, to Lever Brothers Company. Liquid detergent. 4,082,684, Cl. 252-109.000.

Kristensson, Sten Krister: *See—*
Fex, Hans Jacob; Kristensson, Sten Krister; and Stamvik, Anders Robert, 4,082,779, Cl. 260-397.500.

Krob, Erwin; Weigl, Erwin; and Svoboda, Josef, to Gertsch AG. Safety ski binding. 4,082,315, Cl. 280-631.000.

Krohn, Duane D.; and Culbertson, Samuel W., to Binks Manufacturing Company. Roving cutter. 4,081,904, Cl. 30-128.000.

Krolak, Ronald L.; Cackley, George W.; Getz, Marvin G.; and Ritter, Arthur J., Jr., to Caterpillar Tractor Co. Drive mechanism having separable housing. 4,082,156, Cl. 180-9.620.

Kronogard, Sven-Olof, to United Turbine AB & Co. Compressor having two or more stages. 4,082,477, Cl. 415-120.000.

Krupinski, Kenneth C.: *See—*
Augustine, Harry G.; Krupinski, Kenneth C.; and Smith, Frank A., 4,082,823, Cl. 264-7.000.

Kruszecki, Steve. Battery cable connector. 4,082,401, Cl. 339-95.00B.

Krutyansky, Mikhail Mironovich: *See—*
Bortnichuk, Nikolai Iosifovich; Davydov, Valery Pavlovich; Krutyansky, Mikhail Mironovich; Malinovsky, Vladimir Sergeevich; and Khotin, Vladimir Alexeevich, 4,082,914, Cl. 13-2.00P.

Kubik, John J.: *See—*
Anderson, Clifton W.; Kubik, John J.; Pollock, Tom G.; Schlict, Larry J.; and Wilcox, Craig R., 4,082,198, Cl. 214-519.000.

Kubo, Keiji: *See—*
Suzuki, Akira; Kubo, Keiji; Kunitake, Suguru; and Arai, Fumiaki, 4,082,902, Cl. 428-457.000.

Kubota, Ltd.: *See—*
Nakajima, Toshi; Sagara, Takao; and Hagio, Shohachiro, 4,082,321, Cl. 285-39.000.

Kuder, Alfred W., to Klaus, Frank A. High speed reamer attachment for coaxial drive fastener gun. 4,082,475, Cl. 408-125.000.

Kuhla, Donald E.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,082,717, Cl. 260-345.90R.

Kulp, Jack H.; and Florsheim, James M., to Royal Industries, Inc. Traffic control element. 4,083,033, Cl. 340-114.00R.

Kunitake, Suguru: *See—*
Suzuki, Akira; Kubo, Keiji; Kunitake, Suguru; and Arai, Fumiaki, 4,082,902, Cl. 428-457.000.

Kurobe, Akira: *See—*
Ikeda, Masao; Miyamoto, Shigeo; Nozawa, Thutomu; Kurobe, Akira; and Futsukaichi, Osamu, 4,082,744, Cl. 260-239.0BB.

Kurokawa, Mitsuo: *See—*
Imaizumi, Fumitake; Nagaoka, Isao; Kurokawa, Mitsuo; and Komatsu, Koei, 4,082,817, Cl. 260-879.000.

Kurosaki, Shiro: *See—*
Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, 4,082,420, Cl. 350-96.310.

Kurreck, Manfred, to Holstein und Kappert Aktiengesellschaft. Mold closing apparatus. 4,082,492, Cl. 425-451.000.

Kushin, George Raymond; and Kao, Ming-Luh, to Milgo Electronic Corporation. Continuous quantitative signal-display system using light-emitting elements. 4,083,042, Cl. 340-324.00M.

Kushner, Benjamin: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, 4,081,893, Cl. 29-432.000.

Kuusik, Uno, to Chrysler Corporation. Centrifugal force hydraulic governor. 4,082,103, Cl. 137-54.000.

Kuwada, Yutaka; Meguro, Kanji; and Tawada, Hiroyuki, to Takeda Chemical Industries, Ltd. Methods for the production of 4H-s-triazolo[4,3-a][1,4]benzodiazepine 5N-oxides. 4,082,764, Cl. 260-308.00R.

Kuznetsov, Viktor Yakovlevich: *See—*
Burgsdorf, Vladimir Vladimirovich; Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Mishin, Valery Vasilievich; Kuznetsov, Viktor Yakovlevich; and Kondratiev, Anatoly Dmitrievich, 4,082,962, Cl. 307-147.000.

La-Z-Boy Chair Company: *See—*
Knabusch, Edward M.; and Shoemaker, Edwin J., 4,082,355, Cl. 297-440.000.

Labelle, R.: *See—*
Lamarre, Cerge Rudolf Maxime, 4,081,881, Cl. 16-162.000.

La Breche, Ferdinand J. Direction and slope indicating putter head. 4,082,286, Cl. 273-162.00B.

La Ferla, Vivian R.; Moreau, Janine E.; and Rodrigues, Mariano. Three-dimensional board game. 4,082,283, Cl. 273-241.000.

Lagana', Vincenzo: *See—*
Zardi, Umberto; Lagana', Vincenzo; Bonetti, Andrea; and Schmid, Giorgio, 4,082,797, Cl. 260-555.00A.

Lahiri, Syamal K., to International Business Machines Corporation. Thin film resistors and contacts for circuitry. 4,083,029, Cl. 338-32.00S.

Lake, Peter B.; Grenawalt, John J.; and Pastorek, Ronald L., to Youngstown Sheet and Tube Company. Ultra-high strength low alloy titanium bearing flat rolled steel and process for making. 4,082,576, Cl. 148-12.00F.

Lalin, Andre; and Brisabois, Roger, to Regie Nationale des Usines Renault. Rotary plate carrier drum for multi-plate clutches or brakes. 4,082,171, Cl. 192-70.200.

Lamarre, Cerge Rudolf Maxime, to Labelle, R. Folding closure. 4,081,881, Cl. 16-162.000.

Lampietti, Bernard P.; and Cavagnero, Erman V., to Torin Corporation. Apparatus and method for making wheel rim blanks and the like. 4,082,935, Cl. 219-9.500.

Landrum, Charles Rabun: *See—*
Calvert, Rodney K.; and Landrum, Charles Rabun, 4,081,945, Cl. 53-186.000.

Lane, Gordon Brandon, Jr. Modular chest back pack. 4,082,208, Cl. 224-8.00R.

Laney, David F. Magnetic bearing plotting and sighting device. 4,081,912, Cl. 33-272.000.

Lanfermann, Willy, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H. Rack device for a mining machine. 4,082,361, Cl. 299-43.000.

Lang, Otis C. Three-dimensional, layered, self sealing target. 4,082,280, Cl. 273-102.00B.

Lange, Karl Heinz, to Balda-Werke Photographische Gerate & Kunststoff GmbH. & Co. KG. Camera mechanism providing for relative movement of components against frictional resistance. 4,083,060, Cl. 354-286.000.

Lapchak, Markian; and Curtis, Henry H., Jr., to Honeywell Inc. Latensifying apparatus. 4,082,449, Cl. 355-69.000.

Laridon, Urbain Leopold; Poot, Albert Lucien; and Willems, Jozef Frans, to AGFA-GEVAERT N.V. Thermographic material. 4,082,901, Cl. 428-480.000.

Larsen, Larry D., to Patent Development & Management Company. Detection circuit. 4,083,037, Cl. 340-237.00S.

LaSalle, LeRoy: *See—*
Teague, J. T., 4,082,193, Cl. 214-2.500.

Laserplane Corporation: *See—*
Teach, Ted L., 4,081,919, Cl. 37-103.000.

Laskaris, Evangelos T., to General Electric Company. Uniformly-cooled superconducting rotor. 4,082,967, Cl. 310-64.000.

Lassman, Howard B.; and Novick, William J., Jr., to American Hoechst Corporation. Method of treating dermal inflammations. 4,082,850, Cl. 424-278.000.

Lattin, William Walter, to Motorola, Inc. MOS analog to digital converter. 4,083,045, Cl. 340-347.0AD.

Laundy, James R., to Tenneco Inc. Coupling device for connecting a plurality of ports to one pipe. 4,082,325, Cl. 285-155.000.

Lavigne, Vernon W.: *See—*
Bailey, James R.; and Lavigne, Vernon W., 4,082,409, Cl. 339-182.00R.

Lear Siegler, Inc.: *See—*
Bales, Emmett R.; and Murphy, Randal T., 4,082,352, Cl. 297-364.000.

Learmont, Robert P., to United States Steel Corporation. In situ solution mining technique. 4,082,358, Cl. 299-4.000.

Leasure, William C.; and Garcia, Luis, to Mira-Pak, Inc. Apparatus and method for producing packages with individual product-filled cells. 4,081,943, Cl. 53-26.000.

Leasure, William R.: *See—*
Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., 4,082,868, Cl. 427-329.000.

LeCossec, Jean: *See—*
Denamps, Jean; and LeCossec, Jean, 4,082,960, Cl. 307-118.000.

Lefebvre, Denis. Flame retention head assembly. 4,082,495, Cl. 431-183.000.

Lehman, Richard F., to Xerox Corporation. Compact illumination system for optically providing a structured photoreceptor charge distribution. 4,082,450, Cl. 355-71.000.

Leiber, Heinz; and Blasius, Udo, to Teldix G.m.b.H. Monitoring device for an antilocking brake control system. 4,082,370, Cl. 303-92.000.

Leidal, Shirley Margaret: *See—*
Wingard, Robert Dean; and Leidal, Shirley Margaret, 4,082,512, Cl. 23-252.00R.

Leliaert, Raymond M.: *See—*
Jones, George F.; and Leliaert, Raymond M., 4,081,929, Cl. 51-163.200.

Lemanski, Savarian F. Self-decoupling tap and die holder. 4,081,873, Cl. 10-89.00H.

Lenken, Thomas J., to Desco Corporation. Temperature indicator with limit detection apparatus. 4,081,999, Cl. 73-343.00R.

Lennon, David C., to General Electric Company. Male and female terminal combination. 4,082,412, Cl. 339-256.0SP.

Lennox Industries, Inc.: *See—*
Pfarrer, David M., 4,082,989, Cl. 318-224A.

Lentz, Carl A., to General Motors Corporation. Range shift control by input governor. 4,082,009, Cl. 74-731.000.

Lentz, Lawrence R., to Champion Spark Plug Company. Spark plug design having two electrically isolated center electrodes. 4,082,976, Cl. 313-135.000.

Leo Pharmaceutical Products Ltd.: *See—*
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; Bruun, Herta; and Bretting, Claus Aage Svensgaard, 4,082,851, Cl. 424-300.000.

Leonard, Richard L.: *See—*
Fritzsche, Alfred Keith; and Leonard, Richard L., 4,082,658, Cl. 210-22.00R.

Leonhardt, Joachim; and Klein, Hans-Dieter, to Bergwerksverband GmbH. Device for measuring the magnitude and direction of compression forces. 4,081,993, Cl. 73-88.00R.

Lerch, Arthur L.: *See—*
Horn, Charles F.; Lerch, Arthur L.; Turckes, Raymond J.; and Nagel, Ronald P., 4,082,022, Cl. 83-82.000.

Letailleur, Jean-Luc: *See—*
Didier, Alain; and Letailleur, Jean-Luc, 4,082,541, Cl. 75-5.000.

Leutwyler, Roy: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, 4,081,893, Cl. 29-432.000.

Lever Brothers Company: *See—*
Galesloot, Wilhelmus Gerardus, 4,082,683, Cl. 252-105.000.
Kreischer, Pieter Hubertus, 4,082,684, Cl. 252-109.000.
Pader, Morton, 4,082,841, Cl. 424-50.000.
Pugh, Brinley Roy, 4,081,876, Cl. 15-167.00R.

Lever, Paul H., to Fireplace Corporation of America. Chimney construction for heating fixtures. 4,082,322, Cl. 285-133.00R.

Levine, Arnold M., to International Telephone and Telegraph Corporation. Radar transmitter temporal noise reduction system. 4,083,007, Cl. 325-159.000.

Levine, Robert Aaron: *See—*
Wardlaw, Stephen Clark; Levine, Robert Aaron; and Massey, James Vincent, III, 4,082,085, Cl. 128-2.00G.

Levine, Walter E., to Bindicator Company. Method for manufacturing an ultrasonic transducer. 4,081,889, Cl. 29-25.350.

Li, George S.; and Dirks, Gary W., to Standard Oil Company, The. Rubber-modified acrylonitrile-vinyl ether-indene polymers. 4,082,819, Cl. 260-879.000.

Li, George S.; and Jorkasky, Richard J., II, to Standard Oil Company, The. High softening maleic anhydride copolymers. 4,082,820, Cl. 260-879.000.

Li, Ke Wen, to Continental Oil Company. Manufacture of petroleum coke with fines recycling. 4,082,650, Cl. 208-131.000.

Liao, Hsiang-Peng: *See—*
Fisher, Warren C.; Linder, Seymour M.; Pelley, Ralph L.; and Liao, Hsiang-Peng, 4,082,777, Cl. 260-348.250.

Lightolier Incorporated: *See—*
Donato, Anthony C.; and Russo, Neil, 4,082,395, Cl. 339-21.00R.

Liles, Donald T.; and Michael, Keith W., to Dow Corning Corporation. Silicone epoxy curable compositions. 4,082,719, Cl. 260-37.0SB.

Lilja, Pekka Juhani. Outer wall element. 4,081,933, Cl. 52-171.000.

Lilly Industries Limited: *See—*
Evans, Delme; Jolley, Michael Ralph John; Ross, William James; and Swann, Brian Picton, 4,082,771, Cl. 260-332.20R.

Liman, Sandy, to Scott USA, Inc. Ski glove or mitt. 4,081,864, Cl. 2-161.00A.

Lindell, Curt Oskar: *See—*
Nilsson, Karl Osten Alf; and Lindell, Curt Oskar, 4,082,260, Cl. 271-1.000.

Linder, Seymour M.: *See—*
Fisher, Warren C.; Linder, Seymour M.; Pelley, Ralph L.; and Liao, Hsiang-Peng, 4,082,777, Cl. 260-348.250.

Lindlau, Paul F.: *See—*
Smorzaniuk, Adam; and Lindlau, Paul F., 4,082,407, Cl. 339-112.00R.

Lindmayer, Joseph. Solar cell with multiple-metal contacts. 4,082,568, Cl. 136-89.0CC.

Lindstol, Anders, to Ecodyne Corporation. Filter and method. 4,082,664, Cl. 210-80.000.

Lingley, Richard C.: *See—*
Heathman, John H.; and Lingley, Richard C., 4,082,240, Cl. 244-158.000.

Link, Edwin A., to RTE Corporation. Method of use and electrical equipment utilizing insulating oil consisting of a saturated hydrocarbon oil. 4,082,866, Cl. 427-294.000.

Lipniewska, Danuta: *See—*
Szadkowska, Maria; Pisarek, Jerzy; Dzik, Boleslaw; Staniak, Elzbieta; Lipniewska, Danuta; and Bijok, Franciszek, 4,082,853, Cl. 426-36.000.

Lipp, Xaver. Apparatus for producing a pipe from metal strip. 4,081,981, Cl. 72-49.000.

Lipscher, Ervin, to Medicor Muvek. Portable diagnostic device. 4,082,084, Cl. 128-2.00D.

Liquid Removal Service Co., Inc.: *See—*
Petroski, Alex, 4,082,672, Cl. 210-205.000.

Liske, Kenneth T.: *See—*
Russell, John X.; and Liske, Kenneth T., 4,082,018, Cl. 82-2.500.

Litton Systems, Inc.: *See—*
Marfatia, Anil C.; and Jarvis, George A., 4,082,077, Cl. 126-197.000.
Thuleen, Richard A.; and Richard, John E., 4,082,078, Cl. 126-197.000.

Litvan, Gerhard G.; and Sereda, Peter J., to Canadian Patents and Development Limited. Porous particles in frost-resistant cementitious materials. 4,082,562, Cl. 106-97.000.

Liu, Francis C.; and Huang, Kwang Ta. Dynamic wave energy extraction system. 4,081,962, Cl. 60-501.000.

Liu, Kang-Jen: *See—*
Chlanda, Frederick P.; Nagasubramanian, Krishnamurthy; and Liu, Kang-Jen, 4,082,835, Cl. 423-242.000.

Lloyd, Ruth Diane: *See—*
Schardein, Daniel Joseph; and Lloyd, Ruth Diane, 4,082,907, Cl. 428-640.000.

Lo, Cheng Fan: *See—*
Hearon, William Montgomery; Witte, John F.; and Lo, Cheng Fan, 4,082,743, Cl. 536-30.000.

Locke, David Richard, to Sperry Rand Corporation. Cutter head assembly for an electric dry shaver. 4,081,902, Cl. 30-43.920.

Lockhart, William Robert: *See—*
Kanotz, William Michael; Lockhart, William Robert; Piper, George Francis; Vesperman, William Charles; and Wilson, Max Kearns, 4,082,585, Cl. 156-51.000.

Lockheed Corporation: *See—*
Hall, Larry Baker, 4,081,987, Cl. 72-389.000.

Loewe-Opta GmbH: *See—*
Kanow, Willy, 4,083,012, Cl. 325-455.000.

Loew's Theatres, Inc.: *See—*
Chen, Leighton L., 4,082,950, Cl. 250-343.000.

Long, E. David, to Allied Chemical Corporation. Modulation for fuel density in fuel injection system. 4,082,066, Cl. 123-32.0EA.

Long, Walt C.; and Williams, Milton L., to United States of America, National Aeronautics and Space Administration. Non-destructive method for applying and removing instrumentation on helicopter rotor blades. 4,082,001, Cl. 73-756.000.

Lonseal Corporation: *See—*
Miura, Nobuo, 4,082,876, Cl. 428-159.000.

Looks, Arnold, to Conver Ingenieur-Technik GmbH & Co., KG. Coupling device for containers. 4,082,052, Cl. 114-75.000.

Loomba, Yogendra S.: *See—*
Stephenson, Robert L.; and Loomba, Yogendra S., 4,082,236, Cl. 242-107.40B.

Looschen, Floyd William, to Burroughs Corporation. Three-level serial digital data communication system. 4,083,005, Cl. 325-38.00A.

Looschen, Floyd William, to Burroughs Corporation. Receiving means for use in a digital data communication system. 4,083,010, Cl. 325-321.000.

Lorcher, Otfried: *See—*
Andrascheck, Hans-Joachim; Lorcher, Otfried; and Zentner, Erich, 4,082,711, Cl. 260-23.0XA.

Lo Scalzo, Enzo; Ferre, Franco; and Cantoni, Gianfranco, to Societa' Italiana Resine S.I.R. S.p.A. Process for the emulsion polymerization of conjugated dienes. 4,082,714, Cl. 260-29.70R.

Losciale, Francesco: *See—*
Germano, Giovanni; Losciale, Francesco; Falesiedi, Roberto; Daclon, Ferruccio; and Merzagora, Nicola, 4,081,895, Cl. 29-573.000.

Losert, Gerhard K., to General Electric Company. Clothes dryer air flow test device and method. 4,081,997, Cl. 73-168.000.

Lou, Perry W., to Texas Instruments Incorporated. MOS detector or sensing circuit. 4,082,966, Cl. 307-362.000.

Lovelace, David Francis: *See—*
Thompson, George Horace Brooke; and Lovelace, David Francis, 4,082,419, Cl. 350-96.120.

Lucifer S.A.: *See—*
Stampfli, Harald, 4,082,116, Cl. 137-630.140.

Lukawich, Joseph James: *See—*
Jaffe, Wolfgang; and Lukawich, Joseph James, 4,081,974, Cl. 66-75.200.

Lumma, William C., Jr.; and Saari, Walfred S., to Merck & Co., Inc. 6-Chloro-2-(1-piperazinyl)pyrazine. 4,082,844, Cl. 424-250.000.

Lumma, William C., Jr.: *See—*
Saari, Walfred S.; and Lumma, William C., Jr., 4,082,845, Cl. 424-250.000.

Lutz, David Edward: *See—*
Lutz, David William; and Lutz, David Edward, 4,082,196, Cl. 214-83.220.

Lutz, David William; and Lutz, David Edward. Loading and unloading apparatus for vehicles. 4,082,196, Cl. 214-83.220.

Lythgoe, Stanley; and Gelder, David, to Pilkington Brothers Limited. Glass melting tank with temperature control and method of melting. 4,082,528, Cl. 65-135.000.

M.C.P. Industries, Inc.: *See—*
Musbach, Alan Jon, 4,082,623, Cl. 204-43.00S.

M I Systems, Inc.: *See—*
Page, Dennis M.; and Bevilacqua, Albert J., 4,082,086, Cl. 128-2.06E.

Magee, Raymond J. Film viewer. 4,081,920, Cl. 40-362.000.

Magnagard Equipment & Manufacturing Corporation: *See—*
Putnam, Dean H., 4,082,454, Cl. 355-99.000.

Magnetic Controls Company: *See—*
Castleman, Cordell V., 4,082,920, Cl. 179-2.0DP.

Majcherczyk, Richard, to Centre Experimental de Recherches et d'Etudes du Batiment et des Travaux Publics. Device for measuring the stress of tangential friction of a shoe on a surfacing for the ground. 4,081,989, Cl. 73-9.000.

Malgarini, Giansilvio; Pasero, Edoardo; Alitta, Giorgio; De Candida, Cristiano; and Raggio, Carlo, to Istituto di Ricerca Finsider per la Riduzione Diretta S.p.A.; and Italimpianti S.p.A., part interest to each. Reduction of iron ore in fluidized bed reactors. 4,082,545, Cl. 75-35.000.

Malinovsky, Vladimir Sergeevich: *See—*
Bortnichuk, Nikolai Iosifovich; Davydov, Valery Pavlovich; Krutyansky, Mikhail Mironovich; Malinovsky, Vladimir Sergeevich; and Khotin, Vladimir Alexeevich, 4,082,914, Cl. 13-2.00P.

Mallinckrodt, Inc.: *See—*
Chen, Jong-C., 4,082,747, Cl. 260-239.570.

Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., to Burlington Industries, Inc. Hot melt size, yarn sized therewith, and packages and fabrics of sized yarn. 4,082,883, Cl. 428-253.000.

Mandusky, Jack C., to Hoover Ball and Bearing Company. Seat assembly. 4,082,256, Cl. 267-81.000.

Mangus, Ervin E., to Caterpillar Tractor Co. Fuel injection nozzle. 4,082,224, Cl. 239-453.000.

Mann, Alfred E.; and Schulman, Joseph H., to Pacesetter Systems Inc. Multimode recharging system for living tissue stimulators. 4,082,097, Cl. 128-419.0PS.

Mann, Friedrich H.: *See—*
Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., 4,083,011, Cl. 325-352.000.

Manthey, Willi Bruno; and Deiwick, Horst, to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH. Apparatus for cooling hot slabs. 4,082,100, Cl. 134-76.000.

Mar-Kel Lighting, Inc.: *See—*
Petty, Frank, 4,082,159, Cl. 181-156.000.

Marathon Oil Company: *See—*
Andon, Nicholaki A.; and Fleece, Robert I., 4,082,513, Cl. 23-288.00E.

Mardon Flexible Packaging Limited: *See—*
Stonehouse, Ernest, 4,082,594, Cl. 156-253.000.

Marfatia, Anil C.; and Jarvis, George A., to Litton Systems, Inc. Oven door latch. 4,082,077, Cl. 126-197.000.

Marker, Hannes: *See—*
Sedlmair, Gerhard, 4,082,314, Cl. 280-625.000.

Marks, Stephen W.; and Marsh, Robert E., to General Motors Corporation. Ignition distributor rotor with corona generating points of electrically conductive paint. 4,082,926, Cl. 200-19.0DR.

Marlow, Jerry R.: *See—*
Dornfeld, Kenneth A.; Marlow, Jerry R.; and Sanders, Robert K., 4,082,013, Cl. 74-866.000.

Marquis, Gerald L., to Dresser Industries, Inc. Method and apparatus for running and retrieving logging instruments in highly deviated well bores. 4,082,144, Cl. 166-250.000.

Marriott, Joe E., to Hewlett-Packard Company. Dual slope integration circuit. 4,082,998, Cl. 324-99.00D.

Marsh, Robert E.: *See—*
Marks, Stephen W.; and Marsh, Robert E., 4,082,926, Cl. 200-19.0DR.

Marshall, Clifford, to Imperial Chemical Industries Limited. Treatment of textile materials. 4,082,508, Cl. 8-139.100.

Marshall, J. Howard, III; and Harrington, Timothy M., to MDH Industries Inc. Unipolar wide-range current-to-frequency converter. 4,083,044, Cl. 340-347.0AD.

Martig, Kenneth W., Jr., to Pro-Tech, Inc. Flow stilling device. 4,081,998, Cl. 73-302.000.

Martin, Arthur Lee. Tennis practice and teaching rebounder. 4,082,271, Cl. 273-29.00A.

Martin, Frank Stephen; Melvin, Terence; and Pieroni, Joseph Kirby, to Uniroyal, Inc. Method of making adjuvant for elastomeric composition. 4,082,288, Cl. 273-218.000.

Martin, Joe E.: *See—*
Volta, Victor S.; and Martin, Joe E., 4,082,334, Cl. 292-288.000.

Martin Marietta Corporation: *See—*
Owen, William J., 4,082,462, Cl. 356-152.000.

Marvin Glass & Associates: *See—*
Breslow, Jeffrey D.; and Jaworski, Eugene, 4,082,268, Cl. 273-1.00R.
Fletchic, Donald K.; Morrison, Howard J.; and Baer, Ralph H., 4,082,292, Cl. 274-23.00R.

Maschinenfabrik Hennecke GmbH: *See—*
Althausen, Ferdinand; and Raffel, Rainer, 4,082,251, Cl. 366-179.000.

Masclet, Jean; and Veaux, Jacques, to Messier-Hispano S.A. Oleo-pneumatic damper. 4,082,255, Cl. 267-64.00R.

Massey-Ferguson Inc.: *See—*
Dwyer, Robert M., 4,081,961, Cl. 60-386.000.
Mueller, Otto, Jr., 4,082,318, Cl. 285-19.000.

Massey, James Vincent, III: *See—*
Wardlaw, Stephen Clark; Levine, Robert Aaron; and Massey, James Vincent, III, 4,082,085, Cl. 128-2.00G.

Masumoto, Hakaru; Murakami, Yuetsu; and Nakamura, Naoji, to Foundation: The Research Institute of Electric and Magnetic Alloys, The. Rectangular hysteresis magnetic alloy. 4,082,579, Cl. 148-31.550.

Materniak nee Babcerowicz, Gizela; and Materniak, Zdzislaw. Exhaust system for laundry dryer. 4,081,915, Cl. 34-235.000.

Materniak, Zdzislaw: *See—*
Materniak nee Babcerowicz, Gizela; and Materniak, Zdzislaw, 4,081,915, Cl. 34-235.000.

Matsui, Masayuki: *See—*
Arai, Tatsuo; Hirano, Hironori; Kajimura, Hiroyuki; and Matsui, Masayuki, 4,082,132, Cl. 152-361.00R.

Matsuo, Tatsuo: *See—*
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,082,252, Cl. 266-142.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Tatsuta, Hiroshi; Fukai, Masakazu; and Takahashi, Hiroaki, 4,082,686, Cl. 252-299.000.

Matsushita, Toshihiko: *See—*
Egawa, Setsuya; Sakamoto, Masahiro; and Matsushita, Toshihiko, 4,082,688, Cl. 252-316.000.

Mattern, John; and Harrison, Earnest R., to Westinghouse Electric Corporation. Moving target radar. 4,083,049, Cl. 343-7.700.

Matthews, John C., to Diamond Power Specialty Corporation. Snubber assembly for a control rod drive. 4,082,610, Cl. 176-365.000.

Maul Technology Corporation: *See—*
Dininio, Thomas, 4,082,108, Cl. 137-269.500.

Mayburg, Sumner: *See—*
Birman, Joseph L.; and Mayburg, Sumner, 4,083,017, Cl. 331-94.50H.

Mayer, Hartmut, to Robert Bosch GmbH. Method and apparatus to determine the timing of cyclically repetitive events, particularly ignition instant for internal combustion engines. 4,082,069, Cl. 123-117.00D.

Mayer, Norbert; Pfahler, Gerhard; and Wiezer, Hartmut, to Hoechst Aktiengesellschaft. Aza-adamantane compound stabilizers for organic polymer compositions. 4,082,723, Cl. 260-45.80N.

Mazeke, Herbert F.: *See—*
Coffey, Gerald P.; and Mazeke, Herbert F., 4,082,818, Cl. 260-879.000.

McCartney, Clyde B., to Parrow, Wayne; and Parrow, Harold, part interest to each. Wheeled undercarriage for snowmobiles. 4,082,155, Cl. 180-5.00R.

McColgan, John M.; and O'Brien, Philip F. Portable light-weight solar heater. 4,082,081, Cl. 126-271.000.

McCollum, James H.: *See—*
Fabian, Gordon R.; McCollum, James H.; and Kammerer, Leo P., 4,082,238, Cl. 244-17.130.

McCullough, John E., to Arthur D. Little, Inc. Scroll-type apparatus with fixed throw crank drive mechanism. 4,082,484, Cl. 418-55.000.

McDaniel, Ralph B.: *See—*
Seidel, William H.; and McDaniel, Ralph B., 4,081,878, Cl. 15-256.500.

McDermott, Hugh L., to Eaton Corporation. Fluid pressure device and improved Geroler ® for use therein. 4,082,480, Cl. 417-283.000.

McFadden, Robert L. Phonemic word game method. 4,082,279, Cl. 273-272.000.

McGahey, Dean C., to Texaco Inc. Closed fuel system with vacuum assist. 4,082,122, Cl. 141-5.000.

McGarvey, Jarvis M., to Carborundum Company, The. Endless abrasive belt, and laminated patch splice therefor. 4,082,521, Cl. 51-295.000.

McGee, Larry S.: *See—*
Estes, Ronald L.; McGee, Larry S.; and Welton, Sanford M., 4,082,526, Cl. 65-24.000.

McGrane, Earl F.: *See—*
McGrane, Merle V.; and McGrane, Earl F., 4,082,227, Cl. 239-675.000.

McGrane, Merle V.; and McGrane, Earl F., to Bio-Life Company, Inc. Slurry mixer and spreader. 4,082,227, Cl. 239-675.000.

McGraw-Edison Company: *See—*
Boni, Richard R.; and Janubetz, Joseph J., 4,081,900, Cl. 29-624.000.

McGregor, Weldon Courtney; Newmark, Harold Leon; and Ramel, Armin Hermann, to Hoffmann-La Roche Inc. Stabilized thymosin composition and method. 4,082,737, Cl. 260-112.50R.

McIlhinney, Allen E.: *See—*
Capes, C. Edward; McIlhinney, Allen E.; and Messer, Leonard, 4,082,515, Cl. 23-313.00R.

McIntyre, Donald B.; and McIntyre, Frederic S., to Acumeter Laboratories, Inc. Coating apparatus with intermittent substrate backup. 4,082,059, Cl. 118-407.000.

McIntyre, Frederic S.: *See—*
McIntyre, Donald B.; and McIntyre, Frederic S., 4,082,059, Cl. 118-407.000.

McKendry, Lennon H., to Dow Chemical Company, The. Substituted-(aminosulfonylamino) pyridine thiocarboxylic acids and derivatives thereof. 4,082,758, Cl. 260-294.80F.

McKendry, Lennon H., to Dow Chemical Company, The. Substituted-(aminosulfonylamino)pyridine thiocarboxylic acids and derivatives thereof. 4,082,759, Cl. 260-294.80E.

McNally, George S.; Naik, Dilip T.; and Spence, John H., to Pullman Incorporated. Stability bracing for twist on high gondolas or hopper cars. 4,082,045, Cl. 105-411.000.

McPherson, John B.; and Gunther, William H., Jr., to Thor Dahl, Inc. Envelope opening process. 4,082,603, Cl. 156-654.000.

McQuinn, Ted M.; and Anderson, Richard B., to General Motors Corporation. Engine and transmission power train. 4,082,011, Cl. 74-862.000.

McQuinn, Ted M.: *See—*
Schaefer, Robert H.; and McQuinn, Ted M., 4,082,012, Cl. 74-864.000.

McRae, Dougal Harold, to Rohm and Haas Company. Selective weed control with m-dinitrobenzene. 4,082,538, Cl. 71-125.000.

McWhorter, Delmer L. Door lock version. 4,082,330, Cl. 292-218.000.

MDH Industries Inc.: *See—*
Marshall, J. Howard, III; and Harrington, Timothy M., 4,083,044, Cl. 340-347.0AD.

Mead Corporation, The: *See—*
Calvert, Rodney K.; and Landrum, Charles Rabun, 4,081,945, Cl. 53-186.000.
Kelley, Russell D., 4,082,713, Cl. 260-29.300.

Mechlowitz, Bela: *See—*
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,082,549, Cl. 96-1.00R.

Medicor Muvek: *See—*
Lipscher, Ervin, 4,082,084, Cl. 128-2.00D.

Mees, Bernhard; and Ribka, Joachim, to Hoechst Aktiengesellschaft. Mixtures of oil-soluble phenyl- and naphthyl-azo-phenyl dyestuffs. 4,082,501, Cl. 8-26.000.

Mees, Bernhard: *See—*
Paszthory, Emmerich; Mees, Bernhard; and Hille, Ernst, 4,082,803, Cl. 260-575.000.

Meguro, Kanji: *See—*
Kuwada, Yutaka; Meguro, Kanji; and Tawada, Hiroyuki, 4,082,764, Cl. 260-308.00R.

Mehta, Ramesh, to H. B. Fuller Company. Adhesive systems comprising a bisamino piperazine-containing polyamide. 4,082,708, Cl. 260-18.00N.

Meisch, Charles Edward: *See—*
Upshaw, Jackson E.; and Meisch, Charles Edward, 4,081,866, Cl. 3-1.911.

Meller, Frederick D.: *See—*
Patzke, Robert C.; DeRyke, Thomas V.; and Meller, Frederick D., 4,082,206, Cl. 222-400.700.

Melvin, Terence: *See—*
Martin, Frank Stephen; Melvin, Terence; and Pieroni, Joseph Kirby, 4,082,288, Cl. 273-218.000.

Mendelson, Barry; and Denman, Stephen A., to Mendelson, Barry. Stomach pump. 4,082,095, Cl. 128-235.000.

Menon, Sukumaran K.; and Wenthe, Stephen J., Jr., to Xerox Corporation. Lamp carriage drive system. 4,082,444, Cl. 355-8.000.

Menth, Anton; Perry, Anthony J.; and Spinner, Ulrich, to BBC Brown, Boveri & Company, Limited. As - cast permanent magnet Sm-Co-Cu material, with iron, produced by annealing and rapid quenching. 4,082,582, Cl. 148-102.000.

Mercer, Alec Victor: *See—*
Bolton, Ivan Joseph; and Mercer, Alec Victor, 4,082,746, Cl. 260-239.900.

Mercer, John E., to Flow Industries, Inc. Method of making composite structure. 4,081,892, Cl. 29-421.00R.

Mercier, Jean-Pierre, to Unibra S.A. Crystallization of polycarbonates. 4,082,715, Cl. 260-30.60R.

Merck & Co., Inc.: *See—*
Arnett, Carroll D.; Wright, Jeremy; and Zenker, Nicolas, 4,082,847, Cl. 424-273.00R.
Lumma, William C., Jr.; and Saari, Walfred S., 4,082,844, Cl. 424-250.000.
Remy, David C., 4,082,801, Cl. 260-570.900.
Saari, Walfred S.; and Lumma, William C., Jr., 4,082,845, Cl. 424-250.000.

Merkel, Paul Barrett, to Eastman Kodak Company. Photothermographic materials and process. 4,082,555, Cl. 96-114.100.

Merritt, Ronald, to Raymond Lee Organization, Inc., The, a part interest. Horseracing game. 4,082,289, Cl. 273-246.000.

Merz, Eric Robert. Desk organizer. 4,082,190, Cl. 211-11.000.

Merzagora, Nicola: *See—*
Germano, Giovanni; Losciale, Francesco; Falesiedi, Roberto; Daclon, Ferruccio; and Merzagora, Nicola, 4,081,895, Cl. 29-573.000.

Messer, Leonard: *See—*
Capes, C. Edward; McIlhinney, Allen E.; and Messer, Leonard, 4,082,515, Cl. 23-313.00R.

Messier-Hispano S.A.: *See—*
Masclet, Jean; and Veaux, Jacques, 4,082,255, Cl. 267-64.00R.

Metaframe Corporation: *See—*
Rodemeyer, Donald J., 4,082,062, Cl. 119-5.000.

Metcalf, Wilbur F., to Sangamo Electric Company. Electronic tachograph. 4,083,052, Cl. 346-18.000.

Metrosound Audio Products Ltd.: *See—*
Myers, Mark Stanley; and Bowler, Richard George, 4,082,294, Cl. 274-47.000.

Metzger, Grant W., to Carbonoyl Company. Modified starch containing liquid fuel slurry. 4,082,516, Cl. 44-51.000.

Metzler, Gerhart; Rother, Peter; and Sukopp, Hans, to Geratewerk Lahr GmbH. Pick-up arm assemblies for record players. 4,082,291, Cl. 274-23.00R.

Meuller, Von W.; and Foerster, Ronald A., to GTE Automatic Electric Laboratories Incorporated. Windings for magnetic latching reed relay. 4,083,025, Cl. 335-153.000.

Meyer, Gerhard; and Toth, Anton, to Akzona Incorporated. Process for producing 3-hydrazino-4-amino-5-mercapto-1,2,4-triazole. 4,082,763, Cl. 260-308.00R.

Michael, Keith W.: *See—*
Liles, Donald T.; and Michael, Keith W., 4,082,719, Cl. 260-37.0SB.

Michael Reese Research Foundation: *See—*
Robbins, Kenneth C.; and Summaria, Louis, 4,082,612, Cl. 195-62.000.

Midrex Corporation: *See—*
Beggs, Donald; and Kelley, Bruce G., 4,082,543, Cl. 75-11.000.

Miedema, Andries Rinse; Buschow, Kurt Heinz Jurgen; and Mulder, Jan, to U.S. Philips Corporation. Heat regenerator. 4,082,138, Cl. 165-4.000.

Miers, Bruce W.: *See—*
Hurt, William C., II; Miers, Bruce W.; and Mossner, Eugene O., 4,082,343, Cl. 296-28.00C.

Miki, Takuichi; Hiraga, Kentaro; and Goto, Giichi, to Takeda Chemical Industries, Ltd. Estradiol derivatives. 4,082,780, Cl. 260-397.500.

Milgo Electronic Corporation: *See—*
Kushin, George Raymond; and Kao, Ming-Luh, 4,083,042, Cl. 340-324.00M.

Millauer, Hans: *See—*
Pistorius, Rudolf; and Millauer, Hans, 4,082,809, Cl. 260-611.00R.

Miller, Arthur, to RCA Corporation. Optical coupler. 4,082,425, Cl. 350-96.170.

Miller, Barry: *See—*
Chang, Kuang-Chou; Heller, Adam; and Miller, Barry, 4,082,602, Cl. 156-627.000.
Heller, Adam; Miller, Barry; and Vadimsky, Richard George, 4,082,624, Cl. 204-47.000.

Miller, Frederick L. B. Knife holder in log slabbing chipper. 4,082,127, Cl. 144-220.000.

Miller, Lewis F., to International Business Machines Corporation. Method of making a ternary barrier structure for conductive electrodes. 4,081,901, Cl. 29-630.00R.

Miller, Richard G.; and Cavitt, Roy L., to PPG Industries, Inc. Electroless deposition of electrically nonconductive copper-boron coatings on nonmetallic substrates. 4,082,898, Cl. 428-427.000.

Miller, William C.: *See—*
Baumberger, John G.; Gazy, Michael A.; and Miller, William C., 4,082,263, Cl. 271-266.000.

Milner, Edward F. G.; Parker, Ernest G.; and Swinkels, Godefridus M., to Cominco Ltd. Hydrometallurgical process for treating metal sulfides containing lead sulfide. 4,082,629, Cl. 204-66.000.

Mims, Samuel S., to El Paso Products Company. Esterification and extraction process. 4,082,788, Cl. 260-465.400.

Minai, Masayoshi: *See—*
Suzuki, Yoshio; Minai, Masayoshi; Hamma, Noritaka; Murayama, Eiichi; and Aono, Shunji, 4,082,913, Cl. 560-102.000.

Mine, Katsutoshi; and Yokoyama, Masuo, to Toray Silicone Company, Ltd. Curable organopolysiloxane compositions with improved adhesion. 4,082,726, Cl. 260-46.5UA.

Minin, Vladilen Fedorovich; Gambarov, Vitaly Stepanovich; Kachan, Mikhail Samuilovich; Okladnikov, Vladlen Alexeevich; Troinin, Boris Leonidovich; and Trishin, Jury Alexeevich. Plant for explosion working of materials. 4,081,982, Cl. 72-56.000.

Minnesota Mining and Manufacturing Company: *See—*
Appeldorn, Roger H.; and Anderson, Raymond H., 4,082,433, Cl. 350-211.000.
Brown, Robert A., 4,082,426, Cl. 350-105.000.
Conder, Terrence M.; and O'Leary, Kevin P., 4,082,879, Cl. 428-219.000.
Ward, Joseph E., III; and Huber, John C., 4,082,429, Cl. 350-162.0SF.
Ward, Joseph E., III, 4,082,431, Cl. 350-162.0SF.
Wegwerth, Arthur A., 4,082,896, Cl. 428-413.000.

Mira-Pak, Inc.: *See—*
Leasure, William C.; and Garcia, Luis, 4,081,943, Cl. 53-26.000.

Misaki, Susumu: *See—*
Takahara, Takao; and Misaki, Susumu, 4,082,752, Cl. 260-260.000.

Mischenko, Mikhail Vasilievich: *See—*
Cherny, Iosif Semenovich; and Mischenko, Mikhail Vasilievich, 4,083,023, Cl. 335-135.000.

Mishin, Valery Vasilievich: *See—*
Burgsdorf, Vladimir Vladimirovich; Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Mishin, Valery Vasilievich; Kuznetsov, Viktor Yakovlevich; and Kondratiev, Anatoly Dmitrievich, 4,082,962, Cl. 307-147.000.

Mishuku, Minoru; Edo, Taro; and Tsuchiya, Nobujiro, to Fuji Die Co., Ltd. Cemented carbide products and manufacturing method. 4,082,559, Cl. 106-43.000.

Misiano, Carlo; Diedrich, Karl Heinz; and Simonetti, Enrico, to Selenia-Industrie Elettroniche Associate S.p.A. Process for manufacturing semiconductor structures by sputter etching. 4,082,637, Cl. 204-192.00E.

Mr. Putt, Incorporated: *See—*
Berkey, George V., 4,082,287, Cl. 273-186.00C.

Mita Industrial Company: *See—*
Takayama, Hiroshi; and Aizawa, Tatsuo, 4,082,681, Cl. 252-62.10P.

Mitacek, Bill, to Phillips Petroleum Company. Gear oil compositions. 4,082,680, Cl. 252-59.000.

Mitchell, William O.: *See—*
Patterson, Thomas K.; Mitchell, William O.; Smith, Donald H.; and Hunter, John P., Jr., 4,082,589, Cl. 156-98.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Saito, Masao; Onozawa, Mamoru; Sasagawa, Kaoru; and Kawakami, Takamasa, 4,082,786, Cl. 260-465.00C.

Mitsubishi Kasei Kogyo Kabushiki Kaisha: *See—*
Yamawaki, Takeshi; Hoshijima, Tokitaro; and Mizushima, Kiyoshi, 4,081,994, Cl. 73-95.000.

Mitsui-Anaconda Electro Copper Sheet Co., Ltd.: *See—*
Morisaki, Shigeyoshi; and Kitamura, Nobuo, 4,082,591, Cl. 156-150.000.

Mitter & Co.: *See—*
Mitter, Mathias, 4,082,036, Cl. 101-122.000.

Mitter, Mathias, to Mitter & Co. Ink trough dividers for endless band screen printer. 4,082,036, Cl. 101-122.000.

Mitterhummer, Gerhard: *See—*
Auracher, Franz; Mitterhummer, Gerhard; and Zeitler, Karl-Heinz, 4,082,421, Cl. 350-96.220.

Miura, Nobuo, to Lonseal Corporation. Method for producing foamed body having chemical embossed patterns and resultant product. 4,082,876, Cl. 428-159.000.

Miyake, Shiuichi; and Saito, Takao, to Nihon Radiator Co., Ltd. (Nihon Rajieeta Kabushiki Kaisha). Printed motor. 4,082,971, Cl. 310-114.000.

Miyamoto, Shigeo: *See—*
Ikeda, Masao; Miyamoto, Shigeo; Nozawa, Thutomu; Kurobe, Akira; and Futsukaichi, Osamu, 4,082,744, Cl. 260-239.0BB.

Miyata, Katsuhiko: *See—*
Nakamura, Kazuo; Miyata, Katsuhiko; and Tokutomi, Seijiro, 4,083,056, Cl. 354-25.000.

Miyazaki, Tatsuyoshi, to Yoshida Kogyo K.K. Portable press. 4,082,026, Cl. 83-453.000.

Miyoshi, Kiyotaka. Anti-smoke hanging wall and construction method. 4,081,931, Cl. 52-39.000.

Mizushima, Kiyoshi: *See—*
Yamawaki, Takeshi; Hoshijima, Tokitaro; and Mizushima, Kiyoshi, 4,081,994, Cl. 73-95.000.

Mobil Oil Corporation: *See—*
Kaeding, W. W., 4,082,805, Cl. 260-585.00B.
Rosinski, Edward J.; Stein, Thomas R.; and Fischer, Ronald H., 4,082,695, Cl. 252-465.000.

Moffatt, John G.: *See—*
Jones, Gordon H.; Moffatt, John G.; and Nestor, John J., Jr., 4,082,735, Cl. 260-112.50R.
Jones, Gordon H.; Moffatt, John G.; and Nestor, John J., Jr., 4,082,736, Cl. 260-112.50R.

Mohr, Reinhard; Mundlos, Eberhard; and Hohmann, Kurt, to Hoechst Aktiengesellschaft. Quaternary basic azodyestuffs containing a propenyl amino radical. 4,082,740, Cl. 260-146.00R.

Monarch Marking Systems, Inc.: *See—*
Williams, Frederick P., 4,082,873, Cl. 428-40.000.

Monsanto Company: *See—*
Fritzsche, Alfred Keith; and Leonard, Richard L., 4,082,658, Cl. 210-22.00R.
Williams, Peter Geoffrey, 4,082,328, Cl. 289-2.000.

Monsimer, Harold G.: *See—*
Nannelli, Piero L.; and Monsimer, Harold G., 4,082,793, Cl. 260-502.40R.

Montemarano, Jean A.: *See—*
Dyckman, Edward J.; Montemarano, Jean A.; and Fischer, Eugene C., 4,082,709, Cl. 260-22.0CB.

Moore, Edward W.: *See—*
Zollar, Leland H.; and Moore, Edward W., 4,082,677, Cl. 252-8.50B.

Moore, Patricia A.: *See—*
Gibson, David L.; Barrett, Lawrence J.; Moore, Patricia A.; and Butler, David R., 4,082,390, Cl. 312-284.000.

Moran, John Milton: *See—*
Grimmell, William Charles; Kaetzel, Gilbert Carl; Moran, John Milton; and Zanko, George Michael, 4,082,188, Cl. 209-73.000.

Moran, Paul R., to United States of America, Energy. Compton effect thermally activated depolarization dosimeter. 4,082,951, Cl. 250-336.000.

Moraw, Roland; and Dryczynski, Kurt, to Hoechst Aktiengesellschaft. Recording or erasure of images on thermoplastic material. 4,083,054, Cl. 346-151.000.

Moreau, Janine E.: *See—*
La Ferla, Vivian R.; Moreau, Janine E.; and Rodrigues, Mariano, 4,082,283, Cl. 273-241.000.

Moreau, Rene J.: *See—*
Garnier, Marcel A.; and Moreau, Rene J., 4,082,207, Cl. 222-594.000.

Moreinis-Eisen, David. Equipment for the treatment of textiles in the form of hanks or webs with liquid or pastes. 4,081,976, Cl. 68-19.000.

Morelock, Donald L. Method and apparatus for shaping and planing boards. 4,082,129, Cl. 144-326.00R.

Morgan, Jerry N.: *See—*
Blackburn, James R.; Smith, Dudley C.; Smith, Theo B., Jr.; and Morgan, Jerry N., 4,082,142, Cl. 165-76.000.

Morgan, Thomas E., Jr.: *See—*
Black, Richard D.; and Morgan, Thomas E., Jr., 4,082,369, Cl. 303-3.000.

Mori, Hiroshi: *See—*
Tada, Osamu; Nakagawa, Mutsuaki; Mori, Hiroshi; Wakasa, Yutaka; Kataoka, Koju; Inoue, Tadanari; and Uchiike, Hisayuki, 4,082,942, Cl. 364-111.000.

Morisaki, Shigeyoshi; and Kitamura, Nobuo, to Mitsui-Anaconda Elec-

tro Copper Sheet Co., Ltd. Surface treatment process for copper foil. 4,082,591, Cl. 156-150.000.

Morita, Toyoshige; Fujita, Isamu; and Iwamura, Junichi, to F. K. Suzuki International, Inc. Sweetening compound, method of recovery, and use thereof. 4,082,858, Cl. 426-597.000.

Moriyama, Hisa; and Moriyama, Toshiyuki. Massaging instrument and a massaging assembly. 4,082,089, Cl. 128-24.300.

Moriyama, Toshiyuki: *See—*
Moriyama, Hisa; and Moriyama, Toshiyuki, 4,082,089, Cl. 128-24.300.

Morlan, Alva F. X-ray absorbing wedge for improving soft tissue outline. 4,082,957, Cl. 250-482.000.

Morrison, Bertram L., to ACF Industries, Incorporated. Method of making a valve. 4,081,891, Cl. 29-157.10R.

Morrison, Howard J.: *See—*
Fletchic, Donald K.; Morrison, Howard J.; and Baer, Ralph H., 4,082,292, Cl. 274-23.00R.

Morrone, James V. Record album filing cabinet. 4,082,385, Cl. 312-10.000.

Morton, Douglas Ross, Jr., to Upjohn Company, The. 13,14-Dihydro-PGD_1, analogs. 4,082,782, Cl. 260-408.000.

Morton, Douglas Ross, Jr., to Upjohn Company, The. Cis-13-PGD_1 compounds. 4,082,784, Cl. 260-413.000.

Morton, Douglas Ross, Jr., to Upjohn Company, The. Inter-oxa-PGD_1 compounds. 4,082,794, Cl. 260-514.00D.

Morton, Edward W.; and Gilmore, John F., to Westinghouse Electric Corporation. Energy saving device for a standard fluorescent lamp system. 4,082,981, Cl. 315-97.000.

Mosher, Paul R., to United States of America, Navy. Solventless double base propellants and method for plasticizing MTN nitrocellulose propellants without use of solvents. 4,082,583, Cl. 149-96.000.

Mossner, Eugene O.: *See—*
Hurt, William C., II; Miers, Bruce W.; and Mossner, Eugene O., 4,082,343, Cl. 296-28.00C.

Mossner, William Arno; and Mueller, Gerald Edwin, to Houdaille Industries, Inc. Floating tool holder. 4,082,472, Cl. 408-57.000.

Motorola, Inc.: *See—*
Davis, William F., 4,082,075, Cl. 123-148.00E.
Lattin, William Walter, 4,083,045, Cl. 340-347.0AD.
Yanez, Richard R., 4,082,604, Cl. 156-656.000.

Mott, James D.: *See—*
Wolff, Danny K.; Mott, James D.; and Colvin, Kenneth W., 4,082,147, Cl. 166-314.000.

Mould, Henry Manifold, to Perkin-Elmer Limited. Optical slit control apparatus. 4,082,461, Cl. 356-100.000.

Moynihan, Daniel J.: *See—*
Campbell, John A. L.; and Moynihan, Daniel J., 4,082,360, Cl. 299-33.000.

Mueller, Gerald Edwin: *See—*
Mossner, William Arno; and Mueller, Gerald Edwin, 4,082,472, Cl. 408-57.000.

Mueller, Karl, to Xerox Corporation. Method and apparatus for fuser assembly cooling in an electrostatographic machine. 4,082,137, Cl. 165-1.000.

Mueller, Otto, Jr., to Massey-Ferguson Inc. Hydraulic connection and method. 4,082,318, Cl. 285-19.000.

Mulder, Jan: *See—*
Miedema, Andries Rinse; Buschow, Kurt Heinz Jurgen; and Mulder, Jan, 4,082,138, Cl. 165-4.000.

Mullins, William H.: *See—*
Prince, Jack E.; Terry, Franklin E.; and Mullins, William H., 4,082,662, Cl. 210-63.00R.

Mundlos, Eberhard: *See—*
Mohr, Reinhard; Mundlos, Eberhard; and Hohmann, Kurt, 4,082,740, Cl. 260-146.00R.

Murakami, Yuetsu: *See—*
Masumoto, Hakaru; Murakami, Yuetsu; and Nakamura, Naoji, 4,082,579, Cl. 148-31.550.

Murata Manufacturing Co., Ltd.: *See—*
Yoshikawa, Masazi; and Sawada, Tomoe, 4,082,980, Cl. 315-59.000.

Murayama, Eiichi: *See—*
Suzuki, Yoshio; Minai, Masayoshi; Hamma, Noritaka; Murayama, Eiichi; and Aono, Shunji, 4,082,913, Cl. 560-102.000.

Murphy, James R., to Pullman Incorporated. Process for separating solid asphaltic fraction from hydrocracked petroleum feedstock. 4,082,648, Cl. 208-97.000.

Murphy, Randal T.: *See—*
Bales, Emmett R.; and Murphy, Randal T., 4,082,352, Cl. 297-364.000.

Murrmann, Helmuth: *See—*
Graul, Juergen; and Murrmann, Helmuth, 4,082,571, Cl. 148-1.500.

Musbach, Alan Jon, to M.C.P. Industries, Inc. Method of electroplating small parts with chrome substitute tin alloys and electroplating barrel therefor. 4,082,623, Cl. 204-43.00S.

Myers, Mark Stanley; and Bowler, Richard George, to Metrosound Audio Products Ltd. Cleaning and static-removing device for gramophone records. 4,082,294, Cl. 274-47.000.

N.O.V.A. Corporation: *See—*
Seidel, William H.; and McDaniel, Ralph B., 4,081,878, Cl. 15-256.500.

Nagaoka, Isao: *See—*
Imaizumi, Fumitake; Nagaoka, Isao; Kurokawa, Mitsuo; and Komatsu, Koei, 4,082,817, Cl. 260-879.000.

Nagasubramanian, Krishnamurthy: *See—*
Chlanda, Frederick P.; Nagasubramanian, Krishnamurthy; and Liu, Kang-Jen, 4,082,835, Cl. 423-242.000.

Nagata, Akira; and Iyoda, Jun, to Agency of Industrial Science & Technology. Method for manufacture of non-coagulative organosilicone polymer. 4,082,727, Cl. 260-46.50G.

Nagel, Ronald P.: *See—*
Horn, Charles F.; Lerch, Arthur L.; Turckes, Raymond J.; and Nagel, Ronald P., 4,082,022, Cl. 83-82.000.

Nahle, Armando. Medicant composition for the treatment of diabetes. 4,082,842, Cl. 424-229.000.

Naik, Dilip T.: *See—*
McNally, George S.; Naik, Dilip T.; and Spence, John H., 4,082,045, Cl. 105-411.000.

Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, to Bristol-Myers Company. Certain 7-acylamido-3-(2-carboxyalkyl-2,3-dihydro-s-triazolo[4,3-b]pyridazin-3-on-6-ylmethyl)-3-cephem-4-carboxylic acids their salts and easily hydrolyzed esters. 4,082,912, Cl. 544-26.000.

Nakada, Akira: *See—*
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Ishii, Shigeki, 4,082,027, Cl. 84-1.010.

Nakagawa, Koji; and Hirano, Kenkiti, to Denki Kagaku Kogyo Kabushiki Kaisha. Method for execution of quick hardening cement. 4,082,561, Cl. 106-89.000.

Nakagawa, Masataka; Iga, Tadasu; and Fukura, Akira, to Sumitomo Chemical Company, Limited. Process for the preparation of aromatic secondary or tertiary amino compounds. 4,082,802, Cl. 260-574.000.

Nakagawa, Mutsuaki: *See—*
Tada, Osamu; Nakagawa, Mutsuaki; Mori, Hiroshi; Wakasa, Yutaka; Kataoka, Koju; Inoue, Tadanari; and Uchiike, Hisayuki, 4,082,942, Cl. 364-111.000.

Nakagawa, Yasuhiko: *See—*
Yokota, Akira; and Nakagawa, Yasuhiko, 4,081,959, Cl. 60-282.000.

Nakahara, Teruto: *See—*
Hayashi, Tadaaki; and Nakahara, Teruto, 4,082,434, Cl. 350-225.000.

Nakajima, Toshi; Sagara, Takao; and Hagio, Shohachiro, to Kubota, Ltd. Separation-preventing pipe joint construction. 4,082,321, Cl. 285-39.000.

Nakamura, Hiroyuki; Kawaguchi, Hiroshi; and Nishiwaki, Kiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Speed-deceleration warning system for motor vehicles. 4,083,032, Cl. 340-71.000.

Nakamura, Kazuo; Miyata, Katsuhiko; and Tokutomi, Seijiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focus detecting device for single-lens reflex cameras. 4,083,056, Cl. 354-25.000.

Nakamura, Naoji: *See—*
Masumoto, Hakaru; Murakami, Yuetsu; and Nakamura, Naoji, 4,082,579, Cl. 148-31.550.

Nakamura, Yukinobu: *See—*
Ohtsu, Takao; Nakamura, Yukinobu; and Sugimoto, Akira, 4,082,997, Cl. 324-65.00R.

Nakamura, Zenso: *See—*
Tsunekawa, Tokuichi; Nakamura, Zenso; Taguchi, Tetsuya; Uchidoi, Masanori; Aizawa, Hiroshi; and Uchiyama, Takashi, 4,083,059, Cl. 354-149.000.

Nakanishi, Toru: *See—*
Hasegawa, Katsumi; Nakanishi, Toru; and Oka, Toshihiko, 4,081,888, Cl. 28-285.000.

Nakano, Jiro: *See—*
Shichida, Hiromichi; Toyoda, Kenichi; and Nakano, Jiro, 4,082,019, Cl. 82-36.00A.

Nakashima, Nobuyuki, to Fukuoka Tokushu Garasu Kabushiki Kaisha. High refractive index glass compositions. 4,082,427, Cl. 350-105.000.

Nakashima, Noriyuki, to Nippondenso Co., Ltd. Liquid level detector. 4,082,959, Cl. 250-577.000.

Nakata, Roy; and Bohlinger, Arthur Leo, to General Electric Company. Stab connector for enclosed electric bus apparatus. 4,082,933, Cl. 200-163.000.

Nannelli, Piero L.; and Monsimer, Harold G., to United States of America, Navy. Aromatic phosphinic acids containing sulfone linkage. 4,082,793, Cl. 260-502.40R.

Napierski, Silvia: *See—*
Fries, William; and Napierski, Silvia, 4,082,564, Cl. 127-46.00A.
Fries, William; and Napierski, Silvia, 4,082,701, Cl. 260-2.10E.

Narasimhan, Mandayam J.: *See—*
Thirumalachar, Mandayam J.; Narasimhan, Mandayam J.; and Anderson, John A., 4,082,613, Cl. 195-76.000.

National Manufacturing, Co.: *See—*
Edeus, James A., 4,081,880, Cl. 16-90.000.

National Marineplastic Co., Ltd.: *See—*
Iida, Norihika; and Gobaru, Shigeto, 4,082,590, Cl. 156-144.000.

Natkins, Ephraim, to American Casting & Mfg. Corporation. Tamper proof seal. 4,082,336, Cl. 292-318.000.

NCR Corporation: *See—*
Egawa, Setsuya; Sakamoto, Masahiro; and Matsushita, Toshihiko, 4,082,688, Cl. 252-316.000.
Gottschlich, James A., 4,082,210, Cl. 226-91.000.

Nealon, Terence Patrick: *See—*
Corbett, Roger Patrick; Gilson, Trevor Robert; Nealon, Terence Patrick; and Hendra, Patrick John, 4,082,860, Cl. 427-27.000.

Nelson, George Franklin: *See—*
Sauter, Gerald Francis; and Nelson, George Franklin, 4,082,424, Cl. 350-96.110.

Nelson, Norman A.: *See—*
Kelly, Robert C.; and Nelson, Norman A., 4,082,776, Cl. 260-343.600.

Nelson, William T.: *See—*
Holtz, Hans D.; Nelson, William T.; and Devault, Albert N., 4,082,518, Cl. 44-72.000.

Neotec Corporation: *See*—
Johnson, Robert Lincoln, Jr., 4,082,464, Cl. 356-188.000.
Nestor, John J., Jr.: *See*—
Jones, Gordon H.; Moffatt, John G.; and Nestor, John J., Jr., 4,082,735, Cl. 260-112.50R.
Jones, Gordon H.; Moffatt, John G.; and Nestor, John J., Jr., 4,082,736, Cl. 260-112.50R.
Neumann, Arthur E.: *See*—
Rumer, David Orville, Jr.; Findlay, Donald James; Neumann, Arthur E.; and Del Castillo, Juan M., 4,082,029, Cl. 84-484.000.
Neumann, Jurgen: *See*—
Kluger, Wolfgang; and Neumann, Jurgen, 4,082,205, Cl. 222-193.000.
Neuss, Norbert: *See*—
Brannon, Donald R.; and Neuss, Norbert, 4,082,754, Cl. 260-287.00P.
New England Nuclear Corporation: *See*—
Adler, Norman; and Camin, Leopoldo Lazaro, 4,082,840, Cl. 424-1.000.
Newell, Alfred Turenne, III. Animal feeding apparatus. 4,082,064, Cl. 119-51.110.
Newhouse, Donn G.: *See*—
Zwiep, Theodore Carl; Newhouse, Donn G.; and Craner, Jerry D., 4,082,856, Cl. 426-299.000.
Newmark, Harold Leon: *See*—
McGregor, Weldon Courtney; Newmark, Harold Leon; and Ramel, Armin Hermann, 4,082,737, Cl. 260-112.50R.
Newsome, Mary H. Cigarette dispenser and lighter. 4,082,202, Cl. 221-147.000.
Newton, Robert E., to Auburn International, Inc. Vapor/liquid fraction determination. 4,082,994, Cl. 324-30.00R.
NGK Insulators, Ltd.: *See*—
Sato, Nobuo, 4,082,663, Cl. 210-79.000.
NGK Spark Plug Co., Ltd.: *See*—
Iijima, Sigeru, 4,082,826, Cl. 264-65.000.
Nicol, Henry A. Sailing cradle. 4,082,049, Cl. 114-39.000.
Niebylski, Leonard M.; and Rifkin, Ellis B., to Ethyl Corporation. Fuel composition for reducing exhaust gas catalyst plugging. 4,082,517, Cl. 44-68.000.
Niel, Pierre: *See*—
Rozier, Paul; Niel, Pierre; and Ferlay, Jean, 4,082,932, Cl. 200-148.00R.
Nielsen, Jorgen Ilum: *See*—
Borrevang, Poul; Guddal, Erling; Petersen, Henning Borge; Faarup, Peter; and Nielsen, Jorgen Ilum, 4,082,745, Cl. 260-239.100.
Nielsen, Ole Bent Tvaermose: *See*—
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; Bruun, Herta; and Bretting, Claus Aage Svensgaard, 4,082,851, Cl. 424-300.000.
Nihon Electronic Industry Co., Ltd.: *See*—
Kozima, Yasuhiro, 4,082,599, Cl. 156-504.000.
Nihon Iyakuhin Kogyo Co., Ltd.: *See*—
Ikeda, Masao; Miyamoto, Shigeo; Nozawa, Thutomu; Kurobe, Akira; and Futsukaichi, Osamu, 4,082,744, Cl. 260-239.0BB.
Nihon Radiator Co., Ltd. (Nihon Rajieeta Kabushiki Kaisha): *See*—
Miyake, Shiuichi; and Saito, Takao, 4,082,971, Cl. 310-114.000.
Nijman, John Peter, to Bunker Ramo Corporation. Planar pi multi-filter having a ferrite inductance for pin filters in electrical connectors. 4,083,022, Cl. 333-79.000.
Nikka Kabushiki Kaisha: *See*—
Ueno, Tadayoshi; and Itaya, Akio, 4,082,038, Cl. 101-425.000.
Nikonets, Leonid Alexeevich: *See*—
Burgsdorf, Vladimir Vladimirovich; Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Mishin, Valery Vasilievich; Kuznetsov, Viktor Yakovlevich; and Kondratiev, Anatoly Dmitrievich, 4,082,962, Cl. 307-147.000.
Nilsson, Jan: *See*—
Gustafsson, Sven-Goran; Nilsson, Jan; and Syvakari, Pertti, 4,081,984, Cl. 72-60.000.
Nilsson, Karl Osten Alf; and Lindell, Curt Oskar, to Toolex Alpha AB. Adjustable apparatus for separating an outermost label from a stack of labels. 4,082,260, Cl. 271-1.000.
Nims, Philip A., to Crompton & Knowles Corporation. Pneumatic picking mechanism for looms. 4,082,118, Cl. 139-144.000.
Ninneman, Lawrence D.: *See*—
Guest, Paul Richard; and Ninneman, Lawrence D., 4,082,200, Cl. 215-1.00C.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Deutsch, Ralph, 4,082,028, Cl. 84-1.240.
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Ishii, Shigeki, 4,082,027, Cl. 84-1.010.
Nippon Oil Co., Ltd.: *See*—
Nobuo, Yokoyama, 4,082,558, Cl. 106-10.000.
Nippon Sheet Glass Co., Ltd.: *See*—
Yoshida, Motoaki, 4,082,894, Cl. 428-335.000.
Nippon Steel Corporation: *See*—
Ando, Teiichi; and Itoi, Hidenobu, 4,082,718, Cl. 260-33.40R.
Sasaki, Minoru; Hida, Yukihiro; Enokido, Tsuneo; and Ito, Kaoru, 4,082,540, Cl. 75-3.000.
Sugawara, Kinichi, 4,082,539, Cl. 75-3.000.
Nippondenso Co., Ltd.: *See*—
Nakashima, Noriyuki, 4,082,959, Cl. 250-577.000.
Nishikawa, Yukiyasu; and Itagaki, Takuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure information quantizing circuit utilizing shift register. 4,083,055, Cl. 354-23.00D.
Nishimura, Sanji: *See*—
Watanabe, Morio; and Nishimura, Sanji, 4,082,832, Cl. 423-70.000.
Nishino, Eizo. Scale removal device. 4,081,875, Cl. 15-104.06R.
Nishiwaki, Kiyoshi: *See*—
Nakamura, Hiroyuki; Kawaguchi, Hiroshi; and Nishiwaki, Kiyoshi, 4,083,032, Cl. 340-71.000.
Nissan Motor Company, Limited: *See*—
Washino, Kozo, 4,082,119, Cl. 139-370.200.
Yokota, Akira; and Nakagawa, Yasuhiko, 4,081,959, Cl. 60-282.000.
Niswender, Gordon Dean; and Hudson, James M., to Rohm and Haas Company. Cyanocobalamin derivatives. 4,082,738, Cl. 260-121.000.
NM Uranium, Inc.: *See*—
Spence, Andrew P., 4,082,359, Cl. 299-4.000.
Noat, Jacques: *See*—
Vrancken, August; Dufour, Paul; Noat, Jacques; and Holderic, Jean, 4,082,710, Cl. 260-23.0TN.
Nobuo, Yokoyama, to Nippon Oil Co., Ltd. Novel polyolefin waxes and aqueous polishing emulsions thereof. 4,082,558, Cl. 106-10.000.
Noland, Richard D. Self-cleaning filter. 4,082,524, Cl. 55-294.000.
Nolte and Nolte, P.C.: *See*—
Williams, Jake Millard, 4,082,437, Cl. 352-123.000.
Nonaka, Yoshimasa: *See*—
Tanaka, Michiaki; and Nonaka, Yoshimasa, 4,082,397, Cl. 339-49.00R.
Nonn, Konrad; Wolf, Karlheinz; and Hornle, Reinold, to Bayer Aktiengesellschaft. Dyeing preparations, which are soluble in cold water, of anionic dyestuffs. 4,082,505, Cl. 8-85.00R.
Noone, Thomas M.: *See*—
Rudner, Bernard; and Noone, Thomas M., 4,082,704, Cl. 260-2.50A.
Noordermeer, Aart: *See*—
Kok, Johannes George Jacobus; van Moorselaar, Rudolf; and Noordermeer, Aart, 4,082,721, Cl. 260-42.210.
Notari, Bruno; and Rivola, Luigi, to Snamprogetti, S.p.A. Process for the production of aluminum chlorohydroxides. 4,082,685, Cl. 252-187.00R.
Notari, Bruno: *See*—
Fattore, Vittorio; and Notari, Bruno, 4,082,785, Cl. 260-465.300.
Novak, Emil J.: *See*—
Schneider, Manuel; and Novak, Emil J., 4,082,665, Cl. 210-91.000.
Novick, William J., Jr.: *See*—
Lassman, Howard B.; and Novick, William J., Jr., 4,082,850, Cl. 424-278.000.
Novo Industri A/S: *See*—
Borrevang, Poul; Guddal, Erling; Petersen, Henning Borge; Faarup, Peter; and Nielsen, Jorgen Ilum, 4,082,745, Cl. 260-239.100.
Nowack, Gerhard P.: *See*—
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 4,082,815, Cl. 260-683.200.
Nozawa, Takamitsu, to Yoshino Kogyosho Co., Ltd. Trigger type spraying device. 4,082,223, Cl. 239-333.000.
Nozawa, Thutomu: *See*—
Ikeda, Masao; Miyamoto, Shigeo; Nozawa, Thutomu; Kurobe, Akira; and Futsukaichi, Osamu, 4,082,744, Cl. 260-239.0BB.
O & K Orenstein & Koppel Aktiengesellschaft Werk Lubeck: *See*—
Timmann, Peter; and Steinborn, Heinrich A., 4,082,051, Cl. 114-72.000.
Oakes, Malcolm Campbell, to Taymar Limited. Gas appliance valve and adaptor. 4,082,993, Cl. 137-322.000.
Obermoller, Douglas B., to Raven Industries, Inc. All electrical self-contained fuel control system for a burner in a thermal airship. 4,082,239, Cl. 244-98.000.
Obrecht, Robert E. Connection arrangement for manifold blocks. 4,082,324, Cl. 285-137.00R.
O'Brien, John P. Golf training device. 4,081,918, Cl. 36-132.000.
O'Brien, Philip F.: *See*—
McColgan, John M.; and O'Brien, Philip F., 4,082,081, Cl. 126-271.000.
Occidental Oil Shale, Inc.: *See*—
Compton, Leslie E.; and Rowan, William H., 4,082,146, Cl. 166-259.000.
Elkington, W. Brice, 4,082,145, Cl. 166-251.000.
Occidental Petroleum Corporation: *See*—
Ore, Fernando, 4,082,836, Cl. 423-321.00S.
Offergeld, Egon; and Wischniewski, Martin, to Buttner-Schilde-Haas Aktiengesellschaft. System for drying and heating particulate coal. 4,082,498, Cl. 432-14.000.
Ogisu, Kenji: *See*—
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,082,628, Cl. 204-64.00T.
O'Grady, Thomas M.: *See*—
Wennerberg, Arnold N.; and O'Grady, Thomas M., 4,082,694, Cl. 252-444.000.
Ohta, Masafumi, to Ricoh Co., Ltd. Trinitro-11H-indeno[1,2-b]quinoxaline-11-one and process for preparing same. 4,082,750, Cl. 260-250.00Q.
Ohtsu, Takao; Nakamura, Yukinobu; and Sugimoto, Akira, to Japan Gasoline Co., Ltd. Oil detecting device. 4,082,997, Cl. 324-65.00R.
Ohuchi, Hirobumi; Kawakami, Sumio; and Okamura, Masahiro, to Hitachi, Ltd. Avalanche photodiode with reduced avalanche breakdown voltage. 4,083,062, Cl. 357-13.000.
Oil States Rubber Company: *See*—
von Base, Robert J., 4,082,468, Cl. 403-2.000.
Oka, Masahisa: *See*—
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,082,912, Cl. 544-26.000.

Oka, Toshihiko: *See—*
Hasegawa, Katsumi; Nakanishi, Toru; and Oka, Toshihiko, 4,081,888, Cl. 28-285.000.

Okamura, Masahiro: *See—*
Ohuchi, Hirobumi; Kawakami, Sumio; and Okamura, Masahiro, 4,083,062, Cl. 357-13.000.

Okita, Koichi, to Sumitomo Electric Industries, Ltd. Porous polytetrafluoroethylene tubings and process of producing them. 4,082,893, Cl. 428-376.000.

Okladnikov, Vladlen Alexeevich: *See—*
Minin, Vladilen Fedorovich; Gambarov, Vitaly Stepanovich; Kachan, Mikhail Samuilovich; Okladnikov, Vladlen Alexeevich; Troinin, Boris Leonidovich; and Trishin, Jury Alexeevich, 4,081,982, Cl. 72-56.000.

Okuhara, Shinzi, to Hitachi, Ltd. Semiconductor speech path switch. 4,082,923, Cl. 179-18.0GF.

Okumura, Jun: *See—*
Naito, Takayuki; Okumura, Jun; Kamachi, Hajime; Iimura, Seiji; Hoshi, Hideaki; and Oka, Masahisa, 4,082,912, Cl. 544-26.000.

O'Leary, Kevin P.: *See—*
Conder, Terrence M.; and O'Leary, Kevin P., 4,082,879, Cl. 428-219.000.

Olin Corporation: *See—*
Owens, William F., Jr., 4,082,098, Cl. 131-9.000.
Ralston, Richard W., Jr.; and Ames, George K., 4,082,639, Cl. 204-219.000.

O'Loughlin, James P.: *See—*
Hornbeck, Donald W.; and O'Loughlin, James P., 4,082,965, Cl. 307-260.000.

Olschewski, Armin: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; Schurger, Rainer; Brandenstein, Manfred; and Burkl, Erich, 4,082,374, Cl. 308-6.00C.

O'Neil, Charles P., to Amerace Corporation. Timing device with tripping mechanism for fluid valve. 4,082,113, Cl. 137-624.110.

Onizawa, Masao, to Sanyo Trading Co., Ltd. Vulcanizable rubber compositions and vulcanized rubbers obtained therefrom. 4,082,700, Cl. 260-2.00A.

Onozawa, Mamoru: *See—*
Saito, Masao; Onozawa, Mamoru; Sasagawa, Kaoru; and Kawakami, Takamasa, 4,082,786, Cl. 260-465.00C.

Ontario Energy Corporation: *See—*
Flynn, Peter Charles, 4,082,646, Cl. 208-11.00R

Ore, Fernando, to Occidental Petroleum Corporation. Process for the purification of phosphoric acid by extraction. 4,082,836, Cl. 423-321.00S.

Ore-Ida Foods, Inc.: *See—*
Citti, James E.; and Dienst, Carl S., 4,082,855, Cl. 426-250.000.
Hodges, Joseph L.; and Green, Glen R., 4,082,024, Cl. 83-402.000.

Oride, Akiyoshi: *See—*
Yamada, Yukio; Abe, Michiharu; and Oride, Akiyoshi, 4,082,441, Cl. 355-14.000.

Oroshnik, William, to SCM Corporation. Intermediates for Vitamin A. 4,082,791, Cl. 560-260.000.

Orzalesi, Giovanni; and Selleri, Renato, to Societa Italo-Britannica L. Manetti-H. Roberts & Co. 2-(4-Isobutylphenyl)-propiohydroxamic acid and a procedure for its preparation. 4,082,707, Cl. 260-500.50H.

Osment, David L. Method of making model trees and article. 4,082,586, Cl. 156-61.000.

Oster Corporation: *See—*
Sukow, Daniel L.; Smith, Richard A.; and Cockroft, James B., 4,082,941, Cl. 219-243.000.

Otis Elevator Company: *See—*
Simon-Kochloffel, Arnulf Ivan, 4,082,173, Cl. 198-330.000.

Otoshi, Yutaka; and Ishino, Ken, to TDK Electronics Co., Ltd. Vessel for use in heating food. 4,082,560, Cl. 106-45.000.

Ott, Denis P.: *See—*
Sting, Donald W.; and Ott, Denis P., 4,082,327, Cl. 285-401.000.

Ouchi, Yoshio; and Ikeda, Takatoshi, to Hitachi, Ltd. Ink jet recording method and apparatus. 4,083,053, Cl. 346-75.000.

Ovshinsky, Stanford R.: *See—*
Izu, Masatsuga; and Ovshinsky, Stanford R., 4,082,861, Cl. 427-56.000.

Owen, William J., to Martin Marietta Corporation. Automatic space sextant. 4,082,462, Cl. 356-152.000.

Owens-Corning Fiberglas Corporation: *See—*
Symborski, Alex P., 4,082,469, Cl. 403-24.000.

Owens-Illinois, Inc.: *See—*
Guest, Paul Richard; and Ninneman, Lawrence D., 4,082,200, Cl. 215-1.00C.

Owens, William F., Jr., to Olin Corporation. Flavored cigarette. 4,082,098, Cl. 131-9.000.

Oxford Laboratories Inc.: *See—*
Sturm, Ronald Leo; and Smith, James Curtis, 4,082,121, Cl. 141-27.000.

P. Leiner & Sons Limited: *See—*
Croome, Ronald John, 4,082,857, Cl. 426-573.000.

Pacesetter Systems Inc.: *See—*
Mann, Alfred E.; and Schulman, Joseph H., 4,082,097, Cl. 128-419.0PS.

Packard, Douglas R.: *See—*
Grossman, Leonard N.; and Packard, Douglas R., 4,082,834, Cl. 423-210.000.

Pader, Morton, to Lever Brothers Company. Dentifrice. 4,082,841, Cl. 424-50.000.

Page, Dennis M.; and Bevilacqua, Albert J., to M I Systems, Inc. ECG monitoring pad. 4,082,086, Cl. 128-2.06E.

Paget, Charles J.; and Wikel, James H., to Eli Lilly and Company. 4-(2-Halophenyl)-1,2,4-triazole-3-thiol compounds. 4,082,762, Cl. 260-308.00R.

Paice, Derek A., to Westinghouse Electric Corporation. Measurement of motor winding temperature. 4,083,001, Cl. 324-158.0MG.

Pako Corporaton: *See—*
Jensen, Gerald A.; Harvey, Ronald B.; Caulfield, Patrick J.; Putzke, Dwayne H.; and Strunc, Gerald R., 4,082,943, Cl. 235-303.100.

Pallemaerts, Colin J.: *See—*
Bickford, William J.; Hatton, William L.; Pallemaerts, Colin J.; Tanzi, Paul J.; and Tsao, Carson K. H., 4,083,009, Cl. 325-304.000.

Palmer, Wayne D. Security apparatus. 4,082,332, Cl. 292-259.00R.

Palosi, Eva: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcz, 4,082,813, Cl. 260-618.00B.

Palumbo, Dominic T., deceased (by Palumbo, Frances A., administratrix); and Shaffer, Francis N., to GTE Sylvania Incorporated. Manganese activated alkaline earth tungstate phosphors and method of preparing the same. 4,082,687, Cl. 252-301.40F.

Palumbo, Frances A., administratrix: *See—*
Palumbo, Dominic T., deceased; and Shaffer, Francis N., 4,082,687, Cl. 252-301.40F.

Papirer, Eugene; and Donnet, Jean-Baptiste, to Agence Nationale de Valorisation de la Recherche. Method of purification. 4,082,660, Cl. 210-36.000.

Paramonov, Evgeny Borisovich: *See—*
Zakharov, Nikolai Nikolaevich; and Paramonov, Evgeny Borisovich, 4,081,955, Cl. 60-39.16S.

Parker, Ernest G.: *See—*
Milner, Edward F. G.; Parker, Ernest G.; and Swinkels, Godefridus M., 4,082,629, Cl. 204-66.000.

Parker-Hannifin Corporation: *See—*
Hoffman, Robert K.; and Franson, David C., 4,082,107, Cl. 137-195.000.

Parker, Walter, to Ernest Scragg & Sons Limited. Manufacture of bulked yarn. 4,081,948, Cl. 57-34.0HS.

Parkinson, Ronald; and Sinton, Richard Allan, to Falconbridge Nickel Mines Limited. Reusable integrated cathode unit. 4,082,641, Cl. 204-281.000.

Parmentier, Jean; Saurais, Jacques; and Carre, Gerard, to SKF Compagnie d'Applications Mecaniques. Ball cages for ball bearings of the angular contact type having a double row of balls with opposed angular contacts. 4,082,383, Cl. 308-194.000.

Parrow, Harold: *See—*
McCartney, Clyde B., 4,082,155, Cl. 180-5.00R.

Parrow, Wayne: *See—*
McCartney, Clyde B., 4,082,155, Cl. 180-5.00R.

Partyka, Richard Anthony: *See—*
Juby, Peter Frederick; and Partyka, Richard Anthony, 4,082,751, Cl. 260-256.40C.

Pascuzzi, Louis Ferdinand, to Cineffects Color Laboratory Inc. Wet gate embodied in a photographic strip film printer. 4,082,447, Cl. 355-30.000.

Pasero, Edoardo: *See—*
Malgarini, Giansilvio; Pasero, Edoardo; Alitta, Giorgio; De Candida, Cristiano; and Raggio, Carlo, 4,082,545, Cl. 75-35.000.

Passaret, Michel Xavier: *See—*
Regreny, Andre Maurice; Passaret, Michel Xavier; and Rivoallan, Loic Andre, 4,082,601, Cl. 156-623.00R.

Pastorek, Ronald L.: *See—*
Lake, Peter B.; Grenawalt, John J.; and Pastorek, Ronald L., 4,082,576, Cl. 148-12.00F.

Paszthory, Emmerich; Mees, Bernhard; and Hille, Ernst, to Hoechst Aktiengesellschaft. Process for preparing 4-chloro-2,5-dimethoxy aniline. 4,082,803, Cl. 260-575.000.

Patel, Vinod, to Xerox Corporation. Compact illumination system for optically providing a structured photoreceptor charge distribution. 4,082,451, Cl. 355-71.000.

Patent Development & Management Company: *See—*
Larsen, Larry D., 4,083,037, Cl. 340-237.00S.

Paterson, Malcolm M.; and Yelle, Ernest N., to Raytheon Company. Automatic bypass apparatus. 4,082,228, Cl. 241-34.000.

Patterson, John A.: *See—*
Kolaian, Jack H.; Patterson, John A.; and Ward, Frank K., 4,082,792, Cl. 260-501.110.

Patterson, Thomas K.; Mitchell, William O.; Smith, Donald H.; and Hunter, John P., Jr. Creel loading, cutting, and splicing system for sheet material. 4,082,589, Cl. 156-98.000.

Pattyn, Herman Alberik; Vanassche, Willy Joseph; and Philippaerts, Herman Adelbert, to AGFA-GEVAERT N.V. Direct-positive silver halide emulsions. 4,082,554, Cl. 96-101.000.

Patzke, Robert C.; DeRyke, Thomas V.; and Meller, Frederick D., to Addressograph Multigraph Corporation. Cap assembly for aqueous ammonia container. 4,082,206, Cl. 222-400.700.

Paulinski, Ronald Adam, to Burroughs Corporation. Potential failure detecting circuit having improved means for detecting transitions in short duration signals. 4,082,218, Cl. 235-304.000.

Pausch, Josef. Filter bag cleaning apparatus. 4,082,523, Cl. 55-293.000.

Paxton, Wayne E.: *See—*
Carol, John A., Jr.; Paxton, Wayne E.; and Riddel, John W., 4,082,158, Cl. 180-108.000.

Payrhammer, Bernd: *See*—
Bickl, Horst; Treiber, Helmut; Findeis, Gunter; Knor, Bernhard; Payrhammer, Bernd; and Fergg, Berthold, 4,082,465, Cl. 356-203.000.

PCB Piezotronics, Inc.: *See*—
Change, Nicholas D.; and Riggs, Michael T., 4,081,988, Cl. 73-4.00R.

Peabody Coal Company: *See*—
Campbell, John A. L.; and Moynihan, Daniel J., 4,082,360, Cl. 299-33.000.

Peckham, Augustus W. Manually operated lawn sprinkling or irrigating system. 4,082,117, Cl. 137-870.000.

Pedersen, Kristen I.; and Kiely, William L., to Sofec, Inc. Submerged self-stabilized cargo hose arm for a single point mooring system. 4,081,872, Cl. 9-8.00P.

Peel, Robert C.: *See*—
Headrick, J. Charles; Starnes, R. Emory; and Peel, Robert C., 4,082,212, Cl. 228-147.000.

Peeples, Denny L., to General Motors Corporation. Liquid level sensor. 4,082,930, Cl. 200-84.00C.

Pehle, Ronald C.: *See*—
Haubein, Harold D.; Allen, George D.; Harmon, Robert W.; Ramsey, Edgar J., Jr.; and Pehle, Ronald C., 4,083,028, Cl. 337-144.000.

Pelley, Ralph L.: *See*—
Fisher, Warren C.; Linder, Seymour M.; Pelley, Ralph L.; and Liao, Hsiang-Peng, 4,082,777, Cl. 260-348.250.

Pepper, Roger T.: *See*—
Kendall, Ernest G.; and Pepper, Roger T., 4,082,864, Cl. 427-248.00B.

Perkin-Elmer Corporation, The: *See*—
Austin, Robert R.; and Bastien, Roy C., 4,082,413, Cl. 350-1.100.

Perkin-Elmer Limited: *See*—
Mould, Henry Manifold, 4,082,461, Cl. 356-100.000.

Perreault, Jules; and Bombardier, Emile, to Bombardier Limited. Vehicle windshield. 4,082,346, Cl. 296-84.00R.

Perretta, Michael L., to Crouse-Hinds Company. Ballast vibration isolation system with thermal path. 4,082,141, Cl. 165-69.000.

Perry, Anthony J.: *See*—
Menth, Anton; Perry, Anthony J.; and Spinner, Ulrich, 4,082,582, Cl. 148-102.000.

Perry, Jack A. Spring type ball-pitching apparatus. 4,082,076, Cl. 124-7.000.

Perry, Kenneth D.: *See*—
Cole, Victor L.; and Perry, Kenneth D., 4,082,168, Cl. 188-112.00R.

Peters, Alan. Method for forming a decorative novelty device. 4,082,871, Cl. 428-15.000.

Petersen, Carl Herbert; and Gunnergaard, Marius, to Dansk Industri Syndikat A/S. Foundry apparatus for the separation of castings from casting moulds. 4,082,135, Cl. 164-404.000.

Petersen, Henning Borge: *See*—
Borrevang, Poul; Guddal, Erling; Petersen, Henning Borge; Faarup, Peter; and Nielsen, Jorgen Ilum, 4,082,745, Cl. 260-239.100.

Peterson, Raymond L.: *See*—
Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., 4,081,917, Cl. 36-76.00R.

Petretti, Raymond H., to Toneray Covers, Inc. Cover assembly. 4,082,347, Cl. 296-98.000.

Petrie, Harold L.: *See*—
Erickson, John W.; and Petrie, Harold L., 4,082,482, Cl. 417-408.000.

Petro-Canada Exploration Inc.: *See*—
Flynn, Peter Charles, 4,082,646, Cl. 208-11.00R.

Petroski, Alex, to Liquid Removal Service Co., Inc. Mobile sludge trailer and method of filling and emptying same. 4,082,672, Cl. 210-205.000.

Petrow, Henry G.; and Allen, Robert J., to Prototech Company. Method of preparing catalytic structures from colloidal platinum compounds and such catalytic structures. 4,082,699, Cl. 252-472.000.

Petty, Frank, to Mar-Kel Lighting, Inc. Ceramic speaker enclosure. 4,082,159, Cl. 181-156.000.

Petzold, Manfred: *See*—
Heyden, Rudi; Asbeck, Adolf; Eckelt, Michael; Petzold, Manfred; and Uphues, Gunter, 4,082,689, Cl. 252-321.000.

Pfahler, Gerhard: *See*—
Mayer, Norbert; Pfahler, Gerhard; and Wiezer, Hartmut, 4,082,723, Cl. 260-45.80N.

Pfarrer, David M., to Lennox Industries, Inc. Switching contactor circuit for five-lead two-speed single-phase motor. 4,082,989, Cl. 318-224A.

Pfeifer, Friedrich; and Klein, Gunter, to Vacuumschmelze GmbH. Iron-nickel-molybdenum alloy having improved stability and high initial permeability. 4,082,580, Cl. 148-31.550.

Pfizer Inc.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,082,717, Cl. 260-345.90R.

Pharo, Lawrence C., Jr., to United States of America, Navy. Acoustic presence detection method and apparatus. 4,083,031, Cl. 340-5.00R.

Philippaerts, Herman Adelbert: *See*—
Pattyn, Herman Alberik; Vanassche, Willy Joseph; and Philippaerts, Herman Adelbert, 4,082,554, Cl. 96-101.000.

Phillips Petroleum Company: *See*—
Holtz, Hans D.; Nelson, William T.; and Devault, Albert N., 4,082,518, Cl. 44-72.000.
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 4,082,815, Cl. 260-683.200.
Mitacek, Bill, 4,082,680, Cl. 252-59.000.

Piber, Earl T., to Cutler-Hammer, Inc. Switch with illuminated handle tip. 4,082,934, Cl. 200-315.000.

Picker Corporation: *See*—
Sell, Leslie James, 4,082,955, Cl. 250-445.00T.
Vepy, Tamas A., 4,082,956, Cl. 250-480.000.

Pieroni, Joseph Kirby: *See*—
Martin, Frank Stephen; Melvin, Terence; and Pieroni, Joseph Kirby, 4,082,288, Cl. 273-218.000.

Pierson, Marvin B.: *See*—
Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., 4,082,868, Cl. 427-329.000.

Pietrusza, Arthur Jacob: *See*—
Kent, Harry James; and Pietrusza, Arthur Jacob, 4,082,489, Cl. 425-222.000.

Pijlman, Hans: *See*—
van de Goor, Adrianus Johannes; Pijlman, Hans; and van der Vleugel, Bernard Evert, 4,082,945, Cl. 235-419.000.

Pike, Daniel E., to Air Pollution Industries, Inc. Blast furnace pressure equalizing apparatus. 4,082,253, Cl. 266-147.000.

Pilkington Brothers Limited: *See*—
Lythgoe, Stanley; and Gelder, David, 4,082,528, Cl. 65-135.000.

Pillote, Vernon J., to Brearley Company, The. Weighing scale apparatus. 4,082,154, Cl. 177-211.000.

Piper, George Francis: *See*—
Kanotz, William Michael; Lockhart, William Robert; Piper, George Francis; Vesperman, William Charles; and Wilson, Max Kearns, 4,082,585, Cl. 156-51.000.

Piranha Products: *See*—
Boosman, Frank Carlisle, 4,082,229, Cl. 241-46.00B.

Pirtle, Allwyn W.: *See*—
Van Auken, Richard L.; and Pirtle, Allwyn W., 4,082,277, Cl. 273-80.00R.

Pisarek, Jerzy: *See*—
Szadkowska, Maria; Pisarek, Jerzy; Dzik, Boleslaw; Staniak, Elzbieta; Lipniewska, Danuta; and Bijok, Franciszek, 4,082,853, Cl. 426-36.000.

Pistorius, Rudolf; and Millauer, Hans, to Hoechst Aktiengesellschaft. P-Benzoquinone diketals. 4,082,809, Cl. 260-611.00R.

Pitney-Bowes, Inc.: *See*—
Schubert, Keith E., 4,082,006, Cl. 74-89.200.

Pittinger, A. Lincoln. Energy roof. 4,082,080, Cl. 126-271.000.

Pizzio, Pietro, to Alfachimici S.p.A. Silver base activating solutions for electroless copper deposition. 4,082,557, Cl. 106-1.110.

Planiblock, S.A.: *See*—
Del Carpio, Bernardo, 4,082,824, Cl. 264-46.300.

Pockrandt, Gunter: *See*—
Baron, Gerhard; Bierbach, Herbert; Hafke, Carl; and Pockrandt, Gunter, 4,082,520, Cl. 48-202.000.

Polaroid Corporation: *See*—
Driscoll, John J.; Svatek, Thomas A.; and Wareham, Richard R., 4,082,446, Cl. 355-27.000.

Pollitzer, Ernest L.; and Hayes, John C., to UOP Inc. Hydrocracking hydrocarbons over tri-metallic catalyst. 4,082,649, Cl. 208-111.000.

Pollock, Tom G.: *See*—
Anderson, Clifton W.; Kubik, John J.; Pollock, Tom G.; Schlict, Larry J.; and Wilcox, Craig R., 4,082,198, Cl. 214-519.000.

Polysius AG: *See*—
Kluger, Wolfgang; and Neumann, Jurgen, 4,082,205, Cl. 222-193.000.

Pommer, Dennis, to General Mills, Inc. Apparatus for handling snack chips. 4,082,176, Cl. 198-411.000.

Pool Company: *See*—
Armstrong, James Eubank, 4,081,932, Cl. 52-111.000.

Poot, Albert Lucien: *See*—
Laridon, Urbain Leopold; Poot, Albert Lucien; and Willems, Jozef Frans, 4,082,901, Cl. 428-480.000.

Popodi, Alfred E., to Westinghouse Electric Corporation. Fast switching phase lock loop system. 4,083,015, Cl. 331-4.000.

Poppe, Wassily: *See*—
Fielding, Ivor R.; and Poppe, Wassily, 4,082,716, Cl. 260-30.40R.

Porinchak, Joseph F.: *See*—
Brax, Harri J.; Porinchak, Joseph F.; and Weinberg, Alan S., 4,082,829, Cl. 264-209.000.

Portescap: *See*—
Girardin, Jean-Claude, 4,082,970, Cl. 310-113.000.

Portin, Henry E. Cushioned protective surface. 4,082,888, Cl. 428-327.000.

Portnoy, Norman A.; and Anderson, David Paul, to International Telephone and Telegraph Corporation. Recovery of chemical components of cellulosic regenerating solution. 4,082,617, Cl. 203-28.000.

Potrykus, Franz Johann: *See*—
Klaus, Franz; and Potrykus, Franz Johann, 4,082,380, Cl. 308-163.000.

Powers Manufacturing, Inc.: *See*—
Powers, Whitney S., Jr., 4,081,991, Cl. 73-41.000.

Powers, Whitney S., Jr., to Powers Manufacturing, Inc. Apparatus for pressure testing frangible containers. 4,081,991, Cl. 73-41.000.

PPG Industries, Inc.: *See*—
Chang, Wen-Hsuan, 4,082,634, Cl. 204-159.150.
Estes, Ronald L.; McGee, Larry S.; and Welton, Sanford M., 4,082,526, Cl. 65-24.000.
Franz, Helmut, 4,081,934, Cl. 52-171.000.
Kelly, Joseph B., 4,081,927, Cl. 51-101.00R.
Kelly, Joseph B., 4,082,529, Cl. 65-273.000.
Miller, Richard G.; and Cavitt, Roy L., 4,082,898, Cl. 428-427.000.
Seymour, Samuel L., 4,082,530, Cl. 65-273.000.

Prab Conveyors, Inc.: *See*—
Van Nocker, Melvin, 4,082,178, Cl. 198-741 000.

Pracht, Hans Joachim; and Wong, Louis Fay, to Procter & Gamble Company, The. Fabric conditioning articles and process. 4,082,678, Cl. 252-8.600.
Pressman, Gerald L., to ElectroPrint. Electrostatic modulator for control of flow of charged particles. 4,082,448, Cl. 355-3.0SC.
Prestele, Karl: *See—*
Franetzki, Manfred; Korn, Volker; and Prestele, Karl, 4,082,088, Cl. 128-2.080.
Pricon, Inc.: *See—*
Bedford, John E., 4,082,511, Cl. 23-230.0HC.
Prince, Jack E.; Terry, Franklin E.; and Mullins, William H. Liquid Waste treatment apparatus. 4,082,662, Cl. 210-63.00R.
Pro-Tech, Inc.: *See—*
Martig, Kenneth W., Jr., 4,081,998, Cl. 73-302.000.
Procter & Gamble Company, The: *See—*
Pracht, Hans Joachim; and Wong, Louis Fay, 4,082,678, Cl. 252-8.600.
Products of Information Technology, Inc.: *See—*
Haemmig, Adrian B., 4,083,003, Cl. 325-6.000.
Propper Manufacturing Co., Inc.: *See—*
Heine, Helmut A.; Schmidt, Otto H.; and Rosenbusch, Helmut W., 4,082,946, Cl. 362-32.000.
Prototech Company: *See—*
Petrow, Henry G.; and Allen, Robert J., 4,082,699, Cl. 252-472.000.
Provi, Mike A., to Brearley Company, The. Digital type floor scale with weigh cycle control. 4,082,153, Cl. 177-177.000.
Pruncutz, T. John. Fish hook holder. 4,081,923, Cl. 43-57.50R.
Pugh, Brinley Roy, to Lever Brothers Company. Toothbrushes. 4,081,876, Cl. 15-167.00R.
Pullman Incorporated: *See—*
McNally, George S.; Naik, Dilip T.; and Spence, John H., 4,082,045, Cl. 105-411.000.
Murphy, James R., 4,082,648, Cl. 208-97.000.
Purrmann, Robert: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; Zahler, Wolf-Dieter; and Grimm-Lenz, Rainer, 4,082,722, Cl. 260-42.430.
Pursley, John A. Process for preparing hydrazine. 4,082,838, Cl. 423-408.000.
Puterbaugh, Richard L., to Franklin Manufacturing Company. Method of constructing a refrigeration cabinet. 4,082,825, Cl. 264-46.500.
Putnam, Dean H., to Magnagard Equipment & Manufacturing Corporation. Modular microfiche duplicator. 4,082,454, Cl. 355-99.000.
Putzke, Dwayne H.: *See—*
Jensen, Gerald A.; Harvey, Ronald B.; Caulfield, Patrick J.; Putzke, Dwayne H.; and Strunc, Gerald R., 4,082,943, Cl. 235-303.100.
Pyreflex Corporation: *See—*
Berg, Charles A., 4,082,414, Cl. 350-1.700.
Quadbeck-Seeger, Hans-Juergen; and Tonne, Peter, to BASF Aktiengesellschaft. Process for the production of amines. 4,082,749, Cl. 260-250.0BN.
Quantor Corporation: *See—*
Seitz, Paul N., 4,082,439, Cl. 355-100.000.
Quinci, Emanuel: *See—*
Konars, Clement R.; and Quinci, Emanuel, 4,082,262, Cl. 271-149.000.
Quinn, Peter T., to Honeywell Inc. Focus size compensation. 4,083,057, Cl. 354-25.000.
Raab, Alfred, to Jacuzzi Bros., Inc. Hydro-air fitting. 4,082,091, Cl. 128-66.000.
Raabe, Ralph C.; Cleffman, Roger G.; and Stratton, Raymond G., to Bandag Incorporated. Splicing of tread strips. 4,082,592, Cl. 156-153.000.
Rabeau, Henry A.: *See—*
Gibb, George H.; and Rabeau, Henry A., 4,082,115, Cl. 137-630.200.
Raffel, Rainer: *See—*
Althausen, Ferdinand; and Raffel, Rainer, 4,082,251, Cl. 366-179.000.
Raggio, Carlo: *See—*
Malgarini, Giansilvio; Pasero, Edoardo; Alitta, Giorgio; De Candida, Cristiano; and Raggio, Carlo, 4,082,545, Cl. 75-35.000.
Raidel, John E. Multiple axle suspension with load equalizer beam. 4,082,316, Cl. 280-681.000.
Raines, Russell Harold: *See—*
Koenig, Harvey Steven; and Raines, Russell Harold, 4,082,506, Cl. 8-91.000.
Ralston, Richard W., Jr.; and Ames, George K., to Olin Corporation. Method and apparatus for mercury cell anode adjustment. 4,082,639, Cl. 204-219.000.
Ramel, Armin Hermann: *See—*
McGregor, Weldon Courtney; Newmark, Harold Leon; and Ramel, Armin Hermann, 4,082,737, Cl. 260-112.50R.
Ramsey, Edgar J., Jr.: *See—*
Haubein, Harold D.; Allen, George D.; Harmon, Robert W.; Ramsey, Edgar J., Jr.; and Pehle, Ronald C., 4,083,028, Cl. 337-144.000.
Rangabe, Alexander Rizo. Method of mounting a particle on a support member. 4,082,213, Cl. 228-171.000.
Rangi, Rajindar S.; and South, Peter, to Canadian Patents and Development Limited. Overspeed spoilers for vertical axis wind turbine. 4,082,479, Cl. 416-23.000.
Rapp, Willard Emanuel, to Western Electric Company, Inc. Apparatus for changing screen devices. 4,082,487, Cl. 425-135.000.
Rashid, Sheikh A.; Bray, Hugh S.; and Boarini, Edward J., to United States Gypsum Company. Fire resistant asphalt roofing shingles. 4,082,885, Cl. 428-281.000.
Rautenbach, Robert; Hoeck, Horst; and Beer, Wolfgang. Freeze dryer. 4,081,914, Cl. 34-92.000.
Rave, Terence W., to Hercules Incorporated. Glyoxal modified poly (beta-alanine) strengthening resins for use in paper. 4,082,730, Cl. 260-72.00R.
Raven Industries, Inc.: *See—*
Obermoller, Douglas B., 4,082,239, Cl. 244-98.000.
Ray, James Lester, Jr.: *See—*
Keller, Alex J.; Dellinger, Keith Sidney; Ray, James Lester, Jr.; Cherry, Thomas Adrian; and Fechner, Erhard A., 4,081,949, Cl. 57-53.000.
Raymond, Anthony J. Semi-hot metallic extrusion-coating method. 4,082,869, Cl. 427-357.000.
Raymond International, Inc.: *See—*
Swenson, William J., 4,082,032, Cl. 91-216.00B.
Raymond Lee Organization, Inc., The: *See—*
Chirumbolo, Frank, 4,082,186, Cl. 206-577.000.
Elkins, Nate, 4,082,266, Cl. 272-75.000.
Merritt, Ronald, 4,082,289, Cl. 273-246.000.
Rodgers, John, 4,082,079, Cl. 126-270.000.
Raytheon Company: *See—*
Bickford, William J.; Hatton, William L.; Pallemaerts, Colin J.; Tanzi, Paul J.; and Tsao, Carson K. H., 4,083,009, Cl. 325-304.000.
Paterson, Malcolm M.; and Yelle, Ernest N., 4,082,228, Cl. 241-34.000.
RCA Corporation: *See—*
Ban, Vladimir Sinisa; and Gilbert, Stephen Lee, 4,082,865, Cl. 427-253.000.
Dingwall, Andrew Gordon Francis, 4,081,896, Cl. 29-590.000.
Hinn, Werner, 4,082,996, Cl. 358-242.000.
Knop, Karl, 4,082,438, Cl. 353-97.000.
Knop, Karl, 4,082,453, Cl. 355-88.000.
Miller, Arthur, 4,082,425, Cl. 350-96.170.
Woodward, Oakley McDonald, 4,083,051, Cl. 343-797.000.
Realist, Inc.: *See—*
Underberg, Robert L., 4,082,466, Cl. 356-249.000.
Realty & Industrial Corporation: *See—*
Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., 4,082,172, Cl. 197-20.000.
Rebhan, Dieter: *See—*
Harbeck, Alfred; Rebhan, Dieter; and Walburg, Richard, 4,082,300, Cl. 277-123.000.
Rech, Jakob, to Applefield, Sheldon H.; and Applefield, Jerome H., part interest to each. Fastening means. 4,082,130, Cl. 151-23.000.
Recognition Equipment Incorporated: *See—*
Hicks, James Ray, 4,083,034, Cl. 340-146.30H.
Reed, David Robert: *See—*
Burton, Arthur; and Reed, David Robert, 4,082,890, Cl. 428-328.000.
Reeves, Richard F.: *See—*
Henley, Thomas D.; and Reeves, Richard F., 4,082,867, Cl. 427-327.000.
Regie Nationale des Usines Renault: *See—*
Lalin, Andre; and Brisabois, Roger, 4,082,171, Cl. 192-70.200.
Regreny, Andre Maurice; Passaret, Michel Xavier; and Rivoallan, Loic Andre. Process for fabricating $Li(NbTa)O_3$ films onto lithium tantalate single crystals. 4,082,601, Cl. 156-623.00R.
Reichardt, Mayo M.: *See—*
Cerano, Leon R.; and Reichardt, Mayo M., 4,082,486, Cl. 425-129.00R.
Reime, Roy O.; and Stewart, Byron C., to Dorst, Richard. Electric power plant for motor driven vehicles. 4,082,988, Cl. 318-139.000.
Reinbacher, Helmut. Ring cutting tool and accessory. 4,082,025, Cl. 83-411.00R.
Reinhall, Rolf Bertil. Disc refiner having means for removing gaseous media from pulp stock. 4,082,233, Cl. 241-244.000.
Reinhardt, Bruce A.: *See—*
Harris, Frank W.; and Reinhardt, Bruce A., 4,082,806, Cl. 260-590.00D.
Relf, Victor K.: *See—*
Haythornthwaite, Peter F.; and Relf, Victor K., 4,082,123, Cl. 141-64.000.
Reliance Electric Company: *See—*
Chung, Jackson, 4,082,180, Cl. 198-835.000.
Simmons, Frank B.; Bozsvai, Alex; Kovacs, Louis A.; and Gerbetz, Robert P., 4,082,381, Cl. 308-187.000.
Reliance Products Corporation: *See—*
Chrones, Anthony, 4,082,351, Cl. 297-347.000.
Remy, David C., to Merck & Co., Inc. 4-Aminomethyldibenzobicyclo[5.1.0]octanes. 4,082,801, Cl. 260-570.900.
Renner, Alfred; and Haug, Theobald, to Ciba-Geigy Corporation. New imides of unsaturated dicarboxylic acids, processes for their manufacture, and their use. 4,082,768, Cl. 260-326.260.
Renner, Hermann; and Wacker, Siegfried, to Daimler-Benz Aktiengesellschaft. Head support for backrest, especially of motor vehicles. 4,082,354, Cl. 297-410.000.
Reuther, Albert: *See—*
von der Eltz, Hans-Ulrich; Reuther, Albert; and Wassmuth, Hans-Joachim, 4,082,502, Cl. 8-34.000.
Rexham Corporation: *See—*
Johnson, Kenneth R., 4,081,942, Cl. 53-22.00B.
Reynolds Metals Company: *See—*
Schardein, Daniel Joseph; and Lloyd, Ruth Diane, 4,082,907, Cl. 428-640.000.

Reynolds, Roy: *See*—
Ailshie, Roger Howard; and Reynolds, Roy, 4,082,342, Cl. 296-28.00C.
Rhodes, Rufus K., to Witco Chemical Corporation. Light stabilized textile mineral oil. 4,082,679, Cl. 252-8.800.
Rhude, John M., to General Electric Company. Circuit tester with reliable indication means. 4,082,995, Cl. 324-51.000.
Ribka, Joachim: *See*—
Mees, Bernhard; and Ribka, Joachim, 4,082,501, Cl. 8-26.000.
Richard, John E.: *See*—
Thuleen, Richard A.; and Richard, John E., 4,082,078, Cl. 126-197.000.
Richards, Edward L.: *See*—
Dobrosielski, Stephen S.; Richards, Edward L.; and Skalka, Paul, 4,083,027, Cl. 337-66.000.
Richter Gedeon Vegyeszeti Gyar Rt.: *See*—
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcz, 4,082,813, Cl. 260-618.00B.
Rickel, David Murray: *See*—
Hermanson, Gerald Peter; Rickel, David Murray; and Carr, Robert Joseph, 4,081,894, Cl. 29-433.000.
Ricoh Co., Ltd.: *See*—
Ohta, Masafumi, 4,082,750, Cl. 260-250.00Q.
Yamada, Yukio; Abe, Michiharu; and Oride, Akiyoshi, 4,082,441, Cl. 355-14.000.
Riddel, John W.: *See*—
Carol, John A., Jr.; Paxton, Wayne E.; and Riddel, John W., 4,082,158, Cl. 180-108.000.
Riemenschneider, Wilhelm; and Wegener, Peter, to Hoechst Aktiengesellschaft. Process for preparing cyanoformamide. 4,082,796, Cl. 260-545.00R.
Rifkin, Ellis B.: *See*—
Niebylski, Leonard M.; and Rifkin, Ellis B., 4,082,517, Cl. 44-68.000.
Riganati, John P.; and Vitols, Visvaldis A., to Rockwell International Corporation. Binary image minutiae detector. 4,083,035, Cl. 340-146.30E.
Riggs, Michael T.: *See*—
Change, Nicholas D.; and Riggs, Michael T., 4,081,988, Cl. 73-4.00R.
Ring, Harry Kenneth, Jr.: *See*—
Hantke, Gerhard John; and Ring, Harry Kenneth, Jr., 4,082,114, Cl. 137-625.370.
Ringel, Reginald Karl: *See*—
Sly, William Porter; and Ringel, Reginald Karl, 4,082,299, Cl. 277-82.000.
Ritsema, Irving R., to Bendix Corporation, The. Disc brake having retention device. 4,082,166, Cl. 188-73.600.
Ritter, Arthur J.; and Deck, James R., to Caterpillar Tractor Co. Final drive bladder. 4,082,170, Cl. 192-13.00R.
Ritter, Arthur J., Jr.: *See*—
Krolak, Ronald L.; Cackley, George W.; Getz, Marvin G.; and Ritter, Arthur J., Jr., 4,082,156, Cl. 180-9.620.
Rivoallan, Loic Andre: *See*—
Regreny, Andre Maurice; Passaret, Michel Xavier; and Rivoallan, Loic Andre, 4,082,601, Cl. 156-623.00R.
Rivola, Luigi: *See*—
Notari, Bruno; and Rivola, Luigi, 4,082,685, Cl. 252-187.00R.
Robbins, Kenneth C.; and Summaria, Louis, to Michael Reese Research Foundation. Plasminogen activator complex. 4,082,612, Cl. 195-62.000.
Robert Bosch GmbH: *See*—
Denamps, Jean; and LeCossec, Jean, 4,082,960, Cl. 307-118.000.
Gansert, Willi, 4,082,400, Cl. 339-91.00R.
Mayer, Hartmut, 4,082,069, Cl. 123-117.00D.
Roberts, John S., to Kling-Tecs, Inc. Method for crimping yarn. 4,081,886, Cl. 28-251.000.
Robertshaw Controls Company: *See*—
Rogers, Arden D., Jr.; and Goff, Clifford E., 4,082,219, Cl. 236-12.00R.
Robinson, Delmar W., to UOP Inc. Method of catalyst manufacture. 4,082,696, Cl. 252-466.00B.
Rockwell International Corporation: *See*—
Fabian, Gordon R.; McCollum, James H.; and Kammerer; Leo P., 4,082,238, Cl. 244-17.130.
Griffith, Glen R.; Sandusky, Zane A.; and Watson, George A., 4,081,995, Cl. 73-116.000.
Riganati, John P.; and Vitols, Visvaldis A., 4,083,035, Cl. 340-146.30E.
Rodemeyer, Donald J., to Metaframe Corporation. Integrated aquarium. 4,082,062, Cl. 119-5.000.
Rodgers, John, to Raymond Lee Organization, Inc., The. Portable solar oven and grill. 4,082,079, Cl. 126-270.000.
Rodite, Robert Richard: *See*—
Gedney, Ronald Walker; and Rodite, Robert Richard, 4,082,394, Cl. 339-17.00M.
Rodrigues, Mariano: *See*—
La Ferla, Vivian R.; Moreau, Janine E.; and Rodrigues, Mariano, 4,082,283, Cl. 273-241.000.
Roe, Anthony Maitland: *See*—
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,082,843, Cl. 424-250.000.
Rogers, Arden D., Jr.; and Goff, Clifford E., to Robertshaw Controls Company. Fluid mixing valve construction and method of making the same. 4,082,219, Cl. 236-12.00R.
Rohm and Haas Company: *See*—
Fries, William; and Napierski, Silvia, 4,082,564, Cl. 127-46.00A.
Fries, William; and Napierski, Silvia, 4,082,701, Cl. 260-2.10E.
McRae, Dougal Harold, 4,082,538, Cl. 71-125.000.
Niswender, Gordon Dean; and Hudson, James M., 4,082,738, Cl. 260-121.000.
Rollei of America, Inc.: *See*—
Adams, James R., Jr., 4,082,983, Cl. 315-241.00P.
Rosen, Irving: *See*—
Aziz, Walid Y.; Ball, Lawrence E.; and Rosen, Irving, 4,082,728, Cl. 260-67.00A.
Rosenbusch, Helmut W.: *See*—
Heine, Helmut A.; Schmidt, Otto H.; and Rosenbusch, Helmut W., 4,082,946, Cl. 362-32.000.
Rosinski, Edward J.; Stein, Thomas R.; and Fischer, Ronald H., to Mobil Oil Corporation. Catalyst for residua demetalation and desulfurization. 4,082,695, Cl. 252-465.000.
Ross, Joseph. Soft contact lens insertion and removal instrument. 4,082,339, Cl. 294-1.0CA.
Ross, William James: *See*—
Evans, Delme; Jolley, Michael Ralph John; Ross, William James; and Swann, Brian Picton, 4,082,771, Cl. 260-332.20R.
Rossi, Eugene F., to Allis-Chalmers Corporation. Multipurpose kiln shell gas burner. 4,082,499, Cl. 432-19.000.
Rothenberger GmbH & Co. Werkzeugeuge-Maschinen: *See*—
Rothenberger, Gunter, 4,081,985, Cl. 72-117.000.
Rothenberger, Gunter, to Rothenberger GmbH & Co. Werkzeugeuge-Maschinen. Tool for forming necks on circumferential surfaces of pipes. 4,081,985, Cl. 72-117.000.
Rother, Peter: *See*—
Metzler, Gerhart; Rother, Peter; and Sukopp, Hans, 4,082,291, Cl. 274-23.00R.
Rothwell, Thomas F., to Dresser Industries, Inc. Butterfly valve thruport seal. 4,082,246, Cl. 251-307.000.
Rotter, Gerhard: *See*—
Buchan, William A.; and Rotter, Gerhard, 4,082,237, Cl. 242-192.000.
Rover, Jack T., to Datron Systems, Inc. Miniature relay. 4,083,024, Cl. 335-136.000.
Rowan, William H.: *See*—
Compton, Leslie E.; and Rowan, William H., 4,082,146, Cl. 166-259.000.
Royal Industries, Inc.: *See*—
Kulp, Jack H.; and Florsheim, James M., 4,083,033, Cl. 340-114.00R.
Rozier, Paul; Niel, Pierre; and Ferlay, Jean, to Delle-Alsthom S.A. High-voltage electric equipment cell. 4,082,932, Cl. 200-148.00R.
RTE Corporation: *See*—
Flatt, Richard P., 4,082,404, Cl. 339-111.000.
Link, Edwin A., 4,082,866, Cl. 427-294.000.
Rubright, Phillip L., to Chemcast Corporation. Sealing member. 4,081,879, Cl. 16-2.000.
Ruchlak, Kasimir: *See*—
Heinze, Christoph; Ruchlak, Kasimir; and Steude, Holm, 4,082,659, Cl. 210-23.00F.
Rudner, Bernard; and Noone, Thomas M., to Tenneco Chemicals, Inc. Polyurethane foam of increased rigidity. 4,082,704, Cl. 260-2.50A.
Ruhrgas Aktiengesellschaft: *See*—
Baron, Gerhard; Bierbach, Herbert; Hafke, Carl; and Pockrandt, Gunter, 4,082,520, Cl. 48-202.000.
Rumer, David Orville, Jr.; Findlay, Donald James; Neumann, Arthur E.; and Del Castillo, Juan M., to Del Castillo, Juan M. Optical metronomes. 4,082,029, Cl. 84-484.000.
Runciman, Herbert Morrison; and Berry, Peter John, to Barr & Stroud Limited. Radiation scanning system with two scanners rotating about parallel axes. 4,082,416, Cl. 350-6.800.
Runciman, Herbert Morrison; and Berry, Peter John, to Barr & Stroud Limited. Radiation scanning system with two reflective drums rotating about parallel axes according to an equation. 4,082,417, Cl. 350-6.800.
Russell, John X.; and Liske, Kenneth T., to Babcock & Wilcox Company, The. Machine tool automation. 4,082,018, Cl. 82-2.500.
Russo, Neil: *See*—
Donato, Anthony C.; and Russo, Neil, 4,082,395, Cl. 339-21.00R.
S.A.F. Societe Agricole et Fonciere S.A.: *See*—
Imhof, Hugo, 4,082,532, Cl. 71-8.000.
Saari, Walfred S.; and Lumma, William C., Jr., to Merck & Co., Inc. 3-(1-Piperazinyl)-pyrido[2,3-b]pyrazines. 4,082,845, Cl. 424-250.000.
Saari, Walfred S.: *See*—
Lumma, William C., Jr.; and Saari, Walfred S., 4,082,844, Cl. 424-250.000.
Sackin, Milton; and Hummert, George T., to Westinghouse Electric Corporation. Elevator system. 4,082,164, Cl. 187-29.00R.
Sagara, Takao: *See*—
Nakajima, Toshi; Sagara, Takao; and Hagio, Shohachiro, 4,082,321, Cl. 285-39.000.
Sahlin, Thomas E.: *See*—
Hutchings, Le Roi E.; and Sahlin, Thomas E., 4,082,647, Cl. 208-78.000.
St. Cyr, Lewis A.: *See*—
Knight, John H.; St. Cyr, Lewis A.; and Wilson, Omer L., 4,082,645, Cl. 208-11.00R.
St. Laurent, Raymond G.: *See*—
Werner, Gregory Keith; Switzer, Kenneth Oscar; and St. Laurent, Raymond G., 4,082,371, Cl. 305-56.000.
Saito, Masao; Onozawa, Mamoru; Sasagawa, Kaoru; and Kawakami,

Takamasa, to Mitsubishi Gas Chemical Company, Inc. Process of production of aromatic nitriles. 4,082,786, Cl. 260-465.00C.

Saito, Takao: *See*—
Miyake, Shiuichi; and Saito, Takao, 4,082,971, Cl. 310-114.000.

Saito, Yukio: *See*—
Komuro, Takeo; Saito, Yukio; and Hirato, Mizuno, 4,082,615, Cl. 201-12.000.

Sakaki, Hirokazu: *See*—
Yamashina, Toshiro; and Sakaki, Hirokazu, 4,082,040, Cl. 101-456.000.

Sakamoto, Masahiro: *See*—
Egawa, Setsuya; Sakamoto, Masahiro; and Matsushita, Toshihiko, 4,082,688, Cl. 252-316.000.

Salinger, Fred G., to Electro-Therm, Inc. Mounting grommet for an electric heating element used in appliances and the like. 4,082,301, Cl. 277-212.00F.

Salisbury, Thomas. Quick lace tightener for shoes. 4,081,916, Cl. 36-50.000.

Salloum, Robert J.: *See*—
Duff, Clifford C.; and Salloum, Robert J., 4,082,366, Cl. 302-11.000.

Salmen, Leo Augustus: *See*—
Inamorato, Jack Thomas; and Salmen, Leo Augustus, 4,082,682, Cl. 252-92.000.

Salminen, Reijo K. Pulp and paper drying apparatus and method. 4,081,913, Cl. 34-41.000.

San Fernando Electric Manufacturing Company: *See*—
Amin, Rajnikant B.; Anderson, Harlan Urie; and Hodgkins, Charles E., 4,082,906, Cl. 428-539.000.

Sanders, Davis J. Golf ball holder. 4,082,209, Cl. 224-29.00B.

Sanders, Robert K.: *See*—
Dornfeld, Kenneth A.; Marlow, Jerry R.; and Sanders, Robert K., 4,082,013, Cl. 74-866.000.

Sandoz Ltd.: *See*—
Bolton, Ivan Joseph; and Mercer, Alec Victor, 4,082,746, Cl. 260-239.900.

Sandquist, Axel: *See*—
Brinkschroder, Franz-Jurgen; Sandquist, Axel; and Johannaber, Friedrich, 4,082,488, Cl. 425-204.000.

Sandusky, Zane A.: *See*—
Griffith, Glen R.; Sandusky, Zane A.; and Watson, George A., 4,081,995, Cl. 73-116.000.

Sanford, Lawrence. Inflatable packer and valve mechanism therefor. 4,082,298, Cl. 277-34.300.

Sanford, Richard: *See*—
Bourdon, Normand C.; Sanford, Richard; and Eifler, Raymond J., 4,082,398, Cl. 339-59.00M.

Sangamo Electric Company: *See*—
Metcalf, Wilbur F., 4,083,052, Cl. 346-18.000.

Sangamo Weston, Inc.: *See*—
Becker, Dale F., 4,083,000, Cl. 324-137.000.

Santiago, Gonzalo D.: *See*—
Crawford, Duncan J.; and Santiago, Gonzalo D., 4,082,497, Cl. 431-158.000.

Santos, Adelino Claudio. Ejector retraction mechanism. 4,082,245, Cl. 249-68.000.

Santos, James P. Stationary exercise bicycle. 4,082,264, Cl. 272-73.000.

Sanyo Trading Co., Ltd.: *See*—
Onizawa, Masao, 4,082,700, Cl. 260-2.00A.

Sasagawa, Kaoru: *See*—
Saito, Masao; Onozawa, Mamoru; Sasagawa, Kaoru; and Kawakami, Takamasa, 4,082,786, Cl. 260-465.00C.

Sasaki, Minoru; Hida, Yukihiro; Enokido, Tsuneo; and Ito, Kaoru, to Nippon Steel Corporation. Material for sintering emitting a lesser amount of nitrogen oxide and a method for manufacturing the same. 4,082,540, Cl. 75-3.000.

Sato, Hiroshi: *See*—
Shimogori, Kazutoshi; Sato, Hiroshi; and Tomari, Haruo, 4,082,900, Cl. 428-469.000.

Sato, Nobuo, to NGK Insulators, Ltd. Method of positioning a filter cake discharge device for a filter press. 4,082,663, Cl. 210-79.000.

Satriana, Daniel R.; and Bracuti, Arthur J., to United States of America, Army. Ballistic modifier. 4,082,584, Cl. 149-109.400.

Satzinger, Gerhard: *See*—
Stoss, Peter Johannes; Herrmann, Manfred Franz Reinhold; and Satzinger, Gerhard, 4,082,770, Cl. 260-330.500.

Saufferer, Helmut; and Willmann, Karl, to Daimler-Benz Aktiengesellschaft. Installation for feeding and atomizing liquid, especially combustion fuel. 4,082,070, Cl. 123-119.00E.

Saunders, Lawrence Allan, to Clark Equipment Company. Axle cradle mounting having elastomeric spherical bushings. 4,082,377, Cl. 308-15.000.

Saurais, Jacques: *See*—
Parmentier, Jean; Saurais, Jacques; and Carre, Gerard, 4,082,383, Cl. 308-194.000.

Sauter, Gerald Francis; and Nelson, George Franklin, to Sperry Rand Corporation. Integrated optic device. 4,082,424, Cl. 350-96.110.

Savage, Marc. Container-dispenser for desiccant material for inclusion in a racket handle. 4,082,204, Cl. 222-191.000.

Sawada, Tomoe: *See*—
Yoshikawa, Masazi; and Sawada, Tomoe, 4,082,980, Cl. 315-59.000.

Sawaki, Toru: *See*—
Ichikawa, Yataro; Sawaki, Toru; and Honda, Yuitsu, 4,082,804, Cl. 260-584.00R.

Sawyer, Philip N. Prosthesis and method for making the same. 4,082,507, Cl. 8-94.110.

Schaefer, Henry A.: *See*—
Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., 4,083,011, Cl. 325-352.000.

Schaefer, Robert H.; and McQuinn, Ted M., to General Motors Corporation. Transmission and control with centrifugal dump valve. 4,082,012, Cl. 74-864.000.

Schafer, Eugene D.: *See*—
Draugelis, Vaidevutis C.; and Schafer, Eugene D., 4,082,443, Cl. 355-4.000.

Schalow, Rudolph D., to Energystics. Vehicle guidance system. 4,083,047, Cl. 343-7.0VM.

Schardein, Daniel Joseph; and Lloyd, Ruth Diane, to Reynolds Metals Company. Thin molybdenum coatings on aluminum for solar energy absorption. 4,082,907, Cl. 428-640.000.

Scheiderer, Edwin L.: *See*—
Wittenbrook, Lawrence S.; and Scheiderer, Edwin L., 4,082,533, Cl. 71-28.000.

Scheller, James I. Tire tread structure. 4,082,131, Cl. 152-210.000.

Schelp, Helmut R., to Garrett Corporation, The. Low nitric oxide emission combustion system for gas turbines. 4,081,958, Cl. 60-39.51R.

Schering Aktiengesellschaft: *See*—
Vorbruggen, Helmut, 4,082,911, Cl. 536-23.000.

Schevey, William R.: *See*—
Spiliotis, Nicholas J.; Schevey, William R.; and Himler, Donald W., 4,082,621, Cl. 204-38.00B.

Schiemann, Heinz: *See*—
Kleen, Gerhard; Schiemann, Heinz; and Allmendinger, Karl, 4,083,026, Cl. 336-70.000.

Schiethart, Lodewijk, to Heemaf B.V. Synchronous electric motor. 4,082,973, Cl. 310-162.000.

Schilling, Hermann; and Seifert, Heinz, to Carl Freudenberg, Firma. Silencer for exhausting gas streams. 4,082,160, Cl. 181-258.000.

Schilt, Earl A.: *See*—
Houston, James E.; Gingrich, Reynard W.; and Schilt, Earl A., 4,082,606, Cl. 159-27.00B.

Schjeldahl, Gilmore T. Apparatus for handling superimposed stacked receptacles. 4,082,203, Cl. 221-211.000.

Schlaf, Helmut: *See*—
Burg, Karlheinz; and Schlaf, Helmut, 4,082,729, Cl. 260-67.0FP.

Schlichthaerle, Gottfried: *See*—
Buechner, Oskar; Schlichthaerle, Gottfried; and Urban, Friedrich, 4,082,910, Cl. 528-481.000.

Schlict, Larry J.: *See*—
Anderson, Clifton W.; Kubik, John J.; Pollock, Tom G.; Schlict, Larry J.; and Wilcox, Craig R., 4,082,198, Cl. 214-519.000.

Schmid, Giorgio: *See*—
Zardi, Umberto; Lagana', Vincenzo; Bonetti, Andrea; and Schmid, Giorgio, 4,082,797, Cl. 260-555.00A.

Schmidgall, Rolf E.: *See*—
Jennings, Marvin D.; and Schmidgall, Rolf E., 4,081,996, Cl. 73-141.00A.

Schmidt, Alexander, Jr.: *See*—
Schmidt, Alexander, Sr.; Schmidt, Walter; and Schmidt, Alexander, Jr., 4,081,977, Cl. 69-42.000.

Schmidt, Alexander, Sr.; Schmidt, Walter; and Schmidt, Alexander, Jr., to USM Corporation. De-fleshing apparatus for animal hides. 4,081,977, Cl. 69-42.000.

Schmidt, Andreas; and Kirchmayr, Rudolf, to Ciba-Geigy Corporation. 1-Oxo-2-(phosphona)-1,2-diphenylethanes. 4,082,821, Cl. 260-946.000.

Schmidt, George A.; Zubko, Ronald L.; and Abolins, Andrew, to Strick Corporation. Convertible vehicle body. 4,082,357, Cl. 298-27.000.

Schmidt, Manfred, to AGFA-Gevaert, A.G. Hose coupling. 4,082,112, Cl. 137-614.030.

Schmidt, Otto H.: *See*—
Heine, Helmut A.; Schmidt, Otto H.; and Rosenbusch, Helmut W., 4,082,946, Cl. 362-32.000.

Schmidt, Walter: *See*—
Schmidt, Alexander, Sr.; Schmidt, Walter; and Schmidt, Alexander, Jr., 4,081,977, Cl. 69-42.000.

Schmitt, Werner; Purrmann, Robert; Jochum, Peter; Zahler, Wolf-Dieter; and Grimm-Lenz, Rainer. Pre-mixed dental composition for the preparation of a dental silicate cement. 4,082,722, Cl. 260-42.430.

Schmitz, Joseph Francis, to Whirlpool Corporation. Vacuum cleaner fan. 4,082,478, Cl. 415-209.000.

Schnedler, Paul E.; Pierson, Marvin B.; Graff, Hart F.; Compton, Thomas A.; and Leasure, William R., to Armco Steel Corporation. Method for continuously contact-coating one side only of a ferrous base metal strip with a molten coating metal. 4,082,868, Cl. 427-329.000.

Schneider, Manuel; and Novak, Emil J. Fluid filter device for automotive power steering system. 4,082,665, Cl. 210-91.000.

Schoerner, Roger J.; and Chia, Enrique C., to Southwire Company. High tensile strength aluminum alloy conductor and method of manufacture. 4,082,573, Cl. 148-2.000.

Schouwenaars, Jozef E. K. M., to U.S. Philips Corporation. Phonograph record player or changer. 4,082,293, Cl. 274-39.00A.

Schroter, Herbert, to Hoechst Aktiengesellschaft. Device for adjusting an original to be copied. 4,082,456, Cl. 355-109.000.

Schubert, Keith E., to Pitney-Bowes, Inc. Postage meter conversion apparatus. 4,082,006, Cl. 74-89.200.

Schulman, Joseph H.: *See*—
Mann, Alfred E.; and Schulman, Joseph H., 4,082,097, Cl. 128-419.0PS.

Schulthess, Peter U.; and Wild, Peter J., to BBC Aktiengesellschaft

Brown, Boveri & Company, Ltd. Driving circuit for a matrix-addressed liquid crystal display device. 4,082,430, Cl. 350-333.000.

Schultz, Frederick K., to General Motors Corporation. Monostable multivibrator timer circuits with reset. 4,083,013, Cl. 328-207.000.

Schurger, Rainer: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; Schurger, Rainer; Brandenstein, Manfred; and Burkl, Erich, 4,082,374, Cl. 308-6.00C.

Schutt, Elmer F.; Thornton, Bryce G.; and Bentivegna, Charles R., Jr., to Addressograph Multigraph Corporation. Duplicator control by area scanned coded master. 4,082,039, Cl. 101-450.000.

Schwarz, Peter. Color television, having superimposed colors. 4,082,978, Cl. 313-474.000.

Schweiger, Barry: *See—*
Simon, Theodore, 4,083,039, Cl. 340-248.00R.

Schweiger, Fritz, to Hochtemperatur-Kernkraftwerk GmbH, Gemeinsames Europaisches Unternehmen. Control rod for gas-cooled nuclear reactors. 4,082,609, Cl. 176-86.00R.

SCM Corporation: *See—*
Oroshnik, William, 4,082,791, Cl. 560-260.000.

Scott, Bruce Albert: *See—*
Engler, Edward Martin; Kaufman, Frank Benjamin; and Scott, Bruce Albert, 4,082,552, Cl. 96-38.400.

Scott USA, Inc.: *See—*
Liman, Sandy, 4,081,864, Cl. 2-161.00A.

Sedlmair, Gerhard, to Marker, Hannes. Front jaw for safety ski bindings. 4,082,314, Cl. 280-625.000.

Segal, Bernard C. Combination of interlocking security on chain door. 4,082,333, Cl. 292-264.000.

Seidel, William H.; and McDaniel, Ralph B., to N.O.V.A. Corporation. Tape cleaning device. 4,081,878, Cl. 15-256.500.

Seifert, Heinz: *See—*
Schilling, Hermann; and Seifert, Heinz, 4,082,160, Cl. 181-258.000.

Seiler, William, Jr., to David Kopf Systems. Proportioning system. 4,082,667, Cl. 210-96.00M.

Seipos, Andrew G.: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, 4,081,893, Cl. 29-432.000.

Seitz, Karl, to Ciba-Geigy AG. Fibre-reactive dyestuff containing a bis-triazinylamino. 4,082,739, Cl. 260-146.00T.

Seitz, Paul N., to Quantor Corporation. Film duplicator. 4,082,439, Cl. 355-100.000.

Selenia-Industrie Elettroniche Associate S.p.A.: *See—*
Misiano, Carlo; Diedrich, Karl Heinz; and Simonetti, Enrico, 4,082,637, Cl. 204-192.00E.

Sell, Leslie James, to Picker Corporation. X-ray apparatus. 4,082,955, Cl. 250-445.00T.

Selleri, Renato: *See—*
Orzalesi, Giovanni; and Selleri, Renato, 4,082,707, Cl. 260-500.50H.

Semicon, Inc.: *See—*
House, Robert E.; Irvin, Robert A.; and Kane, Daniel F., 4,082,570, Cl. 136-89.0SJ.

Separex SA: *See—*
Westberg, Johan Eric Hayden, 4,082,217, Cl. 233-25.000.

Serbert Industries (Proprietary) Limited: *See—*
Alberts, Heinrich-Albert, 4,082,470, Cl. 403-172.000.

Sereda, Peter J.: *See—*
Litvan, Gerhard G.; and Sereda, Peter J., 4,082,562, Cl. 106-97.000.

Sewell, Richard Benjamin Hollis: *See—*
Anderton, William Arthur; and Sewell, Richard Benjamin Hollis, 4,082,588, Cl. 156-71.000.

Seymour, Samuel L., to PPG Industries, Inc. Press bending apparatus and method of fabrication. 4,082,530, Cl. 65-273.000.

Shabel, Barrie S.: *See—*
Evancho, Joseph W.; Shabel, Barrie S.; and Truckner, William G., 4,082,578, Cl. 148-12.70A.

Shadle, Robert James, to W. R. Grace & Co. Unoriented composite laminar film with an elastomeric layer and sealable layer. 4,082,877, Cl. 428-35.000.

Shaffer, Francis N.: *See—*
Palumbo, Dominic T., deceased; and Shaffer, Francis N., 4,082,687, Cl. 252-301.40F.

Shaffer, John W., to GTE Sylvania Incorporated. Photoflash lamp. 4,082,494, Cl. 431-95.00R.

Shank, Lee R. Method of making a textile product. 4,081,885, Cl. 28-149.000.

Sharp Kabushiki Kaisha: *See—*
Takagi, Toshinori, 4,082,636, Cl. 204-192.00N.

Shaw, Wilfrid G.; and Terrill, David B., to Standard Oil Company, The. Catalyst compositions especially useful for preparation of unsaturated acids. 4,082,698, Cl. 252-469.000.

Sheehan, Russell T. Self-contained pallet-elevating bag palletizer. 4,082,194, Cl. 214-6.00P.

Sheldon, Gregg. Torsion bar skateboard. 4,082,306, Cl. 280-87.04A.

Shell Oil Company: *See—*
Gwyn, John E., 4,081,968, Cl. 61-35.000.

Shergov, Igor Vladimirovich; Slavinsky, Vladimir Danilovich; Fridlender, Lev Moiseevich; Zharinov, Valery Ivanovich; and Kozhaev, Arkady Filippovich. Thermionic heater cathode assembly of electron-beam gun. 4,082,938, Cl. 219-121.0EB.

Shibata, Tatsuo: *See—*
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,082,252, Cl. 266-142.000.

Shichida, Hiromichi; Toyoda, Kenichi; and Nakano, Jiro, to Fujitsu Fanuc Limited. Tool-indexing apparatus for machine tool. 4,082,019, Cl. 82-36.00A.

Shier, George D., to Dow Chemical Company, The. Process for production of oxazine diones. 4,082,748, Cl. 544-98.000.

Shimogori, Kazutoshi; Sato, Hiroshi; and Tomari, Haruo, to Kobe Steel, Ltd. Chemical apparatus free from crevice corrosion. 4,082,900, Cl. 428-469.000.

Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, to Sumitomo Electric Industries, Ltd. An optical transmission fiber containing fluorine. 4,082,420, Cl. 350-96.310.

Shoemaker, Edwin J.: *See—*
Knabusch, Edward M.; and Shoemaker, Edwin J., 4,082,355, Cl. 297-440.000.

Shook, Howard Everett, Jr., to Du Pont de Nemours, E. I., and Company. Recovery of metal and triarylborane catalyst components from olefin hydrocyanation residue. 4,082,811, Cl. 260-606.50B.

Shrum, Lorne Russell. Molds for the continuous casting of metals. 4,081,983, Cl. 72-56.000.

Siemens Aktiengesellschaft: *See—*
Auracher, Franz; Mitterhummer, Gerhard; and Zeitler, Karl-Heinz, 4,082,421, Cl. 350-96.220.
Franetzki, Manfred; Korn, Volker; and Prestele, Karl, 4,082,088, Cl. 128-2.080.
Franke, Kurt, 4,082,954, Cl. 250-421.000.
Gies, Johannes, 4,082,964, Cl. 307-259.000.
Graul, Juergen; and Murrmann, Helmuth, 4,082,571, Cl. 148-1.500.
Hoffmann, Kurt, 4,082,963, Cl. 307-221.00D.
Krause, Hartmut; and Grassme, Ulrich, 4,082,953, Cl. 250-413.000.

Siess, Hans Gunter Gerhard: *See—*
Braun, Klaus Joachim; and Siess, Hans Gunter Gerhard, 4,082,460, Cl. 356-85.000.

Sigler, Thelma G., to Alpha Nova Development Corporation. Cast cutter. 4,081,906, Cl. 30-276.000.

Sigmatex AG Basel: *See—*
Weman, Per-Olof, 4,082,317, Cl. 280-745.000.

Silver, Harry. Electrical junction box. 4,082,915, Cl. 174-51.000.

Simeola, Mario J. Portable shampoo unit. 4,081,867, Cl. 4-159.000.

Simmons, Frank B.; Bozsvai, Alex; Kovacs, Louis A.; and Gerbetz, Robert P., to Reliance Electric Company. Lubricated bearing assembly. 4,082,381, Cl. 308-187.000.

Simon-Kochloffel, Arnulf Ivan, to Otis Elevator Company. Drive unit for an endless conveyor. 4,082,173, Cl. 198-330.000.

Simon, Stefan: *See—*
Johst, Wolfgang; Friese, Axel; and Simon, Stefan, 4,081,884, Cl. 28-119.000.

Simon, Theodore, to Simon, Theodore; and Schweiger, Barry. Voltage enhancement circuit for central station monitored alarm systems. 4,083,039, Cl. 340-248.00R.

Simonetti, Enrico: *See—*
Misiano, Carlo; Diedrich, Karl Heinz; and Simonetti, Enrico, 4,082,637, Cl. 204-192.00E.

Simulation Physics, Inc.: *See—*
Kirkpatrick, Allen R., 4,082,958, Cl. 250-492.00B.

Singer Company, The: *See—*
Jaffe, Wolfgang; and Lukawich, Joseph James, 4,081,974, Cl. 66-75.200.
Stiles, John Callender; and Ferriss, Lincoln Stark, 4,082,990, Cl. 318-662.000.

Single Buoy Moorings, Inc.: *See—*
van Heijst, Willem Jan, 4,082,050, Cl. 114-53.000.

Sinton, Richard Allan: *See—*
Parkinson, Ronald; and Sinton, Richard Allan, 4,082,641, Cl. 204-281.000.

Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, to Warner-Lambert Company. Amides of 4-hydroxy-6H-thieno[2,3-b]thiopyran-5-carboxylic acid-7,7-dioxide. 4,082,757, Cl. 260-294.80C.

Sjolander, Rino. Method and apparatus for the removal of deposits from a fuel injection valve. 4,082,565, Cl. 134-1.000.

Sjostrand, Uno Roland, to AB Ziristor. Arrangement for the reading of photocell markings on a material web provided with decoration. 4,081,944, Cl. 53-51.000.

Skalka, Paul: *See—*
Dobrosielski, Stephen S.; Richards, Edward L.; and Skalka, Paul, 4,083,027, Cl. 337-66.000.

SKF Compagnie d'Applications Mecaniques: *See—*
Parmentier, Jean; Saurais, Jacques; and Carre, Gerard, 4,082,383, Cl. 308-194.000.

SKF Industrial Trading & Development Company B.V.: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; Schurger, Rainer; Brandenstein, Manfred; and Burkl, Erich, 4,082,374, Cl. 308-6.00C.

Skurkiss, Peter Kenny, to Bell Telephone Laboratories, Incorporated. Process for chromating metallic surfaces. 4,082,620, Cl. 204-15.000.

Slater, John W. Pressure sensitive label applicator. 4,082,595, Cl. 156-351.000.

Slater, Robert Antony: *See—*
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,082,843, Cl. 424-250.000.

Slavinsky, Vladimir Danilovich: *See—*
Shergov, Igor Vladimirovich; Slavinsky, Vladimir Danilovich; Fridlender, Lev Moiseevich; Zharinov, Valery Ivanovich; and Kozhaev, Arkady Filippovich, 4,082,938, Cl. 219-121.0EB.

Sly, William Porter; and Ringel, Reginald Karl, to Caterpillar Tractor Co. Sealing means and assembly therefore. 4,082,299, Cl. 277-82.000.

Smith, Donald H.: *See—*
Patterson, Thomas K.; Mitchell, William O.; Smith, Donald H.; and Hunter, John P., Jr., 4,082,589, Cl. 156-98.000.
Smith, Dudley C.: *See—*
Blackburn, James R.; Smith, Dudley C.; Smith, Theo B., Jr.; and Morgan, Jerry N., 4,082,142, Cl. 165-76.000.
Smith, Frank A.: *See—*
Augustine, Harry G.; Krupinski, Kenneth C.; and Smith, Frank A., 4,082,823, Cl. 264-7.000.
Smith, Homer H. Portable door securing device. 4,082,335, Cl. 292-291.000.
Smith, Hoyt L., to Cutters Machine Company, Inc. Drive speed control apparatus for cloth spreading machine. 4,082,258, Cl. 270-31.000.
Smith International, Inc.: *See—*
Kellner, Jackson M., 4,082,373, Cl. 308-4.00A.
Wood, Edgar Wray; and Young, Jerry Olympus, 4,082,323, Cl. 285-133.00A.
Smith, James B. Omnidirectional sewer hose support. 4,082,242, Cl. 248-83.000.
Smith, James Curtis: *See—*
Sturm, Ronald Leo; and Smith, James Curtis, 4,082,121, Cl. 141-27.000.
Smith Kline & French Laboratories Limited: *See—*
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,082,843, Cl. 424-250.000.
Smith, Richard A.: *See—*
Sukow, Daniel L.; Smith, Richard A.; and Cockroft, James B., 4,082,941, Cl. 219-243.000.
Smith, Theo B., Jr.: *See—*
Blackburn, James R.; Smith, Dudley C.; Smith, Theo B., Jr.; and Morgan, Jerry N., 4,082,142, Cl. 165-76.000.
Smorzaniuk, Adam; and Lindlau, Paul F., to Amerace Corporation. Terminal block with encapsulated heat sink. 4,082,407, Cl. 339-112.00R.
Snamprogetti, S.p.A.: *See—*
Fattore, Vittorio; and Notari, Bruno, 4,082,785, Cl. 260-465.300.
Germano, Giovanni; Losciale, Francesco; Falesiedi, Roberto; Daclon, Ferruccio; and Merzagora, Nicola, 4,081,895, Cl. 29-573.000.
Notari, Bruno; and Rivola, Luigi, 4,082,685, Cl. 252-187.00R.
Zardi, Umberto; Lagana', Vincenzo; Bonetti, Andrea; and Schmid, Giorgio, 4,082,797, Cl. 260-555.00A.
Sneer, Meer. Dental implants. 4,081,908, Cl. 32-10.00A.
Snyder, Milo S.: *See—*
Dehait, Jack T.; Dietz, David C.; Snyder, Milo S.; and Talor, Francis M., 4,082,463, Cl. 356-167.000.
Snyder, Robert, to Documation, Inc. Band timing generator. 4,082,944, Cl. 235-309.000.
Societa' Italiana Resine S.I.R. S.p.A.: *See—*
Lo Scalzo, Enzo; Ferre, Franco; and Cantoni, Gianfranco, 4,082,714, Cl. 260-29.70R.
Societa Italo-Britannica L. Manetti-H. Roberts & Co.: *See—*
Orzalesi, Giovanni; and Selleri, Renato, 4,082,707, Cl. 260-500.50H.
Societe Anonyme Automobiles Citroen: *See—*
Cadiou, Jean, 4,082,987, Cl. 318-139.000.
Societe Chimique des Charbonnages: *See—*
Couderc, Pierre; and Hilmoine, Serge, 4,082,775, Cl. 260-343.600.
Sodaflo Drinks Limited: *See—*
Haythornthwaite, Peter F.; and Relf, Victor K., 4,082,123, Cl. 141-64.000.
Sofec, Inc.: *See—*
Pedersen, Kristen I.; and Kiely, William L., 4,081,872, Cl. 9-8.00P.
Sogo, Yoshiaki: *See—*
Aoki, Sethuo; and Sogo, Yoshiaki, 4,082,936, Cl. 219-10.410.
Solex Research Corporation: *See—*
Watanabe, Morio; and Nishimura, Sanji, 4,082,832, Cl. 423-70.000.
Solid State Scientific Inc.: *See—*
Goldberg, Mitchell J., 4,083,020, Cl. 331-113.00R.
Sommer, Manfred, to Wolf, Helmut. Rotary vane-type pump. 4,082,485, Cl. 418-226.000.
Sony Corporation: *See—*
Hamada, Takeshi; Ishigaki, Yoshio; and Hongu, Masayuki, 4,083,019, Cl. 331-113.00R.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,082,628, Cl. 204-64.00T.
Soong, Jeanne F.: *See—*
Soong, Tsai C.; and Soong, Jeanne F., 4,082,275, Cl. 273-73.00D.
Soong, Tsai C.; and Soong, Jeanne F. Sport racket. 4,082,275, Cl. 273-73.00D.
Soudijn, Willem: *See—*
van Wijngaarden, Ineke; Soudijn, Willem; Vandenberk, Jan; and Hens, Jozef Fr., 4,082,755, Cl. 260-293.600.
South, Peter: *See—*
Rangi, Rajindar S.; and South, Peter, 4,082,479, Cl. 416-23.000.
Southern Business Systems of Greensboro, Inc.: *See—*
Williams, Charles V., 4,082,047, Cl. 109-21.500.
Southwire Company: *See—*
Bonnamour, Yves B., 4,082,136, Cl. 164-433.000.
Headrick, J. Charles; Starnes, R. Emory; and Peel, Robert C., 4,082,212, Cl. 228-147.000.
Schoerner, Roger J.; and Chia, Enrique C., 4,082,573, Cl. 148-2.000.
Spector George: *See—*
Walters, Adolbert F.; and Spector George, 4,082,939, Cl. 219-202.000.
Speier, John L., to Dow Corning Corporation. Method of preparing mercaptans. 4,082,790, Cl. 260-448.80R.
Spence, Andrew P., to Atlantic Richfield Company; NM Uranium, Inc.; and United States Steel Corporation. Method for the recovery of a material. 4,082,359, Cl. 299-4.000.
Spence, John H.: *See—*
McNally, George S.; Naik, Dilip T.; and Spence, John H., 4,082,045, Cl. 105-411.000.
Sperry Rand Corporation: *See—*
Ehrhart, Philip J., 4,081,946, Cl. 56-14.400.
Locke, David Richard, 4,081,902, Cl. 30-43.920.
Sauter, Gerald Francis; and Nelson, George Franklin, 4,082,424, Cl. 350-96.110.
Spiliotis, Nicholas J.; Schevey, William R.; and Himler, Donald W., to Allied Chemical Corporation. Plating method with lead or tin sublayer. 4,082,621, Cl. 204-38.00B.
Spinner, Ulrich: *See—*
Menth, Anton; Perry, Anthony J.; and Spinner, Ulrich, 4,082,582, Cl. 148-102.000.
Sprenger, Alfred Paul. Oil well pump. 4,082,483, Cl. 417-554.000.
Staker, Anthony Gail. Programmable variable-rate electric adapting device for watt-hour meters. 4,082,999, Cl. 324-116.000.
Stampfli, Harald, to Lucifer S.A. Electromagnetic two-way valve. 4,082,116, Cl. 137-630.140.
Stamvik, Anders Robert: *See—*
Fex, Hans Jacob; Kristensson, Sten Krister; and Stamvik, Anders Robert, 4,082,779, Cl. 260-397.500.
Standard Oil Company, The: *See—*
Aziz, Walid Y.; Ball, Lawrence E.; and Rosen, Irving, 4,082,728, Cl. 260-67.00A.
Coffey, Gerald P.; and Mazeke, Herbert F., 4,082,818, Cl. 260-879.000.
Li, George S.; and Dirks, Gary W., 4,082,819, Cl. 260-879.000.
Li, George S.; and Jorkasky, Richard J., II, 4,082,820, Cl. 260-879.000.
Shaw, Wilfrid G.; and Terrill, David B., 4,082,698, Cl. 252-469.000.
Standard Oil Company (Indiana): *See—*
Fielding, Ivor R.; and Poppe, Wassily, 4,082,716, Cl. 260-30.40R.
Wennerberg, Arnold N.; and O'Grady, Thomas M., 4,082,694, Cl. 252-444.000.
Staniak, Elzbieta: *See—*
Szadkowska, Maria; Pisarek, Jerzy; Dzik, Boleslaw; Staniak, Elzbieta; Lipniewska, Danuta; and Bijok, Franciszek, 4,082,853, Cl. 426-36.000.
Starnes, R. Emory: *See—*
Headrick, J. Charles; Starnes, R. Emory; and Peel, Robert C., 4,082,212, Cl. 228-147.000.
Stauffer Chemical Company: *See—*
Baker, Don R.; and Walker, Francis H., 4,082,799, Cl. 260-559.00B.
Baker, Don R.; and Walker, Francis H., 4,082.800, Cl. 260-559.00B.
Stedman, Robert N., to Caterpillar Tractor Co. Articulated high lift vehicle. 4,082,197, Cl. 214-132.000.
Stein, Merle R., to United States Steel Corporation. Tool-clamping device and method of setting up a pipe cutoff machine. 4,082,020, Cl. 82-37.000.
Stein, Philip C. Seal for sealing between a rotating member and a housing. 4,082,296, Cl. 277-3.000.
Stein, Thomas R.: *See—*
Rosinski, Edward J.; Stein, Thomas R.; and Fischer, Ronald H., 4,082,695, Cl. 252-465.000.
Steinborn, Heinrich A.: *See—*
Timmann, Peter; and Steinborn, Heinrich A., 4,082,051, Cl. 114-72.000.
Steiner, Edward L., to Xerox Corporation. Toner control system for an electrostatic reproduction machine. 4,082,445, Cl. 355-14.000.
Steiner, Peter, to Foster Wheeler Energy Corporation. Process for the gasification of coal. 4,082,519, Cl. 48-202.000.
Steklenski, David J.; and Albuerne, Evelio A. Perez, to Eastman Kodak Company. Electrophotographic element containing a multilayer interlayer. 4,082,551, Cl. 96-1.0PC.
Stephan, Bernd; Hund, Franz; and Holznagel, Wilhelm, to Bayer Aktiengesellschaft. Production of iron oxide pigments with improved resistance to oxidation. 4,082,905, Cl. 428-538.000.
Stephan, Wolfgang, to Biotest-Serum-Institut GmbH. Production of intravenously applicable native human immune globulin having a normal half-life. 4,082,734, Cl. 260-112.00B.
Stephens, Donald S.: *See—*
Jaklic, Albin, Jr.; and Stephens, Donald S., 4,082,916, Cl. 174-52.0PE.
Stephenson, Robert L.; and Loomba, Yogendra S., to Allied Chemical Corporation. Free pull web sensitive retractor. 4,082,236, Cl. 242-107.40B.
Stepniak, Frank M., to Amerace Corporation. Loadbreak male contact assembly. 4,082,405, Cl. 339-111.000.
Sternberg, Ernest R., to White Motor Corporation. Highway vehicle with hydraulically driven power dolly. 4,082,157, Cl. 180-14.00A.
Steude, Holm: *See—*
Heinze, Christoph; Ruchlak, Kasimir; and Steude, Holm, 4,082,659, Cl. 210-23.00F.
Stevens, Robert. Tennis racket. 4,082,274, Cl. 273-73.00C.
Stewart, Byron C.: *See—*
Reime, Roy O.; and Stewart, Byron C., 4,082,988, Cl. 318-139.000.
Stewart, Glenn M. Collapsible camp supply unit. 4,082,389, Cl. 312-258.000.
Stewart, Robert M.: *See—*
Cheng, Richard C. M.; Dennis, Gene Patrick; and Stewart, Robert M., 4,082,220, Cl. 238-10.00F.
Stiger, Darrel E. Drill attachment. 4,082,474, Cl. 408-110.000.

Stiles, John Callender; and Ferriss, Lincoln Stark, to Singer Company, The. Electrostatic pickoff and torquer. 4,082,990, Cl. 318-662.000.
Sting, Donald W.; and Ott, Denis P., to Hancor, Inc. Connecting joint for corrugated plastic tubing. 4,082,327, Cl. 285-401.000.
Stobb, Walter John. Apparatus and method for handling bundles of sheets. 4,082,174, Cl. 198-368.000.
Stonehouse, Ernest, to Mardon Flexible Packaging Limited. Method for making a wrapping material. 4,082,594, Cl. 156-253.000.
Storck, Glenn E.; and Kominiak, Andrew A., to Amerace Corporation. Electrical connectors and contact assemblies therefor. 4,082,410, Cl. 339-252.00R.
Storck, Glenn E., to Amerace Corporation. Electrical connectors and contact assemblies thereof. 4,082,411, Cl. 339-252.00R.
Stork Amsterdam B.V.: *See—*
Brummelhuis, Johannes Arnold Julius, 4,082,221, Cl. 239-214.250.
Stoss, Peter Johannes; Herrmann, Manfred Franz Reinhold; and Satzinger, Gerhard, to Warner-Lambert Company. Benzo(b)thiophene derivatives. 4,082,770, Cl. 260-330.500.
Stout, Eldon Charles: *See—*
Duffy, Robert Donovan; and Stout, Eldon Charles, 4,082,703, Cl. 260-2.5BE.
Stove, Flemming, to Danfoss A/S. Control circuit for a servo-motor. 4,081,963, Cl. 60-528.000.
Strandberg, Per: *See—*
Hedvall, Per; and Strandberg, Per, 4,082,656, Cl. 209-222.000.
Stratton, Raymond G.: *See—*
Raabe, Ralph C.; Cleffman, Roger G.; and Stratton, Raymond G., 4,082,592, Cl. 156-153.000.
Strekal, Leonid Pavlovich: *See—*
Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,082,937, Cl. 219-121.0EB.
Strick Corporation: *See—*
Schmidt, George A.; Zubko, Ronald L.; and Abolins, Andrew, 4,082,357, Cl. 298-27.000.
Strickland, James W. Surgery table. 4,082,257, Cl. 269-328.000.
Strickland, Robert E. Alternately ascending and descending aquatic article. 4,082,063, Cl. 119-5.000.
Strickland, Robert V. Chain with guide. 4,082,007, Cl. 74-240.000.
Strong, Herbert M., to General Electric Company. Manufacture of diamond products. 4,082,185, Cl. 206-525.000.
Strunc, Gerald R.: *See—*
Jensen, Gerald A.; Harvey, Ronald B.; Caulfield, Patrick J.; Putzke, Dwayne H.; and Strunc, Gerald R., 4,082,943, Cl. 235-303.100.
Sturm, Michael, to Display Corporation International. Device for displaying wrist watches. 4,082,183, Cl. 206-301.000.
Sturm, Ronald Leo; and Smith, James Curtis, to Oxford Laboratories Inc. Liquid dispenser with means for automatically purging air therefrom during liquid loading. 4,082,121, Cl. 141-27.000.
Sugawara, Kinichi, to Nippon Steel Corporation. Method for the preliminary treatment of materials for sintering. 4,082,539, Cl. 75-3.000.
Sugimoto, Akira: *See—*
Ohtsu, Takao; Nakamura, Yukinobu; and Sugimoto, Akira, 4,082,997, Cl. 324-65.00R.
Sugiyama, Yuichi; Kaido, Hiroyuki; and Koyama, Tsuneo, to Yokohama Rubber Company, Limited, The. Rubber composition containing metal salt of hydroxy benzoic acid. 4,082,909, Cl. 526-4.000.
Sukopp, Hans: *See—*
Metzler, Gerhart; Rother, Peter; and Sukopp, Hans, 4,082,291, Cl. 274-23.00R.
Sukow, Daniel L.; Smith, Richard A.; and Cockroft, James B., to Oster Corporation. Bag sealer. 4,082,941, Cl. 219-243.000.
Sumitomo Chemical Company, Limited: *See—*
Kameda, Nobuyuki; Hisada, Yoshio; Kato, Toshiro; and Fujinami, Akira, 4,082,849, Cl. 424-274.000.
Nakagawa, Masataka; Iga, Tadasu; and Fukura, Akira, 4,082,802, Cl. 260-574.000.
Suzuki, Yoshio; Minai, Masayoshi; Hamma, Noritaka; Murayama, Eiichi; and Aono, Shunji, 4,082,913, Cl. 560-102.000.
Yamahara, Takeshi; and Inokuma, Shun, 4,082,767, Cl. 260-326.14T.
Sumitomo Durez Company, Ltd.: *See—*
Aoki, Takao; Kako, Yuji; Kikuga, Toyoji; and Hatano, Keizo, 4,082,661, Cl. 210-40.000.
Sumitomo Electric Industries, Ltd.: *See—*
Okita, Koichi, 4,082,893, Cl. 428-376.000.
Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, 4,082,420, Cl. 350-96.310.
Summaria, Louis: *See—*
Robbins, Kenneth C.; and Summaria, Louis, 4,082,612, Cl. 195-62.000.
Sun Chemical Corporation: *See—*
Brigham, Ward E., 4,082,455, Cl. 355-100.000.
Sun, Tsu-Hung; and Basiulis, Algerd, to Hughes Aircraft Company. Heat pipe actuated valve. 4,082,109, Cl. 137-340.000.
Suncrux Incorporated: *See—*
Hsu, Ying-Yen, 4,082,428, Cl. 350-350.000.
Sundstrand Data Control, Inc.: *See—*
Kirschner, Robert Kay, 4,082,432, Cl. 350-174.000.
Sundstrom, John A.: *See—*
Wortham, Otis W.; and Sundstrom, John A., 4,081,975, Cl. 68-18.0FA.
Super Stud Products, Inc.: *See—*
Dawson, Raymond B., 4,081,979, Cl. 70-58.000.
Superior Oil Company, The: *See—*
Knight, John H.; St. Cyr, Lewis A.; and Wilson, Omer L., 4,082,645, Cl. 208-11.00R.
Sutures Inc.: *See—*
Esemplare, Pascal E.; and Beeferman, Dennis, 4,082,862, Cl. 427-133.000.
Suzuki, Akira; Kubo, Keiji; Kunitake, Suguru; and Arai, Fumiaki, to Kabushiki Kaisha Ricoh. Spark-recording type printing method and spark-recording material for use thereof. 4,082,902, Cl. 428-457.000.
Suzuki, Toru: *See—*
Yamada, Muneki; Hirata, Sadao; Kishimoto, Akira; Hirata, Shunsaku; Suzuki, Toru; and Kano, Fumio, 4,082,854, Cl. 426-106.000.
Suzuki, Tuneo: *See—*
Ishii, Susumu; and Suzuki, Tuneo, 4,081,883, Cl. 24-205.14R.
Suzuki, Yoshio; Minai, Masayoshi; Hamma, Noritaka; Murayama, Eiichi; and Aono, Shunji, to Sumitomo Chemical Company, Limited. Phenoxyalicyclic carboxylic acid derivatives. 4,082,913, Cl. 560-102.000.
Svatek, Thomas A.: *See—*
Driscoll, John J.; Svatek, Thomas A.; and Wareham, Richard R., 4,082,446, Cl. 355-27.000.
Svenska Dataregister AB: *See—*
Englund, Gosta Roland, 4,082,035, Cl. 101-93.040.
Svoboda, Josef: *See—*
Krob, Erwin; Weigl, Erwin; and Svoboda, Josef, 4,082,315, Cl. 280-631.000.
Swann, Brian Picton: *See—*
Evans, Delme; Jolley, Michael Ralph John; Ross, William James; and Swann, Brian Picton, 4,082,771, Cl. 260-332.20R.
Swearingen, Judson S. Bearing assembly. 4,082,379, Cl. 308-26.000.
Swenson, William J., to Raymond International, Inc. Control of hydraulically powered equipment. 4,082,032, Cl. 91-216.00B.
Swinkels, Godefridus M.: *See—*
Milner, Edward F. G.; Parker, Ernest G.; and Swinkels, Godefridus M., 4,082,629, Cl. 204-66.000.
Swiss Aluminium Ltd.: *See—*
Anthony, William H.; Brock, Andrew J.; and Gullotti, Damian V., 4,082,574, Cl. 148-2.000.
Switchcraft, Inc.: *See—*
Bailey, James R.; and Lavigne, Vernon W., 4,082,409, Cl. 339-182.00R.
Switzer, Kenneth Oscar: *See—*
Werner, Gregory Keith; Switzer, Kenneth Oscar; and St. Laurent, Raymond G., 4,082,371, Cl. 305-56.000.
Symborski, Alex P., to Owens-Corning Fiberglas Corporation. Adjustment mechanism. 4,082,469, Cl. 403-24.000.
Syntex (U.S.A.) Inc.: *See—*
Jones, Gordon H.; Moffatt, John G.; and Nestor, John J., Jr., 4,082,735, Cl. 260-112.50R.
Jones, Gordon H.; Moffatt, John G.; and Nestor, John J., Jr., 4,082,736, Cl. 260-112.50R.
Systems Research Laboratories, Inc.: *See—*
Dehait, Jack T.; Dietz, David C.; Snyder, Milo S.; and Talor, Francis M., 4,082,463, Cl. 356-167.000.
Syvakari, Pertti: *See—*
Gustafsson, Sven-Goran; Nilsson, Jan; and Syvakari, Pertti, 4,081,984, Cl. 72-60.000.
Szadkowska, Maria; Pisarek, Jerzy; Dzik, Boleslaw; Staniak, Elzbieta; Lipniewska, Danuta; and Bijok, Franciszek, to Instytut Przemyslu Mleczarskiego. Method for coagulating milk proteins. 4,082,853, Cl. 426-36.000.
Szafianski, Marius. Ventilated handle for tennis rackets or the like. 4,082,276, Cl. 273-75.000.
Szeberenyi, Szabolcz: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcz, 4,082,813, Cl. 260-618.00B.
Szporny, Laszlo: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcz, 4,082,813, Cl. 260-618.00B.
Szymanis, Edward, to Canadian General Electric Company Limited. Rotary lawn mower with separate grass pick up. 4,081,947, Cl. 56-13.300.
Tabler, Donald C.: *See—*
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 4,082,815, Cl. 260-683.200.
Tada, Osamu; Nakagawa, Mutsuaki; Mori, Hiroshi; Wakasa, Yutaka; Kataoka, Koju; Inoue, Tadanari; and Uchiike, Hisayuki, to Yokogawa Electric Works, Ltd. Process control system with signal conversion to standard intermediate signals carrying data as a function of time duration. 4,082,942, Cl. 364-111.000.
Taguchi, Tetsuya: *See—*
Tsunekawa, Tokuichi; Nakamura, Zenso; Taguchi, Tetsuya; Uchidoi, Masanori; Aizawa, Hiroshi; and Uchiyama, Takashi, 4,083,059, Cl. 354-149.000.
Tait, Robert John. Motorcycle suspension. 4,082,307, Cl. 280-277.000.
Takagi, Toshinori, to Sharp Kabushiki Kaisha. Ion plating method. 4,082,636, Cl. 204-192.00N.
Takahara, Takao; and Misaki, Susumu, to Daikin Kogyo Co., Ltd. Process for fluorination of uracil. 4,082,752, Cl. 260-260.000.
Takahashi, Hiroaki: *See—*
Tatsuta, Hiroshi; Fukai, Masakazu; and Takahashi, Hiroaki, 4,082,686, Cl. 252-299.000.
Takahashi, Ken: *See—*
Kamiya, Hiroyuki; Takahashi, Ken; Watanabe, Seiji; and Kanazawa, Tomohisa, 4,082,406, Cl. 339-112.00L.

Takahashi, Miyoshi: *See—*
Yamamoto, Hiroe; Takahashi, Noriyosni; and Takahashi, Miyoshi, 4,082,974, Cl. 310-179.000.
Takahashi, Noriyoshi: *See—*
Yamamoto, Hiroe; Takahashi, Noriyoshi; and Takahashi, Miyoshi, 4,082,974, Cl. 310-179.000.
Takashima, Tadao: *See—*
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,082,252, Cl. 266-142.000.
Takayama, Hiroshi; and Aizawa, Tatsuo, to Mita Industrial Company. Magnetic developer for electrostatic photography and process for preparation thereof. 4,082,681, Cl. 252-62.10P.
Takeda Chemical Industries, Ltd.: *See—*
Kuwada, Yutaka; Meguro, Kanji; and Tawada, Hiroyuki, 4,082,764, Cl. 260-308.00R.
Miki, Takuichi; Hiraga, Kentaro; and Goto, Giichi, 4,082,780, Cl. 260-397.500.
Takeishi, Norikazu. Oil replenishing cartridge. 4,082,163, Cl. 184-105.00R.
Talcott, Thomas D., to Dow Corning Corporation. Method of storing blood and a blood storage bag therefor. 4,082,509, Cl. 21-58.000.
Talor, Francis M.: *See—*
Dehait, Jack T.; Dietz, David C.; Snyder, Milo S.; and Talor, Francis M., 4,082,463, Cl. 356-167.000.
Tamm, Paul W., to Chevron Research Company. Catalyst carrier, its method of preparation and a reforming catalyst supported on the carrier. 4,082,697, Cl. 252-466.0PT.
Tan, Gim: *See—*
Gatsis, John G.; and Tan, Gim, 4,082,643, Cl. 208-8.000.
Gatsis, John G.; and Tan, Gim, 4,082,644, Cl. 208-8.000.
Tanaka, Eiji: *See—*
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,082,628, Cl. 204-64.00T.
Tanaka, Michiaki; and Nonaka, Yoshimasa, to Kabushiki Kaisha Elco International. Hermaphrodite housing assembly. 4,082,397, Cl. 339-49.00R.
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, to IRI-E Kosan Corporation. Method and system for processing molten slag. 4,082,252, Cl. 266-142.000.
Tanzi, Paul J.: *See—*
Bickford, William J.; Hatton, William L.; Pallemaerts, Colin J.; Tanzi, Paul J.; and Tsao, Carson K. H., 4,083,009, Cl. 325-304.000.
Tatsuta, Hiroshi; Fukai, Masakazu; and Takahashi, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Liquid crystal composition. 4,082,686, Cl. 252-299.000.
Tawada, Hiroyuki: *See—*
Kuwada, Yutaka; Meguro, Kanji; and Tawada, Hiroyuki, 4,082,764, Cl. 260-308.00R.
Taylor, Alexander. Air current deflecting device. 4,082,340, Cl. 296-1.00S.
Taylor, Edwin Michael: *See—*
Coates, William John; Roe, Anthony Maitland; Slater, Robert Antony; and Taylor, Edwin Michael, 4,082,843, Cl. 424-250.000.
Taylor, James B., Jr.; and Fritz, Galen F., to Texas Instruments Incorporated. Method of manufacturing an electronic calculator utilizing a flexible carrier. 4,081,898, Cl. 29-622.000.
Taylor, Otis C.: *See—*
Wiley, A. C., Jr.; and Taylor, Otis C., 4,082,630, Cl. 205-98.000.
Taymar Limited: *See—*
Oakes, Malcolm Campbell, 4,082,993, Cl. 137-322.000.
TDK Electronics Co., Ltd.: *See—*
Otoshi, Yutaka; and Ishino, Ken, 4,082,560, Cl. 106-45.000.
Teach, Ted L., to Laserplane Corporation. Backhoe bucket. 4,081,919, Cl. 37-103.000.
Teague, J. T., to LaSalle, LeRoy. Pipe handling apparatus. 4,082,193, Cl. 214-2.500.
Tecl, Bohuslav: *See—*
Boe, Hans; Hoehn, Ralf; Tecl, Bohuslav; and Kirsch, Wilhelm, 4,082,878, Cl. 428-195.000.
Teijin Limited: *See—*
Ichikawa, Yataro; Sawaki, Toru; and Honda, Yuitsu, 4,082,804, Cl. 260-584.00R.
Teldix G.m.b.H.: *See—*
Leiber, Heinz; and Blasius, Udo, 4,082,370, Cl. 303-92.000.
Wehde, Heinz; and Becker, Willi, 4,082,376, Cl. 308-10.000.
Teledyne Industries, Inc.: *See—*
Erdley, Harold F., 4,082,005, Cl. 73-505.000.
Telefonaktiebolaget L M Ericsson: *See—*
Carlqvist, Bengt Roland; and Eriksson, Anders Gunnar, 4,082,924, Cl. 179-84.0VF.
Hertsius, Lars-Olov; and Arneborn, Anders, 4,082,023, Cl. 83-293.000.
Teleglobe Pay-TV System, Inc.: *See—*
Chomet, Marc, 4,082,921, Cl. 179-2.00A.
Tenneco Chemicals, Inc.: *See—*
Hayes, Tom F., 4,082,057, Cl. 118-9.000.
Rudner, Bernard; and Noone, Thomas M., 4,082,704, Cl. 260-2.50A.
Tenneco Inc.: *See—*
Laundy, James R., 4,082,325, Cl. 285-155.000.
Terrill, David B.: *See—*
Shaw, Wilfrid G.; and Terrill, David B., 4,082,698, Cl. 252-469.000.
Terry, Franklin E.: *See—*
Prince, Jack E.; Terry, Franklin E.; and Mullins, William H., 4,082,662, Cl. 210-63.00R.
Terry, John Christopher: *See—*
Wyndham, Ronald; and Terry, John Christopher, 4,082,833, Cl. 423-135.000.
Texaco Inc.: *See—*
Kolaian, Jack H.; Patterson, John A.; and Ward, Frank K., 4,082,792, Cl. 260-501.110.
McGahey, Dean C., 4,082,122, Cl. 141-5.000.
Texas Instruments Incorporated: *See—*
Kinnebrew, Gerald P.; Watkins, Bobby Mack; and Texas Instruments Incorporated, 4,081,928, Cl. 51-131.000.
Lou, Perry W., 4,082,966, Cl. 307-362.000.
Taylor, James B., Jr.; and Fritz, Galen F., 4,081,898, Cl. 29-622.000.
Thermacore, Inc.: *See—*
Eastman, George Y., 4,082,575, Cl. 148-6.350.
Theys, Andre, to Fabrique Nationale Herstal S.A. Multi level presser-foot device. 4,081,973, Cl. 66-64.000.
Thirumalachar, Mandayam J.; Narasimhan, Mandayam J.; and Anderson, John A., to University of Minnesota, The Regents of the. Process for the production of insulin by genetically transformed fungal cells. 4,082,613, Cl. 195-76.000.
Thomason, Harry E. Solar energy. 4,082,143, Cl. 165-104.00S.
Thompson, George Horace Brooke; and Lovelace, David Francis, to International Standard Electric Corporation. Optical waveguide couplers. 4,082,419, Cl. 350-96.120.
Thomson-CSF: *See—*
Autran, Jean Michel; and Epsztein, Bernard, 4,083,021, Cl. 333-72.000.
Thor Dahl, Inc.: *See—*
McPherson, John B.; and Gunther, William H., Jr., 4,082,603, Cl. 156-654.000.
Thorneycroft, Malcolm: *See—*
Hodgson, Brian; Fairnington, Robert; Thorneycroft, Malcolm; and Grant, Ronald Malcolm, 4,082,031, Cl. 90-4.000.
Thornton, Bryce G.: *See—*
Schutt, Elmer F.; Thornton, Bryce G.; and Bentivegna, Charles R., Jr., 4,082,039, Cl. 101-450.000.
Thornton, Roy F.; and Weininger, Joseph L., to General Electric Company. Method of producing a sealed electrolyte-limited lead-acid battery. 4,081,899, Cl. 29-623.200.
Thorsen, Niels Peter, to Danfoss A/S. Electric switch actuated in dependence on pressure, particularly an evaporator thermostat for refrigerators. 4,082,929, Cl. 200-83.0SA.
Thuleen, Richard A.; and Richard, John E., to Litton Systems, Inc. Pyrolytic lock assembly. 4,082,078, Cl. 126-197.000.
Tile Council of America: *See—*
Ellis, Jeffrey R.; and Wagner, Herman B., 4,082,563, Cl. 106-90.000.
Timex Corporation: *See—*
Crutcher, William C., 4,081,953, Cl. 58-50.00R.
Timmann, Peter; and Steinborn, Heinrich A., to O & K Orenstein & Koppel Aktiengesellschaft Werk Lubeck. Container ship construction. 4,082,051, Cl. 114-72.000.
Toepelt, Werner; and Bernier, Richard, to Coats & Clark, Inc. Locking zipper slider, and zipper incorporating said slider. 4,081,882, Cl. 24-205.00R.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, to Sony Corporation. Method of adjusting the hardness of a titanium metal. 4,082,628, Cl. 204-64.00T.
Tokutomi, Seijiro: *See—*
Nakamura, Kazuo; Miyata, Katsuhiko; and Tokutomi, Seijiro, 4,083,056, Cl. 354-25.000.
Toledo, Romeo T., to Tracy-Luckey Co., Inc. Pecan-worm separator process and apparatus. 4,082,655, Cl. 209-173.000.
Tomari, Haruo: *See—*
Shimogori, Kazutoshi; Sato, Hiroshi; and Tomari, Haruo, 4,082,900, Cl. 428-469.000.
Tomforde, Johann, to Daimler-Benz Aktiengesellschaft. Shell-shaped children's seat for vehicles. 4,082,350, Cl. 297-243.000.
Tomlinson, Leroy O.: *See—*
Baker, Jack M.; Clark, Gordon W.; Harper, Douglas M.; and Tomlinson, Leroy O., 4,081,956, Cl. 60-39.18B.
Toneray Covers, Inc.: *See—*
Petretti, Raymond H., 4,082,347, Cl. 296-98.000.
Tonne, Peter: *See—*
Quadbeck-Seeger, Hans-Juergen; and Tonne, Peter, 4,082,749, Cl. 260-250.0BN.
Toolex Alpha AB: *See—*
Nilsson, Karl Osten Alf; and Lindell, Curt Oskar, 4,082,260, Cl. 271-1.000.
Toray Industries, Inc.: *See—*
Hasegawa, Katsumi; Nakanishi, Toru; and Oka, Toshihiko, 4,081,888, Cl. 28-285.000.
Toray Silicone Company, Ltd.: *See—*
Mine, Katsutoshi; and Yokoyama, Masuo, 4,082,726, Cl. 260-46.5UA.
Torin Corporation: *See—*
Lampietti, Bernard P.; and Cavagnero, Erman V., 4,082,935, Cl. 219-9.500.
Torley, Jozsef: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcz, 4,082,813, Cl. 260-618.00B.
Torres, Silvestre Sanchez. Catalytic converter for transforming polluting gases into non-polluting gases. 4,082,514, Cl. 23-288.00F.
Toth Aluminum Corporation: *See—*
Wyndham, Ronald; and Terry, John Christopher, 4,082,833, Cl. 423-135.000.

Toth, Anton: *See*—
Meyer, Gerhard; and Toth, Anton, 4,082,763, Cl. 260-308.00R.
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcz, to Richter Gedeon Vegyeszeti Gyar Rt. 3-Ioda-α-ethynyl benzhydrol. 4,082,813, Cl. 260-618.00B.
Towmotor Corporation: *See*—
Friesen, Larry Dean; and Johannson, Richard James, 4,082,199, Cl. 214-672.000.
Toyo Seikan Kaisha Limited: *See*—
Yamada, Muneki; Hirata, Sadao; Kishimoto, Akira; Hirata, Shunsaku; Suzuki, Toru; and Kano, Fumio, 4,082,854, Cl. 426-106.000.
Toyoda, Kenichi: *See*—
Shichida, Hiromichi; Toyoda, Kenichi; and Nakano, Jiro, 4,082,019, Cl. 82-36.00A.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Nakamura, Hiroyuki; Kawaguchi, Hiroshi; and Nishiwaki, Kiyoshi, 4,083,032, Cl. 340-71.000.
Tracy-Luckey Co., Inc.: *See*—
Toledo, Romeo T., 4,082,655, Cl. 209-173.000.
Trane Company, The: *See*—
Eber, David Henry, 4,081,971, Cl. 62-216.000.
Hantke, Gerhard John; and Ring, Harry Kenneth, Jr., 4,082,114, Cl. 137-625.370.
Traylor, Fling Armstrong, Jr., to El-Do, Inc. Carpeting and method and apparatus for making carpeting. 4,082,874, Cl. 428-54.000.
Trbovich, Nicholas D. Air cushion game. 4,082,282, Cl. 273-126.00R.
Trefilunion: *See*—
Francois, Maurice, 4,082,120, Cl. 140-107.000.
Treiber, Helmut: *See*—
Bickl, Horst; Treiber, Helmut; Findeis, Gunter; Knor, Bernhard; Payrhammer, Bernd; and Fergg, Berthold, 4,082,465, Cl. 356-203.000.
Trevisan, Lucio: *See*—
Benigni, Fulvio; and Trevisan, Lucio, 4,082,760, Cl. 260-307.0FA.
Trishin, Jury Alexeevich: *See*—
Minin, Vladilen Fedorovich; Gambarov, Vitaly Stepanovich; Kachan, Mikhail Samuilovich; Okladnikov, Vladlen Alexeevich; Troinin, Boris Leonidovich; and Trishin, Jury Alexeevich, 4,081,982, Cl. 72-56.000.
Troinin, Boris Leonidovich: *See*—
Minin, Vladilen Fedorovich; Gambarov, Vitaly Stepanovich; Kachan, Mikhail Samuilovich; Okladnikov, Vladlen Alexeevich; Troinin, Boris Leonidovich; and Trishin, Jury Alexeevich, 4,081,982, Cl. 72-56.000.
Troster, Helmut: *See*—
Fuchs, Otto; and Troster, Helmut, 4,082,769, Cl. 260-328.000.
Truckner, William G.: *See*—
Evancho, Joseph W.; Shabel, Barrie S.; and Truckner, William G., 4,082,578, Cl. 148-12.70A.
TRW Inc.: *See*—
Breuer, David R., 4,083,043, Cl. 340-347.0AD.
Brooks, Robert Ellison; and Winter, Donald Charles, 4,082,415, Cl. 350-3.830.
Tsao, Carson K. H.: *See*—
Bickford, William J.; Hatton, William L.; Pallemaerts, Colin J.; Tanzi, Paul J.; and Tsao, Carson K. H., 4,083,009, Cl. 325-304.000.
Tsuchiya, Nobujiro: *See*—
Mishuku, Minoru; Edo, Taro; and Tsuchiya, Nobujiro, 4,082,559, Cl. 106-43.000.
Tsumori, Toshiro: *See*—
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,082,628, Cl. 204-64.00T.
Tsunekawa, Tokuichi; Nakamura, Zenso; Taguchi, Tetsuya; Uchidoi, Masanori; Aizawa, Hiroshi; and Uchiyama, Takashi, to Canon Kabushiki Kaisha. Automatic exposure control system for flash photography. 4,083,059, Cl. 354-149.000.
Tsuzuki, Yu: *See*—
Iwata, Hiroshi; and Tsuzuki, Yu, 4,083,058, Cl. 354-128.000.
Turckes, Raymond J.: *See*—
Horn, Charles F.; Lerch, Arthur L.; Turckes, Raymond J.; and Nagel, Ronald P., 4,082,022, Cl. 83-82.000.
Turner, Roland P. Stowable galley. 4,082,391, Cl. 312-314.000.
Tyco Industries, Inc.: *See*—
Cheng, Richard C. M.; Dennis, Gene Patrick; and Stewart, Robert M., 4,082,220, Cl. 238-10.00F.
U C B, Societe Anonyme: *See*—
Vrancken, August; Dufour, Paul; Noat, Jacques; and Holderic, Jean, 4,082,710, Cl. 260-23.0TN.
Uchidoi, Masanori: *See*—
Tsunekawa, Tokuichi; Nakamura, Zenso; Taguchi, Tetsuya; Uchidoi, Masanori; Aizawa, Hiroshi; and Uchiyama, Takashi, 4,083,059, Cl. 354-149.000.
Uchiike, Hisayuki: *See*—
Tada, Osamu; Nakagawa, Mutsuaki; Mori, Hiroshi; Wakasa, Yutaka; Kataoka, Koju; Inoue, Tadanari; and Uchiike, Hisayuki, 4,082,942, Cl. 364-111.000.
Uchiyama, Takashi: *See*—
Tsunekawa, Tokuichi; Nakamura, Zenso; Taguchi, Tetsuya; Uchidoi, Masanori; Aizawa, Hiroshi; and Uchiyama, Takashi, 4,083,059, Cl. 354-149.000.
Ueno, Tadayoshi; and Itaya, Akio, to Hitachi Printing Co. Ltd.; and Nikka Kabushiki Kaisha. Apparatus for automatically removing dust from a form cylinder of a printing machine. 4,082,038, Cl. 101-425.000.
Underberg, Robert L., to Realist, Inc. Optical sighting instrument. 4,082,466, Cl. 356-249.000.
Unibra S.A.: *See*—
Mercier, Jean-Pierre, 4,082,715, Cl. 260-30.60R.
Union Carbide Corporation: *See*—
Duffy, Robert Donovan; and Stout, Eldon Charles, 4,082,703, Cl. 260-2.5BE.
Koenig, Harvey Steven; and Kaines, Russell Harold, 4,082,506, Cl. 8-91.000.
Yenni, Donald McKelvie, 4,082,870, Cl. 427-425.000.
Uniroyal, Inc.: *See*—
Danielson, Arthur C., 4,082,706, Cl. 260-5.000.
Martin, Frank Stephen; Melvin, Terence; and Pieroni, Joseph Kirby, 4,082,288, Cl. 273-218.000.
United States Gypsum Company: *See*—
Rashid, Sheikh A.; Bray, Hugh S.; and Boarini, Edward J., 4,082,885, Cl. 428-281.000.
United States of America
Agriculture: *See*—
Jurd, Leonard, 4,082,814, Cl. 260-619.00R.
Ward, Truman L.; and Benerito, Ruth R., 4,082,500, Cl. 8-120.000.
Army: *See*—
DeRosa, Robert J.; and Campbell, Robert T., 4,083,048, Cl. 343-7.300.
Hornbeck, Donald W.; and O'Loughlin, James P., 4,082,965, Cl. 307-260.000.
Satriana, Daniel R.; and Bracuti, Arthur J., 4,082,584, Cl. 149-109.400.
Energy: *See*—
Divona, Charles J., 4,082,607, Cl. 176-19.0LD.
Kolleck, Floyd W., 4,082,531, Cl. 65-296.000.
Moran, Paul R., 4,082,951, Cl. 250-336.000.
Health, Education and Welfare: *See*—
Gal, Andrew E., 4,082,781, Cl. 260-403.000.
National Aeronautics and Space Administration: *See*—
Evans, John C., Jr., 4,082,569, Cl. 136-89.0CC.
Long, Walt C.; and Williams, Milton L., 4,082,001, Cl. 73-756.000.
Navy: *See*—
Dyckman, Edward J.; Montemarano, Jean A.; and Fischer, Eugene C., 4,082,709, Cl. 260-22.0CB.
Glista, Andrew S.; and Katz, Rodney S., 4,082,423, Cl. 350-96.230.
Kaloi, Cyril M., 4,083,046, Cl. 343-700.0MS.
Mosher, Paul R., 4,082,583, Cl. 149-96.000.
Nannelli, Piero L.; and Monsimer, Harold G., 4,082,793, Cl. 260-502.40R.
Pharo, Lawrence C., Jr., 4,083,031, Cl. 340-5.00R.
U.S. Philips Corporation: *See*—
Bahlmann, Johannes P. M.; and Zwijsen, Wilhelmus A. J. M., 4,083,036, Cl. 340-166.00R.
Bolhuis, Pieter Jan, 4,082,985, Cl. 315-241.00P.
Cukrowski, Georg, 4,082,290, Cl. 274-9.00A.
Hunter, Donald Noel, 4.082,556, Cl. 96-115.00R.
Kok, Johannes George Jacobus; van Moorselaar, Rudolf; and Noordermeer, Aart, 4,082,721, Cl. 260-42.210.
Miedema, Andries Rinse; Buschow, Kurt Heinz Jurgen; and Mulder, Jan, 4,082,138, Cl. 165-4.000.
Schouwenaars, Jozef E. K. M., 4,082,293, Cl. 274-39.00A.
United States Steel Corporation: *See*—
Augustine, Harry G.; Krupinski, Kenneth C.; and Smith, Frank A., 4,082,823, Cl. 264-7.000.
Learmont, Robert P., 4,082,358, Cl. 299-4.000.
Spence, Andrew P., 4,082,359, Cl. 299-4.000.
Stein, Merle R., 4,082,020, Cl. 82-37.000.
United States Trading International, Inc.: *See*—
De Long, Charles F., 4,082,884, Cl. 428-262.000.
United Technologies Corporation: *See*—
Cox, George Benjamin, Jr., 4,081,957, Cl. 60-39.360.
Fortmann, William E., 4,082,375, Cl. 308-9.000.
United Turbine AB & Co.: *See*—
Kronogard, Sven-Olof, 4,082,477, Cl. 415-120.000.
University of California, Regents of the: *See*—
Brown, Daniel Maitland, 4,082,055, Cl. 114-245.000.
University of Edinburgh, The University Court of the: *See*—
Jones, Robert L., 4,082,789, Cl. 560-121.000.
University of Minnesota, The Regents of the: *See*—
Thirumalachar, Mandayam J.; Narasimhan, Mandayam J.; and Anderson, John A., 4,082,613, Cl. 195-76.000.
University of Southern California: *See*—
Whelan, James M., 4,082,837, Cl. 423-405.000.
University of Utah: *See*—
Clark, Lealand L., 4,082,846, Cl. 424-266.000.
UOP Inc.: *See*—
Antos, George J., 4,082,651, Cl. 208-139.000.
Gatsis, John G.; and Tan, Gim, 4,082,643, Cl. 208-8.000.
Gatsis, John G.; and Tan, Gim, 4,082,644, Cl. 208-8.000.
Gewartowski, Steve A., 4,082,654, Cl. 208-352.000.
Hutchings, Le Roi E.; and Sahlin, Thomas E., 4,082,647, Cl. 208-78.000.
Pollitzer, Ernest L.; and Hayes, John C., 4,082,649, Cl. 208-111.000.
Robinson, Delmar W., 4,082,696, Cl. 252-466.00B.
Uphues, Gunter: *See*—
Heyden, Rudi; Asbeck, Adolf; Eckelt, Michael; Petzold, Manfred; and Uphues, Gunter, 4,082,689, Cl. 252-321.000.

Upjohn Company, The: *See—*
Hester, Jackson B., Jr., 4,082,761, Cl. 260-308.00R.
Kelly, Robert C.; and Nelson, Norman A., 4,082,776, Cl. 260-343.600.
Morton, Douglas Ross, Jr., 4,082,782, Cl. 260-408.000.
Morton, Douglas Ross, Jr., 4,082,784, Cl. 260-413.000.
Morton, Douglas Ross, Jr., 4,082,794, Cl. 260-514.00D.
Wingard, Robert Dean; and Leidal, Shirley Margaret, 4,082,512, Cl. 23-252.00R.
Youngdale, Gilbert A., 4,082,783, Cl. 260-410.90R.
Upshaw, Jackson E.; and Meisch, Charles Edward, to Howmedica, Inc. Total anatomical knee prosthesis. 4,081,866, Cl. 3-1.911.
Urban, Friedrich: *See—*
Buechner, Oskar; Schlichthaerle, Gottfried; and Urban, Friedrich, 4,082,910, Cl. 528-481.000.
Urbush, Richard L., to Andis Clipper Co. Electric clipper. 4,081,905, Cl. 30-221.000.
USM Corporation: *See—*
Schmidt, Alexander, Sr.; Schmidt, Walter; and Schmidt, Alexander, Jr., 4,081,977, Cl. 69-42.000.
Vaas, Frederick T., Jr.: *See—*
Bluhm, Elmer; and Vaas, Frederick T., Jr., 4,081,890, Cl. 29-157.00C.
Vacuumschmelze GmbH: *See—*
Pfeifer, Friedrich; and Klein, Gunter, 4,082,580, Cl. 148-31.550.
Vadimsky, Richard George: *See—*
Heller, Adam; Miller, Barry; and Vadimsky, Richard George, 4,082,624, Cl. 204-47.000.
Valdespino, Joseph M.; and Brandl, Ronald A. Recreational vehicle leveling and support system. 4,082,249, Cl. 254-45.000.
Vanaglash, John J., Jr., to Burr-Brown Research Corporation. Gold plating process and product produced thereby. 4,082,908, Cl. 428-672.000.
Vanassche, Willy Joseph: *See—*
Pattyn, Herman Alberik; Vanassche, Willy Joseph; and Philippaerts, Herman Adelbert, 4,082,554, Cl. 96-101.000.
Van Auken, Richard L.; and Pirtle, Allwyn W. Golf club shaft. 4,082,277, Cl. 273-80.00R.
Van Ausdall, James G., to Ceel-Co. Flexible protective cover sections, assemblies and form system. 4,081,941, Cl. 52-726.000.
van de Goor, Adrianus Johannes; Pijlman, Hans; and van der Vleugel, Bernard Evert, to International Business Machines Corporation. Document processing device. 4,082,945, Cl. 235-419.000.
Vandenberk, Jan: *See—*
van Wijngaarden, Ineke; Soudijn, Willem; Vandenberk, Jan; and Hens, Jozef Fr., 4,082,755, Cl. 260-293.600.
Vanderpool, Charles C. Garment bag sealing machine. 4,082,596, Cl. 156-359.000.
van der Vleugel, Bernard Evert: *See—*
van de Goor, Adrianus Johannes; Pijlman, Hans; and van der Vleugel, Bernard Evert, 4,082,945, Cl. 235-419.000.
Van Dyke, Ronald D.: *See—*
Dugge, Richard H.; and Van Dyke, Ronald D., 4,082,365, Cl. 302-52.000.
van Heijst, Willem Jan, to Single Buoy Moorings, Inc. Coupling between an anchor under water and a buoyant body. 4,082,050, Cl. 114-53.000.
van Moorselaar, Rudolf: *See—*
Kok, Johannes George Jacobus; van Moorselaar, Rudolf; and Noordermeer, Aart, 4,082,721, Cl. 260-42.210.
Van Nocker, Melvin, to Prab Conveyors, Inc. Harpoon-type conveyor. 4,082,178, Cl. 198-741.000.
Vansant, James H.: *See—*
Dancy, Edna A.; and Vansant, James H., 4,082,863, Cl. 427-181.000.
van Wijngaarden, Ineke; Soudijn, Willem; Vandenberk, Jan; and Hens, Jozef Fr., to Janssen Pharmaceutica N.V. 1-[(Diarylmethyl-)aminoalkyl]piperidimes. 4,082,755, Cl. 260-293.600.
Varga, Lajos: *See—*
Kocsanyi, Laszlo; and Varga, Lajos, 4,082,367, Cl. 302-14.000.
Varian Associates, Inc.: *See—*
Farney, George K.; and Feulner, Fred A., 4,082,979, Cl. 315-39.300.
Zangrando, Donald Roy; and Kelley, Clifford Herrol, Jr., 4,083,016, Cl. 331-56.000.
Vasiliev, Adolf Alfonsovich: *See—*
Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,082,937, Cl. 219-121.0EB.
Vaskin, Boris Denisovich: *See—*
Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,082,937, Cl. 219-121.0EB.
Veaux, Jacques: *See—*
Masclet, Jean; and Veaux, Jacques, 4,082,255, Cl. 267-64.00R.
Velsicol Chemical Corporation: *See—*
Anderson, Arnold L., 4,082,725, Cl. 260-45.75B.
Vepy, Tamas A., to Picker Corporation. X-ray film changer for serial radiography. 4,082,956, Cl. 250-480.000.
Vesperman, William Charles: *See—*
Kanotz, William Michael; Lockhart, William Robert; Piper, George Francis; Vesperman, William Charles; and Wilson, Max Kearns, 4,082,585, Cl. 156-51.000.
Vetco, Inc.: *See—*
Baugh, Benton F., 4,082,002, Cl. 73-756.000.
Vinchent, Romain: *See—*
Depoitier, Jacques; and Vinchent, Romain, 4,082,952, Cl. 250-381.000.
Vitale, Ben. Gum massaging implement. 4,081,877, Cl. 15-188.000.
Vitols, Visvaldis A.: *See—*
Riganati, John P.; and Vitols, Visvaldis A., 4,083,035, Cl. 340-146.30E.
Volk, Anthony J. Disposable cooking thermometer structure. 4,082,000, Cl. 73-358.000.
Volta, Victor S.; and Martin, Joe E. Interior security device for double doors. 4,082,334, Cl. 292-288.000.
von Base, Robert J., to Oil States Rubber Company. Quick release sleeve retained split nut-bolt structure. 4,082,468, Cl. 403-2.000.
von der Eltz, Hans-Ulrich; Reuther, Albert; and Wassmuth, Hans-Joachim, to Hoechst Aktiengesellschaft. Process for the dyeing of synthetic or natural fibers. 4,082,502, Cl. 8-34.000.
von der Eltz, Hans-Ulrich, to Hoechst Aktiengesellschaft. Process for the continuous dyeing of cellulose fibers or mixtures thereof with synthetic fibers with water-insoluble azo dyestuffs developed on the fiber. 4,082,504, Cl. 8-44.000.
Vonusa, Joseph S. Lid remover. 4,082,016, Cl. 81-3.430.
Voorhies, John Davidson, to American Cyanamid Company. Process for improved carbon-supported hydrodesulfurization catalysts. 4,082,652, Cl. 208-216.000.
Vorbruggen, Helmut, to Schering Aktiengesellschaft. Process for the preparation of nucleosides. 4,082,911, Cl. 536-23.000.
Vornberger, Karl F.: *See—*
Vornberger, Walter; and Vornberger, Karl F., 4,082,060, Cl. 118-411.000.
Vornberger, Walter; and Vornberger, Karl F., to International Shoe Machine Corporation. Cement side and heel lasting machine. 4,082,060, Cl. 118-411.000.
Vrancken, August; Dufour, Paul; Noat, Jacques; and Holderic, Jean, to U C B, Societe Anonyme. Isocyanate-modified acrylic compositions. 4,082,710, Cl. 260-23.0TN.
Vulcan Tool Company, The: *See—*
Horn, Charles F.; Lerch, Arthur L.; Turckes, Raymond J.; and Nagel, Ronald P., 4,082,022, Cl. 83-82.000.
W. R. Grace & Co.: *See—*
Brax, Harri J.; Porinchak, Joseph F.; and Weinberg, Alan S., 4,082,829, Cl. 264-209.000.
Cogliano, Joseph A., 4,082,830, Cl. 264-213.000.
Shadle, Robert James, 4,082,877, Cl. 428-35.000.
Wacker, Siegfried: *See—*
Renner, Hermann; and Wacker, Siegfried, 4,082,354, Cl. 297-410.000.
Wacker, Wade L.: *See—*
Appleman, Theodore C.; and Wacker, Wade L., 4,082,226, Cl. 239-584.000.
Waeschle Maschinenfabrik GmbH: *See—*
Krambrock, Wolfgang, 4,082,364, Cl. 302-28.000.
Wagner, Herman B.: *See—*
Ellis, Jeffrey R.; and Wagner, Herman B., 4,082,563, Cl. 106-90.000.
Wakasa, Yutaka: *See—*
Tada, Osamu; Nakagawa, Mutsuaki; Mori, Hiroshi; Wakasa, Yutaka; Kataoka, Koju; Inoue, Tadanari; and Uchiike, Hisayuki, 4,082,942, Cl. 364-111.000.
Walburg, Richard: *See—*
Harbeck, Alfred; Rebhan, Dieter; and Walburg, Richard, 4,082,300, Cl. 277-123.000.
Waleij, Ivar: *See—*
Grundstrom, Erik Hilding; Grundstrom, Gote Einar; and Waleij, Ivar, 4,082,048, Cl. 111-2.000.
Walker, Francis H.: *See—*
Baker, Don R.; and Walker, Francis H., 4,082,799, Cl. 260-559.00B.
Baker, Don R.; and Walker, Francis H., 4,082,800, Cl. 260-559.00B.
Wallace, Richard A. Recovery of waste heavy metals from solutions by cementation with aluminum. 4,082,546, Cl. 75-109.000.
Walter Kidde & Company, Inc.: *See—*
Whittingham, Reginald P., 4,082,191, Cl. 212-59.00R.
Walter, Lothar: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; Schurger, Rainer; Brandenstein, Manfred; and Burkl, Erich, 4,082,374, Cl. 308-6.00C.
Walters, Adolbert F.; and Spector George, to Walters, Adolbert Fitzgerald. Vehicular coffee heater. 4,082,939, Cl. 219-202.000.
Walters, Adolbert Fitzgerald: *See—*
Walters, Adolbert F.; and Spector George, 4,082,939, Cl. 219-202.000.
Ward, Frank K.: *See—*
Kolaian, Jack H.; Patterson, John A.; and Ward, Frank K., 4,082,792, Cl. 260-501.110.
Ward, Joseph E., III; and Huber, John C., to Minnesota Mining and Manufacturing Company. Apparatus for copying graphic images including the processing of incoherent radiation with a spatial filter. 4,082,429, Cl. 350-162.0SF.
Ward, Joseph E., III, to Minnesota Mining and Manufacturing Company. Image processing system using incoherent radiation and spatial filter hologram. 4,082,431, Cl. 350-162.0SF.
Ward, Truman L.; and Benerito, Ruth R., to United States of America, Agriculture. Process for imparting wrinkle recovery to cotton fabrics with vapors from glycidol. 4,082,500, Cl. 8-120.000.
Ward, William, IV: *See—*
Wilson, Layton G.; and Ward, William, IV, 4,082,125, Cl. 141-86.000.
Wardlaw, Stephen Clark; Levine, Robert Aaron; and Massey, James

Vincent, III. Blood constituent testing methods. 4,082,085, Cl. 128-2.00G.

Wareham, Richard R.: *See—*
Driscoll, John J.; Svatek, Thomas A.; and Wareham, Richard R., 4,082,446, Cl. 355-27.000.

Warner-Lambert Company: *See—*
Kessler, Henry A.; and Ying, Phyllis, 4,082,693, Cl. 252-430.000.
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,082,757, Cl. 260-294.80C.
Stoss, Peter Johannes; Herrmann, Manfred Franz Reinhold; and Satzinger, Gerhard, 4,082,770, Cl. 260-330.500.

Washino, Kozo, to Nissan Motor Company, Limited. Method of and device for controlling a weaving loom. 4,082,119, Cl. 139-370.200.

Wassmuth, Hans-Joachim: *See—*
von der Eltz, Hans-Ulrich; Reuther, Albert; and Wassmuth, Hans-Joachim, 4,082,502, Cl. 8-34.000.

Watanabe, Morio; and Nishimura, Sanji, to Solex Research Corporation. Treatment of raw materials containing titanium. 4,082,832, Cl. 423-70.000.

Watanabe, Seiji: *See—*
Kamiya, Hiroyuki; Takahashi, Ken; Watanabe, Seiji; and Kanazawa, Tomohisa, 4,082,406, Cl. 339-112.00L.

Watkins, Bobby Mack: *See—*
Kinnebrew, Gerald P.; Watkins, Bobby Mack; and Texas Instruments Incorporated, 4,081,928, Cl. 51-131.000.

Watson, George A.: *See—*
Griffith, Glen R.; Sandusky, Zane A.; and Watson, George A., 4,081,995, Cl. 73-116.000.

Watson, William Ferguson: *See—*
Jones, Stanley Peter; and Watson, William Ferguson, 4,082,527, Cl. 65-83.000.

Watt, William Doyle, Jr.; and Flowerday, Dale L., to Keeler Corporation. Collar attachment for support hook. 4,082,243, Cl. 248-205.00R.

Weatherchem Corporation: *See—*
Bittel, Patricia A., 4,082,201, Cl. 220-339.000.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Jardin, Hans, 4,081,926, Cl. 49-210.000.

Weber, Dieter: *See—*
Hunger, Klaus; and Weber, Dieter, 4,082,741, Cl. 260-154.000.

Weber, Joseph A.; and Wenshau, Hugo, to Gustafson, Inc. Crosscut sampler. 4,082,004, Cl. 73-422.00R.

Weeks, Paul D.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,082,717, Cl. 260-345.90R.

Wegener, Peter: *See—*
Riemenschneider, Wilhelm; and Wegener, Peter, 4,082,796, Cl. 260-545.00R.

Wegwerth, Arthur A., to Minnesota Mining and Manufacturing Company. Abrasion resistant coatings. 4,082,896, Cl. 428-413.000.

Wehde, Heinz; and Becker, Willi, to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH; and Teldix G.m.b.H. Bearing arrangement. 4,082,376, Cl. 308-10.000.

Weigl, Erwin: *See—*
Krob, Erwin; Weigl, Erwin; and Svoboda, Josef, 4,082,315, Cl. 280-631.000.

Weinberg, Alan S.: *See—*
Brax, Harri J.; Potinchak, Joseph F.; and Weinberg, Alan S., 4,082,829, Cl. 264-209.000.

Weinhold, Karl. Pipe coupling. 4,082,320, Cl. 285-31.000.

Weininger, Joseph L.: *See—*
Thornton, Roy F.; and Weininger, Joseph L., 4,081,899, Cl. 29-623.200.

Weinstein, Hyman; and Adler, Kurt, to Delta Truck Body Company, Inc. Fiberglass reinforced plywood structural sandwich with acrylic facing on one or both sides thereof. 4,082,882, Cl. 428-246.000.

Weintraub, Burton: *See—*
Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, 4,082,319, Cl. 285-27.000.

Weisshappel, Helmut: *See—*
Hutai, Hubert; Klie, Wolfgang; and Weisshappel, Helmut, 4,082,338, Cl. 293-85.000.

Welton, Sanford M.: *See—*
Estes, Ronald L.; McGee, Larry S.; and Welton, Sanford M., 4,082,526, Cl. 65-24.000.

Weman, Per-Olof, to Sigmatex AG Basel. Safety belt for motor vehicles. 4,082,317, Cl. 280-745.000.

Wennerberg, Arnold N.; and O'Grady, Thomas M., to Standard Oil Company (Indiana). Active carbon process and composition. 4,082,694, Cl. 252-444.000.

Wenshau, Hugo: *See—*
Weber, Joseph A.; and Wenshau, Hugo, 4,082,004, Cl. 73-422.00R.

Wenthe, Stephen J., Jr.: *See—*
Menon, Sukumaran K.; and Wenthe, Stephen J., Jr., 4,082,444, Cl. 355-8.000.

Werner, Gregory Keith; Switzer, Kenneth Oscar; and St. Laurent, Raymond G., to Deere & Company. Support and guide for a track of a track-laying vehicle. 4,082,371, Cl. 305-56.000.

West Electric Company, Ltd.: *See—*
Hirata, Shinji, 4,082,982, Cl. 315-151.000.
Iwata, Hiroshi, 4,082,984, Cl. 315-241.00P.
Iwata, Hiroshi; and Tsuzuki, Yu, 4,083,058, Cl. 354-128.000.

Westberg, Johan Eric Hayden, to Separex SA. Centrifuge apparatus. 4,082,217, Cl. 233-25.000.

Western Electric Company, Inc.: *See—*
Kanotz, William Michael; Lockhart, William Robert; Piper, George Francis; Vesperman, William Charles; and Wilson, Max Kearns, 4,082,585, Cl. 156-51.000.
Rapp, Willard Emanuel, 4,082,487, Cl. 425-135.000.

Westinghouse Electric Corporation: *See—*
Cohn, Marvin, 4,083,004, Cl. 325-6.000.
Coley, Kenneth R.; and Carris, George M., 4,082,396, Cl. 339-36.000.
Dobrosielski, Stephen S.; Richards, Edward L.; and Skalka, Paul, 4,083,027, Cl. 337-66.000.
Gamble, Dennis H., 4,082,393, Cl. 339-14.00R.
Hayes, Matthew N., 4,082,931, Cl. 200-144.00C.
Jaklic, Albin, Jr.; and Stephens, Donald S., 4,082,916, Cl. 174-52.0PE.
Kleemann, Willi; and Beck, Cyril G., 4,082,548, Cl. 75-171.000.
Mattern, John; and Harrison, Earnest R., 4,083,049, Cl. 343-7.700.
Morton, Edward W.; and Gilmore, John F., 4,082,981, Cl. 315-97.000.
Paice, Derek A., 4,083,001, Cl. 324-158.0MG.
Popodi, Alfred E., 4,083,015, Cl. 331-4.000.
Sackin, Milton; and Hummert, George T., 4,082,164, Cl. 187-29.00R.

Westran Corporation: *See—*
Dalton, Thomas B., 4,082,247, Cl. 251-229.000.

Wheelabrator-Frye, Inc.: *See—*
Jones, George F.; and Leliaert, Raymond M., 4,081,929, Cl. 51-163.200.

Whelan, James M., to University of Southern California. Process for the selective catalytic oxidation of partially oxidized inorganic compounds. 4,082,837, Cl. 423-405.000.

Whirlpool Corporation: *See—*
Schmitz, Joseph Francis, 4,082,478, Cl. 415-209.000.

White Motor Corporation: *See—*
Sternberg, Ernest R., 4,082,157, Cl. 180-14.00A.

Whittingham, Reginald P., to Walter Kidde & Company, Inc. Crane with left cylinder and journal lock and release device. 4,082,191, Cl. 212-59.00R.

Whittle, John Edward, to International Nickel Company, Inc., The. Production of perforated metal foil. 4,082,632, Cl. 204-129.650.

Whitworth, Billie J., to Hughes Tool Company. Cam mounting for an impact tool. 4,082,152, Cl. 173-119.000.

Wick, Arnold: *See—*
Jost, Max; and Wick, Arnold, 4,082,778, Cl. 260-378.000.

Wiezer, Hartmut: *See—*
Mayer, Norbert; Pfahler, Gerhard; and Wiezer, Hartmut, 4,082,723, Cl. 260-45.80N.

Wikel, James H.: *See—*
Paget, Charles J.; and Wikel, James H., 4,082,762, Cl. 260-308.00R.

Wilcox, Craig R.: *See—*
Anderson, Clifton W.; Kubik, John J.; Pollock, Tom G.; Schlict, Larry J.; and Wilcox, Craig R., 4,082,198, Cl. 214-519.000.

Wild, Peter J.: *See—*
Schulthess, Peter U.; and Wild, Peter J., 4,082,430, Cl. 350-333.000.

Wiley, A. C., Jr.; and Taylor, Otis C., to Dow Chemical Company, The. Electrolytic cell brine feed system. 4,082,630, Cl. 205-98.000.

Willems, Jozef Frans: *See—*
Laridon, Urbain Leopold; Poot, Albert Lucien; and Willems, Jozef Frans, 4,082,901, Cl. 428-480.000.

Willey, Barry A. Motorcycle windshield assembly. 4,082,345, Cl. 296-78.100.

Williams, Charles V., to Southern Business Systems of Greensboro, Inc Modular visitor station. 4,082,047, Cl. 109-21.500.

Williams, Frederick P., to Monarch Marking Systems, Inc. Switch-proof label. 4,082,873, Cl. 428-40.000.

Williams, Graham: *See—*
Henman, Terence John; and Williams, Graham, 4,082,720, Cl. 260-42.150.

Williams, Jake Millard, to Nolte and Nolte, P.C. Game having optical presentation and apparatus therefor. 4,082,437, Cl. 352-123.000.

Williams, Milton L.: *See—*
Long, Walt C.; and Williams, Milton L., 4,082,001, Cl. 73-756.000.

Williams, Peter Geoffrey, to Monsanto Company. Apparatus for joining undrawn yarns. 4,082,328, Cl. 289-2.000.

Willmann, Karl: *See—*
Saufferer, Helmut; and Willmann, Karl, 4,082,070, Cl. 123-119.00E.

Willms, Charles F., to A-T-O Inc. Fire protection system. 4,082,148, Cl. 169-61.000.

Wilson, John S. Directional flare. 4,082,041, Cl. 102-35.000.

Wilson, Layton G.; and Ward, William, IV. Spillage collection device for fuel tanks for boats. 4,082,125, Cl. 141-86.000.

Wilson, Max Kearns: *See—*
Kanotz, William Michael; Lockhart, William Robert; Piper, George Francis; Vesperman, William Charles; and Wilson, Max Kearns, 4,082,585, Cl. 156-51.000.

Wilson, Omer L.: *See—*
Knight, John H.; St. Cyr, Lewis A.; and Wilson, Omer L., 4,082,645, Cl. 208-11.00R.

Wilson, Richard C.: *See—*
Culpepper, Bertram C., Jr.; and Wilson, Richard C., 4,081,939, Cl. 52-535.000.

Wingard, Robert Dean; and Leidal, Shirley Margaret, to Upjohn Company, The. Mixing head for a reaction injection molding machine. 4,082,512, Cl. 23-252.00R.

Winkles, Dwayne L. Land levelling equipment. 4,082,150, Cl. 172-780.000.

Winter, Donald Charles: *See—*
Brooks, Robert Ellison; and Winter, Donald Charles, 4,082,415, Cl. 350-3.830.
Wischniewski, Martin: *See—*
Offergeld, Egon; and Wischniewski, Martin, 4,082,498, Cl. 432-14.000.
Wise, Harry Honon, to Johns-Manville Corporation. Building structure utilizing precast concrete elements. 4,081,935, Cl. 52-236.800.
Wise, Mark J., to Flexicore Co., Inc., The. Structural framework with improved connector. 4,081,936, Cl. 52-301.000.
Witco Chemical Corporation: *See—*
Berger, Paul Daniel, 4,082,691, Cl. 252-358.000.
Rhodes, Rufus K., 4,082,679, Cl. 252-8.800.
Witte, John F.: *See—*
Hearon, William Montgomery; Witte, John F.; and Lo, Cheng Fan, 4,082,743, Cl. 536-30.000.
Wittenbrook, Lawrence S.; and Scheiderer, Edwin L., to D. M. Scott & Sons Company. Coated controlled-release product. 4,082,533, Cl. 71-28.000.
Wnek, Alfred B., to Ex-Cell-O Corporation. Handling system for heavy loads. 4,082,195, Cl. 214-38.0BA.
Wolf, Helmut: *See—*
Sommer, Manfred, 4,082,485, Cl. 418-226.000.
Wolf, Karlheinz: *See—*
Nonn, Konrad; Wolf, Karlheinz; and Hornle, Reinold, 4,082,505, Cl. 8-85.00R.
Wolfe, Court Lone, to Chemed Corporation. Analytical cell assembly for an analyzer. 4,082,459, Cl. 356-85.000.
Wolff, Danny K.; Mott, James D.; and Colvin, Kenneth W., to Hydril Company. Method and apparatus for a surface control system for: subsurface safety valves. 4,082,147, Cl. 166-314.000.
Wong, Louis Fay: *See—*
Pracht, Hans Joachim; and Wong, Louis Fay, 4,082,678, Cl. 252-8.600.
Wood, Donald W., to Argus Chemical Corporation. Chlorinated cyclopentadiene peroxides. 4,082,812, Cl. 260-610.00R.
Wood, Edgar Wray; and Young, Jerry Olympus, to Smith International, Inc. Box hole drill steel. 4,082,323, Cl. 285-133.00A.
Wood, John Frederick Barry: *See—*
Hazelett, Robert William; and Wood, John Frederick Barry, 4,082,101, Cl. 134-127.000.
Woodbury, John L., Jr. Water level control for toilet having vertical float. 4,082,110, Cl. 137-426.000.
Woodward, Oakley McDonald, to RCA Corporation. Circularly-polarized antenna system using tilted dipoles. 4,083,051, Cl. 343-797.000.
Woodward, William R. Multirudder steering system for multihull boats. 4,082,053, Cl. 114-163.000.
Wortham, Otis W.; and Sundstrom, John A., to General Motors Corporation. Clothes washer with centerpost mounted lint filter bag. 4,081,975, Cl. 68-18.0FA.
Wright, Howard J.: *See—*
Fisk, William W.; and Wright, Howard J., 4,082,816, Cl. 260-855.000.
Wright, Jeremy: *See—*
Arnett, Carroll D.; Wright, Jeremy; and Zenker, Nicolas, 4,082,847, Cl. 424-273.00R.
Wright, Luther R. Cotton press. 4,082,034, Cl. 100-240.000.
Wright State University: *See—*
Harris, Frank W.; and Reinhardt, Bruce A., 4,082,806, Cl. 260-590.00D.
Wyndham, Ronald; and Terry, John Christopher, to Toth Aluminum Corporation. Clay halogenation process. 4,082,833, Cl. 423-135.000.
Xerox Corporation: *See—*
Draugelis, Vaidevutis C.; and Schafer, Eugene D., 4,082,443, Cl. 355-4.000.
Fraser, Lawrence J., 4,082,061, Cl. 118-645.000.
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,082,549, Cl. 96-1.00R.
Lehman, Richard F., 4,082,450, Cl. 355-71.000.
Menon, Sukumaran K.; and Wenthe, Stephen J., Jr., 4,082,444, Cl. 355-8.000.
Mueller, Karl, 4,082,137, Cl. 165-1.000.
Patel, Vinod, 4,082,451, Cl. 355-71.000.
Steiner, Edward L., 4,082,445, Cl. 355-14.000.
Yamada, Muneki; Hirata, Sadao; Kishimoto, Akira; Hirata, Shunsaku; Suzuki, Toru; and Kano, Fumio, to Toyo Seikan Kaisha Limited. Packaging materials having excellent gas permeation resistance and process for preparation thereof. 4,082,854, Cl. 426-106.000.
Yamada, Shigeru: *See—*
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Ishii, Shigeki, 4,082,027, Cl. 84-1.010.
Yamada, Yukio; Abe, Michiharu; and Oride, Akiyoshi, to Ricoh Co. Ltd. Method and apparatus for producing and fixing a visible image on a thermoplastic layer of a photoconductive material. 4,082,441, Cl. 355-14.000.
Yamahara, Takeshi; and Inokuma, Shun, to Sumitomo Chemical Company, Limited. Production of alpha-amino acids. 4,082,767, Cl. 260-326.14T.
Yamamoto, Hiroe; Takahashi, Noriyoshi; and Takahashi, Miyoshi, to Hitachi, Ltd. Gap winding type dynamo-electric machine. 4,082,974, Cl. 310-179.000.
Yamamoto, Shinji: *See—*
Kohno, Hideki; Hashizume, Akihide; and Yamamoto, Shinji, 4,082,457, Cl. 356-39.000.
Yamashina, Toshiro; and Sakaki, Hirokazu, to Fuji Photo Film Co., Ltd. Lithographic printing plate. 4,082,040, Cl. 101-456.000.
Yamawaki, Takeshi; Hoshijima, Tokitaro; and Mizushima, Kiyoshi, to Mitsubishi Kasei Kogyo Kabushiki Kaisha. Method of tension stress testing of rubber. 4,081,994, Cl. 73-95.000.
Yanagihara, Shigeru, to Agency of Industrial Science & Technology. Automatic fuel heating injection valve. 4,082,067, Cl. 123-32.00H.
Yanez, Richard R., to Motorola, Inc. Semiconductor process. 4,082,604, Cl. 156-656.000.
Yang, Kei-Hsiung; and De Luca, John A., to General Electric Company. Tunable laser system. 4,083,018, Cl. 331-94.50F.
Yelle, Ernest N.: *See—*
Paterson, Malcolm M.; and Yelle, Ernest N., 4,082,228, Cl. 241-34.000.
Yenni, Donald McKelvie, to Union Carbide Corporation. Method for coating nonsymmetrical objects. 4,082,870, Cl. 427-425.000.
Ying, Phyllis: *See—*
Kessler, Henry A.; and Ying, Phyllis, 4,082,693, Cl. 252-430.000.
Yoerger, William E., to Eastman Kodak Company. Hexachlorocyclopentene chemical sensitizers for heterogeneous organic photoconductive compositions. 4,082,550, Cl. 96-1.50R.
Yokogawa Electric Works, Ltd.: *See—*
Tada, Osamu; Nakagawa, Mutsuaki; Mori, Hiroshi; Wakasa, Yutaka; Kataoka, Koju; Inoue, Tadanari; and Uchiike, Hisayuki, 4,082,942, Cl. 364-111.000.
Yokohama Rubber Company, Limited, The: *See—*
Sugiyama, Yuichi; Kaido, Hiroyuki; and Koyama, Tsuneo, 4,082,909, Cl. 526-4.000.
Yokoshima, Ichiro, to Agency of Industrial Science & Technology. Loop type standard magnetic field generator. 4,083,006, Cl. 325-125.000.
Yokota, Akira; and Nakagawa, Yasuhiko, to Nissan Motor Company, Limited. Arrangement for supporting a thermal reactor to an engine proper. 4,081,959, Cl. 60-282.000.
Yokoyama, Masuo: *See—*
Mine, Katsutoshi; and Yokoyama, Masuo, 4,082,726, Cl. 260-46.5UA.
Yoshida Kogyo K.K.: *See—*
Ishii, Susumu; and Suzuki, Tuneo, 4,081,883, Cl. 24-205.14R.
Miyazaki, Tatsuyoshi, 4,082,026, Cl. 83-453.000.
Yoshida, Motoaki, to Nippon Sheet Glass Co., Ltd. Polycarbonate resin shaped articles having improved abrasion resistance. 4,082,894, Cl. 428-335.000.
Yoshikawa, Masazi; and Sawada, Tomoe, to Murata Manufacturing Co., Ltd., a part interest. Spark plug cap providing a capacitor in parallel with the spark cap. 4,082,980, Cl. 315-59.000.
Yoshino Kogyosho Co., Ltd.: *See—*
Nozawa, Takamitsu, 4,082,223, Cl. 239-333.000.
Young, Jerry Olympus: *See—*
Wood, Edgar Wray; and Young, Jerry Olympus, 4,082,323, Cl. 285-133.00A.
Youngdale, Gilbert A., to Upjohn Company, The. 2a,2b-Dihomo-15-alkyl $PGF_1\alpha$ analogs. 4,082,783, Cl. 260-410.90R.
Youngstown Sheet and Tube Company: *See—*
Lake, Peter B.; Grenawalt, John J.; and Pastorek, Ronald L., 4,082,576, Cl. 148-12.00F.
Yu, Rosendo U., to General Electric Company. Gate turnoff thyristor with a pilot SCR. 4,083,063, Cl. 357-38.000.
Zachary, William A., to International Minerals & Chemical Corporation. Combined sand core machine. 4,082,134, Cl. 164-157.000.
Zahler, Wolf-Dieter: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; Zahler, Wolf-Dieter; and Grimm-Lenz, Rainer, 4,082,722, Cl. 260-42.430.
Zakharov, Nikolai Nikolaevich; and Paramonov, Evgeny Borisovich. Regulating systems for two-shaft gas-turbine engine. 4,081,955, Cl. 60-39.16S.
Zangrando, Donald Roy; and Kelley, Clifford Herrol, Jr., to Varian Associates, Inc. Coupled-cavity microwave oscillator. 4,083,016, Cl. 331-56.000.
Zanko, George Michael: *See—*
Grimmell, William Charles; Kaetzel, Gilbert Carl; Moran, John Milton; and Zanko, George Michael, 4,082,188, Cl. 209-73.000.
Zardi, Umberto; Lagana', Vincenzo; Bonetti, Andrea; and Schmid, Giorgio, to Snamprogetti, S.p.A. Method for the condensation of carbammate in urea-synthesis installations. 4,082,797, Cl. 260-555.00A.
Zboril, Vaclav George, to du Pont of Canada Limited. Paper-like thermoplastic film. 4,082,880, Cl. 428-220.000.
Zeineh, Rashid Ayoub; and Finley, Richard Arthur. Ultra filtration apparatus and method. 4,082,668, Cl. 210-129.000.
Zeitler, Karl-Heinz: *See—*
Auracher, Franz; Mitterhummer, Gerhard; and Zeitler, Karl-Heinz, 4,082,421, Cl. 350-96.220.
Zeitz, Vernon, to Johnson & Johnson. Optical switch. 4,082,435, Cl. 350-269.000.
Zenith Radio Corporation: *See—*
Blumenberg, Horst H., 4,082,977, Cl. 313-457.000.
Gamboa, Paul, 4,082,986, Cl. 315-411.000.
Zenker, Nicolas: *See—*
Arnett, Carroll D.; Wright, Jeremy; and Zenker, Nicolas, 4,082,847, Cl. 424-273.00R.
Zentner, Erich: *See—*
Andrascheck, Hans-Joachim; Lorcher, Otfried; and Zentner, Erich, 4,082,711, Cl. 260-23.0XA.
Zharinov, Valery Ivanovich: *See—*
Shergov, Igor Vladimirovich; Slavinsky, Vladimir Danilovich; Fridlender, Lev Moiseevich; Zharinov, Valery Ivanovich; and Kozhaev, Arkady Filippovich, 4,082,938, Cl. 219-121.0EB.

Zinnes, Harold: *See*—
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,082,757, Cl. 260-294.80C.

Zirngiebl, Eberhard, to Bayer Aktiengesellschaft. Absorption of chlorine gas. 4,082,631, Cl. 204-128.000.

Zollar, Leland H.; and Moore, Edward W., to Harvest Industries, Inc. Dried phosphoric acid product and process. 4,082,677, Cl. 252-8.50B.

Zubko, Ronald L.: *See*—
Schmidt, George A.; Zubko, Ronald L.; and Abolins, Andrew, 4,082,357, Cl. 298-27.000.

Zulli, Bruno. Method for producing thin particle board. 4,082,828, Cl. 264-119.000.

Zwiep, Theodore Carl; Newhouse, Donn G.; and Craner, Jerry D., to Country Queen Foods, Inc. Process and apparatus for shelling eggs. 4,082,856, Cl. 426-299.000.

Zwijsen, Wilhelmus A. J. M.: *See*—
Bahlmann, Johannes P. M.; and Zwijsen, Wilhelmus A. J. M., 4,083,036, Cl. 340-166.00R.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 4TH DAY OF APRIL, 1978

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Berger, Horst H.; and Wiedmann, Siegfried K., to International Business Machines Corporation. Monolithically integrated semiconductor structure containing at least two devices in a common zone and technique for preventing parasitic transistor action. T969,010, 4-4-78, Cl. 357-46.000.

Cogswell, Frederic Neil; and Tomka, Jiri George, to Imperial Chemical Industries Limited. Production of oriented fibrillar products. T969,008, 4-4-78, Cl. 260-78.410.

Davis, Merton Louis; and Dworjanyn, Lee Oleh. Dyed fibers. T969,001, 4-4-78, Cl. 8-25.000.

Dworjanyn, Lee Oleh: *See—*
Davis, Merton Louis; and Dworjanyn, Lee Oleh, T969,001, Cl. 8-25.000.

General Electric Company: *See—*
Lahut, Joseph A.; and Skoda, Raymond E., T969,009, Cl. 346-74.100.

Goetz, Richard E., to Smith International, Inc. Method for making rock bits. T969,007, 4-4-78, Cl. 219-121.0EM.

Imperial Chemical Industries Limited: *See—*
Cogswell, Frederic Neil; and Tomka, Jiri George, T969,008, Cl. 260-78.410.
Watkiss, Bruce Martin, T969,004, Cl. 96-27.00R.

International Business Machines Corporation: *See—*
Berger, Horst H.; and Wiedmann, Siegfried K., T969,010, Cl. 357-46.000.

Kohler, John J.: *See—*
Phillips, John F., Jr.; and Kohler, John J., T969,003, Cl. 71-64.00F.

Lahut, Joseph A.; and Skoda, Raymond E., to General Electric Company. Transfer of magnetic toner particles with a directed magnetic field. T969,009, 4-4-78, Cl. 346-74.100.

Mihara, Yuji: *See—*
Tanaka, Akira; Mikawa, Akikazu; Mihara, Yuji; and Mukunoki, Yasuo, T969,005, Cl. 96-100.00R.

Mihari, Yuji; Sakai, Takeo; Ohmatsu, Hideki; and Sato, Akira. Spectrally sensitized silver halide photographic emulsions. T969,006, 4-4-78, Cl. 96-126.000.

Mikawa, Akikazu: *See—*
Tanaka, Akira; Mikawa, Akikazu; Mihara, Yuji; and Mukunoki, Yasuo, T969,005, Cl. 96-100.00R.

Mukunoki, Yasuo: *See—*
Tanaka, Akira; Mikawa, Akikazu; Mihara, Yuji; and Mukunoki, Yasuo, T969,005, Cl. 96-100.00R.

Norton, Melvin M.; and Parker, Byron R., to Tennessee Valley Authority. Granular ammonium phosphate sulfate and urea-ammonium phosphate sulfate using a common pipe-cross reactor. T969,002, 4-4-78, Cl. 71-29.000.

Ohmatsu, Hideki: *See—*
Mihari, Yuji; Sakai, Takeo; Ohmatsu, Hideki; and Sato, Akira, T969,006, Cl. 96-126.000.

Parker, Byron R.: *See—*
Norton, Melvin M.; and Parker, Byron R., T969,002, Cl. 71-29.000.

Phillips, John F., Jr.; and Kohler, John J., to Tennessee Valley Authority. Controlled release liquid fertilizers. T969,003, 4-4-78, Cl. 71-64.00F.

Sakai, Takeo: *See—*
Mihari, Yuji; Sakai, Takeo; Ohmatsu, Hideki; and Sato, Akira, T969,006, Cl. 96-126.000.

Sato, Akira: *See—*
Mihari, Yuji; Sakai, Takeo; Ohmatsu, Hideki; and Sato, Akira, T969,006, Cl. 96-126.000.

Shell Oil Company: *See—*
Vermeire, Hans F., T969,011, Cl. 427-207.00B.

Skoda, Raymond E.: *See—*
Lahut, Joseph A.; and Skoda, Raymond E., T969,009, Cl. 346-74.100.

Smith International, Inc.: *See—*
Goetz, Richard E., T969,007, Cl. 219-121.0EM.

Tanaka, Akira; Mikawa, Akikazu; Mihara, Yuji; and Mukunoki, Yasuo. Color photographic materials containing high-boiling organic solvent. T969,005, 4-4-78, Cl. 96-100.00R.

Tennessee Valley Authority: *See—*
Norton, Melvin M.; and Parker, Byron R., T969,002, Cl. 71-29.000.
Phillips, John F., Jr.; and Kohler, John J., T969,003, Cl. 71-64.00F.

Tomka, Jiri George: *See—*
Cogswell, Frederic Neil; and Tomka, Jiri George, T969,008, Cl. 260-78.410.

Vermeire, Hans F., to Shell Oil Company. Hot melt adhesive emulsion process. T969,011, 4-4-78, Cl. 427-207.00B.

Watkiss, Bruce Martin, to Imperial Chemical Industries Limited. Light-absorbing filters. T969,004, 4-4-78, Cl. 96-27.00R.

Wiedmann, Siegfried K.: *See—*
Berger, Horst H.; and Wiedmann, Siegfried K., T969,010, Cl. 357-46.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF APRIL, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Caterpillar Tractor Co.: *See—*
Oke, Stanley A.; and Shankwitz, Robert F., Re. 29,603, Cl. 214-145.00R.

Continental Oil Company: *See—*
Ziegenhain, William C.; and Smith, John H., Re. 29,605, Cl. 23-293.00A.

Eaton Corporation: *See—*
Richards, Elmer A., Re. 29,601, Cl. 74-339.000.

Matarelli, Frank W. Whip finishing tool. Re. 29,604, Cl. 289-17.000.

Oke, Stanley A.; and Shankwitz, Robert F., to Caterpillar Tractor Co. Bucket reinforcement structure. Re. 29,603, Cl. 214-145.00R.

Perl, Richard L., to Tappan Company, The. Domestic oven. Re. 29,602, Cl. 126-21.00A.

Richards, Elmer A., to Eaton Corporation. Transmission with resiliently loaded mainshaft gears. Re. 29,601, Cl. 74-339.000.

Shankwitz, Robert F.: *See—*
Oke, Stanley A.; and Shankwitz, Robert F., Re. 29,603, Cl. 214-145.00R.

Smith, John H.: *See—*
Ziegenhain, William C.; and Smith, John H., Re. 29,605, Cl. 23-293.00A.

Tappan Company, The: *See—*
Perl, Richard L., Re. 29,602, Cl. 126-21.00A.

Ziegenhain, William C.; and Smith, John H., to Continental Oil Company. High-porosity, high-surface area, low-bulk density alumina. Re. 29,605, Cl. 23-293.00A.

LIST OF PLANT PATENTEES

Cross, Harry, Jr., to Gray, O. S., Jr. Pecan tree named GraCross. 4,236, 4-4-78, Cl. 31.000.

Ecke, Paul, Jr.: *See*—
Gutbier, Gregor, 4,235, Cl. 68.000.

Friedman, Cora G.: *See*—
Friedman, Martin; and Friedman, Cora G., 4,232, Cl. 38.000.

Friedman, Martin; and Friedman, Cora G. French prune. 4,232, 4-4-78, Cl. 38.000.

Gray, O. S., Jr.: *See*—
Cross, Harry, Jr., 4,236, Cl. 31.000.

Gutbier, Gregor, to Ecke, Paul, Jr. Poinsettia plant named Gutbier V-10. 4,235, 4-4-78, Cl. 68.000.

Klehm Boys' Partnership: *See*—
Klehm, Roy G., 4,233, Cl. 68.000.
Klehm, Roy G., 4,234, Cl. 68.000.

Klehm, Roy G., to Klehm Boys' Partnership. Peony plant named My Pal Rudy. 4,233, 4-4-78, Cl. 68.000.

Klehm, Roy G., to Klehm Boys' Partnership. Peony named whopper. 4,234, 4-4-78, Cl. 68.000.

LIST OF DESIGN PATENTEES

AB Filip Linden: *See*—
Breger, Carl Arne, 247,664, Cl. D10-101.000.

Balmer, James G., Jr., to Xerox Corporation. Film reel. 247,667, 4-4-78, Cl. D14-11.000.

Behun, Eugene, to Xerox Corporation. Stripper pad. 247,673, 4-4-78, Cl. D16-32.000.

Behun, Eugene, to Xerox Corporation. Stripper pad. 247,674, 4-4-78, Cl. D16-32.000.

Behun, Eugene, to Xerox Corporation. Stripper pad. 247,675, 4-4-78, Cl. D16-32.000.

Berkey-Colortran, Inc: *See*—
LeVasseur, Craig, 247,689, Cl. D48-20.00K.

Blackman, R. Eugene: *See*—
Laule, Thomas M.; Parise, Carl; Wimsatt, James M.; and Blackman, R. Eugene, 247,671, Cl. D15-52.000.

Bockhorn, Albert. Crab trap. 247,677, 4-4-78, Cl. D22-18.000.

Breger, Carl Arne, to AB Filip Linden. Rain gauge. 247,664, 4-4-78, Cl. D10-101.000.

Brokaw, Paul E. Fish lure. 247,678, 4-4-78, Cl. D22-27.000.

Brown, Paul R., to United States Telephone Company. Telephone or similar article. 247,670, 4-4-78, Cl. D14-53.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; and Ishii, Yoshiyasu, 247,688, Cl. D34-15.00C.

Dartois, Yvon Maurice, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes. Tire. 247,666, 4-4-78, Cl. D12-146.000.

Desjardins, Adrien. Tool for golf player. 247,686, 4-4-78, Cl. D34-5.0CB.

Dillon, Jack E.: *See*—
Dillon, Kathleen, 247,656, Cl. D1-16.000.

Dillon, Kathleen, to Dillon, Jack E., a part interest. Confectionery food product. 247,656, 4-4-78, Cl. D1-16.000.

Doyel, John S. Record cleaning device. 247,662, 4-4-78, Cl. D7-161.000.

Dunlop Limited: *See*—
Haines, Robert Christopher; and Shaw, Michael, 247,685, Cl. D34-5.0QQ.

Furst, Norman Roland; and Tokiyama, Masaru, to Motorola, Inc. Housing for a microphone or similar article. 247,668, 4-4-78, Cl. D14-12.000.

Genovese, Mario A.: *See*—
Willard, Allen D.; and Genovese, Mario A., 247,661, Cl. D7-107.000.

Haines, Robert Christopher; and Shaw, Michael, to Dunlop Limited. Golf ball. 247,685, 4-4-78, Cl. D34-5.0QQ.

Hemphill, William T. Douche apparatus. 247,681, 4-4-78, Cl. D24-61.000.

Ishii, Yoshiyasu: *See*—
Nakao, Shinroku; and Ishii, Yoshiyasu, 247,688, Cl. D34-15.00C.

Kearney, Linden P. Support for hanging potted plants. 247,659, 4-4-78, Cl. D6-28.000.

Keen, Peter Charles, to United States Shoe Corporation. Unit sole. 247,658, 4-4-78, Cl. D2-320.000.

Kruse, James Allen. Grinding wheel. 247,672, 4-4-78, Cl. D15-126.000.

Larsen, Larry D., to Patent Development & Management Company. Fire alarm housing. 247,665, 4-4-78, Cl. D10-121.000.

Laule, Thomas M.; Parise, Carl; Wimsatt, James M.; and Blackman, R. Eugene, to Parise & Sons, Inc. Hot-water extraction unit. 247,671, 4-4-78, Cl. D15-52.000.

LeVasseur, Craig, to Berkey-Colortran, Inc. Luminaire. 247,689, 4-4-78, Cl. D48-20.00K.

Lighting Systems, Inc.: *See*—
Zelina, Thomas, 247,690, Cl. D48-24.00R.

Lorenzetti, Alexandre Jose Antonio. Shower head. 247,680, 4-4-78, Cl. D23-35.000.

Marusho Industrial Co., Ltd.: *See*—
Nakahata, Kozo, 247,676, Cl. D16-41.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Murakami, Tsutomu; and Mishiro, Benito, 247,669, Cl. D14-12.000.

McMullen, Thomas J. Spray gun handle. 247,679, 4-4-78, Cl. D23-17.000.

Mishiro, Benito: *See*—
Murakami, Tsutomu; and Mishiro, Benito, 247,669, Cl. D14-12.000.

Motorola, Inc.: *See*—
Furst, Norman Roland; and Tokiyama, Masaru, 247,668, Cl. D14-12.000.

Murakami, Tsutomu; and Mishiro, Benito, to Matsushita Electric Industrial Co., Ltd. Combined transceiver remote-control microphone. 247,669, 4-4-78, Cl. D14-12.000.

Nakahata, Kozo, to Marusho Industrial Co., Ltd. Splicer. 247,676, 4-4-78, Cl. D16-41.000.

Nakao, Shinroku; and Ishii, Yoshiyasu, to Combi Co., Ltd. Toy music box. 247,688, 4-4-78, Cl. D34-15.00C.

Nitta, Tomio. Disposable cigarette gas lighter. 247,682, 4-4-78, Cl. D27-42.000.

North American Philips Corporation: *See*—
Rakocy, William J.; and Tsuji, Masao, 247,683, Cl. D28-13.000.

Parise, Carl: *See*—
Laule, Thomas M.; Parise, Carl; Wimsatt, James M.; and Blackman, R. Eugene, 247,671, Cl. D15-52.000.

Parise & Sons, Inc.: *See*—
Laule, Thomas M.; Parise, Carl; Wimsatt, James M.; and Blackman, R. Eugene, 247,671, Cl. D15-52.000.

Patent Development & Management Company: *See*—
Larsen, Larry D., 247,665, Cl. D10-121.000.

Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See*—
Dartois, Yvon Maurice, 247,666, Cl. D12-146.000.

Rakocy, William J.; and Tsuji, Masao, to North American Philips Corporation. Electric hair dryer. 247,683, 4-4-78, Cl. D28-13.000.

Richard Heinze GmbH & Co. KG, Firma: *See*—
Spellier, Roland, 247,663, Cl. D8-313.000.

Roland, Bernadette C. Headgear toy for hoop whirling or the like. 247,687, 4-4-78, Cl. D34-5.0HP.

Selchow & Righter Company: *See*—
Tiffany, Lee W., 247,684, Cl. D34-5.0MM.

Shaw, Michael: *See*—
Haines, Robert Christopher; and Shaw, Michael, 247,685, Cl. D34-5.0QQ.

Spellier, Roland, to Richard Heinze GmbH & Co. KG, Firma. Handle for furniture doors, drawers or the like. 247,663, 4-4-78, Cl. D8-313.000.

Tiffany, Lee W., to Selchow & Righter Company. Score sheet. 247,684, 4-4-78, Cl. D34-5.0MM.

Tokiyama, Masaru: *See*—
Furst, Norman Roland; and Tokiyama, Masaru, 247,668, Cl. D14-12.000.

Tortorici, Michael A. Wine rack. 247,660, 4-4-78, Cl. D7-71.000.

Tsuji, Masao: *See*—
Rakocy, William J.; and Tsuji, Masao, 247,683, Cl. D28-13.000.

United States Shoe Corporation: *See*—
Keen, Peter Charles, 247,658, Cl. D2-320.000.

United States Telephone Company: *See*—
Brown, Paul R., 247,670, Cl. D14-53.000.

Willard, Allen D.; and Genovese, Mario A. Barbecue grill. 247,661, 4-4-78, Cl. D7-107.000.

Wimsatt, James M.: *See*—
Laule, Thomas M.; Parise, Carl; Wimsatt, James M.; and Blackman, R. Eugene, 247,671, Cl. D15-52.000.

Xerox Corporation: *See*—
Balmer, James G., Jr., 247,667, Cl. D14-11.000.
Behun, Eugene, 247,673, Cl. D16-32.000.
Behun, Eugene, 247,674, Cl. D16-32.000.
Behun, Eugene, 247,675, Cl. D16-32.000.

York, Harold D., Jr. Thong sandal. 247,657, 4-4-78, Cl. D2-270.000.

Zelina, Thomas, to Lighting Systems, Inc. Combined portable fluorescent light and power pack therefor. 247,690, 4-4-78, Cl. D48-24.00R.

161
425

1.

159

12
105
340

107

26
34
44

85
91
94.
120
139.

8

89

2

71.7

104.0
167
188
256.5

2
90
162

58
96

230
252
288
288
293
313

205
205.1

119
149
251
271
285

25.3
157 C
157.1
421 R
432
433
573
590
622

623.2
624
630 R

43.92
90.6
128
221

CLASSIFICATION OF PATENTS

ISSUED APRIL 4, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

161 A	4,081,864
425	4,081,865

CLASS 3

1.911	4,081,866

CLASS 4

159	4,081,867

CLASS 5

12 R	4,081,868
105	4,081,869
340	4,081,870

CLASS 7

107	4,081,871

CLASS 8

26	4,082,501
34	4,082,502
44	4,082,503
	4,082,504
85 R	4,082,505
91	4,082,506
94.11	4,082,507
120	4,082,500
139.1	4,082,508

CLASS 9

8 P	4,081,872

CLASS 10

89 H	4,081,873

CLASS 13

2 P	4,082,914

CLASS 14

71.7	4,081,874

CLASS 15

104.06 R	4,081,875
167 R	4,081,876
188	4,081,877
256.5	4,081,878

CLASS 16

2	4,081,879
90	4,081,880
162	4,081,881

CLASS 21

58	4,082,509
96	4,082,510

CLASS 23

230 HC	4,082,511
252 R	4,082,512
288 E	4,082,513
288 F	4,082,514
293 A	Re.29,605
313 R	4,082,515

CLASS 24

205 R	4,081,882
205.14 R	4,081,883

CLASS 28

119	4,081,884
149	4,081,885
251	4,081,886
271	4,081,887
285	4,081,888

CLASS 29

25.35	4,081,889
157 C	4,081,890
157.1 R	4,081,891
421 R	4,081,892
432	4,081,893
433	4,081,894
573	4,081,895
590	4,081,896
622	4,081,897
	4,081,898
623.2	4,081,899
624	4,081,900
630 R	4,081,901

CLASS 30

43.92	4,081,902
90.6	4,081,903
128	4,081,904
221	4,081,905
276	4,081,906
294	4,081,907

CLASS 32

10 A	4,081,908
66	4,081,909

CLASS 33

181 R	4,081,910
270	4,081,911
272	4,081,912

CLASS 34

41	4,081,913
92	4,081,914
235	4,081,915

CLASS 36

50	4,081,916
76 R	4,081,917
132	4,081,918

CLASS 37

103	4,081,919

CLASS 40

120	4,081,921
362	4,081,920

CLASS 43

19.2	4,081,922
57.5 R	4,081,923

CLASS 44

51	4,082,516
68	4,082,517
72	4,082,518

CLASS 46

61	4,081,924
116	4,081,925

CLASS 48

202	4,082,519
	4,082,520

CLASS 49

210	4,081,926

CLASS 51

101 R	4,081,927
131	4,081,928
163.2	4,081,929
295	4,082,521
411	4,081,930

CLASS 52

39	4,081,931
111	4,081,932
171	4,081,933
	4,081,934
236.8	4,081,935
301	4,081,936
309.1	4,081,937
410	4,081,938
535	4,081,939
712	4,081,940
726	4,081,941

CLASS 53

22 B	4,081,942
26	4,081,943
51	4,081,944
186	4,081,945

CLASS 55

	4,082,522
	4,082,523
	4,082,524
	4,082,525

CLASS 56

13.3	4,081,947
14.4	4,081,946

CLASS 57

34 HS	4,081,948
53	4,081,949

CLASS 58

4 R	4,081,950
23 R	4,081,951
50 R	4,081,952
	4,081,953

CLASS 59

86	4,081,954

CLASS 60

39.16 S	4,081,955
39.18 B	4,081,956
39.36	4,081,957
39.51 R	4,081,958
282	4,081,959
289	4,081,960
386	4,081,961
501	4,081,962
528	4,081,963
636	4,081,964
641	4,081,965
	4,081,966
	4,081,967

CLASS 61

35	4,081,968
39	4,081,969
88	4,081,970

CLASS 62

216	4,081,971

CLASS 63

31	4,081,972

CLASS 65

24	4,082,526
83	4,082,527
135	4,082,528
273	4,082,529
	4,082,530
296	4,082,531

CLASS 66

64	4,081,973
75.2	4,081,974

CLASS 68

18 FA	4,081,975
19	4,081,976

CLASS 69

42	4,081,977

CLASS 70

58	4,081,978
	4,081,979
92	4,081,980

CLASS 71

8	4,082,532
28	4,082,533
92	4,082,534
	4,082,535
93	4,082,536
121	4,082,537
125	4,082,538

CLASS 72

49	4,081,981
56	4,081,982
	4,081,983
60	4,081,984
117	4,081,985
320	4,081,986
389	4,081,987

CLASS 73

4 R	4,081,988
9	4,081,989
40.5 R	4,081,990
41	4,081,991
84	4,081,992
88 R	4,081,993
95	4,081,994
116	4,081,995
141 A	4,081,996
168	4,081,997
302	4,081,998
343 R	4,081,999
358	4,082,000
422 R	4,082,003
	4,082,004
505	4,082,005
756	4,082,001
	4,082,002

CLASS 74

89.2	4,082,006
240	4,082,007
339	Re.29,601
531	4,082,008
731	4,082,009
800	4,082,010
862	4,082,011
864	4,082,012
866	4,082,013

CLASS 75

3	4,082,539
	4,082,540
5	4,082,541
	4,082,542
11	4,082,543
12	4,082,544
35	4,082,545
109	4,082,546
122.7	4,082,547
171	4,082,548

CLASS 76

43	4,082,014
108 A	4,082,015

CLASS 81

3.43	4,082,016
57.16	4,082,017

CLASS 82

2.5	4,082,018
36 A	4,082,019
37	4,082,020

CLASS 83

4	4,082,021
82	4,082,022
293	4,082,023
402	4,082,024
411 R	4,082,025
453	4,082,026

CLASS 84

1.01	4,082,027
1.24	4,082,028
484	4,082,029

CLASS 85

60	4,082,030

CLASS 90

4	4,082,031

CLASS 91

216 B	4,082,032

CLASS 96

1 PC	4,082,551
1 R	4,082,549
1.5 R	4,082,550
38.4	4,082,552
74	4,082,553
101	4,082,554
114.1	4,082,555
115 R	4,082,556

CLASS 99

406	4,082,033

CLASS 100

240	4,082,034

CLASS 101

93.04	4,082,035
122	4,082,036
425	4,082,037
	4,082,038
450	4,082,039
456	4,082,040

CLASS 102

35	4,082,041

CLASS 104

18	4,082,042

CLASS 105

182 R	4,082,043
376	4,082,044
411	4,082,045

CLASS 106

1.11	4,082,557
10	4,082,558
43	4,082,559
45	4,082,560
89	4,082,561
90	4,082,563
97	4,082,562

CLASS 108

106	4,082,046

CLASS 109

21.5	4,082,047

CLASS 111

2	4,082,048

CLASS 114

39	4,082,049
53	4,082,050
72	4,082,051
75	4,082,052
163	4,082,053
230	4,082,054
245	4,082,055

CLASS 116

34 R	4,082,056

CLASS 118

9	4,082,057
319	4,082,058
407	4,082,059
411	4,082,060
645	4,082,061

CLASS 119

5	4,082,062
	4,082,063
51.11	4,082,064

CLASS 123

32 EA	4,082,066
32 H	4,082,067
41.02	4,082,068
117 D	4,082,069
119 B	4,082,071
119 E	4,082,070
139 AA	4,082,072
140 FG	4,082,074
140 R	4,082,073
148 E	4,082,075
219	4,082,065

CLASS 124

7	4,082,076

CLASS 126

21 A	Re.29,602
197	4,082,077
	4,082,078
270	4,082,079
271	4,082,080
	4,082,081
	4,082,082
343.5 A	4,082,083

CLASS 127

46 A	4,082,564

CLASS 128

2 D	4,082,084
2 G	4,082,085
2.06 E	4,082,086
	4,082,087
2.08	4,082,088
24.3	4,082,089
51	4,082,090
66	4,082,091
139	4,082,092
142.2	4,082,093
214 R	4,082,094
235	4,082,095
303.1	4,082,096
419 PS	4,082,097

CLASS 131

9	4,082,098

CLASS 133

3 R	4,082,099

CLASS 134

1	4,082,565
2	4,082,566
10	4,082,567
76	4,082,100
127	4,082,101

CLASS 135

5 R	4,082,102

CLASS 136

89 CC	4,082,568
	4,082,569
89 SJ	4,082,570

CLASS 137

54	4,082,103
71	4,082,104
72	4,082,105
174	4,082,106
195	4,082,107
269.5	4,082,108
322	4,082,993
340	4,082,109
426	4,082,110
596	4,082,111
614.03	4,082,112
624.11	4,082,113
625.37	4,082,114
630.14	4,082,116
630.2	4,082,115
670	4,082,117

CLASS 139

144	4,082,118
370.2	4,082,119

CLASS 140

107	4,082,120

CLASS 141

5	4,082,122
27	4,082,121
64	4,082,123
65	4,082,124
86	4,082,125

CLASS 142

1	4,082,126

CLASS 144

220	4,082,127
230	4,082,128
326 R	4,082,129

CLASS 148

1.5	4,082,571
	4,082,572
2	4,082,573
	4,082,574
6.35	4,082,575
12 F	4,082,576
12.1	4,082,577
12.7 A	4,082,578
31.55	4,082,579
	4,082,580
32	4,082,581
102	4,082,582

CLASS 149

96	4,082,583
109.4	4,082,584

CLASS 151

23	4,082,130

CLASS 152

210	4,082,131
361 R	4,082,132

CLASS 156

51	4,082,585
61	4,082,586
71	4,082,587
	4,082,588
98	4,082,589
144	4,082,590
150	4,082,591
153	4,082,592
230	4,082,593
253	4,082,594
351	4,082,595
359	4,082,596
429	4,082,597
463	4,082,598
504	4,082,599
505	4,082,600
623 R	4,082,601
627	4,082,602
654	4,082,603

656 4,082,604
4,082,605

CLASS 159

27 B 4,082,606

CLASS 160

191 4,082,133

CLASS 164

157 4,082,134
404 4,082,135
433 4,082,136

CLASS 165

1 4,082,137
4 4,082,138
8 4,082,139
45 4,082,140
69 4,082,141
76 4,082,142
104 S 4,082,143

CLASS 166

250 4,082,144
251 4,082,145
259 4,082,146
314 4,082,147

CLASS 169

61 4,082,148

CLASS 172

40 4,082,149
780 4,082,150

CLASS 173

119 4,082,151
4,082,152

CLASS 174

51 4,082,915
52 PE 4,082,916
146 4,082,917

CLASS 176

19 LD 4,082,607
61 4,082,608
86 R 4,082,609
365 4,082,610

CLASS 177

177 4,082,153
211 4,082,154

CLASS 179

1 AA 4,082,918
2 A 4,082,921
2 DP 4,082,920
2 EA 4,082,919
15 BA 4,082,922
18 GF 4,082,923
84 VF 4,082,924

CLASS 180

5 R 4,082,155
9.62 4,082,156
14 A 4,082,157
108 4,082,158

CLASS 181

156 4,082,159
258 4,082,160

CLASS 182

82 4,082,161
166 4,082,162

CLASS 184

105 R 4,082,163

CLASS 187

29 R 4,082,164

CLASS 188

59 4,082,165
73.6 4,082,166
4,082,167
112 R 4,082,168
322 4,082,169

CLASS 192

13 R 4,082,170
70.2 4,082,171

CLASS 195

28 R 4,082,611
62 4,082,612
76 4,082,613
139 4,082,614

CLASS 197

20 4,082,172

CLASS 198

330 4,082,173
368 4,082,174
377 4,082,175
411 4,082,176
453 4,082,177

741 4,082,178
801 4,082,179
835 4,082,180
863 4,082,181

CLASS 200

11 G 4,082,925
19 DR 4,082,926
52 R 4,082,927
67 DA 4,082,928
83 SA 4,082,929
84 C 4,082,930
144 C 4,082,931
148 R 4,082,932
163 4,082,933
315 4,082,934

CLASS 201

12 4,082,615

CLASS 203

3 4,082,616
28 4,082,617

CLASS 204

15 4,082,618
4,082,619
4,082,620
38 B 4,082,621
40 4,082,622
43 S 4,082,623
47 4,082,624
4,082,625
56 R 4,082,626
59 R 4,082,627
64 T 4,082,628
66 4,082,629
128 4,082,631
129.65 4,082,632
157.1 R 4,082,633
159.15 4,082,634
159.23 4,082,635
192 E 4,082,637
192 N 4,082,636
213 4,082,638
219 4,082,639
279 4,082,640
281 4,082,641
299 EC 4,082,642

CLASS 205

98 4,082,630

CLASS 206

107 4,082,182
301 4,082,183
519 4,082,184
525 4,082,185
577 4,082,186
585 4,082,187

CLASS 208

8 4,082,643
4,082,644
11 R 4,082,645
4,082,646
78 4,082,647
97 4,082,648
111 4,082,649
131 4,082,650
139 4,082,651
216 4,082,652
251 R 4,082,653
352 4,082,654

CLASS 209

73 4,082,188
4,082,189
173 4,082,655
222 4,082,656
311 4,082,657

CLASS 210

22 R 4,082,658
23 F 4,082,659
36 4,082,660
40 4,082,661
63 R 4,082,662
79 4,082,663
80 4,082,664
91 4,082,665
93 4,082,666
96 M 4,082,667
129 4,082,668
184 4,082,669
195 R 4,082,670
195 S 4,082,671
205 4,082,672
234 4,082,673
242 S 4,082,674
360 R 4,082,675
447 4,082,676

CLASS 211

11 4,082,190

CLASS 212

59 R 4,082,191

CLASS 214

1 HA 4,082,192
2.5 4,082,193
6 P 4,082,194
38 BA 4,082,195
83.22 4,082,196
132 4,082,197
145 R Re.29,603
519 4,082,198
672 4,082,199

CLASS 215

1 C 4,082,200

CLASS 219

9.5 4,082,935
10.41 4,082,936
121 EB 4,082,937
4,082,938
202 4,082,939
239 4,082,940
243 4,082,941

CLASS 220

339 4,082,201

CLASS 221

147 4,082,202
211 4,082,203

CLASS 222

191 4,082,204
193 4,082,205
400.7 4,082,206
594 4,082,207

CLASS 224

8 R 4,082,208
29 B 4,082,209

CLASS 226

91 4,082,210

CLASS 228

145 4,082,211
147 4,082,212
171 4,082,213

CLASS 229

23 R 4,082,214
36 4,082,215
55 4,082,216

CLASS 233

25 4,082,217

CLASS 235

303.1 4,082,943
304 4,082,218
309 4,082,944
419 4,082,945

CLASS 236

12 R 4,082,219

CLASS 238

10 F 4,082,220

CLASS 239

214.25 4,082,221
331 4,082,222
333 4,082,223
428.5 4,082,225
453 4,082,224
584 4,082,226
675 4,082,227

CLASS 241

34 4,082,228
46 B 4,082,229
92 4,082,230
187 4,082,231
236 4,082,232
244 4,082,233
248 4,082,234

CLASS 242

84.2 J 4,082,235
107.4 B 4,082,236
192 4,082,237

CLASS 244

17.13 4,082,238
98 4,082,239
158 4,082,240

CLASS 248

1 4,082,241
83 4,082,242
205 R 4,082,243
280 4,082,244

CLASS 249

68 4,082,245

CLASS 250

203 R 4,082,947

304 4,082,948
329 4,082,949
336 4,082,951
343 4,082,950
381 4,082,952
413 4,082,953
421 4,082,954
445 T 4,082,955
480 4,082,956
482 4,082,957
492 B 4,082,958
577 4,082,959

CLASS 251

229 4,082,247
307 4,082,246

CLASS 252

8.5 B 4,082,677
8.6 4,082,678
8.8 4,082,679
59 4,082,680
62.1 P 4,082,681
92 4,082,682
105 4,082,683
109 4,082,684
187 R 4,082,685
299 4,082,686
301.4 F 4,082,687
316 4,082,688
321 4,082,689
4,082,690
358 4,082,691
429 B 4,082,692
430 4,082,693
444 4,082,694
465 4,082,695
466 B 4,082,696
466 PT 4,082,697
469 4,082,698
472 4,082,699

CLASS 254

29 R 4,082,248
45 4,082,249
47 4,082,250

CLASS 260

2 A 4,082,700
2.1 E 4,082,701
2.5 A 4,082,704
2.5 AK 4,082,702
2.5 BE 4,082,703
4 R 4,082,705
5 4,082,706
18 N 4,082,708
22 CB 4,082,709
23 TN 4,082,710
23 X A 4,082,711
28 R 4,082,712
29.3 4,082,713
29.7 R 4,082,714
30.4 R 4,082,716
30.6 R 4,082,715
33.4 R 4,082,718
37 SB 4,082,719
42.15 4,082,720
42.21 4,082,721
42.43 4,082,722
45.75 B 4,082,724
4,082,725
45.8 N 4,082,723
46.5 G 4,082,727
46.5 UA 4,082,726
67 A 4,082,728
67 FP 4,082,729
72 R 4,082,730
75 T 4,082,731
112 B 4,082,732
4,082,733
4,082,734
112.5 R 4,082,735
4,082,736
4,082,737
121 4,082,738
146 R 4,082,740
146 T 4,082,739
154 4,082,741
187 4,082,742
239 BB 4,082,744
239.1 4,082,745
239.57 4,082,747
239.9 4,082,746
250 BN 4,082,749
250 Q 4,082,750
256.4 C 4,082,751
260 4,082,752
285.5 4,082,753
287 P 4,082,754
293.53 4,082,756
293.6 4,082,755
294.8 C 4,082,757
294.8 E 4,082,759
294.8 F 4,082,758
307 FA 4,082,760
308 C 4,082,765

308 R 4,082,761
4,082,762
4,082,763
4,082,764
326 HL 4,082,766
326.14 T 4,082,767
326.26 4,082,768
328 4,082,769
330.5 4,082,770
332.2 R 4,082,771
332.3 H 4,082,772
340.5 4,082,774
340.5 R 4,082,773
343.6 4,082,775
4,082,776
345.9 R 4,082,717
348.25 4,082,777
378 4,082,778
397.5 4,082,779
4,082,780
403 4,082,781
408 4,082,782
410.9 R 4,082,783
413 4,082,784
448.8 R 4,082,790
453 P 4,082,787
465 C 4,082,786
465.3 4,082,785
465.4 4,082,788
500.5 H 4,082,707
501.11 4,082,792
502.4 R 4,082,793
514 D 4,082,794
544 F 4,082,795
545 R 4,082,796
555 A 4,082,797
557 B 4,082,798
559 B 4,082,799
4,082,800
570.9 4,082,801
574 4,082,802
575 4,082,803
584 R 4,082,804
585 B 4,082,805
590 D 4,082,806
590 R 4,082,807
606.5 B 4,082,810
4,082,811
609 F 4,082,808
610 R 4,082,812
611 R 4,082,809
618 B 4,082,813
619 R 4,082,814
683.2 4,082,815
855 4,082,816
879 4,082,817
4,082,818
4,082,819
4,082,820
946 4,082,821
972 4,082,822

CLASS 264

7 4,082,823
46.3 4,082,824
46.5 4,082,825
65 4,082,826
98 4,082,827
119 4,082,828
209 4,082,829
213 4,082,830
249 4,082,831

CLASS 266

142 4,082,252
147 4,082,253
175 4,082,254

CLASS 267

64 R 4,082,255
81 4,082,256

CLASS 269

328 4,082,257

CLASS 270

31 4,082,258
73 4,082,259

CLASS 271

1 4,082,260
69 4,082,261
149 4,082,262
266 4,082,263

CLASS 272

73 4,082,264
4,082,265
75 4,082,266
125 4,082,267

CLASS 273

1 R 4,082,268
1.5 R 4,082,269
2 4,082,270
29 A 4,082,271
73 A 4,082,272

73 C 4,082,274
73 D 4,082,275
73 J 4,082,273
75 4,082,276
80 R 4,082,277
94 R 4,082,278
102 B 4,082,280
106 A 4,082,281
126 R 4,082,282
162 B 4,082,286
186 C 4,082,287
218 4,082,288
237 4,082,285
241 4,082,283
246 4,082,289
251 4,082,284
272 4,082,279

CLASS 274

9 A 4,082,290
23 R 4,082,291
4,082,292
39 A 4,082,293
47 4,082,294

CLASS 277

1 4,082,295
3 4,082,296
15 4,082,297
34.3 4,082,298
82 4,082,299
123 4,082,300
212 F 4,082,301

CLASS 280

11.37 H 4,082,302
4,082,303
12 KL 4,082,304
81 R 4,082,305
87.04 A 4,082,306
277 4,082,307
296 4,082,308
446 B 4,082,309
492 4,082,310
507 4,082,311
615 4,082,312
618 4,082,313
625 4,082,314
631 4,082,315
6K1 4,082,316
745 4,082,317

CLASS 285

19 4,082,318
27 4,082,319
31 4,082,320
39 4,082,321
133 A 4,082,323
133 R 4,082,322
137 R 4,082,324
155 4,082,325
238 4,082,326
401 4,082,327

CLASS 289

2 4,082,328
17 Re.29,604

CLASS 292

202 4,082,329
218 4,082,330
228 4,082,331
259 R 4,082,332
264 4,082,333
288 4,082,334
291 4,082,335
318 4,082,336
338 4,082,337

CLASS 293

85 4,082,338

CLASS 294

1 CA 4,082,339

CLASS 296

1 S 4,082,340
4,082,341
28 C 4,082,342
4,082,343
4,082,344
78.1 4,082,345
84 R 4,082,346
98 4,082,347

CLASS 297

45 4,082,348
183 4,082,349
243 4,082,350
347 4,082,351
364 4,082,352
379 4,082,353
410 4,082,354
440 4,082,355
442 4,082,356

CLASS 298

27 4,082,357

CLASS 299

4 4,082,358
4,082,359
33 4,082,360
43 4,082,361
57 4,082,362

CLASS 301

6 CS 4,082,363

CLASS 302

11 4,082,366
14 4,082,367
4,082,368
28 4,082,364
52 4,082,365

CLASS 303

3 4,082,369
92 4,082,370

CLASS 305

56 4,082,371
57 4,082,372

CLASS 307

118 4,082,960
141 4,082,961
147 4,082,962
221 D 4,082,963
259 4,082,964
260 4,082,965
362 4,082,966

CLASS 308

4 A 4,082,373
6 C 4,082,374
9 4,082,375
10 4,082,376
15 4,082,377
4,082,378
26 4,082,379
163 4,082,380
187 4,082,381
190 4,082,382
194 4,082,383

CLASS 310

64 4,082,967
68 B 4,082,968
103 4,082,969
113 4,082,970
114 4,082,971
162 4,082,972
4,082,973
179 4,082,974
239 4,082,975

CLASS 312

3 4,082,384
10 4,082,385
204 4,082,386
242 4,082,387
258 4,082,388
4,082,389
284 4,082,390
314 4,082,391

CLASS 313

135 4,082,976
457 4,082,977
474 4,082,978

CLASS 315

39.3 4,082,979
59 4,082,980
97 4,082,981
151 4,082,982
241 P 4,082,983
4,082,984
4,082,985
411 4,082,986

CLASS 316

19 4,082,392

CLASS 318

139 4,082,987
4,082,988
224 A 4,082,989
662 4,082,990

CLASS 320

1 4,082,991
6 4,082,992

CLASS 324

30 R 4,082,994
51 4,082,995
65 R 4,082,997
99 D 4,082,998
116 4,082,999
137 4,083,000
158 MG 4,083,001
227 4,083,002

CLASS 325

6 4,083,003
4,083,004
38 A 4,083,005
125 4,083,006
159 4,083,007
163 4,083,008
304 4,083,009
321 4,083,010
352 4,083,011
455 4,083,012

CLASS 328

207 4,083,013

CLASS 331

1 A 4,083,014
4 4,083,015
56 4,083,016
94.5 F 4,083,018
94.5 H 4,083,017
113 R 4,083,019
4,083,020

CLASS 333

72 4,083,021
79 4,083,022

CLASS 335

135 4,083,023
136 4,083,024
153 4,083,025

CLASS 336

70 4,083,026

CLASS 337

66 4,083,027
144 4,083,028

CLASS 338

32 S 4,083,029
35 4,083,030

CLASS 339

14 R 4,082,393
17 M 4,082,394
21 R 4,082,395
36 4,082,396
49 R 4,082,397
59 M 4,082,398
75 M 4,082,399
91 R 4,082,400
95 B 4,082,401
97 C 4,082,402
111 4,082,403
4,082,404
4,082,405
112 L 4,082,406
112 R 4,082,407
182 R 4,082,409
198 G 4,082,408
252 R 4,082,410
4,082,411
256 SP 4,082,412

CLASS 340

5 R 4,083,031
71 4,083,032
114 R 4,083,033
146.3 E 4,083,035
146.3 H 4,083,034
166 R 4,083,036
237 S 4,083,037
244 R 4,083,038
248 A 4,083,040
248 R 4,083,039
255 4,083,041
324 M 4,083,042
347 AD 4,083,043
4,083,044
4,083,045

CLASS 343

7 VM 4,083,047
7.3 4,083,048
7.7 4,083,049
700 MS 4,083,046
729 4,083,050
797 4,083,051

CLASS 346

18 4,083,052
75 4,083,053
151 4,083,054

CLASS 350

1.1 4,082,413
1.7 4,082,414
3.83 4,082,415
6.8 4,082,416
4,082,417
10 4,082,418
96.11 4,082,424
96.12 4,082,419
96.17 4,082,425
96.22 4,082,421
96.23 4,082,422
4,082,423
96.31 4,082,420
105 4,082,426
4,082,427
162 SF 4,082,429
4,082,431
174 4,082,432
211 4,082,433
225 4,082,434
269 4,082,435
333 4,082,430
350 4,082,428

CLASS 352

72 4,082,436
123 4,082,437

CLASS 353

26 R 4,082,440
97 4,082,438

CLASS 354

23 D 4,083,055
25 4,083,056
4,083,057
128 4,083,058
149 4,083,059
286 4,083,060
307 4,083,061

CLASS 355

3 R 4,082,442
3 SC 4,082,448
4 4,082,443
8 4,082,444
14 4,082,441
4,082,445
27 4,082,446
30 4,082,447
69 4,082,449
71 4,082,450
4,082,451
74 4,082,452
88 4,082,453
99 4,082,454
100 4,082,439
4,082,455
109 4,082,456

CLASS 356

39 4,082,457
73 4,082,458
85 4,082,459
4,082,460
100 4,082,461
152 4,082,462
167 4,082,463
188 4,082,464
203 4,082,465
249 4,082,466

CLASS 357

13 4,083,062
38 4,083,063

CLASS 358

242 4,082,996

CLASS 362

32 4,082,946

CLASS 364

111 4,082,942

CLASS 366

179 4,082,251

CLASS 401

199 4,082,467

CLASS 403

2 4,082,468
24 4,082,469
172 4,082,470

CLASS 404

133 4,082,471

CLASS 408

57 4,082,472
101 4,082,473
110 4,082,474
125 4,082,475
234 4,082,476

CLASS 415

120 4,082,477
209 4,082,478

CLASS 416

23 4,082,479

CLASS 417

283 4,082,480
403 4,082,481
408 4,082,482
554 4,082,483

CLASS 418

55 4,082,484
226 4,082,485

CLASS 423

70 4,082,832
135 4,082,833
210 4,082,834
242 4,082,835
321 S 4,082,836
405 4,082,837
408 4,082,838
489 4,082,839

CLASS 424

1 4,082,840
50 4,082,841
229 4,082,842
241 4,082,881
250 4,082,843
4,082,844
4,082,845
266 4,082,846
273 4,082,848
273 R 4,082,847
274 4,082,849
278 4,082,850
300 4,082,851
317 4,082,852

CLASS 425

129 R 4,082,486
135 4,082,487
208 4,082,488
222 4,082,489
412 4,082,490
440 4,082,491
451 4,082,492

CLASS 426

36 4,082,853
106 4,082,854
250 4,082,855
299 4,082,856
573 4,082,857
597 4,082,858
636 4,082,859

CLASS 427

27 4,082,860
56 4,082,861
133 4,082,862
181 4,082,863
248 B 4,082,864
253 4,082,865
294 4,082,866
327 4,082,867
329 4,082,868
357 4,082,869
425 4,082,870

CLASS 428

15 4,082,871
24 4,082,872
35 4,082,877
40 4,082,873
54 4,082,874
134 4,082,875
159 4,082,876
195 4,082,878
219 4,082,879
220 4,082,880
246 4,082,882
253 4,082,883
262 4,082,884
281 4,082,885
284 4,082,886
289 4,082,887
327 4,082,888
328 4,082,889
4,082,890
332 4,082,892
335 4,082,894
376 4,082,893
412 4,082,891
4,082,895
413 4,082,896
426 4,082,897
427 4,082,898
457 4,082,899
4,082,902
469 4,082,900
480 4,082,901
514 4,082,903
528 4,082,904
538 4,082,905
539 4,082,906
640 4,082,907
672 4,082,908

CLASS 431

25 4,082,493
95 R 4,082,494
158 4,082,497
183 4,082,495
343 4,082,496

CLASS 432

14 4,082,498
19 4,082,499

CLASS 526

4 4,082,909

CLASS 528

481 4,082,910

CLASS 536

23 4,082,911
30 4,082,743

CLASS 544

26 4,082,912
98 4,082,748

CLASS 560

102 4,082,913
121 4,082,789
260 4,082,791

CLASSIFICATION OF DESIGNS

D1— 16 247,656
D2— 270 247,657
320 247,658
D6— 28 247,659
D7— 71 247,660
107 247,661
161 247,662
D8— 313 247,663
D10— 101 247,664
121 247,665
D12— 146 247,666
D14— 11 247,667
12 247,668
247,669
53 247,670
D15— 52 247,671
126 247,672
D16— 32 247,673
247,674
247,675
41 247,676
D22— 18 247,677
27 247,678
D23— 17 247,679
35 247,680
D24— 61 247,681
D27— 42 247,682
D28— 13 247,683
D34— 5 CB 247,686
5 HP 247,687
5 MM 247,684
5 QQ 247,685
15 C 247,688
D48— 20 K 247,689
24 R 247,690

CLASSIFICATION OF PLANTS

P.— 31 4,236
38 4,232
68 4,233
4,234
4,235

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

8— 25 T969,001
71— 29 T969,002
64 F T969,003
96— 27 R T969,004
100 R T969,005
126 T969,006
219–121 EM T969,007
260— 78.41 T969,008
346— 74.1 T969,009
357— 46 T969,010
427— 207 B T969,011

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 4,082,064
4,082,161
2 : 4,081,916
4 : 4,081,885
4,082,075
4,082,080
4,082,225
4,082,304
4,082,483
4,082,604
4,082,908
4,082,961
4,083,045
5 : 4,082,212
6 : Re.29,604
4,081,868
4,081,878
4,081,906
4,081,907
4,081,925
4,081,958
4,081,962
4,081,980
4,081,995
4,082,000
4,082,005
4,082,025
4,082,028
4,082,041
4,082,049
4,082,055
4,082,063
4,082,081
4,082,083
4,082,093
4,082,094
4,082,097
4,082,102
4,082,109
4,082,121
4,082,133
4,082,140
4,082,146
4,082,162
4,082,189
4,082,208
4,082,214
4,082,218
4,082,229
4,082,230
4,082,231
4,082,235
4,082,237
4,082,240
4,082,242
4,082,266
4,082,267
4,082,269
4,082,274
4,082,281
4,082,286
4,082,287
4,082,311
4,082,322
4,082,330
4,082,334
4,082,339
4,082,353
4,082,379
4,082,392
4,082,415
4,082,428
4,082,436
4,082,448
4,082,471
4,082,475
4,082,482
4,082,493
4,082,509
4,082,516
4,082,525
4,082,607
4,082,614
4,082,633
4,082,667
4,082,671
4,082,677
4,082,697
4,082,735
4,082,736
4,082,799
4,082,800
4,082,812
4,082,814
4,082,834
4,082,836
4,082,837
4,082,838
4,082,864
4,082,874
4,082,906
4,082,922
4,082,927
4,082,940
4,082,978
4,082,988
4,082,991
4,082,999
4,083,002
4,083,003
4,083,005
4,083,007
4,083,010
4,083,016
4,083,033
4,083,035
4,083,043
4,083,044
4,083,046
4,083,050
7 : 4,081,941
8 : 4,081,904
4,082,145
4,082,241
4,082,449
4,082,462
4,082,474
4,082,645
4,082,738
4,082,983
4,082,998
4,083,040
4,083,057
9 : 4,081,882
4,081,902
4,081,953
4,082,006
4,082,016
4,082,085
4,082,200
4,082,245
4,082,375
4,082,396
4,082,413
4,082,574
4,082,603
4,082,652
4,082,717
4,082,777
4,082,897
4,082,935
4,083,041
06 : 4,082,356
10 : 4,082,730
4,082,787
4,082,848
11 : 4,082,884
12 : 4,081,893
4,081,894
4,081,923
4,081,957
4,081,965
4,082,117
4,082,126
4,082,244
4,082,249
4,082,306
4,082,391
4,082,567
4,082,918
4,082,944
4,083,042
13 : 4,081,945
4,081,987
4,082,044
4,082,136
4,082,202
4,082,305
4,082,573
4,082,589
4,082,655
4,082,904
16 : 4,081,864
4,082,608
17 : Re.29,603
4,081,880
4,081,897
4,081,918
4,081,938
4,081,942
4,081,996
4,082,029
4,082,030
4,082,045
4,082,072
4,082,086
4,082,153
4,082,154
4,082,156
4,082,170
4,082,197
4,082,206
4,082,224
4,082,268
4,082,278
4,082,292
4,082,299
4,082,310
4,082,331
4,082,343
4,082,345
4,082,349
4,082,401
4,082,409
4,082,412
4,082,531
4,082,612
4,082,622
4,082,638
4,082,643
4,082,644
4,082,647
4,082,649
4,082,651
4,082,653
4,082,654
4,082,668
4,082,694
4,082,696
4,082,716
4,082,795
4,082,798
4,082,869
4,082,885
4,082,886
4,082,925
4,082,977
4,082,986
4,083,025
4,083,037
4,083,052
18 : 4,081,929
4,082,009
4,082,011
4,082,012
4,082,013
4,082,139
4,082,166
4,082,180
4,082,216
4,082,257
4,082,309
4,082,329
4,082,388
4,082,534
4,082,627
4,082,753
4,082,754
4,082,762
4,082,766
4,082,774
4,082,810
4,082,870
4,082,892
4,082,926
4,083,013
4,083,047
19 : 4,082,192
4,082,227
4,082,238
4,082,371
4,082,592
20 : 4,081,954
4,082,007
4,082,524
4,082,586
4,082,765
4,082,957
4,082,992
21 : 4,081,910
4,081,997
4,082,256
4,083,061
22 : 4,081,990
4,082,500
4,082,833
23 : 4,082,414
24 : 4,081,886
4,082,143
4,082,169
4,082,271
4,082,301
4,082,568
4,082,583
4,082,585
4,082,709
4,082,830
4,083,004
4,083,015
4,083,049
25 : 4,081,903
4,081,917
4,082,059
4,082,060
4,082,115
4,082,118
4,082,182
4,082,360
4,082,385
4,082,422
4,082,442
4,082,446
4,082,473
4,082,484
4,082,570
4,082,674
4,082,699
4,082,821

4,082,840
4,082,875
4,082,891
4,082,933
4,082,958
4,082,979
4,082,994
4,083,009
4,083,048
26 : Re.29,601
4,081,873
4,081,879
4,081,889
4,081,890
4,081,921
4,081,939
4,081,940
4,081,960
4,081,961
4,081,986
4,082,018
4,082,042
4,082,073
4,082,074
4,082,092
4,082,103
4,082,107
4,082,130
4,082,134
4,082,158
4,082,178
4,082,179
4,082,194
4,082,195
4,082,236
4,082,243
4,082,247
4,082,285
4,082,297
4,082,318
4,082,324
4,082,335
4,082,355
4,082,366
4,082,369
4,082,472
4,082,486
4,082,496
4,082,497
4,082,513
4,082,517
4,082,581
4,082,623
4,082,635
4,082,690
4,082,702
4,082,706
4,082,719
4,082,725
4,082,748
4,082,758
4,082,759
4,082,761
4,082,776
4,082,782
4,082,783
4,082,784
4,082,790
4,082,794
4,082,856
4,082,861
4,082,947
27 : 4,081,865
4,081,871
4,082,033
4,082,077
4,082,078
4,082,176
4,082,198
4,082,203
4,082,358
4,082,384
4,082,424

4,082,426
4,082,429
4,082,431
4,082,433
4,082,478
4,082,480
4,082,523
4,082,708
4,082,825
4,082,855
4,082,879
4,082,896
4,082,920
4,082,943
29 : 4,081,956
4,082,037
4,082,043
4,082,316
4,082,365
4,082,640
4,082,747
4,082,816
4,083,028
31 : 4,082,054
4,082,387
32 : 4,082,337
33 : 4,082,228
4,082,312
4,082,408
4,082,917
4,082,965
34 : 4,081,896
4,081,920
4,081,935
4,081,974
4,081,979
4,082,058
4,082,079
4,082,108
4,082,148
4,082,151
4,082,173
4,082,174
4,082,188
4,082,204
4,082,220
4,082,253
4,082,277
4,082,284
4,082,382
4,082,395
4,082,403
4,082,405
4,082,407
4,082,410
4,082,411
4,082,425
4,082,440
4,082,455
4,082,467
4,082,487
4,082,491
4,082,519
4,082,537
4,082,563
4,082,584
4,082,602
4,082,617
4,082,620
4,082,621
4,082,624
4,082,682
4,082,693
4,082,695
4,082,704
4,082,705
4,082,731
4,082,737
4,082,742
4,082,756
4,082,757
4,082,773
4,082,791

4,082,805
4,082,835
4,082,841
4,082,850
4,082,862
4,082,865
4,082,881
4,082,882
4,082,899
4,082,990
4,083,051
36 : 4,081,867
4,081,870
4,081,872
4,081,877
4,081,899
4,081,901
4,081,924
4,081,972
4,081,988
4,081,991
4,082,053
4,082,061
4,082,062
4,082,066
4,082,087
4,082,095
4,082,104
4,082,122
4,082,137
4,082,141
4,082,172
4,082,177
4,082,185
4,082,186
4,082,190
4,082,262
4,082,263
4,082,264
4,082,275
4,082,276
4,082,282
4,082,289
4,082,319
4,082,333
4,082,336
4,082,347
4,082,368
4,082,390
4,082,394
4,082,398
4,082,399
4,082,437
4,082,443
4,082,444
4,082,445
4,082,447
4,082,450
4,082,451
4,082,452
4,082,507
4,082,521
4,082,549
4,082,550
4,082,551
4,082,552
4,082,553
4,082,555
4,082,566
4,082,572
4,082,596
4,082,606
4,082,626
4,082,665
4,082,673
4,082,679
4,082,712
4,082,732
4,082,733
4,082,751
4,082,792
4,082,808

4,082,839
4,082,889
4,082,919
4,082,921
4,082,931
4,082,939
4,082,948
4,082,949
4,082,967
4,082,969
4,082,981
4,083,017
4,083,018
4,083,029
4,083,039
4,083,063
37 : 4,081,949
4,081,978
4,082,047
4,082,056
4,082,098
4,082,332
4,082,341
4,082,543
4,082,658
4,082,847
4,082,883
4,082,950
39 : Re.29,602
4,081,919
4,081,927
4,081,936
4,081,975
4,082,022
4,082,039
4,082,065
4,082,096
4,082,111
4,082,157
4,082,175
4,082,184
4,082,201
4,082,210
4,082,226
4,082,259
4,082,265
4,082,272
4,082,327
4,082,348
4,082,378
4,082,381
4,082,454
4,082,463
4,082,469
4,082,512
4,082,529
4,082,533
4,082,569
4,082,576
4,082,610
4,082,698
4,082,713
4,082,728
4,082,806
4,082,818
4,082,819
4,082,820
4,082,868
4,082,872
4,082,873
4,082,895
4,082,930
4,082,976
40 : Re.29,605
4,081,912
4,082,071
4,082,363
4,082,518
4,082,650
4,082,680
4,082,815
41 : 4,082,024

4,082,127
4,082,129
4,082,131
4,082,187
4,082,199
4,082,386
4,082,546
4,082,743
4,083,024
42 : 4,081,900
4,081,934
4,081,946
4,082,020
4,082,125
4,082,164
4,082,191
4,082,196
4,082,246
4,082,273
4,082,279
4,082,280
4,082,296
4,082,357
4,082,393
4,082,402
4,082,459
4,082,489
4,082,494
4,082,526
4,082,530
4,082,538
4,082,548
4,082,564
4,082,575
4,082,578
4,082,634
4,082,672
4,082,687
4,082,701
4,082,793
4,082,801
4,082,823
4,082,844
4,082,845
4,082,867
4,082,898
4,082,915
4,082,916
4,082,968
4,083,001
4,083,020
4,083,027
4,083,031
43 : 4,081,909
44 : 4,082,283
4,082,288
4,082,351
4,082,995
45 : 4,082,003
4,082,295
4,082,827
4,082,829
4,082,877
4,083,000
46 : 4,082,155
4,082,239
47 : 4,082,159
4,082,219
4,082,250
4,082,258
4,082,352
4,082,639
48 : 4,081,866
4,081,891
4,081,898
4,081,911
4,081,928
4,081,930
4,081,932
4,081,943
4,081,968
4,081,992

4,082,002
4,082,004
4,082,015
4,082,017
4,082,032
4,082,034
4,082,057
4,082,076
4,082,105
4,082,142
4,082,147
4,082,150
4,082,152
4,082,168
4,082,193
4,082,215
4,082,298
4,082,323
4,082,359
4,082,373
4,082,468
4,082,511
4,082,630
4,082,648
4,082,657
4,082,662
4,082,666
4,082,691
4,082,788
4,082,811
4,082,842
4,082,966
48 : 4,082,989
4,083,034
49 : 4,082,232
4,082,542
4,082,846
50 : 4,082,090
4,082,101
4,082,149
4,082,303
4,082,435
4,082,464
51 : 4,082,001
4,082,110
4,082,270
4,082,423
4,082,781
4,082,887
4,082,907
4,083,011
53 : 4,081,892
4,081,913
4,081,998
4,082,209
4,082,233
4,082,234
4,082,432
4,082,888
54 : 4,082,362
4,082,506
4,082,703
55 : 4,081,874
4,081,905
4,081,922
4,081,971
4,081,999
4,082,068
4,082,113
4,082,114
4,082,183
4,082,325
4,082,342
4,082,389
4,082,404
4,082,466
4,082,499
4,082,595
4,082,616
4,082,866
4,082,934
4,082,941
4,082,951

DESIGN PATENTS

6 : 247,657
247,659
247,660
247,672
247,687

247,689
12 : 247,681
17 : 247,665
247,668

25 : 247,661
26 : 247,667
27 : 247,679
32 : 247,671

34 : 247,677
247,683
36 : 247,662
247,670

247,673
247,674
247,675
247,684

39 : 247,658
247,678
42 : 247,690
48 : 247,656

PLANT PATENTS

6 : 4,232

17 : 4,233

4,234

48 : 4,236

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

1 : T969,002

T969,003

6 : T969,007

17 : T969,010

36 : T969,009

45 : T969,001

U. S. GOVERNMENT PRINTING OFFICE · O - 1978

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

April 11, 1978 || Volume 969 Number 2

CONTENTS

	Page
Patent and Trademark Notices	
Suspension of Action Under 37 CFR 1.103 and Under 37 CFR 1.212	969 OG 8
Removal From Register	969 OG 8
Reissue Applications Filed	969 OG 8
Patent Notices	
Certificates of Correction for the Week of April 11, 1978	969 OG 10
Disclaimers	969 OG 10
Dedications	969 OG 10
National Technical Information Service	969 OG 10
Errata	969 OG 11
Condition of Patent Applications	969 OG 12
Reissue Patents Granted (29,606)	393
Plant Patents Granted (4,237)	395
Patents Granted	
General and Mechanical (4,083,064)	397
Chemical (4,083,680)	605
Electrical (4,084,064)	713
Design Patents Granted (247,691)	785
Index of Patentees	PI 1
Indices of Reissues, Plants and Designs	PI 42
Classification of	
Patents (Including Reissues)	PI 45
Designs and Plants	PI 47
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 48
Designs and Plants	PI 49
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $342.20 per annum for first class mailing, also available as fourth-class mail at $250.00; foreign mailing $85.55 additional; single copies $6.60 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $88.40 per annum, foreign mailing $22.10 additional; single copies $1.70 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS, price 60 cents each.

CIRCULARS OF GENERAL INFORMATION concerning TRADEMARKS, price 50 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Suspension of Action Under 37 CFR 1.103 and Under 37 CFR 1.212

The purpose of this notice is to clarify existing Office practice with respect to suspension of action.

"Suspension of action" under 37 CFR 1.103 applies only to the situation where action is to be taken *by the Examiner*. In other words, action cannot be suspended in an application which contains an outstanding Office action awaiting response by the applicant.

Under 37 CFR 1.212, upon declaration of an interference, ex parte prosecution of an application is suspended and any outstanding Office actions are considered as withdrawn by operation of the rule. *Ex parte Peterson*, 49 USPQ 119 (Commissioner of Patents, 1941). Upon termination of the interference, the Examiner will reinstate the action treated as withdrawn by operation of 37 CFR 1.212 and set a statutory period for response. The formats set forth in MPEP 1109.01 and MPEP 1109.02 may be followed.

Careful adherence to the distinction set forth above will prevent any question of abandonment from arising in connection with cases in which suspension of prosecution has occurred.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Mar. 7, 1978.

Removal From Register

Pursuant to the provisions of 37 CFR 1.347, letters were directed on February 23 and March 6, 1978, to Mr. Robert H. Lambert at 1321 Highland Ave., Plainfield, New Jersey 07060, the last post office address furnished by him to the Committee on Enrollment. Both letters have been returned by the Post Office with notations to the effect that the addressee had moved and left no forwarding address.

Accordingly, his name is being removed from the Register of Attorneys.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks and Chairman, Committee on Enrollment.

Mar. 17, 1978.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,141,108, Re. S.N. 874,280, Filed Feb. 1, 1978, Cl. 313/231.2, LIGHTNING ARRESTER WITH AN ARC-EXTINGUISHING GAS, Windfield H. Benner, et al., Owner of Record: *Sigma Instruments, Inc., Braintree, Mass.*, Attorney or Agent: David Toren, et al., Ex. Gp.: 252

3,270,904, Re. S.N. 868,719, Filed Jan. 11, 1978, Cl. 215/318, PRESS-ON TURN-OFF CAP, Charles N. Foster, et al., Owner of Record: *Continental Can Company, New York, N.Y.*, Attorney or Agent: Fred S. Lockwood, et al., Ex. Gp.: 241

3,323,979, Re. S.N. 872,521, Filed Jan. 26, 1978, Cl. 162/167, METHOD OF IMPROVING THE DRAINAGE RATE IN FORMING PAPER BY INCORPORATING A REACTION PRODUCT OF POLYACRYLAMIDE, FORMALDEHYDE AND DIALKYLAMINE IN THE FURNISH, William A. Foster, et al., Owner of Record: *The Dow Chemical Company, Midland, Mich.*, Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 173

3,423,671, Re. S.N. 873,348, Filed Jan. 30, 1978, Cl. 324/1, BOREHOLE APPARATUS FOR INVESTIGATING SUBSURFACE EARTH FORMATIONS INCLUDING A PLURALITY OF PAD MEMBERS AND MEANS FOR REGULATING THE BEARING PRESSURE THEREOF, Andre Marcel Vezin, Owner of Record: *Societe de Prospection Electrique, Schlumberger S.A., Paris, France,* Attorney or Agent: Edward M. Roney, et al., Ex. Gp.: 252

3,661,333, Re. S.N. 871,783, Filed Jan. 24, 1978, Cl. 241/281, TREE DESTROYER, Leward N. Smith, Owner of Record: *Morbark Industries, Inc., Winn, Mich.*, Attorney or Agent: John F. Learman, et al., Ex. Gp.: 325

3,665,899, Re. S.N. 878,035, Filed Feb. 15, 1978, Cl. 123/32 EA, CIRCUIT FOR AIDING THE COLLAPSE OF AN ELECTROMAGNETIC FIELD, John R. Nagy, Owner of Record: *The Bendix Corporation, Southfield, Mich.*, Attorney or Agent: Markell Seitzman, et al., Ex. Gp.: 342

3,694,991, Re. S.N. 872,297, Filed Jan. 25, 1978, Cl. 53/22 A, VACUUM SKIN PACKAGE, AND PROCESS AND APPARATUS FOR MAKING SAME, Richard R. Perdue, et al., Owner of Record: *W. R. Grace & Co., Duncan, S.C.*, Attorney or Agent: John J. Toney, Ex. Gp.: 324

3,825,763, Re. S.N. 858,100, Filed Dec. 7, 1977, Cl. 250/486, LUMINESCENT SCREEN HAVING A MOSAIC STRUCTURE, Martinus Adrianus Cornelis Lightenberg, et al., Owner of Record: *U.S. Philips Corporation, New York, N.Y.*, Attorney or Agent: Frank R. Trifari, Ex. Gp.: 256

3,854,587, Re. S.N. 874,520, Filed Feb. 2, 1978, Cl. 209/111.7, OPTICAL INSPECTION APPARATUS, Robert W. McLoughlin, et al., Owner of Record: *Gallaher Limited, Belfast, Northern Ireland,* Attorney or Agent: Elwin A. Andrus, et al., Ex. Gp.: 311

3,909,247, Re. S.N. 865,303, Filed Dec. 28, 1977, Cl. 75/84.1 R, PRODUCTION OF METALS AND METAL ALLOYS OF HIGH PURITY, Rene Antoine Paris, et al., Owner of Record: *Inventors,* Attorney or Agent: Karl F. Ross, Ex. Gp.: 223

3,914,755, Re. S.N. 844,075, Filed Oct. 20, 1977, Cl. 340/274, PRESSURE CHANGE RESPONSIVE ALARM APPARATUS, Glen C. Hook, Owner of Record: *Moe Misles, Chicago, Ill.*, Attorney or Agent: Charles A. Laff, et al., Ex. Gp.: 234

3,926,789, Re. S.N. 860,567, Filed Dec. 14, 1977, Cl. 209/8, MAGNETIC SEPARATION OF PARTICULATE MIXTURES, Roland H. Shubert, Owner of Record: *Maryland Patent Development Inc., Silver Spring, Md.*, Attorney or Agent: Roland H. Shubert, Ex. Gp.: 177

3,936,150, Re. S.N. 872,515, Filed Jan. 26, 1978, Cl. 350/183, LENS SELECTION DEVICE, Hiroshi Ikeda, Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Meyer A. Gross, Ex. Gp.: 257

3,936,561, Re. S.N. 869,763, Filed Jan. 16, 1978, Cl. 428/264, ANTI-DUSTING TREATMENT OF TEXTILES, James F. Cotton, Owner of Record: *West Point Pepperell, Inc., West Point, Ga.*, Attorney or Agent: John W. Malley, et al., Ex. Gp.: 164

3,937,528, Re. S.N. 875,044, Filed Feb. 3, 1978, Cl. 305/21, SEGMENTED AND CUSHIONED IDLER FOR TRACK-TYPE VEHICLE, Donald E. Clemens, et al.,

Owner of Record: *Caterpillar Tractor Company, Peoria, Ill.,* Attorney or Agent: Ralph E. Walters, et al., Ex. Gp.: 311

3,937,795, Re. S.N. 875,688, Filed Feb. 6, 1978, Cl. 423/573 G, DESULFURIZING PROCESS FOR HYDROGEN SULFIDE-CONTAINING GASES, Nobuyasu Hasebe, Owner of Record: *Inventor,* Attorney or Agent: Lewis Anten, Ex. Gp.: 113

3,940,266, Re. S.N. 868,927, Filed Jan. 12, 1978, Cl. 75/128 A, AUSTENITIC STAINLESS STEEL, George N. Goller, et al., Owner of Record: *Armco Steel Corporation, Middletown, Ohio,* Attorney or Agent: John W. Melville, et al., Ex. Gp.: 111

3,964,703, Re. S.N. 871,128, Filed Jan. 19, 1978, Cl. 246/34 R, MAGNETIC OBJECT DETECTION DEVICE, Joseph R. Wilkas, et al., Owner of Record: *Computer Identics Corp., Westwood, Mass.,* Attorney or Agent: Joseph S. Iandiorio, Ex. Gp.: 315

3,968,997, Re. S.N. 877,196, Filed Feb. 13, 1978, Cl. 302/37, FEED MATERIAL HANDLING APPARATUS, Aquila D. Mast, et al., Owner of Record: *Sperry Rand Corporation, New Holland, Pa.,* Attorney or Agent: Frank A. Seemar, Ex. Gp.: 313

3,981,527, Re. S.N. 875,582, Filed Feb. 6, 1978, Cl. 294/99 R, TWEEZERS FOR USE WITH SEMI-CONDUCTOR WAFERS, John A. Ciano, Owner of Record: *Interconsal Associates, Inc., Palo Alto, Calif.,* Attorney or Agent: Harvey G. Lowhurst, et al., Ex. Gp.: 313

4,030,767, Re. S.N. 875,661, Filed Feb. 6, 1978, Cl. 277/235 R, CHROME INSERT RING, Isao Taniguchi, Owner of Record: *Nippon Piston Ring Co. Ltd., Tokyo, Japan,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 241

4,033,247, Re. S.N. 849,086, Filed Nov. 7, 1977, Cl. 98/119, VENT STRUCTURE, Dennis E. Murphy, Owner of Record: *McDonnell Douglas Corporation, Long Beach, Calif.,* Attorney or Agent: Walter J. Jason, Ex. Gp.: 344

4,033,400, Re. S.N. 876,951, Filed Feb. 13, 1978, Cl. 164/98, METHOD OF FORMING A COMPOSITE BY INFILTRATING A POROUS PREFORM, William E. Gurwell, et al., Owner of Record: *Eaton Corporation, Cleveland, Ohio,* Attorney or Agent: Donald L. Wood, et al., Ex. Gp.: 322

4,037,106, Re. S.N. 877,561, Filed Feb. 13, 1978, Cl. 250/381, IONIZATION-TYPE FIRE OR SMOKE SENSING SYSTEM, Andreas Scheidweiler, et al., Owner of Record: *Cerberus AG, Mannedorf, Switzerland,* Attorney or Agent: Robert D. Flynn, et al., Ex. Gp.: 256

4,042,612, Re. S.N. 869,750, Filed Jan. 16, 1978, Cl. 260/448.8 R, POLYMERIC ALKOXYSILANES, Walter L. Magee, Jr., Owner of Record: *Stauffer Chemical Company, Westport, Conn.,* Attorney or Agent: Ellen P. Trevors, et al., Ex. Gp.: 117

4,055,460, Re. S.N. 878,223, Filed Feb. 15, 1978, Cl. 162/209, PAPER MACHINE SHAKE, John Gordon Buchanan, Owner of Record: *JWI Ltd., Montreal, Quebec, Canada,* Attorney or Agent: Robert Mitchell, et al., Ex. Gp.: 173

4,057,725, Re. S.N. 875,432, Filed Feb. 6, 1978, Cl. 250/360, DEVICE FOR MEASURING LOCAL RADIATION ABSORPTION IN A BODY, Wolfgang Wagner, Owner of Record: *U.S. Philips Corporation, New York, N.Y.,* Attorney or Agent: Frank R. Trifari, Ex. Gp.: 256

4,062,621, Re. S.N. 871,675, Filed Jan. 23, 1978, Cl. 350/184, LARGE APERTURE EXTENDED RANGE ZOOM LENS, Andor A. Fleischman, Owner of Record: *Bell & Howell Company, Chicago, Ill.,* Attorney or Agent: Aaron Passman, Ex. Gp.: 257

4,069,372, Re. S.N. 876,427, Filed Feb. 9, 1978, Cl. 429/104, ELECTRIC ACCUMULATOR WITH A SOLID ELECTROLYTE, Michel Voinov, Owner of Record: *Battelle Development Corporation, Columbus, Ohio,* Attorney or Agent: Thomas W. Winland, et al., Ex. Gp.: 114

PATENT NOTICES

Certificates of Correction for the Week of Apr. 11, 1978

P.P. 4,102	4,037,268	4,051,176	4,059,614
Re. 29,338	4,037,393	4,051,458	4,059,645
Re. 29,448	4,038,039	4,051,994	4,059,694
Re. 29,498	4,038,165	4,052,183	4,059,739
D. 235,318	4,038,572	4,052,216	4,059,843
3,735,138	4,039,005	4,052,221	4,060,096
3,760,879	4,039,635	4,052,645	4,060,729
3,846,148	4,040,023	4,052,779	4,061,012
3,946,996	4,040,155	4,053,232	4,061,042
3,956,056	4,040,452	4,053,583	4,061,121
3,965,460	4,041,016	4,053,593	4,061,146
3,988,365	4,041,181	4,053,659	4,061,223
4,000,872	4,041,884	4,053,713	4,061,459
4,003,845	4,042,173	4,054,037	4,061,549
4,003,867	4,042,826	4,054,124	4,061,594
4,010,201	4,044,023	4,054,191	4,062,319
4,010,775	4,044,422	4,054,226	4,062,452
4,011,800	4,045,180	4,054,236	4,062,464
4,015,336	4,045,215	4,054,415	4,062,524
4,016,295	4,045,235	4,054,467	4,062,797
4,020,942	4,045,361	4,054,632	4,062,929
4,021,173	4,045,447	4,054,674	4,062,966
4,021,463	4,046,062	4,054,866	4,063,258
4,021,917	4,046,450	4,055,103	4,063,383
4,022,752	4,046,595	4,055,388	4,063,734
4,025,524	4,047,248	4,055,537	4,063,855
4,025,685	4,047,546	4,055,598	4,063,862
4,027,230	4,047,778	4,056,068	4,063,878
4,029,677	4,048,214	4,056,253	4,064,122
4,029,720	4,048,371	4,056,668	4,064,815
4,029,821	4,048,374	4,056,680	4,064,822
4,031,065	4,048,660	4,056,723	4,064,951
4,031,116	4,049,021	4,056,913	4,065,074
4,031,163	4,049,400	4,056,949	4,065,161
4,033,624	4,049,590	4,057,161	4,065,187
4,033,656	4,049,737	4,057,401	4,065,315
4,034,034	4,049,738	4,057,527	4,065,348
4,034,103	4,050,124	4,057,703	4,066,352
4,034,664	4,050,290	4,057,926	4,066,378
4,035,311	4,050,316	4,058,437	4,066,817
4,035,313	4,050,337	4,058,517	4,066,973
4,035,360	4,050,383	4,059,488	4,067,582
4,036,715	4,050,721	4,059,498	
4,036,799	4,051,072	4,059,503	
4,037,029	4,051,093	4,059,506	

Disclaimer

3,913,603.—*Jorge Torres,* Newbury Park, Calif. CRASHWORTHY FLAPPER VALVE. Patent dated Oct. 21, 1975. Disclaimer filed Mar. 6, 1978, by the assignee, *Aeroquip Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 13, 14, 18 and 21 of said patent.

Dedication

3,927,539.—*Norman W. Harkison,* Taylor Ridge, Ill. SPRAYING. Patent dated Dec. 23, 1975. Dedication filed Nov. 25, 1977, by the assignee, *Ludell Mfg. Co., Inc.*

Hereby dedicates to the Public the remaining term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., N.W.
Washington, D.C. 20314

Patent application 826,225. High Power, Rechargeable, Pile Type Silver-Zinc Battery. Filed Aug. 17, 1977.

Patent application 842,139. A Compact Air-to-Air Heat Exchanger for Jet Engine Application. Filed Oct. 14, 1977.

Patent application 842,140. Integrated Quantized Signal Smoothing. Filed Oct. 14, 1977.

Patent application 844,162. Porous Electrode Primary Battery Having State of Charge Sensing Electrode. Filed Oct. 21, 1977.

Patent application 852,770. Laser Mirror Cooling Means. Filed Nov. 18, 1977.

Patent 4,058,276. Pilot Chute Crown Line Attachment System. Filed Feb. 16, 1977. Patented Nov. 15, 1977. Not available NTIS.

U.S. DEPT. OF THE NAVY
Assistant Chief for Patents Office of Naval Research
Code 302, Arlington, Va. 20546

Patent application 740,694. Electric Monomicrostrip Dipole Antennas. Filed Nov. 10, 1976.

Patent application 740,695. Asymmetrically Fed Magnetic Microstrip Dipole Antenna. Filed Nov. 10, 1976.

Patent application 773,883. Acoustic-Optic Coupler for Glide Slope Control Systems. Filed Mar. 3, 1977.

Patent application 815,736. Afterburner Recoilless Rifle. Filed July 14, 1977.

Patent application 841,515. Energy Fluence Meter for X-Rays. Filed Oct. 12, 1977.

Patent application 841,859. Planar Fiber Optic Star and Access Coupler. Filed Oct. 6, 1977.

Patent application 842,448. Weather Modification Automatic Cartridge Dispenser. Filed Oct. 14, 1977.

Patent application 846,070. A Microwave InP/SiO_2 Insulated Gate Field Effect Transistor. Filed Oct. 27, 1977.

Patent application 847,455. Asymmetrically Fed Twin Electric Microstrip Dipole Antennas. Filed Oct. 31, 1977.

Patent application 847,456. Offset Fed Twin Electric Microstrip Dipole Antennas. Filed Oct. 31, 1977.

Patent application 847,457. Diagonally Fed Twin Electric Microstrip Dipole Antennas. Filed Oct. 31, 1977.

Patent 3,964,393. Igniter. Filed June 21, 1974. Patented June 22, 1976. Not available NTIS.

Patent 3,967,529. Rail Launched Missile. Filed June 20, 1974. Patented July 6, 1976. Not available NTIS.

Patent 4,030,038. Multiple Dumping Integrator. Filed Feb. 27, 1976. Patented June 14, 1977. Not available NTIS.

Patent 4,037,162. Pseudo Sampling. Filed May 27, 1975. Patented July 19, 1977. Not available NTIS.

Patent 4,046,076. Impulsive Rocket Motor Safety-Arming Device. Filed Sept. 29, 1975. Patented Sept. 6, 1977. Not available NTIS.

Patent 4,047,795. Optical Integrated Circuit Laser Beam Scanner. Filed Nov. 22, 1974. Patented Sept. 13, 1977. Not available NTIS.

Patent 4,049,953. Complex Pulse Repetition Frequency Generator. Filed June 24, 1976. Patented Sept. 20, 1977. Not available NTIS.

Patent 4,051,478. Notched/Diagonally Fed Electric Microstrip Antenna. Filed Nov. 10, 1976. Patented Sept. 27, 1977. Not Available NTIS.

Patent 4,052,846. Baffled Combustion Chamber. Filed Jan. 8, 1976. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,053,928. Edge Detection Analyzer. Filed July 23, 1976. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,057,778. Built-in Test Equipment for Sonobuoy. Filed Nov. 1, 1976. Patented Nov. 8, 1977. Not available NTIS.

Errata

All reference to Patent No. 4,075,315 to Herman Ainis, Charles F. Lange, Abraham S. Mark and George H. Scherr of the United States for DETECTION OF ANTIGENS BY ANTIBODY SENSITIZED MICROBIAL PARTICLES appearing in the OFFICIAL GAZETTE of February 21, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,075,410 to Cyril Woolf, deceased (Helga Woolf, executrix), Frank Mares, and Bryce C. Oxenrider of the United States for FLUOROCARBON MODIFICATION OF FIBERS appearing in the OFFICIAL GAZETTE of February 21, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,078,732 to Carlos Oliver Pujol of Spain for HORIZONTAL AXLE GRINDER WITH ROTATABLE SIEVE appearing in the OFFICIAL GAZETTE of March 14, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,081,096 to David Bellamy and David A. Winchell of the United States for SEALED CLOSURE FOR PLASTIC CONTAINER WITH INTERLOCKING PROTECTIVE OUTER CLOSURE appearing in the OFFICIAL GAZETTE of March 28, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,081,243 to Herman Ainis, Abraham S. Mark and Charles F. Lange of the United States for DETECTION OF ANTIGENS BY ANTIBODY SENSITIZED, PROTEIN-A-COUPLED PARTICLES appearing in the OFFICIAL GAZETTE of March 28, 1978 should be deleted since no patent was granted.

All reference to Reissue Patent No. 29,573 to Angelo Serratto of Italy for LOCAL CONDITIONING INDUCTION-TYPE APPARATUS EMPLOYING PRIMARY INLET AIR AS A POWER MEANS FOR CONTROLLING TEMPERATURE appearing in the OFFICIAL GAZETTE of March 14, 1978 should be deleted since no patent was granted.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 11, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-11-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-8-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-20-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	4-6-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-11-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-10-76
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-17-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-9-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-8-77
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-27-76
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-10-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-22-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-15-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-3-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-16-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-18-77

Expiration of patents: The patents within the range of numbers indicated below expire during March 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,973,519 to 2,977,597, inclusive
Plant Patents..... Numbers 2,032 to 2,039, inclusive

REISSUES

APRIL 11, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

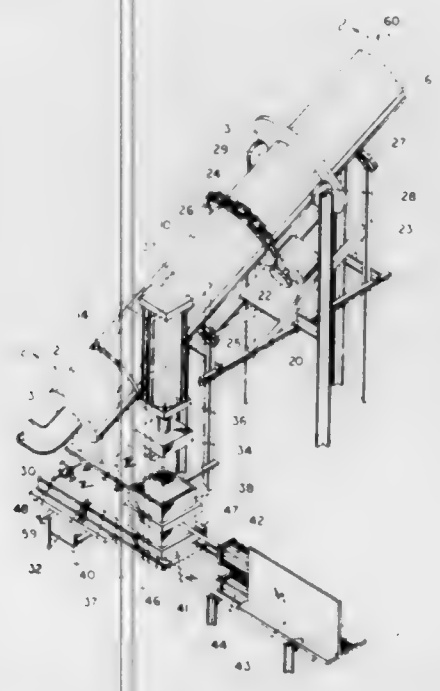
Re. 29,606
SCRAP RECLAMATION

Sigdon A. Eliot, Worthington, Ohio, assignor to Thermetics, Inc., Worthington, Ohio

Original No. 3,656,735, dated Apr. 18, 1972, Ser. No. 803,729, Mar. 3, 1969. Application for reissue Apr. 8, 1974, Ser. No. 459,127

Int. Cl.[2] C21B *7/00*

U.S. Cl. 100—92 12 Claims



1. An apparatus for reclaiming metal from adulterated metal chips by removing surface adhering adulterants from the chips, the apparatus comprising:

a. an inclined tumbler barrel rotatably mounted to a frame *and having its lower end open;*

b. means for rotatably driving the barrel;

c. heating means for heating and injecting gas into the lower end of the barrel;

d. exit means at the lower end of the barrel for removing hot chips from the barrel *comprising a non-rotatable cylindrical tube, having an opening in its under side, and aligned with the open lower end of the tumbler barrel and an open-ended hopper aligned with the opening in the under side of the cylindrical tube*; and

e. means comprising a [plunger and a] *moveable* mating compacting [cylinder, for compacting said hot chips and positioned to] *box having an open top and at times movable into alignment with the lower open end of said hopper and so become positioned to* receive the hot chips from the exit means;

wherein adulterated chips may be inserted in the upper end of the barrel while being drivingly rotated, hot gas may be passed from the lower end of the barrel to and out the higher end, and hot metal chips relatively free of surface adhering adulterants may be withdrawn through the exit means; and

wherein a removable bottom panel is provided to close the bottom of the compacting [cylinder] *box*, an open top is provided to receive chips, and the plunger is provided with drive means for linear axial movement of the plunger into the [cylinder] *box*, wherein chips may be inserted in the [cylinder] *box*, compressed between the plunger and the bottom panel, and ejected from the cylinder by removal of the bottom panel and movement of the plunger.

Re. 29,607
DERIVATIVES OF 5-HYDROXYMETHYL-3-SUBSTITUTED-2-OXAZOLIDINONES, PROCESS OF PREPARATION THEREOF AND THERAPEUTIC APPLICATION

Claude P. Fauran; Guy M. Raynaud, both of Paris; Rene A. Oliver, Vincennes, Val de Marne, and Colette A. Douzon, Paris, all of France, assignors to Delalande S. A., Courbevoie, France

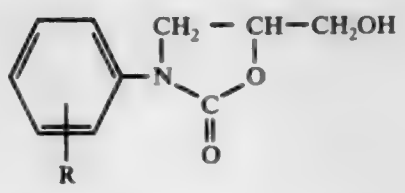
Original No. 3,655,687, dated Apr. 11, 1972, Ser. No. 20,020, Mar. 16, 1970. Application for reissue Jun. 4, 1976, Ser. No. 692,744

Claims priority, application United Kingdom, Mar. 18, 1969, 14260/69

Int. Cl.[2] C07D *263/24*

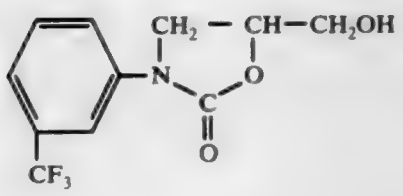
U.S. Cl. 260—307 C 5 Claims

5. A compound of the formula



in which R is selected from the group consisting of p-methyl and m-methyl.

7. A compound of the formula



Re. 29,608
BENZOXAZOLE DERIVATIVES

Delme Evans, Chalfont St. Peter; David William Dunwell, Camberley, and Terence Alan Hicks, Farnborough, all of England, assignors to Lilly Industries Limited, London, England

Original No. 3,912,748, dated Oct. 14, 1975, Ser. No. 356,251, May 1, 1973. Application for reissue Feb. 1, 1977, Ser. No. 764,664

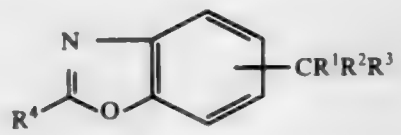
Claims priority, application United Kingdom, May 18, 1972, 23409/72

Int. Cl.[2] C07D *263/56*

U.S. Cl. 260—307 D 7 Claims

1. Compound of the formula:

I



wherein the group —$CR^1R^2R^3$ is in the 5- or 6-position of the benzoxazole nucleus, wherein R^4 is cyclohexyl, furyl, thienyl, pyridyl, phenyl or phenyl substituted in any available position by one or two substituents selected from halogen, nitro, amino, [hydroxy,] C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-3} alkyl-CO, C_{1-4} alkyl sulphonyl or substituted in two adjacent positions by methylene- or ethylene-dioxy, R^1 and R^2 are independently hydrogen, methyl or ethyl and R^3 is:

i. the group —$COOR^5$, where R^5 is C_{1-4} alkyl; or

ii. the group —CO—R^6 where R^6 is —NHOH or —NR^7R^8 where R^7 and R^8 are hydrogen; or
iii. the group —CH_2OR^9 where R^9 is hydrogen or C_{1-4} alkyl; or
iv. the group —COOH or an alkali or alkaline earth metal, aluminum or ammonium salt thereof.

Re. 29,609

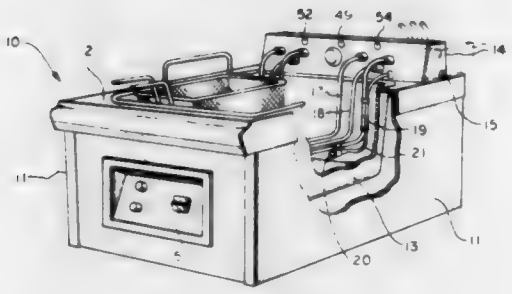
ELECTRIC COOKING APPARATUS WITH SAFETY CONTROL

Gurinder S. Wadia, Harwood Heights, and Harnek S. Gill, Algonquin, both of Ill., assignors to McGraw-Edison Company, Elgin, Ill.

Original No. 3,919,523, dated Nov. 11, 1975, Ser. No. 535,572, Dec. 23, 1974. Application for reissue Dec. 23, 1976, Ser. No. 753,910

Int. Cl.[2] H05B *1/02*

U.S. Cl. 219—494 **9 Claims**



1. In an electric cooking unit having electric heating [elements] *element means* disposed to heat a cooking environment, an improved operating-safety circuit comprising main on and off switch means, an operating contactor and a safety contactor each including normally open switch contacts and an actuating coil effective for closing same, an operating thermostat and a safety thermostat each having a heat sensor in the cooking environment and each having [normally closed contacts opened] *contact means shifted between operative dispositions* responsive to the sensed [set high temperature] *temperature demand and higher temperature satisfied and overheat conditions*, means connecting the operating contactor switch contacts and the safety contactor switch contacts on opposite sides of and in main power series circuits with the heating [elements] *element means* effective for controlling electric input to same, an operate control including means connecting the main on and off switch means operatively in series with a parallel hookup connection of the safety contactor actuating coil as one leg and the serially connected [operator] *operating* contactor actuating coil and operating thermostat controlled [contacts] *contact means* as the other leg, so that *in the temperature demand conditions* actuation of said main on and off switch means simultaneously energizes and deenergizes both actuating coils and thereby opens and closes the switch contacts of both contactors, a safety control including means connecting the safety thermostat controlled [contacts] *contact means* operatively with [power series connection through] said mentioned parallel hookup connection and in series with the main on and off switch means operable responsive to the [opening of said contacts for] *shifting of said controlled contact means for opening the parallel hookup connection and thereby* simultaneously deenergizing the actuating coils of both contactors, *and* means effectively holding said parallel hookup connection open and manual reset means for releasing the said holding means[, and a signal device hooked across the main power input lines at locations between the safety contactor switch contacts and heating elements effective to indicate both a power on condition and a faulted closed condition of the safety and operator contactor switch contacts].

Re. 29,610

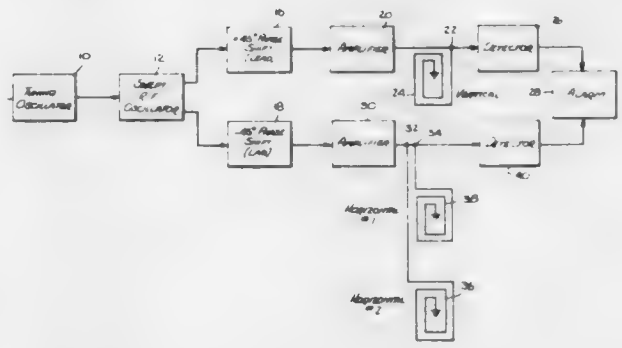
FIELD STRENGTH UNIFORMITY CONTROL SYSTEM

Arthur J. Minasy, Woodbury, and Ronald Pruzick, Commack, both of N.Y., assignors to Knogo Corporation, Hicksville, N.Y.

Original No. 3,838,409, dated Sep. 24, 1974, Ser. No. 351,018, Apr. 13, 1973. Application for reissue May 7, 1975, Ser. No. 575,153

Int. Cl.[2] G08B *13/24*

U.S. Cl. 340—280 **18 Claims**



20. An article theft detection system comprising an oscillator, means defining an output signal path including a first junction connected to the output of said oscillator and means forming a pair of branch signal paths leading from said first junction to first and second antenna junctions, separate antenna windings connected respectively to said antenna junctions, said antenna windings being positioned at a given checkpoint and lying in different planes, detector means connected to each of said antenna junctions, said detector means being responsive to predetermined changes in energy level at the antenna junctions to produce an output signal, alarm means arranged to be actuated by said output signal from said detection means and phase shifter means arranged in at least one of said branch signal paths between said first junction and one of said antenna junctions.

PLANT PATENTS

GRANTED APRIL 11, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,237

APRICOT TREE

Chris Floyd Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Jul. 28, 1976, Ser. No. 709,612
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree, as illustrated and described, characterized by its dwarf size, averaging approximately four feet in height in four years and reaching a mature height of 6 to 8 feet, its leaf nodes being approximately ½ inch apart on the new variety as compared to ⅞ of an inch on the standard apricot variety Tilton, and the new apricot variety is further characterized by the productive bearing of medium size fruit of good quality and firmness.

4,238

POINSETTIA PLANT

Paul Ecke, Jr., P.O. Box 488, Encinitas, Calif. 92024

Filed Sep. 3, 1976, Ser. No. 720,366
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct variety of Poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a general resemblance to the variety known as "Annette Hegg Maxi", (U.S. Plant Pat. No. 3,394), the smooth bracts being very erect and having little tendency to droop.

4,239

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Wertherstrasse 112, 4294 Isselburg, Germany

Filed Apr. 12, 1977, Ser. No. 786,852
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet known by the cultivar name Nevada and characterized particularly as to uniqueness by the combined characteristics of large, white flowers having frilled edges, with certain areas of the edges being red-violet in color; vigorous growth; strong, upright flower stems, and profuse flowering; compact growth habit, and by the plant being saleable at the first flash of flowers.

4,240

CHRYSANTHEMUM

Nicolaas Middelburg, 'sGravenzande, Netherlands, assignor to Middelburg B.V., Netherlands

Filed Jun. 3, 1977, Ser. No. 792,487
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum, substantially as described and pictured herein, characterized by its satiny pure white blooms, vigorous growth, 12 week response and permanence, and by having larger bloom and a purer white color than the parent cultivar, Horim.

PATENTS

GRANTED APRIL 11, 1978

ERRATA

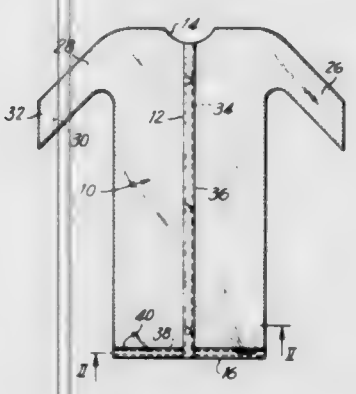
For CLASS	See PATENT NO.
081–009.3	4,083,086
074–243 R	4,083,247
063–032	4,083,352
214–082	4,083,469
366–147	4,083,537
206–623	4,083,879
423–024	4,083,915
427–409	4,084,014
428–009	4,084,015
536–096	4,084,060
364–118	4,084,083
362–184	4,084,084
362–135	4,084,085
362–161	4,084,086
312–199	4,084,125
328–134	4,084,127
329–116	4,084,128
330–282	4,084,129
331–094.5 H	4,084,130
365–125	4,084,153
365–222	4,084,154
264–200	4,084,235

PATENTS

GRANTED APRIL 11, 1978

GENERAL AND MECHANICAL

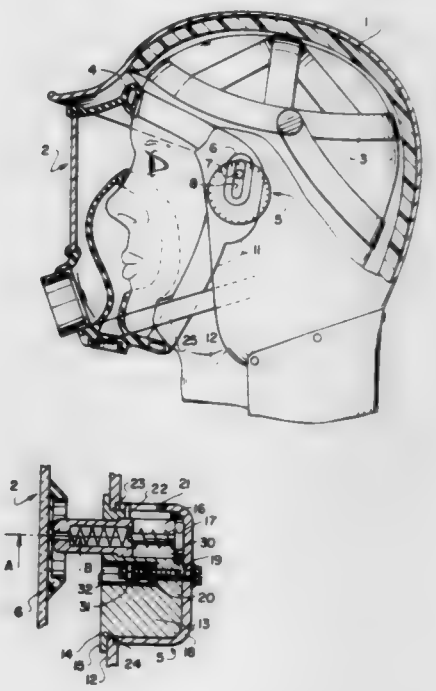
4,083,064
INFANT THERMAL SHIELD
Keith M. Schneider, 195 Wildwood Rd., Great Neck, N.Y. 11024
Filed Mar. 28, 1975, Ser. No. 563,222
Int. Cl.[2] A41D *3/00*
U.S. Cl. 2—69.5 **19 Claims**



1. A thermal shield for a neonate whose thermal regulatory mechanism has not yet gained stability, comprising a garment in robe-like form of transparent material of solid monolithic non-cellular cross-section, the garment being of a size generally corresponding to the size of neonates whose thermal regulatory mechanism has not yet gained stability, but permitting the insertion of implements between the material and the neonate's body, the material being sufficiently pliable so as to conform generally to the neonate's body when draped over the neonate's body and so as to be capable of being manually held in skin tight contact with portions of the neonate corresponding to at least the area of the head of a stethoscope but not so pliable as to be capable of molding to the configuration of the neonate's face and thereby suffocating the neonate, the garment having a sealable vertical open edge for facilitating placing the garment on the neonate, means for sealing the vertical open edge and a neck opening constituting one extremity of the garment whereby the garment is hoodless.

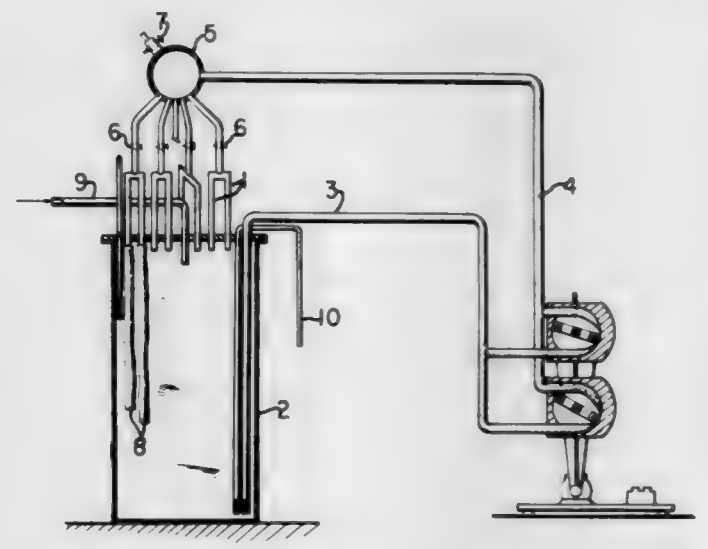
4,083,065
PROTECTIVE HELMET AND FULL FACE MASK CONSTRUCTION
Ernst Warncke, Lubeck, Germany, assignor to Dragerwerk Aktiengesellschaft, Germany
Filed Nov. 8, 1976, Ser. No. 740,133
Claims priority, application Germany, Nov. 7, 1975, 2549979
Int. Cl.[2] A42B *1/08*
U.S. Cl. 2—424 **6 Claims**

1. A protective helmet and full face mask for combined use on the face and head of a wearer, comprising a mask adapted to fit over the face and having a peripheral portion for encircling the chin, jaw and forehead of the face, a helmet adapted to engage over the head and having at least one portion adapted to overlie a portion of said mask, said mask having a receiving bearing recess in the overlying portion, said helmet having a locking mechanism comprising a member rotatably mounted on said helmet having a cavity extending toward said mask eccentric to the axis of said member, a pin of substantially the same width as the bearing recess and being movable in said cavity between a locking position in which it projects out of said cavity for engagement into said bearing recess and an unlocked position withdrawn into said cavity, said member being rotatable with said pin engaged in said recess to move said mask toward said helmet for tighter engagement with the wearer's face, a cam follower carried by said pin, and cam



means engageable with said cam follower for moving said pin in said cavity.

4,083,066
HETEROLOGOUS ARTERIAL TRANSPLANTS
Heribert Schmitz, Trogen, and Walter Stocklin, Ettingen, both of Switzerland, assignors to Solco Basel AG, Basel, Switzerland
Filed Nov. 7, 1975, Ser. No. 629,752
Claims priority, application Germany, Nov. 11, 1974, 2453363
Int. Cl.[2] A61F *1/24*; A63B *51/02*
U.S. Cl. 3—1.4 **6 Claims**



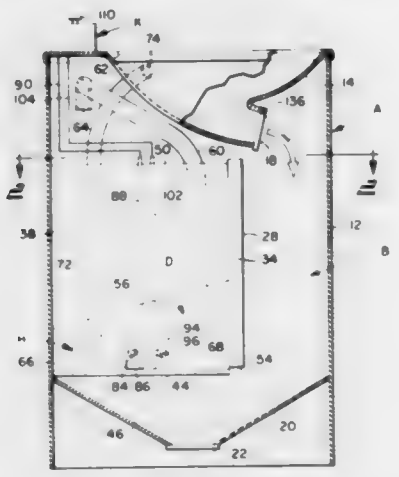
1. A process for the preparation of heterologous arterial transplants comprising freeing animal arteries of surrounding tissue, ligating collateral branches, subjecting the resulting arteries to proteolysis to remove elastic fiber and muscle tissue to obtain collagen tubes and tanning said tubes to effect cross-linking, the said proteolysis and tanning steps being effected by proteolytic and tanning solutions which continuously flow in one direction both through said arteries and along the outer surface of said arteries.

4,083,067

RECIRCULATING TOILET AND METHOD

Donald F. Lieb, Mentor; Neil W. Stillman, Madison, and William E. Kidon, Chardon, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Jan. 29, 1976, Ser. No. 653,444
Int. Cl.[2] E03D *1/00, 3/00, 5/00*
U.S. Cl. 4—317 **21 Claims**



1. A recirculating toilet system wherein the recirculating flush liquid includes treated liquid waste comprising a toilet bowl having a discharge means;

a waste storage chamber operatively connected to said toilet bowl discharge means;

a valved discharge outlet on said waste storage chamber for periodically discharging the accumulated solid and liquid waste content from the toilet system;

a flush liquid treatment chamber in liquid communication with said waste storage chamber;

filter means interposed between said flush liquid treatment chamber and said waste storage chamber; said filter means being located above said valved discharge outlet and the maximum level of settled accumulated solid waste in said waste storage chamber and being located at least partially below the flush liquid level in said flush liquid treatment chamber so as to provide said liquid communication between said waste storage chamber and said flush liquid treatment chamber;

means associated with said flush liquid treatment chamber for destroying bacteria in said flush liquid in said flush liquid treatment chamber;

and means for circulating said treated flush liquid from said flush liquid treatment chamber to said toilet bowl on activation of a control by the user of said recirculating toilet system.

4,083,068

ADJUSTABLE ARTICLE OF FURNITURE

Günther Böhme, Dachswaldweg 55, 7 Stuttgart 80, Germany

Filed Nov. 17, 1976, Ser. No. 742,565
Claims priority, application Germany, Nov. 19, 1975, 2551819
Int. Cl.[2] A61G *7/10;* **A47C** *3/32*
U.S. Cl. 5—66 **16 Claims**

1. In an adjustable article of furniture, particularly adjustable bed, a combination comprising a frame having a central plane and a first and a second region spaced from one another along said central plane; a backrest; means for mounting said backrest on said first region of said frame for pivoting along said central plane between a substantially horizontal rest position and an upright position; and means for urging said backrest toward said upright position thereof, including at least one resiliently bendable elongated spring having one portion connected to said frame at said second region of the latter, another portion acting on said backrest in and inbetween said positions of the latter, and an additional portion located intermediate said one



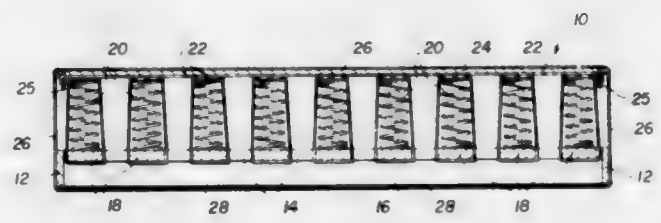
and other portions of said spring and supported on said frame at said first region.

4,083,069

REVERSIBLE DUAL PURPOSE BOX SPRING

Manuel Glickman, 1500 Worcester Rd., Framingham, Mass. 01701

Filed Dec. 22, 1976, Ser. No. 752,121
Int. Cl.[2] A47C *27/08, 27/22*
U.S. Cl. 5—345 R **2 Claims**



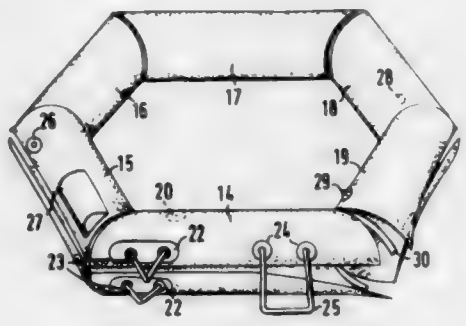
1. A box spring for resiliently and rigidly supporting a mattress comprising a rigid box-like structure adapted to be supported at its peripheral edges only by a bedstead frame; said structure having upper and lower load bearing surfaces coextensive with that of a mattress to be supported; one of said surfaces being resiliently supported by means mounted in said structure and the other of said surfaces having a rigid support so that the reversing of said surfaces varies the firmness of the supported mattress.

4,083,070

INFLATABLE LIFERAFTS OF THERMOPLASTIC MATERIAL AND METHODS FOR THEIR MANUFACTURE

Michael Dudley Martin, Haslemere, England, assignor to RFD Inflatables Limited, Godalming, England

Filed Jul. 2, 1976, Ser. No. 702,078
Claims priority, application United Kingdom, Apr. 5, 1976, 13710/76
Int. Cl.[2] B63C *9/04*
U.S. Cl. 9—11 A **7 Claims**



5. An inflatable liferaft comprising, a polygonally shaped liferaft floor made from flexible thermoplastic sheet material.

A buoyancy tube sub-assembly having a plurality of panels

of flexible thermoplastic sheet material disposed in series at the transverse edges of adjacent panels in lipless, non-overlapping, end-to-end, abutting relationship, and adjoining strips of thermoplastic material being disposed contiguous with the portions of the surfaces of the adjacent panels proximate to the transverse edges thereof and which are to be at the interior of the buoyancy tube sub-assembly, the strips overlapping the transverse edges of adjacent panels, the strips being heat welded to the adjacent panel, whereby the panels are joined to form an endless loop, there being a single panel for each side of the polygonal shape of the liferaft, the buoyancy tube sub-assembly being disposed with one of the longitudinal edges of each of the panels extending outwardly of the floor periphery and with a portion of each panel adjacent the one of the longitudinal edges overlying the periphery of the floor,

a V-shaped strip of material consisting of thermoplastic material only on the outer surfaces of the strip, the V-shaped strip being disposed between the portion of each panel adjacent to the one of the longitudinal edges and the periphery of the floor, the apex of the V-shaped strip extending outwardly with respect to the periphery of the floor, the upper surface of the periphery of the floor being heat welded to the lower outer surface of each of the V-shaped strips, the outer surface of the portion of each of the panels of the buoyancy tube sub-assembly adjacent the one longitudinal edge thereof being heat welded to the upper outer surface of the V-shaped strips, the inner surfaces of each of the V-shaped strips remaining free of one another after the heat welding to enable each V-shaped strip to be hinged about the apex thereof, thereby creating a heat welded seam between the floor periphery and the buoyancy tube sub-assembly, the other longitudinal edge of each of the panels being disposed in an overlying relationship with the one longitudinal edge of each of the panels,

a V-shaped strip of material consisting of thermoplastic material only on the outer surfaces of the strip being disposed between the portions of the inner surfaces of each panel adjacent the longitudinal edges thereof, the apex of each V-shaped strip extending toward the longitudinal edges of each panel, the inner surfaces of each panel immediately adjacent the longitudinal edges thereof being contiguous to one another, the inner surfaces of each panel immediately adjacent the longitudinal edges thereof being heat welded to one another, the inner surface of each panel being heat welded to the outer surfaces of the V-shaped strip disposed therebetween, the inner surfaces of each V-shaped strip being free of one another after the heat welding to enable the V-shaped strip to be hinged about the apex thereof, the heat welding of the panels adjacent the longitudinal edges closing the buoyancy tube sub-assembly along its longitudinal extend and forming a single, uninterrupted, longitudinally-extending heat welded seam about the buoyancy tube sub-assembly, said single seam extending around the outboard side of the liferaft; whereby seams on the inboard side of the buoyancy tube sub-assembly used to form the endless loop consist only of lipless, heat welded transverse seams.

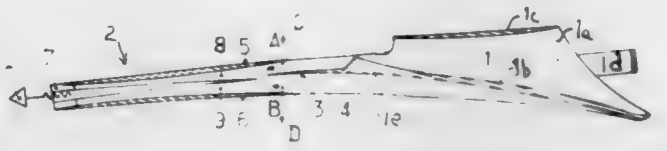
4,083,071

SWIM FLIPPERS

Roland Forjot, 117 Avenue de Rimiez, 06100 Nice, France

Filed Jan. 17, 1977, Ser. No. 759,861
Claims priority, application France, Jan. 20, 1976, 76 02214
Int. Cl.[2] A63B *31/10*
U.S. Cl. 9—309 **7 Claims**

1. Swim flippers comprising a shoe portion and a fin portion, said fin portion having upper and lower surfaces and a continuous through channel for the flow of water therethrough, a water discharge exit at the forward end of said fin portion, a water inlet opening at the trailing end of each of the upper and lower surfaces of said fin portion communicating with said through channel, and flap means integral with said shoe portion and extending forwardly therefrom, said flap means being pivotably mounted interiorly between said shoe portion and said fin portion and into said through channel between said



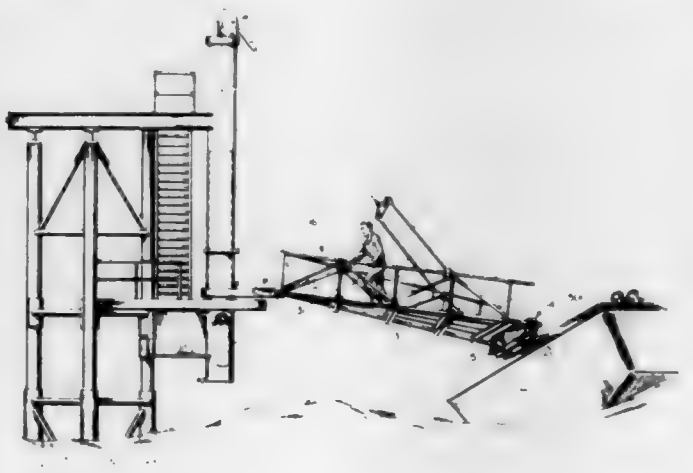
inlet openings so as to be oscillatable responsive to the movement of said flipper in water for alternately directing the flow of water into one of said inlets while simultaneously closing the other of said inlets.

4,083,072

CONNECTION SYSTEM FOR MARINE STRUCTURES

William J. Ryan, P.O. Box 367, Loreauville, La. 70552

Division of Ser. No. 501,991, Aug. 30, 1974, Pat. No. 4,003,473.
This application Jan. 7, 1977, Ser. No. 757,756
Int. Cl.[2] E01D *1/00*
U.S. Cl. 14—69.5 **11 Claims**



1. A system for connecting for example a personnel ramp on one marine structure to a second marine structure, at least one of said structures being a floating vessel, which system comprises:

a. a structural docking pedestal affixed to the second marine structure;

b. connection means on said ramp for docking one end portion of said ramp with said pedestal;

c. a frame connected to the docking end of said pedestal and rotatably mounted on said pedestal;

d. swivel means associated with said frame for swiveling engaging said ramp;

e. locking means associated with said frame for securing said frame on said pedestal;

f. elongated flexible means associated with said connection means for bringing said connection means into the proximity of said pedestal; and

g. power means associated with said elongated flexible means for perfecting a connection between said docking pedestal and said connection means;

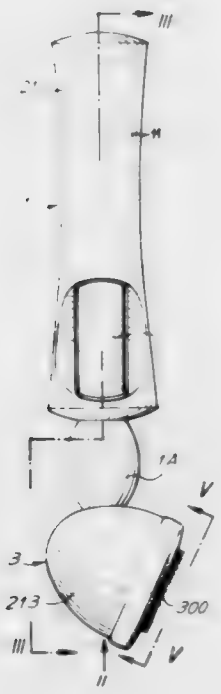
said locking means being opened when said frame is pulled onto said pedestal by said power means, and said locking means being closed, securing said frame on said pedestal when said power means completely pulls said frame onto said pedestal.

4,083,073

DEVICES FOR NEUTRALIZING ELECTROSTATIC CHARGES AND REMOVING DUST AND PARTICLES FROM RECORDING DISCS AND THE LIKE

Leandro Bernardini, 11, Via Mazzini, Calenzano, Firenze, Italy (I-50041)

Filed Dec. 6, 1976, Ser. No. 747,633
Claims priority, application Italy, Mar. 31, 1976, 9395 A/76
Int. Cl.[2] G11B *3/58*
U.S. Cl. 15—1.5 A 10 Claims



1. A device for neutralizing electrostatic charges and removing dust and particles attracted by the charges on a gramaphone record or disc, comprising:

an operative cap head including a base having a flat portion, said head having a cavity opening towards said flat portion, said flat portion including an edge surrounding said cavity;

a handle joined to said operative head for hand operation of the device with said flat portion adjacent to a surface of the disc to be treated;

a piezo-electric generator in said handle, and at least one ionic flux and electric field generating electrode within said cap head operatively connected with said generator, said electrode projecting into said cavity above said flat portion to neutralize the dust and particles when energized by said generator;

a push-button associated with said handle for controlling said generator and energizing said electrode; and

a brush-pad unit associated with said electrode and carried by said cap, said brush pad unit mechanically removing the dust particles neutralized by said electrode;

said brush pad-unit including:

brush means on a back portion of said edge inwardly thereof, and a relative soft packing on said flat portion rearwardly of said brush means

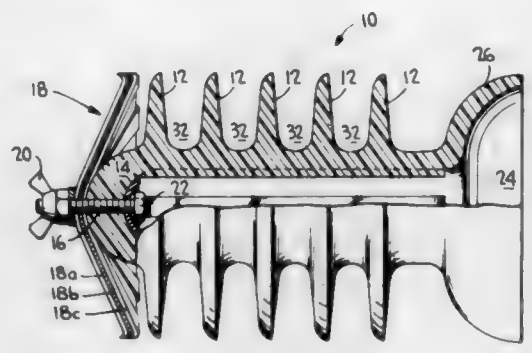
said brush means extending from said cavity beyond said flat portion to the rear of said electrode in the direction of movement of said record or disc and between said electrode and said soft packing in the direction of travel of the surface, said brush means extending through said base beyond said packing to remove dust from said surface and to penetrate into the micro-grooves to remove dust which has not been removed, immediately after the surface has passed in front of said cap and said electrode and has been subjected to the action of ionic flux and electric field from said electrode.

4,083,074

MULTIPURPOSE PIPELINE PIG

Arvel C. Curtis, Dallas, Tex., assignor to Mustang Services Co., Oklahoma City, Okla.

Filed Dec. 16, 1976, Ser. No. 751,344
Int. Cl.[2] B08B *9/04*
U.S. Cl. 15—104.06 R 5 Claims



1. A plug for treating the interior of pipes, comprising:

an elastomeric main body portion having a leading end and a trailing end and having a length approximately one and one-half times its diameter;

said trailing end of said body portion having a cup-shaped flange extending outwardly therefrom and defining a cavity facing away from said body portion;

said leading end of said main body portion including a hub with a central opening therethrough adapted for receiving a bolt member facilitating the securement of scraper elements to said main body portion;

said main body portion further including a hollow portion extending from said hub to said cup-shaped flange along the length of said body portion;

a plurality of reinforcing rib members extending along the longitudinal axis of said main body portion on the interior of said hollow portion; and

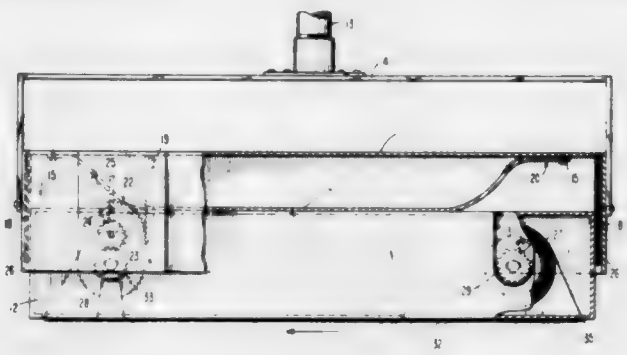
a plurality of sealing elements extending radially outwardly from said hollow portion and spaced axially along said main body portion from said hub to said cup-shaped flange, the diameter of each of said sealing elements being substantially equivalent to the diameter of said flange.

4,083,075

LINT PICKUP DEVICE

Michael A. Hester, 169 S. Cedar St., Hazleton, Pa. 18201

Filed Apr. 13, 1977, Ser. No. 787,126
Int. Cl.[2] A47L *13/00*
U.S. Cl. 15—104 A 12 Claims



1. An adhesive tape device for removing litter from carpets, rugs and the like, which comprises:

a housing adapted to receive to a tape cartridge means;

tape cartridge means adapted to be removably fitted into said housing, said cartridge means comprising a first reel for supplying a length of tape and a second reel for taking up said length of tape, said cartridge being movable within said housing from a first extended position to a second retracted position;

biasing means mounted in said housing for normally disposing said cartridge in said first extended position; and

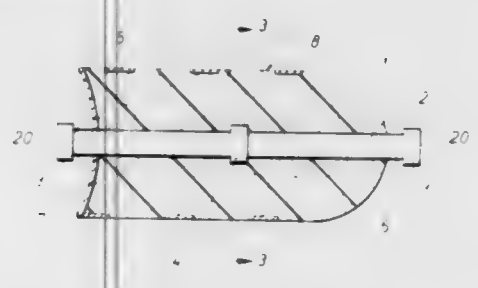
tape advancing means mounted on said housing for rotating said second reel to thereby advance a length of tape from said first reel in response to a sequential movement of said cartridge from said first extended position to said second retracted position and back to said extended position, said length of tape having an outwardly facing tacky surface, a portion of said tacky surface being positioned outside of said housing and being adapted to contact the litter to be removed when said cartridge is in said retracted position, said extended position and all intermediate positions therebetween.

4,083,076

PIPELINE PIG WITH LONGITUDINALLY INCOMPRESSIBLE MEMBER

Harry J. Girard, P.O. Box 27208, Houston, Tex. 77027

Filed Jan. 14, 1977, Ser. No. 759,262
Int. Cl.[2] B08B *9/04*
U.S. Cl. 15—104.06 R **8 Claims**



1. In a pipeline pig of the type to be propelled through a pipeline by a pressure gradient, the combination comprising:

an elongated one piece cylindrical body member formed of a resilient material;

an elongated column member mounted within and generally coaxial with said body member and having at least one end extending beyond one end of said body member, wherein said end has a diameter smaller than that of said body member, said column member being substantially incompressible along the longitudinal axis thereof and flexible perpendicular to the longitudinal axis thereof.

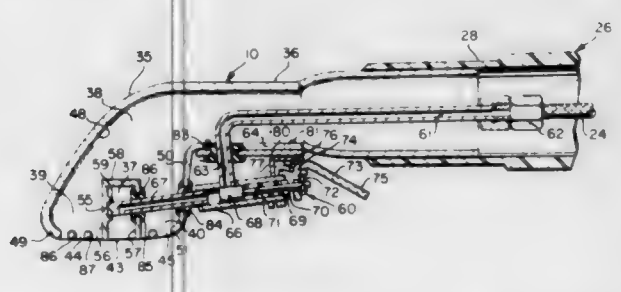
and a radially enlarged portion joined coaxially and immovably to said column member, and within said body member.

4,083,077

HAND TOOL FOR CLEANING FABRIC

Arlen M. Knight, 3943 Laguna Blanca, and William Hachtmann, 4197 State St., both of Santa Barbara, Calif. 93110

Filed Dec. 15, 1975, Ser. No. 640,493
Int. Cl.[2] A47L *7/00*
U.S. Cl. 15—321 **2 Claims**



1. A hand tool for cleaning fabric comprising:

(a) a generally hollow head defining a spray chamber with a bottom opening and a suction chamber with a bottom opening positioned forwardly of the spray chamber;

(b) a front wall of the head having a convexly rounded lower portion to facilitate forward movement by the hand tool over fabric;

(c) a rear wall of the head having a convexly rounded lower portion to facilitate rearward movement by the hand tool over fabric;

(d) side walls of the head between the front wall and rear wall;

(e) a hollow neck coupled to the head and arranged in communication with the suction chamber, said neck being coupled to an elongated flexible hose;

(f) a spray nozzle in the spray chamber;

(g) a fluid solution line;

(h) a flow control interconnecting the fluid solution line and spray nozzle;

(i) a steam cleaning machine having a dispensing tank for holding the fluid solution and a recovery tank, and,

(j) a swivel coupling interconnecting the vacuum hose and recovery tank for facilitating maneuverability of the vacuum hose and hand tool by an operator, said swivel coupling including a collar formed internally with a stop ring; a sleeve formed with an annular groove positioned within the collar, the stop ring being positioned in the annular groove so that relative rotation can take place between said stop ring and said sleeve while holding said sleeve and said collar against axial separation;

(k) an inlet fitting connected to a side wall portion of the sleeve, for fluid communication with the dispensing tank;

(l) a rigid flow line arranged at one end in fluid communication with the inlet fitting and extending through a portion of the sleeve; and

(m) an exit fitting attached to the other end of the rigid flow line, for fluid communication with the fluid solution line,

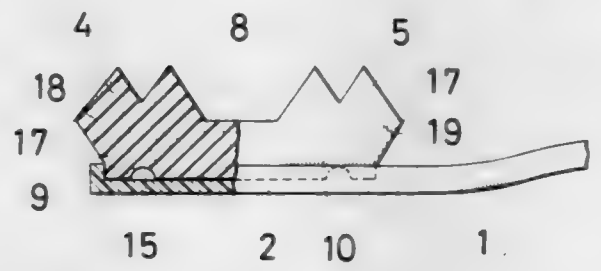
wherein as the hand tool is pulled rearwardly, suction may be applied to clean areas of the underlying fabric previously sprayed.

4,083,078

TOOTHBRUSH

Hiromichi Shimizu, 26, 4-chome, Kuwazu-cho, Higashisumiyoshi-ku, Osaka, Japan (546)

Filed Oct. 29, 1976, Ser. No. 736,994
Claims priority, application Japan, Aug. 13, 1976, 51-109053[U]
The portion of the term of this patent subsequent to Feb. 24, 1993, has been disclaimed.
Int. Cl.[2] A61H *13/00*
U.S. Cl. 15—244 R **18 Claims**



1. A toothbrush having a rigid handle,

a head on one end of the handle and an elongated resilient pad fixed on the brush head;

said pad having a concavity of a relatively large area across the pad in the area halfway between the ends of the pad on the upper surface, to form two protrusions on the opposite sides of the concavity;

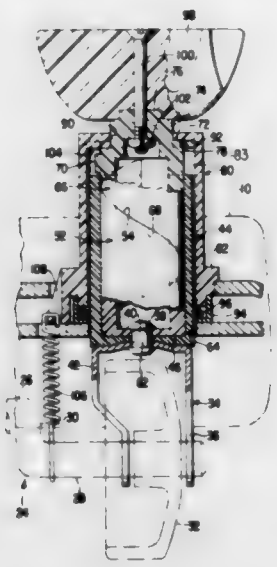
each said protrusion being provided with at least one upside projection thereon substantially in the form of a triangular prism with the lateral edges extending in the lateral direction of the pad; and

each said protrusion having another lateral projection which projects in the longitudinal direction of said pad, in the form of a polygonal prism with the lateral edges extending in the lateral direction of said pad.

4,083,079
VACUUM CLEANERS WITH NOZZLE HEIGHT ADJUSTING MECHANISMS

Don William Vermillion, Anderson, S.C., assignor to The Singer Company, New York, N.Y.

Filed Sep. 1, 1976, Ser. No. 719,543
Int. Cl.[2] A47L *5/34*
U.S. Cl. 15—354 4 Claims

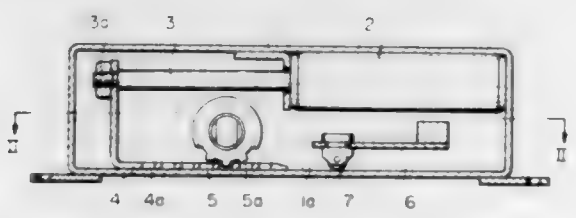


1. A nozzle height adjusting mechanism for a suction cleaner having a chassis including a suction nozzle inlet at the bottom thereof and first and second sets of wheels for supporting said chassis for movement on a floor surface, said mechanism comprising: first axle means including a central portion journaled on said chassis and having offset legs formed on opposite ends of said central portion for journaling said first set of wheels, second axle means longitudinally spaced from the first axle for journaling said second set of wheels on said chassis, means including a substantially cylindrical guide member and a first slide member concentric therewith journaled on an off-set leg, said first slide member including a helical end cam track disposed about the axis of the guide member, a hollow cylindrical locking member secured to said chassis and including a substantially central axial opening for receiving said guide member and said first slide member, said locking member including a plurality of detent teeth disposed circumferentially within said central axial opening, a second slide member positioned within said locking member having a cam follower positioned on said cam track and an annular ledge for supporting the locking member, said ledge including at least one tooth positionable between each two adjacent detent teeth of said locking member, and operator influenced means for turning said second slide member so as to reposition said tooth between other detent teeth and reposition the follower on said track thereby to change the elevation of the chassis relative to said wheels.

4,083,080
DOOR CLOSER

Hiroshi Miyazawa, Hiratsuka, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Nov. 24, 1976, Ser. No. 744,799
Claims priority, application Japan, Nov. 26, 1975, 50-141413
Int. Cl.[2] E05F *3/00*
U.S. Cl. 16—66 5 Claims

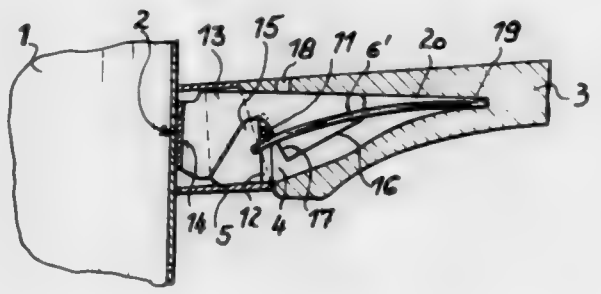


1. A door closer comprising a housing, an actuating plate, means for storing a door closing force therein to which said actuating plate is connected for movement to store and release a door closing force, a rack portion formed on the actuating plate and slidable along the inner surface of said housing, a pinion meshed with said rack and rotatably driven by the opening and closing movement of a door, an engaging member for meshingly engaging with the rack portion of the actuating plate when the door is moved a predetermined amount thereby restraining the movement of the door, and mounting means on said housing on which said engaging member is mounted for resiliently urging said engaging member against the rack portion of the actuating plate.

4,083,081
HANDLE SECURING DEVICE

Günther Witte, Attendorn, Germany, assignor to Gebr. Dingerkus, Attendorn, Germany

Filed Nov. 23, 1976, Ser. No. 744,264
Claims priority, application Germany, Nov. 27, 1975, 2553308
Int. Cl.[2] A47B *95/02*
U.S. Cl. 16—114 A 5 Claims



1. In a device for securing a handle to a handle carrier portion affixed to an article and extending away therefrom; the handle including a handle recess for accommodating the carrier portion upon insertion of the handle on the carrier portion in a direction of insertion; the improvement comprising

(a) means defining a detent notch in said carrier portion;

(b) an elongated latch member disposed within said recess and arranged in said detent notch in an orientation transverse to said direction of insertion; said latch member having opposite ends;

(c) means defining guide grooves in said handle within said handle recess; said guide grooves receiving said ends of said latch member;

(d) means defining a tapered continuation of said handle recess; and

(e) a spring arranged in said handle recess and having a first end conformingly received in said tapered continuation and a second, opposite free end engaged by said latch member which maintains said spring in a biased state; said spring urging said latch member against said handle and said carrier portion for locking said handle and said carrier portion to one another.

4,083,082
CONCEALED SELF-CLOSING HINGE FOR PANEL DOOR CABINET STRUCTURE

Frank A. Holmes, Ballasalla, Isle of Man, assignor to Jaybee Manufacturing Corporation, Los Angeles, Calif.

Filed Nov. 10, 1976, Ser. No. 740,766
Int. Cl.[2] E05D *3/06, 3/08, 3/10, 15/52*
U.S. Cl. 16—163 7 Claims

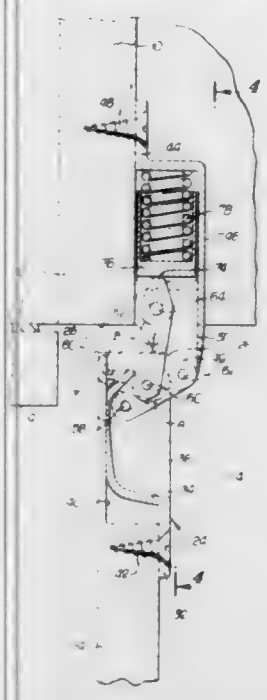
7. In a hinge structure for a cabinet having a frame and a door:

(a) a pair of hinge leaves for attachment to the frame and the inside of the door respectively;

(b) a pair of links each pivotally connected at opposite ends to the respective hinge leaves, said links and hinge leaves forming elements of a quadrilateral having a degree of

freedom to determine the course of movement of the door as the quadrilateral folds in opposite directions, elements of said quadrilateral mutually engaging each other to determine a limit to the opening movement of said quadrilateral;

(c) the pivotal connection between two of said quadrilateral elements being formed by a limited lost motion connection; and



(d) spring means urging said lost motion connection to one limit to determine a normal course of folding movement of said quadrilateral, said spring means yielding upon the imposition of torque tending to move said linkage beyond said limit whereby a shock absorption is provided for opening movement of said quadrilateral.

4,083,083

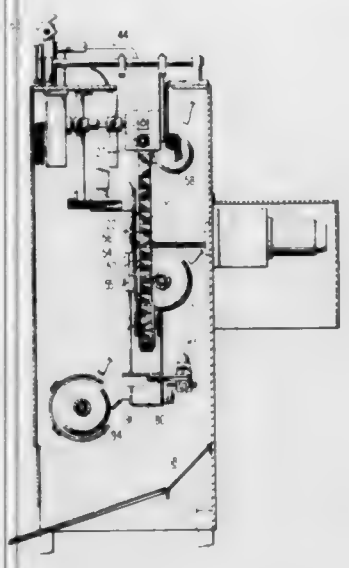
MACHINE FOR CUTTING POULTRY INTO SELECTIVELY VARIABLE PORTIONS

William D. Duncan, and Carolyn L. Duncan, both of Kokomo, Ind., assignors to Duncan Creations, Inc., Kokomo, Ind.

Continuation of Ser. No. 583,875, Jun. 5, 1975, abandoned. This application Sep. 17, 1976, Ser. No. 724,694

Int. Cl.[2] A22C *21/00*

U.S. Cl. 17—11 **8 Claims**



1. In apparatus for automatically cutting eviscerated poultry carcasses alternatively into a plurality of pre-selected groups of portions under the control of a single operator, each of said groups of portions consisting of a whole poultry carcass severed into separate predetermined pieces numbering between two and ten inclusive, comprising:

a frame means;

b first cutter means removably mounted on the frame means for severing the wings from a carcass;

c second cutter means removably mounted on the frame means for severing breast meat from the carcass and the legs from the thighs;

d third cutter means mounted on the frame means for at least partially severing a carcass into two halves in the plane of the backbone;

e fourth cutter means removably mounted on the frame means for severing thighs from the rib cage;

f fifth cutter means including means for removably and selectively mounting the fifth cutter means on the frame means in one position tangent to the third cutter means to coact with said third cutter means to split a carcass into two similar halves and in another position on the frame means to sever the breast meat only into two halves, and;

g conveyor means mounted on the frame means for moving successive poultry carcasses in a predetermined path for engagement with those of said aforementioned cutter means as are mounted on the frame means,

whereby the apparatus is convertible to cut poultry carcasses into between two and ten pieces.

4,083,084

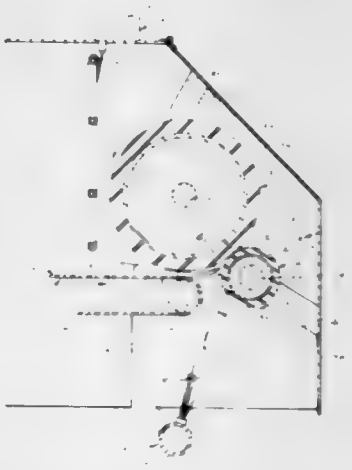
MACHINE FOR SEPARATING MEAT FROM CRAB SHELLS

Walter L. Davis, Milton-Freewater, Oreg., assignor to Applied Magnetics, Inc., Goleta, Calif.

Filed Nov. 8, 1976, Ser. No. 739,981

Int. Cl.[2] A22C *29/00*

U.S. Cl. 17—73 **7 Claims**



1. A crab meat removing machine for separating crab meat from its exoskeleton or shell, comprising:

a supporting framework;

feed means on the framework for receiving and moving the crab parts in a prescribed horizontal path from an infeed station and discharging the crab parts from a discharge roller at a discharge station;

a small diameter squeeze roller means rotatably mounted on the framework in the horizontal path and spaced downstream of the feed means discharge roller forming a gap therebetween and having a peripheral surface extending vertically above the horizontal path;

a large diameter squeeze roller means rotatably mounted on the framework above the horizontal path and spanning over the gap between the feed means discharge roller and the small diameter squeeze roller means;

wherein the large diameter squeeze roller means has a peripheral surface engaging the peripheral surface of the small diameter squeeze roller means in an inclined tangential relationship forming an inclined squeeze nip elevated above the horizontal path for squeezing the crab parts therebetween;

wherein the peripheral surface of the large diameter squeeze

roller means extends over the feed means discharge roller in horizontal tangential relationship with the horizontal path forming a horizontal gripping nip between the large diameter squeeze roller means and the discharge roller for gripping the crab parts therebetween;

wherein the peripheral surfaces of the large and small squeeze roller means are formed of rubber-like resilient material for functionally engaging, and squeezing the crab exoskeleton therebetween with sufficient force to separate the crab meat from the crab exoskeleton;

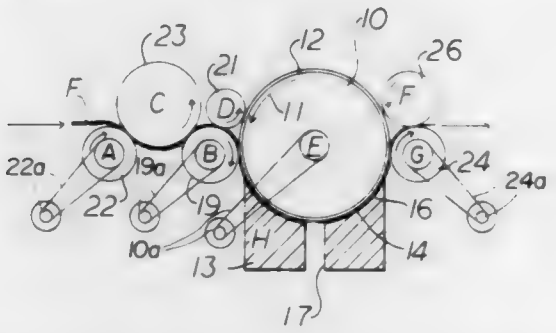
drive means for operatively driving the feed means and the small and large squeeze roller means for conveying the crab parts from the infeed station to the discharge station with the large diameter squeeze roller means and the discharge roller gripping the crab parts therebetween and projecting forward ends of gripped crab parts through the gap and against the small diameter squeeze roller means with the small diameter squeeze means deflecting the forward ends of the crab parts upward and into the inclined squeeze nip while rear ends of the crab parts are being gripped in the gripping nip and applying a positive forward pressure on the crab parts with the small and large squeeze roller means squeezing the crab exoskeleton in the inclined squeeze nip to extrude the crab meat from the exoskeleton and enable the crab meat to fall by gravity through the gap as the rear ends clear the gripping nip.

4,083,085

APPARATUS FOR BLENDING AND PARALLELING TEXTILE FIBERS

Emmett S. Livingston, Talbottom, Ga., and Otis B. Alston, Wetumpka, Ala., assignors to Dixie Yarns, Inc., Chattanooga, Tenn.

Filed May 14, 1976, Ser. No. 686,312
Int. Cl.[2] D01G *15/40*
U.S. Cl. 19—105 **1 Claim**



1. In a system for paralleling and blending strands of fibers in the form of sliver, which strands contain fibers of different lengths and without appreciable loss of the shortest fibers,

(a) a work roll about 3 5/16 inches in diameter covered with metallic wire having about 400 teeth per square inch, the teeth of which are forwardly raked,

(b) a stationary arcuate section of metallic wire having about 400 teeth per square inch and with the points thereof in close running clearance to the points of the wire on said work roll, said arcuate section extending around a portion of the lower periphery of the work roll,

(c) the teeth of the wire on the arcuate section being oppositely raked relative to the rake of the teeth on the work roll,

(d) a pair of cooperating sliver feed rolls whose diameters are less than the diameter of the work roll mounted close to the work roll and designed to deliver sliver to the work roll ahead of the arcuate section,

(e) a pair of cooperating outfeed rolls whose diameters are less than the diameter of the work roll mounted close to the work roll downstream of the arcuate section,

(f) means to rotate the work roll at a surface speed faster than the rate of delivery of the sliver by said infeed rolls thereby to draft the sliver prior to entering between arcuate section and the work roll, and

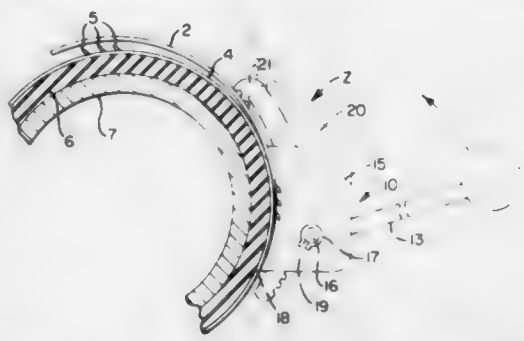
(g) means to rotate the outfeed rolls at a surface speed greater than the surface speed of the work roll thereby to assure that no negative draft is applied to the sliver while it is being removed from the work roll.

4,083,086

TIGHTENING DEVICE FOR ATTACHING A HOSE CLAMP

Hans Oetiker, 21, Oberdorfstrasse, Horgen, Switzerland

Continuation-in-part of Ser. No. 564,132, Apr. 1, 1975, Pat. No. 3,981,049, which is a continuation of Ser. No. 349,697, Apr. 10, 1973, abandoned. This application Apr. 16, 1976, Ser. No. 677,525
Int. Cl.[2] B65D *63/02*
U.S. Cl. 81—9.3 **22 Claims**



1. Apparatus for clamping a hose and a nipple including a tightening device for assembly and disassembling a hose and nipple clamp of the type having a band with first and second releasably interengageable means spaced from one another along the length of the band; said tightening device comprising:

first and second coupling elements engageable with a band at respective spaced positions along the length of said band,

forcing means for forcibly moving said first and second coupling elements with respect to one another to effect movement of said first and second means of said band to positions accommodating interengagement and disengagement of said first and second means with respect to one another,

and guide means for guiding relative movement of said first and second coupling elements along a predetermined circumferential path about a hose and nipple being clamped during assembly and disassembly operations,

wherein said guide means includes a first rigid member with a first curved guiding surface formed thereon and a second rigid member with a second curved guiding surface formed thereon, wherein said first and second curved guiding surfaces are slidably engageable with one another to constrain movement of said first and second rigid members with respect to one another only along a predetermined curved path defined by said first and second guiding surfaces, and wherein said first coupling element is fixedly connected with said first rigid member and said second coupling element is fixedly connected with said second rigid member, whereby said first and second coupling elements are constrained by said guide means to move with respect to one another only along a curved path parallel with said first and second curved guiding surfaces.

4,083,087

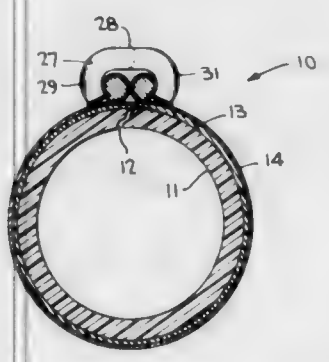
FLEXIBLE PIPE CLAMP ASSEMBLY

C. Clark Hale, P.O. Box 409, McComb, Mass. 39648

Filed Apr. 12, 1977, Ser. No. 786,776
Int. Cl.[2] B65D *63/06*; F16L *55/16*
U.S. Cl. 24—21 **5 Claims**

1. A clamp assembly for securing a band about a flexible pipe, the band being flexible and having outwardly curled

ends, and elongated pins engageable with said curled ends, comprising, said pins having co-axial undercut portions located in the outer surfaces thereof, said pins lying within said curled ends and being so disposed that said undercut portions thereof face away from one another, portions of said curled ends overlying said undercut portions, and at least one resilient clamp member having portions thereof extending toward one another and being complementary in shape to said undercut



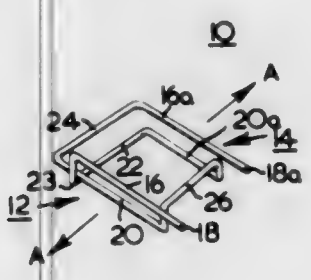
portions, said clamp member extending transversely of said pins, said complementary portions of said clamp member engaging said overlying portions of said ends for forcing said overlying portions into intimate contacting engagement with said undercut portions, whereby said band is securely held about the flexible pipe while said clamp member is locked in place with said complementary portions and said overlying portions being seated within said undercut portions.

4,083,088

STRAP CONNECTOR BUCKLE

Gert P. Somann, 745 Inverness Avenue, London, Ontario, Canada

Division of Ser. No. 492,848, Jul. 29, 1974, Pat. No. 3,924,302.
This application Feb. 13, 1975, Ser. No. 549,804
Claims priority, application Canada, Jan. 8, 1974, 189673
Int. Cl.[2] A44B *11/00*
U.S. Cl. 24—74 A **7 Claims**



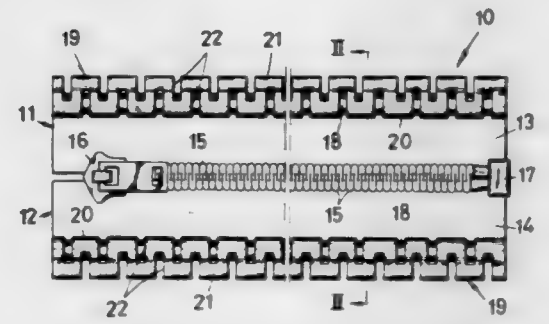
1. A strap connector buckle formed of a single piece of wire, said connector buckle being approximately rectangular in outline and comprising a pair of strap engaging arms on each of two opposing sides of the connector buckle, each of said pair of arms comprises a first arm and a second arm, both of which are generally straight and approximately parallel to one another and to the first and second arms of the opposing pair, the first and second arms of each pair being spaced apart sufficiently to permit, in use, a strap with which the connector buckle is to be used to be passed therebetween and said two first arms being spaced apart a distance greater than the distance between said two second arms, the first arm of each of said pairs being a respective terminal portion of the wire and having a free end and the second arm of each pair being an intermediate wire segment, a first run of the wire connecting the first arm of one of said pair to the second arm of the other of said pair, a second run of the wire connecting the second arm of said one pair to the first arm of said other pair and a further run of the wire connecting the second arms of said pairs to one another, and wherein the first run of wire has an end portion thereof adjacent the first arm of said one pair provided with an elbow portion extending partially around said second arm of said one pair to permit strap tension forces tending to spread said second arms apart to be transmitted from one of said second arms to the other of said second arms via said first run of wire to resist the spreading apart of said second arms, said elbow portion comprising a generally right angle bend in said end portion of the first run of wire, said bend being located adjacent to but spaced from that end of the generally straight second arm of said one pair to which said second run of wire is attached, and wherein the free ends of the first arms are arranged to engage and be supported by said further run of wire when said strap is under tension, said further run of wire having an upstanding elbow at each of its ends, said free ends of the first arms tending to come into engagement with said elbows when the strap is tensioned to hold them in approximate parallelism with their associated second arms.

4,083,089

SLIDING CLASP FASTENER

Tadashi Minami, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Filed Apr. 21, 1976, Ser. No. 678,982
Claims priority, application Japan, Apr. 24, 1975, 50-56122[U]
Int. Cl.[2] A44B *19/34*
U.S. Cl. 24—205.16 R **3 Claims**



1. A sliding clasp fastener comprising in combination: a pair of fastener stringers each having an elongated stringer tape carrying on and along one longitudinal edge a row of interlocking fastener elements, the other longitudinal edge of at least one stringer tape having a bulged portion extending therealong; a slider mounted on and movable along said rows of interlocking fastener elements to couple and uncouple the same; and an elongated adapter web member carried on said bulged edge portion of at least one of said stringer tapes for mounting the sliding clasp fastener on a support material, said adapter web member having inner edge portions which embrace said bulged edge portion to secure thereto the adapter web member, said adapter web member having outer edge portions disposed for attachment to said support material, said inner and outer edge portions having recesses disposed at spaced locations along the lengths of said edge portions and said recesses in the inner and outer edge portions being staggered relative to each other in the longitudinal direction of said web member.

4,083,090

NON-MARKING SEAM IN SCREEN USED FOR MANUFACTURE OF NONWOVEN FABRIC

Theodore Duvekot, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 11, 1976, Ser. No. 685,151
Int. Cl.[2] B21F *27/10*
U.S. Cl. 28—104 **6 Claims**

1. A process for seaming into a closed loop a rigid screen composed of longitudinal wires and transverse wires interwoven with said longitudinal wires, the frequency of each said wires in said screen being no greater than 12 wires/cm, comprising

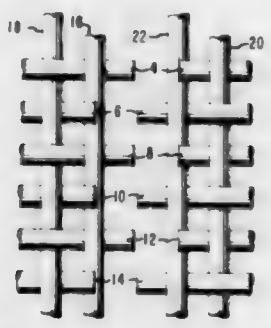
(a) cutting said longitudinal wires to a length corresponding

to the circumference desired for said loop, said cutting of said longitudinal wires at each end of said screen being such that

(i) the ends of the longitudinal wires at each end of said length of screen can be butted together,

(ii) there is one of said transverse wires at each end of said length of screen, which wires become an adjacent pair of transverse wires upon the butting together, and

(iii) the butting together occurs at the crossovers of said ends of said longitudinal wires with said adjacent pair of



transverse wires in one surface of said screen, whereby the butting together of said longitudinal wires is not visible from the opposide surface of said screen,

(b) butting together the ends of the longitudinal wires of each end of said length of screen to thereby form said length of screen into a closed loop, and

(c) forming a seam of the butted ends of said longitudinal wires in said one surface of said screen which is not visible in the opposite surface of said screen by fusing said butted ends together.

4,083,091

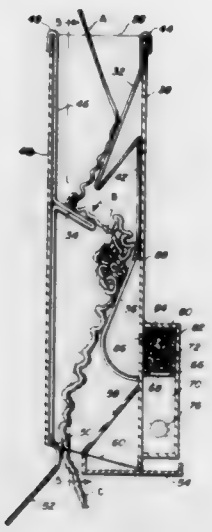
METHOD FOR DEVELOPING BULK IN A STRAND OF SYNTHETIC TEXTILE YARN

William Allen McNeill, Gastonia, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 310,476, Nov. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 169,001, Aug. 4, 1971, abandoned. This application Mar. 15, 1977, Ser. No. 777,771

Int. Cl.[2] D02G *1/00*

U.S. Cl. 28—281 **12 Claims**



1. A method of developing bulk in a strand of synthetic yarn comprising feeding said yarn continuously in a generally downward direction and in a substantially tensionless condition, providing an obstruction under said generally downwardly feeding yarn to cause said yarn to be substantially completely relaxed, applying heat and moisture to said obstructed relaxed yarn for substantially complete development of bulk therein, and allowing said bulked yarn to fall downwardly in a free condition without substantial loss of the bulk developed therein.

4,083,092

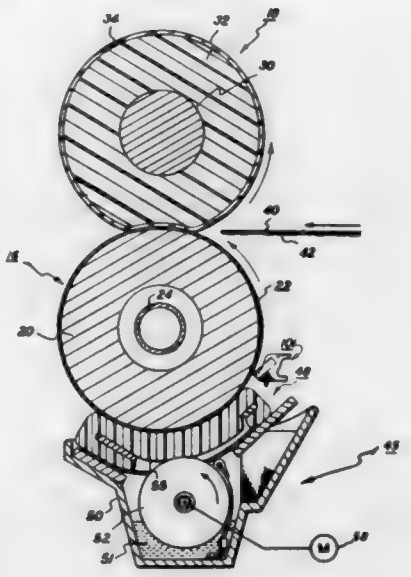
SLEEVED ORGANIC RUBBER PRESSURE ROLLS

George R. Imperial, Webster, and James A. Lentz, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 3, 1977, Ser. No. 803,095

Int. Cl.[2] B21B *31/08*

U.S. Cl. 29—132 **20 Claims**



1. A pressure roll for a roll fusing apparatus utilized in fixing toner images to support sheets, the pressure roll comprising:

a rigid core;

a layer of crosslinked organic rubber adhered to the rigid core, the organic rubber being cured in a free radical crosslinking system comprising a free radical initiating agent; and

an outer protective sleeve material having a high flex life over the organic rubber layer, the sleeve material providing a barrier is relatively free from oxidative degradation.

4,083,093

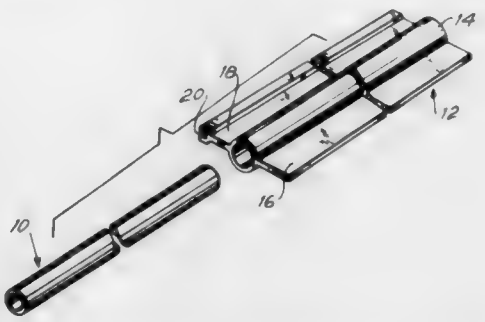
MULTIPLE MATERIAL SOLAR PANEL AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

Burton Z. Chertok, L'Ecluse La., Huntington Bay, N.Y. 11743

Filed Aug. 8, 1975, Ser. No. 603,047

Int. Cl.[2] B23P *15/26*

U.S. Cl. 29—157.3 V **16 Claims**



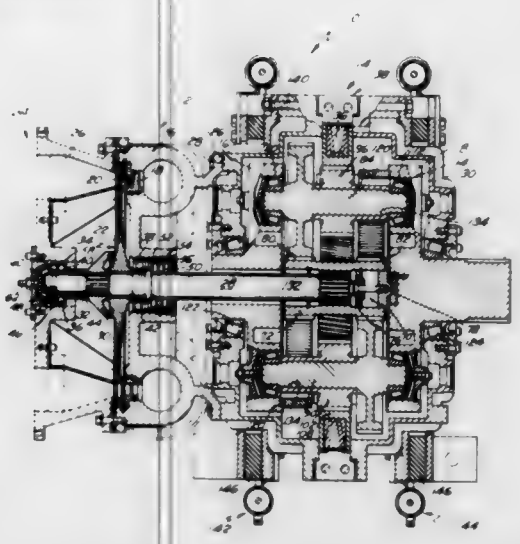
1. A method comprising fabricating a solar panel of different interior and exterior materials to utilize the structural and heat absorbing properties of the exterior material and the corrosion resistance of the interior material, said fabricating being effected by intimately wedding the materials along the entire length of the same by applying a fluid pressure internally against the interior material and simultaneously throughout at least substantially the entire length of the same to displace the interior material into intimate contact with the exterior material, the fluid pressure being applied with a force which permanently deforms the interior material and elastically deforms the exterior material within the elastic limit of the exterior material, and thereafter relieving said pressure so that the exterior material contracts against the interior material to work harden the interior material.

4,083,094

GEAR TOOTH ALIGNMENT BY ACCOMMODATION

Giovanni J. Silvestri, 4 Meadowbrook Dr., Barrington, R.I. 02806

Filed May 18, 1977, Ser. No. 798,062
Int. Cl.[2] B21D *53/28;* B23P *15/14*
U.S. Cl. 29—159.2 3 Claims



1. A method of gear tooth alignment in a two stage cluster assembly having a first gear as a first piece, hardened and ground separately, having a shaft and a second stage pinion as a second piece, hardened and ground separately, and having a bore in a multi-cluster gear train system comprising the steps of:

fitting loosely the shaft of the first piece and the bore of the second piece;

welding an area of contact of the first piece and the second piece to form a compact cluster;

assembling the compact cluster in said multi-cluster gear train system; and

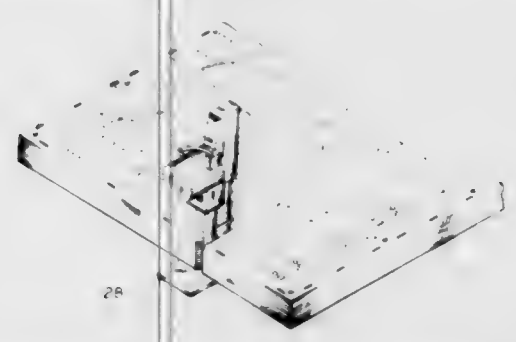
isolating mass of first piece from the masses of the remaining component of the gear train system.

4,083,095

PROCESS FOR CUTTING AND ASSEMBLING MULTIPLE PANELED TOY CONSTRUCTIONS

Dennis Michael Flaum, 1 E. Schiller, Chicago, Ill. 60610, and Herman Lawrence Fleishman, 6518 N. Kenton, Lincolnwood, Ill. 60645

Filed May 13, 1977, Ser. No. 796,757
Int. Cl.[2] B23P *17/00*
U.S. Cl. 29—416 10 Claims



1. A method for manufacturing multiples of a family of panels from segments of vinyl web stock, said family including panels for forming a bag structure, said panels including designs printed on said stock, said families produced with corresponding of said designs positioned on corresponding of said panels, said method comprising the steps of:

(a) imprinting said designs on said web at accurately reproducible intervals;

(b) indexing said web by printing index marks along opposed edges of said web to correspond to said intervals;

(c) severing said web to form said segments;

(d) stacking said segments to bring said designs on adjacent of said segments into register by overlaying said index markings on said adjacent segments;

(e) templating each panel of said family on the uppermost of said segments to form an outline of each said panel, said outline including therewithin that portion of said design to be reproduced on each side panel; and

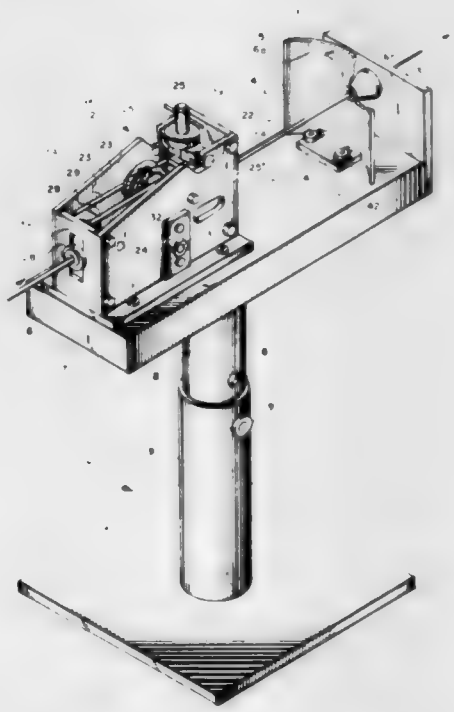
(f) cutting through said stacked segments along said outline of each said panel to form said multiples of said family.

4,083,096

INSULATED WIRE STRIPPING METHOD

Irv Baston, Bremen, Ga.; J. Orbie Lowery, Ranburne, Ala., and O. Leon Thomas, Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Division of Ser. No. 648,083, Jan. 12, 1976, Pat. No. 3,977,277.
This application Jun. 7, 1976, Ser. No. 693,456
Int. Cl.[2] B23P *19/00;* H02G *1/12*
U.S. Cl. 29—427 1 Claim



1. An improved method of removing the insulating covering from the inner wire of an insulated electrical conductor wire of the type where the initial cutting of the insulating covering is followed by subsequent stripping of said covering wherein the improvement comprises the steps of:

(a) providing a non-powered machine consisting essentially of resiliently mounted means for cutting said insulating covering, means for positioning said insulated electrical conductor wire and means for stripping said covering from the inner wire, wherein said cutting means and said positioning means are two opposed, interdigitated, W-shaped sections, rotatably mounted in spaced relationship to each other;

(b) positioning said insulated electrical conductor wire diametrically between said cutting means and said positioning means without substantially deforming said wire,

(c) pulling said insulated electrical conductor wire through said non-powdered machine, whereby said insulating covering is cut by one of the two apexes of the first W-shaped section while being positioned in the valley of the second W-shaped section;

(d) adjusting said resiliently mounted cutting means to substantially cut only the insulating covering, without damage to the inner conductor wire, in a single longitudinal direction along the length of the wire, and

(e) continuously passing the wire with its cut insulating covering through the stripping means, said stripping means having a fixed orifice bearing against said cut insulating covering but not against the inner wire thereby

stripping the cut insulation off and away from the inner wire,

(f) substantially passing an additional length of insulated wire through said machine so that the insulated covering is cut by one of the apexes of the second W-shaped section while being positioned in the valley of the first W-shaped section.

4,083,097

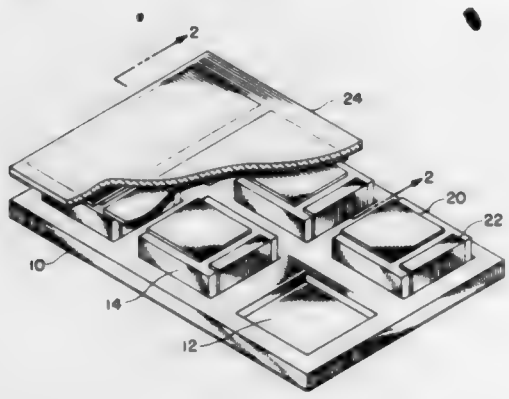
METHOD OF MAKING ENCAPSULATED SOLAR CELL MODULES

Evelyn Anagnostou, Westlake, and Americo F. Forestieri, Berea, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 30, 1976, Ser. No. 746,269

Int. Cl.[2] H01L *37/00*

U.S. Cl. 29—572 **6 Claims**



1. A method of making a module of solar cells having a transparent cover comprising the steps of

forming a plurality of depressions in said transparent cover,

placing a solar cell in each of said depressions so that the front surfaces of the solar cells which are to face a light source contact the bottoms of said depressions,

positioning a back cover over said solar cells in contact with the back surfaces thereof opposite said front surfaces, and

electrically connecting said solar cells while securing said transparent cover to said back cover.

4,083,098

METHOD OF MANUFACTURING ELECTRONIC DEVICES

Keith H. Nicholas, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.
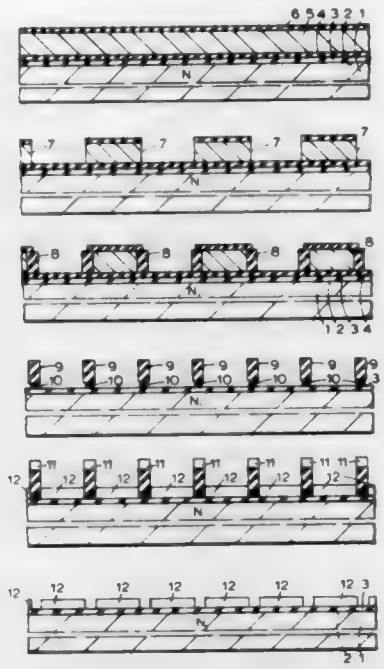
Filed Oct. 12, 1976, Ser. No. 731,339

Claims priority, application United Kingdom, Oct. 15, 1975, 42223/75

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—578 **14 Claims**

1. A method of manufacturing an electronic device, comprising a plurality of closely spaced conductive layers on a substrate, said method comprising the steps of depositing on said substrate a layer of polycrystalline semiconductor material, providing at least one aperture defined in and extending through said polycrystalline layer, effecting a material treatment via an exposed edge of said polycrystalline layer in said aperture in the presence of a masking layer on said polycrystalline layer, said treatment being effected to convert a narrow strip portion of the polycrystalline layer of substantially uniform width and underlying the masking layer adjacent the aperture into material insoluble in at etchant specific for the untreated part of said polycrystalline layer, removing said masking layer and selectively removing, with the use of said etchant, the untreated polycrystalline semiconductor material to leave a narrow strip of material present on and raised above the substrate, and effecting a deposition of conductive material on the upper surface of said strip of material and on said substrate at least at opposite sides of said strip, said conductive material being deposited in a thickness less than the height of



said strip above the substrate and a discontinuity in said deposited conductive material being formed at said strip.

4,083,099

MANUFACTURE OF A TWISTED NEMATIC FIELD EFFECT MODE LIQUID CRYSTAL DISPLAY CELL

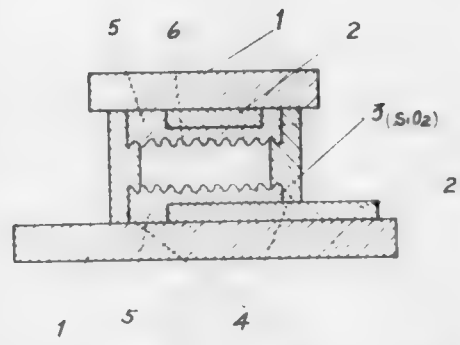
Kozo Yano, Tenri; Hiroshi Kuwagaki, Kyoto, and Sadatoshi Takechi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Mar. 31, 1976, Ser. No. 672,505

Claims priority, application Japan, Mar. 31, 1975, 50-39471

Int. Cl.[2] H01S *4/00;* G02F *1/13*

U.S. Cl. 29—592 R **4 Claims**



1. A method for fabricating a twisted nematic field effect mode liquid crystal display cell comprising the steps of:

a. providing two glass substrates each having a major surface thereon;

b. forming electrode patterns on the major surfaces of the respective glass substrates;

c. coating each of the major surfaces of the glass substrate with a transparent insulator film made of silicone dioxide which resists absorption of organic elements therein;

d. rubbing the surface of each of the transparent insulating films to form micro-grooves aligned in a predetermined direction;

e. depositing glass frit on at least one of said glass substrates in surrounding relationship to said insulating film thereon;

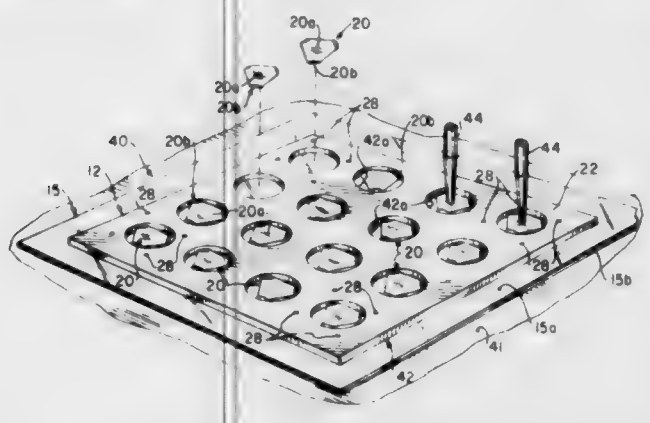
f. securing the other glass substrate to said glass frit in spaced relationship to said at least one glass substrate by means of a glass paste and the application of heat, said glass paste being of a composition which emits organic elements when said heat is applied thereto; and

g. filling a liquid crystal composition between said two glass substrates.

4,083,100
METHOD OF MANUFACTURING A KEYBOARD ASSEMBLY

John E. Flint, Herkimer, and Stephen E. Dudek, Clayville, both of N.Y., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Jan. 24, 1977, Ser. No. 761,925
Int. Cl.[2] H01H *11/00*
U.S. Cl. 29—622 21 Claims



1. A method of manufacturing a keyswitch system having an insulative board and a plurality of switches in a predefined arrangement on one face of the board, each switch comprising a pair of spaced contacts on the board face and a resilient, electrically conductive actuating member, overlying said contacts in registry therewith and selectively operable to be deformed for providing an electrical circuit between said contacts, said method comprising the steps of:

adhering a portion of each of said actuating members, in said predefined arrangement, on a sheet of flexible insulative material to form an assembly sheet, said adhering step being performed with the aid of a planar template having a plurality of apertures therein positioned in said predefined arrangement, each of said apertures being dimensioned to receive one of said actuating members, said adhering step further comprising the steps of:

placing said template in engagement with a surface of said sheet of flexible insulative material while resting the other surface of said sheet against a substantially flat surface;

inserting an actuating member through each of said apertures of said template to contact said sheet of flexible insulative material so that said actuating members are oriented in said predefined arrangement on said sheet; and

bonding each of said actuating members to said sheet of insulative material at a point of contact therewith;

positioning said assembly sheet on said circuit board with each of said actuating members facing said one board face and positioned to be opposingly aligned with its respective contacts; and

securing said assembly sheet to said one face of said circuit board so that each of said actuating members is retained on said circuit board in opposed alignment with its respective contacts, thereby sealing said members to said circuit board.

4,083,101
TOOL FOR INSTALLING INDIVIDUAL PINS IN PRINTED CIRCUIT BOARD

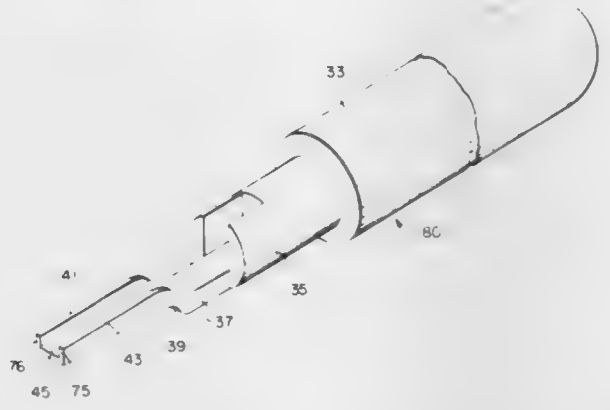
James Ray Coller, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 27, 1976, Ser. No. 754,307
Int. Cl.[2] H05K *3/30*
U.S. Cl. 29—739 2 Claims

1. A tool for forcing an elongated electrical contact pin into an aperture in a printed circuit board through the upper end of a housing mounted on said board,

said tool comprising an elongated member provided with a channel portion at one end, a handle portion at the opposite end and an intermediate shaft portion which is wider than the channel portion,

said pin having a first section of dimensions to be frictionally retained within said aperture, a second section providing oppositely extending shoulders and a flat spring-like section substantially the width of the channel in the tool,

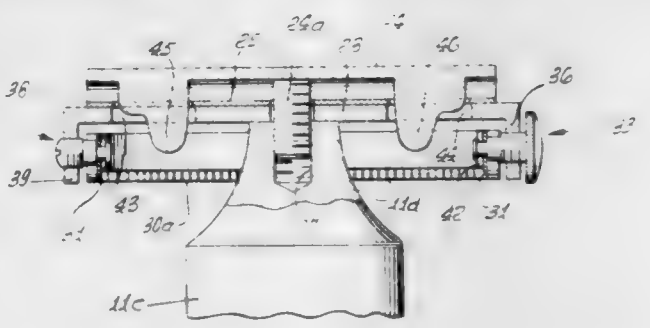


the distance between the free end of the channel and the most adjacent part of the shaft being such that the widened end of the shaft abuts the top edge of the housing when the springlike sections of the pin lies within the channel of the tool, the free end of the channel abuts the shoulders on the pin and said first section of the pin is nested within the aperture.

4,083,102
VIBRATORY RAZOR WITH ADJUSTABLE GUARDS

Russell P. Harshberger, P.O. Box 601, Pasadena, Calif. 91102

Filed Dec. 10, 1976, Ser. No. 749,377
Int. Cl.[2] B26B *21/38*
U.S. Cl. 30—45 15 Claims



15. In a battery operated razor, the combination comprising

(a) a handle in the form of a stem, a battery in the stem, a battery operated motor in the stem, and means displaceable by the motor in the stem in response to battery energization of the motor to produce vibration, and

(b) a blade receiving head assembly removably attached to the stem, the assembly including a blade guard yieldably supported for limited displacement relative to the blade and stem, whereby the blade is vibrated relative to the guard when the guard is urged against a user's skin and the motor is energized,

(c) the head assembly including spring structure carrying the blade guard for said limited displacement, and adjustable means attached to said spring structure to adjustably shift the position of the guard relative to the blade and stem.

4,083,103

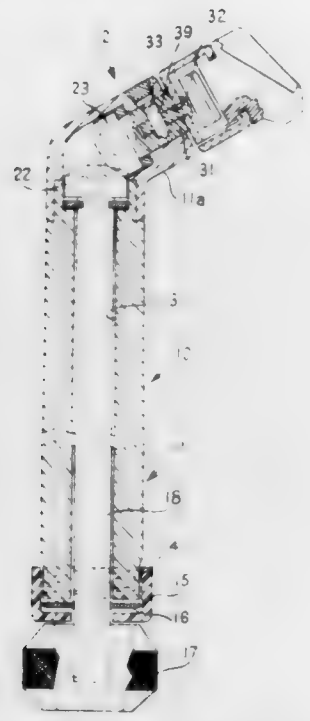
ADJUSTABLE SAFETY RAZOR

Ramon D. Estandian, 3922-18th St., San Francisco, Calif. 94114

Continuation-in-part of Ser. No. 614,792, Sep. 19, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,894

Int. Cl.[2] B26B *21/06, 21/52*

U.S. Cl. 30—47 **1 Claim**



1. A safety razor comprising a tubular handle having an upper end and a lower end, a first shaft disposed within the handle, an operating member at the lower end of the handle for rotating the first shaft, a head portion adapted to hold a blade, a second shaft affixed to the head, a first gear affixed to the first shaft at its upper end, a second gear meshing with the first gear and affixed to the second shaft at its end remote from the head and means at the lower end of the shaft above the operating member for locking the gears at a desired setting, said means comprising a disc affixed to the first shaft slightly below the lower end of the tubular handle, a screw ring enclosing the disc and a threaded portion of the lower end of the handle, such that when the screw ring is tightened its lower surface will abut the disc and urge the first shaft upwardly to lock the gears at a desired setting.

4,083,104

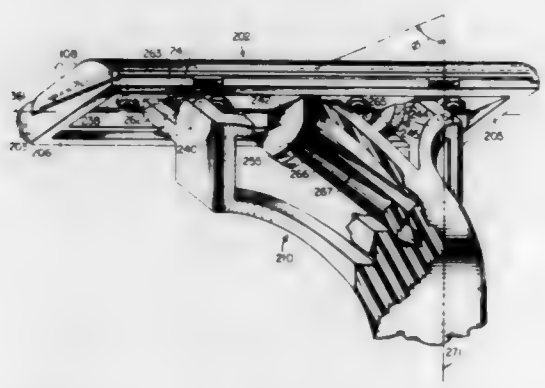
RAZOR HANDLE

Warren I. Nissen, Topsfield, and Roger L. Perry, Lynnfield, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed May 12, 1975, Ser. No. 576,254

Int. Cl.[2] B26B *21/22*

U.S. Cl. 30—47 **7 Claims**



1. A razor handle for a razor blade assembly adapted to be movably mounted on said handle and having cam means thereon for receiving a biasing force, said razor handle comprising:

journal means disposed on movable arm portions of said razor handle, said arm portions being pivotally movable toward and away from each other to permit said journal means to engage and disengage said razor blade assembly; and

cam follower means projecting from an opening in said handle and moving reciprocally through said opening in response to a force applied to a free end thereof by movement of said razor blade assembly, whereby to exert a yieldable biasing force on said razor blade assembly.

4,083,105

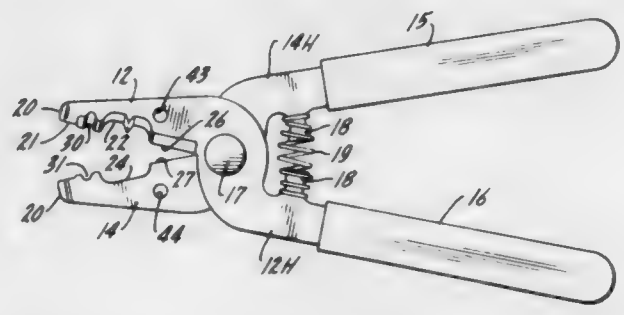
WIRE STRIPPERS

Clyde M. ViPond, Waterman, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Sep. 5, 1975, Ser. No. 610,536

Int. Cl.[2] H02G *1/12;* **B21F** *13/00*

U.S. Cl. 30—90.4 **1 Claim**



1. A tool for separating the outer non-metallic sheath from an electrical cable, to expose the interior core wires for stripping, and comprising:

a pair of opposed blade members articulated at a pivot for closing and opening movement relative to the cable located therebetween;

said blade members respectively presenting opposed recesses having spaced ends for encompassing the cable in the closed position of the blade members;

and a single piercing barb, presented by the tool and formed integrally thereon, said barb being located in one of the recesses only and projecting therefrom in the direction of the opposed recess, which pierces the cable sheath on closing the blades and then slits the cable sheath as an incident to subsequent longitudinal displacement between the tool and cable, said piercing barb being off-center compared to the lateral span of the recess and said recess ends being so spaced that cables of different width may be positioned in contact with one or the other of the recess ends, which ever gives the better purchase of the barb into the sheath, and to be guided thereby, said piercing barb being shaped to combine both a piercing point and a knife edge, said edge being sloped in the direction of one side face of the related blade member and only the recess in which the knife edge is located having a face sloped substantially parallel to the slope of the knife edge, such that on tilting the tool substantially the entire barb may penetrate the sheath and thereafter, during displacement between the tool and cable, the sloped face glides in a guiding-relation on the encompassed cable.

4,083,106

ADJUSTABLE POLYETHYLENE PIPE OUTSIDE BEAD REMOVER

Arthur H. McElroy, 5619 E. Independence, Tulsa, Okla. 74115

Filed Nov. 15, 1976, Ser. No. 741,559

Int. Cl.[2] B26B *3/00*

U.S. Cl. 30—280 **3 Claims**

1. Apparatus for removing the external bead from a joint

formed by the fusion joining of two polyolefin pipes, comprising:

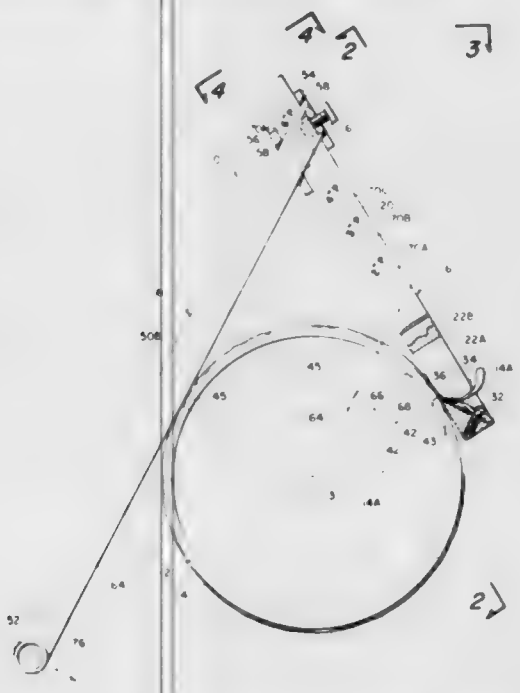
(a) a first arm comprising

two substantially parallel members spaced apart a distance wider than said bead and each having an inner surface to rest against the outer surface of said pipes;

means at a first end to support a cutting blade between said members at a selected angle to said inner surface, said blade having a cutting edge flush with said inner surface;

(b) a second arm having

two substantially parallel members spaced apart a distance



wider than said bead and each having an inner surface to rest against said outer surface of said pipes;

means at one end to receive and retain the second end of said first arm at a selected angle less than 90°, and position depending upon the size of said pipes;

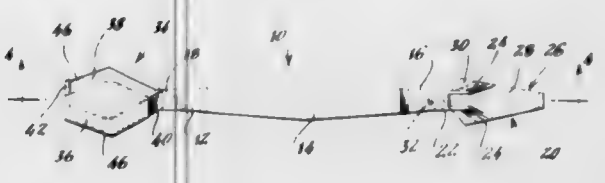
whereby said inner surfaces of said first and second arms tangentially contact said outer surface of said pipes, straddling said bead, and rotated about said pipes in the direction toward the cutting blade, said blade will be pressed into the bead and will slit off the bead flush with said pipe outer surface as it moves along the circumference of the joint.

4,083,107

CITRUS PEELING KNIFE

James Kuka, P.O. Box 971, Reno, Nev. 89504

Filed Apr. 5, 1977, Ser. No. 784,924
Int. Cl.² A47J *17/04*
U.S. Cl. 30—123.7 **4 Claims**



1. A knife for peeling the rinds from citrus-type fruits comprising:

an elongated handle; and

first cutting means disposed on one end of said elongated handle, said cutting means providing a first blade including

a shank portion fixedly secured on one end thereof to said one end of said elongated handle,

a cutting portion disposed in a different plane than said shank, said cutting portion having sharpened edges, and

a plurality of arms, each of said arms fixedly secured on one end thereof to the other end of said shank portion, the other end of each of said arms fixedly secured to said cutting portion adjacent the edges thereof,

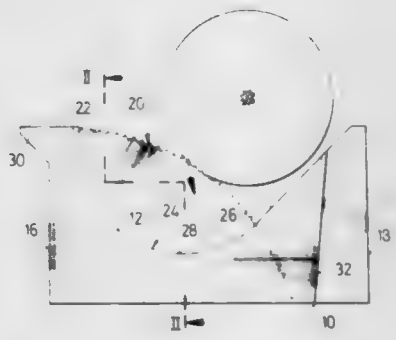
wherein substantially two-thirds of said cutting portion is rounded in to a semi-oblongitudinal shape, the other third of said cutting surface being triangular in shape.

4,083,108

DEVICE FOR HALVING FRUIT

Peter Ackeret, Kusnacht, Switzerland, assignor to Ackeret Design Studios, Ebmatingen, Switzerland

Filed Oct. 6, 1976, Ser. No. 730,199
Claims priority, application Germany, Aug. 6, 1976, 2635578
Int. Cl.² B26B *11/00*
U.S. Cl. 30—124 **16 Claims**



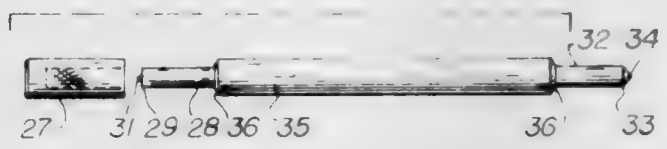
1. A device for halving citrus fruits such as oranges and the like from which the juice is to be extracted, the device comprising a holder having a bottom member adapted to rest upon a supporting surface, the holder having upstanding walls around the periphery of the bottom member, said walls including two upright end walls opposite each other and two side walls opposite each other and adjoining the end walls, an upright blade between the side walls and having an upper cutting edge, the blade being supported on the bottom member and widely spaced from the side walls and the blade being connected to at least one of the end walls, the side walls having upper edges with enlarged fruit-receiving recesses therein such that the edge of the blade and the adjacent portions of the upper edges of the wall extend transversely of each other, the lowermost portions of the upper edges of the side walls in said recesses being spaced significantly below the cutting edge of the blade by a distance nearly as great as the diameter of the citrus fruit so that the blade can penetrate into and halve the piece of fruit as the fruit is thrust downwardly with limited rotation, and said lowermost portions of the upper edges of the side walls also being widely spaced outwardly of the blade and also spaced above the bottom member whereby the piece of fruit to be halved may be held during the entire halving process with both hands and without changing hands.

4,083,109

CENTER PUNCH GUIDE AND PUNCHES

Douglas M. Homs, Hillsborough, Calif.

Filed Feb. 4, 1977, Ser. No. 765,593
Int. Cl.² B26F *1/32*
U.S. Cl. 30—368 **4 Claims**



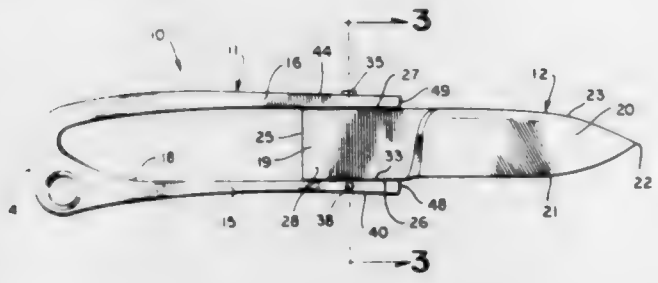
1. A center punch comprising an elongated uniform-diameter shank having shoulders and reduced-diameter pointed portions at either end, and a removable cap which can be placed over either of the reduced-diameter pointed portions with the inside edges of the cap abutting the shoulders, so that the cap can be used as a tapping surface when the opposite end of the punch is used for center punching, said cap having an external diameter equal to that of said shank and an internal

diameter portion slightly greater than said reduced-diameter portions.

4,083,110
FOLDABLE BLADE KNIFE

Jerry H. Goldin, Snellville, and Walter W. Collins, Atlanta, both of Ga., assignors to Collins Knives, Inc., Atlanta, Ga.

Filed May 2, 1977, Ser. No. 792,666
Int. Cl.[2] B26B *1/02*
U.S. Cl. 30—155 **6 Claims**

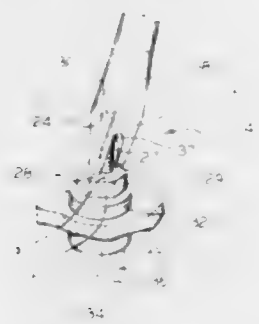


1. A knife comprising an approximately U-shaped handle fabricated from resilient material including a base portion and a pair of arms extending in spaced, approximately parallel relationship with respect to each other from said base portion, a knife blade element formed as a tang at one end and a blade at the other end, said tang positioned between the arms of said handle at the ends of said arms away from the base portion of said handle, a pivot pin extending through the arms of said handle and through the tang of said blade element, said pivot pin being located approximately equidistant from the butt of the tang and the ends of the arms, the base portion and pair of arms of said handle defining an opening sized shaped to approximately correspond to the size and shape of said blade element, at least one edge surface of said tang and the facing surface of an arm of said handle being formed in interfitting convex-concave shapes when the blade is located in the opening of the handle or when the blade extends out coextensively from the handle, whereby the interfitting convex-concave shapes of the tang and handle and the resiliency of the handle tend to hold the blade folded into the handle or to hold the blade extending out coextensively from the handle and whereby the butt of the tang is approximately coextensive with the ends of the arms of the handle when the blade is folded into the handle.

4,083,111
NUT CUTTER

Harry A. Kerins, Wheaton, Ill., assignor to H and W Tool Sales, West Chicago, Ill.

Continuation of Ser. No. 658,361, Feb. 17, 1976, abandoned.
This application May 5, 1977, Ser. No. 793,847
Int. Cl.[2] B26B *3/00*
U.S. Cl. 30—168 **4 Claims**



1. A nut cutter for removing nuts frozen to threaded fasteners, said nut cutter comprising:

a. an elongated shaft defining a main body for receiving and transmitting force to a pair of tines;

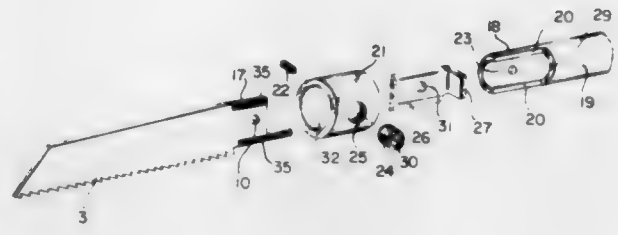
b. a pair of tines extending from said elongated shaft, said tines having end sharpened cutting edges in alignment with one another, and perpendicular to the longitudinal axis of said shaft, and

c. a central notch extending from between said tines toward said shaft, a portion of said notch adjacent said tines having a width greater than that of said threaded fastener for extending about said threaded fastener and permitting said tines to engage the surface of said nut on opposite sides of said fastener, said notch terminating in a blunt curved section; said shaft having a concavely curved surface extending from said curved section, and being outwardly inclined in the direction of said shaft, the width of said surface gradually diminishing to a tapered point in the direction of the shaft for resting against said threaded fastener and for obliquely guiding said tines into said nut.

4,083,112
CLAMP ARRANGEMENT FOR CLAMPING SAW BLADES TO THE BLADE HOLDER OF A POWER DRIVEN SAW

Bernhard Palm, Fallston, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Dec. 6, 1976, Ser. No. 747,906
Int. Cl.[2] B26B *1/00*
U.S. Cl. 30—335 **21 Claims**



1. A clamp arrangement for clamping blades to the blade holder of a power driven saw comprising:

surface means formed on the end portion of the blade holder of the power driven saw for receiving the saw blade thereon;

collar means surrounding said end portion of the blade holder and the saw blade; and,

securing means engaging said collar for pressing the saw blade and said end portion against the inside wall surface of said collar thereby pressing the blade tightly between said securing means and said surface means; said securing means being an annular member defining a clear passage therethrough for facilitating access to the shank portion of the saw blade held between said securing means and said surface means whereby said shank portion can be easily removed from between said securing means and said surface means with aid of an instrument passed through said clear passage in the event the saw blade should break off at the shank.

4,083,113
BRAZING PROCESS FOR ORTHODONTIC ASSEMBLIES

Frank R. Miller, 1126 Fairview Ave., Apt. 105, Arcadia, Calif. 91006, and Craig A. Andreiko, 517 N. Holliston, Pasadena, Calif. 91106

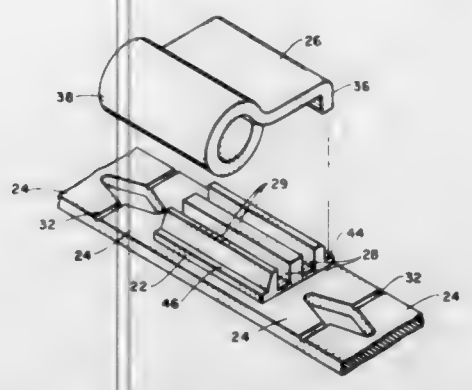
Division of Ser. No. 568,962, Apr. 17, 1975, Pat. No. 3,985,282.
This application Jul. 16, 1976, Ser. No. 706,037
Int. Cl.[2] A61C *7/00*
U.S. Cl. 32—14 A **2 Claims**

1. An orthodontic assembly comprising:

base means having a plurality of upright webs forming at least one channel;

a cap resting on and secured to the top of said webs for enclosing said one or more channels;

said cap terminating on one side in a cylindrical tube and on the other side in a downwardly extending flange;



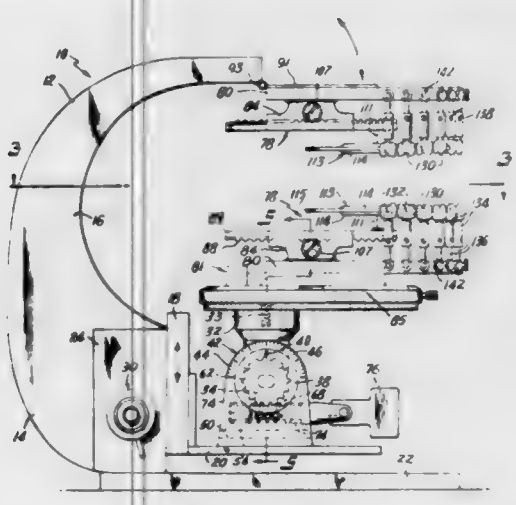
said tube and said flange forming with said webs a cavity for retaining brazing material whereby said assembly may be furnace brazed.

4,083,114

DENTAL ARTICULATOR FOR DETERMINING X, Y, AND Z DISPLACEMENT OF SEPARATE TEETH

Raul Acevedo, Obi No. 144, Rio Piedras Heights, Rio Piedras, P.R. 00926

Division of Ser. No. 543,773, Jan. 24, 1975, Pat. No. 3,983,628. This application Feb. 20, 1976, Ser. No. 659,910
Int. Cl.[2] A61C *11/00*
U.S. Cl. 32—32 **8 Claims**



1. A dental articulator for use with an orthodontic bite registration template which establishes the position of models of each of the individual teeth of the upper and lower teeth of a patient thereby determining the inner lingual conformation of these teeth, said articulator comprising:

a base;

a hinged C-shaped handle projecting from said base having an interior horizontal curved portion from which models of the upper teeth are suspended by means of adjustable vertical pins attached separately to each model;

upper first rack and pinion means mounted on said handle below said suspended teeth model on which the bite registration template is mounted, said first rack and pinion means of said registration template providing horizontal movement in a lateral direction defining the X axis;

second rack and pinion means mounted on said handle providing horizontal movement perpendicular to the X axis of said registration template along the Y axis;

a table support on said base in alignment with said C-shaped handle;

a horizontal rotary stage having a circular periphery mounted on said table provided with an index about the circular periphery for measuring angular displacements of lower teeth models supported on said stage relative to the bite registration template for the models of the lower teeth;

tilting means including a worm gear assembly mounted on said base connected to said rotary table to tilt the table upwardly or downwardly;

a post on said rotary stage for fixing the position of said aforementioned bite registration template relative to models of the lower teeth;

lower first rack and pinion means for mounting models of the lower teeth of the patient on pins which permit limited movement of each separate tooth, said means providing lateral horizontal movement of the teeth in the X direction; and

lower second rack and pinion means operatively connected to said models for moving them perpendicularly and horizontally in the Y direction.

4,083,115

DENTAL SALIVA EJECTOR

Thomas H. McKelvey, 645 First St., Suite E, Macon, Ga. 31201

Filed Mar. 15, 1976, Ser. No. 666,588
Int. Cl.[2] A61C *17/04*
U.S. Cl. 32—33 **5 Claims**



1. In a dental saliva ejector, the combination of

an ejector tube having an inlet end to be placed in the patient's mouth and an outlet end portion spaced from said inlet end,

at least said outlet end portion being of a resiliently deformable polymeric material;

a male tubular connector member comprising

a first portion of larger outer transverse dimension adapted to be connected to a conduit to communicate with a source of reduced pressure, and

a shank projecting axially from said first portion;

said shank being provided with an outwardly opening transverse annular first groove at the end of said shank adjacent said first portion, an outer surface portion which tapers inwardly from said first groove toward the tip of the shank, a transverse end face and an axial through bore which opens through said end face;

a tubular female connector member comprising

a body portion having an axial through bore with a transverse dimension slightly smaller than the outer diameter of said outlet end portion of the ejector tube, said throughbore being interrupted by a transverse annular second groove, and

a sleeve portion extending from one end of said body portion and terminating in a transverse annular inwardly directed flange dimensioned to engage in said first groove,

said first groove and said flange being circular, whereby said male and female connector members can be rotated relative to each other;

said outlet end portion of the ejector tube extending through the axial through bore of said body portion in force-fit relation such that the material of said outlet end portion is inwardly compressed by the wall of the axial through bore; and

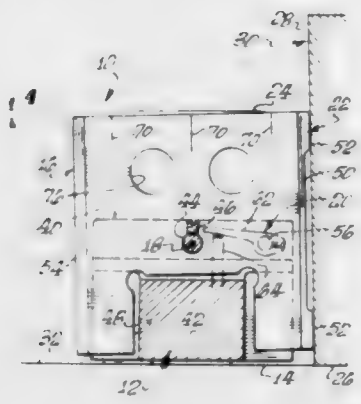
a sealing ring disposed in said second groove and providing a fluid-tight seal between said body portion of said female connector and said ejector tube.

4,083,116

TRANSFER GAGE

Raymond E. Dillberg, 8916 Longden Ave., Temple City, Calif. 91780

Filed Mar. 22, 1976, Ser. No. 669,225
Int. Cl.[2] G01B *3/56*
U.S. Cl. 33—174 M **2 Claims**



1. A transfer gage comprising:

a base member having a planar base surface and a slot entering the upper side of said base member in a plane normal to said base surface,

a flat rectangular gage plate disposed in said slot with the lower plate edge entering said slot and with said plate projecting edgewise above said base member and beyond at least one side of said base member,

means pivotally mounting said gage plate on said base member on a pivot axis normal to the plate and parallel to said base surface,

said base having a limit stop formation entering a recess in said lower gage plate edge to limit pivotal movement to said gage plate,

said gage plate having a top gaging edge disposed above said base and a side work engaging edge perpendicular to said top edge and disposed beyond said one side of said base, said side edge having a recess between its ends, and

means for releasably locking said gage plate to said base member in fixed angular position about said pivot axis, said locking means comprising a lock screw threaded in said base member for locking engagement against said gage plate, a spring for urging said screw to locking position, and a handle on said lock screw for releasing said screw against the action of said spring.

4,083,117

ALL ANGLE BOREHOLE TOOL

Anthony William Russell, and Michael King Russell, both of Cheltenham, England, assignors to Sperry-Sun, Inc., Sugar Land, Tex.

Filed Sep. 24, 1976, Ser. No. 726,199
Int. Cl.[2] G01C *9/02*
U.S. Cl. 33—313 **6 Claims**

1. An apparatus for measuring the inclination and high side angle of a borehole, comprising:

a cylindrical case for positioning in the borehole;

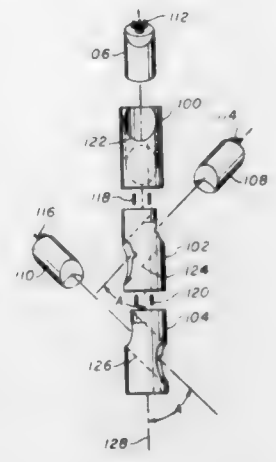
a first cylindrical frame longitudinally positioned in said case and having a bore through the side thereof;

a first gravity transducer positioned in the bore of said first frame;

a second cylindrical frame longitudinally positioned in said case atop said first frame and having a bore through the side thereof, said second frame being rotated about its elongate axis such that the axis of the bore is displaced from the axis of the bore in said first frame;

a second gravity transducer positioned in the bore of said second frame;

a third cylindrical frame longitudinally positioned in said case atop said second frame and having a bore through the side thereof, said third frame being rotated about its elongate axis such that the axis of the bore is displaced from the axes of the bores in said first and second frames;



a third gravity transducer positioned in the bore of said third frame; and

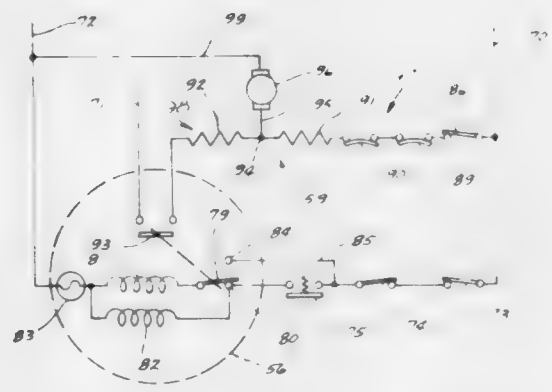
means for holding each of said frames in fixed relationship to each other.

4,083,118

TIME-AND-TEMPERATURE DRYER CONTROL

Curran D. Cotton, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Sep. 7, 1976, Ser. No. 720,693
Int. Cl.[2] F26B *19/00*
U.S. Cl. 34—53 **8 Claims**



1. A fabric drying apparatus having a drying chamber and comprising: means operable for effecting drying of fabrics in said drying chamber and including an electric heating circuit; three-wire power supply means including first and second power lines and a neutral line, said heating circuit being connected across said first and second power lines and including an electric heating element having an intermediate electrical tap effectively dividing said heating circuit into first and second heater legs extending from said intermediate tap to said first and second power lines respectively; temperature sensing means effectively responsive to the temperature in said drying chamber and comprising a switch in said first heater leg operable to a nonconductive condition at a predetermined temperature for opening said first heater leg to deenergize said heating circuit; sequential control means including an electric timer motor and operable for energizing and controlling operation of said fabric drying apparatus; and timer motor circuit means for electrically connecting said timer motor between said neutral line and said intermediate tap, said timer motor having a starting voltage exceeding the voltage drop thereacross when said heating circuit is energized whereby said timer motor is not

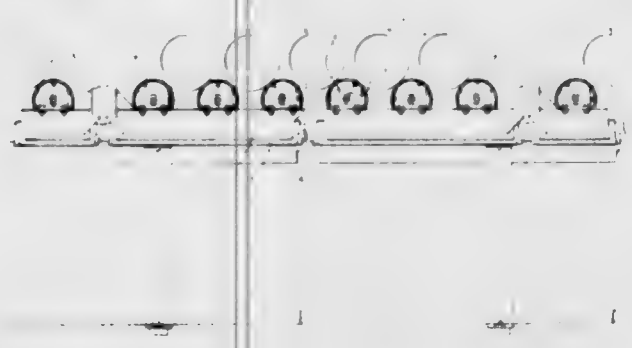
energized when said heating circuit is energized, said starting voltage being less than the voltage drop across said timer motor when said first heater leg is open whereby said timer motor is energized through said timer motor circuit means and said second heater leg when said heating circuit is deenergized, said sequential control means being operable to an off condition for deenergizing said fabric drying apparatus after a period of timer motor energization.

4,083,119

ROLLER DRYER FOR CLAY PIPE

Stephen B. Yacura, Glenshaw, Pa., assignor to Pullman Incorporated, Pullman Swindell Division, Pittsburgh, Pa.

Filed Jan. 30, 1976, Ser. No. 653,769
Int. Cl.[2] F26B *25/00*
U.S. Cl. 34—105 **5 Claims**



1. In a tunnel dryer having a plurality of rails extending therethrough, the improvement which comprises:

(a) a rectilinear frame which extends transversely across at least some of said rails, a plurality of roll mounting positions along opposite sides thereof extending parallel to said rails,

(b) a plurality of opposed roll support means,

(c) a plurality of roll members extending between opposed roll support means while resting upon at least some of the rails, and

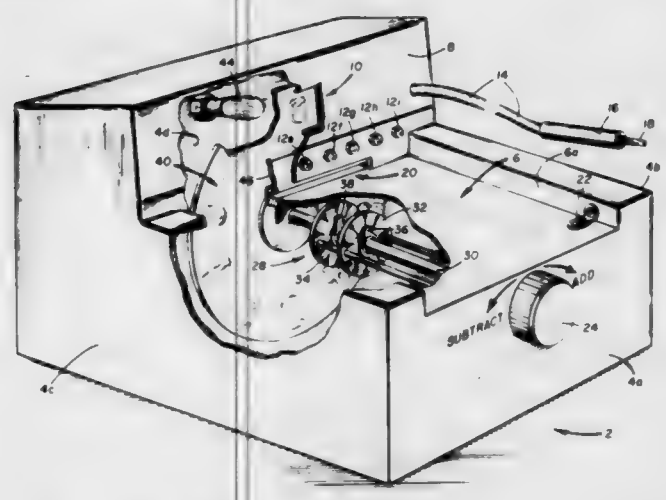
(d) means selectively positioning said opposed roll support means at selected roll mounting positions whereby the distance between said roll member may be varied.

4,083,120

ELECTRONIC DEVICE FOR USE AS A TEACHING AID

Timothy T. Brendle, Rte. 4, Box 360, Spotsylvania, Va. 22553

Filed Sep. 24, 1976, Ser. No. 726,103
Int. Cl.[2] G09B *5/00, 7/06*
U.S. Cl. 35—9 B **11 Claims**



11. A teaching device, comprising:

a base member having a planar surface portion on which a program card may be mounted;

at least one read-out opening formed in said base member;

switch means mounted on said base member and having a set of switch contacts mounted coaxially with a rotatable shaft, and a wiper mounted on said shaft for rotation therewith, said wiper engaging said set of switch contacts;

a display member mounted on said shaft for rotation therewith, said display member bearing indicia which are selectively aligned with said read-out opening upon rotation of said shaft;

an indicator light source mounted rearwardly of said display member for illuminating said indicia aligned with said read-out opening;

a plurality of count indicating members mounted to a front-facing portion of said base member, said plurality of count indicating members being connected in common to an electrical source and individually connected to respective ones of said set of switch contacts; and

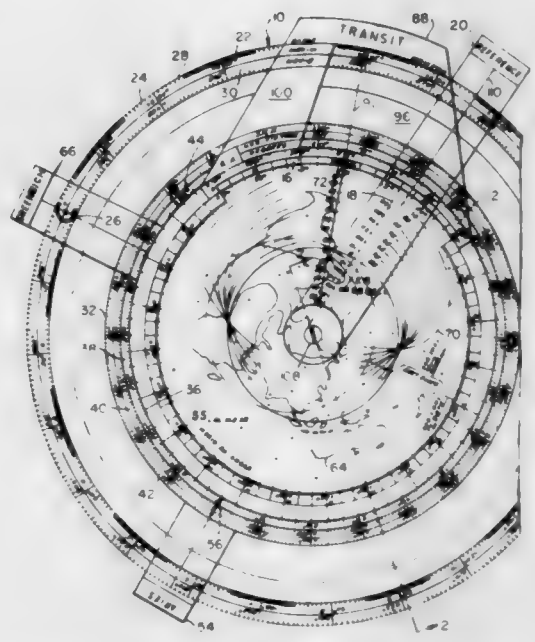
an electrical socket located in said base member for receiving a cooperating electrical terminal portion of a program card mounted on said base member, said electrical socket including a first set of terminals to each of which is electrically connected a corresponding one of said set of switch contacts, a third set of terminals equal in number to said first set of terminals and between each two of which is connected one of a plurality of series-connected diodes, a fourth terminal to which said wiper is electrically connected, a fifth terminal electrically connected to ground and a sixth terminal electrically connected to one terminal of said indicator light source, said indicator light service having a second terminal electrically connected to said electrical source.

4,083,121

UNIVERSAL PLANISPHERE, SIGHT REDUCTION FINDER AND IDENTIFIER, GUIDANCE AND COMPUTER SYSTEM

William A. Eisenhauer, Van Wert, Ohio, assignor to The Eisenhauer Manufacturing Company, Van Wert, Ohio

Continuation-in-part of Ser. No. 538,579, Jan. 6, 1975, Pat. No. 4,012,851, which is a division of Ser. No. 268,646, Jul. 3, 1972, Pat. No. 3,858,334, which is a continuation-in-part of Ser. No. 500, Jan. 5, 1970, Pat. No. 3,673,710, which is a continuation of Ser. No. 600,920, Dec. 12, 1966, abandoned, which is a continuation-in-part of Ser. No. 369,598, May 25, 1964, Pat. No. 3,290,799, which is a continuation-in-part of Ser. No. 271,658, Apr. 9, 1963, Pat. No. 3,251,143, which is a continuation-in-part of Ser. No. 851,648, Nov. 9, 1959, Pat. No. 3,088,228. This application Mar. 21, 1977, Ser. No. 779,505
Int. Cl.[2] G09B *29/00*
U.S. Cl. 35—44 **10 Claims**



1. Planisphere computer structure comprising a central navigation west and navigation east dial having a zero Greenwich indication thereon and navigation west and navigation

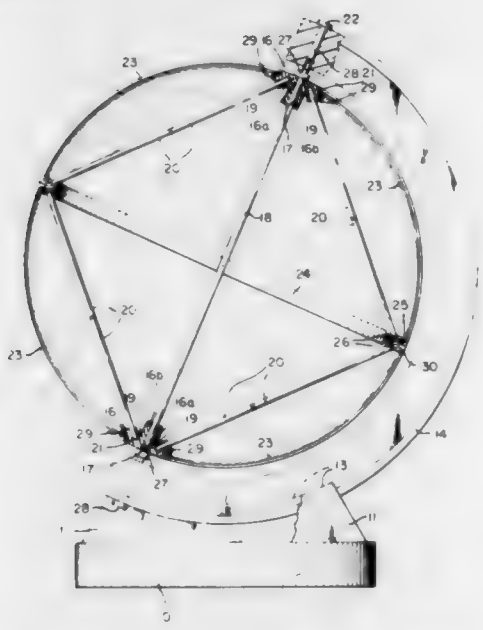
east scales about the outer periphery thereof proceeding 360° clockwise and counterclockwise from the zero Greenwich indication, a sky map dial on at least one side of the navigation west and navigation east dial and concentric therewith having a ground position sky map thereon and a first point of Aries zero indication thereon and circumferential sidereal hour angle and right ascension sidereal time and degree scales thereon proceeding respectively in a clockwise direction from zero to 360°, in a counterclockwise direction from zero to 24 hours, and from zero to 360°, which scales are radially inwardly of the navigation west and navigation east scales of the navigation west and navigation east dial, a Greenwich dial concentric with the navigation west and east dial and sky map dial and positioned over the sky map dial on the other side thereof from the navigation west and east dial radially within the sidereal hour angle and right ascension scales on the sky map dial, which Greenwich dial is transparent and has thereon a ground position azimuthal equidistant polar map, a concentric transit indicator dial positioned over the Greenwich dial which is transparent and includes horizon lines for different latitudes thereon and which has peripheral, circumferentially extending meridian angle and meridian time scales thereon reading both clockwise and counterclockwise from one to 180° and from 0 to 12 hours in each direction over 180° respectively, an Aries indicator extending radially outwardly from the sky map dial at the first point of Aries, a Greenwich indicator extending radially outwardly from the Greenwich meridian on the Greenwich dial, a transit scale indicator extending radially outwardly from the sky mask dial including transparent and translucent portions with the transparent portions extending over more than one-half of the circumferential extent of the transit scale indicator, a reference indicator extending radially outwardly from the center of the concentric dials having a reference line thereon, and pivot means extending through each of the dials centrally thereof and through the inner end of the reference indicator for permitting relative rotation of each of the dials about the pivot means and permitting rotation of the reference rule about the inner end thereof.

4,083,122

WORLD GLOBE WHICH CAN BE ASSEMBLED OR DISASSEMBLED

Don W. Denney, 19215 Marine View Cir. SW., Seattle, Wash. 98166

Filed Mar. 14, 1977, Ser. No. 777,403
Int. Cl.² G09B *27/08*
U.S. Cl. 35—46 A **5 Claims**



1. A globe which can be repeatedly assembled and disassembled comprising:

a C-shaped arc,

a base having a mounting portion thereon adapted to slidably receive and support the C-shaped arc,

members representing the polar caps of the globe pivotally supported for rotation to the respective terminating ends of the C-shaped arc, each of the polar cap members having a central bore therein coaxial with the axis of the polar cap member and spaced sockets to receive one end of a series of bracing rods, the spaced sockets extending from the polar cap member at an angle with respect to the axis of the polar cap member,

an axis rod extending between the opposed polar cap members and through the respective central bores thereof for securing the polar cap members to the C-shaped arc,

a ring representing the equator of the globe having spaced sockets therein to receive the respective other ends of the series of spaced bracing rods,

a series of bracing rods, each rod supported at one end in the socket of one of the polar cap members and at the other end in the opposed socket of the equatorial ring, and

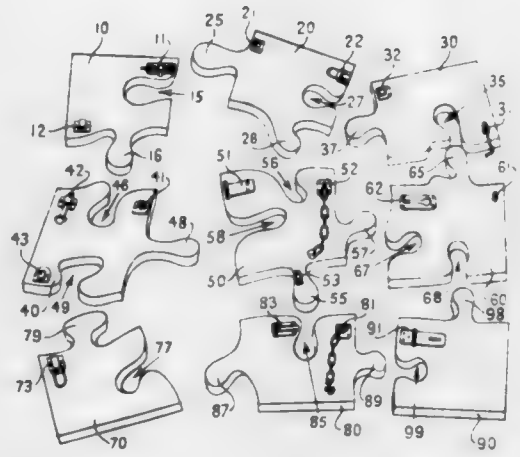
a series of semi-rigid, arcuate, triangular-shaped gore segments of a sphere, each segment adapted to be held under tension between one of the polar cap members and the equatorial ring, the tension holding the gore segment in place.

4,083,123

JIGSAW PUZZLE WITH EXTRA INTERLOCK

Cynthia S. Livermore, 398 Walsh Rd., Atherton, Calif. 94025

Filed Mar. 21, 1977, Ser. No. 779,317
Int. Cl.² A63F *9/10*
U.S. Cl. 35—73 **4 Claims**



1. A teaching aid comprising: a jigsaw puzzle comprising a plurality of interlocking parts; at least one part of a multiple part element attached to each jigsaw puzzle piece; a second part of each such element attached to a different jigsaw puzzle piece in such manner that the two parts of the same element match, and interconnect with one another when the jigsaw puzzle pieces are in proper relationship to one another and not in any other position.

4,083,124

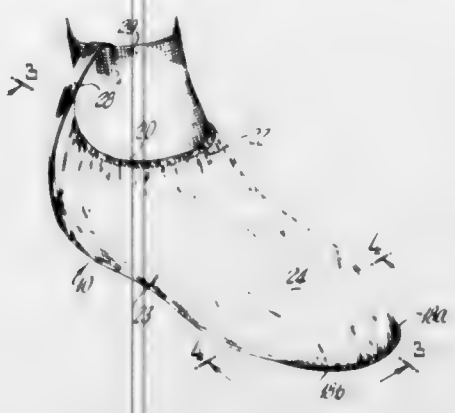
PROTECTIVE SHOE COVERINGS

Sylvia S. Michalak, South River, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 29, 1976, Ser. No. 709,825
Int. Cl.² A43B *3/16*
U.S. Cl. 36—7.1 R **9 Claims**

1. A boot for covering a shoe and the lower leg of a wearer comprising: a shoe-shaped lower section of flexible material having a foot-receiving opening therein; an upper section of flexible material joined to said lower section substantially around the opening thereof and extending in an upward direction from said opening to form a covering for encircling the lower leg of the wearer, said upper extending section including two opposing wrappable flap segments of said flexible material, each of said flap segments having an inside surface and an

outside surface; and adhesvie means located on the inside surface of at least one of said flaps whereby when used, the flap



with said adhesive means thereon is wrapped around the leg or trousers of the wearer and adhesively fastened thereto.

4,083,125

OUTER SOLE FOR SHOE ESPECIALLY SPORT SHOES AS WELL AS SHOES PROVIDED WITH SUCH OUTER SOLE

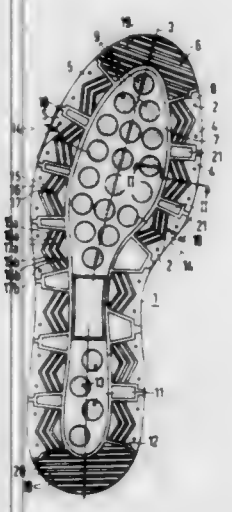
Hans Benseler, Harkenbleck-Hannover, and Horst Schaefer, Bad Windsheim, both of Germany, assignors to PUMA-Sportschuhfabriken Rudolf Dassler KG, Germany

Filed Jun. 8, 1976, Ser. No. 693,956

Claims priority, application Germany, Jun. 9, 1975, 2525613; Jun. 9, 1975, 2525615; Jun. 9, 1975, 2525665

Int. Cl.[2] A43B *13/0*

U.S. Cl. 36—32 R **40 Claims**



1. A profiled outer sole for shoes made of a material having rubber-elastic properties, and provided with profiled projection means arranged along lateral sole edges, characterized in that the profiled projection means laterally delimit a tread surface of the outer sole, each of the profiled projection means are provided with at least two V-shaped slots opening in a direction toward a longitudinal axis of the sole and extending obliquely to a tangential plane at outer boundary surfaces of the individual profiled projection means in a bisecting plane thereof, said at least two V-shaped slots are nested one within the other.

4,083,126

STUDDED BOOTS FOR FIREFIGHTERS

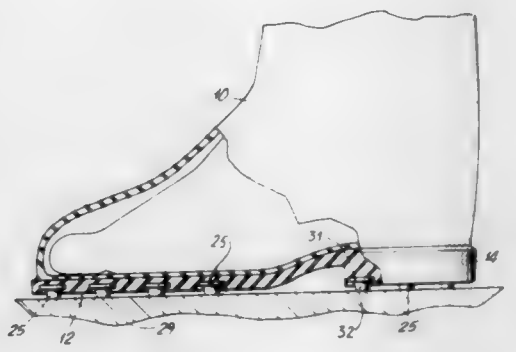
Henri Pelletier, Waltham, Mass., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 30, 1976, Ser. No. 746,072

Int. Cl.[2] A43C *15/00*; B60B *9/00*

U.S. Cl. 36—67 D **1 Claim**

1. A flexible boot, the sole and heel portion of which are fitted with projecting studs, in which the studs are detachably engaged in the boot, and in which an axial blind threaded hole is formed in each stud, with said hole open to the exterior face



of the stud, said hole serving as means to engage a threaded tool for removal of a stud from the boot.

4,083,127

ADJUSTABLE, PRESSURE-COMPENSATING, CUSTOM FITTING PADS HAVING PREDETERMINED AMOUNT OF FITTING MATERIAL AND THEIR USE IN BOOTS

Chris A. Hanson, Boulder, Colo., assignor to Hanson Industries Incorporated, Boulder, Colo.

Filed Mar. 17, 1977, Ser. No. 778,828

Int. Cl.[2] A43B *7/14, 19/00, 5/04*

U.S. Cl. 36—93 **26 Claims**

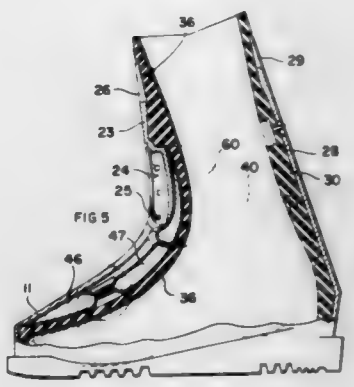


FIG 5

7. In a boot that covers the ankle of the wearer, the improvement comprising

providing in combination with and disposed and positioned in said boot along selected portions thereof, including selected front and side portions, including the ankle, of the foot, an adjustable, removable, pressure-compensating fitting pad having a fitting portion which substantially assumes the shape of selected portions of the foot covered thereby and provides proper, controllable and ready fitting, firm support and comfort to selected portions of the foot, and which comprises

a shaped, flexible, protective enclosure having retained therein a predetermined volume of flowable, pressure-compensating fitting material, which, together, provide an adjustable, pressure-compensating fitting pad,

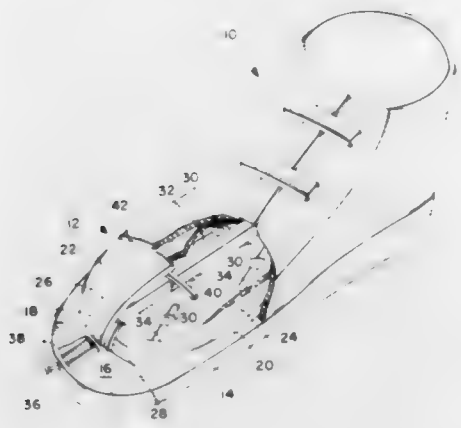
said enclosure being shaped and constructed to provide therein a reservoir section and at least one communicating primary fitting section, to allow confined fitting material in said primary fitting section to flow therein in response and conformance to continuously applied pressure exerted on that section of the fitting pad and the relief of such exerted, flow-producing pressure, and to provide a reservoir section from or to which at least some flowable fitting material may be selectively transferred, as desired, within the enclosure to or from said primary fitting section, and including means for selectively restricting or preventing the flow of flowable fitting material from one section to the other section and maintaining a desired or controllable volume of fitting material in said primary fitting section.

4,083,128

ADJUSTABLE BOOT

Robert A. Rossman, 154 Riveredge Dr., Leola, Pa. 17540

Filed May 25, 1977, Ser. No. 800,404
Int. Cl.[2] A43B *3/26*
U.S. Cl. 36—97 **7 Claims**



1. A width and length adjustable boot for use with skis and skates comprising:

a fixed platform sole, attachable to the equipment used and permanently attached to and protruding forward from the boot at approximately the front edge of the arch;

a sole plate of length from the front edge of the boot to approximately the front of the arch of the boot, split longitudinally into a first half sole plate and a second half sole plate, the first and second halves being moveable relative to each other and each independently slideably attached to said fixed platform sole, at least one of said halves being moveable both laterally and longitudinally relative to the fixed platform sole;

a toe cover split longitudinally forming a first toe cover section attached to the first half sole plate and a second toe cover section attached to the second half sole plate;

weather sealing means sealing the junction between the first and second toe cover sections and between the toe cover sections and the remaining portion of the boot; and

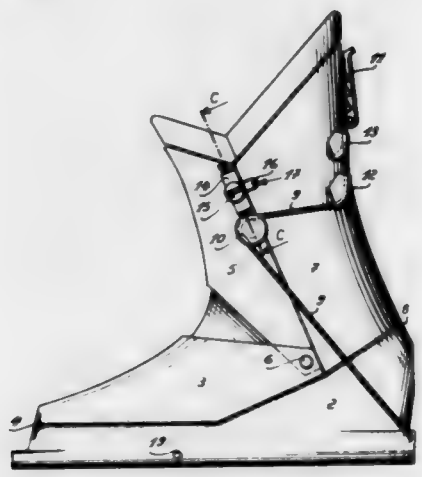
fastening means fixing the first and second half sole plates in particular positions on the fixed platform sole to prevent motion while the boot is in use.

4,083,129

ARTICULATED CASING FOR SKI BOOTS

André Marcel Collombin, Avully, Geneva, Switzerland, and Georges Pierre Joseph Salomon, Bordet a Quintal 74, Haute-Savoie, France

Filed Nov. 28, 1975, Ser. No. 635,593
Claims priority, application Switzerland, Nov. 28, 1974, 15790/74; Nov. 5, 1975, 14248/75
Int. Cl.[2] A43B *5/04*
U.S. Cl. 36—117 **19 Claims**



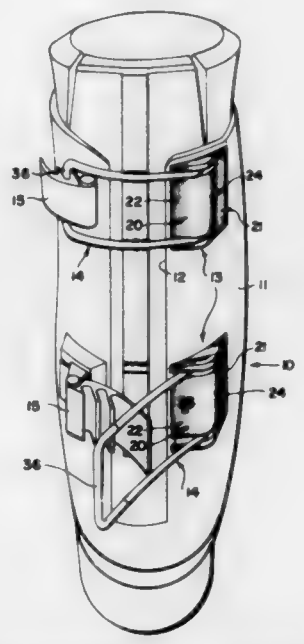
1. A casing for a ski boot comprising at least two rigid portions articulatedly interconnected for relative swinging movement relative to each other between a use position in which they at least partially enclose the lower extremity of a skier, and an out-of-use position in which they occupy a smaller volume than in said use position, means for releasably locking said parts in said use position, and means for releasably locking said parts in said non-use position.

4,083,130

PLASTIC SKI BOOT SHELL WITH INTEGRAL CABLE RETAINING STRUCTURE

Donald W. Bertetto, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries Incorporated, Boulder, Colo.

Filed Mar. 17, 1977, Ser. No. 778,752
Int. Cl.[2] A43B *5/04, 21/00, 11/00;* **A43C** *11/00*
U.S. Cl. 36—117 **7 Claims**



1. In a plastic boot shell having an opening for foot entry and a buckle on one side of said opening for engaging an endless cable, cable retaining structure on the other side of said opening and comprising:

first and second retainer portions each aligned with said buckle and each projecting outwardly from the shell;

each of said retainer portions being composed of the same plastic material as said shell and constituting an integral continuation of the shell;

said first retainer portion being located between said buckle and the second retainer portion;

said second retainer portion having a surface facing the first retainer portion;

said first retainer portion having a base part contiguous to said shell and a flexible flap part extending from said base part toward the second retainer portion;

said flap part having an edge adjacent said facing surface on the second retainer portion;

said second retainer portion having an opening in said facing surface thereof and a recess extending from said opening in a direction away from said first retainer portion;

said first retainer portion being cut away inwardly of the inner surface of said flap part to define means for receiving and accommodating a cable.

4,083,131

APPARATUS FOR REGENERATION OF SKIING COURSES

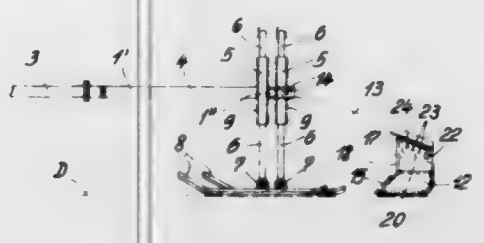
Max Auer, 18 Agathafeld, Rossruti, Wil(Kt.St. Gallen), Switzerland

Filed Mar. 29, 1977, Ser. No. 782,350

Claims priority, application Switzerland, Apr. 2, 1976, 4133/76

Int. Cl.[2] E01C *19/00*

U.S. Cl. 37—13 12 Claims



1. An apparatus for the preparation and regeneration of skiing courses comprising a draw mounting frame, guides mounted on the frame, runners, runner supports, runner hinge, means for mounting the runners on the lower ends of the runner supports, said supports being slidably adjustable up and down in said guides, hydraulic means for adjusting said supports in said guides, planing bodies, draw rods carrying said planing bodies, said draw rods being hinged to said frame, the arrangement being such that said planing bodies can be lowered into the snow in the manner of a plough.

4,083,132

DRAGHEAD FOR SUCTION DREDGER

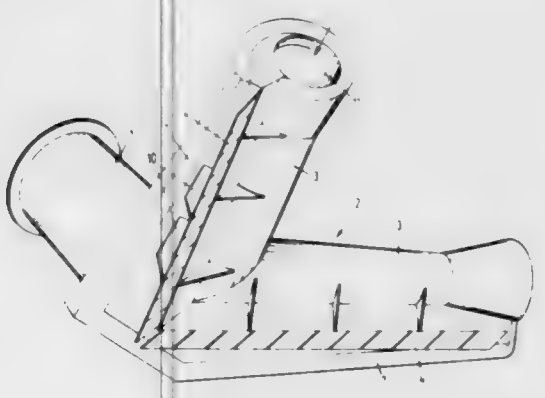
Johannes Franciscus Reinardus Andreae, Gorinchem, Netherlands, assignor to Bos Kalis Westminster Group N.V., Sliedrecht, Netherlands

Filed Jun. 15, 1976, Ser. No. 696,363

Claims priority, application Netherlands, Jun. 30, 1975, 7507759

Int. Cl.[2] E02F *3/88*

U.S. Cl. 37—58 5 Claims



1. A draghead including a connection opening for connection to a suction tube: at least one cutter mounted on the draghead and disposed to be dragged with a cutting edge through the earth to be sucked, the cutting having two legs arranged in a V-shape with the edge of the V facing in the drag direction and forming said cutting edge, a transport water tube provided along and substantially parallel to the rear edge of each leg and terminating into said connection opening for the suction tube, said water tubes being of reduced cross-section with respect to the cross-section of the suction tube and having open ends for receiving a supply of transport water.

4,083,133

SWINGABLE WATER AND SLUSH TUBE ASSEMBLY FOR SUCTION DREDGERS

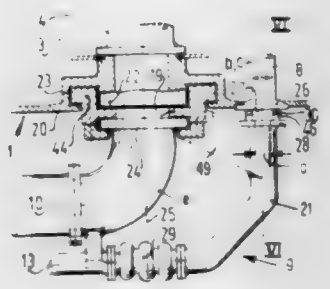
Cornelis Jan Ravesteyn, Jutphaas; Jan de Koning, Amsterdam, and Tjako Aaldrik Wolters, Zeist, all of Netherlands, assignors to Ballast-Nedam Groep N.V., Amstelveen, Netherlands

Filed Oct. 18, 1976, Ser. No. 733,065

Claims priority, application Netherlands, Oct. 17, 1975, 7512247

Int. Cl.[2] E02F *3/90*

U.S. Cl. 37—72 17 Claims



1. A suction dredger comprising a floating body accommodating a slush duct and a water duct, said water duct having a water duct flange and said slush duct having a slush duct flange, an assembly of a slush tube and a water tube rigidly secured together, lifting means for moving the assembly between an operative position beneath the water level and a rest position above the water, guide means on said body for guiding said assembly during said movement, said assembly further including a slush tube flange non-rotatably engaged with said guide means and slidably engaged therewith for movement into non-rotatable registry with said slush duct flange when said assembly is in said operative position thereof, a rotary gland fixed at one end to said slush tube and rotatably connected at its other end to said slush tube flange whereby said assembly is rotatable about a predetermined axis with respect to said slush tube flange when said assembly is in said operative position thereof, a water tube piece, an arm fixing said slush tube flange to said water tube piece, a water tube flange fixed to one end of said water tube piece and registered with said water duct flange in the operative position of said assembly, sealing means for effecting a seal between said water tube flange and said water duct flange, and flexible tubing connecting the other end of said water tube piece to said water tube whereby said water tube is free to swing about said axis while said water tube piece remains in fixed registry with said water duct.

4,083,134

SUCTION HEAD FOR DREDGERS

Klaas Oterdoom, Bentveld, Netherlands, assignor to Anglo Dutch Dredging Co. Ltd., Beaconsfield, Great Britain and Amsterdamse Ballast Bagger en Grond, Amsterdam, Netherlands

Filed Nov. 10, 1976, Ser. No. 740,760

Claims priority, application Netherlands, Nov. 10, 1975, 7513146

Int. Cl.[2] E02F *3/88*

U.S. Cl. 37—58 7 Claims

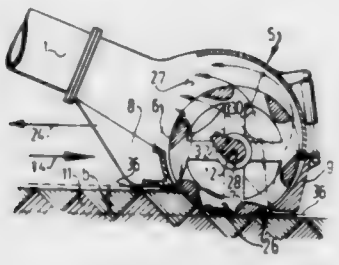
1. In a trailing suction dredger for claiming soil from a ground surface that lies below a body of water, said suction dredger being of the type which includes a suction pump mounted thereon and having a suction pipe that connects a suction head to said suction pump, the improvement wherein said suction head comprises:

a housing defining a suction chamber, said housing being provided with forward and rearward edge portions and side portions to define a generally rectangular shaped bottom opening;

a cylindrical roller rotatably mounted within said suction

chamber about a transverse axis, said roller having only a minor portion protruding from said bottom opening and substantially filling said bottom opening whereby said roller contacts the ground surface and is rolled therealong as the suction dredger is trailed by the moving vessel;

said roller having a plurality of openings spaced about the circumferential surface thereof whereby said suction force is transferred through said roller from said suction head and applied to the ground surface to excavate soil from said ground surface and convey same through said roller into said suction chamber and from said suction chamber via said suction pipe to said vessel, said suction force and the flow pattern into said suction head being constantly



varied with respect to the ground surface due to the rolling of said roller whereby said openings are continuously relocated relative to said housing and thereby continuously redirect said suction force as it is applied to said ground surface, and

said forward edge being higher than said rearward edge thereby to provide a step which extends in a downward and rearward direction so that as the suction dredger is trailed by said vessel during a dredging operation, said forward edge remains substantially at the original ground level and said roller excavates a layer of soil which is substantially as thick as the depth at which said roller protrudes from said bottom opening.

4,083,135

FLEXIBLE CONNECTING ARRANGEMENT FOR SUCTION DREDGERS

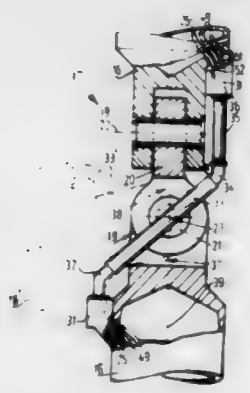
Theodorus van den Brink, Nieuwegein, and Tjako Aaldrik Wolters, Zeist, all of Netherlands, assignors to Ballast-Nedam Groep, N.V., Amstelveen and Amsterdamse Ballast Bagger en Gran, b.v., Nieuwegein, both of, Netherlands

Filed Apr. 8, 1976, Ser. No. 675,167

Claims priority, application Netherlands, Apr. 15, 1975, 7504489; Apr. 15, 1975, 7504493; Apr. 15, 1975, 7504492

Int. Cl.[2] E02F *3/90*

U.S. Cl. 37—58 **7 Claims**



1. In a suction dredger assembly including a pipe system having a rigid upper section and a rigid lower section, said lower section having a suction inlet mouth for inducting a suspension of dredger spoil in water, connecting means physically interconnecting said sections to allow relative pivoting therebetween, said connecting means including an upper member regidly fixed to said upper section, a lower member rigidly fixed to said lower section, and universal pivot means joining said upper and lower members for allowing universal pivotal movement therebetween, that portion of the upper section immediately adjacent said upper member presenting a pair of fluid-conveying mouths disposed on opposite sides of said upper member and that portion of the lower section immediately adjacent said lower member presenting a pair of fluid-conveying mouths disposed on opposite sides of said lower member, and a pair of flexible conduits connected to and communicating the fluid-conveying mouths of said upper and lower sections to extend between such sections with said universal pivot means lying between them, the improvement which comprises:

a first duct extending externally of and along the length of said lower section and having an upper fixed end disposed near the upper end of said lower section;

a second duct extending externally of and along the length of said upper section and having a lower fixed end disposed near the lower end of said upper section; and

a flexible duct section connecting the fixed ends of said first and second ducts, said universal pivot means comprising a pair of members defining an opening therethrough and said flexible duct section passing through said opening.

4,083,136

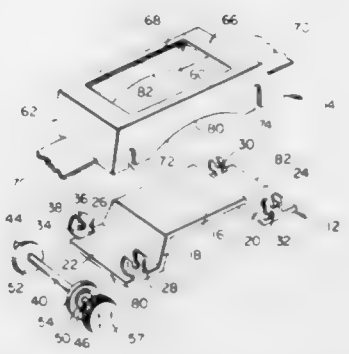
COMPACT NOTE SCROLL

Harry Zelenko, 240 E. 61st St., New York, N.Y. 10021

Filed Nov. 15, 1976, Ser. No. 741,671

Int. Cl.[2] G09F *11/24*

U.S. Cl. 40—518 **7 Claims**



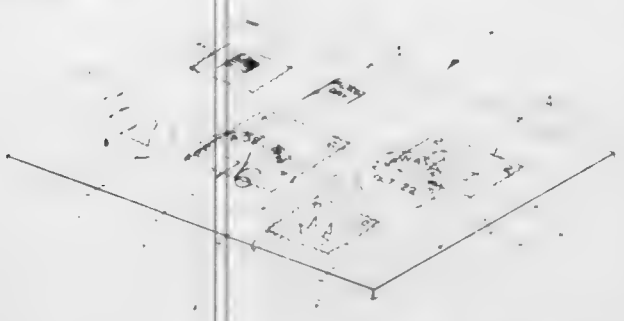
1. A note scroll adapted to be worn on the wrist of a person, comprising a base, a hollow case having an open bottom end sized to receive said base therein to provide a closed housing with said base serving as the bottom wall thereof, means for releasably mounting said hollow case on said base, said base comprising a pair of flat end sections, a pair of inclined walls upstanding from said end sections, a flat table portion extending between said inclined walls, and a pair of spaced lugs upstanding from the side edges of each of said flat end sections, a pair of spaced apart shafts rotatably mounted in the upstanding lugs of the base end sections, an elongated flexible writing strip having a first end attached to one of said shafts and a second end attached to the other of said shafts, with a portion of said strip wound in a roll around at least one of said shafts, the flat table portion of said base underlying an intermediate portion of said flexible writing strip between said shafts, said case having a top wall formed with a window aperture extending over substantially the entire extent of said top wall and positioned to register with said base table portion and the intermediate portion of said flexible strip thereon, and means for rotating said shafts in a direction to advance said flexible strip across the surface of said table portion, said case having a pair of side walls and a pair of end walls, each of said side walls having an arcuate recessed portion on the lower edge thereof, sized to conform to the wrist of the wearer, said note scroll also including a wrist strap connected to the end walls of said case.

4,083,137

DISPLAY SYSTEM ADAPTED FOR PHILATELIC MATERIALS

Anthony I. Rozmanith, 1532 Berlin Rd., Cherry Hill, N.J. 08003

Filed Aug. 26, 1976, Ser. No. 718,033
Int. Cl.[2] G09F *1/10*
U.S. Cl. 40—158 R 16 Claims



1. An article for displaying substantially planar collectibles such as stamps, coins, and the like, comprising:

a support having attachment areas for receiving collectibles thereon;

permanent printing defining said attachment areas and simulative of a specific collectible to be attached to said support in a corresponding attachment area;

a separable, transparent cover disposed over said support and covering said attachment areas; and

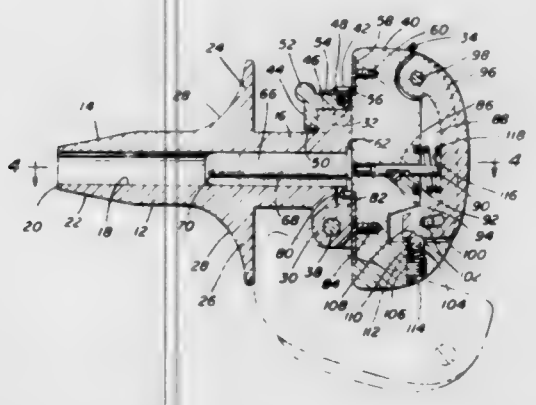
permanent printing formed on said transparent cover to define line figures at least partially overlying, but not obscuring, said attachment areas.

4,083,138

CLOSE COMBAT BACKUP WEAPON

Charles Cash, Star Rte., Box 671, Kerrville, Tex. 78028

Filed Dec. 13, 1976, Ser. No. 749,760
Int. Cl.[2] F41C *3/00;* F42B *11/02*
U.S. Cl. 42—1 R 7 Claims



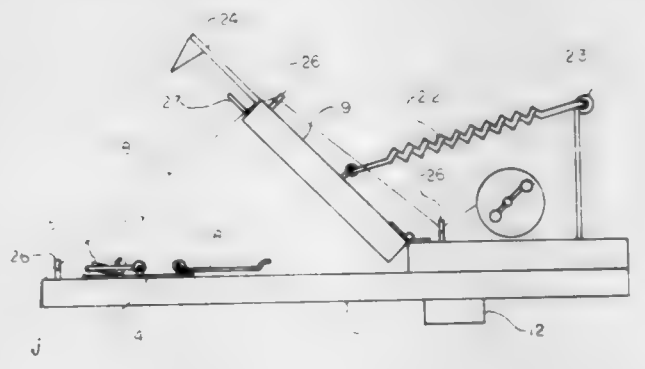
1. A close combat weapon comprising a tubular barrel having front and rear end portions, the rear end portion of said barrel including chamber means for removably chambering a cartridge in said barrel, firing pin means for firing a cartridge chambered in said barrel and shiftable between ready and firing positions, a palm grip supported from the rear end portion of said barrel and of a size to be substantially enclosed within one hand of a user of said weapon with the forward end of said barrel projecting forwardly and outwardly between adjacent fingers of said hand, the forward end of said barrel tapering in wall thickness to a circumferentially unobstructed thin wall portion at the forward terminal end of said barrel, whereby said forward terminal end may be thrust forwardly against a flesh target and at least partially penetrate said target substantially simultaneously with the firing of said cartridge, said palm grip including a rearwardly facing shiftable portion thereof supported for limited front to rear shifting relative to said barrel between forward and rearward positions, said shiftable portion being operatively associated with said firing pin means to effect movement of the latter from said ready position to said firing position in response to shifting of said shiftable portion from said rear position to said forward position, said palm grip including a main body having a rearwardly facing rear surface, said shiftable portion being shiftably supported from said body and projecting rearwardly of said rear surface, detent means connected between said shiftable portion and said main body yieldably resisting forward movement of said shiftable portion, whereby a forward thrust on said shiftable portion relative to said main body above a predetermined value will effect sudden forward snap action movement action of said shiftable portion relative to said body to the forward position thereof and thus effect snap action movement of said firing means pin from said ready position to said firing position.

4,083,139

ICE FISHING APPARATUS

Gerald M. Schwend, 880 Washakie, Lander, Wyo. 82520

Filed Oct. 22, 1976, Ser. No. 735,059
Int. Cl.[2] A01K *97/00, 97/12*
U.S. Cl. 43—16 7 Claims



1. An ice fishing apparatus including a main support member, a cross member disposed transversely of said support member and attached thereto, a trigger including biasing means mounted on said support member near one end thereof, a fishing line-storing means disposed on said support member, an arm positioned between said trigger and said line-storing means pivotally connected to said support member with the pivot point of said arm adjacent the end thereof remote from said trigger and the free end of said arm being operatively connected to said trigger, second biasing means urging the free end of said arm away from said support member, a first line guide on the trigger end of said support member, a second line guide on the free end of said arm, and a third line guide between the pivotally connected end of said arm and said line-storing means; whereby a line threaded through said line guides is maintained in a vertical plane through said main support member as said arm is pivoted from a position substantially parallel to said support member to a position at an acute angle thereto.

4,083,140

FISHING ROD FERRULE

Richard Van Auken, Bridgewater, and Albert T. Mills, Jr., Somerville, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Aug. 13, 1975, Ser. No. 604,178
Int. Cl.[2] A01K *87/00*
U.S. Cl. 43—18 GF 9 Claims

1. In a multisectional fiber-reinforced plastic fishing rod having a plastic ferrule means bonded thereto for detachably securing sections one to the other, the improvement comprising forming said plastic ferrule as a hollow tapered tube having walls formed from alternating layers of graphite fiber-reinforced sheet material and woven fiberglass sheet material, there being at least two layers of continuous graphite fiber-reinforced resin sheet material in which the graphite fibers of

one layer are at an obtuse angle ranging from about 110° to about 140° relative to the fibers in the next superimposed



graphite layer of sheet material and wherein a layer of woven fiberglass material is interposed between the graphite layers.

4,083,141

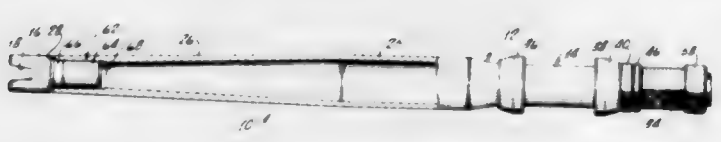
SWAGED INTEGRAL BUTT AND REEL SEAT FOR FISHING ROD

William D. Shedd, Newport Beach, and Lawrence F. Belden, Pacific Palisades, both of Calif., assignors to Axelson Fishing Tackle Mfg. Co., Inc., Newport Beach and James D. Easton Inc., Van Nuys, both of, Calif.

Filed Nov. 4, 1976, Ser. No. 738,735

Int. Cl.[2] A01K *87/06*

U.S. Cl. 43—22 **11 Claims**



1. An integral butt and reel seat for a fishing rod comprising a unitary tubular member swaged to form a plurality of integral sections including

a butt section tapering from a maximum diameter at a forward portion thereof to a minimum diameter at a rear portion, and having a wall thickness that increases towards its smaller diameter portion,

a transition section tapering forwardly from the forward end of said butt section to a decreased diameter and having a wall thickness that increases toward said decreased diameter, and

a cylindrical reel seat section extending forwardly from a forward end of said transition section,

said reel seat section including a threaded portion,

a first reel hood secured to said seat section, means on said seat section for mounting a rod thereto, and

a movable reel hood threaded upon said cylindrical reel seat section.

4,083,142

ANIMAL SNARE

Keith J. Gregerson, Roundup, Mont.

Filed Oct. 19, 1976, Ser. No. 733,767

Int. Cl.[2] A01M *23/34*

U.S. Cl. 43—87 **10 Claims**

1. An animal snare comprising a length of multiwire, multibundle steel cable, a wire swivel with a wound section disposed about one end of said cable, a metal washer substantially the same outer diameter as said wound section of said swivel positioned on said cable between the wound section of said swivel and the end of said cable, a lock having openings through which said cable is threaded, said lock comprising a unitary bent strip member with two sections at an acute angle and two openings in each section, one opening in each section being adjacent the bent and substantially the same distance from the bend as the corresponding opening in the other section, and a second opening in each section located a greater distance from the bend and substantially the same distance from the bend as the corresponding second opening in the other section, one of said second openings having a diamond shape and the other of said second openings being an elongated slot with a tab extending from the end of the slot closest to the bend toward the second opening of the other section of said



bent strip; said cable being threaded first through said second openings with the diamond-shaped opening being closest to the swivel and back through the both said first openings with the end of the cable extending from the first opening adjacent the diamond-shaped second opening; and the ends of said cable having soldered, deformed, helical spring anchors thereon to secure said lock and said swivel on said cable.

4,083,143

CONTROL ARRANGEMENT FOR TOY AND MODEL VEHICLES

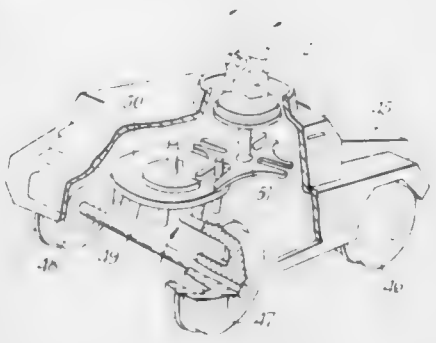
John Allen, 15 Ridge Road, Winchmore Hill, London N21 3EB, England

Continuation-in-part of Ser. No. 340,839, Mar. 13, 1973, Pat. No. 3,939,605. This application Sep. 22, 1975, Ser. No. 615,193

Claims priority, application United Kingdom, Mar. 15, 1972, 12174/72

Int. Cl.[2] A63H *17/25*

U.S. Cl. 46—204 **6 Claims**



1. A toy vehicle having wheels and axles freely and independently rotatable in either direction, said axles being rotatable about their longitudinal axes, said wheels being mounted on said axles and being freely rotatable in either direction relative to said axles; an eccentric pin formed integrally with at least one of said wheels; a member on said vehicle and movable relative to the rest of the vehicle; and means co-acting with said pin and transmitting motion to said member; said means including a rotatable disc to which said member is secured, one

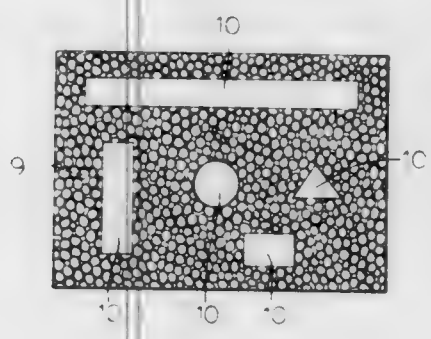
surface of said disc having a ring of pins substantially parallel to the axis of rotation of the disc, said pin on the wheel interfering with the ring of pins for rotating the disc and therefore the member during movement of the toy.

4,083,144

METHOD FOR CULTIVATION OF *LENTINUS EDODES*

Noriyoshi Fuzisawa, Sakura; Akio Maedai, Funabashi, and Kenichi Hattori, Musashino, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed May 5, 1977, Ser. No. 794,100
Claims priority, application Japan, May 24, 1976, 51-59815
Int. Cl.[2] A01G *1/04*
U.S. Cl. 47—1.1 **8 Claims**



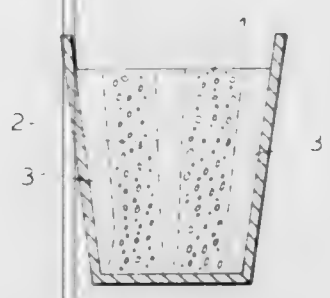
1. A method for artificially cultivating *Lentinus edodes* by using an artificial solid granular or fibrous culture medium, which comprises inoculating a sterilized bed of said culture medium with fungus seed of *Lentinus edodes*, cultivating said bed to generate hyphae of *Lentinus edodes* on the surface of said bed, applying an air-permeable but essentially imperforate film or film pieces of a coating material which is not decomposed by hyphae of *Lentinus edodes* to localized areas of said surface of said bed before said hyphae become brown so that said areas are contacted by said film or film pieces to prevent ambient air from directly contacting said areas while permitting air to permeate through the film or film pieces into contact with said areas, continuing the cultivation of said bed to cause browning of exposed hyphae while the hyphae directly below said pieces of coating material remain white, then subjecting the bed to mushroom-growing conditions effective to form fruit bodies of *Lentinus edodes* which grow from the hyphae below said pieces of coating material.

4,083,145

METHOD FOR VESSEL CULTIVATION OF *LENTINUS EDODES*

Noriyoshi Fuzisawa, Sakura; Akio Maedai, Funabashi, and Kenichi Hattori, Musashino, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1977, Ser. No. 808,977
Claims priority, application Japan, Jul. 13, 1976, 51-83133
Int. Cl.[2] A01G *1/04*
U.S. Cl. 47—1.1 **6 Claims**



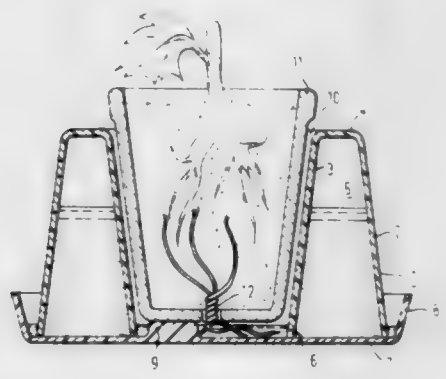
1. A method for the vessel cultivation of *Lentinus edodes* in a bed of culture medium contained in an open-topped vessel which comprises forming a plurality of open-topped seed-inoculating and air-supplying holes in the side face of the bed of culture medium and extending along the inner wall of the vessel, sterilzing said bed, then inoculating fungus seed of *Lentinus edodes* in the holes of the sterilized bed of said culture medium, cultivating said bed to generate hyphae of *Lentinus edodes* in the culture medium, then taking the bed, as a unit, out of the vessel, then subjecting the bed to mushroom-growing conditions effective to form fruit bodies of *Lentinus edodes* which grow from the side faces of the culture medium.

4,083,146

DEVICE FOR CONTINUOUSLY WATERING PLANTS IN FLOWER POTS OR BOXES

Obrad Branković, Temisvarska 12, Belgrade, Yugoslavia

Filed Apr. 1, 1976, Ser. No. 672,722
Claims priority, application Yugoslavia, Apr. 1, 1975, 832/75
Int. Cl.[2] A01G *27/00*
U.S. Cl. 47—71 **2 Claims**



1. A device for continuously watering plants growing in a flower pot, said device comprising:

a body consisting of an outer side wall in the shape of a truncated cone, an inner side wall in the shape of a truncated cone, wherein the inner side wall is positioned within the outer side wall and the inner and outer side walls are sloped in opposite directions with respect to the vertical, such that they converge towards each other at the top of the body, the inner side wall having at least one hole in the bottom edge thereof, and a top wall extending between the top edges of the inner and outer side wall, wherein a hollow space with an open bottom is defined by the inner and outer walls and the top wall; and

a base consisting of a base plate having a diameter greater than the diameter of the bottom edge of the outer side member, a rim extending upward from the edge of the base plate, and a plurality of mounting spacer means extending upward from the base plate for supporting a flower pot thereon, said spacer means being the sole support for said flower pot, the height of the spacer means being greater than the height of the at least one hole in the bottom edge of the inner side wall, wherein the body is positioned on the base plate such that the bottom thereof is between the rim and the plurality of spacer means of the base.

4,083,147

AUTOMATED PLANTER BOX SYSTEM

Laurence James Garrick, Box 699, Woodstock, N.Y. 12498

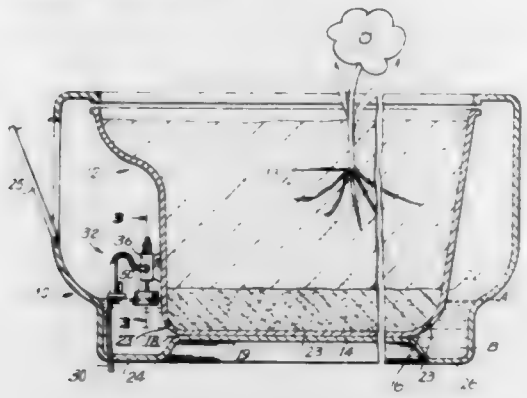
Continuation-in-part of Ser. No. 689,604, May 24, 1976, abandoned, which is a continuation of Ser. No. 553,146, Feb. 26, 1975, abandoned, which is a continuation of Ser. No. 483,174, Jan. 30, 1974, abandoned. This application Nov. 15, 1976, Ser. No. 741,564
Int. Cl.[2] A01G *27/00*
U.S. Cl. 47—80 **13 Claims**

1. An automated planter system comprising a planter unit including an outer container open at the top; an inner container open at the top, supported interiorly of, and spaced away from the sides of, the outer container, a bottom porous portion of the

inner container, being porous to the flow of water between the outer container and the inner container, the porous portion being spaced above the bottom of the outer container; the outer lateral surface of the inner container and the inner lateral surface of the outer container defining an intermediate space extending from the bottom of the outer container to the top of the outer container, providing a water table volume and humidifying space and being open to the space above the inner container; the outer container extending vertically above the inner container;

fluid conduit means extending into the outer container for placing the intermediate space in fluid flow connection with a reservoir of water under pressure;

valve means in the conduit means designed and adapted to open and close the conduit means to fluid flow into the intermediate space; and



wet-dry cycling means to effect alternating wetting and drying cycles for any soil contained in the inner container, the cycling means comprising:

sensing means within the intermediate space designed to sense a lower first level of liquid in the intermediate space located below the porous bottom portion and a higher second level located above the porous bottom portion; and

adjustable operating means for opening and closing the valve, activated by the sensing means, and designed to open the valve means when the liquid level in the intermediate space reaches the pre-determined first level, and to close the valve means when the liquid level reaches the higher second level, whereby the length of the dry cycle is determined by the rate of evaporation of water escaping through the upper opening from the intermediate space and the distance the first level is beneath the porous bottom portion.

4,083,148

WINDOW INSULATING APPARATUS

Ernest R. Saucier, 143 Merriam Ave., Leominster, Mass. 01543

Filed Dec. 6, 1976, Ser. No. 747,701

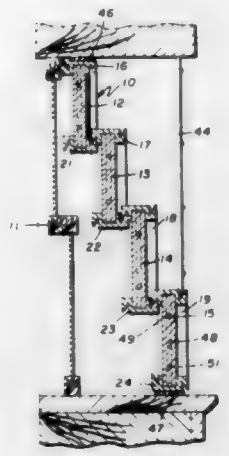
Int. Cl.[2] E05D *15/26*

U.S. Cl. 49—125 **8 Claims**

1. Window insulating apparatus, comprising:

(a) a plurality of panels formed of low heat-transfer material, the sum of the areas of the panels being approximately equal to that of the window opening, each panel being generally rectangular and being arranged in the window opening with the length extending horizontally, the panels being arranged in side-by-side planes and slidable vertically from an upper storage position where the panels lie side-by-side to an operative position where the panels are arranged in a step-like condition, and

(b) an extruded element applied to the upper and lower edges of each panel, each element having a sealing surface which mates with a similar sealing surface on an extruded element applied to the immediately adjacent panel, a similar extruded element extending along each vertical edge of each panel, the sealing surface on said similar extruded element of one panel engaging the sealing surface on said similar extruded element of the immediately adjacent panel, the engagement between the sealing surfaces of said similar extruded elements taking place along the entire length of said similar extruded elements when the panels



are in the storage position and engaging along only a small portion of the length of the said similar extruded elements when the panels are in the operative position.

4,083,149

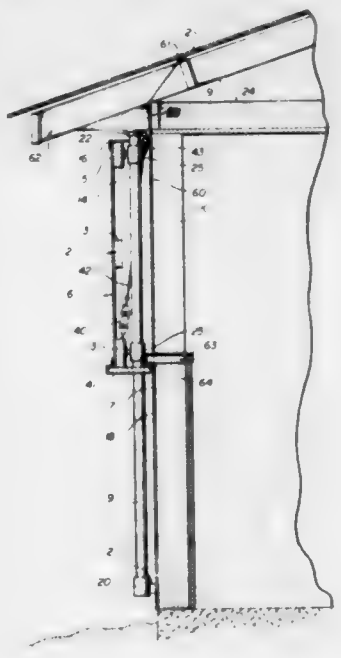
DROP VENT WALL SYSTEM

John S. Hickman, Milwaukee, and Andrew Paul Jensen, Madison, both of Wis., assignors to Capital Steel & Supply Co., division of Jensen Investment Corporation, Madison, Wis.

Filed May 21, 1976, Ser. No. 688,524

Int. Cl.[2] E01F *13/00*; E05F *11/00*

U.S. Cl. 49—147 **25 Claims**



1. A building having a pair of end walls and a pair of side walls and a roof, said building being adapted for housing livestock, poultry and the like, wherein at least one of said building walls includes means for ventilating said building, said ventilating wall means comprising:

a first substantially rigid subwall which extends along a substantial portion of the length of said building wall;

a second substantially rigid subwall which extends along a substantial portion of the length of said building wall and is adapted to overlie said first subwall;

each of said subwalls comprising a frame and a substantially rigid siding attached to said frame to form a subwall face which encloses said subwall;

spaced substantially vertical members offset from and positioned along the length of a face of one of said subwalls;

mounting means located contiguous to the top and bottom of at least one of said subwalls, said mounting means being

joined to said vertical members whereby said mounted subwall is adapted to be moved vertically relative to said remaining subwall; and,

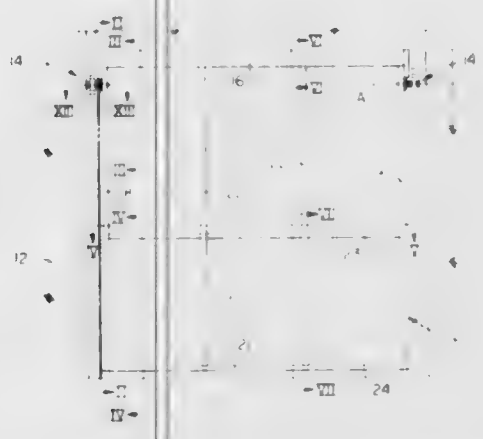
means for moving said mounted subwall along said vertical members to adjustably position said mounted subwall relative to said remaining subwall whereby, when said subwalls are in a closed position, said building wall serves to preclude air from entering said building through said building wall and, when said mounted subwall is moved relative to said remaining subwall to an open position, air is permitted to enter through said building wall to ventilate said building.

4,083,150

DOOR CONSTRUCTION

Wesley A. Smith, Drummond Island, Mich. 49726

Filed Aug. 13, 1976, Ser. No. 714,049
Int. Cl.[2] E05F *1/00*
U.S. Cl. 49—387 **15 Claims**



1. In a one-piece canopy-type door construction which is swingable about a substantially horizontal pivot axis between a closed position wherein the door is substantially vertical and an open position wherein the door is substantially horizontal, the improvement comprising:

a counterbalance structure fixed to and extending along the upper edge of said door, said counterbalance structure including a tubelike member extending across the upper edge of said door and defining therein a compartment, and counterbalance mass means positioned within said compartment;

cantilevered frame means fixed to said counterbalance structure and projecting outwardly therefrom, said frame means including a pair of elongated, substantially parallel, load-carrying side rails which are fixed to said tubelike member adjacent the opposite ends thereof and project outwardly therefrom for defining the opposite sides of said door, said side rails being fixedly connected adjacent their free ends by a substantially horizontally extending bottom rail;

said frame means further including at least two elongated, load-carrying intermediate members disposed between and substantially parallel with said side rails, said intermediate members being spaced from one another and having the upper ends thereof structurally fixedly connected directly to said tubelike member at longitudinally spaced intervals intermediate the ends of said tubelike member, whereby each said immediate member functions as a load-carrying cantilevered beam for transferring loads longitudinally thereof directly to said tubelike member, and the other end of each intermediate member being fixedly connected to said bottom rail;

panel means fixed to and overlying said frame means for defining the exterior face of said door, said panel means extending horizontally between said side rails and extending from said bottom rail to said tubelike member; and

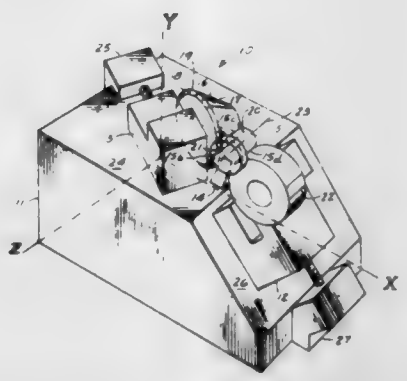
hinge means associated with each of said side rails for defining said horizontal pivot axis, said hinge means being located closely adjacent but spaced downwardly from the upper edge of said door.

4,083,151

ANGULAR FEED CENTERLESS GRINDER

Wilbur F. Jessup, The Hague, and Rudolf J. A. Kimmelaar, Vlaardingen, both of Netherlands, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jun. 6, 1977, Ser. No. 803,570
Int. Cl.[2] B24B *5/18*
U.S. Cl. 51—103 R **5 Claims**



1. An improved centerless grinder, having a grinding wheel and regulating wheel rotatably journaled in respective grinding and regulating wheelheads, further having a work-contacting line defined on said grinding wheel parallel with a first ordinate of a mutually perpendicular triordinate system, wherein the improvement comprises:

a. means to move said regulating wheelhead relative to a workpiece simultaneously in directions substantially parallel to second and third ordinates of said system respectively; and

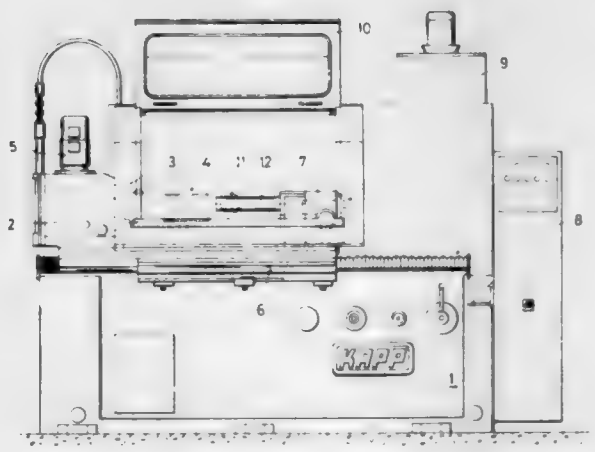
b. means to move said grinding wheelhead relative to a workpiece simultaneously in directions substantially parallel to first and second ordinates of said system, respectively.

4,083,152

APPARATUS FOR GRINDING OF INTERNAL AXIALLY EXTENDING PROFILES

Manfred Lorenz, Coburg-Creidlitz, Germany, assignor to Kapp & Co. Werkzeugmaschinenfabrik, Coburg, Germany

Filed Oct. 27, 1976, Ser. No. 735,978
Claims priority, application Germany, Nov. 21, 1975, 2552259
Int. Cl.[2] B24B *41/04, 55/02*
U.S. Cl. 51—166 MH **8 Claims**



1. An apparatus for grinding of internal, axially extending profiles, particularly for flanks on spline bore hub profiles and inner toothing, and driven by an electric motor, comprising

a grinding arm having a mandrel shape,

a grinding wheel mounted on both sides in said grinding arm,

a belt longitudinally extending completely within said grinding arm and operatively connected to the electric motor and operatively connected to said grinding wheel, said belt being formed as a toothed belt and disposed completely inside of said grinding arm,

mounting means for operatively mounting said grinding wheel in said grinding arm,

gear wheels disposed in said grinding arm with said toothed belt mounted thereabout, operatively connected to said grinding wheel,

encapsulating means for completely encapsulating said grinding arm, said mounting means, said toothed belt and said gear wheels,

said grinding arm being formed with a recess longitudinally therethrough forming an open-circuit first channel means for communicating with said mounting means on one side of the latter and with the ambient on the other side outside of said mounting means, said toothed belt being longitudinally positioned entirely in said grinding arm in said first channel means, said first channel means including means for feeding compressed air containing spray oil therethrough to said mounting means and passing from said mounting means freely into the ambient outside of said encapsulating means for cooling the grinding arm and lubricating said mounting means during passage therethrough, and

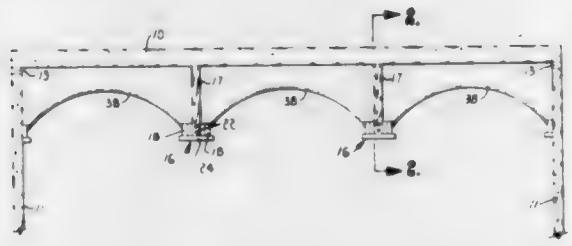
said grinding arm is formed with at least one separate channel means non-communicatingly separate from and adjacent to said first channel means for feeding grinding liquid to outside of said encapsulated means adjacent to said grinding wheel, whereby the pressure of the compressed air prevents grinding liquid and dust from entering the first channel means and the mounting means.

4,083,153

CEILING AND WALL STRUCTURES HAVING CURVED PANELS

Gary T. Sumpter, 402 N. Madison, Spring Hill, Kans. 66083

Filed Apr. 28, 1977, Ser. No. 792,057
Int. Cl.[2] E04B *1/00, 2/74*
U.S. Cl. 52—28 **17 Claims**



1. In a ceiling structure for a room which is bounded by walls, the combination of:

a plurality of ceiling panels curved in the general shape of an arch, each ceiling panel having opposite longitudinal edges;

a plurality of rigid ceiling beams for supporting said ceiling panels, each beam being an elongate structure generally box shaped in section;

a pair of rigid beam members extending along opposite sides of each beam in spaced apart relation;

a plurality of spacer elements extending between each pair of beam members at selected locations along the length of the beam to retain said beam members in spaced apart relation;

means for adjusting each spacer element in a manner to vary the spacing between each pair of beam members;

means for supporting said beams at an elevated position in generally horizontal extension between the walls of the room with the beams spaced apart in substantially parallel relationship to one another; and

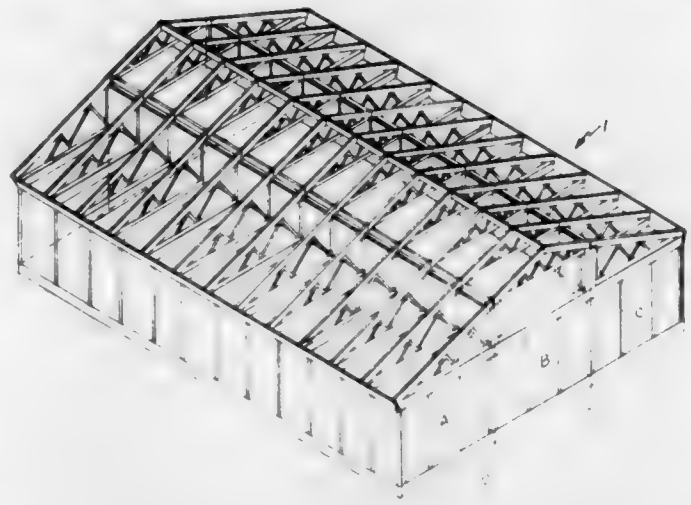
cooperating means on said beams and panel edges for mounting the ceiling panels in extension between the repsective beams with said panels maintained in the general shape of an arch.

4,083,154

MODULAR HOME

Leon F. Klink, 78536 Currin Blvd., Cottage Grove, Oreg. 97424

Filed Apr. 15, 1977, Ser. No. 787,993
Int. Cl.[2] E04H *1/12*
U.S. Cl. 52—79.9 **7 Claims**



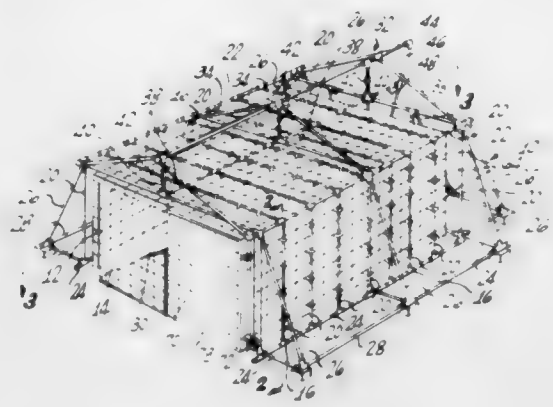
1. A mobile modular building structure comprising three elements, a center element, and two identical end elements disposed at the extremity of said center element, said center element having a substantially rectangular bottom portion and triangular top portion, said top portion being comprised of a pair of rafters and their joists, said rafters and joists being separated by diagonal brace members, said joist member being separated from a lower joist member by a pair of H-shaped joist bar separators disposed at the extremities of the upper and lower joists, said end elements having rafters which extend outwardly in a smooth continuous extension of said rafters of said middle element, said end elements further having joists which extend outwardly in a smooth continuous contour from said lower joist of said middle element terminating at a point in said rafter, and an H-shaped joist bar connecting said rafter of said end element with said joist of said end element in registry with said H-shaped joist bar of said middle element.

4,083,155

THERMALLY INSULATED ENCLOSURE

Albert J. Lampert, 605 Avenue Teresa, San Clemente, Calif. 92672

Filed Mar. 14, 1977, Ser. No. 777,059
Int. Cl.[2] E04B *1/80*
U.S. Cl. 52—93 **15 Claims**



1. A free standing, thermal enclosure comprising:

a substantially rigid skeletal framework defining a substantially rectangular three-dimensional space, said frame-

work including a centrally disposed, horizontal ridge pole and a plurality of inclined buttress members;

a plurality of adjacent solid walls and a ceiling disposed within said framework and spaced inwardly therefrom, said walls and ceiling being formed by interlocking non-structural pads consisting of a pliant low density insulating material made of ceramic fibers, the sides of said pads being exposed and substantially free of contiguous supporting structure along the interior and exterior surfaces of said walls and ceiling, said pads having elongated vertical openings therein;

a plurality of hangers extending inwardly from said framework and inserted between said pads; and

a plurality of rods inserted in said openings, said rods being engaged by said hangers.

4,083,156

APPARATUS FOR BRACING A TILT-UP WALL PANEL

Dennis W. Tye, Hayward, Calif., assignor to Superior Concrete Accessories, Inc., San Diego, Calif.

Filed Apr. 14, 1977, Ser. No. 787,597
Int. Cl.[2] E04G *25/04*; E04H *12/20*
U.S. Cl. 52—127 **15 Claims**



1. In combination with a tilt-up wall panel in raised position adjacent to a floor slab and a panel brace assembly extending angularly upwardly from said slab to said panel and having its lower end connected to the slab and its upper end connected to the panel to brace the panel,

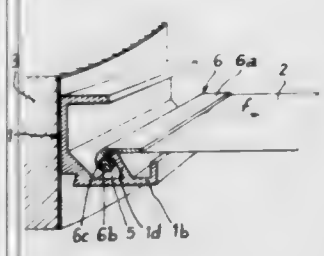
a pair of knee brace assemblies each extending angularly upwardly from said panel to said panel brace assembly, said knee brace assemblies having their upper ends connected to the panel brace assembly and their lower ends connected to the panel at spaced apart points on opposite sides of the vertical plane containing the panel brace assembly to brace the assembly.

4,083,157

FALSE CEILING OR WALL

Camille Anthonioz, Thonon Les Bains, France, assignor to Societe Normalu, Kembs, France

Filed May 10, 1976, Ser. No. 684,636
Claims priority, application France, May 7, 1975, 75 14275
Int. Cl.[2] E04B *1/00*
U.S. Cl. 52—222 **10 Claims**



1. A false ceiling or wall, comprising:

a frame adapted to be fixed to the edges of a ceiling or a wall, said frame including a pair of angularly related flanges, an abutment on one of said flanges, and a rail having a shoulder connected with one of said flanges and extending in the direction of the other and forming a free space between said abutment and itself;

a cloth sheet having a rigid edge engaged in said frame and received within said free space,

said rigid edge of said sheet having a hook-shaped portion which when in place engages said shoulder;

said rail including means to facilitate the engagement of said rigid edge with said shoulder by movement of said rigid edge over said shoulder by external means;

said facilitating means including notches cut out of the shoulder in each corner of the ceiling or wall, said notches being close to the vertices of the corner to engage said rigid edge on the whole length of said rail; and,

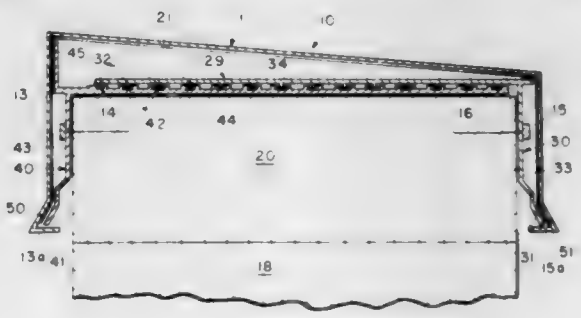
said shoulder extending in a direction opposite to that in which said sheet will exert tension and together with said abutment prevents said hook-shaped portion from being pulled around said shoulder and dislodging said rigid edge from said shoulder by the effect of strong tension in said sheet.

4,083,158

COPING MOUNTING PLATE

Rodney J. Wolma, Grand Rapids, Mich., assignor to Philip L. Johnson, Grand Rapids, Mich.

Filed Dec. 13, 1976, Ser. No. 749,729
Int. Cl.[2] E04F *19/02*
U.S. Cl. 52—300 **7 Claims**



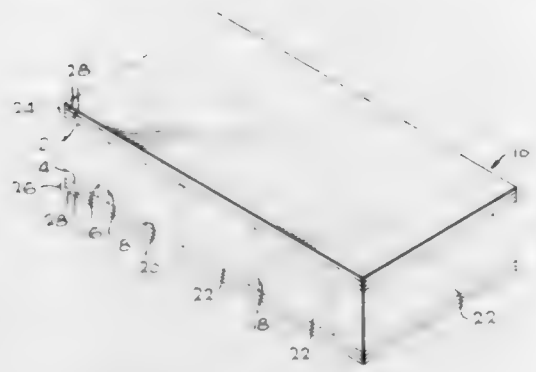
1. A two-piece elongated anchor member for positioning over the top of a wall, said member including a first member and a second member for mounting a snap-on coping, said first and second members having sufficiently long portions extending toward each other over the top of the wall so there is an adjustable region of overlap; said two pieces in said region of overlap having a plurality of coupling means adapted to secure said two pieces to each other at any of a plurality of positions thereby adjusting the combined width across the wall of said two-piece anchor member to securely receive the snap-on coping said two pieces securing to each other to prevent relative movement normal to the top of the wall and across the width of the wall, said coupling means having a male key component attached to said first member said second member including a female keyway component; said keyway component adapted to securely enshroud said key component thus rigidly securing said first member to said second member; and said anchor member extending longitudinally along the wall a shorter distance than the snap-on coping so that the snap-on coping is secured by an anchor member at a plurality of longitudinally spaced anchor positions wherein said key and keyway components extend longitudinally along said anchor member and said key components are transversely spaced from each other in increments equal to the transverse spacing of said keyway components, and wherein said keyway component has an enlargeable opening for snapping on said key member.

4,083,159

STRUCTURAL SOUND ABSORBING PANEL FOR UNDERWATER USE AND METHODS OF MAKING SAME

Donald M. Hatch, Huntington Beach, and George D. Lee, Monterey Park, both of Calif., assignors to Hitco, Irvine, Calif.

Filed Oct. 29, 1973, Ser. No. 410,639
Int. Cl.[2] E04B *1/99*; D03D *3/00*
U.S. Cl. 52—309.1 **8 Claims**



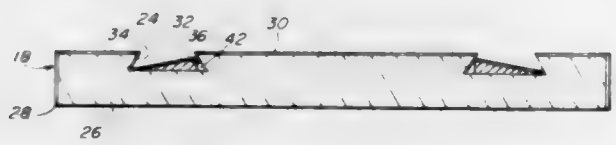
1. A structural sound absorbing panel for use in limiting reflections of impinging sound waves in high pressure water environments comprising a load bearing panel including a pair of opposite faces comprised substantially of fabric reinforced composite which is relatively sound transmissive to the impinging sound waves, at least one of the pair of opposite faces being impermeable to water, the load bearing panel also including a plurality of ribs of fabric reinforced composite, the fabric therein being interwoven with the fabric of the opposite faces to form a lightweight structure, a plurality of stiffening elements which are relatively sound transmissive to the impinging sound waves disposed adjacent the ribs within the load bearing panel, the ribs and the stiffening elements defining a plurality of separate chambers between the opposite faces, the ribs, stiffening elements and faces being relatively thin compared to the dimensions of the chambers so that the chambers comprise a substantial portion of the total volume occupied by the panel, and uncompressed material of relatively high sound absorbency disposed within at least some of the chambers, the stiffening elements extending between and holding the opposite faces in spaced-apart relation against external compressive forces to resist compression of the material of relatively high sound absorbency, and the at least one of the pair of opposite faces which is impermeable to water protecting the material of relatively high sound absorbency from water on the outside of the panel.

4,083,160

RELIEF PANEL AND METHOD OF MAKING SAME

Edward J. MacDonald, 180 Border St., Scituate, Mass. 02066, and Kenneth A. MacDonald, 251 York St., Canton, Mass. 02021

Continuation-in-part of Ser. No. 565,143, Apr. 4, 1975, Pat. No. 4,008,551. This application Feb. 18, 1977, Ser. No. 769,953
Int. Cl.[2] E04C *1/40*; E06B *3/70*
U.S. Cl. 52—316 **10 Claims**



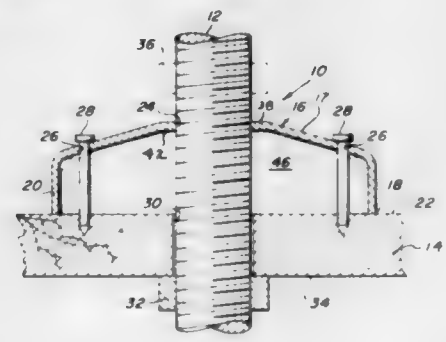
4. A relief panel, comprising
(a) a relatively thick one-piece core,
(b) a relatively thin finish on the outer surface of said core,
(c) said panel being formed inwardly from the edges thereof with an elongated undercut groove of substantially constant width and depth in a predetermined pattern completely through said finish from the front face only of said panel and partially into said core,
(d) an elongated strip of triangular transverse cross-section and of a thickness less than the depth of said groove mounted over and along the bottom wall of said groove, the inboard outer edge of said strip being in butting contact with said core and in slightly recessed relation to the outer surface of said panel and the outboard edge of said strip being disposed in the outboard corner of said groove in deeply recessed relation to the outer surface of said panel.

4,083,161

ANCHOR BOLT ASSEMBLY

George A. Moen, 827 W. 26th Ave., Anchorage, Ak. 99503

Filed Mar. 11, 1977, Ser. No. 776,778
Int. Cl.[2] E04C *5/18*
U.S. Cl. 52—699 **7 Claims**



1. An anchor bolt assembly adapted for connection with a form (**14**) for pouring concrete, said form containing a through bore (**30**), comprising
(a) an anchor bolt (**12**) adapted for insertion through the bore in said form for permanent mounting at one end in the concrete;
(b) at least one cup-shaped member (**16**) including a circular generally disk-shaped body portion (**17**), and an annular generally cylindrical spacer flange portion (**20**) connected at one end with the peripheral edge portion of said body portion, said body portion containing a central aperture (**24**) receiving said anchor bolt, said body portion also containing a plurality of fastening apertures (**26**) arranged in spaced relation about said central aperture, the other end (**18**) of said cylindrical flange portion being adapted for seating engagement with one side of said form in concentrically spaced relation to the through bore contained therein; and
(c) a plurality of fastener elements (**28**) extending through said fastening apertures in said disk-shaped body portion and axially in spaced relation through said cylindrical spacer portion for connection with the form, thereby to properly orient said anchor bolt relative to said form.

4,083,162

CONNECTOR ASSEMBLY

Joseph F. Regan, 102 Meadowbrook Rd., Spring Lake Heights, N.J. 07762, and Robert R. Regan, 12 Prospect Ave., North Arlington, N.J. 07032

Filed Apr. 8, 1977, Ser. No. 785,818
Int. Cl.[2] E04B *1/41*
U.S. Cl. 52—699 **2 Claims**

1. A connector assembly for use in a structure formed of initially fluid condition and subsequently solid aggregate and having an aggregate form base over which the aggregate is placed in said initial condition, comprising the combination of:
a connector socket body having a closed top wall, a tubular side wall, and having a bore formed therein;
a lower flange on the side wall defining the opening of the bore, said bore being threaded internally adjacent said opening;
an elongated, substantially cylindrical locking member hav-

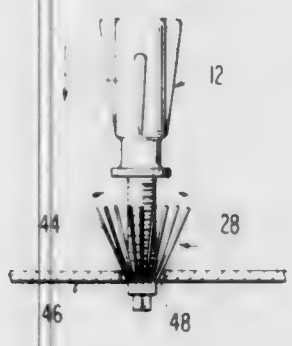
ing a main body section, said main body section being externally threaded and being threadedly engaged in said bore of said socket body;

the locking member having a reduced lower end portion and having a lower engagement segment;

a sleeve fixedly secured on said reduced lower end portion;

a plurality of resilient splines extending from the sleeve in circumferentially spaced, radially outward, angular relation thereto, and being directed toward the socket body;

the form base having a hole formed therein, and the locking member being inserted through said hole by compression



of the splines to extend therethrough, the splines expanding upon passage through the holes to engage against the form base and to clampingly grip the form base as the socket body is tightened on the locking member, the locking member being disengageable when the aggregate is in its solid condition and the socket is embedded therein,

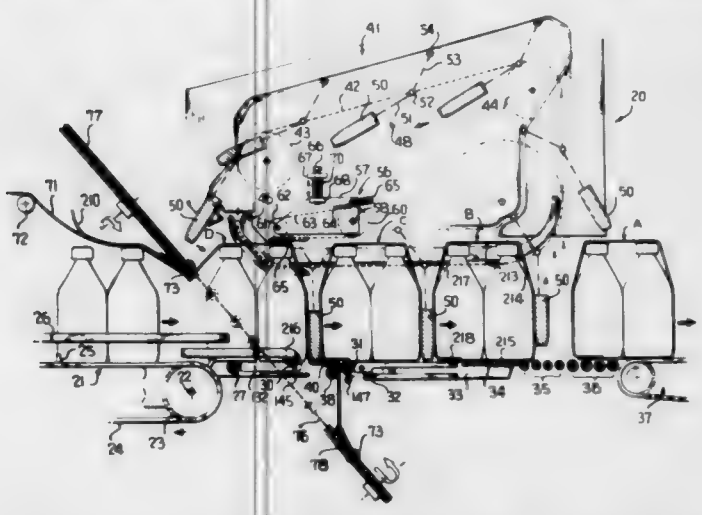
said socket body sidewall having a series of projections thereon to prevent rotation of the socket body upon hardening of the aggregate, and the lower engagement segment terminating in a bolt head to effected threaded engagement of the cylindrical locking member to said socket body.

4,083,163

PACKAGE FORMING MACHINE

Robert H. Ganz, Saddle River, N.J., assignor to Ganz Brothers, Inc., Bergenfield, N.J.

Filed Oct. 22, 1976, Ser. No. 734,876
Int. Cl.[2] B65B *21/24*
U.S. Cl. 53—48 **28 Claims**



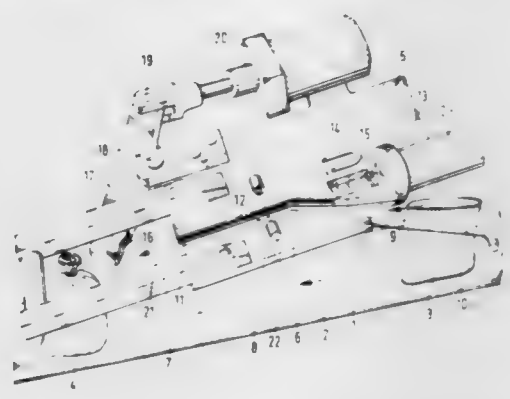
1. A package forming machine comprising conveyor means for advancing articles to be packaged in units of at least one article each along a predetermined path with adjacent units in spaced relation, means for supplying a continuous web generally along said path above said units, and web drawing means for drawing said web down between each adjacent pairs of units in sequence to provide sufficient web for wrapping about the sides and bottom of each unit, said web drawing means including at least one draw member, and circulating means for circulating said draw member in a plane disposed transversely of said path, said plane sloping relative to said path in the direction of movement of articles along said path.

4,083,164

CLIPPING MACHINE FOR CLOSING BAGS

Ewald Hagedorn, Berzeliusstrasse 89, 2 Hamburg 74, Germany

Filed May 18, 1977, Ser. No. 798,265
Claims priority, application Germany, Oct. 21, 1976, 2647598
Int. Cl.[2] B65B *61/00;* B23P *11/00*
U.S. Cl. 53—138 A **4 Claims**



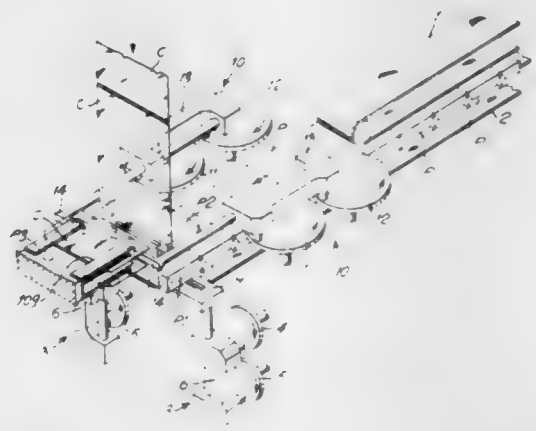
1. A clipping machine for closing bags and similar objects comprising a gate passageway through which the neck of an object to be closed is adapted to pass, said gate passageway having an enlarged entrance end and a narrow exit end, a guide in alignment with the gate passageway for receiving and guiding a U-shaped clip toward the exit end of the gate passageway, a punch mounted for movement longitudinally of the guide for driving a clip toward said exit end, and a die mounted for movement between a first position at the exit end of the gate passageway for cooperation with the punch, and a second position removed from the narrow end of the gate passageway for permitting the object to exit therefrom.

4,083,165

STACKING AND TRANSFERRING DEVICE FOR CELLOWRAPPERS FOR CIGARETTE PACKS

Paolo Maldina, Via Genova 6, Bologna, Italy

Filed Sep. 8, 1976, Ser. No. 721,265
Claims priority, application Italy, Sep. 24, 1975, 2804 A/75
Int. Cl.[2] B65B *35/30*
U.S. Cl. 53—164 **4 Claims**



1. A transferring and stacking device for a cigarette pack cellowrap machine having conveying means for delivering packs one after another to be cellowrapped and a step by step rotatably driven star wheel with a plurality of radial pockets receiving successive cigarette packs each with an associated cellophane sheet, comprising:

means for retaining a plurality of cigarette packs one above the other in a stack,

first and second transferring means continuously reciprocat-

ing each in phase opposition to the other and having a transverse component of displacement during reciprocation causing each transferring means to pass through the path of movement of the packs during the forward operating strokes and to prevent interference with the path of movement of the packs during the return strokes,

said first transferring means removing cigarette packs one after another from said conveying means and delivering each such pack to the bottom of the stack held by said retaining means causing the uppermost pack of the stack to rise,

said second transferring means removing the uppermost pack from the stack and delivering such packs each with a sheet of cellophane to successive pockets of said star wheel.

4,083,166

MULCHER ATTACHMENT FOR ROTARY POWER MOWER

Phil Haas, Charlotte, N.C., assignor to Walter Russel Betenbaugh, Jr., Charlotte, N.C.

Filed Oct. 20, 1976, Ser. No. 734,252
Int. Cl.[2] A01D *55/00*
U.S. Cl. 56—13.7 **12 Claims**



1. A mulcher attachment for use with a rotary mower for shredding and mulching clippings and leaves during operation of the mower, said mulcher attachment comprising

a circular disc having a centrally located mounting hole for securement of the disc to the drive shaft of a rotary mower for rotation alongside the mower cutting blade,

a plurality of relatively large openings at spaced locations around the disc,

a plurality of impeller blades extending upwardly from the disc and adapted for inducing a flow of air upwardly through said openings as the disc rotates while drawing clippings and leaves therewith, and

a series of shredder blades integrally formed along the peripheral edge of the disc and having cutting edges extending above the upper surface of the disc adapted for shredding and mulching the clippings and leaves cast centrifugally outwardly during rotation of the disc.

4,083,167

MULTI-ROW CROP HEADER

Curtis H. Lindblom, New Holland; Joe E. Shriver, East Earl; Robert A. Wagstaff, New Holland, and Edward H. Priepke, Stevens, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

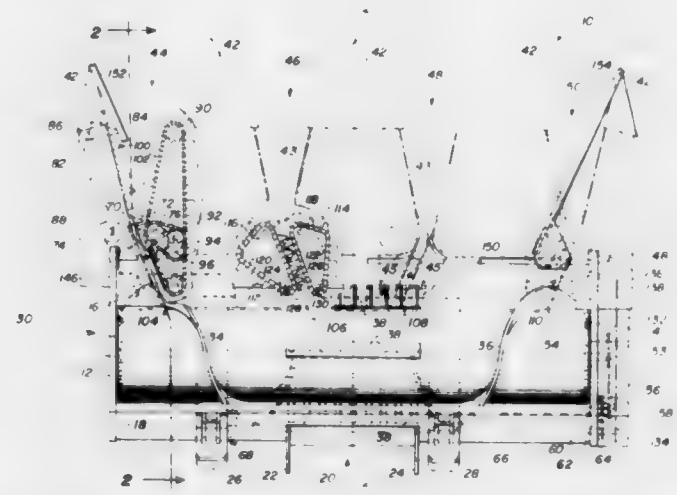
Filed Aug. 11, 1976, Ser. No. 713,468
Int. Cl.[2] A01D *45/02*
U.S. Cl. 56—98 **8 Claims**

1. A multi-row crop header for a crop harvesting machine having a central rear outlet and a transversely extending auger for conveying crop material laterally to said outlet and feeding the same therethrough, said header comprising:

(a) a plurality of fore-and-aft extending dividers, comprising a frame and a first pair of wall portions and a second pair of wall portions mounted on said frame and extending along opposite sides of said dividers said first wall portions defining forward crop gathering passageways between adjacent dividers;

(b) cutting means including elements mounted on said frame and disposed rearwardly of said forward passageways for severing stalks received by said forward passageways;

(c) a plurality of rear passageways defined between adjacent dividers by said second wall portions, said rear passageway extending from a like plurality of respective forward passageways and terminating at spaced apart locations along said auger;



(d) at least some of said rear passageways converging toward said central rear outlet;

(e) lower conveying means supported on said frame and operable along each of said rear passageways for gripping the butt-ends of severed stalks and conveying the same rearwardly toward said auger; and

(f) upper means supported on said frame and operable along at least the onboardmost of said rear converging passageways for directing the upper portions of the stalks inwardly toward the longitudinal centerline of the header as the butt-ends of the stalks are conveyed rearwardly along the rear passageways and fed into said auger at said spaced apart locations whereby butt-end feeding of said stalks to said harvester unit is facilitated.

4,083,168

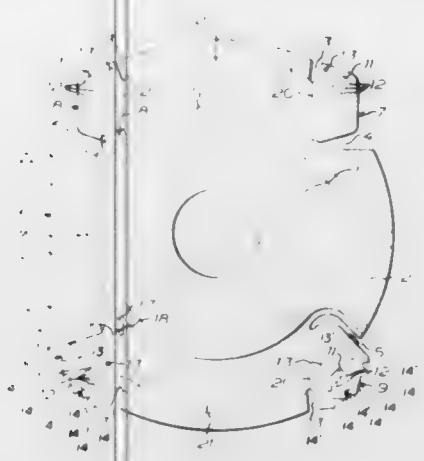
CASING FOR A LAWN MOWER WITH A HORIZONTALLY ROTATING KNIFE

Jerker Evert Oscarsson, Tranas, Sweden, assignor to Stiga AB, Sweden

Filed Jun. 9, 1976, Ser. No. 694,420
Claims priority, application Sweden, Jun. 18, 1975, 7507002
Int. Cl.[2] A01D *67/00*
U.S. Cl. 56—320.2 **5 Claims**

1. In a casing for a lawn mower with a horizontally rotating knife comprising an elevated portion defining a space for rotation of the knife, a generally vertical portion extending downwardly from the elevated portion, and a lower portion extending generally horizontally from the generally vertical portion around the elevated portion, means connected to the lower portion serving as fastenings for axle-mounted wheels and for a handle of the lawn mower, and portions serving as protective devices against accidental contact with the rotary knife, the improvement in which the casing as a whole is formed from a single integral piece of sheet metal or like material, the means serving as wheel and handle fastenings are suitable shaped

projections situated beyond the central elevated portion and bent upwardly with regard to the lower portion, and the lower



portion is provided at the outward edge thereof with upwardly bent edges.

4,083,169

OPEN-END SPINNING MACHINES

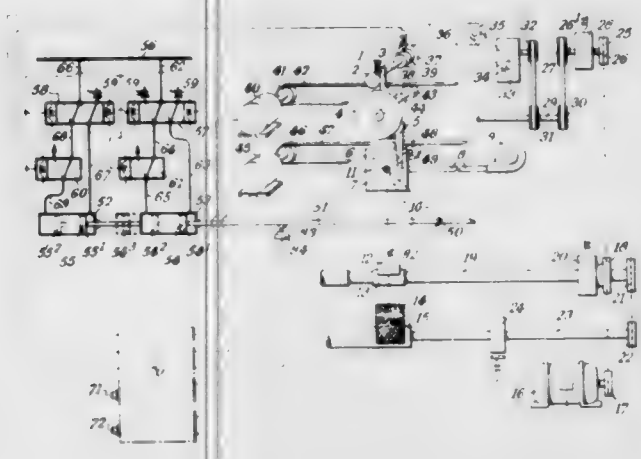
Robert Lane, Accrington, and John Whiteley, Clitheroe, both of England, assignors to Platt Saco Lowell Limited, Helmshore, England

Filed May 18, 1976, Ser. No. 687,600

Claims priority, application United Kingdom, May 20, 1975, 21629/75

Int. Cl.[2] D01H *15/00, 1/12*

U.S. Cl. 57—34 R **14 Claims**



1. A method of open-end spinning textile yarn comprising the steps during spinning of feeding fibres to a spinning means acting to twist the fibres fed thereto into a tail end of a yarn and withdrawing from the spinning means the continuously formed twisted yarn, and the further step following an interruption in spinning and preparatory to restarting spinning of applying with the spinning means stopped at least two cycles of a longitudinal reciprocating motion to the tail end of the yarn to remove excess twist therefrom.

4,083,170

DEVICES FOR REPLACING THE SLIVER CONTAINERS IN A ROTOR SPINNING MACHINE

Hans Raasch, Monchengladbach, Germany, assignor to W. Schlafhorst & Co., Monchengladbach, Germany

Filed Aug. 16, 1976, Ser. No. 714,980

Claims priority, application Germany, Aug. 16, 1975, 2536497; Jul. 10, 1976, 2631141

Int. Cl.[2] D01H *9/18*

U.S. Cl. 57—34 R **11 Claims**

5. In a rotor spinning machine having a multiplicity of spinning stations and sliver containers disposed in tandem in two rows, a device for replacing the sliver containers comprising a rotary table having means for carrying four sliver containers for a respective group of four spinning stations, said rotary

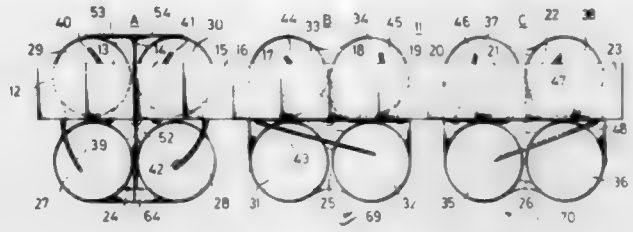


table being rotatable clockwise and counterclockwise from a middle position thereof into respective end positions.

4,083,171

METHOD AND APPARATUS FOR ELIMINATING AN ABNORMALITY IN A THREAD TO BE WOUND ONTO THE BOBBIN OF AN OPEN-END SPINNING DEVICE

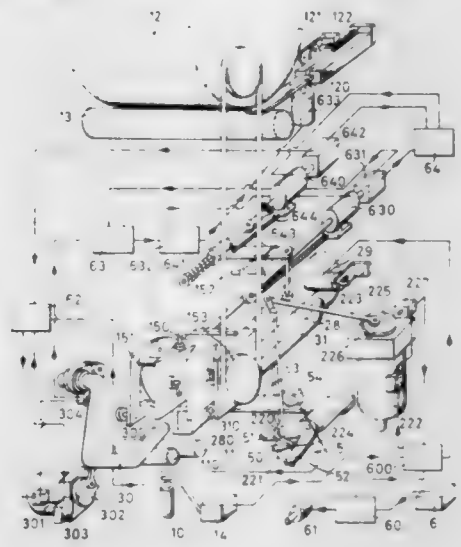
Reinhard Konig, and Stefan Langer, both of Ingolstadt, Germany, assignors to Schubert & Salzer, Ingolstadt, Germany

Filed Sep. 3, 1976, Ser. No. 720,411

Claims priority, application Germany, Sep. 12, 1975, 2540703

Int. Cl.[2] D01H *15/00, 13/16, 1/12*

U.S. Cl. 57—34 R **7 Claims**



6. An apparatus for eliminating an abnormality in yarn being produced by a spinning element of an open end spinning device and being wound on a bobbin, said device comprising:

a knotting device disposed in the normal running path of said yarn which extends from said spinning element to said bobbin;

means for deflecting a portion of said yarn leading to said knotting devce responsive to the occurrence of an abnormality in said yarn from said normal running path of said yarn to a deflected position;

means for severing said yarn in said deflected portion removing said abnormality and producing two resulting ends, said yarn end extending from said bobbin being retained in said knotting device;

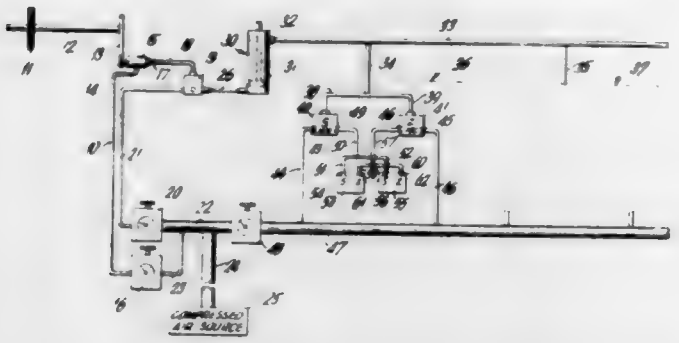
gripping means for gripping said resulting end extending from said spinning element while in said deflected position; and

means for pivoting said gripping means from said deflected position to adjacent said knotting device inserting said resulting end extending from said spinning element into said knotting device for being knotted to said end extending from said bobbin.

4,083,172
CONTROL SYSTEM FOR PNEUMATICALLY TREATED YARNS

Alan H. Norris, and Phillip W. Chambley, both of Rome, Ga., assignors to Champion International Corporation, Stamford, Conn.

Filed Apr. 28, 1977, Ser. No. 791,837
Int. Cl.[2] D01H *7/92*; D02G *1/04*
U.S. Cl. 57—34 AT **10 Claims**



1. A system for the twisting of yarn, comprising a variable speed yarn supply means, a first and a second yarn twist air device to receive yarn from said yarn supply means and to impart a twist to said yarn by a flow of air, a source of compressed air, a first and a second air line respectively connecting said first and second twist air devices to said source of compressed air,

first and second hydraulically controlled air valves respectively in said first and second air lines to control the flow of compressed air to said yarn twist air devices and provide a repeated sequence of a timed period of air flow followed by a timed period of no air flow,

said first hydraulic controlled air valve being normally open and being closed by a rise in hydraulic pressure and said second hydraulically controlled air valve being normally closed and being opened by a rise in hydraulic pressure,

control signal means connected to said yarn supply means to provide a control signal dependent upon the speed of said yarn supply means,

a hydraulic transducer connected to said control signal means to convert said control signal into a rise in hydraulic pressure, and a hydraulic line connecting said hydraulic transducer to said first and said second hydraulic controlled air valves.

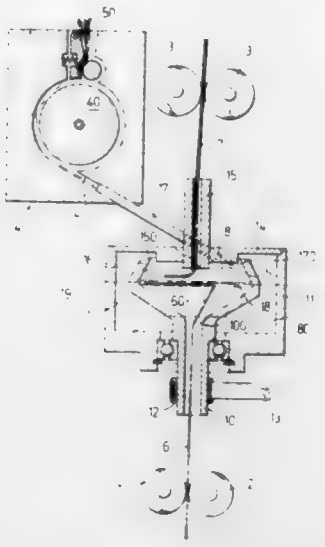
4,083,173
METHOD AND APPARATUS FOR THE MANUFACTURE OF CORE YARN IN AN OPEN-END SPINNING DEVICE

Peter Artzt, Reutlingen; Albert Bausch, Melchingen, and Gerhard Egbers, Eningen, all of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Continuation of Ser. No. 531,872, Dec. 12, 1974, abandoned.
This application May 3, 1976, Ser. No. 682,744
Claims priority, application Germany, Dec. 22, 1973, 2364230
Int. Cl.[2] D01H *1/12*; D02G *3/38*
U.S. Cl. 57—58.95 **12 Claims**

3. An open-end spinning device having a spinning rotor including a circumferential fiber collection surface at the location of the greatest interior diameter of the rotor and a drive shaft, a core thread supply tube, a fiber feed tube and a yarn drawoff tube, each of such tubes having an inner end projecting into the spinning rotor, the improvement comprising the inner end of the core thread supply tube and the inner end of the yarn drawoff tube being spaced, respectively, a substantial distance from a diametral plane through the fiber collection surface, the yarn drawoff tube inner end and the core thread supply tube inner end being disposed at opposite sides of said collection surface diametral plane so that an initial false twist can be imparted to core thread supplied through the core thread supply tube.

11. A method for manufacturing a core yarn in an open-end spinning device having a spinning rotor, a fiber collection surface in the spinning rotor disposed circumferentially thereof, fiber feed means supplying fibers to the collection surface and the core thread supplied to the spinning rotor

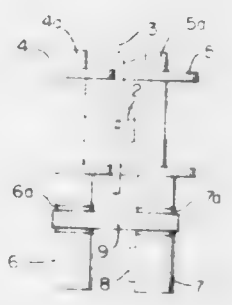


axially thereof and receiving fibers supplied to the rotor, which method comprises the steps of imparting an initial false twist to the core thread, wrapping fibers from the collection surface around the core thread, and retwisting the core thread to form a core yarn.

4,083,174
COUPLED FALSE TWIST SPINDLE AGGREGATE ARRANGEMENT

Wayne Stephen Stanko, Clemson, S.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed May 24, 1977, Ser. No. 799,927
Int. Cl.[2] D02G *1/06*; D01H *1/20*
U.S. Cl. 57—77.45 **9 Claims**



1. In a false twist spindle device having

first and second spindlette driving arrangements respectively made up of first and second drive wheels respectively affixed to first and second whorls;

a spindlette, through which yarn to be false-twisted passes, coupled to said drive wheels to be driven thereby; and

means, coupled to one of said whorls, for driving said one of said whorls and the drive wheel affixed thereto, thereby driving said spindlette;

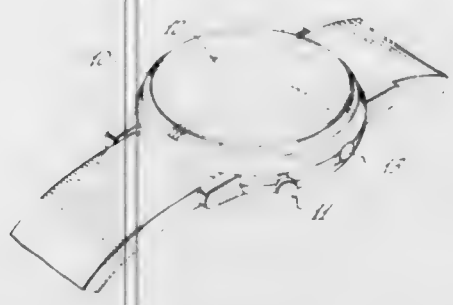
the improvement comprising means for preventing said first drive wheel from rotating at a speed different from the rotational speed of said second drive wheel, said preventing means comprising synchronization means, coupled to said first and second spindlette driving arrangements, for synchronizing the speed of rotation of said first drive wheel with that of said second drive wheel, thus reducing slippage between the drive wheels and said spindlette so that said spindlette is driven at a more uniform speed.

4,083,175

SOLID STATE WATCH WITH SINGLE TIME AND DATE SELECTOR BUTTON

Nick Petropoulos, Mission Viejo, and William G. Holt, Irvine, both of Calif., assignors to Frontier Manufacturing, Inc., Newport Beach, Calif.

Filed May 14, 1975, Ser. No. 577,201
Int. Cl.[2] G04B *19/24;* G04C *3/00;* G04B *27/00*
U.S. Cl. 58—4 A 5 Claims



1. A solid state watch comprising:
an oscillator whose output frequency is stable over an appreciable length of time;
a frequency divider responsively coupled to said oscillator for providing a one Hz output signal;
a time and calendar computer for computing and registering the values of seconds, minutes, hours, day and month;
a visual display means;
multiplexer means coupled to said time and calendar computer for supplying selected time and calendar date values to said visual display means;
display control means responsive to the number of times that said switch is actuated for enabling said multiplexer means to supply either time or calendar date information to said visual display means, said display control means being enabled in mutually exclusive time and date display modes upon sequential actuation of said single switch; and
means for automatically resetting after a predetermined time period said display control means to its original state prior to actuation of said single switch so that said date display mode is not entered unless said switch is twice actuated within said predetermined time period.

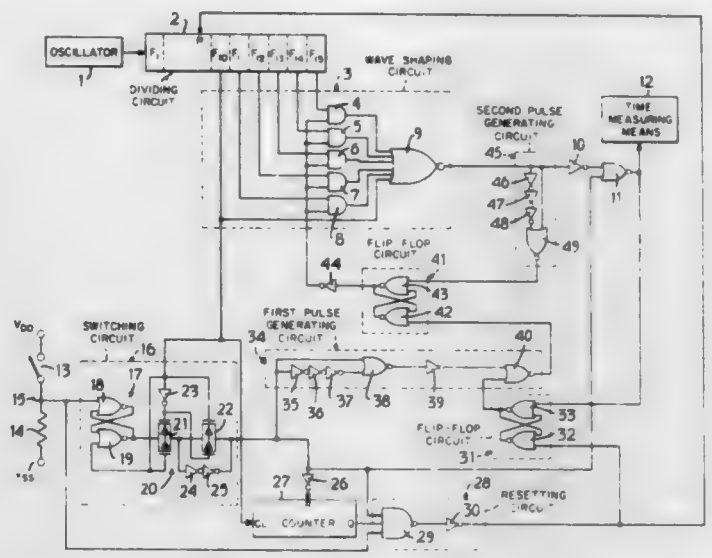
4,083,176

TIME CORRECTING SYSTEM FOR ELECTRONIC TIMEPIECE

Masato Higashi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Mar. 31, 1976, Ser. No. 672,462
Claims priority, application Japan, Apr. 3, 1975, 50-40615
Int. Cl.[2] G04C *3/00;* G04B *27/00*
U.S. Cl. 58—23 R 3 Claims

1. In an electronic timepiece, the combination comprising: an oscillator circuit for developing an oscillatory output signal; dividing circuit means comprised of a plurality of dividing stages connected in cascade for receiving the oscillatory output signal and for developing a time reference signal having a frequency representative of time; time measuring means receptive of the time reference signal for measuring and displaying time; and a time correcting system for correcting the time measured by said time measuring means, said time correcting system comprising a single manually operable switch operable between an open and a closed condition for controlling an electrical signal applied thereto, a switching circuit connected to said switch for developing a chatter-free switching signal indicating opening or closure of said switch, a gate circuit receptive of said time reference signal and responsive to said switching signal for applying the time reference signal to said time measuring means, a counter connected to receive a signal from a certain stage of said dividing circuit for counting the signal from said certain dividing circuit stage and for developing a count representative of the correcting mode of said correcting system, resetting circuit means for resetting all of said dividing stages of said dividing circuit when said counter develops a predetermined count and for releasing all of said divider stages from the reset state in response to opening of said switch, first pulse generating circuit means for developing a pulse signal in response to termination of said switching



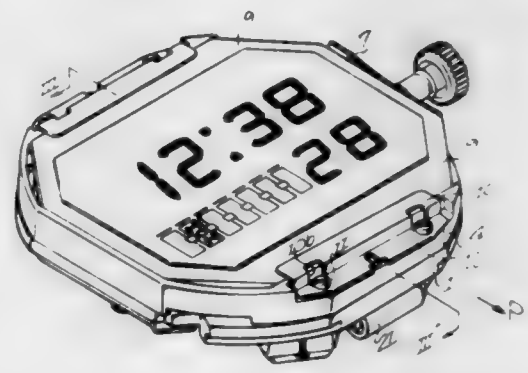
signal before said counter develops a predetermined count, a flip-flop circuit set by the output signal of said first pulse generating circuit and developing an output for enabling said divider circuit, and second pulse generating circuit means receptive of an output of said divider circuit for developing an output pulse to reset said flip-flop.

4,083,177

LIQUID CRYSTAL DISPLAY WRIST WATCH

Katsuo Nishimura, Tokorozawa; Tetsuya Yasuda; Tomomi Murakami, both of Tokyo; Masateru Yoshida, Tanashi; Minoru Natori, Hidaka, and Yoshio Iinuma, Higashimurayama, all of Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Sep. 24, 1974, Ser. No. 508,846
Claims priority, application Japan, Sep. 25, 1973, 48-111687
Int. Cl.[2] G04C *3/00;* G04B *29/00, 33/00;* B21J *7/12*
U.S. Cl. 58—23 R 18 Claims



1. A timepiece having a liquid crystal display and comprising:
an electric battery, a crystal oscillator driven by said battery for producing time reference signals;
an electronic circuit for driving the display by means of signals delivered from said crystal oscillator, said circuit having an array of wire leads from said circuit for connecting said display;
a liquid crystal cell having an array of exterior electrodes for connecting to said wire leads;
an outer case for enclosing a movement therein, said outer case including a protective glass cover and a rear cover, which constitutes at least two elements of said outer case, the improvement characterized by:

a supporting frame defining an open area slightly larger than the area of said liquid crystal cell so that the liquid crystal cell can be removed from the watch by passing through the opening, said supporting frame mounted in said outer case for maintaining an aligned relationship between the array of wire leads of said electronic circuit and said outer case, said supporting frame having two wall surfaces extending in intersecting planes for engaging and positioning the liquid crystal cell and lands for supporting the electrodes of the liquid crystal cell and the wire leads of the electronic circuit, said liquid crystal cell having a reference surface extending along a side of the cell having no leads, said reference surface corresponding in orientation to one of said two wall surfaces of said supporting frame, the position of the array of exterior electrodes of said liquid crystal cell being determined by abuttment between said one wall surface and said reference surface of said liquid crystal cell;

a resilient member for biasing a side of said liquid crystal cell opposed to said reference surface, thereby urging said reference surface of said liquid crystal cell against said one wall surface of said supporting frame; and

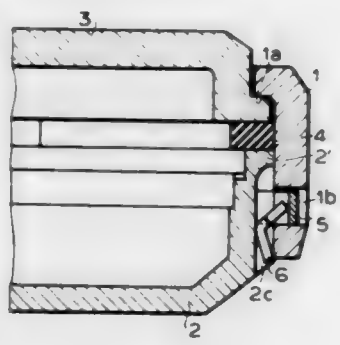
at least one holding frame plate releasably secured to said timepiece, and overlaying said liquid crystal cell to hold said liquid crystal cell within the opening of the supporting frame and for sandwiching the contact surfaces of the wire leads of the electronic circuit between the contact surfaces of the electrodes of the liquid crystal cell and the lands of the supporting frame.

4,083,178

WATCH CASE

Tsunetoshi Sekiguchi, Sayama, and Tsutomu Noguchi, Tokyo, both of Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Sep. 22, 1976, Ser. No. 725,560
Int. Cl.[2] G04B *37/00, 39/00*
U.S. Cl. 58—88 R **8 Claims**



1. A watch case comprising:

a. an external case band having an inside wall,

b. an internal case band having an outside wall,

c. a crystal,

d. a flexible packing sandwiched between the upper surface of said internal case band and the lower surface of said crystal,

e. a horizontal groove formed on the outside wall of said internal case band,

f. a leaf spring having an internal side fitted to to said horizontal groove,

g. a vertical groove formed on the outside wall of said internal case band into which a lever is inserted, and

h. a hole provided on the inside wall of said external case band through which said leaf spring is engaged, and wherein

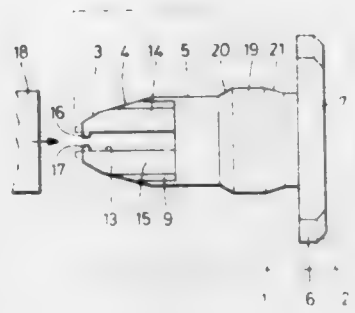
i. the operating point of said lever is within said vertical groove and on the internal side of said leaf spring.

4,083,179

REGULATOR KEY FOR WATCH MOVEMENTS

Urs Giger, Solothurn, and Edwin Jakob, Grenchen, both of Switzerland, assignors to ETA A.G. Ebauches Fabrik, Switzerland

Filed Oct. 26, 1976, Ser. No. 735,731
Claims priority, application Switzerland, Nov. 4, 1975, 14229/75
Int. Cl.[2] G04B *17/14*
U.S. Cl. 58—109 **6 Claims**



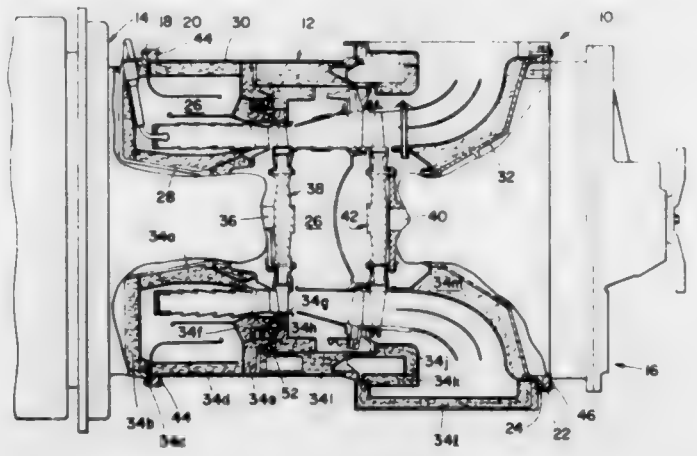
1. A one-piece regulator key for watch movements comprising two spaced apart prongs projecting from and formed integral with a common support, each of said prongs having an inward plane surface facing a corresponding inward plane surface of the other prong with said inward surface being substantially parallel to one another, each prong also having a free end with a tip at that free end, said tips containing respective inwardly facing protuberances projecting laterally and inwardly from said plane surfaces at said tips for decreasing the spacing between said plane surfaces at said tips, said prongs being adapted to hold a spring element in the spacing between said plane surfaces.

4,083,180

GAS TURBINE ENGINE INTERNAL INSULATION

LeRoy R. Thompson, and Edward G. Meints, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 1, 1976, Ser. No. 728,656
Int. Cl.[2] F02C *7/22, 7/24*
U.S. Cl. 60—39.16 R **5 Claims**



1. In a modular gas turbine engine assembly comprising a tubular case, a gasifier module detachably attachable with a first end thereof adjacent a first end of said case and a power output module detachably attachable at a first end thereof adjacent a second end of said case, said case and said modules defining a partially walled off combustion-ducting section within said engine, an improvement comprising a plurality of individually replaceable insulation packs providing heat insulation between said combustion-ducting section and each of said case, said gasifier module and said power output module, each of said packs comprising a high temperature resistant metallic sheet having held against a first side thereof a porous insulation blanket with a fine mesh of metal attached to said sheet and

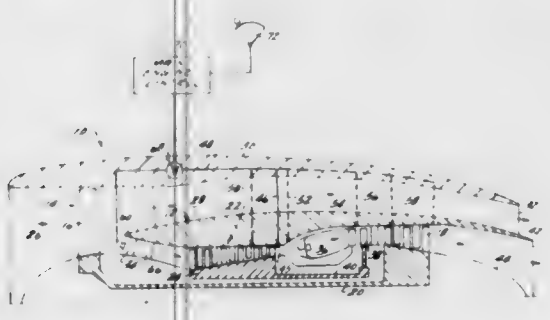
covering the surface of said blanket not abutted to said sheet and wherein said blanket is abutted against a wall portion of said combustion-ducting section with said sheet being spaced therefrom by the thickness of said blanket, said blanket not being bonded to said sheet by a bonding agent and a binder not being used in said blanket to bind said fibers to one another.

4,083,181

GAS TURBINE ENGINE WITH RECIRCULATING BLEED

Arthur P. Adamson, Cincinnati, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 14, 1976, Ser. No. 695,513
Int. Cl.[2] F02C *3/00*
U.S. Cl. 60—39.52 **3 Claims**



1. In a gas turbine engine having a compressor for pressurizing a motive fluid stream, a combustor downstream of said compressor and a turbine drivingly connected to said compressor, the improvement comprising:

means for bleeding a portion of the motive fluid from a first engine location at a relatively high temperature;

means for reintroducing the portion at substantially the same high temperature back into the engine motive fluid stream at a second location upstream of the combustor wherein it is mixed with motive fluid at a relatively lower temperature with respect to the bleed portion;

valve means in serial flow relationship between the bleed meeans and the reintroducing means; and

control means responsive to engine power setting for positioning said valve means to limit the bleed flow to low engine power operation.

4,083,182

MANIFOLD REACTOR

Taro Ikeya, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 20, 1976, Ser. No. 706,960
Claims priority, application Japan, Dec. 29, 1975, 50-156549
Int. Cl.[2] F01N *3/10*
U.S. Cl. 60—282 **5 Claims**



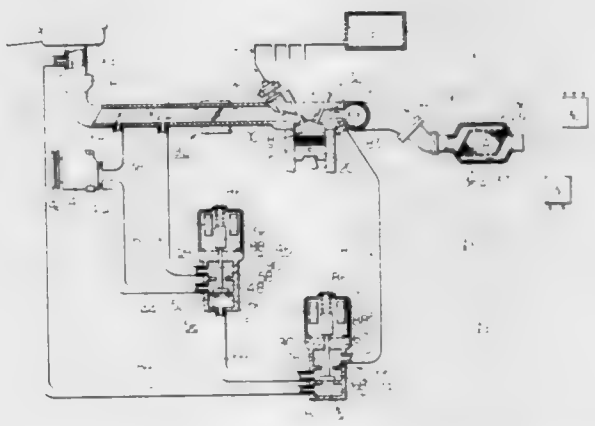
1. A manifold reactor for cleansing an exhaust from an internal combustion engine comprising a baffle, an intermediate shell and an outer shell, the intermediate shell and the baffle being respectively suspended from and sized in place on a suspension bolt that is fixed and fitted in place on the upper section of the outer shell, and an exhaust path is formed from an inlet of the said reactor to an outlet that is constructed outwardly of the baffle and the intermediate shell in the space formed between the baffle and the intermediate shell and runs through the said intermediate shell and the said outer shell, there being further provided a pair of retainer plates arranged in place at the middle and the lower part of said suspension bolt, respectively, in such a manner that said bolt vertically interposes and retains said intermediate shell and said baffle with said retainer plates.

4,083,183

INTERNAL COMBUSTION ENGINE FOR A VEHICLE

Takehisa Yaegashi, and Takayoshi Nakatomi, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 14, 1976, Ser. No. 723,281
Claims priority, application Japan, Dec. 17, 1975, 50-149471
Int. Cl.[2] F02B *75/10*; F02M *25/06*
U.S. Cl. 60—290 **4 Claims**



1. An internal combustion engine for a vehicle comprising:

an engine;

an intake system connected to said engine;

first means coupled to said intake system for sensing the amount of air introduced into the intake system of the engine;

second means for supplying an amount of fuel into the engine intake system in accordance with the amount of introduced air sensed by said first means in order to maintain a predetermined constant air-fuel ratio;

an exhaust system connected to said engine for receiving a resultant exhaust gas therefrom;

first pipe means forming a diversion passageway connected to the intake system located downstream from said first means;

pump means provided in said diversion passageway for forcibly diverting a part of said introduced air from said intake system of the engine;

a first re-introduction passageway connected to said intake system located downstream from said first means;

a second re-introduction passageway connected to said exhaust system;

a third re-introduction passageway connected to the intake system upstream from said first means;

valve means adapted for connecting the diversion passageway with one of said first, second or third re-introduction passageways;

sensing means for providing control signals indicating operating conditions of the engine; and,

means responsive to said control signals from said sensing means for operating said valve means to selectively couple said diversion passageway with one of said re-introduction passageways so that said diverted air is re-introduced

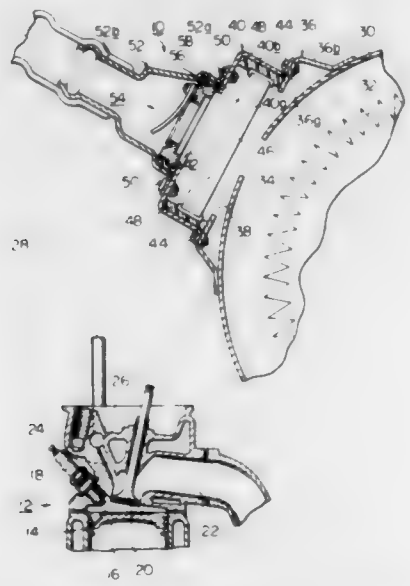
into the engine through respective re-introducing passageways in accordance with engine operating conditions, whereby an air-fuel mixture of an air-fuel ratio which is suitable for each of said engine operating conditions is supplied to said engine.

4,083,184

SYSTEM TO SUPPLY AIR INTO THE EXHAUST CONDUIT OF AN INTERNAL COMBUSTION ENGINE

Takashi Ushijima, Tokyo, and Yoshio Iwasa, Nagareyama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Aug. 4, 1976, Ser. No. 711,522
Claims priority, application Japan, Aug. 18, 1975, 50-113049[U]
Int. Cl.[2] F01N *3/10*
U.S. Cl. 60—293 **7 Claims**



1. A secondary air supply system for admitting air into the exhaust conduit system of an internal combustion engine provided with an air filter housing and a filter element therein for cleaning the air admitted thereinto, comprising:

a first casing having an open end connected to said air filter housing to provide fluid communication between the interior thereof and the interior of said housing, said first casing having a volume sufficient to make the first casing to act as an expansion chamber and thereby function as a noise silencer;

a second casing having an open end connected to said exhaust conduit system and another open end connected to another open end of said first casing so that the interior of said second casing communicates through the interior of said first casing with the interior of said air filter housing;

a reed valve device stationarily disposed in said second casing for selectively opening and blocking a fluid communication between said exhaust conduit system and the interior of said air filter housing in accordance with the magnitude of a negative pressure applied thereto from said exhaust conduit system; and

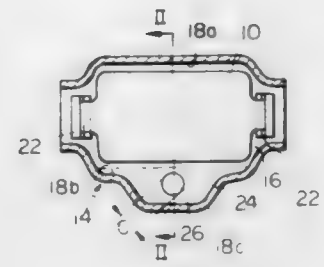
an elastomeric frame member in a space defined between the periphery of said reed valve device and a corresponding portion of the inner surface of said second casing for tightly supporting said reed valve device in said second casing without using any other supporting means.

4,083,185

SHIELDING ARRANGEMENT FOR EXHAUST PURIFIER

Hideo Aizawa, Yokosuka, and Makoto Moriya, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jun. 3, 1976, Ser. No. 692,383
Claims priority, application Japan, Jun. 24, 1975, 50-87529[U]
Int. Cl.[2] F01N *3/08*
U.S. Cl. 60—299 **3 Claims**



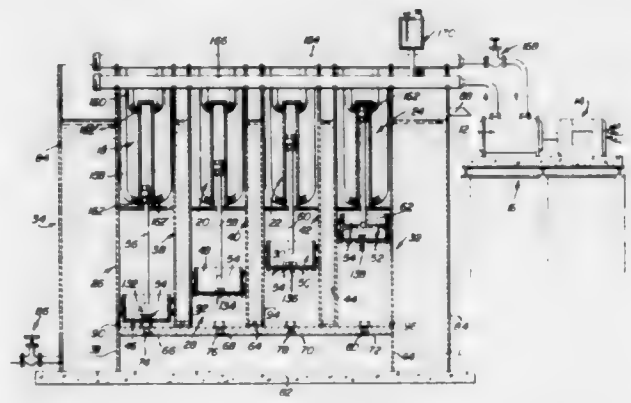
1. In an automobile having an exhaust purifier in its exhaust system, said exhaust purifier being disposed under the vehicle body of the automobile, the combination with said exhaust purifier of a shield member and means for supporting said shield member spaced apart from said exhaust purifier, said shield member having a channel receiving therein said exhaust purifier, a bottom wall and two side walls, said bottom wall and said side walls cooperating to form said channel, said bottom wall having an area coextending with said exhaust purifier and a second area disposed adjacent said first mentioned area, said second area being formed with at least one hole which is big enough to allow removal of any matters that have entered the space between said exhaust purifier and said bottom wall.

4,083,186

APPARATUS AND METHOD FOR CONVERTING HYDROSTATIC ENERGY TO ELECTRICAL ENERGY

Andrew W. Jackson, Sr., P.O. Box 646, Gadsden, Ala. 35901

Filed Dec. 22, 1976, Ser. No. 753,573
Int. Cl.[2] F16D *31/02*
U.S. Cl. 60—325 **13 Claims**



1. Apparatus for converting static energy into useful kinetic energy comprising, in combination:

(a) pump means connected to a motor for actuating same;

(b) a plurality of fluid engines connected to the pumps for actuating same; and

(c) supply means associated with the engines for transferring an operating fluid to and between the engines for driving the engines, each of the fluid engines including in combination:

(1) a container having a top portion and a bottom portion and extending vertically therebetween; and

(2) a float disposed in the container for vertical movement therein, with the float being provided with a recess opening toward the top portion of the container, with

the pump means being connected to the float for actuation by movement of the float within the container.

4,083,187

ACTUATOR FOR EMERGENCY OPERATION

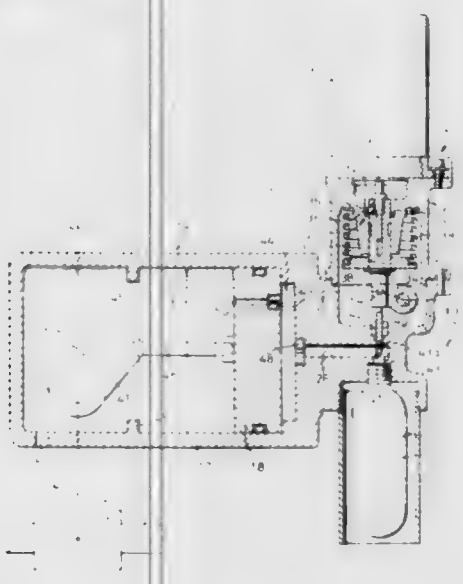
Tugio Nagashima, Yokosuka, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Dec. 7, 1976, Ser. No. 748,389

Claims priority, application Japan, Dec. 9, 1975, 50-145876; Dec. 10, 1975, 50-146258

Int. Cl.[2] F15B *11/06, 20/00*

U.S. Cl. 60—407 **5 Claims**



1. An apparatus for operating a driven device in an emergency, comprising:

an actuator mechanism having a cylinder, a piston slidably disposed within said cylinder and coupled to said driven device, an operational chamber formed by said cylinder and piston, and passage means communicating with said operational chamber;

a high pressure gas generating source defined by a

container vessel having an opening, a high pressure gas generating medium contained within said vessel, and a sealing member for sealing said opening of said vessel; and

means for unsealing said sealing member of said high pressure gas generating source in response to an emergency signal from outside of said seal, said unsealing means having a cutter with a sharp tip, spring means cooperating with said sharp tip for applying a force to urge said cutter in to pierce and rupture said sealing member, locking means for locking said cutter against said spring means for holding the cutter in a designated position, having said sharp tip directed toward and held apart from said sealing member, and unlocking means responsive to said emergency operation signal for unlocking said locking means and urging said spring means to advance said cutter causing rupture of said sealing member and thereby permitting a flow of

high pressure gas from said high-pressure gas generating medium through said opening for passage into said operational chamber and thereby causing said piston thereby to drive said driven device.

4,083,188

ENGINE TURBOCHARGER SYSTEM

Emerson L. Kumm, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Feb. 10, 1977, Ser. No. 767,276

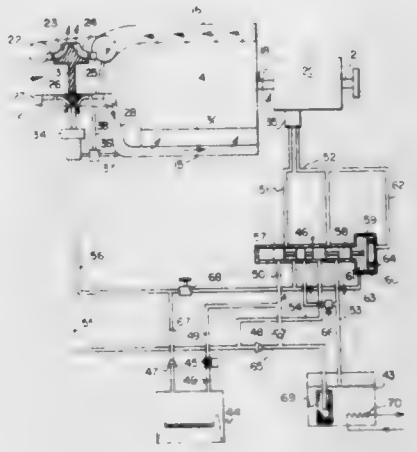
Int. Cl.[2] F02B *33/44*

U.S. Cl. 60—605 **18 Claims**

1. A turbocharger system for a low-compression engine and output transmission operatively connected therewith, the engine having an air intake manifold and an exhaust gas manifold, said turbocharger system comprising:

(a) a turbocharger with a gas turbine arranged to receive gas from the exhaust manifold of the engine and a compressor connected for operation by said gas turbine, said compressor being arranged to discharge air into the intake manifold of the engine;

(b) means for controlling the operation of said turbocharger having a pair of hydraulic power units, one being mechanically connected with said turbocharger and the other being mechanically connected with said engine through said output transmission;



(c) a hydraulic system connected with said power units; and

(d) means for varying the loading of the gas turbine via said hydraulic power units in accordance with predetermined phases of engine operation to maintain a substantially constant pressure differential between said inlet and exhaust manifolds.

4,083,189

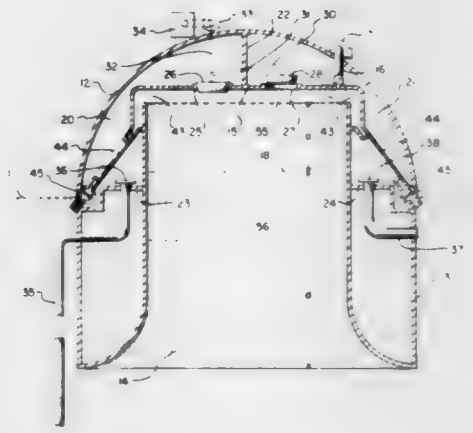
OPEN CYCLE METHOD AND APPARATUS FOR GENERATING ENERGY FROM OCEAN THERMAL GRADIENTS

John G. Fetkovich, O'Hara Township, County of Allegheny, Pa., assignor to Carnegie-Mellon University, Pittsburgh, Pa.

Filed Mar. 17, 1977, Ser. No. 778,791

Int. Cl.[2] F03G *7/04*

U.S. Cl. 60—641 **13 Claims**



1. Apparatus for generating energy from the thermal gradient in a body of water comprising a closed-top evacuated chamber partially immersed in the water and extending above the water level therein, first valved means connecting the closed portion of the chamber with a source of water vapor at a pressure corresponding to the surface temperature of the body of water, second valved means connecting the closed portion of the chamber with a source of water vapor at a pressure corresponding to the subsurface temperature of the body of water, means for repeatedly opening and closing the first valve and simultaneously closing and opening, respec-

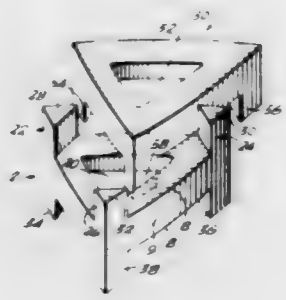
tively, the second valve, in synchronism with the natural frequency of oscillation of the water in the chamber so as to cause oscillation of the water in the chamber, and means for extracting energy from the oscillating water in the chamber.

4,083,190

FUNDAMENTAL ARMOR MODULE IN BREAKWATER NET LINKED SYSTEM

Raul Pey, Casilla 2374, Santa Cruz, Bolivia

Filed May 10, 1976, Ser. No. 684,484
Int. Cl.[2] E02B *3/06*
U.S. Cl. 61—4 **6 Claims**



1. A network for use in a breakwater, said network as seen in plan having a central zone bounded by an outer zone and said network comprising a plurality of adjacent bodies in a support layer and a plurality of adjacent bodies in a supported layer,

all of the bodies of said support layer being at a lower level and all of the bodies of said supported level being at an upper level,

said levels being generally parallel and closely adjacent to one another and means keying said upper and lower levels together forming a breakwater network,

each body of said support layer and each body of said supported layer being of a common size as seen in plan, and

each of said bodies of each of said layers having an upper face and a lower face,

said faces of each body being bounded at their respective peripheral edges by a side surface, and

each body having a cylindrical through recess perpendicular to the faces and of a first predetermined cross sectional area and configuration, said recesses extending centrally between the faces,

said faces of each body of said layers being symmetrical as seen in plan with respect to a vertical center plane perpendicular to the faces,

the upper face of each of the bodies of said support layer in the central zone confronting the lower faces of the bodies of the supported layer in the central zone,

a plurality of three equispaced legs integral with each of the bodies of said supported layer, each leg extending a common distance from the respective lower faces of their respective associated bodies and being adjacent the peripheral edge,

each of the legs of said supported layer having a proximal end and a distal end and being of a cross sectional area less than one-third the cross sectional area of said through recess and of a length between said ends extending from said lower face of the bodies of said supported layer a distance equal to the distance between the faces of said bodies through said recess, and each leg of the bodies of the supported layer extending between adjacent bodies of the support layer,

a plurality of three equispaced arms integral with each of the bodies of the support layer,

each arm extending a common distance from the respective upper face of their associated respective body and being adjacent the peripheral edge,

each of said arms of said support layer having a proximal end and a distal end and being of a cross sectional area less than one-third the area of said through recess of the bodies of the supported layer and of a length between said ends extending from said upper face of the body of said support layer a distance equal to the distance between the faces of said body through said recess, and each arm of the bodies of the support layer extending into a recess of one of the bodies of the supported layer in the central zone, and

the cross sectional area of said arms of the bodies of the support layer and the bodies about the recesses of the supported layer and, also, the legs of the supported layer about the faces of the bodies of the support layer comprising said keying means to loosely interconnect the bodies and layers and in combination defining a breakwater network, and

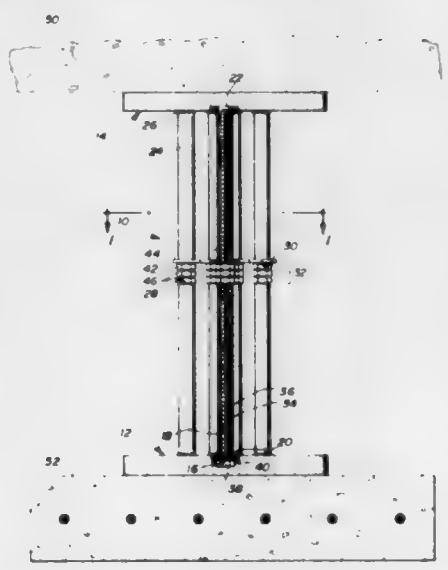
support means extending from the lower face of the supported layer to engage a support surface.

4,083,191

PIER FOR FOUNDATION LEVELING

Emmett F. Donnelly, 3507 Mayhew Dr., Dallas, Tex. 75228

Filed Jan. 14, 1977, Ser. No. 759,772
Int. Cl.[2] E02D *35/00*
U.S. Cl. 61—51 **4 Claims**



1. A foundation leveling pier to maintain a foundation in adjusted condition, comprising:

first and second, opposed, substantially parallel end plates;

one of said end plates engaging a foundation section to be supported and the other end plate engaging an underlying concrete pad;

at least said first end plate having a plurality of apertures formed therethrough;

a first plurality of pipe sections equal in number to the number of apertures formed in the first end plate, each of the pipe sections comprising the first plurality being secured to the first end plate in alignment with one of the apertures formed therethrough and extending therefrom towards the second end plate;

a second plurality of pipe sections equal in number to the number of pipe sections comprising the first plurality, each of the pipe sections comprising the second plurality being secured to the second end plate and extending therefrom toward the first end plate and in alignment with one of the pipe sections comprising the first plurality;

a plurality of elongate externally threaded members each fixedly secured to the first end plate and extending through one of the apertures formed therein and through one of the pipe sections comprising the first plurality and into one of the pipe sections comprising the second plurality; and

a plurality of internally threaded members equal in number to the number of externally threaded members and each threadedly engaging one of the externally threaded members between the respective first and second pipe sections, said internally threaded members adapted for rotational movement with respect to the externally threaded mem-

bers to effect relative positioning between the first and second end plates.

4,083,192

PILING ALIGNMENT SYSTEM

Mark T. Diekman, Rte. 1, Box 53, Cheboygan, Mich. 49721

Filed Oct. 27, 1976, Ser. No. 736,124
Int. Cl.[2] E02D *5/16*
U.S. Cl. 61—63 **13 Claims**



1. In a system for assembling pile sections that have male and female interlocking edges including a means for suspending a pile section at an upper portion thereof and means for aligning adjacent interlocking edges wherein said aligning means include means for fixedly attaching the aligning means to a bottom section of the suspended pile section, means for retaining an interlocking edge of an adjacent set pile section in close approximate lateral alignment to the interlocking edge of the attached pile section, and means for guiding the aligning means from a remote distance so that an operator can guide the aligning means from the ground; the improvement in the aligning means comprises:

means in an immovable and rigid position with respect to the suspended pile section with front and side surfaces for laterally accepting the interlocking edge of the set pile and for abutting side and front portions of the interlocking edge of the set pile along vertically varying positions thereof such that the front and side surfaces precisely align the interlocking edges of the suspended and set pile sections when the front and side edges are in abutment with the side and front portions of the interlocking edge of the set pile whereby the suspended pile edge is not skewed with respect to the set pile edge.

4,083,193

OFFSHORE APPARATUS AND METHOD FOR INSTALLING

James E. Evans, Houston, Tex., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 17, 1976, Ser. No. 751,837
Int. Cl.[2] E02B *17/00*
U.S. Cl. 61—96 **38 Claims**

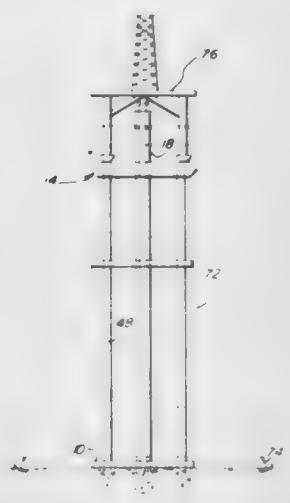
1. Apparatus for conducting offshore operations in deep water comprising:

a template base lying on the ocean floor in a substantially horizontal position and provided with a plurality of laterally spaced vertically extending passages therethrough;

a plurality of elongate rigid anchorage legs extending vertically through at least some of said passages and anchored in the ocean bed below the base;

at least one buoyant stabilizer member provided with a plurality of vertically extending passages therethrough arranged in registry with the passages in the base and mounted on the legs at a location intermediate their vertical length, with the legs passing through the corresponding passages in the stabilizer member;

and a buoyant load platform located below the surface of the water and provided with a plurality of vertically extending passages therethrough also arranged in registry with the passages in the base and mounted on the legs at their upper portions, with the legs passing through the corresponding passages in the platform;



the stabilizer member being fixedly connected to the legs to minimize lateral swaying movement of the column assembly;

the buoyancy of the stabilizer member and the platform maintaining the legs in tension;

and the platform having sufficient excess buoyancy to enable it to support the maximum predetermined load which it is required to carry.

4,083,194

PROCESS FOR RECOVERY OF LIQUID HYDROCARBONS

James F. Millar, Lilydale, and John E. Cockshott, Middle Brighton, both of Australia, assignors to Fluor Engineers and Constructors, Inc., Los Angeles, Calif.

Filed Dec. 2, 1976, Ser. No. 746,839
Int. Cl.[2] F25B *15/00*
U.S. Cl. 62—101 **10 Claims**



1. In a process for separating a stream of methane gas from liquified heavier hydrocarbons in which the methane is compressed after separation thereby heating the methane stream, the improvement comprising:

(a) passing the methane gas in indirect heat exchange with a solution comprising a refrigerant in a suitable solvent to distill said refrigerant from the solvent;

(b) condensing the distilled refrigerant;

(c) expansively cooling the condensed refrigerant;

(d) passing the cooled refrigerant in a heat exchange rela-

tionship with the liquified hydrocarbons to cool said hydrocarbons; and

(e) absorbing the refrigerant in said solvent.

4,083,195

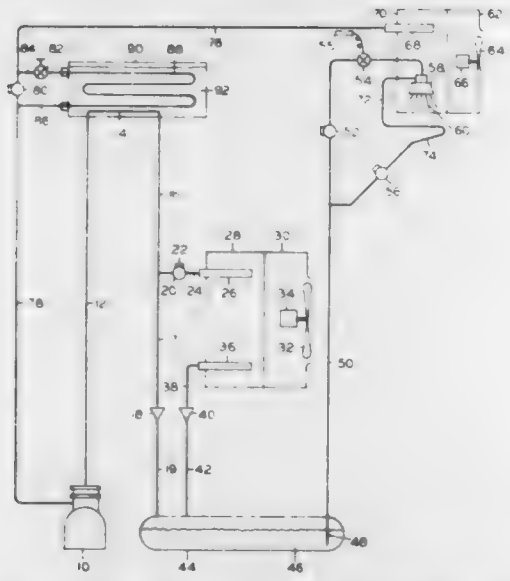
REFRIGERATING AND DEFROSTING SYSTEM WITH DUAL FUNCTION LIQUID LINE

Daniel E. Kramer, Yardley, Pa.; Israel Kramer, Trenton, N.J.; Harold Kramer, Morrisville, Pa.; Lawrence C. Board, Dallas, Tex.; Ram Kumar Chopra, and William Micai, both of Trenton, N.J., assignors to Kramer Trenton Company, Trenton, N.J., by said Israel Kramer, Harold Kramer, Lawrence C. Board, Ram Kumar Chopra, William Micai

Continuation-in-part of Ser. No. 678,477, Apr. 20, 1976, abandoned. This application Apr. 18, 1977, Ser. No. 788,325

Int. Cl.[2] F25B *41/00, 47/00*

U.S. Cl. 62—196 B **27 Claims**



22. A refrigeration system having refrigerating periods and defrost periods, said system having: compressor, discharge line, condenser, liquid line, expansion device, and defrosting evaporator, conduit connected seriatim; a condenser bypass, said bypass connecting the discharge line with the liquid line; a hot gas line connecting the liquid line to the evaporator; first valve means in the hot gas line for controlling flow therethrough; wherein the improvement comprises: second valve means in the discharge line for positively stopping flow to the condenser during defrosting periods; and third valve means in said bypass for allowing flow through the bypass during defrosting periods.

4,083,196

COMPRESSOR REFRIGERATION PLANT

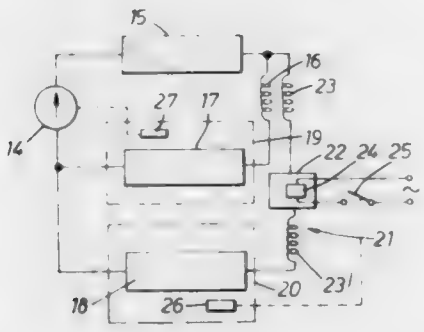
Bent Karll, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 24, 1976, Ser. No. 744,632

Claims priority, application Germany, Nov. 28, 1975, 2553562

Int. Cl.[2] F25B *41/06*

U.S. Cl. 62—200 **6 Claims**



1. A refrigeration unit comprising a compressor, a condenser, an evaporator, capillary tube section extending between and in series with said condenser and said evaporator, a chamber upstream from said capillary section, a PTC resistor in said chamber, said PTC resistor having an operating range wherein a low resistance corresponds to an evaporating temperature T1 and a high resistance corresponding to the refrigerant oil coking temperature T2, and circuit means including switch means for providing current to said resistor.

4,083,197

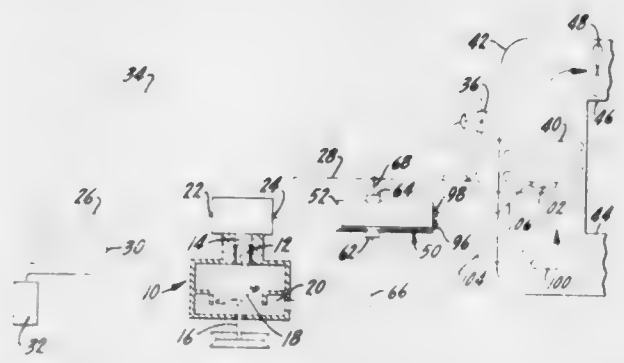
AIR CONDITIONER CONTROL SYSTEM

Andrew Peter Boehmer, Barrington, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 14, 1976, Ser. No. 732,270

Int. Cl.[2] F25B *41/00*

U.S. Cl. 62—211 **3 Claims**



1. A control system for a space air conditioning apparatus of the type including a variable capacity compressor, a condenser, an expansion device and an evaporator all connected in closed circuit, series flow relation, and means for circulating air over said evaporator into the space to be conditioned, said system comprising: means for modulating the capacity of said compressor in response to: (1) the temperature of the air in the space to be conditioned and (2) the temperature of said evaporator, said last-named means including a control valve having a valve body and a moveable spool for controlling flow between inlet and outlet ports, a first spool actuator operated in response to the air space temperature and a second spool actuator operated in response to evaporator temperature, and means for coordinating the effect of said first and second spool actuators such that movement of the spool, and concomitant flow control, become an additive function of air and evaporator temperatures.

4,083,198

AIR CONDITIONER CASE WITH CONDENSATION SHIELD

Donald I. Dennis, Rte. 4, Box 174-B, Tyler, Tex. 75701

Continuation of Ser. No. 671,035, Mar. 29, 1976, abandoned. This application Apr. 29, 1977, Ser. No. 792,227

Int. Cl.[2] F25D *21/14*; B60H *3/04*

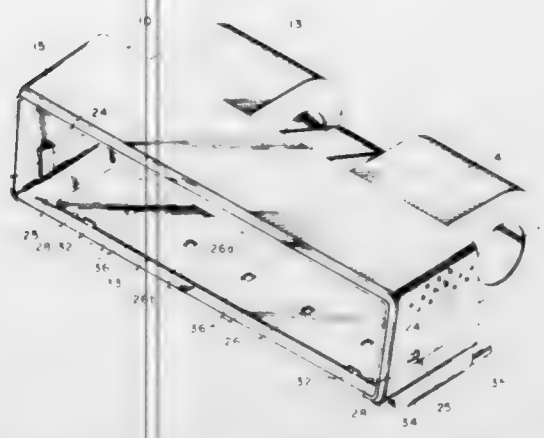
U.S. Cl. 62—285 **13 Claims**

1. An air conditioner case comprising:

(a) a housing having a top wall, a bottom wall and side walls defining an enclosure with a rear wall having an opening through which air enters the enclosure and a front wall having an opening through which air exits the enclosure,

(b) an expansion coil support assembly shield adapted to support an expansion coil assembly between said shield and said top wall, said shield having substantially the same dimensions as said bottom wall positioned within said housing substantially parallel with and spaced from said bottom wall defining a cavity between said shield and said bottom wall, the rear edge of said shield adjoining the rear wall of said housing,

(c) means for providing fluid communication between said cavity and said enclosure, and



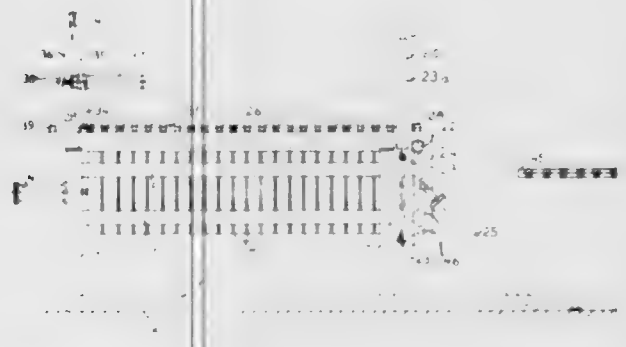
(d) a drain opening providing fluid communication between said cavity and the exterior of said enclosure.

4,083,199

CONTACT FREEZING APPARATUS COMPRISING MUTUALLY MOVABLE FREEZING PLATES

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed Jul. 7, 1976, Ser. No. 703,305
Claims priority, application Denmark, Jul. 10, 1975, 3134/75
Int. Cl.[2] F25C *5/14*
U.S. Cl. 62—341 **6 Claims**



1. A contact freezing apparatus, comprising frame means for slidably supporting a plurality of freezing plates and means for moving said freezing plates along said frame means; feeding means for circulating freezing medium and thawing medium through said freezing plates; beam means for slidably supporting a plurality of comb means above said freezing plates, and means for moving said comb means along said beam means; said beam means being secured to a carriage; vertical guide means for said carriage and lifting means for lifting and lowering said carriage along said vertical guide means between a lower and an upper position and means for rotating said carriage and said beam means 90° in said upper position.

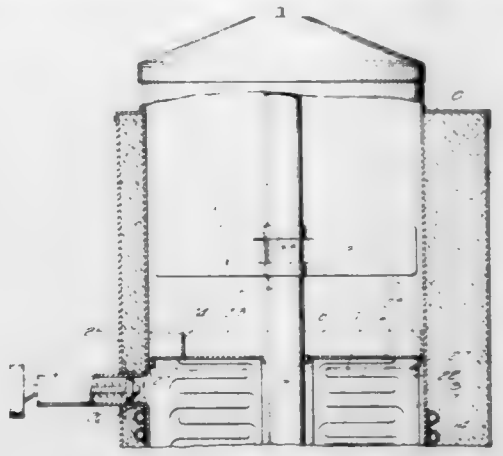
4,083,200

SLUSH FREEZER

Paul L. Luxem, Kiel, Wis., assignor to Stoelting Brothers Company, Kiel, Wis.

Filed Jul. 22, 1976, Ser. No. 707,571
Int. Cl.[2] A23G *9/00*
U.S. Cl. 62—342 **4 Claims**

1. Slush freezing apparatus having an upper liquid reservoir, a lower slush freezing chamber, a divider plate therebetween, passage forming means through the divider plate, and an agitator in said liquid reservoir for stirring the liquid therein, said freezing chamber having a dispensing spigot with its inlet adjacent the divider plate, a sealer ring adjacent the divider plate, said ring having a gap which interrupts its continuity, said gap being disposed adjacent the spigot inlet to channel flow of liquid from the reservoir to the freezing chamber into



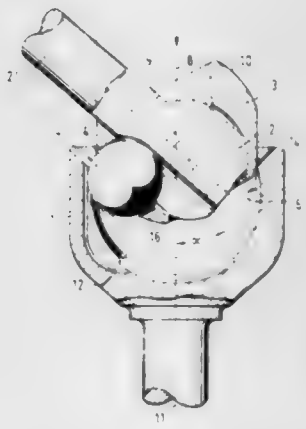
the vicinity of said inlet to flush said inlet with liquid from the reservoir and inhibit ice formation over said inlet.

4,083,201

CONSTANT VELOCITY UNIVERSAL JOINT

Werner Krude, Neunkirchen, and Alfons Jordan, Hennef, both of Germany, assignors to Uni-Cardan AG, Lohmar, Germany

Filed Jul. 7, 1976, Ser. No. 703,131
Claims priority, application Germany, Jul. 11, 1975, 2531009
Int. Cl.[2] F16D *3/33, 3/30*
U.S. Cl. 64—21 **3 Claims**



1. A constant velocity universal joint comprising an outer joint member having a cavity therein and an opening thereto, said cavity having a spherical surface and there being a plurality of grooves in said spherical surface, an inner joint member within said outer joint member and having a plurality of grooves in its outer surface corresponding in number to and opposed from said outer joint member grooves to define pairs of opposed grooves, a plurality of balls between said joint members with each ball being in a pair of opposed grooves, a cage between said joint members and having a plurality of openings therein to retain said balls in a plane which is perpendicular to the axis of the cage and which bisects the angle between the joint members, said cage having a first spherical surface on its outer face guided on said spherical surface of the outer joint member and a second sperical surface on its inner face, said inner joint member having a covex spherical outer surface coacting with said cage second spherical surface, the centers of said first and second cage spherical surfaces being equidistant on opposite sides of the ball plane, a portion of the outer face of said cage being cylindrical and the axis of said face portion forming an angle with the axis of the cage, the diameter of said cylindrical portion being less than the diameter of the opening in said outer joint member.

4,083,202

STROKING UNIVERSAL JOINT HOUSING

Kenneth L. Westercamp, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 5, 1976, Ser. No. 711,852
Int. Cl.[2] F16D *3/30, 3/02*
U.S. Cl. 64—32 R 3 Claims



1. In a stroking universal joint having an inner drive member having a plurality of circumferentially spaced radial trunnions, an outer drive member having a flange normal to its longitudinal axis and a plurality of fingers extending axially from said flange, said fingers having longitudinal radial faces forming a plurality of circumferentially spaced, radially open, longitudinal drive channels and an intermediate drive roller rotatably mounted on each of said trunnions of said inner drive member and disposed in one of said longitudinal drive channels of said outer drive member, the improvement comprising:

a unitary sheet metal housing for enclosing said longitudinal drive channels and retaining said intermediate drive rollers therein,

said housing comprising a sleeve embracing said fingers and having one end tightly engaging an outer periphery of said flange,

a plurality of integral radial tabs entending inwardly at the opposite end of said sleeve and juxtaposed respective radial end faces of said fingers,

each of said radial tabs having an integral perpendicular ear juxtaposed a longitudinal radial face of one of said fingers for wedging engagement between it and one of said intermediate drive rollers, and

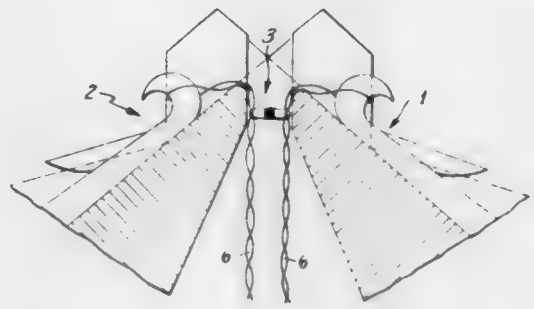
each of said longitudinal drive channels having one of said ears disposed therein to retain one of said intermediate drive rollers in said drive channels.

4,083,203

KNITTING PROCESS UTILIZING MULTI-LEVEL PRESSER FOOT

Andre P. Theys, Wondelgem, Belgium, assignor to Fabrique Nationale Herstal S.A., Herstal, Belgium

Filed Mar. 1, 1977, Ser. No. 773,225
Claims priority, application Belgium, May 31, 1976, 55071
Int. Cl.[2] D04B *7/04*
U.S. Cl. 66—64 6 Claims



1. A process for knitting a composite article including connected rib knit and jersey knit areas during a continuous knitting operation of a knitting machine having a double needle V bed and a presser foot capable of being automatically adjusted during the operation of the machine to operate at either of two preselected levels that are respectively suited for rib or jersey knitting, comprising

(a) adjusting the operating level of the presser foot machine at a level best suited for knitting the first area (rib or jersey) of the article;

(b) knitting the first area of the article;

(c) adjusting the operating level of the presser foot at a second level best suited for knitting the second area (jersey or rib) of the article, said second area having a different knit pattern than the first area;

(d) knitting the second area of the article;

(e) all of the steps (a) through (d) being carried out during the said knitting operation of the machine.

4,083,204

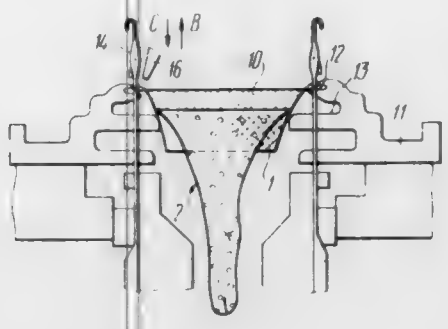
SINGLE PLY HOSIERY WELT AND METHOD OF ATTACHMENT

Evgeny Ivanovich Petrov, Belovezhskaya ulitsa, 91, kv. 77; Vladimir Konstantinovich Raevich, Kutuzovsky prospekt, 9, kv. 188; Elena Nikolaevna Kolesnikova, prospekt Budennogo, 1/1, korpus 2, kv. 44; Zinaida Vyacheslavovna Zhernovaya, ulitsa Serafimovicha, 2, kv. 384, all of Moscow; Evgeny Nikolaevich Skvortsov, selo Spass, 214, Krasnogorsk Moskovskoi oblasti; Ljudmila Ivanovna Dagaeva, ulitsa Frunze, 46a, kv. 12, Tula; Jury Prokopievich Korovnikov, ulitsa Leiteizena, 44, kv. 127, Tula; Pavel Anatolievich Agafonov, ulitsa Sedova, 39b, kv. 17, Tula; Alexandr Ivanovich Bystrov, ulitsa Kalinina, 81, kv. 58, Tula; Stanislav Alexeevich Panin, ulitsa Sedova, 39b, kv. 5, Tula, and Vasily Trofimovich Agafonov, prospekt Lenina, 62, kv. 89, Tula, all of U.S.S.R.

Filed May 24, 1976, Ser. No. 688,998
Int. Cl.[2] D04B *1/26*
U.S. Cl. 66—178 R 3 Claims

1. An article of hosiery knitted on a circular knitting machine comprising: a first part of the article which is to serve as a normal welt and is an ordinary single-ply fabric knitted on the circular knitting machine and having an unravelling edge at one end and a last course at the other end comprising loops which are substantially identical in size with loops of adjacent courses; a second part of the article knitted on the circular knitting machine separately from said first part and having a last course of loops substantially identical in size with the loops of adjacent courses and also substantially identical with said loops of said last course and adjacent courses of said first part; and joining courses comprising individual loops of substantially identical construction to the aforementioned loops join-

ing each loop of the last course of said first part with each loop of the last course of said second part and arranged on the



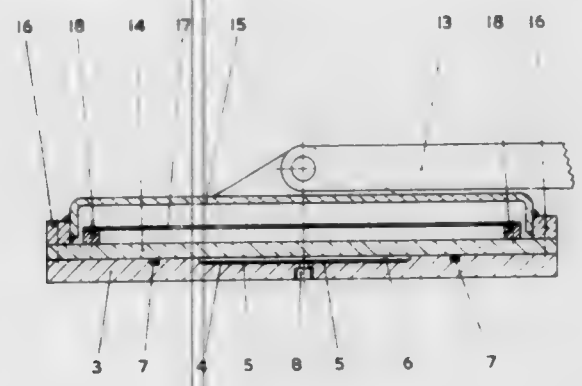
reverse side of the article, thereby forming a linking line of the parts, said loops of the last courses of said parts having a stitch length resulting only from the circular knitting thereof.

4,083,205

TEXTILE PRINTING APPARATUS

William Clarke; Brian Glover, and Guillaume Ward Jamin, all of Manchester, England, assignors to Imperial Chemical Industries Limited, England

Continuation of Ser. No. 174,906, Oct. 14, 1971, abandoned.
This application Jul. 21, 1976, Ser. No. 707,248
Claims priority, application United Kingdom, Nov. 5, 1970, 52710/70
Int. Cl.² D06B *1/10*; B30B *15/34*; D06F *71/36*
U.S. Cl. 68—5 C **11 Claims**



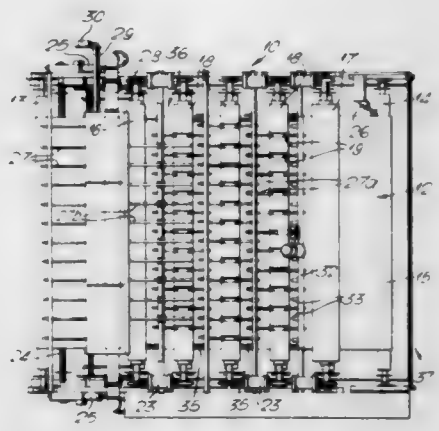
1. Apparatus suitable for carrying out the coloration of synthetic textile materials with a printed carrier material by a vacuum transfer printing process in an intermittent operation consisting essentially of upper and lower rigid platens mounted for relative movement towards or away from each other so that when said platens are closed, said platens cause the printed surface of said carrier material to be pressed into intimate contact with said textile material, means for heating at least one of the platens at least in the area where the carrier material and textile material are pressed together to a temperature above 100° C. so that the heat therefrom is transferred by contact to one or both of said textile material and said carrier material, sealing means for enclosing an air-tight region extending between opposed portions of the surfaces of the platens when the platens are closed so that said region is air-tight, whereby said synthetic textile material and said printed carrier material are containable within said air-tight region enclosed by said sealing means and means for evacuating the said region to a pressure of not more than 100 mm. of mercury.

4,083,206

WASHING MACHINES AND RINSING MACHINES

Maurice Charles Lemon, Leigh, and John Francis Spear, Holmbury St. Mary, both of England, assignors to Universal Towel Company Limited, Sussex, England

Filed Apr. 15, 1976, Ser. No. 677,436
Claims priority, application United Kingdom, Apr. 17, 1975, 15898/75; Jan. 26, 1976, 2946/76
Int. Cl.² D06B *1/06*
U.S. Cl. 68—22 R **11 Claims**



1. A rinsing machine suitable for rinsing a washable dust mat comprising in succession first squeeze means, pressure means following the first squeeze means and at least one intermediate squeeze means between the first squeeze means and the pressure means, each successive squeeze means and pressure means extending transversely of the direction of movement of the mat and being spaced apart from each other longitudinally of the direction of movement of the mat, means for applying rinsing water onto the mat between the pressure means and the intermediate squeeze means, and impervious belt means for feeding the mat in a flat condition through the first squeeze means, intermediate squeeze means and pressure means in succession, said belt being inclined upwardly in the direction of movement of the mat from the first squeeze means to the pressure means, said belt being inclined upwardly in the direction of movement of the mat from the first squeeze means to the pressure means, there being provided means entirely within the transverse extent of said squeeze means for allowing part of the rinsing water to pass from the intermediate squeeze means successively in the direction contrary to the direction of movement of the mat whereby the mat is rinsed between each squeeze means by water of which a part is removed by the next succeeding squeeze means and finally the pressure means, which means for allowing part of the rinsing water to pass from the intermediate squeeze means in a direction contrary to the direction of movement of the mat is disposed at least partially within the width of the belt.

4,083,207

APPARATUS FOR THE WET TREATMENT OF TEXTILE MATERIALS

Carl Lennart Ekstroem, Soermarksilden 21, Boras, Sweden

Filed Jul. 9, 1976, Ser. No. 703,804
Claims priority, application Germany, Jul. 15, 1975, 2531610
Int. Cl.² D06B *3/24*
U.S. Cl. 68—178 **6 Claims**

1. An apparatus for the wet treatment of textiles in web or rope form, comprising

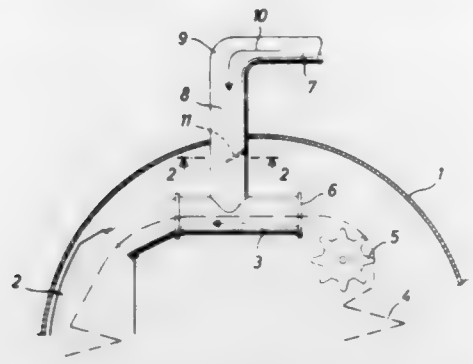
(a) a treatment vessel having an interior chamber for holding textiles;

(b) a nozzle positioned in said treatment vessel above said interior chamber and having an axis with an inlet thereon adapted for receiving said textiles and an outlet; and

(c) mechanical feeding means for transporting said textiles to said nozzle inlet; and

(d) a treatment liquid feed pipe connected to said nozzle at substantially right angles to said nozzle axis, said feed pipe

having a plurality of baffle means, attached to its inner surface in staggered sequence, for creating a helical flow



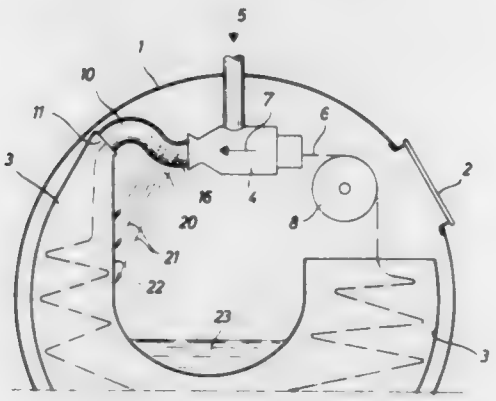
path of said treatment liquid at the feed pipe and nozzle connection.

4,083,208

APPARATUS FOR THE WET TREATMENT OF TEXTILES

Carl Lennart Ekstroem, Soersmarksilden 21, Boras, Sweden

Filed Jul. 9, 1976, Ser. No. 703,805
Claims priority, application Germany, Jul. 10, 1975, 2530915
Int. Cl.[2] D06B *5/14*
U.S. Cl. 68—181 R **5 Claims**



1. Apparatus for the wet-treatment of textile goods in continuous strand form in circulation, comprising a pressure vessel having a first internal chamber for containing said textile goods and a second internal chamber for containing said wet-treatment;

a drive nozzle having an axis substantially horizontally positioned in said pressure vessel for feeding textile goods therethrough and for accepting said wet-treatment, and having an outlet for discharging said textile goods and said wet-treatment;

and a curved discharge pipe connected to said drive nozzle outlet and having an upward curved adjacent said nozzle outlet over the axis of said drive nozzle, the curve in said pipe being aligned in a vertical plane, said curved discharge pipe having a plurality of downwardly facing holes adjacent said drive nozzle outlet for directing said wet-treatment toward said second internal chamber in said pressure vessel, and having a discharge outlet end for directing said textile goods toward said first internal chamber in said pressure vessel.

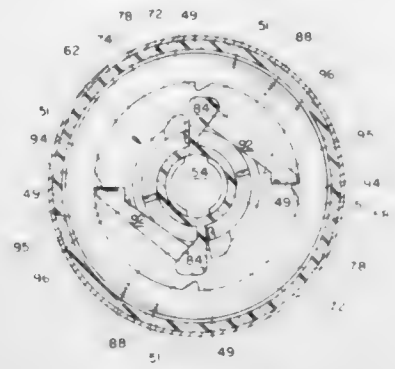
4,083,209

LOW PROFILE THREADED LOCK CAP

Paul H. Sloan, Jr., Sturgis, Mich., assignor to Stant Manufacturing Company, Inc., Connersville, Ind.

Filed Jun. 29, 1977, Ser. No. 810,975
Int. Cl.[2] B65D *55/14*
U.S. Cl. 70—165 **17 Claims**

8. A low profile locking cap for a threaded filler neck comprising a closure member for engaging and closing the neck, a shell providing a hand grip and including a lock, and means providing a positive connection between the shell and closure in the cap removal direction and a torque-limited connection between the shell and closure in the cap advancing direction, the cap further including engaging means and the shell including a shell portion for providing at least one flexible drive



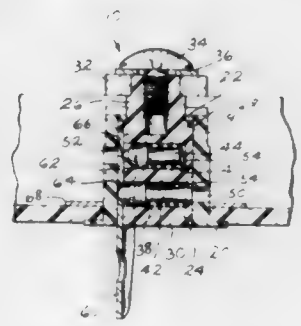
finger for engaging the engaging means to provide a positive connection in the cap advancing direction and a torque-limited connection in the cap removal direction, the cap further including a lock-controlled member for blocking flexing of the drive finger to render the engagement between the drive finger and engaging means positive in the cap removal direction.

4,083,210

CYLINDER LOCK MECHANISM

Paul F. Bergin, 1335 Prospect Dr., Mishawaka, Ind. 46544

Filed Jan. 21, 1977, Ser. No. 761,549
Int. Cl.[2] E05B *27/00*
U.S. Cl. 70—362 **7 Claims**



1. A lock comprising a barrel member for mounting to a lockable article, said barrel member including a side wall terminating in opposite inner and outer ends and defining a cavity in the barrel member, a plug fitted rotatably within said barrel member cavity, said barrel member outer end being open to permit access to said plug, said plug including a cylindrical outer surface and carrying actuator means for securing and releasing the lock upon rotation of the plug within the barrel member between locked and unlocked positions, said barrel member side wall having a cylindrical inner surface juxtaposed with said plug outer surface, a recess formed in said barrel member inner surface, first and second shiftable tumblers carried by said plug, said first tumbler aligned with said recess when said plug is in its locked position, biasing means urging said first tumbler into securing engagement in said recess with said plug to prevent plug rotation when said plug is in its locked position, biasing means urging said second tumbler into a first position, means permitting said second tumbler to be shifted from said first position into a second position when said plug is in its locked position only, said plug having a key receiving groove formed in its outer surface extending to said tumblers, said groove conforming to the cylindrical outer surface of said plug and forming a slot in association with said barrel member inner surface, key means for insertion into said slot between said barrel member and plug to cause rotation of said plug, said key means including surface means for engaging said tumblers and urging said first tumbler out of said recess

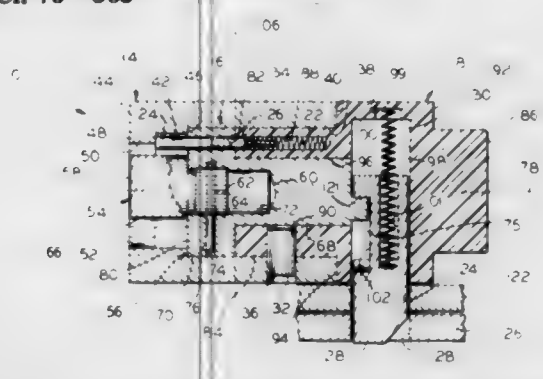
and said second tumbler toward its second position as said key means is inserted into said slot with said plug in its locked position, said key means fitted removably in said slot with said plug in its locked position and camming said first tumbler out of said recess with said second tumbler engaging said key means in its said first position to enable said plug to be rotated into its unlocked position, said key means fitting unremovably within said slot with said plug in its unlocked position and with said second tumbler lockingly engaging said key means in its first position to prevent removal of said key means from said slot.

4,083,211

AXIAL SPLIT-PIN TUMBLER-TYPE LOCK MECHANISM FOR A HANDLE LOCK

Frank J. Scherbing, Chicago, Ill., assignor to Chicago Lock Co., Chicago, Ill.

Filed Apr. 18, 1977, Ser. No. 788,249
Int. Cl.[2] E05B *27/08*
U.S. Cl. 70—363 **5 Claims**



1. In an axial split-pin tumbler-type lock mechanism, said mechaism including a lock cylinder, a forwardly disposed operating part secured within said cylinder and rotatable about a longitudinal axis extending between front and rear ends thereof, a rearwardly disposed stationary sleeve secured within said cylinder and adjoining the operating part at a transverse interfacial plane, said operating part including a shaft extending axially through said sleeve and coupling means on the distal end of the shaft, means forming longitudinal bores in said operating part and said sleeve respectively and movable into and out of alignment upon rotation of the operating part, axially movable split-pin tumblers carried in said bores and each having a forwardly disposed driver element and a separate rearwardly disposed follower element adjoining each other when in aligned bores, and spring means yieldingly urging said tumblers in aligned bores forwardly to positions wherein said interfacial plane is bridged by said follower elements to secure the operating part and the sleeve against relative rotation, said driver elements having front ends engageable with a key, whereby rearward movement of the key moves said tumblers in aligned bores rearwardly to positions wherein the joints between the tumbler elements coincide with said interfacial plane to free said operating part for rotation,

a bolt holder integral with said sleeve and disposed rearwardly thereof, said holder having a bolt race extending transversely therein, and

a lock bolt mounted in said race for transverse sliding movement therein between a retracted unlocking position and an extended locking position wherein the bolt projects laterally outwardly from the holder,

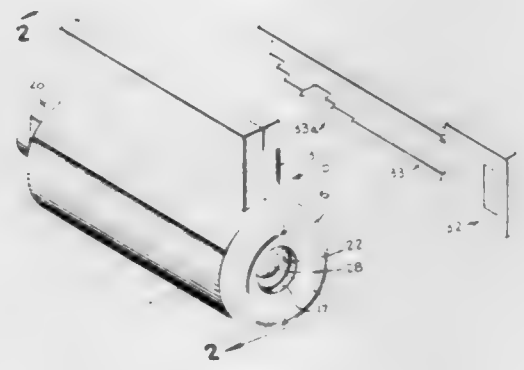
said bolt having means cooperating with said coupling means for moving the bolt between its said positions in response to rotation of said operating part.

4,083,212

ROTARY DISC TUMBLER CYLINDER LOCK

Paul R. Proefrock, Nicholasville, Ky., assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed May 16, 1977, Ser. No. 797,532
Int. Cl.[2] E05B *29/02*
U.S. Cl. 70—366 **20 Claims**



1. A cylinder lock of the rotatable disc tumbler type comprising a stationary lock casing having a cylindrical bore therein, a rotatable plug assembly in the bore of said casing including a shell member rotatable in said bore and a plurality of locking disc tumblers encircled within said shell member arranged in a stack along a common axis therein and rotatable about said axis, an elongated locking bar disposed outwardly adjacent the peripheries of said disc tumblers spanning the stack of tumblers and normally restrained by the tumblers at a position for locking said shell member against rotation relative to the casing, the disc tumblers having gates alignable with and adapted to receive said locking bar to permit rotation of the shell member relative to the casing and said tumblers having key openings therein collectively defining a forwardly opening keyway and shaped to be engaged and angularly moved by the bit of a key inserted therein for aligning the gates with the locking bar, pick barrier means projecting across each intertumbler space between each adjacent pair or tumblers flanking such space including a formation defining a generally cylindrical barrier surface concentric with said common axis and projecting axially from one face of one of the tumblers of each adjacent pair in a first direction and the adjacent tumbler of the pair having a recess in the face thereof confronting said one face and shaped to receive the cylindrical barrier surface in nested relation therein, the barrier surface having an axial extent greater than the space between adjacent disc tumblers in the stacked array and being disposed at a location radially outwardly encircling the keyway to prevent insertion of picking tool portions between tumblers from the keyway into the gate regions thereof, spacer means between each successive pair of disc tumblers in the stack resiliently biasing the tumblers away from each other, means restraining the forwardmost disc tumbler at a position inwardly adjacent the front of the lock against movement toward the front, and forward thrust means movable axially of the stack and bearing against the rearmost disc tumbler of the stack and including a manually operable threaded adjustment portion for adjusting the thrust means and said rearmost disc tumbler toward the front of the lock to vary compressive forces on the stack in the direction of said common axis and thereby adjust the spacing between the disc tumblers thereof.

4,083,213

DEVICE FOR AUTOMATIC ADJUSTMENT OF THE ROLL GAP IN A MILL STAND

Vladimir Nikolaevich Vydrin, ulitsa Timiryazeva, 28, kv. 27; Vladimir Georgievich Dukmasov, ulitsa Soni Krivoi, 77, kv. 5, and Garifulla Davlyatshin, prospekt Komsomolsky, 15, kv. 100, all of Chelyabinsk, U.S.S.R.

Continuation-in-part of Ser. No. 755,039, Dec. 28, 1976. This application Apr. 18, 1977, Ser. No. 788,696

Int. Cl.[2] B21B *37/08*

U.S. Cl. 72—6 3 Claims



1. A device for automatic adjustment of a roll gap between working rolls in a mill stand, comprising two similar parts operating on an identical principle, one of said parts being arranged on each side of the mill stand, said operable parts comprising: at least one one-chamber load cell, mounted under a backup member of one of said working rolls, to absorb a rolling force, said load cell having a piston rod; hydraulic cylinders mounted intermediate of a backup member of another working roll and a roll housing so as to have no effect on said load cell, said cylinders prestressing said mill stand; a three-chamber fluid pressure regulator mounted on said mill stand and having two end chambers and a midchamber, said pressure regulator communicating through a first end chamber with chambers of the hydraulic cylinders and through said midchamber with the chamber of said load cell, said pressure regulator changing the fluid pressure in said hydraulic cylinders for prestressing the mill stand; a regulated pressure valve mounted on the shell of said load cell and having a throttle chamber and a control chamber, said control chamber communicating with said chamber of said load cell, said regulated pressure valve having a spool with a diameter less than the diameter of said piston rod of said load cell; a variable-pressure fluid source arranged outside said mill stand and communicating with the throttle chamber of said regulated pressure valve to maintain therein a variable fluid pressure proportional to said rolling force; and constant-pressure fluid sources, at least one for each operable part of said device arranged on each side of said mill stand and externally thereof, said source communicating with chambers of said hydraulic cylinders and said load cell and a second end chamber of said three-chamber pressure regulator, the fluid being delivered from said constant-pressure fluid source to fill up said chambers and to build up constant pressure therein; the rolling force, originating during the rolling operation, causes fluid to pass from said load cell into the control chamber of said regulated pressure valve, the traverse of said spool being limited to prevent the fluid from overflowing from said load cell into the midchamber of said three-chamber pressure regulator which would render immobile the roll chock resting against said piston of said load cell.

4,083,214

HYDROSTATIC EXTRUSION METHOD

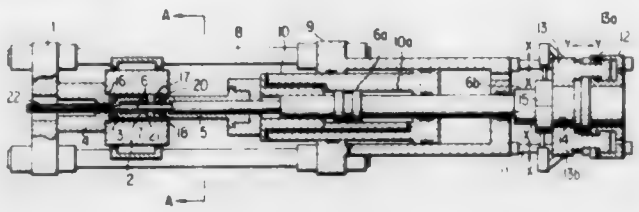
Akira Asari, Osaka, and Hidehiro Tsuzuki, Toyonaka, both of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Nov. 7, 1975, Ser. No. 629,891

Claims priority, application Japan, Nov. 7, 1974, 49-128758; Nov. 7, 1974, 49-128759

Int. Cl.[2] B21C *23/00*

U.S. Cl. 72—60 3 Claims



1. A hydrostatic extrusion process comprising the steps of:

pre-assembling a supply unit, having an inner diameter approximately equal to that of an extrusion container, with an extrusion die and a billet;

subsequently charging pressure medium into said supply unit and thereafter sealing said supply unit with a seal block;

transferring said die, billet, pressure medium, and seal block from said supply unit into the rearward end of said container;

pushing the seal block forwardly by moving a stem forwardly so as to thereby increase the pressure of the pressure medium within the container;

extruding said billet through said extrusion die; and

discharging said seal block out of said container after completion of said extrusion.

4,083,215

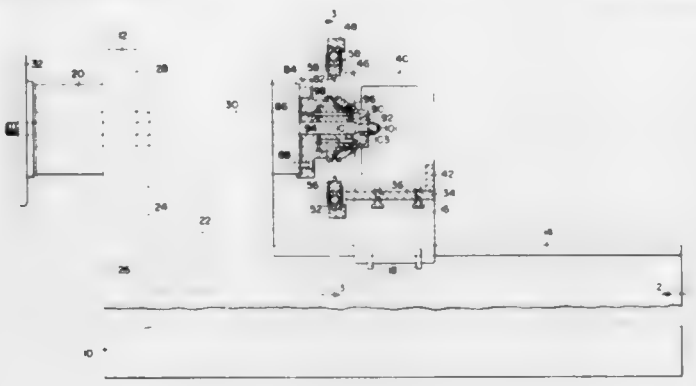
METHOD AND TOOL FOR MAKING A SHEET METAL PULLEY

Robert Paul Guetzlaff, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Feb. 11, 1976, Ser. No. 657,154

Int. Cl.[2] B21D *22/16*

U.S. Cl. 72—82 19 Claims



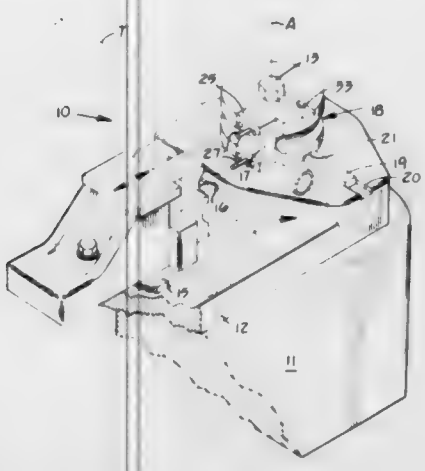
1. A pulley forming attachment for a spinning lathe comprising: a pulley nest mountable on a lathe headstock spindle for rigidly supporting a partially formed pulley having a pair of side-by-side radially extending flanges for rotation with the spindle and about the spindle axis; a forming tool support slidably mountable on the lathe carriage for movement perpendicular to the lathe headstock spindle; a forming tool housing carried on the support; a forming tool including an annular member having an internal diameter greater than the diameter of the radially extending flanges on the partially formed pulley, the inner portion of the annular member including a V-shaped projection terminating at an inner tip adapted to pass between the side-by-side radial flanges; and bearing means rotatably mounting the forming tool to the housing with the inner tip of the V-shaped projection lying in a plane perpendicular to the axis of the lathe spindle.

4,083,216

SUPPORT PIN FOR CLAMPING DIE ASSEMBLY

Robert L. Gilkerson, Yorkville; Donald W. Griggs, and James B. Hadley, both of Aurora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 16, 1977, Ser. No. 797,266
Int. Cl.[2] B21D *7/04*
U.S. Cl. 72—149 **10 Claims**



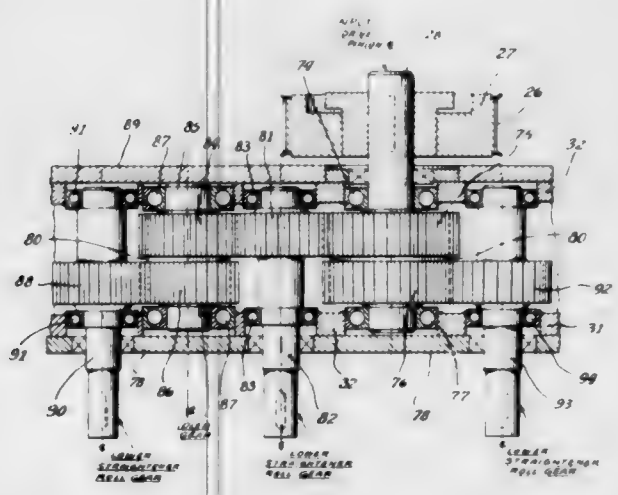
1. A clamping die assembly comprising
a generally annular die member,
means defining a die cavity on a periphery of said die member,
a support pin reciprocally mounted on said die member, adjacent to and vertically below said die cavity, for reciprocal movements between a retracted position within the confines of said die member and an extended position disposing an end of said pin radially outwardly beyond the periphery of said die member and said die cavity, and
biasing means mounted in said die member for biasing said support pin towards its extended position.

4,083,217

OVERLAPPING GEAR DRIVE FOR STRAIGHTENING MACHINES

Kenneth C. Johnson, Des Plaines, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

Filed Mar. 7, 1977, Ser. No. 774,810
Int. Cl.[2] B21D *1/02*
U.S. Cl. 72—165 **6 Claims**



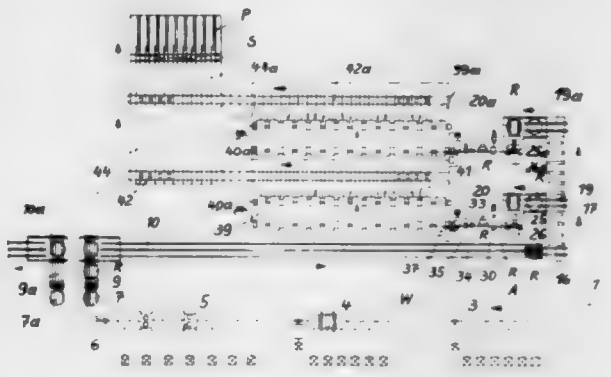
1. In feeding and straightening machines for strip material, the combination with a plurality of lower straightening rolls journalled for rotation in spaced walls provided by the straightening machine, a gear box located adjacent one side of the said machine and including side walls, an input drive shaft mounted for rotation in the walls of the gear box and having a pair of driving gears mounted thereon and located in the gear box, a plurality of drive gears for the lower straightening rolls and which are respectively mounted on a drive shaft journalled for rotation in the side walls of the gear box, certain drive gears being disposed to the right of the input drive shaft and having operative connection with one of the pair of driving gears on the input shaft, other drive gears being disposed to the left of the input drive shaft and having connection with the other driving gear on the input shaft, said gears both right and left of the input shaft having a staggered relation with certain drive gears being located in one plane and other drive gears being located in an adjacent parallel plane, whereby the drive gears may have pitch diameters greater than the center to center distance between adjacent drive shafts, a plurality of idler shafts journalled in the side walls of the gear box with each idler shaft having a pair of idler gears mounted on the same, one idler gear of each pair being disposed in one plane and receiving the drive from its drive gear which meshes therewith, the other idler gear of each pair being disposed in the other plane and transmitting the drive to an adjacent drive gear which likewise meshes therewith, and coupling means connecting each drive shaft with its respective lower straightening roll.

4,083,218

ARRANGEMENT FOR THE FURTHER TREATMENT OF SECTIONAL STEEL

Gerhard Berz, Dusseldorf, Germany, assignor to Schloemann Siemag Aktiengesellschaft, Germany

Division of Ser. No. 580,287, May 23, 1975, abandoned. This application Jun. 22, 1976, Ser. No. 698,683
Claims priority, application Germany, May 27, 1974, 2425463
Int. Cl.[2] B21B *39/00, 43/00, 45/02*
U.S. Cl. 72—201 **6 Claims**



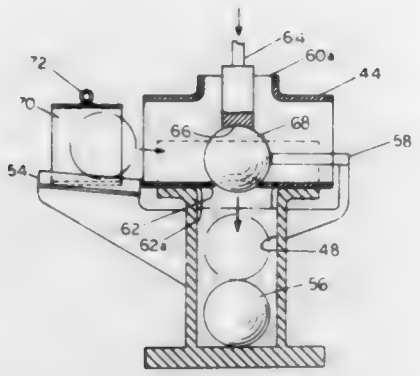
1. An arrangement for processing hot-rolled sectional steel stock delivered by a rolling mill, the arrangement comprising the following units arranged as a continuous processing line, in the order set forth:
a Garrett coiler having a rolled stock entry guide for coiling the hot stock into coils as it emerges from the mill, said entry guide comprising inner and outer telescoping members, said outer member being positioned adjacent to said coiler and being retractible therefrom to effect withdrawal from said guide of a straight length of stock extending from the end of said coil,
a cooling conveyor for coveying the coils, while cooling them, along the processing line,
an uncoiling unit comprising a rotatably mounted uncoiling arbor with means for holding a coil with its coil access horizontal,
a section straightening unit for straighening the stock after it has been uncoiled.
a parallel cut shear for cutting the stock into required lengths,
a device associated with the shear for braking and conveying the cut lengths,
a collection station,
a collection unit for collecting the straightened, cut lengths of stock at the collection station, and
a packaging station located downstream from the collection unit.

4,083,219

APPARATUS AND METHOD FOR FORMING CYLINDRICAL VALVE HUBS

Marvin G. Combes, Castro Valley, and Roger L. Ripert, Concord, both of Calif., assignors to Grove Valve and Regulator Company, Oakland, Calif.

Filed Nov. 1, 1976, Ser. No. 737,711
Int. Cl.[2] B21D *22/00*
U.S. Cl. 72—352 **6 Claims**



1. Apparatus for swaging cylindrical, tubular radial extensions on a curvilinear open-ended tube pre-formed with a pair of opposite oval openings therein, the major axes of which are parallel to the axis of curvation of the curvilinear member; said apparatus comprising;

a concave saddle support for said member having depending therefrom a cylindrical cavity;

a swaging ball of a diameter to be received freely in said cavity;

means for rolling said swaging ball into an open end of said tube;

means for locating said ball over one of said oval openings; and

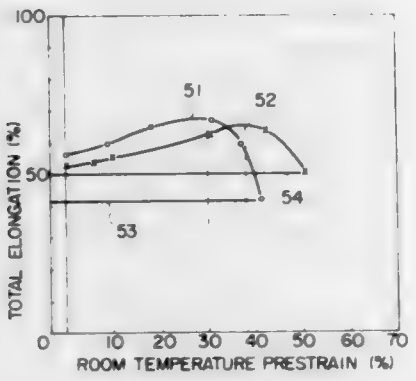
force applying means directed through the other oval opening for pushing said ball through said one oval opening to swage material therearound outward.

4,083,220

SUB-ZERO TEMPERATURE PLASTIC WORKING PROCESS FOR METAL

Masaru Kobayashi, Tokyo; Atsuya Kamada, Kamakura; Takao Terabayashi, and Hiroshi Asao, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 21, 1976, Ser. No. 678,933
Claims priority, application Japan, Apr. 21, 1975, 50-47566; Apr. 24, 1975, 50-49178
Int. Cl.[2] B21D *31/00*
U.S. Cl. 72—364 **2 Claims**



1. A process for plastic working of a metal, comprising the steps of:

subjecting a metal selected from a group consisting of all face-centered cubic metals, titanium and zirconium having close-packed hexagonal lattice to plastic flow including at least a uniaxial tensile stress field, giving a strain which falls immediately before the uniform elongation limit of said metal at room temperature;

then cooling said metal to a temperature below 0° C; and

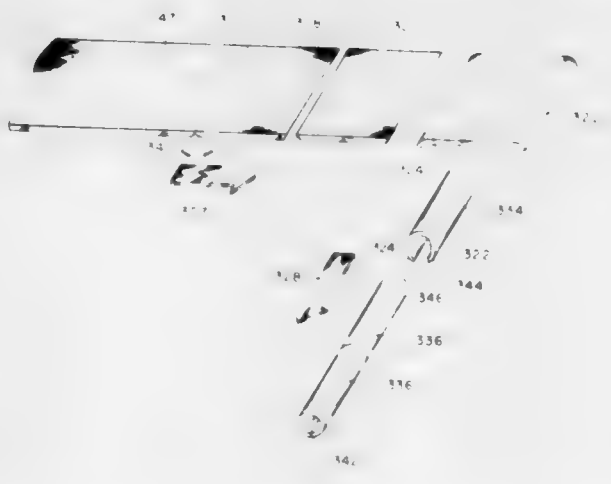
subjecting said metal to plastic flow including at least a uniaxial tensile stress field at said sub-zero temperature.

4,083,221

PARTS FORMING APPARATUS AND METHOD

Robert Lee Whitted, Muncie, Ind., assignor to Duffy Tool & Stamping, Inc., Muncie, Ind.

Filed Jul. 29, 1976, Ser. No. 709,761
Int. Cl.[2] B21D *53/10*
U.S. Cl. 72—405 **8 Claims**

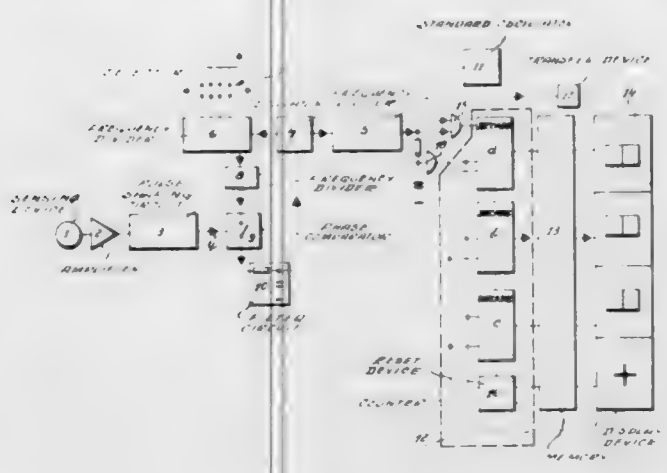


1. The method of forming a generally cylindrical part from a strip of stock comprising the steps of scoring the strip of stock along a score line having side walls disposed at predetermined angles with respect to one another, the score line being formed a distance from the free end of the strip, and breaking the stock along the score line to form a generally flat rectangular blank of material having two opposite edges at predetermined angles with respect to one another, transferring the blank generally horizontally in a first direction from the scoring step to a first die section, primarily forming the blank by bending two opposite longitudinal edge portions of the blank to predetermined configurations with respect to the remainder of the blank in the first die section, transferring the primarily formed blank by moving the primarily formed blank generally horizontally in a second direction generally perpendicular to the first to a second die section, secondarily forming the blank in the second die section about an axis parallel to the two longitudinal edge portions with the longitudinal edge portions turned inwardly at opposite edges of the secondarily formed blank, transferring the secondarily formed blank by moving it in the second direction to a third die section, and forming the blank into the part in the third die section by curling the blank so that the two longitudinal edges are adjacent one another, each of the transferring steps including engaging of the first-mentioned blank by the next successive blank through the successive forming and curling steps, the next successive blank pushing the first-mentioned blank through the successive transfer steps, the step of transferring the secondarily formed blank into the third die section, further comprising the step of lifting the first-mentioned blank after the secondary forming step and prior to engagement by the next successive blank to transfer the secondarily formed blank to the third die section.

4,083,222
APPARATUS FOR MEASURING THE RATE OF A WATCH

Wladyslaw Stawiski, Meyrin, Switzerland, assignor to Portescap, La Chaux-de-Fonds, Switzerland

Filed Jan. 28, 1977, Ser. No. 763,677
Claims priority, application Switzerland, Feb. 2, 1976, 1282/76
Int. Cl.[2] G04D 7/12; G04F 5/10
U.S. Cl. 73—6 **5 Claims**



1. An apparatus for measuring the rate of a watch, including a sensing device (1) for the signals produced by a watch to be checked, a selecting and pulse shaping circuit (3) coupled (through (2) to the sensing device for providing measuring pulses (ϵ or ψ), and including comparator means (12,13,14,15) for comparing the repetition frequency of the measuring pulses or of pulses derived therefrom with the constant repetition frequency of standard pulses produced by a standard oscillator (11) for determining the rate of the watch to be checked, wherein the selecting and pulse shaping circuit (3) comprises an input pulse shaping circuit (31) coupled to the sensing device and adapted to provide output pulses (β) having each a given constant height and a duration determined by the time interval during which the corresponding watch signal (α) exceeds a given threshoid level, a flip-flop circuit (32) a first input (S) of which is connected to the output of the pulse shaping circuit (31) and a first output (Q) of which delivers the said measuring pulses (ϵ), a capacitor (C), a current generator (33) connected for charging the said capacitor (C) by a variable current depending on a control voltage (π) applied to the said current generator, a discharging circuit (34) connected to the said capacitor (C) and having a control input coupled at least to the output of the said pulse shaping circuit (31), the time constant of the said discharging circuit being small as compared to the time constant of charging the capacitor, a detection circuit (35) connected for detecting the voltage (δ) across the said capacitor (C) and for providing an input signal to a second input (R) of the said flip-flop circuit (32) each time the detected voltage (δ) exceeds exceeds a predetermined reference level, and an integrator circuit (36), the input of which is coupled to a second output ($\overline{Q}$) of the said flip-flop circuit (32) and the output of which is coupled to the said current generator (33) for providing the said control voltage (π).

4,083,223
NONDESTRUCTIVE INSPECTION METHOD FOR SPOT-WELDED JOINTS

Masaru Hashimoto, Yokosuka, and Masaya Ogata, Yokosuia, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

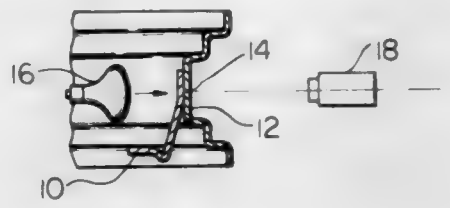
Filed Nov. 10, 1976, Ser. No. 740,472
Claims priority, application Japan, Nov. 11, 1975, 50-135425
Int. Cl.[2] G01N 25/72
U.S. Cl. 73—15 FD **3 Claims**

1. A method of inspecting a joint formed by spot-welding of members which comprises the steps of:

varying substantially uniformly the temperature of one of the said welded members relative to the other welded members in a region including at least the joint; and

measuring the distribution of temperature on a surface of the said other welded members in a region including the joint, said temperature distribution being measured one dimensionally across a parallel projection of a nugget formed in the joint on said surface,

said measurement step further comprising the steps of:



preparing a temperature-distance curve representing said temperature distribution;

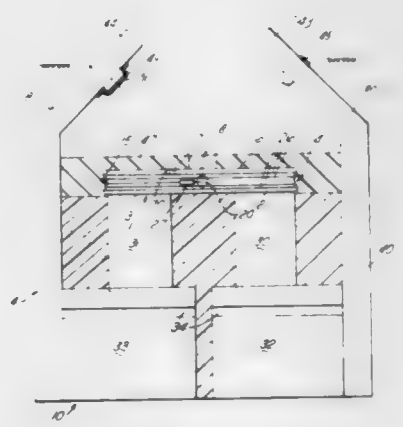
measuring the width of a temperature peak on said curve at half of the height of said temperature peak; and

estimating the diameter of said nugget from said width based on a preliminarily examined relationship between said width and said diameter.

4,083,224
PHASE TRANSITION DETECTOR

Stephen Gayst, Bellevue Hill, Australia, assignor to The University of Sydney, Australia

Filed Sep. 28, 1976, Ser. No. 727,626
Claims priority, application Australia, Sep. 29, 1975, 3370/75
Int. Cl.[2] G01N 25/68
U.S. Cl. 73—17 A **13 Claims**



1. A phase-transition, temperature-detecting device comprising a Peltier effect junction; electrical circuitry means operable to drive a current through said junction to produce cooling thereof; a member having good thermal and electrical conducting properties and cooled by said junction, a discrete area on said member providing an exposed mirror; a temperature-sensitive electrical component buried in said member; first and second electrical connections extending from said component; means thermally clamping said electrical connections to said member whereby said member provides a heat sink for said connection, the first connection being mechanically and electrically connected to said member; a lead connected to said member at a remote location from said first connection; and, transition temperature responsive and registering means connected electrically to said lead, whereby the occurrence of a transition temperature is detected by said mirror, the reflective properties of which deteriorate suddenly when clouded by the occurrence of the transition temperature and the temperature at which this transition occurs is registered by the temperature responsive means.

4,083,225

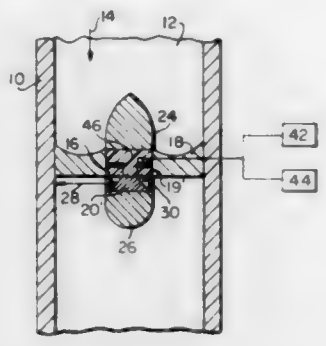
ON-LINE ULTRASONIC GAS ENTRAINMENT MONITOR

Clifford K. Day, and Herbert N. Pedersen, both of Richland, Wash., assignors to The United States of America Government as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 508,004, Sep. 20, 1974, abandoned, which is a continuation of Ser. No. 360,699, May 15, 1973, abandoned. This application Mar. 17, 1976, Ser. No. 667,924

Int. Cl.[2] G01N *29/02*

U.S. Cl. 73—19 **2 Claims**



1. An acoustic device for quantifying bubbles in an elongated tubular enclosure confining a liquid, comprising:

an acoustic transducer having an annular acoustic generating face sized to be supported centrally around the axis of revolution of the enclosure substantially spaced from the enclosure wall with the annular generating face of the transducer oriented to direct acoustic signals longitudinally within the enclosure; and

a truncated conical acoustic reflector having the sides of the cone slope away from the base at a 45° angle with the plane section parallel to the base which replaces the apex of the cone coextensive and mating with and being supported by the annulus of the generating face of the transducer in a manner to direct the signal generated by the transducer radially outward towards the enclosure wall over a 360° arc around the circumference thereof and redirect received ultrasonic energy back reflected, along the line of initial reflection, to the transducer for reception, the transducer being responsive to the back reflected energy to provide an electrical output representative of the intensity of the back reflected signal.

4,083,226

PORTABLE EXPLOSION-PROOF GAS DETECTOR

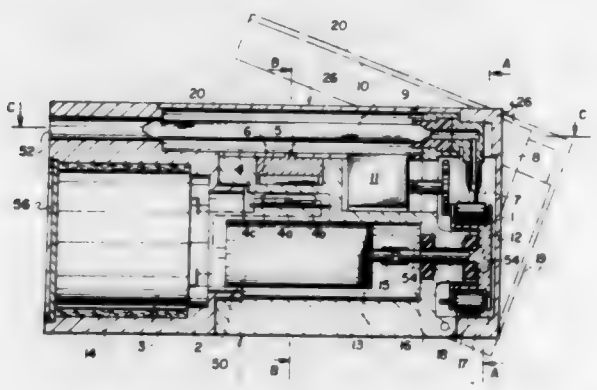
Wolfgang Eckstein, Sereetz, and Horst Rabenecker, Klein Parin, both of Germany, assignors to Drägerwerk Aktiengesellschaft, Germany

Filed Dec. 30, 1976, Ser. No. 755,654

Claims priority, application Germany, Jan. 28, 1976, 2603064

Int. Cl.[2] G01N *1/22*

U.S. Cl. 73—23 **7 Claims**



1. A portable, explosion-proof gas detection device, comprising a housing defining an interior air-tight motor chamber and an electrical operating contact chamber, an electrical motor in said motor chamber, said motor having a pump drive shaft extending out of said chamber, an operating electrical contact for starting and stopping said motor located in said electrical operating contact chamber, said housing also defining a pump chamber adjacent said motor chamber and said electrical operating contact chamber and also defining a testing tube receiving chamber adjacent said motor chamber and said electrical operating contact chamber, said testing tube receiving chamber having a test gas inlet opening adjacent one end and defining a test tube receiving recess adjacent its opposite end, a testing tube holder adjacent the opposite end of said testing tube receiving chamber opposite to and spaced from the recess to permit insertion of a testing tube between said holder and the recess and having a gas passage therethrough, pump means in said pump chamber having an inlet connected to said holder gas passage to draw test gas through said inlet through the testing tube and into said test holder gas passage and for discharging it out of said housing, and electrical circuit control means in said housing electrical operating contact chamber connected to said electric motor for operating said motor to drive said pump means; said housing having a removable cover portion overlying said testing tube receiving chamber.

4,083,227

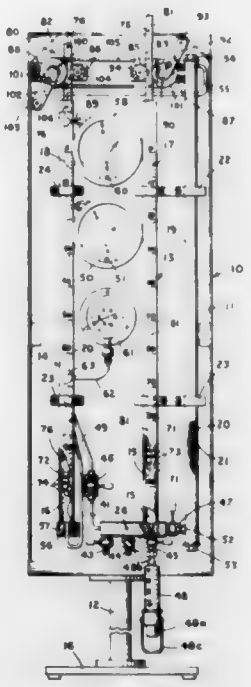
HYDROCARBON VAPOR ANALYZER

Ray C. Edwards, Kinnelon, N.J., assignor to Edwards Engineering Corporation, Pompton Plains, N.J.

Filed Apr. 4, 1977, Ser. No. 784,029

Int. Cl.[2] G01N *31/06*

U.S. Cl. 73—23 **7 Claims**



1. An instrument for analyzing the percent by volume of hydrocarbon vapor and the like components forming part of a vapor mixture comprising,

a. base means including, an instrument panel,

b. a first graduated cylinder mounted substantially vertically on said instrument panel to be utilized for receiving a sample of the vapor mixture to be analyzed,

c. a second graduated cylinder mounted substantially vertically and in spaced relation to said first graduated cylinder to be utilized for providing a direct measurement equivalent to the percent by volume of the component being measured in the vapor mixture sample,

d. valve manifold means having a central passage extending therethrough,

e. said sample receiving cylinder connected in fluid tight engagement on said valve manifold and a connecting passage in said valve manifold to connect said cylinder with the centrally disposed passage therein,

f. an inlet valve means on said valve manifold in communica-

tion with the central passage for passing a vapor mixture sample to be analyzed to said sample receiving cylinder

g. a transfer valve on said valve manifold in communication with the central passage therein,

h. an absorber for absorbing the component to be measured connected at one end to the transfer valve and at the remote end thereof to the measuring cylinder whereby on opening of the transfer valve the vapor mixture sample can be passed through the absorber and the unabsorbed portion of the vapor mixture delivered to said measuring cylinder,

i. pump means connected to said sample receiving cylinder and said measuring cylinder for filling and emptying the sample receiving cylinder with the given vapor mixture sample to be analyzed, and for transferring the vapor mixture sample from the sample receiving cylinder to the measuring cylinder, and

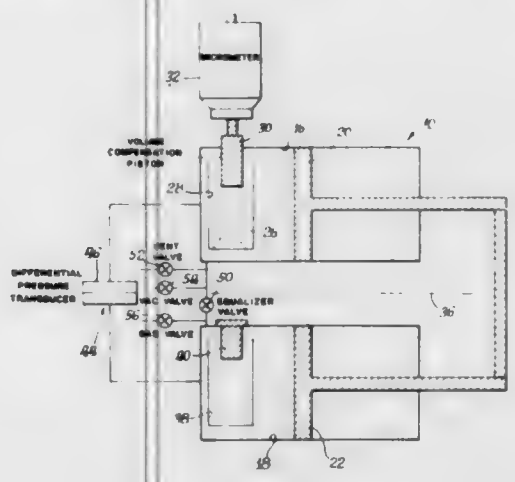
j. gauge means operatively associated with the sample receiving cylinder and the measuring cylinder for providing measured parameters to control the transfer of the vapor mixture sample from the sample receiving cylinder to the measuring cylinder during analysis for the component being measured.

4,083,228

GAS COMPARISON PYCNOMETER

Philip L. Turner, Del Mar; Robert W. Gilkey, San Diego, and Peter L. Lagus, Olivenhain, all of Calif., assignors to Systems, Science and Software, La Jolla, Calif.

Filed Apr. 15, 1977, Ser. No. 787,768
Int. Cl.² G01N *9/26*
U.S. Cl. 73—32 R **8 Claims**



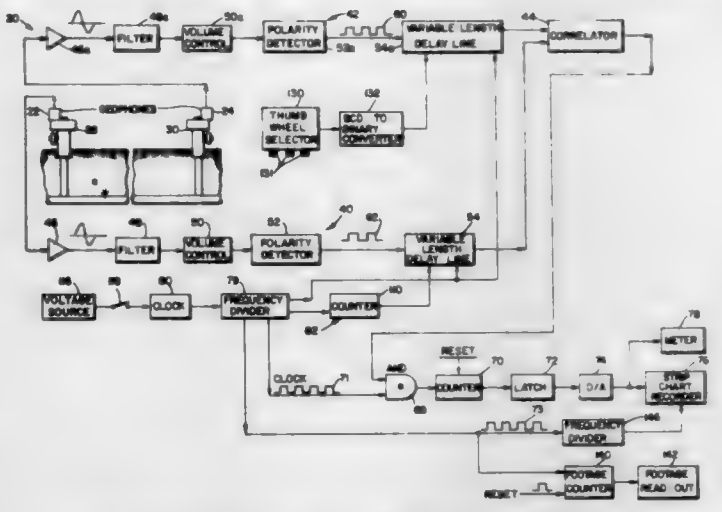
1. A gas comparison pycnometer apparatus comprising housing means defining a pair of substantially equal volume chambers, said chambers being adapted to receive a gas therein, primary means operatively associated with each of said chambers and selectively operable to vary the free space volumes within said chambers, at least one of said chambers being adapted to receive a condensed material sample therein, auxiliary piston means operatively associated with said sample receiving chamber and incrementally adjustable to selectively vary the free space volume of said sample receiving chamber independently of said primary means, means for effecting selective communication between said pair of chambers to facilitate equalization of gas pressure therebetween, differential pressure measuring means communicating with each of said chambers and adapted to indicate the differential pressure between said chambers, said auxiliary piston means including measuring means adapted to indicate the incremental change in free space volume of said sample receiving chamber effected by incremental adjustment of said auxiliary piston means, and dummy piston means operatively associated with the other of said chambers and having thermal conductivity characteristics substantially identical to said auxiliary piston means.

4,083,229

METHOD AND APPARATUS FOR DETECTING AND LOCATING FLUID LEAKS

Allen R. Anway, Superior, Wis., assignor to Plaunt & Anderson Company, Inc., Duluth, Minn.

Continuation-in-part of Ser. No. 650,842, Jan. 20, 1976, abandoned. This application Sep. 28, 1976, Ser. No. 727,359
Int. Cl.² G01M *3/00*
U.S. Cl. 73—40.5 A **43 Claims**



1. In an apparatus for locating a fluid leak in an underground or unexposed pipe or conduit, first means effective upon receipt of a vibration caused by the leak for producing an electrical signal corresponding in phase and frequency to the received vibration, second means effective upon receipt of the vibration for producing a further electrical signal corresponding in phase and frequency to the received vibration, electrical time delay circuit means electrically connected to said first means for variably time delaying one of said electrical signals relative to the other to cause maximum mutual time correlation between the two signals, and means providing an indication of the time correlation between the time delayed one of said signals and the other of said electrical signals

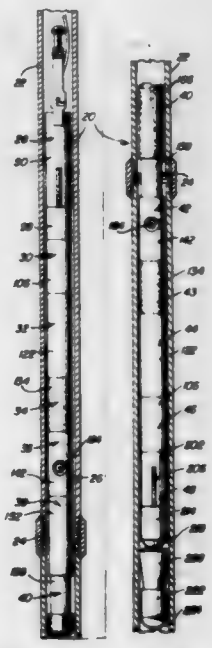
---

4,083,230

TUBING TESTING TOOL

Daniel J. Rome, Sr., and Salvador P. LaRussa, both of Houma, La., assignors to Romco Pipe Testing, Inc., Houma, La.

Filed Feb. 3, 1977, Ser. No. 765,407
Int. Cl.² G01M *3/08*
U.S. Cl. 73—40.5 R **14 Claims**



1. A tool for pressure testing tubing, casing, pipe, or other flow conductors, comprising a tool head with means at the upper end thereof for connection with an apparatus for raising and lowering the tool and means for supplying pressure fluid to the tool, a top sealing assembly supported from the tool head, a bottom sealing assembly spaced from the top sealing assembly, an extension interconnecting the top and bottom

sealing assemblies, the tool head, sealing assemblies and extension having a passageway therethrough for conveying pressure fluid, said tool head, sealing assemblies and extension including a rigid interconnected relationship to maintain a fixed over-all length for the tool during operation of the sealing assemblies, each sealing assembly including a generally cylindrical resilient body capable of being longitudinally compressed and radially expanded to sealingly engage the interior of a tubing to be tested to form a test space, a longitudinally movable cylinder engaging one end of the compressible body, said cylinder being communicated with a pressure fluid passageway for longitudinal movement to compress the resilient body when pressure is introduced into the passageway, each sealing assembly also including a flow controller for discharging testing fluid pressure into the test space between the tool and tubing, said flow controller including a flow director and diffuser for precluding direct impingement of testing fluid against the inner surface of the tubing being tested thereby preserving a coating on the inner surface of the tubing being tested.

4,083,231

SELF-CALIBRATING LEAK DETECTOR CIRCUIT ARRANGEMENT

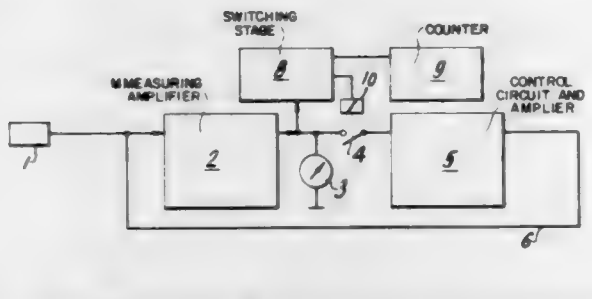
Hermann Mennenga, Balzers, Liechtenstein, assignor to Balzers Patent-und Beteiligungs-Aktiengesellschaft, Liechtenstein

Filed May 28, 1976, Ser. No. 690,920

Claims priority, application Switzerland, Jun. 18, 1975, 007950/75

Int. Cl.[2] G01M *3/16*; H01H *47/02*

U.S. Cl. 73—40.7 **2 Claims**



1. A self-calibrating leak detector circuit arrangement, comprising a measuring probe for generating an electrical measuring signal when exposed to a leakage gas, a measuring amplifier connected to said probe, an indicating instrument connected to said measuring amplifier for indicating the size of the leak, a variable gain amplifier control circuit connected to said amplifier for generating a reverse voltage in an amount to at least partly compensate the measuring signal at the measuring amplifier, a scanning element connected to said amplifier control current, a push button switch connected between the measuring amplifier and said variable gain amplifier control circuit, said control circuit including a storage unit, for storing said reverse voltage, which is connected to said measuring amplifier, a switching stage connected to said switch button and said amplifier for automatically operating said push button when a predetermined size of the signal has been reached on the measuring amplifier, and a counter connected to said push button for recording the number of closings of said push button.

4,083,232

MEDICAL TOMOGRAPH SYSTEM USING ULTRASONIC TRANSMISSION

Richard C. Heyser, Tujunga, and Robert Nathan, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 23, 1976, Ser. No. 679,732

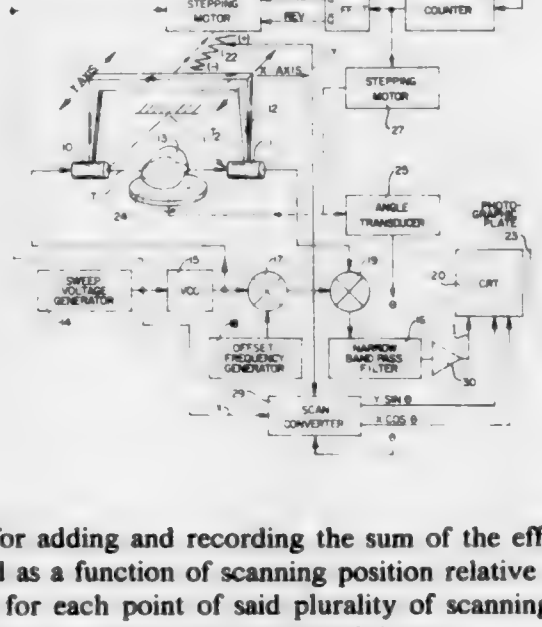
Int. Cl.[2] G01N *29/00*

U.S. Cl. 73—599 **10 Claims**

8. A system for producing an ultrasound transillumination tomographic image reconstruction of a planar section of a body of tissue in vitro or in vivo comprising

means for transmitting ultrasound through said body in a plurality of rectilinear scanning array patterns in the plane of said section,

means for detecting an effect by said body on ultrasound transmitted through it in each raster of each scanning array pattern, and



means for adding and recording the sum of the effect detected as a function of scanning position relative to said body for each point of said plurality of scanning array patterns to produce said tomograph image.

4,083,233

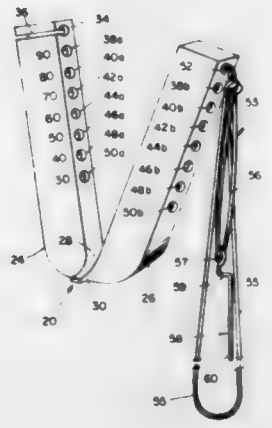
DRAG ADJUSTING DEVICE FOR FISHING REELS

James D. Seal, 711 8th Ave. N., St. James, Minn. 56081

Filed Oct. 12, 1976, Ser. No. 731,252

Int. Cl.[2] G01N *3/08*

U.S. Cl. 73—95 **10 Claims**

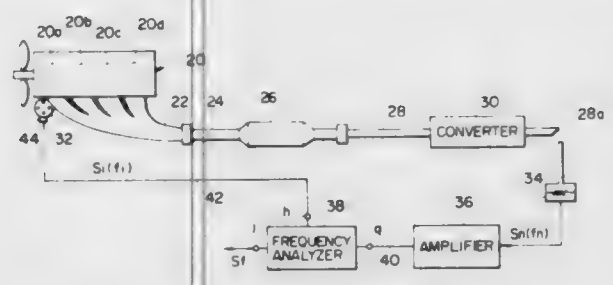


1. A drag adjusting device for fishing reels comprising first and second elongated members, and hinge means connecting said elongated members together at one end, said first member having first means for engaging a first portion of a fishline extending from a fishing reel and second means between said first means and said hinge means for engaging a second portion of the fishline, said second member having third means for engaging a third portion of the fishline, said third means being spaced from said hinge means substantially the same distance as said second means is spaced from said hinge means, whereby when said third portion of said fishline is anchored to said second member and a force applied to said first portion sufficient to break the section of fishline between said second and third fishline portions, the force applied to said first portion of the fishline is less than the breaking strength of said section between said second and third portions and hence less than the breaking strength of the fishline.

4,083,234
METHOD OF AND SYSTEM FOR DETECTING MISFIRE IN INTERNAL COMBUSTION ENGINE

Shigeo Aono, Tokyo, and Masahara Asano, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Dec. 21, 1976, Ser. No. 752,967
Claims priority, application Japan, Dec. 25, 1975, 50-155202
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—116 12 Claims

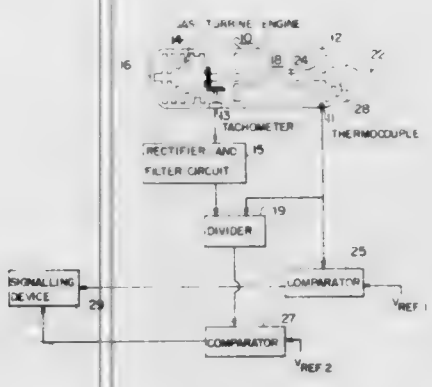


1. A method of detecting misfiring condition of a spark-ignition internal combustion engine, comprising sensing the exhaust noises of the engine and producing a continuous signal wave having an exhaust-noise frequency variable as a function of and in correspondence with the detected exhaust noises, the signal wave having a frequency spectrum having peak values one of which appears at a fundamental frequency component of the wave irrespective of firing conditions in the engine and the others of which appear at certain fractional harmonics of the fundamental frequency component when a misfire takes place in the engine, detecting the output speed of the engine and producing an engine-speed signal variable with the detected engine output speed, and analyzing said signal wave with respect to the fundamental frequency component of the wave and said fractional harmonics on the basis of said engine-speed signal for detecting existence of a misfiring condition, if any, of the engine from the relationship between the respective spectrum amplitudes of the frequency spectrum of the signal wave at the fundamental frequency component and the fractional harmonics thereof.

4,083,235
COMPRESSOR STALL WARNING SYSTEM

Richard Paul Gallant, Leonardtown, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1977, Ser. No. 800,589
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—117.3 4 Claims



1. A stall warning system for a gas turbine engine having a compressor and turbine comprising:

speed sensing means in communication with said compressor operably for providing a signal representative of the rotor rotational speed of said compressor;

temperature sensing means in communication with air entering said turbine operably for providing a signal representative of the temperature of said air;

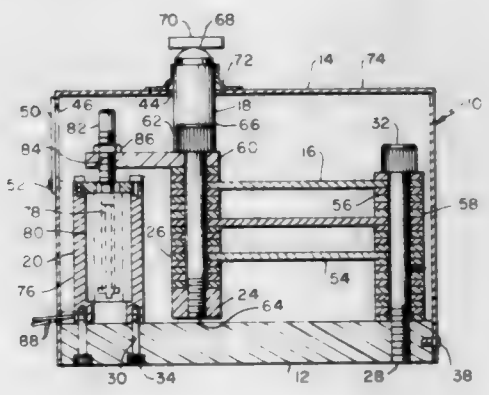
means coupled to receive the outputs of said speed sensing means and temperature sensing means for computing the ratio of the turbine inlet temperature and the compressor rotor rotational speed, for providing output signals when either said ratio or the turbine inlet temperature exceeds prescribed thresholds; and

signalling means coupled to receive said output signals for providing a warning signal indicative of impending aircraft engine stall.

4,083,236
LOAD CELL

Ralph E. Steinmueller, Detroit, Mich., assignor to Harry W. Dietert Co., Detroit, Mich.

Filed Nov. 29, 1976, Ser. No. 745,930
Int. Cl.[2] G01L *1/04*
U.S. Cl. 73—141 A 15 Claims

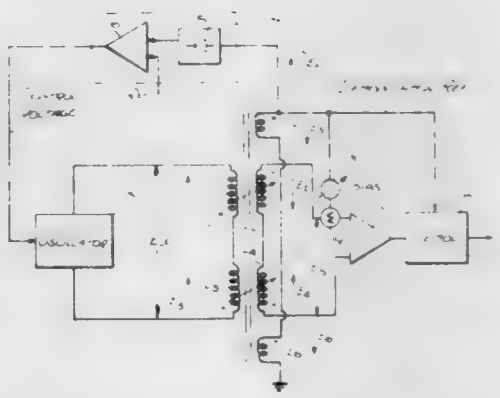


1. A load cell for providing an indication of the magnitude of a load applied thereto, comprising a cantilever member having a free end which deflects in accordance with the weight applied thereto, including a plurality of separate spaced apart elongated members extending longitudinally of the cantilever member and means for varying the number of separate elongated members in the cantilever member whereby deflection of the free end of the cantilever member in response to a predetermined weight is varied, and meand for indicating the deflection of the free end of the cantilever member as force applied to the free end thereof.

4,083,237
DIFFERENTIAL RELUCTANCE MOTION DETECTOR

Peter S. Levesque, Jenkintown, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Feb. 22, 1977, Ser. No. 770,776
Int. Cl.[2] G01L *5/00*
U.S. Cl. 73—141 R 5 Claims



1. A displacement detecting system yielding an electrical output signal that is linearly proportional to the extent of an applied input motion, said system comprising:

A a differential reluctance motion transducer having a pair of symmetrically arranged transformers, each having a core, a primary, a main secondary and an auxiliary secondary, and an armature laterally movable in accordance

with said input motion from a neutral position between the cores to a position toward one of the cores and away from the other;

B an oscillator generating a high-frequency a-c drive voltage which is applied to the primary of each transformer to cause an excitation current to flow therein which is a function of the position of said armature, said excitation current causing a voltage to be induced in said main and auxiliary secondaries which is a function of the inductance of the primary of each transformer as well as the coupling coefficient between the primary and secondaries thereof, the induced voltage being a function of said excitation current and giving rise to a non-linear relationship between the motion of said armature and the induced voltage; and

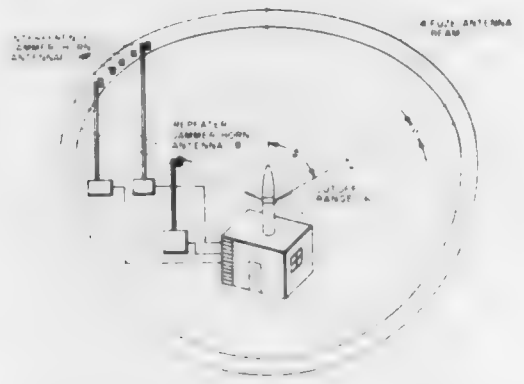
C means to reduce said non-linear relationship including a feedback loop having a regulator comparing a feedback voltage derived from said auxiliary secondaries connected in series coincidence with a reference voltage to produce a control voltage which is applied to said oscillator to regulate said drive voltage.

4,083,238

SYSTEM FOR TESTING PROXIMITY FUZES

John O. Dick, Ventura, Calif., assignor to The United States of America as repesented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 17, 1976, Ser. No. 724,128
Int. Cl.[2] G01S *7/40*
U.S. Cl. 73—167 **9 Claims**



1. An improved system for testing the performance of a proximity fuze having a predetermined cutoff range in response to an interference jamming signal comprising:

a. means for generating an interference jamming signal;

b. means for generating a predetermined envelope signal;

c. means for attenuating said interference jamming signal in response to said envelope signal to simulate approach and intercept of said proximity fuze with an interference jamming source;

d. means for mounting said proximity fuze at a test site of said system such that an antenna beam pattern of said proximity fuze forms a narrow cone in free space at said test site;

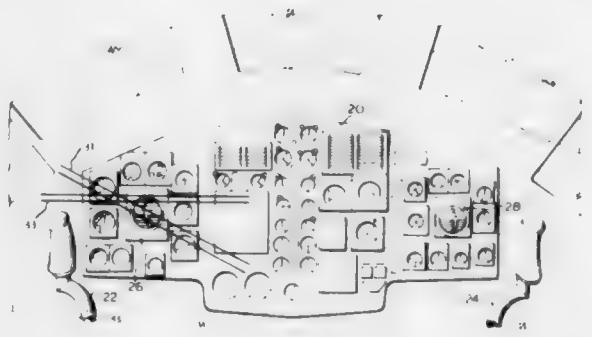
e. horn attenna means mounted beyond said predetermined cutoff range for radiating said interference jamming signal in said narrow cone antenna beam pattern to test false activation of said proximity fuze in response to interference jamming signals.

4,083,239

PERIPHERAL VISION HORIZON DEVICE

Richard Malcolm, Oakville; Philip Anderson, Laurel; Kenneth E. Money, Willowdale, and Walter Mandler, Midland, all of Canada, assignors to Canadian Minister of National Defence, Ottawa, Canada

Continuation-in-part of Ser. No. 636,467, Dec. 1, 1975, abandoned. This application Dec. 13, 1976, Ser. No. 749,867
Int. Cl.[2] G01C *21/00*
U.S. Cl. 73—178 R **17 Claims**



1. A peripheral vision horizon device for use in projecting a light bar onto the interior of an aircraft cockpit or the like to indicate pitch and roll with reference to a datum in the cockpit, the device comprising:

a housing having a first part attachable to the cockpit and a second part rotatably coupled to the first part for movement about a first axis which on assembly in the aircraft extends transversely of the cockpit;

a lens carrier rotatably coupled to the second part for rotation about a second axis, the second axis being at right angles to the first axis;

a light source contained in the housing;

an optical system coupled to the housing for directing light from the light source towards the lens carrier along the second axis;

a lens of two-fold symmetry mounted in the lens carrier transversely of the second axis for receiving said light and projecting a beam of light for striking the interior of the cockpit to create the light bar; and

control means coupled to the housing, the control means being operable to move the second part about the first axis to indicate pitch and to move the lens carrier about the second axis to indicate roll so that deviation of the position of the light bar from said datum will indicate the orientation of the aircraft relative to a horizontal plane containing the light bar.

4,083,240

BALANCED SENSING SYSTEM FOR VORTEX-TYPE FLOWMETER

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Jan. 13, 1977, Ser. No. 759,096
Int. Cl.[2] G01F *1/32*
U.S. Cl. 73—194 VS **4 Claims**

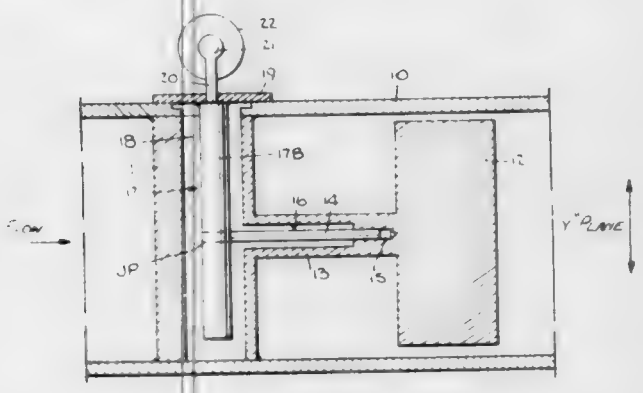
1. An external sensor vortex-type flowmeter which is subjected to accelration forces that produces spurious readings, said meter comprising:

A. a flow tube through which the fluid to be metered is conducted;

B. an obstacle assembly mounted in said tube and constituted by a front section fixedly mounted across said tube and a deflectable tail section cantilevered by a flexible beam behind the front section whereby periodic vortices generated by the front section causes the tail section to vibrate at a corresponding frequency; and

C. a system for transmitting the vibrations of the tail section to an external coupling head engageable by a sensor to produce an electrical signal whose frequency corresponds to the vibratory frequency, said system including a rod

passing through said beam and joined to a bar passing through a bore in said front section, the upper end of the bar being joined to a diaphragm covering said bore, whereby said bar is pivoted therefrom and swings back and forth in accordance with said vibrations, the upper end of said bar being linked to said coupling head, said rod being joined to said bar at an intermediate junction point



dividing said bar into a lower balancing section and an upper sensor linking section, the mass distribution of said bar sections being such that when a substantially identical acceleration acts on both the balancing and tail section the resulting moments about the pivot are balanced so as to render said meter substantially insensitive to acceleration forces.

4,083,241

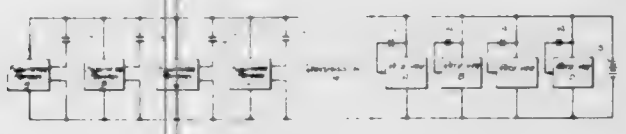
MULTI-CHANNEL COMMON-LINE FLOWMETER TRANSMISSION SYSTEM

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Continuation-in-part of Ser. No. 768,414, Feb. 14, 1977. This application Mar. 11, 1977, Ser. No. 776,913

Int. Cl.[2] G01F *1/32*

U.S. Cl. 73—194 VS **4 Claims**



1. A multi-channel, common-line transmission system for transmitting flowmeter readings taken at a plurality of points to a remote station, said system comprising:

A. a plurality of d-c powered primaries at each point, each primary being constituted by a vortex flowmeter that measures the flow rate of fluid generating periodic fluidic fluctuations as a function thereof, a sensor responsive to said fluctuations, said sensor being an inductive resonator element whose reactance is varied by said fluctuations, a channel oscillator which incorporates said resonator element to produce a carrier whose amplitude and frequency are modulated by said resonator element whereby the resultant carrier signal is modulated as a function of flow rate, and means to maintain the amplitude of said modulated carrier constant to produce a frequency-modulated carrier signal, the oscillators in said plurality of primaries being assigned distinct channel positions within a predetermined frequency spectrum;

B. a common two-wire transmission line extending between said primaries and said remote station to convey the frequency-modulated carrier signals in said spectrum from the primaries to said station; and

C. frequency-modulation receiver means at said station to demodulate said carrier signals to derive therefrom signals indicative of the flow rate at the respective points, said station having a d-c power source connected to said line to supply operating power to the primaries.

4,083,242

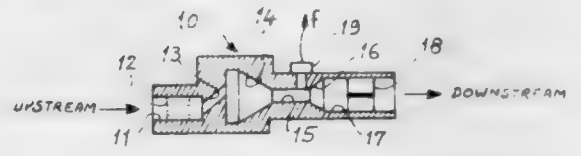
DEVICE FOR MEASURING THE FLOW RATE OF FLUID IN A DUCT

Alain Heckel, Chabeuil, and Rene Presset, Portes les Valence, both of France, assignors to Crouzet, Paris, France

Filed Jan. 19, 1977, Ser. No. 760,578

Int. Cl.[2] G01F *1/32*

U.S. Cl. 73—194 B **8 Claims**



1. A device for measuring the volumetric flow rate of a fluid flowing through a generally tubular body, wherein a swirling or precessing motion is imparted to the fluid comprising in succession, in the flowing direction of the fluid, a first cylindrical duct provided with a filter, a second cylindrical duct of restricted cross-sectional area, a chamber comprising a cylindrical part of enlarged cross-sectional area and a converging conical part, the axis of said second duct being displaced and inclined relative to the axis of said chamber in order to cause the fluid to swirl or precess at the outlet of said chamber, a third cylindrical duct of restricted cross-sectional area coaxial with said chamber, and a fourth cylindrical duct provided with means arranged for stopping the swirling motion of the fluid, but connected to said third duct by a tapered wall, means responsive to the precession of said fluid and producing a variable frequency signal.

4,083,243

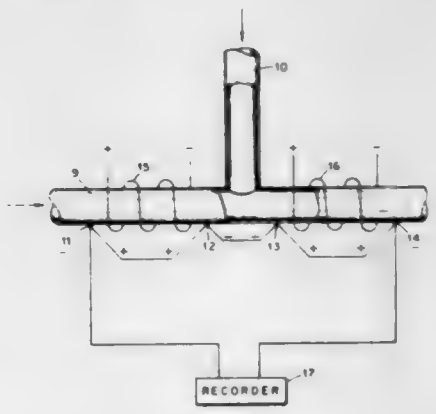
METHOD OF MEASURING THE MASS FLOW RATE OF A SUBSTANCE ENTERING A COCURRENT FLUID STREAM

Henry D. Cochran, Jr., Lenoir City, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 22, 1977, Ser. No. 789,764

Int. Cl.[2] G01F *1/68*

U.S. Cl. 73—196 **1 Claim**



1. A system for monitoring the mass flow rate of solid particles in a cocurrent fluid stream comprising a fluid transport line, a feed line coupled to said fluid transport line for introducing solid particles into said transport line, a first electrical heater encompassing a section of said transport line upstream from said particles feed entry line, a second electrical heater encompassing a like section of said transport line downstream from said particles feed entry line, said heaters adaptable to be supplied with respective equal heating currents, a first pair of thermocouples affixed to said transport line on respective opposite sides of said first heater and connected in electrical

opposition each with the other, a second pair of thermocouples affixed to said transport line on respective opposite sides of said second electrical heater and also connected in electrical opposition each with the other, a recorder, and means for connecting all of said thermocouples in series with each other and with said recorder, whereby when said heaters are energized the difference in temperatures as sensed by said respective pairs of thermocouples provides an indication of the mass flow rate of said particles in said fluid stream and is recorded by said recorder.

4,083,244

METHOD AND APPARATUS FOR MEASURING FLUID FLOW AND/OR FOR EXERCISING A CONTROL IN DEPENDENCE THEREON

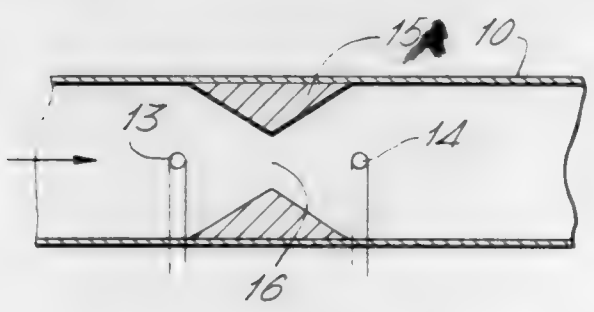
Joram Agar, Alresford, and Klaus Joachim Zanker, Four Marks, both of England, assignors to Agar Instrumentation Incorporated, Houston, Tex.

Filed Nov. 18, 1976, Ser. No. 743,029

Claims priority, application United Kingdom, Nov. 24, 1975, 48186/75

Int. Cl.[2] G01F *1/68*

U.S. Cl. 73—204 **14 Claims**



1. Apparatus for determining fluid flow, said apparatus comprising flow obstruction means and two heat-emitting members which are mounted in a geometrically symmetrical arrangement in a conduit, the heat-emitting members being subject to the same heat losses when there is no fluid flow through the conduit, the flow obstruction means causing the two heat-emitting members to be differentially affected by the fluid flow through the conduit, means for heating each of the two heat-emitting members to a temperature higher than that of the fluid, and means responsive to the ratio of the heat losses from the two heat-emitting members for determining the said fluid flow.

4,083,245

VARIABLE ORIFICE GAS FLOW SENSING HEAD

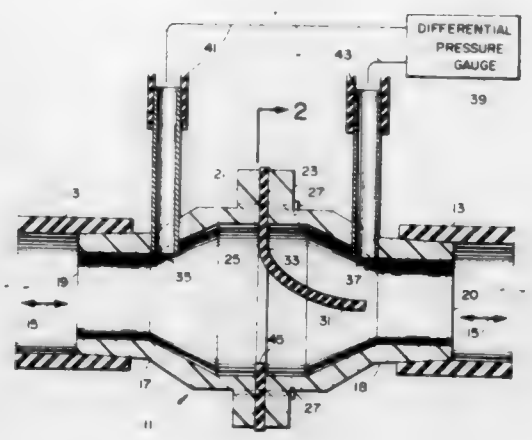
John J. Osborn, Tiburon, Calif., assignor to Research Development Corporation, San Francisco, Calif.

Filed Mar. 21, 1977, Ser. No. 779,557

Int. Cl.[2] G01F *1/22*

U.S. Cl. 73—207 **5 Claims**

1. A gas flow sensing head comprising a housing having gas inlet and gas outlet ports, an orifice membrane disposed across the interior of said housing between said inlet and outlet ports, said orifice membrane being formed of an elastic material, said orifice membrane including a partially cutout portion defining an orifice and a flap integral with and hingably connected to the membrane and substantially coextensive with the orifice, said flap including sides which converge to form the narrowest portion of the flap at that portion thereof most remote from the hinged connection to the orifice membrane whereby the flow of gas through said housing varies the size of said orifice, said hinged connection being narrower than the widest portion of said flap and means disposed on each side of said orifice membrane for sensing the pressure thereat.



4,083,246

FLUID FLOW METER

Lawrence B. Marsh, Silver Spring, Md., assignor to Marsh-McBirney, Inc., Gaithersburg, Md.

Filed Feb. 28, 1977, Ser. No. 772,849

Int. Cl.[2] G01F *1/00*

U.S. Cl. 73—227 **18 Claims**



1. Apparatus for measuring the flow of fluid in a conduit, channel or the like, comprising

(a) means mounted in the conduit for producing an average fluid velocity signal, including

(1) a probe;

(2) means for mounting said probe between the low water mark and the bottom of said conduit, whereby said probe produces a local velocity signal; and

(3) means for modifying said local velocity signal to produce said average velocity signal;

(b) means for producing a fluid height signal corresponding to the height of the fluid in the conduit;

(c) transfer function means for converting the fluid height signal to a fluid area signal;

(d) means for multiplying the average fluid velocity signal with the fluid area signal to produce a fluid flow rate signal; and

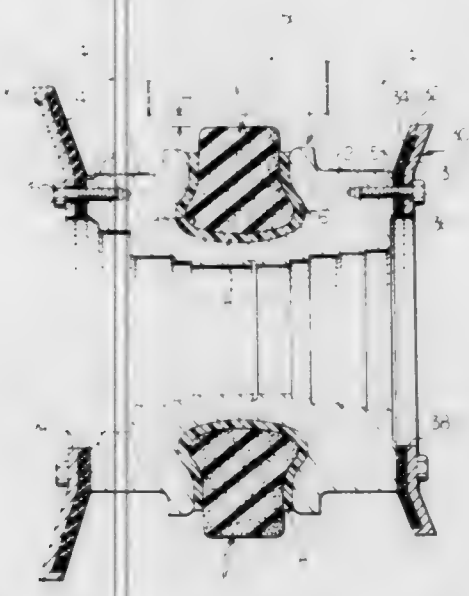
(e) indicator means connected with the output of said multiplier means for producing an indication of the magnitude of said fluid flow rate signal.

4,083,247

APPARATUS FOR REDUCING NOISE OF A CARRIER ROLLER

Hajime Umezaki, Machida; Kyoichi Oguri, Kawasaki; Hiroshi Nakajima, Sagamihara; Shinichi Amemiya, Sagamihara, and Yoshitomo Nozawa, Sagamihara, all of Japan, assignors to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Oct. 4, 1976, Ser. No. 729,544
Claims priority, application Japan, Oct. 11, 1975, 50-151733
Int. Cl.[2] F16H *55/30, 55/14, 55/36*
U.S. Cl. 74—243 R **5 Claims**



1. A noise reduction apparatus for a carrier roller in a crawler tractor, the carrier roller being of the type having a body with opposite side faces formed thereon, comprising:

first and second dished annular guard members secured to the opposite side faces of the body, respectively, said guard members each including an annular steel plate and an annular noise-absorbing member, the latter of which is positioned inwardly of each plate when said first and second guard members are secured to the body;

means forming an annular groove in the central portion of the periphery surface of the body;

a vibration damping material in the form of a layer, said material being bonded to the wall of the annular groove and forming an annular groove therein; and

a third guard member made of a noise-absorbing material, and closely fitted in the annular groove defined in the layer of said damping material.

4,083,248

DIGITAL LIQUID-LEVEL GAUGING SYSTEMS

Lawrence C. Maier, Middlebury, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Continuation of Ser. No. 610,401, Sep. 4, 1975, abandoned. This application Dec. 23, 1976, Ser. No. 754,061
Int. Cl.[2] G01F *23/26*
U.S. Cl. 73—304 C **11 Claims**

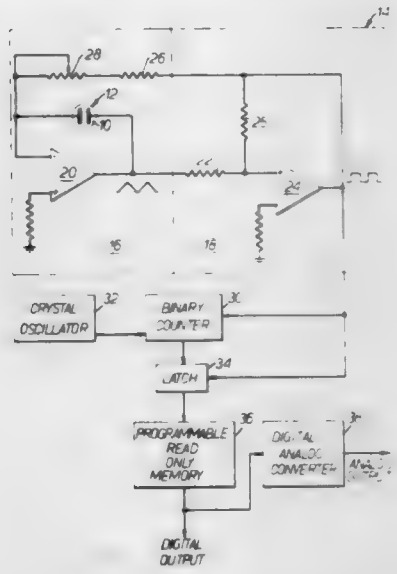
1. A digital liquid-level gauging system, comprising:

a capacitive probe for insertion in a liquid storage tank and having a capacitance variable in dependence on the level of liquid in the tank;

a variable frequency generator including timing circuitry into which the probe is connected, the capacitance of the probe determining the period of each cycle of the generator output, in which the variable frequency generator comprises an integrator forming said timing circuitry and producing a voltage output changing at a rate determined by the probe capacitance, a hysteresis switch connected to receive the integrator output and to produce said generator output switching between high and low voltage levels on the integrator output reaching predetermined high and low values, and means connecting the generator output back to form the integrator input to reverse the direction of integration on said switching of the generator output;

an oscillator for generating count pulses; and

an electronic counter connected to be responsive to said generator output and to receive the count pulses from the



oscillator, the counter repeatedly counting said count pulses for respective lengths of time dependent on the periodicity of the generator output to produce respective accumulated counts, each of which is directly proportional to the period of the generator output and thus a proportionate measure of the level of liquid in the tank.

4,083,249

HYGROMETER

Hermann E. Gerber, Reston, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 17, 1977, Ser. No. 759,935
Int. Cl.[2] G01N *25/68*
U.S. Cl. 73—336.5 **11 Claims**



1. A hygrometer for measuring the relative humidity of an atmosphere comprising:

a substrate with at least one optically highly reflective, hydrophobic surface;

a plurality of closely spaced controlled water-condensation means arranged in planar form on said hydrophobic surface, said controlled water-condensation means acting to condense water vapor to form solution droplets at the locations of said controlled water-condensation means;

light-emitting means for illuminating said controlled water-condensation means;

scattered-light detecting means for detecting light scattered by said solution droplets at the locations of said controlled

water-condensation means and for producing an output signal proportional to the intensity of the scattered light;

direct-light detecting means for detecting the direct light from the light-emitting means and for producing an output signal proportional to the intensity of direct light;

means for obtaining the difference between the output signals of said detecting means and for producing an output signal proportional to the difference;

means for equalizing the direct and reflected-light output signals when the relative humidity of the atmosphere is 100%; and

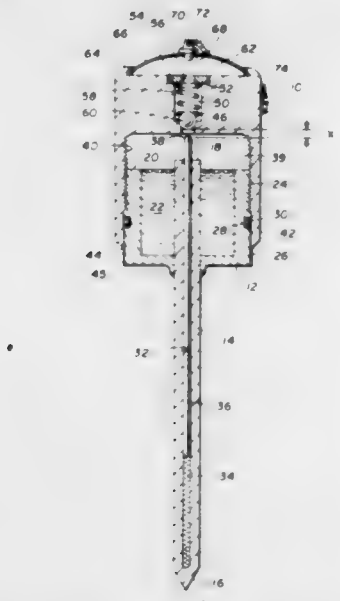
means for utilizing the difference signal to provide an indication of the corresponding relative humidity.

4,083,250

AUDIBLE ALARM FOOD THERMOMETER

Randall Goff, Weston; John M. Radbill, Winsted, and Roger W. Pleasanton, Shelton, all of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 10, 1977, Ser. No. 767,407
Int. Cl.[2] G01K *5/32*
U.S. Cl. 73—352 **10 Claims**



1. An audible alarm food thermometer comprising in combination:

a. a two-part detachable housing internally defining a water reservoir;

b. a temperature sensitive probe secured to one of said housing parts, said probe being insertable into food for sensing internal food temperature while said housing remains outward of the food for exposure to elevated cooking temperatures at which the food is to be prepared;

c. presettable means associated with said housin for adjustably varying the set point temperature at which food temperature sensed by said probe is to effect an audible alarm;

d. seal means operable when probe sensed temperature is below said set point temperature to seal said reservoir against escape of steam generated from water in the reservoir exposed to the cooking temperature;

e. release means operable in opposition to said seal means to force release of said seal mean when the probe sensed temperature is above said set point temperature; and

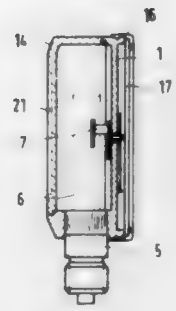
f. whistle means supported in the steam escape path from said reservoir for producing an audible alarm.

4,083,251

PRESSURE GAUGE

Steffen Förster, D-7844 Neuenburg, Germany

Filed May 7, 1976, Ser. No. 684,376
Claims priority, application Germany, Jun. 18, 1975, 2527201; Jun. 18, 1975, 7519384
Int. Cl.[2] G01L *7/04*
U.S. Cl. 73—738 **2 Claims**



1. A pressure gauge comprising:

a. a plate;

b. a bourdon-like tube;

c. mounting means for mounting said tube on said plate;

d. a flange portion on said plate which extends outwardly at substantially right angles from said plate, said flange portion having a recess and being provided with an opening for receiving said mounting means, and said bourdon-like tube has a portion which extends from said mounting means in the form of a hook; and

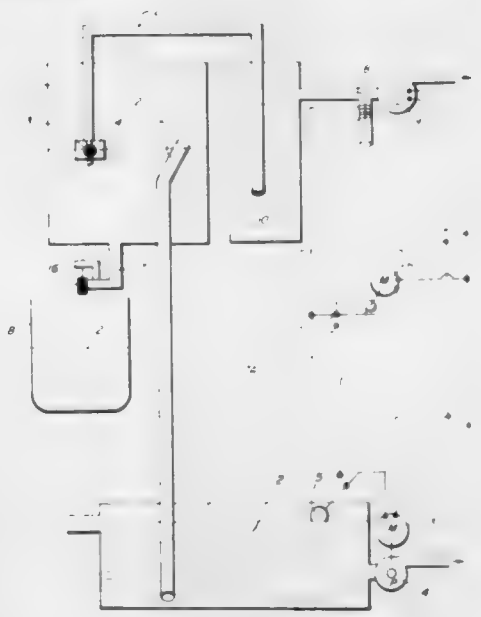
e. a cover mounted on said plate so as to enclose said tube, said cover having a recess area for cooperation with said recess on said flange portion of said plate, and said cover is provided with a weakened area formed by two circular grooves, each of which is formed in a mutually opposite side of said cover.

4,083,252

FLOW PROPORTIONAL LIQUID SAMPLER

Lawrence Lynn Stookey, 105½ N. Franklin, Manchester, Iowa 52057

Filed Jul. 25, 1977, Ser. No. 818,880
Int. Cl.[2] G01N *1/24*
U.S. Cl. 73—421 B **3 Claims**



1. A flow proportional liquid sampler comprised of

(a) a vacuum pump connected to a trap through a solenoid valve,

(b) an inverted U-shaped pipe connecting the trap to a sample vessel and extending vertically into the top of the trap and the sample vessel,

(c) the solenoid valve having an opening to the atmosphere,

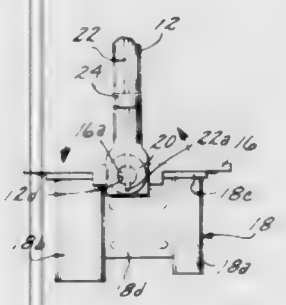
(d) a valve seat box containing a ball valve connected on the end of the inverted U-shaped pipe in the sample vessel,
(e) a stand pipe in the sample vessel running to a source of liquid to be sampled,
(f) the upper end of the stand pipe being at the same elevation as the ball valve,
(g) an outlet pipe attached to the lower portion of the sample vessel and positioned over a sample container,
(h) a flap valve having an imperfect seal attached to the end of the outlet pipe positioned over the sample container,
(i) a percentage timer to control the solenoid valve so as to first create a vacuum in the sample vessel and then open the sample vessel to atmospheric conditions.

4,083,253

FLUID SAMPLING APPARATUS

Harvey Charles Nienow, 918 River La., Santa Ana, Calif. 92706

Filed Aug. 26, 1977, Ser. No. 827,951
Int. Cl.[2] G01N *1/12*
U.S. Cl. 73—425.4 R **8 Claims**



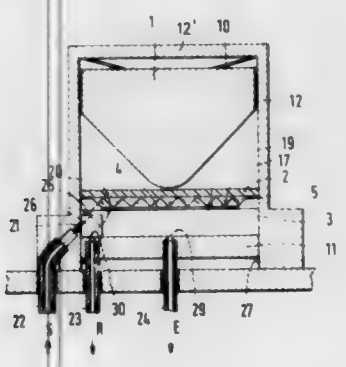
1. A fluid sampling apparatus for obtaining a fluid sample at a predetermined depth in a body of fluid comprising in combination,
an elongated member having handle means at one end and being of such length that with said handle means above the surface of a body of fluid the other end may be positioned at a predetermined depth therein,
a platform adapted to hold a vessel and pivotally mounted on said elongated member at said other end thereof to pivot about an axis at substantially right angles to said elongated member,
and operating means connected relative to said platform and extending to said handle to pivot said platform and vessel thereon substantially 180°.

4,083,254

ACCELEROMETER

Norbert Nissl, Aresing, Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH Gesellschaft mit beschraenkter Haftung, Munich, Germany

Filed May 5, 1977, Ser. No. 793,939
Claims priority, application Germany, May 12, 1976, 2620914
Int. Cl.[2] G01P *15/08*
U.S. Cl. 73—517 R **9 Claims**



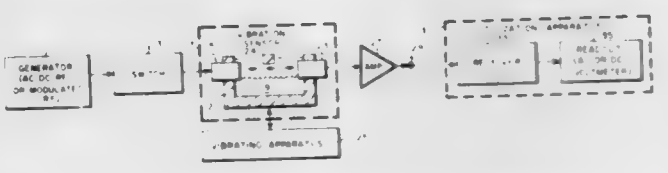
1. An apparatus for measuring acceleration comprising housing means, inertia mass means in said housing means, force measuring means operatively arranged in said housing for responding to acceleration forces effective on said inertia mass means, said force measuring means comprising light source means, prism means having light reflecting surfaces arranged in said housing means to totally reflect light received from said light source means, body means operatively arranged with a spacing relative to one of said light reflecting surfaces of said prism means and so as to vary said spacing in response to said acceleration forces effective on said inertia mass means, and light intensity measuring means operatively arranged to receive light reflected by said prism as influenced by said variable spacing, whereby the measured light intensity provides an indication of the size of said acceleration forces.

4,083,255

HYDRO-OPTIC VIBRATION DETECTOR

John C. McKechnie, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 4, 1977, Ser. No. 774,285
Int. Cl.[2] G01H *3/10*
U.S. Cl. 73—655 **25 Claims**

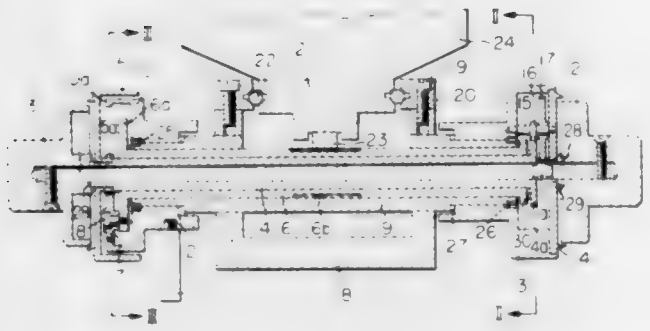


1. A vibration detector, comprising in combination:
means for generating a first predetermined electrical signal;
a container means having at least a pair of oppositely disposed walls;
liquid means disposed within said container means in such manner as to cause the surface thereof to be at a certain level therein when said liquid means is in a quiescent state;
radiant energy generating means effectively electrically connected to the output of said first predetermined electrical signal generating means and mounted in and extending through one of the oppositely disposed walls of said container means in such manner that one portion of the periphery thereof is in contiguous disposition with the surface of said liquid means when said liquid means is in a quiescent state, and so as to permit the broadcast of the radiant energy generated thereby in a predetermined direction along the aforesaid liquid surface in response to said first predetermined electrical signal;
means mounted in and extending through the other of said oppositely disposed walls of said container means in such manner that one portion of the periphery thereof is in contiguous disposition with the surface of said liquid means when said liquid means is in a quiescent state, and so as to permit the reception of radiant energy broadcast by the aforesaid radiant energy generating means and for generating a second electrical signal proportional thereto; and
utilization apparatus means effectively connected to the output of said radiant energy reception means for response to the aforesaid second electrical signal generated thereby.

4,083,256
SINGLE-AXIS COARSE AND FINE ADJUSTMENT DEVICE PROVIDED WITH MEDIUM ADJUSTMENT

Megumu Shio, Kamakura, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Aug. 30, 1976, Ser. No. 718,452
Claims priority, application Japan, Aug. 13, 1975, 50-110492
Int. Cl.[2] F16H *35/18;* G02B *21/26*
U.S. Cl. 74—10.52 6 Claims



1. A single-axis coarse and fine adjustment device for driving a carriage, comprising:

stationary support means;

a pinion shaft rotatably supported by the support means and having a pinion meshing with a rack provided on the carriage;

a connecting shaft rotatably supported within the pinion shaft and having a first toothed portion and a second toothed portion;

first decelerating gear means meshing with the first toothed portion to decelerate the rotation of the connecting shaft and transmit it to the pinion shaft;

a fine adjustment shaft rotatably supported within the connecting shaft and having a toothed portion;

a fine adjustment operating member for rotating the fine adjustment shaft;

second decelerating gear means meshing with the second toothed portion of the connecting shaft and the toothed portion of the fine adjustment shaft to decelerate the rotation of the fine adjustment shaft and transmit it to the connecting shaft;

a medium adjustment operating member rotatably supporting the second decelerating gear means and rotatably supported by the support means so as to impart rotation of equal ratio to the connecting shaft through the second gear means; and

a coarse adjustment operating member rotatably supported by the support means so as to impart rotation of equal ratio to the pinion shaft through the first decelerating gear means;

said fine adjustment operating member being disposed in proximity to said medium adjustment operating member with a predetermined friction imparted thereto, and the friction for fine adjustment, the friction for medium adjustment acting between said medium adjustment operating member and said support means and the friction for coarse adjustment acting between said coarse adjustment operating member and said support means satisfying the following relation in magnitude:

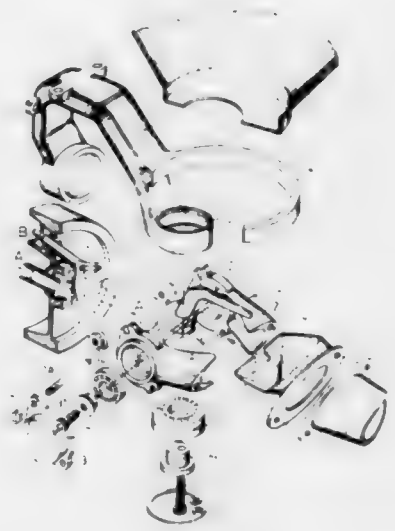
friction for fine adjustment < friction for medium adjustment < friction for coarse adjustment; and

said coarse adjustment operating member having an internal gear, and said first decelerating gear means being a planetary gear rotatably supported on said pinion shaft and meshing with said first toothed portion of said connecting shaft and said internal gear.

4,083,257
AGRICULTURAL IMPLEMENT

Pieter Adriaan Oosterling, Nieuw-Vennep, and Antoine Marinus Rene Baecke, Hoofddorp, both of Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands

Filed Jun. 2, 1975, Ser. No. 582,978
Claims priority, application Netherlands, Jun. 4, 1974, 7407518; Jun. 4, 1974, 7407517; Jun. 4, 1974, 7407516
Int. Cl.[2] F16H *23/00*
U.S. Cl. 74—60 38 Claims



1. In an agricultural implement, the combination of:

a frame having an annular first bearing support and a second bearing support displaced from the first support;

a flywheel journalled in said first bearing support about a generally horizontal first axis;

an oscillatory tool journalled in said second support about a generally vertical second axis which lies in a plane also containing said first axis; and

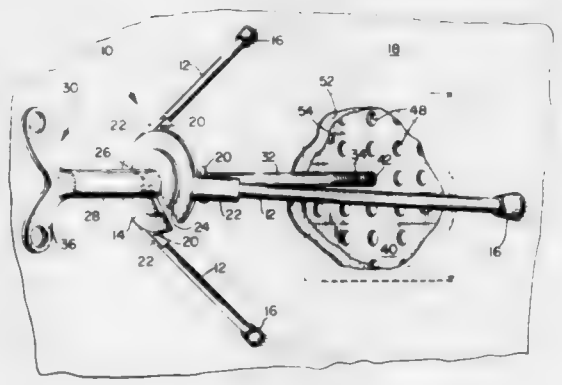
a coupling element eccentrically journalled in said flywheel and connected to said tool in laterally spaced relation to said second axis;

said second support being located relative to said first support such that a plane passing centrally through said second support and perpendicular to said second axis contains said first axis.

4,083,258
WALL PATCHING APPARATUS

Joseph Richard Hammett, 7032 Allentown Rd., Camp Springs, Md. 20031

Filed Aug. 9, 1976, Ser. No. 712,918
Int. Cl.[2] F16H *27/02*
U.S. Cl. 74—89.15 6 Claims



1. Apparatus for patching a hole in a wall, comprising:

a backing plate adapted to be positioned over the hole in engagement with the rear surface of the wall surrounding the hole for receiving patching material thereon, said backing plate having a plurality of perforations therethrough, and

support means engageable with the front surface of said wall and adapted to be removably secured to said backing plate for supporting it in a position over the hole for the receipt of patching material thereon, said support means comprising a rotatable rod having a threaded end adapted to be threadably received within said perforation for supporting said backing plate, and a plurality of movable legs connected to said rod and engageable with the front surface of the wall surrounding the hole,

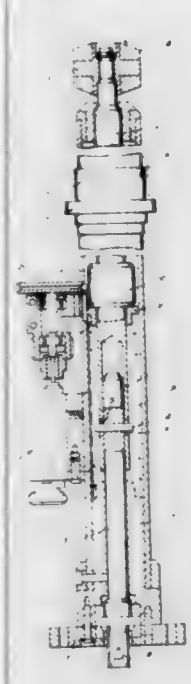
whereby said support means serves to support said backing plate over the hole before and during the application of patching material on said backing plate for patching the hole, and said support means may be removed from said backing plate by rotation of the threaded portion of said rod out of said perforation in said backing plate after the application of patching material thereon.

4,083,259

APPARATUS FOR CRANKING THE ROTOR OF A TURBO MACHINE

Dieter Seliger, and Arun-Kumar Das-Gupta, both of Munich, Germany, assignors to MTU Munchen GmbH, Munich, Germany

Filed Sep. 29, 1976, Ser. No. 727,832
Claims priority, application Germany, Oct. 1, 1975, 2543813
Int. Cl.[2] F16H *15/18*; G05G *1/10*
U.S. Cl. 74—191 **10 Claims**



1. A cranking apparatus for the rotor of a turbo machine, the machine having a casing formed with an opening and the rotor within the casing having a circular surface, the apparatus comprising:

a. a shaft for insertion through the casing opening,

b. a sleeve surrounding said shaft, said shaft being rotatable within said sleeve,

c. means for limiting the amount which said sleeve can extend into the casing,

d. a friction wheel at one end of said shaft for tangentially engaging the circular surface of the rotor, and

e. means for rotating said shaft.

4,083,260

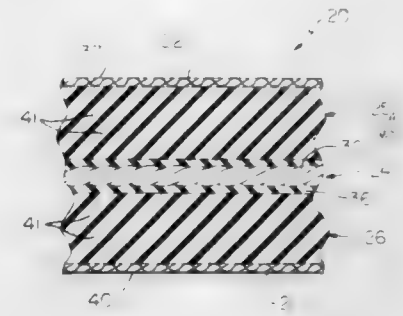
ENDLESS POWER TRANSMISSION BELT

Douglas W. Carlson, and Jack Nelson, both of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 25, 1977, Ser. No. 790,719
Int. Cl.[2] F16G *5/16*
U.S. Cl. 74—233 **20 Claims**

1. An endless power transmission belt comprising a load-carrying section, said load-carrying section having a twisted helically wound load-carrying cord disposed therein which is defined in terms of a twist multiplier having a numerical value in the range of between 4 – 8, said twist multiplier being expressed by the equation:

$$TM = t \times d^{\frac{1}{2}} \times K$$



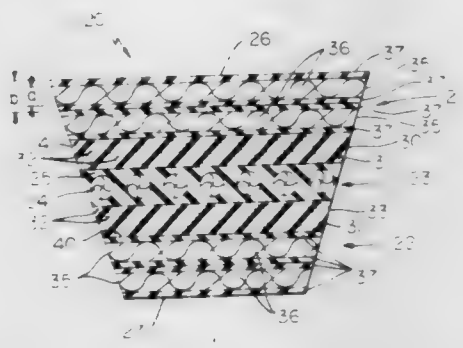
where *TM* is the twist multiplier expression, *t* is the twist of the cord in turns per inch, *d* is denier of the cord, and *K* is a constant for the particular material used to define the cord.

4,083,261

ENDLESS POWER TRANSMISSION BELT

Billy L. Speer, and Richard L. Bushong, both of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 18, 1977, Ser. No. 788,379
Int. Cl.[2] F16G *5/16, 1/00*
U.S. Cl. 74—233 **20 Claims**



1. An endless power transmission belt comprising, a tension section, a compression section, and load-carrying means bonded between said sections, at least one of said sections having at least one laminated layer, said laminated layer comprising a greige fabric and a polymeric material laminated thereagainst, said greige fabric and laminated layer having a thickness ratio within the numerical range 0.35–0.75 defined by the equation:

$$R = a/b$$

where *R* is the thickness ratio, *a* is the thickness of the greige fabric, and *b* is the overall thickness of the laminated layer.

4,083,262

POSTAGE METER CONVERSION APPARATUS

Keith E. Schubert, Rowayton, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sep. 30, 1976, Ser. No. 728,269
Int. Cl.[2] F16H *55/04*
U.S. Cl. 74—436 **5 Claims**

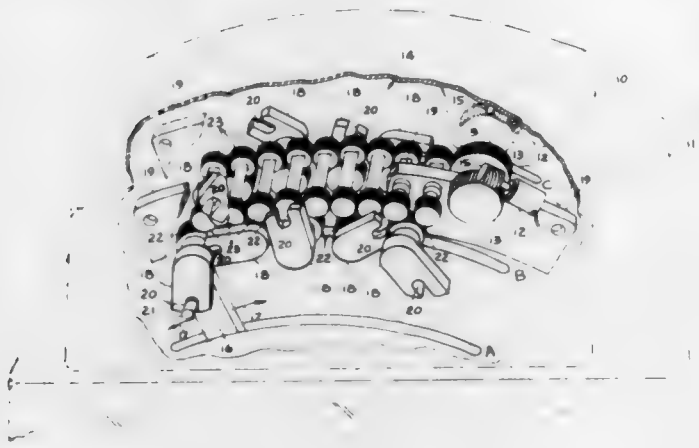
1. A dichotomous conjugate gear and cam apparatus for converting a mechanical lever-settable postage meter to an electrically controlled postage meter, said conjugate gear and cam apparatus comprising:

a gear train having a plurality of gears in a connective intermeshing series;

a motor operatively connected to said gear train for driving said gear train; and

a series of cams each connected to respective gears in said

gear train and each having a camming surface in one end thereof for engaging with, and driving, a lever of a respective postage meter bank, each cam in said series of cams being slightly out of driving phase with a preceding and subsequently adjacent cam in said series, such that, as one



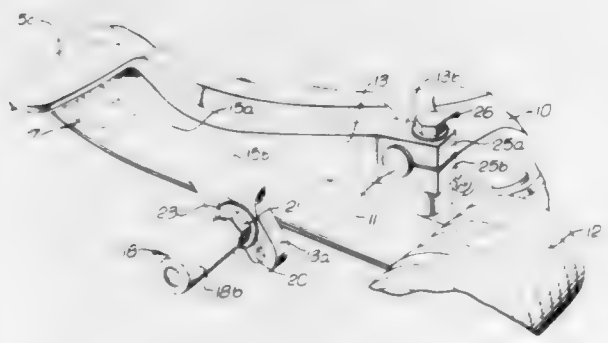
cam completes driving said lever through a given distance, a succeeding cam engages said lever and drives the lever through an additional distance, and so on, whereby the lever of said postage meter bank is driven through a range of postage meter values.

4,083,263

MOTORCYCLE GEAR SHIFTER

Charles W. Lundquist, 2003 Ernest Ave., Redondo Beach, Calif. 90278

Filed Aug. 30, 1976, Ser. No. 718,951
Int. Cl.[2] G05G *1/14*
U.S. Cl. 74—474 **7 Claims**



1. For combination with a gear shifting crank member adapted to extend lengthwise alongside a motorcyclist's shoe, said crank member extending forwardly, the combination comprising

(a) an L-shaped bracket having a first leg connected to the crank member and a second leg projecting laterally to fit over and terminate above a portion of the shoe upper side proximate the toe region, the first leg merging arcuately and smoothly toward the second leg at a junction which is concave toward the shoe, the crank and legs being one-piece, the underside of the second leg being substantially flat to conform to the normally flat upper side of a shoe top portion,

(b) a peg connected to said member and projecting laterally to fit under and terminate beneath a portion of the shoe sole forwardly of the shoe heel, the lateral length of the second leg being substantially less than the width of the shoe toe portion and the length of the second leg in a forward direction being greater than the space between shoe laces, to prevent snagging, the second leg having rounded edges throughout its projecting extent, said edges defining a U-shaped locus which extends laterally from said junction,

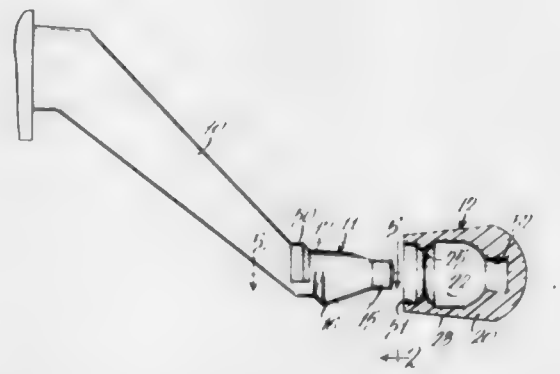
(c) whereby the motorcyclist's shoe is readily insertible between said second leg and peg and may then be displaced toward either the second leg or peg to rotate the crank member for effecting gear shifting.

4,083,264

ROTATABLE KNOB ASSEMBLY

Marlo G. Van Klompenburg, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.

Filed Nov. 8, 1976, Ser. No. 739,600
Int. Cl.[2] G05G *1/00*; B25G *1/00*; E05B *1/00, 7/00*
U.S. Cl. 74—545 **8 Claims**



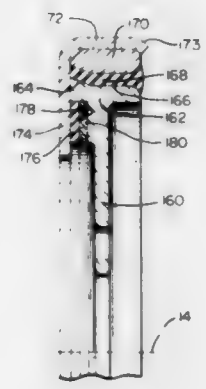
8. The combination of an operating member and freely rotating knob carried thereon, wherein said operating member has a mounting section for the knob including a first part intermediate the length of said mounting section having a noncircular transverse cross section and another adjacent part having a generally circular transverse cross section, both of said parts having substantially the same perimetrical length, and said knob being of flexible material and having a body with an open-ended cylindrical cavity and a surrounding wall, and ridge means within said cavity raised from said wall to define a locking perimeter of approximately the same perimetrical length as the perimetrical lengths of said parts whereby placement of the knob on said mounting section in operative position by insertion of the mounting section into said cavity distorts the knob to have the ridge means assume said noncircular configuration in moving past said first part of the mounting section and said ridge means thereafter being located at said adjacent part of the mounting section and returning to a normal contour to lock behind said first part of the mounting section.

4,083,265

TORSIONAL VIBRATION DAMPER

Robert Charles Bremer, Jr., Brownsburg, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Filed Mar. 5, 1976, Ser. No. 664,381
Int. Cl.[2] G05G *1/00*
U.S. Cl. 74—574 **7 Claims**



1. The torsional vibration damper of the type having an annular hub adapted to be coupled to the crankshaft of an internal combustion engine to damp torsional vibrations

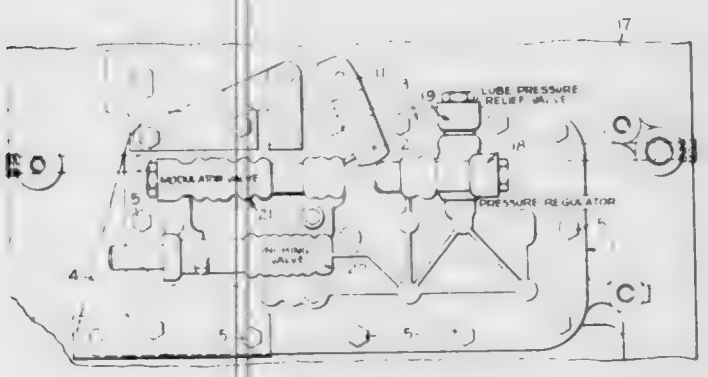
thereof, the hub carrying an elastomer band at the outer radial surface thereof, the elastomer band carrying an outer-most inertia ring, the improvement comprising, the outer radial surface of the hub increasing in diameter toward one axial face of the hub from a point on said surface intermediate the axial faces of the hub to thereby define a conical hub portion, a complementary conical portion on the innermost radial surface of the inertia ring, a continuous annular clamping cup secured to the outermost radial portion of the inertia ring and extending radially inwardly across one axial face of the damper to define a radially disposed abutment portion, a flat elastomer ring and an adjacent, substantially coextensive, flat friction fabric ring both squeezed and sandwiched between said radially extending abutment portion and a portion of said hub.

4,083,266

POWER SHIFT TRANSMISSION WITH REPLACEABLE CONTROL UNIT

Ernest A. Kreitzberg, Mukwonago, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 2, 1976, Ser. No. 711,106
Int. Cl.[2] F16H *57/02, 5/06*
U.S. Cl. 74—606 R **10 Claims**



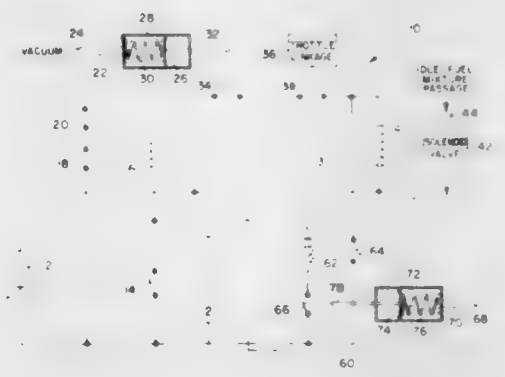
1. A power shift transmission and control system comprising, a drive shaft, a driven shaft, a plurality of gears providing a predetermined number of gear ratios and power paths through the transmission from the drive shaft to the driven shaft, a plurality of hydraulic clutches each including a hydraulic actuator for selectively engaging drive through said transmission in each of said gear ratios, a transmission housing supporting said transmission and defining an inspection opening for viewing internal components in the transmission from the side of the vehicle and a mounting surface on said transmission housing for removably mounting of an integral transmission control unit, said integral transmission control unit including a control mechanism having a portion extending externally of said control unit for manual operation, a valve assembly with flow control valves operated by said control mechanism said control mechanism including a mechanical valve actuator directly engaging said flow control valves for selectively operating said hydraulic actuators in said hydraulic clutches for shifting said transmission, pressure control valves for regulating pressure applied to the flow control valves and modulating the fluid pressure applied to the hydraulic actuators in the hydraulic clutches as the clutches are engaged, an inching valve for manually modulating pressure applied to the flow control valves and modulating the fluid pressure applied to the hydraulic actuators in the hydraulic clutches as the clutches are engaged, a valve cover housing mounting and hydraulically coupling said integral transmission control unit on said transmission housing and closing said opening in said transmission housing while mounted on said mounting surface and hydraulically decoupling said integral transmission control unit from said transmission permitting visual inspection of internal components of said transmission when said integral transmission control unit is removed, port means in said transmission housing in said mounting surface of said transmission, transmission passage means in said power shift transmission connected between said hydraulic actuators and said port means, control unit passage means providing connecting passages in said control unit connecting the pressure control valves and the flow control valves to said port means when said integral control unit is mounted on said transmission housing.

4,083,267

FUEL CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Paul John Raaz, Rte 1, Box 69, Shiner, Tex. 77984

Filed Nov. 17, 1976, Ser. No. 742,435
Int. Cl.[2] F02M *7/12*; F02D *31/00*
U.S. Cl. 74—860 **11 Claims**



1. A fuel control apparatus for use on vehicles powered by internal combustion engines equipped with standard components, such as a voltage source, accelerator, carburetor, ignition switch, forward gear switch, throttle linkage, accessory coil, accessory switch and idle fuel flow passage, comprising:

a vacuum operated switch means operated by intake vacuum pressure of said internal combustion engine, said vacuum operated switch means being connected in series with said accessory switch and said forward gear switch to a first side of said voltage source, said vacuum operated switch means closing at a first predetermined intake vacuum and opening at a second predetermined intake vacuum, said first predetermined intake vacuum being greater than said second predetermined intake vacuum;

transition switch means connected in series with said vacuum operated switch means, said transition switch means being operable by said throttle linkage of said vehicle to close if the accelerator of the vehicle is released;

coil means of solenoid valve means connected in series with said transition switch means to a second side of said voltage source, said solenoid valve means being located in the idle fuel passage of said vehicle for interrupting fuel flow therethrough during deceleration if intake vacuum exceeds a first predetermined level and the accelerator is released;

as long as the accelerator is released, said interruption of fuel flow will continue until intake vacuum drops to a second predetermined level.

4,083,268

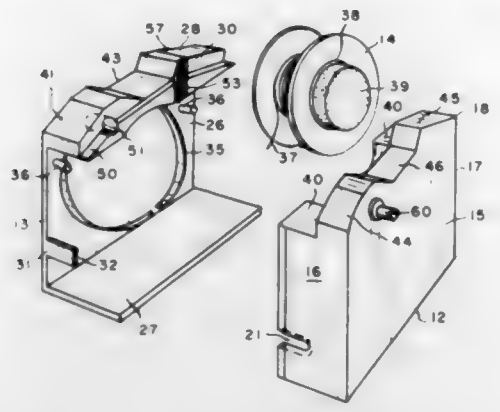
ELECTRICAL WIRE DISPENSER WITH CUTTER AND STRIPPER

Marvin Kober, Spring Valley, N.Y., assignor to O.K. Machine and Tool Corporation, New York, N.Y.

Filed Dec. 21, 1976, Ser. No. 752,726
Int. Cl.[2] H02G *1/12*
U.S. Cl. 81—9.5 R **14 Claims**

1. A wire dispenser comprising a housing, a supply of insulated wire within the housing, means on the housing for severing a portion of the wire withdrawn from the supply, and means on the housing for stripping off the insulation from the

severed wire end, said housing having a wire-receiving groove extending along one surface of the housing, said severing



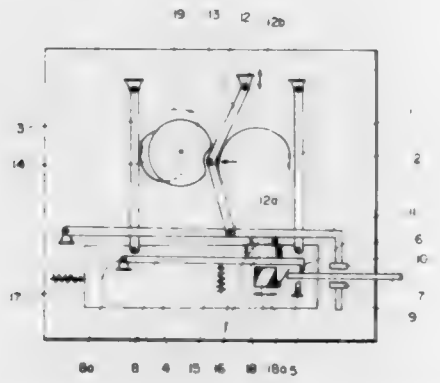
means and stripping means being mounted in spaced relationship along the said wire-receiving groove.

4,083,269

TOOL FOR STRIPPING THE INSULATION FROM ELECTRICAL CONDUCTORS

Alois Ruppert Resch, Heilbronn, Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Apr. 12, 1976, Ser. No. 675,811
Claims priority, application Germany, Apr. 15, 1975, 2516499
Int. Cl.[2] H02G *1/12*
U.S. Cl. 81—9.51 **7 Claims**



1. A tool for stripping the insulation from electrical conductors, comprising:

a housing frame;

a clamping device to clamp the conductor including two clamping jaws movable with respect to each other, one of said clamping jaws being substantially fixedly attached to said housing frame, the other of said clamping jaws being pivotally supported by said housing frame;

two blades which are movable toward each other for cutting the insulation of the conductor;

a carriage mounted to said housing by a pair of generally parallel and pivotable links, said carriage movable relative to said clamping device and supporting said blades, one of said blades being substantially fixedly attached to said said carriage, and the other of said blades movably mounted on said carriage;

a toggle joint operatively connecting said housing frame and said movable clamping jaw; and

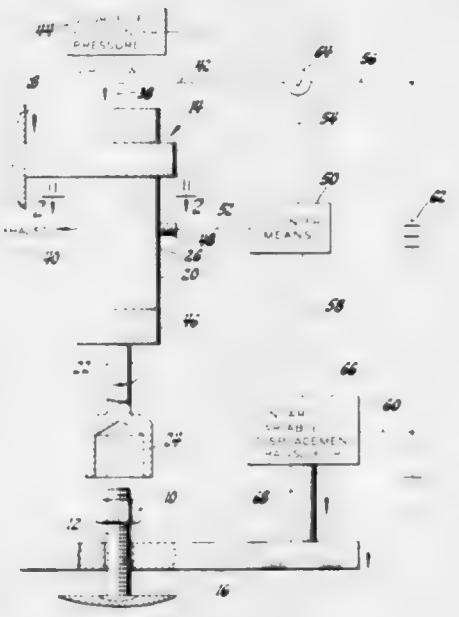
a motor-driven control system for transferring said clamping device and said blades from initial positions in which the conductor is released to a working position in which the conductor is clamped and the blades cut into the insulation, said control system including first and second cams, said first cam acting on said toggle joint and said second cam acting on one of said parallel links, said cams being shaped such that as said toggle joint is expanded said movable clamping jaw and said movable blade are transferred to said working position while said carriage is at rest, and thereafter said carriage is moved while both said clamping device and said blades remain in the working position, and thereafter said movable clamping jaw and said movable blade are returned to the initial position while, at the same time, said carriage is returned.

4,083,270

AIR MOTOR HAVING ANGULAR DISPLACEMENT CONTROL MEANS

Jerry P. Tomkinson, Livonia, Mich., assignor to Desoutter, Inc., Livonia, Mich.

Filed Mar. 18, 1977, Ser. No. 778,865
Int. Cl.[2] B25B *19/00*
U.S. Cl. 81—52.4 R **5 Claims**



1. A power tool, comprising:

an air motor having a housing, said housing having a power chamber including a cylindrical wall formed about a first axis, rotor means mounted in the housing so as to be rotatable about a second axis spaced from and parallel to said first axis,

a tool member connected to the rotor so as to be rotated therewith,

a plurality of vanes, said vanes being mounted on the rotor means in regularly spaced angular intervals and engaging the cylindrical wall of the power chamber as said rotor is being rotated,

a source of fluid under pressure and means for connecting said source to the power chamber for rotating said rotor means and said vanes as pressurized fluid is being passed through the chamber,

sensing means mounted on the housing adjacent the path of motion of the vanes,

counter means connected to the sensing means so as to be actuated as a vane passes said sensing means, and

valve means connected between the source of fluid and the power chamber for blocking fluid flow to said power chamber and means connecting the counter means to the valve means for actuating same to block fluid flow to the power chamber when the counter means registers a predetermined value,

whereby the tool member is rotated through only a predetermined angle of rotation.

4,083,271

LATHE APPARATUS

William Reed Miller, Jr., and Worthy Joseph Forward, Jr., both of Rochester, N.Y., assignors to USM Corporation, Boston, Mass.

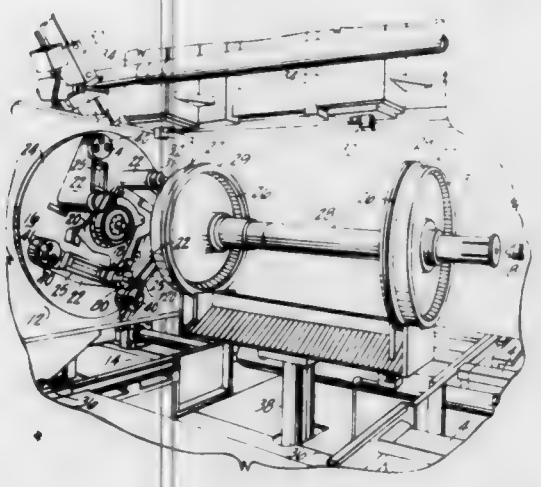
Filed Mar. 17, 1977, Ser. No. 778,610
Int. Cl.[2] B23B *5/34*
U.S. Cl. 82—8 **11 Claims**

1. A machine for turning articles between a pair of head stocks comprising opposing centers on a turning axis of said

machine, said article being driven in rotation through frictional engagement with an arrangement of drivers mounted on at least one rotatably driven face plate, said machine comprising:

at least two driver arms each pivotably mounted on a pivot post on each of said face plates for arcuate motion in a plane parallel to the plane of said face plate;

each driver arm including a bit assembly mounted for slid-



able movement therewith along an axis perpendicular to the plane of said face plate;

means for synchronously pivoting said driver arms so that the radial position with respect to said centers, of each of said bit assemblies on each of said face plates may be set to a corresponding radial dimension; and

means for moving said bit assemblies into contact with said articles to be turned.

4,083,272

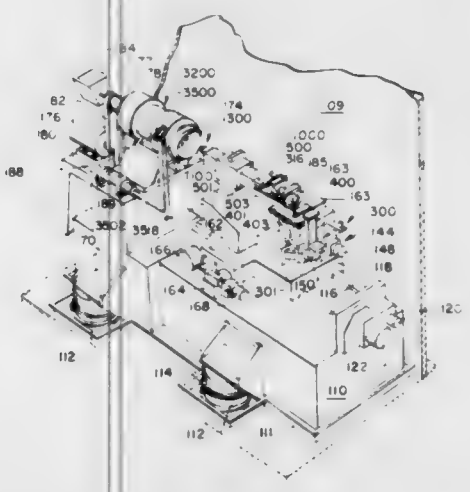
OMEGA-X MICROMACHINING SYSTEM

Donald M. Miller, Sunnyside, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 14, 1976, Ser. No. 750,317

Int. Cl.[2] B23B *5/36, 5/40*

U.S. Cl. 82—12 **18 Claims**



1. A micromachining tool comprising:

means for rotating a workpiece;

a tool bar carrying a tool bit at an end thereof for cutting the workpiece;

a first slide for moving the tool bar in a direction perpendicular to the plane of the workpiece;

a second slide mounted on the first slide aligned in a direction parallel to the plane of the workpiece;

means associated with the second slide for swinging the tool bar about a pivot point located near the end thereof remote from the tool bit and on a line parallel to an axis perpendicular to the axes of the first and second slides; and

means for moving the pivot point along an arc surrounding the perpendicular axis at the same time the tool bar is swinging on the pivot point.

6. A micromachining tool for machining spherical, aspherical, and irregular surfaces and having a machine base, Z-axis slideways on the machine base, a Z-axis slide supported on the Z-axis slideways, X-axis slideways on the Z-axis slide, an improved main air-bearing spindle mounted on a raised section of the machine base, a spindle drive motor mounted on a motor base and connected to the main air-bearing spindle by a torque-smoothing pulley fixed to the shaft of the drive motor, a vibrationless rotary coupling fixed on a driven side to the shaft of the main air-bearing spindle and on a driving side to a pulley supported from the motor base, and a belt connecting the pulleys, the micromachining tool comprising:

an eccentric mechanism mounted on the Z-axis slide and having a lower eccentric adjustment guide supported rotatably by an eccentric mechanism housing, an upper eccentric adjustment engaging the lower eccentric adjustment guide and slidable with respect thereto, a tool bar end bearing plate supported by the upper eccentric adjustment guide, and an eccentric reference ball resting adjustably on the cylindrical column;

means for connecting the lower eccentric adjustment guide to a rotary table fixed to the Z-slide and the eccentric mechanism housing which rotates the lower eccentric adjustment guide;

a hollow tool bar, parallelepipedal in shape and having one end clamped adjustably in an open-ended trough in the tool bar end bearing plate, a tool head attached adjustably to its other end and mounting a tool bit for cutting the workpiece;

a linear air bearing having upper and lower halves which together form a hollow parallelepiped having means mounted therein for supporting a point near an end of the tol bar on all sides, the halves being fastened together by a rocker arm bearing against an edge of the upper half via a rocker ball trapped between the upper half and the rocker arm and cap screws in the rocker arm which pass through holes in the upper half and have threaded engagement with the lower half whereby the halves do not contact each other and the upper half may rotate in an arc having as its center of rotation the center of the rocker ball, and a cylindrical stub projecting pendently from the lower half; and

a pivot bearing rotatably supporting the cylindrical stub projecting from the lower half, the pivot bearing itself being fixed to the X-axis slide and movable therewith.

4,083,273

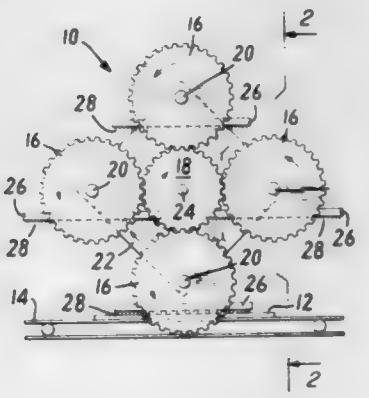
HOLE PUNCHING METHOD AND APPARATUS

Theodore E. Hillman, West Cloquet, and Mark D. Belcher, New Brighton, both of Minn., assignors to Conwed Corporation, St. Paul, Minn.

Filed Dec. 8, 1976, Ser. No. 748,683

Int. Cl.[2] B26F *1/08*

U.S. Cl. 83—2 **5 Claims**



1. Apparatus for punching holes in continuously moving board material comprising:

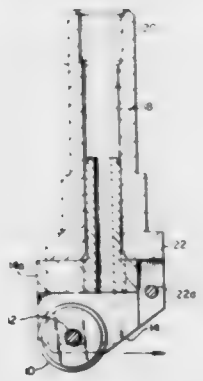
(a) means for continuously moving the board material in a linear direction at a predetermined speed;
(b) a plurality of hole punching means each of which has a plurality of pin-like projections extending therefrom;
(c) a plurality of toothed gear wheels each of which is capable of movement in a plane perpendicular to the surface of board material;
(d) each said hole punching means being rigidly positioned with respect to a toothed gear wheel and being aligned with the pin-like projections in substantially perpendicular relationship to the surface of the board whereby the pin-like projections are at all times rigidly positioned in a direction normal to said board surface;
(e) means for moving the hole punching means and pin-like projections through a circle which has as a tangent the said linear direction, the means for moving including at least one toothed drive wheel which positively drives each said toothed gear wheel being operative to move the pin-like projections at and along at least a portion of the tangent to contact the board material at an angular speed such that the linear speed of the pin-like projections and the said predetermined speed are approximately equal during the time in which the pin-like projections and the board material are in contact; and
(f) said means for moving the hole punching means and pin-like projections also being operative to maintain said pin-like projections in said substantially perpendicular relationship throughout the movement through said circle.

4,083,274

GLASS CUTTER

Thomas A. Insolio, Bristol, and Vincent T. Kozyrski, New Britain, both of Conn., assignors to The Fletcher-Terry Company, Farmington, Conn.

Filed May 31, 1977, Ser. No. 802,129
Int. Cl.² B26D *3/08*; C03B *33/10*
U.S. Cl. 83—12 **10 Claims**



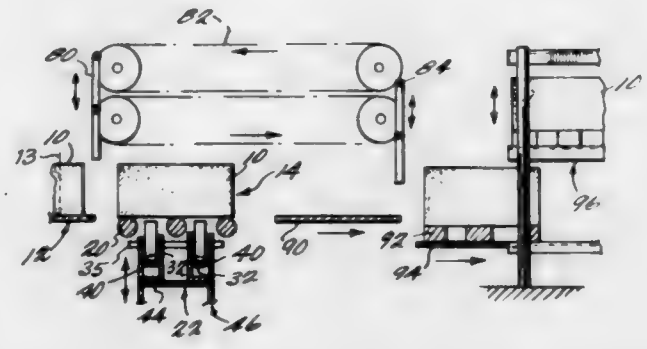
1. A glass cutter, for use in a glass cutting machine having a head adapted to traverse a glass sheet in at least a longitudinal direction, and comprising:
(a) pillar post means having a post adapted for insertion in a mounting which rotatably supports said post on a vertical axis in the cutting machine head,
(b) said pillar post means having a lower bifurcated portion of larger cross sectional size than said post, and defining a downwardly open rectangular slot,
(c) insert means receivable upwardly in said pillar post slot and having parallel sides engaging the inner sides of the furcations of said pillar post,
(d) a glass cutting wheel and axle therefor, said axle mounted in said insert,
(e) means for releasably retaining said insert in said slot, and
(f) said insert having said sides projecting longitudinally beyond the lower portion of said pillar post to facilitate removal of the insert from the pillar post.

4,083,275

METHOD AND APPARATUS FOR THE SPREADING AND TRANSFERRING OF ROWS OF BRICK-LIKE ARTICLES

Hans Lingl, Neu-Ulm-Ludwigsfeld, Germany, assignor to Lingl Corporation, Paris, Tenn.

Filed Apr. 6, 1976, Ser. No. 674,276
Claims priority, application Germany, Jul. 22, 1975, 2532695
Int. Cl.² B26D *7/06*
U.S. Cl. 83—27 **6 Claims**



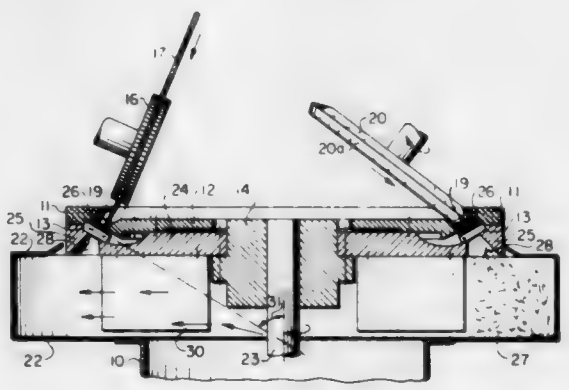
5. The method as in claim **1** wherein the support table is a roller table comprising a plurality of rollers having rotation axes substantially parallel to said second direction and the transport assembly is positioned so as to be vertically movable between the rollers in the support table, whereby the step of feeding the row of articles onto the support table further includes the cutting of said articles from a column of extruded clay material by pushing the column laterally through a plurality of vertically extending wire cutters along said first direction.

4,083,276

METHOD FOR CUTTING TOW

Frits Hutzezon, Arnhem, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 637,806, Dec. 4, 1975, Pat. No. 4,014,231.
This application Aug. 16, 1976, Ser. No. 714,882
Claims priority, application Netherlands, Dec. 6, 1974, 7415905
Int. Cl.² D01G *1/04*
U.S. Cl. 83—37 **2 Claims**



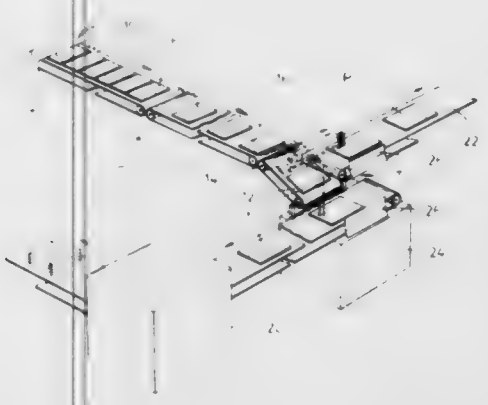
1. A method for cutting tow from a substantially continuous supply into short lengths of staple, wherein the tow is fed between a rotating ring of cutting knives having radially inward facing cutting edges and a pressure roll having a surface of rotation parallel and adjacent the cutting edges, comprising the step of feeding the tow to the rotating ring at a speed higher than the circumferential speed of the ring of cutting edges measured at their greatest diameter.

4,083,277

METHOD AND MEANS FOR RE-SPACING CHIP STEAKS ON A CONVEYOR

Walter Edward Lotz, 74 Laureleaf Road, Thornhill, Ontario, Canada (L3T 2Y1)

Filed Jun. 21, 1976, Ser. No. 697,970
Int. Cl.[2] B26D *4/46*
U.S. Cl. 83—89 5 Claims



1. Means for conveying chip steaks in a friable, slippery, state in continual transit from a stationary source to processing facilities remote from said source, comprising

a conveyor for transporting chip steaks from said source to a transfer station for transfer to said processing facilities, said conveyor incorporating a plurality of operating sections;

an input stage constituting one of said sections disposable to receive chip steaks from said source in relatively closely spaced consecutive order and to transport them from said source towards said transfer station;

a shuttle constituting another of said conveyor sections reaching to said transfer station and travelling faster than the input stage;

an accelerator section between the input stage and the shuttle;

at least two, relatively independent subdivisions of said processing facilities converging on said transfer station within reach of said shuttle;

mechanism for operating said shuttle to communicate said conveyor alternately with each said subdivision and to transfer alternate chip steaks thereto, and

a carrier forming part of each said subdivision onto which the chip steaks are transferred by said shuttle; the speed of said carrier being timed in relation to the said processing facilities;

the input stage, accelerator section and shuttle being serially disposed enabling chip steaks to be transferred in succession from the input stage to the accelerator section and from there to the shuttle;

said source including a cutter for slicing successive chip steaks from a meat loaf for sequential deposit on the input stage;

the input stage being operable in timed relation to the cutter to receive the successive chip steaks in relatively closely spaced order and to impart a slow initial momentum thereto towards said transfer station;

said accelerator section being operable at a faster rate than the input stage increasing the momentum of the chip steaks and introducing significant spacing therebetween, and

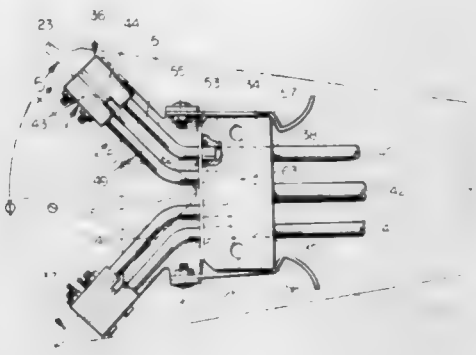
the shuttle being operable to advance chip steaks at a rate commensurate with that of the accelerator section.

4,083,278

SHEAR SPRAY APPARATUS

Leonard D. Steffan, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 26, 1976, Ser. No. 744,903
Int. Cl.[2] B26D *7/08*
U.S. Cl. 83—169 7 Claims



1. Apparatus for cooling and lubricating shear blades of a glass feeder shear mechanism in which the blades are reciprocated into and out of overlapping relationship to shear a stream of glass into mold charges and a stationary shear spray mechanism mounted above the blades, the improvement comprising:

a stationary manifold block individual to each shear blade;

means connected to said block for supplying air and liquid to said manifold;

a pair of spaced-apart spray heads;

means connecting the manifold to both spray heads to provide both air and liquid to each spray head;

said spray heads directing a fine spray of liquid and air against the top surface of the shear blade;

one spray head of each pair of spray heads being individual to one-half the shear blade and the other spray head being directed toward the other half of the shear blade;

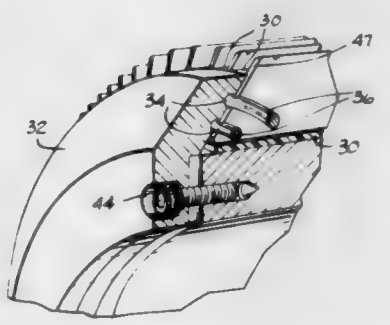
the spray heads being positioned above the blades and to spray downwardly and rearwardly with regard to the shear blade when in its retracted position.

4,083,279

APPARATUS FOR CHOPPING STRAND

Thomas Joseph Wester, and Svend Aage Petersen, both of Toledo, Ohio, assignors to Johns-Manville Corporation, Denver, Colo.

Filed May 10, 1976, Ser. No. 684,528
Int. Cl.[2] D01G *1/04*
U.S. Cl. 83—347 11 Claims



1. A chopper assembly for cutting strands into short lengths comprising:

a. a blade roll comprising a blade roll cylinder member having a plurality of chopper blades projecting generally radially therefrom, each of the blades having a cutting edge, a base portion, and two sides; and blade retaining means; at least the radially outer portion of said blade roll cylinder member comprising a resilient, durable, elastomer having a predetermined thickness; said elastomer having a generally cylindrical outer surface configuration

with a plurality of milled slots therein extending generally in an axial direction and having a depth less than the thickness of the elastomer; said milled slots having a thickness slightly less than the thickness of said base portion of said chopper blades so that the sides of the slots grip said chopper blades when said base portions of said chopper blades are positioned in said slots within said elastomer;

b. backup roll adjacent to the blade roll;

c. said elastomer of said blade roll having a Shore A hardness greater than the hardness of the outer circumferential surface of said backup roll;

d. means for supplying strands between said blades and said back up roll;

e. means for rotating said blade roll and said back up roll so that said strands delivered between said blades and said back up roll are cut into short lengths.

4,083,280

APPARATUS FOR TREATING FRUITS AND VEGETABLES

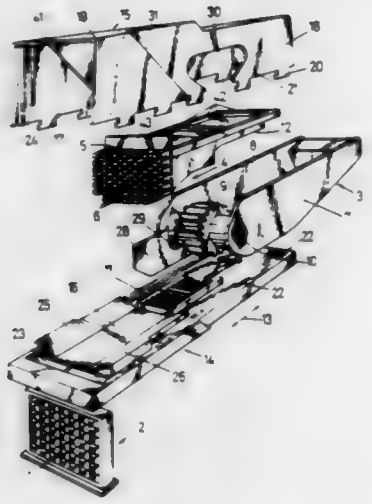
Michel Commiant, Brussels, Belgium, assignor to Compagnie Generale Belge des Isolants, St. Gillis-Brussels, Belgium

Filed Oct. 1, 1976, Ser. No. 728,748

Claims priority, application Belgium, Oct. 1, 1975, 834094

Int. Cl.[2] B26D *3/26, 7/06*

U.S. Cl. 83—425.3 **14 Claims**



1. An apparatus for the preparation of food comprising:

a receiving element against which food may be forced;

a pressure piece mounted for movement relative to the receiving element for forcing food against the receiving element;

a first rack member mounted parallel to the direction of the movement of the pressure piece and attached to the pressure piece;

a second rack member mounted parallel to first rack member and attached to the receiving element;

a lever for controlling the movement of the pressure piece having a toothed wheel assembly at one end, the toothed wheel assembly engaging simultaneously with the first and second racks for rotational movement therebetween.

4,083,281

DEVICE FOR POSITIONING THE BACKWARD STROKE END OF SHEARING BLADE FOR USE IN BOLT FORMING HEADERS

Tazo Yumuro, and Takashi Furuto, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

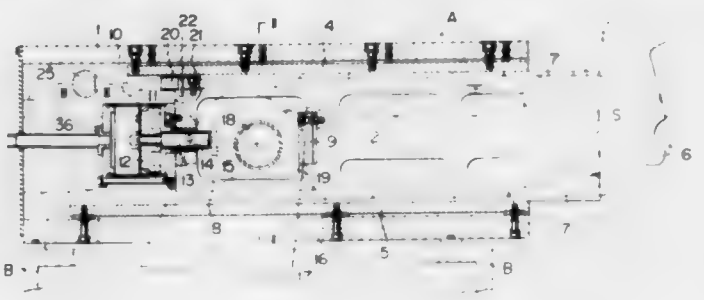
Filed Mar. 21, 1977, Ser. No. 779,566

Claims priority, application Japan, Mar. 19, 1976, 51-32223

Int. Cl.[2] B26D *1/02, 3/20*

U.S. Cl. 83—525 **4 Claims**

1. A device for positioning the backward stroke end of a shearing blade for use in a bolt forming header, comprising a box-shaped frame fixedly mounted on a header body, a shearing slide reciprocably supported within said frame and having a shearing blade attached to its leading end and also having a rectangular opening formed in its rear end portion, a first abutment member fixedly secured to the rear end of said shearing slide, a stopper member mounted on the rear end portion of said frame and extending substantially perpendicular to the direction of reciprocation of said shearing slide, a second abutment member fixedly secured to the forward side face of said rectangular opening of said shearing slide, a hydraulically or pneumatically actuated piston-cylinder arrangement fixedly secured to the rear end of said shearing slide, the piston of said piston-cylinder arrangement being connected to a piston rod which is extensible into the rectangular opening of the shearing slide when said piston is reciprocated, a hydraulic or pneumatic fluid supplying conduit connected between said piston-cylinder arrangement and a pressurized fluid supply source, a block member movably mounted within the rectangular opening of said shearing slide, said block member being confined between the piston rod of said piston-cylinder arrangement and the second abutment member and being adapted to be urged against said second abutment member by the movement of said piston rod, a shearing slide actuating lever pivotally connected through a pivot pin to said block member and adapted to be oscillated by a cam mechanism driven by a driving gear in the bolt forming header, wherein when said shearing slide is moved back towards the backward stroke end thereof, said shearing slide actuating lever is moved backwards further until said block member is permitted to abut against the rear said face of the rectangular opening of said shearing slide opposite to said second abutment member so that a clearance or space can be made between said block member and said second abutment member, thereby enabling a sufficient advancing speed, which is transmitted through the block member and the second abutment member to the shearing slide, to be applied to the shearing slide actuating lever while said lever is forwardly moved in said clearance or space.



4,083,282

ALTERABLE VOICE FOR ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Deutsch Research Laboratories, Ltd., Los Angeles, Calif.

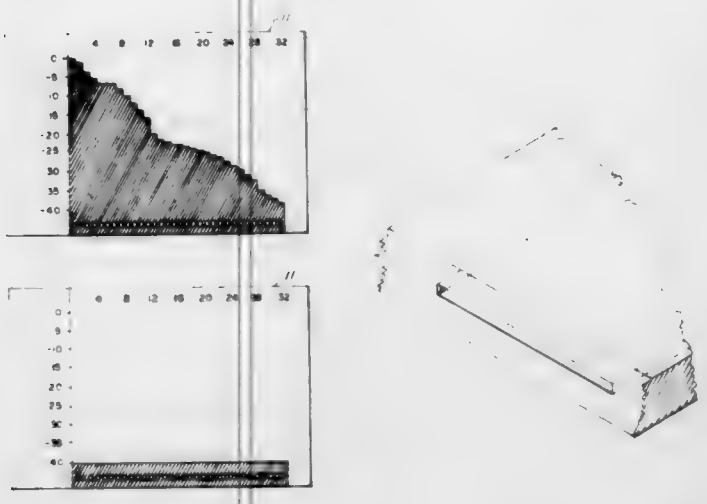
Filed Aug. 18, 1976, Ser. No. 715,614

Int. Cl.[2] G10F *1/00;* G10H *1/02, 3/06*

U.S. Cl. 84—1.19 **11 Claims**

1. In a musical instrument of the type including a keyboard having a plurality of key-operated switches, a plurality of tone setting stop switches, generation means for synthesizing a musical waveshape by calculating its constituent generalized Fourier components and wherein each Fourier component is established by a harmonic coefficient associated with the corresponding Fourier component, said generation means including first circuitry operative during a computation cycle for individually calculating the constituent Fourier components of the musical waveshape, an accumulator for summing the constituent Fourier components to obtain each musical waveshape amplitude the relative amplitude of said constituent Fourier components being established by a set of harmonic coefficients utilized by said first circuitry, the improvement for altering said set of harmonic coefficients comprising;

data card encoded with said set of harmonic coefficients,
card reader means for converting said encoded set of harmonic coefficients on said data card to electrical signals,
conversion means for converting said electrical signals to a data format utilized by said first circuitry whereby said converted electrical signals represent elements of said set of harmonic coefficients,



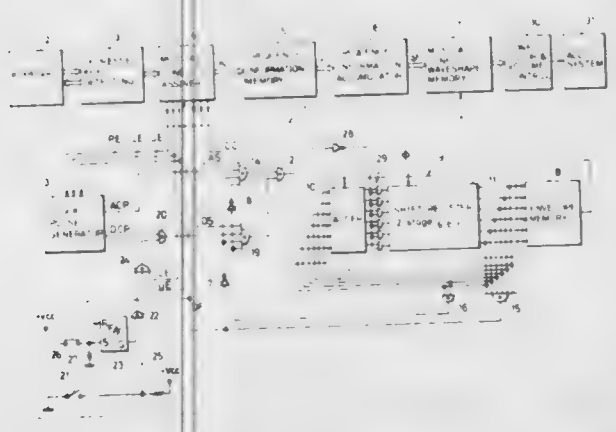
first memory means for writing said converted electrical signals to be thereafter read out, and
utilization means comprising circuitry for selectively reading out said converted electrical signals from said first memory means and for providing converted electrical signals to said first circuitry.

4,083,283

ELECTRONIC MUSICAL INSTRUMENT HAVING LEGATO EFFECT

Teruo Hiyoshi; Akira Nakada; Shigeru Yamada, all of Hamamatsu; Kiyoshi Ichikawa, Hamakita, and Sigeki Isii, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 16, 1976, Ser. No. 723,758
Claims priority, application Japan, Sep. 17, 1975, 50-113037
Int. Cl.[2] G10H *1/02*
U.S. Cl. 84—1.24 **6 Claims**



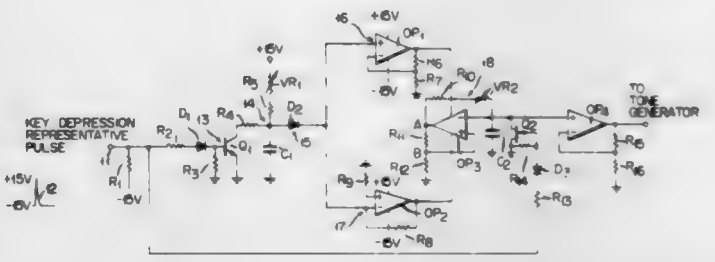
1. In an electronic musical instrument of a type having a memory storing the amplitude envelope of a musical tone, a first circuit for designating an address used for reading the amplitude envelope from said memory and a second circuit for supplying clock pulses to said first circuit in response to depression or release of the key thereby to shift the address, said electronic musical instrument comprising means for selectively preventing subsequent supply of said clock pulses to said first circuit regardless of depression or release of the key when the address designated by said first circuit has shifted to a predetermined step thereby to maintain the reading address at said predetermined step.

4,083,284

DELAYED VIBRATO ARRANGEMENT FOR AN ELECTRONIC MUSICAL INSTRUMENT

Akira Nakada, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 13, 1977, Ser. No. 787,149
Claims priority, application Japan, Apr. 16, 1976, 51-47747[U]
Int. Cl.[2] G10H *1/04*
U.S. Cl. 84—1.25 **14 Claims**



8. A vibrato signal generating arrangement for an electronic musical instrument comprising:
envelope signal generating means for generating an envelope signal which changes from a first potential level to a second potential level in response to and at the instant of key depression, and thereafter changes gradually from said second potential level to said first potential level;
clipping means coupled to the output of said envelope signal generating means and having a predetermined clipping level between said first and second potential levels for clipping off only a portion of said envelope signal between said second potential level and said clipping level;
means coupled to the output of said clipping means for generating first and second control signals having a reference potential level corresponding to the clipped level of output of said clipping means and opposite polarity to each other except for said reference potential level, said control signals having a waveform similar to the output of said clipping means; and
vibrato oscillator means coupled to said means for generating said first and second control signals and powered from said first and second control signals for generating a vibrato signal with an amplitude proportional to the potential difference between said first and second control signals.

4,083,285

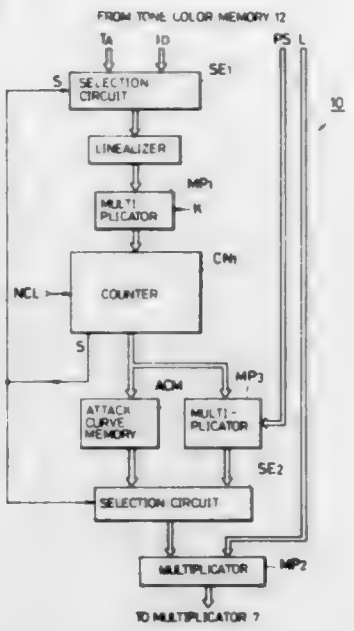
ELECTRONIC MUSICAL INSTRUMENT

Masanobu Chibana, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Sep. 23, 1975, Ser. No. 615,953
Claims priority, application Japan, Sep. 27, 1974, 49-111818; Oct. 4, 1974, 49-114346
Int. Cl.[2] G10H *1/02*
U.S. Cl. 84—1.26 **4 Claims**

1. An electronic musical instrument comprising:
a tone color memory having separately stored therein for each harmonic of a musical tone first information representing the attack peak level of the attack portion of the envelope for the harmonic, second information representing the attack time which elapses from the start of the generation of the musical tone to the attack peak level, third information representing the sustain level of the sustain portion of the envelope, and fourth information representing the decay time which elapses from said peak level to the start of said sustain portion;
a harmonic control unit for sequentially producing, for each harmonic, attack envelope level information in response to said separately stored first and second information and decay envelope level information in response to said separately stored third and fourth information; and
means responsive to the attack envelope level information

and decay envelope level information produced by said harmonic control unit for controlling separately, for each harmonic, the level of said attack portion and the level of the envelope decay portion occurring between said attack



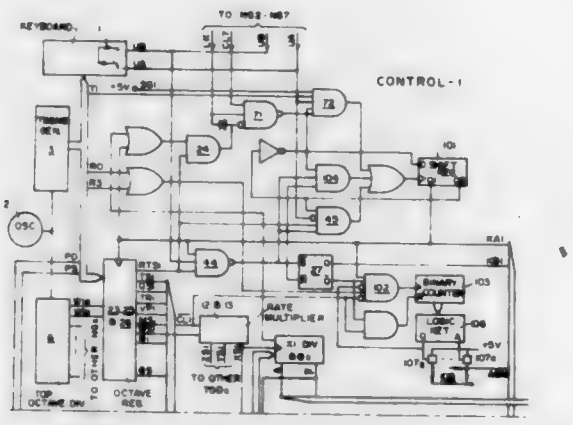
and sustain portions, whereby the envelopes for the respective harmonics of the musical tone are provided with dissimilar shapes from the start of the generation of the musical tone to the start of said sustain portions.

4,083,286

ELECTRONIC ORGAN KEYING SYSTEMS

Alfred H. Faulkner, 1324 Portesuello Ave., Santa Barbara, Calif. 93105

Filed Apr. 12, 1976, Ser. No. 675,853
Int. Cl.² G10H *1/02*
U.S. Cl. 84—1.26 **6 Claims**



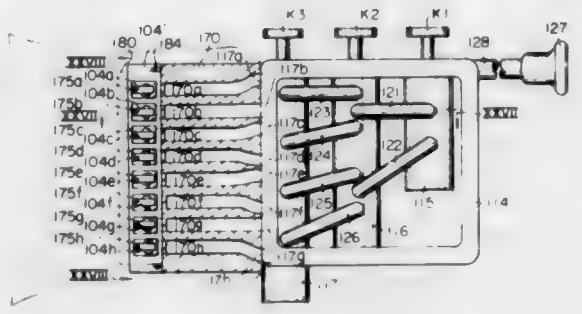
1. In a musical instrument, a playing key having a pair of contacts operated in sequence while the key is being depressed, a digital timer operated during the interval between the contact operations, a voltage controlled amplifier operative to control the amplitude of a tone signal produced in response to operation of said key, a digital-to-analog converter connected between said timer and said amplifier to vary the tone signal amplitude in accordance with the velocity of said key, an envelope generator connected to said voltage controlled amplifier to modulate the tone signal amplitude, said envelope generator comprising a capacitor, a charging circuit for said capacitor operated in response to operation of a playing key to create the attack portion of the envelope, a first discharge circuit for said capacitor operated to create the decay portion of the envelope, a variable voltage source connected in said first discharge circuit to control the envelope signal amplitude during the sustain portion, a second discharge circuit for said capacitor operated in response to release of the playing key to create the release portion of the envelope, an electronic switch operative to control current flow in at least one of said discharge circuits, and a variable duty cycle pulse source connected to a control input of said switch to control the capacitor discharge time.

4,083,287

WIND INSTRUMENT

Yoshiro Suzuki, 7-15, Shirakawa 1-Chrome, Koto-ku, Tokyo, Japan

Filed Apr. 28, 1976, Ser. No. 681,126
Claims priority, application Japan, May 1, 1975, 50-52012
Int. Cl.² G10D *7/12*
U.S. Cl. 84—377 **3 Claims**



1. In a scale change-over mechanism for a wind instrument having air passage tubing with a mouthpiece at one end thereof; first, second, and third playing keys, each having a piston type air passageway change-over valve fitted within a first, second and third cylinder respectively; at least one frame member to hold said component parts thereon; a first air passageway forming tube to connect said first cylinder to said mouthpiece; second and third air passageway forming tubes to connect between said first and second cylinders, and between said second and third cylinders, respectively; and sound producing reed members, the improvement comprising:

a. a scale change-over member having a plurality of air passageways which have a stratified formation, each one side thereof communicating with a corresponding perforated hole of said third cylinder, and each other side thereof being divided into a plurality of radially extending outlets in a horizontal plane, said scale change-over member being fixed to said third cylinder;

b. a plurality of groups of reeds, each producing sounds in accordance with one musical scale, and being provided at said each outlet in a vertical row;

c. a plurality of scale change-over valve plates for opening and closing each one of vertical rows of said outlets, said valve plates being provided on said scale change-over member; and

d. a plurality of scale change-over levers provided on said change-over valve plates for each of them

---

4,083,288

SPLIT NUTS

Patrick Yelverton Williams, 2 Morotai Crescent, Castlecrag, New South Wales, Australia (2068)

Filed Oct. 18, 1976, Ser. No. 732,974
Claims priority, application Australia, Jun. 11, 1976, 6267/76; Jul. 6, 1976, 6552/76
Int. Cl.² F16B *37/10*
U.S. Cl. 85—33 **8 Claims**

1. In a threaded split nut element adapted to co-operate with a second substantially identical element to form a split nut, the nut element has

(a) an arcuate shape extending approximately 180° around an axis

(b) first and second end faces at the respective axial ends,

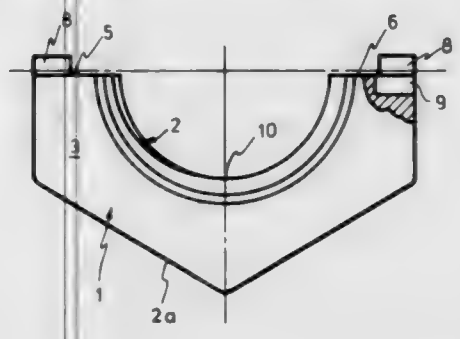
(c) an outer peripheral surface,

(d) an inner screw-threaded surface for engaging a threaded bolt having its axis coincident with said axis of the nut element,

(e) first and second side faces each extending between the inner and outer surfaces,

and the improvement comprising

(f) location means comprising a projection and corresponding recess both carried by at least the first of said side faces and symmetrically offset on respective sides of a central plane through the nut element at right angles to the axis, the location means in use locating the nut element with a second nut element which is inverted, by interengagement with the substantially identical location means of the first side face of the second nut element whereby the nut elements are axially aligned and capable of assembly to form the split nut only when said second nut element is inverted, and substantial movement of the interengaged nut elements in the planes of the respective side faces is prevented,



(g) the threading of said inner surface corresponding to a thread in respect of which a line extending across a true half nut at the intersection of said central plane and the plane of the split, passes through substantially the center of a root of the thread on one side and substantially through the crest of the thread on the other side of the nut element,

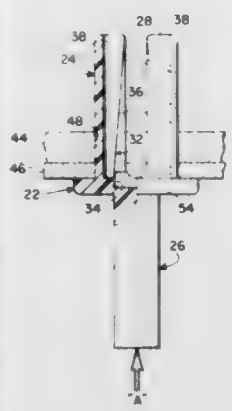
(h) said first and second end faces being substantially conically chamfered at an angle in the range 30° to 75° measured between the cone and the axis of the nut element, whereby either end face can engage a corresponding abutment face of a washer or work piece when in use for urging the nut elements into clamping engagement around a threaded bolt.

4,083,289

PLASTIC FASTENER

Lloyd A. Erickson, Park Ridge, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 14, 1977, Ser. No. 768,674
Int. Cl.[2] B16B *13/08*
U.S. Cl. 85—72 **12 Claims**



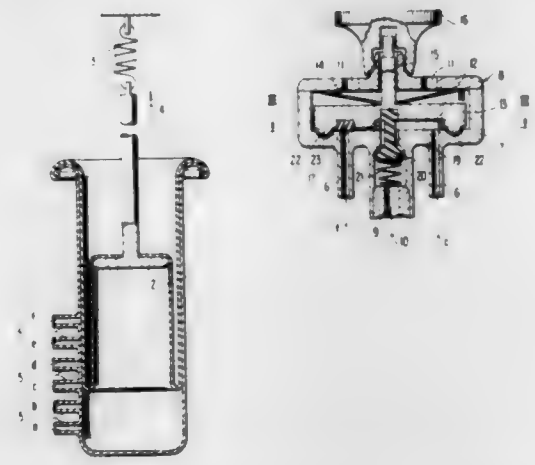
1. A plastic fastener having a head and an integral bifurcated shank forming at least two shank portions, an axial bore traversing said head and extending throughout said shank, said bore being substantially cylindrical adjacent said head and adapted to accept a complimentary axially moveable drive means, said bore being tapered and defined within said shank by tapered facing surfaces on said shank portions and having its major diameter terminating at said cylindrical bore adjacent said head, each shank portion including an axially disposed radial relief means that extends throughout substantially all of the axial extent of each of said shank portions, said relief means on each shank portion includes a compound surface defined by a slot disposed substantially perpendicular to said bifurcation, each of said slots opening into said bifurcation and having a substantially uniform radial depth throughout a substantial portion of its axial extent to form a weakened wall section in each of said shank portions, said slots and said tapered bore at their intersection forming opposed tapered edges which progressively decreases in their radial position toward the free end of said shank, said radial relief means on each said shank portion forming a thinned buckle section between two substantially equal sections of each said shank portions, whereby the axial movement of said drive means will progressively engage the decreasing diameter of the edges formed by the intersection of said frusto-conically defined bore and said slots, and thereby cause said equal sections of each said shank portion to hinge about said buckle section to radially and circumferentially expand said shank portions.

4,083,290

PNEUMATIC ADJUSTING MECHANISM

Rudolf Andres, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Mar. 18, 1976, Ser. No. 667,951
Claims priority, application Germany, Mar. 20, 1975, 2512137
Int. Cl.[2] F15B *9/02, 15/22*
U.S. Cl. 91—357 **19 Claims**



1. A pneumatic adjusting mechanism, which comprises a suction-air adjusting motor including a working cylinder means having a diaphragm piston with a piston rod being acted upon by a spring against the effect of suction-air, and means for selectively adjusting different positioning steps of said adjusting motor, characterized in that individual control lines corresponding to the different steps are operatively connected at the working cylinder means, a control switch means operable to be connected with a suction-air reservoir line, all of said control lines being operatively connected with said control switch means, and further means in said control switch means operable to selectively connect each individual control line with the suction-air reservoir line, characterized in that the control switch means includes a housing means having a substantially central connection for the suction-air reservoir line and connections arranged thereabout substantially along a circle for the individual control lines, and a control disk means rotatable about the center longitudinal axis of the connection for the suction-air reservoir line, said control disk means being provided with a connecting channel between the connection for the suction-air reservoir line and a connection for a control line, characterized in that the housing means of the control switch means is vented and the control disk means is adapted to be lifted against the action of a spring in the axial direction out of its position sealing off the connections for the control lines,

characterized in that actuating means are provided in the housing means of the control switch means and at the control disk means, which effect a temporary lifting of the control disk means during rotation of the control disk means within the angular path between two adjusting path steps, and characterized in that said actuating means include cam means located along a circle and projecting from the control disk means which, with an engaged adjusting path step, engage in corresponding recess means provided in the housing means of the control switch means.

4,083,291

DEVICE FOR CROSS-CUTTING TREE TRUNKS

Leif Larsson, Eskilstuna, Sweden, assignor to Volvo BM AB, Eskilstuna, Sweden

Filed Feb. 24, 1976, Ser. No. 660,793
Claims priority, application Sweden, Mar. 6, 1975, 7502513
Int. Cl.[2] A01G *23/08*; F15B *11/04*
U.S. Cl. 91—412 **3 Claims**



1. A device for cross-cutting tree trunks, comprising at least one cutting tool which is a saw and fluid motor driving means therefor including a fluid pressure source, feeding means for feeding the saw into the tree trunk, control means for controlling the feeding means, means for adjusting said control means in a plurality of discrete steps between a first setting in which the feeding means is caused to feed the saw with a high feed rate and one or more successive settings having lower feed rates, said feed rates differing substantially from each other, sensing means to sense the fluid pressure supplied to the fluid motor of the saw and to influence the control means when a predetermined upper fluid pressure limit for each feed rate is reached so that said control means switches the feeding means from a setting with higher feed rate to a substantially different successive setting with a stepwise lower feed rate, and blocking means connected to the connection between the sensing means and the control means to prevent the feed rate from being increased anew when the fluid pressure supplied to the saw falls after a transition to lower feed rate.

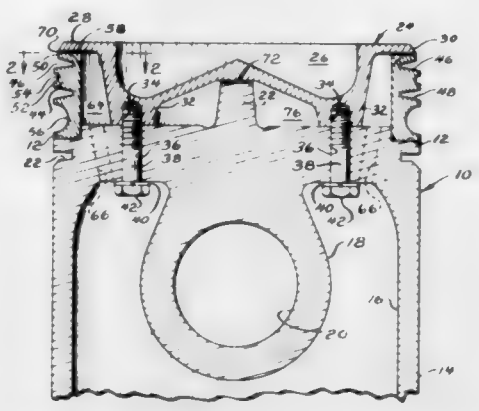
4,083,292

PISTON WITH HIGH TOP RING LOCATION

Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 16, 1976, Ser. No. 697,079
Int. Cl.[2] F01P *3/10*
U.S. Cl. 92—176 **4 Claims**

1. An improved piston assembly comprising:
a generally cylindrical piston body having a depending skirt;
a metal crown secured to said body oppositely of said skirt;
an annular metal ring groove protection band interposed between said crown and said body and clamped therebetween, said band including a first surface in substantial abutment with said crown and an adjacent second, radially outer surface;
a radially outwardly opening, ring-receiving groove in said second surface adjacent said first surface;



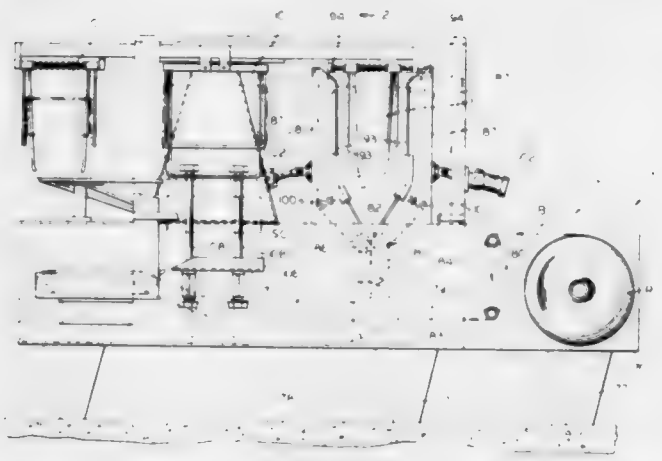
said band, crown and body defining a coolant receiving cavity; and
a relief in said first surface at the radially inner extremity thereof and opening to said cavity for receipt of coolant to cool said groove and a ring received therein, said relief being defined by a plurality of circumferentially spaced cutouts separated by gussets, said gussets having surfaces forming part of said first surface and in substantial abutment with said crown.

4,083,293

APPARATUS FOR PLACING LINERS INTO SHIPPING CONTAINER

Ralph S. Goldstein, Carol Stream, Ill., assignor to Container Corporation of America, Chicago, Ill.

Continuation-in-part of Ser. No. 683,096, May 4, 1976, abandoned. This application Feb. 10, 1977, Ser. No. 767,439
Int. Cl.[2] B31B *7/02*
U.S. Cl. 93—36.01 **9 Claims**



1. In an apparatus for placing a container liner having one closed and one open end within a container with the open end of the liner draped over the sides of the container:
(a) means for moving a liner onto inserting means placing said liner into container;
(b) said inserting means having:
(i) a pair of cross heads movable with respect to each other;
(ii) a pair of side by side liner engaging devices mounted on each cross head;
(iii) one of said liner engaging devices being of a dimension to enter said liner;
(iv) the other of said liner engaging devices being spaced from the said one liner engaging devices and being of a

dimension to enter said liner and extend at least partway to the closed end thereof;

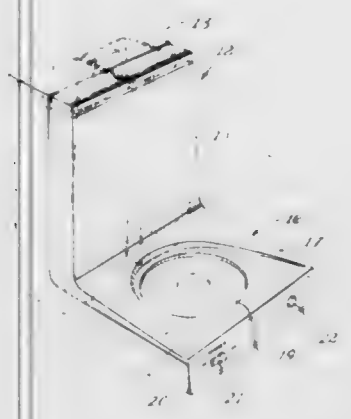
(v) said liner engaging devices being spaced from each other by a distance to accommodate therebetween a wall of a container so as to place said liner within said container with the open end of said liner draped about said container.

4,083,294

MULTIPURPOSE BEVERAGE BREWER STRUCTURE

Stanton H. Petry, Arlington Heights, Ill., assignor to Cory Food Services, Inc., Chicago, Ill.

Filed Apr. 1, 1976, Ser. No. 672,605
Int. Cl.[2] A47J *31/10*
U.S. Cl. 99—279 **10 Claims**



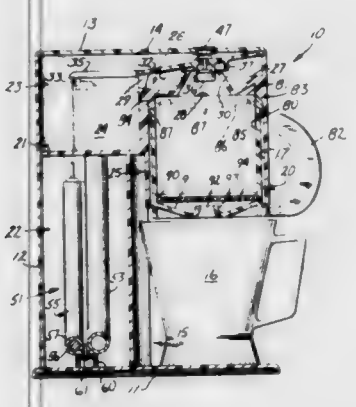
1. A multipurpose beverage brewer structure comprising: a base member defining a base portion for selectively supporting a beverage brewing means; a decanter warmer carried on the base member for maintaining a decanter of beverage at serving temperature; storage means selectively carried on the base member for storing beverage additive ingredients, said base member and said storage means having cooperating support portions for supporting said storage means, said storage means support portions effectively precluding use of the base member to support the beverage brewing means when so carried on the base member; and removable covering means for selectively covering the storage means when the base member is being used for ingredient storing.

4,083,295

COFFEE MAKER WITH STEAM FLUSHING CYCLE

Elmont E. Hollingsworth, Stockton, Minn., assignor to Lake Center Industries, Winona, Minn.

Filed Jan. 12, 1976, Ser. No. 648,389
Int. Cl.[2] A47J *31/00*
U.S. Cl. 99—283 **9 Claims**



1. In a coffee maker, in combination:

a housing having a filling reservoir and having a recess to receive a cup for coffee;

a brew basket removably insertable in said housing at a location above said recess;

means for heating water and dispensing it to the top of said brew basket through a predetermined channel having said basket at one of its ends, said means comprising a vertical U-tube with a longer leg connected to said brew basket and a shorter leg connected to said reservoir, a heater in thermally conductive relation to said U-tube, and a check valve for preventing passage of fluid from said U-tube to said reservoir;

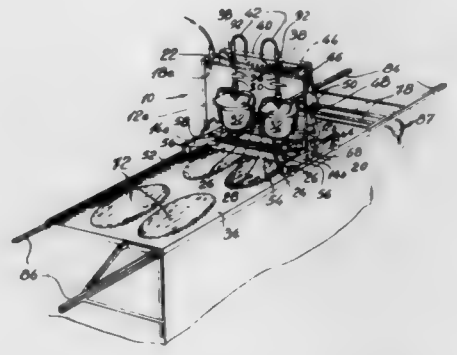
and valve means in said housing operative to move between a first position, in which it opens a small outlet passage from said channel above said basket, and a second position, in which it closes said passage.

4,083,296

CREPE MAKING MACHINE

George Mede; Roberto R. Mede, and Thomas Mede, all of 5573 Robinson Avenue, Montreal, Quebec, Canada

Filed Feb. 9, 1977, Ser. No. 767,039
Int. Cl.[2] A47J *37/10*
U.S. Cl. 99—423 **10 Claims**



1. A machine for use in making crepes, pancakes or tortillas or similar food products made from a flour, corn or potato based viscous dough, the machine comprising:

a support structure adapted to be movably mounted on a griddle, the support structure including a pair of spaced-apart end members rigidly interconnected by a plurality of laterally extending, spaced-apart members;

a lower laterally extending member supporting at least one dispenser for dispensing dough onto a surface of the griddle;

an upper laterally extending member supporting means for actuating the at least one dispenser;

a spreader and leveller means mounted on the support structure, the spreader and leveller means extending between the spaced apart end members and including a planer blade having a lower edge thereof spaced slightly above the surface of the griddle, the spreader and leveller means being situated rearwardly of the at least one dispenser and the planer blade being mounted at an angle such that the planer blade extends downwardly and rearwardly away from the at least one dispenser in a direction of travel of the machine when making crepes, pancakes or the like; and

means for advancing the machine along a length of the griddle.

4,083,297

ARRANGEMENT FOR PROTECTING THE NEEDLES OF THE TYING MECHANISM OF A BALER

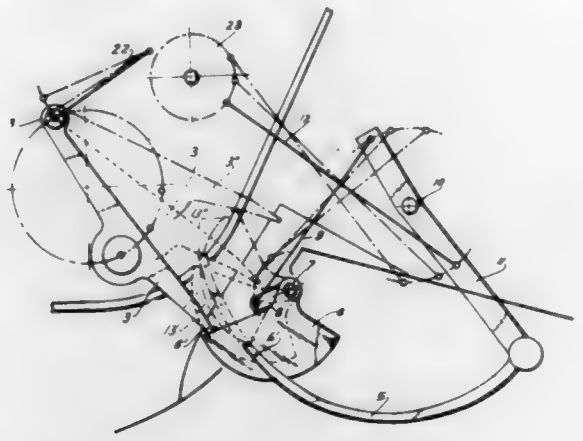
Gustav Ackermann, Marienfeld, and Gerhard Clostermeyer, Guetersloh, both of Germany, assignors to Gebr. Claas Maschinenfabrik GmbH, Harsewinkel, Westfalen, Germany

Filed Jul. 8, 1976, Ser. No. 703,567
Claims priority, application Germany, Jul. 9, 1975, 7521769
Int. Cl.[2] B65B *13/08*
U.S. Cl. 100—19 R **10 Claims**

1. In a baler wherein material to be mailed is displaced along a path past a plurality of needles into a baling chamber and wherein tying mechanism periodically displaces said needles in

a predetermined direction and along predetermined parallel trajectories across said path, the improvement comprising:

at least one shield adjacent each of said needles and displaceable in said direction and along the respective trajectory completely across said path; and



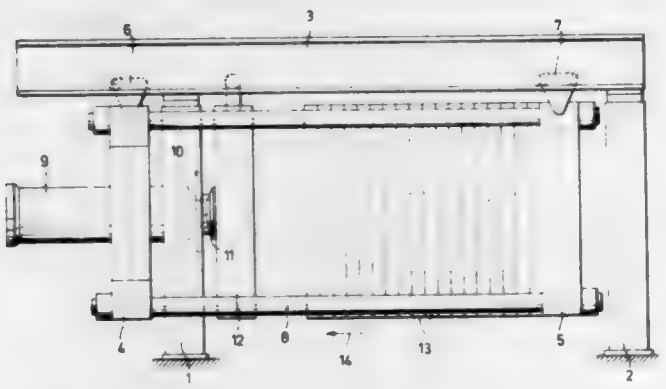
link means between said shields and said tying mechanism for joint displacement of said needles and their respective shields along said trajectories completely across said path with said shields moving ahead of said needles and thereby forcing a way completely through said material for said needles and preventing bending of said needles.

4,083,298

PLATE FILTER PRESS WITH ADJUSTABLE END PLATE

Alfons Schotten, Duren, Germany, assignor to Eberhard Hoesch & Sohne, Duren, Germany

Filed Mar. 19, 1976, Ser. No. 668,508
Claims priority, application Germany, Mar. 22, 1975, 2512823
Int. Cl.[2] B30B *1/00*; B01D *25/00*
U.S. Cl. 100—214 **9 Claims**



1. In a plate filter press having a machine frame; a plurality of filter plates arranged in a face-to-face series and mounted to be movable towards and away from one another in the longitudinal direction of the filter press; a closing device carried by a closing yoke mounted on the machine frame to be movable in the longitudinal direction; a pressure plate disposed at one end of the filter plate series and being connected to the closing yoke and mounted on the machine frame to be movable in the longitudinal direction; an end plate disposed at the other end of the filter plate series; coupling means connecting the end plate to a component of the closing device; the closing device, when energized, pressing the filter plates by the closing yoke and the pressure plate to one another and against the end plate; the improvement comprising

(a) means for pivotally and linearly displaceably supporting said end plate to allow an angular displacement of said end plate with respect to said longitudinal direction and to allow a shift of said end plate in said longitudinal direction;

(b) a traverse rigidly connected with the machine frame; and

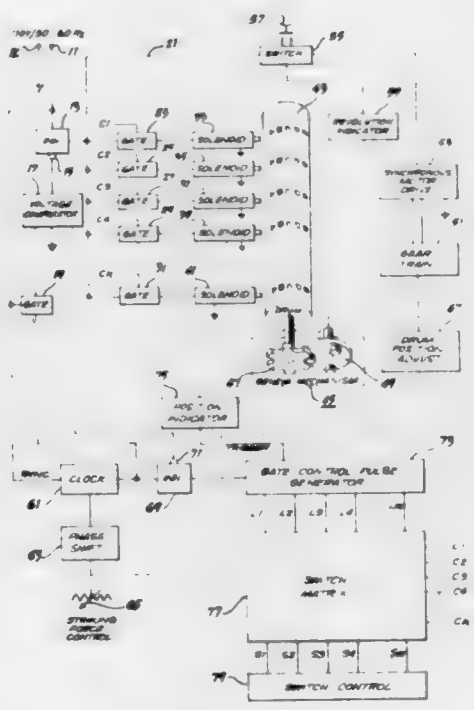
(c) a spherical thrust bearing constituting said coupling means and having a seat member and a head member received in said seat member; one of said members engaging said end plate and the other of said members engaging said traverse; said closing device, when energized, pressing said end plate against said traverse with the intermediary of said closing yoke, said pressure plate and said filter plate series.

4,083,299

ELECTROMAGNETIC STRIKING MEMBERS SELECTIVELY ACTUATED IN TIME FROM ALTERNATING CURRENT POWER

Donald C. Norton, Costa Mesa, Calif., assignor to C. Itoh Electronics, Inc., Los Angeles, Calif.

Filed Jan. 24, 1977, Ser. No. 761,585
Int. Cl.[2] B41J *3/04*
U.S. Cl. 101—93.03 **11 Claims**



1. An impact device comprising:

at least one striking member adapted to be electromagnetically actuated to impact against an opposing surface;

an opposing surface juxtaposed said striking member for receiving said impact from said striking member, said opposing surface being adapted to receive thereon material to be impacted by said striking member;

electromagnetic means coupled to said striking member for actuating said striking member to impact said opposing surface and the material thereon;

an electrical gate connected to said electromagnetic means adapted to be connected to a source of alternating power, said electrical gate having a control electrode adapted to be connected through a switching circuit to a source of gate control pulses having a given pulse time duration, said electrical gate being rendered conductive when opened by the presence of and for the given time duration of a gate control pulse and rendered non-conductive when closed by the absence by a gate control pulse to connect and disconnect the source of alternating power to said electromagnetic means in response to the gate control pulses whereby said striking member is impacted against said opposing surface for the given time duration of the gate control pulse and released therefrom at all other times;

a switching circuit connected to said electrical gate and adapted to be connected to the source of gate control pulses, said switching circuit having a switch control modular for selecting the gate control pulses to be connected to said electrical gate from the source of gate control pulses; and

a source of gate control pulses connected to said switching

circuit and adapted to be connected to the source of alternating power for generating gate control pulses of a given pulse width time duration in synchronism with the source of alternating power to actuate and open said electrical gate during said given pulse width time duration and at given points in time along the alternating power waveform.

4,083,300

CARTRIDGE-TYPE INK SUPPLY DEVICE FOR LABELING MACHINES

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

Continuation-in-part of Ser. No. 539,842, Jan. 9, 1975, abandoned. This application Mar. 4, 1976, Ser. No. 663,693
Claims priority, application Japan, Mar. 6, 1975, 50-26525
Int. Cl.[2] B41J *27/10*; B41F *1/46*
U.S. Cl. 101—103 **7 Claims**



1. In an ink supply device for supplying ink onto a type surface of a printing mechanism of a labeling machine, said printing mechanism being used for printing inscriptions on each of a series of labels fed by indexed movement along a travel path thereof within the machine and said ink supply device comprising holding means adapted for supporting and attaching the device onto the machine; said ink supply device comprising an inking roller cartridge having at least one inking roller and a U-shaped inking roller support for supporting said inking roller, said U-shaped inking roller support having engaging means, said holding means comprising a cartridge holder adapted for holding said inking roller cartridge, said cartridge holder having a first part adapted to be detachably engaged with a part of the labeling machine and with a second part adapted to be detachably engaged with said former engaging means of said U-shaped inking roller support to support thereby said inking roller cartridge; said engaging means of said U-shaped inking roller support comprises mortise means, said second part of said cartridge holder having tenon means adapted to be detachably engaged with said mortise means to support detachably said inking roller cartridge, said first part of said cartridge holder having a structure adapted to be detachably engaged with a part of the labeling machine and for urging the inking roller of said cartridge onto a type surface of the printing mechanism of the labeling machine.

4,083,301

STENCIL EXPOSURE SEAL COMBINATION

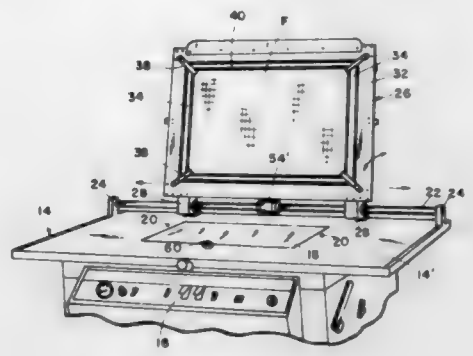
James A. Black, 13700 Sparta Ave., Kent City, Mich. 49330

Filed Oct. 19, 1976, Ser. No. 733,951
Int. Cl.[2] G03F *9/00*
U.S. Cl. 101—128.3 **8 Claims**

6. Stencil exposure apparatus comprising: a translucent surface for supporting a stencil pattern thereon, and peripheral mounting means for said translucent surface;

a stencil screen chase for supporting a stencil screen, and attachment means between said mounting means and said chase for positioning the stencil screen adjacent a stencil pattern on said translucent surface; and

a peripheral seal element suspended between said mounting means and said chase, generally about said translucent surface;



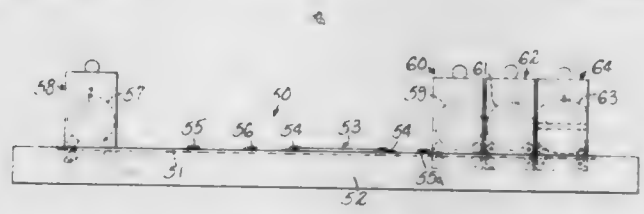
said seal element being suspended by tension elements attached to said mounting means.

4,083,302

CREDIT CARD VERIFICATION AND PRINTING DEVICE

Ralph R. Bello, and Vera C. Bello, both of 35 Andrew La., Orange, Conn. 06477

Filed Dec. 1, 1976, Ser. No. 746,292
Int. Cl.[2] B41F *3/04*
U.S. Cl. 101—269 **6 Claims**



1. Apparatus for printing onto a business form from either one of an embossed credit card and an embossed identification card, or both cards simultaneously, comprising

base means including means for retaining the credit card, means for retaining the identification card, first means for retaining a business form over the embossed indicia on both of the cards, second means for retaining a business form over the embossed indicia on one of the cards, and track means formed in said base means,

inking means riding in said track means adapted to ink the embossed indicia on both the credit card and the identification card,

platen means riding in said track means adapted to be drawn across the business form to cause the inked indicia to print onto said business form,

cleaning means riding in said track means adapted to carry a solvent to dissolve residual ink left on said indicia on both said cards after printing, and

non-rotatable wiper means riding in said track means for wiping said dissolved ink from said indicia.

4,083,303

ENDORSER ASSEMBLY HAVING SEMIPERMANENT PRINT MEANS AND CLAMPING MEANS THEREFOR

George P. McInerny, Andalusia, Pa., assignor to Brandt/Pra, Inc., Cornwells Heights, Pa.

Division of Ser. No. 546,621, Feb. 3, 1975, Pat. No. 4,004,500. This application Jun. 16, 1976, Ser. No. 696,572
Int. Cl.[2] B41F *07/12*
U.S. Cl. 101—415.1 **3 Claims**

1. A print assembly for printing selectable data upon a moving paper document comprising:

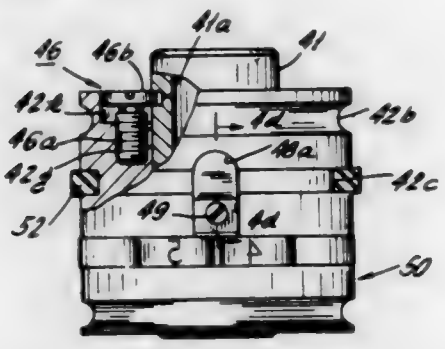
a cylindrical drum;

means for rotatably mounting said drum;

the cylindrical surfaces of said drum having a continuous annular groove arranged transverse to the axis of rotation of the drums;

a narrow elongated print strip having raised indicia;

the length of said strip being much greater than the width;
the width of said groove being at least equal to the width of said strip to snugly position said strip in said groove with the long sides of said strip engaging the sides of said groove;
the length of said strip being nearly equal to the circumference of said drum;
a recess being provided in the surface of said drum and having a tapped aperture at the base thereof, said recess being aligned with the axis of the drum and intersecting said annular groove;



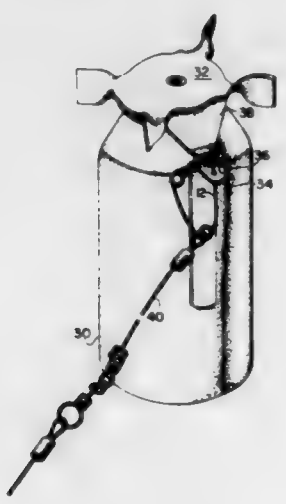
rigid clamping means comprising a one piece member mounted in said recess and having an opening;
a threaded fastening member extending through said opening and threadedly engaging said tapped aperture for compressing and clamping the free ends of said strip beneath said clamping means and urging the ends of said print strip into said recess;
the raised indicia extending beyond the surface of the drum an amount sufficient to enable the raised indicia to engage the surface to be printed upon and to prevent the surface of the drum from engaging the surface to be printed upon.

4,083,304

BOMB FUZE ARMING CLIP

John B. Dexter, California, Md. 20619

Filed Oct. 22, 1974, Ser. No. 516,852
Int. Cl.[2] F42B *25/00*; F41F *5/02*
U.S. Cl. 102—2 **4 Claims**



1. A bomb fuze arming clip for preventing rotation of a bomb fuze propeller of a bomb, said bomb having an anchor attached to the side of the bomb, said propeller having a lip, comprising:
a loop of resilient material, one end being formed in the shape of a hook, the other end being straight in form extending through holes in said lip and said anchor, and extending through and beyond said hook when the loop is closed, said loop remaining closed by action of the resilient force of the loop material, outward pressure at the other side of the loop acting to pull the straight end of the loop through the hook to open the loop, the loop thereupon remaining open, the amount of said pressure required to open said loop determined by the amount of extension beyond said hook by said straight end.

4,083,305

MILD DETONATING CORD CONFINEMENT

C. Gene Garrison, San Jose, and William Southern, Gilroy, both of Calif., assignors to Teledyne McCormick Selph, an operating division of Teledyne Ind. Inc., Hollister, Calif.

Filed Apr. 28, 1976, Ser. No. 681,085
Int. Cl.[2] C06C *5/00*
U.S. Cl. 102—27 R **3 Claims**



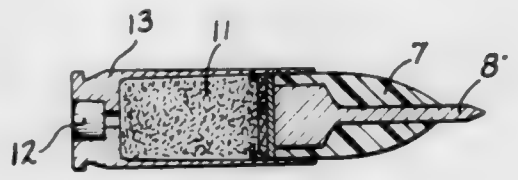
1. A mild detonating cord confinement comprising:
A. A 2.50 grain/foot lead/RDX inner core and means for confining the explosive effects without rupture when the explosive is detonating, further comprising:
i. a layer of plastic fiber overbraid encircling said inner core;
ii. a layer of foam encircling said overbraid, and
iii. at least one layer of plastic fiber overbraid as an outer covering;
said mild detonating cord diameter being no larger than about 0.320 inches.

4,083,306

NOVEL CARTRIDGE

William B. Woodring, Stony Creek, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Oct. 27, 1961, Ser. No. 148,102
Int. Cl.[2] F42B *5/02*
U.S. Cl. 102—38 **5 Claims**



1. A flechette cartridge comprising an external cartridge casing, an internal flechette projectile having protruding stabilizing surfaces, a plurality of individual sabot segments encompassing said projectile and intermeshing with the said protruding stabilizing surfaces to align said projectile with the bore of the firearm in which said cartridge is fired, said projectile-sabot segmented unit having an axial length greater than the axial length of the protruding stabilizing surfaces on said projectile thus supporting the forward portion of the projectile against buckling as the unit proceeds down the bore of the firearm, said sabot segments when intermeshed with said projectile forming a circle of diameter equal to or greater than the diametric circle encompassing the said protruding stabilizing surfaces, explosive means to propel said projectile and suitable means to support said projectile and segmented sabots against thrust of the powder gases and to obturate said powder gases.

4,083,307

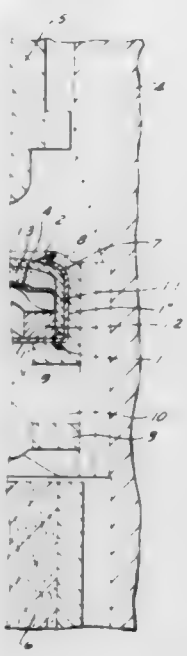
WATER-TIGHT FIRING CAP ARRANGEMENT AND METHOD OF MAKING THE SAME

Paul Beermann, and Wilhelm Grosse-Benne, both of Menden, Germany, assignors to Hagenuk & Co. GmbH, Menden, Germany

Filed Mar. 7, 1977, Ser. No. 774,691
Int. Cl.[2] F42B *19/08*
U.S. Cl. 102—45 **11 Claims**

1. A method of making a water-tight firing cap arrangement,

comprising the steps of providing a firing cap assembly having an interior percussion charge for producing a fire jet along a path in a predetermined direction extending generally from one side of said assembly towards the other side thereof an anvil member having two spaced ends one of which faces towards said percussion charge, and a shell member surrounding said percussion charge and said anvil member and having a closed end closing said assembly from said one side thereof; inserting said assembly into a casing having a closed base wall which extends across said path of said fire jet and adjacent to the other end of said anvil member so as to close said assembly from said other end thereof, and side walls which extend generally along said predetermined direction and which have bendable wall portions at said one side of said assembly; inserting said assembly and said casing into a cavity of a firing cap carrier having bendable flange portions at said one side of said assembly; bending said flange portions in direction generally transversely of said predetermined direction to a position in which said wall portions are located intermediate said flange portions and said closed end of said shell member of said assembly so as to form a corner region with the latter; and introducing sealing material into said corner region so as to prevent access of moisture to said percussion charge at the interior of said assembly, whereby said firing cap arrangement is maintained in moisture-proof condition.



7. A water-tight firing cap arrangement, comprising a firing cap assembly having opposite sides which bound an interior percussion charge for producing a fire jet which extends generally along a path in direction from one of said sides of said assembly towards the other of said sides thereof, an anvil having two spaced ends one of which faces towards said percussion charge, and a shell member surrounding said percussion charge and said anvil member and having a closed end closing said assembly from said one side thereof; a casing partially surrounding said assembly, said casing having a closed base wall which extends transversely across said path of said fire jet, and adjacent to the other end of said anvil member so as to close said assembly from said other side thereof, and side walls which extend generally along said direction and which have transversely-extending wall portions at said one side of said assembly; a firing cap carrier partially surrounding said casing and having transversely-extending flange portions at said one side of said assembly, said flange portions overlying said wall portions and forming with said closed end of said shell member of said assembly a corner region; and a sealing plug in said corner region for preventing access of moisture to said percussion charge at the interior of said assembly, whereby said firing-cap arrangement is maintained in moisture-proof condition.

4,083,308

PROJECTILE FUZES

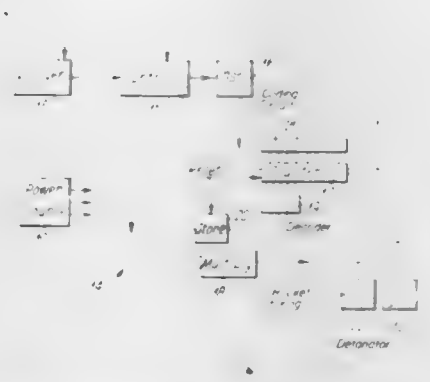
Peter Stanley Levis, Bramhall, England, assignor to Ferranti Limited, Hollinwood, England

Filed May 20, 1974, Ser. No. 471,501

Claims priority, application United Kingdom, May 19, 1973, 23996/73

Int. Cl.[2] F42C *11/06*

U.S. Cl. 102—70.2 R **10 Claims**



1. A time delay fuze for causing detonation of a weapon projectile after a predetermined delay period comprising

(i) an information receiver for receiving information signals and rendered operative upon firing of the projectile,

(ii) timing means operable in response to signals received by the receiver to determine said predetermined delay period and comprising

(a) an oscillator,

(b) a counter of oscillator signals to a counter limit,

(c) control means responsive to a first received information signal to start the counting of oscillations and responsive to a second information signal received after a predetermined unit time period to stop the counting of oscillations,

(d) multiplication means responsive to a third received information signal representative of the number of unit time periods to the end of the delay period to provide a counter counting limit signal representative of the product of the number of unit time periods and the number of oscillations counted in said predetermined unit time period, and

(e) coding means responsive to the counting limit signal to set the counting limit of the counter to the number of oscillations represented by the counting limit signal, and

(iii) detonation means operable at the end of the delay period.

4,083,309

CONTINUOUS TRANSPORT SYSTEMS

Bardet Gerard, Paris, France, assignor to Automatisme et Technique, Arcuell, France

Filed Oct. 14, 1976, Ser. No. 732,513

Claims priority, application France, Oct. 17, 1975, 75 31941

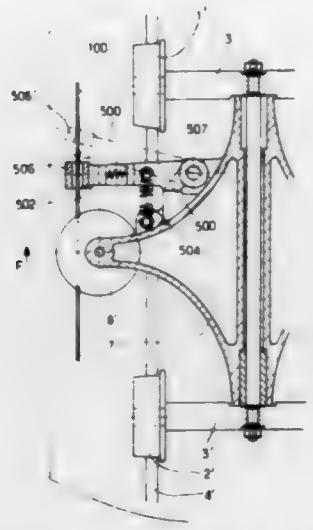
Int. Cl.[2] B61K *1/00*

U.S. Cl. 104—18 **9 Claims**

1. In a continuous transport system in which vehicles are arranged between a head locomotive and tail locomotive to circulate in trains along a main track between stations, each vehicle being selectable for switching to and stopping at a station on a branch track, then leaving the branch track to return to the main track to join the components of another train before arriving at the next station, which may or may not immediately follow the train from which the vehicles derives, said vehicles being passive vehicles without self-contained motors or braking means, one locomotive being arranged to follow the branch track at each station and the other locomotive being arranged to remain on the main track:

driving means along the main track to continue movement of an unswitched vehicle;

decelerating means along the branch track to decelerate a vehicle switched thereto;



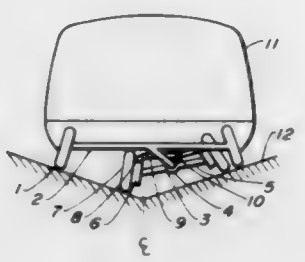
and driven means on each vehicle to couple either to the driving means or the deceleration means.

4,083,310

VEHICLE GUIDANCE SYSTEM INCORPORATING TRACK

Richard Ichiro Emori, 1-50-10 Wada, Suginami, Tokyo, Japan (166), and Koji Suzuki, 2-26-3-1236 Takashimadaira, Itabashi, Tokyo, Japan (175)

Filed Feb. 17, 1976, Ser. No. 658,465
Claims priority, application Japan, Feb. 21, 1975, 50-021015
Int. Cl.² B61F *9/00*
U.S. Cl. 104—242 **3 Claims**



1. In an automatic guidance system for a vehicle having steering wheels and rear wheels, the combination of: a track for said vehicle having nonplanar wheel engageable surfaces disposed in opposition to each other; sensor means connected to said vehicle for determining the divergence of said vehicle from the longitudinal axis of said track, said sensor means including the rear wheels of said vehicle; modulator means for transmitting the signal generated by said sensor means; and a steering mechanism connected to said steering wheels and to said modulator means whereby the sensor-generated signal is impressed upon said steering mechanism to cause said steering wheels to be automatically actuated to eliminate lateral or axial divergence of said vehicle with respect to said track surfaces.

4,083,311

ARTICULATED SCHNABEL CAR

Adrian Peter Wivagg, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 27, 1976, Ser. No. 726,880
Int. Cl.² B61D *5/04*
U.S. Cl. 105—367 **5 Claims**

1. An arrangement for pivotally linking together wheeled sections of a Schnabel-type car that have a lower tension arm and an upper compression pad, a connecting arm that extends vertically between the tension arm and the compression pad of each wheeled section, pivot means with a horizontal axis of rotation linking the tension arm to the connecting arm, means on said connecting arm adapted to abut the compression pad on said wheeled section, and pivot means with a vertical axis of



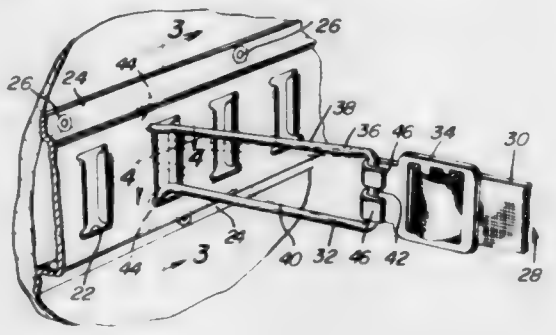
rotation adapted to link adjacent connecting arms whereby spaced wheeled sections are simultaneously movable about a vertical and a horizontal axis.

4,083,312

LOAD HOLDER END FITTING

Robert E. Holman, Jr., 11400 E. Ricks Cir., Dallas, Tex. 75230

Filed Nov. 8, 1976, Ser. No. 740,206
Int. Cl.² A44B *17/00*; B60P *7/10*
U.S. Cl. 105—469 **2 Claims**



1. In combination, a load bed including a pair of opposing load retaining walls interconnected by means of a third wall extending therebetween, a pair of elongated anchor members supported from and extending along said pair of walls, said anchor members have apertures formed therein spaced therealong, a load holding strap assembly, said strap assembly including an adjustable length main section and a pair of opposite end sections, each of said end sections including a generally U-shaped body constructed of stiff spring-type rod material and having a pair of generally parallel substantially straight legs interconnected at one pair of corresponding ends by means of an integral bight portion extending therebetween, said legs each being more than twice the length of said bight portion, the other pair of free ends of the legs of said U-shaped body terminating in oppositely outwardly directed terminal ends defining free ends of substantially L-shaped configuration at the free end portions of the legs, said bight portions being anchored to the opposite ends of said main section, said other pairs of ends of said legs being projected through selected apertures in said anchor members with said terminal ends of each pair of legs engaged behind the surfaces of the corresponding anchor members remote from the other anchor member and on remote sides of the corresponding apertures, said body being tensioned to yieldingly bias said other pairs of ends of said legs of each U-shaped body away from each other into tight frictional engagement with the portions of said anchor members defining said corresponding apertures.

4,083,313

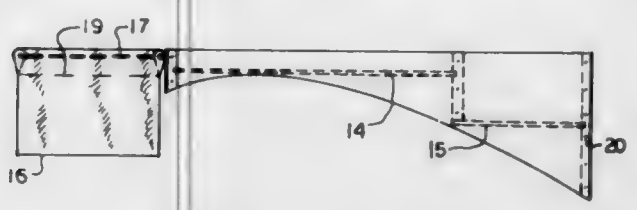
AUTO DRIVER'S VALET WITH TRASH BAG

Edgar L. Borreson, 6133 N. Newburg Ave., Chicago, Ill. 60631

Filed Nov. 17, 1975, Ser. No. 632,865
Int. Cl.² A47B *85/00*
U.S. Cl. 108—26 **1 Claim**

1. A combined utility tray unit and trash bag adapted to be supported by a vehicle passenger seat, said tray comprising two terraced shelf members embraced by vertically disposed front, rear and side wall members, two of said side wall members having arcuate lower edges so as to conform with the

curvature of the upper surface of a vehicle passenger seat, said front wall member having mounted thereon a bracket including a pair of upwardly extending hook members, a trash bag having a peripheral hem inserted supporting bar at the upper portion of said bag, a portion of the hem being open so as to



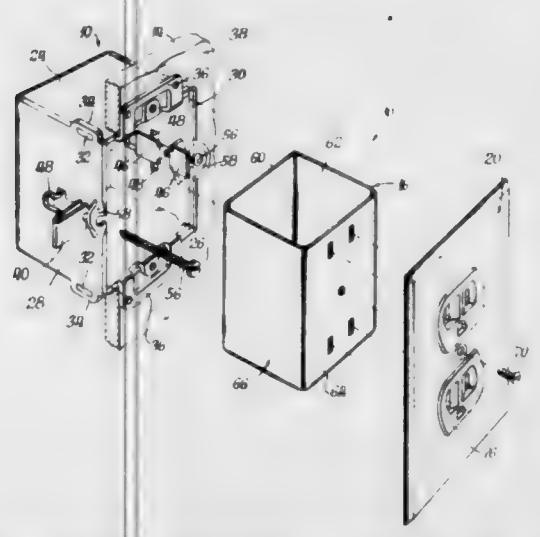
expose a hook engaging portion of said supporting bar for engaging hook members on said bracket, the exposed portion of said bar having a downwardly extending stabilizing bight portion for engaging said front wall of the unit, said terraced dhelf members being continuously accessible from the open upper portion of said tray unit.

4,083,314

WALL DEPOSITORY

George R. Garvin, River Forest, Ill., assignor to Sam Garvin & Company, Chicago, Ill.

Filed May 6, 1976, Ser. No. 683,641
Int. Cl.[2] E05G *1/00*
U.S. Cl. 109—50 **9 Claims**



1. A wall depository comprising a receptacle box, means for mounting said receptacle box substantially behind an opening in a wall surface, a depository container for holding valuables, opening means in said receptacle box for receiving said depository container therewithin through said wall opening, concealing means carried by said depository container to disguise said wall depository, said mounting means including spring means interior of said receptacle box and disposed to frictionally engage said depository container therewithin to hold within said receptacle box and further including a retaining means extending through said receptacle box to behind said wall surface for holding said receptacle box therebehind, said concealing cover means being carried by said depository container and disposed to overlap said wall surface to disguise and hide said wall depository when said depository container is received in said receptacle box.

4,083,315

SOIL WORKING AND SEED PLANTING APPARATUS

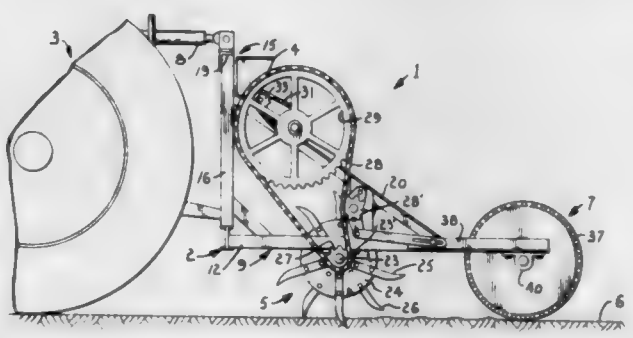
Max L. Crabbs, R.R. No. 5, Box 290, Hutchinson, Kans. 67501

Filed Dec. 30, 1976, Ser. No. 755,676
Int. Cl.[2] A01B *33/02*
U.S. Cl. 111—10 **2 Claims**

1. A soil working and seed planting apparatus comprising:

(a) a frame connectible to a prime mover and having a leading edge portion and a trailing edge portion;

(b) soil working means rotatably mounted on said frame intermediate said leading edge portion and said trailing edge portion and comprising an elongated shaft extending transversely of the direction of travel of said frame, a plurality of longitudinally spaced discs mounted on said shaft, and a plurality of circumferentially spaced tines on each of said discs, each of said tines extending radially outwardly from a respective one of said discs and respectively having a body with a forwardly curved end portion angled toward said trailing edge portion when said tines are positioned in earth contact for contemporaneously forming a plurality of longitudinally and laterally spaced pockets in the soil surface and soil mounds on the soil surface, said earth working means being driven solely by contact of said tines with the earth as the apparatus is translated over the earth, said body being shaped for entering the soil before the forwardly curved end portion



when said apparatus is translated rearwardly for self-cleaning said tines;

(c) seed dispensing means mounted on the frame leading edge portion and driven by said soil working means and operative for dispensing seed in response to rotation of said soil working means; and

(d) roller means rotatably mounted on the frame trailing edge portion for leveling the soil mounds and moving soil over the seed in response to forward movement of said frame, said roller means having a periphery defined by a plurality of longitudinally extending and circumferentially spaced rods; said roller means including a plurality of longitudinally spaced generally circular discs each having a peripheral edge, said rods being spirally mounted on the said peripheral edge and extending radially outwardly thereof for smoothly leveling said soil mound and preventing contact of said discs with the soil surface.

4,083,316

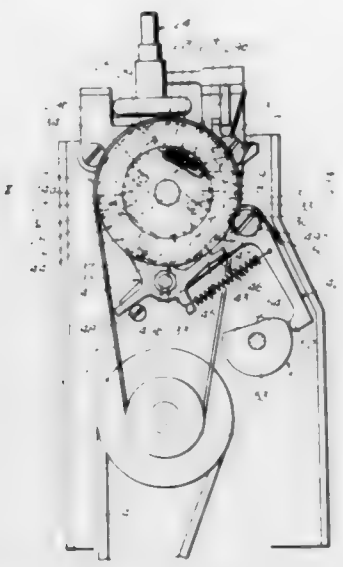
SEWING MACHINE

Noboru Kasuga, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jun. 23, 1975, Ser. No. 589,531
Claims priority, application Japan, Jun. 24, 1974, 49-71256; Jun. 28, 1974, 49-73241
Int. Cl.[2] D05B *69/22*
U.S. Cl. 112—274 **19 Claims**

1. In a sewing machine for continuous and intermittent stitching, a combination comprising a housing; a shaft rotatably mounted in said housing; means for rotating said shaft including a driver member coaxial with said shaft and a clutch mechanism installed between said member and said shaft to rotate said shaft during continuous stitching; and means for disengaging said clutch mechanism, including a rotary blocking device normally receiving torque from said rotating means to thereby maintain said clutch mechanism in engaged condition and means for arresting said blocking device to thereby disengage said clutch mechanism, said arresting means comprising a stitch selector assembly having a portion pivotable

between a first position in which said device is free to rotate and a second position in which said portion engages and blocks



said device against rotation and thereby disengages said clutch mechanism.

4,083,317

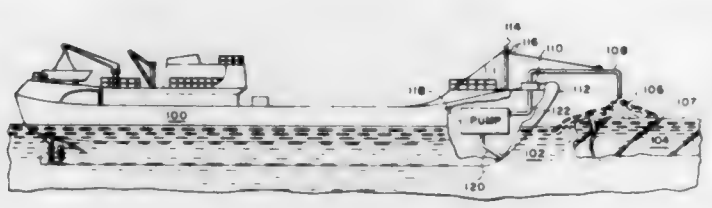
METHOD AND APPARATUS FOR BREAKING ICE WITH WATER

Preston E. Chaney, Dallas, Tex., assignor to John E. Holder; Stanley R. Moore and Thomas L. Crisman, all of Dallas, Tex., part interest to each

Continuation of Ser. No. 620,994, Oct. 9, 1975, abandoned. This application Feb. 11, 1977, Ser. No. 767,777

Int. Cl.[2] B63B *35/08*

U.S. Cl. 114—40 **23 Claims**



21. A water discharge system for breaking ice, comprising:

a pump;

an inlet conduit connected to the inlet of the pump and positioned to remove the water from beneath the ice; and

an unconstricted outlet conduit connected to said pump having a laterally extending portion and a downwardly extending portion both of which provide an unrestricted discharge opening for discharging water onto the surface of the ice at a sufficiently great volumetric rate for accumulating copious quantities of the water on the surface of the ice, thus providing a heavy load thereon to thereby break the ice solely by the effect of the weight of the accumulated water and the thermal stress created within the ice by the water.

4,083,318

LNG TANKER

Cornelis Verolme, Ridderkerk, Netherlands, assignor to Naval Project Development Sarl, Luxemburg, Luxembourg

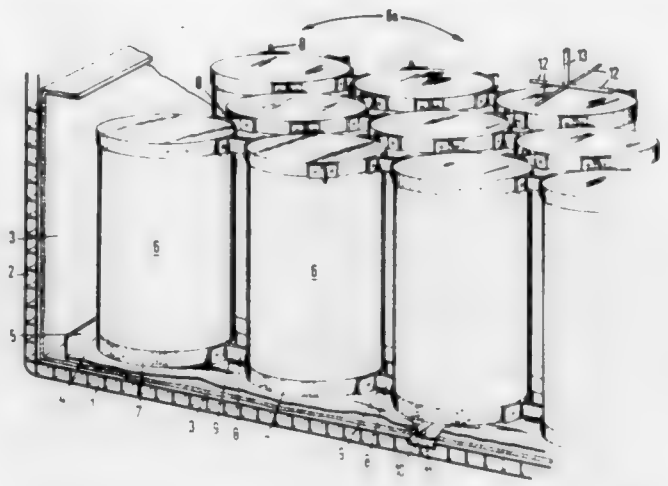
Filed Jan. 24, 1977, Ser. No. 762,132

Claims priority, application Netherlands, Feb. 3, 1976, 7601076

Int. Cl.[2] B63B *25/98*

U.S. Cl. 114—74 A **8 Claims**

1. A tanker for storing and transporting a liquified gas at low temperature, said tanker comprising: a thermally insulated hold with side, bottom, and top wall means; a plurality of liquified gas containers arranged in said hold in a vertical orientation and in an optimized, space utilization pattern, said containers having a cylindrical or prismatic configuration and a diameter-height ratio in the range of about 1:2 to 1:5; means interconnecting said vessels solely at the tops and bottoms thereof into one pack spanning substantially the full width of the hold, said interconnecting means being free of contact with



the side and top wall means of said hold; and co-acting stop means at the lower ends of the containers and at the bottom of the hold to keep said containers from shifting laterally in said hold, said co-acting stop means being located exclusively at the center of the pack and furnishing the sole interconnection between the containers and the hold.

4,083,319

BARGE SHIP DUAL TRUCKS TO TRANSPORT BARGES THEREON

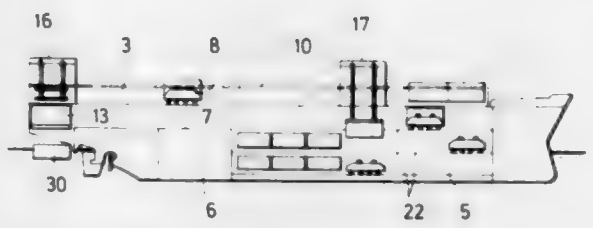
Yasushi Nishino, Akashi; Koji Karashima, Kobe, and Ken Iwai, Yokohama, all of Japan, assignors to Mitsubishi Jukogo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1976, Ser. No. 658,522

Claims priority, application Japan, Nov. 14, 1975, 50-137079

Int. Cl.[2] B63B *35/40*

U.S. Cl. 114—260 **7 Claims**



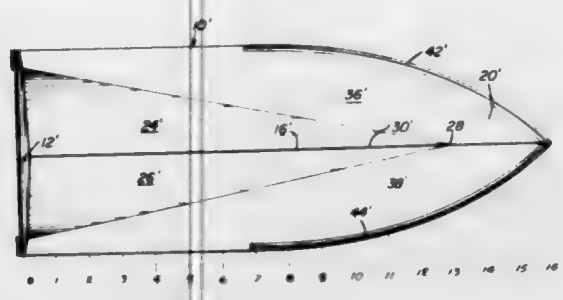
1. A barge carrying ship comprising a hull having sides, a plurality of vertically spaced decks for supporting barges, an open hold beneath at least one of said decks for storing barges, a hatch opening in one of said decks at midship communicating with said hold and at least one lower deck, a first elevator located at one end of said hull for lifting and lowering a barge to and from said decks, a second elevator mounted in said hatch opening and operative to transfer a barge between said decks and said hold, pairs of rail means mounted on each of said decks, said rail means on one of said decks extending between said first and second elevators, truck means movably mount on said rail means and operative to transport barges along said decks and between said first and second elevators, said truck means comprising pairs of independent and separate barge-end-holding trucks, each pair of said truck means being adapted to operate in unison, each of said trucks having a horizontally extending cantilevered prong mounted thereon, means for pivoting said prong about a vertical axis from a first position parallel to said sides of said hull to a second position normal and inwardly of said sides, means for vertically moving said prongs to lift and deposit said barges relative to said deck, hold and elevators and means on said elevators to transfer barges to and from a respective pair of said truck means.

4,083,320

NON-BROACHING BOAT HULL

John V. Yost, 2233 Riverside Dr., Trenton, Mich. 48183

Filed May 7, 1976, Ser. No. 684,173
Int. Cl.[2] B63B *1/18*
U.S. Cl. 114—271 **13 Claims**



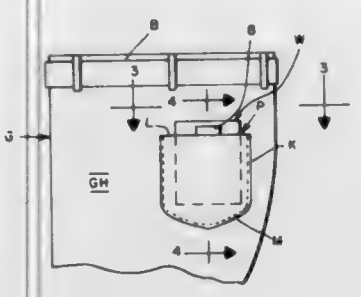
1. A non-broaching boat hull including an aft transom and upstanding freeboard sides extending forwardly from said transom and terminating in a forward bow, a bottom structure including a central keel defining a substantially straight rear portion extending horizontally forwardly from said transom to a point forward of amidship and merging smoothly, at its forward end portion, into an upwardly curving forward portion to form said forward bow, said bottom structure including opposite side deadrise surfaces extending outwardly from said keel, said deadrise surfaces including forwardly tapering substantially planar rear portions extending forwardly from said transom to an area adjacent said point and merging smoothly into upwardly curving forward end portions tapering in width to a forward apex defined by the forward extremities thereof forward of said point and curving upwardly into the lower portion of said bow, the angle of said deadrise surfaces relative to transverse horizontal lines not increasing from said transom to said apex, and upwardly and outwardly inclined opposite side outer bottom surfaces including substantially planar rear sections extending forwardly from said transom between the remote marginal portions of said deadrise surfaces and the lower marginal portions of said freeboard sides, said outer bottom surface rear sections increasing in width at least from said transom to the lowermost point of said upwardly curving bow and merging smoothly into forwardly and upwardly curving outer bottom surface forward sections, the angle of said outer bottom surface rear sections relative to transverse horizontal lines remaining at least substantially constant and substantially less than 90° relative to a vertical plane from said transom toward said bow, but being at least slightly greater than the angles of corresponding portions of said deadrise surfaces.

4,083,321

ANTI-PICKPOCKET WARNING DEVICE

Richard C. LeBron, and Shelden P. LeBron, 6114 Country Club Rd., both of Omaha, Nebr. 68152

Filed Sep. 9, 1976, Ser. No. 721,687
Int. Cl.[2] A45C *13/18*; G08B *13/00*
U.S. Cl. 116—84 **4 Claims**



1. In combination with a wallet uprightly removably inserted into a depending pocket of a donnable wearing apparel garment, which garment pocket comprises a pair of upright-sides including an upright inner-side located nearer the garment wearer and an upright outer-side generally parallel thereto and which pocket outer-side has an upper-lip terminus, the improvement of an anti-pickpocket warning device which exerts both a warning tug against and an audible signal whenever removal of the wallet is being made upwardly toward the pocket upper-lip, said warning device comprising:

A. An elongated substantially rectangular first-strip of laminar material adherently attached to the wallet and extending in the upright direction, said first-strip having an exposed broad outer-face;

B. An elongated substantially rectangular second-strip of laminar material adherently attached inside the pocket, said second-strip extending substantially horizontally directionally and being located below and substantially parallel to the pocket upper-lip, said elongated second-strip being crosswise the first-strip and having an exposed elongated outer-frontage that substantially perpendicularly intersects the mid-area of the first-strip at the outer-face thereof to facilitate wallet removal by the garment wearer; and

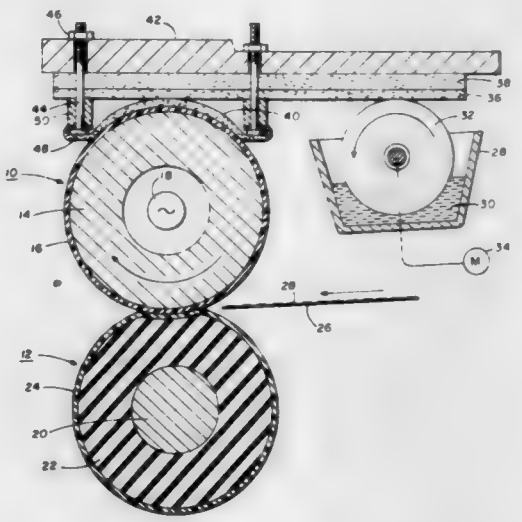
C. Mechanical hooks-and-eyes type removable adhesion means extending from the first-strip outer-face to the second-strip outer-frontage so that whenever the pocketed wallet is manually actuated upwardly toward the pocket upper-lip both a physical tug and an audible signal are coincidentally exerted against the donned garment and audibly warning the garment wearer of unauthorized wallet removal.

4,083,322

FUSER WICK

Maynard K. Beckman, Jr., Plano, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 9, 1976, Ser. No. 675,371
Int. Cl.[2] B05C *11/00, 13/00, 13/02*
U.S. Cl. 118—70 **3 Claims**

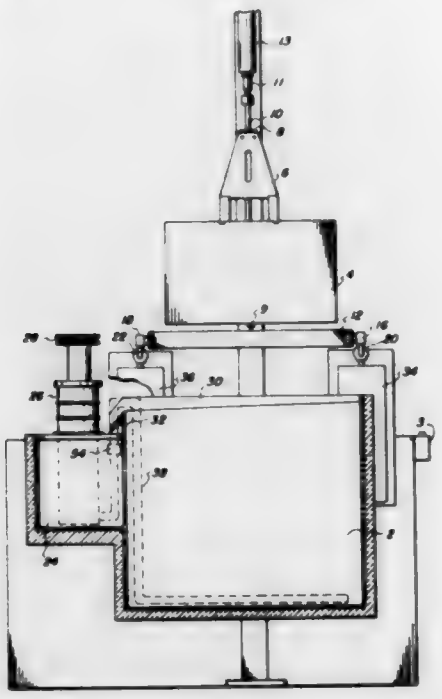


1. In a heated pressure roll fusing system for fusing toner images, a wicking system comprising: an oil reservoir; a heated fuser roll; said reservoir being laterally displaced from said fuser roll; first, second and third members; said first member comprising a heat-resistant, self-lubricated wiper having one face engaging said fuser roll; said second member comprising a heat-resistant porous member of oil wicking characteristic extending between said fuser roll and said reservoir and having a portion of one face thereof engaging the other face of said wiper member; means for directly applying oil from said reservoir to another portion of said one face of said second member; said third member comprising a porous member of a substantially higher oil wicking characteristic and substantially less heat-resistant characteristic than said second member; said third member engaging the other face of said second member from the fuser roll to at least the portion of said second member to which oil is applied.

4,083,323
PNEUMATIC SYSTEM FOR SOLDER LEVELING APPARATUS

Everett Arthur Rote, Corona, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 7, 1975, Ser. No. 602,699
Int. Cl.[2] B05C *3/04*
U.S. Cl. 118—6 1 Claim



1. Apparatus for lowering a printed circuit board into a molten solder bath, imparting reciprocating vertical motion to the printed circuit board while immersed in the solder bath whereby the thickness of the solder bath coating formed on the printed circuit board is controlled, and then withdrawing the printed circuit board from the solder bath comprising:

a. a single gas cylinder having a pressure piston slidably mounted in said cylinder and secured to a vertically extending piston rod, said printed circuit board being operatively associated with said piston rod,

b. a source of air,

c. a hand valve connected to said source of air for manually initiating said verticle reciprocating motion by allowing air from said source to flow to a first movable valve positionable between first and second positions said first movable valve being initially biased in said first position and moved to said second position by said air flow,

d. a master valve responsive to an input air flow and adapted to direct the input air flow to one of first and second outlets, said first and second outlets being operatively coupled to the top and bottom, respectively, of said gas cylinder, said master valve being responsive to the movement of said first movable valve to said second position to direct air flow to said first outlet and to the top of said piston while exhausting air from the bottom thereof to cause the piston to move vertically downward,

e. a second movable valve coupled to said master valve and initially biased in a first position and movable to a second position when air flow is directed thereto;

f. a first air switch coupled between said air source and said second movable valve, means fixed to said piston for operating said air switch to cause said second movable valve to move to said second position when said piston is in a lower position, said master valve being responsive to the movement of said second valve to said second position to direct air flow to said second outlet and to the bottom of said piston via said second outlet while air is exhausted from the top thereof to cause the piston to move vertically upward;

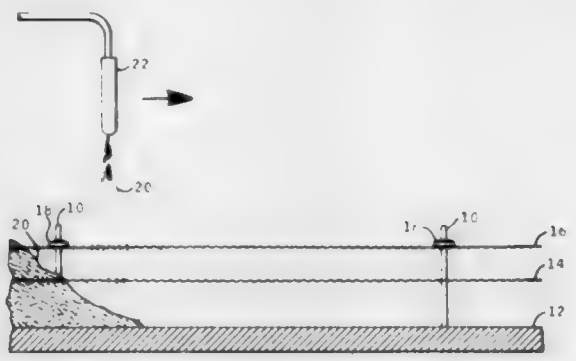
g. a second air switch coupled between said hand valve and said first movable valve, means fixed to said piston for operating said second air switch to cause said first movable valve to move to said second position from said first position when said piston is raised to a position nearing the withdrawal of said printed circuit board to reinitiate the vertical downward motion of said piston, and said second air switch being inoperative to prevent withdrawal of said printed circuit board from said bath when said hand valve is not manually activated; and

h. means for directing heated air from opposite directions onto opposite surfaces of said printed circuit board as said printed circuit board is withdrawn from said solder bath.

4,083,324
APPARATUS FOR COATING A STRUCTURE WITH A UNIFORM FOAM LAYER

Gary C. Krumweide, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 502,586, Sep. 3, 1974, abandoned. This application Jul. 30, 1976, Ser. No. 710,039
Int. Cl.[2] B05C *5/00*
U.S. Cl. 118—300 4 Claims



1. Apparatus for forming a uniform layer of foam on a surface which comprises:

means securing a plurality of spaced upstanding thin studs to a surface to be covered with a foam layer;

a flexible screen having a substantially uniform pattern of openings, said openings comprising at least about 70% of the screen area;

said screen being taut and spaced a selected distance from said surface, with said studs extending through said screen and frictionally supporting it in place;

friction disks over at least some of said studs in contact with said screen to prevent movement of said screen along said stud away from said surface;

means for applying foam material in a liquid, unexpanded state through said screen to form a uniform layer over said surface; and

means for removing said friction disks, and said screen after the foam has risen up through said screen and at least partially cured to a shape-retaining state.

4,083,325
APPARATUS FOR CONTINUOUSLY COATING A LARGE STRUCTURE WITH A UNIFORM FOAM LAYER

Gary C. Krumweide, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 502,586, Sep. 3, 1974, abandoned. This application Jul. 30, 1976, Ser. No. 710,040
Int. Cl.[2] B05B *11/10;* B05C *5/02*
U.S. Cl. 118—315 5 Claims

1. Apparatus for forming a layer of foam having uniform low density and uniform thickness on a surface which comprises:

means for applying a self-rising foam material in a liquid, unexpanded state onto a surface;

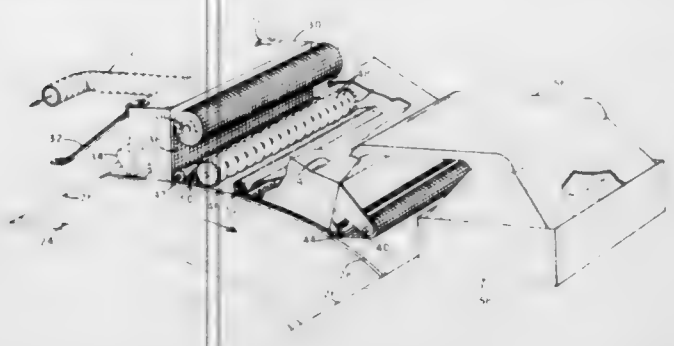
means for moving said surface in a direction substantially in the plane of said surface;

means for positioning a screen substantially parallel to said surface at a selected distance from said surface;

said screen having a substantially uniform pattern of open-

ings, said openings comprising at least about 70% of the screen area;

means for moving said screen parallel to said surface without relative movement between said screen and said surface as said foam rises through said screen and cures to at least a shape-retaining state;



rotary brush means adjacent to said screen to abrade and comminute excess foam extending through said screen; and

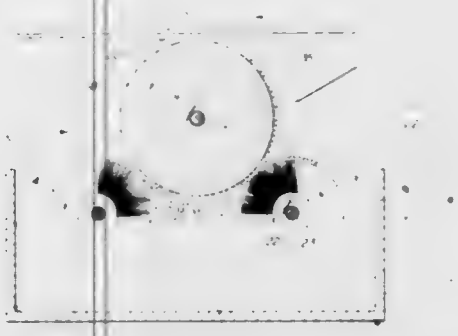
means for removing said screen and any remaining excess foam extending through said screen.

4,083,326

SINGLE COMPONENT DEVELOPER APPLICATOR APPARATUS

Arthur Stanley Kroll, Spencerport, and Frank Alexander Shuster, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,400
Int. Cl.² G03G *15/08*
U.S. Cl. 118—661 **6 Claims**



1. Improved apparatus for developing an electrostatic image on a moving image member, said apparatus comprising:

(a) an electrically conductive applicator roller located for movement in developing relation with such image member;

(b) a toner reservoir located proximate said applicator roller;

(c) an electrically conductive fur brush located in said reservoir and in contact with said applicator roller, said fur brush being constructed to create an electrostatic charge of a first polarity on toner in the reservoir; and

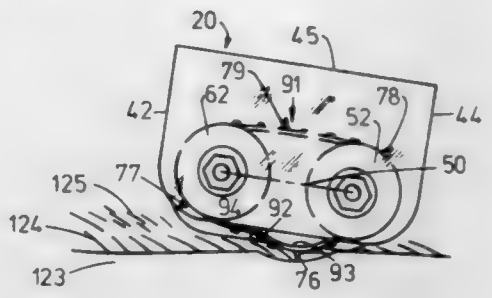
(d) bias means coupled to said reservoir, brush and applicator roller for electrically metering the supply of toner from said reservoir to such image member, said bias means including means for applying a first electrical potential of polarity opposite said first polarity on said fur brush, and means for applying to said applicator roller a second electrical potential of the same polarity as, but greater magnitude than, said brush potential, said second potential further being of the same polarity as, but lesser magnitude than, the electrostatic image to be developed.

4,083,327

ANIMAL GROOMING APPARATUS AND PROCESS

Murrell D. Dowdy, 910 S. Townsend, Spearman, Tex. 79081

Continuation of Ser. No. 606,048, Aug. 20, 1975, abandoned.
This application Mar. 16, 1977, Ser. No. 777,967
Int. Cl.² A01K *13/00*
U.S. Cl. 119—85 **6 Claims**



1. An animal grooming apparatus comprising, in operative combination,

(a) a frame comprising a vertically and longitudinally extending rigid plate, with a smooth bearing surface at the bottom of said plate,

(b) a first transversely elongated longitudinally extending belt support means operatively and rotatably attached to a support means therefor fixedly located relative to said plate for rotation of said belt support means about a first axis fixedly located relative to said plate,

(c) a second transversely elongated longitudinally extending spoke-surfaced belt support means operatively and rotatably attached to a support means therefor fixedly located relative to said plate for rotation of said second belt support means about a second axis fixedly located relative to said plate, and wherein said second axis on said second support means is longitudinally spaced away from said first axis in a longitudinal direction transverse to the direction of said first axis, and said first belt support means is spaced apart from said second belt support means by a space therebetween extending along the length of said frame,

(d) a power means and casing firmly attached to said frame,

(e) (i) a continuous belt assembly supported on said first and second rotatable belt support means,

(ii) said belt assembly comprising a continuous flexible belt base having a substantially smooth interior surface and having a substantially uniform thickness and width, and and forming a loop supported on said belt support means,

(iii) a plurality of like spaced apart ridge elements each extending outwardly of said belt and transversely thereof and having a substantially uniform size and shape and being firmly attached to said belt base, and equally spaced from each other,

(iv) and a comb assembly comprising a comb and a comb support mass, said comb comprising a plurality of rigid teeth each extending outwardly transversely to said belt interior surface, and said comb is attached to said belt base through said comb support mass, said mass being firmly attached to the outer surface of a portion of said belt base,

(v) said belt assembly comprising (a) a series of like segments each comprised essentially of a portion of said flexible belt base and said ridge elements attached thereto and (b) a segment comprising another portion of said flexible belt base and said comb assembly, and said comb assembly and the portion of said flexible belt base to which attached form a segment of greater weight per unit length of said belt assembly than the weight per unit length of the segments of said belt assembly comprised of said flexible belt base and said rigid elements, and

(vi) said power means is attached to one of said belt support means in driving relation to one belt support means and said belt base is operatively connected to the other belt support means in driving relation thereto and said bearing

surface at the bottom of said plate extends below the teeth of said comb in said belt assembly when the belt assembly is stationary and said first axis fixedly located relative to said plate is horizontal and said first axis and second axis are at the same vertical height, and one portion of said belt assembly firmly contacts one of said belt support means, and another, second, portion of said belt assembly is a tight portion extending from one belt support means to the other, second, belt support means and a third portion of said belt assembly extends longitudinally from one of said belt support means to the other belt support means and the ridge elements thereof and teeth thereof extend downwardly from said third portion of said belt assembly and said third portion of said belt assembly is sufficiently loose that the teeth on said third portion of said belt assembly extend below the level of said smooth bearing surface at the bottom of said plate on rotation of said belt support means, and another, fourth, portion of said belt assembly firmly contacts the other, second, one of said belt support means.

4,083,328

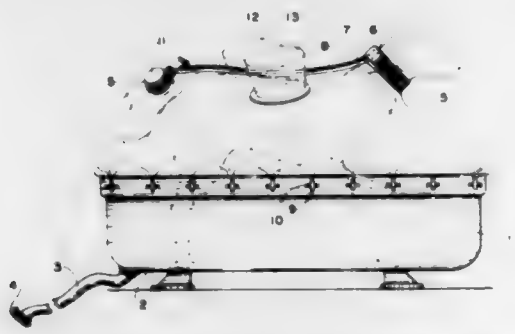
PORTABLE PET WASHING DEVICE

Sandra Baker, New York, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 10, 1976, Ser. No. 740,549

Int. Cl.[2] A01K *13/00*

U.S. Cl. 119—158 **1 Claim**



1. A portable pet washing device for washing a pet without wetting the area in which the device is positioned, said pet washing device comprising

a substantially rigid tub of plastic material having an outlet hole formed through the bottom thereof;

an outlet hose affixed to the bottom of the tub and extending from the outlet hole for draining the tub;

outlet cap means on the outlet hose for manually controlling the flow of fluid through said hose;

a substantially flexible plastic bag having a body opening and a head opening formed therethrough and zipper means extending along the body opening to the head opening for selectively opening and closing the body opening to position a pet therein with its head extending beyond the bag through the head opening;

fastening means for releasably affixing the bag to the tub in a manner whereby the bag covers the tub and extends a distance above said tub;

inlet means in the bag for admitting solids and fluids into the bag onto a pet in the tub, said inlet means comprising an inlet hole formed through the bag and a cap affixed to the bag for selectively covering and uncovering the inlet hole;

a pair of spaced hand holes formed through the bag; and

a pair of plastic sleeve means each extending from the bag at a corresponding one of the hand holes for accommodating the arms of a user washing a pet in the tub.

4,083,329

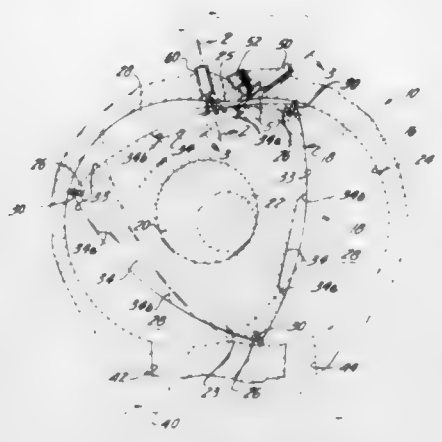
ROTARY ENGINE WITH A PILOT FUEL NOZZLE DOWNSTREAM OF TOP CENTER

David M. Myers, Upper Saddle River, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Feb. 14, 1977, Ser. No. 768,142

Int. Cl.[2] F02B *53/10*

U.S. Cl. 123—205 **7 Claims**



1. A rotary combustion engine comprising:

(a) an outer body having an internal cavity, the inner peripheral surface of which has a multi-lobe profile such that the junctions of said lobes are disposed relatively close to the engine axis;

(b) an inner body of generally polygonal profile having a plurality of apex portions mounted for relative rotation within said outer body cavity, the apex portions of said inner body having sealing cooperation with said multi-lobe peripheral surface to form a plurality of working chambers between the peripheral surfaces of said inner and outer bodies, which chambers vary in volume in response to said relative rotation;

(c) said outer body having an air inlet port and an exhaust outlet port disposed adjacent to and on opposite sides of one of the junctions of the lobes of said multi-lobe peripheral surface;

(d) a first fuel nozzle mounted on the outer body adjacent to and on the downstream side, relative to the direction of inner body rotation, of a second lobe junction of said multi-lobe peripheral surface adjacent to which combustion takes place and disposed to discharge its fuel through said surface in a generally upstream direction into each working chamber after the charge therein has been substantially compressed;

(e) an igniter mounted on the outer body adjacent to said first fuel nozzle for igniting fuel discharging from said nozzle; and

(f) a second fuel nozzle mounted on said outer body adjacent to and on the upstream side of said second lobe junction and disposed to discharge its fuel through said surface into each working chamber, also after the air charge therein has been substantially compressed, for ignition by the burning of the fuel discharged from said first nozzle, a major portion of the fuel discharging from said second nozzle being directed toward the leading portion of each working chamber.

4,083,330

PISTON FOR AN INTERNAL COMBUSTION ENGINE

Alberto Jorge Morris, Dursley, England, assignor to R. A. Lister & Company Limited, Dursley, England

Filed Nov. 2, 1976, Ser. No. 737,528

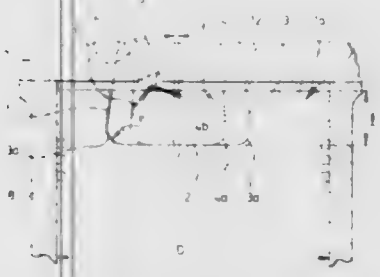
Claims priority, application United Kingdom, Sep. 23, 1976, 39530/76

Int. Cl.[2] F02B *3/00, 23/00*

U.S. Cl. 123—32 B **8 Claims**

1. An internal combustion engine including a cylinder in which is mounted a reciprocable piston, said piston having a

combustion chamber formed in its head, the combustion chamber having an inlet orifice in the top surface of the head, a flat bottom wall, and a side wall which includes a plurality of concave recesses which intersect to define cusps directed towards a central zone of the combustion chamber, said cusps including concavely curved portions which extend upwardly from the flat bottom wall and inclined portions which extend between the curved portions and the surface of the head along the surface of an imaginary cone having its apex above said top surface, the portions of the recesses which intersect to define the inclined portions of the cusps forming scallops around the



inlet orifice, the scallops being contained within an imaginary circle on which lies the radial extremity of each scallop, and the diameter of said imaginary circle defining an overall diameter of said inlet orifice equal to 50% to 60% of the diameter of the piston, the cylinder including an elongate inlet nozzle for liquid fuel inclined with respect to the main axis of the combustion chamber and positioned in the cylinder so that the axis of the inlet nozzle, when the piston occupies its top-dead-centre position in the cylinder, intersects the flat bottom wall of the combustion chamber at a point spaced from the main axis of the combustion chamber by a distance no greater than 4% of the overall diameter of the inlet orifice.

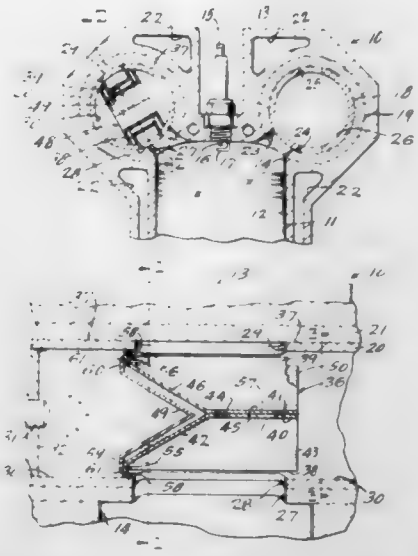
4,083,331

INTERNALLY COOLED ROTARY EXHAUST VALVE

William D. Guenther, Hagerstown, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 1, 1976, Ser. No. 737,601
Int. Cl.[2] F01P *3/02;* F01N *3/02;* F01P *9/02*
U.S. Cl. 123—41.17 **5 Claims**

1. In a rotary valve engine including a piston reciprocating in a cylinder, an intake valve and a rotary exhaust valve mounted to rotate within a cylinder head, said cylinder head, said cylinder and said piston defining a combustion chamber, an improved rotary exhaust valve structure comprising a tubular valve body mounted to rotate in said housing, said valve body having an axially directed passage therein connected to an exhaust gas outlet, at least one said port in said valve body positioned for connecting said combustion chamber with said axially directed passage when said valve body is rotated through a predetermined angular segment whereby exhaust gas flows from said combustion chamber through said side port and said axially directed passage to the exhaust gas outlet, deflector means positioned in said passage for directing exhaust gas flow from said side port toward the gas outlet, and means in said passage upstream of said deflector means for directing a liquid coolant spray toward the exhaust gas outlet, said deflec-



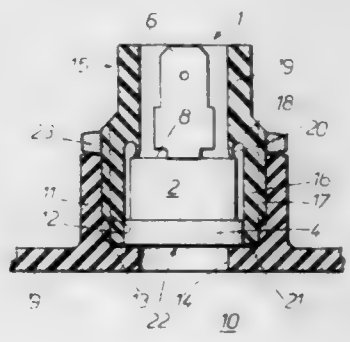
tor means including means for preventing such coolant spray from entering said side port.

4,083,332

FITTING OF A FLUID TEMPERATURE SWITCH IN A WALL

René Elie Neveux, les Clayes-sous-Bois, France, assignor to Societe Anonyme Francaise de Ferodo, Paris, France

Filed Jun. 25, 1976, Ser. No. 699,675
Claims priority, application France, Jun. 30, 1975, 75 20475
Int. Cl.[2] F02M *13/06*
U.S. Cl. 123—41.15 **14 Claims**



1. In an assembly of a fluid temperature switch unit of the kind including an enclosure having an end-face at one end and a bimetal disc at the other end, with a chamber containing a fluid and having a wall comprising a recess having a bottom-face formed with an opening therein communicating with said chamber, the improvement which includes a metal plate covering said bottom-face, and means for sealing said opening by urging said plate toward the wall recess and for applying the end of said switch unit containing the bimetal disc against said plate.

4,083,333

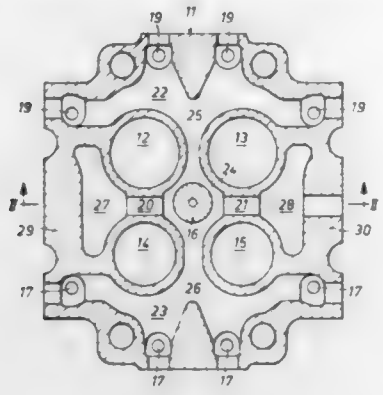
CYLINDER HEAD CONSTRUCTION FOR AN INTERNAL COMBUSTION ENGINE

Wolfgang Rudert, Langenargen, and Karlheinz de Lazzer, Friedrichshafen, both of Germany, assignors to Motoren-und Turbinen-Union Friedrichshafen GmbH, Germany

Filed Dec. 22, 1975, Ser. No. 642,651
Claims priority, application Germany, Dec. 21, 1974, 2460972
Int. Cl.[2] F02F *1/36, 1/40, 1/42*
U.S. Cl. 123—41.82 R **19 Claims**

1. A fluid-cooled cylinder head for an internal combustion engine which engine includes two valves each for inlet and exhaust, each of the two inlet valves and each of the two exhaust valves being arranged in respective valve chamber

means, a combustion means arranged between the inlet valve chamber means and the exhaust valve chamber means, and cooling fluid entry means arranged at a cylinder circumference, the cylinder head comprising: a first cooling chamber means for receiving a cooling fluid, a second cooling chamber means for receiving a cooling fluid disposed below said first cooling chamber means, the cooling fluid entry means communicating with said second cooling chamber means for delivering cooling fluid thereto, bore means arranged between an inlet valve chamber means and an adjacent exhaust valve chamber means for communicating said first cooling chamber means with said second cooling chamber means, an annular channel



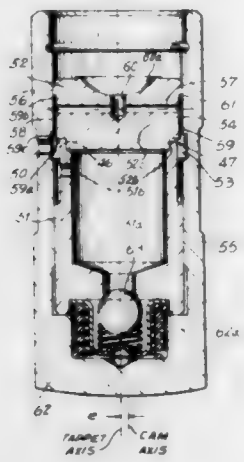
means for receiving a cooling fluid formed about the combustion means, said bore means terminating in said annular channel means, and passage means for communicating said second cooling chamber means with said annular channel means, said bore means, said passage means and said annular channel means being arranged such that the cooling fluid flows from the cooling fluid entry means through said second cooling chamber means into said passage means and from said passage means into said annular channel means and through said bore means into said first cooling chamber means so as to define a long flow path of cooling fluid along a bottom of the cylinder head.

4,083,334

HYDRAULIC VALVE LIFTER

Carlos Alberto Ferrari Roncon, Rua Conde de Sabugasa, 25-3°-D-, Lisbon 5, Portugal

Filed Mar. 11, 1974, Ser. No. 449,895
Claims priority, application Portugal, Apr. 26, 1973, 59753[U]
Int. Cl.[2] F01L *1/14, 1/22, 1/24*
U.S. Cl. 123—90.35 14 Claims



1. In an hydraulic valve lifter comprising

a body having an external generally cylindrical shape and an interior wall defining a cylindrical cavity extending from an open end of the said body to a closed end thereof, and including

a first cross port between the outer and inner surfaces of the body and leading into an oil reservoir within the body;

a plunger assembled within said body for reciprocation therein and having an outer generally cylindrical shape which fits with a very small clearance within the inner surface of said body, the interior of the plunger defining an oil reservoir,

a second cross port between the outer and inner surfaces of said plunger communicating with the first cross port;

a check valve mounted within the bottom portion of said plunger so as to allow the flow of oil from the plunger reservoir to the reservoir in said body but prevents the opposite flow;

the combination of a separately constructed pushrod socket which is force-fitted into said plunger, said socket being of cylindrical shape and having two diameters above the plunger, of which the larger upper one fits with a very small clearance against the inner surface of said body, and the smaller lower one defines with the inner surface of said body an annular zone;

a first groove formed in the inner surface of said body which through the first said port communicates with the exterior of said body;

a second groove formed in the outer surface of said plunger which through said second port communicates with the said plunger reservoir and is located at such a height that in any relative position of said plunger and body said second groove of the plunger always overlaps said first groove of said body;

a transverse bore in said pushrod socket which communicates with a central axial hole of the socket but does not directly communicate with the plunger reservoir, said transverse bore communicating also with the said annular zone and allowing the free flow of oil from the said annular zone to the axial hole of the socket;

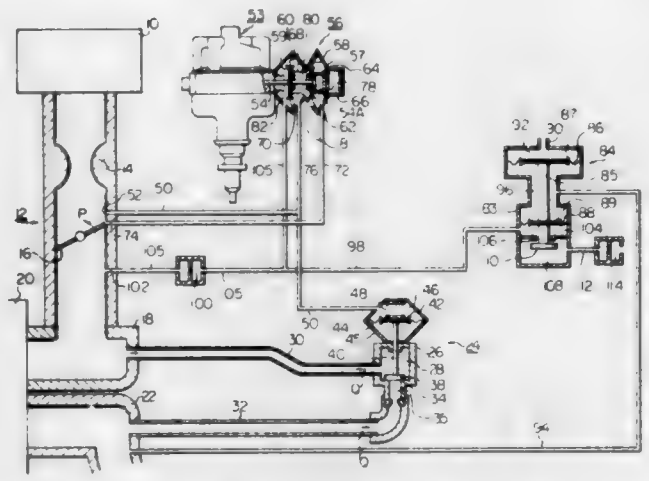
there being an hydraulic connection between the first port of said body and the axial hole of the socket through said first groove, through said annular zone, and through said transverse bore of the socket, whereby the hydraulic resistance concentrates almost exclusively in said annular zone.

4,083,335

APPARATUS FOR CONTROLLING THE IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE

Akira Ohata, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 22, 1976, Ser. No. 725,575
Claims priority, application Japan, May 25, 1976, 51-059576
Int. Cl.[2] F02P *5/10*
U.S. Cl. 123—117 A 4 Claims



1. In an apparatus for controlling the ignition timing of an internal combustion engine provided with an exhaust gas recirculation system, which apparatus comprises a distributor having a spark advance control shaft, at least one vacuum spark advance control diaphragm connected to said shaft, at least one vacuum advance control chamber which is formed on a side of said diaphragm, a port formed in the engine intake system, a pipe connecting said port to said chamber so that the

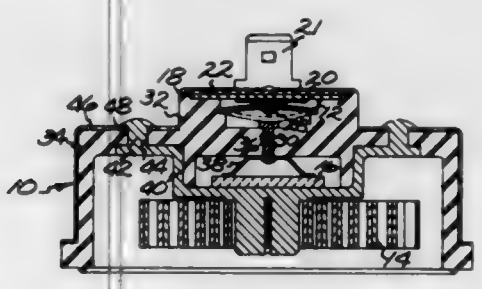
chamber is subject to the engine vacuum to cause said shaft to be displaced to advance the ignition timing of the distributor in response to the level of the engine vacuum while the exhaust gas recirculation operation is functioning, the improvement wherein said apparatus further comprises: another port formed in the intake system of the engine, a vacuum advance compensation chamber formed on a side of said diaphragm of the vacuum advancer opposite to said vacuum advance control chamber, pipe means connecting said other port to said compensation chamber, and means for sensing intake and exhaust gas pressures, said sensing means being connected to the pipe means for controlling the vacuum level of said vacuum advance compensation chamber so as to prevent said advance shaft of the distributor from being too much displaced, whereby to cause the ignition timing to be delayed during operation at high engine speeds.

4,083,336

CONDITION RESPONSIVE CONTROL DEVICE

James J. Armstrong, East Providence, R.I., and Peter G. Berg, Norton, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 10, 1971, Ser. No. 170,542
Int. Cl.² F02M *1/12, 1/10*
U.S. Cl. 123—119 F **2 Claims**



1. A temperature responsive device adapted for use in reducing undesired material in the exhaust gas emitted by an internal combustion engine powered by a combustible fuel-air mixture, said device comprising

a casing adapted to be carried on the engine, said casing including an aperture,

a fixedly mounted conductive contact member disposed within said aperture,

an ambient temperature sensing switch comprising a generally disc-shaped thermostat member of thermostat material having a plurality of metal laminae having unequal coefficients of thermal expansion carried adjacent the aperture at one surface of said casing in a position spaced from said fixedly mounted conductive contact member and adapted to electrically communicate with said contact member upon deflection thereof in response to a preselected ambient temperature at said casing, said thermostat member having a generally centrally located aperture, means for selectively connecting said thermostat member to a source of electrical power including a contact member coupled to the source of electrical power and supported within said aperture in said theremostat member projecting therethrough terminating in spaced facing relationship with said fixedly mounted contact member for selectively contacting said fixedly mounted contact member only upon deflection of said thermostat member,

an engine temperature sensing thermally responsive means, means to thermally couple the engine to the thermally responsive means for sensing the temperature of the engine, the thermally responsive means comprising a member formed of thermostat material having a plurality of metal laminae having unequal coefficients of thermal expansion and being formed in a continuous coil having a plurality of convolutions including an origin fixedly connected to the casing and a terminus adapted to move relative to the origin in response to an elevated temperature of the coil at said casing, said terminus being adapted to be coupled to a valve for adjusting the ratio of the fuel-air mixture, and

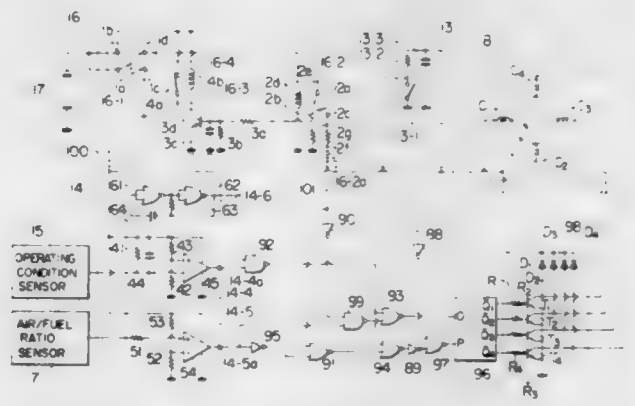
a self-regulating heating element supported by said casing in contact with said fixedly mounted contact member and in thermal communication with said engine temperature sensing coil, said heating element being adapted to generate heat at a substantially constant temperature at said casing in response to electrical energization thereof upon deflection of said thermostat member and having a positive temperature coefficient of resistance and a sharply defined transition temperature above which its resistance increases abruptly whereby deflection of said thermostat member in response to said preselected ambient temperature at said casing effects heating of said engine temperature sensing coil and associated movement of said terminus.

4,083,337

AIR-FUEL RATIO ADJUSTING SYSTEM

Tadashi Hattori, Okazaki, and Takamichi Nakase, Gamagori, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 1, 1976, Ser. No. 701,967
Claims priority, application Japan, Jul. 16, 1975, 50-87495
Int. Cl.² F02M *7/14*
U.S. Cl. 123—119 EC **7 Claims**



1. An air-fuel ratio adjusting system for an internal combustion engine comprising:

a carburetor connected to an intake manifold of an internal combustion engine and including a main passage and a bypass passage for supplying an air-fuel mixture to said engine;

said main passage being provided with a main valve for controlling the amount of the air-fuel mixture to be supplied to said engine, and said bypass passage being provided with a bypass valve for adjusting the air-fuel ratio of said air-fuel mixture by controlling the amount of air flowing therethrough;

driving means coupled to said bypass valve for driving the same;

air-fuel ratio sensing means mounted in an exhaust manifold of said engine for sensing the air-fuel ratio of the mixture supplied to said engine;

a source of direct current;

a key switch of said engine connected to said source;

a control circuit means connected to said source through said key switch, whereby direct current is supplied to said control circuit means when said key switch is closed, said control circuit means being connected to both said air-fuel ratio sensing means for actuating said driving means to drive said bypass valve in a valve opening direction when the air-fuel ratio is below a predetermined value and in a valve closing direction when the air-fuel ratio exceeds the predetermined value;

a delay circuit means connected between said source and said control circuit means for supplying said control circuit means with direct current from said source for a

predetermined time after said key switch is opened, to thereby hold said control circuit means operable;

generating means connected to said key switch for generating a trigger signal when said key switch is opened; and

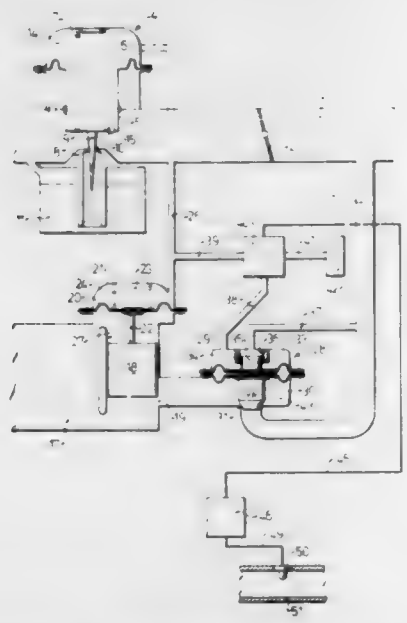
means for applying said trigger signal to said control circuit means, whereby said control circuit means upon receiving said trigger signal actuates said driving means to drive said bypass valve in a direction to a preset position at which said bypass valve enables said carburetor to supply air-fuel mixture having a proper air-fuel ratio to said engine.

4,083,338

APPARATUS FOR CONTROLLING THE FUEL-AIR MIXTURE OF AN INTERNAL COMBUSTION ENGINE

Johannes-Gerhard Bertling, Vaihingen; Hans Zeller, Grafenau, and Johannes Brettschneider, Ludwigsburg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 31, 1977, Ser. No. 764,304
Claims priority, application Germany, Feb. 4, 1976, 2604231
Int. Cl.[2] F02M *23/04*; F02N *7/00*; F02B *75/10*
U.S. Cl. 123—119 EC **12 Claims**



1. In an apparatus for controlling the fuel-air mixture of an internal combustion engine which includes

carburetor means actuated by the differential pressure across a venturi in the induction tube;

a throttle plate located in the induction tube downstream of said carburetor;

an air bypass line, receiving fresh air at one end and terminating in said induction tube downstream of said throttle valve and including air control means; and

means responsive to engine conditions, for controlling the action of said air control means in said bypass line;

the improvement comprising:

said air control means includes a first air metering valve for metering the air flow through said bypass line, said first air metering valve having control means actuated by the difference of the pressures prevailing upstream and downstream of said carburetor, said control means being biased by a spring in the direction of closure of the air passage in said bypass line;

said air control means includes a second air metering valve for further metering of the air flow through said bypass line, said second air metering valve having pressure responsive means for dividing said valve into first and second operative chambers and for obturating the flow through said bypass line; and

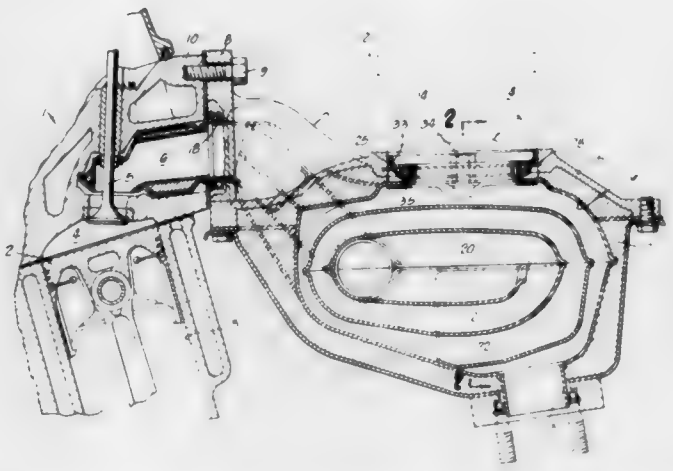
said means for controlling the action of said air control means includes valve means actuated by signals from engine sensors for selection of the pressure admitted to said first chamber of said second air metering valve to thereby adjust the degree of opening thereof.

4,083,339

APPARATUS FOR HEATING INTAKE MIXTURE FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINE

Shuichi Yamazaki, and Ikuo Kajitani, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1976, Ser. No. 725,411
Claims priority, application Japan, Sep. 22, 1975, 50-128921
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—122 AC **2 Claims**



1. For use with an internal combustion engine having an inlet manifold provided with a heat transfer wall, an exhaust manifold comprising a thin wall liner spaced within and enclosed by a thick wall housing, and the housing having a lateral opening communicating with the heat transfer wall, the improvement comprising, in combination: a tubular extension on the liner projecting into the lateral opening in the housing, internally threaded sockets fixed to the liner extending into the housing opening and spaced laterally from said tubular extension, a stationary support ring fixed in said housing opening and having a portion encircling said tubular extension, clearance openings in said stationary support ring, a guide plate engaging said stationary support ring, threaded fasteners extending through said guide plate and clearance openings and engaging said internally threaded sockets, and a shield plate within said liner serving to isolate otherwise exposed ends of the threaded fasteners from hot exhaust gases within said liner.

4,083,340

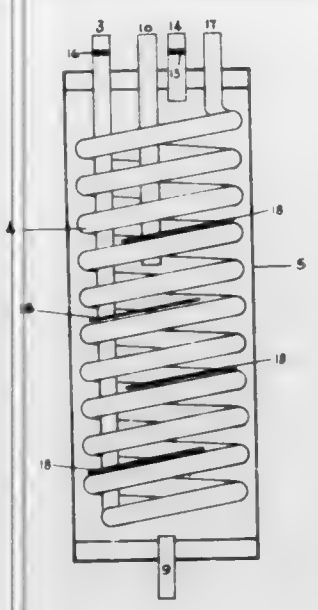
GASOLINE SUPERHEATER

Clen H. Furr, Belmont, W. Va., and Dan W. Favreau, McConnelsville, Ohio, assignors to Fuel Superheater Systems, Inc., McConnelsville, Ohio

Continuation-in-part of Ser. No. 596,951, Feb. 25, 1977, abandoned. This application May 20, 1977, Ser. No. 799,106
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—122 E **16 Claims**

1. In combination a gasoline superheating device and an internal combustion gasoline engine having a carburetor, said gasoline superheating device comprising a gasoline heating chamber, means for delivering gasoline to said heating chamber, means for heating the gasoline in said heating chamber to a temperature of approximately 140° F. which is above its normal boiling point of about 100° F. at normal atmospheric pressure, means for maintaining the gasoline in said heating chamber under sufficient pressure to keep said gasoline in said

heating chamber in a liquid state, even though the temperature in said heating chamber is above the normal boiling point of the



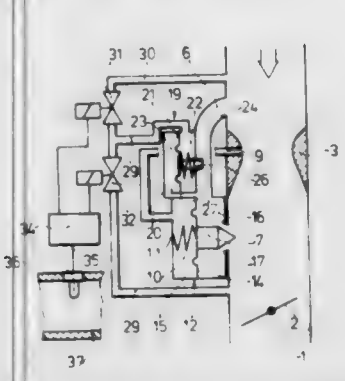
gasoline at normal atmospheric pressure, and means for delivering gasoline from said heating chamber to said carburetor.

4,083,341

PROCESS AND APPARATUS FOR THE REGULATION OF THE FUEL-AIR MIXTURE OF AN INTERNAL COMBUSTION ENGINE THROUGH THE ADMISSION OF AUXILIARY AIR

Johannes Brettschneider, Ludwigsburg, and Johannes-Gerhard Bertling, Vaihingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 13, 1976, Ser. No. 732,125
Claims priority, application Germany, Oct. 16, 1975, 2546310
Int. Cl.[2] F02M *23/04*
U.S. Cl. 123—124 B **16 Claims**



3. An apparatus for regulating the composition of the fuel-air mixture delivered to the combustion cylinders of an internal combustion engine, having a suction tube through which a quantity of fresh air is aspirated and within which there is disposed an arbitrarily displaceable throttle flap and a venturi constriction upstream thereof, comprising:

(a) an air-bypass line connected to the suction tube for bypassing the venturi constriction;

(b) a bypass throttle device located to engage with the air-bypass line, said bypass throttle device having a control pressure chamber, a bypass throttle member and a positioning member;

(c) a pressure communicating line connected between the venturi constriction and the control pressure chamber of the bypass throttle device for communicating the reduced pressure developed at the venturi constriction to the control pressure chamber;

(d) a pressure regulating valve connected to the air-bypass line, said pressure regulating valve having means defining two chambers separated by a positioning component, and a throttle member actuatable by the positioning component;

(e) a connecting line connecting one of the two chambers to the air-bypass line upstream of the bypass throttle device;

(f) a further connecting line connecting the other of the two chambers to the air-bypass line downstream of the bypass throttle device;

(g) a pressure line connecting the control pressure chamber to a source of higher pressure; and

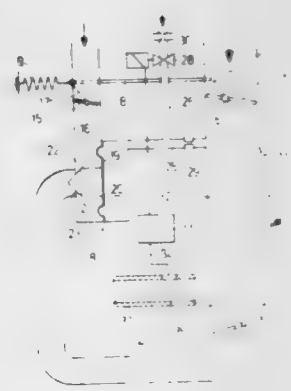
(h) valve means connected to the pressure line for regulating the pressure in the control pressure chamber in accordance with the operational behavior of the engine.

4,083,342

FUEL MIXTURE REGULATOR SYSTEM

Johannes-Gerhard Bertling, Vaihingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 24, 1976, Ser. No. 717,141
Claims priority, application Germany, Sep. 3, 1975, 2539097
Int. Cl.[2] F02M *23/04*
U.S. Cl. 123—124 B **27 Claims**



2. In an apparatus for controlling the fuel mixture of an internal combustion engine, said engine including a fuel mixture generator and an air intake tube in which is disposed a throttle valve, the improvement comprising, in combination:

an air bypass conduit, terminating in said air intake tube downstream of said throttle valve for supplying supplementary air to said intake tube;

first flow control means, disposed within said bypass conduit, for adjusting the free flow cross section of said bypass conduit;

an air flow rate meter, disposed in said air intake tube, upstream of said mixture generator and coupled to said first flow control means for simultaneous actuation of said meter and said first flow control means;

a pressure controlled valve disposed in said air bypass line downstream of said first flow control means, having two chambers separated by a diaphragm, one chamber being connected to receive upstream pressure from said air bypass line and the other chamber being connected to said air intake tube downstream of said air flow rate meter and further being connected to a source of constant pressure; and

adjustable valve means connected between said second chamber of said pressure controlled valve and said source of constant pressure.

4,083,343

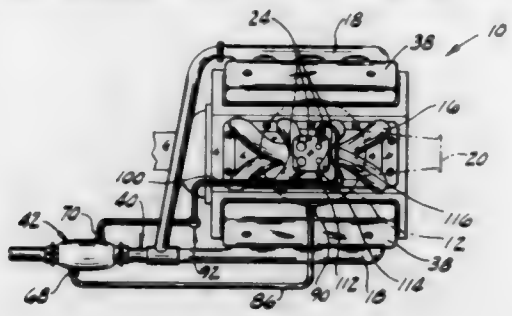
FUEL VAPORIZER

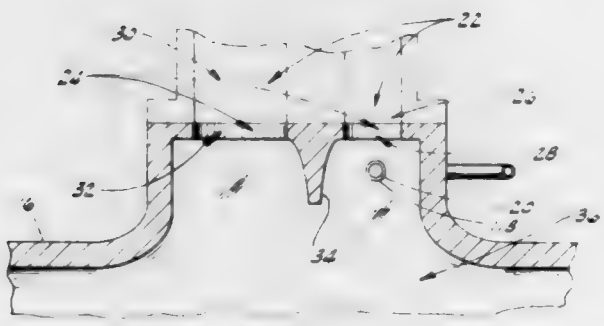
John W. Paton, III, 304 Main St., Franklin, Ill. 63628

Continuation of Ser. No. 573,899, May 2, 1975, abandoned. This application Oct. 13, 1976, Ser. No. 732,099
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—124 R **10 Claims**

1. In an internal combustion engine having an air cleaner mounted on a carburetor having primary and secondary outlets, an intake manifold having primary and secondary inlets and an exhaust manifold, the improvement comprising a heat

exchanger in heat exchange relationship with the exhaust system, a sealed first passageway flowably connected to said air cleaner before said air cleaner vents into the carburetor and a second sealed passageway flowably passing heated air from said heat exchanger through a port in the primary manifold inlet, said manifold having a web separating the primary and





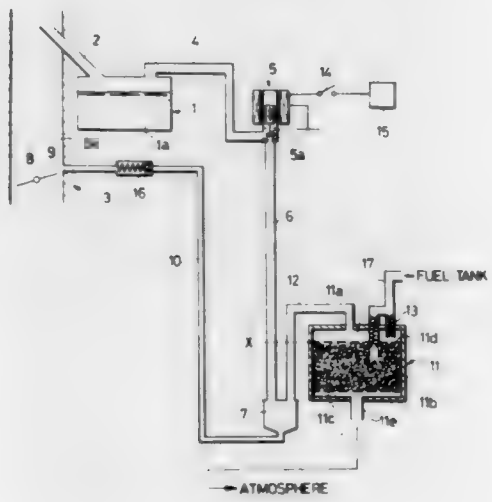
secondary inlets and extending partially into said manifold, said port in the primary manifold inlet located adjacent the primary carburetor outlet whereby the heated air mixes with the air/fuel mixture passing through the primary manifold inlet before said air/fuel mixture mixes with the air/fuel mixture passing through the secondary manifold inlet.

4,083,344

SYSTEM FOR CONTROLLING VAPORIZED HYDROCARBON OF FUEL FOR A GASOLINE ENGINE

Shigenori Sakurai, Toyota; Shigeo Murakami, Okazaki, and Masanori Torii, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 11, 1976, Ser. No. 685,174
Claims priority, application Japan, Jan. 8, 1976, 51-1142
Int. Cl.[2] F02M *59/00*
U.S. Cl. 123—136 **22 Claims**



1. A system for controlling vaporized hydrocarbon of fuel for a gasoline engine, comprising:

a carburetor float chamber having inner and outer vents, said float chamber being connected through said inner vent thereof with a carburetor for a gasoline engine driven vehicle;

a canister containing an absorbent therein; and

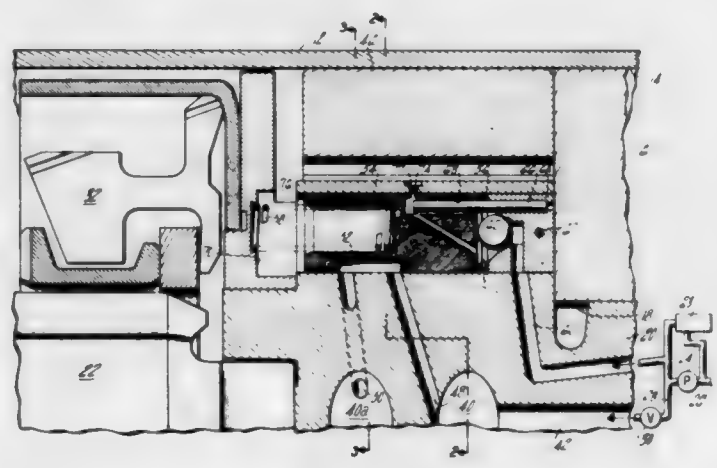
means for connecting said outer vent of said float chamber with said canister so that the vaporized hydrocarbon may be led from said float chamber to said canister, said connecting means including a chamber positioned fluidly intermediate said float chamber and said canister for separating fuel and vapor therein.

4,083,345

FUEL INJECTION PUMP

Charles W. Davis, Simsbury, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Oct. 14, 1975, Ser. No. 621,945
Int. Cl.[2] F02M *59/08*
U.S. Cl. 123—139 ST **16 Claims**



1. A rotary distributor fuel injection pump suited for the delivery of pulsed charges of high pressure fuel sequentially to the cylinders of an associated engine comprising a main high pressure pumping chamber and an auxiliary high pressure pumping chamber having a common outlet passage for the delivery of pressurized fuel generated in the pumping chambers to an associated engine, pumping plungers in said pumping chambers having simultaneous pumping strokes for generating high pressure pulsed charges of fuel therein, actuating means for powering said pumping plungers to generate the pulsed charges of fuel in the chambers simultaneously and deliver their combined pulsed output sequentially to each of the cylinders of the engine, and disabling means for rendering said auxiliary pumping chamber inoperative to delivery its output to said common outlet passage without impairing the connection of the main pumping chamber thereto after the enginer speed reaches a predetermined level.

4,083,346

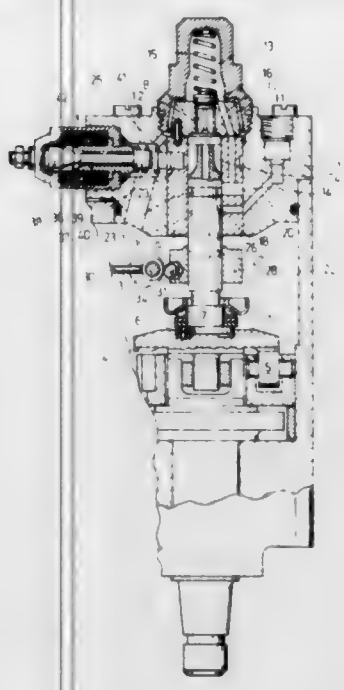
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 27, 1976, Ser. No. 652,869
Claims priority, application Germany, Jan. 28, 1975, 2503355
Int. Cl.[2] F02M *59/42*
U.S. Cl. 123—137 BD **10 Claims**

1. In a fuel injection pump for internal combustion engines which includes a housing, a fuel storage compartment in said housing, cylinder means disposed in said housing and a reciprocating and rotating piston moving in said cylinder means and defining a pressure chamber, a plurality of fuel channels in said housing, one terminus of each of said plurality of fuel channels lying in the wall of said cylinder, said piston having radial apertures which cooperate with said termini to thereby provide rpm-dependent flow control through said plurality of fuel channels, a suction conduit connected between said mutually communicating fuel channels and said fuel storage compartment, the improvement comprising

an electromagnetic valve associated with said housing for controlling fuel flow through said suction conduit, said valve further including a casing, a magnet core disposed in said casing, an armature arranged to cooperate with said



core, a valve closure means associated with said armature and said valve closure means being opened to permit passage of fuel through said suction conduit upon de-energization of said electromagnetic valve.

4,083,347

HIGH ENERGY SPARK IGNITION SYSTEM, PARTICULARLY FOR INTERNAL COMBUSTION ENGINES

Günter Gräther, Pinache, and Friedrich Rabus, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 25, 1977, Ser. No. 762,326
Claims priority, application Germany, Feb. 20, 1976, 2606890
Int. Cl.[2] F02P *1/00, 3/00*
U.S. Cl. 123—148 E **20 Claims**



1. High energy spark ignition system to provide, at a spark gap (36), a spark pulse having a high voltage portion (FIG. 2: E) to break down the gap of the spark gap (36) and a high current portion (FIG. 2: F) to provide ignition energy to the gap after breakdown,

comprising, in accordance with the invention;

an ignition coil (29) having a primary winding (28) and two secondary winding portions (33, 34), a first winding portion (33) having a large number of turns to provide a high voltage output, and the second winding portion (34) having a substantially lesser number of turns to provide high current output;

switch means (26) controlling current flow through the primary winding (28) and interrupting current flow therethrough to release stored electromagnetic energy to the secondary;

a charge storage capacitor (41) to receive and store energy from the second winding portion (34) and provide a high energy discharge pulse;

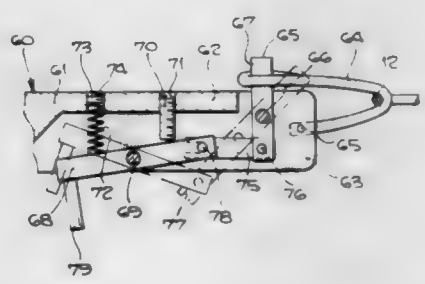
and means applying both the high voltage pulse and the high energy capacitor discharge pulse to the spark gap (36) comprising a circuit common to both said winding portions (33, 34) of the spark coil (29) and to the spark gap (36).

4,083,348

BOWSTRING DRAW AND TRIGGER RELEASE APPARATUS

James D. Fletcher, P.O. Box 218, Bodfish, Calif. 93205

Continuation-in-part of Ser. No. 609,293, Sep. 2, 1975, Pat. No. 4,022,181. This application Sep. 27, 1976, Ser. No. 727,055
Int. Cl.[2] F41C *19/00*
U.S. Cl. 124—35 A **4 Claims**



1. A bowstring draw and release apparatus comprising:

(a) a housing comprising a spine and a pair of flanges having inner walls aligned in uniformly parallel spaced relation to one another, the flanges depending from said spine defining a U-shaped cavity between the inner walls of said flanges with the cavity positioned at the end of the housing;

(b) a bowstring draw cord extending between said flanges of said housing and including a terminal loop, said bowstring draw cord adapted to be disposed about and draw a bowstring;

(c) a holding member pivotally secured between the inner walls of said flanges for movement between said first and second positions for respectively holding and releasing the terminal loop of said draw cord whereby a bowstring may be drawn and released;

(d) trigger means for releasing a bowstring, the trigger means being pivotally coupled between the inner walls of said flanges, and lying in the same plane as said holding member said trigger means being moveable between first and second positions consistent with the first and second positions of the holding member, said trigger means comprising a trigger member having first and second ends, said trigger member being journaled between the inner walls of said flanges intermediate said first and second ends and having its longitudinal axis extending between the first and second ends thereof, the second end of said trigger member comprising first and second parallel flanges, said holding member having a first end extending beyond said housing and a second end lying intermediate said inner walls, the second end of said holding member comprising first and second flanges;

(e) limit stop means coupled to said spine intermediate said inner walls and extending into said cavity for limiting the pivotal movement of said trigger member at the first position of movement thereof;

(f) resilient means coupled to said spine and extending into said cavity for contacting said trigger member and urging said trigger member to return from the second position to the first position of movement thereof; and

(g) a coupling means for directly, slidably coupling said trigger means at a first end thereof to said holding member

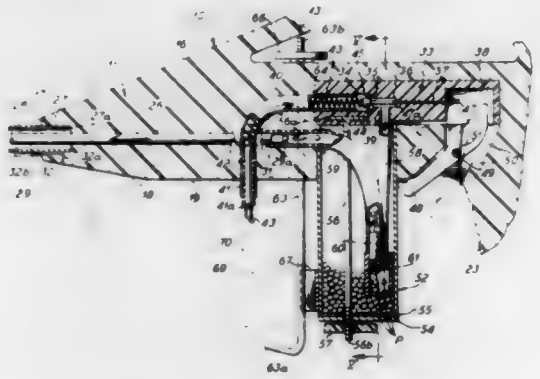
at a second end thereof, whereby the pivotal movement of said trigger means is transmitted to said holding means through a slot in said coupling means by said coupling member to pivot said holding member between the first and second positions thereof, first ends of said coupling member being slidably coupled intermediate the first and second flanges of said trigger member, the second member of said coupling member being journaled intermediate to the first and second flanges of said holding member.

4,083,349

RAPID-FIRE, FLUID ACTUATED B.B. GUN

Eugene Russett Clifford, 753 Minorca, Coral Gables, Fla. 33134

Filed Jul. 13, 1976, Ser. No. 704,836
Int. Cl.[2] F41B *11/02*
U.S. Cl. 124—72 **19 Claims**



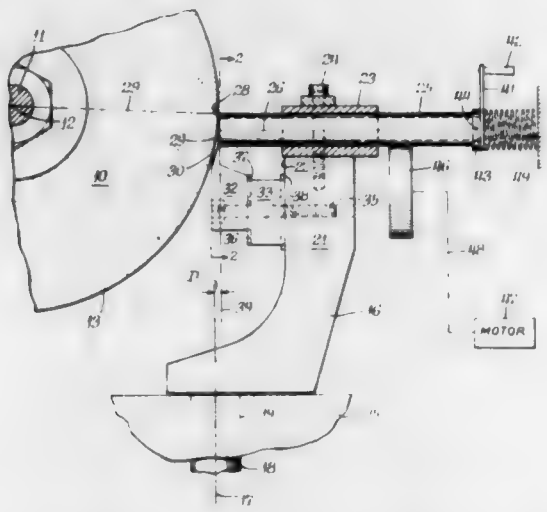
8. A rapid-fire pellet gun having an upright magazine for receiving a multiplicity of pellets, a pellet discharge outlet, an inlet adapted to be connected to a propellant gas source, passageways connecting the inlet with the magazine and the magazine with the outlet, a sleeve in the magazine having an open bottom close to the bottom of the magazine forming a localized swirl chamber receiving gas from the inlet and exiting gas to the outlet together with pellets from the magazine, a valve controlling gas flow from the inlet to the sleeve, and a trigger for opening said valve, whereby squeezing of the trigger will create a high velocity gas stream from the inlet through the sleeve to the outlet sweeping pellets from the bottom of the magazine and discharging the pellets through the outlet.

4,083,350

DIAMOND GRINDING WHEEL PRECISION CONVEX RADII DRESSING APPARATUS

George V. Zogas, 1514 W. Hawthorne, Arlington Heights, Ill. 60005

Filed Nov. 29, 1976, Ser. No. 745,659
Int. Cl.[2] B24B *53/06*
U.S. Cl. 125—11 CP **7 Claims**



1. In an apparatus for dressing a grinding wheel having a periphery which is to be dressed to a given dimension and rotating about an axis and comprising particulate diamonds held together by a bonding material, said apparatus comprising a tool and a device for mounting said tool in contact with said wheel, the improvement comprising:

said tool comprising an elongate member formed about an axis and having an end, said member being formed of a material softer than said diamonds;

said device positioning a first part only of said end in contact with said periphery and including means mounting said member for rotation about said member axis and for resiliently urging said member longitudinally of said member axis toward said wheel, said rotation of said member maintaining said end generally planar and in a plane substantially normal to said member axis; and

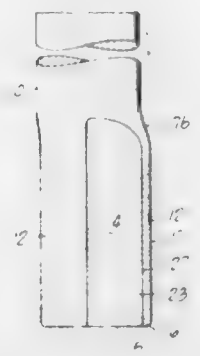
including means engaging said member for rotating said member about its axis and a stop positioned to contact a second part of said end after said member is moved toward said periphery to an extent such that said periphery is reduced to said given dimension, said second part being spaced from said part contacting said periphery, said stop being positioned so that initially said end of said member does not contact the stop but contacts the wheel periphery which holds the end away from the stop but when said wheel has been dressed to said given dimension said second part will contact with said stop and thereby said first part will be at the location at which it will no longer effectively bear against said wheel, whereby said stop limits the movement of said member toward the axis of the wheel when said given dimension has been achieved.

4,083,351

FLUTED DIAMOND DRILL

Harold Jack Greenspan, 5334 Holt Ave., Los Angeles, Calif. 90056

Filed Jan. 21, 1977, Ser. No. 760,966
Int. Cl.[2] B28D *5/00*
U.S. Cl. 125—30 R **5 Claims**



1. An abrasive drill for cutting a cylindrical hole in which the drilling operation is performed by abrasive particles secured to the drill body, the combination of:

(a) a solid body adapted to be rotated along its axis, said body having formed integrally therewith a plurality of cutter elements;

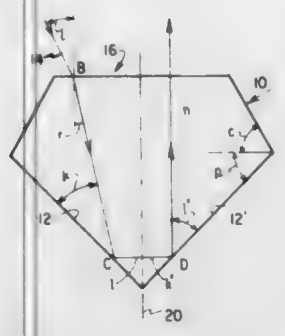
(b) each cutter element having a bottom cutter surface and longitudinal cutter surfaces meeting in leading cutter edges with respect to the direction of rotation of the drill, said leading cutter edges cutting the surface of the material to be drilled, said bottom cutter surfaces combining to form a full diameter cutting surface which cuts the entire diameter of the bottom of the cylindrical hole being cut; and

(c) a layer of abrasive particles bonded to said cutter surfaces, whereby when wear occurs new abrasive particles are continually brought into working position and the drill will continue to function.

4,083,352
METHOD FOR CUTTING ORNAMENTAL TRANSPARENT GEMSTONES AND PRODUCTS PRODUCED THEREFROM

Dmetro Andrychuk, 422 Terrace Dr., Richardson, Tex. 75081

Filed Jan. 28, 1977, Ser. No. 763,404
Int. Cl.[2] B28D *5/00*
U.S. Cl. 63—32 22 Claims



1. Method for cutting a plurality of crown main facets of an ornamental transparent gemstone having an index of refraction *n*, a chosen angle *p* to the horizontal axis of the gemstone for the plurality of pavilion main facets, and an optical axis, to provide improved brilliance and depth of color to the gemstone, comprising the steps of:

choosing a first light ray path to enter the gemstone at a fixed entrance angle to the optical axis of the gemstone, have a plurality of internal reflections within the gemstone and exit the gemstone at an angle parallel to the optical axis;

choosing a second light ray path to enter the gemstone at said fixed entrance angle;
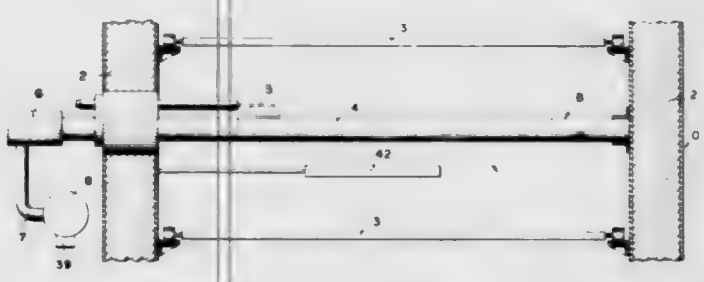
cutting the plurality of the pavilion main facets on said gemstone at said chosen pavilion angle *p;* and

cutting a plurality of crown main facets on the gemstone at an angle *c* to the horizontal axis of the gemstone chosen to allow light entering the gemstone along said second light ray path to have a plurality of reflections within the gemstone and exit the gemstone at an angle parallel to the optical axis.

4,083,353
FOOD PROCESSING OVEN SYSTEM

Basil E. Petry, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.

Filed Nov. 26, 1976, Ser. No. 745,077
Int. Cl.[2] A21B *1/46*
U.S. Cl. 126—21 R 10 Claims

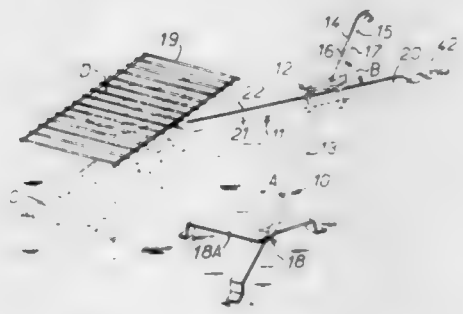


1. In a food processing oven system: an oven housing providing a chamber; means for supporting food products in the chamber; a ribbon burner assembly including a bank of ribbon burners exposed to the chamber atmosphere, and connected by a header for supplying heat to the chamber atmosphere; ignition means for electrically lighting the burners; an air heater; a conduit for transmitting preheated air from the air heater to the header; aspirator mixer means in said conduit upstream from the header; an oil line communicating with the aspirator mixer means for supplying oil to be injected into the preheated air passing through the conduit; a gas line communicating with the aspirator mixer means; valve means for isolating the gas line; valve means for isolating the oil line; an electrical circuit; a sensor for sensing the temperature of the ribbon burner assembly; control means for the oil line isolating valve means and gas line isolating valve means connected in the circuit and operable to normally isolate the oil line and the gas line when the temperature of the ribbon burner assembly is below a predetermined temperature and to permit communication of the gas line with the conduit when the predetermined temperature is reached; exhausting means for removing the atmosphere of the chamber connected in said circuit; a control for operating the exhausting means; and means preventing the valve means for the oil line from being opened until the temperature in the chamber is such that the oil will vaporize satisfactorily.

4,083,354
BARBECUE

Jean Henri Claire, Veules les Roses, and Jean-Claude Henri Claire, St. Valery en Caux, both of France, assignors to Bernard Mercier, Ville d'Avray, France

Filed Mar. 30, 1976, Ser. No. 671,969
Claims priority, application France, Apr. 16, 1975, 75 12720; Mar. 25, 1976, 76 08634
Int. Cl.[2] A47J *37/07*
U.S. Cl. 126—30 5 Claims

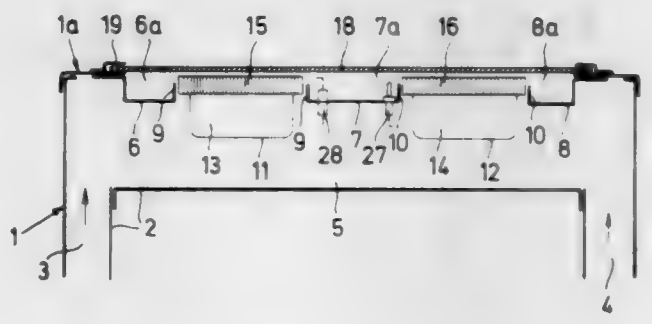


4. A barbecue comprising a stand member having a generally upright bar, a grill member having a cross bar, and a two-way adjustable slide-coupling means for coupling said grill member to said stand member and also for positioning said grill member with respect to said stand member in two component directions, said adjustable slide-coupling means including a first pair of retaining jaws adapted to cooperate with said stand member and a second pair of retaining jaws cooperating with said grill member, each of said pairs of retaining jaws corresponding to one of said component directions, said first pair of retaining jaws being opened at one end whereby the grill member can be easily removed.

4,083,355
GAS RANGE

Bernd Schwank, Cologne, Germany, assignor to Schwank GmbH, Cologne, Germany

Filed Aug. 25, 1975, Ser. No. 607,664
Claims priority, application Germany, Aug. 24, 1974, 2440701
Int. Cl.[2] F24C *3/04*
U.S. Cl. 126—39 J 24 Claims



1. A gas range, comprising an upper glass-ceramic plate; at least one burner below said glass-ceramic plate and including a perforated ceramic element spaced from said plate by substan-

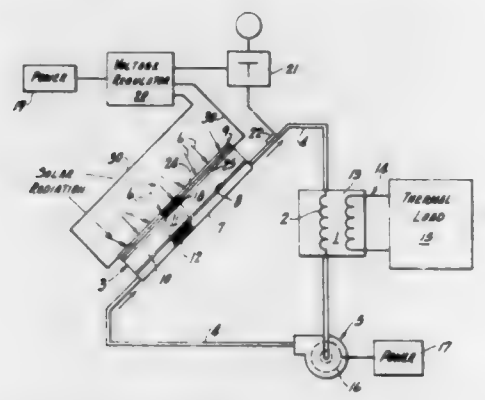
tially 10–15 mm; thermal sensor means for sensing the temperature of said plate; gas supply means for said burner including control means for periodically activating and deactivating said gas supply means in dependence upon the temperature of said plate sensed by said thermal sensor means; and adjusting means for adjusting the temperature of said plate to a plurality of different temperature levels.

4,083,356

SOLAR ENERGY APPARATUS

Ramamoorthy Rajagopal, Brown Deer, Wis., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Aug. 19, 1976, Ser. No. 715,679
Int. Cl.² F24J 3/02; G02B 5/23
U.S. Cl. 126—270 **14 Claims**



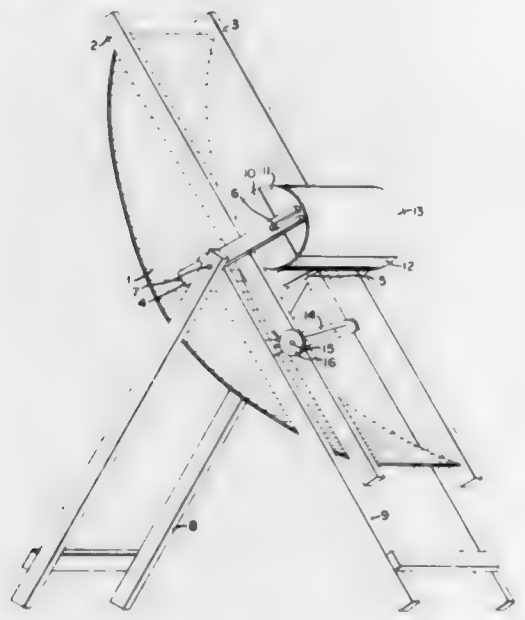
1. A solar energy collector apparatus comprising an energy absorbing means for absorbing solar energy, and a controllable energy transmittance material overlying the absorbing mean, and control means connected to said transmittance material for controlling the energy transmittance level of said transmittance material for varying the transmission of energy to said absorbing means.

4,083,357

SOLAR COOKER

Lawrence Fischer, 302 Center St., Redwood City, Calif. 94061

Filed Aug. 19, 1976, Ser. No. 715,905
Int. Cl.² F24J 3/02
U.S. Cl. 126—270 **5 Claims**



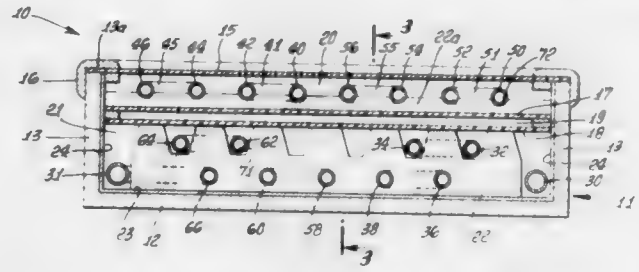
1. A solar cooker consisting of a parabolic reflector trough having ends supported by longitudinal supports, perpendicular supports connected to the center of the longitudinal supports, said perpendicular supports having folding leg assemblies, an aiming device and a cylindrical oven assembly attached thereto.

4,083,358

SOLAR REFLECTOR COLLECTOR

William J. Scott, 2013 Heather Dr., Monterey Park, Calif. 91754

Filed May 10, 1976, Ser. No. 684,496
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **12 Claims**



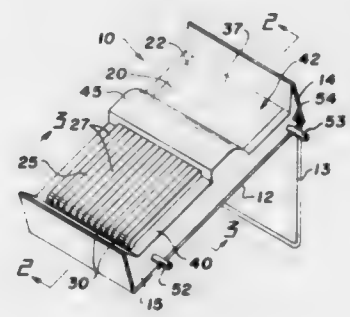
1. In a solar reflector-collector, the combination comprising
(a) a receptacle,
(b) a first translucent panel in the receptacle to pass solar radiation into the receptacle interior
(c) auxiliary translucent panel means extending within the receptacle to form first and second chambers at opposite sides of the auxiliary panel means and within the receptacle,
(d) heat reflecting material in the receptacle facing said panels, and
(e) fluid passing heat absorbing tubing stretches in said chambers and spaced from the panels to receive solar radiation transmitted through said panels and to receive radiation reflected from said material, the tubing stretches in said first and second chambers being in fluid communication with each other, the tubing stretches extending in such close relation as to radiate heat between themselves while passing radiation therebetween for impingement on and reflection from said reflecting material, said heat reflecting material located at the bottom of the first chamber and at the sides of the first and second chambers, said stretches extending in layers generally parallel to said reflecting material at the bottom of the first chamber.

4,083,359

SOLAR HEATER UNITS

Frederick A. Smith, 807-1246 Haro St., Vancouver, British Columbia, Canada (V6E 1E7)

Filed Jul. 15, 1976, Ser. No. 705,531
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **20 Claims**



1. A solar heater unit for liquids, comprising a shallow tank having a relatively large surface in longitudinal and transverse directions to face in the direction of the sun when the heater unit is in operative position, said tank when in the operative position having a lower end positioned below the level of an upper end thereof, tube means of thin cross section outside and overlying the tank and extending over said large surface to form a heating section for said unit, said tube means extending transversely over substantially the full width of said tank surface and having one end communicating directly with the interior of the tank near the lower end thereof, and an opposite

end communicating directly with the interior of the tank spaced above said lower end, said one end and said opposite end of the tube means communicating with the tank interior across substantially the full width of the tank, whereby rapid thermosiphon circulation is maintained as liquid in the unit is heated by the sun when in the tube means and flows from said opposite end of the tube means into the tank, down through said tank and through said one end back into the tube means.

4,083,360

DEVICE FOR COLLECTING SOLAR ENERGY

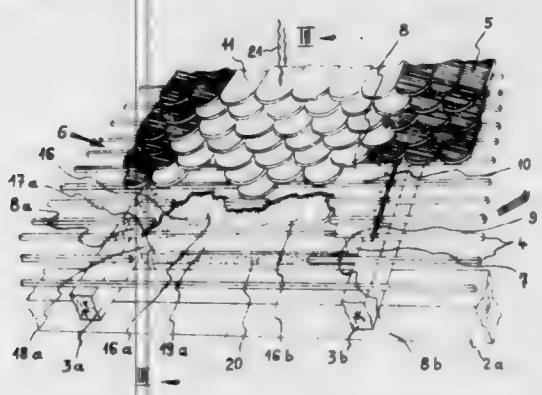
Jean-Claude F. Courvoisier, and Jean-Luc CH. Meylan, both of Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge-Geneva, Switzerland

Filed Feb. 26, 1976, Ser. No. 661,827

Claims priority, application Switzerland, Feb. 28, 1975, 2559/75

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **11 Claims**



1. A solar-energy collector adapted to be mounted in and to form part of a building structure, comprising:

a solar-energy absorbing plate;

conduit means running along said plate for passing a heat-carrying fluid in heat-exchanging relationship with said plate, said plate having a face turned toward the sun;

an array of formations projecting outwardly from said face of said plate turned toward the sun;

a multiplicity of flat hollow elements; and

means on each said element to hook onto said formations so that said elements cover said plate on the side thereof turned toward the sun while lying in side-by-side relation to one another, said elements having surfaces defining with said plate respective cells limiting the circulation of air in the region of said plate and confining heat by the greenhouse effect, said elements being transparent to solar radiation.

4,083,361

KITCHEN VENTILATOR HAVING A VALVE FOR ADJUSTMENT BETWEEN EVACUATION AND RECIRCULATION

Nils Randolf Bergmark, and Thord Ingvar Eugen Westermark, both of Byske, Sweden, assignors to Futurumverken AB, Byske, Sweden

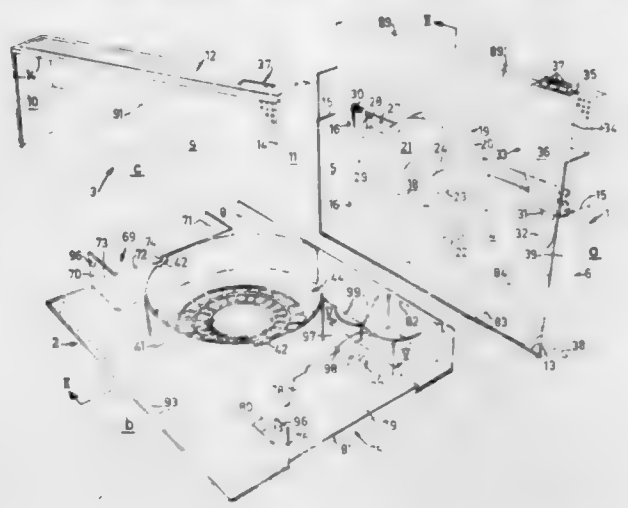
Filed Oct. 29, 1976, Ser. No. 737,193

Claims priority, application Sweden, Nov. 5, 1975, 7512388

Int. Cl.[2] F24C *15/08;* **F23J** *11/00*

U.S. Cl. 126—299 D **7 Claims**

1. A kitchen ventilator comprising a housing having a bottom plate, said housing being intended especially to be mounted above a kitchen stove, a fan for intake of air through an air intake opening in the housing, a first air duct leading from the fan to a first outlet opening which can be connected to an evacuation duct leading from the room in which the kitchen ventilator is mounted, a second air duct provided with an odor removing filter, said second air duct leading from the fan to a second outlet opening communicating with the room, a valve for leading air forced from the fan to the first and/or second air duct, said valve being situated immediately adjacent the bottom plate of the housing and including a pivotable flap which is pivotable about an axis essentially perpendicular to said bottom plate, said first and second air ducts having lower restrictions, at least next to said valve, formed by said bottom



plate, and an operating member for operating the valve said operating member being directly and unmovably connected to the valve and being accessible from below the housing through an opening in the bottom plate.

4,083,362

KITCHEN VENTILATOR HAVING A DOWNWARDLY DIRECTED AIR CURTAIN

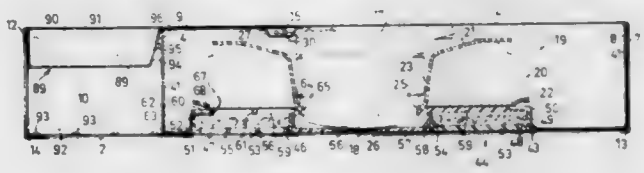
Nils Randolf Bergmark, and Thord Ingvar Eugen Westermark, both of Byske, Sweden, assignors to Futurumverken AB, Byske, Sweden

Filed Oct. 29, 1976, Ser. No. 737,194

Claims priority, application Sweden, Nov. 5, 1975, 7512386

Int. Cl.[2] F24C *15/08;* **F23J** *11/00*

U.S. Cl. 126—299 D **5 Claims**



1. A kitchen ventilator comprising: a housing intended especially to be mounted above a kitchen stove, said housing having an air intake opening therein; a fan for drawing in air through the air intake opening; a first air duct leading air from the fan to a first outlet opening for discharging air from the room in which the kitchen ventilator is mounted; a second air duct leading air from the fan to a second outlet opening which is in communication with the room, said second air duct having an odor removing filter; and valve means for leading air from the fan selectively to the first or second air ducts, said housing having at least one downwardly directed third outlet opening for producing a downwardly flowing air curtain, said third outlet opening communicating with a portion of the second duct between the valve means and the odor removing filter.

4,083,363

BLOOD VISCOSITY DETERMINATION DEVICE

Van B. Philpot, Jr., P.O. Box 312, Houston, Miss. 38851

Continuation-in-part of Ser. No. 579,871, May 22, 1975, Pat. No. 3,999,538. This application Apr. 23, 1976, Ser. No. 679,647

Int. Cl.[2] A61B *5/02*

U.S. Cl. 128—2 G **10 Claims**

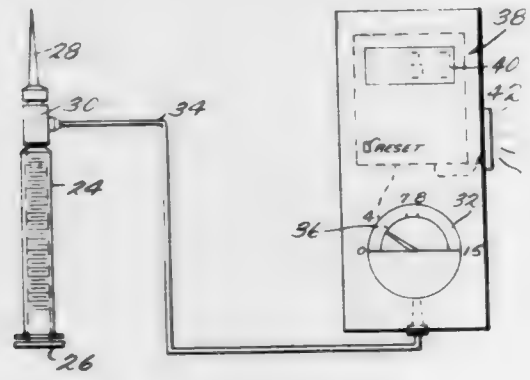
1. Diagnostic apparatus for determining in vivo the whole blood viscosity of blood in the vein of a subject animal while the venous blood pressure in at least a portion of said vein is

maintained substantially constant, said diagnostic apparatus comprising:

a hollow needle having a pointed end for in vivo communication with said whole blood through puncture of said portion of said vein,

blood withdrawing means including means for collecting the blood withdrawn from said vein through said hollow needle and for quantitatively measuring the volume of said withdrawn and collected blood, said blood withdrawing means communicated to said hollow needle at an end distal from said pointed end and adapted to establish a negative pressure thereat with respect to said venous pressure thereby drawing said in vivo blood through the hollow needle;

a negative pressure measuring means communicated to said distal end of the hollow needle for indicating the negative



pressure in the region thereof as the blood is being withdrawn through said hollow needle;

said blood withdrawing means also including means for controlling said negative pressure in accordance with said negative pressure measuring means so as to establish a predetermined substantially constant fluid pressure drop across the hollow needle;

timing means for measuring elapsed time from a starting signal; and

automatic actuation means connected to automatically provide said starting time signal to said timing means when said negative pressure reaches a predetermined preset magnitude;

whereby the in vivo blood viscosity is directly proportional to the time required to withdraw a predetermined quantity of blood and inversely proportional to the volume of blood withdrawn during a predetermined time interval.

4,083,364

HEAD MOUNTED ANIMAL INFORMATION MEANS

L. Thomas Kelly, 603 W. 200 14th St., Carson, Calif. 90745; Robert R. Beachler, Jr., 89 Buckskin La., Rolling Hills Estates, Calif. 90274, and Tor H. Petterson, 31248 Palos Verdes West, Palos Verdes Peninsula, Calif. 90274

Continuation-in-part of Ser. No. 580,488, May 23, 1975, abandoned. This application Apr. 1, 1976, Ser. No. 672,669

Int. Cl.[2] A61B *5/02, 10/00;* **G01K** *1/02*

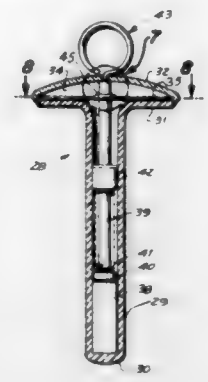
U.S. Cl. 128—2 H **12 Claims**

1. An animal information means adapted for insertion into a cavity cut through the skin and into the subcutaneous fascia of a live animal comprising:

a. a temperature actuated warning assembly including a fever temperature sensing means, and a fever temperature signalling means;

b. means for retaining the sensing means in said cavity while exposing the signalling means for view;

c. the temperature signalling means including an area forming a highly visible surface, a protective transparent element overlying the visible surface, a flexible opaque material interposed between the visible surface and transparent element, and means responsive to the temperature sensing means to remove the opaque material from the highly



visible surface thereby to expose said surface to view through said transparent element.

4,083,365

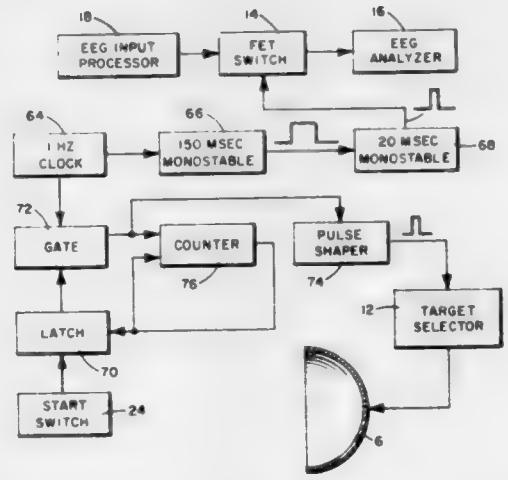
DUAL INTEGRATOR EEG ANALYZER

Don Robert Yancey, Tsukasa Hts. 202, Seki-Machi 2-873, Nerima-ku, Tokyo 177, Japan

Filed Jun. 10, 1976, Ser. No. 694,582

Int. Cl.[2] A61B *5/04*

U.S. Cl. 128—2.1 B **8 Claims**



1. A device for analyzing the EEG signal of a subject in response to periodic stimuli; the improved means for analyzing the EEG signal comprising:

(A) a timer and switch means for passing the EEG signal only during at least one time interval of preset duration beginning a predetermined time after each of a plurality of periodic stimuli, thereby obtaining a gated EEG signal,

(B) rectifier means for dividing the gated EEG signal into positive-going signals and negative-going signals,

(C) first integrator means for integrating the positive-going signals,

(D) second integrator means for integrating the negative-going signals, and

(E) means for algebraically combining output signals from the first and second integrator means for measuring the degree of response of the subject to the periodic stimuli.

4,083,366

HEART BEAT RATE MONITOR

Peter P. Gombrich, 416 N. Westwood Dr., Golden Valley, Minn. 55422 and Michael L. Harvey, Ewa Beach, Hi., assignors to Gombirch, Peter R., Golden Valley, Minn.

Filed Jun. 16, 1976, Ser. No. 696,497

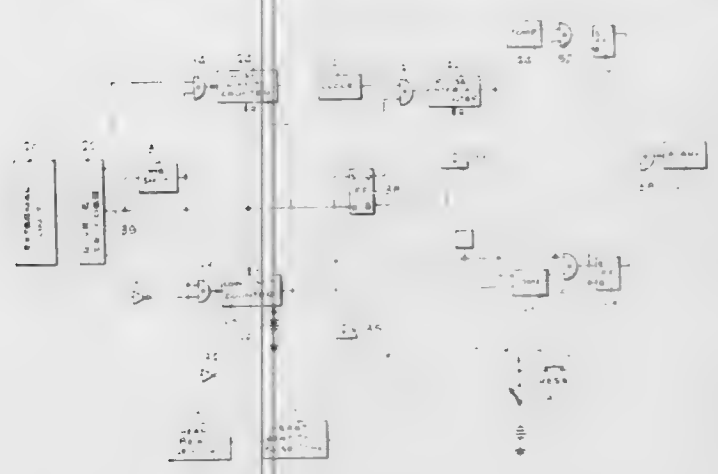
Int. Cl.[2] A61B *5/02*

U.S. Cl. 128—2.05 T **31 Claims**

1. A system for monitoring heart beats of a subject, comprising:

a heart beat monitor including heart beat sensing means for

sensing the subject heart beat and for providing pulses corresponding thereto, first means including receiver means for receiving signals transmitted to said monitor from a source external thereto, said signals including signals defining at least a selected upper limit of heart beat rate, and memory means for storing said upper rate limit defining signals, received by said received means, circuit means responsive to said pulses for comparing their rate with said rate upper limit, stored in said memory means,



and for providing an indication to said subject when the rate of said pulses exceeds the rate upper limit, and a power source means for powering at least said circuit means; and

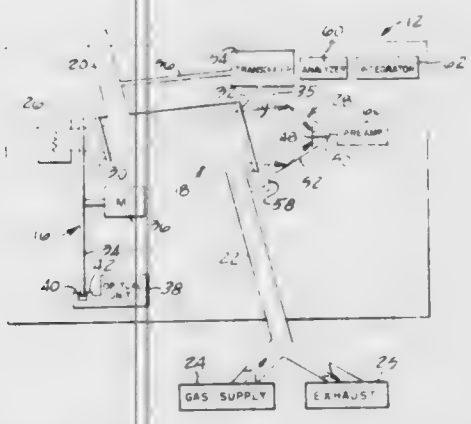
means external to said monitor for transmitting signals to said receiver means in said monitor, said signals including signals defining at least said selected rate upper limit, said external means including controllable variable means for controlling the rate upper limit defined by said signals.

4,083,367

METHOD AND APPARATUS FOR PULMONARY FUNCTION ANALYSIS

Peer M. Portner, Berkeley, and David H. LaForge, Kensington, both of Calif., assignors to Andros Incorporated, Berkeley, Calif.

Filed Jul. 28, 1976, Ser. No. 709,428
Int. Cl.[2] A61B *5/08*
U.S. Cl. 128—2.07 **20 Claims**



1. A method for non-invasively and continuously monitoring the three different pulmonary functions of alveolar volume, pulmonary diffusing capacity and pulmonary blood flow, comprising the steps of

providing a known volume of a gas including known concentrations of first, second and third selected gases for inhalation by a subject,

selecting the first gas as an inert gas having a measurable infrared absorption band,

selecting the second gas to also have a measurable infrared absorption band and a relatively high affinity for hemoglobin with a measurable rate of absorption or diffusion through alveolar capillary walls in order to monitor the function of pulmonary diffusing capacity,

selecting the third gas to also have a measurable infrared absorption band, the third gas also being selected to readily diffuse through alveolar capillary surfaces or walls of the lungs while having a measurable degree of solubility in blood in order to monitor the pulmonary function of capillary blood flow,

causing the subject to inhale said first, second and third gases,

thereafter passing expiration gases from the subject through a sample cell,

simultaneously detecting the concentrations of said first, second and third gases in said sample cell by directing infrared radiation through said sample cell and detecting the amount of absorption due to each of said first, second and third gases, and

measuring the volume of gas exhaled by the subject in order to determine alveolar volume by means of the detected first gas concentration while simultaneously monitoring the pulmonary functions of diffusing capacity and capillary blood flow by means of the detected second and third gas concentrations.

4,083,368

INHALER

Winthrop J. Freezer, 1141 Folsom Street, Paris, France (94103)

Filed Sep. 1, 1976, Ser. No. 719,546
Int. Cl.[2] A61M *15/08*
U.S. Cl. 128—198 **9 Claims**



1. A nasal inhaler having two (paired) spaced apart inhalant dispensing cylindrical passageways comprising: a base, said base having a surface with two (paired) apertures defined through said surface into at least one concavity in said base, said concavity for receiving inhalant compounds; two (paired) nasal cylinders, each said cylinder terminating at one end in a substantially spherical end and open at the opposite end to the concavity, said nasal cylinders each provided at said opposite end with means for attachment to said base overlying one of said two (paired) apertures; each said nasal cylinder including first and second openings, one of said openings disposed substantially axially of said cylinder at said spherical end for dispensing inhalant vaporized air from within said inhalant receiving concavity, and a second opening in the cylinder sidewall for taking in air for inhalant vaporization; a cap, said cap defining a surface complimentary to the surface of said base to provide a substantially uninterrupted sealing interface about said cylinders; at least one aperture (paired apertures) for freely fitting over each of said inhalant dispensing cylinders extending through said surface and extending into at least one concavity defined within said cap for receiving the nasal cylinders whereby when said surface of said cap is confronted to the surface of said base, (top) said nasal cylinders are each sealed at both said openings within said cap; at least one gasket extending peripherally about each of said nasal cylinders overlying the surface of said base, said gasket confronted by the surface of said cap for sealing said nasal cylinders within said cap said gasket at a first portions captured between said nasal cylinders

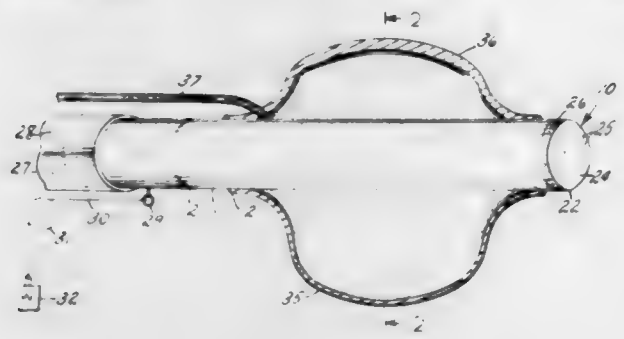
and said surface of said base, and said gasket at second and outer portions are captured between the surface of said base, and the surface of said cap when said cap at the surface of said cap confronts the surface of said base with said gaskets there between; and, means for confronting under compression at said surfaces said cap (top) to said base on said cap for positive sealing of inhalants within said inhaler.

4,083,369

SURGICAL INSTRUMENTS

Manfred Sinnreich, 160 Ft. Hill Rd., Scarsdale, N.Y. 10583

Filed Jul. 2, 1976, Ser. No. 702,191
Int. Cl.[2] A61M *1/00, 25/00, 29/02*
U.S. Cl. 128—276 **3 Claims**



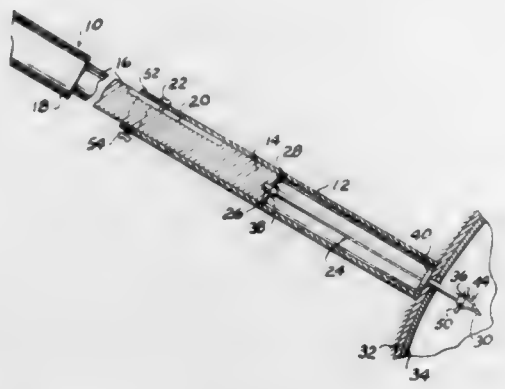
1. An improved surgical device comprising: a hollow circular cylindrical tube element having an outer surface extending between proximal and distal ends, and having an expandable element of generally circular cylindrical configuration having first and second end edges secured to said outer surface; said expandable element having surface areas of differential thickness which are oppositely disposed relative to the longitudinal axis of said tube element; whereby upon expansion, the axis of the tube element is displaced to a non-central relation relative to said inflatable element.

4,083,370

BLOAT RELIEF TUBE AND HOLDER

John D. Taylor, Rte. 3 Box 16, Perryton, Tex. 79070

Filed Nov. 3, 1976, Ser. No. 738,191
Int. Cl.[2] A61B *17/34*
U.S. Cl. 128—347 **2 Claims**



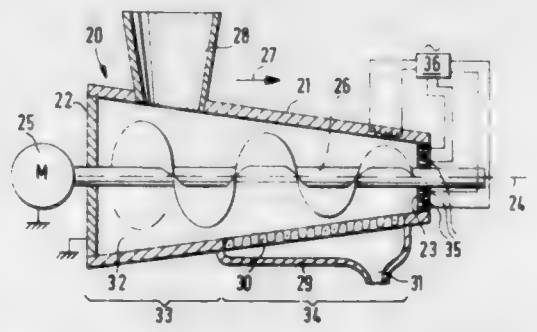
1. A bloat relief device, comprising:
an elongated open ended sleeve having a forward end portion and a rearward end portion;
an elongated plunger having one end axially slidably mounted for telescoping movement into the rearward end portion of said sleeve and having its other end projecting rearwardly of said sleeve,
said one end of said plunger having a socket therein; a cannula axially disposed within said sleeve forwardly of said plunger,
said cannula having a sharpened end portion to facilitate its entry through the skin and stomach wall of an animal and having its other end portion nested by the socket in said plunger;
a ferrule surrounding said cannula adjacent each of its respective ends;
a stop washer longitudinally slidably surrounding said cannula between said ferrules,
the periphery of said stop washer slidably contacting the inner wall surface of said sleeve; and,
a retainer ring surrounding said cannula between its sharpened end portion and the adjacent said ferrule,
said retainer ring having a plurality of flexible wing portions normally projecting laterally of the longitudinal axis of said cannula.

4,083,371

PROCESS FOR PRODUCTION OF ARTIFICIAL TOBACCO

Monique Beringer, Saint Louis, France, and Heinz Spörri, Egg, Zurich, Switzerland, assignors to Fabriques de Tabac Reunies S.A., Neuchatel, Switzerland

Filed Jul. 27, 1976, Ser. No. 709,250
Claims priority, application Luxembourg, Jul. 29, 1975, 73096
Int. Cl.[2] A24B *15/00*; A24D *1/18*; A24B *3/14*
U.S. Cl. 131—2 **9 Claims**



1. A process for the production of artificial tobacco which is free of natural tobacco, comprising the steps of intimately mixing finely divided plant parts with a liquid at a mixing station to form a homogeneous paste having a moisture content of 30–40% by weight; pressurizing and simultaneously conveying the paste past a liquid-permeable filter to reduce the moisture content to 15–25% by filtering out the surplus liquid; adding to the paste an effective amount of chemicals not later than upon completion of said conveying step; extruding the chemicals-containing pressurized paste through at least one nozzle to convert the paste into shaped artificial tobacco; and reducing the moisture content of shaped artificial tobacco to 6–18%.

4,083,372

CIGARETTE-SIMULATING INHALER

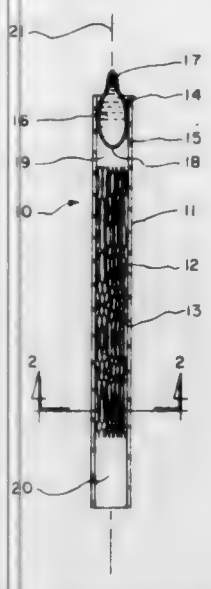
Robert Boden, 1580 Gaywood Dr., Altadena, Calif. 91001

Filed May 24, 1976, Ser. No. 689,481
Int. Cl.[2] A24D *1/00*; A61M *15/06*
U.S. Cl. 131—8 A **13 Claims**

1. A cigarette-simulating inhaler comprising:
a tubular sheath extending about an axis and having two open opposite ends, one of which is to be placed in the mouth of the user, said sheath having a resiliently flexible tubular side wall which is impermeable to air and liquid between said opposite ends of the sheath;
one wick longitudinally contained within and carried by said sheath and located in one end thereof, in which said wick is composed of individual fibers substantially running the entire length of the wick and parallel to the long axis thereof, said fibers being crimped at spaced locations to have short portions extending angularly with respect to the long axis, said fibers also being bonded to each other where the kinked portions are in contact, the resulting structure thus providing and maintaining a large number of small capillary passages through which a liquid can be drawn and subsequently absorbed into the fibers them-

selves so that the capillary passages are re-opened for free air flow therethrough; and

a soft puncturable liquid-containing capsule contained within and carried by said sheath and located in the other end thereof, the wick and capsule being separated from



each other and thus forming an air chamber between them wherein the inhaler is activated by puncturing the end of the capsule nearer the wick and then pinching the outer sheath at the location of the capsule in order to squirt the liquid into the air chamber prior to being absorbed by the wick.

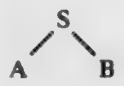
4,083,373

NOVEL TOBACCO PRODUCT COMPRISING ONE OR MORE SULFIDES AND PROCESS

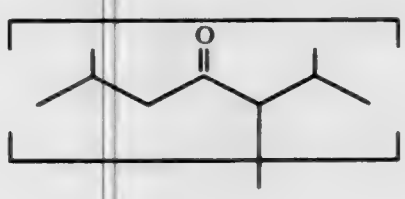
Joaquin F. Vinals, Red Bank, N.J.; Jacob Kiwala, Brooklyn, N.Y.; William J. Evers, Red Bank, and Howard H. Heinsohn, Jr., Hazlet, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 7, 1976, Ser. No. 730,535
Int. Cl.[2] A24B *3/12*
U.S. Cl. 131—17 R **10 Claims**

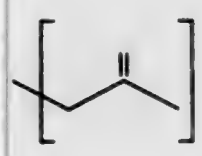
1. A smoking tobacco product having added thereto an amount sufficient to augment or enhance the flavor or aroma of the tobacco product of one or more sulfide compounds having the formula:



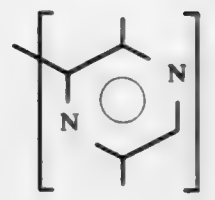
wherein, when A is:



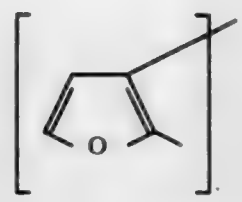
B is:



and when A is:



B is:

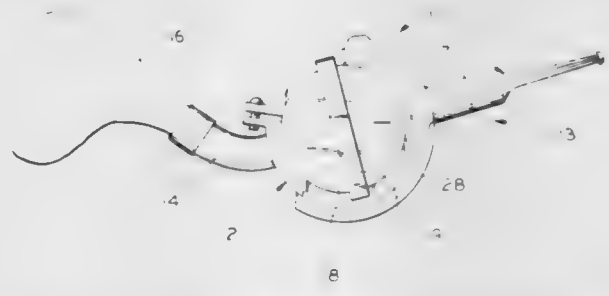


4,083,374

SMOKING DEVICE

Evan L. Jacobsen, 434 N. Austin, Apt. 2E, Oak Park, Ill. 60302

Filed Nov. 23, 1976, Ser. No. 744,316
Int. Cl.[2] A24F *3/00, 1/02*
U.S. Cl. 131—178 **13 Claims**



1. An improved smoking device enabling the smoker to fill a container with smoke and use the smoke in the container to satisfy the smoker's habit,

said device including a main body section,

means for receiving smoking material in said main body section,

stem means extending from said main body section to provide the smoker access to the main body section for smoking purposes,

tube means for coupling said smoke container to said main body section, and

selecting means in said main body for selectively connecting said stem to either said smoking material, said smoke container through said smoking material, or said smoke container without going through said smoking material, whereby said smoker can light said smoking material, blow smoke from said lit and smoldering smoking material into said smoke container and inhale and exhale smoke from said smoke container, respectively.

4,083,375

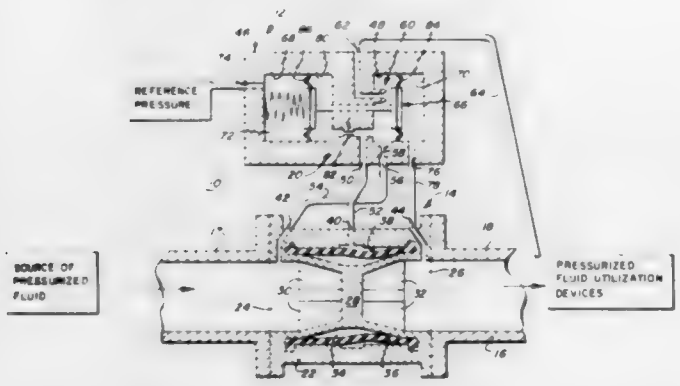
PILOT REGULATOR

Dwight N. Johnson, 24656 Shadowfax, El Toro, Calif. 92630

Filed Feb. 18, 1976, Ser. No. 659,146
Int. Cl.[2] F16K *31/365*
U.S. Cl. 137—86 **3 Claims**

1. A pilot regulator for servo-control of a control pressure signal operated main valve in a fluid system, said pilot regulator comprising a housing including first and second end members and a body member sandwiched between said end members, a partition within said housing defining first and second chambers between said partition and said first and second end members, respectively, a pair of diaphragms each clamped between said partition and one said end member, means interconnecting said diaphragms for simultaneous movement, means defined between each said diaphragm and said end

members for applying opposed forces to the outwardly facing sides of said diaphragms, delay and control chambers defined in opposite ends of said body member between each of said diaphragms and said partition and exposed to the inwardly facing sides of said diaphragms, passage means within said body and in said partition providing restricted flow between



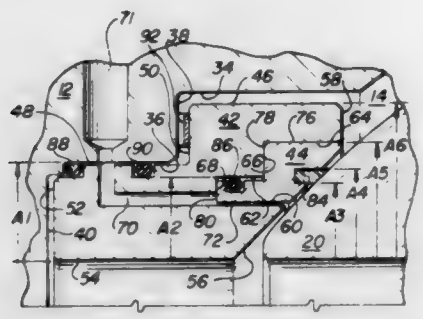
said delay and control chambers, and a pilot valve in said housing operable in response to diaphragm movement for intercommunicating said control chamber and the exterior of said housing, said pilot valve comprising a valve seat defined in said partition, and a valve element defined on the inwardly facing side of said diaphragm defining said control chamber.

4,083,376

TWO PIECE DOUBLE ACTING VALVE SEAT ASSEMBLY

Ruben G. Alaniz, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 14, 1976, Ser. No. 732,250
Int. Cl.[2] F16K 5/22
U.S. Cl. 137—246.22 **7 Claims**



1. In a valve having a valve body with a valve chamber therein, upstream and downstream flow passageways formed in said valve body and being in fluid communication with said valve chamber, a valve member mounted in the valve chamber for movement between open and closed positions to control the flow of fluid through the valve, seat recesses formed in said valve body on the upstream and downstream sides of the valve member and a seat assembly mounted within each seat recess, said seat assemblies each comprising:

(a) an annularly shaped metallic outer seat member extending into an outer peripheral wall portion of said seat recess, and a metallic inner seat member mounted with an inner side portion of said outer seat member for movement in longitudinal alignment with said flow passageways and having a non-metallic face seal on an inner side thereof engagable with said valve member,

(b) a peripheral seal between an outer peripheral portion of said outer seat member and an outer peripheral portion of said seat recess,

(c) an inner seat member seal on an outer peripheral portion of said inner seat member sealingly engaged with said outer member,

(d) said outer seat member peripheral seal having a diameter greater than the diameter of said inner seat member seal and said face seal having a diameter between that of said outer seat peripheral seal and said inner seat member seal, such that when fluid pressure in an associated flow passageway is greater than fluid pressure in said valve chamber then said outer seal member and said inner seat member will be urged toward said valve member, and in a reverse condition when fluid pressure in said valve chamber is greater than fluid pressure in said associated flow passageway then said outer seat member is urged away from said valve member and said inner seat member is urged toward said valve member, and

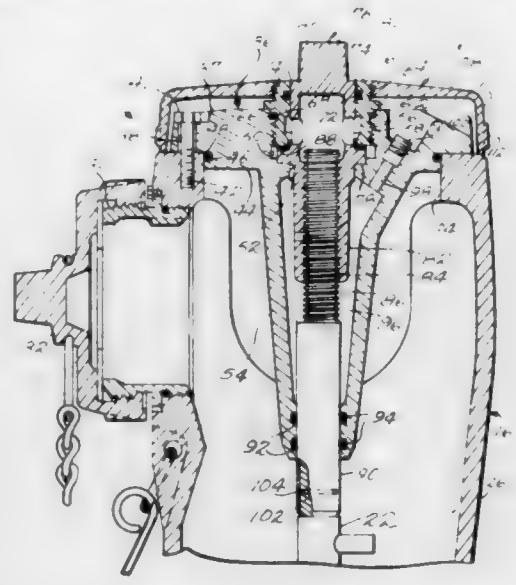
(e) an auxiliary passageway including a first passageway portion through said valve body to said seat recess at a location adjacent an outer peripheral portion of said outer seat member and a second passageway portion through said outer seat member from said outer peripheral portion to an inner peripheral portion of said inner seat member, said auxiliary passageway in use communicating a seat sealant fluid through said first and second passageway portions to said inner peripheral portion of said inner seat member such that the seat sealant fluid can flow around the inner periphery of said inner seat member to said valve member for sealing between said valve member and both of said seat members.

4,083,377

FIRE HYDRANT WITH IMPROVED WEATHER CAP AND BONNET ARRANGEMENT

Lawrence F. Luckenbill, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Filed Oct. 19, 1976, Ser. No. 733,853
Int. Cl.[2] F16K 27/12
U.S. Cl. 137—296 **14 Claims**



1. A fire hydrant comprising:

a barrel member having an open upper end;

valve means positioned in the lower portion of said barrel member;

a reciprocating valve stem extending from said valve means upwardly within said barrel member;

means operatively engaged between said stem and said barrel member for restraining said stem from rotation while permitting reciprocating movement of the same;

an apertured top closure member detachably secured to the upper end of said barrel member, said closure member having an aperture therethrough with an inwardly extending shoulder therein and including a generally flat plate portion having a diameter great enough to fit on the upper end of said barrel member, a downwardly extending annular portion fitting into the upper end of said barrel member, and a downwardly extending tubular portion for receiving the upper end of said valve stem;

bolt means arcuately spaced about said top closure member detachably securing said top closure member to the upper end of said barrel;

a rotatable operating nut member projecting out of said apertured top closure member and having an exterior flange thereon operatively abutting the shoulder in the aperture of said top closure member;

cooperating thread means on said operating nut member and the upper end of said valve stem whereby said nut member can be rotated to raise and lower said valve stem;

a tubular hold-down nut threadedly received in said apertured top closure member and operatively abutting the exterior flange of said operating nut, said hold-down nut extending out of said top closure member and being exteriorly threaded;

a lubricant reservoir defined between said operating nut and said tubular portion of said top closure member, said flat plate portion having a passage therethrough extending from the exterior to the lubricant reservoir, said passage having a removable plug therein; and,

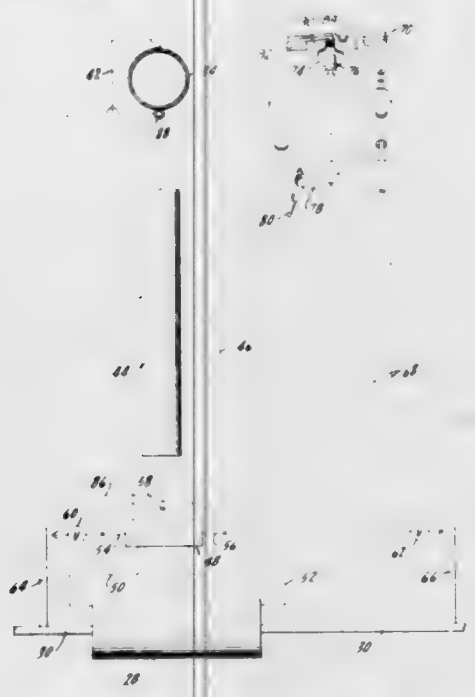
an inverted dish-shaped weather cap having a threaded aperture therethrough, said dish-shaped weather cap having a diameter substantially equal to an outside diameter of the upper end of said barrel member and said weather cap being threaded on to said hold-down nut and protecting said bolt means and said removable plug while giving a flat modern appearance to the hydrant.

4,083,378

WATER DRIVE SYSTEM FOR A MOBILE AGRICULTURAL IRRIGATION UNIT

Richard H. Stearns, Amarillo, Tex., assignor to Lindsay Manufacturing Company, Lindsay, Nebr.

Filed Apr. 19, 1976, Ser. No. 678,189
Int. Cl.[2] B05B *3/00*
U.S. Cl. 137—344 **12 Claims**



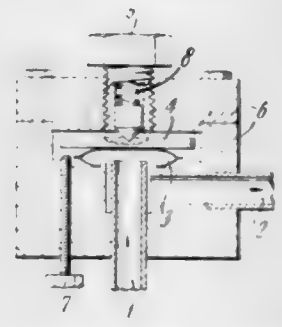
1. In a water drive for an irrigation system, an elongated main water pipe supported at intervals on self-propelled wheeled towers and extending outwardly from a center pivot, a power cylinder on each tower adapted to reciprocate and constructed to rotate the wheels, a supply line connected between the main water pipe and the power cylinder so that the pressure of the water in the main pipe will operate the cylinder, a pilot-operated cycling valve in the supply line to alternately supply water to at least one end of the power cylinder, pilot lines connected to each end of the cycling valve to alternately unbalance the cycling valve so that it will reciprocate, and an alignment valve in one of the pilot lines responsive to the alignment of the system so that the power cylinder will be inoperative when the system is in a certain alignment and will be operative when a tower is out of the certain alignment to bring it back to the certain alignment.

4,083,379

PRESSURE MEDIUM REGULATING DEVICE

Rudolf Aus der Au, Kehrsatz, and Rudolf Schürch, Chur, both of Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

Filed Jan. 15, 1976, Ser. No. 636,788
Claims priority, application Switzerland, Feb. 26, 1975, 2425/75
Int. Cl.[2] G05D *16/08*
U.S. Cl. 137—495 **10 Claims**



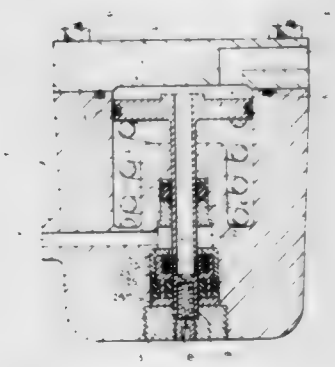
1. Regulating device for controlling the flow of a pressure medium to a load, comprising an inlet passage, an outlet passage, an inflatable flexible cell interconnecting said inlet and outlet passages, the said cell providing the sole enlarged or restricted connection between said passages, said outlet passage adapted to be connected to said load whereby said inflatable cell restricts the flow of said pressure medium in response to a decrease in pressure occurring between said outlet passage and said load and increases said flow in response to an increase in said pressure, and means for controlling the volume of said inflatable cell and thus the cross-section of the interconnection between said inlet and outlet passages.

4,083,380

FLUID VALVE ASSEMBLY

William C. Huber, League City, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 27, 1976, Ser. No. 690,816
Int. Cl.[2] F16K *31/12*
U.S. Cl. 137—505.25 **2 Claims**



1. A fluid regulating valve comprising:

a valve body having an inlet and outlet and a flow passage for fluid flow therethrough;

a tubular stem mounted in said body for reciprocal movement between first and second positions;

barrier means comprising the walls of said tubular stem wherein said walls are of sintered metal throughout a longitudinal section of the tubular stem and constitute a porous portion thereof with the remainder of said tubular member being non-porous;

piston regulating means connected to said stem for moving said stem between said first and second positions in response to pressures within said valve body

wherein said sintered porous portion is in said flow passage and fluid communication is established between said inlet

and outlet and through said sintered porous portion and the interior of said tubular stem when said stem is in said first position and fluid communication is blocked when said stem is in said second position with the non-porous portion of said tubular member interposed in said flow path,

said regulating means comprising an annular piston element connected to said tubular stem, and

spring means mounted in said valve body for exerting a force against said piston element to bias said tubular stem towards said first position, said piston element being responsive to said spring means and the fluid pressure at said outlet for moving said stem between said first and second positions,

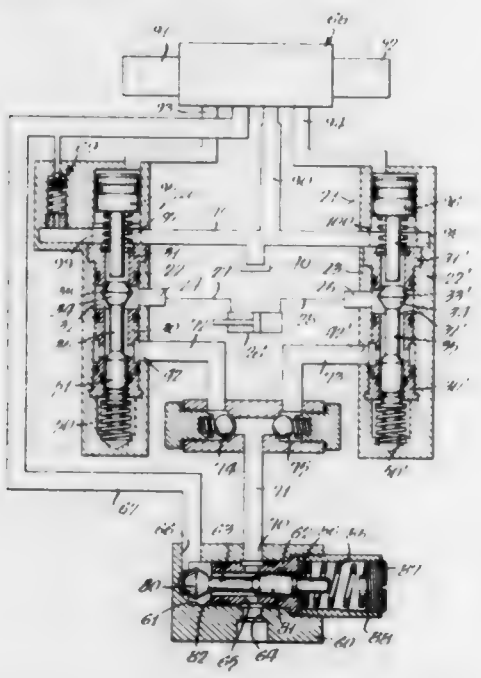
a sealing assembly comprising at least one annular sealing element disposed within said valve body in sealing engagement with the exterior of said tubular member, said annular sealing element comprising an inner cylindrical surface of greater longitudinal axial dimension than said sintered porous portion and sealingly engaging the non-porous portion of said tubular member at adjacent ends of said porous portion when said tubular stem is in said second position, said annular sealing element preventing fluid communication between said inlet and outlet when said tubular member is in said second position and said sintered porous portion is sealingly blocked from said flow passage by said sealing element but permitting said fluid communication when said tubular element is in said first position and said sintered porous portion is disposed in said flow passage whereby a balanced pressure gradient exists across said sintered porous portion when there is fluid flow and substantially balanced forces act on said valve within a wide range of inlet and outlet pressures.

4,083,381

CONTROL VALVE

Samuel B. McClocklin; James C. Solie, and Jan H. Boers, all of Owatonna, Minn., assignors to Owatonna Tool Company, Owatonna, Minn.

Filed Dec. 29, 1975, Ser. No. 644,530
Int. Cl.[2] F15B *13/043*
U.S. Cl. 137—596.15 **6 Claims**



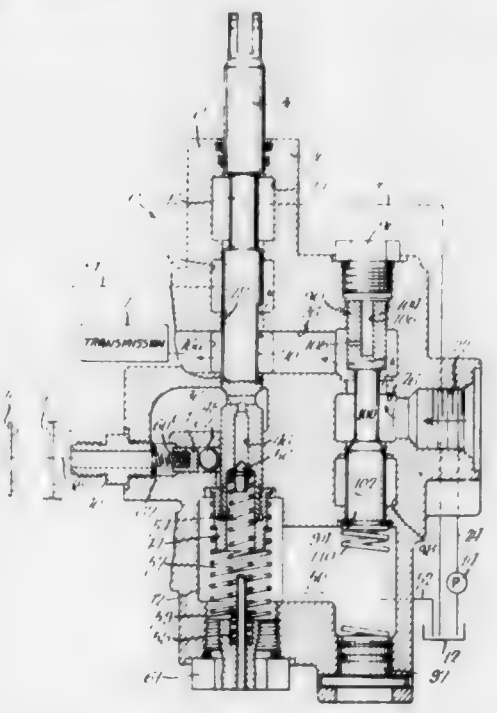
1. A pilot-operated 4-way valve for controlling flow relative to a pair of control ports to provide a neutral hold position as well as advance and return operations including: a pair of 3-way valves each having an inlet port, one of said control ports, a port to reservoir, a bore and a valve spool movable therein, a pair of spaced-apart valve seats positioned one between said control port and reservoir port and the other between said control port and the inlet port with said one valve seat having a larger diameter than the other, and each of said valve spools having a poppet valve member engageable with one or the other of said last-mentioned seats and when said last-mentioned poppet valve member is closed against said other valve seat a section of said bore is open to the inlet port but blocked from the control port, and a land on said valve spool in said bore section subject to pressure in said bore section to provide a balance of fluid pressure forces whereby when the poppet valve member is closed against said other valve seat the closure is maintained regardless of the pressure in said bore section; a pressure-reducing valve for establishing a relative low pressure pilot fluid flow and after pilot operation permitting free flow therethrough and having a fluid supply port and first and second outlet ports with said first outlet port delivering pilot fluid, a valve spool with a poppet valve member for closing against a seat for blocking flow between said supply port and said first outlet port, a land on said last-mentioned valve spool providing for balance of said valve spool when said poppet valve member is closed, and a spring acting on said valve spool in a direction to maintain the last-mentioned poppet valve member away from said last-mentioned seat; a passage connected to said second outlet port of the pressure-reducing valve and with two branches thereof connected one to each of the inlet ports of the 3-way valves for delivery of fluid to the inlet ports of said 3-way valves; a pair of check valves positioned one in each of said branch passages and blocking return fluid flow from the 3-way valves to the pressure-reducing valve when the inlet port and a control port of the 3-way valves are in communication to establish the neutral hold position; and a pilot control for said pair of 3-way valves including, a pair of pilot pistons associated one with each 3-way valve, a pilot control valve having an inlet connected to the first outlet port of the pressure-reducing valve, an outlet port to reservoir and a pair of outlet ports flow connected one to each of said pilot pistons whereby actuation of a pilot piston shifts the associated 3-way valve spool to a position closed against said other valve seat to block said control port from the inlet port and with said balance of forces permitting the relative low pilot pressure acting on the pilot piston to hold said valve closed regardless of the pressure in said passage.

4,083,382

REGULATING VALVE WITH HYDRAULIC DETENT

Ramkishan Khatti, and Donald K. Johnson, both of Racine, Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 3, 1976, Ser. No. 692,294
Int. Cl. F17d *3/00*
U.S. Cl. 137—596.12 **11 Claims**



1. A control valve for controlling flow between a pump, reservoir, power take-off clutch and power take-off brake

comprising a valve housing having a valve bore therein with one end of said bore connected to said reservoir, an inlet passage communicating with said bore and connected to said pump, a brake passage communicating with said bore on one side of said inlet passage and connected to said brake, a clutch passage communicating with said valve bore on an opposite side of said inlet passage and connected to said clutch, a dentent passage in direct communication with said clutch passage and said bore, a detent element in said detent passage, a valve spool slidable in said bore and biased to a first position interconnecting said inlet passage with said brake passage, opening means in said valve spool connecting said clutch passage with said reservoir when said valve spool is in said first position, groove means on the periphery of said valve spool, said groove means being aligned with said detent passage when said valve spool is in a second position, said inlet passage being connected to said clutch passage in said second position while said brake passage is connected to said reservoir and flow from said clutch passage to said reservoir is prevented so that said clutch passage is pressurized and said detent element is held in engagement with said groove means by the pressure of fluid in said clutch passage.

4,083,383

FAUCET ASSEMBLY

Frank Antoniello, Levittown, N.Y., assignor to T & S Brass and Bronze Works, Inc., Westbury, N.Y.

Filed Aug. 26, 1976, Ser. No. 717,573

Int. Cl.[2] F16K *3/02*

U.S. Cl. 137—616.7 **7 Claims**



1. A faucet assembly comprising; a spigot having a passageway therethrough, one end of the spigot being open for exit of fluid and the other end adapted to be rotatably mounted to one end of a stationary fitting, the other end of the fitting adapted to be removably connected to a fluid source, the fitting having a passageway therethrough, a valve means operable upon rotation of the spigot a predetermined degree relative to the fitting to open and close a flow path for flow of fluid between the fitting and spigot and consequently between a source of fluid and the open exit end of the spigot, sealing means on the fitting and spigot to prevent leakage of fluid in the open and closed positions of the valve means to thereby restrict fluid flow to the passageways through the assembly, the spigot including an upright base portion with a laterally extending spigot arm extending from the upper end portion of the base and terminating in the exit opening of the spigot, the fitting having an upwardly extending neck adapted to receive a portion of the base of the spigot therein, releasable connecting means to couple the base of the spigot to the fitting, the undersurface of the base of the spigot having an opening for the passageway therethrough and forming a mating surface with a corresponding surface on the fitting with an opening therein for the passageway through the fitting, the spigot base being rotatable with respect to the fitting so that the undersurface of the base slides over the mating surface of the fitting to bring the openings through the fitting and the spigot into and out of alignment to open and close the flow path through the faucet assembly, at least one sealing ring on the base of the spigot for sealing engagement with the inner surface of the neck of the fitting to provide sealing interengagement therebetween, a bearing member mounted in the passageway of the fitting and having a passageway therethrough, the bearing member having an upper surface aligned with the surface of the fitting mating with the undersurface of the spigot base, at least one sealing ring in the upper surface of the bearing member to seal against the undersurface of the spigot base and maintain the sealing relationship as the spigot base is rotated with respect to the fitting and the bearing member mounted therein, at least one sealing ring positioned along the side walls of the bearing member for sealing engagement with the adjacent side walls of the passageway through the fitting in which the bearing member is mounted to provide a sealing engagement therebetween, the passageway through the bearing member communicating with the passageway through the fitting and adapted to communicate with the passageway through the spigot when the spigot is rotated relative to the fitting into the open position.

4,083,384

METHOD AND APPARATUS FOR INJECTING FOAM INTO A PIPELINE, INCLUDING AN INFLATABLE PLUG

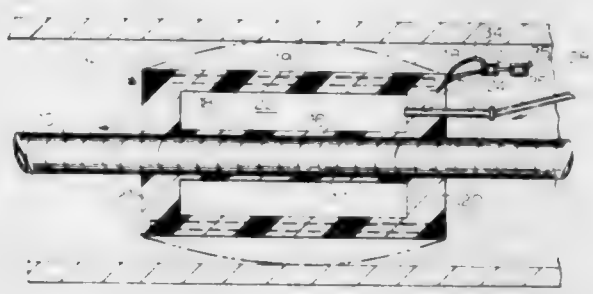
Frederick F. Horne, Carmel Valley, and Gerald G. VanderLans, Lodi, both of Calif., assignors to Airrigation Engineering Company, Inc., Carmel Valley, Calif.

Division of Ser. No. 664,049, Mar. 4, 1976, Pat. No. 4,025,320.

This application Jan. 10, 1977, Ser. No. 757,836

Int. Cl.[2] F16L *55/12*

U.S. Cl. 138—93 **5 Claims**



1. A unitary molded rubber plug for use in injecting foam into a pipe via a foam-conducting flexible tube, comprising:

a flexible-walled, constant-diameter, smooth-surfaced, imperforate through-conduit for passage of said tube therethrough,

a flexible imperforate cylindrical outer wall surrounding and spaced from said through-conduit by a chamber, and

a pair of stiff, thick annular end walls integral with said outer wall and with said through-conduit and thicker and stiffer than said outer wall and through-conduit, so that no additional members are required to retain them against expansion when said plug is inflated for use, said end walls defining the ends of said chamber and joining said outer wall to said through-conduit, one said end wall having air inlet means for said chamber,

said plug being normally slidable relative to a said tube when said plug is inflated sufficiently to engage immovably against a said pipe, so that said tube can extend through and beyond said plug to a desired location and can be moved relatively to said plug,

said through-conduit holding a said tube snugly when said plug is further inflated, said outer wall then engaging and sealing against said pipe.

4,083,385

COUPLING FOR SECURING A HEDDLE FRAME TO A DRIVE LIFTER

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 20, 1976, Ser. No. 752,091

Claims priority, application Switzerland, Dec. 24, 1975, 16769/75; Feb. 4, 1976, 1352/76

Int. Cl.[2] D03C *13/00*

U.S. Cl. 139—59 **6 Claims**

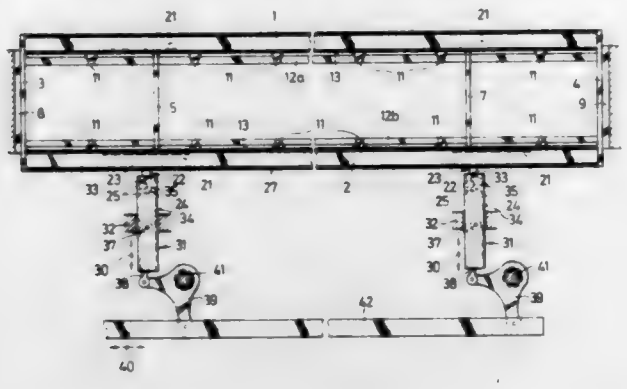
1. A combination comprising

a heddle frame including a transverse beam of predetermined cross-sectional width;

a shedding mechanism for reciprocating said frame, said

mechanism having at least one vertically reciprocally mounted drive lifter, said lifter having a pair of parallel walls and a transverse wall therebetween defining an opening in said lifter; and

a coupling releasably securing said frame to said lifter, said coupling including a pair of coupling parts disposed in mutual engagement, one of said parts being secured to said beam and the other of said parts being secured within said opening of said lifter to said parallel walls and being



spaced from said transverse wall a predetermined distance to define a passage, said one coupling part having a driving element extending from said beam into said opening of said lifter between said parallel walls and a ridge-like retaining part extending transversely of said driving element and secured to said beam in parallel relation, said driving element being of a transverse width less than said predetermined distance of said passage between said other coupling part and said transverse wall and being of a thickness less than said width of said beam.

4,083,386

MANUFACTURE OF PRIMARY CELLS

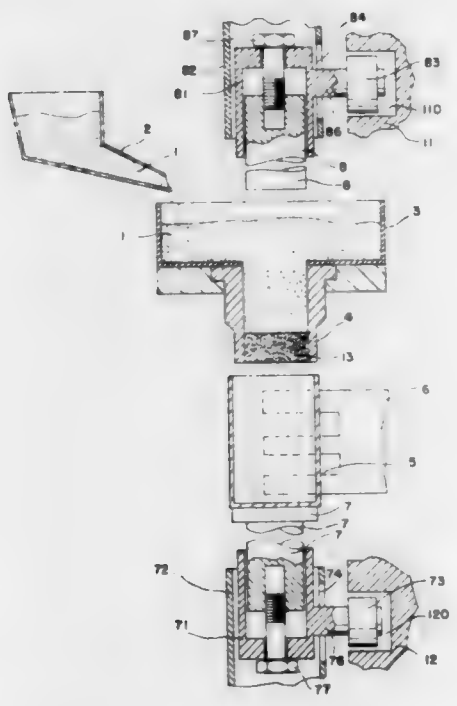
Alois Fränzl, Ellwangen, Jagst, Germany, assignor to Varta Batterie Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 470,863, May 17, 1974, Pat. No. 3,958,612. This application Oct. 23, 1975, Ser. No. 625,198

Claims priority, application Germany, May 24, 1973, 2326460; Nov. 18, 1974, 2454542

Int. Cl.[2] B65B *1/04*

U.S. Cl. 141—12 **31 Claims**



1. In the method of producing galvanic cells having cell cups which contain a predetermined quantity of depolarizer mass compressed to within narrow tolerances of density and conforming to electrochemical conditions, which method includes engaging a cell cup with a nozzle, and utilizing a ram to press the depolarizer mass through the nozzle into the cup, the improvement which comprises:

performing a stroke of the ram through the nozzle to introduce into the cup a first dose of depolarizer mass which is less than the predetermined quantity, and pressing that first dose into the bottom of the cup,

performing at least one subsequent stroke of a ram into the nozzle, each subsequent stroke introducing into the cup and additional dose of the depolarizer mass, which is also less than the predetermined quantity, and pressing that additional dose into the cup,

continuing the subsequent strokes of a ram and pressing of the mass until the first such stroke which presses a dose that more than fills the cup and extends back into the nozzle, and

then separating the cup from the nozzle.

4,083,387

MEANS CONTROLLING THE DELIVERY OF OIL TO A STORAGE TANK

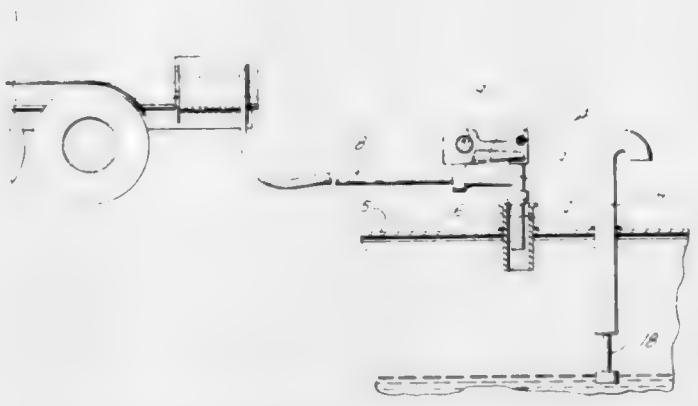
Albert Stieber, 1449 Franklin Drive, Chomedey, Quebec, and Werner Ferch, 305 Eugene Street, Fabreville, Quebec, both of Canada

Filed Sep. 7, 1976, Ser. No. 720,733

Claims priority, application Canada, Jul. 5, 1976, 256445

Int. Cl.[2] B65B *3/36*

U.S. Cl. 141—95 **4 Claims**



1. A fluid delivery apparatus for maximum filling of a tank from a supply vehicle, the tank having a vent pipe with a whistle device therein which ceases to whistle when the fluid in the tank reaches a preset level, the apparatus comprising:

a fluid feed pipe from said supply vehicle,

a delivery spout on the end of said feed pipe for insertion into the tank,

a trigger shut off valve on the end of said feed pipe,

an operating means for closing said shut off valve,

a microphone located on the end of said feed pipe connected to an amplifier means said amplifier means connected to said operating means and adapted to produce a signal representing the whistle from said tank and prevent said operating means from closing said shut off valve while said amplifier produces said signal,

and a time delay means operatively coupled to said operating means so as to prevent said operating means from closing said shut off valve for a predetermined time after the signal from the amplifier means terminates.

4,083,388

FILL METERING SYSTEM

Joseph Tüns, Dachsen, Switzerland, assignor to S I G Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Dec. 22, 1976, Ser. No. 753,425
Claims priority, application Switzerland, Dec. 23, 1975, 16753/75
Int. Cl.[2] B65B *43/58*
U.S. Cl. 141—172 6 Claims



1. In a fill metering system for filling a succession of containers with dry, particulate material and including a material supply unit composed of a metering device for delivering a measured quantity of material to each container, and a shut-off member for selectively blocking flow of material between filling operations, a plurality of containers being moved in turn under the shut-off member to receive a respective measured quantity of material, the improvement wherein: said material supply unit further comprises a downwardly tapering material discharge member presenting a material outlet opening having a central axis inclined to the vertical; said shut-off member is mounted for selectively closing said outlet opening; and said system further comprises means for lifting a container located under said discharge member to a level at which said discharge member projects into the container with said outlet opening inclined to the container sides, and control means operatively associated with said means for lifting and said shut-off member for opening said shut-off member only when a container to be filled has been placed under said discharge member and has been lifted to such level.

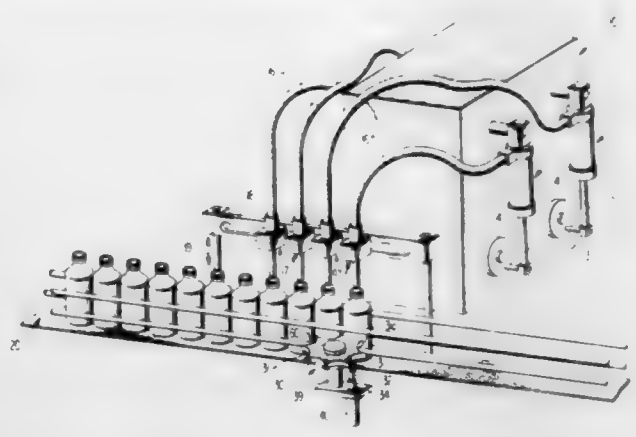
4,083,389

STAR-WHEEL INDEXING SYSTEM FOR AUTOMATIC FILLING MACHINES

Sidney Rosen, 4119-27 Fordleigh Rd., Baltimore, Md. 21215, and Richard Nelson Bennett, Arbutus, Md., assignors to Sidney Rosen and National Instrument Company, both of Baltimore, Md.

Filed Jul. 26, 1976, Ser. No. 708,635
Int. Cl.[2] B65B *43/56*
U.S. Cl. 141—179 21 Claims

1. An indexing system for indexing containers on a conveyor, characterized by a freely rotatable, container-driven star-wheel means driven directly by successive containers engaging said star-wheel means while moved along on said conveyor, means for inhibiting the free rotation of the star-wheel means with the star-wheel means in a predetrmined position including at least one pin-like member provided directly on said star-wheel means and projecting therefrom generally in the axial direction and stop means with a stop member normally projecting into the path of said pin-like member, and control means operatively connected with said stop means and operable to momentarily disengage the stop member from said pin-like member so as to release free rotation of the freely rotatable star-wheel means driven by the containers until the stop member again stops the star-wheel means by



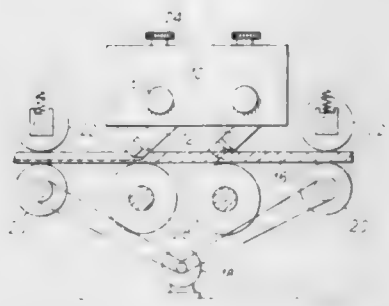
engaging with the next pin-like member projecting into its path.

4,083,390

GROOVING OF SHEET MATERIAL

Robert Edward Ingham, Knaresborough, England, assignor to R.E. Ingham & Co., Limited, England

Continuation-in-part of Ser. No. 469,951, May 15, 1974, abandoned. This application Nov. 24, 1975, Ser. No. 634,372
Int. Cl.[2] B27C *5/00*
U.S. Cl. 144—136 R 10 Claims



1. In a groove cutting machine of the type having
groove cutter means for cutting a groove in a workpiece
means for holding the cutter means,
3. support means for supporting a workpiece against the cutter means during the cutting of a groove in the workpiece by the cutter means, and,
4. drive means for causing relative motion between the workpiece and the cutter means to effect the cutting of a groove in the workpiece by the cutter means,

the improvement for cutting a groove in one face of the workpiece whereby a constant thickness of material remains between the bottom of the groove and the other face of the workpiece wherein

i. the cutter means comprises at least one cutter whose cutting edged are located in a common plane, the shape of those cutting edges in that common plane defining the cross-section of the groove to be cut

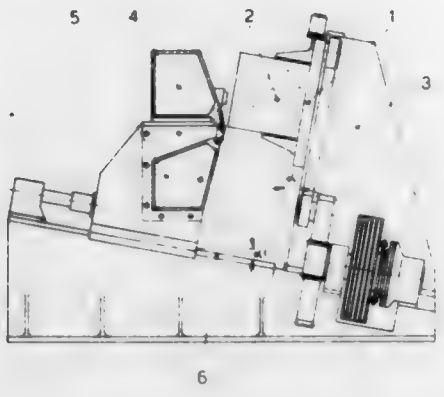
ii. the means for holding the cutter keeps the common plane of those cutting edges in a substantially constant angular position relative to the workpiece the common plane being inclined fowardly in the direction of movement of the cutter relative to the workpiece and that common plane extends upwardly from the bottom of the groove made by the cutting edges.

4,083,391

WOOD SHEARING MACHINE FOR THE PRODUCTION OF VENEERS, HAVING THE WOOD-SUPPORTING TABLE INCLINED TO THE VERTICAL

Angelo Cremona, V.le Lombardia, 275, Monza, Italy (20052)

Filed May 17, 1976, Ser. No. 686,661
Claims priority, application Italy, May 28, 1975, 23803 A/75
Int. Cl.[2] B27C *1/00*; B27L *5/06*
U.S. Cl. 144—178 **1 Claim**



1. A wood shearing machine for cutting a wood stock into thin wood sheets for use as wood veneers comprising a base frame, a slideway mounted on said frame, a table for supporting a wood stock slidably mounted on said slideway whereby said table and wood stock supported thereon can be reciprocated during a cutting operation, said slideway and woodstock being disposed at an acute angle with respect to the vertical, a track mounted on said frame, a bar carrying unit and blade holding unit slidably mounted on said track for movement toward and away from the supported wood stock for feeding said bar carrying unit and blade holding unit toward and away from said wood stock, said bar carrying unit and blade holding unit being immovable during a cutting operation, said track and bar carrying unit and blade holding unit being disposed at an acute angle with respect to the horizontal, said acute angle of said slideway and wood stock relative to the vertical plane of reciprocation being equal to the acute angle of said blade holding unit relative to said horizontal axis so that the angle of inclination between the wood stock and the blade holding unit is substantially 90°, and said cutting of the wood stock being effected by moving the wood stock in a plane parallel to the inclination of said table relative to the vertical plane of reciprocation and relative to a stationary blade holding unit inclined at said acute angle relative to a horizontal axis whereby the inclination of said table provides for maximum resistance against torque forces acting on said wood stock during a cutting operation to provide for accurate and uniform veneer sheets and whereby the cut veneer sheet can be readily and safely extracted from the stationary blade holding unit, and said acute angle of inclination of said table relative to the vertical plane of reciprocation and the acute angle of inclination of said bar carrying unit and blade holding unit relative to said horizontal axis range between 10° to 30° and being beyond the vertical in a direction away from said track and bar carrying unit and blade holding unit.

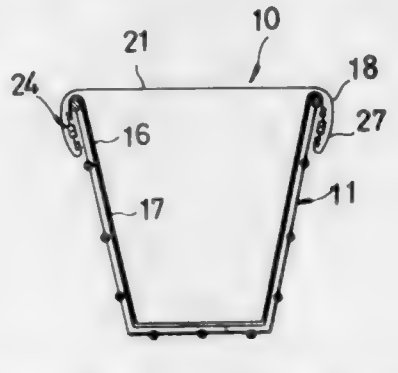
4,083,392

COMBINED BASKET AND BAG CONSTRUCTION

Yoshimatsu Kobayashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 20, 1976, Ser. No. 716,091
Claims priority, application Japan, Sep. 2, 1975, 50-121615[U]
Int. Cl.[2] B65D *11/14*
U.S. Cl. 150—51 **2 Claims**

1. A combined basket and bag construction comprising:
a. a basket of generally rectangular configuration having an open top and being in the form of a latticework consisting of spaced horizontal and vertical stake elements;
b. a bag including a hollow body made of a flexible material and having base and cover portions split along the periphery of said bag body to define a peripheral opening therebetween, and an elongated connecting portion extending along a minor portion of the periphery of said bag body and connecting said base and cover portions at their limited portions to interrupt said peripheral opening, said bag body being fitted internally of said basket, said connecting portion serving as an axis of fold about which said cover portion can be folded outwardly, the upper portion of said bag projecting outwardly of said basket, and said peripheral opening being located in said upper portion;
c. a sliding clasp fastener having a pair of stringer tapes carrying along their inner longitudinal edges rows of interengageable fastener elements, and a slider movable along said fastener elements to close and open said sliding



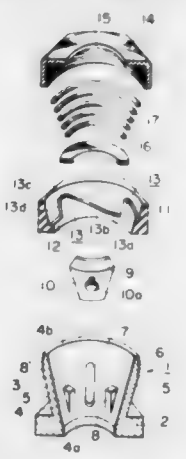
clasp fastener, said stringer tapes being secured to the marginal edges along the complete length of said peripheral opening;
d. means removably attaching said bag to said basket, said means comprising two pairs of vertical straps provided one pair on each side of said bag body, each of said straps having one end fixedly secured to said bag body and the outer end detachably secured to said bag body, and each of said straps extending across and over at least one of said horizontal stake elements, and;
e. said upper portion being foldable outwardly upon said basket along and over the peripheral edge thereof with said sliding clasp fastener being covered and concealed from view by said upper portion.

4,083,393

NUT

Hirosi Okada, Seto, Japan, assignor to Mitsuchi Corporation, Nagoya, Japan

Filed Apr. 29, 1977, Ser. No. 792,411
Claims priority, application Japan, Jul. 16, 1976, 51-85537
Int. Cl.[2] F16B *39/36*
U.S. Cl. 151—19 A **14 Claims**



1. A nut comprising
a nut body having a polygonal base part on an outer surface thereof and being formed with an inner surface defining a tapered hole widening upwardly and narrowing downwardly, said base part having an upper surface and a bearing end face,
a plurality of individual nut segments disposed in said tapered hole of said nut body, said nut segments being

mounted slidably upwardly and downwardly, respectively, on said inner surface of said tapered hole,

guide pins extending from said nut segments, respectively,

spring means for continuously biasing said nut segments downwardly toward a narrower side of said tapered hole,

an operation ring rotatably mounted on said upper surface of said base part of said nut body, said operation ring including cam sections, each of the latter comprising a lower flat surface, an upper flat surface and an inclined surface connecting said upper flat surface with said lower flat surface, said lower and upper flat surfaces extending substantially parallel to the bearing end face of said base part, said cam sections engage said guide pins of said individual nut segments, respectively, to control said nut segments, whereby said nut segments are slidable upwardly on said inner surface of said tapered hole by rotation of said operation ring as well as by lifting of said nut segments and said guide pins therewith off said cam sections, respectively.

4,083,394

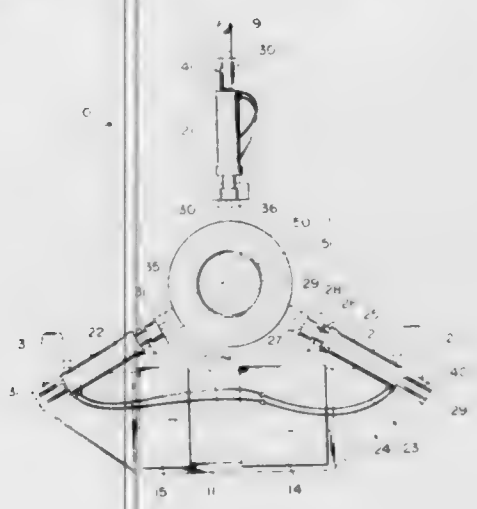
PORTABLE AUTOMOBILE RIM CRUSHER

Leo L. Heikkinen; Kenneth D. Danielson, and Charlie L. Lundborg, all of Prentice, Wis., assignors to LaFont Corporation, Prentice, Wis.

Continuation-in-part of Ser. No. 661,714, Feb. 26, 1976, abandoned. This application Dec. 8, 1976, Ser. No. 748,664

Int. Cl.[2] B60C *25/12;* B30B *7/04*

U.S. Cl. 157—1.21 **7 Claims**



1. An apparatus for removing a tire casing from a tire rim comprising:

a frame for supporting a tire casing and a tire rim;

a first power actuated member mounted on said frame, said power actuated member having a wedge-shaped elongated means for deforming said tire rim through said tire casing;

a second power actuated member mounted on said frame, said power actuated member having a wedge-shaped elongated means for deforming said tire rim through said tire casing;

a third power actuated member mounted on said frame, said third power actuated member having a wedge-shaped elongated means for deforming said tire rim through said tire casing;

said first power actuated member, said second power actuated member and said third power actuated member coacting so that said wedge-shaped elongated means for deforming said tire rim on each of said power actuated members converge toward a central point to deform said tire rim located in a central position between said first power actuated member, said second power actuated member and said third power actuated member and thereby allow said tire casing to be removed from said rim.

4,083,395

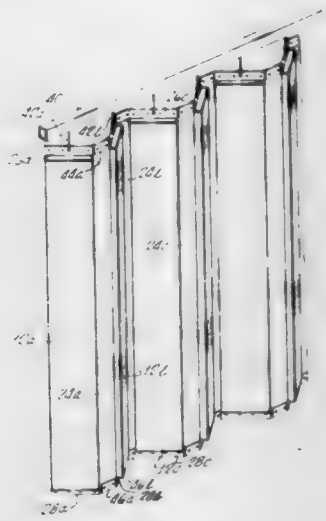
ACOUSTIC DRAPE

Paul L. Romano, 2902 Quincy Ave., Orange, Calif. 92667

Filed Aug. 20, 1976, Ser. No. 716,082

Int. Cl.[2] A47H *1/00*

U.S. Cl. 160—84 R **2 Claims**



1. An optically transparent acoustic drape comprising

a flexible, optically transparent acoustic barrier sheet of non self-supporting material that does not maintain any preselected configuration, and means for providing sound absorption, physical integrity and structural support for said sheet, said means comprising,

a plurality of absorber sleeves directly secured to said barrier sheet in mutually spaced relation to define optically transparent drape hinge sections therebetween, said sleeves being formed of an acoustically transparent protective material, and

a plurality of semi-rigid self-supporting panels of acoustic absorber material, each being snugly but movably confined within a respective one of said sleeves, whereby said sleeves permit relative motion of said panels and said barrier sheet but allow said panels to support said barrier sheet.

4,083,396

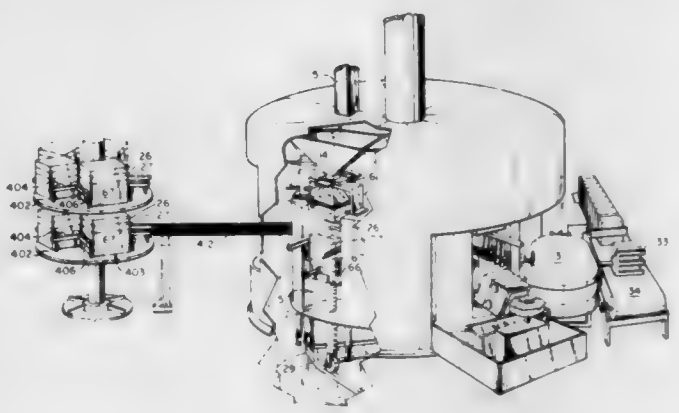
ROTARY TYPE CORE-MAKING MACHINE

Anatol Michelson, Sarasota, Fla., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 5, 1977, Ser. No. 784,939

Int. Cl.[2] B22C *11/04, 15/24*

U.S. Cl. 164—158 **11 Claims**



1. Apparatus for making foundry molds and cores from a plurality of molds each separable into at least a bottom part and a top part comprising;

(a) a carrier continuously rotatable about a central vertical axis;

(b) a plurality of first means mounted in said carrier, each attachable to a bottom part of one of said molds and adapted to raise and lower said bottom part;

(c) a plurality of second means mounted in said rotary carrier, each attachable to a top part of one of said molds and adapted to reciprocate in a radial direction, normal to the vertical direction of movement of said means for raising and lowering;

(d) a first circular cam track positioned essentially in a horizontal plane around and normal to the central axis of said rotatable carrier having a varied horizontal radius, and adapted to be slidably engaged by each of said plurality of second means;

(e) third means for receiving measured amounts of a flowable granular refractory material;

(f) fourth means for conveying said flowable granular refractory material to each of said top parts of each of said molds;

(g) a gas distribution valve and manifold system attached to said plurality of second means, adapted to admit sequentially a curing gas or air to each of said top parts of said molds, and means to admit a compressed gas to said means for conveying flowable granular refractory material upon a predetermined schedule;

(h) a gas collection manifold system connected to each of said bottom mold parts and adapted to remove gas from each of said molds upon a predetermined schedule; and

(i) a circular cam track:

(1) positioned around the central vertical axis of said carrier;

(2) having a substantially constant radius normal to said central vertical axis but having a varied vertical height; and

(3) slidably engaging each of said first means for raising and lowering.

4,083,397

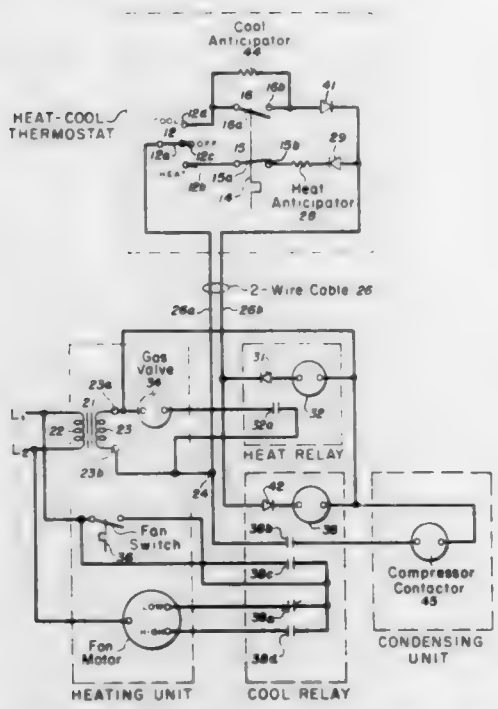
HEATING-COOLING CONTROL SYSTEM

Francis A. Kimpel, and Walter C. Moore, both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jul. 6, 1976, Ser. No. 702,789

Int. Cl.[2] H01H *37/52;* **F25B** *29/00*

U.S. Cl. 165—26 **1 Claim**



1. A heating-cooling control system for thermostatically controlling the operation of heating and cooling apparatus to regulate the temperature in a space to which treated air is supplied by that apparatus, comprising:

an adjustable heat-cool thermostat, located in the space to be temperature controlled, including a heat-off-cool selector switch having a movable contact and first and second fixed contacts, and first and second switches, positioned by a temperature-sensing device, coupled to said first and second fixed contacts, respectively,

the control system being established in a heating mode when said movable contact engages said first fixed contact and in a cooling mode when said movable contact engages said second fixed contact,

said first switch being closed by said temperature-sensing device when the ambient temperature in the space to be temperature controlled is below the desired set point temperature to which the thermostat is adjusted and said second switch being closed by said temperature-sensing device when the ambient temperature is above the desired set point temperature;

an AC power supply having a pair of output terminals across which an alternating voltage is produced;

a two-conductor cable;

means, including one conductor of said cable, for coupling said movable contact of said heat-off-cool selector switch to one of the output terminals of said AC power supply;

a first relay coil which, when energized, renders the heating apparatus operable;

a first series DC circuit, including said first switch, a first pair of similarly poled diodes, the other conductor of said cable and said first relay coil, coupled between said first fixed contact of said selector switch and the other output terminal of said AC power supply to facilitate energization of said first relay coil, in response to the half cycles of one polarity of the alternating voltage, when the control system is established in the heating mode and said first switch is closed by said temperature-sensing device;

a second relay coil which, when energized, renders the cooling aparatus operable;

and a second series DC circuit, including said second switch, a second pair of similarly poled diodes, said other conductor of said cable and said second relay coil, coupled between said second fixed contact of said selector switch and said other output terminal of said AC power supply to facilitate energization of said second relay coil, in response to the opposite polarity half cycles of the alternating voltage, when the control system is established in the cooling mode and said second switch is closed by said temperature-sensing device.

4,083,398

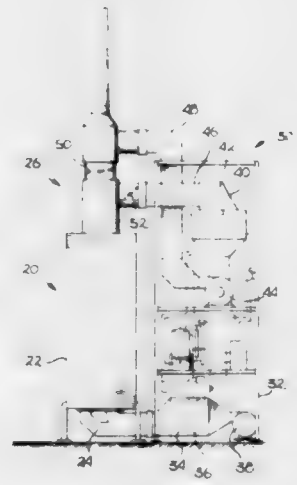
WASTE HEAT RECOVERY SYSTEM

John Joseph Fallon, Jr., Pasadena; Joe Bob Blair, Huntington Beach, and Donald Roy Phelps, Glendale, all of Calif., assignors to John F. Fallon, Jr. and Donald Ritt, both of Sun Valley, Calif.

Filed Dec. 18, 1975, Ser. No. 641,721

Int. Cl.[2] F28D *15/00;* **F24H** *3/12*

U.S. Cl. 165—66 **22 Claims**



1. An apparatus adapted for coupling to a furnace installation which comprises a burner, an inlet air plenum and a verti-

cally disposed exhaust stack, for recovering the heat energy in waste gases produced in said burner and escaping through said stack, and for delivering said recovered waste heat to inlet air flowing through said inlet air plenum, said apparatus comprising:

(a) a vertically disposed, self-supporting, frame structure;

(b) an exhaust gas duct for carrying exhaust gas therethrough, said exhaust gas duct being mounted to an upper portion of said frame structure and being mechanically coupled to and in communication with said stack;

(c) a first heat exchanger means having an inlet and an outlet for receiving and discharging a heat transfer fluid, said first exchanger means being disposed within said exhaust gas duct for absorbing heat from said exhaust gas flowing therethrough;

(d) an inlet air duct for carrying inlet air therethrough, said inlet air duct being mounted to a lower portion of said frame structure and being mechanically coupled to and in communication with said inlet air plenum;

(e) a second heat exchanger means having an inlet and an outlet for receiving and discharging said heat transfer fluid, said second exchanger means being disposed within said inlet air duct for heating the inlet air passing therethrough, the inlet of said second heat exchanger means being in communication with the outlet of said first heat exchanger means, and the outlet of said second heat exchanger means being in communication with the inlet of said first heat exchanger means through conduit means so as to define a flow circuit for said heat transfer fluid;

(f) a reservoir for maintaining a reserve of said heat transfer fluid, said reservoir being mounted on said frame structure and being in communication with said flow circuit; and

(g) pumping means for circulating said heat transfer fluid through said flow circuit, said pumping means being mounted on said frame structure and being in communication with said flow circuit,

whereby, said apparatus may be brought to the site of said furnace installation, disposed adjacent thereto and inter-coupled to said exhaust stack and said inlet air plenum without placing a load on said furnace installation.

4,083,399

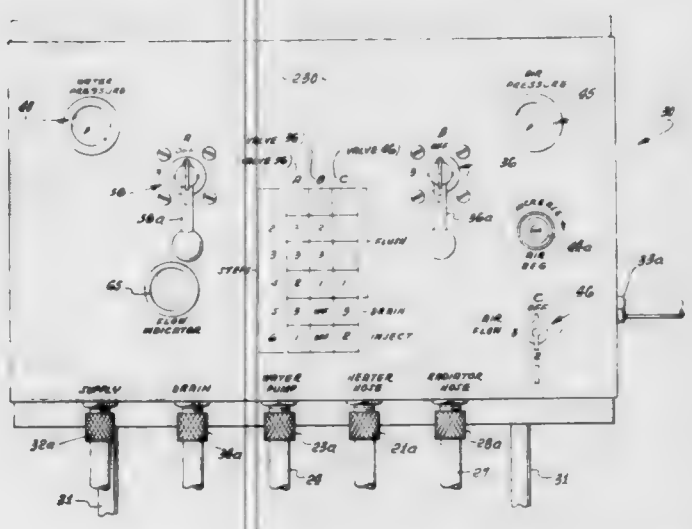
VALVING FOR ENGINE COOLING SYSTEM FLUSHING APPARATUS AND METHOD

John A. Babish, Glendora; Larry K. Arnot, Duarte, and Douglas C. Appel, Glendora, all of Calif., assignors to Wynn Oil Company, Fullerton, Calif.

Continuation-in-part of Ser. No. 741,065, Nov. 11, 1976, abandoned. This application Jul. 14, 1977, Ser. No. 815,495

Int. Cl.[2] F28G *9/00*

U.S. Cl. 165—95 **21 Claims**



1. For combination with an internal combustion engine cooling system that includes a liquid coolant heater, radiator and a liquid coolant pump, flushing apparatus comprising:

a. first means to produce a pressurized flow of flushing liquid and entrained gas bubbles,

b. a series of flow ports selectively connectible to different points in said system, utilizing appropriate adaptors, said ports including first, second and third ports,

c. control means operable to direct said flow from said first means and via said ports in four separate modes, identified as follows:

i. through the radiator in a reverse direction,

ii. through the engine coolant passages in a reverse direction,

iii. through the radiator in a forward direction

iv. through the engine coolant passages in a forward direction

d. said control means including a primary valve connected to receive said flow in the form of pressurized water and air bubbles, said valve having three outlets respectively connectible with said first, second and third ports,

e. said series of flow ports including a drain port, and said control means including a secondary valve having three inlets respectively connectible with said first, second and third ports, said secondary valve having a discharge port connectible with the drain port, and

f. the three outlets of the primary valve respectively directly communicating with the three inlets of the secondary valve via first, second and third ducts to which said first, second and third ports are respectively connectible.

4,083,400

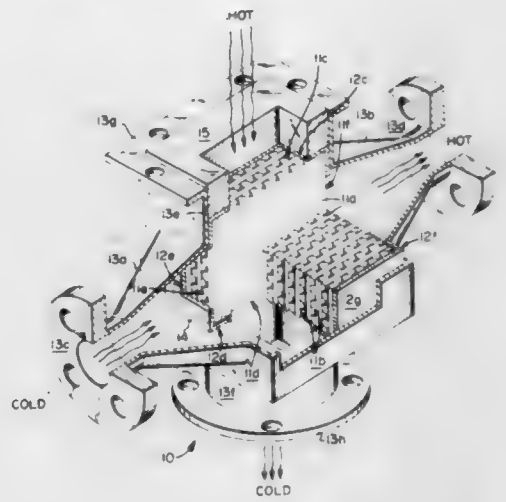
HEAT RECUPERATIVE APPARATUS INCORPORATING A CELLULAR CERAMIC CORE

Chester John Dziedzic, Dushore; Joseph Jerome Cleveland, Wysox, and Ray Lewis Newman, Towanda, all of Pa., assignors to GTE Sylvania, Incorporated, Stamford, Conn.

Filed May 13, 1976, Ser. No. 686,040

Int. Cl.[2] F28F *3/00*

U.S. Cl. 165—165 **11 Claims**



1. A heat recuperative apparatus comprising:

(a) a core of a cross-flow ceramic recuperator, having first and second pairs of opposing faces defining cell openings for the passage of first and second heat transfer fluids, respectively, in directions transverse to one another, the first fluid transferring heat to the second fluid during passage through the cells, whereby each pair of faces has in operation a hot face and a cold face, the hot face of the first pair being the inlet face for the first fluid, and the hot face of the second pair being the outlet face for the second fluid,

(b) a metallic housing surrounding the core, the housing defining openings communicating with the core cell openings, the housing openings adapted for coupling to external fluid conduits,

(c) means for thermally insulating the core from the housing

to promote transfer within the core between the fluids, and

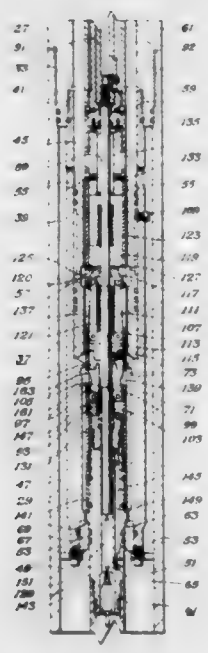
(d) means for maintaining a resilient seal between the insulating means and the housing to promote passage of the heat transfer fluids through the core cells.

4,083,401

APPARATUS AND METHODS FOR TESTING EARTH FORMATIONS

Emmitt Edward Rankin, Aberdeen, Scotland, assignor to Gearhart-Owen Industries, Inc., Fort Worth, Tex. and Petro-Data C.A., Caracas, Venezuela

Filed May 27, 1977, Ser. No. 800,904
Int. Cl.² E21B *47/00, 43/12*
U.S. Cl. 166—250 **13 Claims**



1. Apparatus for concurrent surface indication of an earth formation characteristic during a drill stem testing operation, comprising:

a. a bypass sub to be disposed in a wellbore above the formation to be tested and to be connected to conduit means for communicating fluids via said bypass sub from said formation to aboveground equipment; said bypass sub having a bore extending throughout its length, with said bore having a bypass portion adapted for removably receiving a wireline tool in sealing engagement with said bore, bypass passage means communicating with said bore via upper port means disposed above the region of said sealing engagement and lower port means disposed below the region of said sealing engagement; said bypass sub further including closure means for selectively opening and closing one of said port means;

b. releasable packer means for permitting fluid flow from the formation to be tested to said bypass sub but otherwise isolating formation fluid below said packer means from wellbore fluids above said packer means;

c. a wireline tool to be removably received by said bore bypass portion and including an earth formation characteristic sensor device; and

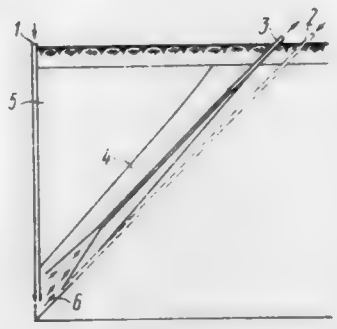
d. means for selectively actuating said closure means while said wireline tool is in place in said bypass sub.

4,083,402

METHOD OF UNDERGROUND GASIFICATION OF A COAL BED

Roza Ivanovna Antonova, Chongarsky bulvar, 10, korpus 1, kv. 41, and Efim Vulfovich Kreinin, ulitsa Chugunnye vorota, 21, korpus 3, kv. 69, both of Moscow, U.S.S.R.

Filed Feb. 17, 1976, Ser. No. 658,779
Claims priority, application U.S.S.R., Apr. 2, 1975, 2115205(I)
Int. Cl.² E21B *43/24*
U.S. Cl. 166—251 **1 Claim**



1. In an improved method of underground gasification of a coal bed, the improvement which comprises the steps of dewatering or drying in advance the coal bed until the specific flow of water to said coal bed is reduced to a value of at least 3.0 m^3/t, by pumping said water out via a first series of wells, gassing out the coal by supplying a blowing agent to the incandescent surface of coal through a system of blow-in wells, withdrawing the products of gasification through a system of gas withdrawal wells while continuing said dewatering step by pumping said water, from the gassed-out space created during said gasification, via a second series of wells, and optimizing the gassing-out of said coal bed at a rate selected in accordance with the following expression:

$$I = \frac{W}{0.506\left(\frac{Q_H^r \cdot V^r}{Q_H^r}\right)^{-1.9}_{m}\left(0.702 - 0.659\,\frac{Q_H^r \cdot V^r}{Q_H^r}\right)}$$

where

W is the amount of water flowing into the gasification zone, m^3/hour;

I is the amount of coal gassed out per unit of time, tons/hour (the intensity of the process);

Q_H^r is the combustion heat of the gas, kcal/m^3;

v^r is the yield of gas from 1.0 kg. of coal, m^3;

Q_H^r is the lowest combustion heat of coal, kcal/kg;

m is the thickness of the coal bed, in meters; whereby control and stabilization of the method of underground gasification of a coal bed is more practical and convenient.

4,083,403

SURFACTANT OIL RECOVERY PROCESS

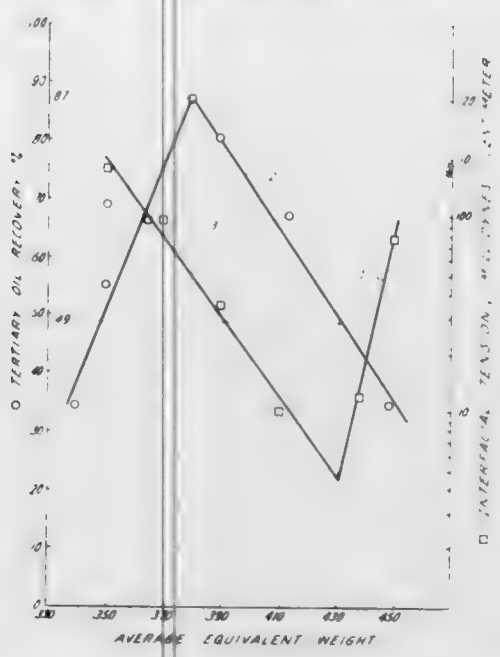
Joseph T. Carlin, and Jack H. Park, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 1, 1976, Ser. No. 746,644
Int. Cl.² F21B *43/22*
U.S. Cl. 166—252 **8 Claims**

1. In a method of recovering petroleum from a subterranean, permeable, petroleum-containing formation penetrated by at least one injection well and by at least one spaced-apart production well, both wells being in fluid communication with the petroleum formation, said formation containing water having a salinity from about 2,000 to about 20,000 parts per million total dissolved solids including a concentration of divalent ions comprising calcium and magnesium from about 0 to about 1,000 parts per million, comprising;

(a) injecting into the formation by the injection well an aqueous saline solution having dissolved therein a petroleum sulfonate whose average equivalent weight is from about 2 to about 20 percent less than the equivalent weight

of petroleum sulfonate which produces the minimum interfacial tension between the formation petroleum and water present in the petroleum formation, said surfactant-containing fluid having a salinity from 2,000 to 20,000 parts per million total dissolved solids including from



about 0 to about 2,000 parts per million divalent ions, said surfactant fluid displacing petroleum toward the producing well; and

(b) recovering petroleum displaced by the surfactant fluid from the formation via the producing well.

4,083,404

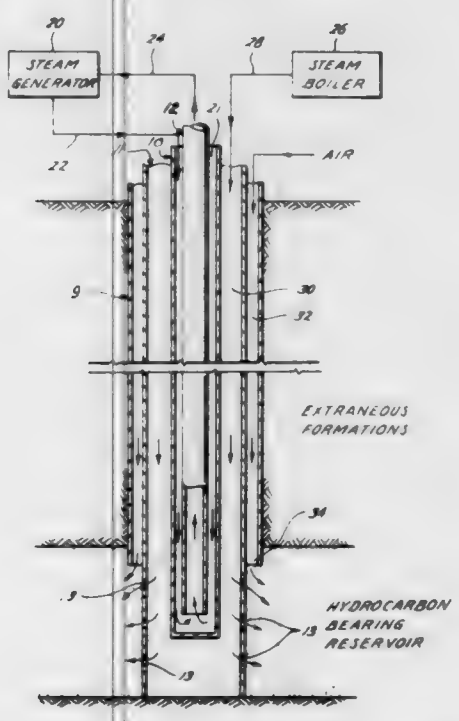
OIL RECOVERY PROCESS UTILIZING AIR AND SUPERHEATED STEAM

Joseph C. Allen, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 665,585, Mar. 10, 1976. This application May 12, 1977, Ser. No. 796,490

Int. Cl.[2] E21B *43/24*

U.S. Cl. 166—261 **3 Claims**



1. A method injecting air and superheated steam into a subterranean hydrocarbon-bearing formation via an injection well with a minimum of heat loss to extraneous earth formations which comprises:

a. placing three tubular means inside the well casing so as to provide an annular space between each tubular means and the casing, wherein the said three tubular means comprise an open-end innermost tubular means in communication with a closed end intermediate tubular means and an outer tubular means extending into the formation and being perforated so that there is communication with the hydrocarbon reservoir and wherein said casing extends into the hydrocarbon reservoir,

b. injecting steam into the annular space between the open end innermost tubular means and the closed end intermediate tubular means and withdrawing condensate via the open-end innermost tubular means whereby the intermediate tubular means is heated,

c. injecting steam having a temperature below that of the steam injected in step (b) into the annular space between the outer tubular means and the intermediate tubular means whereby the steam injected in (c) is superheated and forcing the superheated steam into the hydrocarbon-bearing formation via the perforations in the outer tubular means, and

d. injecting air into the annular space between the casing and the outer tubular means and forcing the said air into the hydrocarbon formation.

4,083,405

WELL DRILLING METHOD AND APPARATUS THEREFOR

Kirk R. Shirley, Houston, Tex., assignor to A-Z International Tool Company, Houston, Tex.

Continuation of Ser. No. 683,650, May 6, 1976, abandoned. This application Jan. 27, 1977, Ser. No. 763,127

Int. Cl.[2] E21B *23/00, 33/126, 33/129;* E21C *17/00*

U.S. Cl. 166—285 **9 Claims**

1. A well tool comprising

a drill string,

a drill bit and a plurality of underreamers secured to the lower end of said drill string,

a liner,

means for releasably connecting the liner to said drill string,

a gripping assembly,

said gripping assembly being slidably mounted in surrounding relation to said liner and having two sets of gripping elements,

said liner having an external taper adapted to coact with the gripping elements of said gripping assembly whereby relative movement between said liner and said gripping assembly wedges one set of said gripping elements into gripping engagement with the wall of the well bore,

said liner including means for sealing between the exterior of the liner and the interior of a well casing into which said liner is run,

means connecting said gripping assembly to said liner and including means responsive to manipulation of said liner to limit or allow axial movement of said liner through said gripping assembly, and

means associated with said gripping assembly resisting axial movement through a wall bore.

6. The method of drilling a well bore and setting a liner wherein including the steps of

connecting a drill string to a drill bit on the lower end thereof and to a liner having a gripping assembly thereabout, lowering said drill string, said drill bit and said liner into a well bore,

rotating said drill bit to deepen said well bore and lowering said drill string as drilling progresses,

manipulating said drill string to set said gripping assembly within said well bore which supports said liner within said well bore,

disconnecting said drill string from said liner,

recovering said drill string from said well bore,

lowering a cementing string into said well bore into sealed engagement within said liner,

pumping cement through said cementing string and upwardly around the exterior of said liner, and

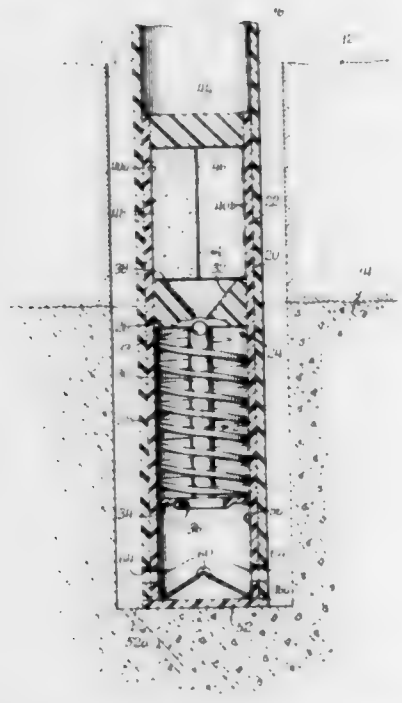
removing said cementing string from said well bore.

4,083,406

METHOD AND APPARATUS FOR SEALING DRILL CASING

Thomas L. Metz, 10 Michael, Park Forest, Ill. 60466

Filed Nov. 18, 1976, Ser. No. 742,870
Int. Cl.[2] E21B *33/13, 43/27*
U.S. Cl. 166—286 **9 Claims**



1. A method for sealing a tubular well casing to a liquid impermeable layer such as bedrock when drilling a well so as to prevent contaminants within the strata above the impermeable layer from seeping downwardly between the periphery of the casing and the impermeable layer, said method comprising the steps of:

(a) inserting a length of tubular well casing into a predrilled bore hole which extends down to and at least partially into the liquid impermeable layer such that the lower end of said well casing is disposed within the portion of said hole in said liquid impermeable layer, said casing having at least one discharge opening formed in its peripheral wall adjacent its lower end,

(b) introducing a cartridge into said casing to a position adjacent said discharge opening, said cartridge defining a storage chamber containing a predetermined quantity of a selected aggregate, a predetermined quantity of a resin monomer and a predetermined quantity of a catalyst with said aggregate and resin monomer being separated from said catalyst by frangible seal means disposed within said chamber, said chamber being defined on its upper boundary by a plunger axially movable within said cartridge when subjected to an external axial force so as to eject materials from said chamber, said cartridge further having mixing element means disposed axially adjacent said storage chamber such that materials ejected from said storage chamber upon axial movement of said plunger are caused to pass through said mixing element means for intermixing,

(c) applying an axial force to said plunger sufficient to effect movement of said plunger in a direction to fracture said frangible seal means and force said aggregate, resin monomer and catalyst to pass downwardly through said mixing element means for intermixing and polymerization thereof,

(d) continuing said movement of said plunger sufficiently to cause said mixture to be at least partially ejected through said discharge opening so as to form a solid nonflexible plug seal between the outer periphery of said well casing and said adjacent impermeable layer, said plug seal being chemically and mechanically adhered to said impermeable layer and the peripheral surface of said well casing adjacent said well opening therein, and

(e) drilling through said plug to a liquid reservoir below said end of said well casing so that said liquid may be drawn upwardly to surface level through said well casing.

4,083,407

SPACER COMPOSITION AND METHOD OF USE

Thomas J. Griffin, Jr., Sand Springs, and Larry K. Moran, Tulsa, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 7, 1977, Ser. No. 766,835
Int. Cl.[2] E21B *21/00, 33/14, 33/16*
U.S. Cl. 166—291 **58 Claims**

1. In a method for injecting a fluid into a borehole containing a drilling mud, wherein the fluid is not compatible with the mud, and wherein injection of the fluid is preceded by injection of a spacer composition compatible with both the mud and the fluid, the improvement comprising: injecting a sufficient quantity of said spacer to separate said mud and said fluid, said spacer comprising

(a) water

(b) a water soluble alkali metal silicate; and

(c) a water soluble metal compound capable of releasing a multivalent metal cation to react with the water soluble silicate;

said components (a)–(c) being provided in amounts effective to form an aqueous pumpable gel.

46. An aqueous fluid composition suitable for use as a spacer in treating wells comprising:

(a) water, and effective amounts of

(b) a water soluble alkali metal silicate,

(c) a water soluble metal compound capable of releasing a multivalent metal cation to react with the water soluble silicate to form a pumpable gel, and

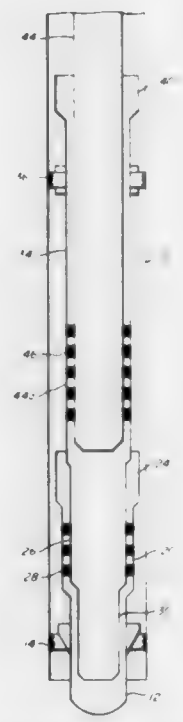
(d) a water dispersible cellulose compound and an inert particulate which together impart fluid loss control to said composition.

4,083,408

WELL COMPLETION APPARATUS

Jack J. Milam, Oklahoma City, Okla., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Dec. 27, 1976, Ser. No. 754,432
Int. Cl.[2] E21B *23/00, 43/10*
U.S. Cl. 166—315 **17 Claims**



1. Well completion apparatus for disposition in a well conduit to seal between a well liner and a well string extending into said well liner, said well completion apparatus comprising:

a. a first seal assembly comprising:

1. a first tubular receptacle member rigidly adjoining said well liner and fixed with respect to said well conduit; and
2. a first insert member including a first tubular body portion received within said first receptacle member;
3. one of said first members defining a first cylindrical sealing surface and the other of said first members including first annular seal means coaxial with and slidably sealingly engaged with said first sealing surface between said first receptacle member and said first tubular body portion; and

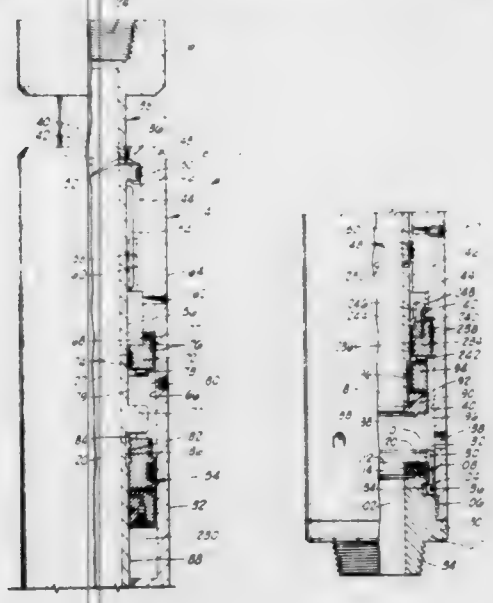
b. a second seal assembly comprising:
1. a second tubular receptacle member rigidly adjoining said first tubular body portion; and
2. a second insert member included in said well string and including a second tubular body portion received within said second receptacle member;
3. one of said second members defining a second cylindrical sealing surface, and the other of said second members including second annular seal means coaxial with and slidably sealingly engaged with said second sealing surface between said second receptacle member and said second tubular body portion; and
4. said second insert member being longitudinally slidable within said second receptacle member and having an outer diameter adjacent said second seal means less than the outer diameter of said first insert member adjacent said first seal means.

4,083,409

FULL FLOW BYPASS VALVE

Burchus Q. Barrington, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 2, 1977, Ser. No. 792,654
Int. Cl.² E21B *43/12*
U.S. Cl. 166—320 **17 Claims**



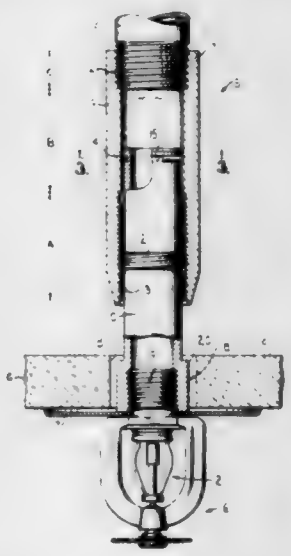
1. A tool comprising:
an outer tubular member having an inner surface thereon;
an inner mandrel member coaxially disposed within said outer tubular member and having an outer surface thereon;
said inner mandrel member being coaxially movable relating to said outer tubular member;
first and second seal means disposed between said outer tubular member and said inner mandrel member in longitudinal spaced relation for providing respective fluid seals between the surfaces of said outer tubular member and said inner mandrel member thereby defining an annular cavity between said outer and inner members having a substantially constant volume during relative coaxial movement between said inner member and said outer member;
a quantity of fluid disposed within the annular cavity;
annular fluid metering means positioned within said annular cavity, having first and second end portions and inner and outer circumferential surfaces for moving with a first one of said members relative to the other one of said members and to said annular cavity;
means for securing said annular fluid metering means to the first one of said members to facilitate the movement of said fluid metering means with the first one of said members;
first fluid metering seal means for providing a sliding seal between said annular fluid metering means and the surface of the other one of said members;
second fluid metering seal means for providing a seal between said annular fluid metering means and the surface of the first one of said members;
first fluid flow passage means in said annular fluid metering means for providing fluid communication between the first and second end portions of said annular fluid metering means;
fluid flow restriction means interposed in said first fluid flow passage means for alternately accelerating and decelerating a fluid stream passing through said fluid flow restriction means and said first fluid flow passage means from the first end portion toward the second end portion of said annular fluid metering means, whereby a high resistance to fluid flow through said first fluid flow passage means is obtained;
second fluid flow passage means in said annular fluid metering means for providing fluid communication between said first and second end portions of said annular fluid metering means; and
check valve means interposed in said second fluid flow passage means for blocking fluid flow through said second fluid flow passage means from the first end portion toward the second end portion of said annular fluid metering means, and, alternately, for allowing substantially unrestricted fluid flow through said second fluid flow passage means from the second end portion toward the first end portion of said annular fluid metering means.

4,083,410

ADJUSTABLE DROP NIPPLE FOR SPRINKLER HEADS

James R. Anderson, Berwyn, Pa., assignor to Central Sprinkler Corporation, Lansdale, Pa.

Filed Aug. 19, 1976, Ser. No. 716,066
Int. Cl.² A62C *39/10*
U.S. Cl. 169—37 **4 Claims**



2. A vertically adjustable drop nipple comprising:
(a) a collar wherein the inner bore length thereof comprises a threaded lower section having internal threads and a smooth bore upper section, said collar threaded section having an open end,
(b) a nipple that is rotatably interconnected with said

threaded section of the collar by means of an externally threaded section on the nipple, said nipple having an outside wall of lesser diameter than said nipple threaded section and extending above said nipple threaded section, at least one O-ring installed therein, and wherein said O-ring is in sealing engagement with said smooth bore section of the collar, said nipple outside wall clearing said collar inner bore length whereby said nipple is insertable directly through said open end and vertically adjustable by rotating said nipple.

4,083,411

SOIL CULTIVATING IMPLEMENTS

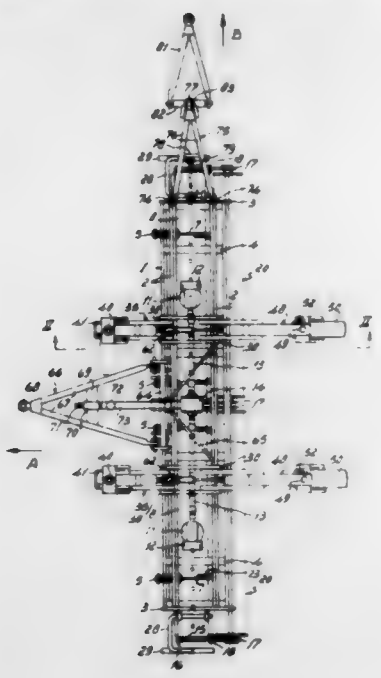
Ary van der Lely, Maasland, Netherlands, assignor to C. van der Lely N.V., Maasland, Netherlands

Filed Aug. 23, 1976, Ser. No. 716,459

Claims priority, application Netherlands, Aug. 29, 1975, 7510211

Int. Cl.[2] A01B *63/22*; B60D *1/00*

U.S. Cl. 172—59 **11 Claims**



1. A rotary harrow comprising a frame and a plurality of soil working members rotatably mounted on said frame and driving means connected to rotate said members, said soil working members being arranged in two adjoining groups and each group being carried by a corresponding hollow frame portion, an elongated supporting frame overlying the frame portions and means linking the frame portions to said supporting frame, said harrow being positionable in an operative position in which the supporting frame extends transverse to the direction of travel with front and rear wheels, the angles of rotation of said wheels being settable about upwardly extending axes at positions at least 90° apart and said wheels being pivoted to the supporting frame with corresponding arms, spaced apart linkages interconnecting said frame portions with said supporting frame, said frame portions together with their soil working members being vertically displaceable relative to said supporting frame during operation, a front two of said ground wheels being located in front of the supporting frame and a rear two of said wheels located at the rear side of that frame, with respect to the direction of operative travel, the axes of rotation of the front wheels and the rear wheels being respectively coincident when in said positions, said two rear wheels being spaced further from the longitudinal center line of said supporting frame than the two front wheels, during operative travel coupling means adjacent one end of the supporting frame for connection to a prime mover for moving said harrow during transport.

4,083,412

AGRICULTURAL SOIL-WORKING APPARATUS

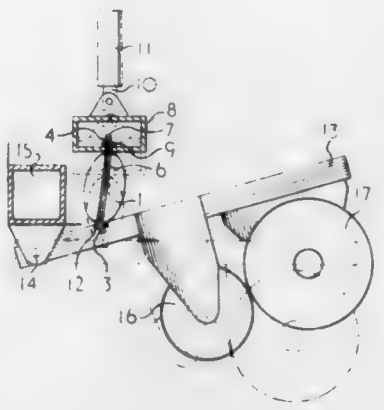
Richard Alexander Stocks, Holbeach, England, assignor to P.B. Bettinson & Company Limited, United Kingdom

Filed Mar. 15, 1976, Ser. No. 667,143

Claims priority, application United Kingdom, Mar. 20, 1975, 11546/75

Int. Cl.[2] A01C *5/06*

U.S. Cl. 172—462 **6 Claims**



1. An agricultural soil-working apparatus comprising a frame, drag bar and soil-working member, said drag bar being pivotally mounted on the frame and carrying said soil-working member, rubber spring means mounted to act on said drag bar to urge the soil-working member into the soil, said rubber spring means being substantially ovoid in shape, having rounded apices, and being free to expand laterally during said urging, and first and second studs mounted at each end of the longitudinal axis of said ovoid spring member, one said stud being attached to the drag arm and the other said stud being attached to a member associated with said frame, said ovoid spring member and said first stud including a hollow longitudinal axial passageway therethrough and a cable member having two end portions located therein, one end portion of said cable extending through the hollow passageway in said first stud and being terminated by a nipple spaced apart from said stud and the other end portion of said cable being attached to the second said stud.

4,083,413

HARROW DISC GANG

Maurice E. Miller, Stratton, Nebr. 69043

Division of Ser. No. 631,145, Nov. 11, 1975, Pat. No. 4,016,935. This application Sep. 15, 1976, Ser. No. 723,568

Int. Cl.[2] A01B *7/00*

U.S. Cl. 172—601 **2 Claims**



1. A disc section for a disc harrow including a frame means, comprising,

an elongated shaft rotatably secured to said frame means, said shaft having a circular cross section,

a plurality of spaced-apart disc blades mounted on said shaft for rotation therewith,

a plurality of spool members mounted on said shaft,

one of said spool members being mounted between adjacent pairs of disc blades,

and means on said disc blades and said spool members for

preventing relative rotation therebetween as the disc harrow is moved through the field,

each of said spool members comprising a center section having end portions extending outwardly therefrom, each of said spool members having a central opening formed therein which receives said shaft,

said means on said spool members and disc blades comprising a lug means on each of said end portions which extends outwardly of the end portion thereof towards the adjacent disc blade, each of said lug means being integrally formed with said spool members,

each of said disc blades having a central opening formed therein which receives said shaft,

each of said disc blades having first and second openings formed therein outwardly of said central opening,

the lug means at one end of said spool member extending into the first opening in the adjacent disc blade, the lug means at the other end of said spool member extending into the second opening in an adjacent disc blade.

4,083,414

COMBINATION ANGLING-TILTING BULLDOZER

Masao Yokoyama; Tsuneo Sughihira, and Koji Ohta, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 30, 1975, Ser. No. 645,353
Int. Cl.² E02F *3/76*
U.S. Cl. 172—804 **3 Claims**



1. A combination angling-tilting bulldozer assembly comprising, in combination:

(a) a frame;

(b) a blade arranged forwardly of said frame;

(c) a swivel connection between said frame and said blade adapted to permit both angling and tilting motions of said blade relative to said frame, said swivel connection comprising:

(1) a swivel member pivotally mounted centrally on the front end of said frame for tilting motion relative to said frame in its lateral direction about a horizontal axis; and

(2) joint means connecting said swivel member to said blade in such a manner that said blade is caused to tilt simultaneously with said swivel member about said horizontal axis and is permitted to angle relative to said swivel member about a normally vertical axis;

(d) first actuator means for causing the tilting motion of said swivel member and therefore of said blade relative to said frame about said horizontal axis; and

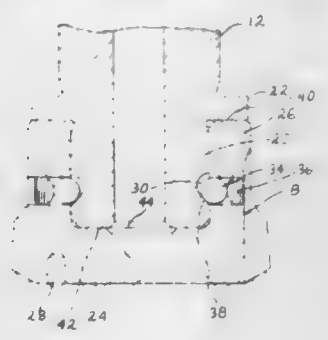
(e) a pair of second actuator means each second actuator means being connected between said frame and an end of said blade for causing the angling motion of said blade relative to said swivel member and said frame about said normally vertical axis wherein said blade is supported at both ends by said pair of second actuator means and at the center by said joint means.

4,083,415

MINING BIT WITH REPLACEABLE WORK ENGAGING MEMBER

John F. Kita, Bedford, and Ray C. MacIntyre, Alum Bank, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Dec. 18, 1975, Ser. No. 642,134
Int. Cl.² E21B *9/35*
U.S. Cl. 173—132 **9 Claims**



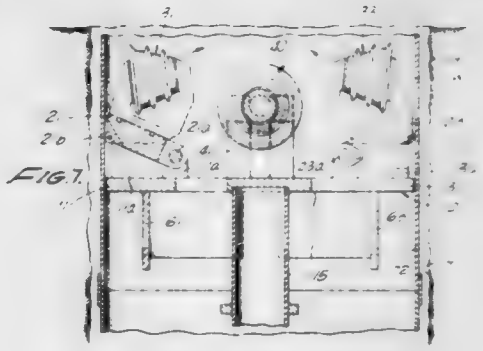
1. In a mining bit; a bit body having an upper end and a lower end, means on the upper end of the body for engagement by a motor for impacting the body and for rotating the body, a cup-shaped cap member on the lower end of the body having a lower wall and a peripheral skirt upstanding from the periphery of said lower wall, said cap member adapted for engagement with a formation to be reduced by the bit, interengaged elements of abutment means on the body and cap member to transmit impact loads therebetween, said elements of abutment means including a radial flange on said body presenting a downwardly facing annular shoulder and the upper end of said skirt of said cap member which presents an upwardly facing annular surface for engagement by said shoulder, and radially movable cooperating elements of releasable connector means on the cap member, individual recesses formed on the lower end of said body and cooperating with said radially movable elements so as to wedge said cap axially against said body and hold said cap nonrotatable relative to said body.

4,083,416

COLLAPSIBLE CUTTERHEAD FOR DRILLING UPWARD

Norman H. Still, and Robert W. Berry, Jr., both of Brea, Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 13, 1977, Ser. No. 787,283
Int. Cl.² E21B *9/00*
U.S. Cl. 175—263 **8 Claims**



1. A cutterhead adapted to drill a hole upwardly in the earth, and then when a casing is inserted into the hole beneath the cutterhead, to be withdrawn downwardly into and through the casing and hence out of the hole, said cutterhead comprising:

a generally circular cutterhead frame whose horizontal diameter is less than the interior diameter of the casing;

means provided on the underside of said cutterhead frame for drivingly rotating the same;

at least three gauge cutters disposed on the upper side of said cutterhead frame in substantially equally spaced positions about the periphery thereof;

at least one additional cutter carried upon the upper surface

of said cutterhead frame between said gauge cutters for cutting the end face of the hole;

each of said gauge cutters having its radially inward extremity pivotally supported from said cutterhead frame and normally extending radially outward beyond said frame, whereby the outer extremity of said gauge cutter may be pivoted upwardly and inwardly in a vertical plane radial to said frame; and

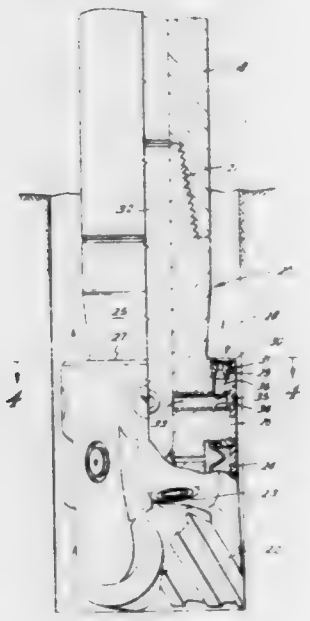
at least three stabilizer rollers mounted on respective roller frames, said roller frames being removably attached to the underside of said cutterhead frame in circumferentially spaced positions thereon so that each stabilizer roller extends radially beyond said cutterhead frame and is supported for rotation about a vertical axis.

4,083,417

JETTING APPARATUS

James F. Arnold, 241 Kilts Dr., Houston, Tex. 77024

Filed Nov. 12, 1976, Ser. No. 741,241
Int. Cl.² E21C *15/00*
U.S. Cl. 175—393 **6 Claims**



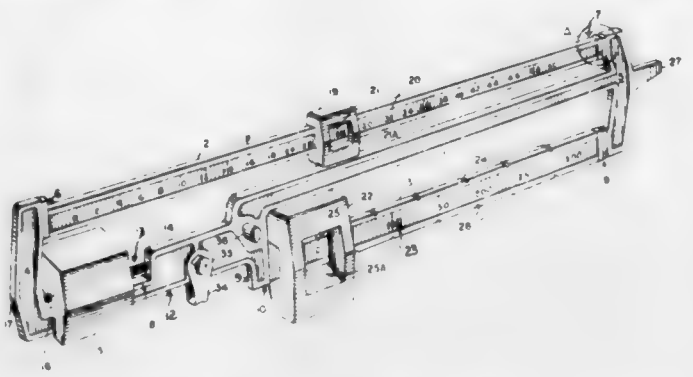
1. A jetting apparatus for reducing the hydrostatic pressure exerted by drilling mud on the bottom of a bore hole while the latter is being drilled comprising a body having means to connect it to a lower part of a drill string, a rotary bit being connected to the drill string to drill the bore hole downwardly, said bit having a downwardly directed bit jet nozzles for passing mud onto the bottom of the bore hole; the body also having a mud passageway therethrough for passing mud to the bit and at least four upwardly facing shoulder portions uniformly disposed about its periphery; a body jet nozzle is each of said shoulder portions positioned to dicharge mud vertically upwardly along and parallel to an upper portion of the body and also parallel to a wall of the bore hole being drilled to thereby reduce the hydrostatic mud pressure on the bottom of the bore hole; and a passageway providing fluid communication between said mud flow passageway and each said body jet nozzle to divert mud to said body jet nozzles, the number of body jet nozzles being sufficient to discharge sufficient mud to reduce the hydrostatic pressure of the drilling mud on the bottom of the bore hole to approximately the pore pressure of the formation at the bottom.

4,083,418

BEAM WEIGHING SCALE FOR DIFFERENT WEIGHT UNITS

William Y. Hutchinson, Chicago, and Walter P. Kushmuk, Niles, both of Ill., assignors to Continental Scale Corporation, Bridgeview, Ill.

Continuation-in-part of Ser. No. 722,411, Sep. 19, 1976, abandoned. This application Mar. 31, 1977, Ser. No. 783,418
Int. Cl.² G01G *1/36, 23/14*
U.S. Cl. 177—247 **12 Claims**



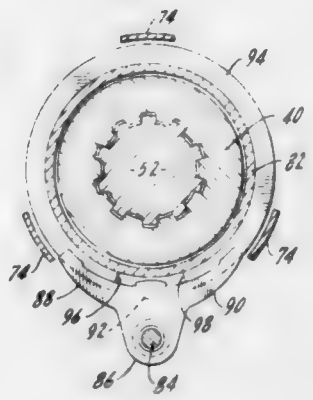
1. In a weighing scale of the balance beam type wherein a beam frame, balanced on a fulcrum pivot and having a power pivot responsive to weight on a weighing platform, has a pair of index bars carrying a slider weight mounted on said frame, the improvement which comprises means for mounting such index bars for rotation on said frame, said index bars containing different types of weight units in proper sequence on two or more sides thereof, the weight units on one side being so displayed with respect to the weight units on another side whereby when said bar is rotated a predetermined amount a different type or value of weight units in proper sequence appears right side up to the viewer of the scale, said beam frame comprising a generally horizontal rigid elongated frame member rigidly interconnected with vertically disposed end members, said index bars being substantially parallel to said generally horizontal rigid elongated frame member and at right angles to said opposing vertically disposed end members, and the opposing ends of said index bars being operatively associated for rotation with respect to said opposing vertically disposed end members.

4,083,419

AUTOMATIC FOUR-WHEEL DRIVE TRANSFER CASE

Mark John Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 23, 1976, Ser. No. 716,629
Int. Cl.² B60V *17/26, 17/34*
U.S. Cl. 180—44 R **12 Claims**



1. In a four-wheel drive vehicle having a transfer case for transferring rotary motion from a source of power to front and rear pairs of traction wheels, said transfer case including a housing, an input shaft and front and rear output shafts rotatably supported in said housing, and means in said housing for transferring rotary motion from said input shaft to said output

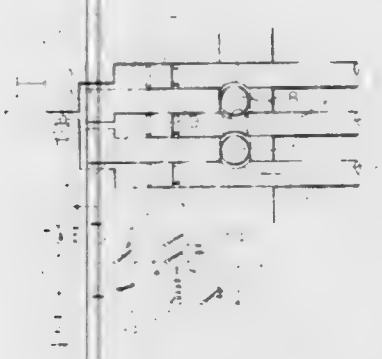
shafts, said transferring means coupling said input shaft with one of said output shafts and including an overrunning clutch coupled with the other of said output shafts, said clutch having first and second elements rotatable in response to rotation of said output shafts and respectively defining first and second clutch races, a roller cage, a plurality of rollers carried by said cage between said clutch races for relative movement between two clutch engaging positions, means biasing said rollers toward one of said clutch engaging positions upon rotation of one of said elements, rotation of said second element faster than said first element tending relatively to move said rollers away from said one engaging position, and means responsive to rotation of one of said elements for movement into position for preventing said relative movement of said rollers to the other of said clutch engaging positions, said preventing means being constructed and arranged to be non-responsive to initial rotation of said one element less than a predetermined distance and responsive to subsequent rotation thereof without regard to centrifugal force.

4,083,420

INTERLOCKING SYSTEM OF MANUAL CHANGE SPEED GEAR

Katsuyasu Kurisu, No. 1293-1, Suenaga, Takatsu-ku, Kawasaki City, Japan

Filed Oct. 3, 1974, Ser. No. 511,632
Claims priority, application Japan, Nov. 5, 1973, 48-127135
Int. Cl.[2] B60R *21/10;* **F16H** *57/06*
U.S. Cl. 180—82 C **4 Claims**



1. A interlocking system of a manual change speed gear of a motor car having a plurality of spaced apart parallel shift rods for changing gears and interlocking members disposed between adjacent shift rods, the system comprising plungers mounted on respective shift rods operative in respective bores, a source of hydraulic fluid under pressure, a plurality of passageways for interconnecting said bores with said source, a valve controlling fluid communication between said bores and the source, said valve being closed only when the driver of the motor car fails to perform a prescribed safety operation, and said valve in its closed position confining the fluid within the bores and passageway so that upon attempted movement of anyone of said shift rods this rod and the other shift rods cannot be moved due to pressure forces transmitted through the incompressible liquid and acting upon said rods in conjunction with the inner locking members disposed upon adjacent shift rods.

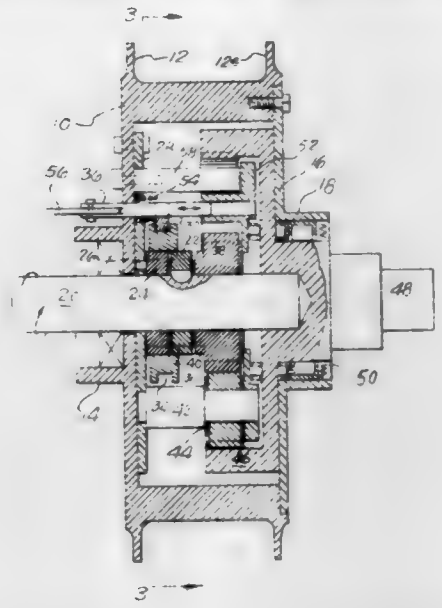
4,083,421

TWO SPEED MOTORCYCLE HUB TRANSMISSION

Ronald L. Van Horn, 44 Poinsettia Ave.; Donald R. Van Horn, 18 Bay View, both of Pittsburg, Calif. 94565, and Roy B. Van Horn, 238 Jefferson St., Monte Vista, Colo. 81144

Filed Dec. 6, 1976, Ser. No. 747,622
Int. Cl.[2] B62M *11/16*
U.S. Cl. 180—88 **5 Claims**

1. A two speed hub for a vehicle including a hub casing, a first shaft, extending into said same hub casing from one side by which said hub may be rotated, a driving element keyed to said first shaft, a first driven element rotatably mounted on said first shaft secured to said hub casing on one side of said driving element, a second driven element rotatably mounted on said first shaft positioned on the other side of said driving element said second element being fixed to a sun gear of a planetary gear system, a second shaft to be fixed to the vehicle extending



coaxially into said casing, an internal ring gear within said hub casing fixed to said second shaft, a spider secured to said casing, at least one planet gear carried by said spider meshing with said sun gear and with said internal ring gear, and axially moveable means to selectively couple said driving element to said first or second driven elements.

4,083,422

BOLT-ON GUIDANCE SYSTEM FOR LIFT TRUCK

Thomas R. Blakeslee, Woodside, and James R. Francy, Los Gatos, both of Calif., assignors to Logisticon, Inc., Sunnyvale, Calif.

Filed Nov. 6, 1975, Ser. No. 629,492
The portion of the term of this patent subsequent to Aug. 9, 1994, has been disclaimed.
Int. Cl.[2] B62D *51/04*
U.S. Cl. 180—98 **11 Claims**



1. An attachment for converting a self-powered vehicle of the type which is manually steered by an operator using a steering wheel connected to one end of a steering column into a manually operable vehicle which can also be selectively guided automatically to follow an external path, the attachment comprising:

means mounted on the vehicle for sensing the external path and for generating an error signal representative of the deviation of the vehicle from the path,

tachometer means connected to the steering wheel for generating a steering control signal proportional to the speed of manual rotation of the steering wheel,

a steering actuator interposed between the steering wheel

and the steering column for steering the vehicle by rotating the steering column in response to one of the signals, and

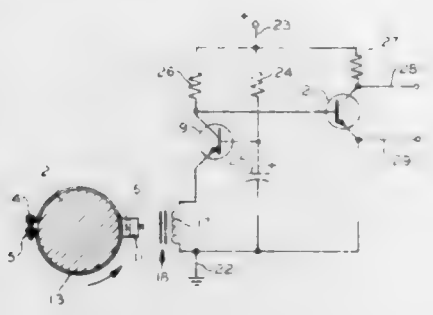
manually operable means mechanically connected to the steering wheel for enabling the vehicle operator, by shifting the position of the steering wheel with respect to the steering column, to selectively connect either the sensing means or the steering wheel tachometer means to the steering actuator to supply one of the signals thereto.

4,083,423

VEHICLE ROAD SPEED SIGNAL SOURCE

James A. Williams, Richmond, and Larry O. Gray, Greensfork, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Jul. 2, 1975, Ser. No. 592,373
Int. Cl.² G01P *3/42*
U.S. Cl. 180—105 E **9 Claims**



1. An apparatus for generating a pulsed output signal representing the road speed of a vehicle, comprising

high energy product magnetic means attached to a member of the vehicle rotating at a rate proportional to the road speed of the vehicle and movable relative to another member of the vehicle;

electromagnetically responsive means for sensing each rotation of said magnetic means and generating a current pulse in response thereto, said sensing means being mounted on said another member of the vehicle and spaced from the path of travel of said magnetic means to allow for relative displacement of said rotating vehicle member with respect to the mounting position of said sensing means; and

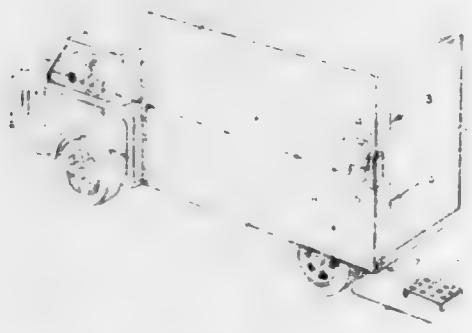
low input impedance means responsive to said current pulse for generating said pulsed output signal whereby spurious signals are suppressed from said pulsed output signal.

4,083,424

PUSH-BUTTON COMBINATION LOCK FOR VEHICLES

Alfons von den Steinen, Agoura, and John R. Swartz, Woodland Hills, both of Calif., assignors to Freight Guard Industries, Westlake Village, Calif.

Filed Feb. 9, 1977, Ser. No. 766,943
Int. Cl.² E05B *65/16*
U.S. Cl. 180—114 **6 Claims**



1. A push-button combination lock for a cargo truck having an entry door to the cargo space in said truck, including, in combination.

(a) a keyboard having a plurality of keys for manual operation;

(b) latch circuit means connected to said keyboard and responsive to a sequential operation of given ones of said keys for generating a first signal;

(c) a first timer connected to said keyboard responsive to operation to the first of said given ones of said keys for initiating a first given time interval;

(d) reset means connected between said first timer and said latch circuit means for blocking the generation of said first signal only in the event said first time interval terminates prior to operation of the last of said given ones of said keys;

(e) a second timer connected between said latch circuit means and said reset means responsive to said first signal for initiating a second given time interval of greater duration than said first given time interval, said second timer providing a second signal only during said second time interval, said second timer terminating said second signal at the end of said second given time interval and resetting said latch circuit means;

(f) modulating means connected to receive said second signal and transmit an a.c. signal of predetermined frequency for the duration of said second signal;

(g) demodulating means connected to demodulate said a.c. signal and provide a d.c. control signal; and

(h) a spring biased solenoid operated lock bolt for said door responsive to said d.c. control signal to retract said bolt against the spring bias to unlocked position, said d.c. control signal being terminated at the end of said second given time interval such that the spring bias returns the lock bolt to its normal locked position said keyboard, latch circuit means, first timer, reset means, second timer and modulating means being packaged in a single housing for attachment to the dashboard of said truck, said demodulating means and spring biased solenoid operated lock bolt being located in the interior of said cargo space for locking and unlocking said door

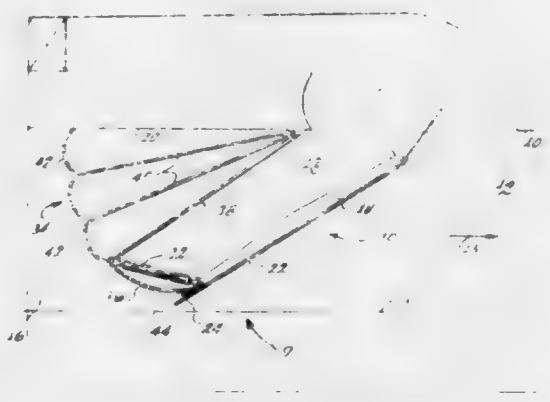
whereby unauthorized entry by passing a signal directly to the demodulating means and spring bias solenoid operated lock is prevented unless said signal is at precisely said predetermined frequency.

4,083,425

PASSIVE STERN SEAL FOR AIR CUSHION VEHICLE

Michael A. Pickards, La Jolla, Calif., assignor to Rohr Industries, Incorporated, Chula Vista, Calif.

Filed Mar. 16, 1977, Ser. No. 777,884
Int. Cl.² B60V *1/16*
U.S. Cl. 180—127 **11 Claims**



1. A passive stern seal for an air cushion marine vehicle for transversing the surface of water comprising:

a front seal member;

a plurality of support stays attached to the inner surface of said front seal member, the forward end of said stay being pivotly attached to said vehicle;

a plurality of strut members each one of said plurality of said

strut members being pivotly attached at one end to one of said plurality of stay members;

a rear seal member attached at one end to said front seal member adjacent the strut stay attachment point and to said vehicle at its other end, the other end of said strut member being attached to said rear seal member intermediate its ends; and

a plurality of first strap members pivotly attached to the rear seal member at its end attached to said strut members and to said vehicle at a position adjacent said strut members.

4,083,426

LOUD SPEAKER APPARATUS

H. Mark Peugh, Box 3652, Vail, Colo. 81657

Continuation-in-part of Ser. No. 515,544, Oct. 17, 1974, abandoned. This application Oct. 9, 1975, Ser. No. 621,159

Int. Cl.² H05K *5/00;* A47B *81/06*

U.S. Cl. 181—156 **8 Claims**



1. A loud speaker apparatus adapted to be mounted at the intersection of three mutually perpendicular walls, comprising:

(a) a housing means having a speaker means mounted therein;

(b) said housing means including a housing assembly, a baffle assembly connected to said housing assembly, and said housing means having an opening between said housing assembly and said baffle assembly;

(c) said baffle assembly including a corner connector assembly having three interconnected reflector plate members perpendicular to each other and mounted about the intersection of three mutually perpendicular walls, each of said reflector plate members to form a separate corner in conjunction with two adjacent ones of the perpendicular walls; and

(d) said speaker means having a first speaker mounted in said housing assembly and directed through said opening toward said baffle assembly and said corners; whereby the sound waves from said first speaker are radiated from each of said corners from said corner connector assembly and the perpendicular walls producing balanced sound throughout the room.

4,083,427

LADDER SCAFFOLD

Eli Box, 1737 Lexington NW., Warren, Ohio 44495

Filed Nov. 26, 1976, Ser. No. 745,427

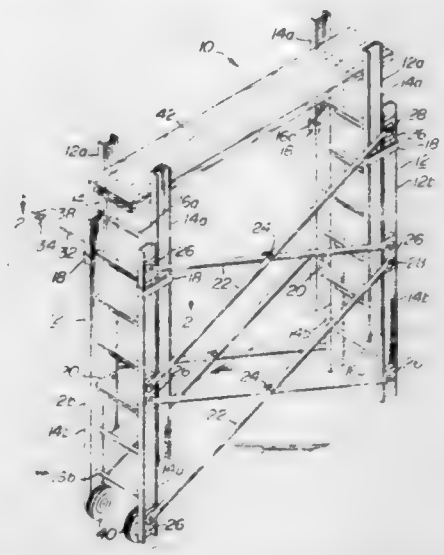
Int. Cl.² E04G *1/08, 1/30*

U.S. Cl. 182—118 **5 Claims**

1. A movable scaffold comprising

a pair of upright ladders, each of said ladders having a pair of upright U-shaped side rails and a plurality of spaced rungs secured between said side rails and upper blocks received within and at the ends and center thereof, each of said ladders being adjustable in height by having two vertically slidable upper and lower sections,

two pairs of diagonally crossing brace rods extending between said ladders, the ends of each of said brace rods being secured to respective spacer blocks of a pair of opposite respective lower side rails of said ladders positioning said ladders with respect to each other with their side rails and rungs respectively spaced opposite and parallel to each other each block at the ends of said lower side rails being secured with one while the center blocks



each being secured with two ends of said brace rods of said brace rods, and

a pair of wheels rotatably mounted at the bottom end of the lower section of only one of the ladders.

4,083,428

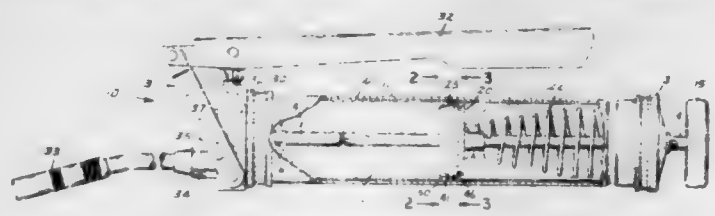
PLUNGER FOR HAND GREASE GUNS

Kenneth P. Ness, Minneapolis, Minn., assignor to K-P Manufacturing Co., Inc., Minneapolis, Minn.

Filed Dec. 29, 1976, Ser. No. 755,239

Int. Cl.² G01F *11/00;* F16J *9/00*

U.S. Cl. 184—105 A **7 Claims**



6. A cylindrical plunger of homogeneous, flexible, elastic material for use as a sliding seal in a cylindrical chamber, said plunger comprising:

a peripheral hollow skirt having a predetermined axial dimension;

a central hub having said predetermined axial dimension, and connected to said skirt only at one axial end thereof,

and a web, of thickness less than said predetermined axial dimension, unitary with said hub at a first, forward end of said plunger and unitary with said skirt at a second, rearward end of said plunger, to comprise a generally conical partition across said plunger which is the only support for said skirt,

the thickness of said skirt decreasing inwardly in both axial directions from a location of maximum outside diameter near said second end of said plunger.

4,083,429

RETRACTABLE PASSENGER LIFT

John D. Abbott, 17469 Parker Rd., Castro Valley, Calif. 94546

Filed Nov. 22, 1976, Ser. No. 744,203

Int. Cl.² B60P *1/44*

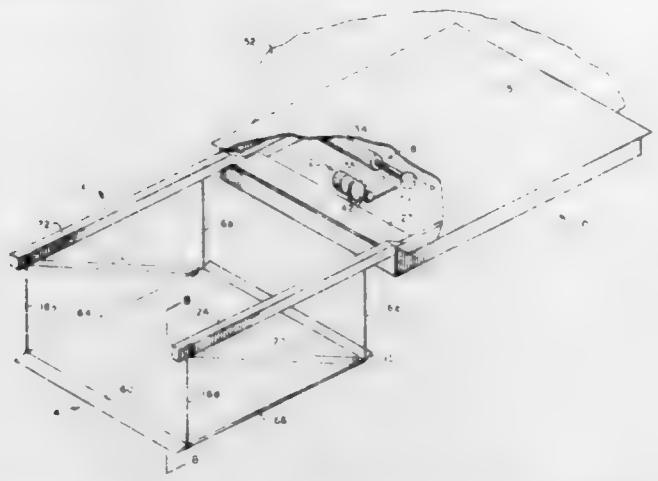
U.S. Cl. 187—9 R **7 Claims**

1. A retractable passenger lift for a vehicle comprising

means defining a containment compartment assembly having a top surface, rear end bracket and front end bracket, said

compartment assembly located with said top surface proximate the floor level of said vehicle,

a support bracket assembly connected to said containment compartment and adapted to be retractable into said compartment,



a generally flat, horizontally disposed, passenger carrying platform adapted to be hung by cables from said support bracket assembly,

means for raising and lowering said platform, and

means for extending and retracting said support bracket assembly out of and into said containment compartment.

4,083,430

APPARATUS FOR DETERMINING THE LOCATION OF AN ELEVATOR CAR OR SIMILAR VEHICLE

John A. Gingrich, Toronto, Canada, assignor to Dover Corporation (Canada) Limited, Toronto, Canada and Dover Corporation, New York, N.Y.

Filed Sep. 29, 1976, Ser. No. 728,006
Int. Cl.² B66B *3/02*
U.S. Cl. 187—29 R **23 Claims**



1. Apparatus for determining the location of a vehicle arranged to move along a predetermined path of travel, said apparatus comprising:

(a) a plurality of first means for transmitting signals;

(b) a plurality of second means for receiving signals from an adjacent one of said first means;

(c) third means, coupled to said first means, for causing said first means to transmit signals, one first means at a time, the transmissions occurring in a constantly repeating sequence; and

(d) fourth means, coupled to said second means, for determining the location of said vehicle along said path of travel;

one of said first and second means being arranged at intervals along said path of travel and the other of said first and second means being arranged on said vehicle along a line extending in the direction of vehicle travel.

4,083,431

ELEVATOR CONTROL APPARATUS

Takeshi Oohira, and Tomiaki Kurihara, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 27, 1976, Ser. No. 680,858
Claims priority, application Japan, May 9, 1975, 50-54468
Int. Cl.² B66B *1/28*
U.S. Cl. 187—29 R **16 Claims**



1. An AC-operated elevator control apparatus comprising: an induction motor for driving an elevator car; driving torque control elements for continuously controlling the driving torque generated in said induction motor; braking torque control elements for continuously controlling the braking torque generated in said induction motor; means for generating a speed command signal at least for deceleration of the elevator car; means for producing a speed signal representing the actual speed of the elevator car; acceleration control means for controlling said driving torque control elements with an open control loop for speed regulation at the time of acceleration of the elevator car by supplying a gradually increased speed command signal to said driving torque control elements; and speed feedback control means for controlling said braking torque control elements with a closed control loop for speed regulation in accordance with a deviation signal representing the difference between said speed signal and said speed command signal at the time of deceleration of the elevator car.

4,083,432

SAFETY ARRANGEMENT

John Lusti, River Vale, N.J., assignor to Otis Elevator Company, New York, N.Y.

Filed Dec. 1, 1976, Ser. No. 746,566
Int. Cl.² B66B *5/15*
U.S. Cl. 187—89 **6 Claims**

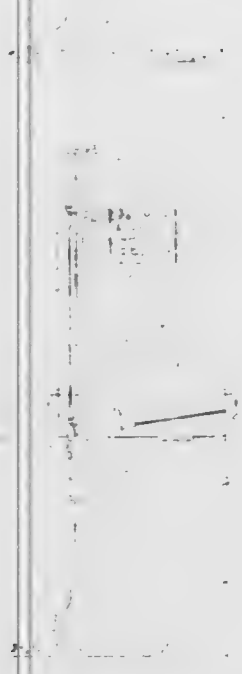
1. In an elevator system in which an elevator car guided by guide rails can be stopped by a hoisting machine when said car reaches a predetermined rate of deceleration, a safety arrangement comprising:

braking means having an actuating member mounted on said car;

a vertically suspended elongated flexible member attached to said actuating member and movable therewith;

governor means driven by said flexible member applying to said actuating member through said flexible member an actuating force of a predetermined magnitude in response to said car exceeding a predetermined velocity, said actuating member responding to said actuating force and

causing a braking force to be applied to said guide rails to initiate stopping of said car; said flexible member having a mass such that in response to said car being decelerated at said predetermined rate during upward movement said flexible member applies an inertial force to said actuating member having a magnitude in excess of said predetermined magnitude of said actuating force; and



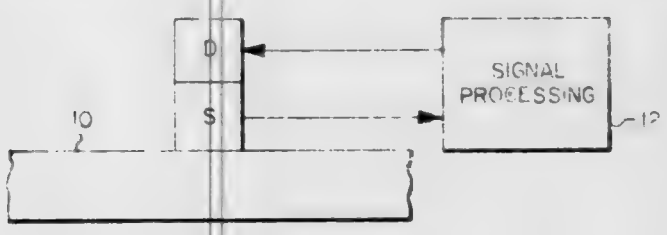
compensating means including a lever arm pivotally mounted on said car and a weight carried by said lever arm, said lever arm being coupled to said actuating member and operating in response to deceleration of said car at said predetermined rate during upward movement to apply to said actuating member a compensating force produced by said weight opposing said inertial force and preventing said inertial force from operating said braking means.

4,083,433

ACTIVE VIBRATION DAMPER WITH ELECTRODYNAMIC SENSOR AND DRIVE UNITS

Kenneth P. Geohegan, Jr., Catonsville; Christopher R. Collins, Arnold; George Bawroski, Pasadena, and George H. Steiner, Church Creek, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1976, Ser. No. 742,473
Int. Cl.² F16D *63/00*
U.S. Cl. 188—1 B **3 Claims**



1. An active vibration damper system for a body subject to vibration, comprising:

A. sensor means for operative connection with said body and being of the type to provide an output signal proportional to the vibration velocity of said body relative to the surrounding ambient medium;

B. a signal processing network responsive to said output signal for providing a resultant control signal;

C. driver means responsive to said control signal for applying to said body a counteracting force proportional to said body velocity;

D. said sensor means including

i. a case member;

ii. a permanent magnet connected to, and contained within said case;

iii. an inertial element suspended within said case and around said magnet;

iv. a coil wound about said inertial element; and

v. terminal means in electrical connection with said coil

4,083,434

BRAKE DISC WITH ANTI-OXIDATION PERIPHERAL COVERING

Henry J. Pinter, 130 W. Vine St., Alliance, Ohio 44601

Filed Apr. 26, 1976, Ser. No. 680,588
Int. Cl.² F16D *65/12*
U.S. Cl. 188—73.2 **3 Claims**



1. A friction member, compising:

A. a rigid disc having a peripheral surface and opposed planar faces;

B. said peripheral surface having a first series of radially extending spline engaging notches extending between said planar faces of said disc arranged in spaced relationship therealong;

C. U-shaped anti-oxidation plate means covering said peripheral surface and havinga configuration complemental to the configuration of said peripheral surface of said disc and said spline engaging notches and overlying a potion of said planar faces of said disc;

D. a plurality of pines engaging the legs of said plate means, penetrating said disc to secure said plate thereto and being fused into the grain structure of said disc;

E. said peripheral surface having a second series of non torque receiving notches therein spaced between at least some of the notches of said first series and extending radially inwardly from said peripheral surface and axially inwardly a distance less than the axial thickness of the plate from said planar faces;

F. a plurality of U-shaped clips, one received in each of said second series of notches to cover the peripheral and side surfaces of the material remaining in said second series of notches; and

G. a plurality of pins securing said clips to said second series of notches; and

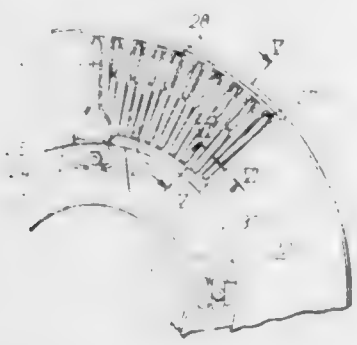
H. said plate means including a plurality of plate sections with the ends of adjacent sections partially overlying said clips and being spaced from each other adjacent said clips.

4,083,435

BRAKE DISC WITH IMPROVED VENTILATION COOLING

Heinz Gallus, Aachen-Richterich in der Schonau; Willi Klein, and Hans Zeuner, both of Remscheid, all of Germany, assignors to Bergische Stahl-Industrie, Remscheid, Germany

Filed Feb. 11, 1977, Ser. No. 767,671
Claims priority, application Germany, Feb. 11, 1976, 2605333
Int. Cl.[2] F16D 65/12
U.S. Cl. 188—218 XL 5 Claims



1. A brake disc of cast steel with improved ventilation cooling means, which includes in combination:

a brake ring comprising two friction ring discs having an inner side and an outer friction surface; and

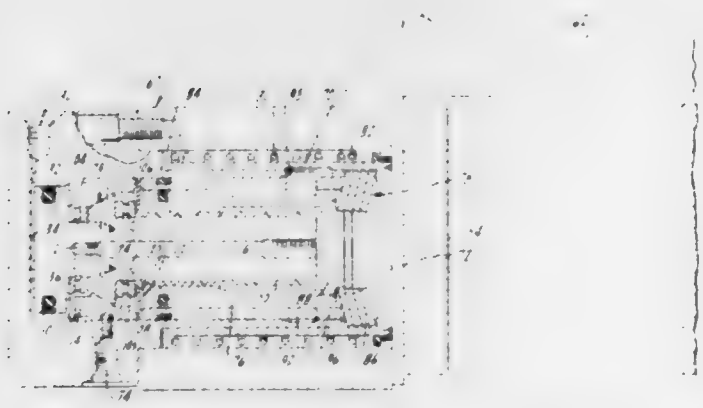
vane means interposed between said friction ring discs and connecting same at the bases of said vane means and providing said brake ring with radial ventilation channels for conveying cooling air from the inner circumference of said brake ring to the outer circumference of said brake ring, the ratio of the cross section of the air inlet of said channels to the cross section of the air exit of said channels being between 1:1 and 1:2, at least some of said vane means extending over the inner width of said brake ring, the width of said bases of at least some of said vane means for increasing air turbulence being greater than 60% of the distance from the start of one vane means to the start of the next adjacent vane means measured along the braking radius, the width of said bases of at least some of said vane means being between 80 and 100% of the distance between adjacent vane means measured at the inner circumference of said brake ring, at least some of said vane means having recesses.

4,083,436

BRAKE APPARATUS INCLUDING LOCKING MEANS THEREFOR

John E. Straut, Mahwah, N.J., assignor to Abex Corporation, New York, N.Y.

Filed Apr. 12, 1976, Ser. No. 675,820
Int. Cl.[2] B60R 25/08
U.S. Cl. 188—265 4 Claims



1. In a disc brake apparatus comprising a brake member movable from a released position forwardly to an engaged position where it engages the disc part which is to have the brake force applied thereto;

a plunger to be positioned opposite said brake member;

a piston inside the plunger;

a housing containing the plunger and piston;

a normally expanded spring interposed between the plunger and piston and effective to transmit forward movement of the piston to the plunger thereby to engage the brake, said spring being compressed during further forward movement of the piston;

said piston being threadedly supported by a screw and constrained against rotation, said screw having a clutch element thereon opposed to a clutch seat inside the housing such that when the clutch is disengaged the screw is free to rotate;

a second spring tending to hold the clutch element on its seat, thereby engaging the clutch;

said piston being in communication with a first chamber for fluid under pressure which when applied to the piston unseats the clutch element and advances the piston in the forward direction to both engage the brake and compress said spring;

a fluid operated piston opposed to and engageable with the clutch element and disposed in a second chamber for unseating the clutch element to permit the first-named piston to retract, and a pressure relief check valve operable during the lapse between brake release and the next brake engagement to maintain sufficient pressure in said second chamber to actuate the second named piston to hold the clutch element unseated with a force which counters the return force of said second spring,

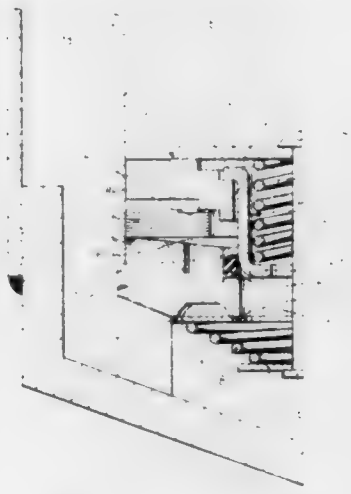
and means to both fully release, while first slowly retarding the release of, fluid under pressure from said first chamber, after the first-named spring has been compressed, allowing said second spring, during retardation, to engage the clutch to hold the brake engaged before pressure is fully released from said first chamber, the last-named means consisting of a restricting orifice in the line which releases pressure from said first chamber.

4,083,437

SHOCK ABSORBER VALVE

Erhard Leppich, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Germany

Filed Mar. 11, 1977, Ser. No. 776,537
Claims priority, application Germany, Apr. 15, 1976, 2616897
Int. Cl.[2] F16F 9/348
U.S. Cl. 188—322 5 Claims



1. In a hydraulic shock absorber including a stationary cylinder, a piston arranged to move within said cylinder in directions of extension and retraction, and a fluid tank; the improvement comprising valve means for controlling the flow of fluid between said cylinder and said tank, said valve means including:

a. a stationary valve partition element having an axially

extending first opening forming part of a first duct for the flow of fluid in one direction during piston extension and having an axially extending second opening, radially offset from said first opening, forming part of a second duct for the flow of fluid in the opposite direction during piston retraction;

b. a thrust collar, arranged adjacent said partition element and movable axially with respect thereto, said thrust collar having a first opening forming a part of said first duct and a second opening forming a part of said second duct;

c. a tie rod, extending through said first duct;

d. a valve plate retained at one end of said tie rod against said thrust collar and forming the closing body of a suction valve with respect to said thrust collar for the flow of fluid through said first duct;

e. a first coil spring retained at the opposite end of said tie rod;

f. a ring plate resiliently retained by said first coil spring against said partition element and forming the closing body of an auxiliary valve with respect to said partition element for the flow of fluid through said second duct; and

g. at least one flat spring disc arranged between said partition element and said thrust collar and forming the closing body of a working valve with respect to said thrust collar for the flow of fluid through said second duct. said at least one spring disc bearing against a contact circle of said partition element on the side thereof opposite said ring plate;

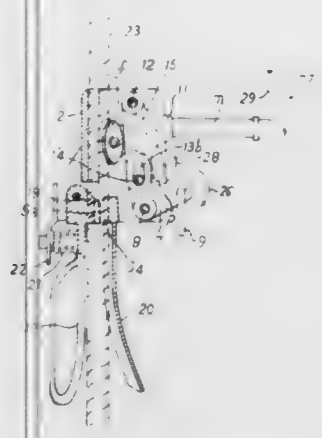
whereby said working valve determines the operating characteristic of said shock absorber and said auxiliary valve is a check valve in series therewith which opens only upon application of fluid pressure in said opposite direction during piston retraction.

4,083,438

ESCAPE DEVICE

Kuninori Handa, 3082-8, Imamenshingai, Sanba-cho, Onomichi-shi, Hiroshima-ken, Japan

Filed Sep. 10, 1976, Ser. No. 722,312
Claims priority, application Japan, Sep. 11, 1975, 50-110777
Int. Cl.² B65H *59/14*
U.S. Cl. 188—65.3 **2 Claims**



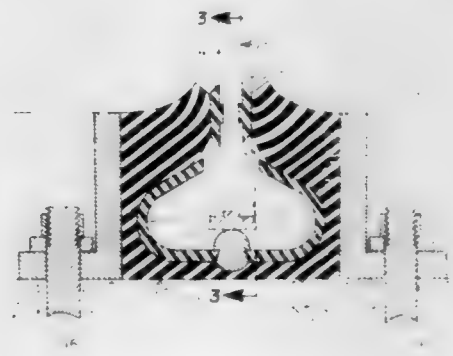
1. A descent and escape device comprising a casing, a lid movably mounted on said casing for opening of the casing to insert a rope, a two-arm lever journalled in said casing and having a slot in one of its arms, an operating rod journalled in said casing and including a presser portion and an arm, said presser portion being movable towards and away from said lid and defining with said lid a passage of variable cross-section to receive said rope, a pawl arm abutting said operating rod, and means on the other arm of said two-arm lever for suspending a body therefrom, the arrangement being such that rotating of said two-arm lever by bodyweight causes rotation of said operating rod and of said pawl arm in the direction to cause said presser portion and said lid to grip the rope, comprising an auxiliary rod journalled on said casing and including a projection, a guide rod on said casing defining with said projection a passage for said rope, and spring means acting between said auxiliary rod and said guide rod to urge said guide rod in the direction to tighten said projection and guide rod onto said rope.

4,083,439

POWER COLLECTION DEVICE FOR ELECTRIC POWERED RAIL CARS

Leo E. Chandler, 3285 Mission Ridge La., Atlanta, Ga. 30339

Filed Sep. 16, 1975, Ser. No. 613,969
Int. Cl.² B60M *1/04*
U.S. Cl. 191—31 **5 Claims**



1. A power distribution system embedded in pavement for electrically powered vehicles comprising:

a flexible resilient conduit having an opening and including a first electrical conductor partially mounted therein opposite said opening;

a flexible resilient casing partially surrounding said resilient conduit and including flexible lip members adapted to be in abutting relation along two opposing first surfaces and to be separated with opposing second surfaces forming an opening in aligned relationship with the opening in said flexible resilient conduit;

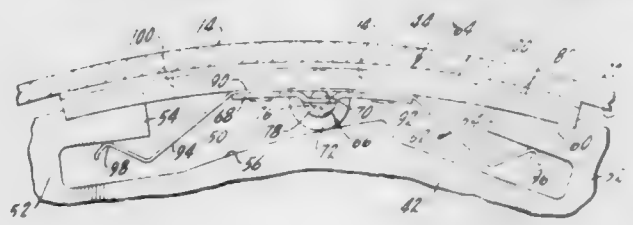
a movable second electrical conductor for conducting power to said rail vehicles separating said lip members and extending through said aligned openings, said second power conductor including a first lubricating conductive insert at the end thereof in contact with said first electrical conductor; said second power conductor including second lubricating non-conductive inserts rigidly but removably attached to said second conductor with said inserts engaging said opposing second surfaces of said lip members, said first surfaces being angled with respect to said lip members to form a seal over the opening in said flexible resilient conduit, whereby external pressure on said lip members causes said opposing second surfaces to be in tighter abutting relationship.

4,083,440

ENGAGING MECHANISM

Russell Earl Silberschlag, Glen Ellyn, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 14, 1976, Ser. No. 732,265
Int. Cl.² F16D *33/00, 3/34*
U.S. Cl. 192—3.31 **15 Claims**



13. A shoe assembly for a clutch mechanism including a friction shoe, a retainer secured to said shoe, a spring between

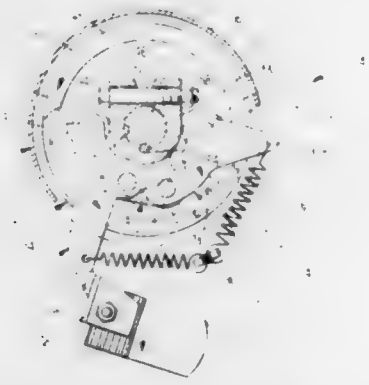
said retainer and said shoe, said retainer having journal means therein, a roller assembly including a roller and axle, said axle being mounted in said journal means whereby said roller assembly is secured in said shoe assembly.

4,083,441

CLUTCH ASSEMBLY

Robert G. Young, Bird-in-Hand, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 30, 1976, Ser. No. 718,708
Int. Cl.[2] F16D *11/00*; B65G *57/00*
U.S. Cl. 192—28 **8 Claims**



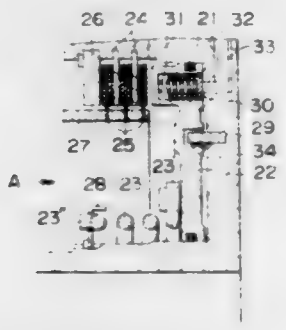
1. An improved clutch assembly, comprising:
a rotatable driving clutch part having leading and trailing lug portions thereon;
a rotatable driven clutch part journalled coaxially with said driving clutch part;
first and second adjacent-positioned pawl elements mounted on said driven clutch part for movements between respective retracted and extended positions such that in their respective extended positions said first pawl element is disposed for driving engagement by said leading lug portion while said second pawl element is disposed for engagement with said trailing lug portion so as to prevent any substantial amount of overrun by said driven clutch part relative to said driving clutch part and in their respective retracted positions said first and second pawl elements are withdrawn from engagement with said respective lug portions;
means urging said first and second pawl elements to their respective extended positions; and
said first pawl element when at its retracted position, in turn, being operative to hold said second pawl element at its retracted position.

4,083,442

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSIONS OF MOTOR VEHICLES

Fumihiro Ushijima, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 7, 1975, Ser. No. 593,497
Claims priority, application Japan, Oct. 22, 1974, 49-121720
Int. Cl.[2] F16D *25/00, 43/20*
U.S. Cl. 192—54 **13 Claims**



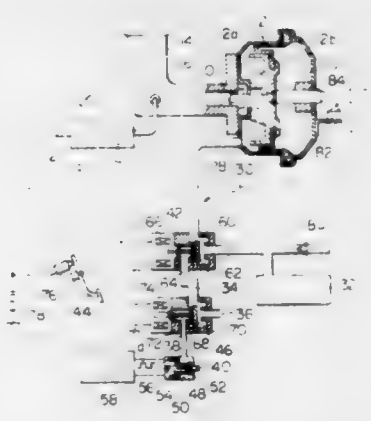
1. A hydraulic control system for an automatic transmission having a housing and a shaft therein, said system comprising, in combination:
(a) a cylinder member engaged with the housing of the transmission and having a pair of fluid passages defined therethrough;
(b) a piston member mounted in said cylinder member and having a valve for controlling the opening and closing of one of said fluid passages, said piston member being movable within a predetermined angular limit about said shaft, means for blocking the angular movement of said piston member about the shaft of said transmission;
(c) a spring retainer rigidly secured to said cylinder member;
(d) a spring between said spring retainer and said piston member and engaged with said piston member for applying a reaction force thereto in the axial direction as well as in the circumferential direction of the shaft of the transmission;
(e) a fluid pressure chamber defined by said cylinder member and said piston member, said chamber being connected with said fluid passages;
(f) a reaction member rigidly secured to said cylinder member;
(g) a first friction element between said reaction member and said piston member and slidably engaged in the axial direction of said transmission with said cylinder member; and
(h) a second friction element adapted to engage said first friction element and engaged with a friction element carrying member connected to said shaft, said piston member detecting the direction of rotation of the friction element carrying member relative to the cylindrical member when said first and second friction members are engaged with each other to thereby control the fluid pressure to be supplied to said fluid chamber.

4,083,443

MECHANISM FOR MODULATING CLUTCH ENGAGEMENT

Hideo Hamada, Yokosuka; Hirotsugu Yamaguchi, and Koichi Takahashi, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jul. 8, 1976, Ser. No. 703,420
Claims priority, application Japan, Jul. 10, 1975, 50-84652
Int. Cl.[2] B60K *21/00*
U.S. Cl. 192—91 R **5 Claims**



1. Control means for automotive vehicle comprising a clutch control pressure differential operated motor; a source of vacuum; first means fluidly connecting the motor to the source of vacuum; second means fluidly connecting first fluidly connecting means to a relatively large air bleed port; third means for fluidly connecting the second fluidly connecting means to a relatively small air bleed port; valve means for repeatedly closing and opening the relatively small air bleed port; a first three-way valve means disposed in the first and second fluidly connecting means intermediate the motor and the source of vacuum for connecting the motor only to the source of vac-

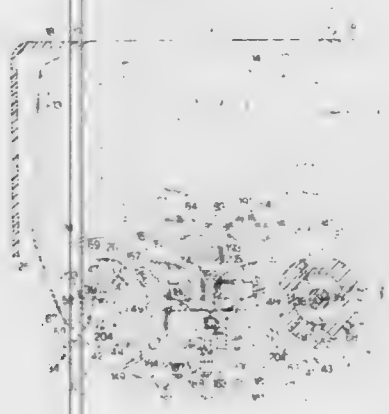
uum when the accelerator is completely released to effect a clutch disengaging operation of the motor and for connecting the motor only to the second fluidly connecting means when the accelerator is depressed to effect a clutch engaging operation of the motor; and a second three-way valve means disposed in the second and third fluidly connecting means intermediate the first three-way valve means, the relatively large air bleed port and the repeatedly closing and opening valve means for connecting the second fluidly connecting means only to the relatively large air bleed port to realize a relatively fast movement of the driven clutch member as it moves towards the driving clutch member and until the driven member contacts the driving member at a predetermined load and for connecting the second fluidly connecting means only to the repeatedly closing and opening valve means to effect a relatively small movement of the driven member as it moves into firmer engagement with the driving member.

4,083,444

REMOVABLE CARTRIDGE FOR AN INKED RIBBON AND RIBBON FEED MECHANISM FOR PRINTING MACHINES

Rinaldo Salto, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Jul. 2, 1976, Ser. No. 702,303
Claims priority, application Italy, Jul. 10, 1975, 68790/75
Int. Cl.[2] B41J *33/50, 33/512*
U.S. Cl. 197—151 18 Claims



1. An inked ribbon cartridge removably fittable on a printing machine, wherein the inked ribbon is wound or two spools rotatable in the cartridge and the printing machine is of the type including a ribbon reversal feed mechanism comprising a support on which the cartridge is fittable, two transport elements rotatably projecting from said support; two sensing elements movable between an operative position in contact with the spools and an inoperative position away from the spools, said sensing elements, in said operative position, sensing a predetermined minimum number of turns of ribbon thereon for rotating one or another of said two transport elements in one predetermined sense of rotation; and a control element projecting from said support and movable thereon between a first and a second position for shifting said sensing elements between said operative position and, respectively, said inoperative position and means for holding said control element in said second position when the cartridge is removed from said support; said cartridge comprising:

a container including a top wall and a bottom wall;

a side wall interconnecting said top wall with said bottom wall and defining a pair of slots for the passage of said inked ribbon from the one to the other of said spools outside said container;

means rotatably supporting said spools in said container about axes substantially perpendicular to said bottom wall;

means for accommodating said transport elements concentrically with said spools, said spools being provided with corresponding engaging means for engaging said transport elements in response to the fitting of the cartridge on the machine;

at least one aperture in said bottom wall for the access of said sensing elements to said two spools allowing said sensing elements to be freely shifted from said inoperative position to said operative position and viceversa; and

an opposing element in said bottom wall for moving said control element from said second position to said first position in response of the fitting of the cartridge on said support, so that the movement of said sensing elements from said inoperative position to said operative position is obtained with the sole fitting movement of the cartridge.

4,083,445

RIBBON REVERSAL MECHANISM FOR AN OFFICE MACHINE

Giorgio Brualdi, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Apr. 22, 1976, Ser. No. 679,636
Claims priority, application Italy, May 15, 1975, 68241 A/75
Int. Cl.[2] B41J *33/44*
U.S. Cl. 197—161 18 Claims



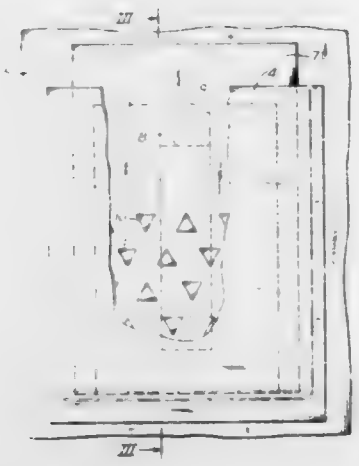
1. A mechanism for reversing the movement of an inked ribbon in a printing machine, the mechanism comprising: first and second rotors each for effecting the rotation of one of two ribbon spools on which the ribbon is mounted; a driving element for alternately imparting a driving force to one of said first and second rotors; and reversing means for alternately selectively coupling said driving element to one of said first and second rotors to effect the reversal of the movement of the ribbon, said reversing means comprising a reversing member shiftable between a first position wherein said driving element is coupled to said first rotor and a second position wherein said driving element is coupled to said second rotor, detent means resiliently coupling said reversing member to said driving element for rotating said reversing member by said driving element when said reversing member is loaded up to or below a predetermined torque and for interrupting said coupling between said reversing member and said driving element when said reversing member is loaded more than said predetermined torque causing a reciprocal rotation between said driving element and said reversing member, means for shifting said reversing member from one to the other of said first and second positions in response to said reciprocal rotation; and ribbon sensing means for sensing that a predetermined amount of ribbon is on one ribbon spool indicating that reversal is required and including means for effecting application of said predetermined torque on said reversing member when the reversal is required to shift said reversing member whereby said driving element is coupled to the other rotor and reversal is effected.

4,083,446

COMBINATION CARD HOLDER AND DECORATIVE ELEMENT

Frederick E. Schuchman, Sr., Gateway Towers, Pittsburgh, Pa. 15222

Filed Apr. 25, 1977, Ser. No. 790,447
Int. Cl.[2] A45C *15/00*; A41B *15/00*
U.S. Cl. 206—38 **3 Claims**



1. A combination card holder and decorative element comprising an open-top card-receiving sheath adapted to be inserted in the breast pocket of a man's jacket, said sheath having a front and a back, a substantially rectangular fabric member in front of the sheath and having a front and a back and upper and lower end portions, said fabric member being at least as wide as said sheath, the appearance of the front of the upper portion of the fabric member being different from the appearance of the front of its lower portion, and separable fastening means attached to the front of the sheath and the back of the fabric member for detachably connecting them together with either end portion of said member extending above the sheath for exposure above a pocket, whereby said decorative element can match the appearance of either of two different cravats.

4,083,447

CARTONS WITH CRADLE FORMING END CLOSURES

Chester F. Walters, Middletown, and Robert M. Bergstein, Cincinnati, both of Ohio, assignors to Bergstein Packaging Trust, Middletown, Ohio

Filed Jul. 26, 1976, Ser. No. 709,003
Int. Cl.[2] B65D *5/50*
U.S. Cl. 206—45.19 **13 Claims**



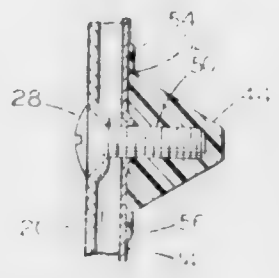
1. In a knock-down carton having opposing body forming panels hingedly connected together along their opposite side edges to define a flat-folded tubular body adapted to be erected by flexing said body forming panels outwardly relative to each other, a cradle forming end closure for said tubular body, said end closure comprising a flap member hingedly connected to an end edge of one of said body panels, said flap member being divided by a curved score line into an inner part and a cradle forming outer flap part, said flap member lying in infolded condition with both said inner and outer flap parts initially justaposed to the inner surface of the body wall panel to which said flap member is connected, said outer flap part being displaceable inwardly along said curved score line to at least partially close the end of the carton body and provide a self-sustaining cradle-like supporting seat for the contents of the carton, a finger opening formed in the body panel to which said flap member is hingedly connected, said finger opening being positioned to coincide with said cradle forming outer flap part when said outer flap part is juxtaposed to the inner surface of the body panel to which said flap member is hingedly connected.

4,083,448

WALL PLATE PACKAGE WITH WAX SCREW SOCKET

Louis Zampini, Jr., Providence, and Joseph P. Stefani, Warwick, both of R.I., assignors to General Electric Company, New York, N.Y.

Filed Jun. 27, 1975, Ser. No. 591,226
Int. Cl.[2] B65D *73/02*
U.S. Cl. 206—329 **3 Claims**



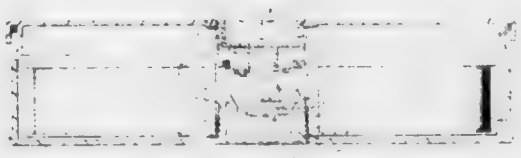
1. A packaged article comprising,
an article having at least one screw hole and a screw extending through the hole,
a card package in contact with and extending beyond at least one surface of the article,
each said screw extending through a hole in the card aligned with said hole in the article,
a plastic sheath in the form of a tapered nut aligned with each said screw hole in said card and bonded to the surface of said card opposite said article,
said sheath surrounding the threaded end of said screw.

4,083,449

REEL CONTAINER

Harry L. Rubins, Saratoga, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 2, 1976, Ser. No. 654,297
Int. Cl.[2] B65D *85/67*
U.S. Cl. 206—405 **10 Claims**



1. In a magnetic tape reel container of the type having parallel flat bottom and cover walls and circumferential side walls, with at least the bottom wall having a centered integral reel-supporting arbor portion projecting inwardly therefrom, and with said walls and arbor portion arranged to loosely retain said reel so as to permit relatively free rotation of said reel with respect to said container when said reel is contained therein, the combination comprising:
a manually operable member centrally mounted for rotation in said cover and having cam follower means projecting radially therefrom;
said bottom arbor portion having a central opening in the inwardly projecting end thereof for receiving said manually operable member, said opening being shaped to provide axial passages for said cam follower means and being

defined in part by at least one radially inwardly extending flange presenting a cam ramp for engaging said cam follower means and for causing said cover to be urged toward said bottom arbor portion upon rotation of said member toward a closed position;

said cam ramp having at least one notch for engaging said cam follower means in the closed position; and

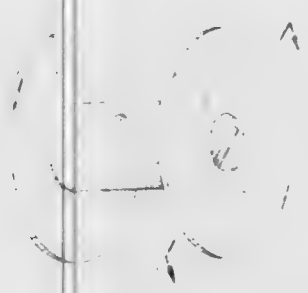
resiliently deformable means between said cover and said bottom arbor portion for loading said cam follower means against said cam ramp independently of said reel during said rotation and for thereby causing said cam follower means to be retained in said notch in the closed position.

4,083,450

PIPE-TAPE SPOOL

Ridge L. La Mar, 628 Harrison, Douglas, Wyo. 82633

Filed Nov. 22, 1976, Ser. No. 744,032
Int. Cl.² B65D 85/676; B65H 75/14
U.S. Cl. 206—416 6 Claims



1. A disassemblable spool for holding pipe tape comprising:

a. a tubular spindle having internal thread at each end,

b. a pair of flat, disk-shaped flange members having a central cup-shaped hub with external threads, said external threads adapted to mate with the internal threads of said spindle, said cup-shaped hub having a solid end and a bar across the opening formed by the cavity of the cup-like hub, said bar being substantially in the same plane as said flat disk-shaped flange members, said flange members having a diameter about three-fold that of the spindle.

4,083,451

METHOD OF HEAT SEALING SHEET-FORM LAYERS OF PERFORATED PLASTIC BETWEEN LAYERS OF PAPERBOARD

George R. Hair, 173rd E. 3rd St., Clifton, N.J. 07011

Division of Ser. No. 289,091, Sep. 14, 1972, Pat. No. 3,923,578. This application Aug. 29, 1975, Ser. No. 609,033
Int. Cl.² B65D 75/26, 75/30
U.S. Cl. 206—461 4 Claims



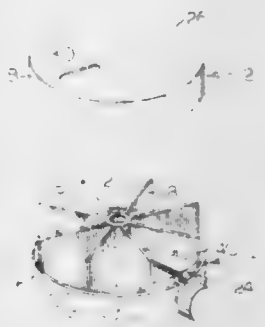
1. An article display package comprising at least one article enclosed between two superposed sheet-form layers of transparent plastic positioned between two layers of paperboard, each layer of plastic having openings therein with the openings in one layer being offset with respect to the openings in the other layer so that each layer of plastic is in direct contact with, and is heat sealed to, both layers of paperboard along marginal areas bounding a window cut-out in at least one layer of paperboard.

4,083,452

CONTAINER FOR MEDICATIONS AND THE LIKE INCLUDING LOCKING DEVICE

William Rossmo, 158 Mount Allison Crescent, Saskatoon, Saskatchewan, Canada

Filed Jul. 6, 1977, Ser. No. 813,341
Claims priority, application Canada, Jul. 26, 1976, 257763
Int. Cl.² B65D 83/04
U.S. Cl. 206—533 11 Claims



1. A container for medications and the like comprising:

a first section defining therein a plurality of compartments, a second section mounted to said first section and overlying said compartments, said second section including mounting means permitting the second section to be indexed to any one of a plurality of positions relative to the first section, said second section having an opening therein to permit access to any one of said compartments after the second section has been indexed to any one of said plurality of positions, and locking means for securing the second section at any one of said plurality of positions, the locking means including catch means movably mounted to one of said sections and engageable with any one of a plurality of recess means provided in the other of said sections, manually operable means for effecting movement of the catch means to release same from any one of said recess means, and further means associated with the manually operable means including a portion movable from a first position wherein movement of the catch means to release same from one of the recess means is permitted, to a second position wherein movement of the catch means is prevented.

4,083,453

TRAY WITH IDENTIFICATION MEANS

Patricia L. Berger, S. 65, W. 12697 Byron Rd., Hales Corners, Wis. 53130, and Ida Podhora, 1244 N. 68th St., Apt. No. 208, Wauwatosa, Wis. 53213

Filed Jan. 24, 1977, Ser. No. 762,143
Int. Cl.² B65D 1/34, 1/00; G09F 3/00
U.S. Cl. 206—565 10 Claims



1. In a tray with component parts nestable with corresponding parts of a similar tray, the combination of:

a rigid flat base;

edges upwardly extending from the sides and ends of such base, and

an identification device spaced from said edges extending

upwardly from such base and having a slot comprising an opening in said base for receiving a flexible insert.

4,083,454

MAILING AND STORAGE BOX

James L. O'Neill, Scituate, Mass., assignor to Merkert Enterprises Co., Canton, Mass.

Filed Aug. 26, 1977, Ser. No. 827,955
Int. Cl.² B65D 5/54
U.S. Cl. 206—605 7 Claims



1. A blank for a container comprising.

a tray portion including a series of serially connected flaps and panels including, in sequence, a lid front flap, a lid panel, a tray rear panel, a tray bottom panel and a tray front panel, each of said panels having end flaps extending therefrom at opposite ends thereof, the end flaps associated with the tray front panel being of reduced height, said flaps and panels being foldable to define an end-loadable box configuration;

said blank further including a wrapper extension extending from and defining a continuation of the tray portion, said wrapper extension including, serially, a wrapper top panel, a wrapper rear panel, a wrapper bottom panel and a wrapper front panel;

said wrapper top panel having a weakened zipper strip formed therein and extending along the juncture of said wrapper portion and said tray portion;

the outer end of the wrapper front panel having a zipper glue strip extending therealong, said panels being foldable so that when the wrapper extension is wrapped about the box portion, the outer zipper will overlie and be in registry with the zipper formed in the wrapper top panel;

the wrapper front panel having a pair of end flaps extending therefrom; and

the wrapper rear panel having a pair of end flaps extending therefrom and being of less height than the end flaps associated with the wrapper front panel.

4,083,455

RECLOSABLE CARTON AND BLANK THEREFOR

Martin Keating, Jr., Park Ridge, N.J., assignor to Universal Folding Box Co., Inc., Hoboken, N.J.

Filed Mar. 16, 1977, Ser. No. 778,041
Int. Cl.² B65D 5/66
U.S. Cl. 206—625 10 Claims

1. A tamperproof reclosable carton formed of a suitably cut and scored blank having an open-topped receptacle portion and a cover portion which pivots to overlap the upper edges of said receptacle portion to close said receptacle portion; said carton being adapted to be filled with articles intermediate formation and closure of said receptacle portion;

(A) said receptacle portion comprising connected front, rear, bottom and a pair of opposed side receptacle panels connecting said front and rear receptacle panels, said front receptacle panel including at the top thereof a horizontally spaced pair of downwardly extending tabs overlying areas of the front surface thereof; and

(B) said cover portion comprising:

(i) a top cover panel hingedly connected to the upper edge of said rear receptacle panel;

(ii) a pair of opposed side cover panels and a front cover panel, said side and front cover panels being connected to said top cover panel and forming skirt portions parallel and adjacent to the respective underlying receptacle panels; each of said side cover panels comprising a first panel portion connected to and depending from said top cover panel and a second locking panel portion con-



nected to said first panel portion by a line of severance, each of said second locking panel portions overlying and being adhered to an associated one of said side receptacle panels, said cover portion being adhered to said receptacle portion exclusively by said locking panel portions, and

(iii) the inner surface of said front cover panel defining upwardly facing ledges engaging the downwardly extending ends of said tabs when said cover portion overlaps said receptacle portion to close the latter.

4,083,456

TERRACED MODULAR RACK ASSEMBLY

John P. Genn, Staten Island; Ralph M. Verni, Baldwin, and Jonathan K. Bindman, Roslyn Heights, all of N.Y., assignors to Controlled Sheet Music Service, Inc., Copiague, N.Y.

Filed Mar. 1, 1976, Ser. No. 662,465
Int. Cl.² A47F 7/00
U.S. Cl. 211—55 20 Claims



1. A rack assembly comprising a pluarality of rack elements connectable to each other to form a terraced rack display, each rack element generally being in the nature of a rectangular housing having bottom, rear and side walls, each element having first locking means including a receiving first locking portion substantially in the plane of said rear wall and forming

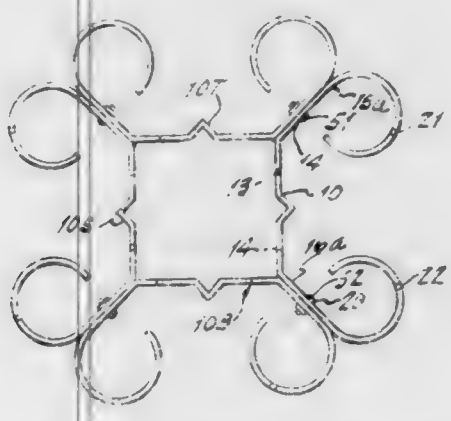
on upwardly open socket and a second locking portion connected to and downwardly projecting from the frontal region of said bottom wall between said side walls, a first locking portion of a frontwardly disposed rack element being adapted to receive a downwardly projecting second locking portion of an adjacent rearwardly disposed rack element to thereby permit adjacent rack elements to be fixedly connected to one another, said rack elements further having second locking means substantially in the planes of said side walls for aligning adjacent rack elements with one another and for securely fixing the positions of the connected rack elements relative to one another, said first and second locking means being arranged to lock successively rearwardly disposed rack elements respectively successively upwardly to provide an upwardly and rearwardly stepped or terraced modular rack assembly.

4,083,457

UNIVERSAL BRACKET APPARATUS FOR SUPPORTING A PLURALITY OF FLOWERPOTS

Michael Dromboski, 361 Independence Ave., Trenton, N.J. 08610

Filed Sep. 1, 1976, Ser. No. 719,461
Int. Cl.² A47G *29/00*
U.S. Cl. 211—71 **9 Claims**



1. A bracket arrangement adapted to support a plurality of flowerpots or similar articles, comprising:

a first integral, flexible, planar bracket member having a relatively horizontal central portion located between two arcuate end portions, each end portion terminating in a opened circular loop and directed towards said central portion with a transverse extending arm, each directed at an angle of 45° with respect to said central portion, wherein said circular loops are within the same plane as said horizontal central portion as extending therefrom, said central portion including a V shaped projection extending in the same direction as said transverse arms and at least two apertures located on said central portion, one on either side of said projection to enable the coupling of a corresponding identical bracket of a mirror image configuration to said first bracket by means coacting with said apertures to form a composite bracket having a central aperture formed by said corresponding projection, to enable the coupling of said composite bracket to a pole assembly.

4,083,458

SHELF-SUPPORTING STANDARDS

Bruce Young, Jr., 105 Masters Rd., Hixson, Tenn. 37343

Filed Apr. 23, 1976, Ser. No. 679,794
Int. Cl.² A47F *5/00*
U.S. Cl. 211—187 **6 Claims**

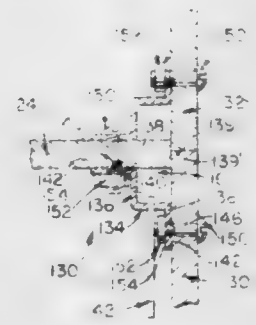
1. A corner connector for joining together two panels to form a corner, comprising;

a first section, said first section being elongate and having a plurality of longitudinally spaced apart holes defined therethrough and a plurality of first anchor nuts affixed to said first section to be concentric with some of said spaced apart holes,

a second section, said second section being elongate and having one longitudinal edge thereof integrally connected to one longitudinal edge of said first section, said first and second sections being oriented with regard to each other to form a right angle;

a third section, said third section being elongate and having one longitudinal edge thereof integrally connected to another longitudinal edge of said second section, said second and third sections being oriented with regard to each other to form a right angle; and

a fourth section, said fourth section being elongate and having a plurality of longitudinally spaced apart holes defined therethrough and a plurality of second anchor nuts affixed to said fourth section to be concentric with



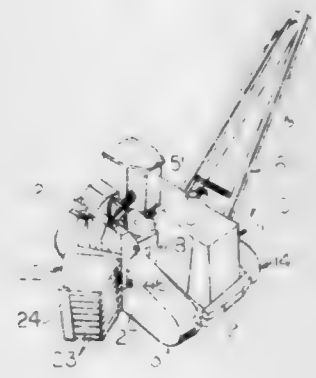
some of said fourth section spaced apart holes and having one longitudinal edge thereof integrally connected to another longitudinal edge of said third section, said third and fourth sections being oriented with regard to each other to form a right angle, said first and third sections being in spaced parallelism and said second and fourth sections being in spaced parallelism, said first and second anchor nuts being located adjacent alternating holes so that a fastening member inserted through one of said first section holes is aligned with one of said second anchor nuts whereby a fourth section of one connector is attached to a first section of another connector by inserting a fastener through a hole in the first section of the one connector and connecting that fastener to an anchor nut in said fourth section of the another connector whereby a pair of panels can be connected together so that those panels form a corner.

4,083,459

MOUNTING APPARATUS FOR A COUNTERWEIGHT ASSEMBLY

Jan K. Allen, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 21, 1977, Ser. No. 789,479
Int. Cl.² B66C *23/00*
U.S. Cl. 212—8 B **6 Claims**



1. In a crawler vehicle having a main frame extending along a longitudinal axis of the vehicle, first and second track assem-

blies disposed at opposite sides of a main frame with each of the track assemblies having a roller frame, a counterweight assembly, and including a mounting apparatus for fastening the counterweight assembly to the vehicle on the outboard side of the first track assembly, the improvement comprising:

a first pair of brackets secured to the main frame adjacent the first track assembly, said brackets being longitudinally spaced;

a second pair of brackets secured to the outboard side of the roller frame of the first track assembly, said brackets being longitudinally spaced;

a frame assembly having first and second arms, said first arm being positioned generally vertically between the main frame and the first track assembly, and said second arm projecting laterally outwardly relative to the first arm and over the first track assembly;

a first pin connecting the first arm of the frame assembly to the first pair of brackets;

a counterweight mounting frame having an upper portion and a lower end portion;

a second pin detachably fastening the lower end portion of the counterweight mounting frame to the second pair of brackets;

a third pin detachably fastening the upper portion of the counterweight mounting frame to the second arm; and

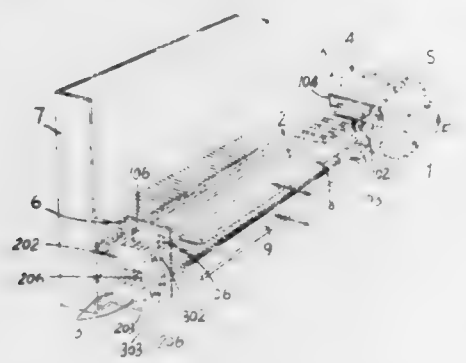
hinge means for attaching the counterweight assembly to the mounting frame for swinging movement in a substantially horizontal pathway between a retracted position at which a first portion of the counterweight assembly is disposed above the forward end of the first track assembly and an extended position at which at least a greater portion of the counterweight is positioned outwardly from the extremity of the first track assembly.

4,083,460

METHOD AND DEVICE FOR FORMING GROUPS OF RODLIKE ARTICLES

Romano Venturi, Via Bergamini, 4, Bologna, Italy

Continuation of Ser. No. 341,478, Mar. 15, 1973, abandoned.
This application Oct. 2, 1974, Ser. No. 511,154
Claims priority, application Italy, Apr. 13, 1972, 12601 A/72
Int. Cl.² B65G *57/18*
U.S. Cl. 214—6 H **2 Claims**



1. Apparatus for stacking rows of rodlike articles in a tray from a continuous orderly flow of such articles, comprising:

a continuously moving conveyor providing a continuous and orderly flow of rodlike articles aligned side by side and advancing laterally along a feed path;

at least two collection stations each including a continuously moving conveying means for moving rodlike articles in a lateral direction and for collecting a row of such rodlike articles of a predetermined number;

article directing means including a rectangular channel being of sufficient size for passing rodlike articles therethrough and having an open end adjacent said conveyor providing the continuous orderly flow of rodlike articles along a feed path and another open end adjacent said stations;

said article directing means being pivotally mounted and movable between two positions whereby said other open end of said channel is disposed adjacent the conveying means of a different one of said collection stations in each of said positions for alternately directing a predetermined number of rodlike articles from said conveyor first to the conveying means of one of said collection stations and then to the conveying means of the other of said collection stations;

each of said conveying means comprising an elongated endless belt type conveyor having one end adjacent said article directing means and a straight upper run receiving and collecting rodlike articles, and a stop means for each belt type conveyor adjacent its end opposite from said article directing means limiting lateral movement of the rodlike articles disposed on the upper run of the associated belt type conveyor;

a tray having an open side adjacent said collection stations; and

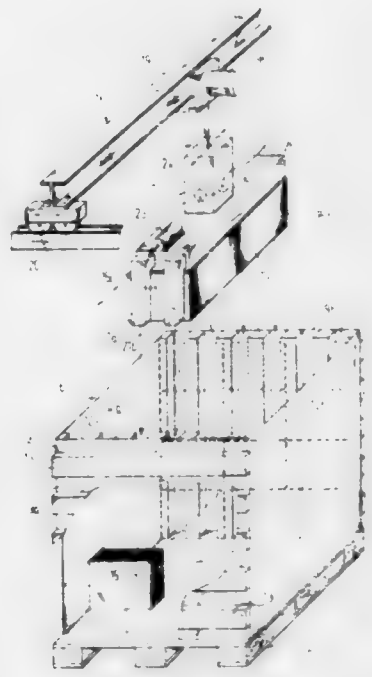
means for transferring a row of rodlike articles from each collection station while rodlike articles are being directed to the other of said collection stations, said transferring means axially moving the articles of the row being transferred.

4,083,461

SYSTEM FOR STORING OF PRINTING PRODUCTS AND FOR TRANSPORTING THEM TO A TREATMENT MACHINE

Jochen Wangermann, Appen, Germany, assignor to Gruner + Jahr AG & Co., Hamburg, Germany

Filed Jul. 15, 1976, Ser. No. 705,719
Claims priority, application Germany, Jul. 18, 1975, 2532297
Int. Cl.² B65G *57/24*
U.S. Cl. 214—8 **19 Claims**



1. A system for storing and transporting a plurality of staples of aligned sheet-like products compressible in the direction of alignment, said system comprising:

at least one rigid transport stand (**6**; **30**) having an open end and a pair of spaced side walls (**9***a*; **9***b*) lying normal to the plane of said open end, said side walls being abuttable with end faces of the staples for receiving at least one staple of said products therebetween and for compressing the staple in the direction of alignment by an amount sufficient to establish the staple as a self-supporting body within said stand and to retain the staple between said walls at a designated location, the portion of each of said side walls in abutment with the staple end faces being provided with at least one groove (**10**; **33**) opening toward the staple end face and along the open end of said transport stand, said

grooves extending parallel to each other in said side walls; and

gripping means (7; 37) relatively moveable with respect to said transport stand, said gripping means having at least one pair of spaced, opposed gripping fingers (21*a*, 21*b*; 38*a*, 38*b*) adapted to be introduced into said grooves in said transport stand side walls, motive power means (23) coupled to said gripping fingers and moving said fingers toward and away from each other for engaging a staple to compress it by an amount greater than the compression exerted by said side walls for providing cohesion to the staple in said gripping means and to permit the gripping fingers to be introduced into said grooves (10).

15. A rigid support stand for a plurality of staples of aligned sheetlike products compressible in the direction of alignment, said stand comprising:

a base member;

a pair of opposed, spaced side wall members mounted on said base member, said side walls being abuttable with end faces of the staples for receiving at least one staple of said products and for compressing the staple in the direction of alignment by an amount sufficient to establish the staple as a self-supporting body within said stand for retaining the staple between the walls, said side walls containing recess means suitable for receiving means for introducing and removing the staple between said side walls.

4,083,462

APPARATUS FOR DISCHARGING BULK MATERIAL FROM STORAGE TANKS

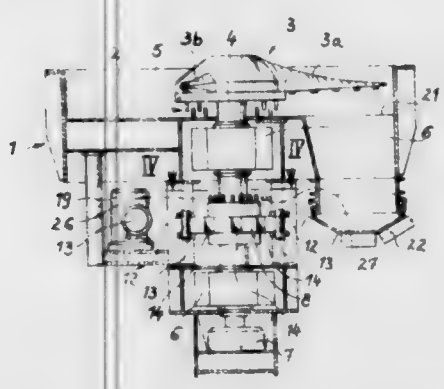
Fritz Teske, Industriestrasse 28, and Lothar Teske, Industriestrasse 30, both of D-5000 Koln 90, Germany

Filed Feb. 1, 1977, Ser. No. 764,562

Claims priority, application Germany, Feb. 3, 1976, 2603964

Int. Cl.[2] B65G *65/48*

U.S. Cl. 214—17 D **14 Claims**



1. In an apparatus for discharging bulk material from a storage tank that includes a floor provided with at least one eccentrically disposed discharge opening; the apparatus including a support shaft; an impeller wheel mounted on the support shaft in the vicinity of the floor; a stepping mechanism for intermittently moving the impeller wheel for loosening material accumulations in the storage tank to enhance an unimpeded discharge of the bulk material downwardly through the discharge opening; the stepping mechanism having a ratchet wheel mounted on the support shaft and connected to the impeller wheel and a pawl mechanism cooperating with the ratchet wheel and having at least one power cylinder for moving the pawl mechanism; and a hydraulic circuit coupled to the power cylinder for energizing the same; the improvement comprising

(a) means forming part of said stepping mechanism for selectively rotating said impeller wheel in either direction;

(b) sensor means for sensing the magnitude of the resistance of the bulk material to the motion of said impeller wheel;

(c) control means connected to said sensor means and said stepping mechanism for reversing the direction of rotation upon said resistance reaching a predetermined magnitude; and

(d) at least one impeller vane forming part of said impeller wheel and associated with said at least one discharge opening; said vane being arranged for moving past its associated discharge opening in either direction and including means for effecting loosening of material accumulations independently of its direction of motion to enhance an unimpeded discharge of the bulk material downwardly through the discharge opening upon rotation of said impeller wheel in either direction.

4,083,463

SUSPENSION DEVICE FOR FELLING UNIT

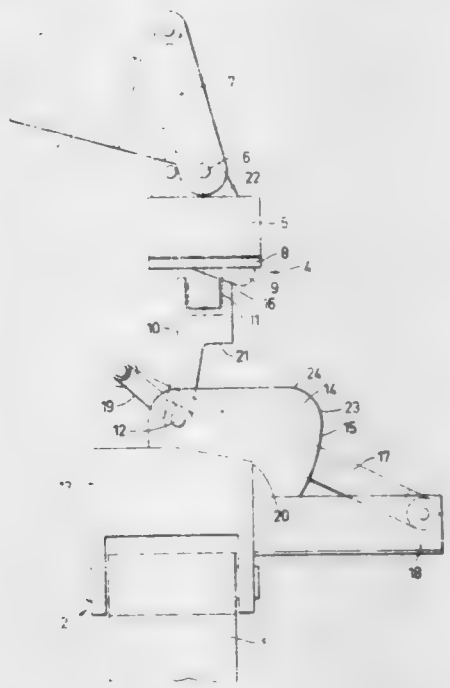
Jan-Eje Ericsson, Sundsvall, Sweden, assignor to Umea Mekaniska AB, Sweden

Filed Nov. 23, 1976, Ser. No. 744,343

Claims priority, application Sweden, Jan. 9, 1976, 7600951

Int. Cl.[2] A01G *23/08*; E02F *3/32*

U.S. Cl. 214—138 R **10 Claims**



1. A device for suspending a tree-felling unit on a crane boom comprising

a rotator placed between said boom and the tree-felling unit for rotation of said unit in relation to the boom;

means pivotally connecting said rotator to the boom;

a link member having a first end and a second end, said link member connecting said tree-felling unit to the rotator;

a first axle means pivotally connecting said first end of said link member to said rotator;

a second axle means pivotally connecting said second end of said link member to the tree-felling unit;

means for pivoting said tree-felling unit about said second axle means to an upper operative position,

said first and second axle means being perpendicularly located relative to each other; and

means for locking said link member against pivotal movement about said first axle means when the tree-felling unit is in said upper operative position.

4,083,464

KNOCKDOWN REUSABLE CONTAINER

Robert A. Burnett, 1530 Eastlake East, Seattle, Wash. 98102

Filed Aug. 20, 1976, Ser. No. 716,074

Int. Cl.[2] B65D *9/12*

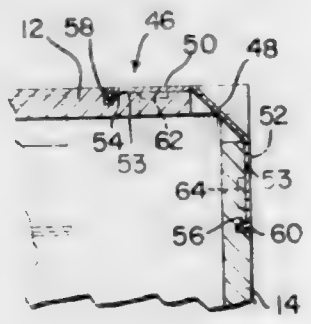
U.S. Cl. 217—13 **4 Claims**

1. A knockdown reusable container, comprising:

a plurality of panels, each having notched edges including notched and projecting steps interfitting with the projecting and notched steps respectively on the edges of adjacent panels to form a rectangular parallel piped, said

panels further including a plurality of clip receiving notches spaced apart along the edges aligned with each other, clip retaining groove positioned adjacent each clip receiving notch, and a trough recessed in the outer surface of said panels between each clip retaining groove and said clip receiving notch; and

a resilient retaining clip having a pair of planar end portions arranged substantially perpendicular to each other, a central portion having a width approximately equal to the width of said clip retaining notches extending between said end portions with said central portion intersecting said end portions at obtuse angles, and a retaining tab



extending inwardly from the end of each end portion of said clip, said clips being positioned on said panels with said central portions extending from one panel to an adjacent panel with the edges of said central portions abutting the inside surfaces of the respective clip receiving notches, said end portions overlying respective recessed troughs on said panels such that the outer surfaces of said end portions are recessed beneath the outer surfaces of said panels, and said retaining tabs being inserted in respective clip retaining grooves to restrict removal of said clips from said panels while increasing the wracking strength of said container and providing said container with a planar outer surface.

4,083,465

RETAINER CLIP AND SYNTHETIC RESIN BOX COMBINATION

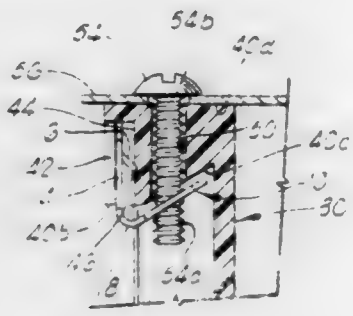
Harold T. Pate, Cleveland, and Richard J. Borsh, Chagrin Falls, both of Ohio, assignors to Indian Head Inc., New York, N.Y.

Continuation-in-part of Ser. No. 607,555, Aug. 25, 1975, Pat. No. 4,036,389. This application Aug. 23, 1976, Ser. No. 716,937

The portion of the term of this patent subsequent to Jul. 19, 1994, has been disclaimed.

Int. Cl.[2] **H02G** *3/14;* **F16B** *19/00, 37/02*

U.S. Cl. 220—3.8 **12 Claims**



1. A spring metal fastener of generally V-shaped configuration comprising:

a first flat, crimp-free, substantially monoplanar leg having edges around the periphery thereof lying in a common plane;

a second flat, substantially monoplanar leg having an opening formed therethrough and disposed centrally therein;

a bend portion joining one end of said first leg to one end of said second leg and reverse bent through an angle of from about 132° to about 137° to define an acute angle between said first and second legs of from about 43° to about 48°; and

a tongue pressed out of the central portion of said first leg and projecting in a plane which extends toward said second leg at an acute angle to the plane of said first leg, said tongue projecting a distance from the plane of said first leg, as measured normal to that plane, which is from about one-half to about two-thirds of the total distance of projection of said bend portion from the plane of said first leg, also as measured normal to the plane of said first leg.

4,083,466

PAINT CONTAINER EXTENSION FOR SUPPORTING A PAINT ROLLER DISTRIBUTOR

C. Chalmer McManaway, 433 Barnett St., West Palm Beach, Fla. 33405

Filed May 23, 1977, Ser. No. 799,724

Int. Cl.[2] **B65D** *25/00, 7/00*

U.S. Cl. 220—90 **12 Claims**



1. A paint container extension for supporting a paint roller distributor for paint rolling adapted to be mounted on an annular rim of a paint container, said paint container extension comprising a tubular member having a center line for extending at an angle to the center line of a paint container, said tubular member having a top rim, said tubular member when mounted on an annular rim of a paint container extending in an angular direction away therefrom for extending over the side of a paint container with one part of its top rim extending the furthest from the center line of a paint container, the bottom of said tubular member having flange means for engaging the annular rim of a paint container, each side of the part of the top rim of the tubular member extending the furthest from the center line of a paint container providing a top support for a paint roller distributor so that the paint roller distributor will extend into a paint container at an angle thereto.

4,083,467

INFANT TRAINING TUMBLER

Keith M. Mullins; Thomas Cannon; Thomas K. Leppert, all of Fort Collins, and Thomas R. Burnell, Bellvue, all of Colo., assignors to Teledyne Industries, Inc., Ft. Collins, Colo.

Filed May 2, 1977, Ser. No. 792,600

Int. Cl.[2] **A47G** *19/22*

U.S. Cl. 220—90.4 **7 Claims**

6. An infant training tumbler comprising:

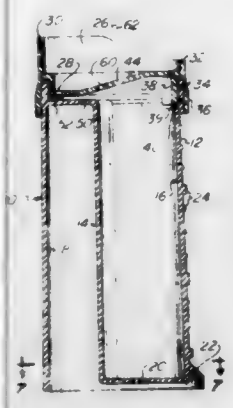
an upright tubular housing;

means within said housing for defining a liquid-containing compartment disposed primarily on one side of a plane containing the longitudinal axis of said housing;

a cap affixed on the upper end of said housing and extending across the top of said compartment;

and means including at least one opening in said cap permit-

ting egress of liquid out of said compartment and from said cap upon tilting of said housing, said opening being dis-



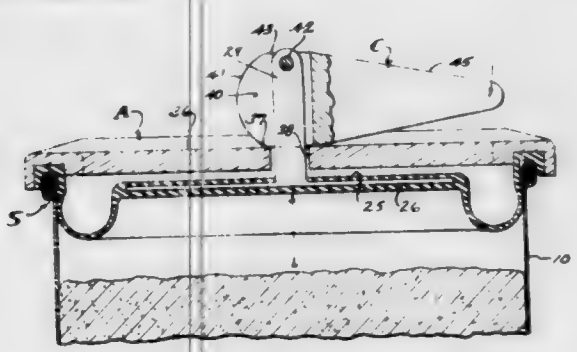
posed on the side of said plane containing said longitudinal axis opposite said one side.

4,083,468

VACUUMIZING CLOSURE FOR VACUUM PACK CONTAINERS

John Howard Batchelor, 1467 Robin La., El Cajon, Calif. 92020

Filed May 20, 1977, Ser. No. 798,794
Int. Cl.[2] B65D *53/00*
U.S. Cl. 220—234 21 Claims



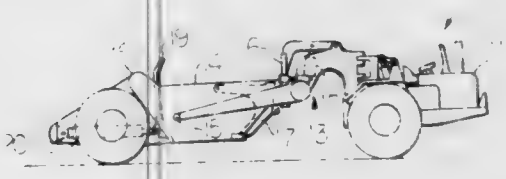
1. A removable vacuumizing closure for the open perimeter end of a container with content remaining therein and including, a positionable diaphragm with seal means releasably engageable with the perimeter end of the container, and actuating means to releasably position the diaphragm outward from a position toward the interior of the container, whereby a partial vacuum is releasably drawn upon said content therein.

4,083,469

BRAKE COOLING CIRCUIT

Lawrence Francis Schexnayder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 16, 1977, Ser. No. 778,273
Int. Cl.[2] F16D *65/853*
U.S. Cl. 214—82 13 Claims



1. In a tractor and towed vehicle, the towed vehicle drawn by the tractor through an articulated connection, the tractor including a source of pressurized fluid, the towed vehicle including wheel brakes and at least one work implement actuable from the tractor; the work implement operable by a jack for adjusting said work implement, the jack operable independently by a control valve on the tractor, separate conduit means for supply and return of fluid from the control valve to each end of said jack, a brake cooling circuit comprising:

a fluid driven motor;
a cooling fluid reservoir;
a radiator;
conduit means for interconnecting said reservoir to the towed vehicle brakes through said radiator;
pump means driven by the fluid driven motor for circulating cooling fluid through the conduit means;
diverter means for selectively diverting pressurized hydraulic fluid from one of the separate conduit means for the one work implement jack for operation of said fluid driven motor; and
temperature sensitive means responsive to brake temperature for operating said diverter means while said brakes are above a predetermined temperature.

4,083,470

GRAIN BOX COVER

Paul Stefanik, R.R. #2, Petrolia, Ontario, and John Voytko, Leonard Crescent, Forest, Ontario, both of Canada

Filed Mar. 30, 1977, Ser. No. 782,739
Claims priority, application Canada, Apr. 2, 1976, 249428
Int. Cl.[2] B65D *43/16*
U.S. Cl. 220—254 4 Claims



1. A grain box cover for mounting over a rectangularly shaped grain box, comprising;

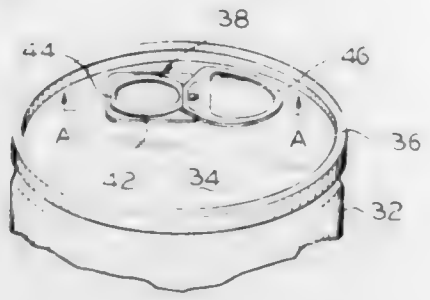
(a) an essentially vertical extending circumscribing wall mating with the grain box to thereby extend the depth and hence the volume of the grain box;
(b) an inclined roof surmounting the extending circumscribing wall, the roof defining an apex along a substantial length thereof from which the roof inclines downward in at least two directions;
(c) a hingeable lid, hinged at its proximate margin to said roof at a location downwardly from the apex thereof, said lid including a distal margin which extends along the roof apex when in closed position; and
(d) hinge means attached to said proximate margin of said hingeable lid and to the roof, said hinge means being disposed below the apex of the roof, said lid, in its closed position, forms part of the roof as the distal margin extends to the apex of the roof to thereby shield the contents of the grain box from direct exposure to the elements, and while in its open position, said lid overlays a segment of the roof below the hinge means to expose the interior of the box.

4,083,471

RESEALABLE FRANGIBLE TOP FOR CONTAINERS

Howard A. Frank, Hoffman Estates, Ill., assignor to Interfrange Ltd., Chicago, Ill.

Filed Dec. 1, 1976, Ser. No. 746,598
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—269 14 Claims



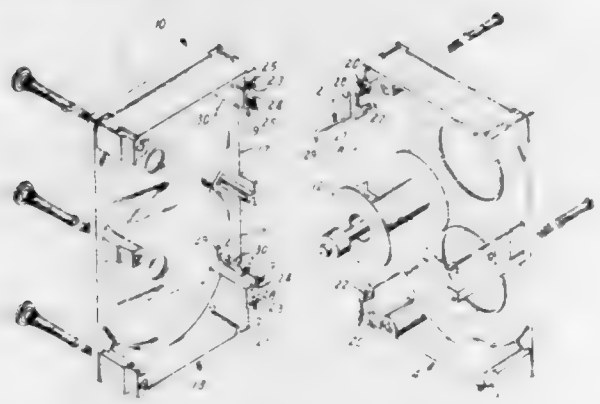
1. A resealable frangible top container comprising an insert having two layers, one of said layers being an upper plate with a score line and a depressed region formed therein, said score line incompletely encompassing an area including said depressed region so that one section of said score line does not rupture and so that the non-ruptured section may act as a hinge when the top is open, the second of said layers being a lower plate with an opening, said depressed region in the upper plate and said opening in said lower plate having substantially the same area and contours so that said depression in the upper plate acts as a stopper for the hole in the lower plate, said upper and lower plate being joined around their periphery to form said insert, and means formed on the top of said can and shaped to surround the periphery of said insert for sealing it to a can top.

4,083,472

TAPE CARTRIDGE WITH HINGED HOUSING SECTIONS

John L. Wharam, Eagan, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 4, 1975, Ser. No. 637,816
Int. Cl.[2] B65D *43/14*; G11B *23/02*
U.S. Cl. 220—334 3 Claims



1. A video tape cartridge that includes a housing for a pair of spaced apart reels in a parallel relationship to one another, which housing is formed of a first housing section and a second housing section that are connected together by at least one knuckle joint comprising:

a male knuckle member that has an open center and protrudes from the sidewall of one of said housing sections;

a channel shaped female knuckle member formed in a sidewall of the other of said housing sections to receive said male knuckle member, said female knuckle member having two sidewalls that each include an aperture therethrough;

an abutment spaced apart from said female knuckle member in a position adjacent one of its sidewalls with at least a portion of said abutment offset from the apertures in the sidewalls of said female knuckle member;

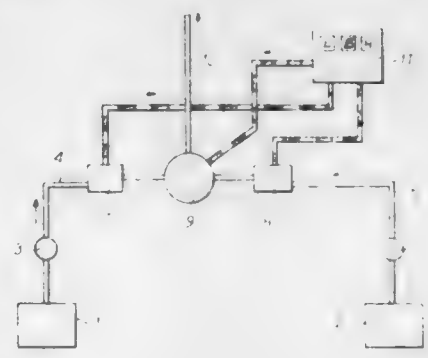
a hinge pin having one terminal end portion extending through the open center of said male knuckle member and journaled in the apertures of said female knuckle member and an opposite terminal end portion lodged against the offset portion of said abutment in such fashion that said pin is maintained under tension in a partially bent condition to securely hold said pin in position connecting said knuckle members together.

4,083,473

LIQUID BLENDING CONTROL SYSTEM

William Thomas Goodwin, and Christopher William Ovens, both of Bracknell, England, assignors to Dresser Europe S. A., Brussels, Belgium

Filed Oct. 14, 1976, Ser. No. 732,290
Claims priority, application United Kingdom, Oct. 14, 1975, 42094/75
Int. Cl.[2] B67D *5/04, 5/10*
U.S. Cl. 222—144.5 4 Claims



1. A liquid blending control system for providing an output which is selectively (a) a first liquid; (b) a second liquid; and (c) a predetermined blend of the first and second liquids, the sytem comprising first and second conduits for conveying the first and second liquids respectively; an outlet coupled to the conduits; a blend control valve connected to control the proportions of the first and second liquids admitted to the outlet from the conduits; an operating lever coupled to control the control valve; first and second solenoids coupled to the operating lever and effective, on being energised, to throw the control lever to one extreme position or the other extreme position respectively and thus control the blend control valve to produce at the outlet the first liquid only or the second liquid only respectively; first and second flow meters in the first and second conduits respectively; a differential having first and second inputs and an output shaft which turns in proportion to the difference between the drives applied to the two inputs; first and second gear trains coupling the flow meters to respective inputs of the differential; an electromagnetic clutch for selectively coupling the output shaft to turn the operating lever, the arrangement including the differential being such that when the clutch is engaged the blend control valve is controlled by the drive from the flow meters to maintain the predetermined blend; and a control circuit which allows one solenoid or the other or the clutch to be energised selectively in accordance with the output required.

4,083,474

APPLICATOR GUN FOR MULTI-COMPONENT RESIN SYSTEMS

Mearle J. Waite, and Frank Wislocker, both of Longview, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

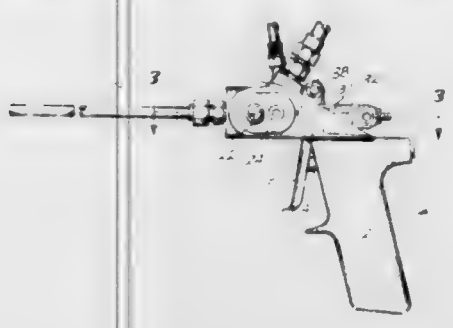
Filed Mar. 21, 1977, Ser. No. 779,448
Int. Cl.[2] B67D *5/56*
U.S. Cl. 222—145 6 Claims

1. An applicator gun for supplying a multi-component compound to a workpiece, comprising;

a body, enclosing a metering chamber, apertured to provide inlets into said chamber for each component of the multi-component compound;

valve means in each inlet for regulating flow of each component into said chamber, each valve having a flow control element, accessible from inside said chamber;

a valve positioner in contact simultaneously with all flow control elements, having contact surfaces such that movement of said positioner axially with respect to the gun body permits the flow control elements to move from substantially zero flow to full flow positions;



an operating rod means for allowing external adjustment of said valve positioner, connected to said valve positioner, extending from said metering chamber, slidably mounted in the gun body and free to move axially with respect to the gun body; and

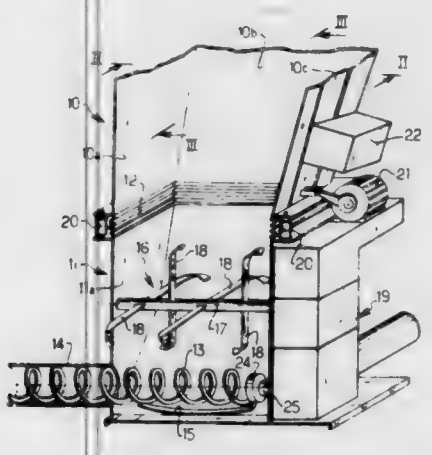
a trigger means mounted on said body and linked to said operating rod means such that full movement of said trigger operates to move said valve positioner between zero flow and full flow positions.

4,083,475

APPARATUS FOR FEEDING AND PROPORTIONING PULVERULENT MATERIALS

Etienne Venner, Bonsecours, and Daniel Lenormand, Romilly-sur-Andelle, both of France, assignors to Dosapro Milton Roy, Pont-Saint-Pierre, France

Filed Jun. 28, 1976, Ser. No. 700,307
Claims priority, application France, Sep. 19, 1975, 75 28815
Int. Cl.[2] B65G *3/12, 33/08, 65/70*
U.S. Cl. 222—198 **8 Claims**



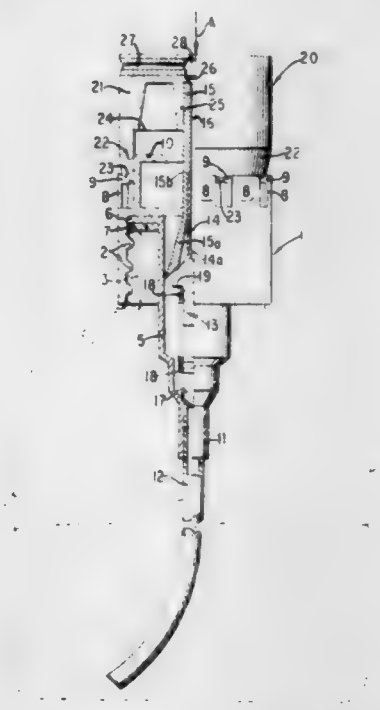
1. Apparatus for feeding and proportioning pulverulent materials comprising in combination: a hopper including an upper section, and a lower section, said upper section being resiliently connected to said lower section by an intermediate section so as to permit movement of said upper section relative to said lower section in random fashion; a rotatable discharge screw mounted horizontally in said lower section and extending through a wall thereof for discharging the material from the hopper; a stirring device rotatably mounted in said hopper above and extending substantially parallel to said discharge screw having a plurality of stirring paddles thereon, said stirring paddles comprising substantially flat strips the ends of which are curved away from the plane of the said strips in opposed directions and being mounted on a rotatable shaft which extends in parallel spaced relation above said discharge screw, said paddles being positioned to convey material stored in said hopper from the regions therein adjacent the walls thereof towards the central region of the hopper; and means for imparting random vibratory or oscillatory movement to the upper section of said hopper relative to said lower section.

4,083,476

SNAP DEVICE FOR MANUALLY ACTUATED LIQUID-ATOMIZING PUMPS

Hans Schwartz, Warthausen-Oberhofen, and Helmut Franz, Mettenberg, Biberach, both of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Continuation-in-part of Ser. No. 711,318, Aug. 3, 1976, abandoned, which is a continuation of Ser. No. 522,228, Nov. 8, 1974, abandoned. This application Dec. 2, 1976, Ser. No. 746,700
Claims priority, application Germany, Nov. 30, 1973, 7342638
Int. Cl.[2] B05B *11/00*
U.S. Cl. 222—321 **3 Claims**



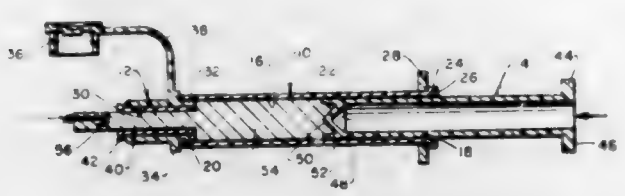
1. A manually operated liquid-atomizing pump assembly for a non-pressurized, liquid-filled container consisting of a pump unit comprising a screw cap and a pump, a pump actuator unit connected to said pump and comprising an atomizing nozzle, said pump actuator unit concentrically slidably mounted over said pump unit and adapted to actuate said pump and expel a spray of atomized liquid from said nozzle upon manual actuation of said pump actuator unit, and a snap device interposed between said screw cap and said pump actuator unit and adapted to snap upon application of a predetermined amount of force to said pump actuator unit, said snap device consisting of a plurality of resilient blades each having a fixed end and a free end, a laterally extending wedge extension attached to the free end of each of said resilient blades, fixed ends of said blades being attached to one of said screw cap and said pump actuator unit, said resilient blades being arranged substantially vertically in a concentric circle about the common sliding axis of said screw cap and said pump actuator unit, and an opposing annular rigid shoulder attached to the other of said screw cap and said pump actuator unit and providing a surface against which said wedge extensions abut.

4,083,477

BAITING TOOL FOR STORING AND DISPENSING FISH BAIT

Niklas F. Zetterberg, 64584 Hughes Rd., Bend, Oreg. 97701

Filed Aug. 9, 1976, Ser. No. 712,922
Int. Cl.[2] G01F *11/02*
U.S. Cl. 222—386 2 Claims



1. In a baiting tool for storing and dispensing fish bait of putty-like consistency, the combination of: elongated tubular cylinder means with opposite discharge and plunger receiving open ends and adapted for receiving a piston therein, a uniform cylindrical outer surface along said cylinder means terminating at said discharge end in a radially outwardly projecting portion and at said plunger receiving end in a relatively short radially outwardly projecting portion; an elongated plunger having a piston-like end, said plunger normally having said piston-like end thereof received in said cylinder means plunger receiving end with said plunger selectively slideable along said cylinder means to dispense said fish bait from said cylinder means discharge end; an outer finger gripping ring telescoping and adapted for being selectively slideable along said cylinder means uniform cylindrical outer surface to and from said outwardly projecting portion of said cylinder means plunger receiving end and to and from said outwardly projecting portion at said discharge end, said finger gripping ring projecting radially outwardly a markedly greater distance than said outwardly projecting portion of said cylinder means plunger receiving end, said finger gripping ring being adapted for being slideably positioned toward said cylinder means plunger receiving end against said outwardly projecting portion during dispensing of said fish bait by said plunger, said finger gripping ring being adapted for being slideably positioned toward said cylinder means discharge end against said outwardly projecting portion during filling of said cylinder means by removal of said plunger and insertion and forcing of said cylinder means plunger receiving end into a bulk supply of said fish bait, the radial projection, of said radially outwardly projecting portion of said cylinder means plunger receiving end, beyond said uniform cylindrical outer surface being only sufficient to retain said outer finger gripping ring to avoid interference with the insertion and movement of said cylinder means plunger receiving end into said bulk supply of said fish bait.

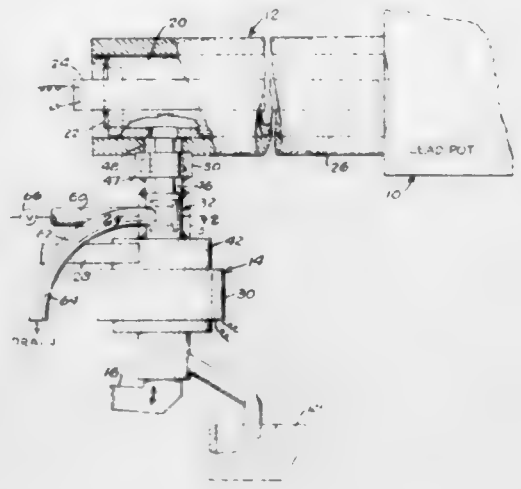
4,083,478

MOLTEN METAL SHUT-OFF VALVE UTILIZING COOLING TO SOLIDIFY METAL FLOW

Jack E. McLane, Port Huron, Mich., assignor to Wirtz Manufacturing Company, Inc., Port Huron, Mich.

Filed Nov. 22, 1976, Ser. No. 743,854
Int. Cl.[2] B22D *41/08*
U.S. Cl. 222—592 8 Claims

1. In a battery grid casting machine having a feed line extending downwardly from a lead pot to a lead dispensing valve, the improvement which comprises, a shut-off valve arranged vertically in said downwardly extending feed line, said shut-off valve having inner and outer sleeves cooperating to define an annular coolant chamber therebetween, means for directing coolant through said chamber and for shutting off the flow of coolant thereto, said inner sleeve having a vertically downwardly extending inlet passageway at its upper end connected to said feed line and an outlet passageway at its lower end connected to said dispensing valve, said inner sleeve also having an intermediate passageway extending vertically between said inlet and outlet passageways, said intermediate passageway being of substantially reduced cross section relative to said inlet passageway and said feed line, said inlet passageway decreasing progressively in cross section to said intermediate passageway, said coolant chamber surrounding said intermediate passageway so that when coolant is directed through said coolant chamber the lead in said intermediate passageway solidifies into a plug which interrupts the flow to



the dispensing valve, and means for heating the dispensing valve to maintain the lead therein in a molten condition, said shut-off valve being disposed adjacent and directly above said dispensing valve in heat exchange relation thereto so that when the flow of coolant through said coolant chamber is discontinued the heat transferred from the dispensing valve to the shut-off valve assists in melting the plug of lead solidified therein.

4,083,479

SEWING AID FOR HANDICAPPED PERSONS

Marceia L. Borden, 7533 Hanover, Detroit, Mich. 48206

Filed Jan. 17, 1977, Ser. No. 759,647
Int. Cl.[2] A41H *31/00*
U.S. Cl. 223—100 4 Claims



1. A sewing aid for handicapped persons who have suffered the loss of use of a hand which comprises:

(a) a flat elongate support base to rest at table top level on a flat supporting surface,

(b) means on said base to grip a supporting surface,

(c) a flexible goose-neck arm supported at one end of said elongate base extending upward and having a distal portion arched to extend in a direction parallel to the base,

(d) a supporting arbor extending outward from said distal end of said goose-neck arm positionable over said base, and

(e) a cylinder telescoped on and supported by said arbor formed of a light rough material such as foamed plastic to frictionally engage fabric thus permitting the user to sew with one hand.

4,083,480

STABILIZING APPARATUS FOR BODY-CARRIED EQUIPMENT

Kenneth K. Lee, Los Altos, and Albert W. Martin, Santa Clara, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Mar. 19, 1976, Ser. No. 668,523
Int. Cl.[2] G03B *17/00*
U.S. Cl. 224—5 V **7 Claims**



1. Stabilizing apparatus for body-carried equipment, comprising:

a saddle mount for engaging the rearward, upper and forward portions of a shoulder of said carrier; and

means for supporting said equipment in balanced condition above said shoulder mount, said last-named supporting means being supported by said saddle mount and being adjustable for movement of said equipment in a forward-rearward direction thereon to achieve said balanced condition of said equipment;

a panning arm extending along an axis forwardly from said saddle mount and having a hand hold formed co-axially with said arm and adjacent the forwardly extending end thereof;

said arm having a downward inclination substantially closer to the horizontal than to the vertical for the restful support of the carrier's arm and hand when relaxed with the fingers of said hand loosely grasping said hand hold; and

a rigid brace extending downwardly and rearwardly from the forwardly extending end of said panning arm, for engaging the midsection of said carrier;

said equipment supporting means having sufficient range is forward-rearward adjustment for balancing the combined masses of said equipment, said panning arm, and said brace with respect to said shoulder mount.

4,083,481

DETACHABLE MOUNTING CLIP ARRANGEMENT FOR MINIATURE PORTABLE APPARATUS OR THE LIKE

George Joseph Selinko, Lighthouse Point, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

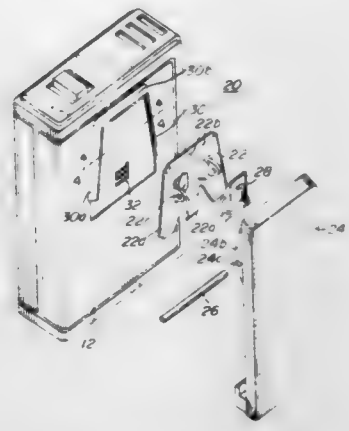
Filed Mar. 10, 1977, Ser. No. 776,324
Int. Cl.[2] A45F *5/02*
U.S. Cl. 224—5 H **3 Claims**

1. A detachable mounting clip arrangement especially suited for use with a portable, hand-held apparatus to be worn on the person, including in combination:

a housing;

a raised ridge on said housing with undercut side walls forming a three-sided tapered recess open at one end, said housing further having a plurality of serrations displaced from said walls;

a base plate dimensioned to insert within said undercut side walls of said raised ridge tapered recess and having a laterally extending resilient finger releasably engaging a



selected one of said housing serrations to lock said base plate in engagement with said housing;

an elongated mounting clip; and

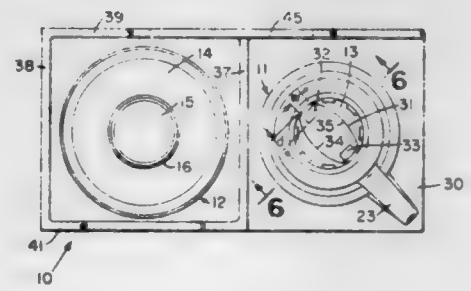
means for pivotably securing said mounting clip to said base plate.

4,083,482

CUP CADDY

Anthony F. Strenczewilk, 72 Knapp Ave., Rochester, N.Y. 14609

Filed Feb. 11, 1974, Ser. No. 440,964
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 G **6 Claims**



1. A cup caddy for cup holders and cup refills of the type which are each mateable along a given cup axis to form a drinking cup, said cup caddy comprising:

(a) a base,

(b) a vertical post mounted on said base for stacking a plurality of said cup holders thereon along said given cup axis when said cup holders have a through-opening coaxial with said cup axis,

(i) said vertical post includes at least one keyway along its length,

(c) each of said cup holders includes at least one key fixed in said through-opening and being in mateable cooperative relationship with said keyway for aligning said cup holder on said post, and

(d) a refill means mounted on said base for containing a plurality of cup refills in stacked relationship along a vertical axis corresponding to said cup axis,

(i) said refill means having an oblong recess communicating with said plurality of cup refills for providing an access to said cup refills along said vertical axis,

(ii) said refill means being proximal to said post.

4,083,483

SHOE HOLDER

Norman Gene Bayless, 7964 SW. 7th St., N. Lauderdale, Fla. 33063

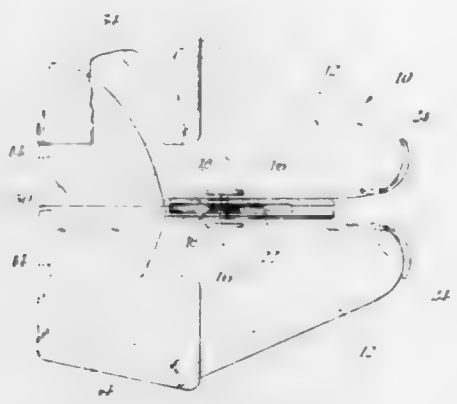
Filed Oct. 8, 1976, Ser. No. 730,698
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 R **7 Claims**

1. A combined shoe holder and carrier comprising:

two cover means including;

two front cover means to encompass the front portion of a pair of shoes, each said front cover means including a front portion, a top portion, a bottom portion and two side portions connected together to provide a rear opening;

two rear cover means to engage the rear portion of the pair of shoes to hold the front portion of the pair of shoes in said two front cover means each said rear cover means including a bottom portion, a rear portion and two side portions connected together to provide a top and front opening;



each said front cover means moveably connected by an adjustable connecting means to a corresponding rear cover means for relative adjustable movement in relation to each other for receiving and holding various sized shoes;

a hinge means connected between said two cover means; and,

a handle means connected to at least one of said front cover means.

4,083,484

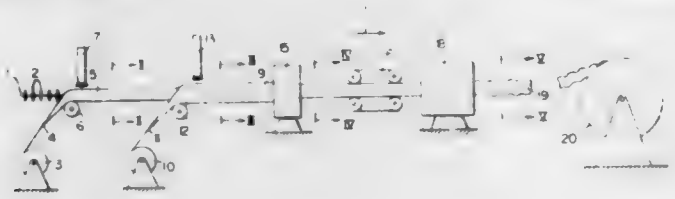
PROCESS AND APPARATUS FOR MANUFACTURING FLEXIBLE SHIELDED COAXIAL CABLE

Fred F. Polizzano, deceased, late of Allendale, N.J. (by Anita Polizzano, executrix); Dimitri R. Stein, Larchmont, N.Y., and Gerhard Ziemek, Hannover, Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte AG, Germany

Filed Nov. 19, 1974, Ser. No. 525,184

Int. Cl.[2] H01B *13/22;* **B23K** *31/02*

U.S. Cl. 228—130 **15 Claims**



1. A process for manufacturing flexible, shielded coaxial cable formed of a plurality of tubular members exhibiting improved screening capabilities, comprising the steps of:

continuously deforming about an inner conductor provided with spacer means a first metal band in a longitudinal direction into a first tubular member, said first metal band being formed of a conductive material;

continuously welding the longitudinal edges of said first tubular member to form a first tubular member having a longitudinally welded seam;

deforming at least a second metal band in a longitudinal direction concentrically about said longitudinally welded first tubular member to form a second tubular member concentrically about said first tubular member, said second metal band being formed of ferromagnetic material;

continuously welding the longitudinal edges of said second tubular member to form a second tubular member having a longitudinally welded seam; and

corrugating both said first and second welded tubular members in a transverse axial direction to provide a common transverse corrugation by corrugating said second welded tubular member into said first welded tubular member to form a dual walled, corrugated metal tube from said first and second welded tubular members.

4,083,485

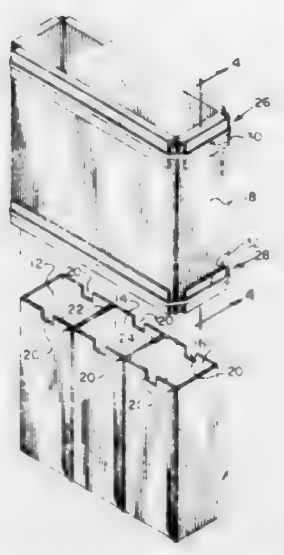
COMBINATION SHIPPING AND STORAGE CONTAINER

Robert A. Bamburg; Farris N. Duncan, both of West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Olinkraft, Inc., West Monroe, La.

Continuation of Ser. No. 557,420, Mar. 11, 1975, Pat. No. 4,040,558. This application Dec. 7, 1976, Ser. No. 748,344

Int. Cl.[2] B65D *5/35, 5/02*

U.S. Cl. 229—23 BT **12 Claims**



1. A combination shipping and storage container comprising:

(a) a removable and reusable outer paperboard shell having at least an open bottom;

(b) an inner paperboard container, positioned within said outer shell, said inner container having at least one product receiving cell;

(c) a removing means, associated with said combination container, for removing said outer shell by lifting said outer shell upwardly from said inner container, said inner container being used to contain products for storage purposes and said outer shell being reusable;

(d) said outer shell being constructed of a heavier material than said inner container to provide stacking strength;

(e) further said outer shell being constructed for engaging an outer wall of said inner container to prevent bulging from the products in the product receiving cell; and

(f) said outer shell and said inner container being constructed so that any frictional holding forces between the walls thereof are less than the combined weight of said inner container and the products in said product receiving cell to permit said outer shell to be lifted from said inner container.

4,083,486

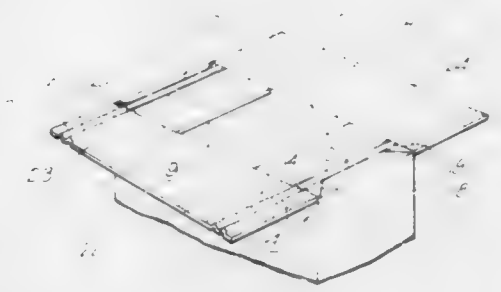
CARTON WITH SIFT-PROOF END CLOSURE

Frank D. Bergstein, Cincinnati, Ohio, assignor to Bergstein Packaging Trust, Middletown, Ohio

Filed Aug. 25, 1977, Ser. No. 827,553

Int. Cl.[2] B65D *5/02*

U.S. Cl. 229—37 R **7 Claims**



1. An end closure for a paperboard carton having four enclosing body walls, a pair of inner closure flaps hingedly connected to the end edges of an opposing pair of said body walls,

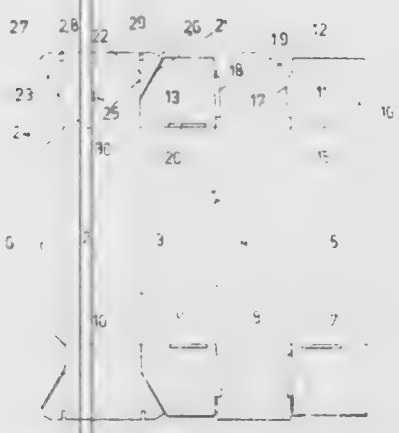
an intermediate closure flap hingedly connected to the end edge of a third of said body walls, and an outer closure flap hingedly connected to the end edge of the fourth body wall, at least one score line formed in each of said inner closure flaps extending in parallel spaced relation to the end edges of the body walls to which said inner closure flaps are hingedly connected, said score lines defining grooves in the outer surfaces of said flaps and corresponding ridges on the inner surfaces of said flaps, debossed areas extending from the outer ends of said score lines to the inner corner edges of said inner closure flaps, said debossed areas defining troughs in the outer surfaces of said inner closure flaps in communication with the grooves defined by said score lines having edges coinciding with the end edges of said inner closure flaps, mating score lines in said intermediate flap positioned to mate with the score lines in said inner closure flaps when the carton is closed, whereby when the flaps are infolded with a thin layer of adhesive interposed between said intermediate closure flap and said inner closure flaps and sealing pressure applied to the flaps, increments of the adhesive will be forced into the troughs to form plugs of adhesive which close and seal the corner edges of the end closure.

4,083,487

SAFETY PACKAGE OF TOOTHPICK HOLDER

Reinaldo Rela Zattoni, Rue Benedita de Oliveira, 112, Itatiba, Sao Paulo, Brazil

Filed Jan. 10, 1977, Ser. No. 758,050
Int. Cl.[2] B65D *5/72*
U.S. Cl. 229—38 **1 Claim**



1. A safety package for holding and dispensing toothpicks in a sanitary way, comprising:

(a) a plurality of sides and a gluing edge attached to one of said sides, all creased by means of creases for forming the package sides;

(b) a plurality of bottom edges fastened to said sides which overlay one another to form a bottom;

(c) a plurality of cover edges fastened to said sides which overlay one another to form a cover, said cover edges further comprising:

(i) a pair of edges having an opening;

(ii) at least one edge having a pair of side cuttings for overlaying said openings when said edges are overlaid to form said cover;

(iii) at least one edge having a pair of creased ears for insertion into said openings through said cuttings when said edges are overlaid, said at least one edge having said ears also having a creased portion in a corner of said edge for breaking and allowing individual access; and

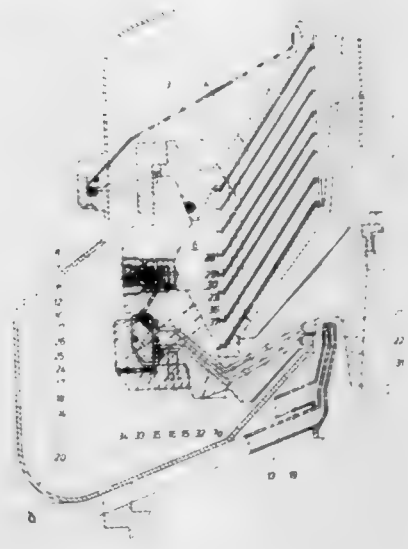
(iv) at least three edges having triangular cuttings which, when said plurality of cover edges are overlaid, are in substantial alignment and overlay said creased portions, whereby said creased portions can be broken and said toothpicks dispensed.

4,083,488

CENTRIFUGAL SEPARATOR HAVING HYDRAULICALLY OPERATED OUTLET VALVES

Hubert Günnewig, Oelde, Germany, assignor to Westfalia Separator AG, Oelde Westfalen, Germany

Filed Mar. 2, 1977, Ser. No. 773,872
Claims priority, application Germany, Mar. 9, 1976, 2609663
Int. Cl.[2] B04B *11/02*
U.S. Cl. 233—20 A **8 Claims**



1. In a centrifugal separator suitable for the concentration of suspended solids having a rotatable drum, hydraulically operated outlet valves uniformly distributed about the periphery of the drum mantle in the plane of greatest drum diameter and including housings containing nozzles having apertures and movable valve bodies shielded from the pressure of the drum charge, the valve bodies being movable by the centrifugal force of the drum at full rotating speed to close the nozzle aperture, the improvement which comprises a ring valve movable between a closed and an open position, for the hydraulic operation of the outlet valves, a passageway network having an inlet adjacent the drum axis, extending through the ring valve and on to the outlet valves for supplying operating liquid to the outlet valves for holding the valve bodies so that the nozzles are open, said passageway network being closed with the ring valve in the closed position so that the passageway network holds the operating liquid therein, and means for moving the ring valve to the open position wherein the passageway network is opened permitting draining of operating liquid from the outlet valves and movement of the valve bodies under the centrifugal force to close the nozzle apertures.

4,083,489

RECORDING DISTANCE MEASURING INSTRUMENT AT VEHICLE WHEEL HUB

Lennart Borgstrom, Svangsta, Sweden, assignor to Record Taxameter AB, Halmstad, Sweden

Filed Sep. 10, 1975, Ser. No. 612.208
Claims priority, application Sweden, Feb. 24, 1975, 7502009
Int. Cl.[2] G01C *22/00*
U.S. Cl. 235—95 C **10 Claims**

1. In a device attached to a hub of a vehicle wheel axle for recording the distance covered by the vehicle, wherein the device includes a counting mechanism utilizing wheels, a printing mechanism for stamping cards, and feed means for advancing the counting mechanism wheels as a function of said distance, drive means for said feed means in the form of a pendulum of annular shape mounted on an axle concentric with the vehicle wheel axle, mechanical coupling means in the form of a worm wheel, and a screw on the pendulum axle to the feed means for the counting mechanism wheels, the improvement comprising:

a feed arm included with said feed means for engaging and indexing the counting mechanism wheels, as the feed arm moves between first and second end positions;

a snap spring for moving said feed arm between said first and said second positions;

means mounting said snap spring in overcenter relationship, with respect to said feed arm, to thereby retain said feed arm in said first and said second positions;

rotating means driven by said worm wheel, which rotates relative to the feed arm, as the vehicle moves, and



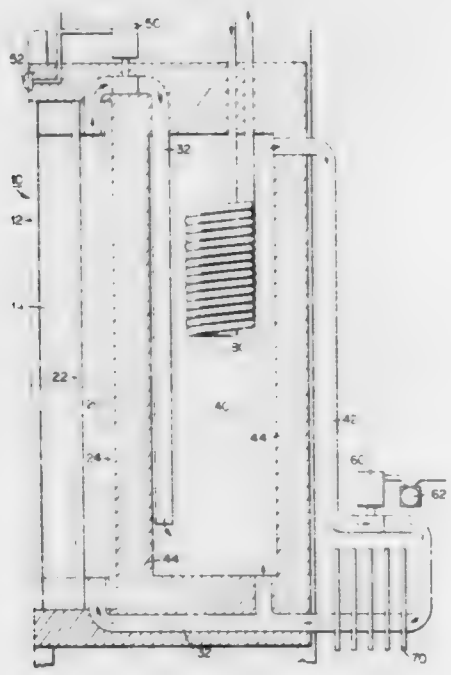
a lost-motion mechanism, disposed between said rotating means and said feed arm for intermittently transmitting motion to said feed arm, to thereby move said feed arm intermittently between said first and second positions, in order to index said counting mechanism wheels.

4,083,490

SOLAR SUPPLEMENTAL HEATING SYSTEM

John Joseph Cunningham, Box 180, Schuylerville, N.Y. 12871; Martin Jeffrey Welch, 16 Underwood Dr., Saratoga, N.Y. 12866, and Henry Francis Puppolo, 218 Corinth St., North Adams, Mass. 01247

Filed Feb. 26, 1976, Ser. No. 661,643
Int. Cl.[2] F24J *3/02*
U.S. Cl. 237—1 A **4 Claims**



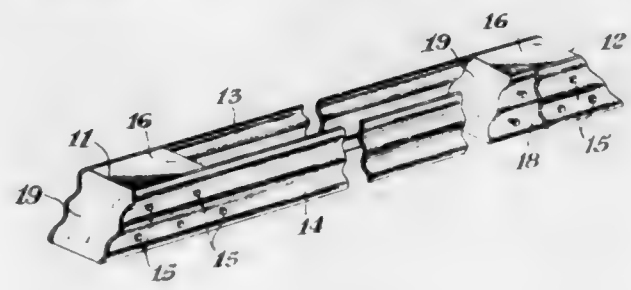
1. A solar supplemental heating system for insertion between the standard stud spacing of domestic dwelling construction, comprising an integral package of a solar heat collector having a width to fill said stud spacing, said collector having an outer transparent face member having a high thermal conductivity, said collector having a rear member having a reflective surface, said collector having an inlet and outlet, a heat storage-emitter of said width located directly behind said collector and spaced therefrom in said package by insulation, said heat storage-emitter having first inlet and first outlet, said storage-emitter being about five times the volume of said collector, conduits connecting the inlet and outlet of said storage-emitter to the outlet and inlet respectively of said collector, said conduits running through said insulation at the top and bottom of said package, a radiator connected to a second inlet and a second outlet of said storage-emitter, a heat collecting fluid medium including a colloidal suspension of finely divided graphite particles in a fluid having a wide fluid temperature range, and means to circulate said medium through said collector, storage-emitter, and radiator by drawing said medium under pressure from said collector to said storage-emitter.

4,083,491

SYNTHETIC RAILROAD CROSSTIE

Albert A. Hill, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 18, 1975, Ser. No. 605,793
Int. Cl.[2] E01B *3/44*
U.S. Cl. 238—98 **5 Claims**



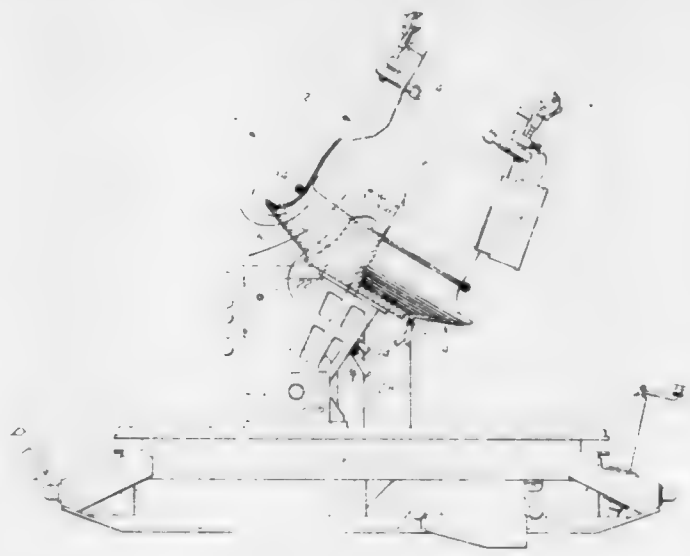
1. In a railroad crosstie, adapted to support rails on a railway roadbed, comprising at least two rail-support blocks and a web system interconnecting and fastened to such blocks, each rail-support block having a base face and a rail face, each such block being adapted to support a rail and to receive rail fastening devices on its rail face, the rail-support blocks being separated from each other by distances corresponding to the distances separating rails to be carried by that crosstie, the interconnecting web system comprising at least one self-supporting rigid sheet component adapted to be buried in particulate ballast when the crosstie is in place in the roadbed, said sheet component having means to interact mechanically with the ballast, the improvement wherein the said self-supporting rigid sheet component is composed of non-metallic material.

4,083,492

APPARATUS AND METHOD FOR PREVENTING ICING ON A SNOW-MAKING MACHINE

Gordon C. Dewey, 157 E. 65th St., New York, N.Y. 10021

Filed Oct. 8, 1976, Ser. No. 731,046
Int. Cl.[2] F25C *3/04*
U.S. Cl. 239—2.5 **14 Claims**



1. A method of making snow at a temperature less than 32° F wherein ice nuclei and water droplets are formed and a rotating member creates an air stream which entrains and mixes the ice nuclei and water droplets whereby they eventu-

ally form snow-like crystals and when the ambient within which the snow-making machine is operated contains ice particles which will adhere to the surface of the rotating member which creates the air stream when the radial force acting on the particle is not sufficient to break the bond between the adhered particles and the surface of the rotating member which includes:

creating an air stream with a rotating member;

forming ice nuclei and water droplets;

entraining the ice nuclei and water droplets in the air stream whereby the ice nuclei and water droplets eventually form snow-like crystals; and,

controlling the flow of the air stream across the rotating member such that the air stream does not contact the surface of the rotating member where the radial force is not sufficient to break the bond between the particles and the surface of the rotating member.

4,083,493

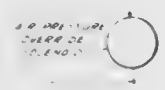
POSITIVE CHECK VALVE CONTROL UNIT FOR COLOR CHANGE SYSTEM

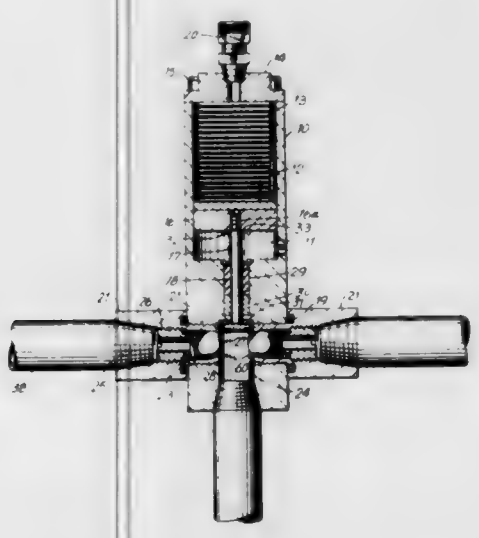
Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Bridgeport, Conn.

Division of Ser. No. 649,074, Jan. 14, 1976, abandoned. This application Mar. 3, 1977, Ser. No. 774,109

Int. Cl.[2] B05B *15/02*

U.S. Cl. 239—112 **3 Claims**





1. In a color change system for a paint spray installation, a purge discharge system comprising

(a) a plurality of spray devices,

(b) paint spray conduit means connected to each of said spray devices,

(c) purge discharge conduit means connected to each of said spray devices,

(d) each of said purge discharge conduit means being connected to a check valve,

(e) said check valves each being connected to a common valve body provided with a common outlet duct,

(f) each of the check valves being provided with an opening for communication with said outlet duct and comprising a ball check and biasing means to urge said ball check against a valve seat at said opening, whereby said check valve is normally closed,

(g) said ball checks each being arranged whereby fluid pressure in the purge discharge conduit means tends to urge the ball check against said valve seat,

(h) said valve body including selectively operable actuating means to engage and displace said ball checks against said biasing means and fluid pressure to positively open said check valves during a color change cycle, and

(i) a common purge outlet conduit means connected to common said outlet duct.

4,083,494

PLANT PERMITTING SPRAYING PROPORTIONING TO THE SPACE COVERED, APPLICABLE IN PARTICULAR TO AGRICULTURAL SPRAYERS

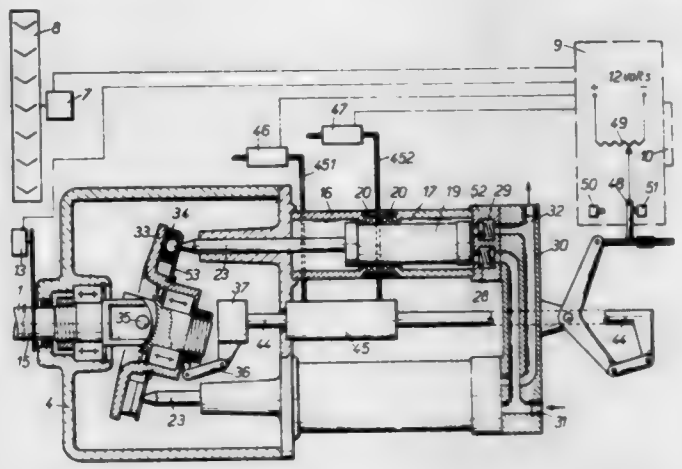
Vincent Pierre Marie Ballu, Epernay, France, assignor to Tecnoma, Epernay, France

Filed Feb. 9, 1976, Ser. No. 656,262

Claims priority, application France, Feb. 7, 1975, 75 03877; Jan. 21, 1976, 76 01557

Int. Cl.[2] B05B *9/06*

U.S. Cl. 239—156 **9 Claims**



1. A mobile spraying plant, which comprises multiple spray heads disposed end to end in substantial alignment, a feeding pump means, means for delivering the spray product output of said feeding pump means to said spray heads, valve means associated with each individual spray head by which the flow of spray product can be shut off and one or more individual spray heads thus rendered inoperative as desired, regulating means operative to decrease the output of said pump means to match the pump output to the number of individual spray heads rendered operative, thereby to ensure that the spraying rate per unit area is maintained constant whatever such number may be, wherein the feed to each individual spray head is controlled by an electrically operated valve, and said regulating means comprises, in respect of each electrically operated valve, an element which is inoperative when that valve is open and operative when it is closed.

4,083,495

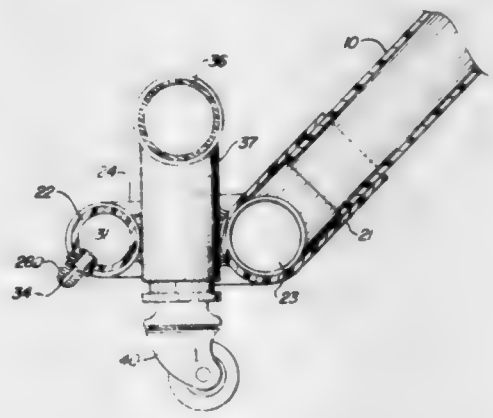
WATER SPRAY DEVICE

Ronald L. Sharp, 2700 S. Federal Blvd., Denver, Colo. 80236

Filed Apr. 5, 1976, Ser. No. 673,877

Int. Cl.[2] B05B *9/02*

U.S. Cl. 239—287 **5 Claims**



1. In a device attachable to a source of pressurized flowable

materials such as water or air for sweeping a surface, the improvement comprising:

a hollow, open ended, elongated, tubulr means adapted at a first end for releasable attachment to the pressurized source,

first and second elongated members rigidly attached in parallel relation to one another with the second end of said tubular means being rigidly attached in perpendcular relation to at least one of said members, said first elongated member including first and second elongated portions interconnected at respective ends by a pair of side portions in a rectangular configuration and having a hollow interior in open communication with the hollow interior of said tubular means coextensive throughout said first and second elongated portions, said tubular means being rigidly attached at a second end to said second elongated portion for open communication between the hollow interiors thereof,

a plurality of spray nozzles attached in an array along said first elongated portion for discharging flowable materials from the interior of said first member and in generally parallel but common directions, and

movable support means movably supporting said first and second elongated members above the surface to be swept, said nozzles being positioned for impinging the discharge thereof at an angle relative to the surface when said tubular means is hand supported, and said movable support means defined by ground-engaging wheels attached for downward extension from opposite ends of said second elongated member in rearward offset relation to said first elongated portion.

4,083,496

ATOMIZER

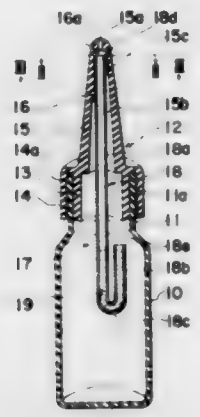
Isao Oshima, Kobe, and Akira Yokogi, Ibaraki, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 27, 1976, Ser. No. 736,188

Claims priority, application Japan, Oct. 28, 1975, 50-147264[U]; Nov. 10, 1975, 50-153199[U]

Int. Cl.[2] B05B 7/24

U.S. Cl. 239—327 **2 Claims**



1. An atomizer which comprises, in combination:

an outer container having an opening through which the interior of said container is communicated to the atmosphere;

a nozzle assembly including a hollow nozzle member, having a substantially elongated passage defined therein, and a body portion, said hollow nozzle member having one end formed with a nozzle in communication with said passage and the other end integrally formed with said body portion, said body portion being mounted on said outer container with said passage in communication with the interior of the container through said opening in said container;

an inner container including a tube portion and a container portion containing a predetermined amount of liquid medium to be atomized, said tube portion having one end inserted into the passage in the nozzle member and terminating adjacent said nozzle and the other end coupled to said container portion;

means for defining an orifice through which, when a grip is applied to the outer container forcing air within the outer container to discharge to the atmosphere through the nozzle, a stream of the air flows while creating within the tube portion a negative pressure necessary to draw the liquid medium within the container portion upwards towards the nozzle through the tube portion, and, with thus created negative pressure in concert with the positive pressure given onto the surface of the liquid medium, to drive said liquid medium towards the nozzle to be atomized;

and wherein said inner container is comprised of a substantially J-shaped tube having a long straight portion, a substantially U-shaped portion and a short straight portion, having one end integrally connected with said long straight portion through said U-shaped portion and wherein said tube portion and said container portion of said inner container being respectively constituted by said long straight portion and said short straight and U-shaped portions of said J-shaped tube.

4,083,497

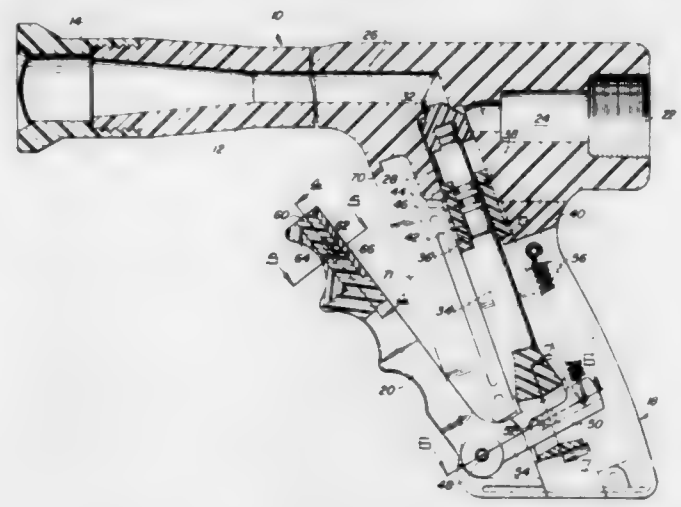
SPRAY GUN

Edwin C. Rosenberger, Piqua, Ohio, assignor to Chem-Lawn Corporation, Dublin, Ohio

Filed Jun. 3, 1976, Ser. No. 692,313

Int. Cl.[2] B05B 7/02

U.S. Cl. 239—526 **4 Claims**



1. A spray gun for liquid insecticides or the like comprising:

(a) a pistol-shaped body of synthetic resin composition having generally hollow barrel and handle sections, the barrel section of said body being formed at opposite ends thereof with relatively parallel but axially offset inlet and outlet passages separated by an intermediate relatively intersecting valve chamber terminating in a valve seat adjacent said outlet passage;

(b) a valve member of synthetic resin composition reciprocable in the valve chamber of said body and movable into and out of seated engagement with the valve seat of said valve chamber to thereby control the flow of liquid from the inlet passage to the outlet passage of said body, said valve member including relatively opposed, substantially equal area surfaces in fluid communication with the inlet passage of said body for hydraulically balancing said valve member when it is engaged with said valve seat;

(c) an elongated valve stem of synthetic resin composition directly connected at one end thereof to said valve member and reciprocable within the handle section of said body for moving said valve member into and out of seated engagement with said valve seat;

(d) a bell crank trigger member pivoted in the handle section of said body and connected to reciprocate said valve stem, said trigger member including a manually operable lever

portion extending outwardly to one side of said handle section; and

(e) spring means in the handle section of said body connected to said trigger member and biasing said valve stem toward a valve-closing position.

4,083,498

FUEL INJECTION NOZZLES

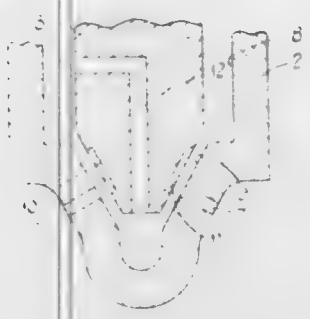
Eric Joseph Cavanagh, Surbiton, and Ivor Fenne, Greenford, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Oct. 14, 1976, Ser. No. 732,339

Claims priority, application United Kingdom, Oct. 21, 1975, 43073/75

Int. Cl.² B05B *1/30*

U.S. Cl. 239—533.3 **10 Claims**



1. A fuel injection nozzle of the kind intended to be mounted in the cylinder head of an internal combustion engine for directing fueld into a combustion space of the engine, the nozzle comprising a body, a bore defined in the body, an outlet orifice communicating with one end of the bore, a valve member slidable in the bore, a seating surface adjacent said one end of the bore, said valve member having a valve surface shaped for co-operation with said seating surface to control fuel flow through said orifice from the bore, said seating surface and said valve surface defining a pair of axially spaced annular sealing zones, the outlet orifice extending from said seating surface intermediate said sealing zones, one of said surfaces intermediate said zones being constructed of softer material than the material forming said zones.

4,083,499

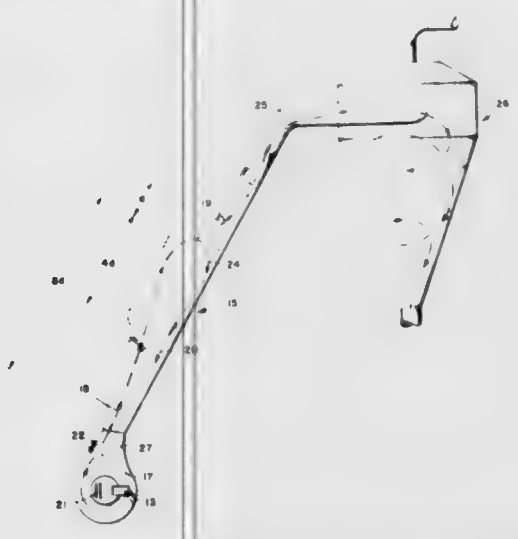
CIGARETTE PACKAGE RIPPER WITH RECYCLING AIR LEG

Richard Eugene Thatcher, Chester, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 15, 1976, Ser. No. 741,598

Int. Cl.² B02C *23/12*

U.S. Cl. 241—24 **6 Claims**



1. A method for ripping open packaged articles such as cigarette cartons, cigarette packs, or cigarettes to remove the tobacco therein, which comprises the steps of conveying said articles successively to the intake of a ripper fan housing, whereby each such article is pulled by the suction thereof into the impeller blades of said fan and ripped open, transferring the ripped materials from said housing into a leg separator having an inclined section from which portions of said materials are carried upwardly to an outlet, while the heavier portions fall out of the air stream and are returned to said ripper fan until said materials become sufficiently light to be conveyed by the air stream to said outlet for removal.

4,083,500

TUBE MILL

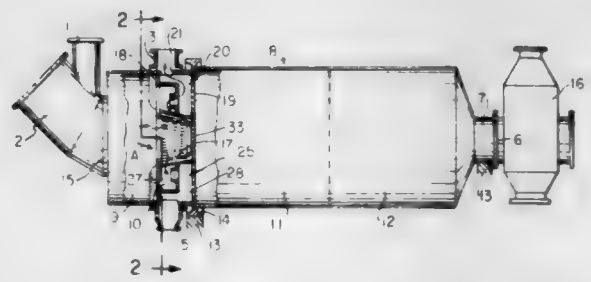
Helge Carl Christian Kartman, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Nov. 19, 1976, Ser. No. 743,100

Claims priority, application United Kingdom, Nov. 21, 1975, 47973/75

Int. Cl.² B02C *23/26*

U.S. Cl. 241—54 **14 Claims**



1. A tube mill for drying and grinding moist material which comprises:

a. a material drying compartment for introducing hot gases and material therein so as to entrain at least a portion of the material in the hot gases;

b. a grinding compartment communicating with said drying compartment and having a material inlet end portion and a material outlet end portion;

c. a separating chamber communicating said drying compartment with said grinding compartment, said separating chamber defining at least one outlet opening at a peripheral portion for the passage of gases therethrough, said separating chamber having generally annular end wall portions, each defining at least one opening;

d. means for defining a plurality of compartments within said separating chamber and for conveying material from said drying compartment to said separating chamber;

e. means for dividing said compartments into upstream and downstream portions and defining openings therein, said openings being positioned between said upstream and downstream portions to define a circuitous path for passage of gases and entrained material through said compartment portions whereby at least a portion of the entrained material is separated from the gases;

f. a sieve drum having a frustoconical configuration positioned within the separating chamber to receive gases and entrained material from the drying compartment, said sieve drum defining a generally circular opening at one end portion and a generally circular opening of lesser diameter at the other end portion so as to be tapered generally in the direction of the grinding compartment; and

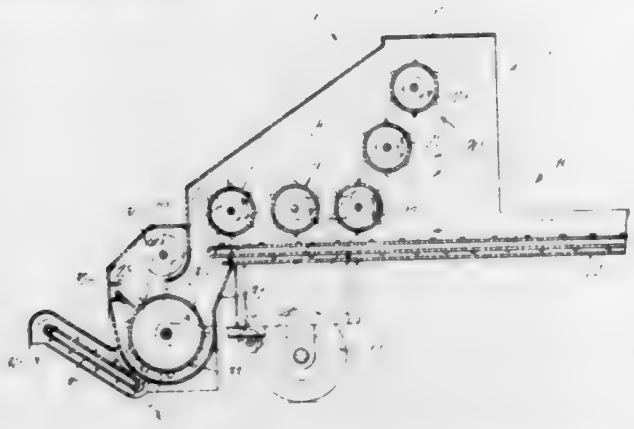
g. sieving means positioned within the opening of lesser diameter of the sieve drum.

4,083,501

MATERIAL DISINTEGRATING APPARATUS

Kelly P. Ryan, Blair, Nebr., assignor to Blair Manufacturing Company, Blair, Nebr.

Filed Jan. 24, 1977, Ser. No. 761,724
Int. Cl.[2] B02C *13/20, 13/286*
U.S. Cl. 241—101 A 4 Claims



1. Apparatus for reducing a large bale of material to short lengths comprising an elongated bed, a housing at one end of the bed, said housing have a top wall and depending side walls enclosing the rear portion of the bed, conveyor means for receiving a bale and advancing the bale along the bed and into the housing, a plurality of disintegrating rolls in the housing and extending from side to side thereof said rolls being mounted for rotation about parallel horizontal axes with at least three disintegrating rolls being arranged in an array inclining upwardly toward a bale advancing in the conveyor, a fourth disintegrating roll in the housing and extending from side to side thereof, said fourth disintegrating roll being mounted for rotation about a horizontal axis parallel to the axes of the other disintegrating rolls and being horizontally spaced from the lowermost disintegrating roll of said array in a direction away from an advancing bale, means for rotating all of said rolls in a common direction, a feed roll in the housing and extending from side to side thereof, said feed roll being mounted for rotation about a horizontal axis parallel to the axes of the disintegrating rolls and being horizontally spaced from the lowermost disintegrating roll in a direction away from an advancing bale, means for rotating the feed roll in a direction opposite to the direction of rotation of the disintegrating rolls, with said lowermost disintegrating roll said fourth disintegrating roll and said feed roll forming a horizontally arranged array of rolls, said conveyor means having an end portion within the housing and extending entirely underneath said horizontally arranged array of rolls, said housing being constructed and arranged to provide an expansion chamber of substantial volume above all of the rolls, means forming a downwardly extending chute rearwardly of the feed roll, a cutting chamber communicating with the chute, and means in the cutting chamber for cutting material fed thereto by the feed roll and delivering the cut material to a discharge.

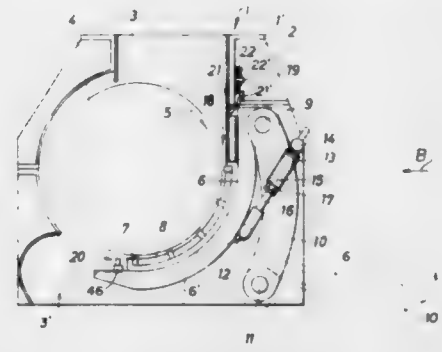
4,083,502

MATERIAL SHREDDER, ESPECIALLY FOR SUGAR CANE

Dietrich Dittman, Salzgitter, Germany, assignor to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

Filed Feb. 2, 1977, Ser. No. 764,748
Claims priority, application Germany, Feb. 10, 1976, 2605050
Int. Cl.[2] B02C *13/04*
U.S. Cl. 241—189 R 10 Claims

1. A shredder apparatus especially for sugar cane comprising housing means (12) with inlet means for material to be shredded, and outlet means for shredded material, hammer rotor means (4) supported for rotation in said housing means, anvil means (6), guide support means (10) movably supporting said anvil means in said housing relative to said hammer rotor means, said guide support means including first journal means (9) journaling said guide support means (10) to said anvil means (6) and second journal means (11) journaling said guide support means (10) to said housing means (2), independently of said anvil means, resilient pressure means (13) connected to said housing and to said anvil means for cooperation with said anvil means (6) and through said anvil means with said guide support means to yieldingly urge the anvil means toward said hammer rotor means and so that a force component is effective substantially tangentially relative to said anvil means, and



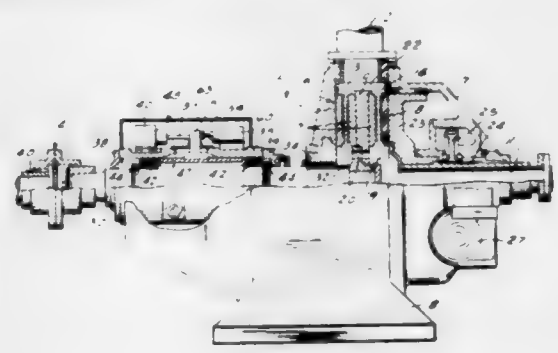
adjustable stop means operatively arranged between said housing means and said anvil means for limiting the spacing between said hammer rotor means and said anvil means to a certain minimum, said anvil means (6), said guide support means (10), and said resilient pressure means cooperating in such a manner that the anvil resistance against yielding is substantially constant throughout the range of anvil yielding movement.

4,083,503

PAPER STOCK ROTOR AXIAL POSITION CONTROLLING AND LOCKING DEVICE

Robert P. Langdon, Savoy, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 8, 1976, Ser. No. 731,049
Int. Cl.[2] B02C *7/00*
U.S. Cl. 241—259.1 12 Claims



1. In a paper stock refiner equipped with a rotary shaft supporting a rotor having oppositely facing refiner surfaces, a stator having refiner surfaces facing said rotor surfaces and defining with the rotor surfaces refining spaces in operation of the refiner, means for delivering stock to be refined into the spaces between the rotor and the stator surfaces, means for discharging the refined stock, and supporting means for the shaft including a stationary bearing quill within which the shaft is axially and rotatably movable in operation, the improvement comprising:

an actuator carried by the quill;

the quill having an axially extending and radially inwardly facing inner bearing surface;

axially spaced bearing assemblies on said shaft having inner races fixed for axial movement with the shaft and the assemblies having outer races in axially slidable bearing engagement with said inner bearing surface of the quill;

and transmission means for transmitting axial force from said actuator to said shaft comprising an axially extending

member located between and engaged with axially facing shoulders on said outer bearing races.

4,083,504

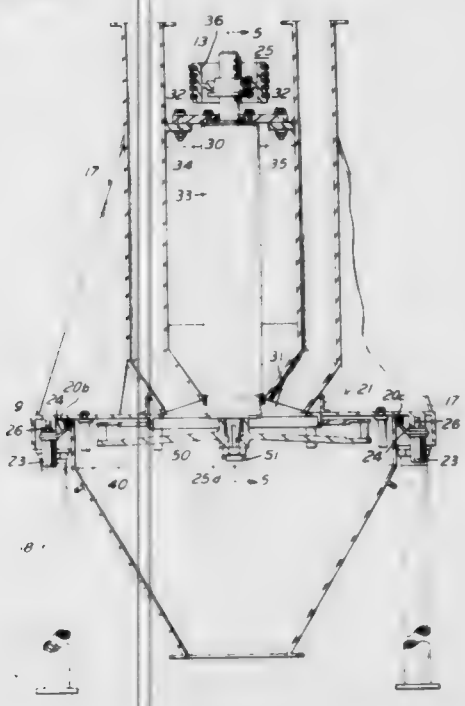
ROTARY PROCESSING APPARATUS

Gurdon B. Wattles, North Haven, and Robert N. Jones, Wallingford, both of Conn., assignors to Entoleter, Inc., Hamden, Conn.

Continuation of Ser. No. 576,322, May 12, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,365

Int. Cl.² B02C *13/09*

U.S. Cl. 241—275 **13 Claims**



1. Rotary processing apparatus comprising, in combination:
a. a supporting frame assembly,
b. a vertical rotary spindle mounted atop and through said frame,
c. a processing rotor within said frame releasably attached to the lower end portion of said spindle,
d. motor means for imparting rotary motion to said spindle and including means coupled to said spindle for driving the latter,
e. at least two chute means for conducting material to be processed to said rotor for processing thereby, said chute means being mounted atop said frame assembly,
f. mounting means supported by and connected to the sides of both of said chute means and providing the primary support for said motor means laterally of said chute means,
g. a normally vertical hopper into which processed material falls which is pivotally mounted to said frame permitting it to be swung downward from a position primarily below and partially around said rotor and concentric therewith to a position enabling access to the interior of said hopper and to the environs of said rotor.

4,083,505

SPINNING MACHINE WITH THREAD APPLYING DEVICE

Klaus Burkhardt, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Feb. 2, 1976, Ser. No. 654,620

Claims priority, application Germany, Jun. 14, 1975, 2526768; Aug. 4, 1975, 2534699

Int. Cl.² B65H *54/02, 54/20*

U.S. Cl. 242—18 PW **4 Claims**

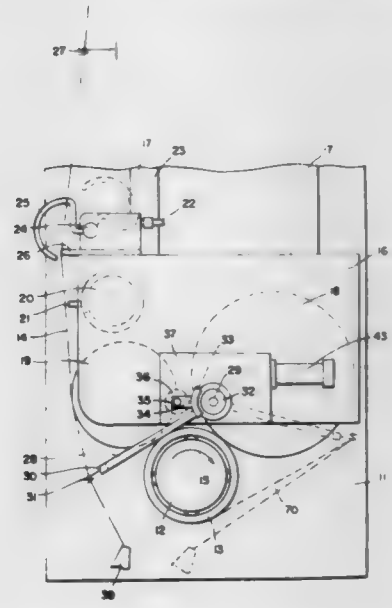
1. In a winding machine for the winding of a number of threads, said winding machine being of the type having a spool spindle arranged to receive a corresponding number of spool sleeves, and having a corresponding number of thread traversing devices for building up a respective bobbin, each of said spool sleeves being provided, at a predetermined position axially of said spindle, with a thread-capturing device,

the improvement that there are provided movable thread applying means for automatically causing said number of threads to execute a movement about as well as axially of said spindle, said movable means including

a thread applying arm extending along at least a part of the length of the spool spindle and supported for rocking movement about a rotational axis such that the spool spindle with said number of empty spool sleeves thereon lies within the space circumscribed by said rocking movement, and

as many open thread guides carried by said arm as there are spools simultaneously wound on said spindle,

that there are provided means for rocking said thread applying arm with said open thread guides thereon from a first rotational position in which each said thread is free of the circumferential surface of the corresponding spool sleeve,



to a second rotational position in which each said thread contacts said circumferential surface, and moving, in automatically timed relationship to said rocking movement, each said thread guide axially in relation to the spool spindle from a first axial position in which each said thread is disposed at a position outside the respective bobbin winding range and also outside the effective range of the respective capturing device, to a second position in which each said thread is at a position within the last-mentioned effective range so that, incidentally to said axial movement, each said thread is captured by its respective capturing device,

that each said open thread guide is fixedly secured to said thread applying arm,

that said thread applying arm is mounted on an axle supported, for rotation and for axial displacement relatively to the spool spindle, in a bearing bushing having a thread-like guide slot, and

that there is radially secured to said axle a guide pin which extends into said guide slot.

4,083,506

WIRE SPOOLER

Keith Anthony Mander, Stockport; Keith James Mitchell, Higham; Barry Arthur Kempster, Bexley, and David Rodger, Cliffe, all of England, assignors to Babcock Wire Equipment Limited, Rochester, England

Filed Mar. 24, 1976, Ser. No. 669,822

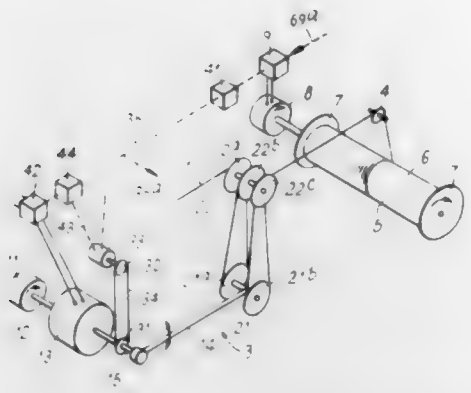
Claims priority, application United Kingdom, Nov. 20, 1975, 36779/74; Nov. 20, 1975, 36780/74

Int. Cl.² B65H *54/28*

U.S. Cl. 242—25 R **5 Claims**

1. A wire spooler, comprising a spool having end flanges, a

motor arranged for rotating the spool, a lead-in pulley arranged for leading the wire onto the pulley between the end flanges, means for effecting between the spool and the lead-in pulley a relative reciprocatory movement that distributes the wire along the spool between the end flanges while it is being wound onto the spool, a wire tension controller having fixed pulley means and movable pulley means biased in a direction away from the fixed pulley means and arranged with the wire passing around both pulley means before it travels to the lead-in pulley, signal-generating means arranged for generating a measuring signal representative of the distance between the fixed pulley means and the movable pulley means, spool speed adjusting means arranged in dependence upon the measuring signal to regulate the spool speed in the sense to maintain said



distance constant, and reversal point adjusting means for adjusting the reversal points of the relative reciprocating movement, the improvement comprising the combination of further signal-generating means arranged to detect periods when the lead-in pulley is within a fixed distance from a reversing point and to generate during such periods a signal preventing during such periods regulation of the spool speed in dependence on the measuring signal and to make possible transfer at the end of each such period of the final value attained by the measuring signal during the period to operating means for the reversal point adjusting means, said operating means being caused to be responsive to said final value of the measuring signal to change the reversal point by a distance proportional to said final value of the measuring signal in the sense to reduce wound wire profile deficits or excesses adjacent the spool end flanges.

4,083,507

GROOVED, YARN-DISTRIBUTING TRAVERSING CYLINDERS IN TEXTILE MACHINES

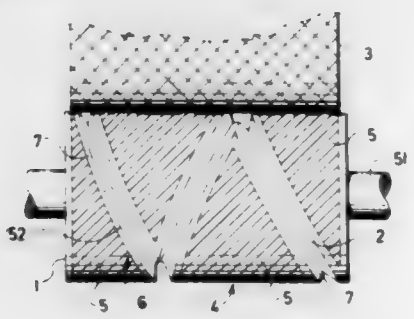
František Pospíšil; Stanislav Škoda; Stanislav Ešner; Miroslav Tyl, all of Usti nad Orlici; Karel Mikulecký, Chocen, and Miloslav Jiskra, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Oct. 1, 1976, Ser. No. 728,838

Claims priority, application Czechoslovakia, Oct. 3, 1975, 6706/75

Int. Cl.² B65H *54/48*

U.S. Cl. 242—43.2 **7 Claims**



1. In a textile machine having a yarn take-up bobbin and a rotatable distributing cylinder having a periphery disposed adjacent and in frictional driving relation to the bobbin, the cylinder exhibiting at least one helical distributing groove disposed along the periphery thereof for paying yarn onto the bobbin while the bobbin is driven by the cylinder, the improvement wherein the periphery of the cylinder exhibits a first relatively large smooth surface region having a first relatively large coefficient of friction, the boundaries of the first surface region being spaced from each peripheral wall of each distributing groove on the cylinder to define therebetween a second smooth, relatively small surface region on the periphery of the cylinder for isolating yarn exiting from the grooves from the first surface region, the second surface region having a second coefficient of friction substantially smaller than the first coefficient of friction.

4,083,508

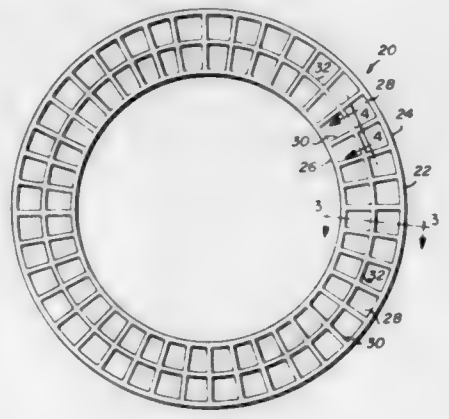
TAPE STORAGE REEL WITH INSERT FOR DECREASING TAPE STORAGE CAPACITY

Luther A. Pattillo, Opelika, Ala., assignor to Data Technology Corporation, Costa Mesa, Calif.

Filed Dec. 17, 1976, Ser. No. 751,388

Int. Cl.² B65H *75/14, 75/18*

U.S. Cl. 242—68.5 **8 Claims**



7. An insert for a magnetic tape reel having a central hub and a pair of spaced apart circular flanges to decrease tape capacity, said insert being disposed over said hub and abutting said flanges, and comprising:

an inner circular, continuous nonresilient and nonmetallic rim having an internal diameter for providing a sliding fit over said central hub;

an outer circular continuous nonresilient and nonmetallic rim having an external diameter selected according to the desired length tape to be stored on the reel, the outer peripheral surface of said outer rim forming the hub on which the tape is to be wound;

a flat central continuous nonmetallic web rib integrally connecting said rims so that they are concentric, said web rib being symmetrical with respect to the outer edges of rims;

a plurality of nonmetallic radial ribs integrally connected to said inner rim, said outer rim, and said web rib on both sides of said web rib; and

a nonmetallic circumferential rib concentric with said rims on either side of said web rib, said circumferential rib integrally connecting said radial ribs and said web rib.

4,083,509

REEL FOR MAGNETIC RECORDING TAPE

Anil Vasudeva, San Jose, and Don W. Geri, Palo Alto, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Continuation of Ser. No. 728,503, Oct. 1, 1976, abandoned. This application Apr. 4, 1977, Ser. No. 783,980

Int. Cl.² B65H *75/18*

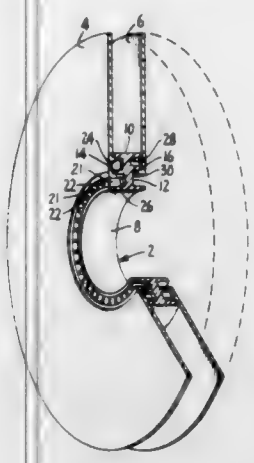
U.S. Cl. 242—71.8 **26 Claims**

1. A reel for magnetic recording tape, comprising

a hub including axially extending coaxial inner and outer rims joined by a radially extending web, and a coaxial

intermediate ring on each side of said web extending axially outwardly of said web;

a pair of opposed flanges attached to and extending radially outwardly of said hub with a first said flange received on a first axial side of said hub and a second said flange received on the second, opposed axial side of said hub, each flange having a pair of coaxial rings extending axially inwardly of said reel with the radially outer said flange ring on each said flange being received against the corresponding radially inward portion of said outer rim, and the radially inner said flange ring on each said flange being received against the radially inward portion of the corresponding said intermediate ring, whereby the flange rings may serve to support their adjacent respective hub outer rim and intermediate ring portions against radially inward deflection; and



a lockout ring groove formed in said reel second side between said hub inner rim and said second flange inner ring.

4,083,510

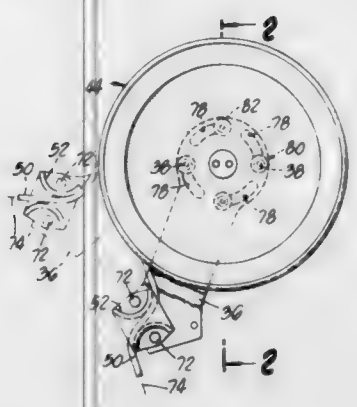
SELF-ADJUSTING FAIRLEAD FOR SPRING REWOUND TAGLINE DEVICE

Secundino G. Gomez, Los Angeles, Calif., assignor to McCaffrey-Ruddock Tagline Corporation, Los Angeles, Calif.

Filed Jun. 14, 1976, Ser. No. 695,638

Int. Cl.[2] B65H *75/48*

U.S. Cl. 242—107 **2 Claims**



1. A spring rewound tagline device, comprising:

(a) an elongate housing structure;

(b) a cable reel at one end of said housing for paying out and retrieving a cable, said reel being supported on a shaft rotatably mounted in said housing and being connected to a rewind spring therein;

(c) means for guiding the cable in its movement to and from said reel;

(d) means for supporting said guiding means adjacent the reel periphery for automatic adjusting movements in response to changes in the lead-off angle of the cable at said guiding means comprising:

an elongate support arm mounting the guiding means at an outer end thereof,

said arm having a flat inner end portion abutting said one end of said housing and having an opening loosely surrounding said shaft,

a plurality of circumferentially spaced arcuate slots through said flat inner end portion surrounding said opening,

a stud means on said housing extending through each of said slots for swingably mounting said inner end portion of the arm to said one end of said housing for limited pivotal movement of the support arm about the axis of said shaft; said stud means including a stud bushing movable in a slot, said bushing having a length greater than the thickness of the material containing said slot; and a radially projecting end flange portion in overlapping relation to the adjacent marginal surface of the associated slot to retain the arm inner end portion in sliding engagement with said one end of said housing.

4,083,511

SEAT BELT RETRACTOR

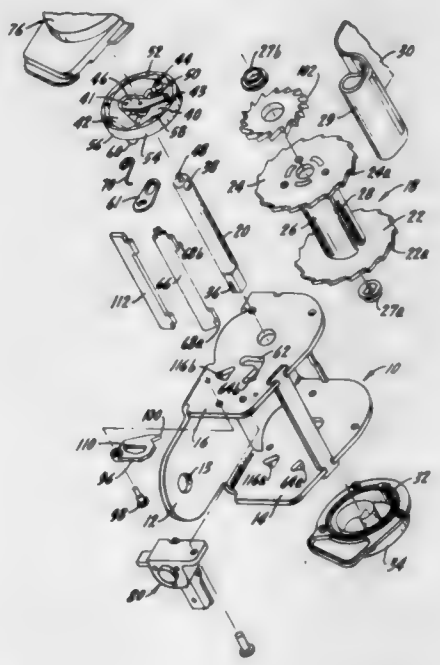
Haruyuki Ikesue, Fujisawa, Japan, assignor to NSK-Warner K. K., Fujisawa, Japan

Filed Mar. 26, 1976, Ser. No. 670,966

Claims priority, application Japan, Apr. 3, 1975, 50-44185[U]; Jun. 5, 1975, 50-75303[U]

Int. Cl.[2] A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **6 Claims**



1. A seat belt retractor having,

(a) a frame including a base and an outwardly extending flange on two opposite sides;

(b) a webbing reel journaled between said flanges and having ratchet gears constrained for rotation with said reel;

(c) biasing means connected to said reel biasing said reel in a direction to take up webbing upon the reel;

(d) locking means responsive to a rate of webbing payout in excess of a predetermined rate comprising:

1. a first locking bar supported by said flanges and movable to engage said ratchet gears to preclude payout of said webbing;

2. a centrifugal counterweight rotatable with said reel for sensing the rate of webbing payout;

3. operating means interposed between said counterweight and said first locking bar engagable by said weight in response to payout of webbing in excess of said predetermined rate and operable by continued rotation of said reel to move said first locking bar into engagement with said ratchet gears;

4. biasing means urging said centrifugal counterweight out of engagement with said operating means, said biasing means establishing said predetermined rate of webbing

payout in excess of which said weight engages said operating means;

(e) and locking means responsive to changes in vehicle acceleration comprising:

1. a second locking bar supported by said flanges and movable to engage said ratchet gears to preclude payout of said webbing;
2. a secondary ratchet gear constrained for rotation with said reel;
3. a ratchet lever mounted on one of said flanges for controlled engagement of said second locking bar and having a non-locking position, an intermediate position wherein said lever is engagable by said secondary ratchet gear and a locking position;
4. inertia sensitive means responsive to changes in vehicle acceleration engagable with said ratchet lever to move said lever from said non-locking position to said intermediate position in response to a predetermined change in vehicle acceleration;
5. rotation of said webbing reel in the direction of webbing payout with said ratchet lever in said intermediate position engaging said secondary ratchet gear with said ratchet lever and continued rotation moving said ratchet lever to said locking position;
6. movement of said ratchet lever to said locking position causing said lever to engage and move said second locking bar into engagement with said ratchet gears;
7. said inertia sensitive means being sized in relation to the size of said biasing means of said locking means sensitive to the rate of webbing payout such that upon subjecting said safety belt retractor to a change in vehicle acceleration which simultaneously imparts to the webbing by the wearer a force in the direction of webbing payout, said inertia sensitive means will operate said ratchet lever to move said ratchet lever from said non-locking to said intermediate position prior to said centrifugal counterweight operating against the bias of said biasing means to engage said operating means interposed between said weight and said first locking bar.

4,083,512

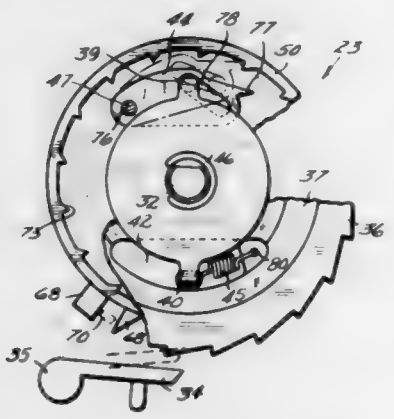
INDEPENDENT REDUNDANT CLUTCHLESS RETRACTOR

Robert John Rumpf, Grosse Pointe, Mich., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 2, 1976, Ser. No. 673,350

Int. Cl.² A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A **9 Claims**



1. An inertial retractor mechanism for safety belt webbing, having a bias to rewind, the structure for drivably locking said retractor against withdrawal comprising:

a frame;

a webbing drum having ratchet end flanges journalled in said frame;

a lock bar pawl in said frame in tiltable lock relation to said ratchet end flanges;

a flywheel having a clearance opening and a recess;

a pilot pawl pivoted on said flywheel and including a positive drive connection to said drum through said clearance opening in said flywheel;

an inner faced ratchet in independent rotational relation to said flywheel located in said recess of said flywheel and coaxial therewith, said inner faced ratchet including drive projections connected to said lock bar and said inner faced ratchet in engageable register with said pilot pawl, said inner faced ratchet having an equal number of teeth to the teeth on said ratchet end flanges of said drum;

means resiliently connecting said flywheel to said drum for rotation therewith whereby upon lagging in rotation of said flywheel relative to said drum, said pilot pawl is driven by said positive drive connection into engagement with said inner faced ratchet, and said lock pawl bar is tilted, by rotation of said inner faced ratchet, into locking engagement with said ratchet end flanges.

4,083,513

WARP BEAM

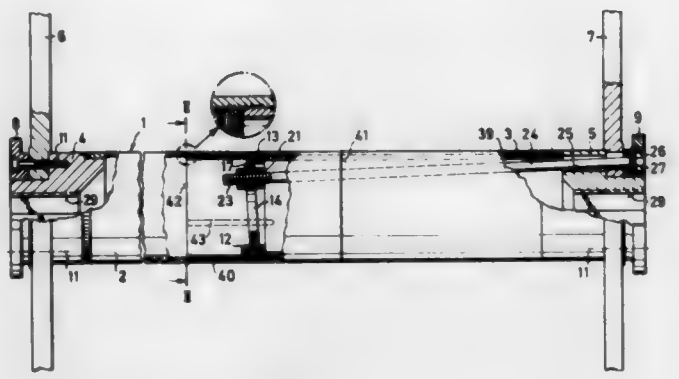
Erwin Pfarrawaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 12, 1975, Ser. No. 630,952

Claims priority, application Switzerland, Dec. 5, 1974, 16148/74

Int. Cl.² B65H *75/14*

U.S. Cl. 242—118.6 **10 Claims**



1. A warp beam comprising

at least two telescopically engaging elongated rigid tubular parts disposed in overlapping relation to define a common area of overlap and an elongated cylindrical surface to receive warp threads thereon;

a flange attached to each of the parts at opposite ends of the thread receiving surface; and

clamping means mounted within the innermost part of said parts for pressing said innermost part radially outwardly against the outermost part within said area of overlap, said clamping means being located between the flanges.

4,083,514

YARN TENSIONING DEVICE

Nathan Levin, 416 Highgate Dr., Trenton, N.J. 08618

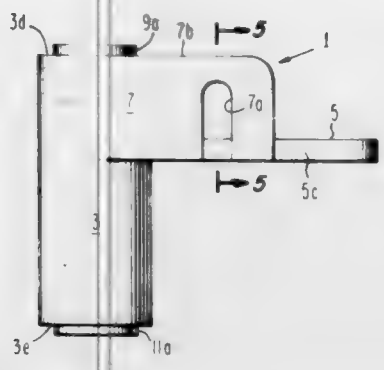
Filed May 3, 1976, Ser. No. 682,714

Int. Cl.² B65H *59/22*

U.S. Cl. 242—152.1 **7 Claims**

1. A yarn tensioning device having a housing of predetermined length, said housing having a yarn passageway extending lengthwise therethrough with said passageway positioned vertically when said device is in its operative position, said device having means within said passageway to apply tension to and to guide a moving yarn passing through said passageway, and a first and a second mounting bracket for said device, said brackets being formed integrally with and extending laterally from said housing, said first bracket extending parallel to a horizontal plane and said second bracket extending parallel to a vertical plane when said device is in its said operative position, said brackets intersecting at right angles and being inte-

grally joined at such intersection, said brackets having slots formed therein, whereby said brackets can be used to mount



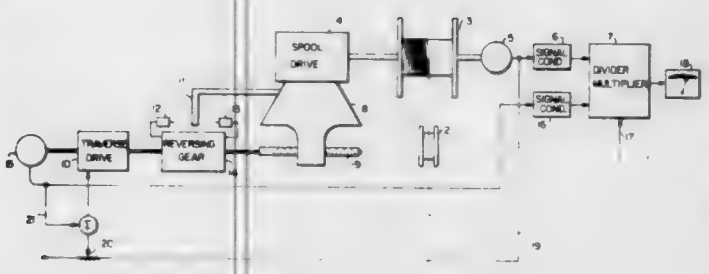
said device in its said operative position upon horizontal and upon vertical surfaces.

4,083,515

METHOD AND APPARATUS FOR DETERMINING AND CONTROLLING WIRE SPACING ON A SPOOL

Henry A. Dickerson, Bristol, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1975, Ser. No. 634,001
Int. Cl.² B65H *54/30*
U.S. Cl. 242—158 R **11 Claims**



7. In an apparatus for winding a wire onto a spool, said apparatus having means for controlling the speed at which said wire traverses relative to said spool speed, apparatus for setting the distance traversed per spool revolution comprising:

1. means for generating a first signal proportional to said traverse speed;
2. means for generating a second signal proportional to the speed that said spool rotates;
3. means for dividing one signal by the other signal to produce an output signal;
4. means for displaying said output signal in units traversed per spool revolution; and
5. means for maintaining the ratio of traverse speed to spool speed.

4,083,516

REEL MOUNTING FOR RECORDING OR REPRODUCING APPARATUS

Albert Schuch, Schwechat; Harald Hohenecker, Vienna; Herbert Riegler, Vienna, and Friedrich Weirich, Vienna, all of Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Dec. 21, 1976, Ser. No. 752,817
Claims priority, application Austria, Dec. 22, 1975, 9731/75
Int. Cl.² G03B *1/04*; G11B *15/32*
U.S. Cl. 242—193 **21 Claims**

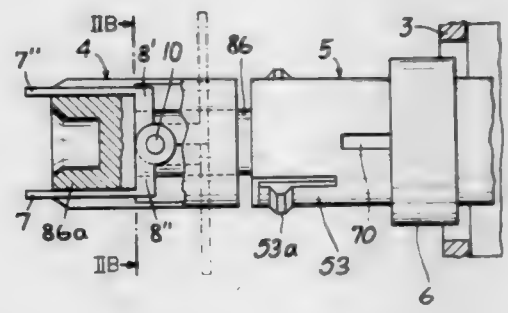
1. In an apparatus for handling an elongate recording medium unwound from a supply reel and wound upon a take-up reel, including a mounting for said supply and take-up reels, the improvement wherein said mounting comprises:

a support;

a shaft cantilevered on said support;

a first mandrel and a second mandrel coaxially juxtaposed on said shaft for independent rotation, said first mandrel being disposed adjacent a free end of said shaft, said second mandrel being inserted between said first mandrel and said support and being separated from said first mandrel by an axial gap, said mandrels being of substantially the same diameter;

retractable detent means carried by said shaft in the vicinity of said gap for selective displacement between a radially extended and a radially withdrawn position, said detent



means enabling emplacement of one of said reels on said second mandrel in said withdrawn position and forming a stop for the other of said reels on said first mandrel in said extended position;

abutment means axially displaceable with reference to said first mandrel for selectively blocking said detent means in one of its said positions; and

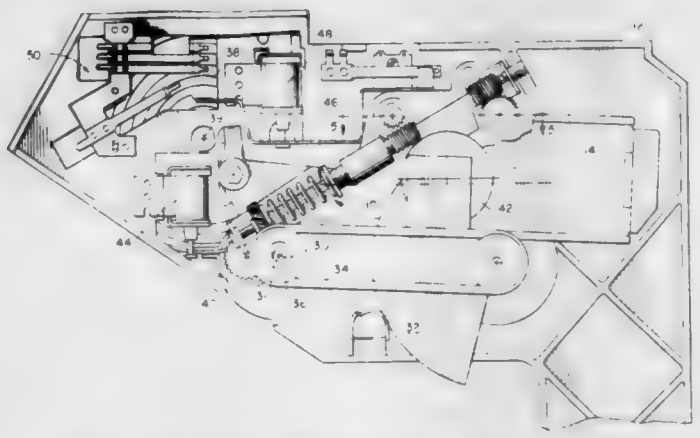
biasing means resiliently urging said detent means into said extended position.

4,083,517

REVERSIBLE DRIVE TRANSMISSION FOR STRIP HANDLING SYSTEMS

Donald T. Scholz, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1977, Ser. No. 756,418
Int. Cl.² G03B *1/04*; G11B *15/32*
U.S. Cl. 242—201 **14 Claims**



1. A drive mechanism for transmitting torque alternately to one or the other of two spaced apart spools mounted for rotation on parallel axes, said mechanism comprising:

first and second spaced apart gears, said first and second gears being substantially coplanarly mounted for rotation about parallel axes;

means for respectively coupling said first and second gears to the spools;

a drive shaft having longitudinally spaced apart first and second gear portions for coupling to said first and second gears;

means for rotatably supporting said drive shaft so as to extend between said spools in a plane approximately perpendicular to the axes of rotation of said first and second gears and so that said spaced apart gear portions of said drive shaft are respectively disposed in close proximity to said first and second gears;

means for pivotally mounting said drive shaft supporting

means for movement about an axis located longitudinally of said spaced apart gear portions and substantially parallel to the axes of said first and second gears between a first position wherein a first of said gear portions is in gear engaging relationship with said first gear while said second gear portion is out of gear engagement with said second gear, and a second position wherein said second gear portion is in gear engaging relationship with said second gear while said first gear portion is out of gear engagement with said first gear;

means for unidirectionally rotating said drive shaft; and

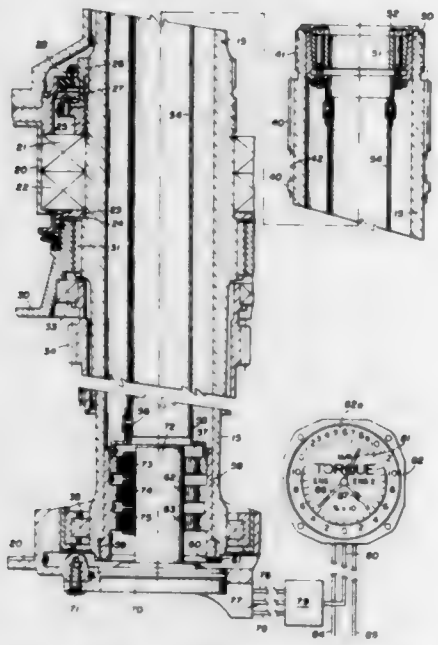
means for selectively pivoting said mounting means between its said first and second positions whereby said drive shaft imparts a rotational motion to said first gear in a first direction when said drive shaft is in its said first position and imparts a rotational motion to said second gear in a direction opposite said first direction when said drive shaft is in its said second position.

4,083,518

MAST TORQUE METERING SYSTEM

James R. Garrison, Arlington; Robert W. Metzger, Hurst, and Herman H. Waldrup, Arlington, all of Tex., assignors to Textron, Inc., Providence, R.I.

Filed May 29, 1975, Ser. No. 581,825
Int. Cl.[2] B64C *27/00*
U.S. Cl. 244—17.11 **2 Claims**



1. In a helicopter having a main mast driving a main rotor mounted at the upper end thereof to support a fuselage secured to the lower end thereof, the combination which comprises:

(a) a reference structure connected to said main mast at said upper end and extending to the lower end thereof;

(b) first ring gear means integrally secured in the lower end of said main mast and having at least one internally facing ring gear coaxial with said main mast;

(c) second ring gear means mounted at the lower end of said reference structure within said main mast, and having at least one internally facing ring gear coaxial with said main mast;

(d) base means coupled to said fuselage and extending upwardly into the lower end of said main mast;

(e) voltage generation means mounted on said base means and confronting said first and said second ring gear means for production of alternating current voltages dependent upon the rotation of said main mast and said reference structure relative to said fuselage;

(f) means to convert said voltages into a phase difference signal representative of relative rotation between said first and said second ring gear means produced by the application of torque which twists said main mast; and

(g) means for displaying said phase difference signal to a pilot.

2. A method of providing a visual display of both available torque and applied torque for a main rotor mast of a helicopter system to indicate the reserve capacity of the main rotor mast, said helicopter system having at least one engine system coupled through a transmission to both said main mast and a tail rotor shaft, which comprises:

(a) sensing the output of said engine system to detect said available torque;

(b) monitoring the amount of twist in said main mast produced through driving said main rotor by securing a reference structure to the upper end of said main mast, said reference structure depending coaxially from the upper end and extending the length of said main mast, and detecting the relative rotation between the base of said main mast and said reference structure as a measure of said applied torque;

(c) generating electrical signals representative of said available torque and said applied torque; and

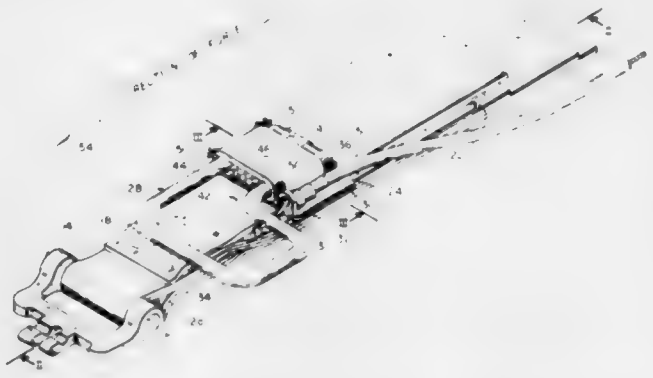
(d) applying said signals to a display.

4,083,519

MANUAL RIPCORD HANDLE ASSEMBLY MOUNTING

Jon T. Matsuo, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 14, 1977, Ser. No. 768,113
Int. Cl.[2] B64D *17/52*
U.S. Cl. 244—149 **6 Claims**



6. A slidable manual ripcord cable and handle mounting assembly for a parachute harness strap subject to a tensional force comprising:

a sleeve-like keeper member loosely receiving the harness strap to be slidable therethrough;

means for securing the keeper member to the harness strap to prevent sliding of said keeper, said securing means detachable upon the application of a predetermined tension on the ripcord cable;

means for mounting the ripcord cable and handle assembly to the top of said keeper;

means for limiting the extent of movement of the keeper on the strap;

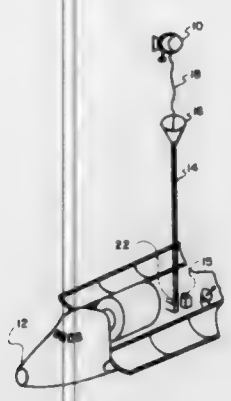
whereby a predetermined tensional force on the ripcord cable will detach the keeper and allow the ripcord cable and handle assembly to slide with the keeper along said strap to the extent allowed by the limiting means.

4,083,520

TETHERLINE SYSTEM FOR ORBITING SATELLITES

Charles C. Rupp, Madison, and Ralph R. Kissel, Huntsville, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 8, 1976, Ser. No. 739,908
Int. Cl.[2] B64G *1/00*
U.S. Cl. 244—167 6 Claims



1. A system for tethering a first orbiting satellite to a second orbiting satellite comprising:
- a reel and motor coupled to said reel, both being supported by said first satellite;
- a tetherline wound on said reel and connected at one end to said second satellite;
- first transducer means responsive to the movement of said line for generating a signal l representative of the length of tetherline betwween satellites;
- second transducer means coupled to said tetherline for generating a signal l' representative of the rate of change of length of line between said satellites;
- third transducer means for generating a signal t_m representative of the tension in said tetherline;
- signal means responsive to said first, second, and third transducer means and signals l and l' and t_m, respectively, and to the orbital angular speed w_o of said first satellite for generating an electrical input to said motor;
- means for generating a first signal constant k_1 and a second signal constant k_3, selectively, and approximately as follows:
  - for deployment, $k_1 = 2$ and $k_3 = 7{,}000$,
  - for retrieval, $k_1 = 0.93$ and $k_3 = 0$, and
  - for station keeping, $k_1 = 0$ and $k_3 =$ the desired length of tetherline; and
- said signal means being responsive to said constants for providing said input to said motor.

4,083,521

ANCHORING DEVICE FOR CLIMBING ROPES

John N. Greiner, II, 313 High St., Klamath Falls, Oreg. 97601

Filed Dec. 29, 1976, Ser. No. 755,265
Int. Cl.[2] A47G *29/00*
U.S. Cl. 248—1 5 Claims



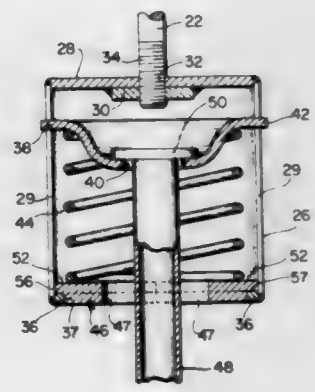
1. A climbing device adapted to be placed in a crevice to support the weight of a climber comprising a body having three symmetrical, equiangularly spaced projecting arms, said body having a large radius of curvature at the junctures of said arms, said body being formed with a passageway through which a sling may pass, said passageway comprising two bores each extending from a common center of said body outward to the juncture of two of said arms.

4,083,522

SPRING SUPPORT DEVICE

Henry A. Vandersip, Cranston, R.I., assignor to Corner & Lada Co., Inc., Cranston, R.I.

Filed Sep. 13, 1976, Ser. No. 723,043
Int. Cl.[2] F16L *3/00*
U.S. Cl. 248—54 R 3 Claims



1. A spring support device adapted to support installed piping and similar loads which are movable over a range of travel during changes in operating conditions thereof, comprising a casing having generally closed side walls, at least partially closed at a first end thereof by an end plate secured thereto, a generally open second end opposite thereto, a compressible spring positioned within said casing between said first end and said second end, ledge integrally secured to said casing at said second casing end and inwardly extending from the periphery thereof, and a second end plate assembly separate from said casing and having peripheral portions thereof disposed in abutting relationship with said ledge and held thereagainst by action of said spring, said ledge defining an extensive second end central opening at least as great as the outer diameter of said spring so as to permit passage of said spring into said casing during assembly of said support, said ledge having contiguous first upper and second inner substantially flat surfaces, said second end plate assembly comprising separate generally planar split ring segments, each segment individually positionable within said casing by passage through said extensive second end central opening, said split ring segments having their inner terminal edge surfaces in face to face position with each other, said segments having a first outer peripheral face in abutting frictional contact with said first upper surface of said ledge and a second outer peripheral face in abutting friction contact with said second inner surface of said ledge.

4,083,523

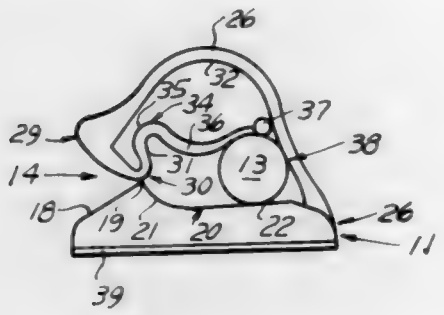
FASTENING DEVICE

John L. Fisher, 6133 Coventry Dr., Swartz Creek, Mich. 48473

Filed May 14, 1976, Ser. No. 686,563
Int. Cl.[2] F16L *3/08*
U.S. Cl. 248—74 A 13 Claims

1. A holding device for retaining an elongated object comprising:
- a base;
- a bracket mounted in overhanging relation with respect to said base and operable to engage and urge said object into contact with said base;
- said bracket having clamping means for engagement with the object being retained;

said clamping means being spring-like and pliant both to conform to the shape of the object being retained and at the same time urge the object toward said base;
said clamping means having a deflectable portion engagable with said object;



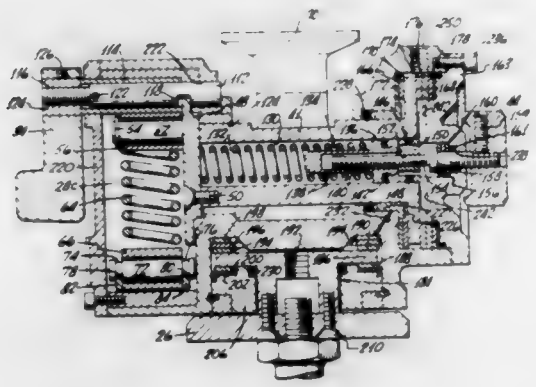
said portion in its free state oppositely bent relative to the periphery of the object;
said portion in its engaged state and free of external forces being bent by the object itself complementary relative to the periphery of the object.

4,083,524

PANHEAD DRAG MECHANISM

Chadwell O'Connor, 2024 Galaxy Dr., Newport Beach, Calif. 92660

Filed Sep. 10, 1976, Ser. No. 722,216
Int. Cl.[2] F16M *11/12*
U.S. Cl. 248—183 **17 Claims**



1. In a drag mechanism for pivotable apparatus, the combination comprising:
a housing having a fluid-tight compartment therein;
a shaft member fixed for rotation relative to said housing, said shaft member having an enlarged flange portion within said compartment;
annular disc-like roller bearing members coacting against opposite faces of said flange portion;
means within said compartment for urging said roller bearing members against said flange faces;
a pressurized viscous fluid within said compartment and surrounding said roller bearing members so that a substantially constant force against relative rotation between said shaft and said housing is established; and
means for adjusting the pressure of said fluid to vary the amount of said force.

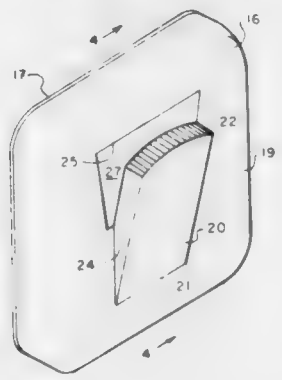
4,083,525

FASTENER FOR HANGING PICTURES

Richard W. Rath, 94 Winslow Ct. #3, Campbell, Calif. 95008

Filed Oct. 5, 1976, Ser. No. 729,668
Int. Cl.[2] A47G *1/24*
U.S. Cl. 248—496 **1 Claim**

1. A fastener for attaching pictures and the like to the wall, comprising in combination:
a first part for atachment to the picture structure;
a second part for attachment to the wall structure;
said first and second parts each including a base member;
means for attaching the base of one part to one structure and the base of the other part to the other structure;
each part including a post extending at an acute angle to the base;
each part also including a recess having a bottom surface which is serrated, each said recess being configured for receiving the post of the other part such that when the



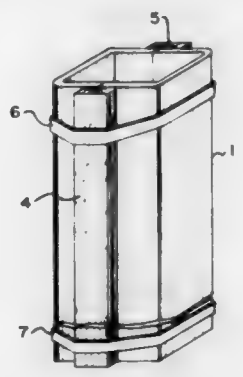
part attached to the picture is positioned with the post extending generally downward and the part attached to the wall is positioned with the post extending generally upward, the parts can be interlocked with the post of each part extending into the recess of the other part to hold the picture on the wall; and
each extending end of the post being serrated to engage the bottom surface of the recess of the other part and hold the parts at the angle selected relative to each other.

4,083,526

PAPERBOARD TUBE CONCRETE FORMS

Hodge Hatfield, Wood River, Ill., assignor to Alton Box Board Company, Alton, Ill.

Filed Sep. 27, 1976, Ser. No. 726,845
Int. Cl.[2] B28B *7/34, 7/38*
U.S. Cl. 249—48 **3 Claims**



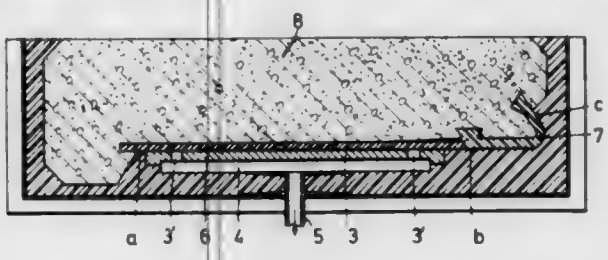
1. A paperboard tube for use in forming concrete columns, said tube being split longitudinally into at least two parts and thereby forming a pair of longitudinally arranged cut edges on each part, the cut edges on each tube part having a urethane coating initially applied thereto so as to prevent moisture absorption thereat and its consequent delamination, each tube part having a coating of acrylic resin thereon to seal its surface pores and prevent moisture absorption, a third coating of urethane solvent applied to at least the interior surface of each tube part to facilitate the release of the composite tube parts after forming a concrete column.

4,083,527

MOULD FOR PRODUCTION OF BUILDING ELEMENTS

Leif Aakjer, Lunde, Norway, assignor to A/S Selvaagbygg, Oslo, Norway

Continuation of Ser. No. 525,653, Nov. 20, 1974, abandoned.
This application Jun. 4, 1976, Ser. No. 693,263
Claims priority, application Norway, Nov. 23, 1973, 4477/73
Int. Cl.[2] B22D *19/00*; B28B *21/56*
U.S. Cl. 249—91 6 Claims



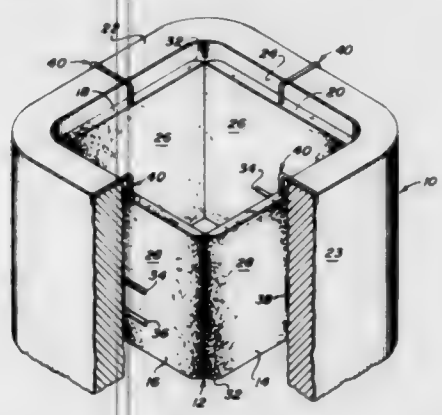
1. A mould for the production of cast building elements from water-containing casting material upon at least a portion of the outer surface of which there is integrally cast a cover layer of a different material, comprising a mould made of elastically deformable material and having a recessed interior portion, a rigid plate-like member positioned within said mould recess having a surface corresponding to the external surface of at least a portion of said cover layer, said mould having projection means in contact with said cover layer for preventing the escape of water from the mould upon vibration of the latter, means cooperating with said rigid plate-like member for maintaining the portion of said cover lyer overlaying said rigid plate-like member in close engagement therewith during the moulding process.

4,083,528

METALLURGICAL SIDEBOARD OR HOT TOP SUSPENSION SYSTEM

Carl Anthony, Jr., 855 Mill St., and Donald E. Wiley, 537 Underridge Rd., both of Conneaut, Ohio 44030

Filed Jul. 26, 1976, Ser. No. 708,777
Int. Cl.[2] B22D *7/10*
U.S. Cl. 249—198 10 Claims



1. In a metallurgical side board having a generally parallelepiped shape and rectangular cross-section with a first face of said board adapted to be placed adjacent a wall of an ingot mold thus exposing a second face to molten metal teemed into said ingot mold the improvement comprising:

at least two generally parallel vertically spaced apart apertures in said board extending through said board from said first face to said second face;

a generally perpendicular passage between said apertures, said passage opening only onto said first face of said board; and

a hanger having a first section rotatably embedded in said board and extending the length of said passage; said hanger extending out of said board and having a second section at the end of said first section projecting beyond said board disposed at a right angle to said first section of said hanger; a third section of said hanger disposed at a right angle to said first section of said hanger, said third section being positioned with respect to said first section and of a size to be within and alternately engage the apertures in said board; said first, second and third sections of said hanger lying within the same plane; said second section adapted to position said hanger on an ingot mold and said first and third sections of said hanger supporting said board in operative position in said ingot mold;

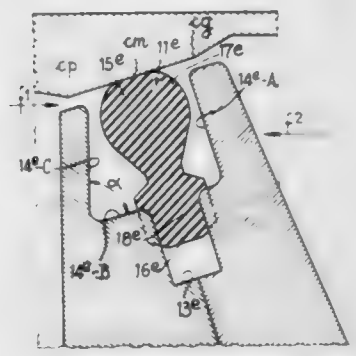
whereby said hanger can be disposed with all sections coplanar with said board for fabrication, packaging, and shipping and readily moved to support said board in an operative position in said ingot mold.

4,083,529

BUTTERFLY VALVE

Jean Santy; Etienne Hochain, and André Schneider, all of Pont-a-Mousson, France, assignors to Pont-a-Mousson S.A., Nancy, France

Filed Dec. 3, 1975, Ser. No. 637,437
Claims priority, application France, Dec. 5, 1974, 74 39862; Nov. 7, 1975, 75 34060
Int. Cl.[2] F16K *25/00*
U.S. Cl. 251—175 5 Claims



1. In a valve comprising an annular seat, a valve closure element cooperative with the seat and defining a peripheral annular groove which opens outwardly onto the periphery of the closure element and has an annular inner end face and a radially inner part and a radially outer part, and an elastomer sealing element having an annular head portion for contacting the seat in a valve-closing position of the closure element and a heel portion, the heel portion being disposed in said inner part of the groove; the improvement comprising in combination a first annular gap which is defined between said heel portion and said inner end face of the groove and extends throughout the width of said inner part of said groove, an intermediate portion connecting the head portion to the heel portion of the sealing element and defining a constricted portion in a free state of the sealing element before assembly of the sealing element with the valve closure element, two first confronting annular faces of said inner part of the groove which have a substantially rectilinear generatrix and are in gripping relation to the sealing element in a part of the sealing element consisting of the heel portion and excluding the intermediate portion whereby to prevent relative movement between the heel portion and the two first confronting faces but allow the head portion and intermediate portion freedom of movement and also allow the intermediate portion to be exposed to pressure of fluid controlled by the valve, the sealing element having in a free state and before assembly of the sealing element with the closure element a cross-sectional shape which is such that said head portion has, in a radially outer part of said head portion, a curvilinear convex contour which extends to a region of said head portion of maximum width and, in a radially inner part of said head portion, a contour defined by two contour lines which progressively converge in a direction toward said heel portion and terminate in said intermediate portion, said outer part of the groove being laterally defined by two second annular confronting faces which are radially in-

wardly divergent from each other and define with respective confronting faces surfaces of the interposed sealing element in a part of the sealing element consisting of the head portion and the intermediate portion a second annular gap on each side of the sealing element, each of said second gaps increasing in width in a direction radially inwardly from said region of maximum width of the head portion to said intermediate portion, a first annular surface substantially parallel to said seat in a valve-closing position of said closure element being connected to a radially inner end of one of said second confronting faces, said one second confronting face extending from said first annular surface at an acute angle, a second annular surface substantially parallel to said seat in a valve-closing position of said closure element being connected to a radially inner end of the other of said second confronting faces, said other second confronting face extending from said second annular surface at an angle of substantially 90°.

4,083,530

ELONGATABLE TELESCOPING SUPPORT

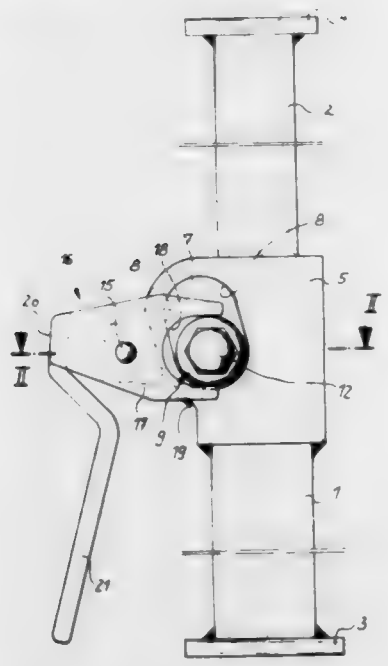
Kurt Linnepe, Ronsdorfstrasse 12, Hagen 1, Germany (5800)

Filed Jun. 22, 1977, Ser. No. 808,955

Claims priority, application Germany, Jul. 7, 1976, 2630446

Int. Cl.² B66F 3/02

U.S. Cl. 254—95 **10 Claims**



1. An extensible and contractable support comprising:

an elongated support tube;

a bar telescopingly received in said support tube and adapted to extend out of a mouth of said support tube;

a head fixed to said support tube at said mouth and formed with at least one running surface inclined inwardly toward said support tube in a direction opposite that in which said bar is adapted to be withdrawn from said support tube to elongate the structure, said bar having a running surface juxtaposed with the running surface of said head, said running surfaces converging in said direction;

a drive roller received in said head and disposed between said running surfaces while having end portions projecting beyond opposite walls of said head, said drive roller being engageable with said running surface of said bar to displace the same out of said support tube upon rotation of said drive roller;

a guide member movably mounted on said head and engaging said end portions; and

means bearing upon said guide member for biasing same and said roller in the direction of convergence of said running surfaces.

4,083,531

SYSTEM AND DEVICE FOR MECHANICALLY AND SIMULTANEOUSLY STRETCHING OUT A PLURALITY OF WIRES OR A PLURALITY OF TRACTION ROPES ON AERIAL ELECTRICAL LINES

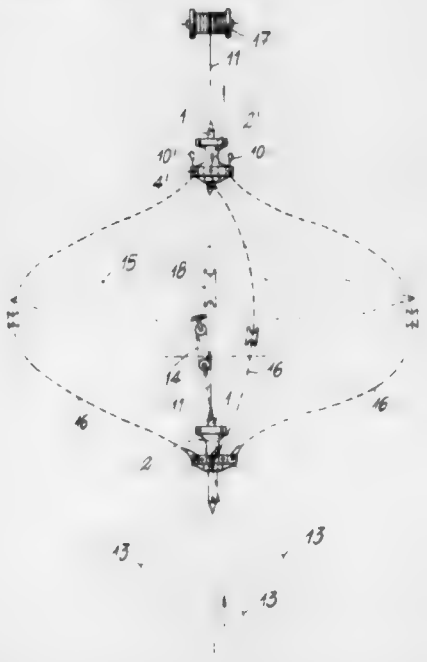
Otto Merz, Schaffhausen, Switzerland, assignor to Luxa A.G., Vaduz, Liechtenstein

Filed Oct. 14, 1976, Ser. No. 732,397

Claims priority, application Switzerland, Oct. 31, 1975, 14128/75

Int. Cl.² B65H 59/00

U.S. Cl. 254—134.3 R **6 Claims**



1. A method for mechanically and simultaneously stretching out a plurality of wires or a plurality of traction ropes on aerial electrical lines, the method comprising the steps of:

conventionally stretching out a pilot cord or traction rope over a plurality of spans between supporting poles or towers;

pulling one end of said traction rope by a winch or like device;

coupling a mounting unit provided with individual bearing elements for the single traction ropes of each wire or for each wire to be stretched out at the other end of said traction rope;

feeding said traction rope along with said mounting unit to the immediate proximity of a pole or a trestle, the end of said ropes on the opposite side relative to said winch being at the same time braked;

anchoring said mounting unit when in the immediate proximity of a pole or trestle by means of a tackle which is in turn anchored to the pole or at the pole;

providing pulleys at the locations on the pole or trestle where the cables are to be secured, the pulleys having lengths of rope or cable therethrough;

coupling respective ones of said lengths of rope or cable in said pulleys to said ropes or wires engaged on said unit, said lengths being previously pulleyed and prearranged on the pole and being capable of overrunning the pole on the respective pulleying locations thereof to engage on a next mounting unit mounted on the traction rope beyond said trestle or pole;

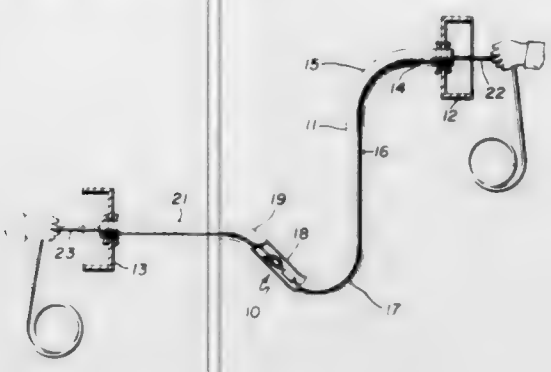
allowing the disconnection of the first mounting unit which is in front of the pole in the arrival direction, so that all of the previously towed ropes or the like will in turn reach the desired positions on the pole by said lengths thus inserted in position;

disconnecting the tackle and then proceeding beyond the trestle or pole to further pulling the traction rope and hence the assembly of ropes coupled on the next mounting unit to reach the next pole or trestle in the line and then perform the same set of operations.

4,083,532
ELECTRICAL WIRE ATTACHMENT

Carlo A. Pola, 129 Tupper Rd., Sandwich, Mass. 02563

Filed Jun. 13, 1977, Ser. No. 805,859
Int. Cl.[2] E21C *29/16*
U.S. Cl. 254—134.3 FT 8 Claims

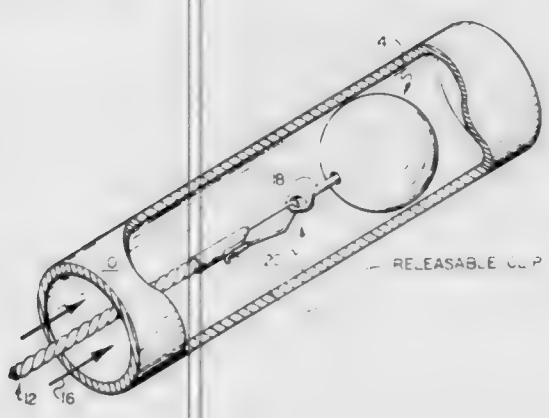


1. Electrical installation tool, comprising:
a. a first fish wire,
b. a second fish wire formed on one end with a hook,
c. an elongated body one end of which is provided with a longitudinal bore for reception of the free end of said first fish wire and having relatively flexible wire loops extending from the other end, each loop having two ends that are firmly locked in a longitudinal bore formed in the said other end of the body, and
d. means for locking said first fish wire within said longitudinal bore.

4,083,533
TECHNIQUE FOR PLACING TENSILE ELEMENTS IN CONDUITS

Willie Carl Schwabe, Corpus Christi, Tex., assignor to Lois I. Oaden, Corpus Christi, Tex.

Filed Jan. 12, 1976, Ser. No. 648,297
Int. Cl.[2] E21C *29/16*
U.S. Cl. 254—134.4 11 Claims

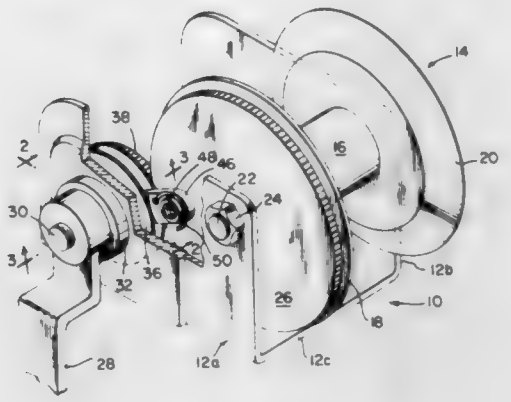


1. A method comprising
pulling a single tensile element through a conduit having therein an area where a piston can become lodged, including
attaching a tensile element to a resilient piston,
placing the piston in the conduit, and
delivering fluid under pressure into the conduit and propelling the piston therethrough;
sticking the piston in the conduit area where a piston can become lodged; and then
retrieving the piston from the conduit area where the piston has become stuck including
pulling on the single tensile element, and
elongating the resilient piston and decreasing the diameter thereof until the piston is free in the conduit.

4,083,534
LOW NOISE, SELF-LOCKING WINCH

Leo J. Notenboom, Kirkland, Wash., assignor to Genie Industries, Inc., Kirkland, Wash.

Filed Aug. 9, 1976, Ser. No. 712,738
Int. Cl.[2] B66D *1/00*
U.S. Cl. 254—186 HC 3 Claims

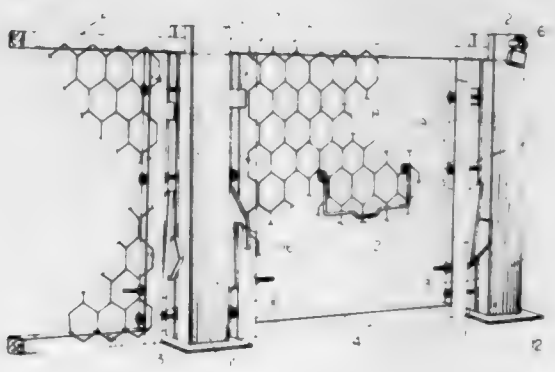


1. A low noise, self-locking winch, comprising:
a rigid winch frame;
a cylindrical drum rotatably mounted in said winch frame, said drum being adapted to receive a cable wound around its periphery;
a crank mounted on a drive shaft, said shaft being rotatably mounted on said frame;
transmission means for coupling said drive shaft to said drum such that rotation of said shaft rotates said drum;
a latch wheel mounted on said drive shaft, means for restricting rotation of said latch wheel with respect to said drive shaft, said latch wheel having a generally V-shaped groove extending around its outer periphery; and
a latch lever having a first end pivotally secured to said frame and a second end resiliently biased against the periphery of said latch wheel, the periphery of said second end having a center of curvature offset from the pivot point of said lever such that the force of said lever against said latch wheel smoothly increases as said drum rotates in a cable unwinding direction; said second end having an outwardly projecting generally V-shaped cross section adapted for insertion into the V-shaped groove of said latch wheel such that the area and depth of contact between said latch wheel and latch lever increases and the second end of said latch lever is compressed by said latch wheel during operation as said drum rotates in a cable unwinding direction.

4,083,535
PORTABLE FENCE

James O. Britt, Westmoreland Rd., Whitesboro, N.Y. 13492

Filed Oct. 28, 1976, Ser. No. 736,370
Int. Cl.[2] E04H *17/16*
U.S. Cl. 256—24 7 Claims



1. A fence structure comprising pairs of spaced, vertical posts with a flat rectangular panel having a top, bottom and

two opposing vertical sides removably mounted vertically between each adjacent pair of said posts; the opposing sides of said posts having vertical slots running substantially the length thereof and adapted to receive guide members mounted on opposing vertical sides of each of said panels; the top, horizontal side of each of said panels extending horizontally beyond the vertical sides of the panel to engage and interlock respectively with the corresponding top extension of each adjacent panels so as to form a continuous interlocking means extending across the entire top of the fence structure for preventing any panel from being raised until the panel adjacent on one side thereof whose top is in overlapping engagement with the extending top thereof is first raised, each of said vertical posts having an open slotted portion at its top which accommodates the overlapping and interlocking portions of said extending top sides and stop means mounted on one vertical side of each panel which engage the adjacent side of one post to maintain said panel in a raised position once it has been raised by sliding between the posts.

4,083,536

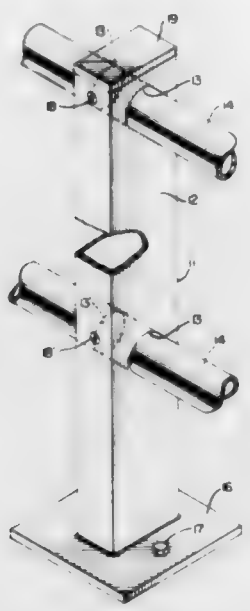
ADJUSTABLE RAILING

Lewis Mulitz, Washington, D.C., assignor to Pico Safe Stairs Co., Hyattsville, Md.

Filed Jun. 9, 1975, Ser. No. 584,878

Int. Cl.[2] B21F *27/00*

U.S. Cl. 256—47 **9 Claims**



1. An adjustable railing comprising

a plurality of vertical members each having a rectangularly dimensioned horizontal cross section formed by its vertical sides and at least one circular hole therethrough along its vertical length and passing through the vertical sides which form the longer dimensions of said rectangular cross section,

a tubular horizontal member slidingly extending through each said at least one hole in said vertical members and between said vertical members,

means to lock said vertical member and said horizontal member passing therethrough to each other without substantially changing the outlines of said vertical member and said horizontal member at their points of intersection.

4,083,537

LINT REMOVING APPARATUS

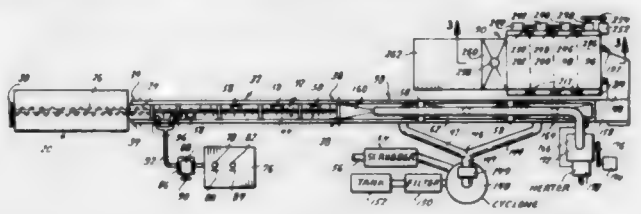
Eldrew P. Smith, Prattville, Ala., assignor to Ring Around Products, Inc., Prattville, Ala.

Filed Sep. 23, 1976, Ser. No. 725,930

Int. Cl.[2] B01F *7/00*

U.S. Cl. 366—147 **26 Claims**

1. Apparatus which comprises a first elongated container, a second elongated container, a third container, a source of lint-bearing cotton seeds which can supply lint-bearing cotton seeds to said first elongated container on a continuous rather than on a batch basis, said lint-bearing cotton seeds being supplied to said first elongated container adjacent one end thereof, a source of acid which can supply aicd to said first-elongated container on a continuous rather than on a batch basis, said acid being supplied to said first elongated container adjacent said one end thereof, a seed stirring and moving member which can admix said acid with said lint-bearing cotton seeds in said first elongated container while it moves said lint-bearing cotton seeds toward the opposite end of said first elongated container, said first elongated container having an outlet adjacent said opposite end thereof through which acid-treated cotton seeds can pass on a continuous rather than on a batch basis, said second elongated container being disposed to receive said acid-treated cotton seeds adjacent one end thereof on a continuous rather than on a batch basis, a second seed stirring and moving member which can stir said acid-treated cotton seeds in said second elongated container while it moves said acid-treated cotton seeds toward the opposite end of said second elongated container, a blower which moves heated air



into and through said second elongated container to dry said acid-treated cotton seeds while said second seed stirring and moving member is stirring and moving said acid-treated cotton seeds toward said opposite end of said second elongated container, said second elongated container having an outlet adjacent said opposite end thereof through which dried acid-treated cotton seeds can pass on a continuous rather than on a batch basis, said third container having an inlet which can receive said dried acid-treated cotton seeds on a continuous rather than on a batch basis, and a seed-moving member which forces said dried acid-treated cotton seeds downwardly toward the bottom of said third container, and hence into a dense mass of cotton seeds, and thereafter moves said dried acid-treated cotton seeds upwardly toward the top of said third container, and hence toward a less dense mass of cotton seeds, the movement of said dried acid-treated cotton seeds downwardly into said dense mass of cotton seeds causing said dried acid-treated cotton seeds to rub against other cotton seeds and thereby mechanically free said dried acid-treated cotton seeds of lint thereon.

4,083,538

CLOSURE MEANS

Harold Edward Haigh, Cleveland, and Dietrich Adolf Hofmann, Newcastle on Tyne, both of England, assignors to Tioxide Group Limited, Cleveland, England

Filed May 23, 1977, Ser. No. 799,534

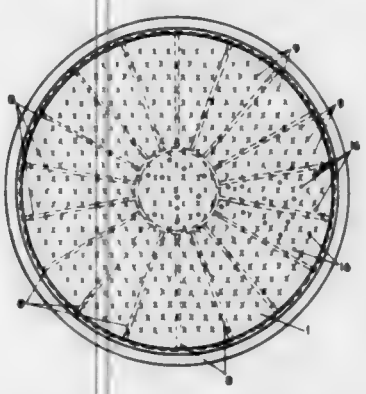
Claims priority, application United Kingdom, Jun. 2, 1976, 22728/76

Int. Cl.[2] C22B *1/10*

U.S. Cl. 266—172 **7 Claims**

1. Closure means suitable for use with a pressure vessel which comprises first and second flat disc-like members spaced coaxially apart, a peripheral cylindrical support member secured to each disc-like member, an inner perforated cylindrical spacing member mounted coaxially with said peripheral support member and secured to each disc-like member, a plurality of rib-like members extending radially of the disc-like members between the inner spacing member and the peripheral support member and secured to the disc-like members and the spacing and support members, said first flat disc-like member having a

plurality of apertures for the passage of a gaseous medium through the member and said second flat disc-like member



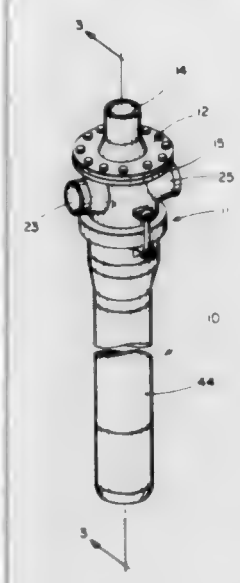
having at least one aperture to permit the introduction of a gas into the region between the two disc-like members.

4,083,539

OXYGEN LANCE ASSEMBLY

William W. Berry, Pittsburgh; Leo L. Meinert, Beaver, and Nicholas M. Rymarchyk, Pittsburgh, all of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Filed May 9, 1977, Ser. No. 795,243
Int. Cl.² C21C *5/32*
U.S. Cl. 266—225 **14 Claims**



1. A steelmaking lance assembly comprising a top support member,

said support member including a first central oxygen supply pipe and second and third water inlet and outlet pipes concentric with said first pipe,

a first connector plate assembly on said top support member,

said first pipe being connected to said first connector plate assembly and projecting downwardly with respect thereto,

said first connector plate assembly having a lower flat surface including a plurality of first openings communicating with said second and third pipes,

a second connector plate assembly,

said second connector plate assembly including a sleeve member having a flange including a flat upper surface having a plurality of second openings adapted to register with said first openings,

a fourth oxygen pipe concentric with said first pipe and including an upper end portion adapted to engage said sleeve member in relative telescoping relation,

first sealing means between said upper end portion and said sleeve,

said first pipe projecting into said upper end portion of said fourth oxygen pipe,

second sealing means between said first pipe and said upper end portion of said fourth pipe,

fifth and sixth water inlet and outlet pipes concentric with said fourth pipe, connected to said second connector plate assembly and communicating with said second openings,

a lance nozzle connected to said pipes including an outlet orifice and water chamber, and

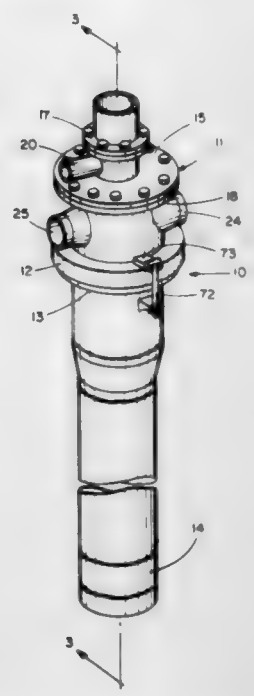
means quick releasably connecting said first and second connector plate assemblies and flat surfaces in clamped relation with their positioned openings in registry and in communication.

4,083,540

GAS AND OXYGEN STEEL MAKING LANCE

William W. Berry, Pittsburgh; Leo L. Meinert, Beaver, and Nicholas M. Rymarchyk, Pittsburgh, all of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Filed May 9, 1977, Ser. No. 795,244
Int. Cl.² C21C *5/32*
U.S. Cl. 266—225 **16 Claims**



1. A steel making lance assembly comprising a top support member,

said top support member including a first central oxygen pipe,

a second gas pipe, and

third and fourth water inlet and outlet pipes, all of said pipes being positioned in concentric relation,

a first connector plate assembly on said top support member,

said first connector plate assembly including upper and lower flat surfaces,

having a central opening through which said first oxygen pipe projects,

said first connector plate assembly including first gas, water inlet and water outlet openings respectively communicating with said second gas, third and fourth pipes,

a second connector plate assembly including second upper and lower flat surfaces,

said second connector assembly having a central second opening receiving said first oxygen pipe,

said second connector plate assembly including a central sleeve in circumferentially spaced relation relative to said first oxygen pipe to provide an annular space therebetween,

a fifth oxygen pipe within said space in telescoping relation with said sleeve and said first oxygen pipe,

said second connector plate assembly having a plurality of second gas, water inlet and water outlet openings communicating respectively with said first openings,

said second connector plate assembly having a second sleeve concentric with said first sleeve projecting downwardly and having an inner diameter larger than the outer diameter of said first sleeve,

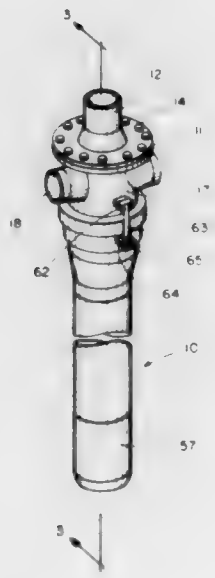
a sixth gas pipe in telescoping engagement with said second sleeve,
said sixth gas pipe communicating with said first and second gas openings,
a seventh water inlet pipe communicating with said first and second water inlet openings,
an eighth water outlet pipe communicating with said first and second water outlet openings,
a nozzle connected to the lower portions of said fifth, sixth, seventh, and eighth pipes,
said nozzle having a chamber and orifice communicating with said gas oxygen pipes, and a
water chamber providing for circulation of water between said third, fourth, seventh and eighth pipes, and
means quick releasably connecting said first and second connector assemblies in clamping relation and said first and second openings of said connector assemblies being in registering relation.

4,083,541

OXYGEN LANCE ASSEMBLY

William W. Berry, Pittsburgh; Leo L. Meinert, Beaver, and Nicholas M. Rymarchyk, Pittsburgh, all of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Filed May 9, 1977, Ser. No. 795,245
Int. Cl.[2] C21C *5/32*
U.S. Cl. 266—225 **12 Claims**



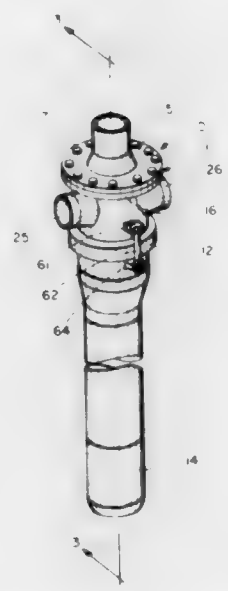
1. A steel making lance assembly comprising a top support member,
said support member including a first central oxygen supply pipe and second and third water inlet and outlet pipe,
a first connector plate assembly on said top support member,
said first plate assembly having a lower flat surface including a first central opening communicating with said first supply pipe,
said lower flat surface including a plurality of first positioned openings communicating with said second and third pipes,
a second connector plate assembly,
said second connector plate assembly including a sleeve member having a flange and a flat annular upper surface provided with a second central opening communicating with said first central opening,
said flat upper surface including a plurality of second openings adapted to register with said first openings,
means releasably connecting said flange of said sleeve member to said lower flat surface of said first connector plate assembly with said sleeve projecting downwardly with respect thereto,
a connector ring extending around said sleeve member,
said connector ring having a plurality of third spaced openings registering with said first and second openings,
a fourth oxygen pipe having its upper end projecting into said sleeve in telescoping sliding relation and communicating with said central openings and said first oxygen supply pipe,
fifth and sixth water inlet and outlet pipes concentric with said fourth pipes connected to said connector ring and communicating with said first, second and third openings,
a nozzle connected to said fourth, fifth and sixth pipes, said nozzle including a discharge orifice connected to said fourth pipe and a water chamber communicating with said fifth and sixth pipes, and
means quick releasably connecting said ring to said first and second connector assemblies whereby said ring may be quickly removed with said fourth, fifth and sixth pipes from said sleeve and flange of said second connector plate assembly.

4,083,542

OXYGEN LANCE ASSEMBLY

William W. Berry, Pittsburgh; Leo L. Meinert, Beaver, and Nicholas M. Rymarchyk, Pittsburgh, all of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Filed May 9, 1977, Ser. No. 795,246
Int. Cl.[2] C21C *5/32*
U.S. Cl. 266—225 **19 Claims**



1. A steelmaking lance assembly comprising a top support member,
said support member including a first central oxygen supply pipe and second and third concentric water inlet and outlet pipes,
a first connector plate assembly on said top support member,
said first connector plate assembly having a flat lower surface including a central opening communicating with said central oxygen pipe,
a plurality of first openings in said lower surface, communicating with said second and third pipes,
a second connector plate assembly having an upper flat surface including a plurality of second openings registering with said first openings,
a fourth pipe connected to said second connector plate assembly and communicating with said first pipe,
fifth and sixth water inlet and outlet pipes on said second connector plate assembly communicating with said second openings,
a nozzle connected to said fourth, fifth and sixth pipes including,
a central oxygen stub pipe,
an outlet orifice communicating with said stub pipe,
an inner water inlet stub pipe,
an outer water outlet stub pipe,
said water inlet and outlet stub pipes communicating with said fifth and sixth pipes,
the lower end portion of said fourth oxygen pipe and oxygen stub pipe being inter-connected to provide a telescoping connection,

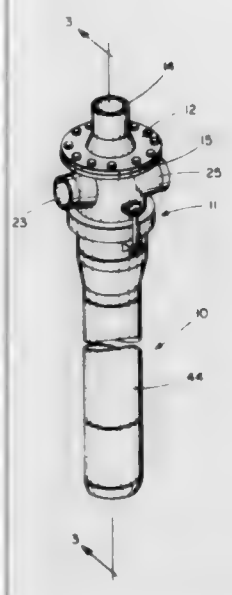
a vent pipe connected to said second connector assembly,
said vent pipe extending about said fourth oxygen pipe and being concentric therewith,
vent passage means on one of said connector assemblies providing for communication of said vent pipe with the atmosphere,
said vent pipe extending adjacent to said oxygen stub pipe,
said lower end of said vent pipe being positioned relative to the telescoping connection of said fourth oxygen and stub pipes, to receive any leakage of oxygen from said telescoping connection and vent the same to the atmosphere.

4,083,543

OXYGEN LANCE ASSEMBLY

William W. Berry, Pittsburgh; Leo L. Meinert, Beaver, and Nicholas M. Rymarchyk, Pittsburgh, all of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Filed May 9, 1977, Ser. No. 795,247
Int. Cl.[2] C21C *5/32*
U.S. Cl. 266—225 **15 Claims**



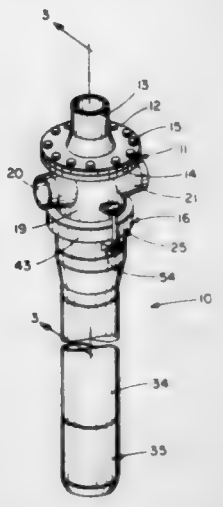
1. A steel making lance assembly comprising a top support member,
said support member including a first central oxygen supply pipe and second and third water inlet and outlet pipes,
a first connector plate assembly on said top support member,
said first pipe being connected to said connector plate assembly and projecting downwardly with respect thereto,
said first connector plate assembly having a lower flat surface including a plurality of first openings communicating with said second and third pipes,
a second connector plate assembly including a first sleeve member having a flange including a flat upper surface with a plurality of second openings adapted to register with said first openings,
a fourth central oxygen pipe having an upper section and a lower section,
said upper section and said lower section being positioned in relative telescoping and sliding relation,
said upper section including a second sleeve member connected thereto,
said second sleeve member and said first pipe being disposed in telescoping sliding relation,
fifth and sixth water inlet and outlet pipes connected to said second connector plate assembly and communicating with said second openings,
an outlet nozzle connected to said fourth, fifth and sixth pipes including a discharge orifice communicating with said lower section of said oxygen pipe,
means on said second connector plate assembly suspending said upper oxygen pipe section, and
quick connect and disconnect means connecting said connector assemblies and flat surfaces in clamped relation.

4,083,544

OXYGEN LANCE ASSEMBLY

William W. Berry, Pittsburgh; Leo L. Meinert, Beaver, and Nicholas M. Rymarchyk, Pittsburgh, all of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Filed May 9, 1977, Ser. No. 795,248
Int. Cl.[2] C21C *5/32*
U.S. Cl. 266—225 **9 Claims**



1. A steel making lance assembly comprising a top support member,
said support member including a first central oxygen supply pipe, and second and third water inlet and outlet pipes,
a first connector plate assembly on said top support member,
said first plate assembly having a lower flat surface including a central opening communicating with said first supply pipe,
said lower surface including a plurality of first openings communicating with said second and third pipes,
a second connector plate assembly, said second connector plate assembly including a flat upper surface including a second central opening registering with said first central opening,
said flat upper surface including a plurality of second openings registering with said first circumferential openings,
a fourth oxygen pipe having an upper end portion communicating with said second central opening and said first oxygen pipe,
fifth and sixth water inlet and outlet pipes connected to said second connector plate assembly and communicating with said second opening,
means quick releasably connecting said first and second connector plate assemblies whereby said openings in said flat surfaces are clamped in registering relation,
a lance nozzle connected to said fourth, fifth and sixth pipes including a water chamber communicating with said fifth and sixth pipes,
a discharge orifice,
an oxygen pipe stub on said nozzle communicating with said orifice,
said pipe stub and the lower portion of said fourth oxygen pipe being positioned in relative telescoping sliding relation, and
a vent passage in one of said connector plate assemblies,
said vent terminating at one end of said flat upper surface of said second connector plate assembly.

4,083,545

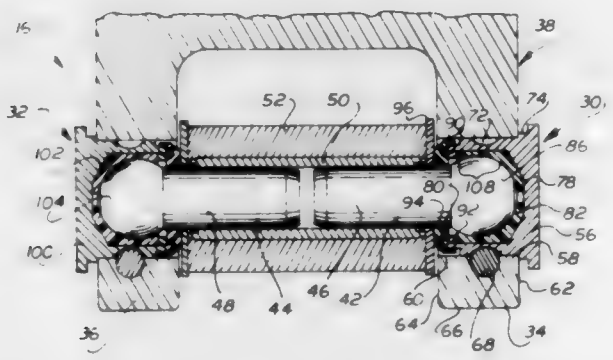
SPRING SHACKLE ASSEMBLY

Edward J. Herbenar, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 31, 1976, Ser. No. 719,190
Int. Cl.[2] B60G *11/12*
U.S. Cl. 267—54 A **10 Claims**

1. A spring shackle assembly for use in connecting an end

portion of a leaf spring with the frame of a vehicle, said spring shackle assembly comprising a bracket connected with the frame of the vehicle, said bracket including a pair of mounting sections spaced apart by a distance which is at least as great as the width of the end portion of the spring and having surfaces defining a pair of coaxial openings extending through the mounting sections, a pair of rigid metal housings each of which is disposed in an associated one of said openings, each of said housings having an inner surface at least partially defining a socket chamber having a closed end portion and open end portion facing toward the space between said mounting sections, a pair of bearing liners formed of polymeric material, each of said bearing liners being disposed in an associated one of said socket chambers and having a spherical inner surface at least partially defining a bearing cavity having an open end facing toward the space between said mounting sections, a pair of ball studs each of which is associated with one of said bearing liners, each of said ball studs having a head end portion with a spherically shaped outer surface disposed in sliding engagement with the spherical inner surface of the associated



one of said bearing liners and having a cylindrical shank portion integrally formed with an associated head end portion and extending outwardly through a socket chamber opening into the space between said mounting sections, said shank portions being disposed in axial alignment with each other and being disposed in an opening in the end portion of the leaf spring, each of said spherical head end portions having a circular medial surface area which is coaxial with the central axis of the associated shank portion and which extends for a substantial distance on both sides of a plane through the center of the spherical head end portion to provide abutting engagement between the circular medial surface area of the head portion of the ball stud and the spherical surface of the associated one of said bearing liners in an area which forms at least part of a sphere and curves inwardly toward the central axis of the shank portion of the ball stud on opposite sides of the plane through the central axis of the head portion of the ball stud to provide for the application of at least partially axially offsetting bearing forces between the ball stud head portion and said bearing liner upon the application of a load to the vehicle spring.

4,083,546

RUG HOLDER

Leonard R. Palm, Everett, Wash., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jul. 1, 1977, Ser. No. 812,238
Int. Cl.² B25B *1/20*
U.S. Cl. 269—152 **2 Claims**

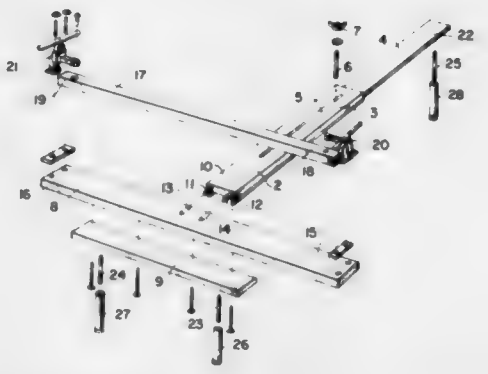
1. A rug holder for supporting a rug during home manufacture thereof, said rug holder comprising

a support arm having two components releasably affixed to each other whereby said support arm is adjustable in length;

a bottom cross arm affixed at its center to one end of the support arm and extending perpendicularly to said support arm to form a T-shaped structure, said bottom cross arm being of predetermined length and having spaced opposite first and second ends;

a top cross arm of the predetermined length having spaced opposite first and second ends;

a pair of clamping devices affixed to the first and second ends of the bottom cross arm and cooperating with the top cross arm, said clamping devices in closed position supporting said cross arms in adjacent parallel relation to clamp a rug between them, said rug resting on the support arm, and said clamping devices in open position support-



ing said cross arms in spaced parallel relation to permit the positioning of said rug therebetween; and

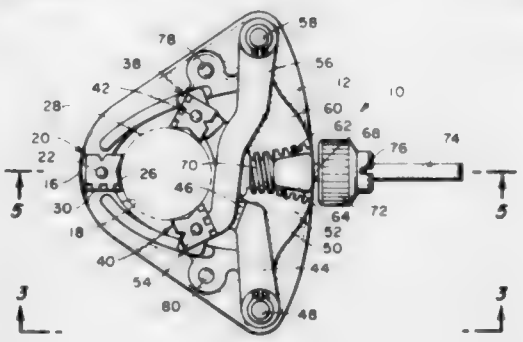
a plurality of mounting members affixed to, and extending substantially perpendicularly from, the bottom cross arm in the areas of the ends thereof and the support arm in the area of the free end thereof, said mounting members hanging over a supporting table at opposite edges thereof to hold the T-shaped structure on the table at said opposite edges.

4,083,547

VISE

Grey M. Gurley, 900 Tioga Dr., Apt. 204, Ventura, Calif. 93001

Filed Jul. 1, 1977, Ser. No. 812,151
Int. Cl.² B25B *1/20*
U.S. Cl. 269—156 **15 Claims**



1. A vise comprising:

a base;

a first jaw mounted to remain substantially fixed in a specific position upon said base;

a second jaw assembly movably mounted upon said base;

a third jaw assembly movably mounted upon said base;

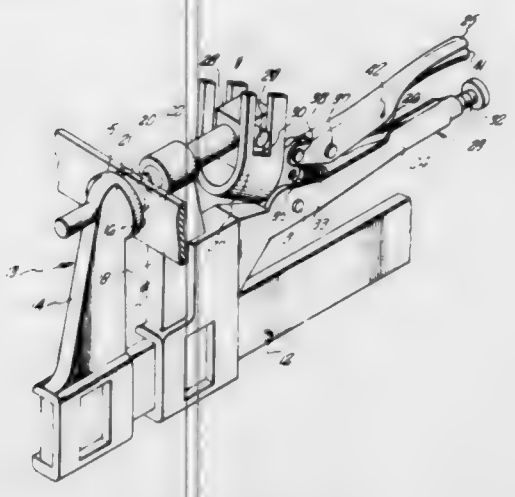
means for simultaneously moving the jaws of said second and third jaw assemblies toward said first jaw along paths which are spaced from and which substantially form an acute angle with one another over the greater portion of the holding range of said jaws, to thereby clamp an exterior object between said first jaw and the jaws of said second and third jaw assemblies; and

said second and third jaw assemblies overlapping each other in a crossed configuration.

4,083,548
ADJUSTABLE CLAMP

Dale J. Hackbarth, 141 Avenida Lysanne, Anaheim, Calif. 92807

Filed Nov. 11, 1976, Ser. No. 740,780
Int. Cl.[2] B25B *1/14*
U.S. Cl. 269—166 12 Claims



1. An adjustable clamp comprising:

(a) a mounting bar;

(b) a first clamping jaw fixedly mounted on said mounting bar comprising an arm having a clamping pad associated therewith adapted to contact a workpiece; and

(c) a second clamping jaw slidably mounted on said mounting bar comprising an arm having a first channel for slidable mounting of the jaw on said mounting bar, a clamping pad mounted on a rod for linear reciprocal motion in a second channel through said arm, said rod operatively connected to a toggle mechanism adapted to reciprocably move said rod and thereby advance or retract said clamping pad into or out of clamping contact with said workpiece said toggle assembly comprising a handle attached to the arm of said second clamping jaw, a toggle link bar having first and second ends, said first end being carried in and movable along a slot in said handle, a lever arm connected intermediate its ends to said toggle link bar at its second end to form a flexible joint, a pivotable connector link operatively connecting said rod to the toggle assembly, said connector link being pivotably connected to said lever arm at one end and pivotably connected to said handle such that raising or lowering of said lever arm causes said connector link to pivot, said connector link and said rod being joined by means adapted to translate the pivotal motion of said connector link to the linear motion of said rod such that raising of said lever arm retracts said rod and lowering of said lever arm advances said rod.

4,083,549
OPERATING TABLE FOR TRANSURETHRAL RESECTION

Masayoshi Morita, 62-940, Aza Kawadaira, Aramaki,Sendai-shi, Miyagi-ken, Japan

Filed May 4, 1977, Ser. No. 793,764
Claims priority, application Japan, Jun. 7, 1976, 51-73531[U]
Int. Cl.[2] A61G *13/00*
U.S. Cl. 269—327 5 Claims

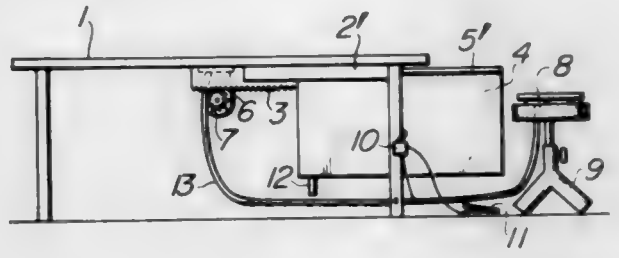
1. An operating table especially adapted for transurethral resection comprising;

(a) an operating table proper,

(b) a pair of parallel grooved guide rails mounted lengthwise on the undersurface of said table proper,

(c) a solution receiving vessel having its upper flanges slidably mounted on said grooved guide rails for movement between a retracted position under said table proper and an extended or receiving position where the vessel is extended forwardly of the front side of the table proper for receiving irrigating solution or the like,

(d) reversible driving means for causing said reversible movement of said vessel between said retracted and receiving positions, and

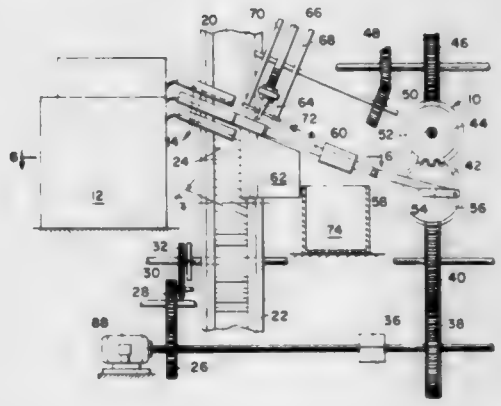


(e) actuating means responsive to the position of an operator for causing said reversible driving means to drive in either direction, whereby when the operator is in an operating position, said chamber or vessel may be automatically retracted in said retracted position under said main body.

4,083,550
MULTIPLE COPY SORTING APPARATUS

Rajendra Pal, 500 Hind Nagar/Kanpur Road, P.O. Krishnanagar, Lucknow, India (226005)

Filed Aug. 3, 1976, Ser. No. 711,305
Int. Cl.[2] B42B *2/00*
U.S. Cl. 270—53 4 Claims



1. A multiple copy sorting apparatus for use in combination with a copying machine employed in making copies consisting of individual sheets having indicia thereon, said sorting apparatus comprising a plurality of tray means for holding paper and mounted on rack means for positioning said tray means in relation to a copying machine, means for moving each of said tray means in said rack means to receive a plurality of individual copies from a copying machine, copy fastener means adjacent said rack means for fastening copies together in said tray means, means for positioning copies in said tray means for engagement by said copy fastener means, said means for positioning copies in said tray means comprising means for removing said tray means away from said rack means and to position copies in said tray means for engagement by copy fastener means that simultaneously fastens said copies and empties said copies from said tray means and then moving said empty tray means towards said rack means.

4,083,551
METHOD AND APPARATUS FOR ON-LINE TIPPING OF INSERTS

Robert A. St. Denis, Gaithersburg, Md., assignor to Harris Corporation, Cleveland, Ohio

Filed Sep. 30, 1976, Ser. No. 728,431
Int. Cl.[2] B65H *5/30*
U.S. Cl. 270—55 8 Claims

1. Collating apparatus comprising a saddle conveyor including means for supporting signatures in a generally inverted V

orientation and for moving said signatures along a longitudinally extending path in said generally invertd V orientation with outer sheets of the signatures facing opposite sides of said longitudinally extending path, said saddle conveyor further including at least one moveable sheet engaging portion for engaging signatures and moving signatures in said generally inverted V orientation, a plurality of hoppers spaced along one side of said longitudinally extending path, means for moving said sheet engaging portion successively past each of said series of hoppers, a first one of said hoppers including means for supporting one or more signatures, means for removing a signature from said first hopper and for directing the signature into position for engagement with said sheet engaging portion of said saddle conveyor, a second one of said hoppers including means for supporting one or more inserts, an auxiliary con-



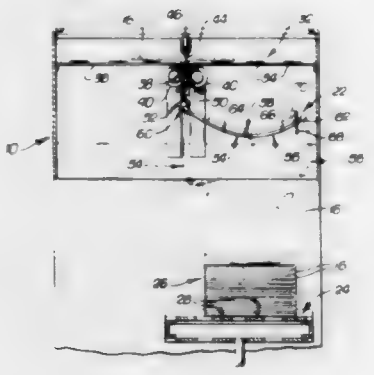
veyor having an insert moving portion movable substantially parallel with and in timed relation to said sheet engaging portion of said saddle conveyor, means for removing an insert from said second hopper and for directing the insert into position for engagement with said insert moving portion of said auxiliary conveyor, means for applying adhesive to an outwardly facing surface of said signature as said signature is in said inverted V orientation and is being moved by said sheet engaging portion of said saddle conveyor, said auxiliary conveyor including means for directing the insert which is engaged by said insert moving portion into juxtaposition with respect to an adhesive carrying portion of said signature as said signature is being moved by said sheet engaging portion of said saddle conveyor and after said signature has been moved past said adhesive applying means.

4,083,552

FOLDER AND STACKER FOR TOWELS, OR OTHER ARTICLES

Carl F. Sioman, San Marino, Calif., assignor to Team Industries, Los Angeles, Calif.

Filed Feb. 25, 1977, Ser. No. 762,290
Int. Cl.[2] B65H *45/18*
U.S. Cl. 270—85 **2 Claims**



1. In an apparatus for stacking articles delivered thereto in sequence, the combination of:

(a) two longitudinally extending, concave cradle structures pivotable downwardly from upper, generally horizontal, operative positions, wherein they project laterally inwardly toward each other and cooperate to form an upwardly concave longitudinally extending cradle for receiving an article and for rendering the article upwardly concave in cross section, to lower, downwardly dependent, inoperative positions wherein they are laterally spaced apart to release the article and permit same to drop by gravity, with the article upwardly concave in cross section, whereby forces produced by the air flowing past the article on opposite sides thereof as it descends, and acting on the article, are balanced so as to insure that the article will drop straight down;

(b) a receiver for the article located below said cradle structures; and

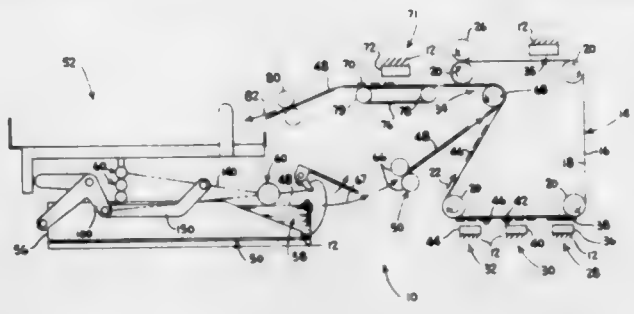
(c) means for pivoting said cradle structures between their upper and lower positions.

4,083,553

COPY SHEET HANDLING APPARATUS FOR A COPIER

Christian A. Beck, Ridgefield, and William A. Ross, Darien, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Nov. 22, 1976, Ser. No. 743,983
Int. Cl.[2] B65H *1/04, 3/06, 31/02*
U.S. Cl. 271—4 **2 Claims**



1. A copier comprising:

a. means for processing a plurality of copy sheets, a tray for supplying copy sheets, the supply tray being movable between a copy sheet feeding position and a copy sheet loading position;

b. means for aligning copy sheets on the supply tray;

c. means for restraining feeding sheets from the supply tray;

d. means for feeding copy sheets in a path of travel from the supply tray to the processing means;

e. means for moving said aligning means and restraining means respectively into and out of the path of travel of copy sheets fed from the supply tray;

f. said moving means including bar means normally disposed for preventing movement of the supply tray from the feeding position to the loading position, said aligning means being movable into and said restraining means being movable out of said path of travel of sheets fed from the supply tray in response to moving said bar means out of the path of movement of said supply tray;

g. a tray for receiving processed copy sheets;

h. means for feeding copy sheets from the processing means to the receiving tray; and

i. said receiving tray being movable from a processed sheet receiving position to a processed sheet refusal position in response to moving said bar means out of the path of movement of said supply tray.

4,083,554

FLUID POWERED ARTICLE FEEDING MECHANISM

Lenard E. Moen, 7914 Michigan, Whittier, Calif. 90602

Filed Oct. 26, 1976, Ser. No. 739,487
Int. Cl.[2] B65H *3/44, 1/02*
U.S. Cl. 271—9 **48 Claims**

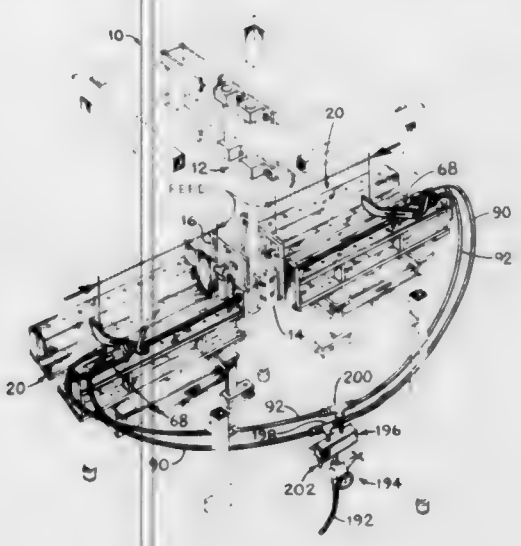
12. A synchronously coupled multiple feed magazine apparatus comprising:

a plurality of magazines each having an elongate rigid support oriented along the feed axis of said magazine,

each of said supports mounting a power unit to drivingly contact an outboard end of a row of articles in the corresponding one of said magazines,

each of said power units comprising a pair of telescopically related elements interconnected to one another and having shape characteristics to define a separate pair of inboard and outboard fluid chambers of mutually interdependent variable volume within said power unit,

control means for alternately communicating either said inboard or outboard fluid chambers to a common source of fluid energy, while the others of said fluid chambers are relieved, to drive one or the other of said pair of elements



in the inboard direction in response to expansion of inboard or outboard ones of said fluid chambers,

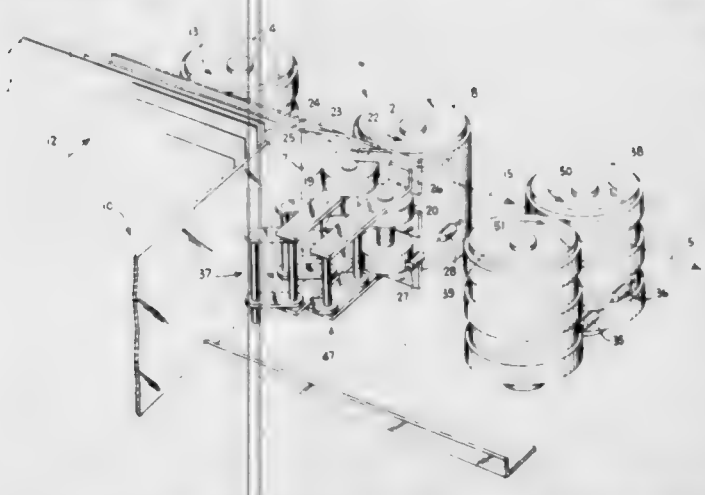
each of said pair of elements of said power units having a unidirectional locking means to prevent retrograde outboard movement of the corresponding one of said elements on said support and responsive to pressurization of the corresponding one of said pair of chambers to unlock and permit inboard movement of the corresponding one of said pair of elements.

4,083,555

SHEET-MATERIAL SEPARATOR AND FEEDER SYSTEM

Robert Irvine, Riverside, and Harry E. Luperti, Wilton, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Apr. 11, 1977, Ser. No. 786,188
Int. Cl.² B65H *3/52*
U.S. Cl. 271—10 **5 Claims**



1. An automatic material separating and feeding system separating a range of inter-mixed thicknesses of sheet-like material and feeding the separated sheet-like material in seriatim to a material-handling device, said material separating feeder system comprising:

means defining a material handling feed path;

stacking means disposed at the beginning of said feed path for stacking a quantity of intermixed thicknesses of sheet-like material;

a feeding means disposed adjacent said stacking means for feeding a portion of said quantity of material towards a first separating means; and

a dual separator mechanism comprising a first separating means disposed along said feed path downstream from said stacking means for separating thicker sheet-like material of said range of inter-mixed thicknesses, and a second separating means disposed adjacent said first separating means for separating thinner sheet-like material of said range of inter-mixed thicknesses, said second separating means having a common drive roller with said first separator means, said second separating means feeding the separated material towards a material-handling device, said second separating means working cooperatively with said first separating means such that said sheet-like material is fed to said material-handling device one sheet at a time in seriatim.

4,083,556

SHEET DELIVERY FOR ROTARY PRINTING MACHINES

Paul Schilling, Neckargemund, and Gerhard Pollich, Heidelberg, both of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Nov. 24, 1976, Ser. No. 744,459
Claims priority, application Germany, Nov. 26, 1975, 2552998
Int. Cl.² B65H *29/04*
U.S. Cl. 271—204 **7 Claims**



1. Sheet delivery for rotary printing machines having gripper bridges carried by revolving endless chains traveling along a chain path having a straight and ascending section merging with a section of the path extending horizontally across a delivery pile, comprising means defining a sheet guide path having a curvilinear configuration spaced from end to end thereof at a continuously varying distance from the endless chains and disposed below the straight and ascending section of the chain path.

4,083,557

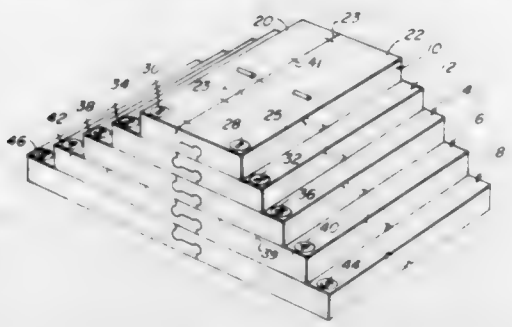
REUSABLE KARATE STRIKING BOARD

Robert Friedenthal, 43 Liberty Square Rd., Boxboro, Mass. 01719

Continuation-in-part of Ser. No. 643,604, Dec. 22, 1975, abandoned. This application Aug. 26, 1976, Ser. No. 717,566
Int. Cl.² A63J *5/00*
U.S. Cl. 272—76 **10 Claims**

1. A striking board comprising at least a first part and a second part, said first part having a first configuration at one of its edges, said second part having a second configuration at one of its edges, said first configuration and said second configuration being mirror images of one another, said first configuration and said second configuration being matched to form an elongated junction in order to mate and hold said first part and said second part only mechanically, said first configuration and said second configuration, when separated, being such as to

permit said first configuration and said second configuration to be mated by sliding motion longitudinally of said elongated junction, said first configuration and said second configuration, when mated, being such at to permit said first configuration



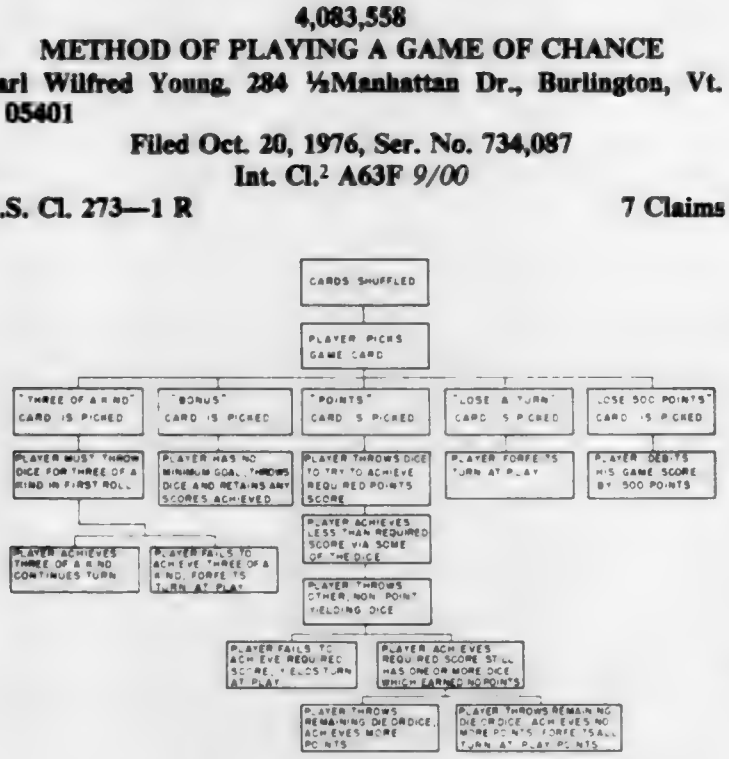
and said second configuration to be separated by an impact applied perpendicularly with respect to said elongated junction, the strength of said first configuration and said second configuration being sufficiently great to avoid shattering along said elongated junction as a result of said impact.

4,083,558

METHOD OF PLAYING A GAME OF CHANCE

Carl Wilfred Young, 284 ½Manhattan Dr., Burlington, Vt. 05401

Filed Oct. 20, 1976, Ser. No. 734,087
Int. Cl.² A63F *9/00*
U.S. Cl. 273—1 R **7 Claims**



1. A method of playing a game of chance, comprising the steps of:

providing dice;

providing a deck of discrete cards which have game-play instructions and enumerated point-goals indicated thereon;

assigning a predetermined point to at least one given die face;

assigning a predetermined point to at least one plurality of a given die face;

selecting a card from said deck thereof and noting any point-goal indicated thereon;

throwing said dice;

noting any achieved points from die faces and pluralities thereof, as thrown, which yield any such points;

adding all achieved points to determine the sum thereof;

noting any point underachievement of said point-goal in said sum; and

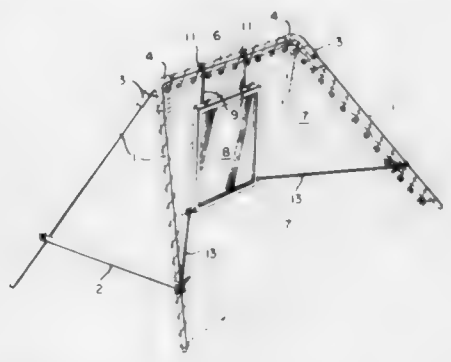
again throwing only such die or dice which yielded no points, in order to endeavor to achieve such points therefrom as will equal or exceed said point underachievement.

4,083,559

SPORTS TRAINING APPARATUS

George Owen, Jr., 23 Robbins St., Milton, Mass. 02186

Continuation of Ser. No. 647,331, Jan. 8, 1976, abandoned. This application May 9, 1977, Ser. No. 794,743
Int. Cl.² A63B *69/00*
U.S. Cl. 273—26 A **6 Claims**



1. Sports training apparatus comprising:

a standard framework including a crossbar,

a mirror assembly including a front surface resistant to the shock of a standard baseball at pitched velocity,

means connecting the mirror assembly and crossbar including means tiltably suspending the mirror from the crossbar, and

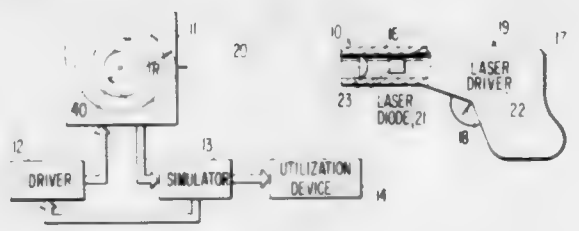
additional means for angular adjustment of the mirror with respect to a vertical plane so that a ball player can view his image while completing natural movements including projecting the ball upon the mirror at playing velocity, wherein the standard frames an area extending substantially peripherally of the mirror and including a web attached to the standard framework blocking passage of the ball through the peripheral area.

4,083,560

TARGET ARRANGEMENT FOR A LIGHT PULSE BEAM COMPRISING CROSSWISE ARRANGED AND GROUPED PHOTOTRANSISTORS

Takayuki Kikuchi, Chigasaki; Fumiharu Yamada, Yamato; Satoshi Nakamura, Yokohama, and Fumio Koyama, Kawasaki, all of Japan, assignors to Nishi Nippon Denki Co., Ltd., Osaka, Japan

Filed Jul. 26, 1976, Ser. No. 708,774
Int. Cl.² A63B *63/00*
U.S. Cl. 273—102.2 B **5 Claims**



1. In a target arrangement comprising a driver unit for controllably producing energizing signals, a target unit having a predetermined point and being responsive to said energizing signals and to a light beam consisting of a predetermined pulse number of light pulses of a predetermined repetition period and hitting said target unit at a cross-sectional area including a center point and approximately having a first and a second predetermined radius in the directions of an X and a Y axis intersecting each other substantially at said predetermined point, respectively, for producing output signals representative of a position of said center point relative to said predetermined point, and a simulator unit responsive to said output signals for indicating said position, said target unit comprising a plurality of photoelectric conversion elements responsive to said energizing signals and to said light pulses for producing output

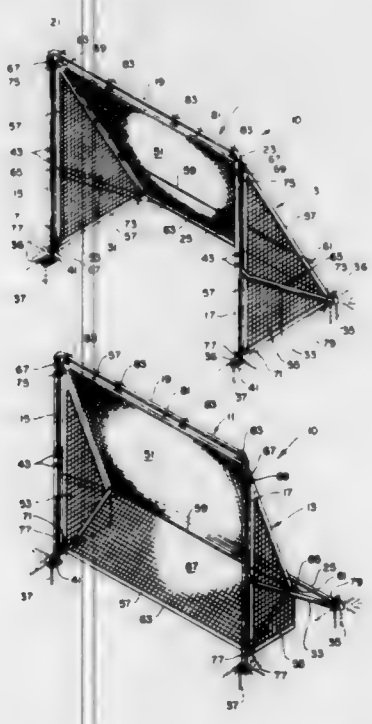
pulses as said output signals, the improvement wherein said photoelectric conversion elements are arranged substantially along said X and Y axes, the photoelectric conversion elements disposed along said X axis being spaced from one another and from said predetermined point substantially with a first predetermined spacing and grouped into a first, a second, a third, and a fourth group, the photoelectric conversion elements disposed along said Y axis being spaced from one another and from said predetermined point substantially with a second predetermined spacing and grouped into a fifth, a sixth, a seventh, and an eighth group, the photoelectric conversion elements of said first and second groups being disposed on different sides of and adjacent to said predetermined point, the photoelectric conversion elements of said third and fourth groups being disposed on different sides of the photoelectric conversion elements of said first and second groups with respect to said predetermined point, respectively, the photoelectric conversion elements of said fifth and sixth groups being disposed on different sides of and adjacent to said predetermined point, the photoelectric conversion elements of said seventh and eighth groups being disposed on different sides of the photoelectric conversion elements of said fifth and sixth groups with respect to said predetermined point, respectively, each of said first and second groups consisting of a first predetermined number of the photoelectric conversion elements, each of said fifth and sixth groups consisting of a second predetermined number of the photoelectric conversion elements, each of said first and second predetermined numbers being not greater than said predetermined pulse number, said first predetermined spacing multiplied by said first predetermined number being less than said first predetermined radius, said first predetermined spacing multiplied by a first sum of said first predetermined number plus one being greater than said first predetermined radius, said second predetermined spacing multiplied by said second predetermined number being less than said second predetermined radius, said second predetermined spacing multiplied by a second sum of said second predetermined number plus one being greater than said second predetermined radius.

4,083,561

SOCCER PRACTICE NET

Fred R. Daffer, Jr., 17212 Berlin La., Huntington Beach, Calif. 92649, assignor to Fred R. Daffer, Jr., Huntington Beach, Calif.

Filed Aug. 11, 1976, Ser. No. 713,462
Int. Cl.[2] A63B *71/02*
U.S. Cl. 273—103 **11 Claims**



1. A ball goal and practice net comprising:

a frame adapted to stand generally upright on the ground and defining an upright rectangular opening;

a net attached to said frame and disposed behind said opening to form a resilient back for receiving balls passing through said opening;

first means connected to said net for holding said net back in a first configuration inclined downward and backward from the top of said opening approximately to the ground to capture balls passing through said opening;

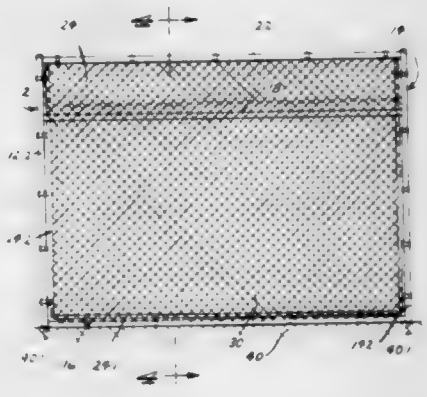
second means connected to said net for forming an angle in said net, the vertex of said angle extending horizontally across said net below the top of the frame and a substantial distance above the ground, for holding said net back in a second configuration inclined downward and backward from the top of said opening and thence, at the vertex of said angle, forward and downward about to the ground for returning balls passing through said opening.

4,083,562

GAME GOAL WITH FLEXIBLE OBJECT IMPACTING CURTAIN

Allen O. Zepper, 5255 Irondale Rd., Mounds View, Minn. 55112

Filed May 28, 1976, Ser. No. 691,132
Int. Cl.[2] A63B *63/00*
U.S. Cl. 273—127 B **9 Claims**



1. A forwardly open goal supportable on a horizontal playing surface such as an outdoor hockey rink or the like and comprising a frame and netting supported by the frame to define side and rear walls of the goal, the goal having a forwardly open and unobstructed mouth, and a vertical metal mesh impact curtain suspended from its top transversely within the goal and spaced well rearwardly of the open mouth, the metal mesh being freely flexible in one direction and being stiff and resistant to flexing in a second direction transverse to said one direction, the curtain hanging freely downwardly within the goal to a level approaching but spaced above and out of contact with the horizontal playing surface, the spacing between the impact curtain and the goal mouth being significantly less than the height of the impact curtain from top to bottom, and the curtain being of see-through, metal mesh which is yieldable and vertically swingable, whereby the momentum of hockey pucks or the like shot into the goal is absorbed by the curtain and the pucks are deposited on the playing surfaces within the goal without rebounding out of the open mouth.

4,083,563

FORTUNE POUCH GAME

Walter Drohomirecky, and Sandy Lynn Drohomirecky, both of 164 Fifth St., Rankin, Pa. 15104

Filed Dec. 7, 1976, Ser. No. 747,944
Int. Cl.[2] A63F *9/04*; A63H *33/16*
U.S. Cl. 273—139 **18 Claims**

1. A game adapted to be held in the hands of a player for manipulation into specific positions, said game comprising:

a. a body portion of a flexible material having an inner sur-

face and an outer surface, said body portion being foldable between a flat plane and into a pair of panels,

b. said panels each including oppositely disposed upper and lower ends and spaced apart sides intermediate said ends, said panels flexibly connected to each other along said lower end,

c. a pair of flexible outer flaps integrally formed with each of said panels on said outer surface, each said outer flap being connected to said upper end and one of said sides, each said outer flap having an inner end and a bottom end freely movable relative to its respective one of said panels, such that the fingers of each hand of the player may be interposed between each of said panels and each of said flaps,

d. a plurality of flexible inner flaps integrally formed with said body portion and hingeably secured thereto and adapted to be disposed in a closed position in overlapping relationship with said body portion to an open position extending upwardly from said body portion,

e. each said inner flap having a viewable outer surface and an inner surface,

f. chance means being removably connected to said flexible inner flaps on each said inner surface,

g. securing means associated with each of said inner flaps for removably connecting said chance means thereto,

h. said securing means includes a plurality of slits in each of said inner flaps,

i. said chance means is in the form of a sheet element with corners thereof adapted to be received in each of said slits,

j. first and second indicia means on each of said inner flaps on each said viewable outer surface, and

k. said first indicia means being viewable when said panels are positioned in one position and said second indicia means being viewable when said panels are positioned in another position by manipulation of the fingers of the player.

4,083,564

BOARD GAME

Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan

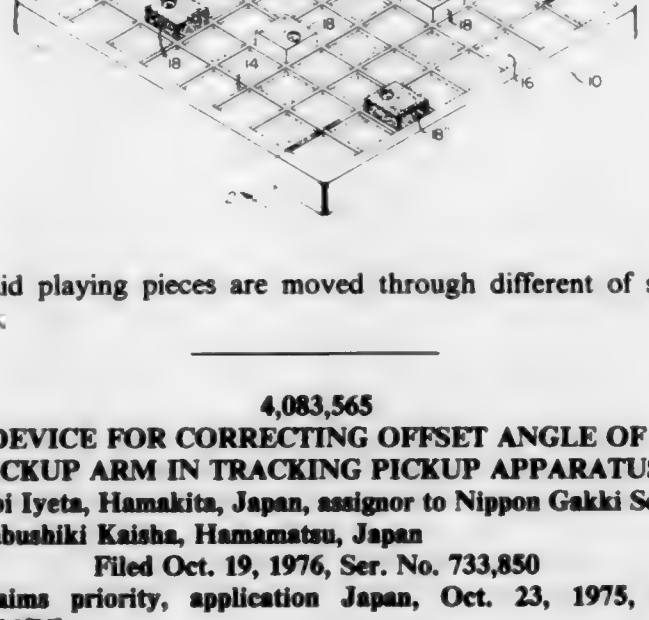
Filed Apr. 19, 1977, Ser. No. 788,973

Claims priority, application Japan, Jul. 28, 1976, 51-90528

Int. Cl.[2] A63F *3/00*

U.S. Cl. 273—239 **11 Claims**

1. A board game, comprising a plurality of playing pieces each provided with a rotatably mounted carriage having a surface provided with multiple indicia indicating the number of moves the playing piece may make and a magnet, a playing surface provided with a plurality of areas on which said playing pieces are positioned and along which said playing pieces are moved, and magnet means positioned below said playing surface and arranged in a pattern to attract said magnets of said playing pieces to rotate said carriages and said indicia thereof



as said playing pieces are moved through different of said areas.

4,083,565

DEVICE FOR CORRECTING OFFSET ANGLE OF PICKUP ARM IN TRACKING PICKUP APPARATUS

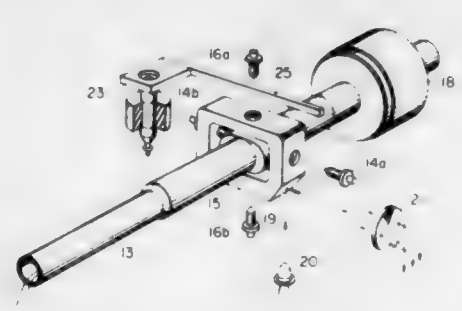
Motoi Iyeta, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 19, 1976, Ser. No. 733,850

Claims priority, application Japan, Oct. 23, 1975, 50-144792[U]

Int. Cl.[2] G11B *3/10*

U.S. Cl. 274—23 A **5 Claims**



1. A pickup arm driving device in a linear tracking pickup apparatus, comprising:

a pickup arm for tracing on a disc;

support means for said pickup arm including a movable gimbal support including first means for supporting the pickup arm for vertical movement and second means for supporting the pickup arm for horizontal movement, said second means having a surface serving as a light-reflecting surface, and means mounting said gimbal support for linear movement;

a motor designed so that its rotation speed and direction of rotation are determined by the value and the polarity of the voltage applied;

a motive power transmitting means for converting the rotation force of said motor to a linear movement force and transmitting the latter force to said movable gimbal support;

an offset angle detector for detecting a horizontal offset angle of the pickup arm, comprising said light-reflecting surface, a light-emitting source fixed to said mounting means to face said light-reflecting surface, and a photosensitive element fixed to said mounting means to face said light-reflecting surface;

an offset signal generating circuit connected to said offset angle detector for generating an offset signal having a variable value and polarity corresponding to the variable magnitude and direction of the offset angle detected; and

an amplifier for receiving, as an input thereof, said offset signal and for driving said motor, by the output of this amplifier, to rotate in a direction corresponding to the

direction of movement of said movable gimbal support in which the offset angle decreases.

4,083,566

SEAL FOR PISTON ROD OF STIRLING ENGINE

John Ingemar Bengtsson, Eslov; Sven Anders Samuel Hakansson, Malmo; Sven Gunnar Kison Lundholm, Lund, and Lars Lonnberg, Bara, all of Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Continuation of Ser. No. 329,710, Feb. 5, 1973, abandoned. This application Jul. 18, 1974, Ser. No. 489,701

Int. Cl.[2] F16J *15/24*; F16K *39/00*

U.S. Cl. 277—3 **2 Claims**



1. A sealing device about a movable piston rod in a region extending between a first gas filled chamber at high pressure and a second gas filled chamber at lower pressure within a housing, comprising in combination, the structure in the preamble, a resilient synthetic plastic ring about said piston rod in said region conically tapered away from said rod on both ends, a pair of complementary metal ring wedges tapered toward said rod and mating with the ring on opposite sides thereof to urge said ring toward said rod, spring means mounted with structure for loading the rings in the axial direction of the rod, means in said second chamber introducing oil about said piston rod only in said lower pressure chamber which oil is drawn between said ring and said rod in a direction opposite to the flow of gas from the high pressure chamber toward the low pressure chamber thereby to form a sealing surface with said ring between said region and said second chamber preventing gas from flowing from said first chamber to said second chamber, intermediate chamber means defined in said housing between said first and second chambers confining gas in said region at a pressure between that of said first and second chambers and a conduit including non-return valve means allowing the flow of gas from said region to said first chamber.

4,083,567

LUBRICANT SEAL

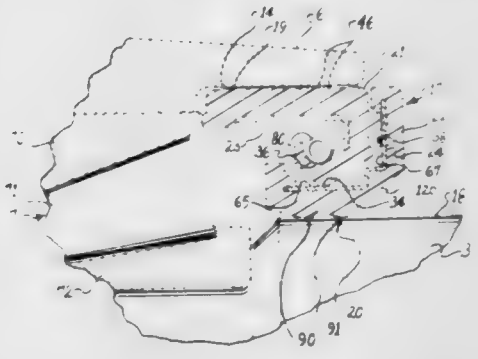
Herbert H. Thumm, Denver, Colo., assignor to The Mechanex Corporation, Englewood, Colo.

Division of Ser. No. 657,095, Feb. 11, 1976, Pat. No. 4,037,849. This application Mar. 11, 1977, Ser. No. 776,708

Int. Cl.[2] F16J *15/34*

U.S. Cl. 277—37 **1 Claim**

1. An axle engaging means for a vehicle wheel lubricant seal, said means comprising a resilient elastomeric member and a rigid member, each of said members having a cylindrical band portion having a wheel facing side and a vehicle facing side and a side member extending radially outwardly from said vehicle facing side of said cylindrical band portion, said cylindrical band portion of said rigid member having a radially inwardly facing surface surrounding and sealingly engaged with a radially outwardly facing surface of said cylindrical portion of said resilient member, said side member of said rigid member having a vehicle facing side engaged with a wheel facing side of said side member of said resilient member, said wheel facing side of said cylindrical band portion of said resilient member being engaged with said wheel facing side of said cylindrical band portion of said rigid member by a locking groove formed in said resilient member and a continuous peripheral edge of said side member of said rigid member being covered by a locking groove formed in said side member of said resilient member for maintaining said resilient member engaged with said rigid member and an annular anchor recess having a right angle cross section formed integral with said rigid member, said anchor recess being formed in a continuous annular portion of said vehicle facing side of said rigid member, said anchor recess having a first leg extending radially outwardly from said cylindrical band portion of said rigid member and a second leg integral with a radial outermost periphery of said first leg and extending substantially perpendicular to said first leg toward said rigid side member and said rigid side member being integral with said second leg and extending radially outwardly from said second leg of said anchor recess and an annular shoulder extending radially outwardly from said vehicle facing side of said cylindrical band portion of said resilient member, said shoulder having a radially outwardly facing surface for engaging a radially inwardly facing surface of said second leg of said anchor recess and a radially extending wheel facing side surface for engaging a vehicle facing side surface of said first leg of said anchor recess for preventing axial movement of said resilient member toward said wheel facing side of said rigid member when said axle engaging means is slid axially onto said axle for aiding in maintaining said resilient member locked about said rigid member during installation of said axle engaging means.



4,083,568

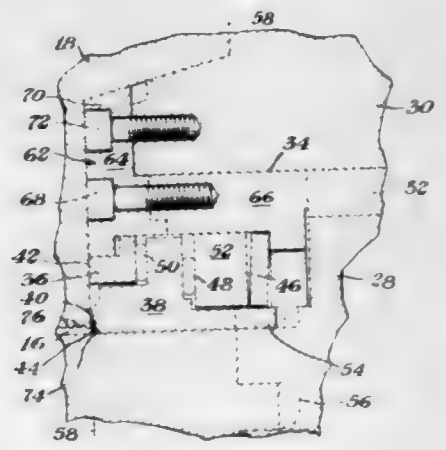
INJECTION MOLD

Eckel R. Lane; Kenneth J. Cleereman, both of Midland, and John W. McLaren, Beaverton, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 25, 1976, Ser. No. 670,316

Int. Cl.[2] F16J *15/34*

U.S. Cl. 277—81 R **5 Claims**



1. An injection mold comprising a plurality of mold elements, a first one of said elements having a mold cavity with a

peripheral edge defining a seal face, a second of said elements receivable in and defining the mold cavity, means for rotating at least one of said first and second mold elements with respect to the other, a cartridge seal assembly, said assembly comrpising a seating ring component having a face seating with the mold seal face, a seal ring component with an annular seal face spaced radially inward from the seating ring component and axially displaced inwardly from said seating face and defining a narrow annular seal gap between the relatively rotatable annular seal face and mold seal face, a resilient component means within said assembly biased between a third mold element and the seal ring component, means for journeying said seating ring component with respect to said seal ring component, means for clamping together the assembly components and compressively preloading said resilient component means axially against said ring components, means clamping the cartridge assembly to the third mold element whereby the seal gap dimension is maintained by the cartridge assembly despite variations in the clamping pressure between the first and third mold elements.

4,083,569

FRONTAL SEAL, IN PARTICULAR FOR TRACKED VEHICLES

Giorgio Negro, via Centallo 62/45, Torino, Italy

Continuation-in-part of Ser. No. 542,832, Jan. 21, 1975, abandoned. This application Mar. 12, 1976, Ser. No. 666,397
Claims priority, application Italy, Jan. 21, 1974, 67159 A/74
Int. Cl.[2] F16J *15/38*
U.S. Cl. 277—92 **1 Claim**





1. A frontal seal, in particular for tracked vehicles, at least a portion of said frontal seal being adapted to be mounted against the walls of a seat, said frontal seal comprising, in combination:

(A) a pair of sealing rings one of which is arranged to slide on the other with a predetermined pressure, each said sealing ring having an axial bore therethrough permitting said sealing rings to be mounted on the track rollers of the vehicle; a frusto-conical outer surface having a relatively high coefficient of friction and axially spaced apart major and minor bases; an outwardly directed flange having first and second substantially plane and parallel surfaces a first of which flange surfaces has a relatively high coefficient of friction and forms a junction with said major base of said frusto-conical outer surface, said second flange surface facing in a direction opposite said first flange surface and defining the end face of said frontal seal, said second flange surface having a relatively low coefficient of friction; and a cylindrical portion extending axially from said minor base of said frusto-conical outer surface in a direction away from said flange, said cylindrical portion terminating at the end of said sealing ring opposite said flange;

(B) a pair of resilient members one of which is mounted on said frusto-conical outer surface of each said sealing ring, each said resilient member including a body portion having a conical bore therethrough, the larger end of said conical bore being in opposition to said flange of said sealing ring in the assembled condition, said body portion having a quadrilateral section with an obtuse angle, that is defined, besides said frusto-conical surface, by an annulus directed towards said flange, by two further external frusto-conical surfaces, and a radially inwardly directed ring-like member of substantially circular cross-section, integral with and substantially tangent to said body portion; and

(C) an appendage coupling said ring-like member to said body portion, said appendage being connected to said frusto-conical surface defining said conical bore in said resilient member at a location that is axially inward of the larger end of said conical bore, said appendage having a length and being located so as to be completely sandwiched and pressed between said ring-like member and said body portion in the assembled condition of said frontal seal, said position being a dead point in the assembled condition, said ring-like member being proximate the junction of said cylindrical member and said minor base of said frusto-conical outer surface of said sealing ring in assembled condition, said frontal seal developing, when forced against the wall of the seat under working conditions:

(a) an axial force resulting from the combination of a pre-load force corresponding to the deformation of said ring-like member clamped between said frusto-conical surface of said sealing ring and of said body portion of said resilient member, and of a reaction of said body portion compressed against the walls of the seat, said axial force ensuring a continuous elastic load of the sealing rings;

(b) a radially inwardly directed force produced by the wall of the seat surrounding and compressing said sealing ring and said resilient member, said radially inwardly directed force ensuring a fluid-tight fit; and

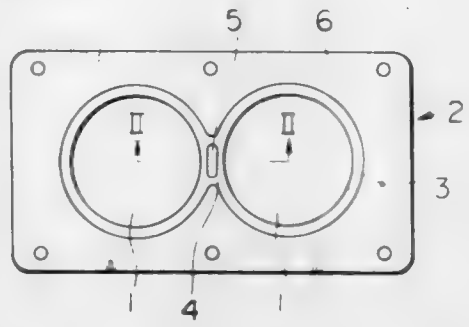
(c) an outwardly directed force for expanding said resilient member within and against the wall of the seat, said outwardly directed force providing for keeping said resilient member fixed and for ensuring a fluid-tight fit.

4,083,570

GASKET REINFORCED BY SLIT GROMMET

Minoru Sugawara, Odawara, Japan, assignor to Ishino Gasket Mfg. Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1976, Ser. No. 671,686
Claims priority, application Japan, Oct. 17, 1975, 50-141954[U]
Int. Cl.[2] F16J *15/12*
U.S. Cl. 277—235 B **4 Claims**



1. A cylinder head gasket reinforced by a slit grommet for an internal combustion engine having a sheet of a heat resisting material mounted therein, comprising:

a gasket base sheet having a plurality of holes and having an area between the adjoining holes cut away;

a graphite sheet having a lamellar crystalline structure mounted on said cut-away area between the adjoining holes; and

a grommet mounted on the peripheral edges of said holes and to said sheet and having a slit in at least one side of said area between the adjoining holes.

4,083,571

DRILL CHUCK ARRANGEMENT

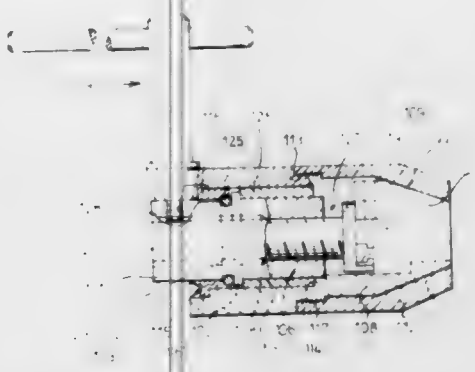
Fritz Schädlich, Stetten, and Heribert Schramm, Stuttgart-Sonnenberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 29, 1975, Ser. No. 626,765

Claims priority, application Germany, Nov. 30, 1974, 7439900[U]

Int. Cl.[2] B23B *31/12*

U.S. Cl. 279—61 9 Claims



1. In a drill arrangement having a spindle, a combination comprising a spindle member connected with the spindle and having an axis, said spindle member having a bore for receiving a portion of an actuating tool, said spindle member further having a circumferential groove; jaw-actuating means mounted at least in part about said spindle member for concentric turning about said axis; anti-friction means including a cylindrical anti-friction bushing located intermediate said spindle member and said jaw-actuating means for relative rotation and preventing binding between the former and the latter and engaging the same; a plurality of opposed clamping jaws slidably connected to a threaded member which threaded member is threadedly connected to said spindle, said jaws being restrained for rotation relative to said jaw actuating means thereby being movable toward and away from each other in response to turning of said jaw-actuating means relative to said spindle member; gear means provided on said jaw-actuating means and adapted to mesh with cooperating gear means on said tool when said portion of said tool is received in said bore, in turning said jaw-actuating means relative to said spindle member in response to turning of said tool in said bore; and friction means including a friction ring seated in said groove intermediate said spindle member and said jaw-actuating means and frictionally engaging the same for dampening a counteracting force which is exerted by the substance being drilled upon said spindle member.

4,083,572

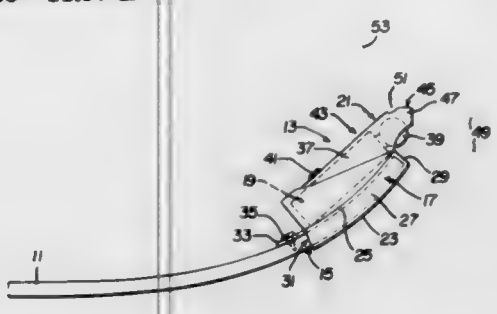
SKI ATTACHMENT

Clifford J. May, Jr., 29208 Glenarden, Farmington, Mich. 48024

Filed Aug. 6, 1976, Ser. No. 712,285

Int. Cl.[2] A63C *11/00*

U.S. Cl. 280—11.37 E 12 Claims



1. A ski attachment comprising a generally U-shaped sheath adapted to be receivably retained over the tip of a ski, said sheath having a closed end at the bight of the U-shaped section and an open portion at its opposite end, the interior of said sheath being shaped to conform to the shape of said ski tip such that when said ski tip is inserted through said open portion, the tip of said ski is disposed against the closed end of said sheath and portions of the surfaces of said ski immediately adjacent said ski tip are disposed snugly against the sloped interior of said sheath for retaining said sheath thereon, a battery-powered electric light and means for mounting said light on said sheath so as to aid the skier during periods when sufficient illumination is not available, said mounting means including a protective housing integral with said sheath and disposed adjacent the upper surface thereof for protectively housing said light.

4,083,573

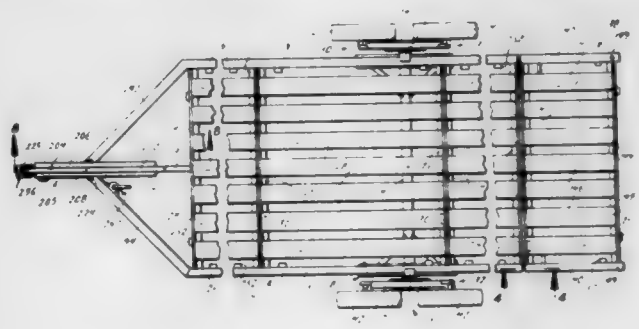
CARGO CARRIER

Bobby G. Baxter, Warrenton, Mo., assignor to The Binkley Company, Warrenton, Mo.

Filed Jul. 15, 1976, Ser. No. 705,585

Int. Cl.[2] B60P *1/04*

U.S. Cl. 280—43.11 50 Claims



1. A cargo carrier operable between an elevated position above the ground and a lowered position substantially on the ground, comprising a bed section of generally planar configuration for supporting cargo, means for supporting the forward end of said bed section above the ground for towing by a towing vehicle, a tail section, means for attaching said tail section to the rear end of said bed section to assume an inclined raised position, means for limiting the degree of inclination of said tail section in the raised position, a carriage assembly, bed support means operatively connect to said carriage assembly for supporting the rear end of said bed for fore and aft movement of said bed relative thereto, said carriage assembly having wheels supporting said bed support means above the ground, whereby forward movement of said bed section from an elevated position of said carrier moves said inclined tail section forwardly and downwardly on said bed support means to lower the rear end of said bed section substantially to the ground, and whereby rearward movement of said bed section from the lowered position of said carrier produces movement of said inclined tail section upwardly and rearwardly on said bed support means to raise the rear end of said bed.

4,083,574

BOOSTER DOLLY

Cecil D. Massey, 16510 North Hwy. 3, Webster, Tex. 77598

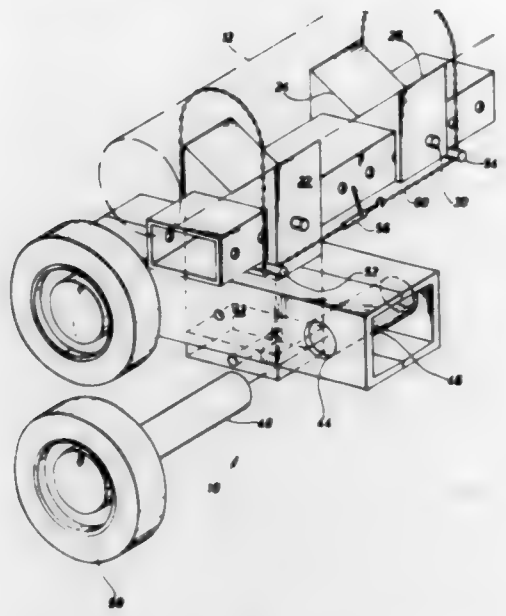
Filed Sep. 16, 1976, Ser. No. 723,751

Int. Cl.[2] B60S *13/00*

U.S. Cl. 280—47.15 8 Claims

1. A booster dolly for use with a boat trailer where a wheel assembly of the boat trailer has failed, comprising a booster assembly including a first support means which supports the weight of the trailer by supporting the boat trailer axle which first support means is adjustable to move into a supportive position for the boat trailer axle and said first support means comprises a generally horizontal structural member and at least a pair of separable pillow blocks movably mounted thereon to receive the weight of the boat trailer, and a second

means structurally connected to said first support means which second means includes a second support means adapted to



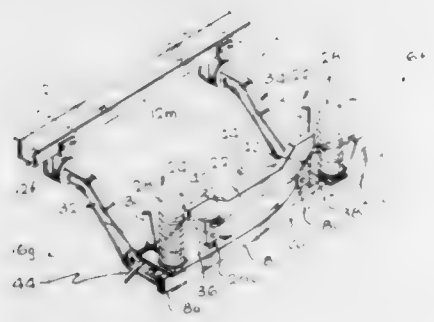
receive and connect to a dolly wheel and which places the weight of the trailer on the dolly wheel.

4,083,575

VEHICLE SUSPENSION SYSTEM

Richard W. Smith, 15602 Briarbank, La Puente, Calif. 91744, and David S. Nakai, 13791 Stampede Cir., Irvine, Calif. 92905

Filed May 22, 1975, Ser. No. 580,057
Int. Cl.² B60G *3/00*
U.S. Cl. 280—696 **3 Claims**



1. A conversion kit for a vehicle which has a frame, a body mounted on the frame, a pair of front wheels, a pair of independent elongated front axles each having an outer portion connected to a front wheel and supporting the frame through an original coil spring and having an inner end pivotally mounted on an original axle block fixed to the rest of said frame, and a pair of original radius arms each having an outer end coupled to an outer portion of a front axle and an inner end mounted on said frame, comprising:

a pair of auxiliary axle blocks mountable on said frame to lie below the original axle blocks, to hold the inner ends of the front axles further below the vehicle frame than they are held by the original axle blocks;

a pair of replacement coil springs, each of greater height than said original coil springs, to support the outer ends of the front axles further below the vehicle frame than they are held by the original springs; and

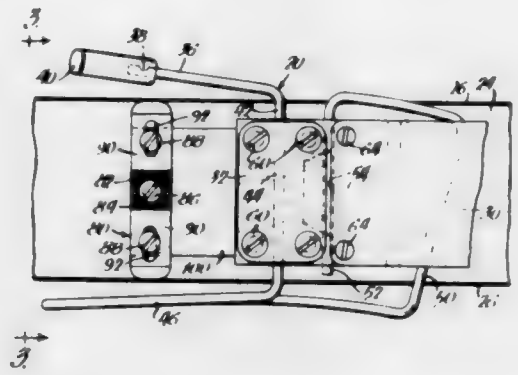
a pair of replacement radius arms, each of longer length than said original radius arms, each having inner and outer ends respectively formed to mount in place of the corresponding ends of the original radius arms, and each having a bent middle portion which leaves the outer ends at substantially parallel orientations, to brace the outer portions of the front axles while they lie at a lower level below the vehicle frame.

4,083,576

ADJUSTABLE SKI BRAKE

Kurt von Besser, 218 S. Hoyne Ave., Chicago, Ill. 60612

Filed Feb. 4, 1977, Ser. No. 765,730
Int. Cl.² A63C *7/10*
U.S. Cl. 280—605 **18 Claims**



1. A ski brake comprising:

mounting means attachable to the upper surface of a ski and having a pair of spaced channels adapted to be located transverse to the longitudinal axis of the ski,

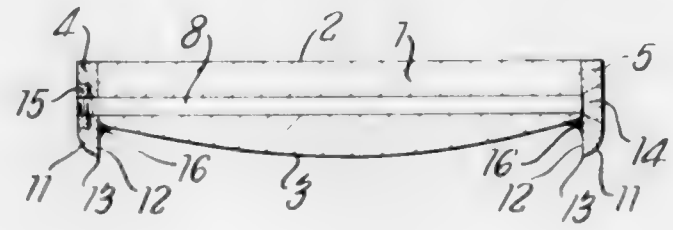
a spring wire having a first end forming a first brake arm and an intermediate portion bent into a first loop which forms a second brake arm, the spring wire having an intermediate transverse portion between the first end and the first loop and located in one of the pair of channels, a second end of the spring wire being transverse to the longitudinal axis of the ski and located in the other channel, and the spring wire having an second holding loop between the second end and the first loop which is depressible against the ski and is pivoted upwardly away from the ski by spring action of the wire and configuration thereof to force the pair of brake arms downwardly with respect to the upper surface of the ski.

4,083,577

SKIS

Howard Ford, Les Abeilles, Boulevard d'Italie, Monte Carlo, Monaco

Filed Jun. 1, 1976, Ser. No. 691,302
Int. Cl.² A63C *5/04*
U.S. Cl. 280—609 **7 Claims**



1. A ski having a longitudinal axis and a side disposed on either side of the longitudinal axis, and having a front upwardly curved end and a rear end with a boot position intermediate said ends, said ski comprising:

a ski face comprising the running surface, said face terminating at the ski sides and said face, substantially along the entire length thereof, being convex in cross-section at right angles to the longitudinal axis of the ski, so that said running surface projects below the sides of the ski;

the convex cross-section of the running surface having radii of curvature which vary smoothly from a large radius at the ski mid-width to a small radius towards the ski sides;

a pair of elongated blades, each blade having a length substantially less than the length of the ski and one blade mounted on each side of the ski at the boot position only,

parallel to the axis of the ski and at least substantially symmetrical in relation to the boot position along the ski;

each blade projecting downwards from the sides of the ski a distance generally the same as the maximum projection of the running surface below the sides of the ski; and

each blade having a top inner face provided with a smoothly rounded surface where the top inner face meets the running surface, said smoothly rounded surface curved so that at its extremities it is tangential respectively to the running surface and the blade face, whereby a smooth groove is defined affording a snow throughway from the front to the rear of the ski.

4,083,578

TOE CLIP FOR A SKI BINDING

William C. Moog, East Aurora, and Colin M. Taeger, Buffalo, both of N.Y., assignors to Moog Inc., East Aurora, N.Y.

Filed Dec. 2, 1976, Ser. No. 748,154
Int. Cl.² A63C *9/086, 9/20*
U.S. Cl. 280—618 **10 Claims**



1. In a ski binding for a ski boot having a toe notch, the improvement comprising:

a sole-plate having at least one recess extending thereacross, each recess having a substantially key-shaped cross-section including a cylindrical portion and a narrowed entrance portion communicating a surface of said sole-plate with said cylindrical portion; and

a toe clip including a base portion having in transverse cross-section a width less than the width of said entrance portion, said base portion being arranged to pass through said entrance portion to be received in said cylindrical portion, including a leg portion extending away from said base portion from the marginal ends thereof, and including a loop portion joining said leg portions and arranged to be received in the toe notch of a ski boot;

whereby said toe clip may retain the toe portion of said ski boot to said sole-plate.

4,083,579

COLLAPSIBLE INFANT'S STROLLER

Otis Basey, Jr., and Roy E. Knoedler, both of Columbus, Ind., assignors to Cosco, Inc., Columbus, Ind.

Filed Jan. 3, 1977, Ser. No. 756,132
Int. Cl.² B62B *11/00*
U.S. Cl. 280—650 **22 Claims**

1. A collapsible stroller movable between an unfolded operating position and a collapsed folded position comprising a pair of elongated parallel side frames having upper and lower ends; a front wheel connected to the lower end of each said side frame; a side strut having upper and lower ends and pivotally connected near its upper end to each said side frame intermediate the length of said side frame; a rear wheel connected to the lower end of each said side strut; a flexible seat mounted on said side frames; a bottom X-frame pivotally connected between said side frames and said side struts adjacent their respective lower ends; a slide assembly slidably carried on each said side frame above said seat; a rear X-frame pivotally connected between said side struts adjacent their lower ends and said slide assemblies; and locking means for releasably locking said slide assemblies in a first position for locking the stroller in an unfolded operating position with said bottom and rear X-frames angularly disposed with respect to each other, said slide assemblies being movable along said side frames away from said seat when said locking means is unlocked toward a



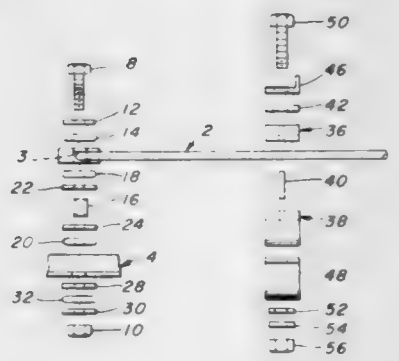
second position for placing the stroller in a collapsed folded position with said bottom and rear X-frames disposed end-to-end in substantially a common plane generally parallel with the plane of said side frames.

4,083,580

BUSHING ASSEMBLY

Robert J. Shaner, Circle G Mobile Home Park, Lot 13, R.D. 4, Kittanning, Pa. 16201

Filed Jun. 9, 1976, Ser. No. 694,404
Int. Cl.² B60G *11/18*
U.S. Cl. 280—689 **23 Claims**



1. An automotive vehicle stabilizer bar assembly comprising,

an elongated stabilizer bar,

a stabilizer bar bushing assembly defining a bore which said stabilizer bar contacts and through which said stabilizer bar passes,

said stabilizer bar bushing assembly having an upper element, a lower element and joining means securing said upper and lower elements in relative fixed position,

said upper and said lower bushing elements being substantially rigid,

said joining means including at least two pairs of aligned openings in said upper and said lower bushing elements and elongated pins extending into said openings,

said upper and lower bushing elements cooperating to define said bore,

said aligned openings being disposed on opposite sides of said bore and being oriented generally transversely with respect to said bore, and

clamp means securing said bushing to a support member on said automotive vehicle, whereby said bushing assembly

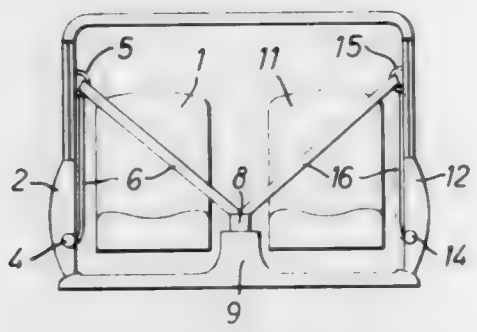
bore defined by said upper and said lower bushing elements will provide a substantially rigid bushing member in intimate contact with said stabilizer bar.

4,083,581

EMERGENCY RELEASE SYSTEMS

Roy Clifford, Ampthill, England, assignor to Kangol Magnet Limited, Carlisle, England

Filed Apr. 19, 1976, Ser. No. 678,407
Int. Cl.[2] B60R *21/02*
U.S. Cl. 280—745 **11 Claims**



1. A vehicle seat belt retractor having a condition-responsive locking device for locking the retractor against belt withdrawal in response to the sensing of a predetermined condition, said locking device comprising a lock member movable in response to the sensing of the predetermined condition from a rest position permitting belt withdrawal to a locking position and

an anti-locking device adapted to render the locking device incapable of locking the retractor in response to the opening of a vehicle door, said anti-locking device comprising a release element, the release element having when the vehicle door is closed a release position in which the lock member can move between the rest and locking positions thereof, means slidably guiding said release element for movement from the release position on opening of the vehicle door to a position retaining said lock member in the rest position thereof, and means biasing said release element from said release position.

4,083,582

BOOK PROTECTOR

Jesus Mario Aguirre Villafana, P.O. Box SUC J No. 4501, Monterrey, Mexico

Filed Jan. 10, 1977, Ser. No. 757,980
Int. Cl.[2] B42D *3/10*
U.S. Cl. 281—20 **1 Claim**

1. A protective cover for a book comprising:

an elongated, flat generally rectangular, flexible sheet material having first and second flat surfaces;

zipper means located approximately along a center elongated axis of said flexible sheet material, said zipper means dividing said flexible sheet material into two approximately equal halves;

said zipper means having a zipper fastener on the first of said flat surfaces for opening the zipper means;

at least two notches in each of the halves to allow each halve of the sheet material to be edgewise folded around a corner of a book cover to prevent overlap of the sheet material;

adhesive bonding surface afixed along the second of said flat surfaces adjacent each outer elongated edge of said flexible material, said adhesive bonding surfaces being adapted for attachment to outer edges of a cover of said book; and



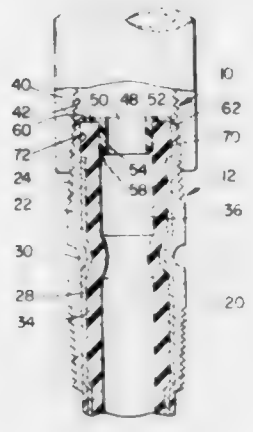
an adhesive covering strip removably attached to said adhesive bonding surface for covering said adhesive bonding surface prior to attachment to said book.

4,083,583

PIPE FITTING HAVING A NON-METALLIC SEALING MEMBER

Frank R. Volgstadt, Madison, and David P. Passerell, Geneva, both of Ohio, assignors to Perfection Corporation, Madison, Ohio

Filed Nov. 8, 1976, Ser. No. 739,839
Int. Cl.[2] F16L *9/14, 15/00*
U.S. Cl. 285—55 **2 Claims**



1. A pipe fitting comprising in combination:

an externally threaded tubular male member having a non-metallic lining at the interior surface thereof;

an internally threaded female member threadedly interconnected to said male member;

a non-metallic ring comprising a tubular body, a radial flange extending substantially generally transversely outwardly from said tubular body and a thread engaging sealing portion extending generally radially outwardly from said radial flange;

said sealing portion having an outer periphery having a diameter greater than the minor diameter of the threads of said female member;

said sealing portion being defined by a lip having a thickness which decreases along the transverse axis of said ring to a minimum thickness at the outer edge of said lip;

a part of said sealing portion being adapted to be disposed between opposed thread flanks of said male member and

said female member as said male member and said female member are brought into threaded engagement, the space between said opposed thread flanks being substantially filled by said part of said sealing portion to thereby provide a seal at said opposed thread flanks;

said tubular body of said ring being disposed in said tubular male member in close engagement with the non-metallic lining thereof;

said radial flange of said sealing portion being disposed over the end wall of said lining and the end wall of said tubular male member and in close contact therewith whereby,

said ring serves to isolate said tubular male member from contact with fluid conducted by said member.

4,083,584

APPARATUS FOR SECURING A FLANGE FERRULE TO THE END OF A FLEXIBLE TUBE, PARTICULARLY A SHOWER TUBE

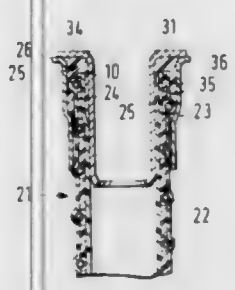
Günter Buzzi, Schiltach, Germany, assignor to Hans Grohe KG, Germany

Filed Jul. 2, 1976, Ser. No. 702,348

Claims priority, application Germany, Jul. 3, 1975, 2529666; Jan. 13, 1976, 7600734[U]

Int. Cl.² F16L *33/20*

U.S. Cl. 285—258 **1 Claim**



1. A fitment construction comprising a flexible tube having an annular end wall, a flange ferrule fitted over the exterior of said tube and having a flange aligned substantially with the end of said tube, a deformable clamp bushing having an unexpanded diameter smaller than the tube fitted into the tube and having a clamp bushing flange engaged over the flange of said flange ferrule, a seal member disposed between the flange of said clamp bushing, said flange ferrule, and the end of said tube, said tube comprising a tube having a spiral reinforcement therethrough forming at least one of the interior or exterior surfaces with corrugations, said deformable seal member having a hollow conical control portion engaged in said tube, and a collar portion engaged over the exterior of said tube and a web portion joining said collar portion and said conical central portion and being engaged over the end of said tube and said clamp bushing being expanded into engagement with the seal member and the wall of the tube so that said tube and seal member are captured and deformed between said clamp bushing and said flange ferrule.

4,083,585

TUBE COUPLING

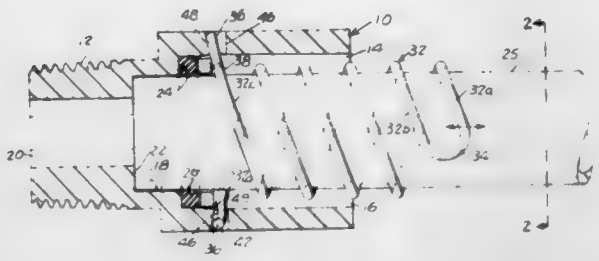
Homer E. Helm, Troy, Mich., assignor to Gordon H. Cork, Birmingham, Mich.

Filed Nov. 12, 1976, Ser. No. 741,236

Int. Cl.² F16L *31/00*

U.S. Cl. 285—260 **15 Claims**

1. A releasable tube coupling comprising a body having a bore extending axially therethrough, said bore having an open end for receiving said tube, a coil spring extending coaxially in said bore and projecting outwardly at said open end thereof, means releasably interengaging the inner end of said spring with said body to prevent axial displacement of said inner end of the spring relative to said body, an annular seal disposed in said bore beyond said inner end of the spring, said seal sealingly engaging the wall defining said bore and adapted to encircle and seal with the outer surface of the end portion of a tube telescoped into said bore, said spring in the relaxed position thereof having an outer diameter smaller than said bore and having an inner diameter slightly smaller than the outer



diameter of the tube and being axially compressible to enlarge the inner diameter thereof by axially displacing the outer end of the spring toward said body to enable insertion of the tube through and its withdrawal from within said spring.

4,083,586

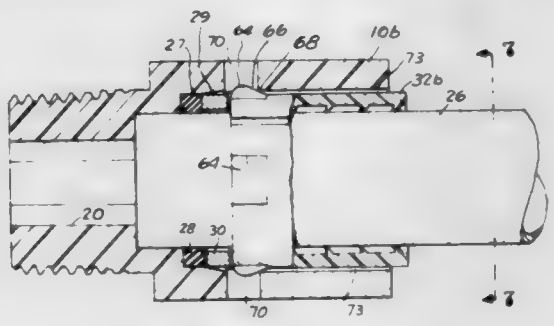
TUBE COUPLING

Homer E. Helm, Troy, Mich., assignor to Gordon H. Cork, Birmingham, Mich.

Filed Nov. 12, 1976, Ser. No. 741,239

Int. Cl.² F16L *17/00, 47/00*

U.S. Cl. 285—323 **14 Claims**



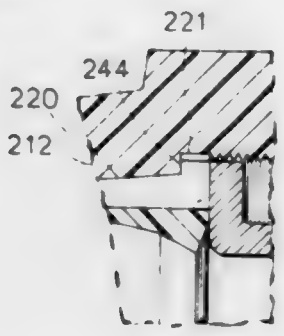
1. A releasable tube coupling comprising, a body having a small cylindrical bore at one end and a coaxial, smooth large cylindrical bore at its opposite end, the inner end of the large bore terminating at a radially inwardly extending shoulder at the junction of the two bores, said large bore having an open end for receiving the tube, a molded plastic resilient cylindrical sleeve in said large bore into which the tube is adapted to be telescoped, said sleeve having a plurality of radially outwardly extending detents on the outer surface thereof, said body having radially outwardly extending recesses in said large bore spaced axially from said open end thereof and into which said detents project, the circle defined by the radially outermost edges of said detents normally having a diameter larger than said large bore, said sleeve being split longitudinally throughout its length so as to provide a pair of circumferentially spaced parted edges which enable the sleeve to be resiliently collapsed circumferentially to reduce the diameter thereof at said detents to at least the diameter of said large bore to enable axial insertion of the sleeve into said large bore through said open end and to permit the sleeve to expand when the detents register axially with said recesses to thereby interengage said detents with the recesses, said detents and recesses having interengaged cam surfaces which tend to circumferentially contract the sleeve into tight clamping engagement with the outer surface of a tube inserted therethrough in response to an axial outward force applied to the tube, said sleeve projecting outwardly beyond said open end of the large bore when the detents are engaged in said recesses, said sleeve being shiftable axially inwardly of said large bore to relieve its clamping action on the tube to enable withdrawal of the tube from within the sleeve.

4,083,587

SPLIT-RING TYPE PIPE COUPLINGS

Moshe Leczycki, Tel Aviv, Israel, assignor to Plasson Maagan Michael Industries Ltd., Menashe, Israel

Continuation-in-part of Ser. No. 618,281, Sep. 30, 1975, Pat. No. 4,025,093. This application Apr. 12, 1977, Ser. No. 786,808
Claims priority, application Israel, May 14, 1976, 49577
Int. Cl.[2] F16L *21/04*
U.S. Cl. 285—343 **3 Claims**



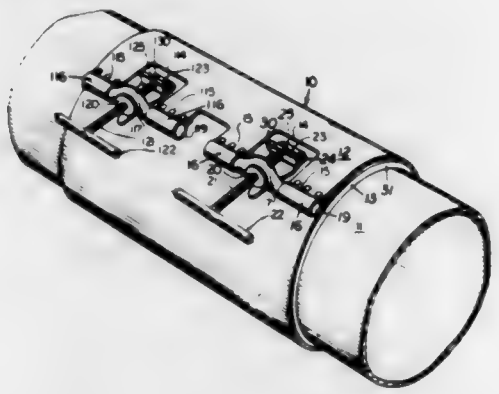
1. A pipe coupling comprising a housing formed with external threads and with an internal axial bore for receiving one end of a pipe; a split-ring of hard elastic material formed with annular teeth on its inner surface and a longitudinally-extending slit for application around the pipe to be received in the bore of the housing, said split-ring further including a plurality of circumferentially-spaced, axially-extending ribs of increasing height, the top lands of which ribs define an outer tapered surface on the split-ring, the higher end of each rib being formed with an outwardly-projecting step; and a sleeve formed at one end with threads cooperable with the threads of the housing, at the opposite end with an internal conical surface engageable with the outer tapered surface of the split-ring to cause the split-ring to tightly clamp the pipe upon threading the sleeve onto the housing, and with an intermediate internal annular shoulder engageable with said outwardly-projecting steps of the ribs.

4,083,588

COUPLING

William L. Berger, 5210 Clinton Dr., Erie, Pa. 16509

Filed Feb. 11, 1977, Ser. No. 767,687
Int. Cl.[2] F16L *21/06*
U.S. Cl. 285—373 **4 Claims**



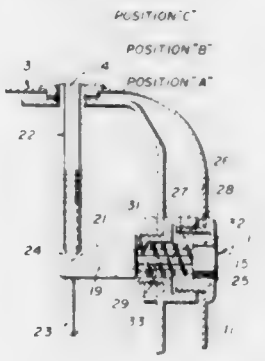
1. A coupling for a tube, pipe or the like comprising,
a tensioning band made up of flexible, relatively thin material adapted to lay on the outside surface of a pipe or tube,
said tensioning band is disposed around a gasket,
said tensioning band having a first notch and a second notch spaced from each other,
a third notch between said first notch and said second notch,
all said notches being formed in one end of said band,
the ends of the material defining each said notch having their ends rolled back forming eyelets,
yokes each having a curved intermediate part and two straight end parts,
said ends being rotatably received in said eyelets,
nuts having one side fixed to the inside curve of the intermediate part of said yoke,
said two straight end parts extending outwardly from said intermediate part and being disposed on a line passing on the opposite sides of said nuts from said one side,
said nuts receiving a screw,
strikes on the end of said band opposite said notches,
said strikes comprising pieces of sheet material slightly narrower than said notches, and having an intermediate part thereof bent back on itself forming an outwardly extending portion extending generally radially of said coupling,
the ends of said strikes resting on said band and extending from said outwardly extending portion a substantial distance and terminating short of the end of said band,
said strikes having seats formed on said outwardly extending parts each adapted to engage an end of a screw,
said screws being adapted to be swung with said yokes to a position parallel to a diameter of said pipe having the end of said screws engage said seats,
said screws being adapted to be swung to a position tangent to said pipe at said strikes and said yokes disposed between a line passing through said screws parallel to the axis of said pipe and the outer periphery of said band whereby the said tensioning band is preliminarily tensioned,
said screws being adapted to be tightened by rotating said screws in said nuts with said eyelets swing into engagement with said band whereby said tensioning band is tensioned and said coupling is held in closed position by toggle action of said screw and said yoke.

4,083,589

VEHICLE SECURITY SYSTEM

Henry Palmerino, The Trail, Sturbridge, Mass. 01566

Filed Apr. 7, 1977, Ser. No. 785,684
Int. Cl.[2] E05C *21/00*
U.S. Cl. 292—336.3 **6 Claims**



1. Security system for a vehicle having a door with a horizontal sill and a latch, comprising:
a. a first button slidably mounted in the door in operative relation to the said latch for vertical movement from an upper UNLOCK position above the sill where the latch is locked, to a lower LOCK position level with the sill where the latch is locked,
b. a second button slidably mounted in the door for horizontal movement from an outer inoperative position to an inner operative position, and
c. a wedge mounted on the second button and having an inclined surface that engages and moves the first button upwardly from its lower position to an upper position as the second button is moved inwardly from its inoperative position to its operative position.

4,083,590

NARROW STILE PANIC EXIT ACTUATOR

Roger J. Folger, Whittier, Calif., assignor to Adams Rite Manufacturing Co., Glendale, Calif.

Filed Feb. 2, 1977, Ser. No. 764,726
Int. Cl.[2] E05C *3/16*
U.S. Cl. 292—92 12 Claims



1. A panic exit actuator mechanism for mounting on a narrow stile door frame in operative relation with a lock mechanism mounted in an associated portion of the narrow stile door frame, said lock mechanism including a latch bolt supported for movement between latched and unlatched positions, comprising:

a. housing means for mounting on a face of the door on said door frame;

b. bearing means projecting from the back side of said housing adapted in the mounted position of the housing to have an outer end thereof disposed in the associated stile frame adjacent said latch bolt;

c. an actuator element supported within the housing for movements in opposite directions;

d. means for actuating said latch bolt in response to movements of said actuator element, comprising:

a shaft rotatably supported in said bearing means,

a cam member at one end of the shaft for operative association with the latch bolt,

a crank member at the other end of the shaft within the housing, and

an elongate link member having one end pivotally connected to said actuator element and its other end pivotally connected to the crank member;

e. a push bar extending along the front side of said housing;

f. means supporting said push bar for guided non-rectilinear movements towards and away from said actuating element, and further constituting an operative connection between the push bar and actuator element for moving the actuator element in a direction to effect rotation of the cam member in a direction to move the associated latch bolt to an unlatched position; and

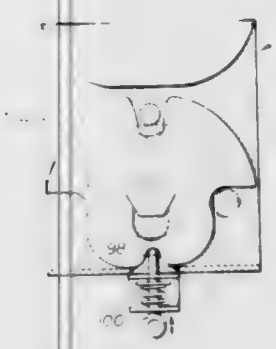
g. means for resiliently urging the push bar in a direction away from said actuator element.

4,083,591

GATE LATCH

Rudolph E. Parisien, 891 Rainbow St., Ottawa, Ontario, Canada

Filed Sep. 1, 1976, Ser. No. 719,593
Claims priority, application Canada, Sep. 22, 1975, 235968
Int. Cl.[2] E05C *3/26*
U.S. Cl. 292—202 2 Claims



1. A gate latch adapted to be secured to a gate post so as to be engaged by a latch pin on a gate adapted to swing toward the gate post, said gate latch comprising a body including back wall, a top wall having a downwardly depending flange and a bottom wall having an upwardly extending portion, and a pawl mounted for rotation between said back wall and said upwardly extending portion, said pawl being adapted to be deflected inwardly by said latch pin so as to cause said latch pin to be trapped in the body thus preventing return movement of said latch pin, an upper portion of said pawl being substantially semi-circular and having an indentation at a mid-portion thereof to co-operate with said latch pin, a lower portion of said pawl being semi-circular and of lesser radius than said upper portion so as to define shoulders on each side of said pawl one or the other of which is adapted to engage said bottom wall or said body when said pawl is in an unlatched and manually releaseable means on said lower portion of said pawl and said bottom wall of said body for retaining said pawl in a closed position.

4,083,592

PROTECTIVE STRIP ASSEMBLY

Richard J. Rubin, and Morton Hollis, both of Newton, Mass., assignors to Boston Metal Products Sales Corporation, Cambridge, Mass.

Filed Jan. 6, 1977, Ser. No. 757,349
Int. Cl.[2] B60J *11/00*
U.S. Cl. 293—71 R 18 Claims



1. A protective strip assembly comprising, in combination, a mounting member and an elongated strip of resilient material secured in said member and extending thereabove, characterized in that:

said resilient strip comprises a body portion extending above said member, a pair of spaced apart legs extending from said body portion into said member, and a pair of oppositely disposed strip latch walls, one on each said leg extending inwardly from the outer side of each said leg and facing upwardly in the direction toward said body portion, said latch walls spaced from the bottoms of said legs; and

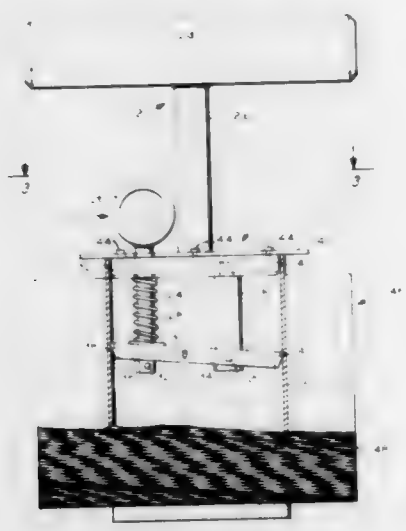
said mounting member comprises a base, a pair of upstanding walls extending from said base within which said legs are positioned, a pair of oppositely disposed mounting member latch walls, one on each said upstanding wall extending inwardly from the inner side of each said upstanding wall and facing downwardly in the direction toward said base, said mounting member and strip latch walls facing each other for restraining said strip against removal from said mounting member, and a pair of center walls extending upwardly from said base between said upstanding walls in the space between said legs, each said center wall facing outwardly toward one said leg and spaced closely adjacent said leg, said center walls restraining said legs from inward deflection and thereby assisting in restraining said strip against removal from said mounting member.

4,083,593

METHOD AND APPARATUS SUITABLE FOR GRASPING AN ANNULAR WORKPIECE

James R. Lynn, Greenville, S.C., assignor to Phillips Fibers Corporation, Greenville, S.C.

Filed Apr. 29, 1976, Ser. No. 681,359
Int. Cl.[2] B66C *1/42*
U.S. Cl. 294—97 7 Claims



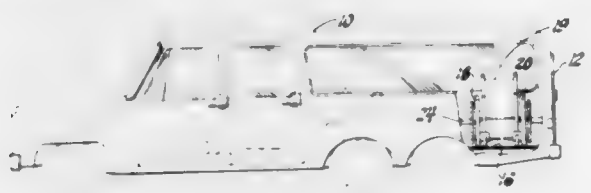
1. Apparatus comprising:
a main support having a first surface and a second surface;
a lifting member attached to the first surface of the main support;
a wedging member support having a first end and a second end wherein said first end is attached to the second surface of the main support;
a wedging member having a first end and a second end, said first and second ends of the wedging member suitable for engaging the inside surface of an annular workpiece, said wedging member having a length sufficiently longer than the inside diameter of the annular portion of the workpiece to permit the wedging member to wedge therein, said wedging member being attached to the wedging member support a distance from the main support in a manner to permit rotation of the wedging member about the point of attachment in a plane perpendicular to the main support and said wedging member having the first end of said wedging member always closer to the main support as compared to the second end of said wedging member; and
a releasing means for rotating the wedging member.

4,083,594

WHEEL CHAIR HOLDING MEANS

Ronald F. Tullock, 33527 Hiveley, Westland, Mich. 48185

Filed Dec. 29, 1976, Ser. No. 755,241
Int. Cl.[2] B60T *1/14;* B60N *1/02*
U.S. Cl. 296—1 A 7 Claims



1. A combination comprising:
an elongated support having a plurality of regularly spaced openings along the support;
a wheel chair having a pair of laterally spaced rotatable wheels disposed adjacent the support, each wheel having a rim defining an opening and being rotatable about an axis of rotation;
first wheel-engaging means mounted on the support and being engaged with a first of said pair of wheels to prevent motion of said first wheel with respect to the support;
second wheel-engaging means mounted on the support and being movable toward the second of said pair of wheels along a path of motion parallel to the axis of rotation of the second wheel;
an arm carried by the second wheel-engaging means to be received between the opening defined by the rim of the second wheel to prevent motion thereof with respect to the support; and
pin means carried by the second wheel-engaging means, said pin means being receivable in a selected opening in the support whereby the first and the second wheel-engaging cooperate to prevent motion of the wheel chair with respect to the support.

4,083,595

MULTI-LAYER SOUND- AND VIBRATION-ABSORBING COVER PANELS FOR BODY PARTS AND METHOD FOR APPLYING SAME

Rolf Maier, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Jun. 11, 1976, Ser. No. 694,929
Claims priority, application Germany, Jun. 12, 1975, 2526325
Int. Cl.[2] B62D *29/00*
U.S. Cl. 296—39 A 17 Claims



1. A Multi-layered sound- and vibration-damping coating for car body parts, consisting of a layer composed of a flexible porous material accepting a viscous mass, said layer being firmly attached to the car body, said material being covered by an adhesive heavy coating adapted to the shape of the car body part to be damped, characterized by the fact that an open-pored flexible foam layer is used as the porous material and the viscous mass contains at least a portion of adhesive substance, and further characterized by the fact that the foam layer is attached to the car body part to be damped by at least point-wise attachment, and attached more completely to the car body part by subsequent heat treatment with application of adhesive material.

4,083,596

RAISABLE TOPPER

Robert H. Robertson, Dallas, Tex., assignor to Ronbil Industries, Dallas, Tex.

Filed Apr. 23, 1976, Ser. No. 679,728
Int. Cl.[2] B60P *7/02*
U.S. Cl. 296—100 9 Claims

1. For use in conjunction with a vehicle of the type having a bed including opposed side walls, a front wall and a pivotally supported tailgate and wherein the side walls of the bed have stake holes formed in the tops thereof, a raisable topper assembly comprising:
a cover member extending continuously between side edges spaced apart at least as far as the side walls of the bed and

front and rear edges spaced apart at least as far as the front wall and the tailgate of the bed respectively for covering and enclosing the bed of the vehicle;

means for pivotally securing said cover member to the front wall of the vehicle for pivotal movement between a first position wherein said cover member covers and encloses the bed and a second position wherein said cover member is supported substantially above the bed to provide access thereto;

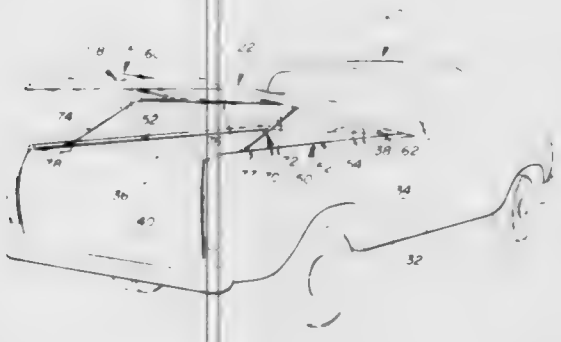
first and second track members attached longitudinally along the underside of said cover member at inwardly spaced positions from said side edges of said cover member;

first and second plug members adapted to slide within said first and second track members;

first and second arm assemblies each having first and second ends, said first ends of said first and second arm assemblies being pivotally attached to the vehicle adjacent the tailgate;

a transverse frame member having first and second ends, said frame member ends interconnecting said second ends of said first and second arm assemblies to form a substantially U-shaped unitary supporting structure for said cover member in said second position;

means mounted to said transverse frame member at points spaced interior of said frame member first and second ends for pivotally engaging said first and second plug members;



first compression spring means having first and second ends and contained within said first track member, said first end of said first spring means being attached to said first plug member and said second end of said first spring means being attached to a point on said cover member remote from said rear edge of said cover member;

second compression spring means having first and second ends and contained within said second track member, said first end of said second spring means being attached to said second plug member and said second end of said second spring means being attached to a point on said cover member remote from said rear edge of said cover member;

said first and second arm assemblies being maintained at a predetermined angle with respect to the top of the side walls of the vehicle and biased by said first and second compression spring means when said cover member is in said first position; and

said first and second compression spring means being operable to simultaneously bias said first and second arm assemblies for urging said second ends of said first and second arm assemblies towards the tailgate of the vehicle to thereby simultaneously rotate said first and second arm assemblies to an upright position to raise said rear edge of said cover member to said cover member second position to provide access to the bed of the vehicle.

4,083,597

FOLDING ARTICLE OF FURNITURE

Ernest Nathan Dowdy, P.O. Box 224, Hiawassee, Ga. 30546

Filed Nov. 15, 1976, Ser. No. 741,546

Int. Cl.[2] A47B *39/00*

U.S. Cl. 297—21 **7 Claims**



1. A foldable article of furniture comprising in combination:

(a) a plurality of crossed pairs of legs, each pair including a first leg and a second leg, each leg having a first pivot point adjacent the top end of each leg and a second pivot point intermediate its ends, each first leg being pivotably joined to a corresponding second leg at their respective second pivot points;

(b) a plurality of first and second arms each having a third pivot point adjacent an end, each of said first arms being pivotably joined to a first leg between the third pivot point and the first pivot point, each of said second arms being pivotably joined to a second leg between the third pivot point and the first pivot point;

(c) a first top panel extending normally and overlying and joined to each of said first arms distal to the third pivot points thereof and including an inner face at the end proximal the third pivot points of said first arms;

(d) a second top panel overlying and joined to each of said second arms distal to the third pivot points thereof and including an inner face at the end proximal the third pivot points of said second arms;

(e) a brace overlying and joined to said first legs extending normally to and adjacent to the bottom ends thereof distal said first pivot points;

(f) said first arms being held in parallel relation by said first top panel, said second arms being held in parallel relation by said second panel and said first legs being held in parallel relation by said brace; and

(g) a removable spacing insert removably received over the intermediate portions of said arms and clamped by and between the inner faces of said first panel and said second panel.

4,083,598

COLLAPSIBLE WHEELCHAIR

Morton I. Thomas, Nyack, N.Y., assignor to Temco Products, Inc., Passaic, N.J.

Filed Dec. 30, 1976, Ser. No. 755,753

Int. Cl.[2] A47C *4/42*

U.S. Cl. 297—45 **13 Claims**

1. A lightweight collapsible wheelchair comprising:

a pair of side frames;

a collapsible means connecting said pair of side frames;

a seat means located between said side frames, and supported by said wheelchair;

a pair of footrests each connected respectively to one of said side frames;

wheel means connected to each of said side frames, said wheel means including a pair of smaller front wheels and a pair of larger rear wheels each including an axial exten-

sion thereon, each side frame including one front wheel and one rear wheel connected thereto; and

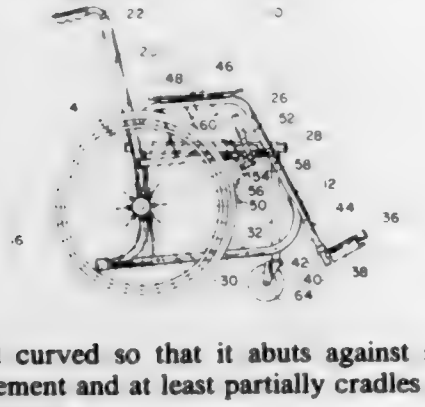
a back support connected to said side frames, wherein each side frame further includes:

a tubular steel spine having an aperture therein to receive the axial extension of one of said larger rear wheels;

a first tubular element which extends from said spine to said footrest and also serves as an arm rest, said spine including an extension thereon which is adapted to be received in one end of said first tubular element;

a second tubular element which extends from said spine to a location on said first tubular element;

a third tubular element extending from said first tubular element to said spine and located below said second tubular element, so that the end of said spine which makes contact with said third tubular element is flattened and curved so that it abuts against said third tubular element and at least partially cradles said third tubular element,



a fourth tubular element which extends vertically from said tubular element and is connected to said first and third tubular elements;

a swivel axel means connected to said front wheels and including a stud attached thereto, said stud including a pin receiving hole therethrough;

a bracket means for reinforcing said front wheels against twisting loads, said bracket means being rigidly connected at one end to said third tubular element by a conventional attaching means; and,

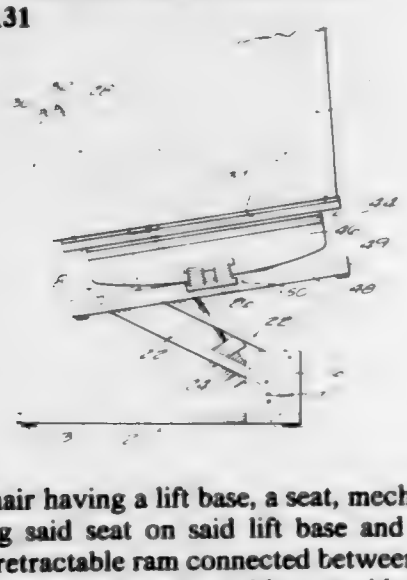
a pin means which passes through said bracket means, said third tubular element, said fourth tubular element and the hole in said stud means in order to rigidly secure said front wheels to said side frames.

4,083,599

LIFT CHAIR WITH ROCKER AND WHEEL FRAME ATTACHMENTS

Edward J. Gaffney, N26 W27293 Highway SS, Pewaukee, Wis. 53072

Filed Apr. 16, 1976, Ser. No. 677,597
Int. Cl.[2] A47C *13/00, 1/02*
U.S. Cl. 297—131 **6 Claims**



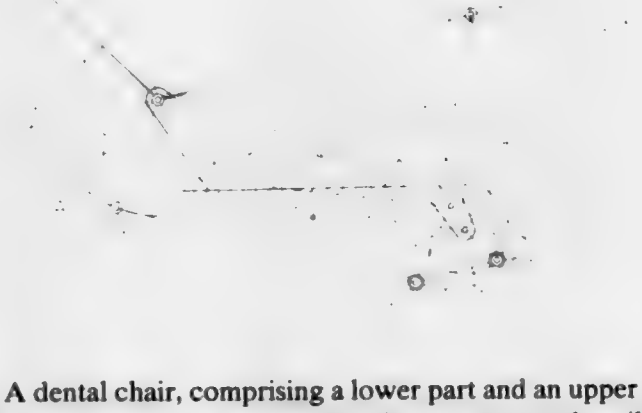
1. In a lift chair having a lift base, a seat, mechanism adjustably supporting said seat on said lift base and including an extensible and retractable ram connected between said lift base and said seat to selectively raise and lower said seat and to tilt said seat with respect to said lift base, an accessory base connected to said seat and positioned to contact the floor before said ram is fully retracted so that full retraction of said ram lifts the lift base off the floor, whereby the entire weight of the seat is transferred to said accessory base, less than full retraction of said ram leaving the lift base in contact with the floor to provide a stable base to support the chair during tilting thereof during subsequent extension of the ram.

4,083,600

DENTAL CHAIR

Emil Hirth, Rosenstrasse 32, D-7502 Malsch, Germany

Filed Jan. 28, 1977, Ser. No. 763,507
Claims priority, application Germany, Jan. 29, 1976, 2603253; Jan. 29, 1976, 7602398
Int. Cl.[2] A47C *1/02*
U.S. Cl. 297—316 **8 Claims**



1. A dental chair, comprising a lower part and an upper part, said upper part having an inclinable seat part and a tiltable backrest, said seat part and said backrest being pivotally attached together and also being pivotally connected with the lower part at a common point of support thereon and having respective independent inclining and tilting movements which take place by means of a common driving member acting on them via a linkage system, characterized in that said linkage system includes means for causing continuous tilting of the backrest, from a sitting position into a prone position, to take place with almost linear angular velocity, and in that said linkage system also includes means for inclining said seat part while said backrest is tilting, for causing such tilting to take place with approximately sinusoidal angular velocity, and for causing the main inclining movement to occur during the second and third quarters of tilting movement from sitting to prone position.

4,083,601

FOUL WEATHER OUTDOOR CHAIR

John L. McBeth, Pueblo, Colo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 9, 1977, Ser. No. 768,865
Int. Cl.[2] A47C *7/62*
U.S. Cl. 297—184 **2 Claims**

1. A foul weather outdoor chair, comprising

a folding chair having a pair of square U frames pivotally affixed to each other and a seat sheet of material having spaced opposite edges each affixed to a corresponding one of the frames;

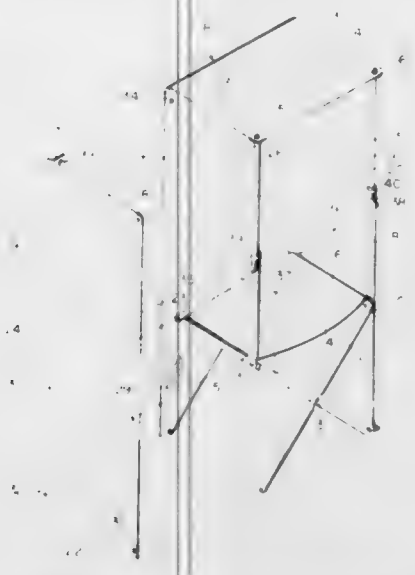
a pair of support members each pivotally affixed to a corresponding one of the frames at a front top corner thereof and positionable adjacent the corresponding frame in rest position and substantially upright in operative position;

a pair of arms each releasably affixed to a corresponding one of the support members and extending substantially upright;

a back and top panel of wind and rain resistant material of inverted L-shape with a top part removably affixable to the tops of the arms for covering the top of the chair and a back part extending substantially perpendicularly from

the back edge of the top part for covering the back of the chair to the ground; and

a pair of rigid side panels of wind and rain resistant material of rectangular configuration each having a spaced opposite top and bottom and a pair of spaced side edges, each



of the side panels being removably affixable to the back part of the back and top panel and to the frames of the chair for covering the sides of the chair from the top part of the back and top panel to the ground and from the back part of the back and top panel to the front of the chair.

4,083,602

WEBBING GUIDE FOR A SEAT BELT

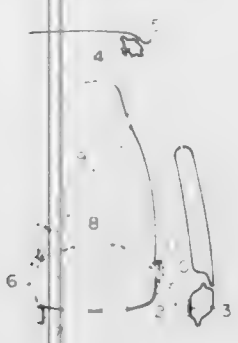
Mamoru Mori, Okazaki; Shiro Sasaki, Toyota, and Sadao Hachisuka, Anjyo, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyoto, Japan

Filed Feb. 17, 1977, Ser. No. 769,702

Claims priority, application Japan, Mar. 4, 1976, 51-25553[U]

Int. Cl.[2] B60N *1/02*

U.S. Cl. 297—389 **10 Claims**



1. A three-point seat belt for an automobile having a seat and upper and lower structural members located on a first side of said seat, comprising a webbing having first and second ends, a first webbing end mounting means mounted to said lower structural member and holding said first end of said webbing, a second webbing end mounting means mounted to said upper structural member and holding said second end of said webbing, a tongue plate connected with an intermediate portion of said webbing, a tongue plate holding means located at a rear side end portion of said seat on a second side thereof which is opposite to said first side and adapted to selectively hold said tongue plate, and a lug mounted to a rear side end portion of said seat on said first side and defining an opening for guiding said webbing therethrough at a portion thereof extending between said first end and said intermediate portion connected with said tongue plate.

4,083,603

METHOD FOR THE SOLUTION MINING OF A MINERAL

Dennis E. Stover, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.; NM Uranium, Inc., Houston, Tex. and United States Steel Corporation, Pittsburgh, Pa.

Filed Sep. 30, 1976, Ser. No. 728,327

Int. Cl.[2] E21B *43/28*

U.S. Cl. 299—4 **7 Claims**

1. An improved method for the solution mining of a mineral from a subterranean formation containing same in which an injection and production well are drilled and completed within said formation, leach solution and an oxidant are injected through said injection well into said formation to dissolve said mineral, and said dissolved mineral is recovered via said production well, wherein the improvement comprises injecting oxidant via said production well while injecting said leach solution and oxidant through said injection well and subsequently recovering said dissolved mineral from said production well.

4,083,604

THERMOMECHANICAL FRACTURE FOR RECOVERY SYSTEM IN OIL SHALE DEPOSITS

Jack R. Bohn, Rancho Palos Verdes, and Durk J. Pearson, Palos Verdes Estates, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 15, 1976, Ser. No. 741,820

Int. Cl.[2] E21B *43/24, 43/28*

U.S. Cl. 299—4 **14 Claims**

1. A process for the in-situ recovery of hydrocarbon values and associated minerals from subsurface oil shale deposits in which a gas-tight retort chamber can be produced comprising the steps of:

(A) drilling into and removing a core sample from said oil shale deposits;

(B) subjecting said core sample to controlled heating with accompanying strain measurements to determine the thermomechanical characteristics of the core material from which can be determined the thermal gradients required of said shale deposits so as to produce a fracturing pattern;

(C) injecting steam into said shale deposits to heat said shale deposits correspondingly to the results derived from said core sample heating to produce corresponding fracturing patterns in said shale and to dissolve and extract said associated minerals which are water soluble thereby forming a substantially gas-tight chamber;

(D) injecting hot, pressurized, non-oxidizing gas into said shale deposit in said chamber whereby said associated minerals are decomposed and further fractured with appropriate time-temperature cycles and hydrocarbon fluids extracted;

(E) injecting an aqueous solvent and surfactant into said deposit and extracting said decomposed minerals and hydrocarbon fluids;

(F) removing said solvent-surfactant from said deposit;

(G) instituting a flame front with air and water to combust hydrocarbon residue; and

(H) filling said chamber with a fluid selected from the group consisting of water, aqueous solutions, and aqueous slurries.

4,083,605

RIPPER TOOTH

Michael A. College, Everett; Clyde G. Hutzell, Schellsburg; Charles A. Lane, Brownsville, and Robert J. McKenry, Windber, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Jun. 22, 1976, Ser. No. 698,769

Int. Cl.[2] E02F *3/80*

U.S. Cl. 299—91 **3 Claims**

1. A ripper tooth for an excavating machine comprising; a

tooth member having a forward working portion and a rearward portion, said rearward portion having a recess adapted for attachment to an excavating machine, said forward working portion having a generally U-shaped peripheral region when viewed in side, said peripheral region comprising planar sections facing outwardly from the central axis of the ripper tooth and forming a blunt section when viewed in side and



plan, and when viewed in plan said blunt section is bounded by angularly related planar side walls tapering outwardly of said blunt section and outwardly rearwardly of said forward working portion, and rod-like cemented hard metal carbide compacts imbedded in a distributed relation for most of the length around said blunt section viewed in side and having cemented hard metal carbide imbedded in a spaced relation in at least one of said planar side walls.

4,083,606

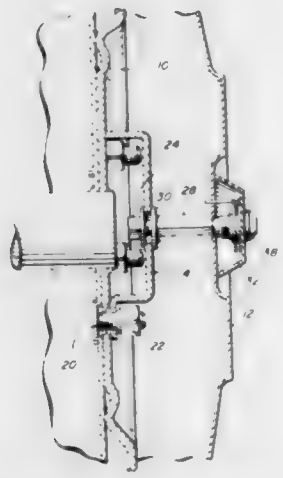
WHEEL COVER LOCKING DEVICE

Charles Scruggs, 8033 South Essex, Chicago, Ill. 60617

Filed Sep. 10, 1976, Ser. No. 722,303

Int. Cl.[2] B60B *7/06*

U.S. Cl. 301—37 AT **3 Claims**



1. In a wheel cover locking device comprising an elongated, generally C-shaped bracket having means at one end thereof to permit attachment to a wheel lug of a vehicle wheel, an elongated slot aperture extending through the bracket at a mid-portion thereof and overlying the center of a vehicle wheel when said bracket is secured thereto, a wheel cover with an aperture at a mid-portion thereof, an elongated spacer lug having a first and a second threaded opening at either end, a threaded fastener means extending from one side of said mid-portion of said bracket through said slot aperture and into said first threaded opening at one end of said spacer lug to secure said spacer lug to said bracket, said spacer lug second threaded opening abutting at its other end the inner side of the wheel cover, said wheel cover being mountable so that the aperture is in alignment with said second threaded opening of said spacer lug, retainer means comprising a concave annular cap member having a centrally disposed aperture therein and overlying the outer side of the wheel cover, the cap member aperture being in alignment with the other end of said spacer lug, and a lock bolt for securing said cap member to said spacer lug, said lock bolt having a head portion with means for receiving a key, said head portion having a flange portion and a threaded cylindrical first portion, said threaded first portion having at least one flattened portion, wherein the improvement comprises said lock bolt further comprising a threaded shaft portion of a diameter smaller than said first portion and extending further out from said flange portion than said first portion extends, said threaded shaft portion capable of rotation relative to said head portion by the rotation of said key, the threaded first portion of the head portion of the lock bolt being extended through said aperture in said retainer cap member and engaging a lock nut means and a washer means, said lock nut means affixing said washer means to said first portion of said lock bolt, said washer means having an inner flattened portion corresponding with the flattened portion of said threaded first portion of said lock bolt, and a pin means affixed to said washer means, said pin means fitting into a hole in said wheel cover, the hole being located a distance from the aperture in said wheel cover as to be overlaid by said cap member, said pin means and washer means thereby preventing the rotation of said wheel cover independent of said head portion of said lock bolt, the threaded shaft portion of said lock bolt extending through the aperture in said wheel cover to engage said second threaded opening of said spacer lug, said threaded shank portion being rotatable by said key to tighten the flange portion of said lock bolt against said retainer cap means and, upon the removal of said key, to lock said wheel cover to said bracket by the locked non-rotatability of said lock bolt shaft portion within said lock bolt head portion.

4,083,607

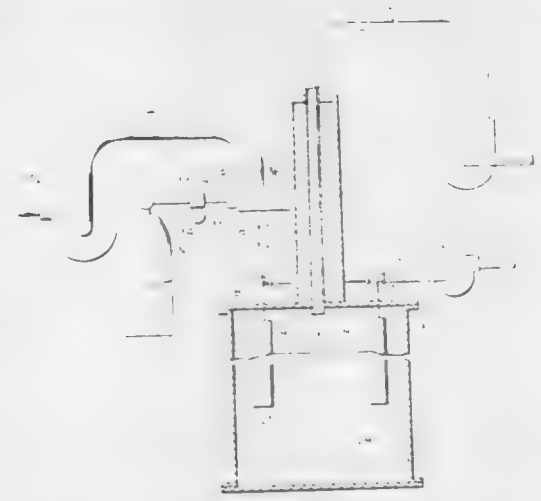
GAS TRANSPORT SYSTEM FOR POWDERS

Lambert H. Mott, c/o Mott Metallurgical Corporation Farmington Industrial Park, Farmington, Conn. 06032

Filed May 5, 1976, Ser. No. 683,378

Int. Cl.[2] B65G *53/60;* **B01D** *35/02*

U.S. Cl. 302—59 **1 Claim**



1. In a gas transport system for particulate matter having a tank, a delivery pipe, means blowing gas and particulate matter being transported thereby through said pipe into said tank, and filter means within said tank through which at least some transport gas is removed from said tank; the improvement comprising, in combination, an end portion of porous metal of said delivery pipe, said end portion having a thin inner layer with a pore size smaller than the particulate matter being transported and an outer layer having a pore size larger than the particulate matter being transported, said outer layer surrounding and supporting said thin inner layer, said end portion extending vertically downward into said tank, a jacket disposed about said porous end portion, a vacuum turbine, a "T" fitting having a first arm connected to said jacket, a second arm, and a leg, a constriction in said first arm, a vacuum line connected between said vacuum turbine and said leg, said vacuum turbine drawing a vacuum in said jacket through said leg, said first arm, and said constriction and thereby drawing at least some transporting gas outward through said inner and

outer layers of said end portion, a nozzle in said second arm of said "T" fitting directed toward said constriction in said first arm, a source of gas under pressure, and valve means incorporating a timer and being connected between said source of gas under pressure and said nozzle periodically releasing pulses of gas from said source of gas under pressure to blast from said nozzle through said constriction against flow therethrough momentarily pressurizing said jacket causing momentary inward flow through said porous end portion clearing the pores of said inner layer of said porous end portion.

4,083,608

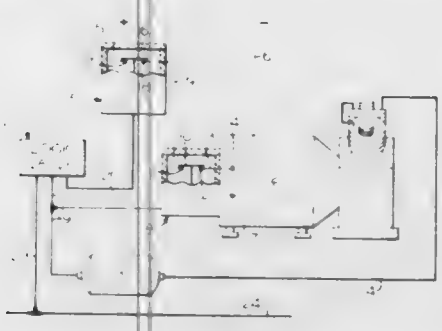
AIR COMPRESSOR LAY-OVER CONTROL CIRCUIT

Frank W. Shirey, North Huntingdon, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Oct. 21, 1976, Ser. No. 734,386

Int. Cl.[2] B60T *17/02*

U.S. Cl. 303—11 **4 Claims**



1. Control apparatus for controlling compressor operation of a compressed air system of a railway vehicle cooperatively with brake apparatus of the vehicle including a brake pipe normally charged with fluid pressure during a running-vehicle condition, and being void of said fluid pressure during a parked-vehicle condition, said control apparatus comprising:

(a) an air compressor;

(b) driving means for driving said compressor;

(c) a storage reservoir for storing compressed air output from the compressor;

(d) power circuit means providing energy for said driving means;

(e) primary governor means serially interposed in said power circuit means for maintaining compressor output within upper and lower limits of a high pressure range;

(f) secondary governor means serially interposed in said power circuit means in serial relation with said primary governor means for maintaining said compressor output within upper and lower limits of a low pressure range; and

(g) monitoring means operably connected to said brake apparatus for sensing the braking condition thereof and including a logic valve device having a control pressure input connected to said brake pipe, said logic valve device being operable responsively to a control pressure signal from the brake pipe during said running-vehicle condition, to a closed position in which communication between said reservoir and said secondary governor means is cut off and said primary governor means is activated exclusively of said secondary governor means, and being operable, in the absence of said control pressure signal during said parked-vehicle condition, to an open position in which said communication is opened for activating said secondary governor means exclusively of said primary governor means.

4,083,609

BRAKE ACTUATING SYSTEM

Thomas N. Cochran, Far Hills, N.J. 07931

Continuation-in-part of Ser. No. 463,708, Feb. 15, 1974, abandoned, which is a continuation of Ser. No. 74,118, Sep. 21, 1970, abandoned, which is a continuation of Ser. No. 603,334, Dec. 20, 1966, abandoned. This application Oct. 28, 1975, Ser. No. 626,586

Int. Cl.[2] B60T *8/02, 8/10*

U.S. Cl. 303—96 **1 Claim**



1. In a vehicle having at least four wheels at least two of which wheels may be non-driven and any one or more of which wheels which are driven may assume an overspeeding or a skid condition, a brake actuating system utilized to influence the rotational speed of all said wheels comprising means for actuating the same, means for sensing the rotational speed of each wheel and for generating a signal representing the same, means for amplifying and transmitting each signal to valve means for separately controlling the application and reduction of brake effort to each portion of the braking system associated with each wheel, the improvement comprising means for sensing the differences in rotational speeds of each of the wheels, means for electrically communicating the sensed information to said valve means for selectively increasing and decreasing brake effort to each of the wheels as a function of the information received for varying the rotational speeds of said wheels, such that said valve means are selectively activated for applying brake pressure to any of the driven wheels in an overspeeding condition, and are selectively activated for reducing brake pressure to any of the wheels rotating at a speed substantially less than that of the fastest wheel, said valve means comprising means for directing the brake pressure produced at any such wheel to be applied through said brake actuating system to increase the brake pressure to all of the other wheels, means connecting said brake actuating system and said sensing and communicating means for actuating said means for reducing pressure only when said brake actuating system is actuated, each said valve means consisting of communicating lines from the brake circuit of the vehicle and from the brake pedal, and piston and circuit means for receiving pressure from a locked or relatively slowly rotating wheel and being directly responsive thereto for increasing the brake pressure in the line communicating with the brake pedal and the other wheels.

4,083,610

BEARING ASSEMBLY UTILIZING A TAPERED BUSHING HOLDER

John Kruchowski, 148 W. Park, South St. Paul, Minn. 55075

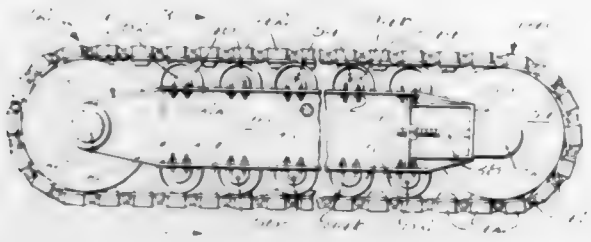
Filed Apr. 1, 1977, Ser. No. 783,814

Int. Cl.[2] F16C *13/00*

U.S. Cl. 305—25 **14 Claims**

1. A bearing assembly for use with a cylindrical shaft comprising a member to be journaled for rotation on said shaft, said member having a tapered bore extending inwardly from one

side thereof, a bushing holder received in said tapered bore having a tapered outer surface the taper of which corresponds generally to that of said tapered bore and having a cylindrical bore, and a bushing received in said cylindrical bore having a



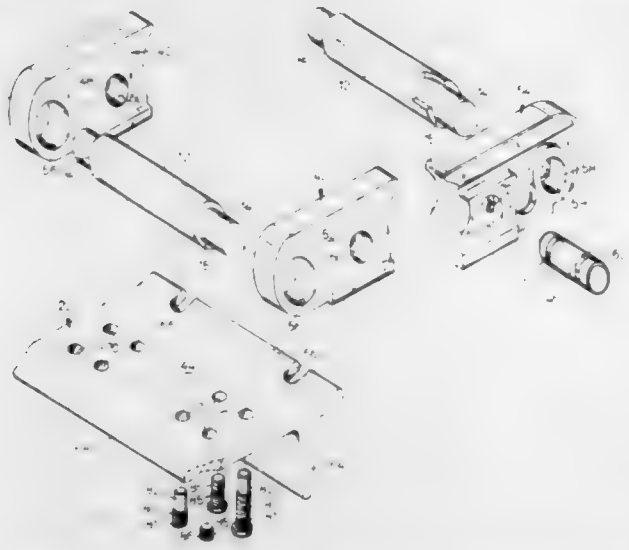
cylindrical outer surface the diameter of which corresponds generally to that of said cylindrical bore and having a cylindrical bore the diameter of which is such as to permit relative rotation of said bushing and said shaft.

4,083,611

MASTER LINK ASSEMBLY FOR CRAWLER TRACTOR TRACK ASSEMBLY

Donald L. Schaffner, and James L. Miller, both of Springfield, Ill., assignors to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Continuation of Ser. No. 543,353, Jan. 23, 1975, abandoned. This application May 20, 1976, Ser. No. 688,281
Int. Cl.[2] B62D *55/20*
U.S. Cl. 305—54 **13 Claims**



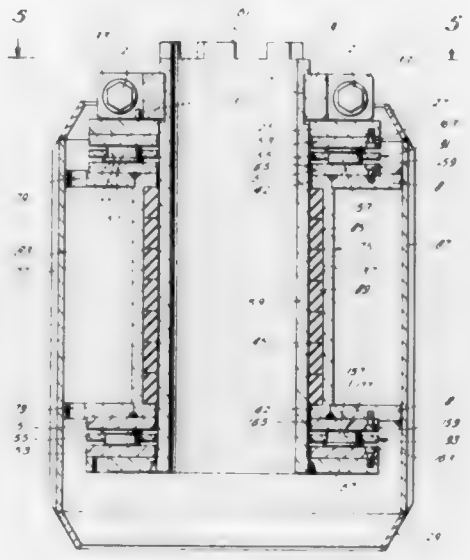
1. In a crawler track assembly: a plurality of track link assemblies, each track link assembly comprising at least one link and connecting means for articulately connecting adjacent track link assemblies, one of said track link assemblies being a master link assembly and comprising: at least one master link comprising a pair of overlapping half-links, said half-links overlapping along a plane, each half-link being articulately connected by connecting means to an adjacent track link assembly, a pin-engaging hole in each half-link, the pin-engaging holes being in registry with each other, a pin extending perpendicular to said plane and engageable with said pin-engaging holes in said half-links to effect alignment of said half-links, said pin having capscrew engaging means thereon, a master track shoe overlying said pair of half-links, each half-link having a capscrew hole in registry with a capscrew hole in said master track shoe, and capscrews for securing said master track shoe to said pair of half-links and connecting said pair of half-links in fixed relationship to each other and to said master track shoe, each capscrew being disposed in a capscrew hole in said master track shoe and a registering capscrew hole in half-link, at least one of said capscrews being engaged with said capscrew engaging means on said pin.

4,083,612

NON-ROTATING STABILIZER FOR EARTH BORING AND BEARING THEREFOR

Wallace Fred Olson, Midland, Tex., assignor to Smith International, Inc., Midland, Tex.

Filed Oct. 15, 1976, Ser. No. 732,608
Int. Cl.[2] F16C *17/00, 17/08*
U.S. Cl. 308—4 A **23 Claims**



1. A stabilizer comprising
a body including wall contacting means adapted to contact the side wall of an earth bore to centralize a drill stem rotatable in such bore,
said body having an axial opening therethrough providing a radial bearing and adjacent each end having a portion adapted to take thrust, sometimes hereinafter referred to as a thrust portion,
journal means rotatably mounted in the radial bearing and having a radial flange at each end, each flange being fixed against axial movement away from the other flange,
thrust bearing means between each journal flange and the adjacent thrust portion of the body,
each thrust bearing means comprising a floating support ring and anti-friction means carried by the ring and protruding therefrom in the direction that extends between the journal flange and the thrust portion of the body, said ring and said anti-friction means separating said flange and said thrust portion by a distance greater than the thickness of the ring, at least the portion of said anti-friction means that protrudes from said ring transmitting thrust,
fluid transmission means to transmit fluid between parts of the earth bore separated by the stabilizer body,
said fluid transmission means including outer fluid passage means between said wall contacting means and inner fluid passage means through the stabilizer providing space for fluid passage between the radial bearing and journal and space for fluid passage across each thrust bearing connecting with the ends of the first said space.

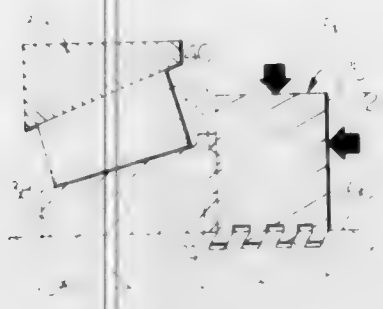
23. A thrust bearing comprising
a pair of metal thrust rings,
a support ring disposed between said thrust rings,
said support ring having a plurality of holes extending all the way therethrough and azimuthally spaced about the axis of the support ring,
a plurality of headed buttons of ultra high molecular weight polyethylene disposed one in each of said holes with the heads of adjacent buttons on opposite sides of the ring,
each button extending clear through the hole in which it is disposed with the end opposite the headed end extending beyond the ring a distance equal to the axial length of the head of the button.

4,083,613

RETAINER FOR RESILIENTLY LOADING A BEARING

Mary Ann Chute McGee, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 11, 1977, Ser. No. 767,858
Int. Cl.[2] F16C *33/30*; F16D *1/06*
U.S. Cl. 308—236 9 Claims



9. A retainer for resiliently loading a bearing mounting a rotatable shaft, comprising:

a separable clamping ring having an inner surface to fit about the shaft, said surface containing resiliently deformable lands generally circumferentially of said shaft,

a shaft section adjacent the bearing and having grooves to receive said lands, one of said lands and receiving grooves being oblique to the shaft axis, and

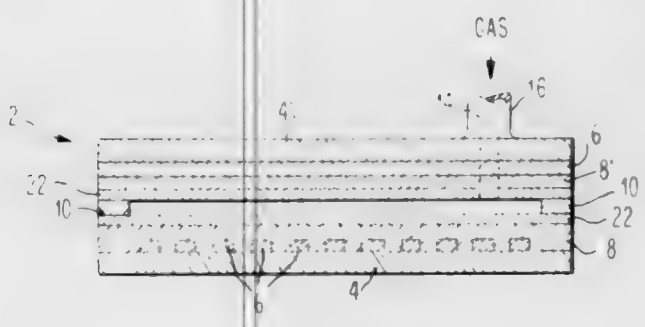
fastening means for clamping the ring onto the shaft to mesh the lands and grooves forcing the retainer axially against the bearing.

4,083,614

METHOD OF MANUFACTURING A GAS PANEL ASSEMBLY

M. Osama Aboelfotoh, Poughkeepsie, and Kyu Chang Park, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1976, Ser. No. 736,802
Int. Cl.[2] H01J *9/02*
U.S. Cl. 316—19 8 Claims



1. In a method for improving the operating margin of a gaseous discharge display device comprising an assembly of two sealed plates, the improvements comprising the steps of

forming an array of conductors in a predetermined configuration on each of said plates,

applying a layer of dielecric material over at least one of said conductor arrays,

heating the assembly of said plates, said conductor arrays and said dielectric to a temperature range between 200° and 400° C.,

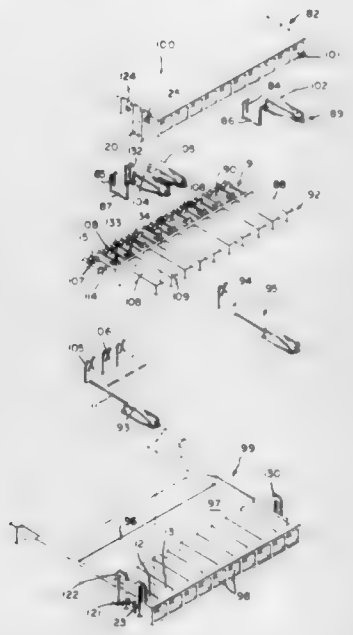
vapor depositing a layer of magnesium oxide onto the surface of the dielectric of said heated plate assembly, and sealing said plate assemblies about their edges to form a chamber therein, said plate assemblies being disposed such that the conductor arrays on said plate assemblies are substantially orthogonal to each other, the intersections of said conductors defining gaseous discharge cells.

4,083,615

CONNECTOR FOR TERMINATING A FLAT MULTI-WIRE CABLE

Robert Volinskie, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 27, 1977, Ser. No. 763,210
Int. Cl.[2] H01R *11/32*
U.S. Cl. 339—17 F 10 Claims



1. In combination, a flat, multi-wire cable and a connector means for terminating said cable comprising:

housing means having a flat bed surface;

a plurality of first contacts each comprising a first plate-like terminal mounted vertically in a first row upon said flat bed surface and each having first slot means formed therein open at one end and closed at the other;

a plurality of second contacts each comprising a second plate-like terminal mounted vertically in a second row upon said flat bed surface of said housing and each having second slot means formed therein open at one end and dividing into second and third slots as it extends into said second plate-like terminal with each of said second and third slots having a closed end and constructed to receive a separate wire of said multi-wire cable;

the plate-like terminals of said first row being interleaved with the plate-like terminals of said second row with the open ends of said first and second slot means being at the top of said slotted plate-like terminals and facing away from said flat bed surface;

second housing means positioned over said first housing means and constructed to retain said wires in said slots in a common plane which is substantially parallel with the plane in which said cable enters said connector means.

4,083,616

PRINTED WIRING BOARD LEVERED INJECT-EJECT CAM

Reginald C. McNiece, Altamonte Springs, Fla., and Warren W. Porter, Escondido, Calif., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,318
Int. Cl.[2] H01R *13/54*
U.S. Cl. 339—45 M 2 Claims

1. Inject-eject cam apparatus for mounting at a corner of the outer edge of a wiring board with its cam surfaces extending laterally from the board for engagement with a fixed engageable means which is adjacent to said outer edge of the board when the board is in its fully plugged-in position in a wiring board cell, said apparatus comprising:

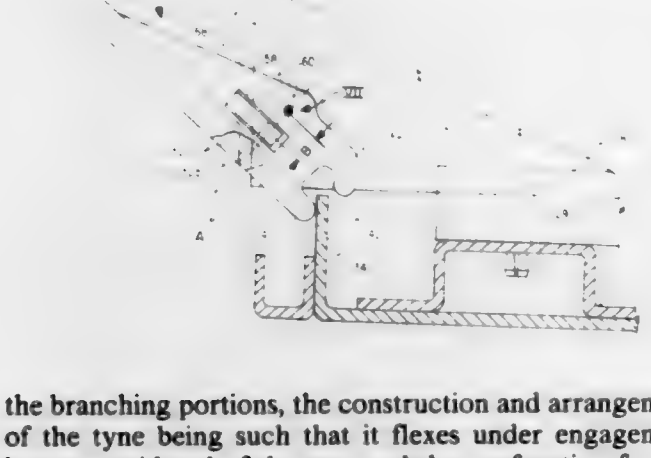
(a) an integral body member forming a lever arm portion and inject-eject cam portion and adapted for pivotal mounting

about a pivot axis between the lever arm and cam portions,

(b) said body member being of a bifurcated configuration forming a pair of branching portions shaped as flat stock members perpendicular to the pivot axis, said pivot axis passing through the branching bifurcated portions, whereby the body member is adapted for pivotal mounting to the wiring board with the wiring board interposed between the branching portions,

(c) said flat stock members being shaped in profile to form the cam surfaces as edges of the flat stock members, said cam surfaces cooperating with the fixed engageable means to alternatively inject the wiring board into its fully plugged-in position or to eject same from its fully plugged-in position under actuation of said lever arm portion in one and the other of opposite pivotal directions,

(d) each branching portion formed as a flat stock member further forms a tyne having an end which projects toward the confronting face of a wiring board interposed between



the branching portions, the construction and arrangement of the tyne being such that it flexes under engagement between said end of the tyne and the confronting face of the board to thereby provide sliding friction to allow prepositioning of the cam portion at a pivotal position whereat the cam portion will be in proper position to engage the fixed engageable means for wiring board injection upon installation of the wiring board within the wiring board cell, and

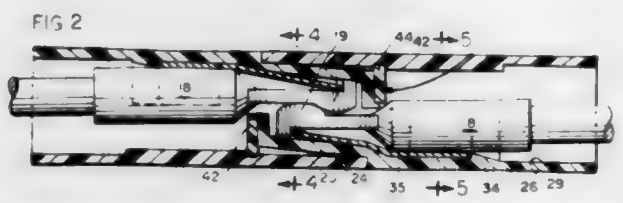
(e) each flat stock member formed by a branching bifurcation portion has an elongated slot formed therein, said tynes being formed as peninsular elements extending longitudinally into said elongated aperture from an end of the elongated aperture, the end of said peninsular element having formed thereon an integral protuberance projecting toward the confronting face of the wiring board to cause the tyne to be in a resiliently flexed condition when the wiring board is interposed between the branching bifurcation portions.

4,083,617

ELECTRICAL CONNECTOR

Robert S. Wyatt, Park Ridge, Ill., assignor to Brad Harrison Company, LaGrange, Ill.

Filed Apr. 1, 1977, Ser. No. 783,674
Int. Cl.[2] H01R *25/00*
U.S. Cl. 339—47 R **8 Claims**



1. An electric connector comprising:

a housing of electrically insulated material, said housing including a top portion and a base portion, said top portion being generally rectangular in shape and providing a forward socket portion and further having a transverse slotted opening across the width thereof, said base portion being substantially rectangular in form as said top portion and having a pocket portion and a rearward extending body portion with said body portion having aligned grooves on the side thereof,

spring means mounted in said aligned grooves of said body portion and having a tongue portion extending into said pocket portion of said base portion,

a barrier member insertable into said slotted opening in said top portion, and

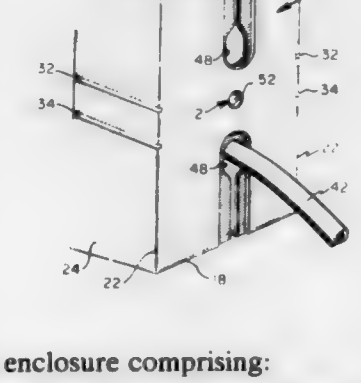
terminal means positioned in said body portion of said housing and engageable with said leaf spring and said barrier member to be firmly retained within said pocket portion of said base portion when said top portion is attached to said base portion.

4,083,618

SAFETY ENCLOSURE

Francis W. Busch, Jr., Luther Dr., Southbury, Conn. 06488

Filed Jun. 6, 1977, Ser. No. 803,628
Int. Cl.[2] H01R *13/54*
U.S. Cl. 339—75 P **6 Claims**



1. A safety enclosure comprising:

a hollow thin flexible insulator having a vertical rectangular front panel with top and bottom horizontal edges and oppositely disposed vertical side edges, said insulator having top and bottom walls and oppositely disposed side walls, the top wall being integral with the panel and extending rearwardly and upwardly from the top edge, the bottom wall being integral with the panel and extending rearwardly and downwardly from the bottom edge, each side wall being integral with the top and bottom walls and the panel and extending rearwardly and outwardly from the panel;

said panel having a central opening, each side wall having upper and lower horizontal elongated slots completely spanning the side wall and disposed respectively slightly above and slightly below said opening, the upper and lower slots of one side wall being horizontally aligned with the upper and lower slots respectively of the other side wall, the portion of the insulator including the top wall and the portions of side walls and panel between the top wall and the upper slots constituting an upper section, the portion of the insulator including the bottom wall and the portions of the side walls and panel between the bottom wall and the lower slots constituting a lower section;

the upper section being hingedly secured to the panel by a first elongated horizontal living hinge defined by a first horizontal line in the panel interconnecting the adjacent ends of the upper slots, the lower section being hingedly secured to the panel by a second elongated horizontal living hinge defined by a second horizontal line in the panel interconnecting the adjacent ends of the lower slots;

the upper section having first slotted means for detachably receiving a male plug and cord connected thereto, the

lower section having second slotted means for detachably receiving a male plug and cord connected thereto;

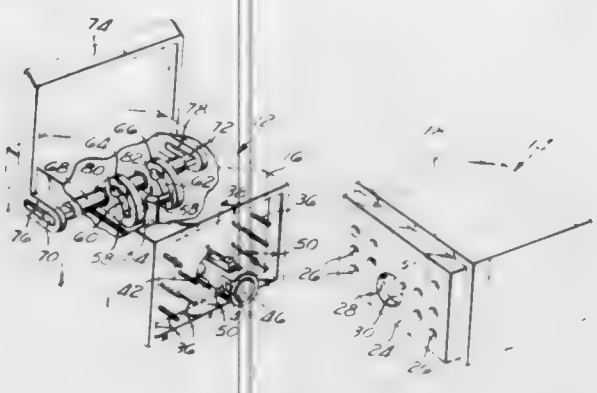
and an elongated horizontal insulator cylinder having a central horizontal bore, one end of the cyliner being secured to the rear of the panel with the bore aligned with the central hole, said cylinder extending rearwardly from the panel.

4,083,619

ELECTRICAL CONNECTOR

David Michael McCormick, Redondo Beach, and Earl Andrew Cooper, Mar Vista, both of Calif., assignors to Automation Industries, Inc., Los Angeles, Calif.

Filed Jun. 20, 1977, Ser. No. 807,896
Int. Cl.[2] H01R *13/54*
U.S. Cl. 339—75 M **8 Claims**



1. An electrical connector comprising:

a receptacle section having a first set of electrical contacts, said receptacle section having a collet opening therein, first connecting means connecting with said collet opening;

a plug section having a second set of electrical contacts, said plug section capable of mating with said receptacle section producing electrical interconnection between said first and said second sets of electrical contacts, said plug section including second connecting means movable between an extended position and a retracted position;

means being movable between a first position and a second position, with said means in said first position said second connection means is maintained in said extended position; and

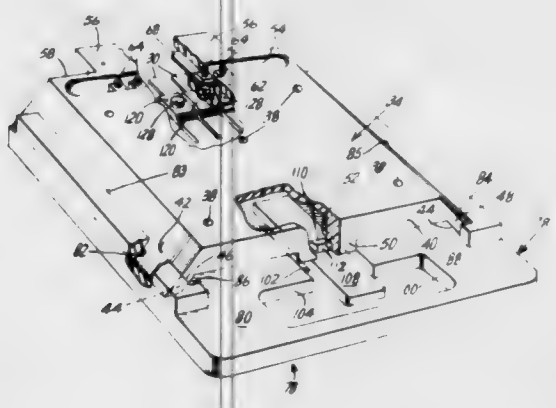
manual actuation means connected to said means to move said means between said first and said second positions.

4,083,620

VEHICLE RADIO MOUNT

Ralph C. Burgin, P. O. Box 272, West Point, Iowa 52656

Filed Aug. 26, 1976, Ser. No. 717,620
Int. Cl.[2] H01R *13/59*
U.S. Cl. 339—91 R **3 Claims**



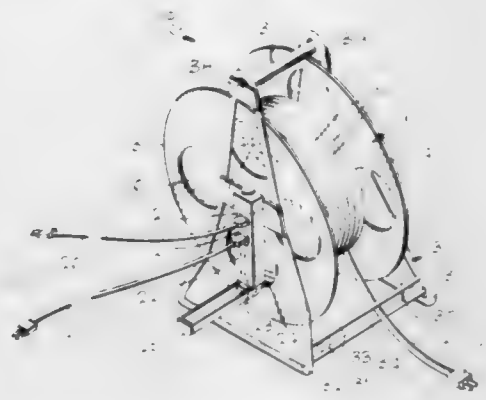
1. Vehicle radio-mounting apparatus comprising first and second essentially flat members removably assembled together in superposed relation; said first member having on two opposite edge portions thereof elongated, straight divergent mounting flanges; said second member having on two opposite edge portions thereof elongated slots open at one end and closed at the other ends and shaped slidably to receive said flanges, respectively, through said open end; first and second slidably engageable electrical contacts on said first and second members, respectively; first means on one of said first and second members carrying one of said contacts and yieldably urging it into engagement with said second contact; second means for releaseably locking said members in assembled relation; said second means including abutment portions on said second member which close said other ends of said slots, respectively; one end of said flanges being engageable with said abutment portions, respectively; a first locking portion on said first member extending toward said second member; a second locking portion on said second member supported manually to engage said first locking portion thereby to lock said first member against removal from said slot when said flanges engage said abutment portions; a cantilever resiliently mounted on said second member and carrying said second locking portion; said second locking portion having an upper cam surface inclined in a direction from said one end toward said other end of said slots; a portion on said second member extending beyond said first member which serves as a handle removing said second member from said first member upon disengaging said first and second locking portions; said handle having an opening therethrough; said cantilever extending into said opening which extends laterally therebeyond to provide clearance for inserting the fingers of an operator's hand therethrough whereby said cantilever may be manipulated to disengage said first and second locking portions while manually grasping said handle.

4,083,621

MULTIPLE SOCKET EXTENSION CORD

William C. Davidson, 5145 Mecca Ave., Tarzana, Calif. 91356, and Robert W. Forsyth, 1517 N. 3rd Ave., Upland, Calif. 91786

Filed Jan. 12, 1977, Ser. No. 758,645
Int. Cl.[2] H01R *13/60, 39/02*
U.S. Cl. 339—119 C **9 Claims**



1. An electrical extension cord apparatus comprising:

a frame;

a reel assembly rotably carried on said frame;

an electrical extension cord adapted to be coiled on said reel assembly;

a plurality of electrical outlets carried on said reel assembly and arranged to rotate therewith; and

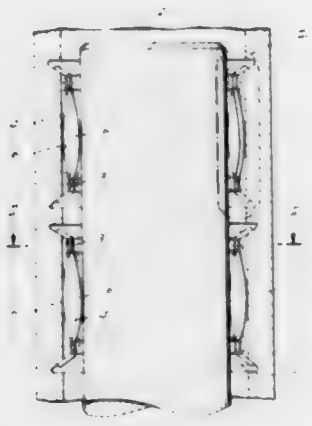
handle means carried on said reel assembly for manually rotating said reel assembly for coiling said extension cord thereon, wherein said handle means includes a box carried on said reel assembly and mounting said electrical outlets thereon.

4,083,622

ELECTRICAL CONNECTOR

Rudolf Neidecker, Basel, Switzerland, assignor to Multi-Contact AG, Allschwil, Switzerland

Filed Jun. 18, 1976, Ser. No. 697,613
Claims priority, application Germany, Jun. 21, 1975, 2527681
Int. Cl.[2] H01R *13/12*
U.S. Cl. 339—256 R **10 Claims**



1. In an electrical connector for two members having respective surfaces wherein a conducting element is interposed between and contacts said surfaces, said conducting element comprising a strip of resilient material with a multiplicity of lamellae integral with and bent from said strip and substantially parallel to one another defining interstices between them, the improvement wherein said interstices are filled with an elastic solid mass to resiliently resist deformation of said lamellae, said lamellae being twisted to lie transverse to a web of the strip and form contact edges on opposite sides of said web, each of said lamellae being connected to said web at twisted connection regions at their ends, said elastic solid mass being constructed and disposed in said interstices to keep contacting edges of the lamellae metallically bright, said mass flanking said web and said lamellae;

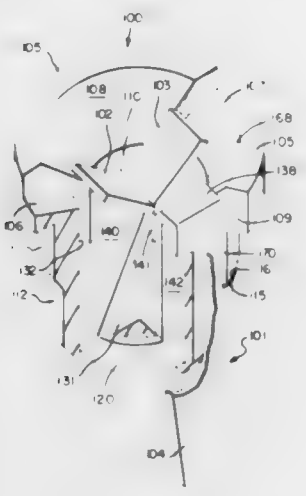
the elastic modulus of said elastic solid mass being such as to prevent deformation of said lamellae beyond the elastic limit of the element.

4,083,623

MINI SPRING SOCKET WITH PLASTIC BASE

James Edward Lynch, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 18, 1977, Ser. No. 770,140
Int. Cl.[2] H01R *13/12*
U.S. Cl. 339—258 R **15 Claims**



9. A spring socket comprising a plastic housing and contact means retained within said housing;

said housing comprising:

walls of a generally tubular shape with a cavity formed therein and open at a first end thereof; and

a pair of first slots formed on opposite sides at the open end thereof and extending into said cavity; and

a contact means comprising:

first and second bowed spring-like contacts secured together at first ends thereof within said cavity at the second end of said housing and having free ends extending upwardly towards said open end of said housing with the convex sides of said bowed spring-like contacts facing each other and with said free ends being positioned to be deflected away from each other and into one of said first slots; and

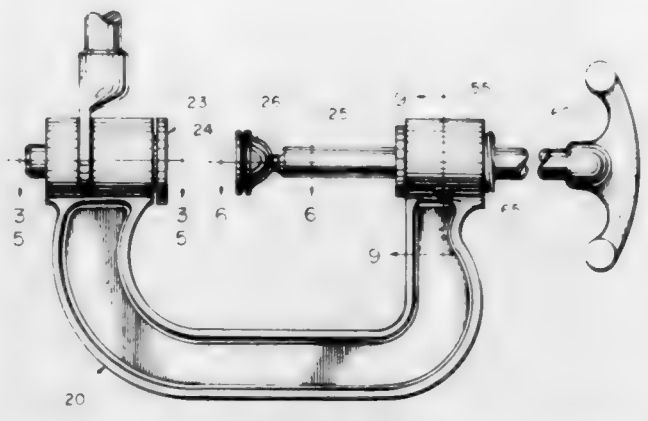
a third element secured to the first ends of said bowed spring-like contacts and extending upwardly along the inner surface of the wall of said housing towards said open end, across the housing wall and downwardly along the outside surface of the wall of said housing.

4,083,624

TERMINAL CLAMP

Henry Timmer, 2705 Rockhill Dr., Grand Rapids, Mich. 49505

Filed Jan. 19, 1977, Ser. No. 760,736
Int. Cl.[2] H01R *11/26*
U.S. Cl. 339—264 R **4 Claims**



1. An electrical terminal clamp having a C-shaped frame, and having a bearing pad mounted at one extremity of said frame, on the side thereof nearest the opposite extremity thereof and also having a clamping shaft mounted at the said opposite extremity of said frame for movement toward and away from said pad along an axis, wherein the improvement comprises:

means forming a bore in said one frame extremity along said axis, and a slot in said extremity transverse to, and intersecting, said bore;

a plug having a head providing said pad and a body portion receivable in and normally transversing said bore; and

a coupling member normally secured to an electrical conductor, and having a portion receivable in said slot, said portion having an aperture normally receiving said body portion.

4,083,625

OPTICAL FIBER JUNCTION DEVICE

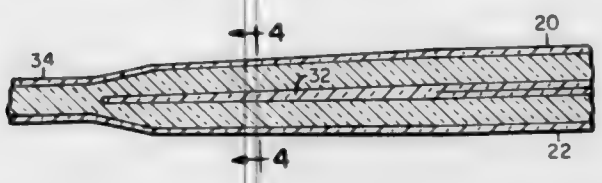
Marshall C. Hudson, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 2, 1976, Ser. No. 711,103
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.15 **13 Claims**

1. A junction device for optical fibers having a core of transparent material surrounded by a layer of transparent cladding material having a refractive index lower than that of said core material, said device comprising

at least two optical fibers having their end portions fused together in side-by-side relationship, the cross-sectional area of said end portions decreasing toward the endfaces of said fibers, and

at least one other fiber having its end portion disposed parallel to the end portions of said at least two fibers, the endface of said at least one other fiber being fused to the



endface of said at least two optical fibers, and the core of said at least one other fiber overlapping at least a portion of the cores of said at least two fibers.

4,083,626

REAR PROJECTION SCREENS

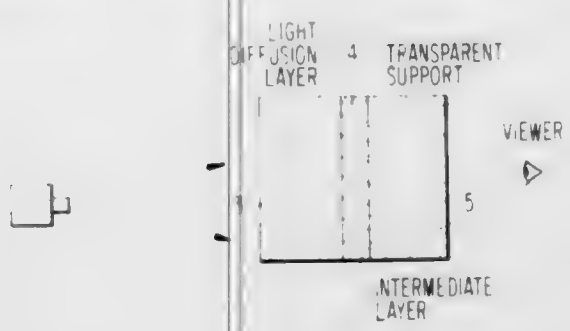
Junji Miyahara, and Hisatoyo Kato, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 2, 1976, Ser. No. 672,930

Claims priority, application Japan, Apr. 4, 1975, 50-41710; Aug. 1, 1975, 50-9386; Sep. 4, 1975, 50-107232; Sep. 4, 1975, 50-107233; Sep. 4, 1975, 50-107234; Sep. 3, 1975, 50-106766; Jul. 31, 1975, 50-106077; Aug. 1, 1975, 50-106689; Nov. 19, 1975, 50-156938; Nov. 19, 1975, 50-156939

Int. Cl.² G03B *21/56*

U.S. Cl. 350—117 **17 Claims**



1. A rear projection screen comprising at least one light diffusion layer and at least one transparent support which are bonded via an intermediate layer formed from a photocurable composition.

4,083,627

TWO DIMENSIONAL OPTICAL PHASE GRATING FILTER

Yukio Okano, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

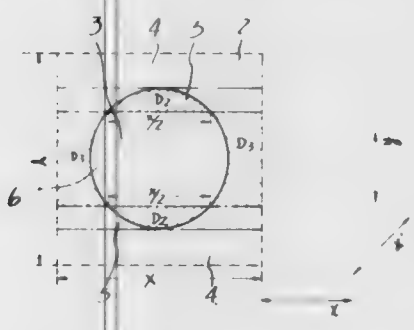
Filed Jan. 20, 1976, Ser. No. 650,781

Claims priority, application Japan, Jan. 20, 1975, 50-7862

The portion of the term of this patent subsequent to Mar. 1, 1994, has been disclaimed.

Int. Cl.² G02B *5/18, 5/20;* H04N *9/06*

U.S. Cl. 350—162 SF **8 Claims**



1. An improved two dimensional optical phase grating filter comprising;

a plurality of repetitive unitary grating members having a uniform period in at least one direction and capable of providing phase retardation across the plane of the filter, each unitary grating member including at least a retardation segment individually capable of providing phase retardation to a desired incident bandwidth of light energy frequency, λ, and at least a non-retardation segment individually capable of transmitting the incident bandwidth of light energy frequency, λ, without retardation, the unitary grating member including an area wherein the total width of the retardation segment is greater than one-half the period in said one direction, the phase grating filter, in said one direction, having the following parameters:

$$Q = 1 - 2\frac{P}{A}(1 - \cos\delta)$$

$$-0.4 \leqq Q \leqq 0.2$$

$$\delta = \frac{2\pi}{\lambda}(n - n')d$$

wherein,

A is the total area covered by a periodic unitary grating member;

P is an area of a periodic unitary grating member which is the sum of, first, those phase retardation areas in a first area segment of the unitary grating member wherein the total phase retardation area widths along said direction are less than one-half of the period and secondly, those areas of the unitary grating member other than the phase retardation areas in a second area segment, the second area segment having total phase retardation area widths along said direction greater than one-half of the period;

δ is the phase retardation;

λ is the wave length of a predetermined frequency;

n is the refractive index of the phase retardation grating member;

n' is the refractive index of the medium; and

d is the thickness of the phase retardation grating member.

4,083,628

COPYING OBJECTIVE LENS SYSTEM

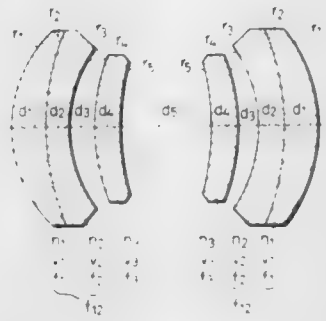
Toshimichi Koizumi, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Apr. 13, 1976, Ser. No. 676,657

Claims priority, application Japan, Apr. 15, 1975, 50-45950

Int. Cl.² G02B *11/24*

U.S. Cl. 350—220 **3 Claims**



1. A copying objective lens system comprising a front lens group and rear lens group arranged symmetrically in respect to a stop positioned at the center, each of said front and rear lens group comprising a first and second lens components designated in the order from the object side toward the center for the front lens group and from the image side toward the center for the rear lens group, said first lens component being a cemented doublet lens having negative refractive power and consisting of a positive meniscus lens and a negative meniscus lens, said second lens component being a positive meniscus lens, said copying objective lens system having the following numerical data:

$r_1 = 0.1606$		
$d_1 = 0.0319$	$n_1 = 1.62041$	$\nu_1 = 60.3$
$r_2 = 0.2011$		
$d_2 = 0.0285$	$n_2 = 1.64769$	$\nu_2 = 33.8$
$r_3 = 0.1312$		
$d_3 = 0.0269$		
$r_4 = 0.2348$		
$d_4 = 0.0256$	$n_3 = 1.55671$	$\nu_3 = 58.7$
$r_5 = 0.3867$		
$d_5 = 0.0470$		
F/8.0, f = 1.0,	$f_{12} = -4.285$,	$f_3 = 1.012$

wherein reference symbols r_1 through r_5 respectively represent radii of curvature of respective lens surfaces, reference symbols d_1 through d_5 respectively represent thicknesses of respective lenses and airspaces between respective lenses, reference symbols n_1, n_2 and n_3 respectively represent refractive indices of respective lenses, and reference symbols ν_1, ν_2 and ν_3 respectively represent Abbe's numbers of respective lenses, reference symbol f_{12} represents the focal length of the first lens component, reference symbol f_3 represents the focal length of the second lens component, reference symbol f represents the focal length of the lens system as a whole.

4,083,629

BEAM SPLITTING SYSTEM FOR A WELDING LASER

Robert C. Kocher, Harvard, and Alfred Piorkow, Sudbury, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 29, 1976, Ser. No. 745,737
Int. Cl.[2] G05D *25/00*
U.S. Cl. 350—285 **3 Claims**



1. For use with a laser welder responsive to a trigger signal to generate optical welding beam pulses, a beam splitting system for enabling the welder to perform welding operations at a pair of selected welding sites, the beam splitting system including housing means coupled to the welding laser and disposed about the optical welding beam path thereof; beam splitting means within the housing means for distributively directing the incoming beam along a pair of output optical paths; and first and second beam focussing means respectively located in a different one of the output optical paths for independently focussing the pulses propagating therealong at a respective one of the site pair, the improvement wherein said beam splitting means comprises bimodal switching means synchronized with the trigger signal for switching a predetermined number of welding beam pulses between alternate output paths, whereby the laser welder sequentially welds at the two regions, said bimodal switching means includes

a reflective surface member rotatable through the incoming pulse path to interruptingly deflect a first predetermined number of laser pulses along one output path; and

means synchronized with the trigger signal for passing the reflective surface member across the incoming pulse path in one mode to deflect said first predetermined number of laser pulses along said one output path and removing the reflective surface member from the incoming pulse path in another mode to permit a second predetermined number of laser pulses to propagate along the second path, said synchronized means comprising

a variable speed motor responsive to a control signal for rotating the reflective member through the pulse path; and

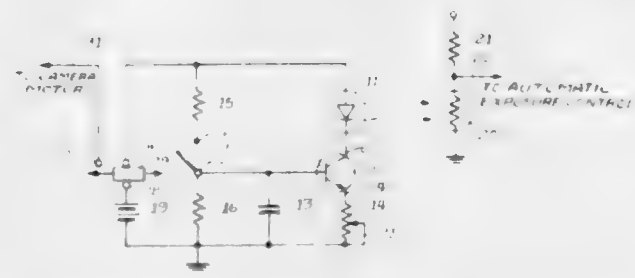
control signal generating means responsive to the time phase difference between the trigger signal and the mode transition occurrence of the bimodal switching means to synchronize the interruption by the surface member with the trigger signal.

4,083,630

FADE IN AND FADE OUT ARRANGEMENT FOR A MOTION PICTURE CAMERA

Robert C. Mau, deceased, late of Chicago, Ill. (by Donna M. Mau, administratrix), and Erwin E. Figge, Des Plaines, Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jul. 24, 1975, Ser. No. 598,502
Int. Cl.[2] G03B *21/36*
U.S. Cl. 352—91 C **10 Claims**



1. In a motion picture camera of the type which includes an automatic exposure control for controlling the size of the objective lens diaphragm opening in inverse relation to ambient light level conditions, a new and improved fade circuit comprising:

a light source capable of providing light of controlled intensity;

a light sensitive device disposed to receive both ambient light for controlling the size of the opening in the objective lens diaphram in inverse relation to ambient light level conditions, and the light from said light source for augmenting the received ambient light; and

intensity control means coupled to said light soource for controlling the intensity of the light of said surce to thereby cause said light source to illuminate the light sensitive device with light of gradually varying intensity so as to cause the automatic exposure control to gradually alter the diaphram opening size between a closed condition and a condition corresponding to only ambient light levels.

4,083,631

ANIMATED VISUAL EFFECT ADAPTOR FOR GATED STILL PICTURE PROJECTORS

William G. Gugeler, 200 S. Vance, Lombard, Ill. 60148

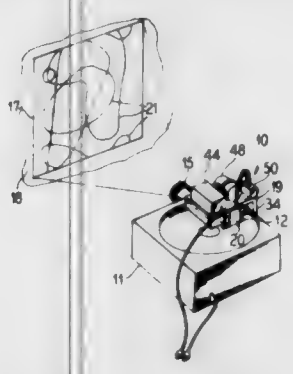
Filed Jul. 9, 1976, Ser. No. 703,793
Int. Cl.[2] G09F *13/24;* A63J *3/00;* G03B *21/00*
U.S. Cl. 353—120 **9 Claims**

1. An animated visual effects adaptor unit for a conventional slide projector which has a top exterior horizontal surface through which a projection gate opens, said gate being between a light source and a projection lens system, said lens system projecting along a generally horizontal projection axis, said adaptor comprising:

a supporting platform adapted to be removably mounted on top of and substantially parallel to said horizontal top surface of the projector;

a light permeable animated visual effect device carried by and movable with said supporting platform;

said device comprising panel structure carrying a plurality of individual light beam projectable animated visual effects producing means, the panel structure extending downwardly from the supporting platform and being dimensioned to be received freely in the projection gate of the projector between said light source and the projection lens system when the platform is placed in position adjacent to said horizontal surface, for passage of light beam



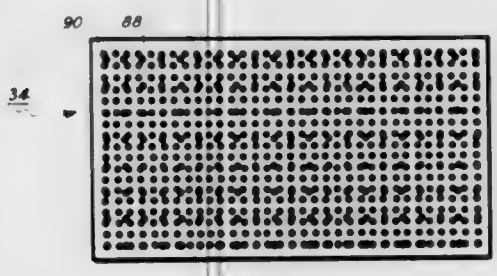
from the light source through all of said visual effects producing means for projection through the lens system of the projector of animated visual effects produced by operation of said visual effects producing means of the device; and means mounted on and movable with said supporting platform for operating each of said plurality of animated visual effects producing means of the device independently.

4,083,632

MULTI-FREQUENCY SCREEN

Louis D. Mailloux, Fairport, and James E. Bollman, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 5, 1976, Ser. No. 673,318
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—3 R **14 Claims**



11. A half-tone screen, including:
a substantially transparent substrate; and
a plurality of opaque regions disposed on said substrate, said opaque regions being arranged in a high frequency repetitive pattern and a low frequency repetitive pattern extending across said substrate and being superimposed over one another with each opaque region being substantially identical to one another.

4,083,633

BLADE CLEANING HOLDER

Alan L. Shanly, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

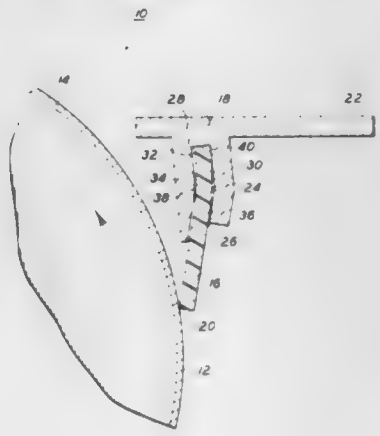
Filed Jun. 28, 1976, Ser. No. 700,438
Int. Cl.[2] G03G *21/00*
U.S. Cl. 355—15 **3 Claims**

1. In a copying apparatus wherein image developer material is cleaned from a reusable imaging surface by a resilient elongated cleaning blade with a cleaning edge in cleaning engagement with said imaging surface, and wherein said blade has a mounting edge mounted in a blade supporting member, and wherein said blade is a normally planar elastomeric strip with parallel surfaces spaced apart by the thickness of the cleaning blade, the improvement comprising:

a blade retaining channel in said blade supporting member with a blade receiving opening,

said blade retaining channel having a linear bottom base surface linearly supporting said mounting edge of said blade,

said blade retaining channel having opposing generally planar and parallel walls spaced apart continuously from said channel base surface to said channel opening by a distance slightly greater than said thickness of said cleaning blade to provide unobstructed insertion of said cleaning blade through said channel to said base surface thereof without compression of said cleaning blade,



said blade retaining channel having generally two linear segments with a slight angular transitional bend therebetween located intermediately between said base surface and said channel opening, said bend being sufficiently arcuate to resiliently bend said cleaning blade within said channel sufficiently to resiliently frictionally engage said cleaning blade against both of said opposing walls of said blade retaining channel to retain said cleaning blade within said channel against said base surface and to seal said base surface from said image developer material,

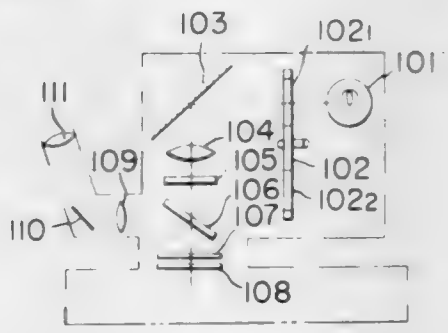
said cleaning blade being retained in said blade supporting member solely by said resilient frictional engagement of said cleaning blade within said blade retaining channel.

4,083,634

PATTERN EXPOSURE APPARATUS USING POLYCHROMATIC LIGHT SOURCE

Katsumi Momose, and Kazuhisa Okutsu, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 629,561, Nov. 6, 1975, Pat. No. 4,032,341, which is a continuation of Ser. No. 429,904, Jan. 2, 1974, abandoned. This application Apr. 6, 1977, Ser. No. 785,047
Claims priority, application Japan, Jan. 16, 1973, 48-7207
Int. Cl.[2] G03B *27/76*
U.S. Cl. 355—71 **4 Claims**



1. An exposure print-out device for exposing to a pattern a photosensitive material formed over a substrate having a reflective surface, comprising:

light source means for producing at least two lights of different wavelengths;
means disposed in the optical path from said light source means for adjusting the energy levels of said lights; and
means for carrying a mask to be printed out, said carrier means being disposed in said optical path between said substrate and said adjust means and spaced apart from said substrate by a predetermined distance;
whereby the energy levels of the light beams from said light source means are adjusted by adjustment of said adjust means and said photosensitive layer is disposed in the reduced peak value region of a standing wave formed by the incident light of said photosensitive material over said substrate and the light reflected by said reflective surface of said substrate, thereby imparting a pattern print-out to said photosensitive material with a uniform sensitizing energy.

4,083,635
METHOD OF PRODUCING POSITIVE IDENTIFICATION CHECKS

Thomas K. Reed, Jr., P.O. Box 709, Albuquerque, N. Mex. 87103

Filed Oct. 1, 1975, Ser. No. 618,563
Int. Cl.[2] G03B *27/32, 27/44, 27/70;* **G01D** *9/42*
U.S. Cl. 355—77 **11 Claims**



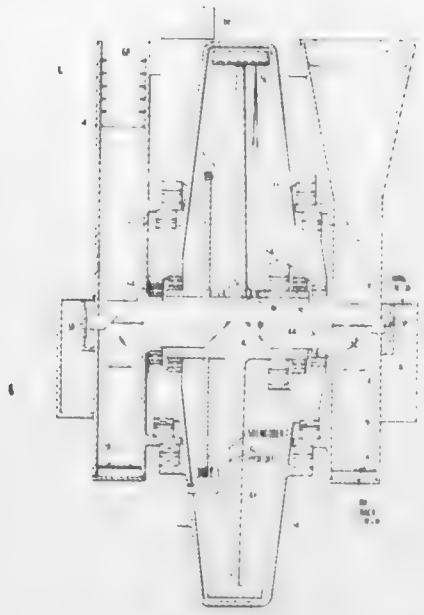
1. A method of producing positive identification checks from sheets having a negotiable check portion and a non-negotiable record copy portion, the method comprising simultaneously the steps of:
imprinting on the check portion information identifying the first negotiator of the check, including the likeness and signature of the negotiator, from a source of first negotiator identifying information, including the likeness and signature, of one or more individuals;
imprinting from the source on the record copy portion at least some of the identifying information imprinted on the check portion; and
severing the imprinted record copy portion from the imprinted check portion.

4,083,636
NAVIGATIONAL INSTRUMENT

William J. Owen, Littleton, Colo., assignor to Martin Marietta Corporation, Rockville, Md.

Filed Feb. 23, 1976, Ser. No. 660,583
Int. Cl.[2] G01B *11/26*
U.S. Cl. 356—141 **11 Claims**

1. A method of determining position fixes utilizing two optical receivers, comprising the steps of:
a. positioning a first receiver on an axis of rotation into alignment with a first celestial body to receive radiation emitted therefrom;
b. positioning a second receiver on said axis of rotation into alignment with a second celestial body to receive radiation emitted therefrom;
c. developing a signal indicative of the scalar angle between the two optical receivers, said signal generated by measuring the time interval of constantly rotating means passing



through the optical axis of said first receiver and then through the optical axis of said second receiver.

4,083,637
INSPECTION APPARATUS FOR CONTAINERS WITH TRANSPARENT BOTTOMS

Bernd Ellinger, and Konrad Holler, both of Regensburg, Germany, assignors to Hermann Kronseder, Regensburg, Germany

Filed Oct. 8, 1976, Ser. No. 731,062
Claims priority, application Germany, Oct. 11, 1975, 2545678
Int. Cl.[2] G01N *21/32*
U.S. Cl. 356—240 **10 Claims**



1. In test apparatus for the detection of foreign matter particles in the bottom area of containers having transparent bottoms and including a driven rotor having a front face lying in the image plane of a projected image of the illuminated container bottom, a first photoelectric cell, said face being provided with a first optical element which scans radiation projected from said bottom and transmits the incident radiation to a first photoelectric cell, said apparatus having an evaluator for the output signals of the photoelectric cell which upon a certain decrease of the incident light due to the presence of foreign matter delivers a signal, the improvement in which a second optical element is disposed in said image plane in the region of the axis of rotation of said rotor and is rotatable therewith and which receives radiation emitted from the central area of the container buttom, a second photoelectric cell to

which said second optical element transmits said radiation, and an evaluator which emits a signal upon a certain decrease of the radiation transmitted by the second optical element due to the presence of foreign matter in said central area.

4,083,638

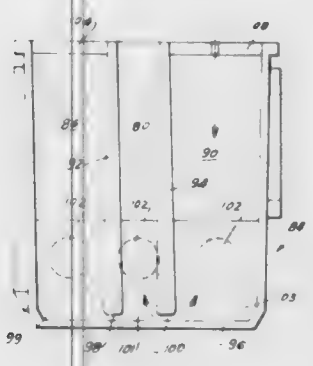
CUVETTE AND METHOD OF USE

Harold E. Sandrock, Rockville Centre; Morris W. Leen, Yorktown Heights, and Edward W. Stark, Garden City, L.I., all of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Division of Ser. No. 604,526, Aug. 27, 1975, Pat. No. 3,994,594. This application Nov. 8, 1976, Ser. No. 739,902

Int. Cl.[2] G01N *1/10*

U.S. Cl. 356—246 **11 Claims**



1. A cuvette, comprising: a body member including means defining at least three spaced chambers, a pair of optical windows defined in at least one of said chambers for viewing the optical density of the contents contained therein, means defining openings through which different reactants are introduced into predetermined ones of said chambers, and means defining fluid passageways interconnecting selected ones of said chambers, said passageways being remote from said openings and normally isolating reactants contained within said chambers, the opening of one of said chambers being adapted and arranged for being in operative arrangement with a pressure source, the opening of another of said chambers being adapted and arranged to receive a sealing member, such that, when said sealing member is received by said another chamber, the application of pressure to said one chamber is effective to transfer reactant along the passageway interconnecting said one chamber and a remaining one of said chambers.

4,083,639

SHAFT END COUPLING FOR A DYNAMOELECTRIC MACHINE

Vincent G. Terry, Beverly, Mass., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 510,673, Sep. 30, 1974. This application Dec. 30, 1976, Ser. No. 755,756

Int. Cl.[2] F16B *3/00*

U.S. Cl. 403—16 **1 Claim**

1. A coupling arrangement for connecting a driving shaft to a driven shaft, said driving shaft having an annular flange at the coupling end thereof, said coupling arrangement comprising:

a coupling member having an annular flange portion mating with and attachably secured to said driving shaft annular flange; said coupling member having an inner axial bore and shrunk on and tightly engaging said driven shaft at a common annular interface;

a plurality of cylindrical keyways, extending in the axial direction, spaced circumferentially about the common annular interface, each keyway being drilled into a portion of said coupling member and a portion of said driven shaft subassembly; and,

an elongated, hollow, deformable metal key of cylindrical cross section inserted into each keyway with its end free continguous with the end faces of said coupling member and said driving shaft whereby relative rotation between the driven shaft and coupling member is prevented and each said keys are threaded along the interior adjacent its



end face thereof for mating with a tool to effect the insertion or withdrawal of said keys.

4,083,640

BUILDERS SCAFFOLDING

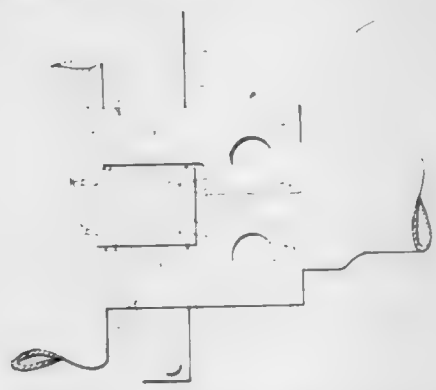
Dennis William Lovering, Pattingham, England, assignor to Kwikform Limited, Birmingham, England

Filed Nov. 15, 1976, Ser. No. 741,693

Claims priority, application United Kingdom, Nov. 14, 1975, 46977/75

Int. Cl.[2] F16B *7/00*

U.S. Cl. 403—246 **10 Claims**



1. In builders' scaffolding of the kind which comprises an upright member, a cross-member and connecting means for detachably connecting the upright member and cross-member together, wherein the connecting means comprises a socket member mounted on the exterior of the upright member, the socket member being open at each of its two opposite ends which are spaced apart along the length of the upright member, the connecting means further comprising a wedge clamping member and a co-operative connector member provided at or near one end of the cross-member, the connector member including two limbs each having a socket engaging surface which in the operative position are spaced apart vertically to permit of the socket member of the upright member being received between said surfaces, each limb having an abutment face adapted to abut against the upright member, each limb further being provided with an opening which receives the wedge clamping member as it extends through the two open ends of the socket member in pressure-engagement with an edge of the opening of each of the two limbs which is nearest to the upright member and also with an internal clamping face of the socket member, in such a manner that the said abutment faces of the two limbs are brought into pressure-engagement with the upright member at positions above and below the socket member, the wedge clamping member being provided with a laterally projecting retaining formation adjacent to its lower end, the wedge member-receiving opening in the in situ uppermost one of said limbs of the connector member provided on the end of the cross-member has a width such that

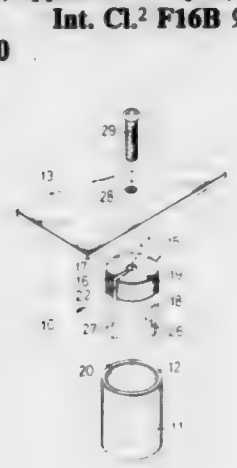
said retaining formation cannot pass through said opening thereby to render the wedge clamping member captive, the other opening of said connector member has a width such that the retaining formation is able to pass through to enable the wedge clamping member to be driven downwardly through the socket member with which the connector member is assembled, the invention wherein the in situ uppermost one of the two limbs of said connector member is upwardly recessed from its socket engaging surface to define a cavity adapted to receive the lowermost end portion of the wedge clamping member and the retaining formation thereon when the wedge clamping member is in a raised position, the spacing between the socket engaging surfaces of said connector means being such as to receive said socket member therebetween with only a small clearance.

4,083,641

T-SHAPED STRUCTURAL JOINT

Yukio Sado, Ashahi, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 7, 1977, Ser. No. 785,511
Claims priority, application Japan, Apr. 10, 1976, 51-40450
Int. Cl.[2] F16B *9/02*
U.S. Cl. 403—260 **10 Claims**



1. A T-shaped structural joint, comprising:
(a) a first member having a hollow open end;
(b) a second member extending transversely to and having a surface disposed flatwise against said open end, said second member having a through hole;
(c) a connector disposed coaxially in said first member at its open end with a press fit, said connector having a body with an end face held flatwise against said surface of said second member, said body having on its outer periphery means defining a roughened surface held in frictional engagement with the interior surface of said hollow open end, there being a bore and a slot in said body, said bore being located substantially centrally of said body, and said slot communicating between said bore and said outer periphery; and
(d) a screw passing through said hole threadedly into said connector.

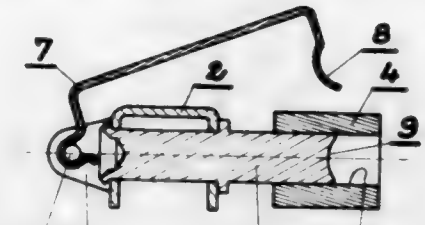
4,083,642

DEVICE FOR SECURING A WIPER BLADE TO AN ARM

Maurice Andre Journee, Reilly, France, assignor to Paul Journee S.A., Reilly, France

Filed Aug. 5, 1976, Ser. No. 711,917
Claims priority, application France, Sep. 16, 1975, 75 28302
Int. Cl.[2] B25G *3/00*
U.S. Cl. 403—316 **1 Claim**

1. A device for mounting a windshield wiper blade on a pivotal arm comprises a pin fixably secured to and projecting from one of said blade and arm, a pin receiving passage in the other of said blade and arm, clip means pivoted to said one of said blade and arm adjacent to said pin and movable to be engaged and disengaged with that end of the pin receiving passage opposite to an end through which the pin is inserted into that passage, said clip means constituting means securing



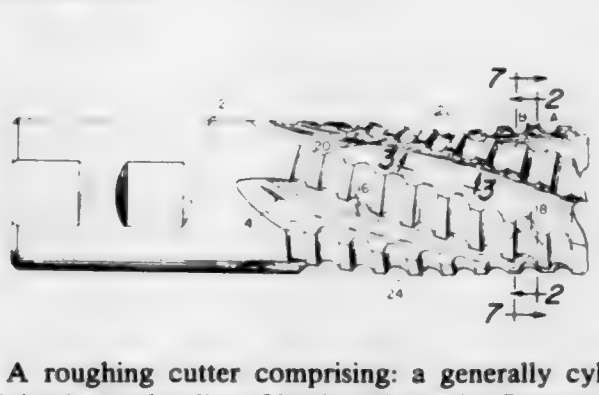
said blade and arm together when engaged with said opposite end of said passage.

4,083,643

ROUGHING CUTTER

Anthony D. Parone, Elmwood, Conn., assignor to Colt Industries Operating Corporation, West Hartford, Conn.

Filed May 16, 1977, Ser. No. 797,582
Int. Cl.[2] B26D *1/12*
U.S. Cl. 407—59 **2 Claims**



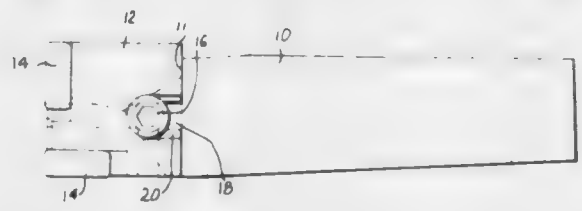
1. A roughing cutter comprising: a generally cylindrical shank having a plurality of lands and angular flutes separating the lands, a plurality of straight-crested cutting teeth formed on each of the lands with selected lead angle formed between the teeth of adjacent lands, each tooth having radial relief and a cutting face at its advancing end with a leading point and a trailing point, each cutting face having a straight cutting edge defined between the leading and trailing points such that the cutting edge of each tooth is substantially perpendicular to a radial line from the axis of the shank to the leading point thereto.

4,083,644

TOOL HOLDER

Ernest J. Friedline, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Apr. 4, 1977, Ser. No. 784,119
Int. Cl.[2] B26D *1/12*; B23B *29/00*
U.S. Cl. 407—67 **10 Claims**



1. In a tool holder comprising; a support member having a notch in one end with a bottom wall, a block receivable in said notch having a lower side, an upper portion and side walls, insert receiving pockets in said upper portion of said block, cooperating elements of rib and groove means on said bottom wall of said notch and said lower side of said block operable to interlock said block and support member against relative lateral movement and against relative fore and aft movement in at least one direction, a slotted portion formed in said block communicating with a side wall of said block and extending

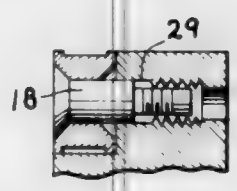
from said upper portion through said lower side of said block, and clamping means carried by said support member and receivable in said slotted portion when said block is mounted in said notch, said clamping means having a head for clampingly engaging said block, said clamping means forming the sole means for clamping said block on said support member.

4,083,645

TOOL HOLDER

Ernest J. Friedline, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Jan. 13, 1977, Ser. No. 758,952
Int. Cl.[2] B26D *1/00*
U.S. Cl. 407—104 **1 Claim**



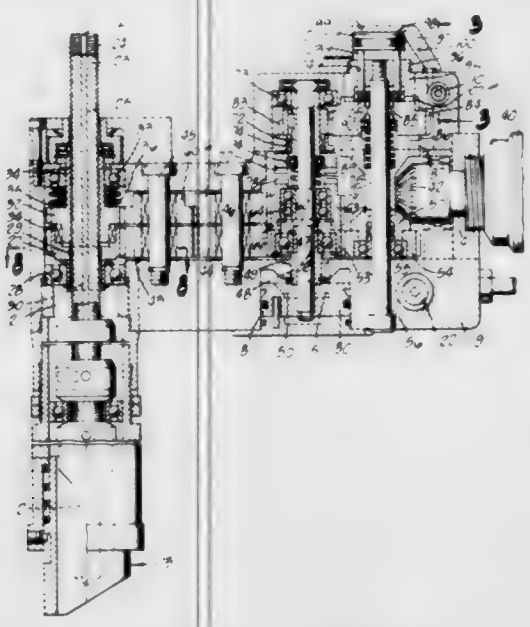
1. In a tool holder having a pocket for receiving a cutting insert, said pocket having at least a bottom wall and side wall for engaging the cutting insert and the insert having an aperture for receiving a clamping pin, said clamping pin having opposing ends with a head on one end, the improvement which comprises; a hole formed in one of the side and bottom walls of said pocket for receiving the opposite end from the head of the pin wherein said opposite end passes through the aperture in the insert, said other end of said pin and said hole having cooperating elements of cam means which comprise threads formed on said pin and on the periphery of said hole and said threaded cam means operable upon in one rotated position of said pin to cause the pin to bring the head thereof into clamping engagement with the insert, and axial recesses in each of said pin and hole interrupting the threads thereon and adapted so that one of said pin and said hole receives the threads on the other so as to permit free axial movement of the pin in the hole in another rotated position of the pin.

4,083,646

POSITIVE FEED DRILL WITH RAPID ADVANCE

Pierre G. Vindez, Redondo Beach, Calif., assignor to Zephyr Manufacturing Co., Inc., Inglewood, Calif.

Filed Dec. 9, 1976, Ser. No. 749,017
Int. Cl.[2] B23B *47/18*
U.S. Cl. 408—133 **12 Claims**



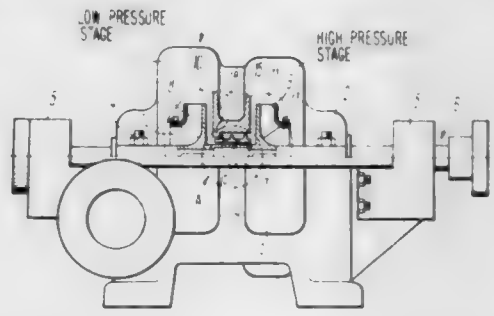
1. A positive feed drill, the combination including:
(a) a spindle adapted to carry a cutting tool;
(b) spindle rotating means for rotating said spindle for causing cutting action when said spindle is moved toward the work;
(c) spindle feed means for feeding said spindle;
(d) spindle feed drive means for operating said spindle feed means at a normal rate;
(e) rapid advance drive means for operating said spindle feed means for feeding said spindle toward said work at a rapid advance speed;
(f) manually operable means for connecting said spindle feed drive means to said advance speed drive means; and
(g) means for locking said rapid advance drive means from operation.

4,083,647

SEAL MEANS FOR A CENTRIFUGAL PUMP

Viktor Arsentievich Tatkov, prospekt Tsiolkovskogo, 67, kv. 9; Nikolai Nikolaevich Letov, ulitsa Transportnaya, 105, kv. 81, both of Novokuznetsk Kemerovskoi oblasti; Boris Nikolaevich Sharapov, ulitsa Gorkogo, 6, kv. 12, and Vladimir Petrovich Rozhkov, ulitsa Zavodskaya, 11, kv. 2, both of Yasnogorsk Tulskoi oblasti, all of U.S.S.R.

Filed May 24, 1976, Ser. No. 689,666
Int. Cl.[2] F01D *11/00*; F04D *29/10*
U.S. Cl. 415—113 **3 Claims**



1. A centrifugal pump having low and high pressure stages and comprising a casing, a shaft rotatably mounted in said casing and forming a circular gap therewith, a seal for said shaft between the low and high pressure stages in the circular gap between said shaft and casing, said casing including a circular collar at the side of the low-pressure stage projecting towards said shaft partially into said circular gap, and a plurality of rings surrounding said shaft and disposed in said circular gap, said rings being freely floating in said gap and being subjected to pressure difference between the low and high pressure stages to be pressed against one another and against said circular collar during pump operation to form a seal for said shaft.

4,083,648

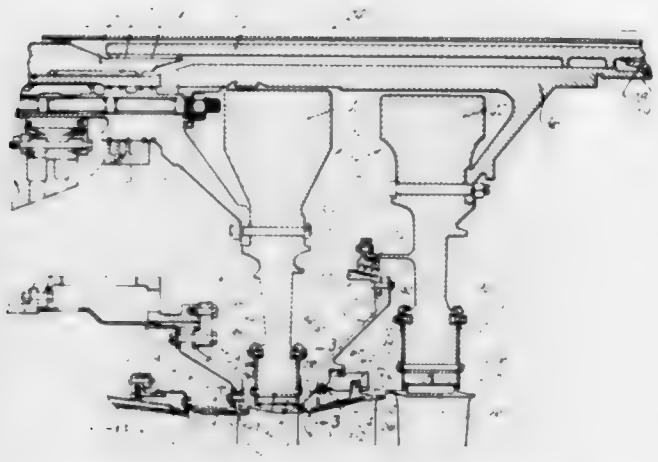
GAS TURBINE CONSTRUCTION

Herbert Frederick Asplund, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 601,564, Aug. 1, 1975, Pat. No. 4,011,718. This application Dec. 3, 1976, Ser. No. 747,457
Int. Cl.[2] F01D *9/04, 25/24*
U.S. Cl. 415—137 **17 Claims**

1. A turbomachinery stator assembly concentric about an axis and including:
(1) a plurality of radially extending airfoil shaped vanes positioned in circumferential array about said axis.
(2) means to support the radial outer end of said vanes, and
(3) means to position the radial inner end of said vanes and be supported therefrom including:
(a) a diaphragm member extending radially inwardly from the radial inner ends of said vanes,
(b) a spline connecting said diaphragm member to said vane inner ends so as to conentrically support said diaphragm member from said vane inner ends,
(c) a circumferentially extending ring member positioned radially inward of said vanes,

(d) means connecting said ring member to the inner end of said ends of said vanes so as to axially position said ring member and support said ring member concentrically about the axis,



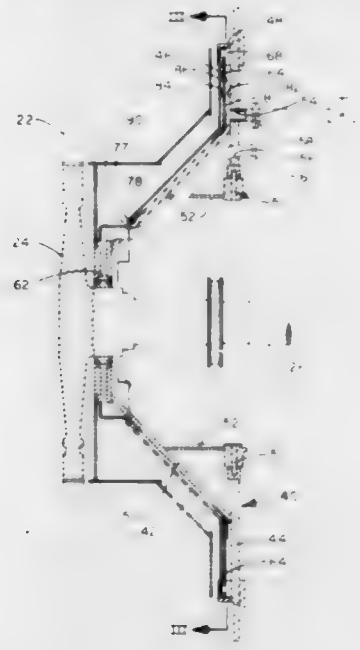
(e) a bayonet connection connecting said ring member to said diaphragm member to lock said members in axial relationship.

4,083,649

COOLING SYSTEM FOR TURBOMACHINERY

Arthur J. Miller, North Huntington, and J. Rodger Shields, Pittsburgh, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 5, 1976, Ser. No. 683,360
Int. Cl.[2] F01D *25/12;* F04D *29/58*
U.S. Cl. 415—116 **7 Claims**



1. An assembly for admitting a cooling inert gas in a saturated state into a turbomachine operating at relatively high temperatures comprising:

a first member having spaced, opposed front and rear radially extending walls defining a chamber therebetween;

a baffle member extending radially within said chamber defined by said spaced walls, the top surface of said baffle member including a plurality of orifices defining a fluid flow path through said baffle member; and

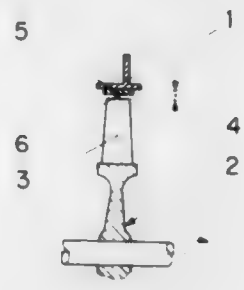
at least one fluid expansion nozzle provided in a selected one of the opposed walls of said first member to define an entrance path for the saturated cooling insert gas being expanded upon discharge from said nozzle into a substantially superheated gas, said cooling gas successively passing between the inner surface of said selected one wall and a first surface of said baffle member, said orifices, and between the inner surface of said other wall and a second surface of said baffle member, the lower surface of said other wall defining a top surface of an outlet to permit said cooling gas to pass from said assembly.

4,083,650

ARRANGEMENT FOR MAINTAINING OPTIMUM MINIMUM OPERATING CLEARANCE BETWEEN ROTOR AND STATOR COMPONENTS OF FLUID-FLOW MACHINES AND THE LIKE

Josef Zboril, Fislibach, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Continuation of Ser. No. 483,076, Jun. 25, 1974, abandoned.
This application Jun. 28, 1976, Ser. No. 700,449
Claims priority, application Switzerland, Jun. 29, 1973, 9487/73
Int. Cl.[2] F01D *11/08*
U.S. Cl. 415—174 **2 Claims**



1. In a machine which incorporates rotor and stator components and wherein at least one abradable sealing element is provided intermediate a surface of the rotor and an oppositely located surface of the stator thereby to define an operating clearance therebetween, the improvement that said abradable element consists of a sintered graphite-metal composition and that the metal phase of said composition contains at least one element of the group consisting of copper, tin, lead, antimony and zinc together with at least one element of the group consisting of nickel and iron, the composition of said abradable element consisting of, by weight, 8% carbon, 55% copper, 28% nickel and 9% iron.

4,083,651

WIND TURBINE WITH AUTOMATIC PITCH AND YAW CONTROL

Marvin Chapin Cheney, Jr., Glastonbury, and Petrus A. M. Spierings, Middletown, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 17, 1976, Ser. No. 715,346
Int. Cl.[2] F03D *7/04*
U.S. Cl. 416—18 **10 Claims**

1. A wind turbine device adapted to be wind driven to generate power and including:

(A) support means adapted to support a wind turbine,

(B) a wind turbine,

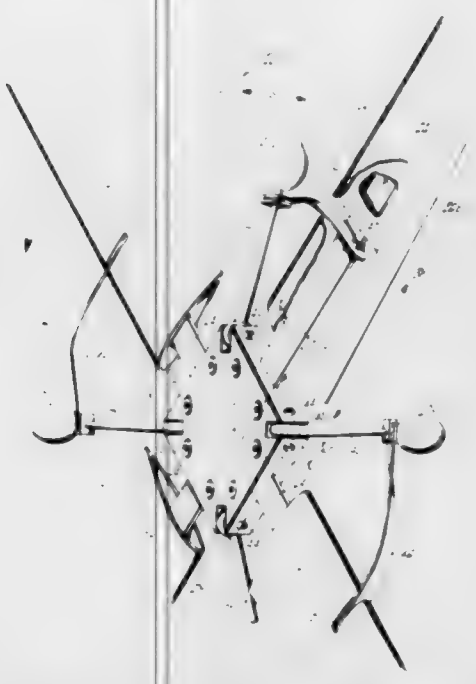
(C) means to connect said wind turbine to said support means for rotation about an axis of rotation in a plane of rotation downward thereof and for yaw rotation about a free-pivot connection between the wind turbine and the support means,

(D) said wind turbine including:

(1) a flexible beam member passing through the turbine axis of rotation and extendng on opposite sides thereof and fabricated to have high tensile strength and torsional flexibility about the beam member torsional axis normal to the axis of rotation,

(2) two airfoil blades mounted on said flexible beam member to extend from opposite ends thereof for rotation therewith and for torsional flexing therewith and shaped to produce a high negative static pitch angle with the wind turbine plane-of-rotation sufficient to permit wind turbine self-starting in response to minimal initial wind flow, and

(E) turbine speed control means comprising a pendulum member pivotally connected to the wind turbine so as to form a selected angle with the turbine plane-of-rotation when static, and connected to the flexible beam member



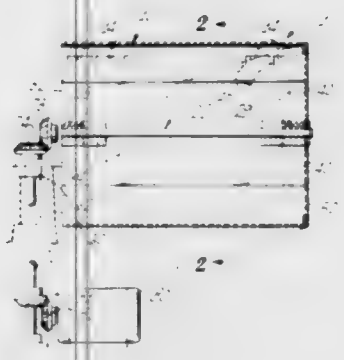
of each blade so as to be centrifugally responsive to rotor speed to torsionally twist the flexible beam member to maintain the blade pitch angle near 0° throughout the wind turbine design operating range.

4,083,652

INFLATABLE AIR-DRIVEN MOTOR

Boris Isaacson, 14532 Vanowen St., Van Nuys, Calif. 91405

Continuation-in-part of Ser. No. 634,620, Nov. 24, 1975, Pat. No. 3,990,808. This application Jan. 21, 1976, Ser. No. 651,187
Int. Cl.[2] F04D *29/18*
U.S. Cl. 416—84 **13 Claims**



1. An air-driven motor which comprises:

a rotor;

a blade means comprising thin, flexible, collapsible sheeting forming a plurality of blades and apertures adjacent thereto;

flexible, thin, collapsible, support means for said blade means affixed to said rotor, said support means spacedly supporting said blade means a radial distance, greater than zero, away from said rotor; and

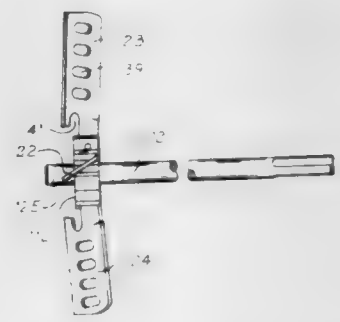
air entry means directing air to said blade means whereby, as said air is directed to said blade means above a predetermined velocity, said flexable, thin, collapsible support means for said blade means are forced radially outwardly and said blade means are inflated to thereby force air outwardly through said apertures adjacent to said blade means, and said blade means and support means therefor are rotated causing said rotor to also be rotatably driven, the primary source of rotation of said rotor being said air directed onto said blade means.

4,083,653

STIRRING DEVICE

Hugh A. Stiffler, 956 N. Layman Ave., Indianapolis, Ind. 46219

Continuation of Ser. No. 630,010, Nov. 7, 1975, abandoned. This application Feb. 14, 1977, Ser. No. 768,340
Int. Cl.[2] B01F *7/18*
U.S. Cl. 416—142 **9 Claims**



1. A stirring device comprising:

a hub having a central aperture for mounting on a shaft and a plurality of pivot means circularly spaced in said hub radially outward from said aperture;

a plurality of elongate vanes pivotally mounted to said hub around a circle to pivot from a folded idle position wherein said vanes extend parallel to the axis of said aperture, outward to working position radially outward from the axis;

each of said vanes having a mounting hub portion connected to said hub by one of said pivot means, and a distal portion remote from said hub, with a major portion of each vane from the hub portion through the distal portion being skewed with respect to said hub portion to facilitate folding said vanes close to said axis without interference with said axis, and to propel axially a liquid when said vanes are in said working position and rotated in a plane normal to said axis;

the major portion of each vane when folded having generally parallel inner and outer trailing and leading, respectively longitudinally extending edges; and the major portion of each vane, when folded, having an inner surface generally facing said axis and an outer surface generally facing away from said axis; the inner edge of each vane, when said vanes are folded, being immediately adjacent the inner surface of a vane next following it around the circle, and the inner region of the major portion having a longitudinally extending slot opening toward the hub and defining an inwardly extending trailing edge cutting part.

4,083,654

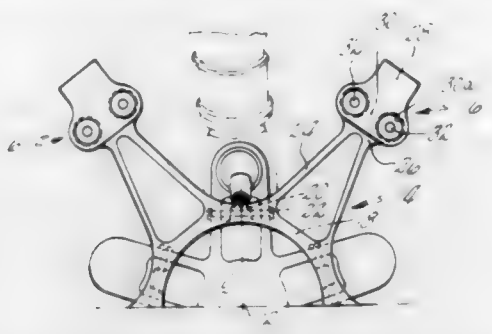
EXTENDED ARM BIFILAR AND METHOD TO ELIMINATE SECOND ORDER VIBRATION EXCITATION

Irwin Jeffrey Kenigsberg, and William Francis Paul, both of Trumbull, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 633,886, Nov. 20, 1975. This application Dec. 27, 1976, Ser. No. 754,667
Int. Cl.[2] B64C *27/32*
U.S. Cl. 416—145 **3 Claims**

1. In a helicopter rotor including a hub and arms extended radially from said hub, each arm supporting a bifilar vibration absorber at its extended end, the method of keeping bifilar mass motions at or below ± 15° amplitude and in so doing minimizing overtuning to improve bifilar performance and also minimizing attendant dissimilar pendulum motions and resulting second order vibrations, which consists in defining the mass of

the bifilar required to absorb input excitations at design forward speed at pendulum amplitude of ± 30° by rotating the



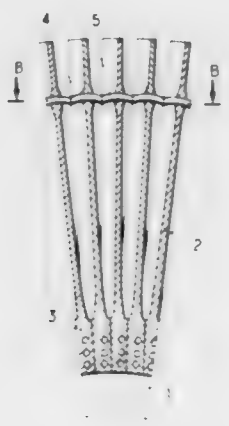
bifilar on a test arm of length *n* and then mounting absorbers of the defined mass on a support arm having a length 2*n*.

4,083,655

TURBINE ROTOR

Robert Tempére, Aubervilliers, France, assignor to Groupe Europeen pour la Technique des Turbines a Vapeur G.E.T.T. S.A., Paris, France

Filed Dec. 16, 1976, Ser. No. 751,298
Claims priority, application France, Dec. 29, 1975, 75 39980
Int. Cl.[2] F01D *5/22*
U.S. Cl. 416—196 R **1 Claim**



1. A mobile stage of a turbo-machine comprising: a plurality of radially extending twisted blades, connection means fitted to each blade in the vicinity of their radially outer portions for making them integral with each other and for preventing rotation in either direction of one blade in relation to its neighbouring blades, and said blades being prestressed during assembly by being un-twisted through an angle a which is less than or equal to and in the same direction as the angle b through which said blades would be un-twisted during rotation if they were free to rotate in relation to each other.

4,083,656

COMPOSITE ROTOR BLADE

James L. Braswell; Cecil E. Covington, both of Hurst; Nolan B. Phillips, Fort Worth; Reggie J. Tomerlin, Cleburne, and Robert M. Wohlfeld, Dallas, all of Tex., assignors to Textron, Inc., Providence, R.I.

Filed Mar. 21, 1975, Ser. No. 560,587
Int. Cl.[2] B64C *27/32*
U.S. Cl. 416—226 **14 Claims**



1. A composite rotor blade comprising:
(a) a nose spar of fiber reinforced plastic with the fibers extending spanwise the length of said span, at the root encircling a transverse hub attachment structure and of channel shape open rearwardly,
(b) a tubular inner liner of cross ply fiber reinforced plastic extending from a point outboard of said attachment structure to the region of the tip of said blade integrated to form a liner and closure for said spar, and
(c) a blade afterbody structure having means including a skin for integrating said afterbody with said nose spar and said liner.

4,083,657

FLOOD GUARD WARNING SYSTEM, APPARATUS AND PROCESS

Doyle R. Misener, Rte. 2, Box 123, Lincoln, Ark. 72744

Filed Oct. 30, 1975, Ser. No. 627,247
Int. Cl.[2] F04B *41/06*
U.S. Cl. 417—4 **7 Claims**



1. A system of residences and sewerage systems therefor comprising:
a. A plurality of residences supported on a body of ground;
b. A ground level for each of such residences;
c. A vertically extending drain pipe for liquid wastes for each of said residences, with one, upper, end of said vertically extending drain pipe operatively connected to one of said residences;
d. A vertically extending sump tank at a location spaced away from at least one of said residences;
e. A pump assembly, and an inlet to said pump assembly located in said sump tank;
f. A horizontally extending drain collector pipe;
g. A plurality of vertically extending conduits each extending substantially to said ground level and operatively connected to said horizontally extending drain collector pipe and spaced away horizontally from said sump tank;
h. A horizontally extending sewer line;
i. A sensor and indicating assembly, and
wherein;
j. Each of said residences comprises a living area at a vertical height below the level of said ground level and below the height of said horizontally extending said sewer line;
k. Each of said vertically extending drain pipes being horizontally spaced apart from other vertically extending drain pipes and extending downwardly to and operative connecting to said horizontally extending drain collector pipe;
l. All portions of said horizontally extending drain collector pipe slope downwardly toward said sump tank and are operatively connected to said sump tank;
m. Each of said vertically extending conduits has a lower end opening to and connecting to said horizontally extending drain collecting pipe at an intersection therebetween, said system including a plurality of such intersections, said vertically extending conduits being operatively connected to said sump tank through said horizontally extending drain collector pipe;
n. Said pump assembly has an outlet operatively connected to said sewer line, a power source operatively connected to said pump assembly; and,

o. Said sensor and indicating assembly comprises, in operative combination,

(i) a plurality of liquid level sensing means;

(ii) a vertically extending dimensionally stable sensor support means for each of said liquid level sensing means located in one of said vertically extending conduits, each of said liquid level sensing means attached to the bottom of one of said sensor support means and extending downward therefrom;

(iii) a plurality of sensor support positioning means each firmly supported in the ground and an attaching means on each of said sensor support means near its upper end attached to one of said sensor support positioning means and a source of electrical voltage;

(iv) each of said liquid level sensing means firmly located above an intersection of a vertically extending conduit and said downwardly sloped horizontally extending drain collector pipe and in said vertically extending conduit, each of said liquid level sensing means comprising a horizontally and narrowly spaced apart pair of vertically extending electrical conductors having different electrical polarity and the same distance between members of pairs of said vertically extending electrical conductors on all of said liquid level sensing means;

(v) said liquid level sensing means being located at different vertical levels and each of said liquid level sensing means being horizontally spaced away from said sump tank and below the height of the top of said sump tank;

(vi) a plurality of indicating means in a support therefor and an electrical conductor between each of said liquid level sensing means and one of said plurality of indicating means, each of said indicating means being indicative of liquid level at said one of said liquid level sensing means;

(vii) a plurality of electrical circuits each comprising a relay coil and one of said sensor assemblies in series across a low voltage source and a normally open relay switch electromagnetically actuated by said relay coil, with the same voltage applied across each of the pairs of conductors forming said liquid level sensing means at the bottom of each of said sensor support positioning means, said normally open relay switch being in series with a second, higher, voltage source and one of said indicating means;

(viii) said low voltage source actuating each said relay and each said indicating means being connected to a power source which is separate from the power source connected to said pump assembly; and,

(ix) said support for said indicator means being remote from said sump tank and from one of said residences.

4,083,658

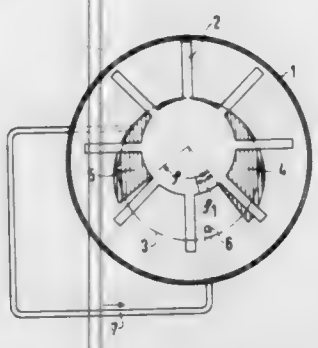
LIQUID RING COMPRESSOR INCLUDING A CALIBRATED GAS INPUT OPENING

Claus Ramm, Nuremberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 8, 1976, Ser. No. 721,450

Int. Cl.² F04C *19/00*

U.S. Cl. 417—68 **1 Claim**



1. In a liquid ring compressor including a separate gas input opening disposed in a control disc of the compressor near a delivery space of the compressor impeller and between suction and output openings of the control disc, the improvement comprising said opening comprising a calibrated gas input opening, and said compressor including means for coupling said calibrated opening to a compression space of said compressor for continuously feeding a pressure-increasing gas ballast to the delivery space of the compressor through said calibrated opening from the compression space of the compressor for reducing the pressure increase of gas pumped by the impeller ahead of the output openings of the control disc in the direction of rotation of said impeller.

4,083,659

MOTOR-DRIVEN LIQUID-RING PUMP INCLUDING A LIQUID SEPARATOR

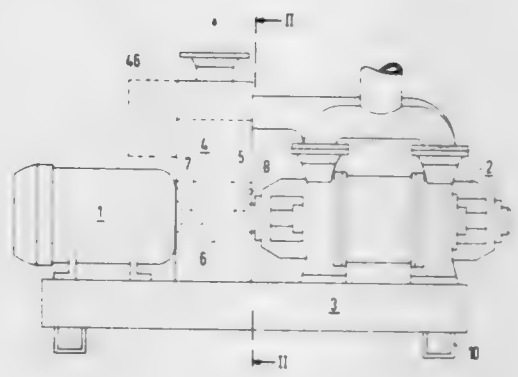
Heribert Schmidt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 9, 1976, Ser. No. 721,695

Claims priority, application Germany, Sep. 22, 1975, 2542221

Int. Cl.² F04C *19/00*

U.S. Cl. 417—68 **4 Claims**



1. In a motor-driven liquid-ring pump in which the pump and the motor are disposed in tandem and are coupled to each other by means of a coupling, and including a liquid separator coupled to said pump, the improvment comprising said separator being disposed between said motor and said pump and at least partially enclosing said coupling, said separator comprising a U-shaped, vertically-mounted separator having parallel legs which laterally enclose said coupling.

4,083,660

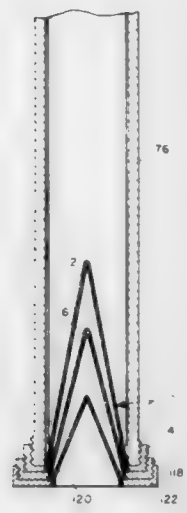
GAS DRIVE OIL WELL PUMPING SYSTEM HAVING MIXING MEANS FOR THE GAS/OIL MIXTURE

Joseph S. Newbrough, 1869 Wedgemere, El Cajon, Calif. 92020

Continuation of Ser. No. 601,263, Aug. 4, 1975, abandoned. This application Mar. 30, 1977, Ser. No. 782,848

Int. Cl.² F04F *1/20, 5/24*

U.S. Cl. 417—108 **8 Claims**



1. In a gas drive oil well pumping system utilizing gas under pressure to force oil from the well, including a cased well, a

production tubing extending longitudinally through the well and cooperating with the casing thereof to define an annulus, means for introducing high pressure gas into the upper end of the annulus, a plurality of jet pump means disposed in longitudinally spaced relation in the tubing and each defining an elongate axially extending venturi, and means communicating with and between the venturi and the annulus to conduct gas from the annulus to said venturi to create suction in said tubing to lift gas and oil from the well in stages, the improvement comprising:

a plurality of check valve devices secured in the tubing in spaced apart relation along its length, whereby the gas/oil mixture is lifted in stages from the well, said check valve devices secured in the tubing closely adjacent and upstream of the jet pump means;

a central pipe secured inside the tubing immediately upstream and adjacent at least one of the check valve devices and communicating at one end with a check valve device for flow of gas and oil therethrough to the check valve device;

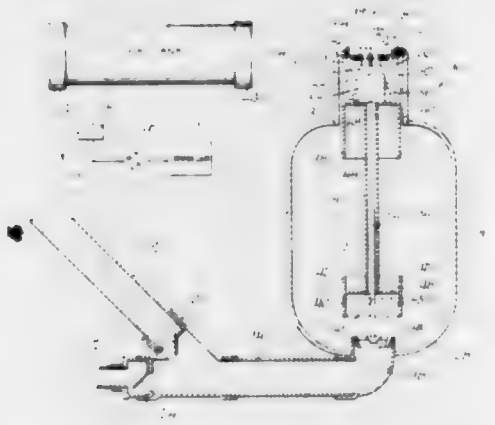
and gas/oil mixing devices comprising screen means having apertures therethrough sized to provide a total flow area approximately the flow area of the tubing, said screen means being secured on the other end of the central pipe, for maintaining the oil/gas intermixed and to thus enhance the lifting ability of the gas and thereby increase the efficiency of the system.

4,083,661

PNEUMATIC SEWAGE EJECTOR

Alex L. McPherson, Winfield, and Hubert L. Williams, Hinsdale, both of Ill., assignors to Clow Corporation, Oak Brook, Ill.

Filed May 5, 1976, Ser. No. 683,371
Int. Cl.[2] F04F *1/06*
U.S. Cl. 417—131 **10 Claims**



1. A pneumatic sewage ejector comprising:

a tank for holding sewage, said tank having at least one pipe through which sewage can enter and exit the tank;

an air-input pipe for conducting pressurized air into the tank;

a vent for venting air from the tank;

valve means inside the tank having parts which are relatively reciprocatively movable between an air-input position and a vent position for selectively and alternately coupling said air-input pipe and said vent to the interior of said tank;

float means in the tank for responding to the level of fluid in the tank by ascending and descending, one part of said valve means being fixedly attached to said float means for movement to the air-input position when the fluid in the tank reaches a predetermined high level so that pressurized air enters the tank and forces the fluid out of the tank, and for movement to the vent position when the fluid in the tank reaches predetermined low level so that the pressure within the tank is thereby relieved, said float means including a vertically extending hollow tube for receiving pressurized air through said valve means and conducting it into a bottom portion of the tank and

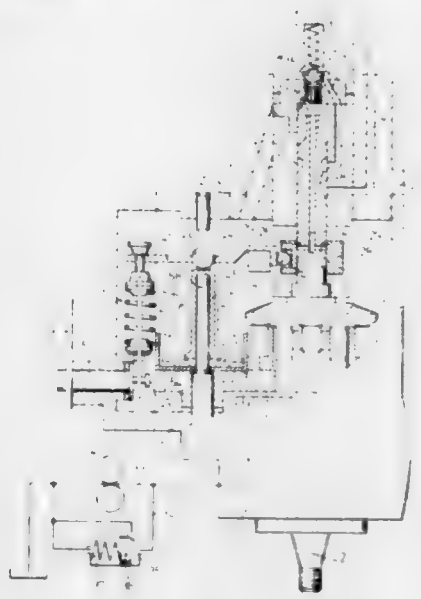
detent means associated with said valve means so that said float means is movable betewwn the air-input position and the vent position in one discrete step so that said valve means is at rest only either in the air-input position or in the vent position.

4,083,662

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINE

Gerald Höfer, Weissach-Flacht; Karl Konrath, Ludwigsburg, and Otmar Weiss, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 21, 1976, Ser. No. 688,720
Claims priority, application Germany, May 21, 1975, 2522374
Int. Cl.[2] F04B *39/10*
U.S. Cl. 417—499 **7 Claims**



1. In a fuel injection pump for internal combustion engines including: means defining a cylinder, an operating chamber and a low pressure chamber, a pump piston situated for reciprocating movement within the cylinder, the pump piston having a bore formed therein with a radial portion defining two openings in the wall of the pump piston, said bore connecting the operating chamber to the low pressure chamber; and means defining a control edge for opening and closing the two openings, the improvement comprising:

an enlargement formed at each end of the radial portion of the bore in the pump piston wall and connected to the bore thereby defining an extension of the bore opening, wherein at least one common dimension of each enlargement is different in magnitude, and wherein each enlargement cooperates with the controlling edge to control the amount of fuel injected into the engine on each pressure stroke of the piston.

4,083,663

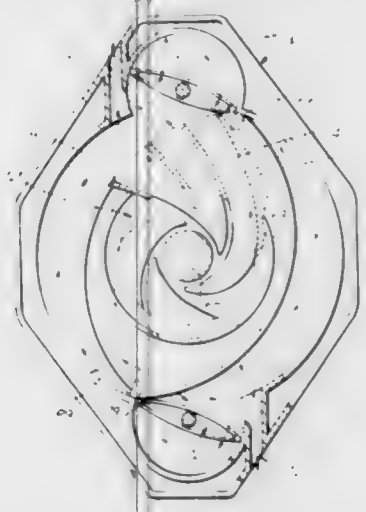
ROTARY ENGINE WITH PISTONS AND LENTICULAR VALVES

Lionel Morales Montalvo, 457 Monserrate St., Havana, Cuba

Continuation-in-part of Ser. No. 432,625, Jan. 11, 1974, abandoned. This application Jul. 2, 1975, Ser. No. 592,775
Int. Cl.[2] F04C *17/00;* F02B *653/08*
U.S. Cl. 418—183 **1 Claim**

1. A machine with rotating lenticular pistons and valves for internal and external combustion engines, expansion motors and pumps, comprising a flat central stator housing with two lateral cover housings, a plurality of rotating elements enclosing the interior of said stator housing and rotating on stationary parallel shafts pivoted on bearings inside said cover housings, gear train means connecting said parallel shafts for producing

rotation of said parallel shafts in one direction and at the same angular speed, said central stator housing containing in its interior and throughout its entire thickness, a cylindrical central cavity coaxially intersected by a plurality of cylindrical smaller equidistant surfaces distributed around its periphery and rotating inside said central cylindrical cavity, a rotor-piston with lenticular cross-section, a plurality of rotor-valves also of lenticular cross-section and surrounding said rotor-piston, said rotor valves rotating and making contact with said smaller cylindrical surfaces, said cylindrical equidistant surfaces contacting said cavity by said rotor-piston, said rotor-valves having seal means shaped in correspondence to the profiles of the lenticular surfaces of said rotor-valves, said rotor-piston and rotor valves maintaining continuous contact for forming hermetic chambers of variable volumes, three sandwiched housings, said stator housing being enclosed on both sides by two covers, said stator housing having two outlet ducts communicating with an interior central cavity of said stator housing, said interior cavity being formed by the intersection of two cylindrical surfaces of substantially identical diameter and distributed symmetrically about a central cylindrical surface substantially of larger diameter, three rotors of lenticular cross-section rotating within said three cylindrical surfaces and generated by a single common circumferential curve, said rotors having sealing means, said rotor-piston rotating within the larger cylindrical surface and having channels formed by spiral volumes communicating with the chambers



within said stator housing, said channels communicating with the exterior through an annular intake distributed about said shaft, said rotor sealing means comprising: first auxiliary sealing means of a plurality of arc-shaped members conforming to the surface of said rotor-piston with lenticular cross-section and wave-shaped spring means between said arc-shaped members and said rotor-piston, said second auxiliary sealing means with two sheets forming flat face plates in channels along lines of contact with said rotor valves, auxiliary spring means in said channels and urging said face plates against said lines of contact with said rotor valves, said plates said plates having means for the flow of lubricating oil, said rotor-piston having interior channels for circulation of cooling fluid, cooling fin means on said stator housing, suction ring means on said rotor-piston and communicating with said chambers through said spiral volutes, the profiles of said rotors are geometrically formed by the election of two arbitrary surface circumferences orthoganally intersected, the circumscription of said two circumferences extending so that the circumference of greater diameter is circumscribed over the smaller one in an unbroken line, the smaller traced line being inscribed within the larger continuous unbroken line circumference, four circumferential arcs with radius equal to the pistons between centers being traced from a center in the intersection point of both traced circumferences and from the diametrically opposite points on the traced circumferences, so that two lenticular configurations are formed in contact by one of their points within the original circumferences, other lenticular configurations being added to the pair drawn by repeating one of them, angular displacement of the major axis of the lenticular configurations forming helicoid rotors with curved surfaces for blades.

4,083,664

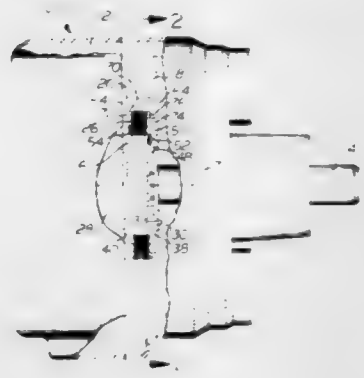
ROTARY HYDRAULIC DEVICE WITH RETAINING MEANS FOR PUMPING ELEMENT BIASING SPRINGS

David John Suttkus, Warren, and Jack Warden Garrett, Utica, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Nov. 8, 1976, Ser. No. 740,035

Int. Cl.[2] F01C *1/00;* F03C *3/00;* B23P *11/00;* F01C *21/00*

U.S. Cl. 418—266 **13 Claims**



1. A hydraulic device comprising a rotor having a central axis and defining a pair of major side surfaces disposed normal to said central axis and an outer portion joining said major side surfaces, a cam surface circumscribing said rotor, said cam surface and said rotor being adapted for relative movement about said central axis of said rotor, said rotor including a series of circumferentially spaced slots, a pumping element being movable in each of said slots, a spring member associated with each of said pumping elements in its respective slot and adapted to apply a force to the pumping element for urging the pumping element toward engagement with the cam surface and supporting said pumping element for rocking movement in following the contour of the cam surface, each pumping element comprising means defining an inner surface area in engagement with a first end portion of a respective spring, each pumping element further defining surface means for blocking axial movement of a first portion of the respective spring in one axial direction relative to said rotor and allowing axial movement of the portion of the respective spring in the opposite axial direction, each of the circumferentially spaced slots in the rotor defining a bottom surface area in engagement with a second end portion of the respective spring, each of the slots further defining surface means for blocking axial movement of a second portion of the respective spring in the axial direction which is opposite to the said one axial direction relative to the rotor and means for allowing axial movement of the second portion of the spring in the said one axial direction relative to the rotor.

4,083,665

APPARATUS FOR MANUFACTURING A FOAMED ARTICLE FORMED OR PRE-EXPANDED POLYSTYRENE

Klaus Schnellmann; Walter Kilchenmann, and Hans Ulrich Hauser, all of Niederweningen, Switzerland, assignors to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland

Filed Oct. 22, 1975, Ser. No. 624,954

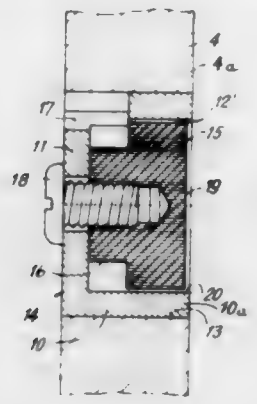
Claims priority, application Switzerland, Oct. 31, 1974, 14586/74

Int. Cl.[2] B29D *27/00*

U.S. Cl. 425—144 **9 Claims**

1. An apparatus for the manufacture of a foamed molded article of plastic, especially pre-expanded polystyrene, comprising a mold provided with a hollow mold compartment, walls defining said hollow mold compartment, said hollow mold compartment being provided at least at the region of one

of its walls with passageways, means within said walls defining a vapor chamber, said passageways communicating the hollow mold compartment with said vapor chamber, a valve arrangement disposed in each passageway and responsive to the vapor temperature for controlling each passageway, each valve arrangement closing its associated passageway when the vapor temperature exceeds a temperature range provided for limited foaming of the plastic molded article, each valve arrangement comprising an insert means provided with seat means provided for the associated passageway and a closure element cooperating with said seat means, said closure element having a free end surface, means for fixedly securing the closure element and insert means to one another at a location remote from said free



end surface, each passageway being formed between the closure element and the seat means thereof, the material of the closure element and the inner width of the passageway are selected such that the closure element comes into contact with the seat means due to thermal expansion when the vapor temperature exceeds said temperature range and with said free end surface of said closure element expanding in the direction of said hollow mold compartment to form a surface which is substantially flush with said wall provided with said passageways, said closure element and said seat means coming out of contact with one another due to contraction of said closure element upon dissipation of the thermal energy which caused said thermal expansion.

4,083,666

COOKIE PRESS

Walker L. Richardson, 3215 Acre La., Boise, Id. 83704

Filed Sep. 29, 1976, Ser. No. 727,858
Int. Cl.[2] A21C *11/18*
U.S. Cl. 425—183 **4 Claims**



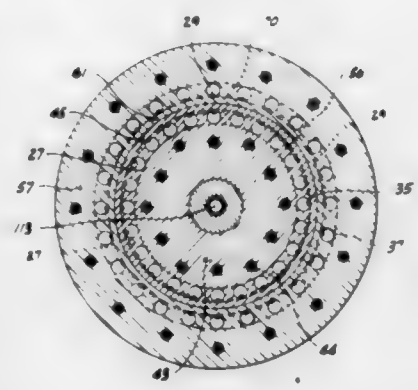
1. An improved cookie press comprising a drive housing, power drive means mounted in said housing, switch means selectively operable to control said power drive means, upstanding cylindrical body threadably engageable with said drive housing, said cylindrical body including a bottom wall having an outlet opposite the threadably engaging end of said body portion, a ram having an upstanding shaft, said ram being disposed in said body, said upstanding shaft having first drive means operatively connected to said power drive means for urging said ram downwardly in said body, a die plate rotatably attached to the bottom of the upstanding cylindrical body having a plurality of ornamental die openings selectively positionable over said outlet, said die plate including second drive means, and third drive means operatively connected to said power drive means and to said second drive means so that actuation of said power drive means rotates said die plate.

4,083,667

APPARATUS FOR EXTRUDING PLASTIC NETTING

Wayne W. Livingston, Osseo, and Gerald W. Melin, Wyoming, both of Minn., assignors to Bemis Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 450,860, Mar. 13, 1974, abandoned.
This application Aug. 14, 1975, Ser. No. 604,486
Int. Cl.[2] B29F *3/04*
U.S. Cl. 425—192 R **20 Claims**



1. Apparatus for extruding plastic netting comprising a shaft, means mounting the shaft for rotation in one direction on a generally vertical axis, a barrel surrounding the shaft with an annular space between the shaft and barrel for downward flow of plastic to be extruded, means mounting the barrel for rotation in the opposite direction on said axis, an inner die on the lower end of the shaft and an outer die on the lower end of the barrel surrounding the inner die, each die having a circular series of extrusion orifices for extrusion of filaments of plastic therethrough, and means operatively associated with said orifices for splitting the downward flow of plastic through said annular space into two separate streams, one for the extrusion orifices of the inner die and the other for the extrusion orifices of the outer die, said splitting means comprising an inner set of passages associated with the inner die for flow of plastic from said annular space to the extrusion orifices of the inner die and on outer set of passages associated with the outer die for flow of plastic from said annular space to the extrusion orifices of the outer die, the total cross-sectional area of the passages of the inner set being substantially equal to the total cross-sectional area of the passages of the outer set substantially to equalize the rate of flow of the plastic from said annular space to the extrusion orifices for the inner die and the rate of flow of the plastic to the extrusion orifices of the outer die.

4,083,668

NOODLE MAKING MACHINE

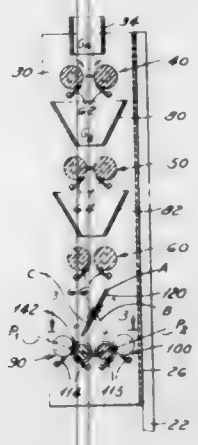
John Bardwick, III, 1733 Westridge, Ann Arbor, Mich. 48105, and Ligor G. Fenerli, 102 S. First St., Ann Arbor, Mich. 48104

Filed Apr. 28, 1976, Ser. No. 681,025
Int. Cl.[2] A21C *11/24*
U.S. Cl. 425—194 **4 Claims**

1. A noodle making machine which comprises:
(a) a vertical mount frame,
(b) a plurality of sets of feed rollers each set comprising a roller on either side of, and substantially parallel to, a common vertical plane and being vertically spaced relative to each other set and mounted horizontally on said frame, said rollers of each set being spaced from each other to provide progressively narrower gaps as the sets are spaced downwardly to provide a vertical fall path for a comestible,
(c) cutter rollers on said frame below said plurality of sets of feed rollers, said cutter rollers comprising at least one roll having a series of axially spaced lands and grooves,

(d) driving means on said frame connected to drive said feed and cutter rollers wherein the facing surfaces of each pair at the cleavage are moving downwardly, and

(e) said cutter rollers comprising two sets of roller pairs spaced horizontally from the vertical fall path of the feed



rollers, each set being disposed to perform independently of the other and movable guide means below the lowermost feed rather set to divert descending comestible dough from the vertical fall path between said feed rollers to the cleavage between one of said sets of cutter rollers.

4,083,669

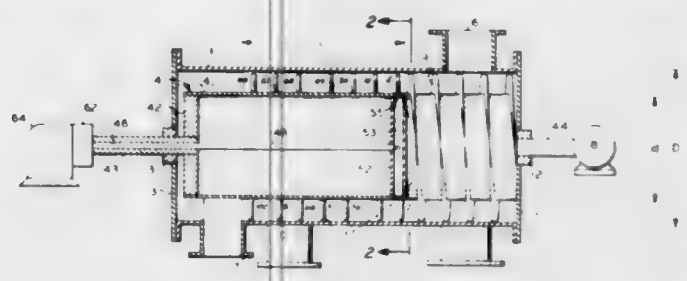
CARBON BLACK PELLETER WITH INTERNAL FLUID INJECTION

Clinie E. Cole, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 15, 1976, Ser. No. 705,484

Int. Cl.[2] B01J *2/10*; B29B *1/02*; C09C *1/58*

U.S. Cl. 425—222 **18 Claims**



1. A carbon black pin pelleter comprising

a. a cylindrically shaped longitudinally arranged housing,

b. inlet means for the introduction of carbon black through said housing attached to the housing near the upstream end of the pelleter,

c. outlet means for removal of pellets, said outlet means attached to said housing near the downstream end of the pelleter,

d. a hollow shaft coaxially and rotatably arranged within said housing,

e. pelleting pins attached to said shaft and extending essentially radially from said shaft toward said housing,

f. two parallel plates attached to the inside of said hollow shaft at a location proximate to the upstream pelleting pins on said shaft, said plates being arranged essentially parallel to each other and essentially perpendicular to the axis of said housing and connected along their circumference in a fluid-tight manner to the interior of the shaft,

g. at least one opening through said shaft, said opening being so adapted as to connect the interior of said shaft confined between said plates with the annular space between the shaft and the housing, and

h. conduit means to provide a fluid connection between the interior of said shaft confined between said plates and a source of pelleting fluid.

4,083,670

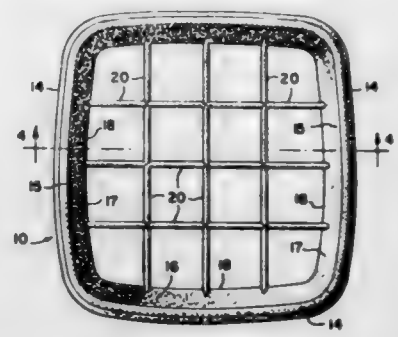
APPARATUS FOR MAKING HIGH STRENGTH OPEN BOTTOM PACKAGING TRAY

Richard F. Reifers, New Canaan, Conn., and Henry A. Lord, Cape Elizabeth, Me., assignors to Diamond International Corporation, New York, N.Y.

Continuation of Ser. No. 568,784, Apr. 17, 1975, abandoned, which is a division of Ser. No. 481,850, Jun. 21, 1974, Pat. No. 3,894,679. This application Feb. 18, 1977, Ser. No. 769,989

Int. Cl.[2] B29C *17/00*; B29J *1/00*

U.S. Cl. 425—398 **8 Claims**



1. A finishing apparatus for imparting final form to an open bottom tray of molded pulp or the like with vertically extending intersecting ribs comprising male die means including a resiliently deformable member for reception of a preform of molded pulp and a rigid core member underlying said deformable member and extending around peripheral edges of said deformable member, and female pressing die means including a plurality of rigid bar elements for pressing a preform into said male die means whereby final form is imparted to the preform, the deformable member including a plurality of pairs of spaced apart, upstanding webs forming rib grooves between adjacent sides, said rib grooves intersecting in at least two directions and having diverging side portions which facilitate entry of a preform and said bar elements into said rib grooves of said male die means, said pairs of groove forming webs having remote sides at least one of which forms a cavity with remote sides of others of said groove forming webs, said pressing bar elements of said female pressing die means intersecting in at least two directions corresponding to said rib grooves of said male die means whereby said pressing bar elements penetrate into said rib grooves to cooperatively give final form to the generally vertically extending ribs of the tray to be formed, said female die means also including downwardly extending plug portions which during engagement of said male and female die means enter into engagement with said cavities formed by said webs in said male die in direct lateral contact therewith and thus subject said rib forming webs and preform received in said rib grooves to lateral compression, said deformable member being thus deformed having sufficient resiliency to recover the free form thereof upon disengagement of said male and female die means whereby an open bottom tray given final form in said apparatus may be readily removed therefrom.

4,083,671

DEVICE FOR THE PRODUCTION OF MOLDED ARTICLES FROM FOAMABLE PLASTICS

Jean-Pierre Niederst, Schotmar, and Karl Holzinger, Bad Oeynhausen, both of Germany, assignors to Herbert Kannegiesser Kommanditgesellschaft, Vlotho, Germany

Filed Dec. 30, 1976, Ser. No. 755,882

Claims priority, application Germany, Jan. 12, 1976, 2600900; Jan. 12, 1976, 7600626[U]

Int. Cl.[2] B29C *1/16*

U.S. Cl. 425—450.1 **4 Claims**

1. An apparatus for producing molded articles from expandable plastics, such as polyurethane, comprising:

a. a lower platen,

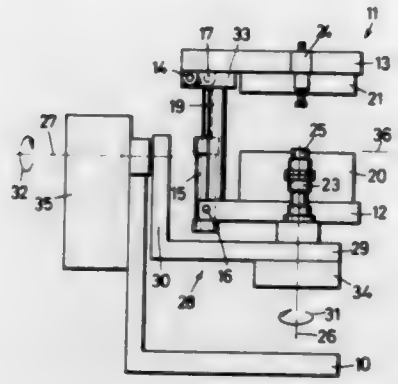
b. a pair of spaced, parallel guide posts rigidly mounted on

opposite sides of the lower platen proximate one end thereof and perpendicular thereto,

c. a traversing member slidably mounted on the guide posts and parallel to the lower platen,

d. an upper platen hinged at one end to the traversing member about an axis perpendicular to the guide posts and laterally offset from the lower platen, the upper platen resting on the traversing member in a position parallel to the lower platen and being pivotable about its hinge axis in a direction upward and away from the lower platen,

e. a bipartite, split mold whose mating halves are individually mounted on the respective upper and lower platens facing each other, and



f. a double acting extendable and retractable fluid operating cylinder and piston rod assembly, one end of said assembly being hingedly mounted to the lower platen and the other end of said assembly being hingedly mounted to the upper platen proximate the hinge axis thereof, whereby the upper platen and mold half mounted thereon is movable toward and away from the lower platen and mold half mounted thereon with both platens being maintained parallel to each other, and wherein the further extension of the cylinder and piston rod assembly after the traversing member has reached its upper limit of travel pivots the upper platen upward and away from the lower platen.

4,083,672

AUTOMATIC HUB AND APPARATUS FOR DISASSEMBLY OF THE HUB

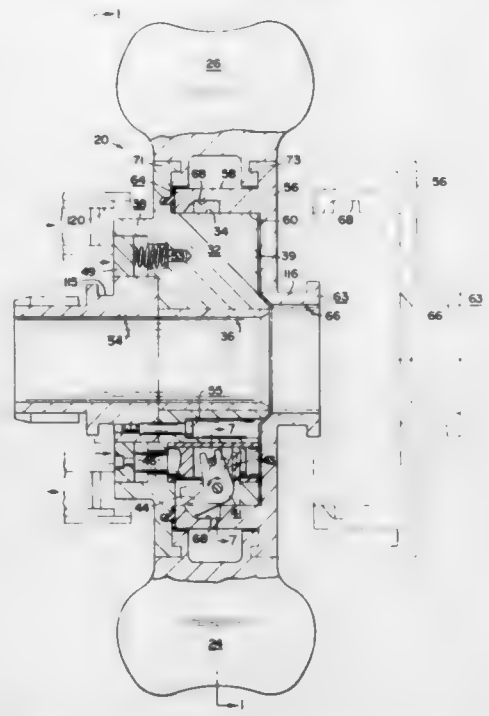
Dolar Harshadrai Vaishnav, Cuyahoga Falls, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 28, 1977, Ser. No. 782,252

Int. Cl.[2] **B29C** *5/00;* **B29H** *3/08;* **B29F** *1/00;* **B29H** *17/00*

U.S. Cl. 425—457 **10 Claims**

1. A hub assembly for holding a plurality of core segments in assembled relationship and providing for quick disassembly of the core segments including in combination a hub member comprising an annular member having an outer peripheral surface and a bore defining an inner peripheral surface, said hub member having first and second axial end portions, a plurality of circumferentially spaced and pivotally mounted latch members carried by said hub member, each latch member having first and second end portions and being movable between latched and unlatched positions, a plurality of circumferentially spaced pin members extending into said hub member from said first axial end portion therof, a first end portion of said pin members being operatively connected to a first end portion of a respective latch member, a locking ring located at said first axial end portion of said hub member, a second end portion of said pin members being operatively connected to said locking ring, said locking ring being movable between first and second positions to move said latch member between said latched and unlatched positions, spring means acting between said locking ring and said hub member and at all times urging said locking ring to its said first position, a hub ring comprising an annular member having an outer peripheral surface and an inner peripheral surface, said hub ring having first and second axial end portions, wall means defining a bore through said first axial end portion of said hub ring, wall means defining a latch receiving recess means extending into said hub ring from said inner peripheral surface thereof, a first core engaging flange extending generally radially outwardly from said outer peripheral surface of said hub member and adapted to engage one side portion of a plurality of assembled core sections, a second core engaging flange extending generally radially outwardly from said outer peripheral surface of said hub ring and adapted to engage another side portion of a plurality of assembled core sections, said hub ring residing on said hub member with said inner peripheral surface thereof engaging said outer peripheral



surface of said hub member and with said second axial end portion of said hub ring engaging said first core engaging flange on said hub member, said second end portions of said latch members residing in said latch receiving recess means of said hub ring in said first position of said locking ring to secure said hub ring on said hub member, said second end portions of said latch members being located out of said latch receiving recess means in said second position of said locking ring thereby permitting removal of said hub ring from said hub member.

4,083,673

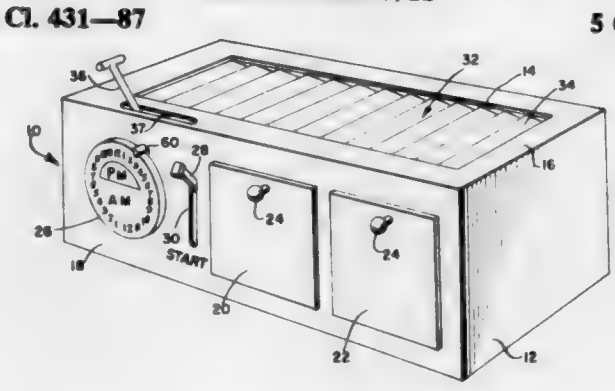
PORTABLE HEATING APPARATUS

Ralph C. Robinson, Charlotte, N.C., assignor to General Time Corporation, Thomaston, Conn.

Filed May 11, 1976, Ser. No. 685,322

Int. Cl.[2] **F23N** *5/22*

U.S. Cl. 431—87 **5 Claims**



1. An automatic heating system for heating a confined area comprising, in combination:

(a) housing means;

(b) catalytic means including a catalyst disposed in said housing means;

(c) means providing a fuel for reaction with said catalyst;

(d) means initating an exothermic reaction of said fuel in the presence of said catalyst, said initating means including

(1) a heating element for initating said reaction;
(2) a source of power,
(3) means connecting said power source and said heating element, and
(4) means in series with said heating element for energizing said heating element at a predetermined time and over a predetermined period of time; and

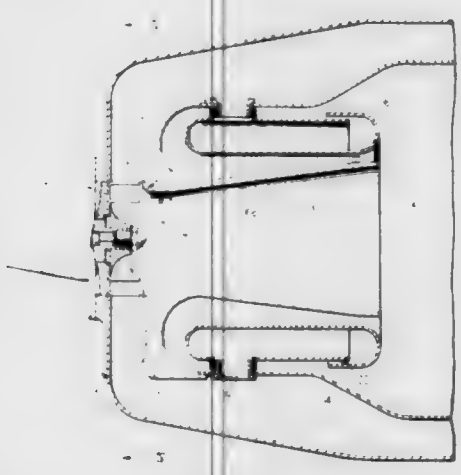
(e) shutter means for opening and closing said housing to ambient conditions whereby said exothermic reaction will continue for a period of time during which said shutter means remains open.

4,083,674

FILM EVAPORATION COMBUSTION CHAMBER

Immanuel Holzapfel, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Mar. 15, 1976, Ser. No. 667,086
Claims priority, application Germany, Mar. 14, 1975, 2511171
Int. Cl.[2] F23D *5/06, 11/04*
U.S. Cl. 431—116 **39 Claims**



1. A film-evaporating combustion chamber, comprising an evaporator pipe means having inner wall surfaces wetted with a fuel film from a fuel feed means and means for producing a swirling combustion air flow, in which evaporating fuel is seized by the swirling combustion-air flow sweeping along an inner diameter of the evaporator pipe means with the evaporating fuel being mixed with the combustion-air flow, characterized in that the fuel feed means includes at least one feedline means which extends from an inside of the evaporator pipe means toward an inner wall means of the evaporator pipe means, a discharge opening of the feedline means being located in one of an inlet area of the evaporator pipe means or an area substantially directly in front of the inlet area of the evaporator pipe means.

4,083,675

SCRAP PREHEATING SYSTEM

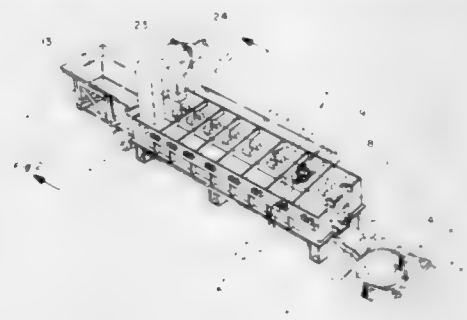
John R. Fellnor, Yardley, Pa., and Thomas J. Dzakowic, Delran, N.J., assignors to Melting Systems, Inc., Burlington, N.J.

Division of Ser. No. 525,838, Nov. 21, 1974, Pat. No. 3,985,497.
This application Aug. 2, 1976, Ser. No. 710,750
Int. Cl.[2] F27D *3/00;* **F27B** *15/18*
U.S. Cl. 432—1 **5 Claims**

1. The method of preheating scrap metal and fully burning unburned hydrocarbons in the products of combustion comprising the steps of:

enclosing the scrap metal with a burner hood while directing the flames from a burner upon the scrap metal; and

drawing the hot products of combustion from the burner hood through an exhaust chamber positioned adjacent the burner hood and mixing air with the products of combus-



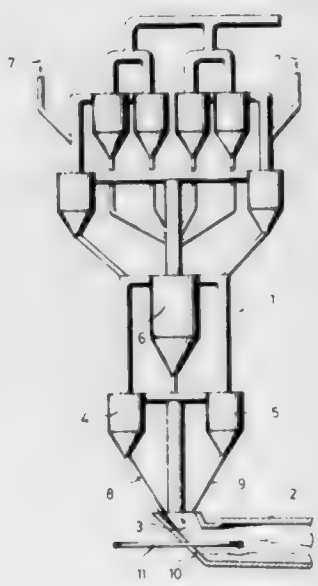
tion in the exhaust chamber to complete combustion of any unburned hydrocarbons.

4,083,676

METHOD FOR HEAT TREATING FINE-GRAIN MATERIAL

Horst Ritzmann, Enniger; Heinz Thiemeyer, Neubeckum; Georg Schepers, Ennigerloh, and Wolf Goldmann, Neubeckum, all of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed Oct. 12, 1976, Ser. No. 731,527
Claims priority, application Germany, Oct. 14, 1975, 2545933
Int. Cl.[2] F27B *15/00, 7/02*
U.S. Cl. 432—14 **8 Claims**



1. A method for heat treating fine-grain material such as raw cement meal comprising preheating said material; introducing said preheated material to a rotary kiln for subsequent calcining; introducing fuel to said kiln in contact with said preheated material immediately following introduction of said material to said kiln; and combusting said fuel virtually entirely in said kiln and substantially at said material while preventing gasification of said fuel prior to its combustion.

4,083,677

METHOD AND APPARATUS FOR HEATING A FURNACE CHAMBER

James E. Hovis, Pittsburgh, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.

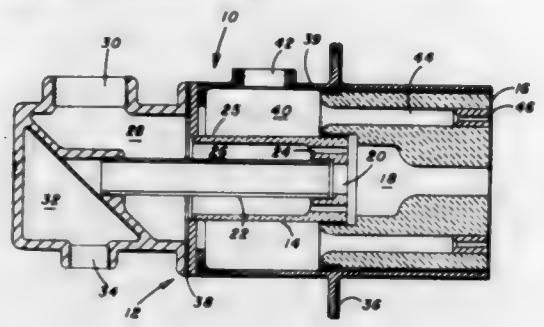
Filed Sep. 22, 1976, Ser. No. 725,563
Int. Cl.[2] F23N *1/02;* **F27D** *7/00*
U.S. Cl. 432—19 **9 Claims**

1. A method of heating a metallurgical furnace chamber or the like to maintain high momentum levels during a heat treating cycle so as to obtain a substantially uniform temperature throughout a charge positioned within the chamber comprising the steps for:

A. firing a plurality of high velocity burners by introducing

fuel and combustion air through combustion zones of said burners at a high fuel input rate and substantially in the stoichiometric ratio;

B. reducing the fuel input rate while maintaining the stoichiometric ratio as a charge temperature approaches a heat treat temperature; and



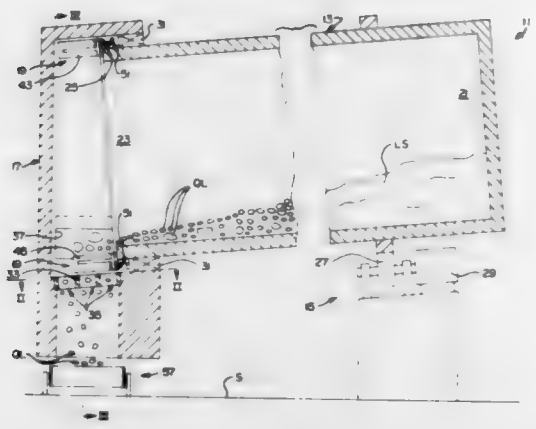
C. introducing excess air external of the combustion zones of said high velocity burners to maintain a desired momentum level within the furnace chamber during the remainder of the heat treat cycle.

4,083,678

ROTARY KILN

Tommy L. Rickman, Michie, Tenn., assignor to Tennessee River Pulp & Paper Company, Counce, Tenn.

Filed Nov. 5, 1976, Ser. No. 739,310
Int. Cl.[2] F27B *9/18*
U.S. Cl. 432—61 **5 Claims**



3. An improved rotary kiln of the type including a hollow body means for receiving a quantity of material to be treated and having an opened end for allowing said material to exit said body means after said material has been treated, means for rotating said body means, and shroud means for covering said opened end of said body means and having grate means for allowing particles of said material of a certain maximum size to pass therethrough, wherein the improvement comprises:

(a) chute means provided in said shroud means for allowing particles of said material of a size greater than the maximum size capable of passing through said grate means to pass therethrough; and

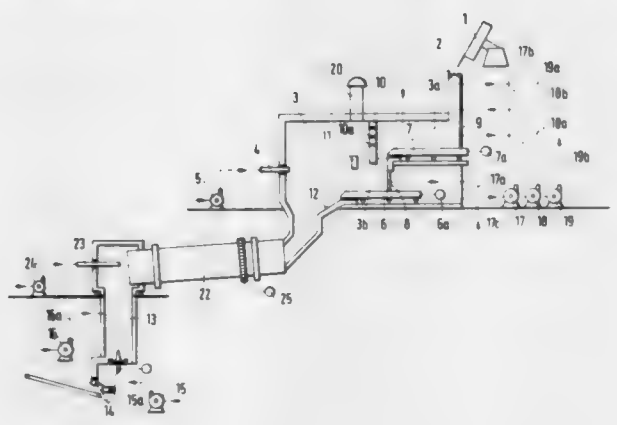
(b) arm means fixedly attached to said body means for rotation therewith and for moving any particles of said material of a size greater than the maximum size capable of passing through said grate means to said chute means.

4,083,679

INSTALLATION FOR THE BURNING OF SINTERING AND COOLING OF CEMENT CLINKER, LIME, MAGNESITE, DOLOMITE, AND THE LIKE

Erich Bade, Beckum, Germany, assignor to Readymix Cement Engineering GmbH & Co. KG, Ratingen, Germany

Filed Jan. 17, 1977, Ser. No. 760,018
Claims priority, application Germany, Jul. 9, 1976, 2630895
Int. Cl.[2] F27B *1/04*; C04B *7/02*
U.S. Cl. 432—99 **16 Claims**



1. An installation for the burning or sintering and subsequent cooling of cement clinker, lime, magnesite, dolomite, and similar materials in granular or crushed form, the installation comprising in combination:

an enclosed elongated burn chamber;

burner means supplying a flow of hot burn gases to a forward portion of the burn chamber;

gas circulation means drawing the used burn gases from the rear of the burn chamber;

at least two generally horizontally extending materials carrying movable platforms arranged inside the burn chamber in a staggered, vertically and rearwardly spaced relationship, so that materials which are discharged over the forward edge of the upper platform fall onto the lower platform, forming on the latter a forwardly facing natural slope on which the materials are exposed to the rearwardly flowing burn gases;

a charging shaft opening into the burn chamber at a point above the upper movable platform, so that raw materials which are fed into the burn chamber through said shaft form a similar, forwardly exposed natural slope on said platform;

a materials retaining back wall associated with each movable platform;

a platform drive connected to each movable platform, the drive imparting to the platform a reciprocating motion which causes materials from said natural slope to be discharged over the forward edge of the platform;

an intermediate wall extending downwardly from the ceiling of the burn chamber, said wall having a lower edge which is located forward of the upper platform and which reaches downwardly into contact with the upper end portion of the materials slope on the lower platform, said wall thereby subdividing the burn chamber into a forehearth for the upper platform and a main hearth for the lower platform.

4,083,680

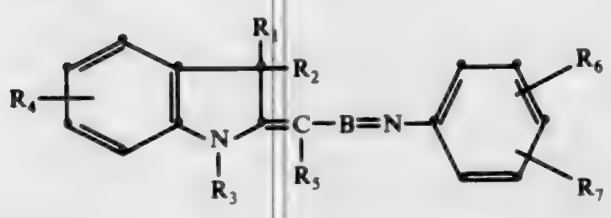
PRINTING INKS FOR TRANSFER PRINTING

Hubertus Psaar, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 468,934, May 10, 1974, abandoned.
This application Feb. 17, 1976, Ser. No. 658,470
Claims priority, application Germany, Apr. 18, 1973, 2325155
Int. Cl.[2] D06P *3/00*
U.S. Cl. 8—2.5 A 2 Claims

1. In a process for transfer printing of acid-modified textile fiber materials wherein a dyestuff is applied to a temporary carrier web and subsequently transferred to the textile material by being pressed against the textile and heated to cause the dyestuff to sublime and be adsorbed by the textile material, the improvement which comprises employing a printing ink consisting essentially of

(a) as a dyestuff intermediate a dyestuff base which can be sublimed at 160°–240° C, of the formula



(I)

wherein

R_1 and R_2 represent an alkyl or conjointly with the C atom by which they are linked form a carbocyclic ring;

R_3 denotes hydrogen alkyl, cycloalkyl or aralkyl;

R_4 denotes hydrogen, alkyl, cycloalkyl, aryl, aryl, aralkyl, alkoxy, aryloxy, aralkoxy, alkylamino, dialkylamino, arylamino, aralkylamino, acylamino, sulphonamido, carbonamido, alkoxycarbonyl, acyl, nitrile or halogen;

R_5 denotes hydrogen, alkyl, alkoxycarbonyl, or nitrile;

R_6 and R_7 denote hydrogen, alkyl, alkoxy, aralkoxy, acylamino, dialkylamino or alkylmercapto; or

R_6 and R_7 conjointly form a heterocyclic structure; and

B represents CH, N, or C-alkyl;

(b) a practically anhydrous neutral organic solvent; and

(c) a neutral resin which is soluble in this solvent.

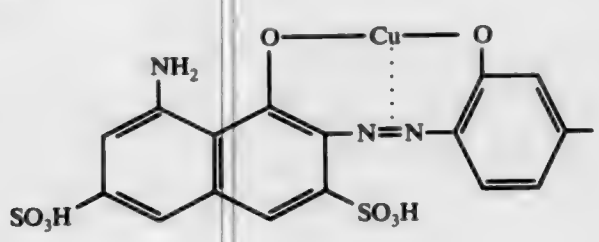
4,083,681

COMPOSITIONS OF METAL COMPLEXES OF DISAZO ACID DYES STABILIZED WITH AMINO ETHERS

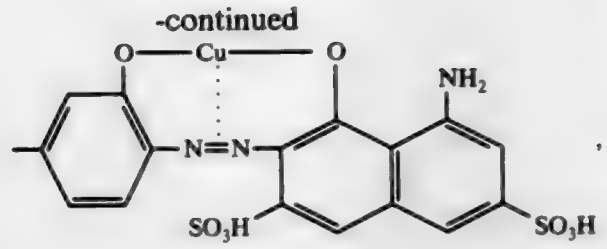
Alfred Frei, Thalwil, and August Schweizer, Muttenz, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 314,104, Dec. 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 824,296, May 13, 1969, abandoned. This application Oct. 8, 1975, Ser. No. 620,641
Claims priority, application Switzerland, Jun. 14, 1968, 8887/68; Aug. 9, 1968, 11971/68; Feb. 7, 1969, 1873/69; Feb. 21, 1969, 2708/69
Int. Cl.[2] D06P *1/655, 3/32, 3/60;* D21H *1/46*
U.S. Cl. 8—7 9 Claims

1. A stable liquid dye composition comprising about 5 to 15% by weight of a dye, said dye being the compound of the formula



-continued



or a salt thereof,

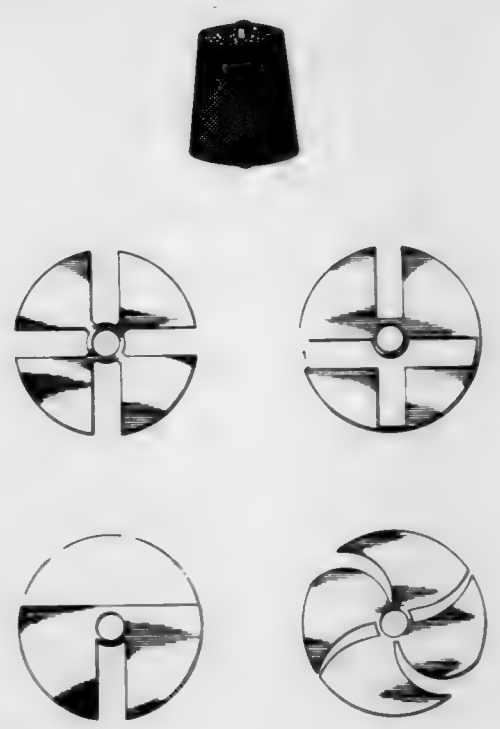
about 2 to 10% by weight of the stabilizer of the formula $H_2N—CH_2CH_2—O—CH_2CH_2OH$, said amount of said stabilizer being effective for the stabilization of said dye, and water.

4,083,682

METHOD FOR PRODUCING VARIEGATED NYLON YARN

Richard L. Gambill, Hope Mills, N.C., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 451,265, Mar. 14, 1974, abandoned. This application Feb. 3, 1976, Ser. No. 654,838
Int. Cl.[2] D06P *3/04, 5/12, 5/22*
U.S. Cl. 8—15 6 Claims



1. A method for producing a variably dyed nylon yarn which comprises non-uniformly applying a reagent to one or both ends of a spool of said yarn, said reagent being effective to alter the affinity of the portions of the yarn so treated to a dyestuff, followed by dyeing of the yarn with the dyestuff.

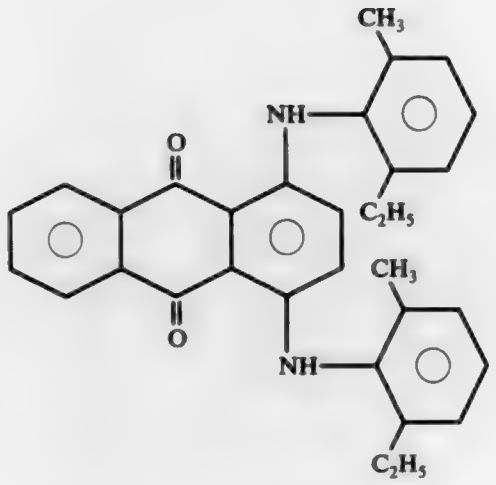
4,083,683

METAL-CONTAINING POLYPROPYLENE DYED WITH 1,4-BIS-(2'-METHYL-6'-ETHYLANILINO)ANTHRAQUINONE

Raouf Botros, Beech Creek, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

Filed Mar. 11, 1977, Ser. No. 776,895
Int. Cl.[2] C09B *1/00;* C07C *97/12*
U.S. Cl. 8—39 D 2 Claims

1. Dyed metal-containing polypropylene fibers, the dye being:



the metal of said metal-containing polypropylene fibers being selected from the group consisting of aluminum, nickel and zinc.

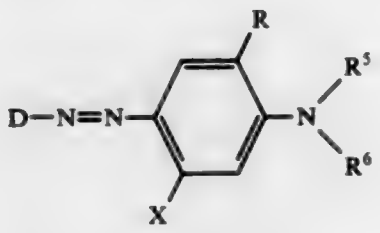
4,083,684

UNIFORMLY DYED WATER-SWELLABLE CELLULOSIC FIBERS

Guenter Hansen, Ludwigshafen; Hermann Kaack, Wachenheim; Wolf-Dieter Kermer, Fussgoenheim, and Guenter Meyer, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Germany

Filed Feb. 18, 1977, Ser. No. 770,095
Claims priority, application Germany, Mar. 1, 1976, 2608345
Int. Cl.[2] C09B *27/00;* D06P *1/02*
U.S. Cl. 8—41 R **18 Claims**

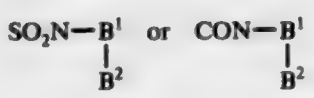
1. Uniformly dyed water-swellable cellulosic fibers, said fibers being fast to washing, dry cleaning, sublimation and light and having been produced by contacting water-swellable cellulose fibers sequentially or concomitantly with water, ethylene glycol or a derivative thereof and, while the fibers are still swollen, with an essentially water-insoluble dye of the formula



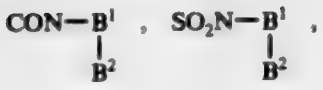
in which

D is phenyl substituted by fluoro, chloro, bromo, nitro, cyano, trifluoromethyl, methylsulfonyl, ethylsulfonyl, phenylsulfonyl,

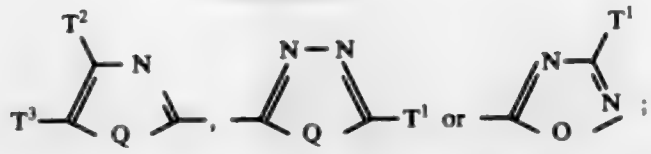
C_1 to C_8 alkoxycarbonyl, phenoxycarbonyl, benzyloxycarbonyl, phenoxyethoxycarbonyl, C_1 to C_4 alkoxyethoxycarbonyl, methyl, ethyl, methoxy, ethoxy, phenoxy, carboxy, phenylazo, phenylazo bearing fluoro, chloro, bromo, nitro, cyano, trifluoromethyl, methyl, ethyl, methoxy, ethoxy,



as a substituent,



-continued



benzothiazolyl bearing nitro, thiocyanato, methylsulfonyl or methoxy as a substituent; benzoisothioazolyl bearing chloro, bromo, nitro or cyano as a substituent; thioazolyl bearing phenyl or nitro as a substituent or thiodiazolyl bearing phenyl, methylmercapto, ethylmercapto, cyanoethylmercapto or C_1 to C_4 alkoxycarbonylethylmercapto as a substituent;

Q is O or S;

R is hydrogen, methyl, methoxy or ethoxy;

X is hydrogen, chloro, methyl, C_2 to C_4 alkanoylamino, chloroacetylamino, trifluoroacetylamino, benzoylamino, methylsulfonylamino, phenylsulfonylamino or $NHCOR^3$—O—Ar;

R^5 is C_1 to C_4 alkyl, allyl, β-hydroxyethyl, β-cyanoethyl, β-acetoxyethyl, β-methoxyethyl, β-ethoxyethyl, cyclohexyl, benzyl, β-phenylethyl or $C_2H_4OCOR^3$—OAr;

R^6 is C_1 to C_4 alkyl, allyl, acetoxyethyl, β-cyanoethyl, benzyl or $C_2H_4OCOR^3OAr$;

B^1 is hydrogen, C_1 to C_8 alkyl, cyclohexyl, β-hydroxyethyl, benzyl, phenylethyl or phenyl optionally bearing chloro, methyl or methoxy as a substituent;

B^2 is hydrogen, C_1 to C_4 alkyl or β-hydroxyethyl;



is pyrrolidyl, piperidyl, morpholyl or $NH(CH_2)_3OC_2H_4OB^3$;

B^3 is C_1 to C_4 alkyl, cyclohexyl, phenyl or tolyl;

T^1 is C_1 to C_8 alkyl, methoxymethyl, phenoxymethyl, phenyl or phenyl bearing chloro, bromo, nitro, methoxy or ethoxy as a substituent;

T^2 is hydrogen or methyl;

T^3 is methyl, ethyl, phenyl or phenyl bearing chloro, bromo, or methyl as a substituent;

T^2 and T^3 together are a fused benzene ring optionally bearing methoxy, ethoxy, methyl or chloro as a substituent;

R^3 is C_1 to C_3 alkylene; and

Ar is phenyl or phenyl bearing chloro, bromo, methyl or methoxy as a substituent and at least one of the radicals R^5, R^6 or X contains a group of the formula $OCOR^3$—OAr.

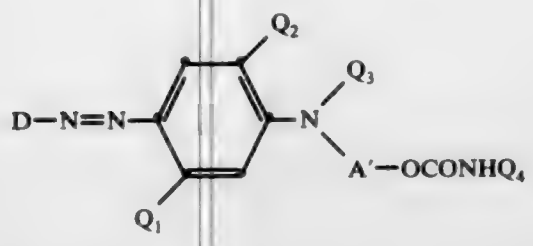
4,083,685

PROCESS FOR DYEING SYNTHETIC FIBRE MATERIALS FROM AN ORGANIC WATER-IMMISCIBLE SOLVENT

Winfried Kruckenberg, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 474,990, May 31, 1974, abandoned.
This application Jul. 6, 1976, Ser. No. 703,013
Claims priority, application Germany, Jun. 2, 1973, 2328160
Int. Cl.[2] C09B *27/00;* D06P *1/02*
U.S. Cl. 8—41 R **8 Claims**

1. In a process for dyeing a synthetic fibre material from an organic water-immiscible solvent by the exhaustion process, the improvement comprising employing a dispersion of a dyestuff of the formula:



wherein

D is the radical of an aromatic carbocyclic or aromatic-heterocyclic diazo component;

Q_1 is hydrogen; C_1–C_4-alkyl; C_1–C_4 alkoxy; halogen; C_2–C_5 alkylcarbonylamino which is unsubstituted or substituted with hydroxyl, halogen, CN, or C_1–C_4-alkoxy; phenylcarbonylamino which is unsubstituted or mono-, di, or tri-substituted with C_1–C_4-alkyl; C_1–C_4-alkoxy, halogen, hydroxyl, formylamino, or ureido;

Q_2 is hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen;

Q_3 is hydrogen, $C_2H_4OCONHQ_4$, C_1–C_4-alkyl which is unsubstituted or substituted with CN, Cl, -$CONH_2$ or C_1–C_2-alkoxy;

Q_4 is hydrogen, amino, C_1–C_4-hydroxyalkylamino, OH, methyl, or hydroxphenyl; and

A′ is C_1–C_4-alkylene; in the dyeing liquor.

6. In a process for dyeing a synthetic fibre material from an organic water-immiscible solvent by the exhaustion process, the improvement comprising employing a dispersion of a dyestuff of the formula:

$$Y_1—Ar—N=N—B—Y_2$$

wherein

Ar is unsubstituted or substituted benzene free of ionic groups;

B is unsubstituted or substituted pyrazolone, aminopyrazole, indole, or imidazole; and

Y_1 and Y_2 independently of one another are hydrogen or —X—A—$OCONR_1R_2$, wherein X is a direct bond or a bridging group, A is alkylene, R_1 is hydrogen or alkyl, and R_2 is hydrogen, alkyl, cycloalkyl, aralkyl, aryl or substituted or unsubstituted amino, with the proviso that Y_1 and Y_2 are not simultaneously hydrogen; in the dyeing liquor.

4,083,686

UNIFORMLY DYED WATER-SWELLABLE CELLULOSIC FIBERS

Peter Dimroth, Mannheim; Walter Kurtz, Bad Durkheim; Volker Radtke, Hassloch, and Werner Juenemann, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

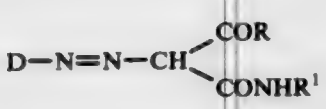
Filed Feb. 28, 1977, Ser. No. 772,768

Claims priority, application Austria, Mar. 18, 1976, 2024/76

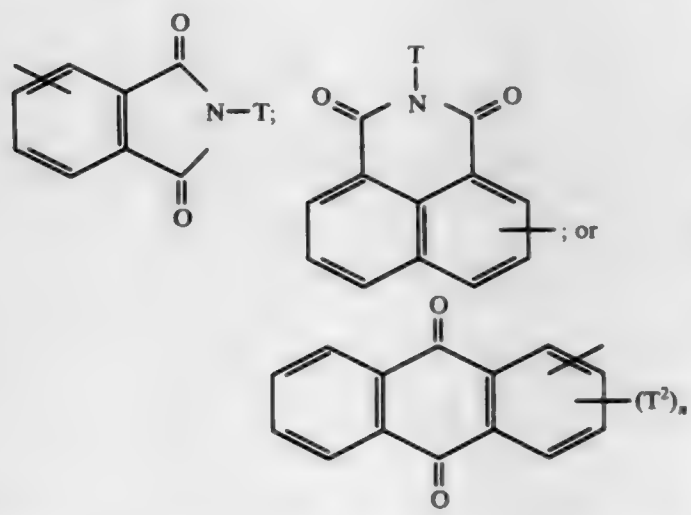
Int. Cl.[2] C09B *27/00, 67/00*

U.S. Cl. 8—41 R **13 Claims**

1. Uniformly dyed water-swellable cellulosic fibers, said fibers being fast to washing, dry cleaning, sublimation and light and being produced by contacting water-swellable cellulosic fibers successively or simultaneously with water, ethylene glycol or a derivative of ethylene glycol and, while the fibers are still swollen, with an essentially water-insoluble dye of the formula



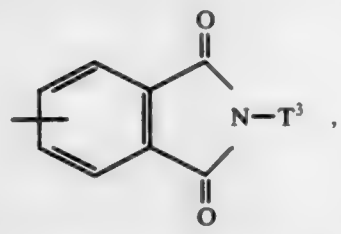
in which D is phenyl substituted by fluorine, chlorine, bromine, methyl, trifluoromethyl, ethyl, methoxy, ethoxy, phenoxy, nitro, cyano, methylsulfonyl, ethylsulfonyl, phenylsulfonyl, alkoxycarbonyl or 1 to 8 carbon atoms acetylamino, benzoyl, carbamoyl or sulfamoyl which are N-substituted by alkyl of 1 to 8 carbon atoms, by phenyl of by phenyl which is substituted by chlorine, methyl or methoxy, oxdiazol-5-yl, 3-phenyloxdiazol-5-yl, 4-phenyloxdiazol-2-yl, phenylazo, phenylazo substituted by chlorine, bromine, nitro, methyl, ethyl, methoxy or ethoxy, $CONH(CH_2)_3OC_2H_4OT^1$ or $SO_2NH(CH_2)_3OC_2H_4OT^1$;



where *n* is 0 or 1, T is C_6H_5, $C_2H_4C_6H_5$, $(CH_2)_3OC_2H_4OC_6H_5$ or



T^1 is alkyl of 1 to 8 carbon atoms, benzyl, phenylethyl, cyclohexyl, phenyl or tolyl, T^2 is methyl, chlorine or bromine, R is alkyl of 1 to 4 carbon atoms, phenyl or phenyl substituted by chlorine, bromine, methyl, methoxy or ethoxy, and R^1 is phenyl, or phenyl substituted by chlorine, bromine, methyl, ethyl, methoxy, ethoxy, benzyloxy, phenoxy, chlorophenoxy, alkoxycarbonyl (where alkoxy is of 1 to 8 carbon atoms), cyano, phenylsulfonyl, $CONHT^3$ or SO_2NHT^3, or



where T^3 is alkyl of 1 to 8 carbon atoms, cyclohexyl, benzyl, phenylethyl, phenyl, phenyl substituted by chlorine, methyl, methoxy or ethoxy, or $(CH_2)_3OC_2H_4OT^1$.

4,083,687

PROCESS FOR THE DYEING OF THERMOPLASTICS

André Pugin, Riehen, and Volkhard Wiese, Pratteln, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

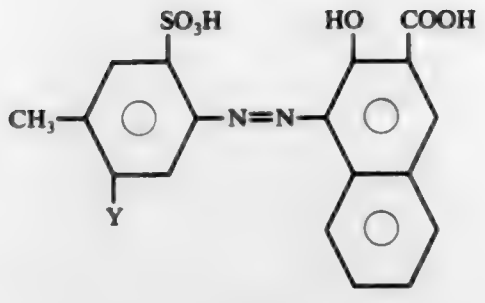
Filed Jun. 18, 1976, Ser. No. 697,604

Claims priority, application Switzerland, Jul. 4, 1975, 8743/75

Int. Cl.[2] C09B *45/00;* **D06P** *3/00*

U.S. Cl. 8—42 D **7 Claims**

1. A process for dyeing polyolefins in which process there are used Mg or Cd salts of an azo dye sulphonic acid of the formula



wherein Y represents hydrogen or a chlorine atom.

4,083,688

DISAZO PYRAZOLYL DYED POLYESTER FIBERS

Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

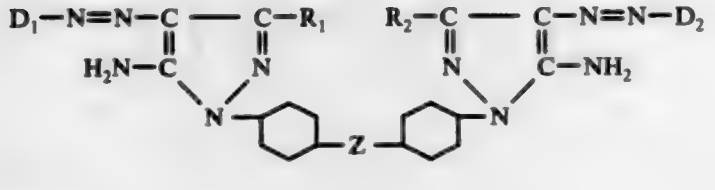
Continuation-in-part of Ser. No. 191,535, Oct. 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 816,394, Apr. 15, 1969, abandoned. This application Oct. 29, 1973, Ser. No. 410,747

Claims priority, application Switzerland, Apr. 24, 1972, 6112/72

Int. Cl.[2] C09B *35/22, 35/24, 35/34;* D06P *3/48*

U.S. Cl. 8—41 C 5 Claims

1. Polyester fiber dyed with a disazo disperse dyestuff, free from $—SO_3H$ groups impartingg solubility in water, and having the formula

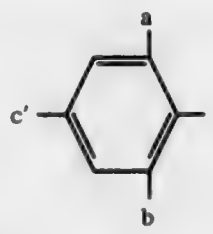


wherein

Z is —O— or —NH-;

R_1 and R_2 each represent methyl or methoxy; and

D_1 and D_2 each is a group of the formula



wherein a is hydrogen, cyano, chloro, bromo, methyl, trifluoromethyl, carboxymethoxy, methylsulfonyl, nitro, methoxy, ethoxy, sulfonic acid amide, N-C_{1-3} alkyl sulfonic acid amide, N-isopropyloxypropyl sulfonic acid amide or N,N-di-C_{1-2}alkylsulfonic acid amide; *b* is hydrogen, bromo or chloro; *c'* is C_{1-2}-alkylcarbonyl, C_{1-2}-alkylaminocarbonyl, nitro, cyano C_{1-2}-alkylsulfonyl, carbo-C_{1-2}alkoxy, carbocyclohexyloxy, β-chloroethylaminosulfonyl, sulfonic acid amide, N-C_{1-3}alkyl sulfonic acid amide, N-isopropyloxypropyl sulfonic acid amide or N,N-di-C_{1-2}-alkyl sulfonic acid amide.

4,083,689

SOLID ε-CAPROLACTAM DYESTUFF PREPARATIONS

Karlheinz Wolf; Konrad Nonn, both of Leverkusen; Reinhold Hörnle, Cologne, and Hans Werner Petroll, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 26, 1975, Ser. No. 617,195

Claims priority, application Germany, Sep. 26, 1974, 2446040; Dec. 27, 1974, 2461504

Int. Cl.[2] C09B *67/00*

U.S. Cl. 8—85 B 12 Claims

1. A solid dyestuff preparation in granular form consisting essentially of one or more water-soluble dyestuffs dispersed or dissolved in ε-caprolactam and formed by (a) dispersing or dissolving said dyestuff in an ε-caprolactam melt; (b) solidifying the resulting dyestuff/ε-caprolactam melt by cooling; and (c) shaping the melt during or after cooling into granules.

4,083,690

AUTOMATIC PREPARATION OF SAMPLE FOR ANALYSIS

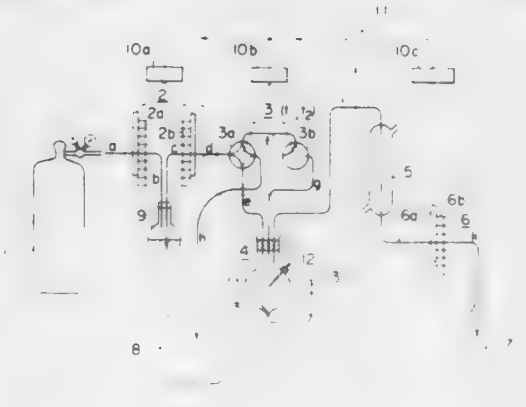
Takashi Inoue, Takasaki, Japan, assignor to Kirin Beer Kabushiki Kaisha, Japan

Filed Sep. 27, 1976, Ser. No. 727,109

Claims priority, application Japan, Oct. 2, 1975, 50-119074; Oct. 2, 1975, 50-135033

Int. Cl.[2] G01G *13/24;* G01N *33/00, 33/02*

U.S. Cl. 23—230 M 10 Claims



10. In the preparation of corresponding samples for analysis containing a diacetyl-odor component in a concentrated state from a plurality of aqueous solution samples containing diacetyl-odor components, the improvement which comprises washing said aqueous solution samples in a gas washer with an inert gas at a temperature higher than the boiling point of diacetyl and lower than the boiling point of water, cooling the diacetyl-odor component accompanied by said inert gas, thereafter collecting the component in collector means by using a collector agent for converting the diacetyl-odor component to diacetyl dioxime, and employing said inert gas as a carrier gas for charging said aqueous solution samples into said gas washer and for discharging a gas-washed sample residue from said gas washer and as a carrier gas for charging said collector agent into said collector means.

4,083,691

METHOD FOR DETECTING CONTAMINANTS IN WATER

Lawrence M. McCormack; Achille Silvestri, both of Harford, and Arthur R. Jones, Jr., Cecil, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

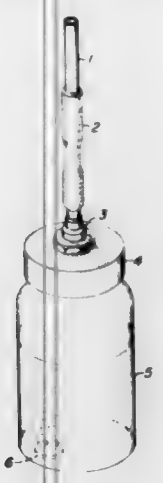
Filed Apr. 22, 1977, Ser. No. 789,769

Int. Cl.[2] G01N *21/20, 33/18*

U.S. Cl. 23—230 R 12 Claims

1. A method for rapidly detecting the presence of organic pollutants in water comprising the steps of adding an effervescent material to a water sample containing organic pollutants to thereby accelerate the release of pollutants into the atmosphere above the water sample, passing the resulting pollutant containing atmosphere through an air contamination detector

tube which has been selected for its colorimetric reactivity with the suspected organic pollutant and then noting any



positive colorimetric reaction to indicate the presence of the suspected organic pollutant.

4,083,692

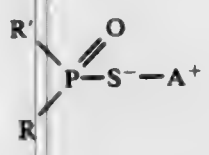
DETECTION AND ESTIMATION OF MICROQUANTITIES OF ALKYLATING AGENTS

Joseph Epstein, Baltimore, Md.; Robert M. Heggie, and John J. Norman, both of Ottawa, Canada, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 4, 1970, Ser. No. 57,410
Int. Cl.[2] G01N *31/22*
U.S. Cl. 23—232 R **5 Claims**

1. A method of detecting microquantities of nitrogen mustard or sulfur mustard, the steps comprising: adding an unknown solution to an aqueous solution comprising an O-alkyl alkylphosphorothicate salt or an O-alkyl alkylphosphonothicate salt forming a reaction solution, said reaction solution standing for a time sufficient to form anticholinesterase active compound, contacting an inert substrate comprising a cholinesterase with the reaction solution containing the anticholinesterase active compound, said substrate with the anticholinesterase active compound standing for a time sufficient to form an inhibited cholinesterase, adding indoxyl acetate, the absence of color change of the substrate indicates that the unknown solution contains microquantities of the nitrogen mustard or sulfur mustard.

5. A member of the group consisting of compounds of the formula

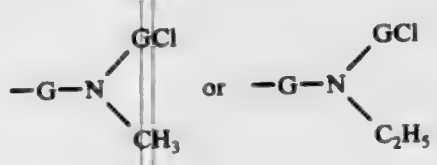


Where:

R is alkoxy group from C_1 to C_5 carbon atoms.

R′ is alkyl group or alkoxy group from C_1 to C_5 carbon atoms.

A is: -G-S-GCl, -G-S-G-O-G-S-GCl, -G-S-G-S-GCl, -G-N(GCl)$_2$,



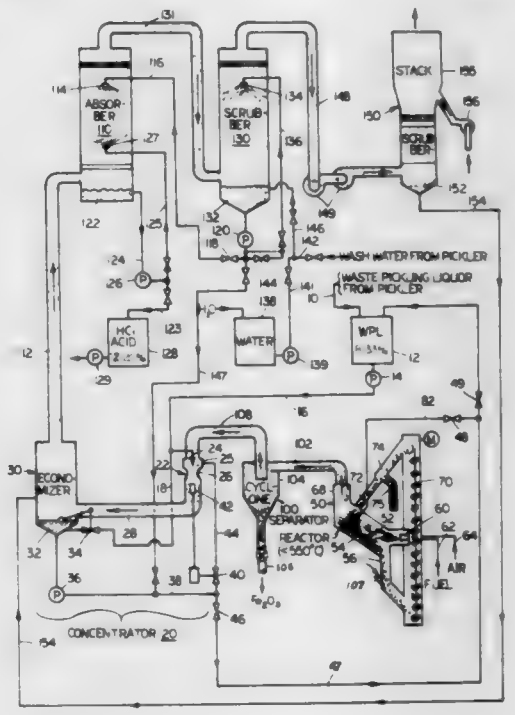
Where G is $-C_2H_4^-$.

4,083,693

APPARATUS FOR TREATING WASTE ACIDS

Lars J. Hansen, Petersburg, Mich., assignor to Toledo Pickling & Steel Service, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 702,082, Jul. 2, 1976, abandoned. This application Jul. 7, 1977, Ser. No. 813,437
Int. Cl.[2] F27B *9/14;* B01J *6/00*
U.S. Cl. 23—262 **36 Claims**



1. A reactor comprising:

A. a chamber having a non-vibratory inclined bottom, an outlet at the lower end of said bottom, and an inlet above the upper other end of said bottom,

B. burner means adjacent said outlet for producing a hot gaseous atmosphere in said chamber,

C. inlet means for introducing solid particles through said inlet whereby said particles form a free-falling curtain onto said bottom and slide down along said bottom to and out of said outlet,

D. conveyor means for circulating said solid particles from said outlet to said inlet means, and

E. means for introducing the substance to be treated into said chamber along with said solid particles flowing through said chamber,

the improvement comprising:

F. said chamber bottom having a central portion and means comprising continuous troughs along opposite sides of said center of said inclined bottom for increasing the sliding flow of said particles along the parallel side edges of said bottom more than along the center of said outlet by presenting a greater angle of descent at said troughs compared to the angle of descent of said center portion, said troughs comprising less than 40% of the width of said chamber bottom.

4,083,694

HEAT INSULATING DEVICE FOR AN ENGINE EXHAUST SYSTEM

Noriyuki Takeda, Yokosuka; Hideo Ikeda; Iwao Nakamura, both of Yokohama, and Noriaki Uchida, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited

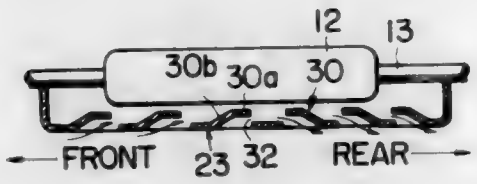
Filed Mar. 19, 1976, Ser. No. 668,796
Claims priority, application Japan, Mar. 25, 1975, 50-40003[U]
Int. Cl.[2] B01J *8/02, 35/00;* F01N *3/14*
U.S. Cl. 23—288 F **5 Claims**

1. In combination, a catalytic converter with an exhaust pipe for connection to an automotive internal combustion engine,

a heat-insulating panel located beneath the catalytic converter and having two opposite sidewalls spaced laterally

from respective sides of the catalytic converter and having a bottom wall integral with the sidewalls and spaced apart from a bottom surface of the catalytic converter and facing toward the surface of the ground when mounted in an automotive vehicle,

a plurality of louver-shaped, slanted, parallel fins formed integrally with the bottom wall of the heat-insulating panel and defining openings through said bottom between



next adjacent fins, each of said fins having a horizontal portion spaced inwardly from said bottom wall in a direction toward said catalytic converter and having a slanted portion between the horizontal portion and the bottom wall, the horizontal portion of each fin constituting an integral horizontal extension of the corresponding slanted portion, the fins being arranged spaced from each other in a longitudinal direction of the converter and heat-insulating panel.

4,083,695

TUBULAR REACTOR FOR ENDOTHERMIC CHEMICAL REACTIONS

Egon Haese, and Albert Kellermann, both of Bochum, Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

Filed Nov. 4, 1976, Ser. No. 738,829

Claims priority, application Germany, Nov. 11, 1975, 2550565

Int. Cl.[2] B01J *8/06*

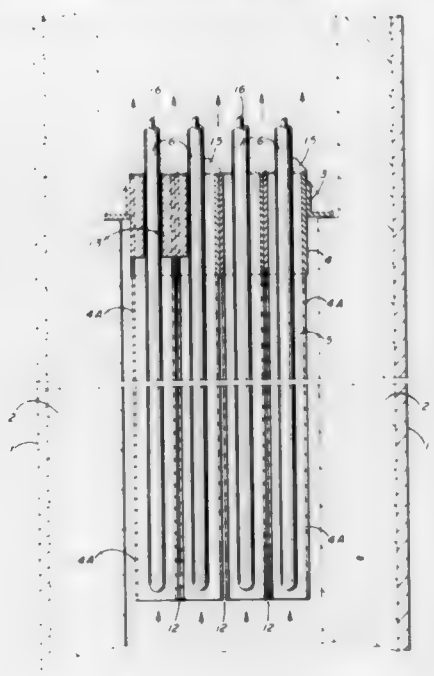
U.S. Cl. 23—289 **10 Claims**

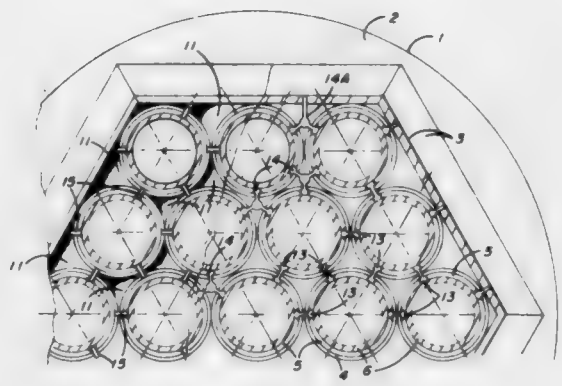
1. A tubular reactor receiving a pressurized gaseous medium at a temperature within the range of approximately 600° and 1000° C after heating in a nuclear reactor for carrying out an endothermic chemical reaction, said tubular reactor including the combination of:

a reactor shell including a layer of insulation disposed within the shell,

a plurality of jacketed tube assemblies extending vertically within said reactor shell in a bundle formation with mutually-contacting top portions thereof being arranged such that an equilateral triangle is defined by lines interconnecting the central axes of three jacketed tube assemblies in mutual contact, each jacketed tube assembly including a sheathing tube and a reaction tube disposed within the sheathing tube to define an annular gap therebetween for conducting the medium undergoing said endothermic chemical reaction upwardly within said annular gap, each sheathing tube having six longitudinally-arranged slots uniformly distributed about the top end thereof,

a connecting element welded to mutually-contacting sheathing tubes while extending along a slot in each sheathing tube, the connecting element having a face surface projecting into said annular gap within a sheathing tube to bear against the reaction tube, and





means supported by said reactor shell to carry said jacketed tube assemblies in a bundle formation within said reactor shell.

4,083,696

PROCESS FOR DESULFURIZING PIPELINED COAL

Edward L. Cole, Fishkill, and Matthew A. McMahon, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 552,395, Feb. 24, 1975, Pat. No. 3,993,456. This application Jul. 12, 1976, Ser. No. 704,195

Int. Cl.[2] C10L *9/10;* C10B *57/00*

U.S. Cl. 44—1 R **4 Claims**

1. A process for reducing the pyritic sulfur content of coal as it is being transported through a pipeline as a coal-water slurry under conditions of turbulent flow at a Reynolds number of less than 2000 from a slurry preparation plant to a dewatering plant which comprises injecting into said slurry in at least one point upstream of said dewatering plant a pyrite oxidant and thereafter increasing the Reynolds number to above 3000.

3. The process of claim 1 in which the pyrite oxidant is selected from the group consisting of hydrogen peroxide, ferric chloride, nitric acid, ferric sulfate, an oxygen-containing gas, sodium hypochlorite and an organic peracid.

4,083,697

COMBUSTIBLE COMPOSITION

Thomas F. Smith, and Alban Timmons, both of Beverley, England, assignors to Reckitt & Colman Products Limited, London, England

Filed Jul. 9, 1976, Ser. No. 703,911

Claims priority, application United Kingdom, Jul. 11, 1975, 29172/75

Int. Cl.[2] C10L *7/02*

U.S. Cl. 44—7 D 29 Claims

1. A solid combustible composition comprising:

(a) a hardened emulsion of a thermosetting resin and a hydrocarbon oil wherein said thermosetting resin forms a matrix and said hydrocarbon oil is dispersed throughout said matrix; and

(b) a particulate compressed peat material dispersed throughout said matrix wherein said peat material has a particle size such that at least 95% of said peat particles are retained on a sieve having a mesh number of 35 and a nominal aperture size of 0.44 mm.

4,083,698

CLEAR AND STABLE LIQUID FUEL COMPOSITIONS FOR INTERNAL COMBUSTION ENGINES

Edward C. Wenzel, Hackettstown, and Henry W. Steinmann, Sparta, both of N.J., assignors to Fuel Systems, Inc., Newton, N.J.

Continuation-in-part of Ser. No. 592,083, Jun. 30, 1975, Pat. No. 4,002,435, which is a continuation-in-part of Ser. No. 199,773, Nov. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 84,507, Oct. 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 56,746, Jul. 20, 1970, abandoned. This application Dec. 1, 1976, Ser. No. 746,618

The portion of the term of this patent subsequent to Jan. 11, 1994, has been disclaimed.

Int. Cl.[2] C10L *1/18*

U.S. Cl. 44—51 16 Claims

1. A clear, liquid fuel composition which comprises:

(a) a hydrocarbon fuel;

(b) about 0.1% to about 10% by weight water; and

(c) a surface-active amount of a combination of surface-active agents consisting of:

(i) a saturated or unsaturated long-chain fatty acid salt having from 12–18 carbon atoms or a mixture thereof;

(ii) a free unsaturated long-chain fatty acid having from 12–18 carbon atoms, or a mixture of free unsaturated and saturated long chain fatty-acids having from 12–18 carbon atoms; and

(iii) a non-ionic surfactant.

4,083,699

POLYOXYETHYLENE POLYAMINE MANNICH BASE PRODUCTS AND USE OF SAME IN FUELS AND LUBRICANTS

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 525,268, Nov. 19, 1974, Pat. No. 4,006,089. This application Nov. 26, 1976, Ser. No. 745,322

Int. Cl.[2] C10L *1/22*

U.S. Cl. 44—75 23 Claims

1. A Mannich base product which is the condensation product of (1) a polyalkyl-substituted hydroxyaromatic compound, wherein the polyalkylene has a number average molecular weight of from about 100 to about 4000, (2) an amine having one of the formulae

$$NH_2CH(CH_3)CH_2-[OCH_2CH(CH_3)]_x-NH_2$$

$$NH_2CH(CH_3)CH_2[OCH_2CH(CH_3)]_a-[OCH_2CH_2]_b[OCH_2CH(CH_3)]_c-NH_2$$

and

$$CH_3CH_2C(CH_2-[OCH_2CH(CH_3)]_l-NH_2)(CH_2-[OCH_2CH(CH_3)]_m-NH_2)(CH_2-[OCH_2CH(CH_3)]_n-NH_2)$$

wherein x is chosen such that the molecular weight of the amine is from about 142 to about 2,000, b is zero or from about 10 to about 50, $a + c$ is about 2.5 and the sum of l, m and n is from about 3 to about 10 and (3) an aldehyde wherein the respective molar ratios of reactants are 1:0.1–10:0.1–10.

13. A fuel composition comprising a major amount of a fuel and a minor amount of a Mannich base product which is the condensation product of (1) a polyalkyl-substituted hydroxyaromatic compound wherein the polyalkyl has a number average molecular weight of from about 100 to about 4,000, (2) an amine having one of the formulae

$$NH_2\,CH(CH_3)CH_2\,[OCH_2CH(CH_3)]_x\,NH_2$$

$$NH_2CH(CH_3)CH_2[OCH_2CH(CH_3)]_a\,[OCH_2CH_2]_b[OCH_2CH(CH_3)]_c\,NH_2$$

and

$$CH_3CH_2C(CH_2-[OCH_2CH(CH_3)]_l-NH_2)(CH_2-[OCH_2CH(CH_3)]_m-NH_2)(CH_2-[OCH_2CH(CH_3)]_n-NH_2)$$

wherein x is chosen such that the molecular weight of the amine is from about 142 to about 2,000, b is zero or from about 10 to about 50, $a + c$ is about 2.5 and the sum of l, m and n is from about 3 to about 10 and (3) an aldehyde wherein the respective molar ratios of reactants are 1:0.1–10:0.1–10.

4,083,700

NOVOLAK-ABS RESIN BINDER IN A GRINDING WHEEL

Lewis H. Bowers, Scotia; Raymond E. Jankowski, Schenectady, and John L. Sullivan, Ballston Lake, all of N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

Filed Jan. 3, 1974, Ser. No. 430,539

Int. Cl.[2] C08J *5/14*

U.S. Cl. 51—298 A 8 Claims

1. A grinding wheel comprising abrasive grits bonded with a bonding agent which is a blend of an acrylonitrile-butadiene-styrene terpolymer resin and a hardened phenol-formaldehyde novolak, said terpolymer being present in an amount of 1 to 50% based on the phenol in the novolak, the phenol being phenol per se.

4,083,701

PROCESS AND APPARATUS FOR REMOVING UNDESIRABLE GASES FROM FLUE GASES

Rolf Noack, Oberhausen, Germany, assignor to Deutsche Babcock Aktiengesellschaft, Oberhausen, Germany

Filed Jun. 14, 1976, Ser. No. 695,768

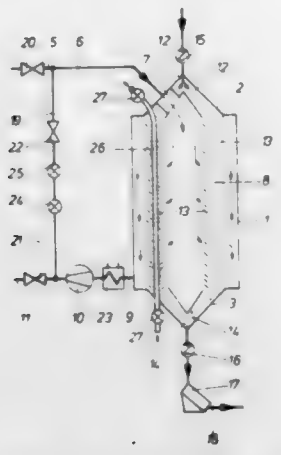
Claims priority, application Germany, Oct. 9, 1975, 2545218

Int. Cl.[2] B01D *53/02*

U.S. Cl. 55—20 17 Claims

1. A method for removal by adsorption of undesirable components such as sulphur dioxide from waste gases, particularly flue gas, comprising the steps of: placing activated carbon between two perforated walls; traversing said activated carbon by flue gases to be cleaned; and feeding back only during shutdown and low-load operation the gas already cleaned and remaining to be cleaned for passing once more through said activated carbon; said step of feeding back occurring only during flow of gas through said activated carbon is substantially reduced during shutdown and low-load operation, cool-

ing the fed back flue gases before being once more passed through said activated carbon, the feedback of said gas being independent of the composition of said flue gases, the feedback



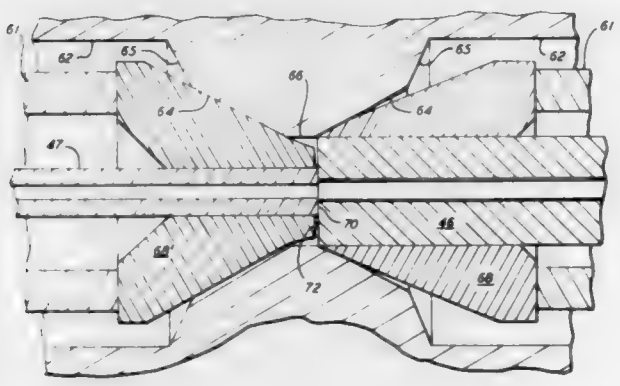
of said gases cooling the activated carbon to a temperature substantially below the spontaneous combustion temperature of the activated carbon for inhibiting spontaneous ignition of said carbon.

4,083,702

CHROMATOGRAPHIC COLUMN FITTINGS

Martin Joseph Hartigan, Huntington, and Francis Paul Wilson, Oxford, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 19, 1976, Ser. No. 706,897
Int. Cl.[2] B01D *15/08*
U.S. Cl. 55—67 **16 Claims**



1. In a chromatograph having a chromatographic column tube and a connection tube, a fitting for interconnecting said tubes comprising:

a union member having an axial through-bore which includes at both ends thereof;

a first portion,

a second inwardly tapered portion connected to the first portion, and

a third cylindrical portion connecting the second portion of one end of the union member with the second portion of the other end of the union member;

one end of said connecting tube being receivable in one end of said union member and one end of said column tube being receivable in the other end of said union member, said one end of said connecting tube and said one end of said column tube being engageable in butt-to-butt relationship within said union member,

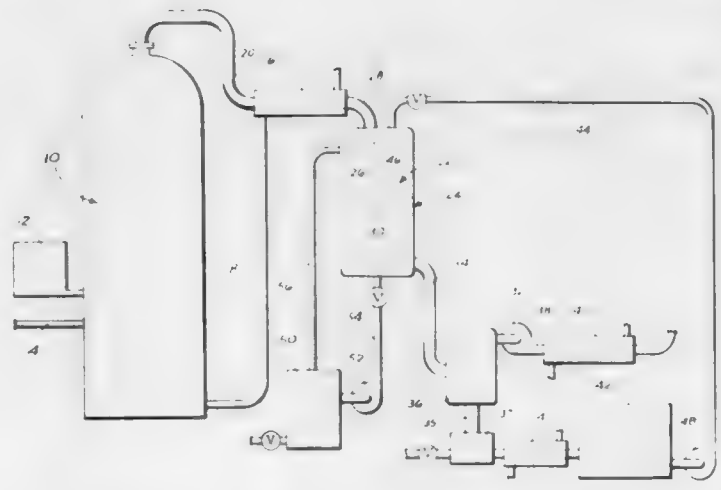
means for wedging ferrule means between the outside surface of said connecting tube and the adjacent second portion of said union member to retain said connecting tube in said union member, and means for wedging second ferrule means between the outside surface of said column tube and the adjacent second portion of said union member to retain said column tube within said union member, the adjacent ends of the two ferrule means being disposed in essentially ferrule-to-ferrule orientation with respect to each other within said union member, and the two ferrule means extending substantially to the ends of the tubes respectively.

4,083,703

PROCESSING OF GAS STREAMS

Ellis, G. Udwin, Long Beach, Calif., and Thomas R. Becker, Newport, Oreg., assignors to Becker-Udwin, Inc., Portland, Oreg.

Filed Jul. 30, 1973, Ser. No. 383,525
Int. Cl.[2] B01D *47/04*
U.S. Cl. 55—89 **8 Claims**



1. A method of processing a gas stream to remove particles entrained therein comprising

providing a bed of filter media comprising loose filtering solids of not more than about 1.4 millimeter size and having a specific gravity exceeding that of water,

directing the gas stream downwardly through said bed,

simultaneously with the passage of the gas stream through the bed passing liquid downwardly through the bed in concurrent flow with the gas stream thus to wet the filtering solids whereby the gas stream and entrained particles are exposed to wetted surfaces of the filtering solids on passage through the bed, the small size of the filtering solids promoting Brownian diffusion induced interception of the particles on the filter media, and

at intervals backwashing the bed with liquid to clean from the surfaces of the filtering solids accumulations of particles removed from the gas stream.

4,083,704

DEVICE FOR THE SEPARATION OF THE CLEANING AGENT FROM THE EXHAUST AIR OF DRY CLEANING MACHINES

Hans Knopf, Holzheimer Weg 113, Neuss, Germany

Filed Aug. 2, 1976, Ser. No. 710,430
Claims priority, application Germany, Sep. 1, 1975, 7527619[U]; Mar. 16, 1976, 2611070
Int. Cl.[2] B01D *47/10*
U.S. Cl. 55—237 **5 Claims**

1. A device for separating a cleaning agent from the exhaust air of a dry cleaning machine comprising in combination,

a purifier having a closed vessel and a liquid held in said vessel,

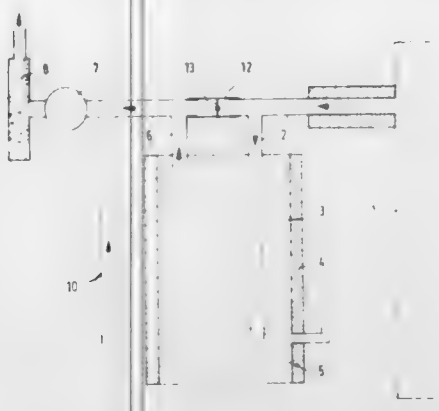
an exhaust line having one end in direct fluid communication with the dry cleaning machine and the other end immersed in said liquid,

exhaust means for drawing the air and the cleaning agent from the dry cleaning machine through said exhaust line to said purifier,

an outlet line having one end connected to and in fluid communication with said purifier at a point above said liquid and another end open to atmosphere,

conduit means having one end connected to said exhaust air

line at a point above said liquid and having its other end connected to said outlet line at a point intermediate its ends,



means for controlling exhaust air flow through said conduit means, and

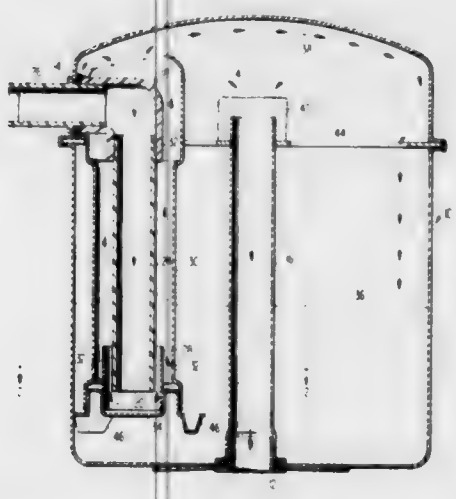
a filter positioned in said outlet line between said conduit means and said open end.

4,083,705

DUMP BUCKET FOR A WET/DRY VACUUM SYSTEM

Carl Parise, Reno, Nev.; Karl R. Uhlig, Huntington Beach, and William W. Lockard, Long Beach, both of Calif., assignors to Parise & Sons, Inc., Reno, Nev.

Filed Nov. 24, 1976, Ser. No. 744,675
Int. Cl.[2] B01D *47/00*
U.S. Cl. 55—257 NP **5 Claims**



1. In a dump bucket for a vacuum cleaner system, said dump bucket comprising:

a cylindrical container having a bottom wall and a top wall and containing liquid therein and having its axis extending vertically;

a hollow riser tube extending upwardly from the bottom of the container and open at the bottom to the container exterior and being open at the top but terminating short of the container top wall;

tube means for introducing a flow of return fluid comprising air and contaminants into said container mounted within said container and extending vertically therein, said tube means including wall means defining separate, adjacent, parallel vertical first downwardly directed and second upwardly directed flow paths respectively;

said tube means further including a hollow, fluid return tube projecting through a wall of the container near its top and being in fluid communication with said first flow path at the upper end thereof, said tube means being closed off at its bottom and said tube means further including means forming a venturi for fluidly communicating said flow paths at the bottom of said tube means and increasing the velocity of the return fluid flow;

at least one aperture in said tube means near its bottom end in such proximity to said venturi and opening to said second flow path that liquid filling said container to a level above said at least one aperture is aspirated by return fluid moving through said venturi and upwardly into said second flow path to entrain said contaminates, and

an opening in said tube means communicating the upper end of said second flow path to the container interior;

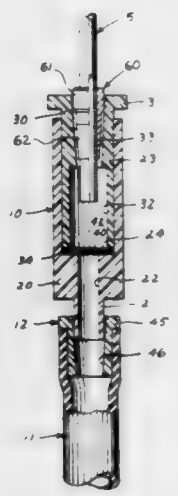
whereby, a mixture of the return fluid and liquid flowing within said second flow path is discharged through the opening within said tube means for impact against the container interior and to separate the liquid and contaminate components from the air when vacuum pressure is applied to the hollow riser tube at the bottom of the dump bucket container, to effect filtering of the return fluid stream.

4,083,706

STERILE TRAP ACCESSORY FOR USE WITH SURGICAL ASPIRATOR

Corless W. Wiley, 1505 Junior Dr., Dallas, Tex. 75208

Continuation-in-part of Ser. No. 517,935, Oct. 25, 1974, abandoned. This application Feb. 9, 1976, Ser. No. 656,367
Int. Cl.[2] B01D *49/00;* A61C *17/04;* A61M *1/00*
U.S. Cl. 55—385 R **8 Claims**



1. A trap, for selective use as a component of a dental or surgical evacuation system, which system includes an aspirator and a flexible suction conduit as other components thereof; in which evacuation system said suction conduit includes means at one end defining a coupling orifice, said aspirator includes means at one end defining a coupling nipple, and said conduit coupling orifice and said aspirator coupling nipple are configured for coacting coupling and sealing engagement with each other; said trap comprising

an elongated housing having means defining a cylindrical coupling nipple at one end, having an outer diameter of 7/16 inch; said housing having a through passage, including a small bore portion at said one end passing through said nipple, and including a cylindrical counter bore opening to the end of said housing opposite from said nipple;

a retainer having a cylindrical body dimensioned to be received in said housing counterbore with a sliding sealing fit, and having radially enlarged gripping means at one end for manipulating the retainer relative to said housing; said retainer having an axial through passage including means defining a coupling orifice at said one end; said retainer coupling orifice being defined by a bore having a 7/16 inch taper;

a filter element confined in said housing by said retainer; said filter element traversing said housing through passage and defining, with said housing and said retainer, a collection chamber;

said housing coupling nipple being configured for coacting frictional coupling and sealing engagement with said conduit coupling orifice, the coupling orifice of which is

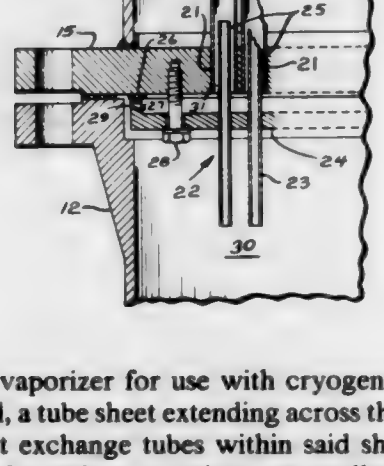
defined by a bore having a 7/16 inch taper and is a counterpart of said retainer coupling orifice; and said retainer coupling orifice being configured for coacting frictional coupling and sealing engagement with said aspirator coupling nipple, the coupling nipple of which has an outer diameter of 7/16 inch and is a counterpart of said housing coupling nipple.

4,083,707

FLOW STABILIZER FOR TUBE AND SHELL VAPORIZER

Henry W. Bivins, Jr., 5030 Brummel, Skokie, Ill. 60076

Filed Apr. 12, 1976, Ser. No. 676,054
Int. Cl.[2] F17C *7/02*
U.S. Cl. 62—51 **12 Claims**



1. In a vaporizer for use with cryogenic liquids having an outer shell, a tube sheet extending across the shell, and a plurality of heat exchange tubes within said shell and defining entrance end portions opening outwardly through said tube sheet, the improvement comprising: a carrier; mounting means for mounting said carrier outwardly adjacent said tube sheet; a plurality of inlet tubes carried by said carrier in thermally isolated relationship to said vaporizer, said inlet tubes having inner ends extending into said heat exchanger tube entrance end portions and outer ends opening to outwardly thereof, said inlet tube inner ends having an inner cross section substantially smaller than the inner cross section of said heat exchanger tube entrance end portions; and wall means defining a supply chamber communicating with said inlet tube outer ends for containing cryogenic liquid to be vaporized, said inlet tube outer ends being constructed to extend into the liquid in said supply chamber during vaporizing operation of said vaporizer and deliver the liquid to be vaporized inwardly through said inlet tubes inner ends into said heat exchanger tube entrance end portions and then through said heat exchanger tubes to have heat transfer with a higher temperature fluid in said shell whereby said inlet tubes cause substantially all said liquid to be vaporized in said tubes inwardly of said entrance end portions thereof.

4,083,708

FORMING A GLASS ON A SUBSTRATE

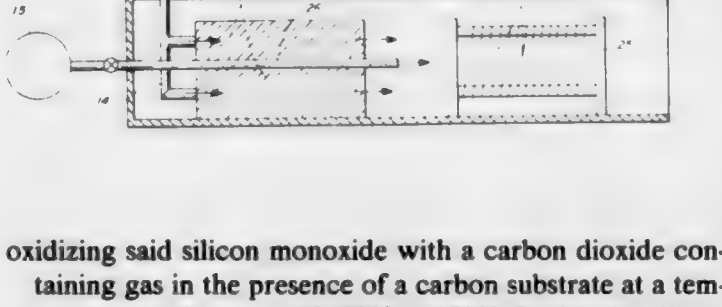
Carl E. Heath, Neuilly sur Seine, France; Daniel Grafstein, Convent Station, and John V. Milewski, Bridgewater, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 723,605, Sep. 15, 1976, abandoned. This application Jul. 13, 1977, Ser. No. 815,142
Int. Cl.[2] C03C *19/00, 25/02, 17/00*
U.S. Cl. 65—23 **11 Claims**

1. A method for forming a composite glass article having a glass exterior coating on a shaped substrate comprising: placing a shaped substrate in a reaction chamber, said substrate being selected from materials chemically and thermally stable under glass deposition temperatures; introducing a stream of a glass precursor consisting essentially of generated silicon monoxide and being capable of being oxidized to a glass; simultaneously introducing an oxidizing gas into the reaction chamber whereby the glass precursor is oxidized to a glass and deposited on said substrate.

8. A method of forming a glass article comprising:

contacting a silica containing material at temperatures in the range of about 1300° to 1700° C with a gaseous mixture containing hydrogen, methane and nitrogen whereby silicon monoxide is generated;



oxidizing said silicon monoxide with a carbon dioxide containing gas in the presence of a carbon substrate at a temperature in the range of 1300° to 1700° C whereby silicon dioxide glass is deposited on said carbon substrate and thereafter maintaining said deposited glass substrate at a temperature between about 800° and 1200° C in the presence of air whereby said carbon substrate is oxidized thereby providing a glass article.

4,083,709

METHOD FOR MAKING GLASS-CERAMICS WITH FERRIMAGNETIC SURFACES

Richard F. Reade, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,590
Int. Cl.[2] C03B *32/00;* C03C *3/22*
U.S. Cl. 65—32 **5 Claims**

1. A method for making a glass-ceramic article composed of a body portion and a thin integral surface layer demonstrating ferrimagnetic properties. said body portion consisting essentially of beta-spodumene solid solution crystals dispersed within a glassy matrix and said surface layer consisting essentially of $NiFe_2O_4$ and/or $CoFe_2O_4$ crystallites dispersed within a glassy matrix, consisting of the steps of:

(a) melting a batch for a glass consisting essentially, in weight percent on the oxide basis, of about 2.5–5.5% Li_2O, 16–27% Al_2O_3, 1–3% Fe_2O_3, 40–75% SiO_2, 1.75–6% TiO_2, 0.5–3% NiO, and/or 1–3% CoO, the sum NiO + CoO not exceeding about 4%, said Li_2O, Al_2O_3, and SiO_2 being present in a molar ratio of about $Li_2O.Al_2O_3.nSiO_2$, wherein *n* ranges between about 2–8;

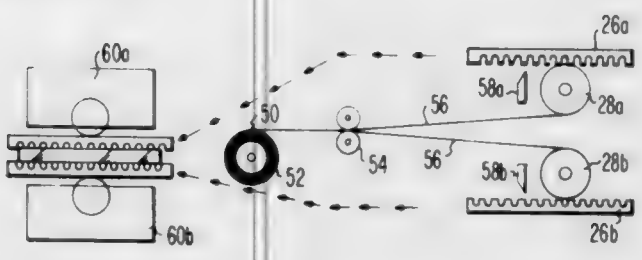
(b) simultaneously cooling the melt to at least within the transformation range and shaping a glass article therefrom; and

(c) exposing said glass article only in an oxidizing atmosphere to a temperature between about 900°–1300° C. for a period of time sufficient to cause the growth in situ of beta-spodumene solid solution crystals in the body portion of said glass article and of $NiFe_2O_4$ and/or $CoFe_2O_4$ crystallites in an integral surface layer on said article thereby producing a glass-ceramic article.

4,083,710
METHOD OF FORMING A METAL PATTERN ON AN INSULATING SUBSTRATE

John Norman Hewitt, Kendall Park, and Victor Christiano, Hamilton Square, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1977, Ser. No. 761,427
Int. Cl.² C03C 27/02
U.S. Cl. 65—40 20 Claims



1. A method of forming a metal pattern on at least one surface of a solid insulating substrate, comprising the steps of:

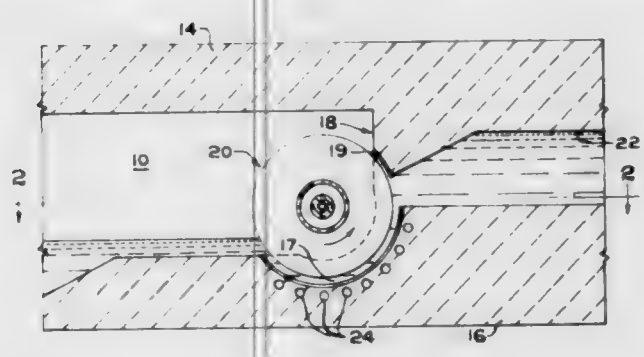
(a) pressing a plurality of metal strips into contact with a die having a predetermined relief pattern thereon and conforming the strips to at least portions of said die so as to shape and position said strips in accordance with said relief pattern and releasably securing the strips to said die; and then

(b) placing said surface of said solid insulating body into contact with said shaped and positioned metal strips while holding said strips on said die in said predetermined position and holding the insulating body against said strips until said strips are bonded to said insulating body.

4,083,711
GLASS FOREHEARTH HAVING A VISCOSITY PUMP

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 28, 1977, Ser. No. 782,134
Int. Cl.² C03B 5/26
U.S. Cl. 65—346 8 Claims



1. A delivery system for molten glass comprising a forehearth having an open section and a closed section, said open section containing unpressurized molten glass therein and said closed section containing pressurized molten glass, means for sealing said closed section to pressurize it and pump means including a rotor having a substantially uniform surface, said rotor being mounted within but adjacent to a wall portion of the forehearth at a position between said open and closed sections, said wall portion being shaped to a curve correspondent to but spaced from the outer surface of the rotor such that said portion of said forehearth acts as a stator with said rotor to transport molten glass from the open section to the closed section using the viscous drag of the molten glass against the forehearth and the rotor as the rotor is rotated within the molten glass in the forehearth.

4,083,712
NITROGENOUS FERTILIZER COMPOSITIONS

Herbert Corte, Opladen; Harold Heller, Cologne; Peter Michael Lange, Cologne, and Otto Netz, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 223,023, Feb. 2, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,264
Claims priority, application Germany, Feb. 19, 1971, 2107916
Int. Cl.² C05C 9/00
U.S. Cl. 71—28 8 Claims

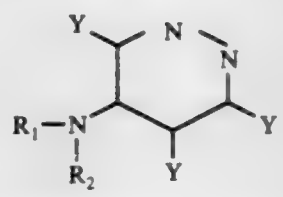
1. Method of fertilizing crops or areas of crop cultivation which comprises applying to the area of crop cultivation fertilizingly effective amounts of a composition comprising a cation exchanger salt of a cation exchanger material selected from the group consisting of a cross linked sulfonated polystyrene and a crosslinked polyacrylic acid with a basic carbonic acid compound containing at least two nitrogen groupings selected from the group consisting of guanidine, guanylurea, melamine and diguanidine.

4,083,713
SELECTIVE HERBICIDAL ACTIVITY OF FLUOROAMINOPYRIDAZINES

Roy Y. Yih, Doylestown; Wayne O. Johnson, Warminster, and Gerald E. Kollman, Chalfont, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 14, 1975, Ser. No. 558,568
Int. Cl.² A01N 9/22
U.S. Cl. 71—92 7 Claims

1. A method of controlling weeds which comprises applying to the area in which the weeds are to be controlled a herbicidally effective amount of a compound of the formula



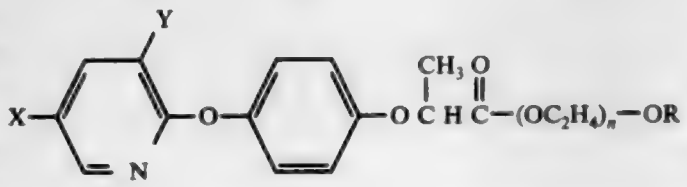
wherein Y is chlorine or fluorine; R_1 and R_2 are independently hydrogen, ethyl or chloroacetyl.

4,083,714
ALKOXYALKYL ESTERS OF SUBSTITUTED PYRIDYLOXYPHENOXY-2-PROPANOIC ACIDS, HERBICIDAL COMPOSITION CONTAINING THE SAME AND METHOD OF USE THEREOF

Ryohei Takahashi, Kusatsu; Kanichi Fujikawa, Kyoto; Isao Yokomichi, Kusatsu; Yasuhiro Tsujii, Kusatsu, and Nobuyuki Sakashita, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Division of Ser. No. 623,517, Oct. 17, 1975, Pat. No. 4,046,533. This application Jun. 10, 1977, Ser. No. 805,388
Claims priority, application Japan, Oct. 17, 1974, 49-118676; Mar. 13, 1975, 50-29556
Int. Cl.² A01N 9/22; C07D 213/64
U.S. Cl. 71—94 7 Claims

1. A compound having the general formula (I):



(I)

wherein X is a halogen atom, Y is a hydrogen atom, a halogen atom or a methyl group, n is an integer of from 1 to 5, and R is a (C_1–C_4) alkyl group in which the alkyl moiety thereof may be straight or branched chain.

5. A herbicidal composition comprising a herbicidally effec-

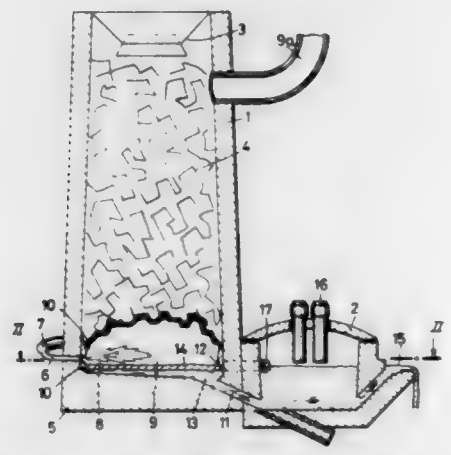
tive amount of the compound as defined in claim 1 as an active ingredient and an agriculturally acceptable adjuvant.

4,083,715

SMELTING PLANT AND METHOD

Hans Jürgen Langhammer, Platjenwerbe, Germany, assignor to Klockner-Werke AG, Duisburg, Germany

Filed May 25, 1976, Ser. No. 689,859
Int. Cl.² C21C *5/00*
U.S. Cl. 75—43 **5 Claims**



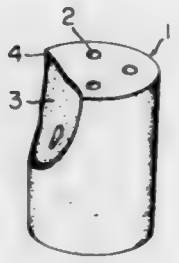
1. In a method of smelting iron-containing materials wherein said materials descend as a column in a shaft furnace above the floor thereof and are heated adjacent said floor so as to form thereon a liquefied-iron melt on which floats a layer of slag and to form on the inside wall of said furnace an iron-scale deposit, the improvement comprising the step of withdrawing liquefied iron from said melt and slag from said layer in such manner that said layer of slag always remains at the level of said deposit and said wall is thereby protected from said slag by said deposit.

4,083,716

MAGNESIUM BASE TREATING AGENT OF MOLTEN IRON

Hiroshi Yoshida, Kasukabe, Japan, assignor to Aikoh Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1976, Ser. No. 729,085
Claims priority, application Japan, Nov. 14, 1975, 50-136200
Int. Cl.² C22C *33/08*; C21C *7/02*
U.S. Cl. 75—58 **8 Claims**



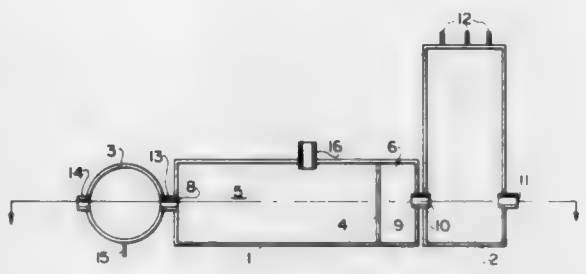
1. A composite article having a porosity ranging from about 25 to about 50 percent for treating molten iron comprising a mixture of a plurality of magnesium particles, said particles having a particle size of less than about 5 mm; at least one additive component selected from the group consisting of magnesia, zirconia, titania, graphite, coke and charcoal; and at least one binder therefor selected from the group consisting of clay, bentonite, resins, cellulosic type binder and water-soluble silicic acid.

4,083,717

SEPARATION OF THREE METALLURGICAL PHASES BY DECANTATION

Pierre Lenoir, Edegem, and André L. Delvaux, Berchem, both of Belgium, assignors to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Filed Jul. 20, 1976, Ser. No. 707,145
Claims priority, application France, Jul. 21, 1975, 75 22711
Int. Cl.² C22B *13/00*
U.S. Cl. 75—77 **7 Claims**



1. A process for separating three liquid metallurgical phases by decantation, comprising:

(a) introducing the three liquid phases to be separated in a first settling zone and allowing them to separate therein by gravity into an upper layer consisting of the phase with the lowest density, an intermediate layer consisting of the phase with the intermediate density, and a lower layer consisting of the phase with the highest density,

(b) allowing the phase with the intermediate density and the phase with the highest density to flow from said first settling zone into a second settling zone through a passage connecting the lower part of the first settling zone with the lower part of said second settling zone,

(c) allowing the phase with lowest density to flow from said first settling zone over a first weir,

(d) allowing the phase with the intermediate density and the phase with the highest density to flow from said second settling are over a second weir provided at such a level L above the level L′ of the top of said passage so that (L − L′) equals to ($g1h1/g3$) + ($g2h2/g3$), $g1$, $g2$ and $g3$ being respectively the density of the phase with lowest density, the density of the phase with intermediate density, and the density of the phase with the highest density,($h1$ + $h2$) being the difference between the level of the first weir and L′, $h1$ being the desired layer thickness of the phase with lowest density in the first vessel and $h2$ being positive, and

(e) collecting the phases flowing over the second weir and separating them by decantation.

4,083,718

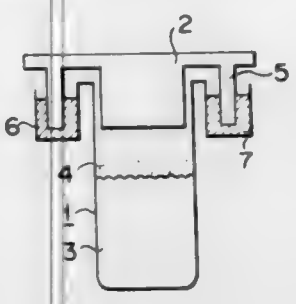
BISMUTH-TIN-INDIUM-LEAD ALLOY

Hideki Murabayashi, Kawasaki; Katsuhiko Kawakita, Yokosuka; Kisaku Nakamura, Funabashi, and Sadao Kobatake, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1976, Ser. No. 668,447
Claims priority, application Japan, Mar. 20, 1975, 50-32939
Int. Cl.² C22C *13/02, 30/04*
U.S. Cl. 75—134 B **2 Claims**

1. A low melting point, sealing alloy of bismuth, tin, indium and lead which consists essentially of 27 to 72 weight percent

bismuth, 25 to 52 weight percent tin, 2 to 12 weight percent indium and 1 to 8 weight percent lead, said alloy being substantially resistant to atmospheric oxidation at temperatures up to 150° C.



4,083,719

COPPER-CARBON FIBER COMPOSITES AND PROCESS FOR PREPARATION THEREOF

Hideo Arakawa; Keiichi Kuniya; Takashi Namekawa, all of Hitachi, and Tomio Iizuka, Naka, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 29, 1976, Ser. No. 737,023

Claims priority, application Japan, Oct. 29, 1975, 50-129269

Int. Cl.[2] C22C *1/09*

U.S. Cl. 75—229 **11 Claims**

1. A non-directional carbon fiber-copper matrix composite comprising randomly arranged carbon fibers having an aspect ratio of at least 200 and a copper matrix in which the carbon fibers are embedded, said carbon fibers being bonded together by an additive element forming a carbide at parts of the additive element falling in contact with the carbon fibers and the amount of the carbon fibers being at least 20 volume % based on the total composite, said additive element being at least one element selected from the group consisting of members A and B, said member A consisting of at least one of titanium, zirconium niobium and member B consisting of at least one of vanadium, chromium, molybdenum and tungsten, the amount of the element of member A being at least 3 volume % based on the composite and the amount of the element of member B being at least 5 volume % based on the composite.

6. A process for the preparation of non-directional carbon fiber-copper matrix composites comprising mixing and agitating carbon fibers having an aspect ratio of at least 200 with a powder of at least one additive element selected from the group consisting of titanium, zirconium, niobium, vanadium, chromium, molybdenum and tungsten and a powder of copper in a liquid medium, removing the liquid medium from the resulting mixture, and heating the residual mixture under a pressure of a least 50 Kg/cm^2 in a non-oxidizing atmosphere at a temperature higher than the recrystallization temperature of copper but lower than the melting point of copper whereby the carbon fibers are bonded together by the additive element forming a carbide at parts of the additive element falling in contact with the carbon fibers; with the amount of carbon fibers being at least 20 volume % based on the resulting composite and the amount of the additive element being at least 3 volume % based on the composite when the additive element is titanium, zirconium, or niobium or at least 5 volume % based on the composite when the additive element is vanadium, chromium, molybdenum or tungsten.

10. A process for the preparation of non-directional carbon fiber-copper matrix composites that have a linear thermal expansion coefficient that is on the average lower than 12×10^{-6}/° C. in the range of 0° to 250° C. and in which the carbon fibers have an aspect ratio of at least 200, are at least 20% of the volume of the composite and are arranged non-directionally therein, which comprises mixing carbon fibers coated with copper in a liquid medium with a powder of at least one additive element selected from the group consisting of A and B, member A consisting of at least one of titanium, zirconium and niobium and member B consisting of at least one of vanadium, chromium, molybdenum and tungsten, the amount of the element of member A admixed with the fibers being at least 3 volume % based on the composite and the amount of the element of member B admixed with the carbon fibers being at least 5 volume % based on the composite, removing the liquid medium from the resulting mixture and heating the mixture separated from the liquid medium at a temperature higher than the recrystallization temperature of copper but lower than the melting point of copper under a pressure of at least 50 Kg/cm^2 in a non-oxidizing atmosphere.

4,083,720

PHOTOSENSITIVE GRID USEFUL FOR SCREEN TYPE ELECTROGRAPHIC APPARATUSES AND THE METHOD OF MANUFACTURING THE PHOTOSENSITIVE GRID

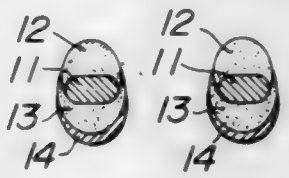
Toshio Nakatsubo; Masaji Nishikawa, both of Hachioji, and Eiichi Sato, Tama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1975, Ser. No. 637,769

Claims priority, application Japan, Dec. 10, 1974, 49-141120

Int. Cl.[2] G03G *5/04, 5/14*

U.S. Cl. 96—1.5 R **3 Claims**



1. A photosensitive grid for electrographic apparatus comprising

a grid shaped electrically conductive core constituting a first electrode,

a first photoconductive layer formed on one side surface of said core and constituting a photosensitive layer,

a second photoconductive layer formed at that side surface of said core which is opposed to said first photoconductive layer, said second photoconductive layer being electrically insulative and

an opaque electrically conductive layer constituting a second electrode formed on said second photoconductive layer, said first photoconductive layer being bare.

2. A method of manufacturing a photosensitive grid for electrographic apparatus comprising

forming a first photoconductive layer by vapor depositing in a vacuum a photoconductive material on one side surface of a grid shaped electrically conductive core constituting a first electrode,

forming a second photoconductive layer by vapor depositing in a vacuum a photoconductive material on that side surface of said core which is opposed to said first photoconductive layer, and

forming an electrically conductive layer constituting a second electrode by vapor depositing in a vacuum an electrically conductive material on either one of said photoconductive layers while leaving the other photoconductive layer bare.

4,083,721

PHOTOGRAPHIC PHENOLIC COUPLERS WITH AMIDO COUPLING-OFF GROUPS

Kozo Inouye; Yukio Yokota; Akio Okumura; Keisuke Shiba, and Seiiti Kubodera, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 604,864, Aug. 14, 1975, abandoned. This application Dec. 8, 1976, Ser. No. 748,604
Claims priority, application Japan, Aug. 14, 1974, 49-92895
Int. Cl.² G03C *1/40, 7/00*
U.S. Cl. 96—56.2 **14 Claims**

1. A photographic material comprising a silver halide photographic emulsion containing at least one of the photographic couplers represented by the formula (I)

[A]— NHCOR (I)

wherein A represents a cyan color forming coupler residue having a naphthol coupling nucleus or phenol coupling nucleus; the RCONH-group is a substituent in the coupling position of [A], said coupling position being the 4-position of said naphthol or phenol nucleus, and R represents (1) an aliphatic hydrocarbon or alicyclic hydrocarbon group which has at least one electron attractive substituent in the α-position to the carbonyl group in the RCONH- group, or (2) an aryl group, a heterocyclic group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an acyl group or an amino group which may be substituted with one or more electron attractive substituents and said R as defined above is a residue derived from a carboxylic acid of the formula RCOOH having a pKa of about 1.3 or less.

4,083,722

DEVELOPER COMPOSITION AND PROCESS FOR DEVELOPING PHOTOGRAPHIC FILM

William Alexander Anneman, 10021 LaTuna Canyon Blvd., Sun Valley, Calif. 91352

Continuation-in-part of Ser. No. 666,574, Mar. 15, 1976, abandoned. This application Jan. 17, 1977, Ser. No. 759,986
Int. Cl.² G03C *5/30*
U.S. Cl. 96—66 HD **15 Claims**

1. A bromide free developing composition consisting essentially of at least one 3-pyrazolidone compound, at least one hydroxybenzene compound selected from the group consisting of ortho-dihydroxybenzene compounds, para-dihydroxybenzene compounds, substituted ortho-dihydroxybenzene compounds, substituted para-dihydroxybenzene compounds, trihydroxybenzene compounds, and substituted trihydroxybenzene compounds, para-methylaminophenol or an acid salt thereof, at least one alkaline preservative and at least one accelerator wherein the weight ratio of said at least one 3-pyrazolidone compound to said at least one hydroxybenzene compound is in the range of about 3:1 to about 8:1.

4,083,723

PROCESS FOR COLOR PHOTOGRAPHIC PROCESSING

Isao Shimamura, and Junkiti Ogawa, both of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Filed Feb. 24, 1977, Ser. No. 771,492
Claims priority, application Japan, Feb. 24, 1976, 51-19215; Sep. 29, 1976, 51-117036
Int. Cl.² G03C *5/30*
U.S. Cl. 96—66.5 **12 Claims**

1. A process for color photographic processing, which comprises subjecting an imagewise exposed silver halide color light-sensitive material to a color development using a color developer containing:

(1) a p-phenylenediamine developing agent or derivative thereof and

(2) at least one organic compound having at least one phosphono group and at least one carboxy group in the molecule selected from the group consisting of 2-phoshonobutane-1,2,4-tricarboxylic acid, 1-phosphonopropane-1,2,3-tricarboxylic acid, 1-phosphonobutane-2,3,4-tricarboxylic acid, 1,1-diphosphonopropane-2,3-dicarboxylic acid, 2-phosphonobutane-2,3,4-tricarboxylic acid and 2,2-diphosphonobutane-3,4-dicarboxylic acid.

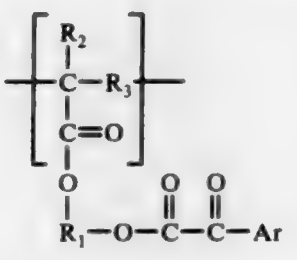
4,083,724

METHOD OF MAKING LIGHT SENSITIVE POLYMERIZABLE COMPOSITIONS

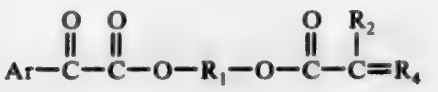
Thaddeus M. Muzyczko, Melrose Park, and Donald W. Fieder, Wheaton, both of Ill., assignors to The Richardson Company, Des Plaines, Ill.

Division of Ser. No. 363,018, May 23, 1973, Pat. No. 3,930,868. This application Aug. 4, 1975, Ser. No. 601,677
Int. Cl.² G03C *1/68;* C08F *2/46*
U.S. Cl. 96—115 R **7 Claims**

1. A method of forming a light sensitive and polymerizable composition which comprises an effective amount of a polymer that includes as a recurring structure:



wherein Ar represents an aromatic structure selected from the group consisting of benzene, naphthalene and substituted products of each, R_1 represents an alkylene group having from one to ten carbon atoms, R_2 represents a grouping selected from the group consisting of hydrogen, or a lower alkyl group having from one to five carbon atoms, and R_3 represents an alkylene group having from one to ten carbon atoms; said method including the steps of charging an arylglyoxyalkyl acrylate together with an emulsifying surfactant and an initiator into a reactor, said arylglyoxyalkyl acrylate having the following general structure:



wherein Ar, R_1 and R_2 are as defined above and R_4 represents an alkenyl group having from one to ten carbon atoms, forming said polymer by emulsion polymerization, and thereafter recovering said polymer.

4,083,725

PHOTOSENSITIVE COMPOSITION

Hideo Fukutani, Tokyo; Konoe Miura, Kanagawa; Chihiro Eguchi, Kanagawa; Yoshihiro Takahashi, Kanagawa, and Kazuo Torige, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 475,895, Jun. 3, 1974, abandoned. This application Apr. 19, 1976, Ser. No. 678,115
Claims priority, application Japan, Jun. 2, 1973, 48-62144
Int. Cl.² G03C *1/68;* C08F *8/18, 8/34*
U.S. Cl. 96—115 R **5 Claims**

1. A photosensitive composition, which consists essentially of:

a photosensitive resin containing pendant cinnamic acid radicals, and from 0.01 – 10% by weight of a sensitizer of a nuclear-chloro substituted benzanthrone or a nuclear-fluoro substituted benzanthrone based on the photosensitive resin.

4,083,726

MAGNESIUM CONTAINING PROTECTIVE COATING FOR FERROUS METAL

Lee Minus Parson, Inglewood, and Eugene R. du Fresne, Sierra Madre, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Filed May 28, 1976, Ser. No. 690,974
Int. Cl.[2] C09D *5/10*
U.S. Cl. 106—14.41 14 Claims

1. A protective coating for protecting an underlying steel surface from corrosion, the coating having a thickness of at least 0.5 mil and consisting essentially of magnesium powder, a passivating compound which reacts with the surface to form a protective film for the surface, the passivating compound on contact with water having a pH of at least about 8, and a non-saponifiable organic binder for binding the magnesium powder and the passivating compound to the underlying surface.

4,083,727

GLASS-CERAMICS WITH MAGNETIC SURFACE FILMS

Ronald L. Andrus, Elmira, and Richard F. Reade, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,582
Int. Cl.[2] C03C *3/22*; C03B *32/00*
U.S. Cl. 106—39.7 12 Claims

1. A method for making a glass-ceramic article composed of a body portion and an integral surface layer demonstrating magnetic properties and exhibiting a reflective, metallic luster, said body portion consisting essentially of beta-quartz solid solution crystals dispersed within a glassy matrix and comprising at least 50% by volume of said body portion, and said surface layer consisting essentially of magnetite (Fe_3O_4) crystals dispersed within a glassy matrix and comprising at least 50% by volume of said surface layer, consisting of the steps of:

(a) melting a batch for a glass consisting essentially, in weight percent on the oxide basis, of about 1–6% FeO, 3–10% Li_2O, 15–40% Al_2O_3, 40–75% SiO_2, 2–7% RO_2, wherein RO_2 consists of 2–6% TiO_2 and 0–3% ZrO_2, and being essentially free from transition metal oxides other than iron oxide;

(b) simultaneously cooling the melt to at least within the transformation range and forming a glass article therefrom;

(c) exposing said glass article in an oxidizing atmosphere to a temperature between about 750°–1025° C. for a period of time sufficient to cause the growth of beta-quartz solid solution crystals in situ in the body portion of said glass article and the growth of hematite crystals in situ in an integral surface layer on said glass article thereby producing a glass-ceramic article;

(d) exposing said glass-ceramic article to a H_2O-containing reducing environment at a temperature between about 450°–650° C. for a period of time sufficient to reduce the hematite crystals in said surface layer to magnetite (Fe_3O_4) crystals; and

(e) cooling said article to room temperature.

6. Glass ceramic article made in accordance with method of claim 1.

7. A method for making a glass-ceramic article composed of a body portion and an integral surface layer demonstrating magnetic properties and exhibiting an enamel-like or earthen appearance, said body portion consisting essentially of beta-spodumene solid solution crystals dispersed within a glassy matrix and comprising at least 50% by volume of said body portion, and said surface layer consisting essentially of magnetite (Fe_3O_4) crystals dispersed within a glassy matrix and comprising at least 50% by volume of said surface layer, consisting of the steps of:

(a) melting a batch for a glass consisting essentially, in weight percent on the oxide basis, of about 1–6% FeO, 3–10% Li_2O, 15–40% Al_2O_3, 40–75% SiO_2, 2–7% RO_2, wherein RO_2 consists of 2–6% TiO_2 and 0–3% ZrO_2, and being essentially free from transition metal oxides other than iron oxides;

(b) simultaneously cooling the melt to at least within the transformation range and forming a glass article therefrom;

(c) exposing said glass article in an oxidizing atmosphere to a temperature of at least 1050° C. for a period of time sufficient to cause the growth of beta-spodumene solid solution crystals in situ in the body portion of said glass article and the growth of hematite crystals in situ in an integral surface layer on said glass article thereby producing a glass-ceramic article;

(d) exposing said glass-ceramic article to a H_2O-containing reducing environment at a temperature between about 450–650° C. for a period of time sufficient to reduce the hematite crystals in said surface layer to magnetite (Fe_3O_4) crystals; and

(e) cooling said article to room temperature.

4,083,728

METHOD FOR MAKING GLASS

Francis L. Orso, Corning, and Timothy E. Pierce, Pine City, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 45,905, Jun. 12, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 228,298
Int. Cl.[2] C03C *3/04*
U.S. Cl. 106—52 9 Claims

1. A method for making solid silicate glass articles comprising the steps of:

(a) preparing true solutions and/or colloidal solutions and/or suspensions having a pH between about 10–15 and containing about 1–12 moles of SiO_2/liter in solution from soluble silicate solutions selected from the group consisting of an organic ammonium silicate, alkali metal silictes, and mixtures thereof;

(b) reacting an organic compound therewith selected from the group consisting of formaldehyde, paraformaldehyde, and mixtures thereof at a temperature between the freezing point and the boiling point of the solution for a sufficient length of time to reduce the pH to between about 7–10 and polymerize the SiO_2, and

(c) firing the polymerized SiO_2 body at a temperature between about 650°–1400° C. for a sufficient length of time to consolidate to a solid silicate glass body.

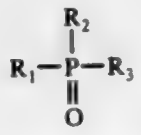
4,083,729

HYDRAULIC CEMENT COMPOSITION

Senri Yamada, Takatsuki; Kanji Nagasawa, Nagaokakyo; Tokiaki Mori, Ibaraki, and Masaru Tanaka, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd. and Dai-Ichi Kogyo Seiyaku Co., Ltd., both of, Japan

Filed Feb. 2, 1977, Ser. No. 764,880
Int. Cl.[2] C04B *7/35*
U.S. Cl. 106—88 10 Claims

1. A hydraulic cement composition which contains an organic phosphoric acid ester of the formula:



wherein R_1 is a group of the formula: $R_4—O—(CH_2CH_2O)_n—$ wherein R_4 is alkenyl having 4 to 18 carbon atoms or aryl substituted with an alkyl group having 4 to 18 carbon atoms and *n* is an average addition molar number of ethylene oxide of 5 to 14, R_2 and R_3 are the same or different and are each hydroxy or a group of the formula: $R_4—O—(CH_2CH_2O)_n—$ wherein R_4 and *n* are as defined above, or a salt thereof.

4,083,730

CEMENT, PROCESS AND DEVICE FOR ITS PRODUCTION

Ludwig Kwech, Kaltenleutgeben, and Fritz Jung, Vienna, both of Austria, assignors to Perlmooser Zementwerke A.G., Austria

Filed Jul. 20, 1976, Ser. No. 706,948

Claims priority, application Austria, Jul. 22, 1975, 5652/75; Aug. 27, 1975, 6614/75

Int. Cl.[2] C04B *7/02*

U.S. Cl. 106—89 **27 Claims**

1. A cement comprising at least two clinkers of which one is a Portland cement clinker of conventional composition and the other is at least one clinker burned at temperatures within a range of up to about 1200° C at the most, wherein at least one porous marl clinker opened at temperatures between 450° and 1250° C by means of a burning process and containing hydratizable mineral phases of low calcium content and 0 to 30 percent by weight related to the marl clinker of glass phases is contained in addition to said Portland cement clinker of conventional composition, the weight ratio of the content in the Portland cement clinker to marl clinker is 25:1 to 1:1.

4,083,731

MIXED OXIDATION PRODUCT ON THE BASIS OF BARK WAXES AND OTHER WAXES

Walter Brotz, Gersthofen; Günther Illmann, Stadtbergen, and Karl Heinz Stetter, Gersthofen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 17, 1975, Ser. No. 623,350

Claims priority, application Germany, Oct. 23, 1974, 2450342

Int. Cl.[2] C08L *91/06*

U.S. Cl. 106—270 **9 Claims**

1. A process for the manufacture of a mixture of wax acids which comprises oxidizing a wax mixture at 70 to 130° C with chromic acid in sulfuric acid solution having 60 to 140 grams CrO_3 and 200 - 600 grams concentrated H_2SO_4 per liter, said mixture consisting of (a) 5 to 80% by weight of a bark wax together with (b) 95 to 20% by weight of at least one of another natural wax, a hydrocarbon wax, an oxidized hydrocarbon wax.

4,083,732

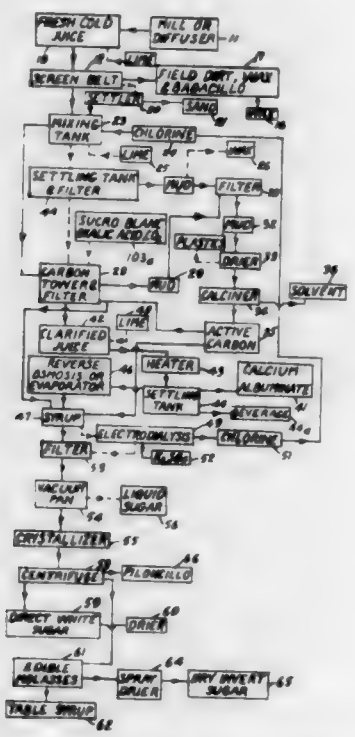
SUGAR JUICE TREATMENT

Lewis A. Paley, 614 Adams St., Aurora, Ill. 60505

Filed Jan. 11, 1965, Ser. No. 424,713

Int. Cl.[2] C13D *3/16, 3/06, 3/12*

U.S. Cl. 127—48 **8 Claims**



1. The method of treating fresh sugar juice at about room temperature, which comprises removing non-sugar impurities from said juice to form a cold, water white juice, removing water from said water white juice by reverse osmosis to form a syrup, and evaporating said syrup to form direct white sugar and edible molasses.

4,083,733

METHOD OF PRODUCING BETA-LACTOSE

Yusuke Asano, Kodaira; Yoshio Aoki, Higashimurayama, and Nagataka Yamazaki, Yokkaichi, all of Japan, assignors to Meiji Milk Products Company Limited, Tokyo and Taiyo Kagaku Kogyo Company Limited, both of, Japan

Filed Nov. 26, 1976, Ser. No. 744,922

Int. Cl.[2] C13K *5/00*

U.S. Cl. 127—42 **6 Claims**

1. A method of producing beta-lactose comprising adding a small amount of water to an alpha-lactose material selected from the group consisting of alpha-lactose and alpha-lactose-containing substances and subjecting the resulting mixture to extrusion from a screw extruder under pressure to convert the alpha-lactose into beta-lactose.

4,083,734

NICKEL BASE ALLOY

William J. Boesch, Utica, N.Y., assignor to Special Metals Corporation, New Hartford, N.Y.

Continuation-in-part of Ser. No. 597,853, Jul. 18, 1975, abandoned. This application Jun. 9, 1976, Ser. No. 691,161

Int. Cl.[2] C22C *19/05*

U.S. Cl. 148—32.5 **4 Claims**

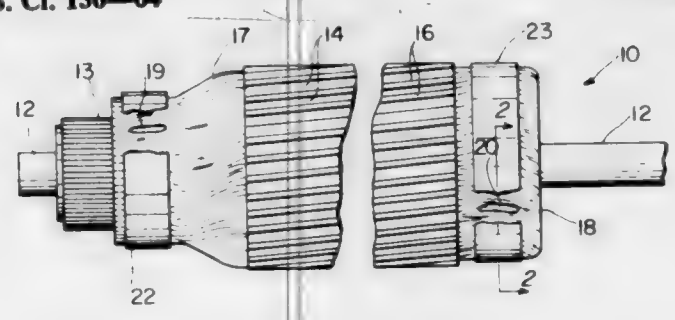
1. A gamma prime strengthened nickel base alloy consisting essentially of, by weight, from 12.0 to 20.0% chromium, from 4.75 to 7.0% titanium, from 1.3 to 3.0% aluminum, from 13.0 to 19.0% cobalt, from 2.0 to 3.5% molybdenum, from 0.5 to 2.5% tungsten, from 0.005 to 0.03% boron, from 0.005 to 0.045% carbon, up to 0.75% manganese, (up) from 0.01 to 0.08% zirconium, up to 0.5% iron, up to 0.2% of rare earth elements that will not lower the incipient melting temperature below the solvus temperature of the gamma prime present in the alloy, up to 0.02% of elements from the group consisting of magnesium, calcium, strontium and barium, balance essentially nickel; said titanium plus said aluminum content being from 6.5 to 9.0; said titanium and aluminum being present in a titanium to aluminum ratio of from 1.75:1 to 3.5:1; said alloy being substantially free of deleterious acicular, sigma and mu phases; said alloy having a 1650° F impact strength of at least 6 ft.-lbs. after 35,000 hours exposure at 1600° F; said alloy forming substantially fewer $M_{23}C_6$ carbides than similar alloys of higher carbon content after long term service at elevated temperatures; said gamma prime being characterized as gamma prime which is substantially spheroidal.

4,083,735

METHOD OF BALANCING ROTORS AND COMPOSITION THEREFOR

John A. Caramanian, 1021 Summer St., Cincinnati, Ohio 45204

Filed Mar. 29, 1977, Ser. No. 782,570
Int. Cl.[2] G01G 5/00; G01M 1/00
U.S. Cl. 156—64 6 Claims



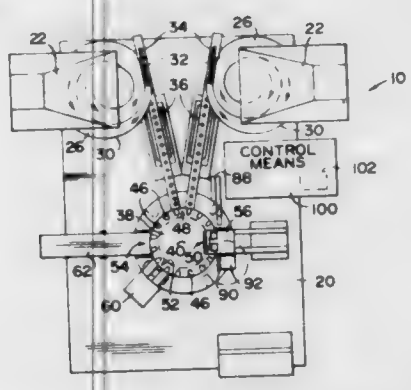
1. A method of balancing a rotor or the like which comprises applying to the rotor a balancing composition which consists essentially of approximately 10 percent by weight of an epichlorhydrin-bisphenol A epoxy resin, 19 percent of a fibrous inorganic material, 51 percent of powdered weighting material selected from the group consisting of a powdered zinc and powdered barium sulfate, 19 percent of a reactive polyamide having an amido equivalent of 200 to 300, and a catalyst, the composition having a specific gravity of at least 3.0 and having substantially no slump at 500° F temperature the composition being sufficiently tacky, adherent, and cohesive to adhere to the rotor during dynamic testing before curing, dynamically testing the rotor with the balancing composition in position thereon, adjusting the amount of the balancing composition on the rotor to achieve balance, and then curing the resin.

4,083,736

FILTER MOUNTING APPARATUS

Edward R. Nordstrom, Crystal Lake, and Roger K. Ufferfilge, Cary, both of Ill., assignors to Seaquist Valve Company, Div. of Pittway Corporation, Cary, Ill.

Filed Mar. 9, 1977, Ser. No. 775,974
Int. Cl.[2] B32B 31/20
U.S. Cl. 156—73.1 19 Claims



1. An apparatus for mounting a filter to a member, comprising in combination:

member holding means adapted for moving the member between a loading position, a securing position and an unloading position;

means for loading the member on said member holding means at said loading position;

securing means mounted relative to said securing position;

means for interposing the filter between the member and said securing means;

means for activating said securing means for securing the filter to the member and severing the portion of the filter secured to the member from the remainder of the filter; and

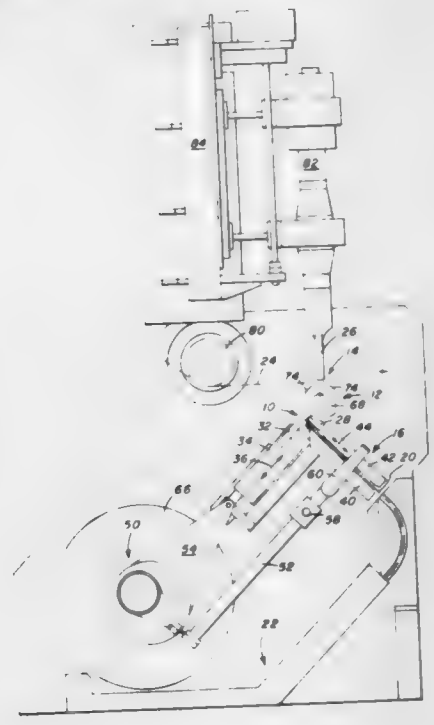
means for unloading the member and the secured filter from said member holding means at said unloading position.

4,083,737

METHOD AND APPARATUS FOR ATTACHING A STRIP OF MATERIAL TRANSVERSELY OF A MOVING WEB

James Conklin Foote, Jr., York, and William Mapstone Clemow, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 19, 1976, Ser. No. 678,087
Int. Cl.[2] B32B 31/20
U.S. Cl. 156—73.1 9 Claims



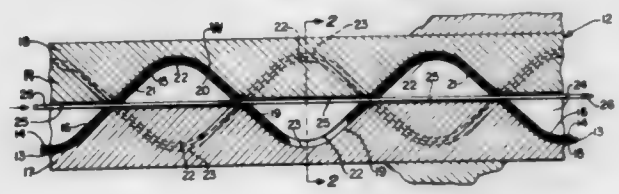
1. The method of attaching a strip of a first material having a hot melt adhesive on both sides thereof to a second web of material comprising the steps of supplying a first web of said first material to a cutting station, cutting said strip from the end of said first web and transferring said strip to a sealing station on a transfer member, supplying said second web of material to said sealing station at a substantially constant velocity, moving said strip through said sealing station at a velocity substantially equal to the velocity of said second web and bringing said strip into contact with a first surface of said second web, said sealing station including ultrasonic transducer means arranged to contact the other surface of said second web, compressing said strip and said second web between said transfer member and said ultrasonic transducer means and ultrasonically sealing the strip to said first surface of said second web, releasing said strip from said transfer member, and stopping said transfer member.

4,083,738

METHOD AND APPARATUS FOR SPLICING TIRE CORD FABRIC

Joel M. Kahaner, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 398,053, Sep. 17, 1973, Pat. No. 4,030,653.
This application Feb. 25, 1977, Ser. No. 772,800
Int. Cl.[2] B32B 7/08
U.S. Cl. 156—92 11 Claims



1. A method of splicing at least two pieces of fabric composed of warp cords held in parallel array by weft threads, comprising the steps of:

(a) holding adjacent ends of the two pieces of fabric in

overlapped relation, the warp cords of the overlapped ends being generally parallel;

(b) forming waves with interconnected ridges and troughs across the overlapped ends such that the longitudinal axes of the ridges and troughs parallel the warp cords; and

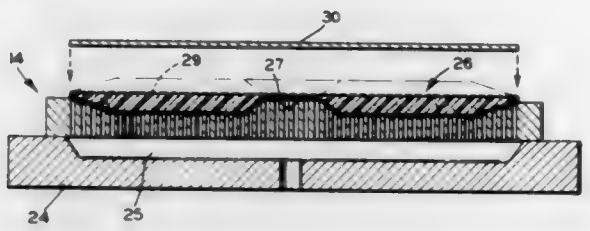
(c) moving a plurality of splicing rods across the overlapped ends while guiding the rods into piercing engagement through the waves intermediate the ridges and troughs at successive points spaced along parallel lines angularly disposed to the parallel warp cords and through the overlapped ends alternately from the opposing farthest spaced faces of the overlapped ends.

4,083,739

FABRICATED PARTS AND METHOD AND APPARATUS FOR PRODUCING THE SAME

Lloyd E. Stahl, Monroe, Mich., assignor to Woodall Industries Inc., Detroit, Mich.

Filed Apr. 8, 1976, Ser. No. 674,883
Int. Cl.[2] B26D *3/00*; B32B *31/00*
U.S. Cl. 156—163 **2 Claims**



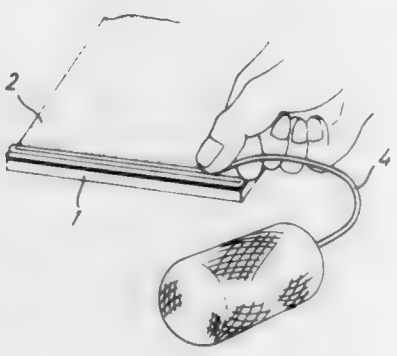
1. A method of fabricating an article, which comprises deforming a flexible sheet to locate selected portions thereof at one side and other portions thereof at the other side of a predetermined line, moving a cutting tool along said line and in cutting engagement with said deformed sheet to remove only said other portions from said sheet, and retaining said cut flexible sheet in said deformed state by securing a backing to the areas of said selected portions of said sheet that were at said one side of said line during the movement of said cutting tool while said cut flexible sheet is in said deformed state.

4,083,740

METHOD OF MAKING FANCYWORKS USING PRESSURE-SENSITIVE ADHESIVE

Rikio Hamanaka, Kyoto, Japan, assignor to Hamanaka Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 501,215, Aug. 28, 1974, abandoned. This application Jan. 6, 1976, Ser. No. 646,943
Int. Cl.[2] B32B *5/00*
U.S. Cl. 156—166 **3 Claims**



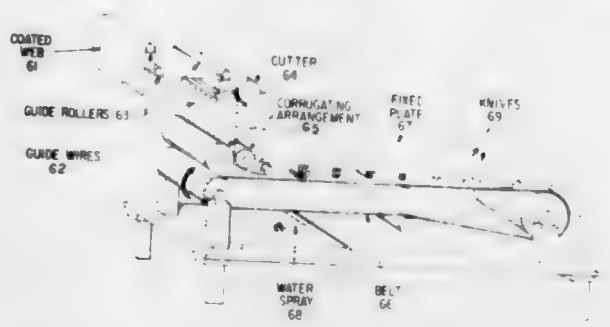
1. A method of making a decorative object suitable for attachment to an article to be decorated, which comprises the steps of: providing a base comprising a generally planar member coated on the opposite surfaces thereof with a layer of pressure-sensitive adhesive with each of said adhesive layers being covered by a unitary release paper; stripping off the entirety of one of said release papers from its associated adhesive layer to expose said adhesive layer, while maintaining the other release paper in place covering the other adhesive layer; applying to a localized small area of said exposed adhesive layer a small portion of elongated yarn means and manually pressing said yarn portion against said exposed adhesive layer to adhere said yarn portion thereto, and then serially applying successive portions of said yarn means to successive portions of said exposed adhesive layer and manually pressing the successive portions of said yarn means against the exposed adhesive layer until said exposed adhesive layer on a section of said base is completely covered by yarn adhered thereto; and then cutting said base around the perimeter of said section to separate the remainder of said base from said section so that section provides a decorative object having exposed yarn covering one surface thereof and the other release sheet covering the other surface thereof.

4,083,741

NOVEL DOSAGE FORM

Arthur H. Goldberg, Montclair, N.J., assignor to Hoffmann-La Roche, Inc., Nutley, N.J.

Division of Ser. No. 640,610, Dec. 15, 1975. This application Jul. 27, 1976, Ser. No. 709,159
Int. Cl.[2] B65H *81/00*
U.S. Cl. 156—184 **6 Claims**



1. In a method of preparing solid pharmaceutical unit dosage forms comprising loading one or more medicaments to a therapeutically inert, edible web, fabricating said web into a solid geometric form of predetermined dimensions having said medicament substantially internalized, said form being divisible into a plurality of unit dosage forms, unitizing said geometric form into said plurality of unit dosage forms and sealing said unit dosage forms to completely internalize said medicament wherein said procedures include at least one non-destructive testing operation, said fabrication procedure comprising cutting said loaded web transversely to form substantially uniform lengths of loaded web each divisable into a plurality of dosage units, corrugating each length of web to form same into a loosely wound coil and convolute winding said loose coil to form a substantially solid rod, the improvement in sealing said rods which comprises applying to each said rod a sheet of heat-sealable, edible polymeric material dimensioned to substantially equal the longitudinal dimension of said rod but unsufficient to completely encase same, and applying heat and pressure to said sheet after said rod is formed to thereby seal the latter.

5. A system for producing solid, pharmaceutical unit dosage forms comprising, in combination:

(a) first means for producing a web of edible, therapeutically inert material;

(b) second means receiving said web for loading to said web at least one medicament;

(c) third means receiving said loaded web for fabricating said loaded web into a solid geometric form of predetermined dimensions having said medicament substantially internalized, said form being divisible into a plurality of unit dosage forms, said means including means for cutting said loaded web transversely to form substantially uniform lengths of loaded web each divisible into a plurality of unit dosage forms, means for corrugating each length of web to form it into a loosely wound coil and means for convo-

lute winding said loose coil to form a substantially solid rod;

(d) fourth means receiving each said rod for cutting same transversely to form therefrom a plurality of unit dosage forms;

(e) fifth means receiving said unit dosage forms for sealing said unit dosage forms and completely internalizing said medicament;

(f) means for testing on-line non-destructively the output of at least one of said first through said fifth means and thereby assure uniform quality of said unit dosage forms;

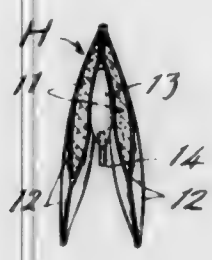
(g) means included in said third means for applying to the trailing edge of each said coil a sheet of heat-sealable, edible polymeric material dimensioned to substantially equal the longitudinal dimension of said rod but insufficient to completely encase the rod, and for applying heat and pressure to said sheet after said rod is formed to thereby seal the latter.

4,083,742

PROCESS FOR PRODUCING ORNAMENTAL STANDING TOYS

Takehiko Sugimoto, 240 Nakazato-Cho, Kita-Ku, Tokyo, Japan

Filed Sep. 2, 1976, Ser. No. 719,908
Claims priority, application Japan, Apr. 28, 1976, 51-49124
Int. Cl.² B32B *31/00*
U.S. Cl. 156—227 **3 Claims**



1. A process for producing ornamental standing toys comprising the steps of providing a rectangular laminated synthetic resin sheet comprising a foam synthetic resin core sandwiched in between a pair of weldable synthetic resin layers and including a pair of opposite half sheet portions connected together along the longitudinal center line of said sheet and each bearing a series of laterally spaced patterns of toys printed on one surface in symmetrical relationship to the corresponding patterns on the other half portion, cutting selected portions of said symmetrical patterns from said two half sheet portions and simultaneously welding said weldable synthetic resin layers together along the peripheral edges of said cut selected portions of the symmetrical patterns to form separate selected portions of said ornamental standing toys, folding said sheet along said center line, and cutting the remaining portions of said symmetrical patterns from said two half sheet portions and simultaneously welding said weldable resin layers along the peripheral edges of the remaining portions of the symmetrical patterns on the two half sheet portions to complete said ornamental standing toys.

4,083,743

COMPOSITION BOARD WITH IMPROVED POLYMERIC SKIN

Alfredo Degens, Ave. Delfim Moreira 952, Rio de Janeiro, Brazil

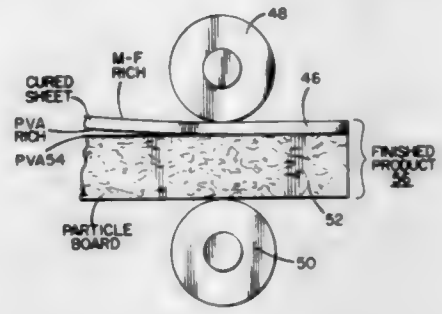
Filed Jun. 7, 1976, Ser. No. 693,198
Int. Cl.² B32B *31/00*
U.S. Cl. 156—278 **21 Claims**

1. A process for preparing a nonfrangible sheet material suitable for use as a surface covering, which process consists essentially of:

a. providing a single, thin, cellulosic, fibrous sheet material adapted for use as a face sheet material, the material impregnated throughout its depth with from about 20 to 70% by weight of a curable, thermosetting resin, and having a basis weight of from about 15 to 180 gsm;

b. applying onto one surface of the resin-impregnated sheet material a layer of an adhesive material compatible with the curable resin; and

c. subjecting the curable resin-impregnated adhesive sheet material to high pressures of over about 20 kilos per centimeter square at a resin-curing temperature for a period of time to force and impregnate the adhesive material from the one surface into the sheet material during the high-pressure curing-resin cycle, the amount of adhesive material and its depth of impregnation sufficient to provide a nonfrangible thin sheet material characterized by a nonporous, cured, resin-rich, face surface free of adhesive, and an impregnated adhesive-rich back surface, the sheet material being flexible and capable of being handled without fracture thereof.



2. A process for preparing a composition board, which process comprises

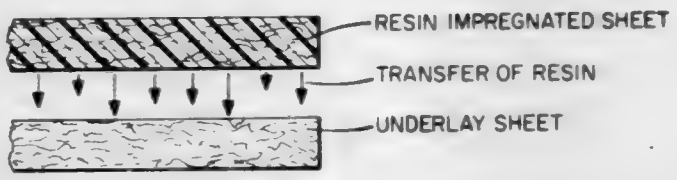
bonding the adhesive-rich surface of the non-frangible sheet material produced by the process of claim 1 without sanding thereof to at least one surface of a composition board.

4,083,744

METHOD OF PREPARING COMPOSITION BOARD WITH IMPROVED POLYMERIC SKIN

Alfredo Degens, Ave. Delfim Moreira 952, Rio de Janeiro, Brazil

Filed Jun. 7, 1976, Ser. No. 693,197
Int. Cl.² B32B *27/42*
U.S. Cl. 156—306 **21 Claims**



1. A process for preparing a flexible, bonded sheet material suitable for use as a surface covering, which process consists essentially of:

a. providing a first fibrous sheet material impregnated with from about 30 to 70% by weight of a curable thermosetting resin, the first sheet having a basis weight of from 20 to 200 g/m² and adapted after curing to be used as a fully resin-cured sheet on a composition board;

b. placing onto one surface of the first resin-impregnated sheet material a second, dry, fibrous, underlay sheet material essentially free of a curable resin, the surface in contact with the fist sheet capable of absorbing resin from the first sheet and the opposite surface capable of absorbing an adhesive material, the second sheet having a basis weight of from 20 to 200 g/m² and adapted to serve as a carrier sheet for the first sheet material; and

c. subjecting the first and second contacting sheet materials to a high pressure of over about 20 kilos per centimeter square at a resin-curing temperature, and for a period of time to effect the flow of a portion of the curable resin

from the first resin-impregnated sheet into the one contacting surface of the second sheet and to bond the contacting surface of the second sheet material to the one surface of the first sheet material by the cured resin, thereby providing an integral, flexible, bonded sheet material having a thickness of about 0.1 to about 0.5 mm in which the top surface of the first sheet is characterized by a hard, resin-cured surface, and the back surface capable of absorbing an adhesive material therein.

4,083,745

APPARATUS FOR PROMOTING THE SETTING OF ADHESIVE ON STACKS OF SHEETS IN BOOKBINDING MACHINES

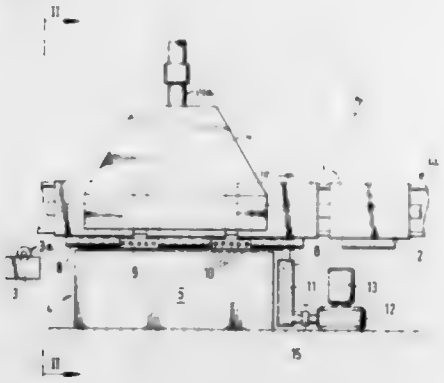
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswill, Switzerland

Filed Jul. 16, 1976, Ser. No. 705,819

Claims priority, application Switzerland, Aug. 21, 1975, 010861/75

Int. Cl.[2] B32B *19/02*; H05B *9/04*; B01K *5/00*

U.S. Cl. 156—380 **9 Claims**



1. In a machine for processing stacks which consist of sheets and selected portions of which are coated with a thermosetting adhesive, such as wet glue, particularly in a bookbinding machine, a combination comprising a conveyor including a plurality of holders each arranged to support a stack and to transport the respective stack in a predetermined direction along a predetermined path; means for promoting the setting of adhesive on the stacks in said path, including a heating device having electrode means adjacent to a predetermined section of said path; means for establishing and maintaining a stream of a gaseous fluid which flows transversely of said path along at least a portion of said predetermined section; means for regulating the rate of flow of gaseous fluid across said portion of said predetermined section; and means for conditioning the gaseous fluid ahead of said portion of said predetermined section.

4,083,746

APPARATUS FOR MAKING BIOLOGICAL DISCS

Christopher P. Thissen, Austin, Minn., assignor to Geo. A. Hormel & Co., Austin, Minn.

Filed Dec. 23, 1976, Ser. No. 754,094

Int. Cl.[2] B32B *31/14, 31/20, 31/26*

U.S. Cl. 156—499 **4 Claims**

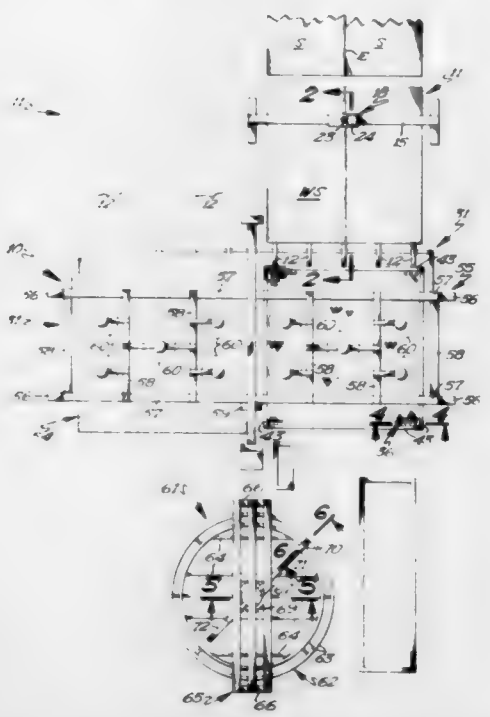
1. Apparatus for forming a circular water-treatment biological disc comprising:

a support means for supporting a pair of substantially identical, rectangular flat plastic sheets of material in side by side relation, the rectangular sheets having adjacent longitudinal edges thereof disposed in overlapped relation,

a heating mechanism engageable with the adjacent overlapped longitudinal edges of the pair of plastic sheets to simultaneously heat the longitudinal edges to a predetermined temperature,

a compression assembly for compressing the overlapped heated longitudinal edges of the sheets to thereby heat seal the edge portion together and form the two sheets into a single large sheet,

a vacuum forming device including a horizontally disposed vacuum forming structure, having a plurality of upwardly convex elements and a plurality of downwardly opening concave recesses throughout the area of said vacuum forming structure, clamping means connected with the peripheral portions of said vacuum forming structure and being operable to releasably clamp the peripheral portions of the sheets on the vacuum forming structure,



a volumetric vacuum zone defined between the clamped sheet and the vacuum forming structure when the former is clamped to the latter, means connected with a vacuum zone for evacuating air therefrom,

a heating mechanism shiftable into close proximity of the vacuum forming device for heating the sheet when the latter is clamped upon the vacuum forming structure,

a cutting apparatus positioned closely adjacent the vacuum forming device including a supporting frame, and a cutting mechanism mounted adjacent said frame and adapted to be rotated on a predetermined radius for cutting the sheet into a disc form.

4,083,747

APPARATUS FOR MAKING STACKS OF PLASTICS BAGS

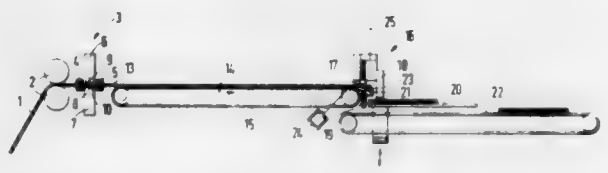
Kurt Rochla, Lengerich, Germany, assignor to Windmoller & Holscher, Lengerich, Germany

Filed Dec. 2, 1976, Ser. No. 746,724

Claims priority, application Germany, Dec. 3, 1975, 2554395

Int. Cl.[2] B31B *1/98, 23/14*; B32B *31/18*

U.S. Cl. 156—510 **5 Claims**



3. A device for forming stacks of plastic bags from tubular or semi-tubular webs of thermoplastic film comprising: (a) first means for forming transversely extending weld seams and lines of perforations in the web of thermoplastic film; (b) second means for separating individual bags from the welded and perforated web of thermoplastic film along said lines of perforations and for stacking the separated individual bags, said second means having:

1. a movable support for supporting the bags to be stacked,
2. a clamping bar positioned above the movable support,
3. means for urging the movable support towards the bottom of the clamping bar,
4. a first punch movable into engagement with bags supported on said movable support for moving said movable support away from the clamping bar,
5. a second punch movable towards a top surface of the clamping bar for clamping the web of thermoplastic film while an individual bag is being separated from the web along a said line of perforations by the movement of said first punch; and

(c) conveying means positioned between said first and said second means for conveying and cooling the web of thermoplastic film from said first to said second means, said conveying means including a supporting and cooling plate means and means for blowing air for advancing the web of thermoplastic film along said plate means, the weld seams being cooled by said plate means and the blowing air.

4,083,748

METHOD OF FORMING AND GROWING A SINGLE CRYSTAL OF A SEMICONDUCTOR COMPOUND

William Andrew Gault, Ewing Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 30, 1975, Ser. No. 627,319

Int. Cl.[2] B01J *17/20, 17/22;* **C01G** *15/00*

U.S. Cl. 156—609 **3 Claims**



1. A method of forming a single crystal Group II-VI or Group III-V compound, which comprises:

(a) positioning a quantity of a first reactant selected from the group consisting of a Group II element or a Group III element within a vertically disposed crucible house in the upper part of a vertically disposed reaction container, said crucible communicating with the interior of said reaction container through a plurality of apertures located in the lower portion of said crucible;

(b) positioning in the lower part of said reaction container a source quantity of a second reactant selected from the group consisting of a Group VI element or a Group V element;

(c) positioning a single crystal seed within the bottom portion of said crucible in contact with said first reactant, the interface between said first reactant and said seed being proximate the level of said plurality of apertures;

(d) heating to a first temperature the lower part of said reaction container to produce a gaseous ambient comprising said second reactant, said gaseous second reactant passing through said plurality of apertures to contact said first reactant and to form a horizontal protective barrier, between said seed crystal and said first reactant;

(e) heating at least the upper part of said reaction container to a second temperature to form the compound within said crucible by reaction of said first reactant and said ambient comprising said gaseous second reactant in contact therewith and to form a melt comprising said formed compound in contact with said horizontal protective barrier;

(f) heating at least the lower portion of said crucible to said second temperature to assure a continuum of said melt comprising said formed compound in contact with said seed crystal; and

(g) lowering at least said second temperature to a third temperature below said second temperature to expose said contacted melt and seed thereto to crystallize and grow from said contacted melt a single crystal on said seed crystal.

4,083,749

METHOD OF MAKING SIZED PAPER

Tatsuro Miwa, Mitaka; Akira Aoyama, Kitamoto; Masatoshi Shimosaka, Tokyo; Hideto Kusumoto, Machida, and Katsuhiko Kuroda, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd. and Hamano Industry Co., Ltd., both of Tokyo, Japan

Filed Jul. 19, 1976, Ser. No. 706,599

Claims priority, application Japan, Jul. 23, 1975, 50-89891

Int. Cl.[2] D21D *3/00*

U.S. Cl. 162—168 N **17 Claims**

1. A method of making sized paper which is characterized by the steps of the preparation of a pulp slurry in a beater, addition of water soluble or water dispersible polymeric cationic neutral sizing agent having cationic nitrogen atoms, forming the pulp into a wet sheet and drying of the wet sheet, wherein the improvement comprises treating aqueous pulp slurry containing the cationic neutral sizing agent, or the wet sheet prepared therefrom, with an oxidizing agent, the oxidizing agent having the ability to and being used in amount to fix the cationic neutral sizing agent on the pulp.

10. A method for making a sized paper which comprises

(a) adding to an aqueous pulp slurry, a cationic neutral sizing agent comprising an acid salt of a diamine derivative of a copolymer formed by the reaction of C_{6-40} α-olefin-maleic anhydride copolymer with a diamine having at least one primary amino group, the molar ratio of the maleic anhydride to the α-olefin being 1–1.5:1, the average molecular weight of the α-olefin/maleic anhydride copolymer being 2000–10,000, and the molar ratio of the diamine to the acid anhydride group of the α-olefin-maleic anhydride copolymer being 0.6–1.0:1.0,

(b) adding an oxidizing agent to the pulp slurry containing the cationic neutral sizing agent, and

(c) forming the thus treated pulp slurry into a paper, the oxidizing agent having the ability to and being used in an amount to fix the cationic neutral sizing agent to the pulp.

4,083,750

FLOWBOX WITH CONVERGENT WALL PORTIONS

Michael David Newns, and Brian William Attwood, both of Bristol, England, assignors to St. Anne's Board Mill Company Limited, Bristol, England

Filed May 3, 1976, Ser. No. 682,594

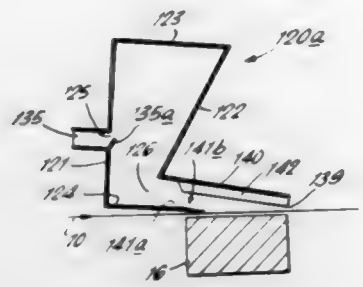
Claims priority, application United Kingdom, May 6, 1975, 19053/75

Int. Cl.[2] D21F *1/02*

U.S. Cl. 162—317 **14 Claims**

1. A flowbox for a paper, board or similar fibrous web making machine, the flowbox comprising an enclosed explosion chamber having upstream and downstream convergent wall portions converging from a top wall portion towards a bottom wall portion, wherein a stock inlet is disposed in the upstream wall portion and is directed towards the convergent downstream wall portion so that a jet of stock emanating from the inlet impinges against the convergent downstream wall portion adjacent the region of closest approach of the upstream and downstream wall portions before passing through a stock

outlet, the stock outlet being provided by non-divergent upper and lower plates defining an exit slice, the lower plate being a



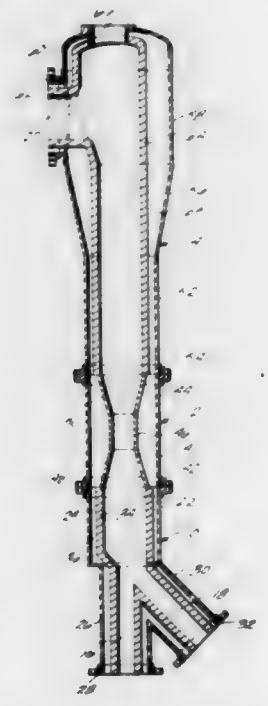
continuation of the bottom wall portion, and the lower plate being shorter than the upper plate.

4,083,751

CONTINUOUS FEED PYROLYSIS CHAMBER FOR DECOMPOSING SOLID WASTE

Charles K. Choi, Claremont, and Joseph P. Tassoney, Diamond Bar, both of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 603,872, Aug. 11, 1975, abandoned. This application Aug. 31, 1976, Ser. No. 719,273
Int. Cl.[2] C10B *49/20, 53/02*
U.S. Cl. 202—99 6 Claims



1. A pyrolysis reactor for the transport pyrolysis of particles of solid organic waste by heating by gas fluidized hot solid particles comprising a tubular chamber formed of lower tubular blending section, an intermediate tubular particles acceleration section and upper tubular section in which:

(a) the lower tubular blending section has an enclosing lower end coupled at said lower end in communicating relation to a first inlet pipe, said first inlet pipe provided for admitting the gas fluidized hot solid particles and coupled in communicating relation to a second inlet pipe positioned at an acute angle to the first inlet pipe, said second inlet pipe for introduction of the particles of solid organic waste, and coupled at its upper end in communicating relation to said tubular intermediate particles acceleration section by a frustoconical section, the portion of the lower tubular blending section between the enclosing lower end and the intermediate tubular particles acceleration section forming the section for blending the particles of solid organic waste and the gas fluidized hot solid particles in initial pyrolyzing combination;

(b) the intermediate tubular particles acceleration section is coupled to the upper tubular section and has a diameter less than the diameter of the lower tubular blending section to increase velocity of particle flow of solid waste and hot solids relative to velocity of particle flow in the lower tubular blending section to promote mixing of particles passing from the lower tubular blending section to the upper tubular section; and

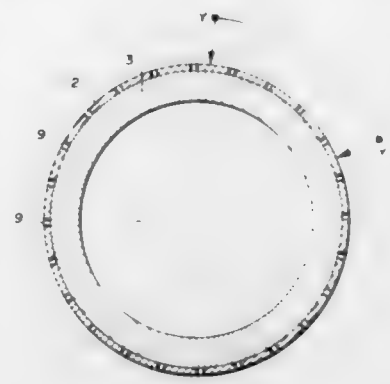
(c) the upper tubular section has a diameter, greater than the diameter of the intermediate tubular particles acceleration section, an enclosing upper end, and has an outlet pipe adjacent said enclosing upper end, said tubular upper section for completion of pyrolysis of said particulate solid organic waste.

4,083,752

ROTARY RETORT

Edward T. Bielski, Crofton, Md., and Timothy J. Fowler, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 10, 1976, Ser. No. 740,635
Int. Cl.[2] C10B *1/10, 45/00;* F27B *7/00*
U.S. Cl. 202—100 15 Claims



1. In a rotary kiln comprising a cylindrical steel shell lined with a refractory material wherein at least one end of said steel shell is exposed to a greater heat flux than the portion of said steel shell adjacent said end is exposed to, the improvement which comprises providing a plurality of generally parallel slots in said steel shell spaced substantially equi-distant around the circumference of said steel shell and extending from at least one so affected end of said steel shell to a point on said steel shell remote from said end whereat the thermal expansion of the steel shell no longer places an unacceptable stress on the refractory lining fixedly affixed thereto, said slots being of sufficient width and frequency to accommodate the circumferential expansion of the segments of said steel shell between said slots at operating temperatures, and each such slotted segment of said steel shell being affixed to the refractory lining by at least one sliding anchor means to accommodate the longitudinal expansion of each such slotted segment.

4,083,753

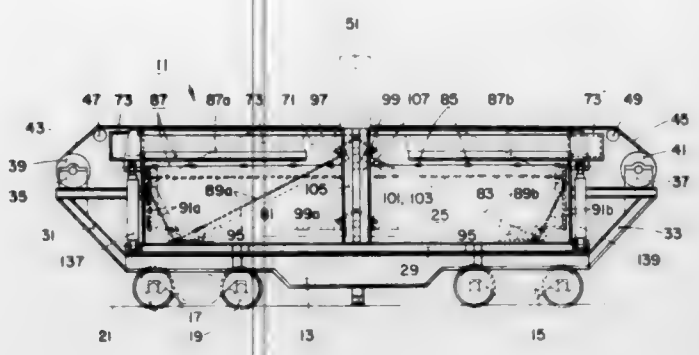
ONE-SPOT COKE QUENCHER CAR

Robert C. Rogers, Pittsburgh, and John D. Sustarsic, McKees Rocks, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 4, 1976, Ser. No. 683,057
Int. Cl.[2] C10B *39/14*
U.S. Cl. 202—227 11 Claims

1. In a one-spot coke quencher car having a tiltable hopper including means for tilting said hopper, wherein hot coke pushed from a coke oven battery chamber is received, and an extendible and retractable covering over said hopper, the improvement in said hopper comprising:

a. a transversely articulated vertically movable bed disposed within said hopper; and



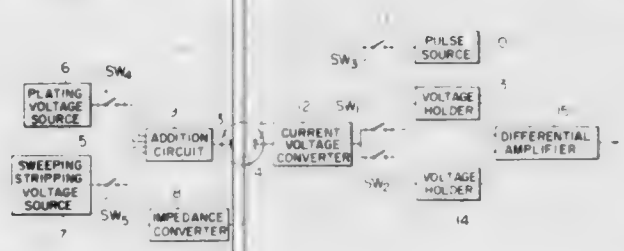
b. means for raising and lowering said bed to and from an angular position with respect to a horizontal plane.

4,083,754

VOLTAMMETRIC APPARATUS AND METHOD

Koremitsu Outsuka, Fukuoka; Kazuyoshi Kawasaki, and Yutaka Tanaka, both of Kitakyushu, all of Japan, assignors to Mitsubishi Kasei Kobyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1976, Ser. No. 679,972
Claims priority, application Japan, Apr. 28, 1975, 50-51668
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—1 T **12 Claims**



1. A method of differential pulse anodic stripping voltammetry comprising the steps of

filling a solution containing ions of a metal to be analyzed into an electrolytic cell having a working electrode and a counter electrode,

applying a plating voltage across the counter electrode and the working electrode to plate the same with the metal,

applying across the counter electrode and the working electrode a DC stripping voltage having superimposed thereon a pulse voltage having a repetition period of 16.7 to 400 milliseconds in order to strip the metal that has been plated on the working electrode by the plating voltage,

measuring a first sampling current which flows through the working electrode during a predetermined interval in which the pulse voltage is not applied,

measuring a second sampling current which flows through the working electrode while the pulse voltage is applied, and

determining the difference between the first and second sampling currents.

4,083,755

METHOD AND APPARATUS FOR SELECTIVELY PLATING RECTANGULAR SHEET CONTINUOUSLY OR INTERMITTENTLY

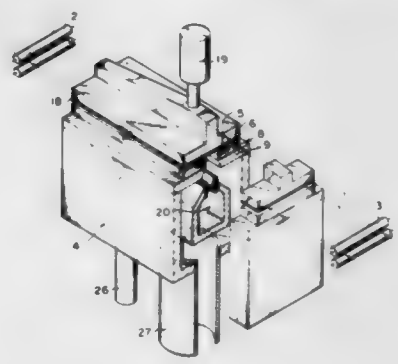
Yasuyuki Murata, Kamakura, Japan, assignor to Electroplating Engineers of Japan, Limited, Tokyo, Japan

Filed Apr. 8, 1976, Ser. No. 675,135
Claims priority, application Japan, Jun. 14, 1975, 50-80126
Int. Cl.[2] C25D *5/02*
U.S. Cl. 204—15 **11 Claims**

1. A process for continuously electroplating a selected area of an elongated electroconductive sheet, comprising the steps of:

continuously pressing a plate-form pressure packing member against a plate-form masking packing member;

continuously forcibly moving said sheet in the longitudinal direction thereof between said packing members so that said masking packing member contacts a surface portion of one side of said sheet and said pressure packing member contacts a surface portion of the opposite side of said sheet, said pressure packing member being pressed against said sheet and thereby presses said sheet against said masking packing member, said masking packing member having opening means therethrough having a configuration corresponding to the selected area to be plated of said sheet with the perimeter of said opening means being in substantially sealed contact with said one side of said



sheet, and simultaneously connecting said sheet to the negative side of a source of DC electroplating potential;

continuously pumping electroplating solution from storage tank means through nozzle means associated with said opening means and thereby spraying jet means of said electroplating solution into said opening means in said masking packing member during the movement of said sheet while simultaneously connecting said nozzle means to the positive side of said source of DC electroplating potential whereby said electroplating solution continuously contacts said selected area of said sheet and an electroplated coating is continuously deposited on said selected area of said sheet as it is moved between said masking packing member and said pressure packing member, and continuously returning said electroplating solution from said opening means to said storage tank means.

4,083,756

PROCESS FOR IMPROVING CORROSION RESISTANCE OF ANODIZED METAL SURFACES AND TREATED PRODUCT

Edward George Tajkowski, Williamsville, N.Y., assignor to Allied Chemical Corporation, Morris Township, N.J.

Filed Jun. 17, 1977, Ser. No. 807,756
Int. Cl.[2] C25D *11/18*
U.S. Cl. 204—35 N **11 Claims**

1. A process for preparing a corrosion-resistant anodized metal substrate comprising the steps of anodizing a metal substrate selected from aluminum and its alloys to produce a metal oxide coating from about 0.0002 to about 0.001 inch thick and immersing the anodized metal in an aqueous solution having a pH of about 5.5 to about 6.5 and having at least about 0.05 weight % of a sealing agent selected from segmented polycarboxylic acids having a perfluorinated alkyl or alkoxy chain of at least three carbons, acidic salts of said segmented carboxylic acids and mixtures thereof at between about 98° C and about 100° C for a sufficient time to seal the metal oxide coating.

4,083,757

ELECTROCHEMICAL PROCESS FOR PRODUCING MANGANESE DIOXIDE

Levan Nikolaevich Dzhaparidze, ulitsa Saburtalinskaya, 37, kv. 9; Temuri Alexandrovich Chakhunashvili, ultisa Plekhanova, 2/8; Venera Romanovna Maisuradze, prospekt Akakiya Tsereteli, korpus 5, kv. 54; Raul Vladimirovich Chagunava, ulitsa Pekinskaya, 2, kv. 23, all of Tbilisi; Zurab Yasonovich Kervalishvili, Rustavi, prospekt Lenina, 14, kv. 3; Nodar Georgievich Sukharulidze, Rustavi, Saradzhishvili, 51, kv. 24, both of Gruzinskaya; Dali Georgievna Otiashvili, prospekt V. Pshavela, 11, kv. 12, Tbilisi, and Alexei Pavlovich Epik, ulitsa Gorkogo, 9, kv. 19, Kiev, all of U.S.S.R.

Filed Jul. 26, 1977, Ser. No. 819,105

Int. Cl.² C25B *1/30*

U.S. Cl. 204—83 **2 Claims**

1. An electrochemical process for producing manganese dioxide comprising electrolysis of an aqueous solution of manganese sulphate containing 100 to 150 g/l of manganese sulphate and 20 to 30 g/l of sulphuric acid and having a temperature of from 90 to 95° C at an anodic current density of from 80 to 100 A/m^2 using a cathode and a titanium anode coated with a layer of titanium carbide with a thickness of from 50 to 100 mcm.

4,083,758

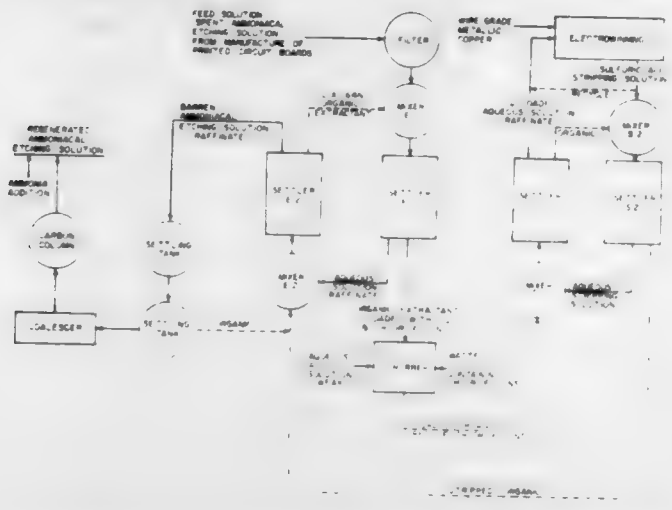
PROCESS FOR REGENERATING AND FOR RECOVERING METALLIC COPPER FROM CHLORIDE-CONTAINING ETCHING SOLUTIONS

Wayne D. Hamby, Pleasant Grove, and Marvin Dale Slade, Maesar, both of Utah, assignors to Criterion, Orem, Utah

Filed Sep. 27, 1976, Ser. No. 727,172

Int. Cl.² C25C *1/12*; B08B *7/04*; C23G *1/36*

U.S. Cl. 204—106 **8 Claims**



1. A process for recovering copper values in metallic form from an aqueous, ammoniacal, etching solution containing the copper values along with chloride ions, said etching solution being derived from the etching of printed electronic circuit boards with a mixture of ammonium hydroxide and ammonium chloride, comprising the steps of:

a. intimately mixing the etching solution with an organic medium containing an exchange reagent which is capable of selectively extracting copper and chloride ions from said solution, thereby producing a dispersion comprising an aqueous phase and an organic phase, the organic phase containing the exchange reagent, the copper ions, and the chloride ions;

b. separating the phases of step (a);

c. intimately mixing the organic phase of step (b) with an aqueous, weakly acidic, scrubbing solution which is capable of selectively stripping the chloride ions from the organic phase to produce a dispersion comprising an aqueous acidic phase containing the chlorides, and an organic phase containing the exchange reagent and copper ions substantially free of chloride ions;

d. separating the phases of step (c);

e. intimately mixing the organic phase of step (d) with an aqueous acidic stripping solution which is capable of stripping copper ions from the organic phase, thereby producing a dispersion comprising an aqueous phase containing the copper ions substantially free of chloride ions, and an organic phase containing the exchange reagent;

f. separating the phases of step (e); and

g. electrowinning metallic copper from the aqueous phase containing the copper ions substantially free of chloride ions.

4,083,759

METHOD FOR REDUCING SLUDGE FORMATION IN THE CONTINUOUS PRODUCTION OF IRON BY ELECTROLYSIS OF FERROUS ELECTROLYTE

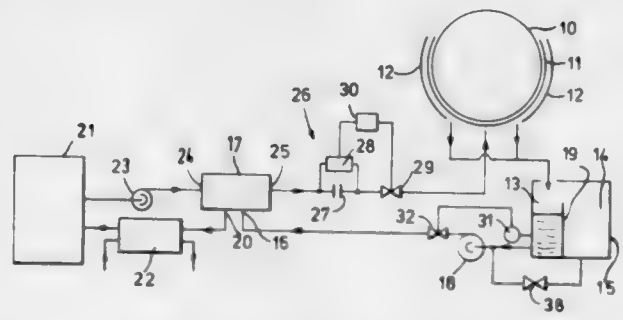
Colin Roscoe, Mold, Wales, and Kevin Lucas, Widnes, England, assignors to The Electricity Council, London, England

Filed Jul. 16, 1976, Ser. No. 705,980

Claims priority, application United Kingdom, Jul. 17, 1975, 30080/75

Int. Cl.² C25C *1/06*; C25D *1/04*

U.S. Cl. 204—112 **10 Claims**



1. In a method of continuous production of iron by electrolysis of a ferrous electrolyte in an electro-deposition cell, the improvement wherein the ferrous electrolyte is reconstituted by the steps of

cooling the electrolyte leaving the electrodeposition cell,

passing the cooled electrolyte into a holding tank containing metallic iron to reconstitute ferrous ions in the electrolyte, and

heating the reconstituted electrolyte after it has left the tank but prior to its entry into the cell, to thereby reduce the rate of sludge formation in said method.

4,083,760

ELECTROLYTIC PRECISION DRILLING DEVICE AND PROCESS

Jörg Puhr-Westerheide, Birkenau, Germany, assignor to MTU Motoren-und Turbinen-Union Munchen GmbH, Munich, Germany

Filed Aug. 27, 1976, Ser. No. 718,429

Claims priority, application Germany, Aug. 30, 1975, 2538653

Int. Cl.² C25F *3/02*; C25D *17/12*

U.S. Cl. 204—129.55 **5 Claims**

3. A method for electrolytic precision drilling of a plurality of in-line boreholes formed in a row, the boreholes having skewed axes and serving as cooling air holes in a workpiece, the holes being drilled by a plurality of tubular electrodes attached to a movable manifold head, comprising the steps of:

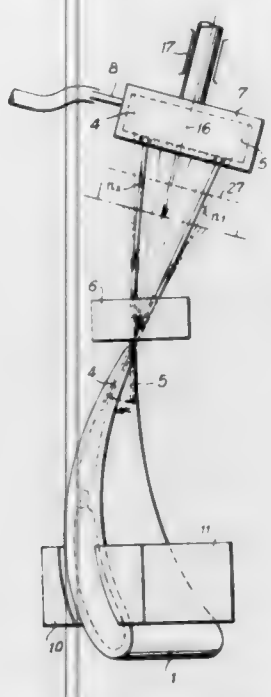
holding the tubular electrodes in the manifold head by elastic material having a modulus of elasticity not exceeding 500 kp/mm^2;

receiving the tubular electrodes in guidance means, the manifold head being arranged above the guidance means, the latter having an upper edge and being provided with guidance bores coaxial with respective boreholes to be formed in the workpiece, the guidance means being rigid

with the workpiece, the tubular electrodes being slidably received in the coaxial guidance bores;

feeding the electrolyte manifold head in a direction of feed coinciding with a line bisecting the axes of the outermost boreholes of the row;

feeding the tubular electrodes into the workpiece to form said boreholes, the electrodes being dimensioned so that upon reaching a final bore depth in the workpiece a guidance-free length remains between the attachment point of the tubular electrodes on the electrolyte manifold and the



upper edge of the guidance means, the length being at least 50 times the diameter of one of the tubular electrodes;

passing a stream of electrolyte through the plurality of tubular electrodes;

directing the stream at the workpiece; and

aligning the tubular electrodes in the manifold head in relation to the guidance bores such that no bending of the tubular electrodes will occur in a position corresponding to one-half of the final bore depth.

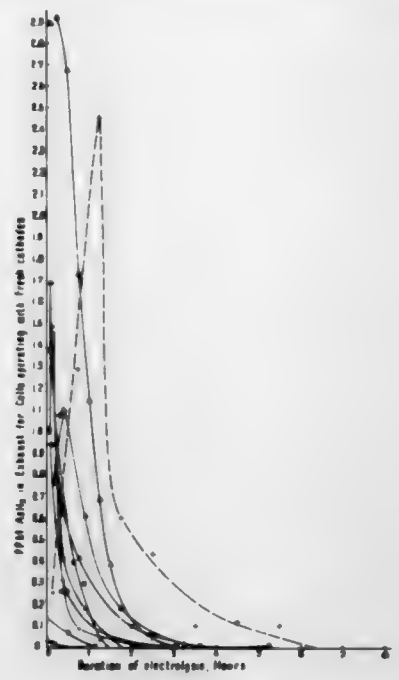
4,083,761

ARSENIC REMOVAL FROM ELECTROLYTES WITH APPLICATION OF PERIODIC REVERSE CURRENT

George J. Houlachi, St. Laurent, and Pierre L. Claessens, St. Eustache, both of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Filed Aug. 2, 1976, Ser. No. 710,866
Int. Cl.² C25C *1/12*
U.S. Cl. 204—130 **20 Claims**

1. In a method of removing arsenic from electrolytes containing arsenic and copper within an electrolytic cell having cathodes and insoluble anodes, wherein the copper concentration of the electrolyte reaches such low levels that toxic arsine gas would be formed at the cathodes during electrolysis, and which comprises applying a direct current through said cell so as to co-deposit arsenic and copper present in the electrolyte onto the cathodes, the improvement comprising periodically



reversing the polarity of the current such as to minimize formation of the toxic arsine gas at the cathodes.

4,083,762

CONTROL OF STAINING IN ELECTRODEPOSITION OF COATINGS

Myron J. Krupp, Grafton; Gerald R. Gacesa, and John P. Knudtson, both of Franklin, all of Wis., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 855,749, Sep. 5, 1969, abandoned. This application Apr. 19, 1974, Ser. No. 462,269
Int. Cl.² C25D *13/10*
U.S. Cl. 204—181 R **7 Claims**

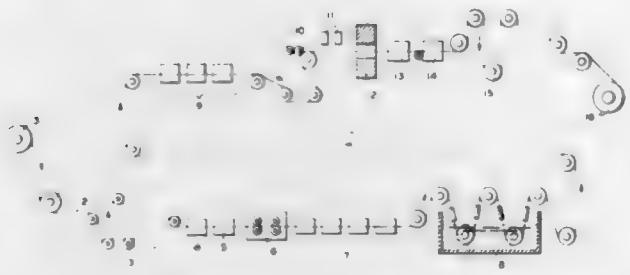
1. In a process for the electrodeposition of a coating upon an iron-containing, electrically-conductive article by an electrodeposition process, the improvement comprising employing a the electrodeposition bath a composition comprising an aqueous dispersion comprising an ionically-solublized synthetic organic vehicle resin, said bath containing a stain-inhibiting amount of a coester of (1) a phosphorous compound selected from the group consisting of phosphorous pentoxide, orthophosphoric acid and polyphosphoric acid, (2) an aliphatic monohydric alcohol containing from 6 to 16 carbon atoms, and (3) a non-ionic adduct of ethylene oxide and an organic compound selected from the group consisting of alkylated phenols containing at least one alkyl group of 6 to 18 carbon atoms, aliphatic alcohols containing from 6 to 25 carbon atoms, aliphatic monocarboxylic acids containing from 6 to 20 carbon atoms, and aliphatic mercaptans containing 7 to 20 carbon atoms, said non-ionic adduct (3) containing from 1 to 40 moles of ethylene oxide per mole of said organic compound, and being present in the weight proportions of about 5 to about 85 parts per 100 parts combined of said non-ionic adduct (3) and said aliphatic monohydric alcohol (2), and the molar ratio of the total number of moles combined of said aliphatic monohydric alcohol (2) and of said non-ionic adduct (3) to the total number of moles of said phosphorous compound (1), calculated as phosphorous pentoxide, being within the range of from about 1:1 to about 5:1.

4,083,763

METHOD FOR MANUFACTURING COLORED METAL SHEETS

Shozo Matsuda, Nishi; Naoe Hirai, Kitakyushu, and Tadashi Tanaka, Yokohama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 364,336, May 29, 1973, abandoned, which is a continuation of Ser. No. 839,982, Jul. 8, 1969, abandoned. This application Jan. 7, 1976, Ser. No. 647,172
Claims priority, application Japan, Jul. 8, 1968, 43-48011
Int. Cl.[2] C25D *13/06, 13/16*
U.S. Cl. 204—181 E 6 Claims



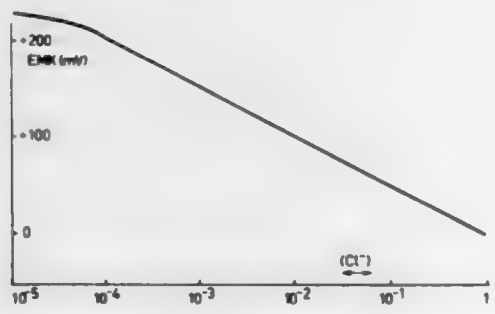
1. A method for manufacturing a colored or non-colored metal coil, comprising the steps of subjecting a metal coil, pretreated for coating, to an electrodepositing coating with a water-soluble or water-dispersable resin which does not contain unsaturated carbon bonds (C=C) polymerizable with electron beams, at a voltage of less than 100 V, for less than 10 seconds, to form a primer coating on the metal coil, water-washing and air-drying the primer coating, them immediately, without curing the primer coating, non-electrolytically coating it with an organic solvent-soluble or monomer-soluble type paint containing unsaturated carbon bonds (C=C) polymerizable with electron beams, as a finishing paint, and then electron beaming it to form a polymerized coating thereon.

4,083,764

ION-SELECTIVE ELECTRODE

Renaat Edmond Van de Leest; Nicolaas Marinus Beekmans, and Leopold Heijne, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1975, Ser. No. 640,704
Claims priority, application Netherlands, Jan. 24, 1975, 7500823
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 M 2 Claims



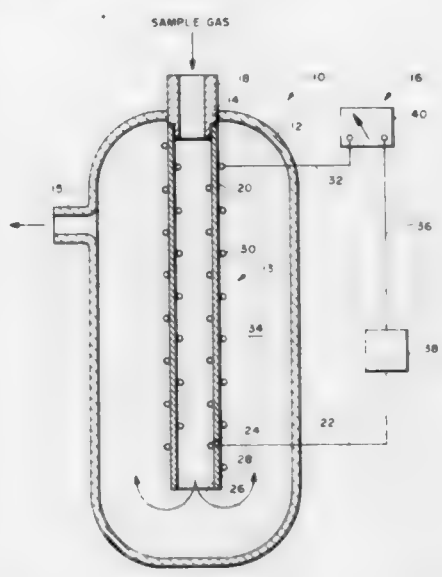
1. An ion-selective electrode for selectively measuring the concentration of an ion in a solution of a mixture of ions, comprising an ion-conducting or a mixed ion-conducting - electron-conducting matrix material of a mixed silver-iodine pyrophosphate having a specific ion conductivity of at least 2×10^{-4}mho.cm^{-1}, and at least one coating on said matrix having a thickness of between 0.1 and 100 um of an ion-selective material of a silver halide or silver phosphate.

4,083,765

POLYMERIC ELECTROLYTIC HYGROMETER

Daniel D. Lawson, Arcadia, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 21, 1976, Ser. No. 752,748
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 W 13 Claims



1. An electrolytic hygrometer comprising in combination:
a closed sample container having an inlet and an outlet defining a sample gas flow path therebetween;
an oxidation-resistant, hygroscopic, gas-impermeable, solid persulfonic acid substituted polytetrafluorethylene polymeric tube for absorbing moisture from the sample gas;
means mounting the tube within the container parallel to and within the flow path such that the sample gas flows in contact with the inner and outer surfaces of the tube;
a first electrode in contact with the inner surface of the tube;
a second counter-electrode in contact with the outer surface of the tube and opposed to the first electrode; and
conductor means defining a series circuit with said electrodes including a DC power source capable of electrolyzing water absorbing by the tube and a meter for measuring the electrolyzing current.

4,083,766

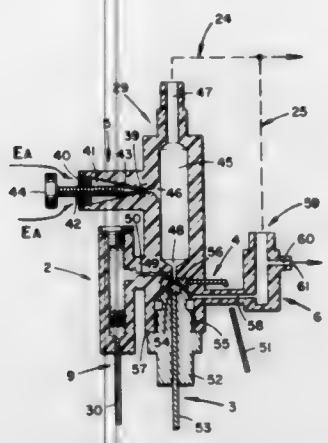
APPARATUS TO DETECT TOXIC IONS IN THE ATMOSPHERE OR DISSOLVED IN WATER

Fred Landon, Cachan; Maurice Bonnemay, Boulogne; Jean-Pierre Laverge; Pierre Malaterre, both of Paris, and Jean Royon, La Varenne, all of France, assignors to Etat Francais represente par le Deleque Ministeriel pour l'Armement, France

Filed Jul. 3, 1974, Ser. No. 485,731
Claims priority, application France, Aug. 7, 1973, 73 28761
Int. Cl.[2] G01N *27/26*
U.S. Cl. 204—195 R 2 Claims

1. Apparatus for detecting and measuring the atmospheric concentration of toxic gases, comprising:
an electrochemical cell having a measurement chamber, an active electrode and a reference electrode located in said measurement chamber, means for introducing an electrolyte into said measurement chamber and for draining said electrolyte after a measurement, an electrolyte condensation chamber communicating with said measurement chamber and with a suction circuit, and a venturi tube having an adjustable needle valve for admitting gas and electrolyte into said condensation chamber;
means connected to said electrochemical cell for electroni-

cally measuring the concentration of toxic gas in the atmosphere; and



means coupled to said measuring means for displaying the results of a measurement.

4,083,767

APPARATUS FOR ELECTROCHEMICAL MACHINING OF WORKPIECES

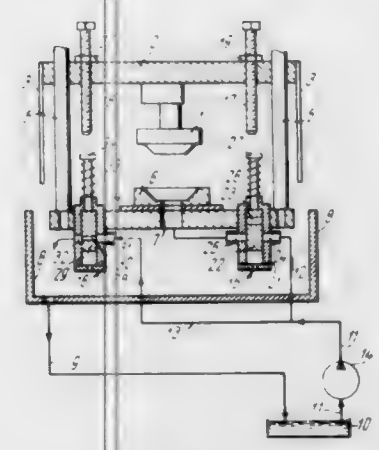
Vladimir Isaakovich Suslin, ulitsa Frunze, 17, kv. 46; Alexandr Ivanovich Dubovik, ulitsa Gvardeitsev Shironintsev, 63a, kv. 22; Boris Anatolievich Makeev, ulitsa Novgorodskaya, 6, kv. 29; Pavela Semenovich Razdymakha, ulitsa Bljukhera, 26, kv. 121, and Zinovy Abramovich Lekarev, ulitsa Trinklera, 20, kv. 71, all of Kharkov, U.S.S.R.

Filed Jul. 8, 1977, Ser. No. 814,096

Claims priority, application U.S.S.R., Jul. 13, 1976, 2374202

Int. Cl.[2] B23P *1/12, 1/16*

U.S. Cl. 204—224 M **1 Claim**



1. An apparatus for electrochemical machining of workpieces, comprising:

a work table adapted to support thereon a workpiece being machined;

and electrode tool adapted to be fed toward said workpiece for a machining operation and to be retracted therefrom for an inter-operation interval;

a tank for a supply of a working fluid;

an intermediate vessel;

a working fluid line for supplying the working fluid from said supply tank to said workpiece being machined;

a bypass line for circulation of the working fluid via said intermediate vessel into said supply tank;

a common line extending from said supply tank to the point of branching off of said working and bypass lines;

a pump mounted in said common line;

a first valve mounted in said bypass line and having a control element;

a second valve mounted in said working line and having a control element;

a means for controlling the switching over of said working and bypass lines, including two rods;

the first one of the two rods of said switching over control means being rigidly coupled with said electrode tool and extending in the direction of the feed thereof, with provisions for adjusting the length of said first rod;

the second one of the two rods of the switching over control means being rigidly coupled with said electrode tool and extending in the direction of the feed thereof, with provisions for adjusting the length of said second rod;

said first valve being fixed on said work table directly under said first rod for interaction of said first rod with said control element of said first valve, as said electrode tool is fed toward said workpiece;

said first valve being adapted to close the flow through said bypass line upon the action being exerted by said first rod upon said control element thereof, and to permit the flow through said bypass line upon this action having ceased;

said second valve being fixed on said work table directly under said second rod for interaction of said second rod with said control element of said second valve, as said electrode tool is fed toward said workpiece;

said second valve being adapted to permit the flow through said working line upon the action being exerted by said second rod upon said control element thereof and to close the flow through said working line upon this action having ceased.

4,083,768

PREPARATION OF HIGH PERFORMANCE POLYELECTROLYTE MEMBRANE

Lester T. C. Lee, Parsippany, and Kang-Jen Liu, Somerville, both of N.J., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed May 24, 1976, Ser. No. 689,304

Int. Cl.[2] C25B *13/08*

U.S. Cl. 204—296 **7 Claims**

1. A durable, high performance membrane carrying charged group comprising a matrix of polyolefin base film uniformly impregnated with a mixture of at least 15 percent by weight, based on the total weight of the membrane, of a cross-linked monovinyl aromatic monomer which is thereafter polymerized and cross-linked with the equivalent of 5–30 percent divinylbenzene based on weight of the mixture of the vinyl aromatic monomer, containing, on the aromatic nuclei of the matrix, chemically bonded electrically charged groups, said charged groups being introduced after the cross-linked matrix has been preswollen with a solvent which is substantially inert and miscible with the functionalization agent which supplied said charged groups.

4,083,769

CATALYTIC PROCESS FOR LIQUEFYING COAL

Richard Emil Hildebrand, Glenshaw; John Angelo Paraskos, and Herman Taylor, Jr., both of Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

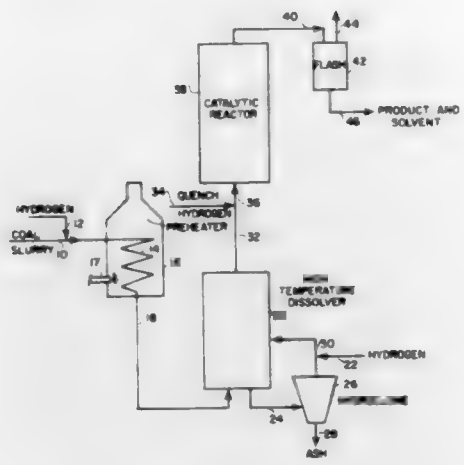
Filed Nov. 30, 1976, Ser. No. 746,180

Int. Cl.[2] C10G *1/08*

U.S. Cl. 208—10 **20 Claims**

1. A process for liquefying coal at a hydrogen pressure above 3,100 psi comprising passing a feed coal-solvent slurry and hydrogen through a tubular preheater zone to heat the slurry to a maximum temperature of about 710° to about 800° F., passing effluent slurry from said preheater zone to a non-catalytic dissolver zone maintained at a hydrogen pressure above 3,100 psi and at a temperature at least 10° F. higher than the maximum temperature in the preheater zone in the range of about 800° to about 900° F., the residence time in the dissolver zone being longer than in the preheater zone, removing an effluent stream from said dissolver zone, passing said dissolver effluent stream without a distillation step and at a hydrogen pressure above 3,100 psi through a catalytic hydrogenation zone maintained at a temperature in the range of 700° to 825°

F., removing a catalytic hydrogenation zone effluent stream and recovering a solvent boiling range fraction therefrom, and



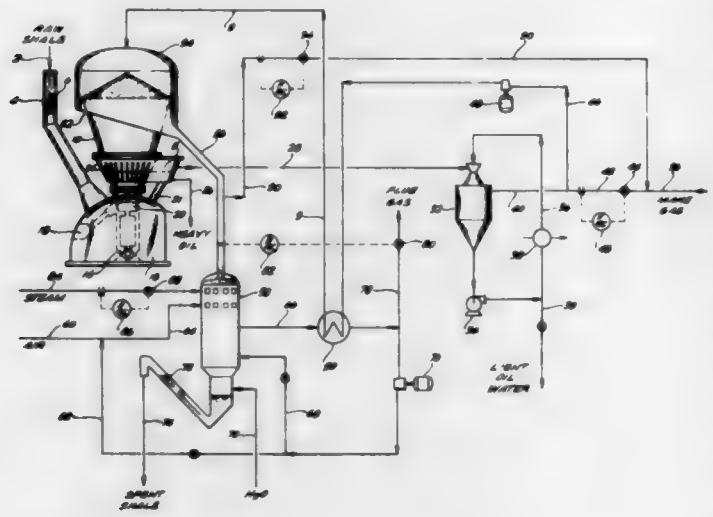
recycling said solvent fraction to form said feed coal-solvent slurry.

4,083,770

USE OF CONTROL SYSTEM FOR GAS-SOLIDS CONTACTING PROCESSES

Roland F. Deering, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 30, 1976, Ser. No. 718,785
Int. Cl.² C10B *53/06*; C10G *1/02*
U.S. Cl. 208—11 R **11 Claims**



3. In a shale retorting process wherein:

(a) crushed oil shale is countercurrently contacted with a preheated, substantially oxygen-free eduction gas in a retorting zone to educe therefrom product oil and a hydrocarbonaceous make gas, the rate of production of said make gas varying from time to time between a maximum value, M, and a minimum value, *m;*

(b) off-gas from said retorting zone is cooled to condense out water and heavy hydrocarbons, and then divided into a net make gas stream and an eduction recycle gas stream; and

(c) hot, retorted shale from said retorting zone is passed through an enclosed transfer zone into a combustion zone wherein it is contacted with an oxygen-containing combustion gas to burn coke therefrom and produce a hot flue gas;

the improved method for preventing the transfer of gases between said retorting zone and said combustion zone without the use of mechanical sealing means, which comprises:

(1) continuously detecting the pressure prevailing at some point in said transfer zone;

(2) maintaining substantially constant pressures in said retorting zone and combustion zone by exhausting flue gas from said combustion zone in response to said detected pressure;

(3) removing from the system net make gas in (b) above at a substantially constant predetermined flow rate, *x*, which is less than said value *m;*

(4) injecting steam into said transfer zone at a substantially constant predetermined flow rate, *y*, which is greater than M − *m;* and

(5) at a point between said steam injection and said retorting zone, withdrawing a mixed gas stream from said transfer zone at a substantially constant, predetermined flow rate, *z*, wherein *z* is greater than M − *x*, but less than *y* + *m* − *x*, whereby said mixed gas stream always comprises the net make gas not withdrawn at step (3) plus some steam, and whereby some of said steam injected at step (4) always passes through said combustion zone.

4,083,771

HYDROREFINING OF PETROLEUM FRACTION UTILIZING A CATALYST PREPARED WITH AN ANION COMPLEX OF A GROUP VI-B AND A GROUP VIII METAL COMPONENT

Mark J. O'Hara, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 719,885, Sep. 1, 1976, Pat. No. 4,046,714, which is a continuation-in-part of Ser. No. 588,561, Jun. 19, 1975, abandoned. This application May 13, 1977, Ser. No. 796,574
Int. Cl.² C10G *23/02*
U.S. Cl. 208—216 **15 Claims**

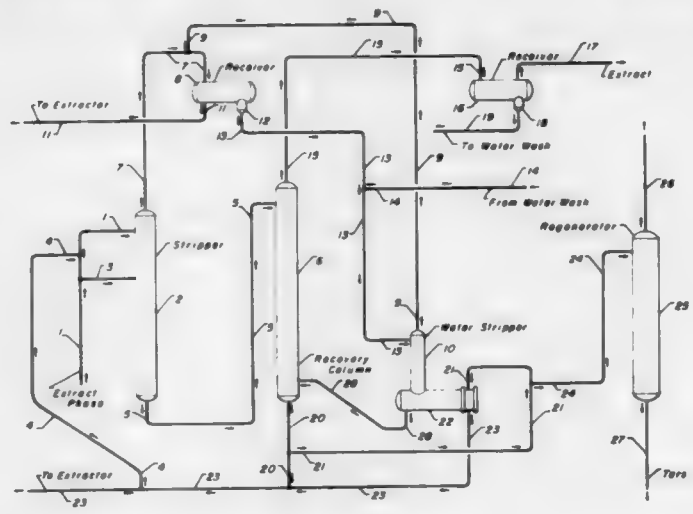
1. A hydrorefining process which comprises treating a petroleum hydrocarbon fraction at hydrorefining conditions to reduce the sulfur content of said fraction; in contact with a catalyst comprising a refractory inorganic oxide impregnated with a Group VIB and a Group VIII metal component, said catalyst having been prepared by impregnating said refractory inorganic oxide with an aqueous solution comprising an anion complex of a Group VIB metal and a Group VIII metal sufficient to provide a catalyst containing from about 5 to about 20 wt. % Group VIB metal, and with a simple salt of a Group VIII metal sufficient in combination with said anionic complex to provide a catalyst containing from about 0.1 to about 10 wt. % Group VIII metal drying said impregnated inorganic oxide and calcining the dried impregnated inorganic oxide.

4,083,772

AROMATIC HYDROCARBON SEPARATION PROCESS

George F. Asselin, Mount Prospect, and Paul A. Witt, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 19, 1976, Ser. No. 706,853
Int. Cl.² C10G *21/28*
U.S. Cl. 208—321 **10 Claims**



1. A method for separating polar hydrocarbons from a mixture thereof with non-polar hydrocarbons and a solvent char-

acteristically selective for absorbing polar hydrocarbons, which method comprises the steps of:

(a) introducing a first portion of said mixture into a first fractionation column, through a first locus in the upper portion thereof, and simultaneously introducing a greater second portion of said mixture through a second locus in the upper portion of said first column, said second locus being below said first locus;

(b) removing a non-polar hydrocarbon stream from said first fractionation column, through a third locus disposed above said first locus and withdrawing a solvent-rich, polar hydrocarbon-containing stream through a fourth locus in the lower portion of said first column;

(c) introducing at least a portion of said solvent-rich, polar hydrocarbon-containing stream into a second fractionation column, through a first locus in the upper portion of said second column, removing a polar hydrocarbon-rich stream, substantially free from solvent and non-polar hydrocarbons, through a second locus in the upper portion thereof, said second locus being above said first locus, introducing a vaporous stripping medium through a third locus in the lower portion of said second column, and withdrawing a solvent-rich stream, substantially free from hydrocarbons, through a fourth locus disposed below said third locus; and,

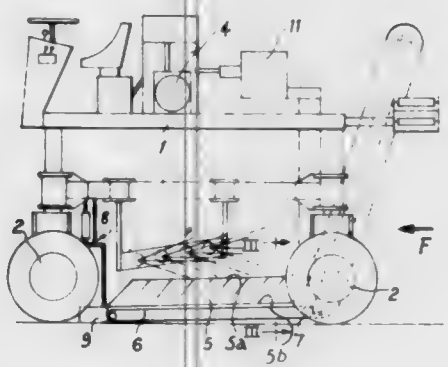
(d) introducing at least a portion of said solvent-rich stream into said first fractionation column through said first locus in admixture with the first portion of said mixture.

4,083,773

FRUIT HARVESTING MACHINE WITH LEAF SEPARATION MEANS

Roger Clary, Loudun, France, assignor to Howard Machinery Limited, Bury St. Edmunds, England

Filed Oct. 7, 1975, Ser. No. 620,413
Claims priority, application France, Oct. 8, 1974, 74 33867
Int. Cl.² B07B *4/02*
U.S. Cl. 209—134 **7 Claims**



5. In a machine for gathering fruit of the type which comprises a frame mounted on a wheeled vehicle chassis, the frame forming a tunnel disposed along the central longitudinal axis of the vehicle, beater means in the tunnel to dislodge fruit, and two conveyors extending parallel to the longitudinal axis and disposed at the sides of the vehicle frame to convey dislodged fruit, at least a part of each conveyor being located to the interior of said frame, the improvement comprising, in combination:

first air duct means along the internal edge of each conveyor having openings to direct air outwardly above the conveyor toward the exterior of the frame;

second air duct means along the external edge of each conveyor having openings to direct air inwardly above the conveyor toward the interior of the tunnel;

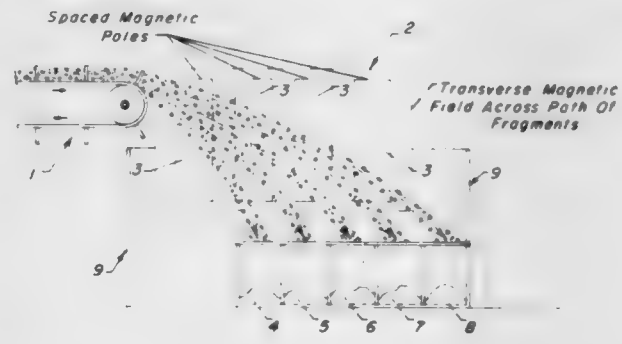
and means for blowing air through both said air duct means to form first and second oppositely flowing transverse air currents which are so related that they cooperate to provide an upper air curtain and a lower air curtain through which dislodged fruit falls onto the conveyors, said two air curtains effectively entraining said light debris and said upper air curtain carrying said debris away from the conveyor toward the exterior of the frame.

4,083,774

MAGNETIC SEGREGATION OF MIXED NON-FERROUS SOLID MATERIALS IN REFUSE

Jack A. Hunter, Long Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 3, 1976, Ser. No. 655,037
Int. Cl.² B03C *1/22*
U.S. Cl. 209—212 **3 Claims**



1. A method for effecting the segregation of mixed solids materials, including mixed, non-magnetic metals obtained in the processing of collected refuse after prior removals of low density materials and magnetically removable ferrous materials, which comprises the steps of:

(a) projecting the mixed solid materials in fragmented form from the surface of a moving belt terminating above and at one end of a magnetic field such that said material fragments will be projected at a constant velocity and substantially horizontally outwardly above a plurality of successively positioned material collection zones,

(b) providing a series of magnetic fields on each side of and perpendicular to the pathways of the projected materials to cause material fragments to cut through the magnetic force lines, thereby inducing eddy-currents across said collection zones and in the various fragments of conductive materials which provides individual magnetic fields therewith to cause drag forces resisting the horizontal movement of such fragments proportional to their individual conductivities,

(c) providing an air flow generally in the direction of the fragment trajectories and with a velocity approximating the average velocity of the fragments to minimize the effect of wind resistance which otherwise might interfere with the separation of the materials, and

(d) collecting the solids materials in said successively positioned collection zones in a resulting segregated manner, where the combination of gravity and the drag forces will cause low density and highly conductive fragments to fall into the closer zones and permit high density and low conductivity fragments to carry to the farther zones.

4,083,775

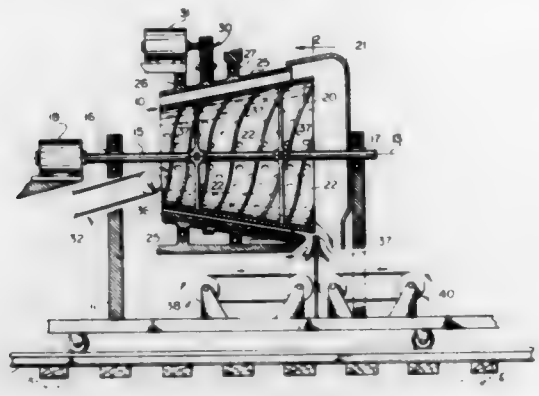
BALLAST CLEANER

John Kenneth Stewart, Lexington, and Helmuth von Beckmann, Columbia, both of S.C., assignors to Canron, Inc., New York, N.Y.

Filed Mar. 5, 1976, Ser. No. 664,099
Int. Cl.² B07B *1/24*
U.S. Cl. 209—257 **7 Claims**

1. A screening device suitable for cleaning railroad ballast, and comprising a frame adapted for movement along a railroad right of way; a generally frusto-conical screen member open at each end rotatably supported on said frame; means for rotating said screen member about its longitudinal axis; an imperforate fines collector, at least partially surrounding said screen member; means for rotating said fines collector about a longitudinal axis thereof; means for delivering ballast to be cleaned to the

narrow open end of said screen member; a stone receiving member located adjacent the wider open end of said screen member; conveying means located adjacent a mouth of said



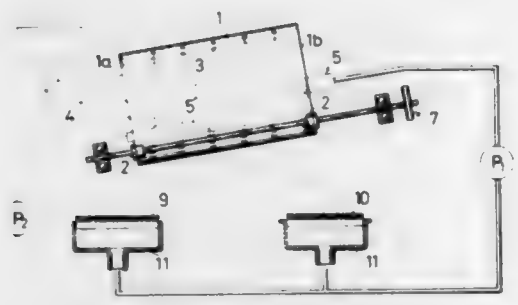
fines collector for removing ballast fines screened through said screen and collected by said fines collector; and conveying means located adjacent said stone receiving member for removing stones received thereby.

4,083,776

METHOD AND APPARATUS FOR REMOVING EXTRANEOUS MATTER FROM WASTE GLASS WITH USE OF FLOW OF WATER

Junzo Shimoiizaka; Akira Konosu, both of Sendai; Kaneji Morita; Akio Sugie, both of Nishinomiya, and Kunio Isioka, Kobe, all of Japan, assignors to Yamamura Glass Kabushiki Kaisha, Japan

Filed Dec. 28, 1976, Ser. No. 755,043
Claims priority, application Japan, Dec. 29, 1975, 50-158071
Int. Cl.[2] B03B *5/56*
U.S. Cl. 209—452 **7 Claims**



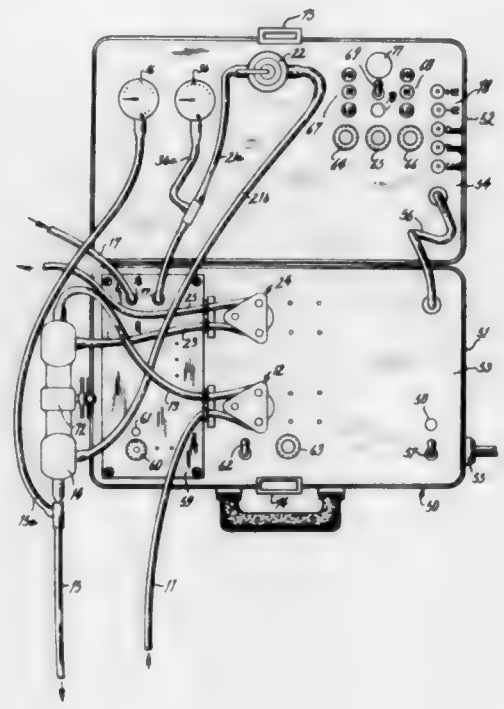
1. A method of removing extraneous matter from a mixture of extraneous matter and waste glass, said extraneous matter having a greater specific surface area and greater resistance to the water flow per unit weight than said waste glass comprising providing an inclined drum having an upper end, a lower end, an inner peripheral surface and a helical wall on said inner peripheral surface, said helical wall being inclined towards the lower end of the drum, introducing water to the drum at said upper end to provide a flow of water running in a substantially axial direction down the interior of the drum over said helical wall, said wall having a depth and pitch to produce a water flow zone substantially reaching said inner peripheral surface, feeding waste glass mixed with extraneous matter into the drum to drop into said flow of water, rotating the drum at a speed to bring the waste glass into a dispensible suspension-resembling state in the water flow with a rocking motion imparted to the glass circumferentially of the drum to cause the waste glass in said suspension-resembling state to be moved toward said upper end of the drum by said helical wall and the extraneous matter to be moved toward said lower end of the drum in said flow of water whilst periodically causing the waste glass and extraneous matter to encounter disruptions in their movements, and discharging the waste glass from the upper end of the drum and the separated extraneous matter from the lower end of the drum.

4,083,777

PORTABLE HEMODIALYSIS SYSTEM

James Thomas Hutchisson, Bellevue, Wash., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 7, 1976, Ser. No. 720,672
Int. Cl.[2] B01D *13/00, 31/00, 35/14*
U.S. Cl. 210—22 A **20 Claims**



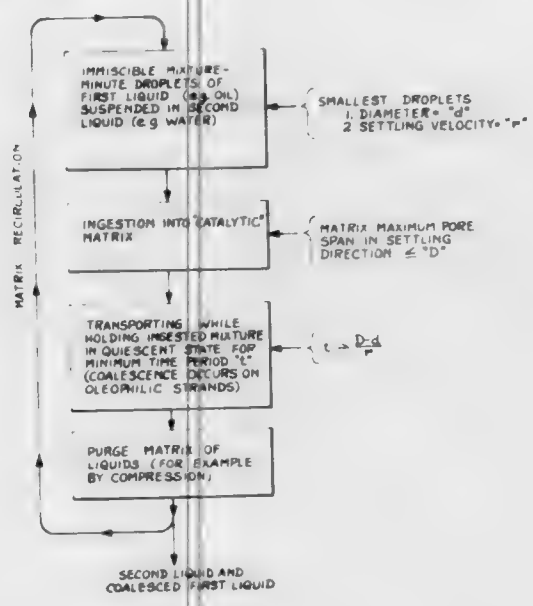
1. In a hemodialysis apparatus for treatment of blood to remove waste impurities therefrom, including: dialyzer means through which waste impurity containing blood and a dialysate solution are passed in indirect mass transfer dialyzing relationship for transfer of said waste impurities from said blood to said dialysate solution; means for transferring waste impurity-containing blood from a patient to said dialyzer means including a flexible resiliant tubing pumping section through which blood is pumped and means for returning waste impurity-depleted blood to said patient forming a blood flow circuit; peristaltic pump means with a rotatable pump head assembly including a base member positioned for rotation about a fixed axis with a plurality of circumferentially spaced apart rollers mounted thereon for independent rotation about respective axes parallel to the base member fixed axis; means for anchoring the end segments of the flexible resiliant tubing pumping section such that the tubing is tensionally extended around the pump head assembly, being simultaneously engaged and compressed by at least two of said circumferentially spaced apart rollers with at least partial closure of the tubing at the points of compression, said rollers being mounted for longitudinal movement of the points of compression along the tubing during rotation of said pump head assembly to advance blood through said tubing; means for supplying dialysate solution to said dialyzer means; and means for discharging waste impurity-enriched dialysate solution from said dialyzer means the improvement wherein said peristaltic pump means comprises three rollers mounted on said base member, each having a diameter of between 0.25 and 0.75 inch and circumferentially spaced 120° apart from the others with a radial distance between the roller axis and said base member fixed axis of from 0.50 to 1.25 inches; said flexible resiliant tubing pumping section has a length, as measured longitudinally along the tubing between the anchored end segments thereof, of from 6.0 to 6.75 inches, a wall thickness of from 0.03 to 0.10 inch, and an internal diameter of from 0.18 to 0.25 inch; and drive means coupled to said pump head assembly for rotation thereof at a speed in the range of from 50 to 400 rpm.

4,083,778

METHOD FOR COALESCING

Jay L. McGrew, Littleton, Colo., assignor to Marine Construction & Design Co., Seattle, Wash.

Continuation of Ser. No. 566,926, Apr. 10, 1975, abandoned.
This application Feb. 7, 1977, Ser. No. 766,027
Int. Cl.[2] B01D *15/02*
U.S. Cl. 210—23 R 10 Claims



1. The process of coalescing minute droplets of a first liquid of a diameter substantially not less than "*d*" suspended in an immiscible mixture thereof with a second liquid of different specific gravity comprising

ingesting the mixture into the voids of a porous three-dimensional matrix comprising elements the surfaces of which are preferentially attractive to the first liquid and which elements are interconnected to form a labyrinth of voids predominantly of a span substantially not greater than "D" in the direction of settling of said droplets, such ingestion being effected by expansion of the matrix from a compressed state while immersed in a body of the mixture,

holding the ingested mixture in said matrix under conditions preventing drainage from or flow through the matrix for a time period substantially not less than "*t*" while the matrix is maintained in substantially constant orientation relative to the direction of the force of gravity so as to effect motion of the droplets toward said elements at a settling velocity "*r*",

wherein substantially $t \geqq D-d/r$,

whereby said droplets settle and coalesce together on said elements,

and purging the matrix substantially of the coalesced first liquid and the second liquid.

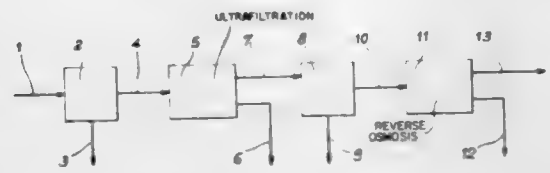
4,083,779

PROCESS FOR TREATMENT OF ANTHOCYANE EXTRACTS

Pierre Combe, and Jean Ladet, both of Bagnols-sur-Ceze, France, assignors to S.E.F.C.A.L. Societe d'Etudes, de Fabrication et de Commercialisation de Colorants Alimentaires, Saint Julien de Peyrolas, France

Filed Jul. 21, 1976, Ser. No. 707,409
Claims priority, application France, Jul. 22, 1975, 75 22854
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—23 H 12 Claims

1. A method of treatment of an anthocyanic extract consisting essentially of an ultrafiltration stage which consists essentially of separating from said extract by ultrafiltration a liquid filtrate which passes through an ultrafilter membrane and a first concentrate containing more condensed forms of anthocyanins, which first concentrate is collected as a first dryable coloring agent, and a reverse osmosis stage consisting essentially of separating from said liquid filtrate by reverse osmosis a diffusate which passes through a reverse osmosis membrane and a second concentrate which contains less condensed forms



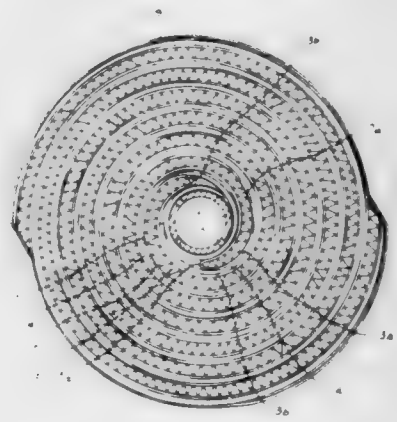
of anthocyanins and collecting said second concentrate as a second coloring agent.

4,083,780

FLUID PURIFICATION SYSTEM

Noel Stuart Call, Long Beach, Calif., assignor to Envirogenics Systems Company, El Monte, Calif.

Filed Jul. 29, 1976, Ser. No. 709,813
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—23 H 24 Claims



1. An apparatus for purifying fluids, comprising:

a cylindrical housing means;

a plurality of convoluted spiral wrap membrane elements contained in said housing and adapted to receive feed fluids under pressure, said elements acting to separate purified product fluids from said feed fluids, said feed fluids passing axially through said housing,

said convoluted spiral wrap membrane elements having feed fluid passageway means and product fluid passageway means, wherein said product fluid passageway means are of short lengths so that only a low pressure drop occurs in the product fluid passageway,

said convoluted spiral wrap membrane elements being arranged in parallel in a bundle within said housing to achieve efficient production of purified fluid for a given diameter housing.

4,083,781

DESALINATION PROCESS SYSTEM AND BY-PRODUCT RECOVERY

Franklin E. Conger, Summit, N.J., assignor to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Jul. 12, 1976, Ser. No. 704,359
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—23 H 4 Claims

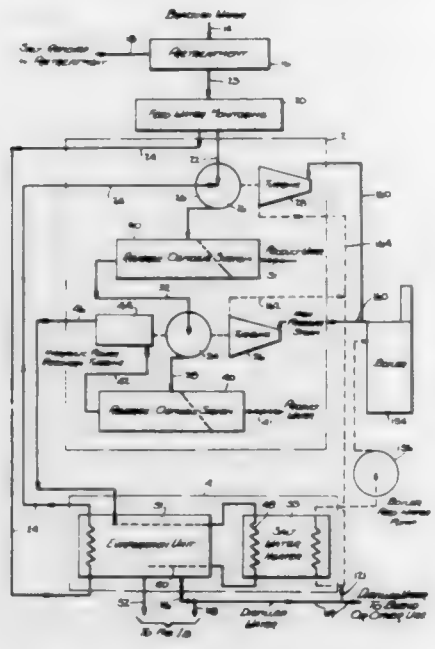
1. A process for removing salts from salt-containing fluids and producing product water containing no more than about 500 ppm of salt therefrom comprising the steps of

(a) placing the salt-containing fluid at an elevated temperature in the range of about 80° to 95 °F,

(b) pumping the salt-containing fluid at the elevated temperature to a first reverse osmosis system operated at an elevated pressure.

(c) withdrawing the product water from the first reverse osmosis system,

(d) delivering reject salt-containing solution from the first reverse osmosis system to a second reverse osmosis system, said second system being operated at a much higher pressure than said first reverse osmosis system,
(e) withdrawing the product water from the second reverse osmosis system,



(f) delivering reject water from the second reverse osmosis system to an evaporation unit, and
(g) withdrawing the desired product water from the evaporation unit.

4,083,782

WATER CONDITIONING PROCESS

Robert Kunin, Yardley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 340,503, Mar. 12, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,322
Int. Cl.² C02B *1/76*
U.S. Cl. 210—32 **7 Claims**

1. A water conditioning process for treating acid water in order to remove therefrom hardness ions, dissolved heavy metals, and to correct the pH of the water to within a range of 7–9.5, which process comprises contacting the water with a weak acid cation exchange resin which has been regenerated to 70–96% of its salt form, the resin comprising a crosslinked methacrylic acid copolymer in the alkali metal or ammonium form wherein the crosslinking monomer is present in an amount of 2.5–10% by weight.

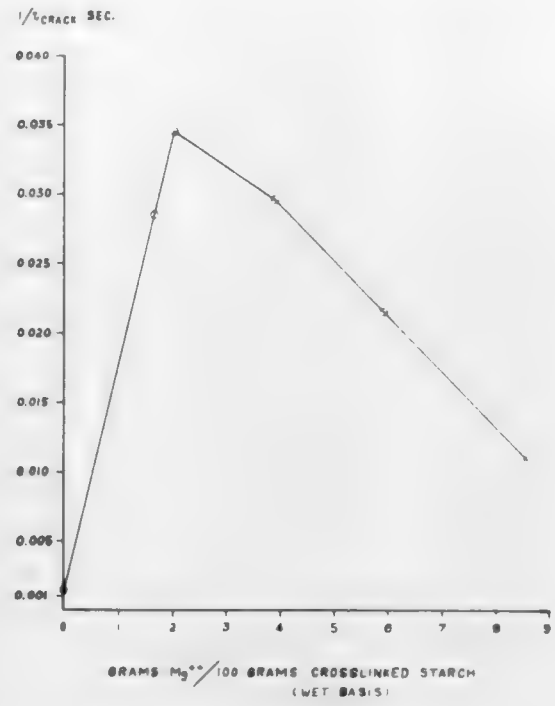
4,083,783

REMOVAL OF HEAVY METAL IONS FROM AQUEOUS SOLUTIONS WITH INSOLUBLE CROSSLINKED-STARCH-XANTHATES

Robert E. Wing, Peoria, and William M. Doane, Morton, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 695,617, Jun. 14, 1976, Pat. No. 4,051,316, which is a continuation-in-part of Ser. No. 515,262, Oct. 16, 1974, Pat. No. 3,979,286. This application Jun. 3, 1977, Ser. No. 803,190
Int. Cl.² C02B *1/20*
U.S. Cl. 210—54 **6 Claims**

1. A process of removing heavy metal ions from aqueous solution comprising:
(1) contacting heavy metal ions in aqueous solutions with an amount of alkali metal-magnesium salt of crosslinked-starch-xanthate,
wherein said salt has a degree of crosslinking (DCL) such that it exhibits a degree of swelling in water at 95° C. of from 65% to 450%,
wherein said magnesium is present in an amount ranging from about 0.5% to about 12%,
wherein said crosslinking occurs between the starch molecules of said salt through the hydroxyl oxygens of said molecules, and



wherein said amount of salt in said contacting step is such that the molar ratio of the xanthate moiety to metal ions is about 1:1; and
(2) removing said heavy metal ions from said aqueous solution.

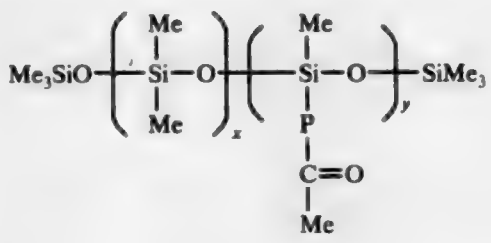
4,083,784

STABILIZED BLOOD SEPARATING COMPOSITION

Anthony R. Zine, Jr., Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 532,946, Dec. 16, 1974, Pat. No. 4,049,692. This application Apr. 28, 1977, Ser. No. 791,921
Int. Cl.² B01D *21/26*
U.S. Cl. 210—83 **3 Claims**

1. In a method of separating a sample of whole blood into serum and clot portions which method comprises centrifuging a sample of whole blood in the presence of a thixotropic water-insoluble composition having a specific gravity in the range of about 1.030 to about 1.090 and consisting of silicone fluid and a siliceous filler dispersed therein, the improvement which comprises using such a composition with a network former added thereto, the network former consisting of a polysiloxane-polyoxyalkyl copolymer in a quantity sufficient to maintain the viscosity of the composition within the range of about 200,000 to 600,000 centistokes for prolonged periods of time; wherein the polysiloxane-polyoxyalkyl network former is a copolymer represented by the formula



where the monomeric units are randomly distributed and
Me represents $-CH_3$;
x represents a number between 80 and 120;
y represents a number between 8 and 12;
P represents a polyoxyalkyl side chain represented by the formula

$CH_2—CH_2—O)_m(CH_2—CH_2—CH_2—O)_n$

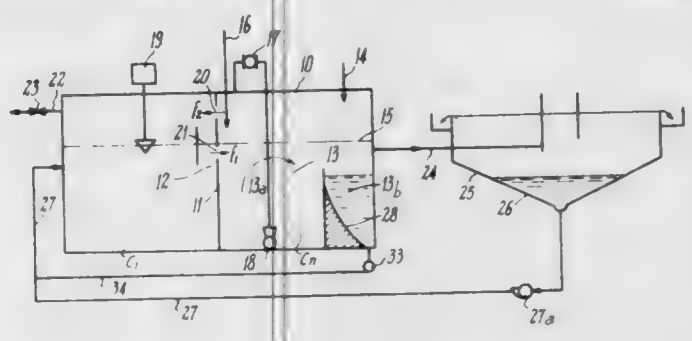
where the monomeric units are randomly distributed and
m represents a number between 20 and 30; and
n represents a number between 1 and 30.

4,083,785

BIOLOGICAL TREATMENT PLANT FOR LIQUID SUSPENSIONS

Jacques Bernard, St. Germain en Laye, and Michel Renaudin, Beynes, both of France, assignors to Degremont, Societe Generale D'Epuration et D'Assainissement, Rueil Malmaison, France

Filed Apr. 23, 1974, Ser. No. 463,411
Claims priority, application Frances, Jul. 5, 1973, 7324722
Int. Cl.² C02C *1/10*
U.S. Cl. 210—195 S **10 Claims**



1. In a plant for the biological treatment by means of activated sludge, by oxidation with pure oxygen or oxygen-enriched air, of a liquid suspension containing oxidizable material, said plant being of the type wherein a liquid suspension progressively flows from an upstream direction to a downstream direction while progressively having oxidizable material removed therefrom, the improvement wherein said plant comprises:

an upstream first tank containing therein activated sludge and having a gas space above said activated sludge, said upstream first tank comprising reactivated sludge supply means;

a downstream second tank having therein at least one compartment;

means for introducing a liquid suspension to be treated into said downstream second tank;

said downstream second tank having a gas space above said liquid suspension;

means providing communication between said upstream first tank and said downstream second tank for causing said activated sludge to flow from said upstream first tank into said downstream second tank to form a mixture with said liquid suspension and for causing said mixture to flow in a downstream direction;

means for introducing oxygen or oxygen-enriched air into said gas space in said downstream second tank for oxidation reaction with said mixture;

means for passing, from said gas space in said downstream second tank to said gas space in said upstream first tank, the oxygen or oxygen-enriched air not used by the reaction in said downstream second tank, to thereby reactivate said sludge in said upstream first tank;

means for exhausting to the atmosphere from said gas space in said upstream first tank a gaseous phase therein in response to the oxygen content of said gaseous phase;

a sludge settling tank;

means for passing said mixture, after reaction thereof with said oxygen or oxygen-enriched air, from said downstream second tank to said settling tank, for removal from said mixture to said sludge; and

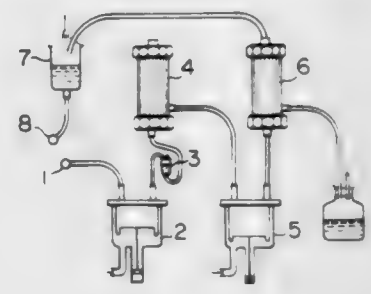
means for returning the thus removed sludge to said upstream tank to recycle and resupply the level of sludge in said upstream first tank.

4,083,786

APPARATUS FOR TREATING ASCITES

Nobuaki Tsuda; Naoya Kominami; Kenji Inagaki, and Tamotsu Imamiya, all of Fujishi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 10, 1976, Ser. No. 665,700
Claims priority, application Japan, Mar. 20, 1975, 50-32931; May 29, 1975, 50-63439; Sep. 19, 1975, 50-112589
Int. Cl.² B10D *13/00*; B01D *19/00*
U.S. Cl. 210—321 B **14 Claims**



1. An apparatus for treating ascites including protein and contaminated with at least one member of the group consisting of blood, cancer cells and bacteria, said apparatus comprising:

(a) an ascites introducing means for carrying ascites from a body into said apparatus;

(b) an ascites transporting means coupled to said introducing means for supplying the force to carry said ascites through said apparatus;

(c) a first filter means for removing bacteria and cancer cells from said ascites, said first filter means including at least one first membrane means for allowing protein to pass therethrough and for blocking the passage of bacteria, cancer cells and other substances of similar size;

(d) a hemolysis preventative means coupled between the output of said transporting means and the input of said first filter means for removing air bubbles from said ascites whereby hemolysis caused by the mixture of air bubbles with the filtered ascites is prevented;

(e) an ascites concentrating means, coupled to the output of said first filter means, said ascites concentrating means including a second membrane means for passing substances of a size different than the size of the substances passed by said first membrane means for blocking the protein in said ascites to thereby form a protein concentrated ascites;

(f) ascites discharging means, coupled to said ascites concentrating means, for receiving said protein concentrated ascites and returning said protein concentrated ascites to the body.

4,083,787

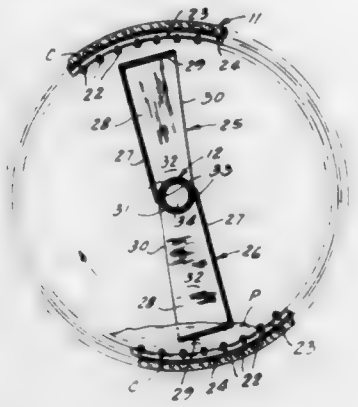
ROTARY VACUUM FILTER

Harold Robert White, New Lenox, Ill., assignor to Alar Engineering Corporation, Chicago, Ill.

Filed Aug. 19, 1976, Ser. No. 715,675
Int. Cl.² B01D *33/06*
U.S. Cl. 210—402 **20 Claims**

1. A rotary filter apparatus which comprises a tank for material to be filtered, a filter drum having a hollow through axle rotatably mounted for partially immersing said drum in material to be filtered in said tank, pan means mounted on and radiating from said axle in said drum in diametrically opposite pairs spaced along the length of the axle in circumferentially offset relation arranged to successively scoop filtrate from the interior of said drum and drain the scooped-up filtrate into said axle, said axle having drainage openings therethrough communicating with said pan means arranged to receive said filtrate from said pan means on the ascending cycle of rotation of the pan means and to receive air from said drum on the descending cycle of rotation of said pan means, and evacuating means for

creating a high velocity air stream through said axle for sweeping filtrate with the air to empty said pan means and maintain



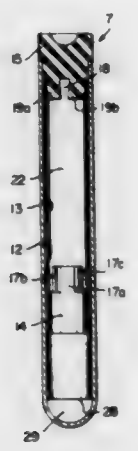
a level of filtrate in said drum substantially lower than the level of material to be filtered in said tank.

4,083,788

BLOOD SERUM-ISOLATION DEVICE

Louis T. Ferrara, 2988 Avenue "T", Brooklyn, N.Y. 11229

Filed Nov. 19, 1975, Ser. No. 633,399
Int. Cl.[2] B01D *21/26*
U.S. Cl. 210—516 **2 Claims**



1. A blood serum-coagulant separation device comprising in combination:

a tubular vessel having a closed end and an open-mouth end thereof:

closure means for the open-mouth end of said tubular vessel, said closure means being penetrable by a tubular needle for introducing into the space within the separation device blood withdrawn from a subject;

a separation means for causing serum to become segregated from coagulant when the separation device is subjected to centrifugal forces after the filling or partial filling of the space within the tubular vessel with the withdrawn blood, said separation means being a substantially solid material having a specific gravity substantially greater than the specific gravity of blood serum and less than the specific gravity of the coagulant precipitate of blood; and

a tubular container located within said tubular vessel, said tubular container having an outside diameter substantially the same as but slightly less than the inside diameter of said tubular vessel, said tubular container having two open ends, one end being adjacent to the open end of the tubular vessel and the other end, the base-opening end, being adjacent to the closed end of the tubular vessel,

said separation means being located within said tubular container, said separation means having an outside diameter substantially the same as but slightly less than the inside diameter of the tubular container, and the said tubular container having a serum outlet opening in the lower portion thereof, whereby

upon filling of interior space within the tubular container with blood, then centrifuging the assembly of tubular vessel and container invertedly mounted in the centrifuge, the serum, by virtue of its specific gravity, becomes located at the closed end of the tubular vessel and and thus located at the base-opening end of the tubular container, and the coagulant precipitate being thereby finally located in the tubular container at the end adjacent the mouth of the tubular vessel, whereby

the tubular container may be removed from the tubular vessel thereby simultaneously removing the coagulant precipitate and thereby leaving solely serum within the tubular vessel.

4,083,789

COMPOSITION CONTAINING HALOGENATED POLYPHOSPHATES

Albert W. Morgan, Collinsville, Ill., and Thomas C. Mathis, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 492,660, Jul. 29, 1974, which is a division of Ser. No. 317,040, Dec. 20, 1972, Pat. No. 3,869,420. This application Dec. 22, 1975, Ser. No. 643,229
Int. Cl.[2] C09K *3/28*
U.S. Cl. 252—8.1 **4 Claims**

1. A composition comprising (A) at least one reactive modifier selected from the group consisting of

(a) Dawsonite,

(b) oxide, hydroxide or salt of a metal selected from the group consisting of lithium, sodium, potassium, magnesium, barium, zirconium, manganese and iron,

(c) a metal salt of a lower aliphatic acid, and

(d) mixtures of (a) – (c) and

(B) at least one halogenated polyphosphate selected from the group consisting of 2,2-bis(chloromethyl)-1,3-propylenebis[bis(2-chloroethyl)phosphate], 2,2-bis(bromoethyl)-1,3-propylenebis(2-bromoethyl-2-chloroethyl) phosphate and 2,2-bis(chloromethyl)-1,3-propylenebis[bis(2,3-dichloropropyl)-phosphate].

4,083,790

AQUEOUS DRILLING FLUID

Karl-Heinz Grodde, Celle, and Alfred Schulz, Hornbostel, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Continuation-in-part of Ser. No. 642,932, Dec. 22, 1975, abandoned, which is a continuation of Ser. No. 363,229, May 23, 1973, abandoned. This application Nov. 26, 1976, Ser. No. 745,017
Claims priority, application Germany, May 23, 1972, 2224959
Int. Cl.[2] C09K *7/02*
U.S. Cl. 252—8.5 C **8 Claims**

1. An aqueous drilling fluid consisting essentially of water, clay solids and from about 0.4 to about 3% by volume of a fractionally distilled tall oil fraction lubricating additive having a fatty acids and fatty oils content of from about 10 to about 25% by weight, a rosin acid content of from about 50% to about 80% by weight, the balance being unsaponifiables and neutrals, said lubricating additive having an initial boiling point in the range of from about 110° to 130° C. at 1.5 mm. Hg., and a final boiling point in the range of from about 185° to 195° C. at 0.5 mm. Hg., the neutralization number thereof being in the range of from about 90 to about 107 and the saponification number being in the range of from about 102 to about 135, and wherein the difference between the Neutralization Number and the Saponification Number of said lubricating additive is below about 30, said lubricating additive being non-foaming in said drilling fluid at a pH up to about 9.

4,083,791

LUBRICATING OIL CONTAINING REACTION PRODUCTS OF POLYISOBUTYLPHENOL, ESTERS OF CHLOROACETIC ACID, AND ETHYLENE POLYAMINE

John Scotchford Elliott, Beaconsfield; Bryan Terence Davis, and Richard Martin Howlett, both of Wokingham, all of England, assignors to Edwin Cooper and Company Limited, Bracknell, England

Continuation-in-part of Ser. No. 490,953, Jul. 23, 1974, abandoned. This application Apr. 16, 1976, Ser. No. 677,672

Claims priority, application United Kingdom, Jul. 23, 1974, 35732/74

Int. Cl.[2] **C07C** *103/127;* **C10M** *1/36, 3/30*

U.S. Cl. 252—51.5 A **6 Claims**

1. A lubricating oil dispersant containing an polyisobutyl phenoxy substituted acetic amide, said dispersant being prepared by the process comprising (i) reacting an polyisobutyl substituted phenol wherein said polyisobutyl substitutent contains from 50 to 200 carbon atoms with a C_{1-4} alkyl chloracetic ester to form an intermediate mixture containing polyisbutylphenoxy-substituted acetic ester, and (ii) reacting said intermediate mixture with an ethylene polyamine without removing unreacted C_{50-200} polyisobutylphenol to convert said acetic ester to carboxylic amide, said dispersant having a high amide and low polyisobutylphenol content.

4,083,792

OVERBASED METAL COMPLEXES AND COMPOSITIONS THEREOF WITH LUBRICANTS

John C. Nnadi, Lagos, Nigeria, assignor to Mobil Oil Corporation, New York, N.Y.

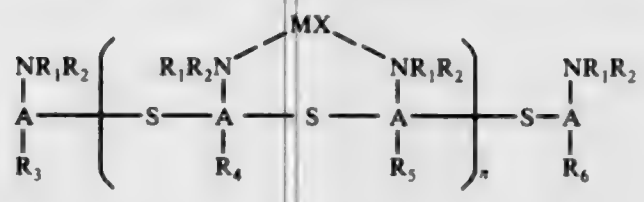
Filed Jan. 2, 1976, Ser. No. 646,127

Int. Cl.[2] **C10M** *3/18*

U.S. Cl. 252—18 **16 Claims**

1. An oil-soluble overbased compound obtained by the process comprising

reacting a compound having the general chemical formula:



wherein

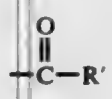
n is an integer of from 1 to about 10;

A is an aromatic hydrocarbon moiety;

M is a polyvalent metal selected from the group consisting of Be, Mg, Ca, Ba, Mn, Co, Ni, Pd, Cu, Zn and Cd;

X is oleate, acetate, oxide or sulfonate;

R_1 and R_2 are alkyl of from 1 to about 10 carbon atoms, aryl,



or combinations thereof;

R′ is alkyl of from 1 to about 10 carbon atoms, aryl or hydrogen;

R_3, R_4, R_5 and R_6 are hydrogen, alkyl of from 1 to about 200 carbon atoms, aryl, alkyl-substituted aryl where the alkyl substituent is comprised of from 1 to about 200 carbon atoms or combinations thereof

with one or more basic metallic compounds selected from the group consisting of NaOH, LiOH, KOH, $Mg(OH)_2$, $Ca(OH)_2$, $Sr(OH)_2$and $Ba(OH)_2$

in the presence of CO_2 and alcohol.

3. A lubricant composition comprising a major portion of an oil of lubricating viscosity or grease thereof and an oxidation property improving amount of the overbased compound of claim 1.

4,083,793

WASHING COMPOSITIONS CONTAINING ALUMINOSILICATES AND NONIONICS AND METHOD OF WASHING TEXTILES

Günter Jakobi, Hilden; Peter Krings, Krefeld; Milan Johann Schwuger, Haan, and Heinz Smolka, Langenfeld, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Germany

Continuation of Ser. No. 458,326, Apr. 5, 1974, abandoned. This application Sep. 16, 1976, Ser. No. 723,728

Claims priority, application Austria, May 23, 1973, 4484/73

Int. Cl.[2] **B01J** *1/04;* **C11D** *1/825, 1/831, 3/12*

U.S. Cl. 252—99 **1 Claim**

1. A washing composition consisting essentially of:

3.8% by weight of the adduct of 14 mols of ethylene oxide onto tallow fatty alcohol,

2.2% by weight of the adduct of 5 mols of ethylene oxide onto tallow fatty alcohol,

7.0% by weight of the sodium salt of alkylbenzenesulfonic acid with 11 to 13 carbon atoms in the alkyl,

3.4% by weight of the sodium soap of a hardened mixture of equal parts by weight of tallow and rape oil fatty acids,

20.0% by weight of a finely-divided water-insoluble crystalline silicate compound having primary particles in the size range of from 10 to 45μ, and a calcium binding power as determined at 22° C for 15 minutes according to the procedure on page 32, lines 18 to 28, of 150 mg CaO/gm of anhydrous active substance, having the formula

$$0.9\ Na_2O \cdot 1\ Al_2O_3 \cdot 2.05\ SiO_2 \cdot 4.3\ H_2O$$

and having the following d-values by X-ray diffraction 4.1, 3.68, 3.38, 3.26, 2.96, 2.73 and 2.60,

10.0% of sodium tripolyphosphate,

0.3% of the sodium salt of ethylenediaminetetraacetic acid,

5.0% of sodium silicate having a Na_2O:SiO_2 ratio of 1:3.3,

28.5% of sodium perborate tetrahydrate,

0.5% of sodium sulfate,

2.0% of magnesium silicate having a 1:1 ratio,

1.5% of the sodium salt of carboxymethylcellulose, and

15.8% of water,

for use as a complete washing agent at temperatures of 50° to 100° C.

4,083,794

DETERGENT COMPOSITION

Frank Lee, Bolton; Charles Fearnley, Romiley, and Glenda Helen Fordham, Simmondley, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 27, 1976, Ser. No. 690,803

Claims priority, application United Kingdom, Jun. 10, 1975, 24841/75; Jan. 10, 1976, 939/76

Int. Cl.[2] **C11D** *7/56, 7/38*

U.S. Cl. 252—99 **10 Claims**

1. A soap or synthetic detergent composition consisting essentially of an anionic surfactant selected from the group consisting of sodium dodecyl sulphate, potassium dodecyl sulphonate, or sodium dodecyl benzene sulphonate and/or non-ionic surface selected from the group consisting of condensation products of 5 to 20 moles of ethylene oxide with a fatty alcohol having 11 to 18 carbon atoms, condensation products of 5 to 20 moles of ethylene oxide with a fatty acid having 12 to 18 carbon atoms, condensation products of 5 to 20 moles of ethylene oxide with an alkyl phenol having 6 to 12 carbon atoms, condensation products of 5 to 50 moles of ethylene oxide with a fatty amine having 12 to 18 carbon atoms or condensation products of 5 to 50 moles of ethylene oxide with hydrogenated fatty acid amides having 12 to 18 carbon atoms and 0.1% by weight, based on the total weight of the composition, of a compound consisting essentially of hydrolysed polymaleic anhydride having a molecular weight of 300 to 5,000 as determined by calculations following osmometric measurement on the polymaleic anhydride before hydrolysis, or of a

water-soluble salt of such hydrolysed polymaleic anhydride in order to inhibit scale deposition, the content of the surfactant being from 10% to 30% by weight, based on the total weight of the composition.

9. An aqueous wash liquor containing 5g/l of solid detergent composition consisting essentially of 20% dodecylbenzene sulphonate, 35% sodium tripolyphosphate, 20% sodium perborate, 10% sodium silicate, 13% sodium sulphate, 2% carboxymethyl cellulose and 0.1% of hydrolysed polymaleic anhydride.

4,083,795

SOLID, NON-CORROSIVE DETERGENT COMPOSITIONS

Daniel Joubert, Trevoux, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jan. 12, 1976, Ser. No. 648,130

Claims priority, application France, Jan. 24, 1975, 75 02234; Jul. 31, 1975, 7523924

Int. Cl.² C11D *7/56*

U.S. Cl. 252—99 **8 Claims**

1. A non-corrosive detergent cleaning composition consisting essentially of by weight:

20 to 70% of sodium metasilicate
20 to 50% of sodium tripolyphosphate
0 to 40% of sodium carbonate
0 to 20% of sodium sulphate
0 to 10% of sodium borate
1 to 4% of sodium silico-aluminate
1 to 4% of a 30% liquid sodium silicate, with a molar ratio SiO_2/Na_2O_3 of from 2.5 to 4/1
0.5 to 3% of a surfactant selected from the group consisting of condensates of ethylene oxide on propylene-glycol and ethylene oxide on alkyl-glycol, sodium alkylaryl-sulphonates, sodium alkylsulphates and sodium alkylsulphonates and mixtures thereof
0.5 to 3% of a compound which liberates chlorine, in which the sodium silico-aluminate and the liquid sodium silicate are incorporated as a premix with the liquid sodium silicate absorbed on the sodium silico-aluminate, and in which the sodium silico-aluminate is of the general formula $x\ Na_2O$, $y\ Al_2O_3$, $z\ SiO_2$, $w\ H_2O$, in which y is 1, x is within the range of 0 to 2, z is within the range of 4 to 16 and w is within the range of 0.3 to 4.

2. A non-corrosive composition in the form of a free flowing powder, a component in the detergent composition which inhibits corrosion and tarnishing of aluminum in the presence of chlorine in the form of a premix consisting essentially of a liquid sodium slicate having a molar ratio of SiO_2/Na_2O of 2.5 to 4/1 absorbed on a sodium silico-aluminate having the general formula $x\ Na_2O$, $y\ Al_2O_3$, $z\ SiO_2$, $w\ H_2O$, in which y is 1, x is within the range of 0 to 2, z is within the range of 4 to 16 and w is within the range of 0.3 to 4, and in which the components are present in the premix in the ratio of 1–4 parts by weight of a 30% liquid sodium silicate and 1–4 parts by weight sodium silico-aluminate.

4,083,796

DYE SYSTEM FOR SOAP AND SYNTHETIC DETERGENT BARS

Robert W. Schubert, Memphis, Tenn., and Thomas J. Hassapis, Scottsdale, Ariz., assignors to Armour-Dial, Inc., Phoenix, Ariz.

Continuation of Ser. No. 495,160, Aug. 6, 1974, abandoned. This application Jun. 9, 1976, Ser. No. 694,266

Int. Cl.² C11D *9/22*

U.S. Cl. 252—132 **10 Claims**

1. In a soap and detergent bar manufacturing process including the coloring of soap and detergent pellets with high concentrations of dye, the improvements comprising the steps of selecting dye from the group consisting of D+C orange #4, D+C yellow #10 (95%), D+C red #19, D+C green #5 (88%), D+C blue #1 (91%), making a dye system consisting essentially of, by weight, from about 2.5 to about 8.5 percent of said dye, from about 48 to about 93.6 percent glycerine, and from about 3.9 to about 44.7 percent water, and adding said dye system to the soap or detergent to be dyed in an amalgamator, whereby there is produced homogeneous intensely colored soap and detergent bars.

4,083,797

NEMATIC LIQUID CRYSTAL COMPOSITIONS

Chan S. Oh, Diamond Bar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 502,659, Sep. 3, 1974, and Ser. No. 502,658, Sep. 3, 1974, Pat. No. 3,975,286. This application May 27, 1975, Ser. No. 581,009

Int. Cl.² C09K *3/34*; G02F *1/13*

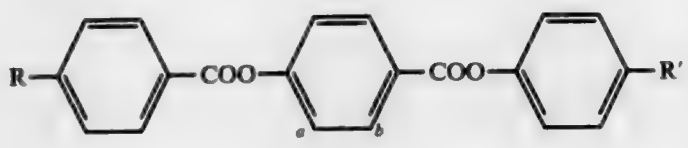
U.S. Cl. 252—299 **36 Claims**

1. A composite liquid crystal composition made up of biphenyl and non-biphenyl constituents for use in field-effect liquid crystal display devices, said composition comprising:

Constituent One — nematic alkylcyanobiphenyl liquid crystal material;

Constituent Two — ester type nematic liquid crystal material which is incompatible with Constituent One and forms a smectic phase in binary mixture therewith and is present in a concentration sufficient to supplement the composite composition with improved electro-optical properties;

Constituent Three—at least one chloro-substituted double ester nematic liquid crystal material having the general formula



wherein R and R′ are alkyl and either *a* or *b* is chlorine, either *a* or *b* being hydrogen which is compatible with Constituent One and present in a concentration sufficient so that the composite composition forms a satisfactory nematic phase for use in a field-effect display device.

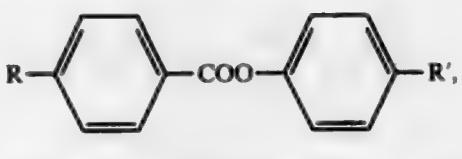
11. A rematic liquid crystal composition having biphenyl liquid crystal dominant electro-optical characteristics and a wide nematic phase temperature range including room temperature, actuable in a twisted nematic liquid crystal display cell by low actuation voltages comprising a component selected from one or more 4′-substituted-4-cyanobiphenyl liquid crystals having the formula



wherein R is a 1 to 9 carbon alkyl or alkoxy group,

blended with one or more 4, 4′-disubstituted phenyl benzoate liquid crystals selected from the group consisting of:

compounds having the formula

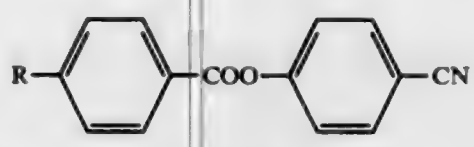


wherein either R or R′ is methoxy and the other of R or R′ an alkyl or an alkoxy having 1 to 7 carbon atoms;

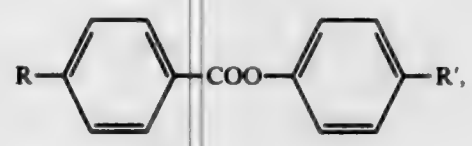
compounds having the formula



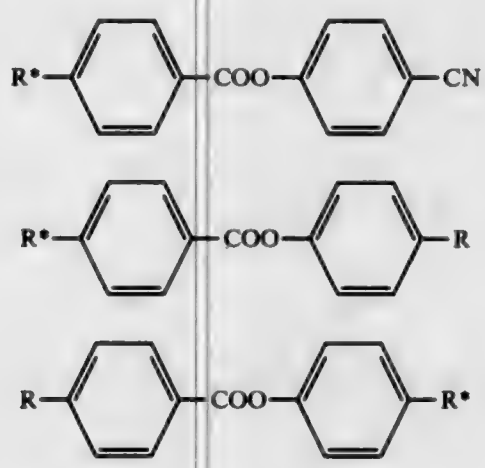
wherein R and R′ are 1 to 7 carbon alkyl groups and *a* and *b* are hydrogen or chlorine, but either *a* or *b* being hydrogen; and compounds having the formula



wherein R is a 1 to 9 carbon atom alkyl or alkoxy group optionally further blended with one or more 4,4′-disubstituted phenyl benzoate liquid crystal compounds having the formula



wherein R and R′ are alkyl groups having 1 to 7 carbon atoms and alkoxy groups having 2 to 7 carbon atoms; and also containing optically active liquid crystal compounds having the following formulae:



wherein R* is an alkyl or alkoxy having 4 to 9 carbon atoms among which at least one carbon atom is asymmetrically substituted, and R is an alkyl or alkoxy group having 2–7 carbon atoms.

4,083,798

STABILIZED STATIC LIQUID MEMBRANE COMPOSITIONS

Joseph Versteeg, Roselle, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Jun. 17, 1976, Ser. No. 697,149
Int. Cl.² B01J *13/00*
U.S. Cl. 252—312 **7 Claims**

1. A pourable composition stable to layering and coalescence which comprises a water-in-oil emulsion, wherein the internal phase of said emulsion is an aqueous solution containing an active ingredient, the volumetric ratio of said internal phase to said oil phase ranges from 1/10 to 1/1, said emulsion is dispersed as droplets in a continuous aqueous phase which contains 1–4 weight % of a water-soluble protein and 1–4 weight % of a gelling polysaccharide, wherein the ratio of said protein to said polysaccharide ranges from 1/2 to 1/1 by weight, and the volumetric ratio of said water-in-oil emulsion to said continuous phase ranges from 1.5–2.6.

4,083,799

METHOD OF STEAM REFORMING

John Harold Estes; Edwin Robert Kerr, and Tansukhlal Gokaldas Dorawala, all of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 322,050, Jan. 8, 1973, abandoned. This application Dec. 14, 1973, Ser. No. 425,005
Int. Cl.² C07C *1/02;* B01D *15/06*
U.S. Cl. 252—373 **19 Claims**

1. The method of steam reforming a non-aromatic hydrocarbon charge which comprises

passing a mixture of steam and a non-aromatic hydrocarbon at 1200°–1400° F into contact with an activated catalyst consisting essentially of a massive metal screen containing at least about 50% nickel thereby forming a product gas containing hydrogen and carbon dioxide, said activated catalyst having been activated by heating in the presence of an oxygen-containing gas;

maintaining the mole ratio of steam to hydrocarbon at 15–70:1; and

recovering said product gas.

17. The method of activating a steam reforming catalyst consisting essentially of a massive metal screen containing at least about 50% nickel which comprises

heating said massive metal screen at 700° F–1400° F in the presence of an oxygen-containing gas thereby forming an activated massive metal screen catalyst; and

recovering said activated massive metal screen catalyst.

4,083,800

ALKYLATION PROCESS AND METHOD FOR CATALYST REGENERATION

Sheldon Herbstman, Spring Valley, and John H. Estes, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 604,587, Aug. 14, 1975, abandoned. This application Dec. 2, 1976, Ser. No. 746,765
Int. Cl.² B01J *21/20;* C07C *3/52, 3/56*
U.S. Cl. 252—415 **14 Claims**

1. In an alkylation process wherein an alkane and an olefin are contacted under alkylation conditions at a mole ratio of alkane to olefin of about 100:1 to 2:1 with an active catalyst consisting essentially of from about 3.0 to 15.0 weight percent chlorine and alumina and where said catalyst is deactivated during use in said alkylation process by the deposition of coke thereupon, the improvement which comprises regenerating said catalyst by the steps of:

(a) contacting said deactivated chlorided alumina catalyst at a temperature of between 400° and 1200° F. in a non-oxidizing atmosphere, wherein said non-oxidizing atmosphere is hydrogen, methane, nitrogen or mixtures thereof;

(b) contacting said catalyst in an oxidizing atmosphere at a temperature between 700° and 1200° F., wherein said oxidizing atmosphere is oxygen, air or an oxygen-containing gas; and

(c) rechloriding said catalyst in a non-reducing atmosphere at a temperature between 200° and 800° F. by contacting said catalyst with a conventional chloriding alumina activating agent and chloriding said catalyst to about 3.0 to 15.0 weight percent chlorine, wherein said non-reducing atmosphere is an inert or oxidizing atmosphere, wherein said alumina is gamma alumina and wherein said regenerated catalyst possesses an alumina surface area substantially reduced from that of said active catalyst.

6. A process according to claim **1** wherein said rechloriding in (c) is undertaken by contacting with carbon tetrachloride.

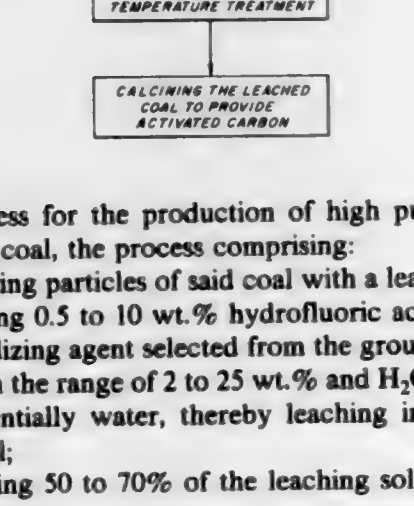
7. A process according to claim **1** wherein said rechloriding in (c) is undertaken by contacting with aluminum chloride.

4,083,801

HIGH PURITY ACTIVATED CARBON PRODUCED BY CALCINING ACID LEACHED COAL CONTAINING RESIDUAL LEACHING SOLUTION

Subodh K. Das, Natrona Heights, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 20, 1976, Ser. No. 752,420
Int. Cl.[2] C01B *31/12;* B01J *21/18*
U.S. Cl. 252—422 9 Claims



1. A process for the production of high purity activated carbon from coal, the process comprising:

(a) contacting particles of said coal with a leaching solution containing 0.5 to 10 wt.% hydrofluoric acid and at least one oxidizing agent selected from the group consisting of HNO_3 in the range of 2 to 25 wt.% and H_2O_2, the remainder essentially water, thereby leaching impurities from said coal;

(b) removing 50 to 70% of the leaching solution from the coal; and

(c) calcining said coal containing residual leaching solution in the range of 30 to 50 wt.%, said calcining being carried out at a temperature in the range of 550° to 750° C for a period of time sufficient to provide said high purity activated carbon.

3. The process according to claim 1 wherein a gaseous oxidizing material is bubbled through said leaching solution during said contacting period.

4. The process according to claim 1 wherein said gaseous oxidizing material is selected from the group consisting of air and oxygen.

9. A process for the production of high purity activated carbon from coal comprising:

(a) contacting said coal having a particle size not greater than 14 mesh (Tyler Series) with a leaching solution containing 0.5 to 10 wt.% hydrofluoric acid and 2 to 25 wt.% nitric acid, the remainder essentially water, said solution at a temperature in the range of 20° to 100° C, said contacting for a time period in the range of 7 to 100 minutes;

(b) during said contacting, bubbling a gaseous oxidizing material selected from the group consisting of air and oxygen;

(c) separating said coal from said leaching solution and leaving in said coal 30 to 50 wt.% residual leaching solution;

(d) subjecting said coal containing said residual leaching solution to a temperature in the range of 80° to 140° C for a time period in the range of 5 to 120 minutes; and

(e) thereafter, calcining said coal at a temperature in the range of 550° to 750° C for a time period in the range of 5 to 120 minutes to provide a reduction in the bulk density of said coal in the range of 5 to 45% thereby producing said high purity activated carbon.

4,083,802

POLYMERIZATION OF OLEFINS AND CATALYSTS THEREFOR

Kazuo Matsuura, Kawasaki; Nobuyuki Kuroda, Yokohama; Takeichi Shiraishi, Kawasaki, and Mitsuji Miyoshi, Naka, all of Japan, assignors to Nippon Oil Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 608,898, Aug. 29, 1975, Pat. No. 4,006,101, which is a continuation-in-part of Ser. No. 439,959, Feb. 5, 1974, abandoned. This application Jul. 19, 1976, Ser. No. 706,589
Claims priority, application Japan, Feb. 9, 1973, 48-16157
The portion of the term of this patent subsequent to Feb. 1, 1994, has been disclaimed.
Int. Cl.[2] C08F *4/02, 4/64*
U.S. Cl. 252—429 C 4 Claims

1. A catalyst composition for use in the polymerization or copolymerization of olefins which essentially comprises a solid carrier and a transition metal compound carried thereon, said transition metal compound being selected from the group consisting of the compounds represented by the general formula $Ti(OR)_nX_{4-n}$ wherein R is an alkyl, alkenyl, aryl and aralkyl group having 1 to 20 carbon atoms, X is a halogen atom and *n* is a whole number of 0 to 4, vanadium tetrahalide and a compound represented by the general formula VOX_3 wherein X is a halogen atom, said carrier resulting from the reaction of

(a) anhydrous magnesium chloride

(b) silicon tetrachloride, and

(c) a compound represented by the general formula

ROH

wherein R is a hydrocarbon group selected from the group consisting of alkyl, alkenyl, aryl and aralkyl having 1 to 20 carbon atoms,

the molar ratio of the compound ROH to silicon tetrachloride being in the range from 1 : 0.1 to 1 : 100, and the molar ratio of said anhydrous magnesium chloride to said silicon tetrachloride being 1 : 0.1 to 1 : 100, the reaction being carried out at a temperature of from 0° to 300° C.

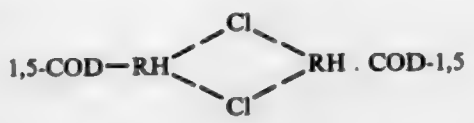
4,083,803

ANCHORED SILYLHYDROCARBYL PHOSPHINE TRANSITION METAL COMPLEX CATALYSTS AND THEIR METHOD OF PREPARATION

Alexis A. Oswald, Mountainside, and Lawrence L. Murrell, Elizabeth, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 265,507, Jun. 23, 1972, Pat. No. 3,907,852. This application Sep. 5, 1975, Ser. No. 610,628
Int. Cl.[2] B01J *31/24*
U.S. Cl. 252—430 20 Claims

1. Anchored silylhydrocarbyl phosphines of the general formula:



wherein R′ is C_{1-6} hydrocarbyl, R is chloro, C_{1-4} acyloxy and C_{1-6} saturated aliphatic or aromatic hydrocarbyl, *m* is 8 to 30, M is a Group VI to VIII transition metal selected from the group consisting of Fe, Ru, Os, Rh, Ir, Ni, Co, Pd and Pt, X is an anion selected from the group consisting of chloride, bromide and acetate, a ligand selected from the group consisting of 1,5-cyclooctadiene carbonyl, tetrahydrofuran, pyridine, acetonitrile, 1,5,9 cyclododecatriene, *x* is 1 to 3, *y* is 1 to 3, *n* is 2 to 6, *z* is 1 and 2, *g* is 1 to 6, *t* is 0 to 3, wherein anchoring is through Si-O bonds to hydroxyl groups of inorganic solids selected from the groups consisting of silica and metal oxides.

4,083,804

CATALYST FOR USE IN AND PROCESS FOR PREPARING ACRYLONITRILE

Shigeru Saito, Fuchu; Yutaka Sasaki, Yokohama; Tomio Nakamura, Ichikawa; Kiyoshi Moriya, Kanagawa; Yoshimi Nakamura, Kawasaki, and Hiroshi Utsumi, Yokohama, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 548,839, Feb. 10, 1975, Pat. No. 3,988,359. This application Jun. 3, 1976, Ser. No. 692,407
Claims priority, application Japan, Feb. 9, 1974, 49-15885
Int. Cl.[2] B01J *21/02, 27/14, 27/02*
U.S. Cl. 252—432 4 Claims

1. A catalyst composition comprising active components of the following empirical formula

$$Fe_aSb_bMe_cTe_dQ_eR_fO_g$$

wherein Me is at least one element selected from the group consisting of V, Mo and W; Q is at least one element selected from the group consisting of Cu, Mg, Zn, La, Ce, Al, Cr, Mn, Co, Ni, Bi and Sn; and R is at least one element selected from the group consisting of P and B; *a, b, c, d, e, f* and *g* each represents atomic ratios, and when *a* is 10, *b* is 15 to 60, *c* is greater than 1 and less than or equal to 10, *d* is 0.5 to 10, *e* is 0.1 to 10, *f* is 0 to 5, and *g* represents the number of oxygen atoms corresponding to the oxides resulting from the combination of the above active components,

wherein the Me and Te components are substantially dissolved in the iron-antimony oxide compound having the formula $FeSbO_4$ to form a solid solution when a slurry containing said components described above, the slurry being obtained by intimately mixing the Me and Te components with the Fe and Sb components along with the Q components and R components, if present, is dried and finally calcined at a temperature of about 500° C to about 900° C.

4,083,805

PREPARATION OF METHACRYLIC ACID FROM METHACROLEIN

James F. White, Akron, and Michael D. Applequist, Mayfield Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 701,259, Jun. 30, 1976, abandoned. This application Nov. 26, 1976, Ser. No. 745,033
Int. Cl.[2] B01J *27/14*
U.S. Cl. 252—437 17 Claims

1. The catalyst composition described by the formula

$$Mo_{12}P_aBi_bCu_cM_dX_eO_f$$

wherein

M is at least one element selected from the group consisting of iron, chromium, nickel, manganese, tellurium, palladium, antimony, and rhodium;

X is a halogen selected from the group consisting of chlorine, bromine or iodine;

and wherein

a, b, and *c* are numbers from 0.001 to 10;

d is from 0 to 10;

e is a positive number less than or equal to 5;

f is a positive number of oxygens required to satisfy the valence states of the other elements present.

4,083,806

HYDROCARBON CONVERSION WITH AN ACIDIC, SULFUR-FREE TRIMETALLIC CATALYTIC COMPOSITE

Frederick C. Wilhelm, Ann Arbor, Mich., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 538,827, Jan. 6, 1975, Pat. No. 3,972,805, and a continuation-in-part of Ser. No. 343,743, Mar. 22, 1973, abandoned, and a continuation-in-part of Ser. No. 15,960, Mar. 2, 1970, abandoned. This application Jun. 17, 1976, Ser. No. 697,075
Int. Cl.[2] B01J *27/10, 27/08*
U.S. Cl. 252—442 8 Claims

1. An acidic sulfur-free gasoline reforming catalytic composite comprising a halided porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum, about 0.01 to about 5 wt. % nickel, about 0.01 to about 5 wt. % tin or lead and about 0.1 to about 3.5 wt. % halogen, wherein the platinum, nickel, and tin or lead are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum is present in the elemental metallic state, wherein substantially all of the tin or lead is present in an oxidation state above that of the elemental metal, and wherein the major portion of the nickel is present in the elemental metallic state.

4,083,807

METHOD FOR PREPARING CRYSTALLINE ALUMINOSILICATE CRACKING CATALYSTS

Joel D. McKinney, Pittsburgh; Bruce R. Mitchell, Sarver, and Raynor T. Sebulsky, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 13, 1976, Ser. No. 648,799
Int. Cl.[2] B01J *29/06;* C10G *11/02*
U.S. Cl. 252—455 Z 4 Claims

1. A method which comprises preparing a zeolitic catalyst composition by contacting a cracking catalyst composition containing a crystalline aluminosilicate zeolite with an ionizable salt of a metal selected from the group consisting of antimony and bismuth under ion exchange conditions, recovering therefrom a crystalline aluminosilicate catalyst composition containing at least 0.25 weight percent of said metal, and thereafter contacting said catalyst composition under cracking conditions with a hydrocarbon charge stock containing at least 3.5 ppm nickel equivalents as metal contaminants and having an average boiling temperature above 600° F.

3. The method of claim 1 wherein said catalyst composition contains a laminar 2:1 layer lattice aluminosilicate material in an amount ranging from 10 to 95 weight percent.

4,083,808

DESULFURIZATION OF RESIDUAL PETROLEUM OILS AND CATALYSTS THEREFOR

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 651,560, Jan. 22, 1976, Pat. No. 4,013,547. This application Oct. 4, 1976, Ser. No. 729,196
Int. Cl.[2] B01J *29/06, 29/00*
U.S. Cl. 252—455 R 7 Claims

1. A catalyst composition consisting essentially of a composite of about 1–7 weight-percent CoO, 8–16 weight-percent MoO_3, and 1–5 weight-percent silica, the balance being activated alumina, said catalyst being further characterized by:

(a) a total surface area between about 150 and 350 m^2/g;

(b) a total pore volume between about 0.3 and 0.8 ml/g, at least about 40% of said pore volume being in pores of 75–100 A diameter; and

(c) a pore volume in pores above 100 A diameter of between about 0.01 and 0.1 ml/g; said catalyst having been prepared by the steps of:

(1) calcining an intimate composite of alumina, silica and

molybdena at a temperature between about 900° and 1400° F;

(2) impregnating the calcined composite with an aqueous solution of a thermally decomposable cobalt compound; and

(3) calcining the impregnated composite at a temperature between about 1250° and 1400° F for a sufficient time to give the pore structure specified in (b) and (c) above.

4,083,809

HYDROGENATION CATALYST AND METHOD OF PRODUCING SAME

Waldo De Thomas, Parsippany, and Eugene V. Hort, Wayne, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Aug. 20, 1976, Ser. No. 716,111

Int. Cl.² B01J *21/06, 23/42, 23/44, 23/72*

U.S. Cl. 252—457 **3 Claims**

1. A hydrogenation catalyst for the selective conversion of a feed compound selected from the group consisting of maleic acid, succinic acid, maleic anhydride, and succinic anhydride to gamma-butyrolactone in the vapor phase by hydrogenation consisting essentially of:

a. an intimate admixture consisting of essentially metallic copper with a small amount of elemental metallic palladium or platinum therewith, on a magnesium silicate non-acidic carrier, wherein:

b. said metals comprise about 4–30% by weight of said admixture, and

c. the weight ratio of copper to said palladium or platinum being about 10:1 to about 500:1.

4,083,810

PROCESSING OF CATALYST POWDER

Thomas Czerny, Glashutten; Hans von Döhren, Frankfurt am Main; Lothar Löech; August Winsel, both of Kelkheim, Taunus, all of Germany, and Kurt Ziegler, deceased, late of Summern, Germany (by Rosemary Ziegler, heir), assignors to Varta Batterie Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 544,753, Jan. 28, 1975, Pat. No. 4,035,151. This application Sep. 22, 1976, Ser. No. 725,637

Claims priority, application Germany, Jan. 29, 1974, 2403998

Int. Cl.² B01J *23/26, 23/74*

U.S. Cl. 252—467 **9 Claims**

1. The method of processing a powdery material containing material capable of being a catalyst, utilizing a vibratory spiral conveyor which includes a spiral chute having its axis positioned generally vertically, a chamber enclosing the chute and means for producing axial vibration of the chute, the method comprising the steps of:

introducing the powdery material at the top of the chute while causing the chute to reciprocate along its axis so as to cause the material to vibratingly move downward along the chute in a substantially uniform thickness layer;

passing reaction gas in counterflow manner respective the powder so as to contact and react with the powder layer moving down the chute, the vibratory movement producing an alternating pumping and suction effect which improves the convective access of the gas to the powdery material and thereby the reaction;

maintaining gas and powder temperatures appropriate for the reaction;

removing the gaseous reaction products near the top of the spiral conveyor; and

withdrawing the processed catalyst material near the bottom of the spiral conveyor.

4,083,811

LANTHANATED THERMIONIC CATHODES

Robert Bachmann, Dottingen; Charley Buxbaum, Baden, and Gernot Gessinger, Niederrohrodorf, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jul. 8, 1974, Ser. No. 486,396

Claims priority, application Switzerland, Jul. 9, 1973, 9940/73

Int. Cl.² H01B *1/06*

U.S. Cl. 252—509 **20 Claims**

1. A thermionic cathode comprising a body surrounded by an emitting surface, said body consisting essentially of a high-melting metal, between 0.2% and 5% by weight lanthanum oxide distributed throughout said body and close to the emitting surface of said body and between 0.05% and 18% by weight of a carbon containing-reducing agent which is effective in reducing the lanthanum oxide to lanthanum during operation of the thermionic cathode and replenish the lanthanum which has evaporated at the emitting surface of the body.

4,083,812

CERTAIN KETOALCOHOL TRICYCLIC NORSESQUITERPENE DERIVATIVES AND COMPOSITIONS CONTAINING THE SAME

Pierre Maupetit, and Paul Jose Teisseire, both of Grasse, France, assignors to Societe Anonyme Roure Bertrand Dupont, Paris, France

Continuation-in-part of Ser. No. 444,684, Feb. 21, 1974, Pat. No. 4,000,202. This application Sep. 16, 1976, Ser. No. 723,748

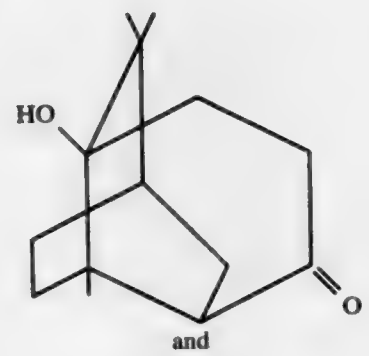
Claims priority, application Switzerland, Feb. 28, 1973, 2884/73; Jul. 3, 1973, 9723/73

Int. Cl.² C07C *49/36, 49/38;* A61K *7/46*

U.S. Cl. 252—522 **2 Claims**

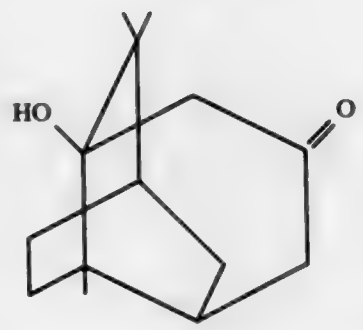
1. Ketoalcohol tricyclic norsesquiterpene derivatives having the formulae

V



and

VII



2. An odoriferous composition containing an odoriferous amount of at least one odorant defined in claim 1.

4,083,813

PROCESS FOR MAKING GRANULAR DETERGENT COMPOSITION

Rodney Mahlon Wise, and Donna M. Derstadt, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 728,578, Oct. 1, 1976, abandoned. This application Jan. 31, 1977, Ser. No. 764,126
Int. Cl.[2] C11D *1/72, 1/84, 11/02*
U.S. Cl. 252—526 17 Claims

1. A process for preparing a zwitterionic surfactant-containing spray-dried granular alkaline detergent composition, wherein the degradation of the zwitterionic surfactant by the alkaline components is minimized, comprising the steps of:

(a) Forming a mixture consisting essentially of

(i) an alkoxylated nonionic surface-active agent; and

(ii) a zwitterionic surface-active agent; in a weight ratio of

(i) to (ii) of from about 5:1 to about 1:5 said mixture having a pH of less than about 9 at a concentration of 1% by weight in water;

(b) thoroughly agitating said mixture of (a);

(c) thereafter adding said mixture to an alkaline aqueous slurry of an alkaline component or components; and

(d) spray-drying the aqueous slurry formed in steps (a)–(c) inclusive to form detergent granules.

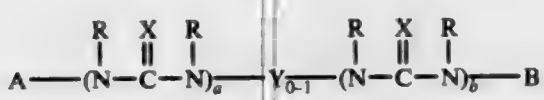
4,083,814

POLYCARBONATE COMPOSITIONS PLASTICIZED WITH UREA COMPOUNDS

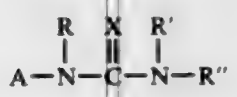
Victor Mark, Evansville, and Phillip Steven Wilson, Mount Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 16, 1976, Ser. No. 751,434
Int. Cl.[2] C08K *5/36*
U.S. Cl. 260—30.8 R 8 Claims

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer having an I.V. of 0.40 to 1.0 dl./g. in methylene chloride at 25° C, and a minor amount of a urea of the following formulae:

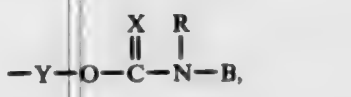


I.



II.

wherein A, B, R, R′ and R″ are independently selected from the group consisting of hydrogen, C_1 to C_{30} alkyl, aryl of 6 to 14 carbon atoms, substituted aryl wherein the substituents are halogen, C_1 to C_{30} alkyl, C_1 to C_{30} alkoxy, aryloxy of 6 to 14 carbon atoms, alkylthio of 1 to 30 carbon atoms, arylthio of 6 to 14 carbon atoms, aralkyl of 7 to 15 carbon atoms; R′ and R″ can also be independently selected from



wherein B and R are as defined previously; Y is independently selected from the group consisting of C_1 to C_{30} alkylene, arylene of 6 to 14 carbon atoms, alkarylene of 7 to 30 carbon atoms, aralkylene of 7 to 20 carbon atoms, $—CH_2—_{1-4}O—CH_2—_{1-4}$, $—CH_2—_{1-4}S—CH_2—_{1-4}$; X is independently O or S; with the proviso that at least one of A, B or R is other than hydrogen; *a* and *b* are 0–1 with the proviso that the sum of *a* and *b* is at least 1.

4,083,815

POLYURETHANE COATING COMPOSITIONS AND PROCESS OF PREPARATION

Edward J. Thompson, Watertown, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 11, 1976, Ser. No. 666,087
Int. Cl.[2] C08K *5/11;* C08G *18/12, 18/65*
U.S. Cl. 260—31.2 N 14 Claims

1. A coating composition which comprises the product obtained by heating, at a temperature in the range of about 100° C to about 180° C in the presence of an organic polar solvent having a boiling point not less than the temperature employed in said heating step, a polyurethane elastomer consisting essentially of the product of reaction in the absence of solvent of

(a) 4,4′-methylenebis(phenyl isocyanate);

(b) a polyol having a molecular weight in the range of about 750 to about 2000 and being selected from the class consisting of polyester diols and polyether diols;

(c) an aliphatic diol extender; and

(d) a monohydric alcohol having a molecular weight in the range of about 32 to 324.8 wherein the ratio of equivalents of isocyanate to total equivalents of hydroxyl in the components (b), (c) and (d) is within the range of 0.99:1 to 1.06:1 and wherein the proportion of equivalents of component (d) to equivalents of component (a) is within the range of about 0.10:1 to about 0.01:1;

until a homogeneous solution is obtained and thereafter cooling the product.

4,083,816

ACETOXYMETHYL DERIVATIVES OF POLYUNSATURATED FATTY TRIGLYCERIDES AS PRIMARY PLASTICIZERS FOR POLYVINYLCHLORIDE

Edwin N. Frankel, and Everett H. Pryde, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 25, 1976, Ser. No. 699,920
Int. Cl.[2] C08K *5/10;* C08L *91/00;* C11C *3/04, 3/12*
U.S. Cl. 260—31.2 R 23 Claims

1. A method of preparing a primary plasticizer for polyvinylchloride comprising the following steps:

a. providing a fatty compound selected from the group consisting of C_{18} unsaturated fatty acids, their lower alkyl esters, and their vegetable oil triglycerides;

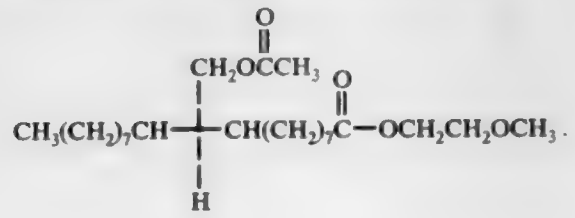
b. hydroformylating said fatty compound with carbon monoxide and hydrogen in the presence of an effective catalyst to add a formyl group at substantially each site of unsaturation;

c. hydrogenating the hydroformylated product of step (b) to convert substantially all the formyl groups to hydroxymethyl groups; and

d. acetylating the hydrogenated product of step (c) to convert substantially all the hydroxymethyl groups to the corresponding acetoxymethyl derivatives of said fatty compound.

5. A primary plasticizer for polyvinylchloride comprising the acetoxymethyl derivative of a fatty compound selected from the group consisting of C_{18} unsaturated fatty acids, their lower alkyl esters, and their vegetable oil triglycerides, wherein the number of acetoxymethyl side chains substantially corresponds to the number of sites of unsaturation in said fatty compound.

10. The plasticizer as defined in claim 5 wherein said acetoxymethyl derivative has the following structure:



4,083,817

BLENDS OF FURAN-ALDEHYDE RESINS WITH PHENOLIC RESINS AND MOLDED ARTICLES PRODUCED THEREFROM

Hugh C. Anderson, Palatine, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jun. 15, 1977, Ser. No. 806,661
Int. Cl.[2] C08L 45/00
U.S. Cl. 260—38 14 Claims

1. A composition comprising: a liquid mixture of
(a) a liquid furan-formaldehyde resin formed by acidic polymerization of a furan-formaldehyde mixture in which an excess of furan is maintained, and
(b) a liquid phenolic resole resin.

4,083,818

FLAME RETARDANT POLYMERS

David R. Brackenridge, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 29, 1975, Ser. No. 617,273
Int. Cl.[2] C08K 5/53
U.S. Cl. 260—2.5 AJ 5 Claims

1. A fire retardant organic polymer or resin having incorporated therein a small but fire retardant effective amount of bis(2,4,6-tribromophenyl) methylphosphonate.

4,083,819

PROCESS FOR PREPARING PREPOLYMERS OR PRECOPOLYMERS OF DIALLYL PHTHALATE IN A SOLID STATE

Akio Hisano, Yao; Shohachi Ogura, and Kouji Satomo, both of Amagasaki, all of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

Filed Sep. 17, 1976, Ser. No. 724,092
Int. Cl.[2] C08F 6/10
U.S. Cl. 260—2.5 R 5 Claims

1. In the process for obtaining prepolymers or precopolymers of diallyl phthalate in a solid state by submitting a polymerization product solution containing a prepolymer or precopolymer of diallyl phthalate and the corresponding unreacted diallyl phthalate monomer to liquid phase extraction using as extractant a nonreactive organic solvent which is a solvent for the diallyl phthalate monomer but a nonsolvent for the prepolymer or precopolymer of diallyl phthalate to separate a prepolymer or precopolymer phase in a liquid state of fluidity and containing 10 - 30% by weight of the extractant based on the prepolymer or precopolymer phase and thereafter drying said prepolymer or precopolymer phase, the improvement which comprises forming said prepolymer or precopolymer phase in a liquid state of fluidity and containing the extractant into a sheetlike form prior to solidifying it by cooling, heating said phase under foaming conditions accompanied by the evaporation of the extractant, and thereafter solidifying said phase.

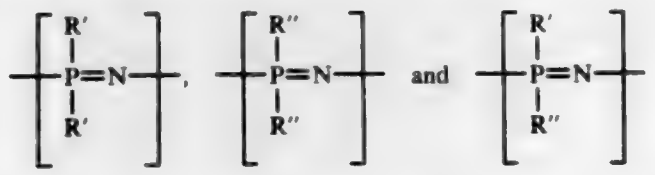
4,083,820

LOW SMOKE POLYPHOSPHAZENE COMPOSITIONS

Ronald L. Dieck, and Edwin J. Quinn, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

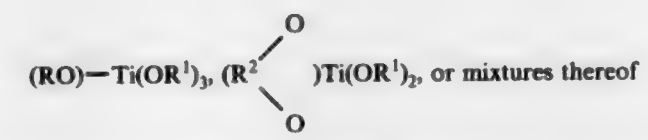
Filed May 20, 1977, Ser. No. 798,818
Int. Cl.[2] C08J 9/00
U.S. Cl. 260—2.5 FP 40 Claims

1. A low-smoke polyphosphazene composition comprising
a. a phosphazene homopolymer or copolymer comprising repeating units of the formula



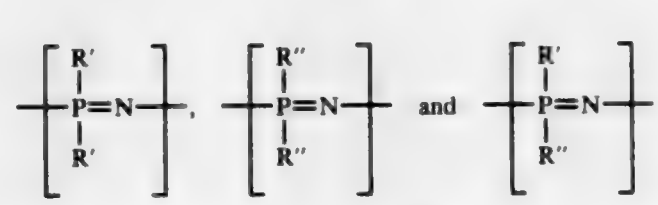
where R′ and R″ are the same or different and are halogen, amino, C_1 to C_{10} dialkylamino, C_1 to C_{10} alkylamino C_6 to C_{14}arylamino, C_6 to C_{14} diarylamino, C_1 to C_{18} linear or branched alkyl, C_2 to C_{18} linear or branched alkenyl, C_1 to C_{18} alkoxy, $_6$ to C_{14} aryl, C_6 to C_{14} aryloxy, substituted C_1 to C_{18} linear or branched alkenyl, substituted C_1 to C_{18} alkoxy, substituted C_6 to C_{14} aryl, or substituted C_6 to C_{14} aryloxy, the substituents selected from the group consisting of halogen, nitro, cyano, alkoxy, aryloxy, alkenyl, amino, C_1 to C_{10} alkylamino, C_1 to C_{10} dialkylamino, C_6 to C_{14} arylamino, C_6 to C_{14} diarylamino, or mixtures thereof;

b. a mineral filler treated with an organo titanate of the formula



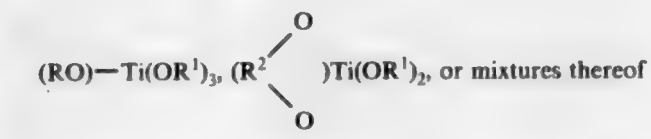
wherein R^1 is the radical $-C(O)R^3$, $-P(O)(OR^4)_2$, $-P(OR^5)_2$, or $-P(O)(OH)OP(OR^6)_2$; R, R^2, R^3, R^4, R^5, and R^6 are the same or different and are C_1 to C_{18} linear or branched alkyl, C_2 to C_{18} linear, branched, or cycloalkylenyl, oxo-substituted C_2 to C_{18} linear, branched, or cycloalkylenyl, C_2 to C_{18} linear or branched alkenyl, C_6 to C_{14} aryl and C_6 to C_{14} substituted aryl, the substituents C_1 to C_{18} linear or branched alkyl, C_2 to C_{18} linear or branched alkenyl, halo, amino, C_1 to C_8 alkylamino or C_1 to C_8 dialkylamino.

26. A foamed low-smoke polyphosphazene composition comprising
a. a phosphazene homopolymer or copolymer comprising repeating units of the formula



where R′ and R″ are the same or different and are halogen, amino, C_1 to C_{10} dialkylamino, C_1 to C_{10} alkylamino, C_6 to C_{14} arylamino, C_6 to C_{14} diarylamino, C_1 to C_{18} linear or branched alkyl, C_2 to C_{18} linear or branched alkenyl, C_1 to C_{18} alkoxy, C_6 to C_{14} aryl, C_6 to C_{14} arloxy, substituted C_1 to C_{18} linear or branched alkyl, substituted C_2 to C_{18} linear or branched alkenyl, substituted C_1 to C_{18} alkoxy, substituted C_6 to C_{14} aryl, or substituted C_6 to C_{14} arloxy, the substituents selected from the group consisting of halogen, nitro, cyano, alkoxy, aryloxy, alkenyl, amino, C_1 to C_{10} alkylamino, C_1 to C_{10} dialkylamino, C_6 to C_{14} arylamino, C_6 to C_{14} diarylamino, or mixtures thereof;

b. a mineral filler treated with an organo titanate of the formula



wherein R^1 is the radical $-C(O)R^3$, $-P(O)(OR^4)_2$, $-P(OR^5)_2$, or $-P(O)(OH)OP(OR^6)_2$; R, R^2, R^3, R^4, R^5, and R^6 are the same or different and are C_1 to C_{18} linear or branched alkyl, C_2 to C_{18} linear, branched, or cycloalkylenyl, oxo-substituted C_2 to C_{18} linear, branched, or cycloalkylenyl, C_2 to C_{18} linear or branched alkenyl, C_6 to C_{14} aryl and C_6 to C_{14} substituted aryl, the substituents C_1 to C_{18} linear or branched alkyl, C_2 to C_{18} linear or branched alkenyl, halo, amino, C_1 to C_8 alkylamino or C_1 to C_8 dialkylamino.

4,083,821

DECORATIVE NON-VINYL SURFACE COVERING COMPOSITION

Thomas G. Harris, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Apr. 20, 1977, Ser. No. 789,297
Int. Cl.[2] C08K *3/00, 3/26*
U.S. Cl. 260—18 PF 9 Claims

1. A non-vinyl surface covering composition comprising
a. a mineral filler distributed substantially uniformly throughout
b. a binder comprising the components
1. chloropolyethylene of chlorine content 35% to 48% by weight, a 100% modulus of 250 to about 500 and a glass transition temperature of from −25° C. to 30° C.; and
2. a copoly(C_1 to C_8 alkyl acrylate/C_6 to C_{12} cycloalkyl acrylate) of molecular weight from about 500,000 to about 2 million where the ratio of component (1):component (2):mineral filler is from 8–32:32–8:60 to 3–12:12–3:85.

4,083,822

PROCESS FOR PRODUCING A POLYMER EMULSION

Akihiko Shimizu, and Takao Hayashi, both of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed May 28, 1976, Ser. No. 690,907
Claims priority, application Japan, Jun. 12, 1975, 50-70165
Int. Cl.[2] C08L *11/02*
U.S. Cl. 260—29.6 HN 10 Claims

1. A process for producing a cationic polymer emulsion consisting essentially of the steps:
(A) mixing 0.1 to 10 wt. parts of a vinyl monomer having an active halogen with from 0.1 to 10 wt. parts of a higher amine in 100 wt. parts of a monomer having an ethylenically unsaturated double bond;
(B) subsequently adding water to the resulting mixture; and
(C) conducting a free radical polymerization wherein the sole monomers polymerized are said monomer having an ethylenically unsaturated double bond and the reaction product of said higher amine and said vinyl monomer having an active halogen.

4,083,823

NO-BAKE FOUNDRY BINDER SYSTEM

James R. Welcome, deceased, late of North Tonawanda, N.Y., and by Elizabeth M. Welcome, administratrix, Belpre, Ohio, assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Mar. 12, 1975, Ser. No. 557,709
Int. Cl.[2] C08G *63/76*
U.S. Cl. 260—40 R 27 Claims

1. A no-bake process for bonding discrete solid particles consisting essentially of admixing said particles with a liquid alkali metal silicate and a hydroxy-terminated polyester resin of a polycarboxylic compound and a polyhydric alcohol and having a hydroxyl number of at least about 50, continuing the mixing of the resulting mixture to coat said particles, and curing the resulting moldable composition by reacting the alkali metal silicate with the hydroxy-terminated polyester to produce a shaped article.

4,083,824

NON-VINYL SURFACE COVERING COMPOSITION

Thomas G. Harris, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Apr. 20, 1977, Ser. No. 789,289
Int. Cl.[2] C08K *3/00, 3/26*
U.S. Cl. 260—42.29 8 Claims

1. A non-vinyl surface covering compositions comprising
(a) a mineral filler distributed substantially uniformly throughout
(b) a binder comprising the components
(1) a copoly block acrylate comprising at least two C_1 to C_8 linear or branched alkyl acrylates of Mw from about 100,000 to about 300,000 and further characterized by at least two glass transition temperatures, one being above 25° C., the other being below 25° C.; and
(2) a random ionic copolymer comprising ethylene and 2.5% to 25% by weight acrylic acid or methyacrylic acid crosslinked by a monovalent or polyvalent metal ion, said ionic copolymer having a melt index of 0.1 to 1000 grams per minute, wherein the ratio of component (1):component (2):mineral filler is from 8–32:32–8:60 to 3–12:12–3:85.

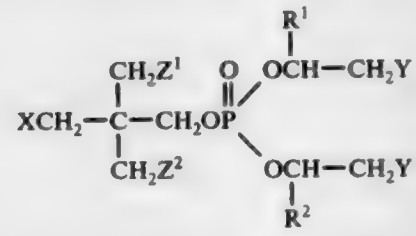
4,083,825

NOVEL PHOSPHATE ESTERS AND NON-SCORCHING FLAME RETARDANT POLYURETHANE COMPOSITIONS CONTAINING THEM

James A. Albright, and Theodore C. Wilkinson, both of Ann Arbor, Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

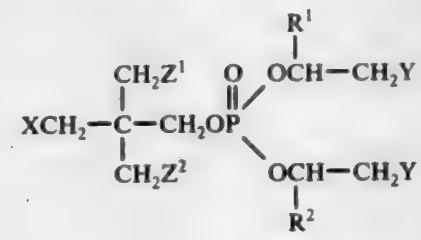
Filed Jul. 23, 1976, Ser. No. 708,055
Int. Cl.[2] C07F *9/09;* C08K *5/52*
U.S. Cl. 260—45.7 P 52 Claims

1. A substantially non-scorching plastic composition containing polyurethane having incorporated therein an effective amount of a flame retardant compound having the formula:



wherein X is chlorine, bromine or hydrogen; Z^1 is chlorine, bromine or hydrogen; Z^2 is chlorine, bromine or hydrogen; Y is chlorine; R^1 is methyl, chloromethyl, bromomethyl or hydrogen; and R^2 is methyl, chloromethyl or hydrogen, except that R^2 is chloromethyl when R^1 is bromomethyl.

27. A compound of the formula:



wherein X is chlorine, bromine or hydrogen; Z^1 is chlorine, bromine or hydrogen; Z^2 is chlorine, bromine or hydrogen; Y is chlorine; R^1 is methyl, chloromethyl, bromomethyl or hydrogen; and R^2 is methyl, chloromethyl or hydrogen, except that R^2 is chloromethyl when R^1 is bromomethyl.

4,083,826

POLYMERIC COMPOSITIONS CONTAINING A FLAME RETARDANT AMOUNT OF A BIS(2,3-DIBROMOPROPYL)-CHLOROALKYL PHOSPHATE

James A. Albright, Ann Arbor, Mich., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed May 5, 1976, Ser. No. 683,356
Int. Cl.[2] C08K *5/53;* C07F *9/09*
U.S. Cl. 260—45.7 P 9 Claims

1. A flame-retardant polymeric composition comprising a polymer selected from the group consisting of polyurethane including flexible and rigid foams and elastomers, polyester, both saturated and unsaturated polyester, styrenated polyester

and cellulosic polyester blends, and a flame retarding amount of a compound of the formula



wherein R is a straight or branched chain alkyl group containing from 2 to about 12 carbon atoms.

4,083,827

DIALKYLAMINOBENZALDEHYDE POLYPYRROLIDONE COMPOSITION

Ralph House, El Sobrante, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 29, 1976, Ser. No. 727,839
Int. Cl.[2] C08K *5/18*
U.S. Cl. 260—45.9 QA **4 Claims**

1. A composition of matter comprising a major amount of normally solid poly-2-pyrrolidone and a thermal stabilizing amount, effective to reduce the thermal degradation of said poly-2-pyrrolidone to its monomer, in the range of from about 0.5 weight percent to about 5 weight percent of said composition, of a N-alkyl-N-alkyl-aminobenzaldehyde.

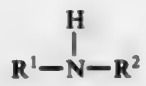
4,083,828

PREPARATION OF POLYPHENYLENE OXIDES BY THE OXIDATIVE COUPLING OF A PHENOLIC MONOMER IN THE PRESENCE OF A MANGANESE SALT, BASE AND A SECONDARY AMINE

Walter Karl Olander, Clifton Park, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 21, 1976, Ser. No. 753,508
Int. Cl.[2] C08G *65/44*
U.S. Cl. 260—47 ET **13 Claims**

1. In a method for the preparation of a polyphenylene oxide by the oxidative coupling of a phenolic monomer with oxygen under polymer forming conditions in the presence of a catalyst which consists essentially of a manganese salt and a basic media, the improvement which comprises adding to the reaction mixture a secondary amine of the formula:



wherein R^1 and R^2 are independently selected from the group consisting of lower alkyl of from 1 to 8 carbon atoms, aryl (lower) alkyl or R^1 and R^2 may be concentrated together to form a piperazine ring.

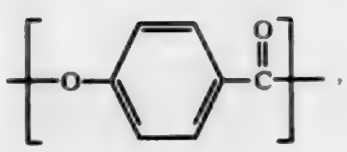
4,083,829

MELT PROCESSABLE THERMOTROPIC WHOLLY AROMATIC POLYESTER

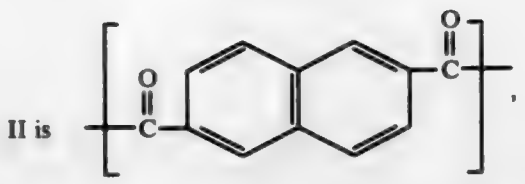
Gordon W. Calundann, North Plainfield; Herbert L. Davis, Convent Station; Frederick J. Gorman, Succasunna, all of N.J., and Robert M. Mininni, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 686,191, May 13, 1976, abandoned. This application Apr. 20, 1977, Ser. No. 789,374
Int. Cl.[2] C08G *63/06, 63/18*
U.S. Cl. 260—47 C **23 Claims**

1. An improved melt processable wholly aromatic polyester capable of forming a thermotropic melt phase at a temperature below approximately 300° C. consisting essentially of the recurring moieties I, II, III, and IV wherein:

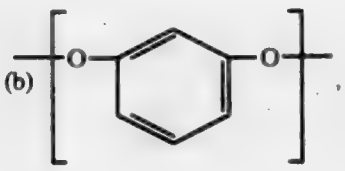
I is  ,

-continued

II is  ,

III is a symmetrical dioxy aryl moiety of the formula [—O—Ar—O—] where Ar is a divalent radical comprising at least one aromatic ring, and IV is selected from the group consisting of

 ,

 ,

and mixtures of (a) and (b),
and wherein said polyester comprises approximately 20 to 70 mole percent of moiety I, approximately 3 to 30 mole percent of moiety II, approximately 7.5 to 40 mole percent of moiety III, and approximately 4 to 30 mole percent of moiety IV, and wherein each of said moieties is free of ring substitution.

4,083,830

CATALYSIS OF AMINO RESIN CROSS-LINKING REACTIONS WITH HIGH MOLECULAR WEIGHT SULFONIC ACIDS

Lawrence V. Gallacher, East Norwalk, Conn., assignor to King Industries, Inc., Norwalk, Conn.

Division of Ser. No. 466,079, May 1, 1974, Pat. No. 3,979,478. This application May 6, 1976, Ser. No. 683,779
Int. Cl.[2] C08G *12/12, 12/32;* C08L *61/32*
U.S. Cl. 260—67.6 R **12 Claims**

1. A composition comprising a convertible amino resin and a catalytically effective amount of a polyalkylaromatic polysulfonic acid having a molecular weight of at least about 500.

4,083,831

PROCESS FOR THE PREPARATION OF GRANULAR URETHANE-UREA POLYMERS

Thomas M. Santosusso, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Apr. 9, 1976, Ser. No. 675,532
Int. Cl.[2] C08G *18/08*
U.S. Cl. 260—77.5 AA **8 Claims**

1. A suspension process for the preparation of essentially linear polyurethane-urea granules comprising the steps of:
a. adding to a water solution of from about 2% to about 20% by weight of a water-soluble inert suspending agent
1. a solution comprising an organic solvent which does not contain a reactive hydrogen, and
a. an organic diisocyanate selected from the group consisting of cycloaliphatic diisocyanate, aliphatic diisocyanate and aromatic diisocyanate,
b. a water immiscible polyol comprising not more than up to about 30 mole percent based on total hydroxy group content of a crosslinking component which has at least three hydroxyl groups per molecule.
c. a catalyst not favoring the water-isocyanate reaction over the polyol-isocyanate reaction,
wherein the mole fraction of said organic diisocyanate with respect to said organic diisocyanate and polyol is from about

0.5 to about 1.00 and the amount of water is sufficient to form the continuous reaction phase;

b. heating the reaction mixture of step (a) to a temperature of from about 50° to 150° C. with stirring sufficient to form a suspension and distilling a constant boiling distillate of said organic solvent and water;

c. terminating the distillation of step (b) when substantially no organic solvent remains in said distillate and substantially no unreacted isocyanate remains in the reaction mixture; and

d. separating the solid polyurethane-urea granules formed in step (b).

4,083,832

BLOOD COMPATIBLE VESSELS AND COMPONENTS THEREOF

Carl A. Dahlquist, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 17, 1975, Ser. No. 559,249

Int. Cl.² C08F *212/08, 212/10*

U.S. Cl. 260—79.3 R **5 Claims**

1. A blood-compatible substantially non-thrombogenic shaped article of water-insoluble solid copolymer of 10 to 60 mole percent styrene and 90 to 40 mole percent of at least one copolymerizable acyclic aliphatic comonomer of the formula $CH_2{=}C(R')—X$ wherein R′ is H or CH_3, X is —CN, —COOH or —COOR″ and R″ is unsubstituted lower alkyl of 1–6 carbon atoms, said article having a ciliate hydrophilic surface containing 20 to 400 milliequivalents of sulfonic acid groups per square meter, said sulfonic acid groups being in the para-position of the aromatic nucleus of said styrene, and a electronegativity measured on detached portions of said ciliate hydrophilic surface as a zeta potential of from −5 to −70 millivolts.

4,083,833

METHOD FOR THE PRODUCTION OF CELLULOSIC FIBRES HAVING A HIGH RESISTANCE TO COMBUSTION, AND TEXTILE PRODUCTS PREPARED BY SAID METHOD

Francesco Siclari, Barlassina; Pietro Paolo Rossi, Garlasco; Roberto Leoni, Milan, and Mario De Gaetano, Seregno, all of Italy, assignors to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A., Italy

Filed Jul. 8, 1976, Ser. No. 703,592

Claims priority, application Italy, Jul. 11, 1975, 25283 A/75

Int. Cl.² C08F *28/00, 30/02, 230/02, 4/27*

U.S. Cl. 260—79.3 MU **13 Claims**

1. Improved method for the production of cellulosic fibres having a high resistance to combustion, comprising the following operations:

a. 1. preparing a copolymerizable monomeric compound by reacting a cyclic alkoxy derivative, including still at least a halogen atom of a phosphonitrile halide, with an unsaturated alcohol;

2. chemically transforming said halogen-containing alkoxy derivative to obtain a copolymerizable monomeric compound;

b. copolymerizing with a free radical catalyst said monomeric compound with an unsaturated acid selected from the group consisting of maleic, acrylic, methacrylic and allylsulphonic acids, obtaining a water insoluble copolymer including acid groups and cyclic phosphonitrile groups;

c. treating said copolymer with an aqueous-alkaline solution so as to salify the said acid groups and to obtain a solution-suspension which is mixable with viscous cellulose xantogenate solutions;

d. adding said solution-suspension to a spinnable cellulose xantogenate viscous dope obtaining a composite viscous mass of cospinnable components, and spinning said viscous mass in an acid spinning and coagulating bath whereby to form a regenerated cellulose fibre including the said insoluble copolymer.

4,083,834

PROCESS FOR PRODUCING POLYMER HAVING FUNCTIONAL GROUPS AT ITS CHAIN TERMINALS

Koei Komatsu, Tokyo; Akinori Nishioka, Yokohama; Noboru Ohshima, Yokohama; Masanobu Takahashi, Yokohama, and Hiromichi Hara, Kawasaki, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 441,184, Feb. 11, 1974. This application Aug. 18, 1975, Ser. No. 605,699

Claims priority, application Japan, Feb. 12, 1973, 48-17231

Int. Cl.² C08F *8/08, 8/34*

U.S. Cl. 260—79.5 NV **21 Claims**

1. A process for producing a conjugated diene polymer having functional groups at its chain terminals, prepared by polymerization of at least one conjuaged diene, with or without an alkenylaromatic monomer, in the presence of lithium metal or a dilithioorganic compound at a temperature of 0° to 100° C., to form a base polymer having lithium metal atoms at its chain terminals and reacting same with an alkylene oxide or alkylene sulfide, characterized in that the reaction of the base polymer and alkylene oxide or sulfide is effected in a hydrocarbon medium in which the modified polymer is insoluble, said medium having a solubility parameter of 7.2 or less at 25° C.

4,083,835

COATING PROCESSES, COMPOSITIONS AND SUBSTRATES COATED WITH MALEIC ANHYDRIDE COPOLYMERS HAVING THE ANHYDRIDE MOIETIES REACTED WITH HYDROZINE OR ITS DERIVATIVES

Heinz Pohlemann, Limburgerhof; Hermann Gausepohl, Mutterstadt, and Herbert Naarmann, Wattenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Germany

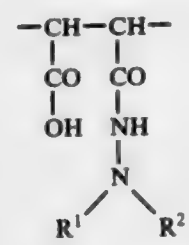
Filed Jun. 25, 1976, Ser. No. 699,931

Claims priority, application Germany, Aug. 2, 1975, 2534613

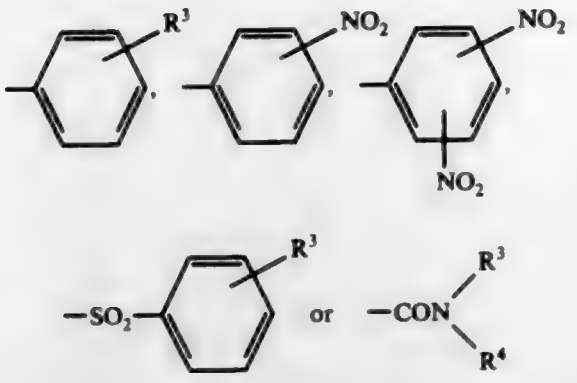
Int. Cl.² C08F *8/30, 8/34*

U.S. Cl. 260—79.5 C **8 Claims**

1. Copolymers which have a molecular weight, as determined by vapor pressure osmometry in chloroform at a concentration of 0.1% by weight and at 37° C., of from 600 to 24,500 and which contain from 0.1 to 60% by weight of units of the formula



where R^1 is H and R^2 is $—CH_3$, $—C_2H_5$, $—C_3H_7$,



and R^3 and R^4 are —H, —CH_3, —C_2H_5 or —C_3H_7, and from 99.9 to 40 percent by weight of units of one or more ethylenically unsaturated monomers which are copolymerizable with maleic anhydride and are selected from amongst o(-olefins of 2 to 12 carbon atoms, monovinyl-aromatic compounds, alkyl esters of ethylenically unsaturated carboxylic acids of 3 to 5 carbon atoms, alkyl esters and alkyl half-esters of maleic acid or fumaric acid, ethylenically unsaturated carboxylic acids of 3 to 5 carbon atoms and their amides, o(-methyleneglutaric acid, vinylphosphonic acid, acrylamidopropanesulfonic acid and alkyl vinyl ethers.

4,083,836

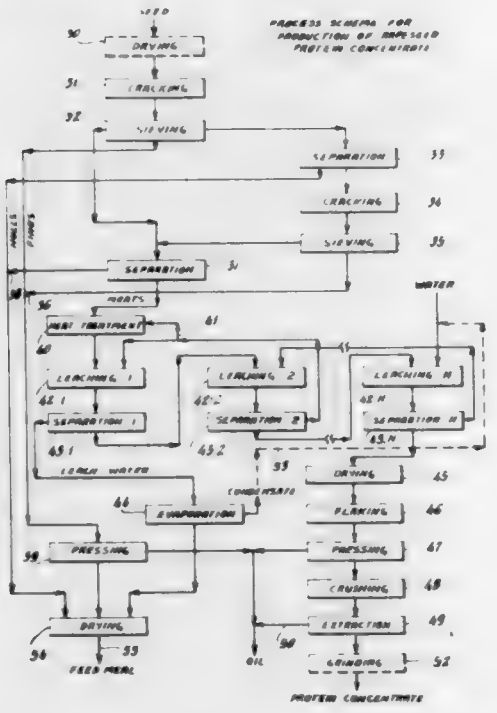
PRODUCTION OF RAPESEED PROTEIN CONCENTRATE FOR HUMAN CONSUMPTION

Klas Orvar Stensson Anjou, Karlshamn; Aurel Jeny Fecske, Grodinge; Carl Goran Krook, Stockholm, and Jan Sven Ragnar Ohlson, Karlshamn, all of Sweden, assignors to Alfa-Laval AB, Tumba and AB Karlshamns Oljefabriker, Karlshamn, both of Sweden

Continuation-in-part of Ser. No. 471,164, May 17, 1974, abandoned. This application Jul. 6, 1976, Ser. No. 702,454

Int. Cl.[2] A23J *1/12, 1/14*

U.S. Cl. 260—123.5 **16 Claims**



1. A method of preparing, from seeds selected from Brassica species and Crambe abyssinica, an edible protein concentrate which is non-toxic and has an acceptable light color and a neutral and bland flavor, said seeds consisting of meat and surrounding hulls attached directly to the meat, said method comprising the steps that the dry seeds are cracked to loosen the hulls and thereby form a cracked material which is then separated under essentially dry conditions into a first fraction consisting essentially of meat and a second fraction consisting essentially of non-meat material, the separation being done in two main steps wherein the cracked material is first divided by sifting into three fractions, namely, a coarse fraction comprising hull material and uncompletely cracked seeds, a medium fraction comprising cracked meat material and hull particles, and a fraction of fines, the medium fraction being thereafter freed from the remaining hull particles on a gravity table so as to provide said first fraction, and that only said first fraction is then subjected to the treatment steps of myrosinase inactivation in the wet state at 80°–100° C, removing glucosinolates and other soluble components, mainly carbohydrates, from said first fraction by leaching with water, drying the resulting meat material, subjecting the dried material to solvent extraction to remove the oil, and careful desolventizing of the meat material so that the protein will not be damaged or discolored.

4,083,837

OXIDATION OF HYDRAZONES TO THE CORRESPONDING DIAZO COMPOUND

Gerard Gallagher, Barrow-in-Furness, and Derek Walker, Windermere, both of England, assignors to Glaxo Laboratories Limited, Greenford, England

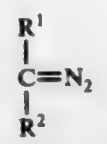
Continuation of Ser. No. 377,223, Jul. 9, 1973, abandoned. This application Sep. 7, 1976, Ser. No. 721,330

Claims priority, application United Kingdom, Jul. 11, 1972, 32423/72

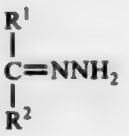
Int. Cl.[2] C07C *113/00, 113/02, 113/04*

U.S. Cl. 260—141 **13 Claims**

1. A process for the preparation of a diazo compound of the formula:



where R^1 is selected from the group consisting of hydrogen and R, where R is phenyl, naphthyl, benzyl, thienyl, furyl, pyridinyl, thienylmethyl, furylmethyl, C_{1-6} alkenyl, C_{5-7} cycloalkenyl, C_{1-6} alkyl and C_{5-7} cycloalkyl groups and such groups substituted by at least one of chloro, bromo, cyano, nitro, C_{1-6} alkyl, C_{1-6} alkylsulphonyl, and C_{1-6} alkoxy; R^2 has independently any of the defined meanings for R; or where R^1 and R^2 together with the intervening carbon atom form a member selected from the group consisting of cyclopentyl, cyclohexyl, fluorenyl, pyranyl and piperidinyl which comprises reacting a hydrazone of the formula:



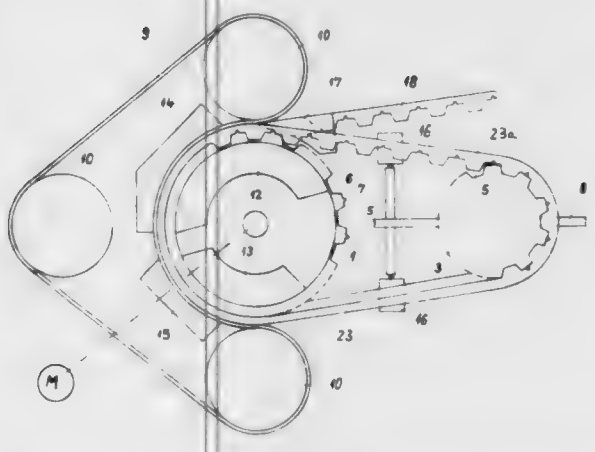
where R^1 and R^2 are as defined above with an oxidizing agent in the presence of an oxidation catalyst and a base, wherein 0.5–2.0 moles of oxidizing agent and 0.5–10 moles of base per mole of hydrazone is used; said base being an alkali metal or alkaline earth metal hydroxide, bicarbonate or carbonate, a guanidine, a basic amide, a quaternary ammonium hydroxide, pyridine, quinoline, tetramethylpiperidine, or triethyl amine, said oxidizing agent being a member selected from the group consisting of organic peracid, chloramine-T and N-chlorosuccinimide and mixtures thereof and said oxidation catalyst a member selected from the group consisting of iodine, an iodide and an iodonium salt.

4,083,838

METHOD OF PRODUCING IN A CONTINUOUS OPERATION ENDLESS TOOTHED BELTS OF ANY DESIRED CIRCUMFERENTIAL LENGTH

Rudolf Breher, Porta Westfalica, Germany, assignor to BRECO Kunststoffverarbeitungs-GmbH & Co. KG, Porta Westfalica, Germany

Filed Apr. 12, 1977, Ser. No. 786,963
Claims priority, application Germany, Apr. 13, 1976, 2616177
Int. Cl.[2] B29D *29/00*
U.S. Cl. 264—145 4 Claims



1. A method of making in a continuous process, by means of a hollow molding chamber, endless toothed belts of extrudable synthetic material and of any desired circumferential length from a relatively narrow prefabricated unfinished belt having a pull-resistant reinforcing insert embedded therein and extending substantially in the longitudinal direction thereof, which includes the steps of: continuously guiding successive sections of said unfinished belt into said hollow molding chamber; heating the respective unfinished belt sections which are in said hollow molding chamber to such an extent that they become fusably soft; supporting said reinforcing insert within said hollow molding chamber; solidifying said softened unfinished belt sections, with said reinforcing insert embedded therein, so as to form a strand of synthetic material; withdrawing said strand of synthetic material from said hollow molding chamber; guiding said strand of synthetic material back into said hollow molding chamber contiguous to the respective continuously guided-in unfinished belt sections; heating at least that side of said guided-in strand of synthetic material which is adjacent to said respective continuously guided-in unfinished belt sections to such an extent that at least said last mentioned side becomes fusably soft; fusing said respective unfinished belt sections to said contiguous guided-in strand of synthetic material to form a hose section; cooling said hose section; withdrawing said hose section from said hollow molding chamber; guiding said hose section back into said hollow molding chamber contiguous to the respective continuously guided-in unfinished belt sections; repeating the aforementioned steps until a hose of a desired length is formed; and while continuing the aforementioned steps, periodically cutting off rings from the thus formed hose so as to obtain belts of the desired width.

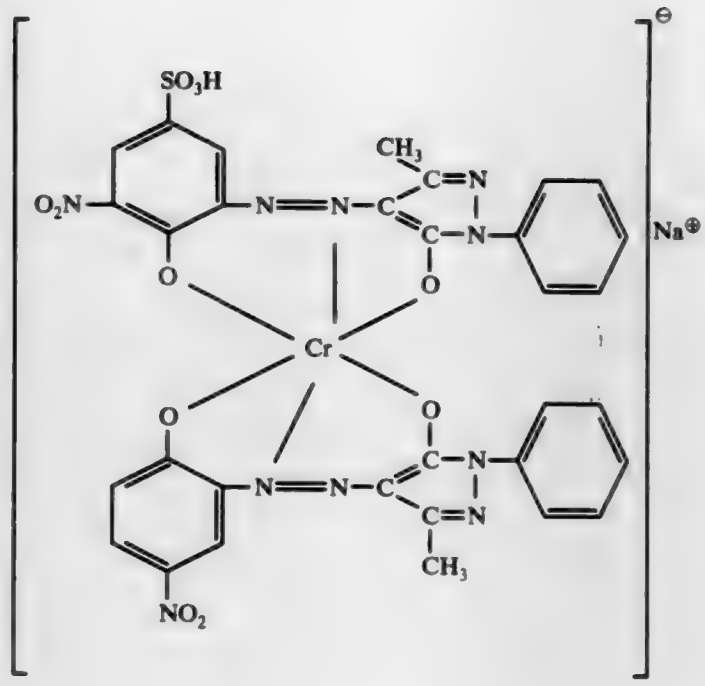
4,083,839

UNSYMMETRICAL MONO SULFO CONTAINING 1:2 AZO, AZO CHROMIUM COMPLEX DYES

Gerhard Back, Lorrach, Germany, and Fabio Beffa, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 536,129, Dec. 24, 1974, abandoned. This application Aug. 6, 1976, Ser. No. 712,284
Claims priority, application Switzerland, Jan. 15, 1974, 506/74
Int. Cl.[2] C09B *45/16*
U.S. Cl. 260—145 B 2 Claims

1. The dye of the formula



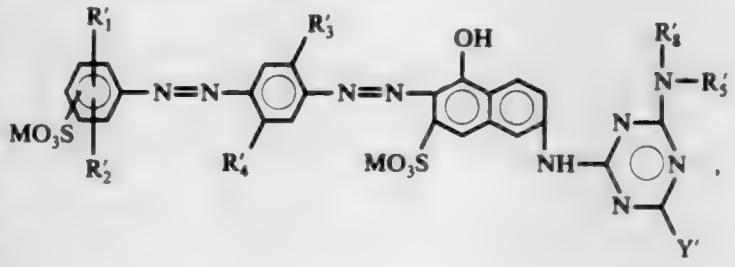
4,083,840

DISAZO DYES HAVING A 6-AMINO OR SUBSTITUTED TRIAZINYLAMINO-1-HYDROXYNAPHTHALENE-3-SULFONIC ACID COUPLING COMPONENT RADICAL

Georg Schoefberger, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Apr. 19, 1976, Ser. No. 678,105
Claims priority, application Switzerland, Apr. 24, 1975, 5277/75
Int. Cl.[2] C09B *31/14, 31/08;* D06P *1/06, 3/32*
U.S. Cl. 260—153 17 Claims

1. A compound of the formula



wherein

R_1' is hydrogen, chloro, methyl, methoxy or ethoxy,

R_2' is hydrogen, chloro or methyl,

R_3' is hydrogen, methyl, methoxy or ethoxy,

R_4' is hydrogen or methyl,

R_5' is $-CHR_6'CHR_6'O-(CHR_7'CH_2O-)_{p'}H$, wherein p' is 0 or 1,

R_8' is hydrogen or $-CHR_6'CHR_6'OH$, with the proviso that R_8' must be hydrogen when p' is 1,

Y' is $-NR_9'R_{10}'$, $-NR_{11}'CHR_6'CHR_6'OH$ or $-NHCHR_6'CHR_6'OCHR_7'CH_2OH$,

wherein each

R_6' is hydrogen or methyl, with the proviso that at least one R_6' on each R_6'-containing group is hydrogen,

each

R_7' is hydrogen or methyl,

each of

R_9' and R_{10}' is independently hydrogen, methyl or ethyl, and

R_{11}' is hydrogen or $-CHR_6'CHR_6'OH$, wherein R_6' is as defined above, and

each

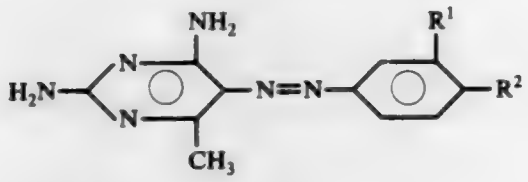
M is hydrogen or a non-chromophoric cation.

4,083,841
2,4-DIAMINO-6-METHYL-5-(HALOPHENYLAZO) PYRIMIDINES

Abha Pal Ghosh, and Kalyan Kumar Ghosh, both of Raleigh, N.C., assignors to Shaw University, Raleigh, N.C.

Filed Oct. 13, 1976, Ser. No. 731,542
Int. Cl.[2] C07C *107/04*
U.S. Cl. 260—154 4 Claims

1. A 2,4-diamino-6-methyl-5-(halophenylazo) pyrimidine compound of the formula



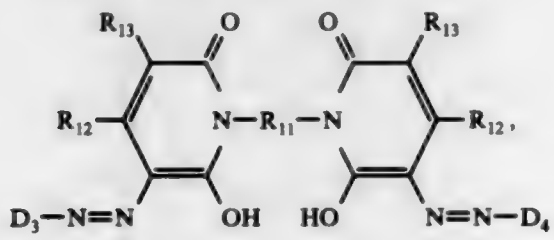
wherein R^1 is Cl or H; when R^1 is Cl, R^2 is H; and when R^1 is H, R^2 is Br or I.

4,083,842
DIAZO COMPOUNDS CONTAINING TWO OPTIONALLY SUBSTITUTED-5-ARYLAZO-6-HYDROXYPYRIDONE-2 RADICALS LINKED THROUGH THEIR NITROGEN ATOMS

Hermann Burkhard, Neuallschwil, and Roland Entschel, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Aug. 14, 1972, Ser. No. 280,355
Claims priority, application Switzerland, Aug. 20, 1971, 12300/71; Sep. 9, 1971, 13299/71
Int. Cl.[2] C09B *33/12;* P06P *1/04, 1/52*
U.S. Cl. 260—156 11 Claims

1. A compound of the formula



wherein

each of D_3 and D_4 is independently phenyl or substituted phenyl wherein each substituent is independently chloro, bromo, cyano, nitro, methyl, trifluoromethyl, methoxy, ethoxy, methylsulfonyl, sulfamoyl, phenoxysulfonyl, guanidinosulfonyl, methoxycarbonyl, ethoxycarbonyl, carbamoyl, phenylcarbamoyl or substituted phenylcarbamoyl wherein each substituent is independently chloro, bromo, methyl or ethyl,

R_{11} is straight or branched chain alkylene having up to six carbon atoms, 1,4-phenylene, substituted 1,4-phenylene wherein each substituent is independently chloro, bromo, methyl, methoxy or ethoxy, 1,4-naphthylene, 1,5-naphthylene, 2,6-naphthylene, 2,7-naphthylene, 4,4'-diphenylene or substituted 4,4'-diphenylene wherein each substituent is independently chloro, bromo, methyl or methoxy,

each R_{12} is independently methyl or phenyl, and

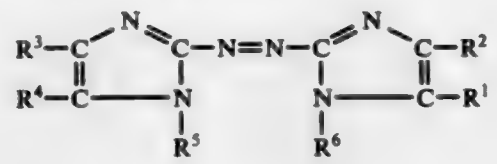
each R_{13} is independently cyano, carbamoyl, methylsulfonyl or sulfamoyl.

4,083,843
2,2'-AZOBIS(4,5-IMIDAZOLEDICARBONITRILE) AND DERIVATIVES

Bruce Arne Carlson, Claymont, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 18, 1976, Ser. No. 697,627
Int. Cl.[2] C09B *29/36;* D06P *1/04, 3/24, 3/70*
U.S. Cl. 260—157 6 Claims

1. A compound of the formula



wherein

R^1, R^2, R^3 and R^4 individually are H, COOH, $COOR^7$, COOM, $CONH_2$, $CNOHNH_2$, COX or CN with the proviso that up to two of R^1, R^2, R^3 and R^4 are hydrogen;

R^5 and R^6 are H, alkyl of 1–8 carbons or aralkyl in which the alkyl group has 1–8 carbons and the aryl substituent has 6–14 carbons;

R^7 is alkyl of 1–8 carbons;

M is one equivalent of an ammonium, a 1–8 carbon atom alkyl substituted ammonium or benzyl substituted ammonium, alkali metal or alkaline earth metal cation; and

X is F, Cl, Br or I;

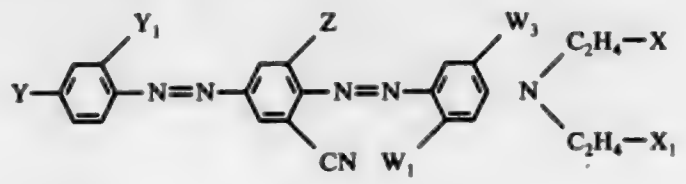
or a salt of said compound.

4,083,844
PHENYLAZO ORTHOCYANO PHENYLAZO OR ORTHOCYANO PHENYLAZO PHENYLAZO CONTAINING DYESTUFFS

Alois Gottschlich, and Klaus Leverenz, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 765,668, Oct. 7, 1968, abandoned. This application Mar. 21, 1974, Ser. No. 453,418
Claims priority, application Germany, Oct. 10, 1967, F 53720
Int. Cl.[2] C09B *43/00;* D06P *1/04, 1/18, 3/54*
U.S. Cl. 260—174 5 Claims

1. Dyestuff of the formula



where

Y is H, Cl, CH_3, NO_2;

Y_1 is H, CH_3;

Z is CH_3, OCH_3, Cl, CN;

W_1 is H, CH_3, $NHCOCH_3$, $NHCOCH_2—OCOCH_3$;

W_3 is H or OC_2H_5;

X is H, C_2H_5, $—OCOOCH_3$ or $OCOCH_3$; and

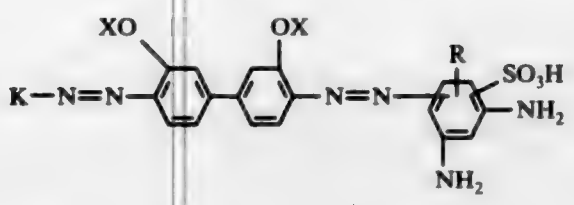
X_1 is H, OH, $COOCH_3$, $OCOCH_3$ or $OCOOCH_3$.

4,083,845
POLYAZO DYESTUFFS HAVING A DIANISIDINE COMPONENT, A DIAMINOPHENYL SULFONIC ACID COMPONENT, AND A NAPHTHOL COMPONENT

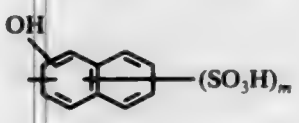
Erich Krämer, Bergisch Gladbach; Horst Nickel, and Karl-Heinz Schündehütte, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 28, 1976, Ser. No. 653,239
Claims priority, application Germany, Jan. 31, 1975, 2504082
Int. Cl.[2] C09B *35/20, 35/36*
U.S. Cl. 260—180 4 Claims

1. Polyazo dyestuffs of the formula



in which
R denotes hydrogen, methyl or chlorine,
X denotes methyl or ethyl and
K represents a radical of the formula



wherein
m denotes 1, 2 or 3.

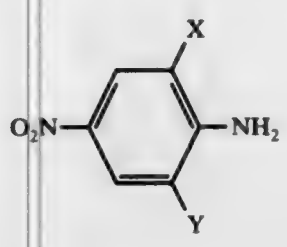
4,083,846

PROCESS FOR THE PREPARATION OF AZO DYESTUFFS

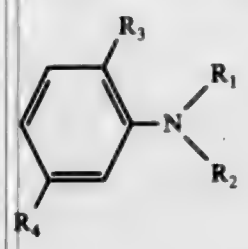
Klaus Leverenz, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 8, 1976, Ser. No. 674,929
Claims priority, application Germany, Apr. 12, 1975, 2516031
Int. Cl.[2] C09B *43/00, 29/08, 29/26*
U.S. Cl. 260—207.1 **10 Claims**

1. Process for the preparation of an azo dyestuff free from sulfonic acid groups comprising
a. diazotizing an amine which is not diazotizable in dilute aqueous mineral acids of the formula:



wherein
X is Cl, Br, or I; and
Y is F, Cl, Br, CF_3, CN, NO_2, COR_6, or SO_2R_6; and wherein
R_6 is C_1–C_4-alkyl, cyclohexyl, phenyl, chlorophenyl, tolyl or methoxyphenyl;
in a lower aliphatic carboxylic acid nitrile or in tetrahydrothiophene-1,1-dioxide or derivative thereof;
b. adding the resulting solution or dispersion of the diazonium salt to an aniline of the formula:



wherein
R_1 is H; C_1–C_4-alkyl; C_1–C_4-alkyl monosubstituted by OH, Cl, $OCOR_5$, OCO_2R_5, $OCONH_2$, $OCONHR_5$, CN, or OR_5 or phenyl-C_1–C_4-alkyl;
R_2 is R_1, cyclohexyl or phenyl;
R_3 is H, CH_3, OCH_3 or OC_2H_5;
R_4 is H, CH_3, Cl, OCH_3, OC_2H_5, CN, $NHCOR_5$, $NHCO_2R_5$, $NHSO_2R_5$, $NHCONH_2$ or $NHCONHR_5$; and
R_5 is C_1–C_4-alkyl, cyclohexyl, phenyl, chlorophenyl, tolyl or methoxyphenyl
in a solvent consisting essentially of a neutral organic dipolar aprotic solvent to effect a coupling reaction and form an o-halogenazodyestuff; and
c. effecting a nucleophilic halogen exchange of an o-halogen atom of the resultant o-halogen azo dyestuff in the resultant reaction medium after neutralization thereof without intermediate isolation of the dyestuff.

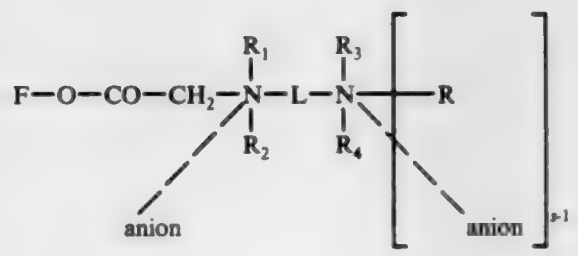
4,083,847

TRANSIENTLY WATER-SOLUBLE DISPERSE MONO-AZO DYES CONTAINING A DIAMINO-METHYLENE-CARBACYL GROUP

Stefan Koller, Ramlinsburg; Peter Aeschlimann, Basel; Urs Karlen, Magden, and Hans Wilhelm Liechti, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 4, 1975, Ser. No. 555,220
Claims priority, application Switzerland, Mar. 7, 1974, 3211/74
Int. Cl.[2] C09B *43/12, 43/18;* **D06P** *1/18, 3/54*
U.S. Cl. 260—207 **9 Claims**

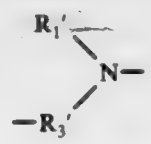
1. A transiently water-soluble disperse dye of the formula



wherein
s is 1 or 2,
R_1 is alkyl of up to 15 carbon atoms or benzyl,
R_2 is alkyl of up to 15 carbon atoms or benzyl,
R_3 is hydrogen, alkyl of up to 15 carbon atoms or benzyl; or together with R_1 or R_4 is lower alkylene,
R_4 is hydrogen, alkyl of up to 15 carbon atoms or benzyl; or together with R_2 is lower alkylene,
R is hydrogen, alkyl of up to 15 carbon atoms or benzyl,
L is alkylene of up to 18 carbon atoms which is uninterrupted or interrupted by —O—, —S— or —NH—; or is a direct bond, and
F is the radical of a non-heterocyclic, monoazo disperse dye;
wherein the —O—CO— group is bonded to an aromatic nuclear carbon atom of F through a group of the formula

-alkylene—X—

wherein
X is directly bonded to said nuclear carbon atom of F and X is selected from the group consisting of
a direct bond,
—O—
—SO_2—,
—SO_2—NH—,
—SO_2—N(alkyl)-,
—CO—NH—, and
—CO—N(alkyl)-;
or through a group of the formula



wherein the nitrogen is directly bonded to said nuclear carbon atom of F;
R_1' is lower alkyl which is unsubstituted or substituted by

fluoro, chloro, bromo, lower alkoxy, lower alkylcarbonyloxy, lower alkylcarbonylamino, benzoyloxy, benzoylamino, cyano, hydroxy, lower alkylsulfonyloxy, phenylsulfonyloxy, cyanoethoxy, phenyl, lower alkylsulfonyl, lower alkoxycarbonyloxy, lower alkylaminocarbonyloxy, phenoxycarbonyloxy, or phenylaminocarbonyloxy; and

R_3' is lower alkylene.

4,083,848

PROCESS FOR PROTECTING AMINO AND/OR IMINO GROUPS

Masumi Itoh, Osaka; Takashi Kamiya, Suita, and Daijiro Hagiwara, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

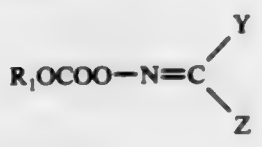
Division of Ser. No. 607,758, Aug. 26, 1975, Pat. No. 4,014,915. This application Jan. 3, 1977, Ser. No. 756,078

Claims priority, application United Kingdom, Apr. 22, 1975, 16706/75

Int. Cl.² C07D *499/00*

U.S. Cl. 260—239.1 **17 Claims**

1. In a process for preparing a protected amino and/or imino group(s) in an amino and/or imino group containing compound comprising reacting said compound with an agent containing a protective group, the improvement comprising said agent having the formula:



wherein R_1 is lower alkyl which may have substituents selected from the group consisting of halogen, lower alkoxy and aryloxy, or ar(lower)alkyl which may have substituents selected from the group consisting of lower alkoxy, halogen, nitro and cyano, Y is selected from the group consisting of cyano, nitro, carbamoyl, aroyl, disubstituted carbamoyl, lower alkanoyl, esterified carboxy, and aryl which may have substituents selected from the group consisting of halogen, lower alkoxy, nitro, cyano and halo(lower)alkyl, or cyano, and Z is aryl which may have substituents selected from the group consisting of halogen, lower alkoxy, nitro, cyano and halo(lower)alkyl.

4,083,849

PROCESS FOR PREPARATION OF 5-CYANOPYRID-6-ONES

Hans-Juergen Quadbeck-Seeger, Bad Durkheim, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Germany

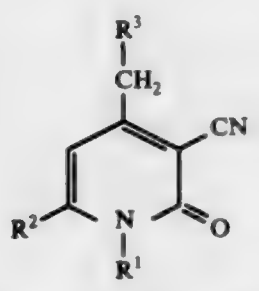
Filed Jun. 23, 1976, Ser. No. 698,916

Claims priority, application Germany, Jul. 11, 1975, 2531035

Int. Cl.² C07D *213/57*

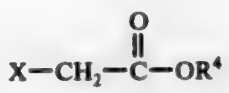
U.S. Cl. 260—294.9 **8 Claims**

1. A process for the preparation of 5-cyanopyrid-6-ones of the formula



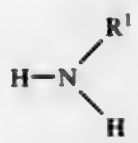
I

where R^1 and R^3 are identical or different and each is alkyl of 1 to 7 carbon atoms, R^1 may also be hydrogen, R^2 is hydroxyl and R^3 may also be hydrogen, cyclohexyl, or alkoxy of 1 to 7 carbon atoms, wherein, in a first step, a haloacetic acid ester of the formula



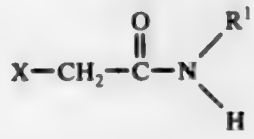
II

where R^4 is alkyl of 1 to 7 carbon atoms and X is bromine or chlorine, is reacted with a nitrogen compound of the formula



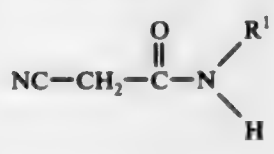
III

where R^1 has the above meanings, the haloacetamide thus obtained of the formula



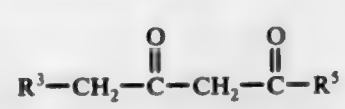
IV

where R^1 and X have the above meanings, is then reacted, in a second step, in situ, with an alkali metal cyanide or alkaline earth metal cyanide, and thereafter, in a third step, the cyanoacetamide thus obtained, of the formula



V

where R^1 has the above meanings, is reacted, in situ, with a dicarbonyl compound of the formula



VI

where R^3 has the above meanings and R^5 represents alkoxy of 1 to 7 carbon atoms, in the presence of a basic compound, after which the reaction mixture is acidified.

4,083,850

3-SUBSTITUTED-2(1H)PYRIDON-6-CARBOXYLIC ACIDS AND PROCESS FOR PREPARATION OF SAME

Takemi Koeda, Yokohama; Takashi Tsuruoka, Kawasaki; Hiroyasu Asaoka, Yokohama; Uichi Shibata, Tokyo; Shigeharu Inoue, and Taro Niida, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Japan

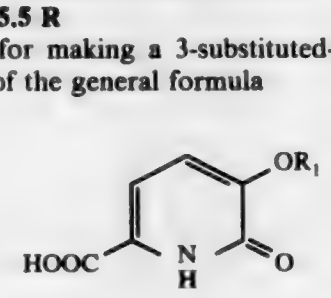
Filed Jun. 28, 1976, Ser. No. 700,340

Claims priority, application Japan, Jun. 30, 1975, 50-80102; Jun. 30, 1975, 50-80103

Int. Cl.² C07D *213/55*

U.S. Cl. 260—295.5 R **27 Claims**

1. A method for making a 3-substituted-2(1H)pyridone-6-carboxylic acid of the general formula



wherein R_1 represents a lower aliphatic acyl group, which comprises (a) reacting D-glucaro-δ-lactam or a metal salt of D-glucaro-δ-lactam with an anhydride in a reaction solvent that includes a base which induces acylation and dehydration reactions to occur simultaneously, and (b) heating the mixture

formed by mixing said lactam or said metal salt with said anhydride in said solvent for from about 5 to 80 hours at temperatures from about 55° C to about 80° C, said base being selected from pyridine, piperidine and triethylamine, and said solvent being selected from pyridine, piperidine, triethylamine, dioxan and and dimethylformamide.

4,083,851

CIS-2,5-DIALKYLPYRROLIDINE PROCESS

Alex Hlynsky, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 431,067, Jan. 7, 1974, abandoned, which is a continuation-in-part of Ser. No. 253,550, May 15, 1972, abandoned. This application Jun. 16, 1975, Ser. No. 587,223

Int. Cl.[2] C07D *207/06*

U.S. Cl. 260—326.8 **10 Claims**

1. A process for hydrogenating a heterocyclic compound selected from the group consisting of 2,5-dimethylpyrrole, 2-ethyl-5-methylpyrrole and 1,5-dimethyl-1-pyrroline to the corresponding dialkylpyrrolidine predominantly as the cis-isomer, which process comprises contacting said heterocyclic compound at a temperature of 55°–180° C and under a hydrogen pressure of 15–1500 psig with ruthenium metal catalyst on a support which is either alumina or titania.

4,083,852

OXA- AND THIA-STEROIDS

Tadao Terasawa, Ibaraki, and Toshihiko Okada, Nara, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

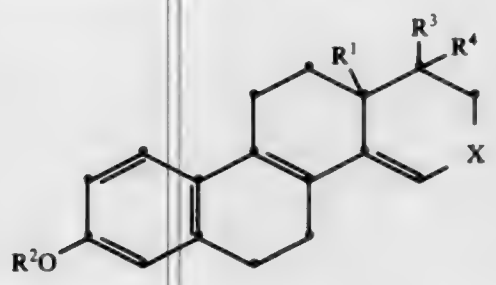
Filed Nov. 5, 1976, Ser. No. 739,448

Claims priority, application United Kingdom, Nov. 13, 1975, 46900/75

Int. Cl.[2] C07D *335/04, 311/78*

U.S. Cl. 260—327 TH **18 Claims**

1. A compound of the general formula:



wherein R^1 represents a lower alkyl of 1 – 5 carbon atoms, R^2 represents a hydrogen atom or lower alkyl of 1 – 5 carbon atoms, R^3 and R^4, one of them represents a hydroxy or alkanoyloxy of 1 – 5 carbon atoms, and the other represents a hydrogen atom, lower alkyl of 1 – 5 carbon atoms, ethynyl or aralkyl of 7 – 8 carbon atoms, or taken together, may represent an oxo group, and X represents an oxygen atom or sulfur atom.

4,083,853

1,3-BENZODIOXOL DERIVATIVES

Satoru Tanaka, Higashikurume, and Hideaki Watanabe, Ushiku, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

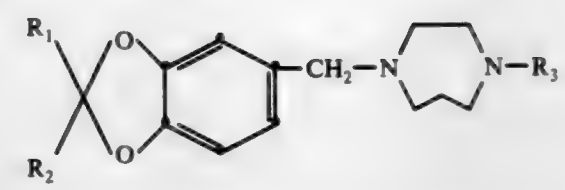
Division of Ser. No. 684,735, May 10, 1976, Pat. No. 4,051,125, which is a division of Ser. No. 609,145, Aug. 29, 1975, Pat. No. 4,026,895, which is a division of Ser. No. 503,515, Sep. 5, 1974, Pat. No. 3,981,864. This application Feb. 18, 1977, Ser. No. 770,038

Claims priority, application Japan, Sep. 8, 1973, 48-100761; Sep. 8, 1973, 48-100762

Int. Cl.[2] C07D *317/44*

U.S. Cl. 260—340.5 R **3 Claims**

1. A member selected from the group consisting of a compound of the formula



wherein R_1 and R_2 are respectively lower alkyl, and R_3 is lower alkyl, phenyl, halogen-substituted phenyl or benzhydryl, and a pharmacologically acceptable acid addition salt thereof.

4,083,854

4,5-DIDEHYDRO-6-OXO-2-ARYL-METHOXYMETHYL-3α-TETRAHYDROPYRANACETIC ACIDS

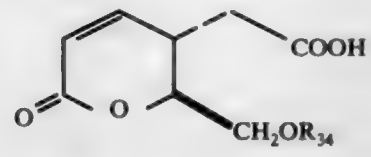
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 676,890, Apr. 14, 1976, Pat. No. 4,020,173. This application Apr. 4, 1977, Ser. No. 784,475

Int. Cl.[2] C07D *309/32*

U.S. Cl. 260—343.5 **2 Claims**

1. A thromboxane intermediate of the formula



wherein R_{34} is an arylmethyl hydroxy-hydrogen replacing group selected from the group consisting of

(a) benzyl,

(b) benzyl substituted by one to five alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive,

(c) benzhydryl,

(d) benzhydryl substituted by one to ten alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive,

(e) trityl, and

(f) trityl substituted by one to 15 alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive.

4,083,855

METHOD FOR PRODUCING A γ-LACTONE

Nobushige Itaya, Nishinomiya, and Fumio Fujita, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

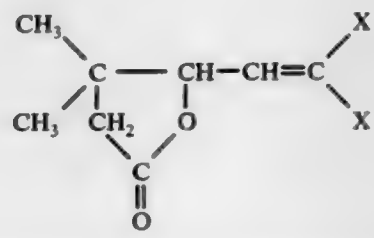
Filed Feb. 4, 1977, Ser. No. 765,780

Claims priority, application Japan, Feb. 19, 1976, 51/17580

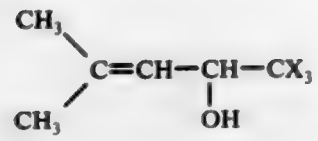
Int. Cl.[2] C07D *307/32*

U.S. Cl. 260—343.6 **2 Claims**

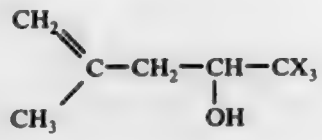
1. A process for producing a 3,3-dimethyl-4-(2,2-dihalogenovinyl)-4-hydroxybutyric-1,4-lactone of the formula,



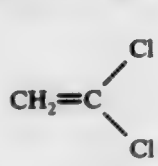
wherein X is a halogen atom which comprises reacting a 1,1,1-trihalogeno-4-methyl-3-pentene-2ol of the formula,



wherein X is a halogen atom, or a 1,1,1-trihalogeno-4-methyl-4-pentene-2-ol of the formula,



wherein X is a halogen atom, or the mixture of the both compounds with vinylidene chloride of the formula,



in sulfuric acid having a concentration of at least 70%.

4,083,856

ADDITION OF UNSATURATED EPOXY MONOMER TO Si-H WITH CHLOROPLATINIC ACID AND HCl-ACCEPTOR

Frank D. Mendicino, Marietta, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 851,087, Aug. 18, 1969, abandoned. This application Oct. 3, 1973, Ser. No. 403,313

Int. Cl.[2] C07F *7/18*

U.S. Cl. 260—348.12 **4 Claims**

1. In the process of adding an ethylenically unsaturated 1,2-epoxy compound to a compound containing Si-H therein using chloroplatinic acid as the catalyst, the improvement which comprises providing a hydrogen chloride acceptor in combination with said catalyst to effect reaction with hydrogen chloride produced by decomposition of chloroplatinic acid during the chemical addition of said ethylenically unsaturated 1,2-epoxy compound to the compound containing Si-H therein and not after said chemical addition is effected.

4,083,857

PROCESS

John Townend, Madeley Heath, near Crewe, and Richard Hazard, Cropston, both of England, assignors to Fisons Limited, London, England

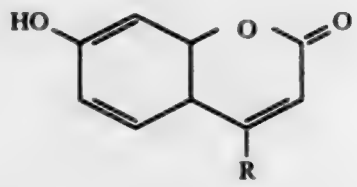
Filed Mar. 31, 1976, Ser. No. 672,275

Claims priority, application United Kingdom, Apr. 11, 1975, 14913/75

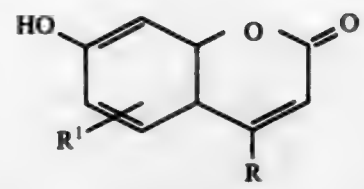
Int. Cl.[2] C07D *311/16*

U.S. Cl. 260—343.44 **9 Claims**

1. A process which comprises reacting a hydroxy-substituted coumarin of the formula



with an acylating agent containing an alkanoyl group in the presence of a Friedel-Crafts catalyst to produce a coumarin derivative of the formula



wherein the formulas R represents an unsubstituted alkyl group, R^1 represents an alkanoyl group, and the hydroxy and R^1 substituents on the second formula are ortho to one another.

4,083,858

ANTHRAQUINONE DYES

John Stuart Manson, and Denis Robert Annesley Ridyard, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

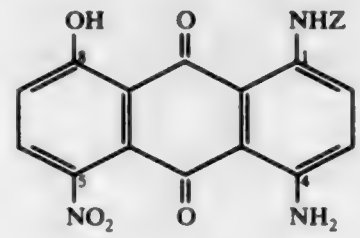
Continuation of Ser. No. 293,057, Sep. 28, 1972, abandoned. This application Aug. 12, 1975, Ser. No. 603,967

Claims priority, application United Kingdom, Oct. 12, 1971, 47453/71

Int. Cl.[2] C07C *143/665;* C09B *1/52*

U.S. Cl. 260—373 **1 Claim**

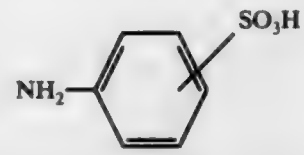
1. A process for the manufacture of a water-soluble anthraquinone dye having the formula:



which comprises reacting 1,8-dihydroxy-4-amino-5-nitroanthraquinone with a primary amine of the formula

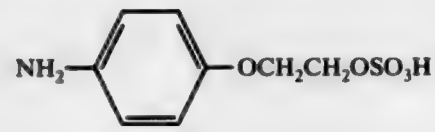
$$Z - NH_2$$

wherein Z represents a radical of the formula



(a)

wherein the aromatic ring may optionally carry one or more substituents selected from halogen, hydroxy, lower alkyl, lower alkoxy, nitro and acetylamino, or



(b)

the reaction being carried out in the presence of boric acid present in amounts of 1–3 moles per mole of said 1,8-dihydroxy-4-amino-5-nitroanthraquinone and either an organic base selected from pyridine, piperidine, morpholine, triethylamine and N,N-dimethylaniline present in amounts of 0.1–10 moles per mole of said 1,8-dihydroxy-4-amino-5-nitroanthraquinone or a polar solvent selected from dimethylformamide and dimethylsulphoxide present in amounts of from 0.1 mole to a large excess per mole of said 1,8-dihydroxy-4-amino-5-nitroanthraquinone.

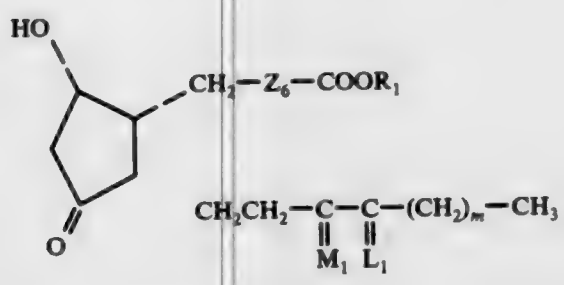
4,083,859

13,14-DIHYDRO-PGD$_2$ COMPOUNDS

Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184.
This application Dec. 30, 1976, Ser. No. 755,988
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—408 25 Claims

1. A prostaglandin analog of the formula



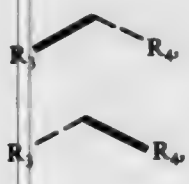
wherein m is one to 5, inclusive;
wherein M_1 is



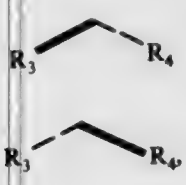
or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and
wherein Z_6 is
(1) cis-$CH{=}CH{-}CH_2{-}(CH_2)_g{-}CF_2{-}$,
(2) cis-$CH{=}CH{-}CH_2{-}(CH_2)_g{-}CH_2{-}$, or
(3) cis-$CH_2{-}CH{=}CH{-}(CH_2)_g{-}CH_2{-}$,
wherein g is one, 2, or 3.

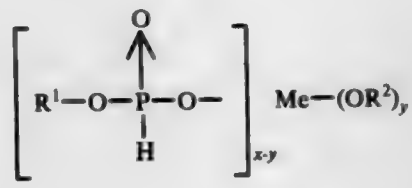
4,083,860

METAL COMPOUNDS OF MONOESTERS OF PHOSPHORIC ACID

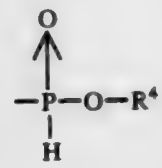
Erich Ruf, Essen, Germany, assignor to Th. Goldschmidt AG, Essen, Germany

Filed Mar. 26, 1976, Ser. No. 670,670
Claims priority, application Germany, Mar. 29, 1975, 2513965
Int. Cl.[2] C07F *7/22*
U.S. Cl. 260—429.7 8 Claims

1. Compound corresponding to the formula



in which
R^1 is the $R^3{-}[O{-}(C_2H_4O)_zC_2H_4{-}]_p$ group of which
R^3 is an alkyl group with 8 to 18 carbon atoms or an akylaryl group whose alkyl residue has at least 8 carbon atoms,
p has a value of 0 or 1, and
z = 0 or a whole number,
R^2 is hydrogen or the



group of which
R^4 is an alkyl residue with 1 to 4 carbon atoms,
Me is a metal selected from the group consisting of alkaline earth, alkali and rare earth metals,
x is a whole number which corresponds to the valence of the metal or the organometallic group and
y is 0 or any whole number less than x.

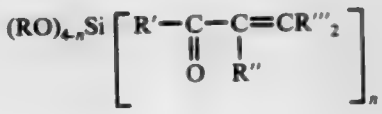
4,083,861

UNSATURATED SILICON ORGANIC COMPOUNDS CONTAINING KETO GROUPS

Claus Dietrich Seiler, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed May 4, 1976, Ser. No. 683,160
Claims priority, application Germany, May 2, 1975, 2519720
Int. Cl.[2] C07F *7/18*
U.S. Cl. 260—448.8 R 54 Claims

1. Keto-group-containing silanes of the general formula



wherein
R independently represents an alkyl, cycloalkyl, alkyloxyalkyl and phenyl group,
R′ represents un unsaturated alkenyl, cycloalkylene or cycloalkenyl group having 2 to 8 carbon atoms,
R″ represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms,
R‴ represents a hydrogen atom, a straight-chained or branched alkyl or alkenyl group having 1 to 6 carbon atoms or a C_5-C_6 cycloalkyl group, and
n has the value 1 or 2
and the condensation products thereof.

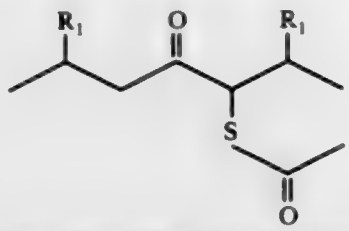
4,083,862

α-OXY(OXO) SULFIDES AND ETHERS

William J. Evers, Red Bank, and Howard H. Heinsohn, Jr., Hazlet, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 730,538, Oct. 7, 1976, Pat. No. 4,045,491.
This application Mar. 31, 1977, Ser. No. 783,474
Int. Cl.² C07C *153/09*
U.S. Cl. 260—455 R **3 Claims**

1. A compound having the structure:



wherein R_1 is selected from the group consisting of hydrogen and methyl, the R_1 moieties being identical.

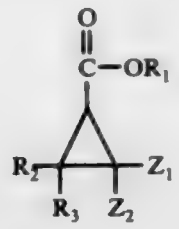
4,083,863

PROCESS FOR THE PREPARATION OF CYCLOPROPANE CARBOXYLIC ACIDS AND ESTERS

William Wayne Brand, Hopewell, N.J., assignor to American Cyanamid Corporation, Stamford, Conn.

Filed Jun. 1, 1976, Ser. No. 691,803
Int. Cl.² C07C *120/00, 121/46, 69/74, 69/78*
U.S. Cl. 260—465 D **13 Claims**

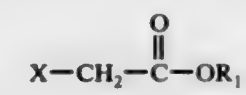
1. A process for the preparation of compounds of formula (IV):



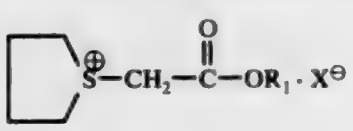
(IV)

wherein R_1 is alkyl C_1–C_4, m-phenoxybenzyl; R_2 and R_3 each are hydrogen, alkyl C_1–C_8, benzyl, phenyl, C_1–C_3 alkylphenyl or halophenyl; or R_2 and R_3 taken together represent an alkylene C_2–C_7 group; Z_1 and Z_2 each are $—CO_2R_4$, $—COR_5$— —CHO, —CN, $—NO_2$, $—SO_2R_6$ or one of Z_1 or Z_2 may also be R_7, and when Z_1 and Z_2 are taken together with the carbon atom to which they are attached they form a cyclopentadienyl or benzocyclopentadienyl group, and when one of Z_1 or Z_2 and one or R_2 or R_3 are taken together with the carbon atoms to which they are attached they form a cyclohexane-1-one group; R_4, R_5 and R_6 each are alkyl C_1–C_8, phenyl, C_1–C_3 alkylphenyl or halophenyl; R_7 is hydrogen, alkyl C_1–C_8, phenyl, C_1–C_3 alkylphenyl or halophenyl; comprising the following steps:

a. reacting tetrahydrothiophene with a one to 1.2 molar equivalent of a compound of the formula:



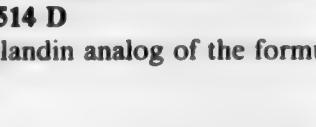
wherein R_1 is as hereinabove defined and X is bromine or chlorine, heat or in the presence of an inert solvent at a temperature from about 15° to 35° C. for a period of time sufficient to obtain a compound of formula (V)



(V)

wherein R_1 and X are as hereinabove defined;

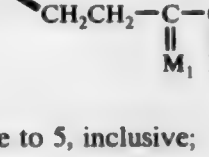
b. reacting the formula (V) compound with an equimolar or excess amount of an alkali metal hydroxide or carbonate or mixtures thereof in the presence of a two-phase mixture of an inert solvent and water at a temperature from about 10° to 50° C. for a period of time sufficient to obtain a compound of formula (VI):



(VI)

wherein R_1 is as hereinabove defined;

c. reacting the formula (VI) compound with a one to 1.2 molar equivalent of a compound of formula (IX):



IX

wherein R_2, R_3, Z_1 and Z_2 are as hereinabove defined, except that when one of Z_1 or Z_2 and one of R_2 or R_3 are taken together with the olefinic carbon atoms to which they are attached, then formula (IX) compound is 2-cyclohexene-1-one; in an anhydrous inert solvent or without solvent under a blanket of inert gas.

4,083,864

METHOD FOR THE PRODUCTION OF N-ALKYL BETA-HYDROXYLAMINE HYDROCINNAMONYL HYDROXAMIC ACIDS

Robert Erwin, Buffalo, N.Y., assignor to Research Corporation, New York, N.Y.

Filed Jun. 1, 1976, Ser. No. 691,788
Int. Cl.² C07C *83/10*
U.S. Cl. 260—500.5 H **9 Claims**

1. A process for preparing N-alkyl beta-hydroxylamine derivatives of hydrocinnamonylhydroxamic acids which comprises contacting an alkyl cinnamate with N-alkyl-hydroxylamine and subsequently adding hydroxylamine thereto, the molar ratio of said hydroxylamine to said alkyl cinnamate being at least about 2:1.

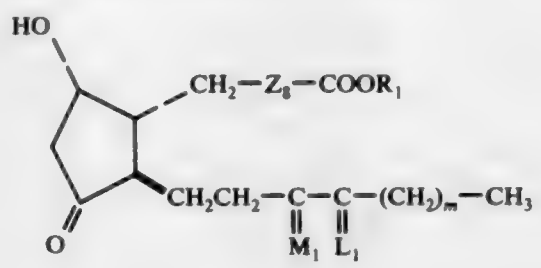
4,083,865

INTER-OXA-13,14-DIHYDRO-PGD$_1$ COMPOUNDS

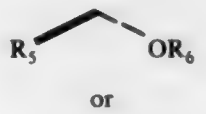
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184.
This application Dec. 30, 1976, Ser. No. 755,986
Int. Cl.² C07C *177/00*
U.S. Cl. 260—514 D **25 Claims**

1. A prostaglandin analog of the formula



wherein *m* is one to 5, inclusive;
wherein M_1 is



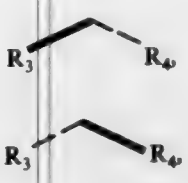
or



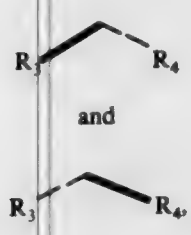
wherein R_5 and R_6 are hydrogen or methyl, with the proviso

that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is



or a mixture of



and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_8 is

(1) $-CH_2-O-CH_2-(CH_2)_g-CH_2-$)

(2) $-(CH_2)_2-O-(CH_2)_g-CH_2-$, or

(3) $-(CH_2)_3-O-(CH_2)_g-$,

wherein g is one, 2, or 3.

4,083,866

SULFONYLAMIDINO AMINOBENZALDEHYDE COMPOUNDS

Jean Claude Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 1, 1976, Ser. No. 737,770

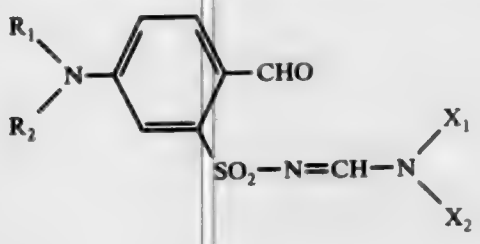
Claims priority, application Switzerland, Nov. 24, 1975, 15199/75

Int. Cl.² C07C *143/80*

U.S. Cl. 260—556 B **9 Claims**

1. An aminobenzaldehyde compound of the formula

(I)



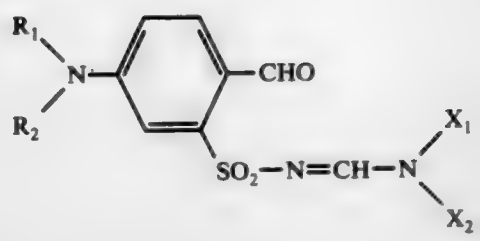
wherein

R_1, R_2, X_1 and X_2 independently of one another represent alkyl having 1 to 12 carbon atoms, alkoxyalkyl having 2 to 8 carbon atoms, cycloalkyl having 5 or 6 carbon atoms, phenyl, benzyl or substituted benzyl or phenyl, said substituents being chosen from alkyl, alkoxy, alkanoyl, nitro, and halogens, and

X_1 and X_2 are also hydrogen.

6. A process for the production of aminobenzaldehyde compounds of the general formula

(I)



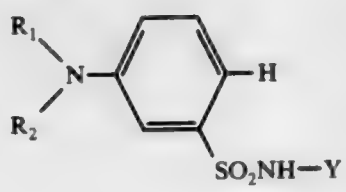
wherein

R_1, R_2, X_1 and X_2 independently of one another represent alkyl having 1 to 12 carbon atoms, alkoxyalkyl having 2 to 8 carbon atoms, cycloalkyl having 5 to 6 carbon atoms, benzyl, phenyl or substituted benzyl or phenyl, said substituents being chosen from alkyl, alkoxy, alkanoyl, nitro, and halogens, and

X_1 and X_2 are also represent hydrogen,

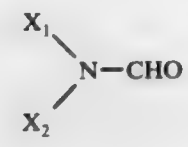
which process comprises reacting a metanilic acid amide of the general formula

(3)



wherein R_1 and R_2 have the aforementioned meaning, and Y represents hydrogen, alkyl having 1 to 4 carbon atoms or alkanoyl having 1 to 4 carbon atoms, with a formamide of the general formula

(4),



wherein X_1 and X_2 have the aforementioned meaning, in the presence of an acid halide.

4,083,867

N-DIMETHYLPROPYNYL-α-METHOXY-α-(3,5-DIMETHYLPHENOXY)ACETAMIDE AND ITS USE AS HERBICIDES

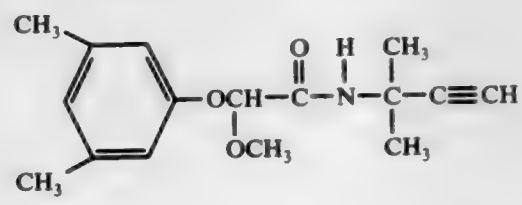
Don R. Baker, Orinda, and Francis H. Walker, Mill Valley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 591,721, Jun. 30, 1975, Pat. No. 4,049,423. This application Jun. 13, 1977, Ser. No. 805,684

Int. Cl.² C07C *103/76*

U.S. Cl. 260—559 B **1 Claim**

1. N-dimethylpropynyl-α-methoxy-α-(3,5-dimethylphenoxy)acetamide having the formula



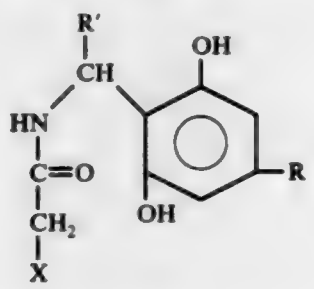
4,083,868

2-(α-AMIDOBENZYL)-5-ALKYLRESORCINOLS

Harold Elmer Zaugg, Lake Forest, and Cheuk Man Lee, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 16, 1976, Ser. No. 714,865
Int. Cl.[2] C07C *103/38*
U.S. Cl. 260—562 N 4 Claims

1. A compound of the formula



wherein

R is a C_6-C_{20} alkyl, arylalkyl or cycloalkyl alkyl;

R′ is phenyl ; and X is H, halogen, or N $(R'')_2$ where R″ is H or C_1-C_7 alkyl.

4,083,869

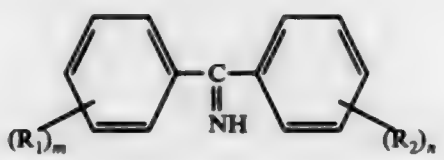
PROCESS FOR PRODUCING IMINE COMPOUNDS

Tomiya Isshiki; Tetsuo Tomita; Mitsuo Abe, all of Tokyo; Norio Takeda, Matsudo, and Mitsuo Miura, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 7, 1977, Ser. No. 831,264
Claims priority, application Japan, Dec. 2, 1976, 51-144900
Int. Cl.[2] C07C *119/00*
U.S. Cl. 260—566 R 11 Claims

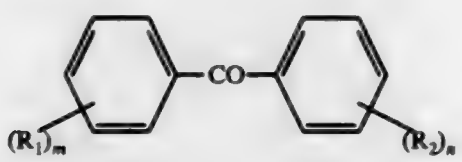
1. A process for producing an imine compound represented by the general formula:

(I)



which comprises reacting a compound represented by the general formula:

(II)



with ammonia in the presence of an oxide of at least one of the metals selected from the group consisting of metals of the second to fifth periods of Groups III to V of the Periodic Table, and iron, wherein R_1 and R_2 represent hydrogen atoms, halogen atoms, and alkyl, alkoxy and nitro groups, and R_1 and R^2 may be the same or different from each other, and *m* and *n* are integers of 1 to 5.

4,083,870

PROCESS FOR CONVERTING POLYAMINOPOLYARYL-METHANES INTO DIAMINODIARYLMETHANES

Hans-Josef Buysch, Krefeld; Peter Ziemek, Cologne, and Roderich Raue, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 12, 1974, Ser. No. 441,930
Claims priority, application Germany, Feb. 17, 1973, 2307684
Int. Cl.[2] C07C *85/24*
U.S. Cl. 260—570 D 4 Claims

1. A process for the production of diaminodiarylmethanes which contain an improved proportion of 2,4′-diaminodiarylmethanes by heating polyaminopolyarylmethanes in the liquid phase with an aromatic monoamine which has at least one free position in the ortho- or para-position to the amino group, characterized in that the reaction is carried out solely in the presence of water.

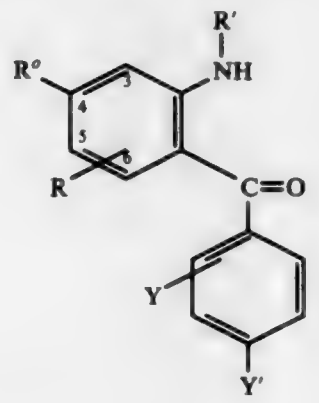
4,083,871

PREPARATION OF 2-SEC.-ALKYLAMINOBENZOPHENONES

William J. Houlihan, Mountain Lakes, N.J.; Paul G. Mattner, Brooklyn, N.Y., and Joseph A. Smith, Fanwood, N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Jan. 29, 1976, Ser. No. 653,361
Int. Cl.[2] C07C *85/08*
U.S. Cl. 260—570 AB 26 Claims

1. The process for preparing in at least 75% yield a 2-sec.-alkylaminobenzophenone of the formula:



wherein

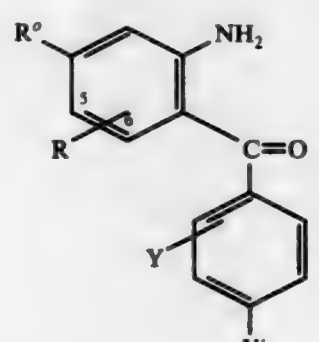
R′ is a secondary alkyl of 3 to 5 carbon atoms,

R and R^0 are independently hydrogen, fluoro, chloro, straight chain alkyl of 1 to 4 carbon atoms, straight chain alkoxy of 1 to 4 carbon atoms or trifluoromethyl, with the provisos that R is in the 5- or 6-position, and no more than one of R and R^0 is trifluoromethyl, or

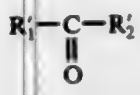
R^0 and R together form 4,5 -alkylenedioxy of 1 to 2 carbon atoms, and

Y and Y′ are independently hydrogen, fluoro, chloro, straight chain alkyl of 1 to 4 carbon atoms, straight chain alkoxy of 1 to 4 carbon atoms or trifluoromethyl, with the proviso that no more than one of Y and Y′ is trifluoromethyl,

from a corresponding 2-aminobenzophenone of the formula:



wherein R^0, R, Y and Y' are as above defined, a borohydride, carboxylic acid and a ketone of the formula:



wherein R_1' and R_2' are each alkyl of 1 to 3 carbon atoms with the proviso that R_1' and R_2' do not exceed 4 carbon atoms, comprising forming a solution comprising said 2-aminobenzophenone, said ketone and a saturated carboxylic acid of 2 to 4 carbon atoms having a strength of from pH 3 to 5 as determined in a 98% by weight aqueous solution, adding to said solution a temperature of at least 10° C. a borohydride at a rate controlled such that the resulting reaction solution does not exceed a temperature of 35° C., and maintaining a reaction temperature in the range of from 10° C. to 35° C. throughout the reaction, the mol ratio of borohydride to said 2-aminobenzophenone being in the range of from 1.7:1 to 4:1, the mol ratio of carboxylic acid to said 2-aminobenzophenone being at least 6:1 and the mol ratio of said ketone to 2-aminobenzophenone being at least 3:1, the actual amounts of said carboxylic acid, ketone and any other liquid present being such and proportioned to each other and to the 2-aminobenzophenone so that the reaction is carried out in a substantially homogeneous solution within said temperature range.

4,083,872

N-2,3-DIHYDROXYPROPYL-N-2-HYDROXYALKYL-AMINE AND ITS SALTS

Werner Schwarze, Frankfurt; Wolfgang Merk, and Volker Binder, both of Hanau, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt and Henkel Kommandit- Gesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, both of Germany

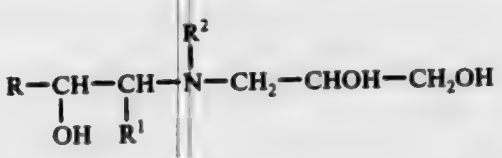
Filed Jan. 30, 1976, Ser. No. 653,835

Claims priority, application Germany, Jan. 31, 1975, 2504053

Int. Cl.² C07C *91/02, 87/30, 87/29, 91/06*

U.S. Cl. 260—584 R **1 Claim**

1. A compound having the formula



R and R^1 are both alkyl groups in which the sum of the carbon atoms in the two alkyl groups is 4 to 30 carbon atoms, R^2 is 2-hydroxyethylamino C_2 to C_6 alkyl, 2-hydroxypropylamino C_2 to C_6 alkyl, or 2,3-dihydroxypropylamino C_2 to C_6 alkyl.

4,083,873

NOVEL BISULFATE AND SULFATE SALTS OF BIS(2-AMINOETHYL) ETHER AND METHODS OF PREPARATION

Fred A. Sherrod, Freeport, and Bobby R. Ezzell, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 6, 1976, Ser. No. 730,108

Int. Cl.² C07C *93/04*

U.S. Cl. 260—584 R **28 Claims**

1. A process for preparing $O—CH_2CH_2NH_3^{\oplus})_2.2HSO_4^{\ominus}$ comprising reacting by contacting $HOCH_2CH_2NH_3^{\oplus}HSO_4^{\ominus}$ with $^{\oplus}NH_3CH_2CH_2OSO_3^{\ominus}$ in the presence of a catalytic amount of sulfuric acid at a temperature of at least about 140° C.

4,083,874

PROCESS FOR PRODUCTION OF ALLYLAMINES FROM PI-ALLYL PALLADIUM COMPLEXES

J. S. McConaghy, Jr., University City, and F. E. Paulik, St. Louis County, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 14, 1976, Ser. No. 705,320

Int. Cl.² C07C *85/22*

U.S. Cl. 260—585 R **12 Claims**

1. A process for the production of allylic amines which comprises reacting a pi-allyl palladium complex with a stoichiometric excess of ammonia or an amine having a reactive hydrogen attached to the nitrogen atom and a cupric salt, the reaction taking place at a temperature below the decomposition temperature of the complex and in solution in a solvent for the pi-allyl palladium complex.

4,083,875

TRIMETHYL PHOSPHINIMINO DIMETHYL METHYLENE PHOSPHORANE AND PROCESS FOR MAKING IT

Hubert Schmidbaur, Garching, and Hans-Jurgen Fuller, Unterpfaffenhofen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

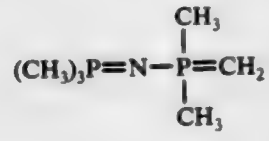
Filed Dec. 15, 1976, Ser. No. 750,586

Claims priority, application Germany, Dec. 20, 1975, 2557611

Int. Cl.² C07F *9/50*

U.S. Cl. 260—606.5 P **4 Claims**

1. Trimethyl phosphinimino dimethyl methylene phosphorane of the formula:



4,083,876

PROCESS FOR THE PREPARATION OF THIOGLYCOLS

Ludwig Bruns; Günther Schnuchel, and Joachim Weber, all of Dormagen, Germany, assignors to Erdolchemie GmbH, Cologne, Germany

Filed Jun. 22, 1976, Ser. No. 698,561

Claims priority, application Germany, Jul. 3, 1975, 2529646

Int. Cl.² C07C *148/00*

U.S. Cl. 260—609 R **12 Claims**

1. Process for the preparation of a thioglycol from an alkylene carbonate of the group ethylene glycol carbonate, propylene glycol carbonate, butylene glycol carbonates and glycerol carbonates, wherein the alkylene carbonate is reacted with hydrogen sulphide at an elevated temperature in an inert solvent in which said hydrogen sulphide is readily soluble under the reaction conditions in the presence of a catalyst for the reaction, to form said thioglycol, said catalyst being of the group carbonates and bicarbonates of alkali metals and alkaline earth metals.

4,083,877

PREPARATION OF A PEROXIDE

David Smith Horne, Warrington; Robert Eric Talbot, Burtonwood, and Peter John Russell, St. Helens, all of England, assignors to Interox Chemicals Limited, London, England

Filed May 6, 1976, Ser. No. 683,654

Claims priority, application United Kingdom, May 13, 1975, 20030/75

Int. Cl.² C07C *179/14*

U.S. Cl. 260—610 D **12 Claims**

1. A process for the preparation of diphthaloyl peroxide comprising the steps of reacting phthalic anhydride with aqueous hydrogen peroxide under alkaline conditions, and thereafter recovering diphthaloyl peroxide from the solution control-

ling both the pH of the solution between 8 and 10, and the temperature of the solution at a temperature of 10° C or below during the period of production of diphthaloyl peroxide.

4,083,878

1-METHOXY-4-(8-HYDROXYTRICYCLO[5,2,1,$0^{2,6}$]-DECYL-8)-BUTEN-1-INE-3

Theodor Leidig, Holzminden, Germany, assignor to Haarman & Reimer Gesellschaft mit Beschrankter Haftung, Holzminden, Germany

Division of Ser. No. 524,849, Nov. 18, 1974, Pat. No. 4,014,938. This application Oct. 27, 1976, Ser. No. 735,919
Claims priority, application Germany, Nov. 30, 1973, 2359659
Int. Cl.² C07C *43/18*
U.S. Cl. 260—611 F **1 Claim**

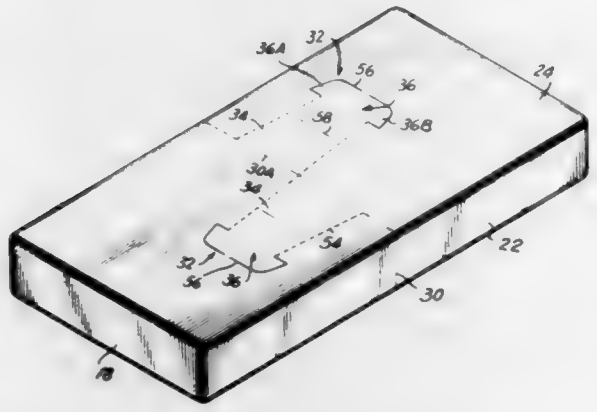
1. 1-Methoxy-4-(8-hydroxy-tricyclo (5,2,1,$0^{2,6}$) decyl-8)-buten-1-ine-3.

4,083,879

SEPARABLE CARTON

James L. Capo, Franklin, Ohio, assignor to International Paper Company, New York, N.Y.

Filed Mar. 22, 1977, Ser. No. 782,121
Int. Cl.² B65D *5/54, 17/24*
U.S. Cl. 206—623 **18 Claims**



1. A carton fabricated from a unitary blank, which is separable into first and second detached units, said carton comprising:

(a) first and second main walls, side walls and end closures defining a hollow carton, one of said main walls including a transverse, median fold line extending between, but not in contact with, said side walls;

(b) means for separating said hollow carton into first and second detached units, each of said units, initially upon separation, having an open end facing the other of said detached units; and

(c) means for closing the open end of each of said detached units when said carton is separated, said closing means comprising:

(i) a pair of elongated, oppositely disposed closure members, wherein each of said closure members is captured from a main wall of the other of said detached units, each of said closure members comprising a base portion, a shaft portion, and a terminal tongue portion, wherein the base portion of each closure member is foldably connected to the detached unit it closes along said transverse, median fold line; and

(ii) a pair of securing means in said main walls, each positioned by removably engage the tongue portion of one closure member upon closing the open end of each detached unit following separation of said carton.

4,083,880

PROCESS FOR PRODUCING C_3—C_{20} ALIPHATIC ALCOHOLS

July Borisovich Kagan, ulitsa Alexeya Tolstogo, 26, kv. 27; Sergei Minovich Loktev, ulitsa Garibaldi, 21, korpus 3, kv. 55, both of Moscow; Gennady Alexeevich Nizov, ulitsa Kosmonavtov, 17-a, kv. 12, Novomoskovsk Tulskoi oblasti; Vyacheslav Alexandrovich Zhilin, ulitsa Mira, 8, kv. 27, Novomoskovsk Tulskoi oblasti; Alexandr Andreevich Zuev, ulitsa Kirova, 2/14, kv. 45, Novomoskovsk Tulskoi oblasti, and Andrei Nikolaevich Bashkirov, ulitsa Novopeschanaya, 21, korpus 1, kv. 12, Moscow, all of U.S.S.R.

Filed May 18, 1977, Ser. No. 798,001
Int. Cl.² C07C *29/00*
U.S. Cl. 260—632 R **6 Claims**

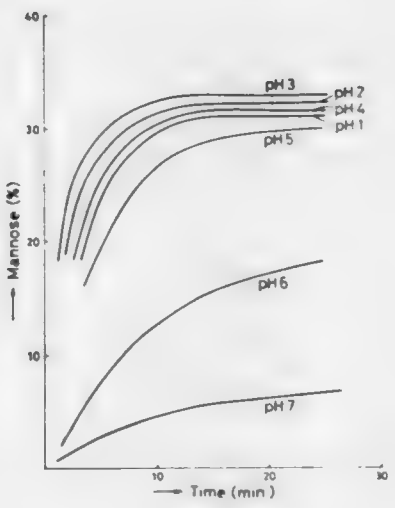
1. A process for producing C_3-C_{20} aliphatic alcohols by catalytically reacting carbon monoxide, hydrogen, and acetylene, all being dissolved in a liquid medium selected from the group consisting of a fraction of saturated aliphatic C_{10}-C_{18} alcohols a fraction of paraffin C_{12}-C_{20} hydrocarbons, and a mixture of both said fractions, said reagents being reacted on a catalyst containing 92 to 95% by weight of Fe_3O_4, 0.5 to 2% by weight of an alkaline promoter selected from the group consisting of K_2O and Na_2O, 3 to 7.5% by weight of structural promoters selected from the group of metal oxides consisting of V_2O_5, Al_2O_3, SiO_2 at a temperature ranging from 170° to 220° C under a pressure of from 20 to 200 atm.

4,083,881

PROCESS FOR PREPARING D-MANNITOL

Motohiro Takemura, Soka; Mochihiro Iijima, Kuki; Yoshiaki Tateno, Misato; Yuji Osada, Tokyo, and Hiroyuki Maruyama, Okegawa, all of Japan, assignors to Towa Kasei Kogyo Co., Ltd., Japan

Filed Dec. 13, 1976, Ser. No. 749,623
Claims priority, application Japan, Dec. 19, 1975, 50-150637
Int. Cl.² C07C *29/00*
U.S. Cl. 260—635 C **11 Claims**



1. Process for preparing D-mannitol which comprises:

(A) heating a D-glucose aqueous solution at a temperature of 110°–160° C with pH 2.0°–4.5 in the presence of molybdic acid compound to convert (or epimerize) a portion of D-glucose into D-mannose,

(B) maintaining the epimerized mixture formed at step (A) at a temperature of 65°–75° C in the presence of glucose-isomerase to convert (or isomerize) a portion of D-glucose remaining in the epimerized mixture into D-fructose,

(C) heating the isomerized mixture formed at step (B) in the presence of a hydrogenating catalyst under high hydrogen pressure to perform the catalytic hydrogenation of sugars contained therein, and

(D) concentrating the finished solution of step (C) to crystallize out D-mannitol.

4,083,882

PRODUCTION OF 1,4-BUTANEDIOL

Paul D. Taylor, Clinton, and Thomas H. Vanderspurt, Gillette, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 26, 1976, Ser. No. 717,810
Int. Cl.[2] C07C *29/14;* B01J *23/58*
U.S. Cl. 260—635 R 12 Claims

1. A process for producing 1,4-butanediol which comprises (1) reacting acrolein with hydrogen in the vapor phase in acrolein/hydrogen molar ratio between 1:1 and 1:1000 at a temperature between about 75° C and 250° C and a pressure between about 75 and 5000 psi in the presence of a catalyst comprising a silver-cadmium alloy to yield a hydrogenation product mixture containing alcohol, wherein the automic ratio of silver to cadmium in the alloy is in the range of between about 0.1 and 3 to 1, and the alloy exhibits an X-ray diffraction pattern which is substantially free of detectable unalloyed metal crystallite lines; (2) contacting the allyl alcohol product mixture with hydrogen and carbon monoxide in a hydrogen carbon monoxide ratio between 1:2 and 2:1 under hydroformylation conditions at a temperature between about 20° C and 120° C and a pressure between about 15 and 150 psi in the presence of a hydroformylation catalyst to yield a product mixture containing 4-hydroxybutanal; (3) separating the 4-hydroxybutanal from the product mixture; and (4) hydrogenating the 4-hydroxybutanal to product 1,4-butanediol.

4,083,883

HYDROCARBON DEHYDROGENATION USING A PLATINUM OR PALLADIUM, RHODIUM, NICKEL, ALKALINE OR ALKALINE EARTH METAL CATALYST

John C. Hayes, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 667,340, Mar. 16, 1976, which is a continuation-in-part of Ser. No. 490,171, Jul. 19, 1974, Pat. No. 3,948,762. This application Apr. 15, 1977, Ser. No. 788,102
Int. Cl.[2] C07C *5/40*
U.S. Cl. 260—668 D 32 Claims

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at dehydrogenation conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, and about 0.01 to about 5 wt. % nickel; wherein the platinum or palladium, rhodium and nickel are uniformly dispersed throughout the porous carrier material; and wherein substantially all of the platinum or palladium, rhodium and nickel are present in the elemental metallic state.

4,083,884

CALCIUM OXIDE MODIFIED ZINC FERRITE OXIDATIVE DEHYDROGENATION CATALYSTS AND USE

Charles C. Purdy, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

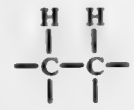
Filed Jul. 19, 1976, Ser. No. 706,664
Int. Cl.[2] B01J *23/58;* C07C *11/12*
U.S. Cl. 260—669 A 13 Claims

5. A novel catalyst composition suitable for oxidative dehydrogenation of organic compounds in the presence of molecular oxygen consisting essentially of zinc ferrite composition having the empirical formula

$$Zn_xFe_yO_z$$

wherein x is from about 0.1 to about 2, y is from 0.3 to about 12, and z is from about 3 to 18 and additionally containing free calcium oxide as a carbonyl suppressor in an amount of from about 0.5 to about 5 weight percent based on the weight of zinc ferrite composition prepared by intimately mixing preformed zinc ferrite and calcium oxide or a compound which will convert to calcium oxide under the condition of oxidative dehydrogenation.

6. In the process of oxidative dehydrogenation of organic compounds having from about 2 to about 20 carbon atoms and at least one



group in the presence of molecular oxygen and a zinc ferrite catalyst composition having the empirical formula $Zn_xFe_yO_z$ wherein x is from 0.1 to about 2, y is about 0.3 to about 12 and z is about 3 to 18 at a temperature of from 250° C to about 900° C to thereby produce a dehydrogenated compound having the same number of carbon atoms, wherein the improvement comprises incorporating into said catalyst composition calcium oxide as a carbonyl suppressor in an amount of from about 0.5 to about 5 weight percent based on the weight of the zinc ferrite composition.

4,083,885

ALKYLATION WITH CATALYST OF GRAPHITE CONTAINING INTERCALATED FLUORIDE

Paul G. Rodewald, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 609,334, Sep. 2, 1975, Pat. No. 4,035,434, which is a division of Ser. No. 532,146, Dec. 12, 1974, Pat. No. 3,962,133. This application Feb. 2, 1977, Ser. No. 765,132
Int. Cl.[2] C07C *3/56*
U.S. Cl. 260—671 C 12 Claims

1. A process for alkylation of an alkylatable hydrocarbon which comprises contacting the same with an alkylating agent, employing a mole ratio of alkylatable hydrocarbon to alkylating agent between about 1:1 and about 10:1, at a temperature between about 0° and about 150° C, a pressure between about atmospheric and about 500 psig with a catalyst consisting essentially of graphite having intercalated in the lattice thereof between about 5 and about 50 weight percent of a Lewis acid fluoride selected from the group consisting of boron trifluoride and phoshorus pentafluoride.

4,083,886

TRANSALKYLATION OF ALKYLAROMATIC HYDROCARBONS

Edward Michalko, Chicago, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 671,894, Mar. 29, 1976, abandoned. This application Jan. 28, 1977, Ser. No. 763,483
Int. Cl.[2] C07C *3/62*
U.S. Cl. 260—672 T 14 Claims

1. A process for the transalkylation of alkylaromatic hydrocarbons which comprises treating an alkylaromatic hydrocarbon having from about 7 to about 15 carbon atoms per molecule in admixture with from about 1 to about 10 moles of hydrogen per mole of hydrocarbon at transalkylation reaction conditions, including a temperature of from about 200° to about 480° C., in contact with a catalytic composite comprising a zeolite in intimate admixture with a refractory inorganic oxide in a weight ratio of from about 1:3 to about 3:1, said catalytic composite having been prepared by subjecting a zeolite in the mordenite crystal structure, and containing less than about 5 wt. % sodium as Na_2O, to an aqueous ammoniacal treatment at a pH of at least about 9.5, and calcining the thus treated zeolite in intimate admixture with a substantially acid anion-free refractory inorganic oxide to form a catalytic composite therewith.

4,083,887

CARBONYL REMOVAL FROM GASEOUS STREAMS USING ZNS

Alan W. Foster, and Alfio J. Besozzi, both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Division of Ser. No. 420,043, Nov. 29, 1973, Pat. No. 3,998,902, which is a continuation-in-part of Ser. No. 223,363, Feb. 3, 1972, abandoned. This application Aug. 16, 1976, Ser. No. 714,743

Int. Cl.[2] C07C *11/12, 15/00, 11/00, 7/00*

U.S. Cl. 260—680 E 1 Claim

1. In a vapor phase process for the preparation of unsaturated hydrocarbons comprising

catalytic oxidative dehydrogenation of a feed stream of hydrocarbon compounds having 4 to 8 carbon atoms to produce an unsaturated hydrocarbon product stream having a greater degree of ethylenic unsaturation than said feed stream and containing organic carbonyl compounds as an impurity

wherein the improvement comprises contacting only said product stream in vapor phase at a temperature in the range of 250° to 800° C and containing less than 5 mol percent free oxygen with a solid catalyst for destroying said carbonyl compounds and consisting essentially of ZnS.

4,083,888

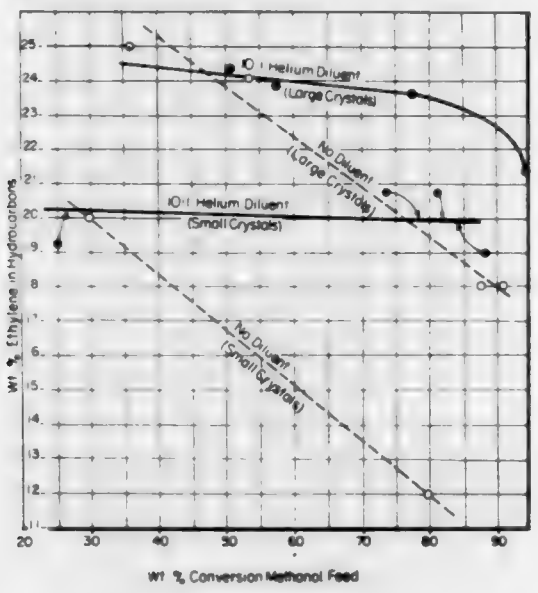
PROCESS FOR MANUFACTURING ETHYLENE

Philip Dornin Caesar, Princeton, and Roger Allen Morrison, West Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 26, 1977, Ser. No. 800,753

Int. Cl.[2] C07C *1/24, 11/04, 43/04;* B01J *29/28*

U.S. Cl. 200—682 7 Claims



1. In a method for producing a hydrocarbon mixture rich in olefins by contacting a methanol feed and a diluent with a catalyst comprising a crystalline aluminosilicate zeolite having a constraint index of 1.0 to 12.0, a silica to alumina ratio of at least about 12 and a dried crystal density in the hydrogen form of not substantially less than 1.6 grams per cubic centimeter, said contacting being effected under conversion conditions, the improvement, whereby increasing the ethylene content of said hydrocarbon mixture, which comprises:

contacting said methanol feed with said zeolite catalyst at a temperature of 500° F to 650° F, at a WHSV of methanol of 0.2–20, at a pressure of 0 to 135 p.s.i.g., said contacting being effected in the presence of 2 to 20 mols of substantially anhydrous diluent per mol of methanol feed; and converting from about 40 wt.% to about 90 wt.% of said methanol feed to said hydrocarbon mixture having an increased ethylene content.

4,083,889

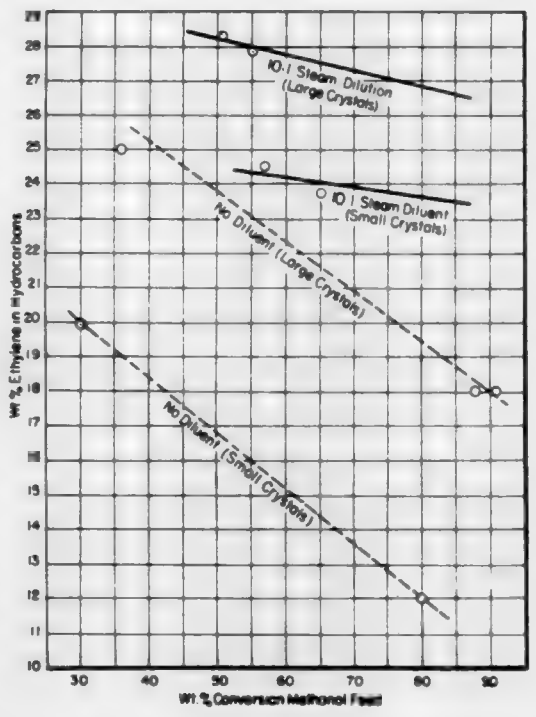
PROCESS FOR MANUFACTURING ETHYLENE

Philip Dornin Caesar, Princeton, and Roger Allen Morrison, West Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 26, 1977, Ser. No. 800,754

Int. Cl.[2] C07C *1/24, 11/04, 43/04;* B01J *29/28*

U.S. Cl. 260—682 8 Claims



1. In a method for producing a hydrocarbon mixture rich in olefins by contacting a methanol feed and a diluent with a catalyst comprising a crystalline aluminosilicate zeolite having a constraint index of 1.0 to 12.0, a silica to alumina ratio of at least about 12 and a dried crystal density in the hydrogen form of not substantially less than 1.6 grams per cubic centimeter, said contacting being effected under conversion conditions, the improvement, whereby increasing the ethylene content of said hydrocarbon mixture, which comprises:

contacting said methanol feed with said zeolite catalyst at a temperature of about 600° F to about 750° F, at a WHSV of methanol of 0.2–20, at a pressure of 0 to 135 p.s.i.g., said contacting being effected in the presence of 2 to 20 mols of steam per mol of methanol feed; and converting from about 40 wt.% to about 90 wt.% of said methanol feed to said hydrocarbon mixture having an increased ethylene content.

4,083,890

UNSATURATED ESTER RESIN/MONOMER BLEND WITH HYDROPEROXIDE, VANADIUM COMPOUND AND KETONE PEROXIDE FOR CONTROLLED GEL TIME

Stevens S. Drake, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 380,915, Jul. 19, 1973, abandoned. This application May 16, 1977, Ser. No. 797,284

Int. Cl.[2] C08F *299/04*

U.S. Cl. 260—836 10 Claims

1. In a resin composition which is curable at elevated temperatures to temperatures below 0° C wherein the composition contains an unsaturated resin in combination with a compatible, copolymerizable monomer, a catalytic amount of a hydroperoxide and a sufficient amount of a soluble organic vanadium compound to accelerate the catalytic cure of said composition, the improvement which comprises retarding the gel time of the composition without inhibiting the cure thereof by the addition of about 10 to 80 weight percent of at least one ketone peroxide based on the weight of the hydroperoxide; wherein said resin is

an unsaturated polyester, a terminally unsaturated vinyl ester resin or mixtures thereof.

4,083,891

NOVOLAK-ABS BINDER FOR A GRINDING WHEEL

Lewis H. Bowers, Scotia; Raymond E. Jankowski, Schenectady, and John L. Sullivan, Ballston Lake, all of N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

Division of Ser. No. 430,539, Jan. 3, 1974. This application Mar. 28, 1975, Ser. No. 563,175

Int. Cl.[2] C08L *25/12, 55/02*

U.S. Cl. 260—846 **6 Claims**

1. A process of preparing a composition suitable for bonding abrasive grits comprising forming a novolak from phenol and formaldehyde in the presence of an acid catalyst and adding an acrylonitrile-butadiene-styrene terpolymer resin in an amount of 1 to 30% of the phenol prior to the completion of the formation of the novolak.

4,083,892

HIGH SOLIDS COATING COMPOSITIONS CONTAINING TETRAHYDRIC ADDUCT

Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Jun. 23, 1976, Ser. No. 698,859

Int. Cl.[2] C08L *61/28, 61/24*

U.S. Cl. 260—855 **12 Claims**

1. A fluid resinous coating composition containing less than about 20% of volatile organic solvent and which cures on baking, said coating composition consisting essentially of a mixture of:

(1) a copolymer of monoethylenic monomers including from about 5-20% of monoethylenic monomer having a functional group reactive with the N-methylol group and selected from carboxylic acid, hydroxy, and amide groups, said copolymer being produced by copolymerization in an organic solvent medium consisting essentially of component (2) below;

(2) liquid tetrahydric adduct of propylene oxide with pentaerythritol having a molecular weight of at least about 400, said copolymer being dissolved in said tetrahydric adduct; and

(3) an aminoplast resin; said copolymer constituting from about 4.5% to 30% of the mixture, the tetrahydric adduct constituting from about 30%-60% of the mixture, and the balance of the mixture of the three components consisting essentially of aminoplast resin, there being at least about 0.8 parts of aminoplast resin per part of copolymer, and said copolymer being present in an amount of from about 15%-80% of the weight of the tetrahydric adduct.

4,083,893

OZONE RESISTANT, CATIONIC DYEABLE NYLON CONTAINING LITHIUM, MAGNESIUM OR CALCIUM SALTS OF SULFONATED POLYSTYRENE

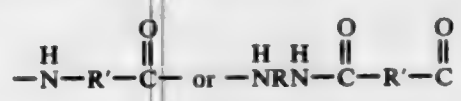
Robert Alden Lofquist, and John Christopher Haylock, both of Richmond, Va., assignors to Allied Chemical Corporation, Morris Township, N.J.

Continuation-in-part of Ser. No. 542,991, Jan. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 436,249, Jan. 24, 1974, abandoned. This application Jan. 26, 1977, Ser. No. 762,597

Int. Cl.[2] C08L *77/00*

U.S. Cl. 260—857 UN **30 Claims**

1. In a method to make a fiber-forming synthetic linear polyamide having a repeating structure of



where R and R′ are radicals of 3 to 13 carbon atoms, receptive to cationic dyes by the addition of a sulfonated polystyrene or salt thereof, said polyamide having from about 10 to about 60 amine gram equivalents per 10^6 grams of polymer and a ratio of less than ten sulfonate gram equivalents per amine gram equivalents, the improvement comprising

adding to said polyamide a water soluble salt selected from the group consisting of the lithium, magnesium and calcium salts of a sulfonated polystyrene homopolymer, said salt being sulfonated to over 90 percent of the theoretical maximum of complete monosulfonation of each styrene residue moiety, said salt having a molecular weight from between about 15,000 to about 300,000 and having a pH of between about 3 and about 8, said polyamide containing said salt having a concentration of sulfonates of from between about 40 and about 180 gram equivalents per 10^6 grams of polymer, and shaping said polyamide into a shaped article,

whereby said dyed polyamide article has highly improved resistance to fading of the cationic dye due to exposure to ozone.

4,083,894

POLYAMIDE PREPARED IN THE PRESENCE OF SULFOPOLYESTER

Tetsuhiro Kusunose; Masataka Ideka; Kazuyuki Kitamura; Tsukasa Shima, and Hiroshi Henmi, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 26, 1974, Ser. No. 536,695

Claims priority, application Japan, Dec. 26, 1973, 48-143937

Int. Cl.[2] C08L *77/00*

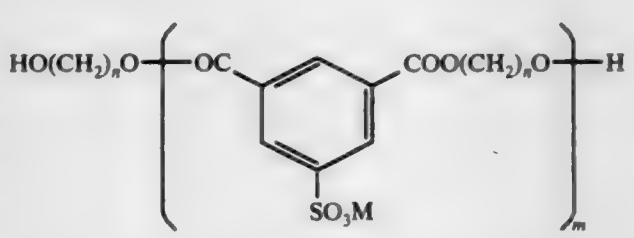
U.S. Cl. 260—857 PE **30 Claims**

1. In a process for preparing a polyamide useful for the formation of films and fibers by the polymerization of

(a) an ω-aminocarboxylic acid;

(b) an ω-lactam; or

(c) an equimolar mixture of a diamine and a dicarboxylic acid, the improvement which comprises modifying the polyamide formed in the polymerization by incorporating before said polymerization at least one compound of the formula (I)



(I)

wherein M represents an alkali metal or an alkaline earth metal; *n* is an integer of 2 to 4; and *m* is an integer of 2 to about 50; and wherein said compound of the Formula (I) is used in an amount of about 0.1 to about 5 mole % of the sulfonate-containing group in said compound of the Formula (I) per recurring unit of the resulting polyamide.

4,083,895

MODIFIED BLOCK COPOLYMERS AND PROCESS OF PREPARING THE SAME

John C. Nnadi, Lagos, Nigeria, and Israel J. Heilweil, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 14, 1976, Ser. No. 696,104

Int. Cl.[2] C08L *9/06, 43/04;* **C10M** *1/40*

U.S. Cl. 260—874 **11 Claims**

1. A novel copolymer having improved solubility in organic fluids prepared by the step comprising alkylating an AB or BAB block copolymer precursor in which block A is a styrene-containing polymer and block B is an alkylene oxide or alkylene sulfide polymer.

4,083,896

TRANSPARENT POLYBLENDS

James R. Moran, Hampden, and Paul J. Drenzek, Ware, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 22, 1976, Ser. No. 707,785
Int. Cl.[2] C08L 51/00, 53/00
U.S. Cl. 260—876 R 20 Claims

1. A transparent polyblend composition having:

A. a graft copolymer having a graftable rubber substrate containing a diene rubber forming monomer and a superstrate of a copolymer consisting essentially of a monovinylidene aromatic monomer and an ethylenically unsaturated nitrile monomer, said graft copolymer having an average clustered particle size diameter of 0.10 to 0.70 microns and a superstrate to substrate ratio of 20 to 100:100, said superstrate copolymer consisting essentially of about 70 to 82 percent by weight monovinylidene aromatic monomer and from about 18 to 30 percent by weight of ethylenically unsaturated nitrile monomer, said graft copolymer being dispersed in

B. a matrix phase consisting essentially of a blend of about 45 to 75 percent by weight of (I) a copolymer of about 70 to 82 percent by weight of monovinylidene aromatic monomer and about 18 to 30 percent by weight of a unsaturated nitrile monomer and about 25 to 55 percent by weight of (II) a methylmethacrylate polymer.

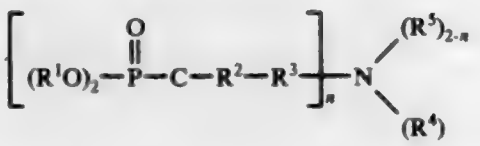
4,083,897

PROCESS FOR PREPARING N-ALKYLATED AMINOALKYLPHOSPHONATES

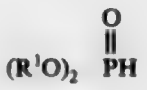
Thomas A. Hardy, Monroe, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 10, 1976, Ser. No. 740,585
Int. Cl.[2] C07F 9/40
U.S. Cl. 260—970 4 Claims

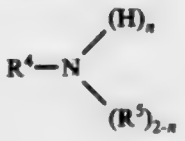
1. A method of preparing N-alkylated aminolalkylphosphonates having the formula:



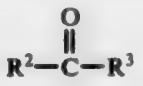
where R^1, R^4 and R^5 are the same or different and are selected from the group consisting of straight and branched lower alkyl having 1 to 5 carbons; R^2 and R^3 are the same or different and are selected from the group consisting of straight and branched lower alkyl having 1 to 5 carbons and hydrogen; and n is the integer 1 or 2, comprising first preparing a mixture of a phosphite having the formula:



where R^1 is as defined above, with a stoichiometric amount of an amine having the formula:



where R^4, R^5 and n are as defined above, followed by adding said mixture to an aqueous reactant having the formula:



where R^2 and R^3 are as defined above, while maintaining the reaction temperature below about 70° C., followed by removal of water at the conclusion of the reaction.

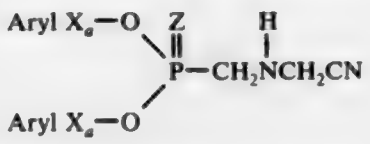
4,083,898

PROCESS FOR PREPARING O-ARYL, N-PHOSPHONOMETHYLGLYCINONITRILES

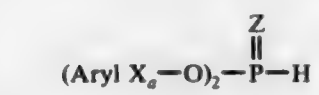
Gerard A. Dutra, Ladue, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 750,327, Dec. 13, 1976. This application Jan. 3, 1977, Ser. No. 756,521
Int. Cl.[2] C07F 9/38
U.S. Cl. 260—970 16 Claims

1. A method for preparing a diester having the formula



wherein Aryl is selected from phenyl, naphthyl or biphenylyl, each X is a substituent on said Aryl selected from halogen, alkyl of 1 to 4 carbon atoms, alkoxy and alkylthio of 1 to 3 carbons, alkoxycarbonyl of 2 to 3 carbon atoms, methylenedioxy, cyano, trifluoromethyl or nitro, Z is oxygen or sulfur and a is an integer from zero to 3, which comprises reacting together a diaryl phosphite of the formula



wherein X, Z and a are as above defined and 1,3,5-tricyanomethylhexahydro-1,3,5-triazine in the absence of an acidic catalyst.

4,083,899

ACCELERATED PROCESS OF ALCOHOLYSIS OR PHENOLYSIS OF PHOSPORUS PENTASULFIDE

Michel Démarcq, Lyon, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 363,128, May 23, 1973, abandoned. This application Feb. 18, 1976, Ser. No. 659,096
Claims priority, application France, Jun. 7, 1972, 72.20487
Int. Cl.[2] C07F 9/165
U.S. Cl. 260—981 2 Claims

1. A process for accelerating the alcoholysis or phenolysis of phosphorus pentasulfide which comprises contacting the phosphorus pentasulfide with an alcohol or phenol in the presence of a nitrogen-containing catalyst in amount from 0.01 to 10% by weight of the alcohol or phenol, the molecule of said catalyst having not more than 14 carbon atoms or more than 4 nitrogen atoms or more than 4 heteroatoms selected from the group consisting of oxygen, sulfur and phosphorus, said catalyst being

(a) an amide or imide of a carboxylic acid, such as N-methylpyrrolidone, urea, a methylurea, ethylene urea, biuret, glycolurile, urethane or ammonium carbamate; or an amide of thiocarboxylic acid such as N,N dimethyl-thioformamide, thiourea, N-methylthiourea, N-ethylthiourea, sym. dibutyl thiourea of ethylene thiourea; or

(b) a compound having a N-O link, being a nitrogen oxide or nitrous acid or metal nitrite or 2-nitroso-2-nitro propane or propane nitrolic acid; or hydroxylamine or a methyl hydroxylamine, oxazirane, an aldoxime or ketoxime of a carbonyl compound having up to 14 carbon atoms, a quinone-oxime, hydroxamic acid, isoxazole or isonitrosomalonyl guanidine; or

(c) a compound having a N-N link, being azine, hydrazine, methyl hydrazine, N,N-dimethyl hydrazine, phenyl hydrazine, amino guanidine, semi-carbazide, pyrazole, indazole, pyrazoline, bensotriazole, 4-amino-1,2,4 triazole, 4-amino antipyridine or hydrazoic acid; or

(d) compounds having a N-P link, being the amides of phosphorous, phosphoric or thiophosphoric acids; or
(e) quinidine; or pyridine or quinoline bases carrying hydroxyl or amino groups on the ring, being 2-hydroxypyridine, 3-hydroxypyridine, 8-hydroxyquinoline, or 2-amino pyridine; or
(f) compounds having a —N=C—O—, N=C=O, —N=C—S or —N=C=S link, being oxazole or oxazoline, oxazine, isourea, isothiourea, metal cyanate or thiocyanate, mercaptobenzothiazole, N,N'-dibutylthiourea or methyl-2-oxazoline; or
(g) guanidine, or imidazole, or imidazoline; or
(h) cyanamide, or dicyanodiamide or the esters of cyanic or thiocyanic acid.

4,083,900

CONTINUOUS PROCESS FOR THE PREPARATION OF N-MONOMETHYLAMIDE OF O,O-DIMETHYL-DITHIOPHOSPHORYL ACETIC ACID

Mario Bornengo, Massa; Saverio Grego, Mestre (Venice), and Sergio Serdi, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 560,114, Mar. 20, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 741,990
Claims priority, application Italy, Dec. 3, 1974, 30137 A/74
Int. Cl.[2] C07F *9/165*
U.S. Cl. 260—984 **3 Claims**

1. A continuous process for the preparation of N-monomethylamide of O,O-dimethyl-dithiophosphorylacetic acid in the form of essentially pure, colorless crystals and in high yield, which process comprises reacting the methyl ester of O,O-dimethyldithiophosphorylacetic acid with an aqueous solution of monomethylamine and is further characterized by the following combination of conditions: (a) the reaction of the methyl ester and methylamine is effected in the presence of an anionic surfactant which is an: aqueous mixture of sodium n.alkylsulphonate plus polyoxymethyleneglycol or a mixture of sodium dodecylbenzene sulphonate, sodium sulphate and polyphosphate, and (b) from 1/10 to 1/20 of the reaction slurry is recycled to the solution in which the reaction occurs.

4,083,901

METHOD FOR CURING POLYURETHANES

Steven Edward Schonfeld; Georg Gustav Anton Bohm, both of Akron, and Michael William Hayes, Canton, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 29, 1975, Ser. No. 608,936
Int. Cl.[2] H05B *9/00*
U.S. Cl. 264—25 **7 Claims**

1. A method for the uniform cure of solid polyurethane elastomers comprising the steps of:
mixing a polyurethane prepolymer, containing free isocyanate groups, with a stable curing agent complex, containing a releasable curative to form a heterogenous blend wherein said complex consists of methylene dianaline and a halide salt;
transferring the blend to a suitable mold; exposing said blend in said mold to a predetermined amount of microwave energy sufficient to cause release of said curative; and,
thereafter maintaining said predetermined amount of energy until said blend is substantially cured.

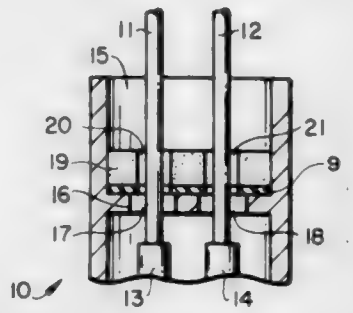
4,083,902

METHOD OF SEALING A CONNECTOR

A. Lofdahl Clyde, Los Altos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 10, 1977, Ser. No. 758,156
Int. Cl.[2] B29D *3/00, 27/00*
U.S. Cl. 264—26 **3 Claims**

1. A process for environmentally sealing at least one electrical lead wire connected to an interior terminal of a connector of the type which possesses a tubular member through which said lead wire extends comprising the steps of:
(a) disposing a laminated disc comprising a lower layer of foamable adhesive, an upper layer of fusible adhesive, and an aperture corresponding to each said at least one electrical lead wire within said tubular member, with said lead wire extending through said corresponding aperture; and



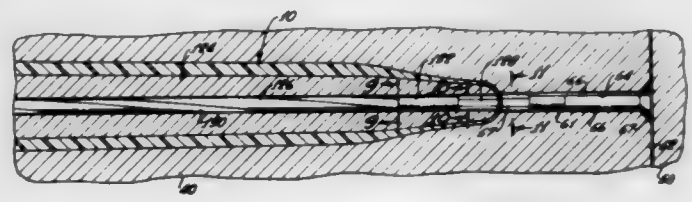
(b) heating said disc whereby said foaming adhesive is caused to foam and said fusible adhesive is caused to melt and flow, and to seal between said lead wire and an interior surface of said member.

4,083,903

METHOD FOR MOLDING ELONGATED THIN WALL ARTICLES

Russell T. Gilbert, Newport Beach, and Irwin B. Pfau, Fountain Valley, both of Calif., assignors to California Injection Molding Co., Inc., Costa Mesa, Calif.

Division of Ser. No. 515,818, Oct. 18, 1974. This application Jul. 14, 1976, Ser. No. 705,136
Int. Cl.[2] B29C *1/06*
U.S. Cl. 264—40.3 **2 Claims**



1. The method of molding an elongated thin wall article comprising the steps of
forming an elongated mold cavity having a length several times greater than its diameter in a first mold part,
mounting in a second mold part an elongated core having a length several times greater than its diameter and formed of a material having a modulus of elasticity considerably greater than the modulus of elasticity of steel,
moving said two mold parts toward a mold closed position to symmetrically position said core within said cavity and to define an elongated annular cavity space between said core and walls of said cavity, maintaining said core independent of and free of support from the walls of said cavity,
injecting molding material into said elongated annular space from a point remote from the free end of said core while said core is free of support from said mold cavity,
maintaining a balanced flow of material into said annular space by steps including venting said space symmetrically of the axis thereof through the free end of said core and through an end of said cavity adjacent the free end of said core, and at least partially solidifying said injected material while said core is free of support and free of contact with said mold cavity.

4,083,904

METHOD FOR MANUFACTURING PHOSPHORYLATED CELLULOSE ESTER MEMBRANES FOR USE IN THE SEPARATION OR CONCENTRATION OF SUBSTANCES

Takezo Sano, Ibaragi, and Takatoshi Shimomura, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 469,281, May 13, 1974, Pat. No. 3,962,212. This application Feb. 26, 1976, Ser. No. 661,646
Claims priority, application Japan, May 16, 1973, 48-54887
Int. Cl.[2] B29D *27/04*
U.S. Cl. 264—41 17 Claims

1. A method for manufacturing a phosphorylated cellulose ester membrane containing 0.1 to 10% of phosphorus, which comprises

a. reacting a lower aliphatic acid ester of cellulose dissolved in a solvent therefor with phosphorus oxychloride or phosphorus oxybromide as a phosphorylating reagent in the presence or absence of a base to chloro- or bromo-phosphonate the hydroxyl groups of said cellulose ester,

b. hydrolyzing the resulting chloro- or bromo- phosphonated product to obtain a phosphorylated cellulose ester containing 0.1 to 10% of phosphorus,

c. dissolving the resulting phosphorylated cellulose ester in a solvent mixture of a good solvent for said phosphorylated cellulose ester and a poor solvent for said cellulose ester, said poor solvent having at least a higher boiling point than said good solvent,

d. casting the resulting solution to form a membrane,

e. evaporating at least a portion of said solvent mixture, and

f. immersing the cast membrane in a coagulating liquor.

4,083,905

OPEN MESH, RANDOM FIBER, CERAMIC STRUCTURE, MONOLITHIC CATALYST SUPPORT

Robert H. Insley, Royal Oak; Joseph Nemeth, St. Clair Shores, and Paul E. Rempes, Jr., Royal Oak, all of Mich., assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Apr. 25, 1975, Ser. No. 571,602
Int. Cl.[2] C04B *33/34*
U.S. Cl. 264—44 5 Claims

1. A method for producing a cellular ceramic catalyst support which comprises the steps of coating an open-celled organic sponge with an adhesive to produce a tacky surface, flocking the tacky surface with a material selected from the group consisting of rayon and cotton fibers and wood flour, impregnating the flocked organic sponge with a slurry having a viscosity of from 300 to 3000 centipoises and consisting essentially of from 50 to 90 percent by weight alumina, from ½ to 4 percent by weight of a flux and from 10 to 45 percent by weight silicone resin which consists essentially of a phenyl lower alkyl silicone resin wherein the total of phenyl and lower alkyl groups divided by the number of silicone atoms is from 0.9 to 1.5 and each alkyl group has not more than 4 carbon atoms, and sintering the impregnated organic sponge at a temperature between 2450°–3100° F. for a period of time sufficient to burn out the organic sponge material and to vitrify the slurry.

4,083,906

PROCESS FOR THE MANUFACTURE OF OPEN-PORE SHAPED ARTICLES OF POLYVINYL ALCOHOL-ACETAL SPONGE

Hermann Schindler, Fischbach, Taunus, and Wolfgang Zimmermann, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 5, 1975, Ser. No. 555,560
Claims priority, application Germany, Mar. 7, 1974, 2410848
Int. Cl.[2] B29D *27/04*
U.S. Cl. 264—49 3 Claims

1. In a process for the manufacture of open-pore, shaped articles of polyvinyl alcohol acetal sponge by acid catalyzed acetalization of polyvinyl alcohol in a mixture or emulsion of aqueous solutions of polyvinyl alcohol and a pore-forming substance substantially inert to acetalization, said acetalization being carried out in a mold to produce a shaped article and said shaped article being substantially washed with water to develop its porosity, the improvement which comprises using from 10% to 50% by weight, based on the weight of said polyvinyl alcohol, of a pore-forming substance selected from the group consisting of water-soluble polyethylene glycol and water-soluble polyacrylamide.

4,083,907

PROCESS FOR CHEMICALLY EMBOSSING HEAT-FOAMABLE RESINOUS MATERIAL USING AGUEOUS ALCOHOLIC, GROWTH-CONTROLLING PRINTING INK COMPOSITIONS

Artimus C. Hamilton, Medwag, Mass., assignor to Congoleum Corporation, Kearny, N.J.

Filed May 12, 1976, Ser. No. 685,868
Int. Cl.[2] B29D *27/04*
U.S. Cl. 264—52 16 Claims

1. A process for chemically embossing heat-foamable and expandable resinous materials which comprises: applying to selected, predetermined portions of the surface of heat-foamable and expandable resinous materials containing a foaming or blowing agent capable of causing said resinous materials to grow and to expand upon heating an aqueous-alcoholic, foam-growth-controlling printing ink composition having a pH of from about 8 to about 12 and being capable of controlling the growth and the expansion of said resinous materials as a result of said heating, said foam-growth-controlling printing ink composition comprising: (1) a foam-growth-controlling chemical agent which is soluble or dispersible in said aqueous-alcoholic, foam-growth-controlling printing ink composition and sufficiently stable therein as to retain its foam-growth-controlling properties, said foam-growth-controlling chemical agent being a pentatomic heterocyclic ring compound containing three nitrogen atoms and two carbon atoms in the pentatomic heterocyclic ring and being capable of controlling the growth and the expansion of said resinous materials as a result of said heating; (2) a water-soluble or water-dispersible alcohol containing from 1 to 6 carbon atoms; (3) a pH controlling or buffering agent capable of creating or maintaining the pH of said aqueous-alcoholic, foam-growth-controlling printing ink composition in the range of from about 8 to about 12; (4) an aqueous printing ink composition; and (5) added water, sufficient to adjust the viscosity of said aqueous-alcoholic, foam-growth-controlling printing ink composition to desired levels for printing on said heat-foamable and expandable resinous materials; and heating said heat-foamable and expandable resinous materials whereby said selected, predetermined portions to which said aqueous-alcoholic, foam-growth-controlling printing ink composition was applied attain heights differing from the contrasting with those other portions to which said aqueous-alcoholic, foam-growth-controlling printing ink composition was not applied.

4,083,908

MANUFACTURE OF CELLULAR LIGHTWEIGHT CONCRETE SLABS

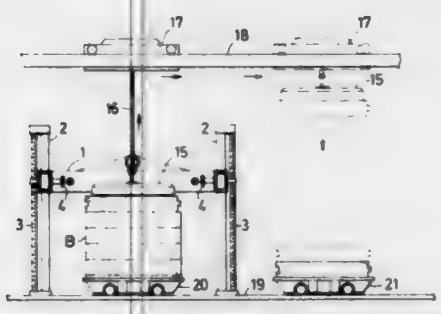
Oystein Kalvenes, Grodinge; Gosta Harald Eriksson, Sodertalje; Percy Svensson, Ronninge, and Rolf Erik Goransson, Akarp, all of Sweden, assignors to Internationella Siporex Aktiebolaget, Malmo, Sweden

Filed Oct. 20, 1975, Ser. No. 624,078
Claims priority, application Sweden, Oct. 31, 1974, 7413713
Int. Cl.[2] C04B *15/14;* B28B *3/00*
U.S. Cl. 264—82 16 Claims

1. A method of manufacturing cellular lightweight concrete products comprising the steps of first molding an at least approximately parallelepipedic, cellular body from a concrete mass that in a given stage after molding is plastic but self-sup-

porting, subsequently dividing said body, when it is resting on a first support and while the concrete mass thereof is still plastic, by horizontal cuts into a plurality of slab-like slices, each of which has a thickness that is substantially less than the original height of the body, and finally steam-hardening a plurality of the body slices thus obtained as a group in an autoclave, while they are rested one on top of the other to form a pile, and in which one body slice at the time is lifted away from the remainder of the body resting on the first support and transferred to a second support, on which the slices thus received are piled in reversed order, one on top of the other, and in which at least one of every two broadsides of adjacent pairs of slices, which will be facing each other in the pile on said second support, is subjected to a treatment capable of at least reducing the risk of the occurence of a firm binding between the piled body slices during the steam-hardening process.

15. A method of manufacturing cellular lightweight concrete products comprising the steps of first molding a substan-



tially parallelepipedic, plastic and self-supporting cellular body from a concrete mass, subsequently making horizontal cuts through said body, when it is resting on a first support and while the concrete mass thereof is still plastic, to thereby divide it into a plurality of slab-like slices, each of which has a thickness that is substantially less than the original height of the body, and finally steam-hardening a plurality of the body slices thus obtained as a group in an autoclave, while they are rested one on top of the other to form a pile, and in which one body slice at the time is first separated and then lifted away from the remainder of the body resting on the first support for being transferred to a second support, on which the slices thus received are piled in reversed order, one on top of the other, and in which at least one broadside of each body slice is subjected to a surface treatment at least reducing the risk of the occurence of a firm binding before coming into contact with an adjacent slice in said pile on the second support, each recently separated slice being removed from the remainder of the body before the next slice is cut free therefrom.

4,083,909

PROCESS FOR MANUFACTURING CELLULAR LIGHTWEIGHT CONCRETE PRODUCTS

Rolf Erik Göransson, Akarp, Sweden, assignor to Internationella Siporex Aktiebolaget, Malmo, Sweden

Filed Oct. 20, 1975, Ser. No. 624,079

Claims priority, application Sweden, Oct. 31, 1974, 7413712

Int. Cl.[2] C04B *15/14*; B28B *3/00*

U.S. Cl. 264—82 **6 Claims**

1. In the process of manufacturing cellular lightweight concrete products the combination of steps comprising:

(a) first molding a discrete, self-supporting but still plastic, cellular and generally parallelepipedic body of a concrete mass,

(b) lowering an elevatable suction head into engagement with the top face of said body while the same is resting with its bottom face on a movable support,

(c) causing said suction head to adhere to the top face of said body to thereby support the same from above without separating it from said movable support,

(d) providing a first and lowermost horizontal cut through said body while it is thus supported from below and above to thereby separate from the remainder of said body held by said suction head a first body slice resting on said movable support,

(e) temporarily separating the remainder of the body thus cut from said first body slice by increasing the vertical distance between said movable support and said suction head to thereby expose the recently cut surfaces,

(f) deposing the upper remainder of the cut body on top of said first body slice by decreasing the vertical distance between said movable support and said suction head,

(g) providing a second horizontal cut through said body at a level above said first cut while said body is again supported from below and above by said movable support and said adhering suction head, respectively, to thereby separate a second body slice resting on said first body slice,

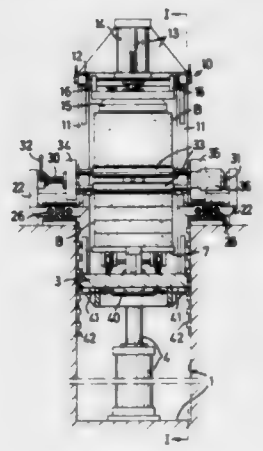
(h) again temporarily separating the upper body remainder, now reduced in height, from said second body slice to thereby expose the new cut surfaces of the second cut,

(i) again deposing the upper reduced remainder of the cut body on top of the pile of body slices now resting on the movable support,

(j) repeating the cutting, lifting and deposing steps until the entire body has been divided into the desired number of piled body slices before the last remainder of the body is released from said suction head, and

(k) finally steam-hardening as a group the piled body slices thus obtained.

2. In a process of manufacturing cellular lightweight concrete products the combination of steps comprising:



(a) first molding a discrete, self-supporting but still plastic, cellular and generally parallelepipedic body of a concrete mass,

(b) lowering an elevatable suction head into engagement with the top face of said body while the same is resting with its bottom face on a movable support,

(c) causing said suction head to adhere to the top face of said body to thereby support the same from above without separating it from said movable support,

(d) providing a first and lowermost horizontal cut through said body while it is thus supported from below and above to thereby separate from the remainder of said body held by said suction head a first body slice resting on said movable support,

(e) temporarily lifting the remainder of the body thus cut from said first body slice by elevating said suction head to thereby expose the recently cut surfaces,

(f) subjecting at least one of the two cut surfaces obtained at said first cutting operation to a treatment,

(g) deposing the upper remainder of the cut body on top of said first body slice by again lowering said suction head,

(h) providing a second horizontal cut through said body at a level above said first cut while said body is again supported from below and above by said movable support and said adhereing suction head, respectively, to thereby separate a second body slice resting on said first body slice.

(i) again temporarily lifting the upper body remainder, now

reduced in height, from said second body slice resting on top of the first body slice to thereby expose the new cut surfaces of the second cut,

(j) subjecting at least one of the two cut surfaces obtained at said second cutting operation to a treatment,

(k) again deposing the upper reduced remainder of the cut body on top of the pile of body slices now resting on the movable support,

(l) repeating the cutting, lifting, treating and redeposing steps until the entire body has been divided into the desired number of piled body slices, before the last remainder of the body is released from said suction head, and

(m) finally steam-hardening as a group the piled body slices thus obtained.

4,083,910

PROCESS FOR MOLDING PLASTIC ARTICLES

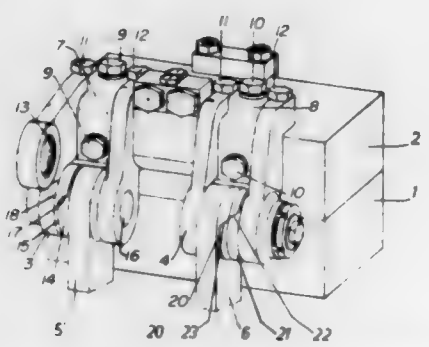
Hubert Tits, Kessel-Lo, and Jean-Marie Losson, Bierges, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed May 16, 1975, Ser. No. 578,254

Claims priority, application France, May 20, 1974, 74 17548

Int. Cl.² B29C *17/07, 7/00*

U.S. Cl. 264—94 **4 Claims**



1. In a process for molding plastic articles possessing a reentrant part wherein a mold is formed by bringing two half-molds together, a molding operation is carried out in the mold, and the mold is opened to release the molded article, the reentrant part of the article extending across the closure plane of the mold, the improvement wherein the opening of the mold at the completion of the molding operation is carried out by causing the entirety of one of the half-molds to undergo a pivoting movement away from the other half-mold accompanied by a translational movement along a direction parallel to the closure plane of the mold, permitting release of the reentrant part of the article before the mold has been completely opened.

4,083,911

GRANULAR ACTIVE ALUMINA WITH HIGH APPARENT DENSITY AND HIGH MECHANICAL DURABILITY

Fritz Weingärtner, Horrem, near Cologne, and Josef Liebertz, Quadrath-Ichendorf, near Cologne, both of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 18, 1975, Ser. No. 569,494

Claims priority, application Switzerland, Apr. 19, 1974, 5420/74

Int. Cl.² B01J *21/02*

U.S. Cl. 264—118 **5 Claims**

1. In a process for the manufacture of granular activated alumina suitable for use as an adsorbent and having high mechanical durability, the steps comprising:

compressing green aluminum hydroxide having less than about 1% free water content by dry compression to form a compact body having an apparent density of at least about 2.2 g./cm.^{3},

comminuting said compact body into granular particles and thereafter heating the resultant granular particles to a temperature sufficient to activate said particles for use as an adsorbent.

4,083,912

PROCESS FOR THE COMPRESSION OF BLACK POWDER

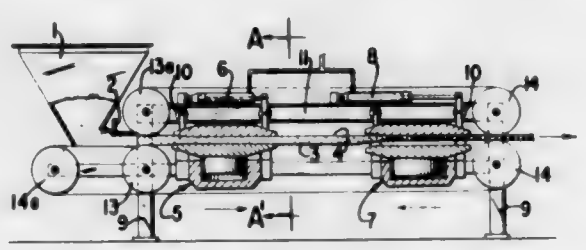
Friedrich Platte, Essen, and Wolfgang Wiedemann, Dulmen, both of Germany, assignors to Wasagchemie GmbH, Munich, Germany

Continuation-in-part of Ser. No. 274,493, Jul. 24, 1972, abandoned. This application Feb. 7, 1975, Ser. No. 547,987

Claims priority, application Germany, Aug. 3, 1971, 2138724

Int. Cl.² B29J *5/10*

U.S. Cl. 264—120 **2 Claims**



1. A method for producing a continuous sheet formed from compressed black powder, comprising:

(a) feeding from a feed container low density, mealy, black powder crystals enclosed between upper and lower endless belts, and moving said powder into a precompression zone to expel air in said powder and produce precompressed black powder,

(b) moving said precompressed powder through a primary compression means capable of idling and for building up compaction pressure on said precompressed powder to further compress said precompressed powder into a continuous sheet and to achieve a new orientation and displacement of said black powder,

(c) moving said continuous sheet through a final compression means capable of idling and for building up a final compaction pressure to break said crystals within said sheet, and to obtain crystal lattice displacements therein,

(d) moving said continuous sheet by a synchronized longitudinal movement of said primary and said final compression means towards and away from each other,

(e) synchronizing the buildup of the compaction pressure on said precompressed powder and the idling time of each of said primary and said final compression means to move said continuous sheet longitudinally by the advancing movement of said primary and said final compression means, and

(f) recovering the continuous sheet formed from compressed black powder.

4,083,913

STABILIZATION OF MIXED-FIBER WEBS

Preston F. Marshall, Walpole, Mass., assignor to The Kendall Company, Boston, Mass.

Continuation-in-part of Ser. No. 204,619, Dec. 3, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,106

Int. Cl.² B27J *5/00*

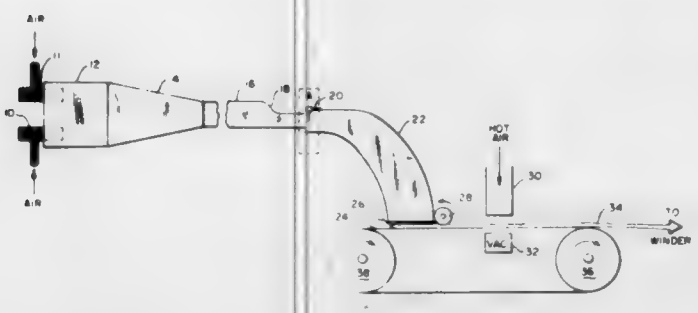
U.S. Cl. 264—121 **4 Claims**

1. The process of stabilizing the relative orientation and distribution of the fibers in an air-laid web, the fibers of said web possessing a substantially random orientation comprising:

a. forming a substantially randomly oriented air-laid web comprising a major portion of non-thermally sensitive fibers, said non-thermally sensitive fibers having admixed therewith in random distribution and oriented throughout the length, breadth, and depth of said web, a minor proportion of fibers of a drawn, thermoplastic and thermoretractile nature which melt at a temperature below the melting point of said non-thermally sensitive fibers, said

drawn thermoretractile fibers consisting essentially of fibers between 0.05 and 0.40 inches in length;

b. heating the mixed fiber web, substantially without pressure, sufficiently to cause said drawn thermoretractile fibers to retract and melt to a series of fluid beads, with a



substantial loss of fiber identity, said beads locating principally at the crossover points of said non-thermally sensitive fibers by said drawn fibers retracting thereon; and,

c. cooling said web until said fluid beads solidify so as to stabilize the relative orientation and distribution of the fibers in said web.

4,083,914

METHODS FOR PRODUCTION OF FILAMENTS FROM FOILS

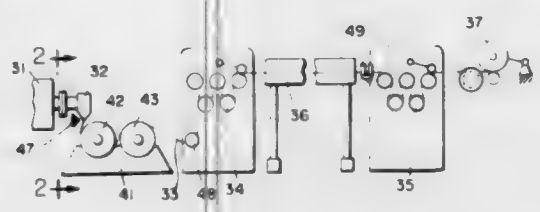
Heinz Schippers, Remscheid-Lennep, and Rolf Hessenbruch, Remscheid, both of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Continuation of Ser. No. 14,758, Feb. 25, 1970, abandoned, which is a continuation of Ser. No. 665,443, Sep. 5, 1967, abandoned. This application Mar. 26, 1973, Ser. No. 344,566

Claims priority, application Germany, Apr. 1, 1967, B 91793; Apr. 21, 1967, B 92161

Int. Cl.[2] **B29H** *7/18*

U.S. Cl. 264—147 **10 Claims**



1. In a process for producing endless, drawn, multiple filaments from filament-forming thermoplastic polymers embodying the steps of extruding a plastic, thermoplastic polymer composition in the form of a foil having a plurality of strand-forming longitudinal rib segments connected by thin, longitudinal necks or strips to form longitudinal, breaking lines or zones, drawing said foil upon or immediately after extrusion by conducting the extruded foil over rotating cylinders operating at speeds sufficient to stretch said extruded foil by at least several times its original length, and immediately cooling the drawn foil sufficiently to solidify said foil, the improvement comprising breaking said solidified foil into completely separated filaments along said breaking lines or zones by the steps consisting of stretching said solidified foil between two sets of rollers, each set having a plurality of rollers over which said foil is conducted in an undulating path on each respective set, and causing said solidified foil to split along said breaking lines or zones into completely separated filaments corresponding to said rib segments solely by the step of imparting a sufficient amount of longitudinal stretching to the solidified foil to separate completely said rib segments into filaments.

4,083,915

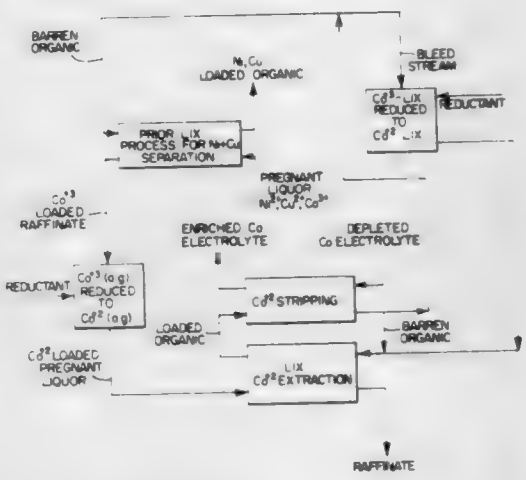
COBALT STRIPPING PROCESS

Gale L. Hubred, Lexington; Roger N. Kust, Acton; David L. Natwig, Brighton, and J. Paul Pemsler, Lexington, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Nov. 20, 1975, Ser. No. 633,852

Int. Cl.[2] **C01G** *3/00, 51/00, 53/00*

U.S. Cl. 423—24 **48 Claims**



8. A process for treating a reduced ammoniacal leach liquor containing copper and nickel and cobalt values comprising the following steps:

(a) oxidizing the leach liquor to convert the copper values to cupric ions;

(b) adding a metallic reductant to the leach liquor to reduce the cobalt values from the trivalent state to the divalent state without reducing the cupric ions;

(c) contacting the leach liquor with an organic extractant to extract copper, nickel and cobalt values;

(d) oxidizing the co-loaded organic extractant to convert the cobalt values to the trivalent state and prevent them from being stripped therefrom;

(e) selectively stripping the nickel and copper from the co-loaded organic extractant;

(f) reducing the trivalent cobalt on the organic extractant to place the cobalt in the divalent state; and,

(g) stripping the reduced cobalt values by contacting them while in a non-oxidizing atmosphere with an aqueous ammoniacal solution containing an ion selected from the group consisting of Cu^{++}, Ni^{++} and mixture thereof to crowd the cobalt values off the organic extractant.

4,083,916

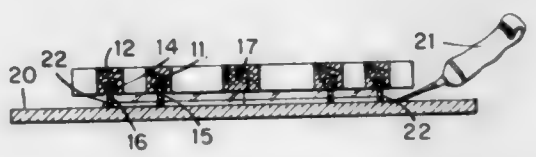
METHOD FOR MOLDING A DECORATIVE LAYER

Arthur E. Chasse, 474 Hanover St., Manchester, N.H. 03104

Filed Aug. 26, 1977, Ser. No. 827,937

Int. Cl.[2] **B29C** *5/00;* **B29D** *3/00, 9/10*

U.S. Cl. 264—245 **9 Claims**



1. A method of producing a plastic ornamental layer comprising:

(a) Constructing a first frame having members corresponding to dividing lines in the ornamental layer to be produced;

(b) securing dividing strips to said members;

(c) placing said first frame with dividing strips down on top of a mold plate;

(d) applying adhesive to bond said strips to said mold plate;

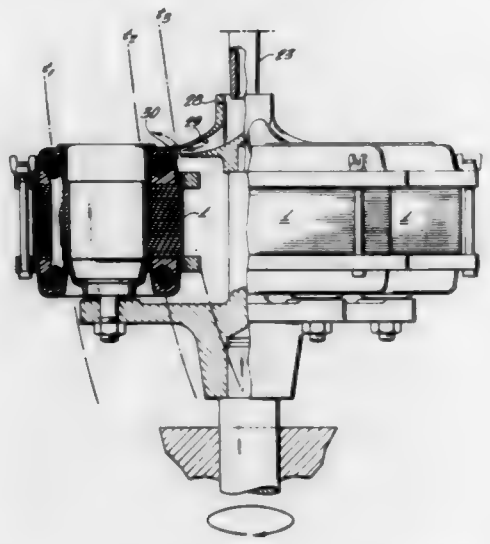
(e) constructing a second frame having an inner face as a mold wall defining the boundaries of the layer being produced;
(f) securing said second frame to said mold surface about said first frame;
(g) removing said first frame leaving said strips bonded to said mold surface;
(h) filling the space within said second frame to a predetermined level covering said strips with a curable plastic mix;
(i) curing said plastic mix to form a hardened layer;
(j) removing said second frame; and,
(k) removing the cured layer from said mold surface with said strips embedded in said layer.

4,083,917

ELECTRIC MACHINE AND METHOD FOR THE PRODUCTION THEREOF

Stig Lennart Hallerback, Vastra Frolunda, and Leif Lachonius, Surte, both of Sweden, assignors to SKF Industrial Trading and Development Company B.V., Jutphaas, Netherlands

Filed Jun. 11, 1976, Ser. No. 694,934
Claims priority, application Sweden, Mar. 29, 1976, 7603723; Jul. 7, 1975, 7507740
Int. Cl.² B29C *5/04*; B29F *1/00*
U.S. Cl. 264—263 **12 Claims**



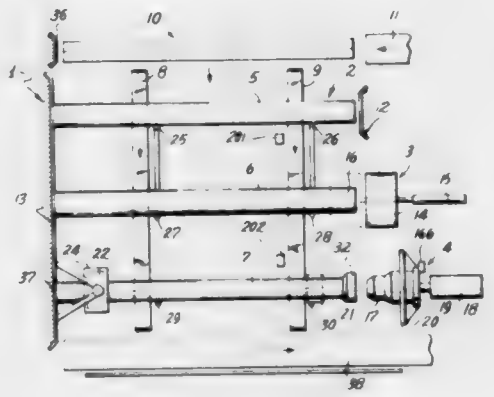
1. A method for making a stator for an electric machine including a plurality of laminations forming a stack arranged to define a stator cavity and winding heads consisting of the steps of supporting casings in a position surrounding the winding heads in sealing relation with opposite ends of the lamination stack, positioning a mandrel in the stator cavity having locating means engageable with the stator stack and means on its outer surface to define axial and radial locating positions for bearing shields, supporting a bearing shield at one end of the mandrel having a circumferential edge portion communicating with one of said cavities, the casing, laminations and mandrel defining an enclosed cavity at one end of the stator stack, the casing, lamination, mandrel and bearing shield defining an enclosed cavity at the other end of the stator stack injecting a curable moulding material into the cavities by means of centrifugal force, and curing the moulding material.

4,083,918

METHOD FOR BELLING PLASTIC PIPE

Clifford P. Ronden, and Imre Rabel, both of Edmonton, Canada, assignors to Grandview Industries, Limited, Canada

Continuation of Ser. No. 691,150, May 28, 1976, abandoned, which is a continuation of Ser. No. 617,631, Sep. 29, 1975, abandoned, which is a continuation of Ser. No. 516,827, Oct. 21, 1974, abandoned, which is a division of Ser. No. 41,267, May 28, 1970, Pat. No. 3,910,744. This application Jan. 12, 1977, Ser. No. 758,865
Int. Cl.² B29B *5/04*
U.S. Cl. 264—297 **2 Claims**



1. The method for belling thermoplastic pipes, comprising
delivering the pipes successively to an initial location adjacent conveyor means which includes a continuously driven endless belt which extends away from the initial location in a direction transverse to the pipe;
transferring the pipes successively from the initial location onto the conveyor means by moving each pipe laterally and positioning the pipes on the conveyor means in laterally spaced apart relation;
operating the conveyor means to advance each pipe in said direction to a belling station while the pipe is continuously supported by the conveyor means;
heating one end portion of each pipe to a softening temperature before the pipe reaches the belling station and while the pipe is suported by the conveyor means;
said step of heating one end portion of each pipe being carried out to limit heating to the end portion and thereby maintaining the remainder of the pipe at a temperature below the softening temperature;
interrupting lateral movement of each length of pipe when the pipe is at the belling station and, while maintaining the pipe out of operative engagement with the endless belt of the conveying means, aligning the pipe with a belling head at the belling station and effecting relative axial movement between the heated end portion of the pipe and the belling head to engage the heated end portion of the pipe with the belling head and accomplish belling of the end portion;
cooling the belled end portion of the pipe and then effecting relative axial movement between the pipe and the belling head to disengage the belling head from the pipe; and
then operating the conveyor means to convey the belled pipe laterally to a delivery location.

4,083,919

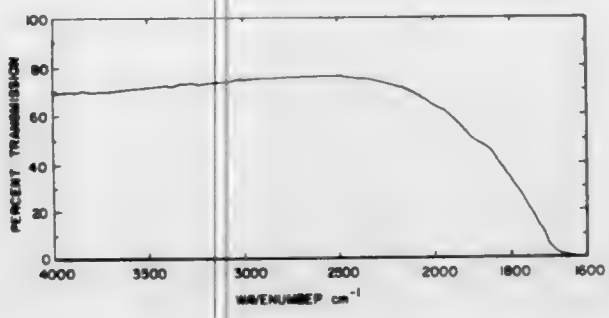
BETA-ALUMINA COMPOSITES AND METHODS FOR PRODUCING THEM

Donald Pearlman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 574,601, May 2, 1975, abandoned. This application Aug. 4, 1976, Ser. No. 711,674
Int. Cl.² C04B *35/10*
U.S. Cl. 264—332 **7 Claims**

1. A method for making a hot pressed beta-alumina composite which comprises:
mixing and reacting together a solution of aluminum alcoholate and an aqueous solution of an alkali metal salt;

coprecipitating as a gelatinous mass aluminum hydroxide and the alkali metal salt;
drying the gelatinous mass coprecipitated in the previous step;
heating the dried mass to a temperature between about 400° C to about 1200° C;



cooling and grinding the dried gelatinous mass into a fine amorphous powder; and
hot pressing the resulting powder to yield a beta-alumina composite.

4,083,920

TREATMENT OF TRI(ALKALINE EARTH METAL) TUNGSTATES WITH ACIDS

Stephen Peter Beaton, Amherstview, and Hans Peter Kasserra, Brockville, both of Canada, assignors to Du Pont of Canada Limited, Montreal, Canada

Filed Jan. 27, 1977, Ser. No. 766,422
Claims priority, application Canada, Jan. 29, 1976, 244540
Int. Cl.² C01G *41/00*
U.S. Cl. 423—53 **5 Claims**

1. In a process for extracting tungsten values from a tungsten composition, wherein the tungsten composition is calcined in the presence of an alkaline earth metal compound, cooled, and then treated with hydrochloric acid, nitric acid or mixtures thereof to dissolve impurities from the composition and to retain the tungsten values in a solid residue from which the tungsten values are subsequently recovered, the improvement comprising:
selecting the tungsten composition to be calcined from the group consisting of iron tungstate, manganese tungstate, an alkaline earth metal tungstate and mixtures thereof;
performing the calcining at a temperature of 800° of 1400° C with the alkaline earth metal compound being a donor compound which donates alkaline earth metal to the tungstate of the tungsten composition to form a tri (alkaline earth metal) tungstate, the donor compound being present in an amount in excess of the stoichiometric quantity required to convert the tungstate of the tungsten composition to the tri (alkaline earth metal) tungstate, and the alkaline earth metal of the donor compound being selected from the group consisting of calcium and mixtures of calcium and at least one of strontium and barium; and
carrying out the treatment with acid having a concentration of no greater than 5 molar and at a temperature of no greater than 50° C.

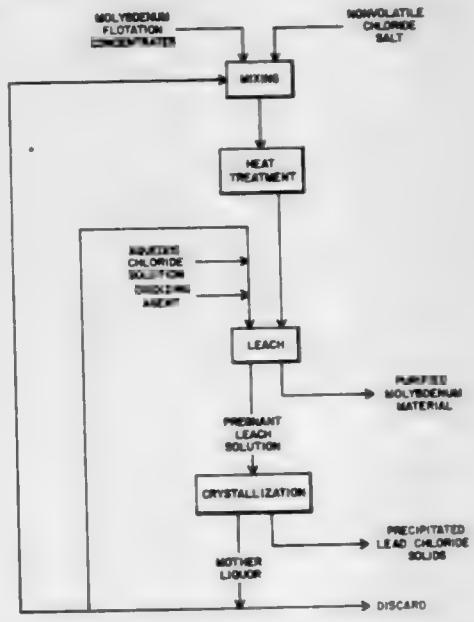
5. In a process for extracting tungsten values from a tungsten composition, wherein the tungsten composition is heated at elevated temperatures, cooled and then treated with hydrochloric acid, nitric acid or mixtures thereof to dissolve impurities from the composition and to retain tungsten values in a solid residue from which the tungsten values are subsequently recovered, the improvement comprising:
selecting the tungsten composition to be heated from the group consisting of alkaline earth metal tungstates and mixtures thereof;
heating the tungsten composition at 800° to 1400° C in a reducing atmosphere to form a mixture of tri (alkaline earth metal) tungstate and finely divided metallic tungsten;
carrying out the treatment with acid having a concentration of no greater than 5 molar and at a temperature of no greater than 50° C and thereafter treating the solid residue with an aqueous ammonia solution in the presence of an excess of an oxidizing agent, the quantity of ammonium ions being sufficient to react with a substantial fraction of the tungsten values in the solid residue to form soluble ammonium tunstate, and then separating the thusly formed ammonium tungstate solution from the remaining insoluble matter.

4,083,921

PURIFYING MOLYBDENUM FLOTATION CONCENTRATES

Rolf Jurgen Wesely, Salt Lake County, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,491
Int. Cl.² C01G *39/00, 21/16*
U.S. Cl. 423—55 **10 Claims**



1. A process for removing copper, iron, and lead impurities from molybdenum flotation concentrates, comprising mixing a nonvolatile chloride salt with the concentrates in a ratio of about 1 to 4 parts by weight of the chloride salt to 1 part of lead in the concentrates; heating the mixture of concentrates and chloride salt to a temperature of from about 200° to 350° C, for a time sufficient to activate the lead impurities in the concentrates so that they are amenable to being leached therefrom; leaching lead, copper, and iron impurities from the concentrates by contacting the heat-treated concentrates with a mildly oxidizing leach solution having a pH of no more than 4 and at a temperature of between about 70° and 95° C, said leach solution containing at least about 50 grams per liter of chloride ions and having an oxidation potential of between about 200 and 800 millivolts as measured between platinum and saturated calomel electrodes; and separating the molybdenum-containing concentrates from the pregnant leach solution, while maintaining the temperature of the pregnant leach solution above about 70° C until it has been separated from the molybdenum-containing concentrates to prevent precipitation of lead chloride from the pregnant leach solution during said separation.

4,083,922

PROCESS FOR THE MANUFACTURE OF AMMONIUM AND ALKALI METAL TUNGSTATES

Hans Peter Kasserra, Brockville, Canada, assignor to Du Pont of Canada Limited, Montreal, Canada

Filed Jan. 27, 1977, Ser. No. 766,425
Claims priority, application Canada, Jan. 29, 1976, 244543
Int. Cl.² C01G *41/00*
U.S. Cl. 423—56 **7 Claims**

1. A process for preparing a tungstate salt comprising preparing a finely divided material selected from the group consisting of metallic tungsten, intermetallic iron/tungsten species

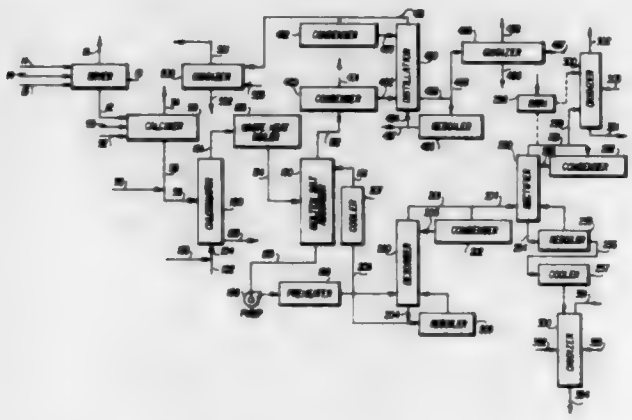
and mixtures thereof, said material having been formed by heating at a temperature in the range of 600° to 1300° C under reducing conditions a tungstate selected from the group consisting of iron tungstate, manganese tungstate and mixtures thereof, treating said material with an aqueous solution at a temperature in the range of 30° to 70° C in the presence of an excess of an oxidizing agent selected from the group consisting of oxygen and hydrogen peroxide, the finely divided material being substantially free of alkaline earth metals and the aqueous solution containing an excess of cations selected from the group consisting of ammonium and sodium ions and mixtures thereof and anions selected from the group consisting of hydroxide, carbonate and bicarbonate ions and mixtures thereof to form a tungstate salt that is soluble in the solution and then separating the tungstate salt from the solution.

4,083,923

PROCESS FOR THE PRODUCTION OF ALUMINUM CHLORIDE AND RELATED PRODUCTS

Alfred Lippman, and Roger Frank Sebenik, both of Metairie, La., assignors to Toth Aluminum Corporation, New Orleans, La.

Filed Jan. 22, 1976, Ser. No. 651,396
The portion of the term of this patent subsequent to Feb. 17, 1993, has been disclaimed.
Int. Cl.² C01F *7/58, 7/02*
U.S. Cl. 423—79 **15 Claims**



1. A process for the production of aluminum chloride comprising the following steps:

A. carbo-chlorinating at up to 1,000° C a dehydrated iron containing aluminous ore to produce a mixed chloride gas stream comprising primarily aluminum chloride, iron chloride, (other metal chloride) titanium cloride, silicon chloride, vaporous components and carbon oxides; and

B. extracting the aluminum chloride and iron chloride components out of the mixed chloride gas stream by contacting the stream with a liquid metal chloride solvent in which the aluminum chloride and iron chloride are soluble to preferentially dissolve the aluminum chloride and iron chloride, then distilling the aluminum chloride and iron chloride from the liquid metal chloride solvent, subsequently separating the aluminum chloride from the iron chloride by rectification to obtain essentially aluminum chloride, and contacting the aluminum chloride with molten aluminum capable of reacting with impurity chlorides to form compounds that will not contaminate the aluminum chloride effluent to obtain aluminum chloride.

4,083,924

METHOD OF REGENERATING USED CONTAMINANT-REMOVING MATERIAL

Ralph E. Styring, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 23, 1974, Ser. No. 435,760
Int. Cl.² C01B *27/00, 29/00;* **C01G** *29/00;* **C22B** *30/00*
U.S. Cl. 423—88 **10 Claims**

1. A method of regenerating for reuse a particulate contaminant-removing material that has been used to remove a contaminant selected from a group of selenium and arsenic from a synthetic hydrocarbonaceous liquid by effecting deposition of said contaminant within said contaminant-removing material such that said contaminant-removing material becomes spent; said particulate contaminant-removing material being selected from the class consisting of the oxides and sulfides of iron, cobalt and nickel, alone and on a supporting matrix; comprising the steps of:

a. providing a non-oxidizing atmosphere about said spent contaminant-removing material; said non-oxidizing atmosphere containing less than 1 percent volume of oxygen;

b. adding and admixing a sulfur-containing material in Intimate contact with said spent contaminant-removing material;

c. heating said sulfur-containing material and said spent contaminant-removing material in a substantial absence of oxygen as provided by the non-oxidizing atmosphere to a temperature in the range of 700°–1500° F. and sufficient to react the sulfur in said sulfur-containing material with said contaminant to form the sulfides of the contaminant; and moving at least one of said sulfur-containing material and said contaminant-removing material with respect to and in intimate contact with the other at said temperature to react the sulfur in said sulfur-containing material with said contaminant to form the sulfides of said contaminant;

d. converting said sulfides of said contaminant to gaseous form by heat and separating said gaseous sulfides of said contaminant from said contaminant-removing material such that said contaminant-removing material is ready for a reuse to again remove said contaminant from said synthetic hydrocarbonaceous liquid; and

e. oxidizing said sulfides of said contaminant with an oxygen-containing material to form the oxides of said contaminant.

4,083,925

METHOD FOR REMOVING FERROUS IRON FROM ALKALI METAL ALUMINATE LIQUOR

John A. S. Green, Ellicott City, and Sergio A. Loynaz, Baltimore, both of Md., assignors to Martin Marietta Aluminum, Inc., Bethesda, Md.

Filed Mar. 22, 1976, Ser. No. 669,358
Int. Cl.² C01F *7/06*
U.S. Cl. 423—121 **18 Claims**

1. In the Bayer process for preparing alumina from bauxite ore, which includes the steps of feeding hot mud settler feed slurry containing alkali metal aluminate liquor, ferrous iron and red mud into a mud settler, and therein separating a portion of the alkali metal aluminate liquor from the red mud, the improvement comprising adding to said slurry 0.003–0.015 gram anionic polyacrylamide per liter of said slurry, said polyacrylamide having molecular weight of at least 2,800,000, and maintaining said slurry and said polyacrylamide in contact, at 65° – 120° C., inclusive, within the mud settler for 4–16 hours, whereby a substantial proportion of the ferrous iron is precipitated with the separated red mud and thereby separating the precipitated ferrous iron from said portion of the alkali metal aluminate liquor.

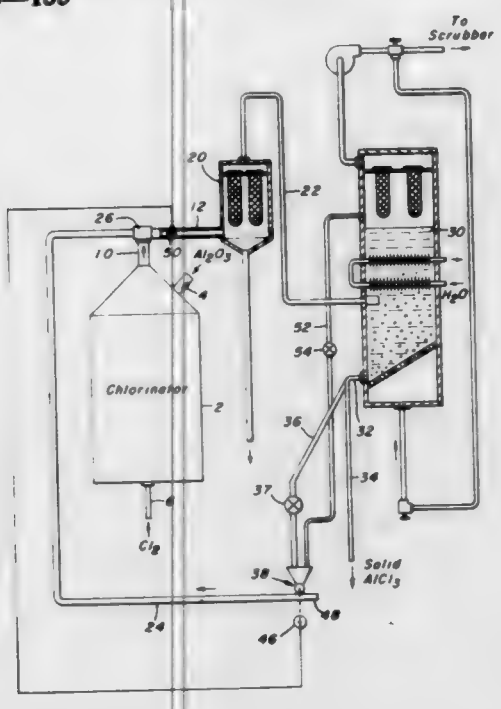
13. In the Bayer process for preparing alumina from bauxite ore, which includes the step of producing clear alkali metal aluminate liquor containing ferrous iron as mud settler overflow, the improvement comprising maintaining said liquor and 0.0013 – 0.015 gram anionic polyacrylamide per liter of clear alkali metal aluminate liquor, said polyacrylamide having molecular weight of at least 2,800,000, in contact , at 65° – 254° C., inclusive, for 4–16 hours whereby a substantial proportion of the ferrous iron is precipitated, and separating the precipitated ferrous iron from the alkali metal aluminate liquor.

4,083,926

COOLING ALUMINUM CHLORIDE VAPORS BY CONTACT WITH SOLID ALUMINUM CHLORIDE

Marlyn D. Ballain, Belleville, Ill.; Roy E. Hardwick, Maryville, Tenn.; Robert L. Hargis, Palestine, Tex., and Larry K. King, Maryville, Tenn., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 3, 1977, Ser. No. 765,291
Int. Cl.[2] C01F 7/58, 7/62
U.S. Cl. 423—135 6 Claims



1. In an improved process for the production of high-purity aluminum chloride suitable for electrolytic reduction to metallic aluminum by the chlorination of aluminous material to produce aluminum chloride at a temperature above the vaporization point of aluminum chloride followed by filtration of the aluminum chloride vapors and subsequent condensation of the aluminum chloride vapors in a fluidized bed, the improvement which comprises: contacting the hot aluminum chloride vapors with sufficient solid aluminum chloride particles recycled by a fluidizing gas, after condensation in the fluidized bed back to a point located between a chlorination zone and a filtration zone to cool the vapors by vaporization of the solid aluminum chloride to a temperature of about 300°–350° C to permit subsequent filtration of the aluminum chloride vapors to remove solid impurities therefrom.

4,083,927

CONTROLLED CARBO-CHLORINATION OF KAOLINITIC ORES

Ronald Wyndham, New Orleans, La., assignor to Toth Aluminum Corporation, New Orleans, La.

Filed Nov. 2, 1976, Ser. No. 737,798
Int. Cl.[2] C01F 7/56, 7/58
U.S. Cl. 423—136 8 Claims

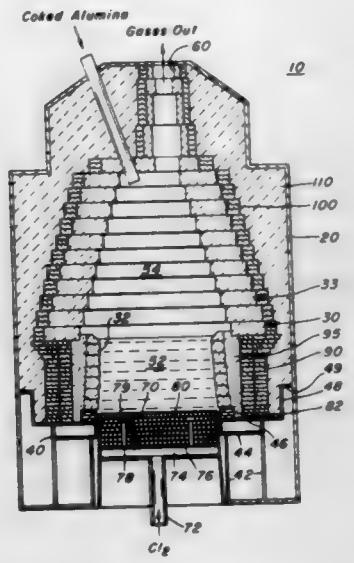
1. A process for preferentially chlorinating alumina and suppressing the chlorination of silica in a kaolinitic ore consisting of the steps of: drying and comminuting a kaolinitic ore to form a powdered ore; calcining the powdered ore at a temperature of from about 700° C to 900° C to remove water of composition; and carbo-chlorinating the powdered ore at a temperature of from about 600° C to 950° C to produce aluminum chloride by exposing the calcined ore to a chlorinating agent in the presence of a carbonaceous reductant in an amount of from about 5% to 40% by weight of the dry ore and boron chloride in an amount of from about 0.3% to 4.0% by volume of the chlorinating agent to preferentially chlorinate alumina and suppress chlorination of silica.

4,083,928

PRODUCTION OF ALUMINUM CHLORIDE

Larry K. King, Maryville, Tenn., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 6, 1976, Ser. No. 748,000
Int. Cl.[2] C01F 7/58, 7/60
U.S. Cl. 423—136 6 Claims



1. In an improved process for the production of aluminum chloride by the reaction of a source of gaseous chlorine and an aluminous compound in the presence of a reducing agent in a reaction chamber, the improvement comprising:

(a) providing a gaseous diffusing zone in the reaction chamber, the chamber having an outer metal shell, an outlet and a multilayer lining therein, the lining having

(i) an inner layer at least adjacent the diffusing zone formed from a nitride-based refractory characterized by being essentially free of carbonaceous residue and being resistant to attack by reactants in the chamber at temperatures below 450° C;

(b) maintaining a fluidized bed containing the aluminous compound and the reducing agent above the diffusing zone, and adding gaseous chlorine to the reaction chamber through the diffusing zone to the fluidized bed to form aluminum chloride, the multilayer lining having

(i) an inner layer adjacent the fluidized bed and extending to said outlet formed from carbon, the multilayer lining further including

(ii) a wall of refractory material perimetrically bounding the inner layer of carbon,

(iii) adjacent the diffusing zone and the fluidized bed, a first layer of finely divided particulate material intermediate the inner layer and the wall of refractory material, said particulate material being reactioninert to gaseous meterial penetrating the inner layer;

(iv) a second layer of insulative refractory particles intermediate the wall of refractory material and the metal shell; and

(c) recovering the aluminum chloride formed as gaseous effluent emmanating from the fluidized bed.

4,083,929

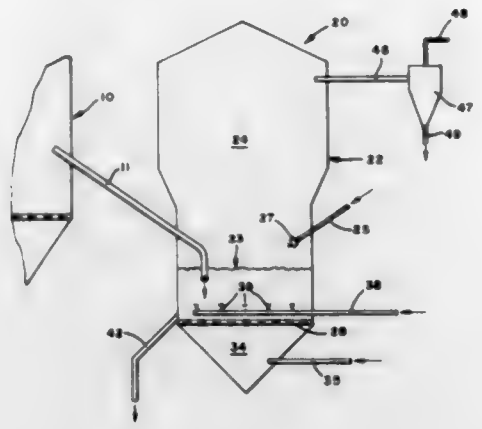
BENEFICIATION OF PHOSPHATE ROCK

Robert Joseph Priestley, Westport, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Dec. 12, 1973, Ser. No. 423,880
Int. Cl.[2] C01F 1/00, 5/00, 11/00; C22B 26/20
U.S. Cl. 423—167 7 Claims

1. In a fluid bed process for beneficiating phosphate rock containing a substantial amount of calcium carbonate as an impurity, which includes the steps of calcining the phosphate rock thereby driving off CO_2 gas and producing a quantity of lime, cooling the calcined rock product, slaking the lime contained therein and separating the slaked lime from the rock

product, the improvement comprising conducting the cooling, slaking and separation operations in a fluid bed reactor, including passing a gas stream through a single bed of particulate calcined phosphate rock in said reactor to fluidize the bed and cool the calcined rock, spraying water into the freeboard region of said reactor to cool the calcined rock, injecting water directly into said fluidized bed of calcined rock below the



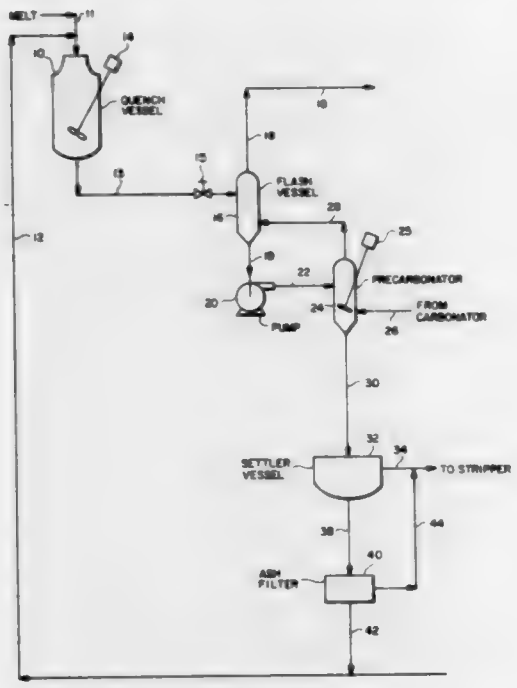
upper surface thereof to obtain an intimate mixture of the water and rock thereby effecting further cooling of the rock and slaking the lime associated therewith, the fluidizing gas effecting elutriation and separation of the slaked lime from the phosphate rock product, removing the gas from the reactor with the elutriated slaked lime entrained therein and disposing of the gas and the solid matter carried thereby.

4,083,930

METHOD OF TREATING ALKALI METAL SULFIDE AND CARBONATE MIXTURES

Arthur L. Kohl, Woodland Hills; Robert D. Rennick, and Martin W. Savinsky, both of Thousand Oaks, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 2, 1976, Ser. No. 673,226
Int. Cl.[2] C01D *7/00, 17/16;* D21C *11/00*
U.S. Cl. 423—189 **12 Claims**



1. A method of treating an alkali-metal sulfide and carbonate mixture, said alkali metal being selected from the group consisting of sodium, potassium, rubidium and cesium, comprising the steps of:

(a) introducing a molten mixture of said alkali metal sulfide and carbonate into an aqueous medium in a quenching zone maintained at a pressure of from about 2 to 200 atmospheres to produce a hot solution of said carbonate and sulfide;

(b) withdrawing said solution from step (a) and introducing it into a zone of reduced pressure whereby there is produced water vapor;

(c) withdrawing said solution from step (b) and introducing it into a first carbonation zone and contacting said solution with a gas containing a major amount of CO_2 and a minor amount of H_2S in an amount sufficient to produce bisulfide and bicarbonate in said solution, said gas being obtained from step (f);

(d) withdrawing said solution from said first carbonation zone and introducing it into a stripping zone maintained at from about 0.2 to 0.8 atmospheres where it is contacted with water vapor obtained from (b) to produce a gaseous stream comprising H_2S and water vapor and a solution of reduced alkali metal sulfide content;

(e) withdrawing said solution from said stripping zone and introducing it into a second carbonation zone and reacting it with substantially pure gaseous CO_2 to precipitate bicarbonate crystals and produce an offgas containing a major amount of CO_2 and a minor amount of H_2S;

(f) recovering said offgas from said second carbonation zone for use in said first carbonation zone;

(g) removing the bicarbonate crystal-containing solution from said second carbonation zone and recovering the crystals to produce a substantially crystal-free solution; and

(h) thermally decomposing the recovered crystals from step (g) to produce an alkali metal carbonate product, and a substantially pure CO_2 offgas for use in the second carbonation zone.

4,083,931

PROCESS FOR TREATING ALDOL-CONDENSATION POLYOL WASTE LIQUOR

Fu-Ming Lee, Toledo, Ohio, assignor to Industrial Sales and Factoring Corporation, Toledo, Ohio

Filed Aug. 23, 1976, Ser. No. 716,555
Int. Cl.[2] C07C *29/24, 53/08;* C01D *15/06*
U.S. Cl. 423—199 **2 Claims**

1. A process for treating and recovering components from aldol-condensation polyol waste liquor containing sodium formate, water, polyol, and organic by-products comprising:

B. Adding, while maintaining the temperature below about 30° C, a stoichiometric excess of methanol and sulfuric acid, based on the sodium formate content, to the mother liquir from Step A, to form a reaction mixture which is capable of forming methyl formate when heated to 30°–100° C;

C. distilling the mixture of Step B at about 30° to 100° C. and recovering methyl formate as a substantially pure liquid;

D. introducing sodium hydroxide to the bottom residue of Step C to increase the pH to about 6.5 to 7.0;

E. cooling to below about 25° C. so as to precipitate $Na_2SO_4.10H_2O$, polyol and organics;

F. adding water to the solid product of Step E at about 30° to 40° C. so as to separate sodium sulfate solution from solid polyol and organics; and

G. cooling the sodium sulfate solution from Step F to precipitate substantially pure $Na_2SO_4.10H_2O$.

4,083,932

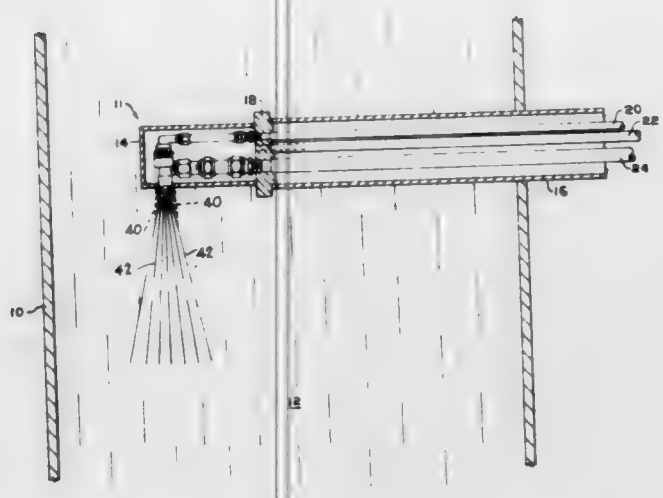
METHOD AND APPARATUS FOR TREATING GASES

John M. Muraco; Lonnie V. Hege, and David G. Miller, all of Lexington, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 685,584, May 12, 1976. This application Jan. 18, 1977, Ser. No. 760,304
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—210 **6 Claims**

1. A method for treating a gaseous stream containing acidic

components comprising introducing said gaseous stream into a gas-liquid contact zone, flowing said stream through said zone, passing a gaseous fluid and a liquid fluid into a spray nozzle having a nozzle cap connected thereto, mixing said gaseous fluid and said fluid in said nozzle to produce a spray mist, locating said nozzle within a housing, said housing including an opening therein, extending said nozzle cap through said opening in said housing and into said zone, pressurizing said housing



with a gas, flowing said spray mist through said nozzle cap into said zone, passing said gas from said housing through said opening in a generally cylindrical path around said nozzle cap and into said zone, at a rate of flow and a pressure sufficient to prevent the flow of said acidic gas stream into said housing and over the surfaces of said nozzle cap, thereby preventing said gaseous stream from entering said housing and shrouding said nozzle cap from said gaseous stream, and removing from the zone a gas stream substantially reduced in acidic components.

4,083,933

PROCESS FOR PREPARING $AlH_3(PO_4)_2 \cdot 3H_2O$

Albert Schlegel, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 543,496, Jan. 23, 1975, Pat. No. 4,021,528. This application Jul. 1, 1976, Ser. No. 701,817

Claims priority, application Germany, Jan. 26, 1974, 2403707; Jul. 12, 1975, 2531258

The portion of the term of this patent subsequent to May 3, 1994, has been disclaimed.

Int. Cl.² C01B *15/16, 25/26*

U.S. Cl. 423—308 **26 Claims**

1. A process for preparing crystalline $AlH_3(PO_4)_2 \cdot 3H_2O$ by crystallization from an aqueous solution which comprises first preparing a solution containing water, an organic solvent miscible with water and aluminum phosphate having a molar ratio of $Al_2O_3:P_2O_5$ of from 1:2 to 1:6, and subsequently crystallizing $AlH_3(PO_4)_2 \cdot 3H_2O$ from said solution, and recovering crystalline $AlH_3(PO_4)_2 \cdot 3H_2O$.

4,083,934

PROCESS FOR OBTAINING PURE ORTHOPHOSPHORIC ACID FROM SUPERPHOSPHORIC ACID

John D. Jernigan, and Brooks M. Whitehurst, both of New Bern, N.C., assignors to Texasgulf Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 577,908, May 15, 1975, abandoned. This application Jan. 18, 1977, Ser. No. 760,261

Int. Cl.² C01B *25/16*

U.S. Cl. 423—317 **18 Claims**

1. A process for obtaining pure orthophosphoric acid from superphosphoric acid comprising:

(a) hydrolyzing superphosphoric acid with water until a mixture of polyphosphoric acids and orthophosphoric acid is formed, wherein the total P_2O_5 content of said mixture is from 65% to 70% and the poly P_2O_5 content of said mixture is from 1% to 15% of the total P_2O_5;

(b) crystallizing said orthophosphoric acid from said mixture;

(c) separating said orthophosphoric acid from said mixture; and

(d) washing said orthophosphoric acid with an organic solvent selected from the group consisting of alcohols having six to nine carbon atoms and hydrocarbons having a low or limited solubility for orthophosphoric acid.

4,083,935

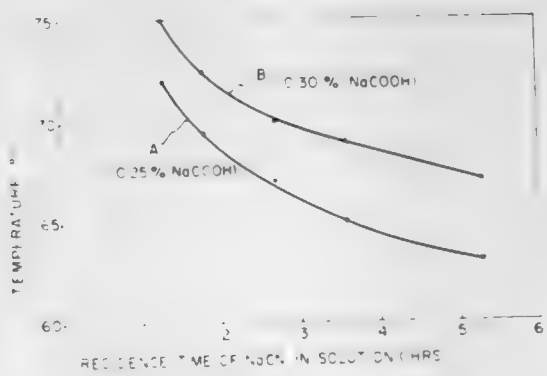
SODIUM CYANIDE CRYSTALLIZATION PROCESS CONTROL

Kamel Michel Makar, Memphis, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 712,699, Aug. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 515,964, Oct. 18, 1974, abandoned. This application May 24, 1977, Ser. No. 800,064

Int. Cl.² C01C *3/10*

U.S. Cl. 423—379 **4 Claims**



1. A control technique for a process of producing crystalline sodium cyanide containing no more than about 0.3% by weight sodium formate and with between about 35 and 60% of the crystals of sodium cyanide being larger than 80 μ in cross section by contacting sodium hydroxide with hydrogen cyanide and crystallizing said sodium cyanide in an aqueous solution containing an excess of about 0.2% to 3.0% by weight of sodium hydroxide over the stoichiometric amount needed for reaction with the hydrogen cyanide, said contacting and crystallizing taking place at subatmospheric pressures, said control technique comprising

maintaining said aqueous solution during said contacting and said crystallizing within a temperature range indicated for the residence time of sodium cyanide in solution between curves A and B of FIG. 3 of the drawing.

4,083,936

MANUFACTURE OF PHOSPHORIC ACID USING ACID PHOSPHATE ESTER ANTIFOAMING COMPOSITIONS

Fred E. Woodward, 200 Churchill Rd., West Palm Beach, Fla. 33405

Filed Sep. 19, 1975, Ser. No. 615,177

Int. Cl.² C01B *25/16*

U.S. Cl. 423—320 **6 Claims**

1. In the process of converting naturally occurring phosphate rock to phosphoric acid by reaction thereof with sulfuric acid, the improvement comprising adding to said reaction mixture a defoaming agent comprising a mixture of the acid phosphate esters of C_6 to C_{12} aliphatic alcohols and C_{14} to C_{26} aliphatic alcohols in which the mixture of said phosphate esters contains at least 25% of the C_{14} to C_{26} alcohol ester.

4,083,937

PROCESS FOR PREPARING PURE PHOSPHORIC ACID

Itaru Toshimitsu; Sakumi Fujii; Masao Uchida, and Yoshio Fujii, all of Shin-Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 594,355, Jul. 9, 1975, abandoned. This application Dec. 14, 1976, Ser. No. 750,371
Claims priority, application Japan, Jul. 9, 1974, 49-77773
Int. Cl.[2] C01B *25/16*
U.S. Cl. 423—321 R 10 Claims

1. In a process for preparing and purifying phosphoric acid whereby phosphate rock containing silica impurities is treated with sulfuric acid or hydrochloric acid to prepare a crude phosphoric acid containing silica, fluorine and chlorine impurities and wherein said crude acid is solvent extracted with an organic solvent to prepare an extracted aqueous phosphoric acid solution reduced in fluorine and silica impurites but whose residual fluorine/silicon content ratio is also decreased, which is then concentrated, the improvement which comprises:

mixing a fluorine compound with said extracted aqueous phosphoric acid solution of a form such that it reacts with said SiO_2 in the extracted phosphoric acid solution and in an amount such that the atomic ratio of F/Si is greater than 4, thereby converting said silica to SiF_4, and concentrating the mixture by evaporating water under a reduced pressure whereby significant quantities of Si, F and Cl impurities are vaporized;

contacting the concentrated phosphoric acid solution with steam or hot air to vaporize the remaining Si, F and Cl impurities such that the concentration levels of Si, F and Cl remaining in the acid are less than 20 ppm, 5 ppm and 1 ppm, respectively, thereby obtaining a purified phosphoric acid solution.

4,083,938

PROCESS FOR THE PRODUCTION OF SILICOFORMIC CYANIDE AND SILICOFORMIC DICYANIDE

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 757,960, Jan. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 701,142, Jun. 30, 1976, abandoned. This application Sep. 23, 1977, Ser. No. 835,902
Int. Cl.[2] C01B *33/00*
U.S. Cl. 423—325 2 Claims

1. The method of producing silicoformic cyanide (h_3SiO_2CN) and silicoformic dicyanide $H_2SiO_2(CN)_2$ by the following steps:

(a) adding about 60 parts by weight of granular silicoformic acid to about 10 to 600 parts by weight of water;

(b) adding about 2 to 10 parts by weight of an alkali catalyst selected from the group consisting of sodium carbonate, sodium cyanide, potassium cyanide and barium cyanide;

(c) adding hydrogen cyanide slowly to said mixture while agitating for 60 to 100 minutes at ambient temperature and pressure until 50 to 60 parts by weight have been added, thereby

(d) producing brown granules of silicoformic cyanide and silicoformic dicyanide.

4,083,939

USE OF TRIBUTOXYETHYLPHOSPHATE TO CONTROL FOAM IN THE PRODUCTION OF SODA ASH FROM TRONA

Walter Lobunez, Princeton; Joseph M. Ilardi, South Brunswick; R. Martin Wright, East Brunswick, all of N.J., and Allan P. Herring, Green River, Wyo., assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 765,148, Feb. 3, 1977, abandoned. This application Mar. 22, 1977, Ser. No. 779,958
Int. Cl.[2] C01D *7/00;* B01D *19/02*
U.S. Cl. 423—421 3 Claims

1. In the evaporative crystallization of an aqueous sodium carbonate solution to produce sodium carbonate monohydrate, the improvement of reducing foaming which comprises carrying out the crystallization in the presence of an effective amount of tributoxyethylphosphate as an antifoaming agent.

4,083,940

COAL PURIFICATION AND ELECTRODE FORMATION

Subodh K. Das, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 23, 1976, Ser. No. 660,704
Int. Cl.[2] C01B *31/02;* C09C *1/48, 1/56;* C10G *29/04*
U.S. Cl. 423—449 21 Claims

1. A method of removing impurites from coal comprising:

(a) providing an aqueous leaching solution containing at least one oxidizing agent selected from the group consisting of HNO_3, H_2O_2 and $Fe_2(SO_4)_3$, and 0.5 to 10 wt. % hydrofluoric acid, the remainder essentially water;

(b) contacting said coal with said solution to form a slurry having a solution to coal ratio in the range of 5:1 to 20:1, said contacting time being for a period in the range of 15 to 120 minutes at a temperature in the range of 20° to 100° C;

(c) mixing said slurry with a gaseous media selected from the group consisting of air, oxygen and nitrogen;

(d) separating said coal from said solution; and

(e) washing said coal with water to provide purified coal.

4,083,941

PURIFICATION OF ANHYDROUS HYDROGEN FLUORIDE

Madhusudan Dattatraya Jayawant, Hockessin, Del., and Geoffrey Walsh Meadows, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 18, 1977, Ser. No. 788,670
Int. Cl.[2] C01B *7/22*
U.S. Cl. 423—488 16 Claims

1. A process for the preparation of pure anhydrous hydrogen fluoride with reduced arsenic and sulfite impurities consisting essentially of (1) contacting in equipment inert thereto anhydrous hydrogen fluoride having arsenic and sulfite impurities with (a) at least 2.3% by weight of H_2SO_3 based on the anhydrous hydrogen fluoride or (b) at least 0.7% by weight based on the anhydrous hydrogen fluoride of hydrogen peroxide and either at least 0.6% by weight of methanol based on the anhydrous hydrogen fluoride or at least 1 mole of sulfuric acid per mole of hydrogen peroxide, at a temperature of from 0° to 75° C, (2) distilling the resulting mixture and (3) recovering a high purity anhydrous hydrogen fluoride with arsenic and sulfite impurities of 0.03 ppm or less and 3 ppm or less respectively.

4,083,942

PROCESS FOR PRODUCING METAL BROMIDES

David C. Sanders, W. Lafayette, Ind., assignor to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed Mar. 3, 1977, Ser. No. 773,851
Int. Cl.[2] C01F *11/34;* C01D *3/10;* C01B *31/20*
U.S. Cl. 423—497 14 Claims

1. A stable process for preparing metal bromides without excessive foaming comprising the steps of:

reacting a less than equivalent amount of a basic compound of a metal selected from the group consisting of alkali and alkaline earth metals with formic acid in the presence of water to form a reaction mixture at a pH of less than 7.0 and in which the hydroxyl sites of the compound have been converted to formates;

thereafter adding stepwise alternate incremental portions of bromine and the basic compound while maintaining the pH less than 7.0 until the reaction is complete in order to control evolution of carbon dioxide.

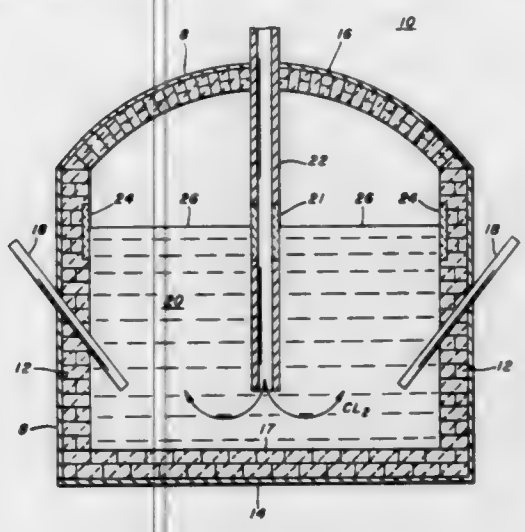
2. A process, as claimed in claim 1, wherein the metal is calcium and the compound is calcium hydroxide.

4,083,943

PRODUCTION OF MAGNESIUM CHLORIDE

Donald L. Kinosz, Lower Burrell, and Warren E. Haupin, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 14, 1976, Ser. No. 750,561
Int. Cl.[2] C01F *5/32*; C25C *3/04*
U.S. Cl. 423—498 4 Claims



1. An improved process for the production of magnesium chloride from a molten mixture containing magnesium oxide, magnesium chloride and a reducing agent, comprising chlorinating the magnesium oxide in a chamber for holding the molten mixture, the chamber employing a refractory lining, at least a portion thereof adjacent the molten mixture surface formed from a nitride-based refractory selected from the group consisting of silicon oxynitride, silicon nitride bonded fused silica, silicon nitride and boron nitride, the refractory characterized by being essentially free of carbonaceous residue and being resistant to attack by the mixture and gases emanating therefrom.

4,083,944

REGENERATIVE PROCESS FOR FLUE GAS DESULFURIZATION

Franklin S. Chalmers, Cleveland, Ohio, assignor to Arthur G. McKee & Company, Independence, Ohio

Filed Dec. 17, 1976, Ser. No. 751,658
Int. Cl.[2] C01B *17/04*
U.S. Cl. 423—567 A 24 Claims

1. A method for removing sulfur dioxide from sulfur dioxide-containing gaseous emission having entrained solid contaminants therein, which method comprises:

absorbing said sulfur dioxide and undissolved entrained solid contaminants in an acidic aqueous buffered absorbent from said gaseous emission in an absorption zone;

separating undissolved entrained solid contaminants from said sulfur dioxide-containing buffered absorbent,

passing to a sulfur precipitation and absorbent regeneration zone at least a portion of the sulfur dioxide-containing buffered absorbent from which undissolved entrained solid contaminants have been separated,

introducing into said sulfur dioxide-containing buffered absorbent in said sulfur precipitation and absorbent regeneration zone sulfide ion in an amount sufficient to precipitate sulfur as elemental sulfur from said sulfur dioxide-containing buffered absorbent,

heating said precipitated elemental sulfur along with said buffered absorbent and entrained precipitated solid impurities under conditions that melt said elemental sulfur while substantially suppressing vaporization of said buffered absorbent,

maintaining said heating and said conditions to cause said elemental sulfur to remain molten for a sufficient period of time to allow phase separation by gravity of molten sulfur from buffered absorbent, of solid impurities from buffered absorbent, and solid impurities from molten sulfur, and

recovering essentially pure elemental sulfur from a lower separated phase.

4,083,945

PROCESS FOR THE TREATMENT OF HYDROGEN SULFIDE GAS STREAMS

Donald M. Fenton, Anaheim, and Byron B. Woertz, Claremont, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Jan. 10, 1977, Ser. No. 758,041
Int. Cl.[2] C01B *17/04*
U.S. Cl. 423—573 R 14 Claims

1. In the process for treating a hydrogen sulfide containing gas by contact with an alkaline aqueous washing solution containing a regenerable oxidizing agent to oxidize the hydrogen sulfide to sulfur and to yield an effluent gas of reduced sulfur content, the washing solution being thereafter contacted with an oxygen containing gas to regenerate the washing solution prior to its recirculation back to the gascontacting step, and thiosulfate salts are formed in said solution, the improvement comprising the steps of:

maintaining a soluble aldehyde in said washing solution in an amount effective to oxidize to a sulfate at least a portion of the thiosulfate salt content of said washing solution, said aldehyde being selected from the group consisting of the formaldehyde, acetaldehyde, propionaldehyde, butyraldehyde, glyoxal, acrolein, crotonaldehyde, trioxane, tetraoxymethylene, paraformaldehyde, 2-hydroxybutyraldehyde, methacrolein, phthalic aldehyde, phthalic acid aldehyde, water-soluble substituted products thereof and water-soluble mixtures thereof; and

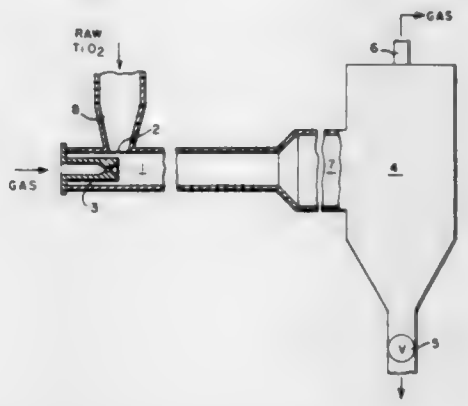
recovering said sulfate from said washing solution.

4,083,946

PROCESS FOR REMOVING CHLORIDE IMPURITIES FROM TiO_2

George Alan Schurr, Newark, and Hans-Achim Dietmar Wildt, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 23, 1977, Ser. No. 780,341
Int. Cl.[2] C01G *23/04*
U.S. Cl. 423—613 10 Claims



1. A process for removing chloride impurities from TiO_2 which has been produced by the vapor phase oxidation of $TiCl_4$ at elevated temperatures, comprising:

A. feeding the TiO_2 into the treatment chamber

B. injecting a gas selected from steam, air, and nitrogen or a mixture thereof at a sonic or a supersonic velocity into the treatment chamber directly in the TiO_2 feed stream and directing the gas so that it flows crosscurrently into the TiO_2 such that the gas creates a pressure difference which draws the TiO_2 into the treatment chamber for 0.1 to 5 seconds, whereby the gas causes the TiO_2 to disperse into discrete particles, and causes the chloride impurities to separate from the particles, wherein the initial gas pressure

is about 25–600 psi and its temperature is about 140°–650° C., and the weight ratio of gas to TiO_2 is 0.2–6.0, and

C. separating the TiO_2 from the gas and chlorides using a cyclone or a bag filter.

4,083,947

ORGAN VISUALIZATION

Reginald Monks, and Anthony Leonard Mark Riley, both of Amersham, England, assignors to The Radiochemical Centre Limited, England

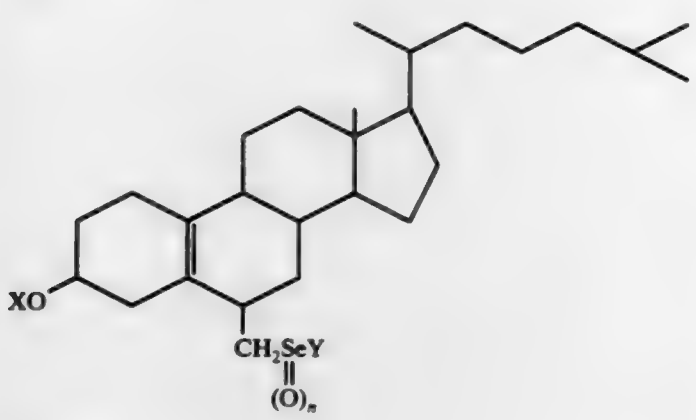
Filed Jun. 22, 1976, Ser. No. 698,606

Claims priority, application United Kingdom, Jul. 2, 1975, 27947/75

Int. Cl.[2] A61K *43/00, 29/00*

U.S. Cl. 424—1 **7 Claims**

1. Selenium derivatives of steroids having the general formula



(I)

where

X is hydrogen or acyl,

Y is hydrocarbon containing up to 30 carbon atoms

n is 0 or 1.

4,083,948

BENZODIAZEPINE RADIOIMMUNOASSAY USING I125-LABEL

Raymond Vincent Davis, and Rodney Ian Fryer, both of North Caldwell, N.J., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

Filed Apr. 4, 1977, Ser. No. 784,101

Int. Cl.[2] A61K *43/00;* **G01N** *33/16;* **C07G** *7/00*

U.S. Cl. 424—1 **15 Claims**

1. In a method for the radioimmunoassy for a 1,4-benzodiazepine compound or metabolites thereof in a sample, which method comprises mixing said sample with a known amount of a labelled 1,4-benzodiazepine compound and an antibody which will selectively bind said 1,4-benzodiazepine compound and said labelled 1,4-benzodiazepine compound, measuring the degree of binding of the said labelled 1,4-benzodiazepine compound to said antibody, and determining the amount of said 1,4-benzodiazepine compound in said sample by comparing said degree of binding to a standard curve;

the improvement which comprises utilizing a ^{125}I-4'-hydroxy-1,4-benzodiazepine as said labelled compound.

4,083,949

NEW ORAL FORM OF MEDICAMENT AND A METHOD FOR PRODUCING IT

Gerald Benedikt, Constance, Germany, assignor to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Germany

Filed Jul. 8, 1974, Ser. No. 486,432

Claims priority, application Germany, Jul. 17, 1973, 2336218

Int. Cl.[2] A61K *9/22, 9/36*

U.S. Cl. 424—19 **15 Claims**

1. A therapeutically-useful and pharmacologically-acceptable oral depot medicament form comprising substantially uniformly-sized spheroidal medicament particals, each of which is provided with a dialysis membrane and has a diameter of between 0.1 and 2 millimeters, the dialysis membrane having a film-forming component which comprises

(a) from 15 to 70 percent by weight of a cellulose ether, selected from the group consisting of methyl cellulose, ethyl cellulose and propyl cellulose, which is insoluble in the pH range of the gastrointestinal tract, which is not enzymatically degraded, which has an alkoxy-group content of from 43 to 50 percent by weight, and which has a viscosity of from about 7 to 100 centipoises in a 5 percent by weight toluene-ethanol mixture (80:20 parts by weight) at 25° C and

(b) from 85 to 30 percent by weight of an organic-compound component which is substantially only soluble in the alkaline pH range of the intestinal tract, which contains from 5 to 40 percent by weight of free carboxyl groups, and which comprises at least one organic compound selected from the group consisting of palmitic acid, myristic acid and stearic acid.

4,083,950

STABLE ACETYLSALICYLIC ACID AND PHENYLPROPANOLAMINE SALT COMPOSITION

Ronald Nash Duvall, and Gerald Gold, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 8, 1976, Ser. No. 664,685

Int. Cl.[2] A61K *9/00, 31/615*

U.S. Cl. 424—44 **6 Claims**

1. A stable medicinal composition comprising a substantially uniform mixture of from about 80 to 650 mg. acetylsalicylic acid and from about 5 to 60 mg. of a bitartrate or tartrate salt of phenylpropanolamine or a mixture of such salts in direct contact with the acetylsalicylic acid.

4,083,951

PHARMACEUTICAL COMPOSITION

Alexander Crossan Goudie, Harlow; Harry Seager, Pulborough, and Howard Fisher, Worthing, all of England, assignors to Beecham Group Limited, Great Britain

Filed Apr. 29, 1977, Ser. No. 792,118

Claims priority, application United Kingdom, May 5, 1976, 18329/76

Int. Cl.[2] A61K *31/60;* **A61L** *9/04*

U.S. Cl. 424—44 **27 Claims**

1. An orally administrable pharmaceutical composition which contains acetyl salicylic acid or a salt thereof and a ferrous salt which composition contains from 1 to 7 equivalents of acetyl salicylate per equivalent of ferrous ion.

4,083,952

SUBSTITUTED AURONES

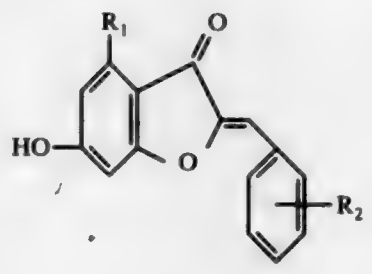
Kenneth M. Snader, Hatboro, Pa., and Chester R. Willis, Blackwood, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 475,726, Jun. 3, 1974, Pat. No. 3,975,380. This application May 17, 1976, Ser. No. 687,057

Int. Cl.[2] A61K *31/34;* **A61L** *9/04*

U.S. Cl. 424—45 **9 Claims**

1. A pharmaceutical composition for inhibiting the symptoms of asthma comprising a pharmaceutical carrier and an amount sufficient to produce said inhibition of a chemical compound of the formula:



wherein:
R_1 is hydrogen or hydroxy; and
R_2 is fluorine.

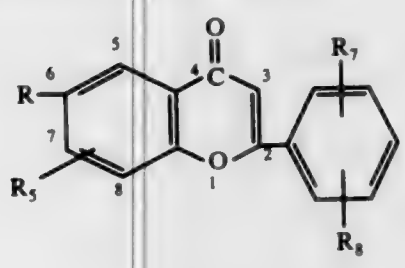
4,083,953

PHARMACEUTICAL COMPOSITION CONTAINING 5:6-BENZO-γ-PYRONE DERIVATIVES AND METHOD OF USE THEREOF

Gianfederico Doria; Pier Nicola Giraldi; Francesco Lauria; Maria Luisa Corno, all of Milan; Piero Sberze, Varese, and Marcello Tibolla, Milan, all of Italy, assignors to Carlo Erba, S.p.A., Milan, Italy

Division of Ser. No. 660,383, Feb. 23, 1976, Pat. No. 4,065,467, which is a continuation of Ser. No. 536,476, Dec. 26, 1974, abandoned. This application Oct. 27, 1976, Ser. No. 736,207
Claims priority, application Italy, Dec. 27, 1973, 32089 A/73; Jul. 4, 1974, 24777 A/74; Jul. 17, 1974, 25244 A/74
Int. Cl.[2] A61K *31/35*
U.S. Cl. 424—45 11 Claims

1. A pharmaceutical composition suitable for the treatment of allergies, said composition in the form of a tablet, pill, capsule, cream or paste which comprises a suitable carrier for oral or topical administration and a pharmaceutically effective amount of compound having the formula:



wherein
R is a carboxy group or a group $—COOR_{13}$, wherein R_{13} is C_1–C_{12} alkyl;
R_5 is hydrogen, allyl or propyl;
each of R_7 and R_8, which may be the same or different, is hydrogen or a radical $—(O)_m—R_{14}$, wherein *m* is zero or 1 and R_{14} is a C_1–C_6 alkyl group, which is unsubstituted or substituted with hydroxy or C_1–C_6 alkoxy;
and a pharmaceutically acceptable salt thereof.

4,083,954

AEROSOL COMPOSITION

Yoshimi Tsuchiya, Yachiyo; Yoshinori Naganuma, Hoya, and Haruhiko Arai, Narashino, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 670,856, Mar. 26, 1976, abandoned. This application Dec. 16, 1976, Ser. No. 751,163
Claims priority, application Japan, Apr. 4, 1975, 50-40847
Int. Cl.[2] A61K *7/00*
U.S. Cl. 424—47 16 Claims

1. A pressurized container having a discharge valve and charged with a self-propelling composition, said composition being separated in two phases when said container is allowed to stand, forming a stable homogeneous emulsion of said two phases in said container when said container is shaken and being dispensed in an aerosol mist form when said discharge valve is opened, said composition consisting essentially of
A. 15 to 80 wt.% of a liquid propellant effective for discharging an aerosol of said composition when said discharge valve is opened and
B. 85 to 20 wt.% of a liquid consisting essentially of
i. 30 to 80 wt.%, based on the weight of B, of an alkanol having one to 3 carbon atoms,
ii. 0.05 to 1.0 wt.%, based on the weight of B, of an emulsifier consisting of an adduct of 1 to 300 moles of ethylene oxide to a substance selected from the group consisting of castor oil, hydrogenated castor oil and lanolin,
iii. 0.01 to 20 wt.%, based on the weight of B, of an active component or a mixture of active components and
iv. the balance is water.

4,083,955

PROCESSES AND COMPOSITIONS FOR REMINERALIZATION OF DENTAL ENAMEL

Robert John Grabenstetter, Colerain Township, Hamilton County, and John Augustus Gray, III, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 561,830, Apr. 2, 1975, abandoned, which is a continuation of Ser. No. 438,973, Feb. 4, 1974, abandoned, which is a continuation-in-part of Ser. No. 297,517, Oct. 13, 1972, abandoned. This application Apr. 19, 1976, Ser. No. 677,933
Int. Cl.[2] A61K *7/16, 7/18;* A01N *11/00;* A61K *33/16*
U.S. Cl. 424—49 15 Claims

1. Process for remineralizing demineralized subsurface of the tooth with a precipitate bound to the tooth structure, said process comprising the steps of applying first ions to the tooth surface so that said first ions diffuse through the tooth surface to demineralized subsurface and thereafter applying second ions to the tooth surface so that said second ions diffuse through the tooth surface to demineralized subsurface and form a precipitate with previously applied first ions at said subsurface, said first ions comprising one of either calcium ions or phosphate ions, said second ions comprising the other of either calcium ions or phosphate ions, said calcium ions being applied in the form of a solution comprising from about 0.005 to about 10% of a water-soluble calcium salt which is compatible in the oral environment, said phosphate ions being applied in the form of a solution comprising from about 0.005 to about 10% of a water-soluble phosphate salt which is compatible in the oral environment, each of the applications being carried out for a time period consistent with normal dental care habits on the order of about 10 to about 30 seconds.

4,083,956

ANHYDROUS ANTIPERSPIRANT CREAMS

David Lee Shelton, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 29, 1976, Ser. No. 681,319
Int. Cl.[2] A61K *7/34, 7/38*
U.S. Cl. 424—66 11 Claims

1. A substantially anhydrous antiperspirant composition in the form of a cream resistant to syneresis, said composition comprising:
A. from about 30.0% to 60.0% by weight of a liquid organic emollient material;
B. from about 3.0% to 9.0% by weight of an inorganic clay suspending/thickening agent suitable for forming a thixotropic cream in admixture with said emollient;
C. from about 1.0% to 3.0% by weight of a gel promoting agent selected from the group consisting of an alkanol containing from 1 to 5 carbon atoms, acetone, propylene carbonate and mixtures thereof; and
D. from about 20.0% to 45.0% by weight of a solid impalpable particulate astringent antiperspirant material suspended throughout said composition.

4,083,957

PROCESS FOR THE ALTERATION OF THE SEX-RATIO OF MAMMALS

John L. Lang, P.O. Box 1242, Midland, Mich. 48640

Continuation-in-part of Ser. No. 491,881, Jul. 26, 1974, abandoned, which is a continuation-in-part of Ser. No. 272,343, Jul. 17, 1972, abandoned, Ser. No. 224,225, Feb. 17, 1972, abandoned, and Ser. No. 874,405, Nov. 5, 1969, abandoned, each is a continuation of Ser. No. 653,670, Jul. 17, 1967, abandoned, which is a continuation-in-part of Ser. No. 222,638, Sep. 7, 1962, abandoned. This application Feb. 4, 1976, Ser. No. 655,237
Int. Cl.[2] A61K *31/74*
U.S. Cl. 424—78 20 Claims

1. In a process for altering the sex ratio of mammals in which process live spermatozoa are treated in order to separate them into two groups each of which comprises a predominance of spermatozoa having only one sex bearing characteristic,

the steps of:

preparing a substantially isotonic solution for diluting and maintaining the life of spermatozoa of a given species,

obtaining a sample of live spermatozoa of that species which sample has a substantially normal male-to-female ratio,

admixing the sample and the solution and subjecting the sample in said solution to an effective amount of polyelectrostatic charge-bearing material which is, in itself, a non-conductor of electrocity and which provides a multiplicity of electrostatically charged sites predominantly of one electrostatic sign,

controlling the solution, with respect to its pH and the ionic environment it provides for the spermatozoa and the materials, substantially to maintain the spermatozoa in an electrostatically charged state in which the spermatozoa of one sex have an effective electrostatic charge opposite to that of the other sex in substantially the same ratio as is found in nature, and to maintain the poly-electrostatic charge-bearing material in a state in which together with ions in the solution it provides a predominance of charged sites of only one electrostatic sign, whereby spermatozoa of one of said groups become attached to said poly-electrostatic charge-bearing material,

thereby separating the spermatozoa into a fraction in which the spermatozoa are handicapped in their ability to move freely and into another fraction in which the spermatozoa are freely mobile and more capable to move to the ova, thus enhancing the probability of fertilizing ova with spermatozoa of only one of said groups.

4,083,958

INACTIVATED EQUINE RHINOPNEUMONITIS VIRUS VACCINE AND USE THEREOF

John T. Bryans, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Sep. 13, 1976, Ser. No. 722,817
Int. Cl.[2] A61K *39/12*
U.S. Cl. 424—89 9 Claims

1. A vaccination method against disease caused by equine rhinopneumonitis virus in horses which comprises (a) vaccinating young female horses at any age past the time they reach their sixth month of age and revaccinating them at appropriate intervals until the females reach breeding age and become pregnant and (b) vaccinating the pregnant mares during their pregnancy and during subsequent pregnancies with an adjuvanted, inactivated vaccine prepared by:

propagating a virulent, immunogenically typical equine rhinopneumonitis virus in a susceptible, cloned, diploid equine cell line that contains no equine blood cell antigens, and causing the virus to be released into a serum-free medium;

harvesting virus from the cell culture, inactivating the virus, neutralizing the inactivating agent, concentrating the virus and adding an oil based immunological adjuvant thereto.

4,083,959

THERAPEUTICAL METHOD FOR TREATING INFECTION OF MINK HEMORRHAGIC PNEUMONITIS

Yuzuru Homma, Tokyo; Takeshi Shimizu, Kodaira, and Kazuo Okada, Tokyo, all of Japan, assignors to President of the University of Tokyo, Tokyo, Japan

Filed Mar. 8, 1976, Ser. No. 664,836
Claims priority, application Japan, Mar. 12, 1975, 50-29104
Int. Cl.[2] A61K *39/02*
U.S. Cl. 424—92 1 Claim

1. Therapeutic method of treating mink infection caused by *Pseudomonas aeruginosa,* comprising the steps of administering 5 to 500 μg/kg of a therapeutic preparation mainly composed of protein of *Pseudomonas aeruginosa* having vaccine activity to mink.

4,083,960

METHOD OF PREVENTING DIARRHEA FOR YOUNG PIG AND CALF

Kiyoshi Yamashita, Kawagoe, and Hidehiko Kudo, Chiba, both of Tokyo, Japan, assignors to Kaken Chemical Co., Ltd. and Godoshusei Company, Limited, both of, Japan

Filed Jan. 27, 1977, Ser. No. 763,242
Claims priority, application Japan, Feb. 16, 1976, 51-14831
Int. Cl.[2] A61K *37/48*
U.S. Cl. 424—94 7 Claims

1. A method of preventing diarrhea in suckling or weaning pigs or calves which comprises orally administering an effective amount of β-galactosidase to said pigs or calves during at least a portion of the lacteal or weaning periods.

4,083,961

PLASMINOGEN ACTIVATOR PHARMACEUTICAL COMPOSITIONS

Lucien Dussourdd'Hinterland, Castres; Lucien Pradayrol, Toulouse; Jacques Durand, and Gerard Normier, both of Castres, all of France, assignors to Pierre Fabre S.A., Paris, France

Filed May 3, 1976, Ser. No. 682,283
Claims priority, application France, May 5, 1975, 75 13932
Int. Cl.[2] A61K *35/12, 31/715*
U.S. Cl. 424—95 11 Claims

1. A pharmaceutical composition consisting essentially of a plasminogen activator obtained by a process comprising the following steps:

(a) suspending a powdered acetone extract of animal organs in an aqueous saline solution having a low ionic strength and a pH around the neutral point;

(b) taking up the precipitate obtained in step (a) in an aqueous saline solution having an ionic strength of from about 0.6 to about 1 at pH-valves from about 3 to about 5;

(c) precipitating out from the solution obtained in step (b), after decantation thereof, by adding a salt or an organic solvent at a pH of from about 3 to 5;

(d) taking up the precipitate obtained in step (c) in water or a saline solution, followed by reprecipitation by adding a salt at a pH of, or slightly above 7;

(e) taking up the precipitate obtained in step (d) in water and dialysing the solution up to a resistivity level of about 1000 ohm. cm at 10° C and

(f) optionally purifying the solution obtained and adding a dextran sulfate in an amount effective to potentiate the plasminogen activator.

4,083,962

COCCIDIOCIDAL COMBINATIONS

Larry R. McDougald, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 670,486, Mar. 25, 1976. This application Mar. 14, 1977, Ser. No. 777,376
Int. Cl.[2] A61K *35/66*
U.S. Cl. 424—114 8 Claims

1. A coccidiocidal method for poultry which comprises

orally administering to the poultry a coccidiocidally-effective combination of from about 25 to about 50 ppm of monensin and from about 40 to about 45 ppm of A28086, together with a poultry feedstuff or drinking water.

4,083,963

POLYPEPTIDE ANTIBIOTIC PRODUCED BY A NEW SUBSPECIES OF STREPTOSPORANGIUM

Walter D. Celmer, New London; Walter P. Cullen, East Lyme; Charles E. Moppett, Mystic; John B. Routien, Lyme; Paul C. Watts, Mystic, all of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 1, 1977, Ser. No. 802,499

Int. Cl.[2] A61K *35/74*

U.S. Cl. 424—117 **4 Claims**

1. Antibiotic Compound 46,192 when in the crystalline form has a melting point of 210°-216° C., is soluble in chloroform, ethyl acetate, methylisobutyl ketone and insoluble in heptane; has absorption maxima in ethanol in the ultraviolet light region of the spectrum at 238 and 300–305$_{sh}$nm with $E_{1\,cm}^{1\%}$ values of 350 and 80, respectively; has the average composition by weight of 48.49% carbon, 5.05% hydrogen, 13.03% nitrogen, 10.88% sulfur and 22.55% oxygen (by difference); has an optical rotation of $[\alpha]_D = -129°$ at a concentration of 1% in chloroform; and when pelleted in KBr, exhibits characteristic absorption in the infrared region at the following wavelengths in microns: 2.97, 5.77, 6.02, 6.30, 6.6–6.75, 7.25, 8.25, 9.75 and 11.20.

4,083,964

ANTIBIOTIC A-35512 FOR INCREASING FEED UTILIZATION EFFICIENCY IN AN ANIMAL

Karl H. Michel, and Calvin E. Higgens, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 689,274, May 24, 1976, abandoned. This application Sep. 13, 1976, Ser. No. 722,936

Int. Cl.[2] A61K *35/74*

U.S. Cl. 424—118 **9 Claims**

1. A method of increasing feed-utilization efficiency in animals which comprises orally administering to said animal an amount which is effective to increase feed-utilization efficiency of a member selected from a group consisting of 1) A-35512 complex which is produced by cultivating *Streptomyces candidus* having the same identifying characteristics of NRRL 8156 in a culture medium containing assimilable sources of carbohydrate, nitrogen and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antibiotic activity is produced; 2) A-35512 factor A which is a white, amorphous, basic compound, having an approximate elemental composition of 54.29 percent carbon, 5.19 percent hydrogen, 5.58 percent nitrogen, 33.76 percent oxygen, and 1.69 percent chlorine; and which in its dihydrochloride form is a white amorphous compound which has these characteristics:

(a) an approximate elemental composition of 51.03 percent carbon, 5.10 percent hydrogen, 4.75 percent nitrogen, 34.20 percent oxygen, and 4.80 percent chlorine;

(b) an infrared absorption spectrum in KBr pellet with significant absorption maxima at the following frequencies (cm^{-1}): 3405 (strong), 3300 (shoulder), 2950 (weak), 1750 (weak), 1670 (strong), 1625 (shoulder), 1602 (strong), 1520 (strong), 1470 (weak), 1440 (weak), 1405 (weak), 1345 (shoulder), 1312 (medium), 1225 (medium), 1180 (weak), 1130 (weak), 1080 (strong), and 1020 (shoulder);

(c) ultraviolet absorption spectra, in acidic and neutral methanol, with an absorption maximum at 282 nm (ε 11,700) and, in basic methanol, an absorption maximum at 292 nm (ε 14,000), and with end absorption at 225 nm;

(d) a molecular weight of about 2106, as determined by titration;

(e) four titratable groups in 66% aqueous dimethylformamide with pK_a values of approximately 7.35, 9.09, 10.49, and 12.44;

(f) the following specific rotations:
$[\alpha]_D^{25}$ −100 (c 1, H_2O)
$[\alpha]_{365}^{25}$ −400 (c 1, H_2O);

(g) is soluble in water, partially soluble in methanol and ethanol, and insoluble in benzene, chloroform, acetone, diethyl ether, ethyl acetate, toluene, hexane, acetonitrile and dioxane;

(h) an amino-acid analysis indicating the presence of at least five amino-acid residues, one of which is glycine;

(i) an R_f value of approximately 0.21 on paper chromatography in a 1-butanol:pyridine:acetic acid:water (15:10:3:12) solvent system, using *Sarcina lutea* as the detection organism;

(j) a ^{13}C nuclear-magnetic-resonance spectrum in D_2O with the following characteristics:

No.	PPM	Height (%)
3	175.3	0.8
4	173.0	2.1
5	172.1	2.0
6	171.4	1.5
7	170.9	2.7
8	170.5	2.3
9	169.5	1.6
10	159.0	1.3
11	157.9	2.3
12	156.2	2.6
13	155.6	2.3
14	155.3	2.4
15	154.4	1.1
16	136.3	1.4
17	136.0	1.0
18	135.1	1.4
19	133.5	1.2
20	129.6	1.6
21	129.1	1.7
22	128.7	1.8
23	127.5	1.0
24	126.0	1.4
25	124.3	2.8
26	122.1	1.6
27	109.9	1.3
28	107.4	1.6
29	101.7	0.9
30	77.6	3.8
31	76.3	4.6
32	75.5	2.6
33	74.8	2.5
34	74.5	2.4
35	73.4	3.7
36	72.8	6.0
37	72.0	4.4
38	70.9	7.0
39	69.6	2.8
40	67.4	90.9*
41	65.4	1.7
42	61.7	3.1
43	56.7	1.7
44	55.5	1.3
45	54.7	0.8
46	24.6	0.9
47	19.1	1.7
48	17.9	2.0
49	17.2	1.9
50	16.7	3.2
51	16.2	3.0

(k) is stable for 72 hours in aqueous solutions having a pH of from about 3 to about 10;

(3) A-35512 factor B which is a white amorphous, basic compound having:

(a) an approximate elemental composition of 53.97 percent carbon, 4.75 percent hydrogen, 5.25 percent nitrogen, 34.29 percent oxygen, and 1.59 percent chlorine;

(b) ultraviolet absorption spectra, in acidic and neutral methanol, with an absorption maximum at 282 nm (ε 15000) and, in basic methanol, an absorption maximum at 292 nm (ε 16000);

(c) a molecular weight of about 2143, as determined by titration;

(d) four titratable groups in 66% aqueous dimethylformam-

ide with pK_a values of approximately 7.15, 8.81, 10.20, and 12.00;

(e) the following specific rotations;
$[\alpha]_D^{25} -123°$ (c 1, H_2O)
$[\alpha]_{365}^{25} -446°$ (c 1, H_2O);

(f) an empirical formula in the range of

$C_{97-99}H_{101-105}N_{8-9}O_{46-48}Cl$;

and which in its dihydrochloride form is a white, hydroscopic, crystalline compound (from 50 percent aqueous methanol) which has these characteristics:

(a') an approximate elemental composition of 52.57 percent carbon, 4.80 percent hydrogen, 5.66 percent nitrogen, 32.86 percent oxygen, and 4.51 percent chlorine;

(b') an infrared absorption spectrum in KBr pellet with significant absorption maxima at the following frequencies (cm^{-1}): 3420 (strong), 3300 (shoulder), 2950 (weak), 1752 (weak), 1675 (strong), 1630 (shoulder), 1605 (strong), 1520 (strong), 1470 (weak), 1440 (weak), 1410 (weak), 1345 (shoulder), 1312 (medium), 1225 (medium), 1180 (weak), 1135 (weak), 1080 strong), and 1020 (weak);

(c') ultraviolet absorption spectra, in acidic and neutral methanol, with an absorption maximum at 282 nm (ε 12,000) and, in basic methanol, an absorption maximum at 292 nm (ε 14,000), and with end absorption at 225 nm;

(d') a molecular weight of about 2027, as determined by titration;

(e') four titratable groups in 66% dimethylformamide with pK_a values of approximately 7.15, 8.87, 10.30, and 12.10;

(f') the following specific rotations:
$[\alpha]_D^{25} -128°$ (c 1, H_2O)
$[\alpha]_{365}^{25} -475°$ (c 1, H_2O);

(g') is soluble in water, partially soluble in methanol and ethanol, and insoluble in benzene, chloroform, acetone, diethyl ether, ethyl acetate, toluene, hexane, acetonitrile and dioxane;

(h') an amino-acid analysis indicating the presence of at least five amino-acid residues, one of which is glycine;

(i') an R_f value of approximately 0.34 on paper chromatography in a 1-butanol:pyridine:acetic acid:water (15:10:3:12) solvent system, using *Sarcina lutea* as the detection organism;

(j') a ^{13}C nuclear-magnetic-resonance spectrum in D_2O with the following characteristics:

No.	PPM	Height (%)
2	173.0	4.1
3	171.9	3.7
4	171.6	3.3
5	171.0	5.8
6	170.8	5.0
7	169.6	3.6
8	159.0	4.1
9	157.9	4.4
10	157.5	3.7
11	156.6	4.8
12	155.6	6.1
13	155.3	4.2
14	154.9	3.3
15	154.3	4.2
16	151.7	3.3
17	144.3	3.1
18	136.7	3.5
19	136.1	4.9
20	135.4	4.0
21	135.2	4.4
22	133.6	4.2
23	133.3	4.1
24	129.8	1.7
25	129.3	3.0
26	128.8	2.6
27	127.6	1.5
28	126.1	3.9
29	124.2	5.6
30	122.4	1.4
31	122.0	4.4
32	120.7	3.3
33	116.5	2.7

-continued

No.	PPM	Height (%)
34	109.5	0.8
35	108.2	1.1
36	107.7	2.7
37	104.5	1.7
38	101.8	2.9
39	100.9	1.6
40	98.3	1.0
41	76.9	1.2
42	76.1	1.8
43	74.1	2.0
44	73.5	2.7
45	72.7	2.4
46	72.3	4.0
47	71.0	7.1
48	70.3	2.5
49	69.7	2.5
51	64.6	1.2
52	62.0	1.5
53	58.0	1.3
54	56.8	1.7
55	55.4	3.9
56	54.3	2.5
57	24.5	2.0
58	17.9	3.0
59	17.2	2.0
60	16.3	2.5

(k') is stable for as much as 72 hours in aqueous solutions having a pH of from about 3 to about 10;

(l') an X-ray powder diffraction pattern (Cu^{++} radiation, 1.5405 λ, nickel filter) having the following interplanar spacings in angstroms (d):

d	Relative Intensity
17.15	100
12.90	80
10.85	70
9.25	70
8.87	60
8.22	50
7.86	50
6.93	40
6.20	40
5.62	40
5.04	05
4.02	02
3.54	02

(m') contains the following sugars: glucose, fucose, mannose, rhamnose, and 3-amino-2,3,6-trideoxy-3-C-methyl-L-xylo-hexopyranose;

(n') has at least one hydroxyl group capable of esterification;

(4) A-35512 factor C which is a white, amorphous, basic compound having:

(a) an approximate elemental composition of 53.93 percent carbon, 5.15 percent hydrogen, 5.80 percent nitrogen, 32.35 percent oxygen, and 1.90 percent chlorine;

(b) an empirical formula of approximately $C_{84}H_{99}N_8O_{38}Cl$, based on elemental composition;

(c) a molecular weight of approximately 1862; and which in its dihydrochloride form is a white amorphous compound which has these characteristics:

(a') an approximate elemental composition of 51.76 percent carbon, 5.07 percent hydrogen, 5.61 percent nitrogen, 30.29 percent oxygen, and 4.88 percent chlorine;

(b') an infrared absorption spectrum in KBr pellet with significant absorption maxima at the following frequencies (cm^{-1}): 3370 (strong), 3280 (shoulder), 3040 (shoulder), 2980 (shoulder), 2920 (weak), 1740 (weak), 1658 (strong), 1620 (weak), 1589 (medium), 1503 (strong), 1460 (weak), 1428 (medium), 1385 (weak), 1330 (weak), 1295 (medium), 1210 (strong), 1162 (medium), 1120 (weak), 1060 (strong), and 1005 (medium);

(c') ultraviolet absorption spectra with an absorption maximum, in acidic and neutral methanol, at 282 nm (ε 14,600) and, in basic methanol, at 292 nm (ε 16,400);

(d′) a molecular weight of about 1982, as determined by titration;
(e′) three titratable groups in 66% dimethylformamide with pK_a values of approximately 7.30, 8.92, and 10.99;
(f′) the following specific rotations:
$[\alpha]_D^{25} -161°$ (c 1.05, H_2O)
$[\alpha]_{365}^{25} -614°$ (c 1.05, H_2O);
(g′) is soluble in water, dimethyl sulfoxide, and aqueous dimethylformamide, partially soluble in methanol and ethanol, and insoluble in benzene, chloroform, acetone, diethyl ether, ethyl acetate, toluene, hexane, acetonitrile, and dioxane;
(h′) an amino-acid analysis indicating the presence of five amino-acid residues, one of which appears to be glycine;
(i′) an R_f value of approximately 0.46 on paper chromatography in a 1-butanol:pyridine:acetic acid:water (15:10:3:12) solvent system, using *Sarcina lutea* as the detection organism;
(j′) a ^{13}C nuclear-magnetic-resonance spectrum in D_2O with the following characteristics:

No.	PPM	Height (%)
1	172.9	2.5
2	172.2	2.0
3	171.5	2.2
4	171.0	3.9
5	169.6	2.0
6	158.6	1.8
7	157.8	3.0
8	156.5	2.1
9	156.1	2.8
10	155.6	4.2
11	154.6	3.9
12	151.1	1.5
13	143.3	1.4
14	136.0	3.2
15	135.4	2.7
16	133.2	3.7
17	128.7	2.3
18	126.5	3.1
19	124.6	2.1
20	129.3	2.7
21	121.5	2.2
22	120.1	1.2
23	118.0	1.7
24	116.5	1.2
25	107.8	2.7
26	104.5	1.9
27	101.7	1.9
28	94.5	1.0
29	75.9	3.0
30	74.3	2.0
31	73.4	2.3
32	72.1	3.5
33	70.9	4.3
34	68.7	2.9
36	64.3	1.3
37	62.2	1.6
38	56.1	1.4
39	55.2	3.5
40	54.2	2.1
41	24.3	1.9
42	17.9	2.2
43	17.1	2.0
44	16.2	2.0

(k′) is stable in aqueous solutions having a pH of from about 3 to about 10, for as long as 146 hours;
(l′) an empirical formula in the range of $C_{83-85}H_{97-101}N_8O_{37-39}Cl_3$ and an approximate empirical formula of $C_{84}H_{97}N_8O_{38}Cl.2HCl$, based on elemental composition;
(5) A-35512 factor E which is a white, amorphous, basic compound having an approximate elemental composition of 54.84 percent carbon, 4.73 percent hydrogen, 5.26 percent nitrogen, 32.67 percent oxygen, and 1.72 percent chlorine; and which in its hydrochloride form is a white amorphous compound which has these characteristics:
(a) an approximate elemental composition of 52.67 percent carbon, 4.59 percent hydrogen; 5.55 percent nitrogen, 33.51 percent oxygen, and 3.62 percent chlorine;
(b) an infrared absorption spectrum in KBr pellet with significant absorption maxima at the following frequencies (cm^{-1}): 3360 (strong), 3220 (shoulder), 2900 (weak), 1725 (weak), 1650 (strong), 1580 (medium), 1498 (strong), 1450 (weak), 1419 (weak), 1295 (medium), 1205 (medium), 1172 (medium), 1110 (weak), 1060 (strong), and 1000 (weak);
(c) ultraviolet absorption spectra with the following absorption maxima: in neutral methanol, 270 nm (sh) and 359 nm (ε 16,216); in acidic methanol, 286 nm (ε 18,018) and 310 nm (sh); in basic methanol, 270 nm (sh), 300 nm (ε 16,216), and 354 nm (ε 17,568);
(d) a molecular weight of about 2018, as determined by titration;
(e) three titratable groups in 66% aqueous dimethylformamide with pK_a values of approximately 6.30, 9.09, and 11.62;
(f) the following specific rotation:

$[a]_D^{25} -108.3$ (c 1, H_2O);

(g) is soluble in water, partially soluble in methanol and ethanol, and insoluble in benzene, chloroform, acetone, diethyl ether, ethyl acetate, toluene, hexane, acetonitrile and dioxane;
(h) an amino-acid analysis indicating the presence of six amino-acid residues;
(i) an R_f value of approximately 0.64 on paper chromatography in a 1-butanol:pyridine:acetic acid:water (15:10:3:12) solvent system, using *Sarcina lutea* as the detection organism;
(6) A-35512 factor H which is a white, amorphous, basic compound having:
(a) an approximate elemental composition of 53.76 percent carbon, 5.32 percent hydrogen, 5.53 percent nitrogen, 33.48 percent oxygen, and 1.59 percent chlorine;
(b) an empirical formula in the range of $C_{85-87}H_{103-107}N_8O_{38-40}Cl$;
(c) a molecular weight of approximately 1908, based on elemental composition; and which in its hydrochloride form is a white amorphous compound which has these characteristics:
(a′) an approximate elemental composition of 53.10 percent carbon, 5.37 percent hydrogen, 5.35 percent nitrogen, 30.12 percent oxygen, and 3.78 percent chlorine;
(b′) an infrared absorption spectrum in KBr pellet with significant absorption maxima at the following frequencies (cm^{-1}): 3410 (strong), 3240 (shoulder), 2940 (weak), 1670 (strong), 1630 (shoulder), 1605 (strong), 1520 (strong), 1470 (weak), 1442 (weak), 1400 (weak), 1345 (shoulder), 1310 (medium), 1225 (medium), 1180 (weak), 1135 (weak), 1080 (strong), and 1020 (shoulder).
(c′) ultraviolet absorption spectra which show, in acidic and neutral methanol, an absorption maximum at 282 nm (ε 12,500) and, in basic methanol, an absorption maximum at 292 nm (ε 14,000), and end absorption at 225 nm;
(d′) a molecular weight of approximately 1660, as determined by titration;
(e′) five titratable groups in 66% aqueous dimethylformamide with pK_a values of approximately 5.0, 7.46, 9.80, 11.43 and 13.02;
(f′) the following specific rotation:
$[\alpha]_D^{25} -123.5°$ (c 1, H_2O);
(g′) is soluble in water, partially soluble in methanol and ethanol, and insoluble in benzene, chloroform, acetone, diethyl ether, ethyl acetate, toluene, hexane, acetonitrile and dioxane;
(h′) an amino-acid analysis indicating the presence of five amino-acid groups, one of which is glycine;
(i′) approximate R_f values in the following paper-chromatographic systems, using *Sarcina lutea* as the detection organism:

Solvent System	R_f Value
1-butanol:pyridine: acetic acid:water	

-continued

Solvent System	R_f Value
(15:10:3:12)	0.15
CH_3OH:0.1N HCl (3:1)	0.47
1-propanol:NH_4OH:H_2O (6:3:1)	0.11

(j') a ^{13}C nuclear-magnetic-resonance spectrum in D_2O with the following characteristics:

No.	PPM	Height (%)
2	177.2	2.7
3	171.6	5.2
4	170.9	5.8
5	169.6	4.7
6	158.9	3.1
7	157.6	4.3
8	156.6	3.8
9	155.6	4.1
10	155.4	3.8
11	154.3	2.4
12	151.3	1.6
13	137.7	2.0
14	136.7	2.2
15	136.0	4.0
16	135.3	1.9
17	133.5	5.0
18	129.4	3.7
19	127.3	1.3
20	126.1	3.2
21	124.2	6.9
22	122.6	4.1
23	107.6	2.7
24	101.8	1.8
25	76.2	2.8
26	73.5	4.4
27	72.3	7.4
28	71.0	12.2
29	69.7	4.6
31	61.6	3.5
32	56.8	1.8
33	55.4	2.8
34	55.0	1.5
35	24.5	2.6
36	17.9	4.6
37	17.2	2.6
38	16.3	3.6

(k') is stable for as much as 72 hours in aqueous solutions having a pH of from about 3 to about 10; and

(7) the pharmaceutically-acceptable salts of A-35512 factors A, B, C, E, and H.

4,083,965

METHOD OF AND COMPOSITION FOR RELIEVING ITCH, PAIN AND SWELLING RESULTING FROM INSECT STINGS AND BITES AND SKIN CONTACT WITH NOXIOUS PLANTS

Henry P. Bluhm, Box 6538, Buena Park, Calif. 90620

Continuation-in-part of Ser. No. 541,657, Jan. 16, 1975, abandoned. This application Aug. 9, 1976, Ser. No. 712,913

Int. Cl.[2] A61K *33/42*

U.S. Cl. 424—128 **8 Claims**

1. A method of relieving the itch, pain, and swelling resulting from insect stings, insect bites, and skin contact with noxious plants, comprising topically applying to the affected area a composition containing an effective amount of an active ingredient selected from the group consisting of one or more calcium phosphates; arrowroot; a mixture of arrowroot and one or more calcium phosphates; a mixture of arrowroot and pumice; a mixture of arrowroot, pumice, and one or more calcium phosphates; and a mixture of one or more calcium phosphates and pumice; together with a carrier material for said active ingredient.

4,083,966

METHOD OF EMULSIFYING MINERAL OIL

Harold James Perry Bowell, 7660 Canada Way, Burnaby, British Columbia, Canada (V3N 3K8)

Filed Nov. 28, 1975, Ser. No. 636,352

Int. Cl.[2] A01N *9/04*; A61K *7/42*

U.S. Cl. 424—170 **1 Claim**

1. A method for producing a stable emulsion of light mineral oil and isopropyl alcohol consisting of:

a. thoroughly mixing one part by weight of North American pine tar with between one and five parts by weight of isopropyl alcohol, and subsequently

b. adding between two and three parts light mineral oil and violently agitating the mixture of alcohol, pine tar and light mineral oil until a stable emulsion is obtained.

4,083,967

NONA- AND DECAPEPTIDES

Christopher Raymond Beddell, Ashford; Lawrence Alfred Lowe, Swanley, and Samuel Wilkinson, Beckenham, all of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

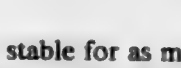
Division of Ser. No. 519,667, Oct. 31, 1974, Pat. No. 3,992,365. This application Aug. 23, 1976, Ser. No. 716,958

Claims priority, application United Kingdom, Nov. 1, 1973, 50811/73; Oct. 10, 1974, 43917/74

Int. Cl.[2] A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **16 Claims**

1. A pharmaceutical composition which comprises a peptide of the formula



Glu-His-X^3-X^4-X^5-X^6-X^7-X^8-Pro-W

or a pharmaceutically acceptable acid addition salt thereof wherein X^3 and X^5 are the same or different and each is phenylalanyl optionally substituted in the benzene ring with a group selected from the group consisting of methoxy, chlorine, methyl, hydroxyl, nitro, and amino;

X^4 and X^6 are the same or different and each is selected from glycyl, alanyl (D- or L-) and asparaginyl;

X^7 is selected from the group consisting of leucyl, isoleucyi, valyl and phenylalanyl, where the phenylalanyl is optionally substituted in the benzene ring with a group selected from the group consisting of methoxy, chlorine, methyl, hydroxyl, nitro and amino;

X^8 is selected from the group consisting of arginyl, lysyl, histidyl, homoarginyl, glycyl and phenylalanyl, where the phenylalanyl is optionally substituted in the benzene ring with a group selected from the group consisting of methoxy, chlorine, methyl, hydroxyl, nitro and amino; and

W is selected from glycine amide and a group -NR^1R^2 where R^1,

R^2 and the nitrogen atom together comprise a group selected from amino, N-alkylamino, N,N-dialkylamino, pyrrolidino, morpholino and 1-methyl-5-amis,omethyl tetrazolyl, the 'alkyl' having from 1 to 4 carbon atoms and being optionally substituted by an hydroxyl group, where all references are to the L-amino acids and their radicals except in the case of glycine and unless otherwise stated in a non-toxic amount calculated as the peptide sufficient to treat infertility in a mammal of hypothalamic origin in association with a pharmaceutically acceptable carrier therefor.

4,083,968

THERAPEUTIC AGENT FOR IMPROVING CARDIOVASCULAR FUNCTION

John Westley, Mountain Lakes, N.J., assignor to Hoffmann-La Roche, Nutley, N.J.

Continuation of Ser. No. 489,978, Jul. 19, 1974, abandoned. This application Jan. 9, 1976, Ser. No. 647,849

Int. Cl.[2] A61K *31/71, 31/70, 31/35*

U.S. Cl. 424—181 2 Claims

1. A method for producing myocardial stimulation in a patient requiring such an effect which comprises parenterally administering to the patient an amount of the compound lasalocid, di-(N-methylglucamine) salt which is effective for producing myocardial stimulation.

4,083,969

PROCESS FOR PREPARING EASILY ABSORBABLE STEROL GLYCOSIDE

Sho Inoue, Uji; Masanobu Kawamata, Oyamazaki; Hirokazu Ushimaru, Kyoto; Koichi Nakamichi, Kyoto, and Yutaka Takahashi, Kyoto, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Kyoto, Japan

Filed Apr. 7, 1976, Ser. No. 674,432

Claims priority, application Japan, Apr. 8, 1975, 50-43008

Int. Cl.[2] C07J *17/00;* A61K *31/705*

U.S. Cl. 424—182 4 Claims

1. A composition comprising a mixture of (a) one or more steryl glucosides selected from the group consisting of β-sitosteryl-β-D-glucoside, stigmasteryl-β-D-glucoside, campesteryl-β-D-glucoside, and cholesteryl-β-D-glucoside and (b) at least one water soluble polymer selected from the group consisting of polyvinylpyrrolidone, polyvinyl alcohol, polyvinyl acetal diethylaminoacetate, diethylaminoethyl methacrylate/methyl methacrylate copolymer, starch, modified starch, alphalized starch, dextrin, sodium starch phosphate, hydroxypropylcellulose and methyl cellulose, said mixture being the solid residue remaining after removal of water from an aqueous solution of said glucoside and said polymer.

3. An oral hemostatic pharmaceutical composition comprising an effective amount of a composition according to claim 1 and a pharmaceutically acceptable carrier.

4,083,970

ACTIVATED INSECTICIDE COMPOSITION EMPLOYING A CERTAIN PHOSPHORODITHIOATE AND AN ACTIVATOR

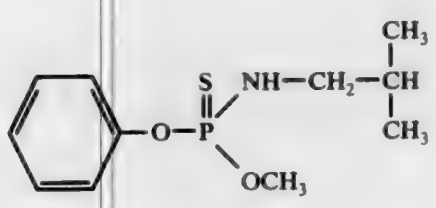
George B. Large, Orinda, Calif., and Leland S. Pitt, Greenville, Miss., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 753,233, Dec. 10, 1976, abandoned, which is a continuation of Ser. No. 619,999, Oct. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 537,145, Dec. 30, 1974, Pat. No. 3,956,486. This application Feb. 22, 1977, Ser. No. 770,532

Int. Cl.[2] A01N *9/36*

U.S. Cl. 424—200 2 Claims

1. An insecticidally active composition comprising an insecticidally effective amount of an insecticide defined as O,O-dimethyl S[4-oxo-1,2,3-benzotriazin-3(4H)-ylmethyl]-phosphorodithioate and an effective amount of an activator having the formula



in a weight ratio of insecticide to activator of about 1:0.1 to about 1:10.

4,083,971

PYRIDYLPHOSPHORIC ACID DERIVATIVES

Karl Kiehs, Lampertheim; Heinrich Adolphi, and Hans Theobald, both of Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

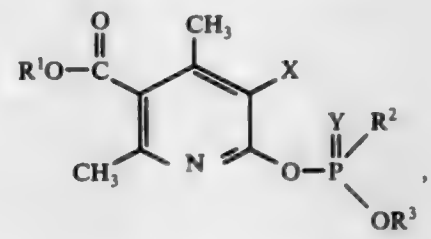
Filed Feb. 7, 1977, Ser. No. 765,930

Claims priority, application Germany, Mar. 6, 1976, 2609312

Int. Cl.[2] A01N *9/22;* C07D *213/55*

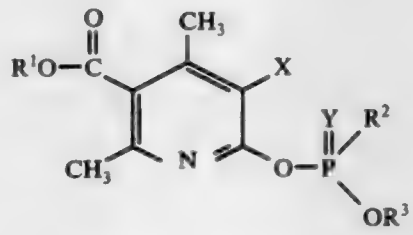
U.S. Cl. 424—200 6 Claims

1. A pyridylphosphoric acid of the formula



where X denotes hydrogen or halogen, Y denotes oxygen or sulfur, R^1 denotes linear or branched alkyl, alkenyl or alkynyl of a maximum of 6 carbon atoms, or unsubstituted or halogen-substituted phenyl or benzyl, R^2 denotes linear or branched alkyl, unsubstituted phenyl, substituted phenyl, alkyloxy or alkylthio of a maximum of 6 carbon atoms, alkenyloxy or alkenylthio of a maximum of 6 carbon atoms, alkynyloxy or alkynylthio of a maximum of 6 carbon atoms, amino or alkylamino with from 1 to 4 carbon atoms in the alkyl moiety, or dialkylamino with from 1 to 4 carbon atoms per alkyl moiety, and R^3 denotes alkyl of from 1 to 4 carbon atoms.

6. A pesticidal composition comprising an inert diluent, adjuvant or carrier and, as the active pesticidal ingredient, from 0.1 to 95% by weight of a pyridylphosphoric acid of the formula



where X denotes hydrogen or halogen, Y denotes oxygen or sulfur, R^1 denotes linear or branched alkyl, alkenyl or alkynyl of a maximum of 6 carbon atoms, or unsubstituted or halogen-substituted phenyl or benzyl, R^2 denotes linear or branched alkyl, unsubstituted phenyl, substituted phenyl, alkyloxy or alkylthio of a maximum of 6 carbon atoms, alkenyloxy or alkenylthio of a maximum of 6 carbon atoms, alkynyloxy or alkynylthio of a maximum of 6 carbon atoms, amino or alkylamino with from 1 to 4 carbon atoms in the alkyl moiety, or dialkylamino with from 1 to 4 carbon atoms per alkyl moiety, and R^3 denotes alkyl of from 1 to 4 carbon atoms.

4,083,972

COMPOSITIONS FOR INHIBITING ANOMALOUS DEPOSITION AND MOBILIZATION OF CALCIUM PHOSPHATE IN ANIMAL TISSUE

Marion David Francis, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 371,440, Jun. 19, 1973, abandoned. This application Aug. 16, 1976, Ser. No. 714,547

Int. Cl.[2] A61K *31/66*

U.S. Cl. 424—204 2 Claims

1. A method for treating urolithiasis comprising administering to an animal afflicted therewith an effective but non-toxic amount of a pharmaceutically acceptable alkali metal, ammonium, or low molecular weight substituted ammonium carbonyldiphosphonate.

4,083,973

PHARMACEUTICAL PREPARATION ADAPTED FOR ORAL ADMINISTRATION

Johannes van der Vies, Oss, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Aug. 16, 1976, Ser. No. 714,454

Claims priority, application Netherlands, Aug. 27, 1975, 7510104

Int. Cl.[2] A61K *31/56;* C07J *1/00*

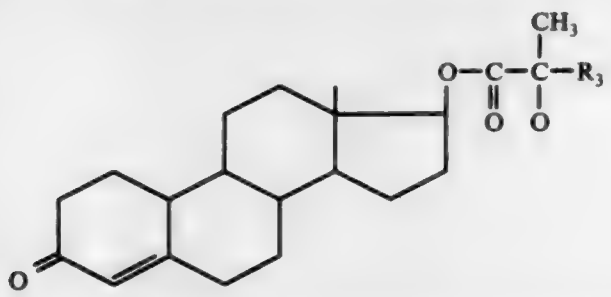
U.S. Cl. 424—239 31 Claims

1. A pharmaceutical composition with anabolic activity adapted for oral administration comprising

at least one 17β-ester of nandrolone, the ester group thereof having been derived from an aliphatic carboxylic acid having 9 to 18 carbon atoms and

a pharmaceutically acceptable non-steroidal lipoid carrier, in unit dosage form comprising per dosage unit, an anabolically effective amount of said ester in the range of from about 0.1 to about 100 mg., said ester constituting up to 50% by weight of said composition and said non-steroidal lipoid carrier being present in an amount at least equal to the amount of said ester.

31. A 17β-ester of nandrolone of the formula:



wherein R_3 is an aliphatic group having 7 to 11 carbon atoms.

4,083,974

TOPICAL STEROIDAL ANTI-INFLAMMATORY PREPARATIONS CONTAINING POLYOXYPROPYLENE 15 STEARYL ETHER

Joseph S. Turi, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 7, 1977, Ser. No. 774,753

Int. Cl.[2] A61K *31/58*

U.S. Cl. 424—241 13 Claims

1. A pharmaceutical composition in ointment form for topical application which comprises an anti-inflammatory effective amount of an anti-inflammatory steroid selected from the group consisting of diflorasone diacetate, betamethasone valerate fluocinonide, clobetasol propionate, methylprednisolone acetate, fluorometholone, fluocinolone acetonide, hydrocortisone acetate, fludrocortisone, flumethasone and triamcinolone acetonide and 1 thru 40% of polyoxypropylene 15 stearyl ether.

12. A pharmaceutical composition in ointment form comprising

Ingredient	%
Diflorasone diacetate	0.01–0.10
Polyoxypropylene 15 stearyl ether	5–30
Stearic acid	5–20
Multi-sterol extract	5–30
White petrolatum	20–85

4,083,975

7-ACYLAMINO-3-(3-SULFOMETHYL-1,2,4-TRIAZOL-5-YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACIDS

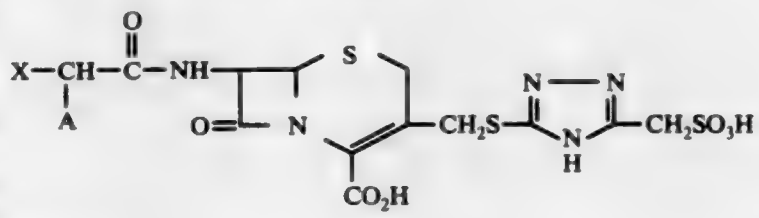
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Sep. 24, 1976, Ser. No. 726,377

Int. Cl.[2] C07D *501/36;* A61K *31/545*

U.S. Cl. 424—246 7 Claims

1. A compound of the formula:



in which:

X is thienyl, furyl, phenyl or phenyl monosubstituted with hydroxy, hydroxymethyl, formamido or ureido; and

A is NH_2, OH, COOH, SO_3H, formyloxy or, when the α-C-hydrogen is absent, methoxyimino;

or its nontoxic pharmaceutically acceptabe alkali metal salts.

4,083,976

10′-(ω-N)-1,4-DIAZABICYCLO(4,3,0)-ALKANYL-LACYL) -PHENOTHIAZINE COMPOSITIONS

Arkady Mikhailovich Likhosherstov, Smolnaya ulitsa, 33, kv. 107; Liya Semenovna Nazarova, Petrovsko-Razumovsky proezd, 20, kv. 22; Alexandr Petrovich Skoldinov, ulitsa Alabyana, 3, korpus 1, kv. 60; Galina Alexandrovna Markova, Kotelnicheskaya naberezhnaya, 1/15, kv. 320, and Natalya Veniaminovna Kaverina, Novopeschanaya ulitsa, 3, kv. 32, all of Moscow, U.S.S.R.

Division of Ser. No. 485,155, Jul. 1, 1974, Pat. No. 3,998,820, which is a continuation of Ser. No. 230,987, Mar. 1, 1972, abandoned. This application Sep. 24, 1976, Ser. No. 726,259

Int. Cl.[2] A61K *31/54*

U.S. Cl. 424—247 4 Claims

1. A pharmaceutical composition possessing a spasmolytic and coronary-dilatant effect containing, as the active ingredient, a spasmolytic and coronary-dilatant amount of 10′-[β-N-(1,4-diazabicyclo (4,3,0)-nonanyl)-propionyl]-2′-chlorophenothiazine in a pharmaceutical carrier.

4,083,977

NOVEL INSECTICIDAL 1-(SUBSTITUTED BENZOYL)-3-(SUBSTITUTED PYRAZINYL)UREAS

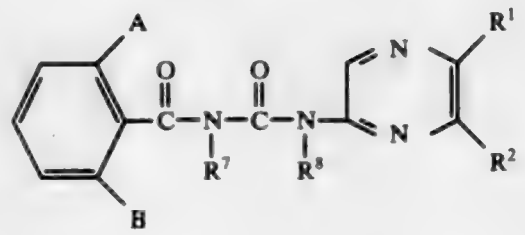
John Louis Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 595,504, Jul. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 507,492, Sep. 19, 1974, abandoned. This application Nov. 18, 1976, Ser. No. 742,948

Int. Cl.[2] A01N *9/22;* C07D *241/40*

U.S. Cl. 424—250 5 Claims

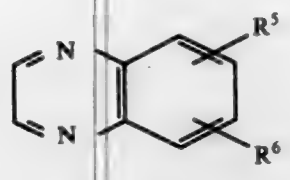
1. A compound of the formula



wherein

A and B are the same or different, and are halo, methyl, or trifluoromethyl;

R^1 and R^2, when taken together with the pyrazine ring to which they are attached, form a benzopyrazine (quinoxaline) of the formula:



wherein

R^5 and R^6 are the same or different, and are hydrogen, halo, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, nitro, cyano, or halo(C_1–C_4)alkyl;

R^7 and R^8, when taken separately, are the same or different, and are hydrogen, C_1–C_4 alkanoyl, or C_1–C_3, alkoxycarbonyl.

3. A method of controlling insects of an order selected from the group consisting of Coleoptera, Diptera, Lepidoptera, and Orthoptera, which comprises applying to the locus of the insects an insecticidal amount of a compound of claim 1.

4,083,978

OXIME ETHERS

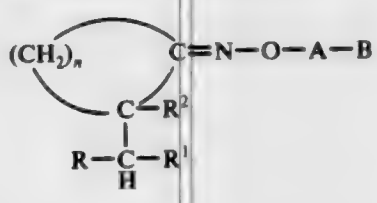
Zoltán Budai; Aranká Lay nee Kónya; Tibor Mezei; Katalin Grasser; Enikö Szirt nee Kiszelly; Ibolya Kósoczky, and Lujza E. Petöcz, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Jan. 27, 1976, Ser. No. 652,806

Int. Cl.[2] A61K *31/495;* C07D *295/12*

U.S. Cl. 424—250 **2 Claims**

1. An oxime ether of the formula



(I)

wherein

R denotes a phenyl radical which may be substituted by a chlorine atom or by one to three methoxy groups;

R_1 and R_2 denote a hydrogen atom each or together a valence bond;

A denotes a C_2–C_4 straight or branched-chain alkylene group;

B is piperazino having a benzyl or C_1–C_3 alkyl substituent on the nitrogen atom; and

n denotes an integer from 3 to 6,

and their pharmaceutically acceptable acid addition salts.

2. A pharmaceutical composition consisting essentially of a compound of claim 1, together with a pharmaceutically acceptable carrier.

4,083,979

THIAZOLIDINE DERIVATIVES AND THEIR USE AS SALIDIURETICS

Hans-Jochen Lang, Altenhain, Taunus, and Roman Muschaweck, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

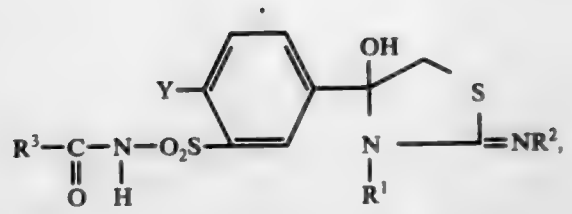
Filed Oct. 13, 1976, Ser. No. 732,135

Claims priority, application Germany, Oct. 15, 1975, 2546165

Int. Cl.[2] C07D *277/18;* A61K *31/425*

U.S. Cl. 424—251 **8 Claims**

1. A thiazolidine compound of the formula



and physiologically tolerated salts thereof, wherein R^1 taken alone is alkyl or alkenyl having 1 to 4 carbon atoms; R^2 taken alone is alkyl or alkenyl having 1 to 6 carbon atoms which may be substituted by alkoxy having 1 to 2 carbon atoms, by cycloalkyl having 3 to 8 carbon atoms, or by phenylalkyl having 1 or 2 carbon atoms in the alkyl; R^1 and R^2 taken together are 1,2-ethylene or 1,3-propylene; R^3 is hydrogen, lower alkyl, or alkoxy having 1 to 3 carbon atoms, or is $—NR^4R^5$ in which R^4 and R^5 taken alone are identical or different and each is hydrogen or lower alkyl having 1 to 4 carbon atoms, and if R^5 is hydrogen then R^4 may also by cycloalkyl having 5 to 8 carbon atoms, or in which R^4 and R^5 taken together with the nitrogen atom to which they are attached are pyrrolidine or piperidine; and Y is chlorine or bromine.

6. A pharmaceutical composition for inducing salidiuresis, said composition comprising a salidiuretically effective amount of a compound or salt as claimed in claim 1 in combination with a pharmaceutically acceptable carrier.

8. A method for inducing salidiuresis in a patient which method comprises administering to said patient, orally, parenterally, or in suppository form, a salidiuretically effective amount of a compound as claimed in claim 1.

4,083,980

DERIVATIVES OF QUINAZOLONE

Kurt Schromm, Ingelheim; Anton Mentrup, Mainz-Kastel; Ernst-Otto Renth, and Armin Fügner, both of Ingelheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

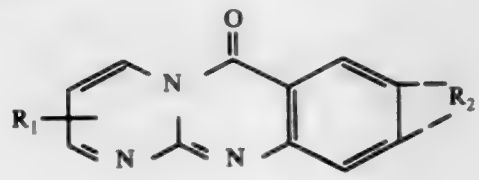
Filed Dec. 15, 1976, Ser. No. 750,725

Claims priority, application Germany, Dec. 19, 1975, 2557425

Int. Cl.[2] A61K *31/505;* C07D *487/04*

U.S. Cl. 424—251 **7 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, lower alkyl, lower alkoxy, amino, acetylamino, cyano, tetrazol-5-yl, $—COR_3$ or a fused benzene ring,

where R_3 is lower alkoxy, amino, hydroxyamino, tetrazol-5-yl-amino or, when R_2 is other than hydrogen, also hydroxyl; and

R_2 is cyano, tetrazol-5-yl, $—COR_4$ or, when R_1 is cyano, tetrazol-5-yl or $—COR_3$, also hydrogen, lower alkyl, lower alkoxy, amino, acetylamino or a fused benzene ring, where R_4 is lower alkoxy, amino, hydroxyl, hydroxyamino or tetrazol-5-yl-amino;

a non-toxic, pharmacologically acceptable acid addition salt thereof; or, when R_3 and/or R_4 are hydroxyl, a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

6. An antiallergic pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective antiallergic amount of a compound of claim 1.

4,083,981

ANALGETIC COMPOSITION

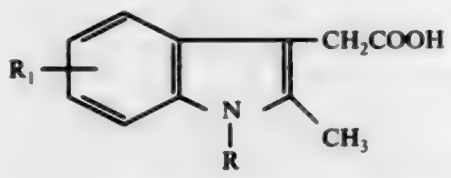
Hisao Yamamoto, Kobe; Toshiya Inukai, Sanda, and Yoshihiko Koga, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 582,757, Jun. 2, 1975, Pat. No. 4,029,798. This application Mar. 3, 1977, Ser. No. 773,936

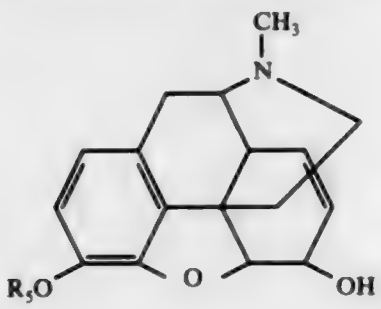
Int. Cl.[2] A61K *31/485, 31/40*

U.S. Cl. 424—260 **20 Claims**

1. An analgetic composition which comprises, as an active ingredient, a therapeutically effective amount of a synergistic mixture of an indole-3-acetic acid derivative of the formula,



wherein R is a halobenzoyl, piperonyloyl, or cinnamoyl group and R_1 is a 5-methoxy or 5,6-methylenedioxy group; and an analgetic compound selected from the group consisting of



wherein R_5 is a hydrogen atom or a $C_1 - C_3$ alkyl group and a pharmaceutically acceptable carrier or diluent.

4,083,982

PROCESS FOR PRODUCING ANALGESIA

Rita B. Messing, Irvine, Calif., and Loy D. Lytle, Concord, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 683,983, May 6, 1976, Pat. No. 4,035,511. This application Apr. 1, 1977, Ser. No. 783,589

Int. Cl.[2] A61K *31/485*

U.S. Cl. 424—260 **3 Claims**

1. The process for producing analgesia or reducing hyperalgesia in an animal which comprises administering a mixture of 3-(p-trifluoromethylphenoxy)-N-methyl-3-phenylpropylamine and morphine sulfate in an amount effective to produce analgesia or reduce hyperalgesia wherein the concentration of morphine sulfate comprises between about 25 to 50 weight percent of the 3-(p-trifluoromethylphenoxy)-N-methyl-3-phenylpropylamine.

4,083,983

ALKOXY PYRIDINE COMPOUNDS

Graham John Durant; Charon Robin Ganellin, both of Welwyn Garden City, and George Sidney Sach, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

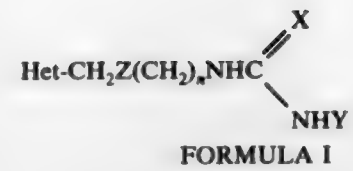
Filed Jul. 13, 1976, Ser. No. 704,877

Claims priority, application United Kingdom, Jul. 31, 1975, 31970/75

Int. Cl.[2] C07D *213/57;* A61K *31/44*

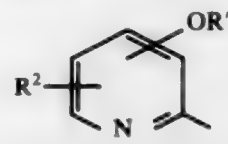
U.S. Cl. 424—263 **20 Claims**

1. A compound of the formula:



FORMULA I

wherein Het is a grouping of the formula:



wherein R′ is lower alkyl or $—(CH_2)_pA$ where p is 2 to 4 and A is hydroxy, lower alkoxy or dimethylamino; R^2 is hydrogen, lower alkyl, lower alkoxy, amino, halogen or methylamino; or —OR′ and R^2 can together form a $—O(CH_2)_qO—$ group attached to adjacent carbon atoms on the pyridine ring, where q is 1 to 4; Z is sulphur or methylene; n is 2 or 3; X is NH, NCN or NOH; Y is hydrogen, lower alkyl or 2-hydroxyethyl; or a pharmaceutically acceptable acid addition salt thereof.

20. A method of blocking histamine H_2-receptors which comprises administering orally or parenterally to an animal in need of blocking of said receptors in an effective amount to block said receptors, a compound of claim 1.

4,083,984

1-SUBSTITUTED PHENYL-4(1H)-PYRIDINONE HYDRAZONES AND COMPOSITION THEREWITH FOR TREATMENT OF COCCIDIOSIS

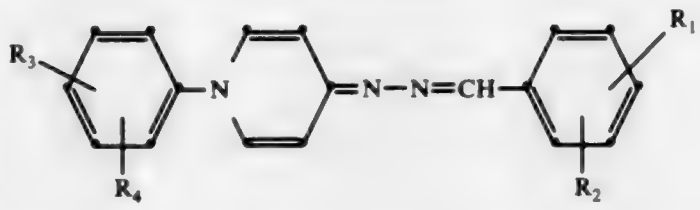
Michael H. Fisher, Bridgewater, and William V. Ruyle, Scotch Plains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 743,388, Nov. 19, 1976. This application Jul. 8, 1977, Ser. No. 813,930

Int. Cl.[2] A01N *9/22;* C07D *211/18*

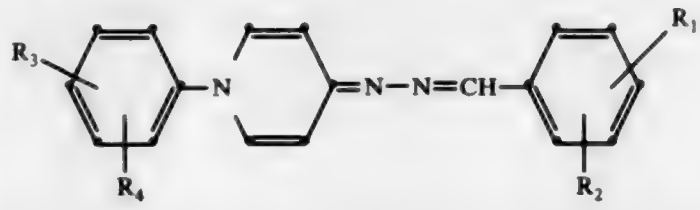
U.S. Cl. 424—263 **15 Claims**

1. A compound having the structure:



wherein R_1 and R_3 are each separately selected from halogen, haloalkyl, alkylthio and cyano wherein the alkyl group contains 1 to 3 carbon atoms; and R_2 and R_4 are each separately selected from hydrogen and halogen and the corresponding non-toxic, pharmacologically acceptable salts thereof.

10. A composition for the treatment of coccidioisis comprising an inert carrier and an effective amount of a compound having the structure:



wherein R_1 and R_3 are each separately selected from halogen, haloalkyl, alkylthio and cyano wherein the alkyl group contains 1 to 3 carbon atoms; and R_2 and R_4 are each separately selected from hydrogen and halogen and the non-toxic, pharmacologically acceptable salts thereof.

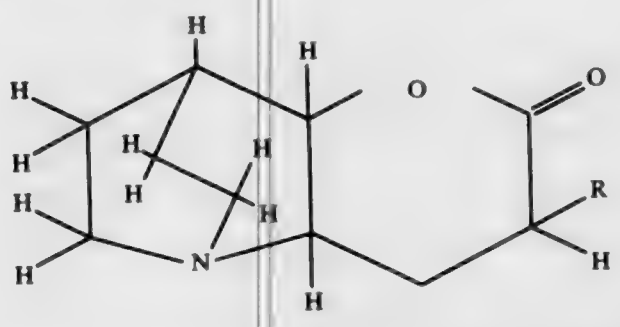
4,083,985

6-OXA-1-AZA TRICYCLO DODECAN-5-ONES AS PSYCHOMOTOR STIMULATORS

Sasson Cohen, Tel-Aviv, and Abraham Fisher, Holon, both of Israel, assignors to The Purdue Frederick Company, New York, N.Y.

Filed Feb. 6, 1976, Ser. No. 655,650
Claims priority, application Israel, Nov. 11, 1975, 48453
Int. Cl.[2] C07D *491/04;* A61K *31/535*
U.S. Cl. 424—267 15 Claims

1. A compound selected from the group consisting of compounds of the formula:



wherein R is selected from the group consisting of hydrogen, lower alkyl, cyclopentyl, cyclohexyl, thienyl, phenyl, methylphenyl, methoxyphenyl, chlorophenyl, trifuloromethylphenyl, aminophenyl, di-loweralkylamino phenyl and benzyl, and physiologically acceptable salts thereof.

13. A pharmaceutical preparation for psychomotor stimulation comprising a therapeutically sufficient quantity of a compound of claim 1 and a pharmaceutically acceptable carrier therefor.

4,083,986

2-TRICHLOROMETHYL-1,3,4-THIADIAZOLE

Ernst-Heinrich Pommer, Limburgerhof; Helmut Hagen, and Helmut Fleig, both of Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Germany

Continuation of Ser. No. 614,193, Sep. 17, 1975, abandoned. This application Jun. 17, 1977, Ser. No. 807,400
Claims priority, application Germany, Oct. 4, 1974, 2447387
Int. Cl.[2] A61K *31/425;* C07D *285/12*
U.S. Cl. 424—270 10 Claims

1. 2-trichloromethyl-1,3,4-thiadiazole.

2. A process for controlling fungi which comprises treating the objects to be protected against attack by fungi with a fungicidal amount of 2-trichloromethyl-1,3,4-thiadiazole.

6. A fungicidal composition comprising a liquid or solid carrier and from 0.02 to 95% by weight of 2-trichloromethyl-1,3,4-thiadiazole as an active fungicidal component.

4,083,987

4-IMINO-1,3-DIAZABICYCLO-(3.1.0)-HEXAN-2-ONE AS A CANCEROSTAT AND IMMUNO-STIMULANT

Uwe Bicker, Mannheim; Wolfgang Kampe, Heddesheim, and Wolfgang Steingross, Viernheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed May 26, 1976, Ser. No. 690,340
Claims priority, application Germany, Jul. 8, 1975, 2530398
Int. Cl.[2] C07D *487/04;* A61K *31/415*
U.S. Cl. 424—273 R 7 Claims

1. 4-Imino-1,3-diazabicyclo[3.1.0]-hexan-2-one or a physiologically compatible salt thereof.

7. A method of stimulating an immune response in a patient which comprises administering to the patient an immunostimulant effective amount of 4-imino-1,3-diazabicyclo[3.1.0]-hexan-2-one or a physiologically compatible salt thereof according to claim 1.

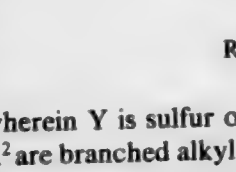
4,083,988

PHARMACOLOGICALLY ACTIVE COMPOUNDS

Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 560,909, Mar. 21, 1975, Pat. No. 4,000,296, which is a division of Ser. No. 384,992, Aug. 2, 1973, abandoned.
This application Sep. 24, 1976, Ser. No. 726,356
Claims priority, application United Kingdom, Sep. 5, 1972, 41161/72
Int. Cl.[2] C07D *233/64;* A61K *31/415*
U.S. Cl. 424—273 R 7 Claims

1. A compound of the formula:



wherein R_1 is hydrogen or lower alkyl; R_2 is a grouping of the formula

$$\text{Het} - (CH_2)_m Z (CH_2)_n -$$

wherein Het is imidazole which is attacked at a ring carbon and which is optionally substituted by lower alkyl, trifluoromethyl or halogen; Z is sulphur, oxygen, NH or a methylene group; *m* is 0, 1 or 2 and *n* is 2 or 3, the sum of *m* and *n* being from 2 to 4; X is COR_3 or CSR_3; and R_3 is lower alkyl or lower alkoxy or a pharmaceutically acceptable acid addition salt thereof.

7. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in need of inhibition of said receptors in an effective amount to inhibit said receptors a compound of claim 1.

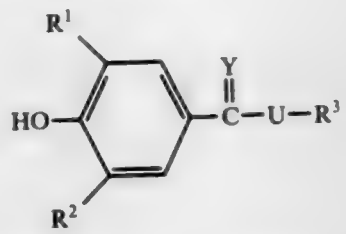
4,083,989

INSECT CONTROL EMPLOYING CERTAIN BENZOATES

Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 559,931, Mar. 19, 1975, Pat. No. 3,988,471, which is a continuation-in-part of Ser. No. 376,871, Jul. 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 281,078, Aug. 8, 1972, Pat. No. 3,867,543. This application Aug. 19, 1976, Ser. No. 715,960
Int. Cl.[2] A01N *9/12;* C07D *333/24*
U.S. Cl. 424—275 11 Claims

1. A compound of the formula



wherein Y is sulfur or oxygen, U is sulfur or oxygen, R^1 and R^2 are branched alkyl group of 3 to 6 carbon atoms attached to the aromatic ring through a secondary or tertiary carbon atom and R^3 is a 5-membered heterocyclic group having one sulfur atom or methyl substituted with a 5-membered heterocyclic group having one sulfur atom.

8. An insecticidal composition comprising a metamorphosis-inhibiting amount of a compound of the formula in claim 1 and a biologically inert carrier.

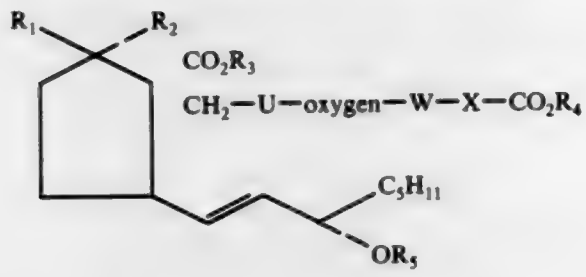
4,083,990

CYCLOPENTANE DERIVATIVES

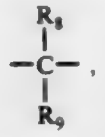
Milos Babej, Frankfurt am Main; Wilhelm Bartmann, Neuenhain, Taunus; Gerhard Beck, Frankfurt am Main, and Ulrich Lerch, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 480,319, Jun. 17, 1974, Pat. No. 3,984,459.
This application Jun. 23, 1976, Ser. No. 698,843
Claims priority, application Germany, Jun. 19, 1973, 2331081
Int. Cl.[2] C07C *177/00*; C07D *309/06*
U.S. Cl. 424—283 16 Claims

1. A cyclopentane compound of the formula



wherein R_1 and R_2, taken alone, are different and each is hydrogen or hydroxy; R_1 and R_2, taken together, are oxygen; R_3 is alkyl to 1 to 5 carbon atoms; R_4 is hydrogen, alkyl having 1 to 5 carbon atoms or a physiologically tolerable mono- or polyvalent cation; R_5 is hydrogen, optionally branched, saturated or unsaturated aliphatic hydrocarbon or araliphatic alkyl, each having 1 to 8 carbon atoms, wherein a $—CH_2—$group may be replaced by oxygen, sulfur or carbonyl, or is alkyl having 1 to 5 carbon atoms which is substituted by cyano or by low-molecular alkoxycarbonyl, or is cycloalkyl having 5 to 8 carbon atoms wherein the $—CH_2—$group in the 2-position is replaced by oxygen or sulfur, or is aliphatic, cycloaliphatic, aromatic or araliphatic carboxyl having up to 20 carbon atoms; U is $—(CH_2)_m—$, where *m* is an integer from 1 to 5; W is



wherein R_8 and R_9 are the same or different and are hydrogen or alkyl having 1 to 5 carbon atoms; and X is $—(CH_2)_n—$, where *n* is an integer from 0 to 5.

4,083,991

TOPICAL TREATMENT OF HERPES INFECTIONS WITH THIMEROSAL

John A. Manfuso, Jr., Chevy Chase, Md., assignor to Burton, Parsons and Company, Inc., Washington, D.C.

Filed May 6, 1977, Ser. No. 794,614
Int. Cl.[2] A61K *31/305*
U.S. Cl. 424—291 4 Claims

1. A method for treating herpes simplex infection in a mammal comprising topically applying thimerosal to the infected area in an effective amount to treat herpes simplex infections.

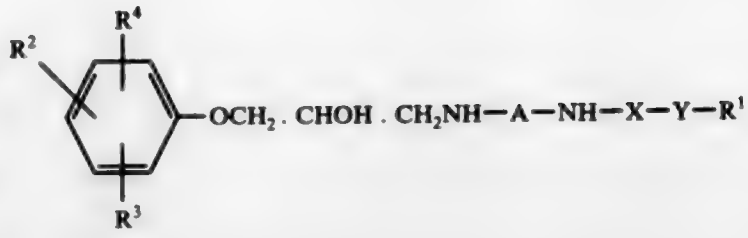
4,083,992

ALKANOLAMINE DERIVATIVES

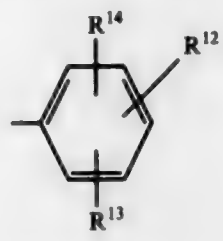
Leslie Harold Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 607,995, Aug. 26, 1975, Pat. No. 4,010,189, which is a division of Ser. No. 421,669, Dec. 4, 1973, Pat. No. 3,928,412. This application Nov. 2, 1976, Ser. No. 738,173
Claims priority, application United Kingdom, Dec. 15, 1972, 57970/72; Sep. 17, 1973, 43478/73
Int. Cl.[2] A61K *31/18, 31/225*; C07C *143/68, 143/78*
U.S. Cl. 424—303 14 Claims

1. An alkanolamine selected from compounds of the formula



wherein A is alkylene of from 2 to 12 carbon atoms, wherein R^1 is hydrogen, or alkyl, halogenoalkyl, alkenyl or cycloalkyl each of up to 10 carbon atoms, or aryl of the formula :



wherein R^2, R^3, R^{12} and R^{13}, which may be the same of different, each is hydrogen, halogen, hydroxy, amino, nitro or cyano, alkyl, cycloalkyl, alkenyl, alkynyl, alkoxy, alkylthio, cycloalkoxy, alkenyloxy, alkynyloxy or alkanoyl each of up to 6 carbon atoms, or aryl, aryloxy or aralkoxy each of up to 12 carbon atoms; or wherein R^2 and R^3 together, and/or R^{12} and R^{13} together, are trimethylene, tetramethylene, 1-oxotetramethylene, propenylene, but-2-enylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl, 5-oxo-5,6,7,8-tetrahydronaphthyl, indenyl, 5,8-dihydronaphthyl or naphthyl; wherein R^4 is hydrogen, hydroxy or hydroxymethyl or aralkoxy of up to 12 carbon atoms; wherein R^{14} is hydrogen, amino or dialkylamino of up to 12 carbon atoms; wherein X is sulphonyl ($—SO_2—$) and wherein Y is a direct link, or alkylene, oxyalkylene or alkyleneoxy each of up to 6 carbon atoms, or imino (—NH—), or alkylimino, iminoalkylene, iminoalkyleneoxy or iminoalkylenecarbonyloxy each of up to 6 carbon atoms, or (except when R^1 is hydrogen) is oxygen; and the acid-addition salts thereof.

12. A method for the treatment or prophylaxis of heart diseases and hypertension in warm-blooded animals which comprises administering to said animals an effective amount of at least one compound claimed in claim 1.

4,083,993

COMPOSITIONS CONTAINING BENZOYLACETONITRILE AND METHOD OF USE TO TREAT INFLAMMATION

Adolph Edward Sloboda, New City, and John William Hanifin, Suffern, both of N.Y., assignors to American Cyanamid Co., Stamford, Conn.

Continuation-in-part of Ser. No. 719,649, Sep. 1, 1976, abandoned. This application Jun. 17, 1977, Ser. No. 807,717
Int. Cl.[2] A61K *31/275*
U.S. Cl. 424—304 8 Claims

1. The method of inhibiting the progression of arthritis in a mammal which comprises administering to said mammal an effective amount of an active ingredient selected from the group consisting of benzoylacetonitrile, o-fluorobenzoylacetonitrile, m-fluorobenzoylacetonitrile, p-fluorobenzoylacetonitrile and mixtures thereof.

4,083,994

CHOLERETICS

Kanji Noda, Chikushino; Ryuhei Kodama, Tosu; Tadanori Yano, Tosu; Hideaki Inoue, Tosu; Kazuhide Furukawa, Tosu; Hirotsune Igimi, Fukuoka, and Hiroyuki Ide, Fukuoka, all of Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Tosu, Japan

Filed Aug. 2, 1976, Ser. No. 710,474
Claims priority, application Japan, Aug. 30, 1975, 50-105451
Int. Cl.[2] A61K *31/22, 31/045, 31/015*
U.S. Cl. 424—311 19 Claims

1. A choleretic pharmaceutical composition comprising a choleretic amount of one or more limonene derivatives selected from the group consisting of 9-acetoxy-p-menth-1-en-8-ol and 9-propionyloxy-p-menth-1-en-8-ol, as effective ingredients, and a pharmaceutically acceptable excipient, wherein said composition is in the form of a capsule, granule, pill, powder, tablet, syrup or rectal suppository.

4,083,995

(Z)-9-TETRADECEN-1-OL FORMATE AND ITS USE AS A COMMUNICATION DISRUPTANT FOR HELIOTHIS

Everett R. Mitchell, Gainesville, Fla.; Martin Jacobson, Silver Springs, Md., and Alfred H. Baumhover, Oxford, N.C., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 707,792, Jul. 22, 1976, abandoned. This application Dec. 6, 1976, Ser. No. 748,031
Int. Cl.[2] A01N *9/24*
U.S. Cl. 424—311 1 Claim

1. A method of controlling mating in the corn earworm, *Heliothis zea* and the tobacco budworm, *H. virescens* which comprises contacting them with a mating inhibiting amount of (Z)-9-tetradecen-1-ol formate.

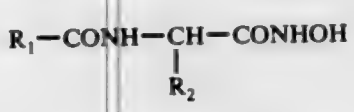
4,083,996

NOVEL HYDROXAMIC ACID DERIVATIVES AND MEDICAMENTS FOR TREATMENT OF UROLITHIASIS AND PYELONEPHROSIS COMPRISING SUCH DERIVATIVES

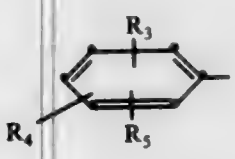
Satoru Tanaka, Higashi-kurume, and Keiichi Munakata, Yono, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1977, Ser. No. 769,847
Claims priority, application Japan, Feb. 20, 1976, 51-16988; Jun. 10, 1976, 51-67077; Jun. 10, 1976, 51-67078
Int. Cl.[2] A61K *31/185;* C07C *83/10*
U.S. Cl. 424—315 7 Claims

1. A compound having the general formula:

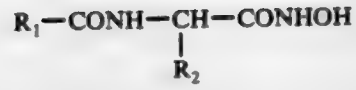


wherein R_1 is a substituted phenyl group represented by a formula:

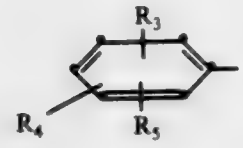


wherein R_3, R_4 and R_5 are selected from the group consisting of hydrogen and a lower alkoxy group, provided that at least one of them is a lower alkoxy group, R_2 is hydrogen or methyl group, and its salt of pharmacologically acceptable base.

4. A medicament for urolithiasis which comprises a compound having the general formula:



wherein R_1 is a substituted phenyl group represented by a formula:



wherein R_3, R_4 and R_5 are selected from the group consisting of hydrogen and a lower alkoxy group, provided that at least one of them is a lower alkoxy group, R_2 is hydrogen or methyl group, and its salt of pharmacologically acceptable base.

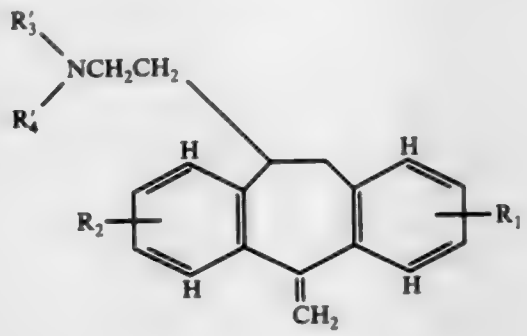
4,083,997

10-(2-SUBSTITUTED-AMINO-ETHYL)-10,11-DIHYDRO-5-METHYLENE-5H-DIBENZO[a,d]CYCLOHEPTENES

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 442,078, Feb. 13, 1974, Pat. No. 3,994,961, and a continuation-in-part of Ser. No. 383,919, Jul. 30, 1973, abandoned, which is a continuation-in-part of Ser. No. 368,652, Jun. 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 342,844, Mar. 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 325,909, Jan. 22, 1973, abandoned, which is a continuation-in-part of Ser. No. 308,302, Nov. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 224,323, Feb. 7, 1972, Pat. No. 3,925,476. This application Sep. 1, 1976, Ser. No. 719,673
Int. Cl.[2] A61K *31/205;* C07C *87/29*
U.S. Cl. 424—316 13 Claims

1. A compound of the formula



wherein

R_1 and R_2 each independently represent hydrogen or fluoro, and

R_3' and R_4' are independently lower alkyl having 1 to 2 carbon atoms, or one of R_3' and R_4' is hydrogen and the other is methyl, provided that at least one of R_1 and R_2 is fluoro.

12. A method for treating depression which comprises administering to a mammal suffering from depression an antidepressant effective amount of a compound of claim 1.

13. A pharmaceutical composition useful in the treatment of depression in mammals comprising as an active ingredient, a compound according to claim 1 and a pharmaceutical carrier therefor, said compound being present in said composition in an amount sufficient to provide a daily dosage of from about 30 milligrams to about 750 milligrams of said compound.

4,083,998

TREATMENT OF INFLAMMATORY DISEASES OF THE MAMMALIAN LARGE INTESTINE WITH CYTOPROTECTIVE PROSTAGLANDINS

André Robert, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 17, 1976, Ser. No. 658,149
Int. Cl.[2] A61K *31/19, 31/215*
U.S. Cl. 424—317 10 Claims

1. A method for the treatment or prevention of a non-traumatically-induced, non-neoplastic inflammatory disease of a mammalian large intestine, which comprises:

administering to a mammal, who is suffering from or is particularly susceptible to said inflammatory disease, an amount of a cytoprotective prostaglandin effective to cure or prevent said inflammatory disease.

4,083,999

TREATING ANIMAL FEEDSTUFFS WITH ANTI-FUNGAL SOLUTIONS OF SOLID ACIDS IN VOLATILE FATTY ACIDS

Emma-Jane E. Drury, Rochester, and David C. Herting, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 501,380, Aug. 28, 1974, abandoned, which is a continuation of Ser. No. 306,758, Nov. 15, 1972, abandoned. This application Apr. 8, 1976, Ser. No. 675,049
Int. Cl.[2] A23L *3/24*
U.S. Cl. 424—317 3 Claims

1. A method for treating animal feedstuffs selected from the group consisting of corn, wheat, oats, soybeans, cottonseed meal, soybean meal, peanuts, barley, rye hay, silage, molasses feed, grain sorghum, safflower seeds, safflower meal, linseed meal, fishmeal, tankage meat and bone meal or scrap, dried blood meal, feather meal, rapeseed and rice by mixing with said feedstuff an effective amount to prevent the growth of mold of a liquid comprising a solution of about 2 to 20% weight per volume of said solution of a mixture of at least one of the acids sorbic and dehydroacetic dissolved in at least one fatty acid selected from the group consisting of acetic, propionic and butyric acids.

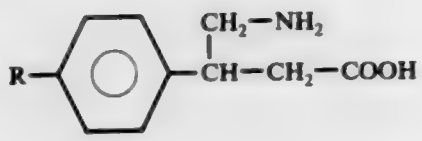
4,084,000

METHOD OF TREATING SCHIZOPHRENIA

Kjell Fuxe, Sollentuna, Sweden, assignor to Nelson Research and Development Company, Irvine, Calif.

Continuation of Ser. No. 596,571, Jul. 16, 1975, Pat. No. 3,978,216, which is a continuation-in-part of Ser. No. 475,856, Jun. 3, 1974, Pat. No. 3,947,579. This application Aug. 16, 1976, Ser. No. 714,698
Int. Cl.[2] A61K *31/195*
U.S. Cl. 424—319 2 Claims

1. A method for treating schizophrenia comprising administering to a schizophrenic an effective amount of a compound having the structural formula



where R is selected from the group consisting of fluorine, chlorine, bromine, trifluoromethyl and a pharmaceutically acceptable salt thereof.

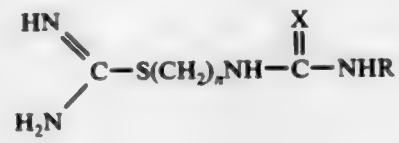
4,084,001

PHARMACOLOGICALLY ACTIVE COMPOUNDS

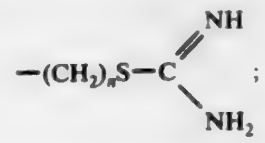
Graham John Durant; Charon Robin Ganellin, both of Welwyn Garden City, and Robert John Ife, Stevenage, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Nov. 23, 1976, Ser. No. 744,584
Claims priority, application United Kingdom, Dec. 1, 1975, 49248/75
Int. Cl.[2] A61K *31/17;* C07C *143/833, 157/00*
U.S. Cl. 424—322 9 Claims

1. A compound of the formula



wherein *n* is an integer from 3 to 6; R is lower alkyl or



X is sulphur; or a pharmaceutically acceptable acid addition salt thereof.

8. A method of blocking histamine H_2-receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim 1.

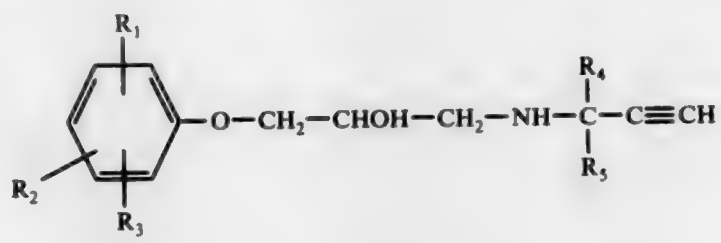
4,084,002

PHARMACEUTICAL COMPOSITIONS CONTAINING A 1-PHENOXY-2-HYDROXY-3-ALKYNYLAMINO-PROPANE AND METHOD OF USE

Herbert Köppe; Werner Kummer; Helmut Stähle, and Gojko Muacevic, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Division of Ser. No. 609,998, Sep. 3, 1975, Pat. No. 4,016,202, which is a continuation-in-part of Ser. No. 444,713, Feb. 22, 1974, Pat. No. 3,925,446. This application Nov. 17, 1976, Ser. No. 742,639
Claims priority, application Germany, Feb. 28, 1973, 2309887; Jan. 26, 1974, 2403809
Int. Cl.[2] A61K *31/135*
U.S. Cl. 424—330 30 Claims

1. A pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective adrenolytic or hypotensive amount of a 1-aryloxy-2-hydroxy-3-alkynylamino-propane selected from the group consisting of racemic or optically active compounds of the formula



wherein

R_1 is a member selected from the group consisting of hydrogen; halogen; nitro; alkyl having from 1 to 5 carbon atoms; alkoxy having from 1 to 4 carbon atoms; alkenyl having from 2 to 5 carbon atoms; alkynyl having from 2 to 5 carbon atoms; alkylamino having from 1 to 5 carbon atoms; dialkylamino having from 1 to 5 carbon atoms in each alkyl; alkoxyalkyl having from 2 to 6 carbon atoms; alkylaminoalkyl having from 2 to 6 carbon atoms; dialkylaminoalkyl having from 3 to 12 carbon atoms; $-(CH_2)_x-$

—NH_2 or —$(CH_2)_x$—OH, where x is an integer from 0 to 3; alkynyloxy having from 3 to 6 carbon atoms; alkenyloxy having from 3 to 6 carbon atoms; —CO—R_9, where R_9 is a member selected from the group consisting of alkyl having 1 to 6 carbon atoms, phenylalkyl having 7 to 10 carbon atoms and phenyl; cycloalkyl having from 3 to 7 carbon atoms; phenyl; phenyl substituted with a substituent selected from the group consisting of halogen, lower alkyl, lower alkoxy and nitro; phenoxy; and phenoxy substituted with a substituent selected from the group consisting of halogen, lower alkyl, lower alkoxy and nitro;

R_2 is a member selected from the group consisting of hydrogen, halogen, alkyl having from 1 to 4 carbon atoms, alkoxy having from 1 to 4 carbon atoms, alkanoyl having from 2 to 4 carbon atoms, alkenyl having from 2 to 4 carbon atoms, amino and nitro;

R_3 is a member selected from the group consisting of hydrogen, halogen, alkyl having from 1 to 4 carbon atoms, alkoxy having from 1 to 4 carbon atoms and, together with R_2 in the ortho-position, —CH=CH—CH=CH— or —$(CH_2)_n$—, where n is an integer from 3 to 5;

R_4 is a member selected from the group consisting of hydrogen and alkyl having from 1 to 3 carbon atoms; and

R_5 is a member selected from the group consisting of alkyl having from 1 to 3 carbon atoms, and, together with R_4, —$(CH_2)_p$—, where p is an integer from 4 to 6;

and physiologically compatible acid addition salts thereof.

4,084,003

PIVALOYL BENZYL AMINES AND METHOD OF USE THEREOF

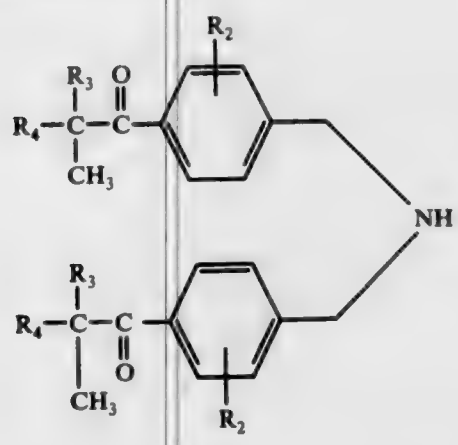
Jeffrey Nadelson, Lake Parsippany, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 625,816, Oct. 28, 1975, Pat. No. 4,011,340. This application Nov. 17, 1976, Ser. No. 742,557

Int. Cl.² A01N *9/20, 9/24;* **C07C** *87/29*

U.S. Cl. 424—330 **14 Claims**

1. A compound of the formula



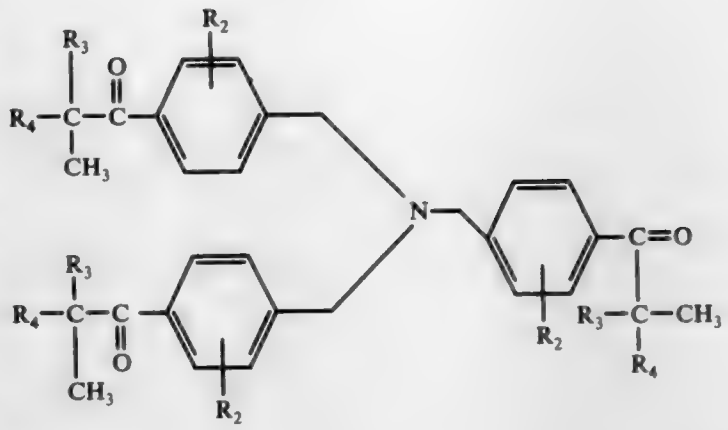
where

R_2 represents hydrogen or halo having an atomic weight of about 19 to 36, and

R_3 and R_4 each independently represent lower alkyl having 1 to 2 carbon atoms,

or a pharmaceutically acceptable salt thereof.

5. A compound of the formula



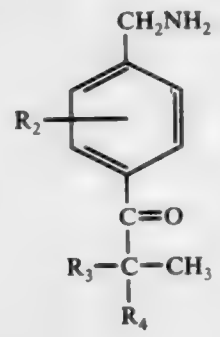
where

R_2 represents hydrogen or halo having an atomic weight of about 19 to 36, and

R_3 and R_4 each independently represent lower alkyl having 1 to 2 carbon atoms,

or a pharmaceutically acceptable salt thereof.

9. A compound of the formula



where

R_2, R_3 and R_4 are as defined in claim 1,

or a pharmaceutically acceptable salt thereof.

13. A method of treating lipidemia which comprises administering to a mammal in need of said treatment a hypolipidemic effective amount of a compound of claim 9.

14. A method of treating obesity which comprises administering to a mammal in need of said treatment a hypolipidemic effective amount of a compound of claim 9.

4,084,004

RODENTICIDAL USE OF DIPHENYLAMINES

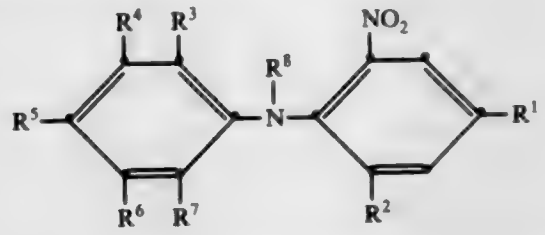
Barry Allen Dreikorn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 617,115, Sep. 26, 1975, abandoned. This application Jul. 21, 1976, Ser. No. 706,021

Int. Cl.² A01N *17/14, 9/20*

U.S. Cl. 424—330 **37 Claims**

1. A method of reducing a population of rats or mice which comprises supplying to a locus frequented by the rate or mice a rodenticidally-effective amount of a rodenticidal composition comprising an inert carrier and a rodenticidally-effective concentration of a compound of the formula



wherein one of R^1 and R^2 represents nitro and the other represents trifluoromethyl or nitro;

R^8 represents hydrogen, methyl, ethyl or propyl, provided that R^8 represents hydrogen when either R^1 or R^2 represents trifluoromethyl;

(1) when R^1 represents trifluoromethyl,
R^3, R^4, R^5, R^6 and R^7 all represent chloro, all represent bromo, or all represent fluoro, or R^4 and R^6 represent trifluoromethyl and R^3, R^5 and R^7 represent hydrogen;
(2) when R^2 represents trifluoromethyl,
R^5 represents halo, hydrogen, cyano, nitro, methyl or trifluoromethyl;
R^3 and R^7 independently represent chloro, bromo, fluoro, methyl, trifluoromethyl, nitro or hydrogen;
R^4 and R^6 independently represent chloro, bromo, fluoro, methyl, trifluoromethyl or hydrogen; provided that
(a) when R^3, R^4, R^6 and R^7 all represent hydrogen, R^5 does not represent fluoro, methyl or hydrogen;
(b) when R^5 represents hydrogen, no more than two of R^3, R^4, R^6 and R^7 represent hydrogen;
(c) no more than two of R^3, R^4, R^5, R^6 and R^7 represent trifluoromethyl;
(d) when one and only one of R^3, R^4, R^6 and R^7 represents trifluoromethyl, two or three of R^3, R^5 and R^7 represent chloro or bromo;
(e) no more than one of R^3, R^4, R^5, R^6 and R^7 represents methyl, except that R^4 and R^6 both may represent methyl;
(f) when R^3, R^4, R^5, R^6 or R^7 represents methyl, two or three of R^3, R^5 and R^7 represent chloro, bromo or fluoro;
(g) no more than one of R^3 and R^7 represents nitro;
(h) when R^3 or R^7 represents nitro, R^5 represents chloro, bromo or nitro;
(3) when both R^1 and R^2 represent nitro and R^8 represents hydrogen,
R^5 represents halo, hydrogen, cyano, nitro or trifluoromethyl;
R^3 and R^7 independently represent bromo, chloro, fluoro, hydrogen or nitro;
R^4 and R^6 independently represent chloro, bromo, fluoro, trifluoromethyl or hydrogen; provided that
(a) no more than two of R^3, R^4, R^5, R^6 and R^7 represent hydrogen, except that R^3, R^5 and R^7 all represent hydrogen when R^4 and R^6 both represent trifluoromethyl;
(b) no more than one of R^3, R^5 and R^7 represents nitro;
(c) when two of R^3, R^4, R^5, R^6 and R^7 represent hydrogen, they are not adjacent to each other;
(d) when either R^3 or R^7 represents nitro, neither R^5 nor the other of R^3 and R^7 represents hydrogen;
(e) R^5 does not represent cyano, nitro or trifluoromethyl when R^4 or R^6 represents trifluoromethyl;
(4) when R^8 does not represent hydrogen,
R^3, R^4, R^5, R^6 and R^7 independently represent chloro, bromo, fluoro or hydrogen, provided that no more than two of R^3, R^4, R^5, R^6 and R^7 represent hydrogen, and two such hydrogen atoms are not adjacent to each other; provided that, in classes 3) and 4) above,
(a) when one of R^3, R^4, R^5, R^6 and R^7 represents fluoro, two or three of R^3, R^5 and R^7 represent chloro or bromo; and provided that, in classes 2), and 3) and 4) above,
(a) when one of R^3, R^4, R^5, R^6 and R^7 represents trifluoromethyl, none of R^3, R^4, R^5, R^6 and R^7 represents fluoro or methyl.

4,084,005

CONTROL OF THE HARMFUL EFFECTS OF FUSARIUM UPON PLANTS

Charles M. Chandler, Columbus, Ga., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 27, 1976, Ser. No. 735,925
Int. Cl.[2] A01N *9/14*
U.S. Cl. 424—337 **7 Claims**

1. A method of controlling the harmful effects of a fungus of the genus Fusarium upon plants which comprises:
contacting the plant with bis(4-chlorophenyl)methyl methyl sulfone in an amount effective to control the harmful effects of the fungus upon the plant.

4,084,006

METHOD OF USING DIALKYLPHENOLS AN ANTIVIRAL AGENTS

Byron E. Leach, 1550 N. Parkway, No. 115, Memphis, Tenn. 38112

Continuation-in-part of Ser. No. 697,530, Jun. 18, 1976, abandoned, which is a continuation of Ser. No. 553,744, Feb. 27, 1975, abandoned, which is a continuation of Ser. No. 378,186, Jul. 11, 1973, abandoned. This application Mar. 21, 1977, Ser. No. 779,951
Int. Cl.[2] A61K *31/05*
U.S. Cl. 424—346 **4 Claims**

1. A method of inhibiting the growth of a virus selected from the group consisting of San Carlos virus, herpes virus, measles virus, and influenza virus in cells infected with said virus, consisting essentially of administering to said cells from 1 femtogram to 100 nanogram of 2,4-dimethyl phenol or the pharmaceutically acceptable addition salts thereof.

4,084,007

METHOD OF PRODUCING EDIBLE MEAL FROM COTTONSEED

James P. Hipp, deceased, late of Tulia, Tex. (by Gretta Hipp, administratrix), and Carter Foster, Jr., Temple, Tex., assignors to Carpat International Inc., Tulia, Tex.

Continuation-in-part of Ser. No. 446,638, Feb. 28, 1974, abandoned. This application Aug. 16, 1976, Ser. No. 714,593
Int. Cl.[2] A23L *1/36*
U.S. Cl. 426—430 **15 Claims**

1. A process for producing edible meal from cottonseed comprising the steps of:
(a) introducing dry, raw cottonseed meats into a cooker;
(b) subjecting said meats in said cooker to mild agitation at a temperature range between about 140° F to 170° F under high humidity conditions for a period of time sufficient to raise the moisture content of said meats to a range of about 14% to 30% by weight of said meats, thereby creating conditions for the release of oil and unruptured gossypol cells from said meats;
(c) continuing said agitation at said temperature range for a period of approximately 20 to 50 minutes, whereby said oil and said unruptured gossypol cells are released from said raw meats along with moisture and form an admixture therewith; and
(d) flowing off said admixture from said meats so as to substantially reduce the moisture content of said meats below the level attained during said agitation under high humidity conditions whereby said meats have a reduced oil and gossypol cell content.

4,084,008

INSTANTIZED POTATO PRODUCTS AND METHOD OF MAKING SAME

Mao H. Yueh, and Herman W. Mueller, both of Minneapolis, Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jul. 14, 1975, Ser. No. 595,931
Int. Cl.[2] A23L *1/216*
U.S. Cl. 426—464 **12 Claims**

1. A method for preparing dehydrated instantized potato pieces comprising cutting a fresh potato into pieces, blanching the pieces, dehydrating the pieces to a moisture content in the range of about 35–65% by weight, steam cooking the partially dehydrated pieces and then dehydrating the cooked pieces to a moisture content of less than 10% by weight.

4,084,009

FLAVORING WITH A HYDROXY CYCLOHEXENONE DERIVATIVE

Kenneth K. Light, Long Branch; Bette M. Spencer, Ocean Grove; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Manfred Hugo Vock, Locust, N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 3, 1977, Ser. No. 774,059
Int. Cl.[2] A23L *1/226*
U.S. Cl. 426—538 2 Claims

1. A process for augmenting or enhancing the organoleptic properties of a foodstuff by adding to said foodstuff from 0.5 parts per million up to about 100 parts per million based on the total composition of 4-hydroxy-2,4,6,6-tetramethylcyclohex-2-en-1-one.

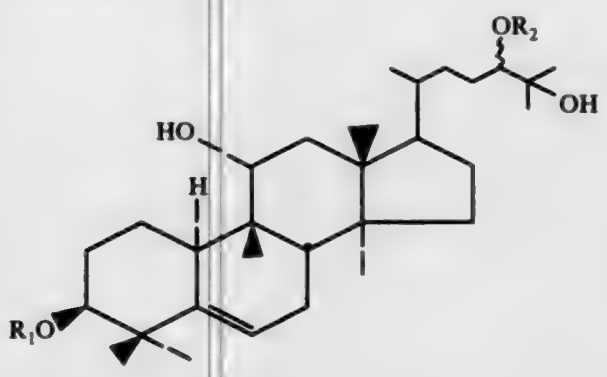
4,084,010

GLYCOSIDES HAVING SWEETNESS

Tsunematsu Takemoto, Tokushima; Tadashi Nakajima, Takatsuki; Shigenobu Arihara, Tokushima, and Megumi Okuhira, Ibaraki, all of Japan, assignors to Tsunematsu Takemoto, Tokushima and Nippon Shoji Kaisha, Ltd., Osaka, both of Japan

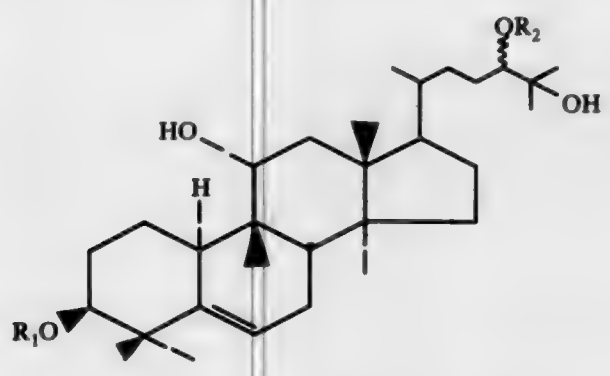
Filed Dec. 29, 1976, Ser. No. 755,425
Claims priority, application Japan, Jan. 1, 1976, 51-001233; Sep. 9, 1976, 51-108499
Int. Cl.[2] A23L *1/22;* C07J *17/00*
U.S. Cl. 426—548 9 Claims

1. A compound of the formula:



wherein R_1 and R_2 are the same or different and are each hydrogen, a residue of β-D-glucose, or a residue of an oligosaccharide comprising not more than four D-glucoses having 1,2- 1,4- and/or 1,6-bond, provided that the total number of the D-glucose residue in R_1 and R_2 is not more than 6 and provided that both R_1 and R_2 are not both hydrogen at the same time.

8. A sweetening agent comprising a compound of the formula:



(I)

wherein R_1 and R_2 are the same or different and are each hydrogen, a residue of β-D-glucose, or a residue of an oligosaccharide comprising not more than four D-glucoses having 1,2-, 1,4- and/or 1,6-bond, provided that the total number of the D-glucose residue in R_1 and R_2 is 4 to 6, and a non-toxic carrier and provided that both R_1 and R_2 are not both hydrogen at the same time.

4,084,011

PREPARATION OF MILK CRUMB FOR MILK CHOCOLATE MANUFACTURE

Janine Chevalley, La Tour-de-Peilz; Walter Rostagno, Corseaux, and Jean-Pierre Besson, Clarens, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Mar. 25, 1976, Ser. No. 670,228
Claims priority, application Sweden, Apr. 2, 1975, 4151/75
Int. Cl.[2] A23C *23/00;* A23G *1/00*
U.S. Cl. 426—580 6 Claims

1. A method of making a milk crumb which comprises:
a. preparing a mixture selected from the group consisting of (1) milk and sugar and (2) milk, sugar and cocoa;
b. drying the mixture under reduced pressure to provide a milk crumb; and
c. compressing the milk crumb under a pressure of at least 100 kg/cm^2 at a temperature in the range from 70° to 95° C to effect crystallisation of amorphous form sugar present in the crumb.

4,084,012

EDIBLE OIL EMULSIONS

Karl L. Krumel, Midland, Mich.; Trudy L. Krasnoff, Reading, Mass., and Terry H. Fiero, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 3, 1975, Ser. No. 628,452
Int. Cl.[2] A23 *2/00*
U.S. Cl. 426—590 6 Claims

5. In a process for preparing a stable edible oil emulsion syrup for use in cloudy beverages, the improvement consisting of dispersing an edible oil emulsion consisting of:
(a) 1–30 wt. % edible oil,
(b) 1–20 wt. % of a water soluble hydroxypropylmethyl cellulose ether having a methoxyl degree of substitution of about 1.12–1.56, a hydroxypropoxyl molar substitution of about 0.10–0.29, a thermal gel point of at least 70° C, and a 2% aqueous solution viscosity of 2–15 cps at 20° C,
(c) 5–30 wt. % of propylene glycol, and
(d) water in an aqueous sugar solution.

4,084,013

PROCESS FOR FORMING SIMULATED NUT-LIKE FOODS

Marvin O. Mikkelson, Atchison, Kans., and Boyd R. Rasmus, Fridley, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Dec. 16, 1976, Ser. No. 751,283
Int. Cl.[2] A23L *1/34, 1/36*
U.S. Cl. 426—601 4 Claims

1. A continuous process for forming a simulated nut-like food product, said process comprising:
a. providing a means for continuously mixing the product having a plurality of mixing zone portions distributed along the flow path of the food product therethrough, and having at least one inlet between said mixing zone portions thereof,
b. providing an edible hydratable film forming substance and an edible water immiscible oleaginous material in liquid form,
c. continuously introducing the liquid and the film former to the mixing means to form a slurry,
d. an inlet located intermediate to the ends of the mixing means continuously introducing water into the slurry, said film forming substance, oleaginous material and water comprising by weight about 1.5% to 32%, 25% to 85% and 13.5% to 67% respectively,
e. continuously mixing and advancing the slurry with said added water to produce an aqueous dispersion within the mixing means in which the film forming substance is hydrated by the added water to form a stable dispersion

comprising a continuous phase within which the water immiscible liquid is dispersed,

f. expelling the stable dispersion from the outlet end of the mixer, and

g. thereafter slowly drying the expelled dispersion to a moisture content of 10% or less while preserving its continuity.

4,084,014

PROCESS FOR SEALING ANODIC OXIDATION LAYERS ON ALUMINIUM SURFACES AND ITS ALLOYS

Juan Brugarolas Fabregas, 92, Via Layetana, Barcelona, Spain

Filed Dec. 14, 1976, Ser. No. 750,541
Claims priority, application Spain, Oct. 5, 1976, 452.499
Int. Cl.[2] C23D *11/24*
U.S. Cl. 427—409 **5 Claims**

1. The method of sealing surface porosities of a surface layer of aluminum oxide formed by anodic oxidation on an article comprised of aluminum which comprises contacting said surface layer with an aqueous solution which includes phosphate ions, trivalent chromium ions, and an emulsion or dispersion or organic resin selected from the group consisting of polymers or co-polymers of acrylic, vinylacrylic and styrene-acrilic, and thereafter causing said surface layer to dry, said ingredients being present in substantially the following concentration ranges:

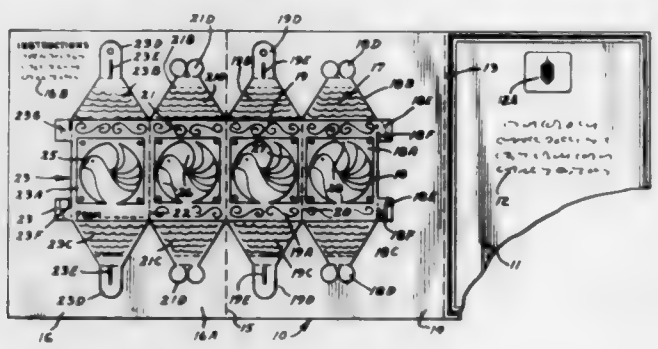
phosphate ions (expressed as P_2O_5) .5 to 150 grs./liter
trivalent chromium (expressed as Cr_2O_3) .01 to 20 grs/liter
resin (solids) 2 to 300 grs/liter.

4,084,015

CAGE ORNAMENT AND CARD

Michael P. Patterson, 1425 Maricopa Dr., Oshkosh, Wis. 54901

Filed May 12, 1976, Ser. No. 685,818
Int. Cl.[2] B65D *5/02*; G09F *1/06*
U.S. Cl. 428—9 **3 Claims**



1. In a greeting card made of foldable stock material comprising a plurality of flat card panels folded relative to each other along at least one fold line, and having a punchout ornament carried thereon, the improvement comprising said ornament being formed of first, second, third and fourth ornament panels each foldably connected to the next adjacent ornament panel, with the outer edges of said first and fourth panels being unattached, and at least one of said fold lines between the ornament panels corresponding to the fold line between the card panels, each of said ornament panels comprising a center panel of generally rectilinear form, and separate generally triangular end portions foldably attached to each of said center panels at the opposite ends of the center panels and extending away from the respective center panels, said center panels being foldable relative to each other to form an open center three dimensional polygon, means to retain the normally free edges of said first and fourth center panels together to form a generally rectilinear tube from said four center panels having a central axis, the end portions of the respective center panels all being foldable toward the central axis to form a pyramidal shape at opposite ends of said three dimensional polygon formed by the center panels, the end portions of the first and third center panels including tab means at the outer ends thereof, said tab means being foldable relative to said end portions adjacent said central axis when the end portions are folded in toward said central axis to extend outwardly from the said end portions at the opposite ends of the ornament, and said tab means of the first and third end portions of the respective ends of the ornament being substantially continguous to each other when folded to pyramidal shape and the end portions of the respective second and fourth center panels including elongated tabs which extend outwardly from the ornament when the end portions of the second and fourth center panels are folded to pyramidal shape, said tabs on said second and fourth end portions including slits adapted to receive both of the tab means of the respective first and third end portions to hold the tab means at each of the opposite ends of said ornament contiguous and to hold the end portions in pyramidal shape and wherein at least one of said center portions has a partially punched out representation of an object, said representation being retained by only two narrow attachment bands to the respective center portion, said attachment bands forming pivot aligning members to permit twisting the representation out of the plane of the respective center portion.

4,084,016

PREPARATION OF LEGUME CHIPS

Samuel Kon, Berkeley, and Catherine J. Dunlap, Mill Valley, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 28, 1976, Ser. No. 754,920
Int. Cl.[2] A23L *1/20*
U.S. Cl. 426—634 **6 Claims**

1. A process for preparing ready-to-eat legume products, which comprises

(a) combining 2 to 10 parts of cooked, acidified broken cell legume powder with one part of cooked whole cell legume powder,

(b) adding water at a temperature of about 60° to 75° C. to the so-combined powders to form a paste, said water being added in an amount of 28 to 45%, based on the weight of the paste,

(c) extruding the paste into thin sheets,

(d) cutting the sheets into pieces, and

(e) par-frying the pieces in edible oil.

4,084,017

FIBROUS PROTEIN MATERIALS

Myung Ki Kim, Congers, and Joaquin Castro Lugay, Thornwood, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 480,987, Jun. 18, 1974, Pat. No. 4,001,459. This application Jun. 16, 1976, Ser. No. 697,077
Int. Cl.[2] A23J *3/00*
U.S. Cl. 426—656 **10 Claims**

1. A method for preparing a texturized protein material comprising:

(a) preparing a mixture comprising heat coagulable protein and water;

(b) cooling the mixture to freeze the water into elongated ice crystals and to separate the protein into well-defined, well-ordered, substantially independent zones;

(c) subjecting the frozen mass to a temperature at least 50° C different from that of the frozen mass to cause shock fracturing of the material at lines of weakness in the frozen mass perpendicular to the elongated ice crystals;

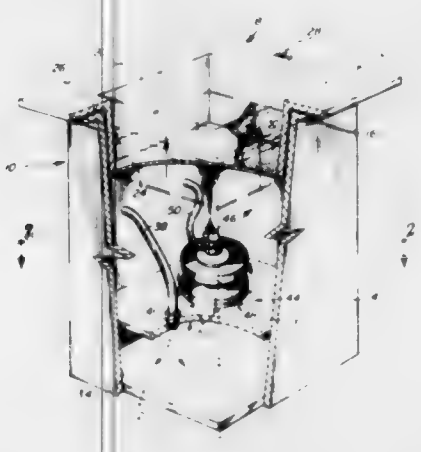
(d) stabilizing the protein in the frozen mass effectively to prevent loss of fibrous structure upon subsequent heating; and

(e) heating the stabilized material to coagulate the protein.

4,084,018
METHOD OF IONIZING GASEOUS FLOW IN FLUIDIZATION CHAMBER

Allan V. Karr, Stratford, Conn., assignor to Electrostatic Equipment Corporation, New Haven, Conn.

Division of Ser. No. 682,183, Apr. 30, 1976, Pat. No. 4,030,446.
This application Jun. 20, 1977, Ser. No. 808,141
Int. Cl.[2] B05D *1/06*
U.S. Cl. 427—27 **2 Claims**

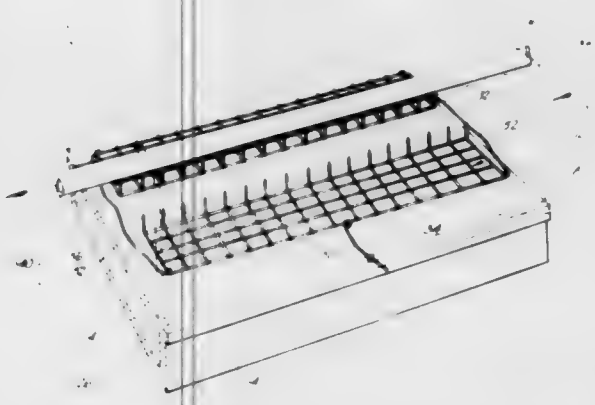


1. A method for coating a workpiece with a particulate material, comprising the steps of: (a) disposing a bed of particulate material, capable of acquiring an electrostatic charge, upon a porous support plate; (b) charging, to a high voltage, electrode means having multiple charge-concentrating portions thereon; (c) directing an airflow in a path substantially conforming to and in contact with said charge-concentrating portions of said charged electrode means, to thereby ionize the air of said stream, and thereafter passing said ionized air stream upwardly through the support plate to simultaneously fluidize the bed of particulate material and electrostatically charge the particles thereof; and (d) disposing a workpiece proximate to the bed of particulate material and electrostatically charge the particles thereof; and (d) disposing a workpiece proximate to the bed of charged particles, while maintaining the workpiece at an effectively opposite electrical potential thereto, to cause attraction and adherence of the particles thereto and thereon.

4,084,019
ELECTROSTATIC COATING GRID AND METHOD

Christy Christ, Trenton, and Hart F. Graff, Middletown, both of Ohio, assignors to ARMCO Steel Corporation, Middletown, Ohio

Filed Feb. 5, 1976, Ser. No. 655,460
Int. Cl.[2] B05D *1/06*; B05B *5/02*
U.S. Cl. 427—32 **6 Claims**



1. A method for electrostatically depositing a uniform coating of thin film of powdered plastic on an elongated metal substrate, which comprising the steps:

(a) providing fluidized bed means including a substantially closed container having a passageway for receiving an elongated metallic substrate;

(b) conveying said elongated metal substrate through the passage way of said fluidized bed means in a path of travel above the upper surface of said bed on a substantially horizontal pass line; and

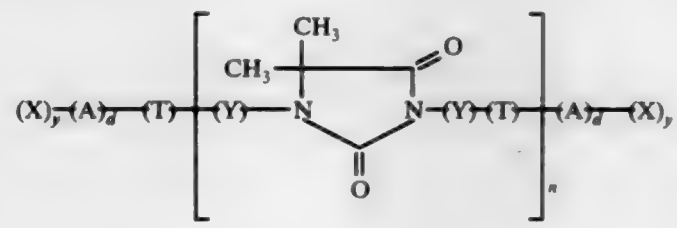
(c) forming a row of localized corona discharges to either side of said passing substrate to effect electrostatic deposition of a thin uniform film coating of said powdered material thereon by a power grid comprising two co-planar wire mesh elements positioned beneath the surface of said bed, said elements having opposed edges in parallel spaced relationship and defining a gap therebetween beneath said pass line, said edges being upturned to form a plurality of electrode segments, the tips of said electrode segments being substantially coincident with the upper surface of said bed when energized.

4,084,020
RADIATION POLYMERIZABLE POLYENES DERIVED FROM HYDANTOIN ACIDS, AMINES AND ESTERS

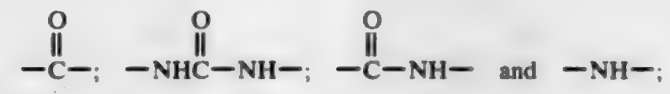
Eckart Mathias, Catonsville, and Charles Robert Morgan, Brookeville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jun. 17, 1976, Ser. No. 697,284
Int. Cl.[2] C08F *8/18*; B05D *3/06*
U.S. Cl. 427—41 **4 Claims**

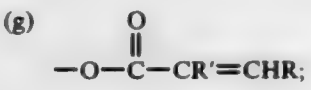
1. The process of forming a solid crosslinked polythioether which comprises admixing a composition comprising (1) a polyene of the formula



wherein Y is alkylene containing 2 to 3 carbon atoms; T is a member of the group consisting of



A is a polyvalent organic radical member free of reactive carbon to carbon unsaturation and independently selected from the group consisting of aryl, substituted aryl, aralkyl, substituted aralkyl, cycloalkyl, substituted cycloalkyl, alkyl and substituted alkyl each containing up to 36 carbon atoms and mixtures thereof, said group members can be connected by a chemically compatible linkage selected from the group consisting of —O—, —S—, carboxylate, carbonate, carbonyl, urethane and substituted urethane, urea and substituted urea, amide and substituted amide, amine and substituted amine, and sulfone; said substituents on the substituted members may be such groups as chloro, bromo, nitro, acetoxy, acetamido, phenyl, benzyl, alkyl and alkoxy of 1 to 9 carbon atoms, and cycloalkyl of 3 to 8 carbon atoms, X is a member selected from the group consisting of (a) $-(CH_2)_d-CR'=CHR$, (b) $-O-(CH_2)_d-CR'-CHR$, (c) $-S-(CH_2)_d-CR'=CHR$, (d) $-(CH_2)_d-C\equiv CR$, (e) $-O-(CH_2)_d-C\equiv CR$, (f) $-S-(CH_2)_d-C\equiv CR$;



and mixtures thereof; where R and R′ each are indepently selected from the group consisting of hydrogen and methyl radicals; *d* is an integer from 0 to 1; *n* is 1 to 30; and *y* from 1 to 10; and (2) a polythiol containing at least 2 thiol groups per molecule, the total combined functionality of (a) the reactive terminal unsaturated carbon to carbon bonds per molecule in the polyene and (b) the thiol groups per molecule in the poly-

thiol being greater than 4, and exposing said curable composition under ambient conditions to a free radical generator.

4,084,021

METHOD FOR RENDERING SUBSTRATES RESISTANT TO ABRASION

Timothy C. Sandvig, Woodville, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 513,116, Oct. 8, 1974, abandoned. This application Sep. 19, 1975, Ser. No. 615,025
Int. Cl.[2] B05D *3/02, 3/06*
U.S. Cl. 427—44 **7 Claims**

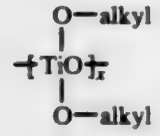
1. A method for rendering a surface of a substrate resistant to abrasion comprising

(A) applying to said surface of a substrate a composition comprising:

(1) a metal ester selected from

(a) a chelate of an ester of titanium, aluminum or zirconium having at least two ester groups of the formula —OR bonded directly to the metal wherein R is hydrocarbyl of 1 to 18 carbon atoms, or

(b) a polymeric alkyl titanate having the repeating structure



and,

(2) an ambifunctional reactive silane selected from epoxy-silane, vinyl silane, and methacryloxy-silane, and

(B) curing said composition to an abrasion resistant state.

4,084,022

METHOD FOR TIN PLATING PRINTED BOARDS

Josef Tratz, and Egon Jäger, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 23, 1976, Ser. No. 725,944
Claims priority, application Germany, Sep. 30, 1975, 2543674
Int. Cl.[2] H05K *3/22, 3/24*
U.S. Cl. 427—96 **7 Claims**

1. A process for bonding a printed circuit board with tin by passing the printed circuit board through a bath of tin, said printed circuit board having a number of closely spaced conductor paths separated by non-conductive areas, wherein the process comprises the step of: masking selected portions of said printed circuit board with heat and solder resistant coating material where the non-conductive areas are small to prevent misbonding due to bubble formation and gap bridging, each of said selected portions including a short section of an associated conductor path and a small section of the non-conductive areas adjacent to the short section of said associated conductor path.

4,084,023

METHOD FOR DEPOSITING A METAL ON A SURFACE

Robert Vincent Dafter, Jr., Ewing Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,455
Int. Cl.[2] C23C *3/02*
U.S. Cl. 427—98 **12 Claims**

1. A method for selectively metallizing a surface of a substrate comprising the steps of:

(a) depositing on the surface a layer of a sensitizing composition by treating the surface with a solution comprising at least (*a'*) a reducible salt of a non-noble metal, selected from the group consisting of a reducible salt of copper, a reducible salt of nickel and a reducible salt of cobalt and (*b'*) a light radiation sensitive reducing agent for said salt;

(b) exposing said layer-deposited surface to a source of light radiant energy to reduce said metal salt to a reduced metal salt species and wherein at least one of said treating steps is restricted to a selected pattern on the surface to produce a real image of the reduced metal salt species in the selected pattern which is capable of directly catalyzing the deposition thereon of a metal from an electroless metal deposition solution; and

(c) treating said real image containing surface, prior to exposure thereof to an electroless metal deposition solution, with a fixing solution comprising a reducing agent selective for the non-noble metal ions of the salt, contained within the real image, selected from the group consisting of formaldehyde and paraformaldehyde when said salt is a reducible salt of copper, and formaldehyde, paraformaldehyde and a hypophosphite species when said salt is a reducible salt of nickel or cobalt, to stabilize the pattern.

4,084,024

PROCESS FOR THE PRODUCTION OF SILICON OF HIGH PURITY

Joseph C. Schumacher, Los Angeles, Calif., assignor to J. C. Schumacher Co., Oceanside, Calif.

Continuation-in-part of Ser. No. 630,305, Nov. 10, 1975, abandoned. This application Nov. 29, 1976, Ser. No. 745,861
Int. Cl.[2] C01B *33/02*
U.S. Cl. 427—215 **11 Claims**

1. A process for the production of high purity silicon comprising: pre-heating hydrogen to a temperature range of substantially 900° C–1200° C; separately pre-heating a halosilane to a temperature range of substantially 900° C–1200° C at which the pre-heated halosilane will react in vapor phase with the separately pre-heated hydrogen; injecting the separately pre-heated halosilane and the separately pre-heated hydrogen as continuous streams into a mixer wherein the pre-heated halosilane vapor and the pre-heated hydrogen gas are intimately mixed to produce chemical reaction in a continuous vapor stream; reducing the pre-heated halosilane with the pre-heated hydrogen in the continuous vapor stream to cause silicon to be produced in the vapor stream; injecting a high velocity stream of silicon particles into the mixer to act as nuclei for the silicon produced during the reducing step; pre-heating the stream of silicon particles to a temperature range of substantially 900° C–1200° C prior to injecting the stream into the mixer; and separating the silicon from the vapor stream.

4,084,025

PROCESS OF APPLYING PROTECTIVE ALUMINUM COATINGS FOR NON-SUPER-STRENGTH NICKEL-CHROMIUM ALLOYS

John R. Rairden, III, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 494,036, Aug. 2, 1974, abandoned. This application May 24, 1976, Ser. No. 689,450
Int. Cl.[2] C23C *1/08, 9/02, 13/02*
U.S. Cl. 427—229 **14 Claims**

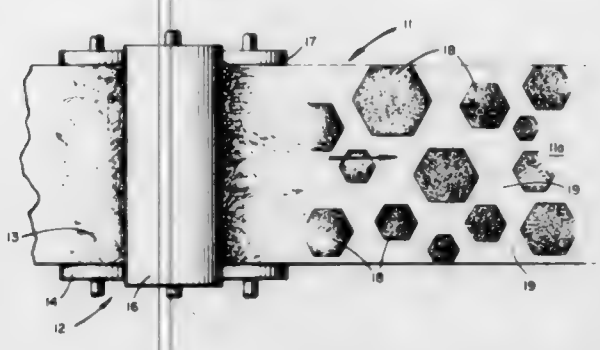
1. A method of improving the high temperature oxidation resistance of a non-super-strength alloy body comprising forming an alloy consisting essentially of, on a weight basis, 10–30% chromium, 2–20% cobalt said amount of cobalt being sufficient to prevent the formation of a continuous brittle α-chrome phase, 0–2.5% manganese, 0–1.5% silicon, 0–1.0% iron, 0–0.25% carbon, 0–0.1% sulfur, and the balance being nickel, and subjecting said body to a diffusion coating consisting essentially of aluminum whereby an inherently bonded, substantially pore-free aluminum coating results.

4,084,026

METHOD OF EMBOSSING TEXTILE MATERIAL

Manuel Taberner Gandia, Onteniente,, Spain, assignor to Colortex, S.A., Onteniente, Spain

Filed Feb. 6, 1976, Ser. No. 656,068
Claims priority, application Spain, Feb. 6, 1975, 434.507
Int. Cl.[2] B05D *3/00, 5/00*
U.S. Cl. 427—276 5 Claims



1. A process of making embossed textile material such as blankets, bedspreads and the like comprising the steps of outlining areas which are not to be embossed on the textile material, treating only said outlined areas with a resinous material, permitting the resin in the treated areas of the textile material to cure, performing a teazeling operation on the textile material to remove the nap from said untreated areas, and subjecting the textile material to a finishing operation to provide a smooth, teazeled nap of the desired length on the material.

4,084,027

PROCESS FOR IMPARTING DURABLE FLAME-RETARDANCY TO COTTON-POLYESTER BLENDED TEXTILES

Ralph J. Berni, Metairie; Marilyn M. Smith, and Ruth R. Benerito, both of New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 6, 1977, Ser. No. 794,594
Int. Cl.[2] C09D *5/18;* C09K *3/28*
U.S. Cl. 427—390 D 6 Claims

1. A method of applying flame retardant water-soluble phosphorus and nitrogen containing compounds and water-insoluble halogenated flame retardant compounds to a cotton-polyester fabric, the method comprising:

(a) incorporating an emulsifying agent of high Hydrophilic-Lypophilic Balance (HLB) Number of at least 14, in the aqueous phase of an aqueous phase-hydrocarbon phase two phase system, and an emulsifying agent of low HLB Number of 9 or less in the chlorinated hydrocarbon phase, thus providing a stable emulsion of HLB Number of about from 9.6 to 15.1, wherein the ratio of aqueous phase to chlorinated hydrocarbon phase is about from 3:1 to 2:1, said stable emulsion having a suitable shelf life for finishing simultaneously the cotton and the polyester fiber when the final emulsion contains, respectively, the phosphorus and nitrogen flame retardants in the water phase and the halogenated flame retardant in the water-insoluble phase;

(b) impregnating the fabric with said stable emulsion; and

(c) curing the impregnated fabric.

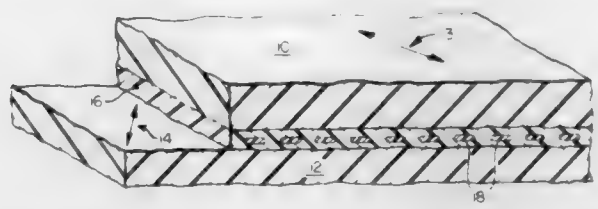
4,084,028

HIGH STRENGTH LAMINATE

Ole-Bendt Rasmussen, 7, Topstykket, 3460 Birkeroed, Denmark

Filed Feb. 12, 1976, Ser. No. 657,647
Claims priority, application United Kingdom, Feb. 12, 1975, 5973/75
Int. Cl.[2] B32B *5/12*
U.S. Cl. 428—105 7 Claims

1. A high strength laminate comprising at least two films of polymeric material, each having a predominant grain direction, arranged with said grain directions in intersecting relation, each adjacent pair of said films being laminated by an intermediate adhesive bonding layer, and an array of filamentitious structures having a generally predominate lengthwise direction disposed in each such bonding layer with said generally predominate lengthwise direction of said array extending in intersecting relation to the grain directions of both the adjacent films, said filamentitious structures being substantially free of adhesive bonding with said adhesive bonding layer and having a significant stretch capacity.

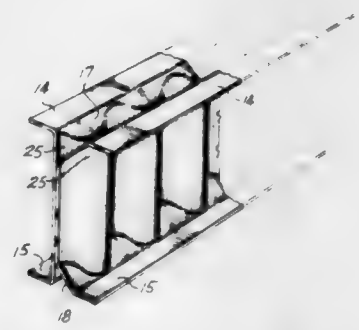


4,084,029

SINE WAVE BEAM WEB AND METHOD OF MANUFACTURE

William Rendall Johnson, Kent, and Ralph Raleigh Welsh, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 25, 1977, Ser. No. 818,910
Int. Cl.[2] B31F *1/20, 1/22*
U.S. Cl. 428—119 6 Claims



1. A structural channel having a length and a back surface, and a web having a base plane and two edges, said edges being in said base plane, a first flange integrally formed with said web at one of said two edges, a second flange integrally formed with said web at the other of said two edges, said first and second flanges being disposed at a predetermined angle to said base plane of said web and extending in a first direction from said base plane, said web having corrugations in the form of sequential protrusions, each protrusion extending from one of said two edges to the other, said protrusions protruding from said base plane in a second direction opposite to said first direction, said second direction being the direction said back surface faces from said base plane, each of said protrusions having two ends, each of said ends intersecting one of said edges of said web, each of said ends of each protrusion being oriented substantially at 45° to said base plane, said ends of each said protrusion sloping toward each other, the overall conformation being such that fibrous fabric, oriented with its fibers at 45° to said protrusions and pressed against said structural channel will conform uniformly to said web and said flanges without wrinkling of said fabric or stretching of said fibers.

4,084,030

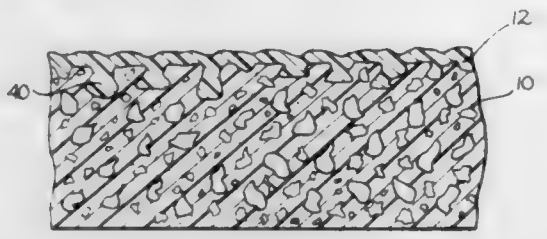
TEXTURED-FOAM COATED URETHANE WALL AND CEILING MATERIAL

Clark W. Goodale, Canoga Park; Charles W. Morgan, Rolling Hills, and Albert L. Rhoton, Cypress, all of Calif., assignors to United Foam Corporation, Compton, Calif.

Division of Ser. No. 743,169, Nov. 19, 1976, Pat. No. 4,049,848, which is a continuation-in-part of Ser. No. 532,315, Dec. 13, 1974, abandoned. This application May 16, 1977, Ser. No. 796,965

Int. Cl.[2] B32B *3/26*

U.S. Cl. 428—141 **10 Claims**



1. A composite building material having a continuously textured surface comprising:

(a) a resilient urethane foam substrate, said substrate having an irregular sea sponge cell structure; and

(b) a cured elastomeric layer adjacent to and embedded in the cells of one surface of said substrate, said elastomeric layer having an exposed surface with a texture which approximates the cellular structure of the adjacent sea-sponge substrate surface.

4,084,031

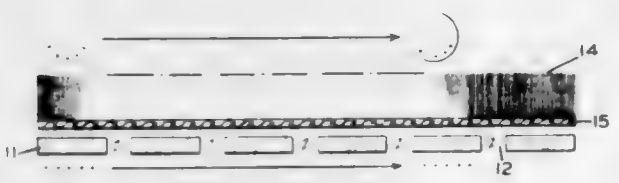
STATIC DISCHARGING FLOOR COVERING

Imre J. Barsy, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Jul. 26, 1976, Ser. No. 708,751

Int. Cl.[2] B32B *33/00*

U.S. Cl. 428—95 **15 Claims**



1. In an article of manufacture which in use tends to accumulate a charge of static electricity and having secured thereto a continuous static electric dissipating substrate, the improvement comprising interrupting said static electric dissipating substrate with grid-like discontinuities wherein the grid-like discontinuities are squares of not greater than 18 × 18 inches, said squares separated one from the other by 0.010 inch to 0.050 inch.

4,084,032

PROCESS FOR MAKING HOT STAMPING FOIL FOR PRODUCING TEXTURED SURFACE EFFECTS

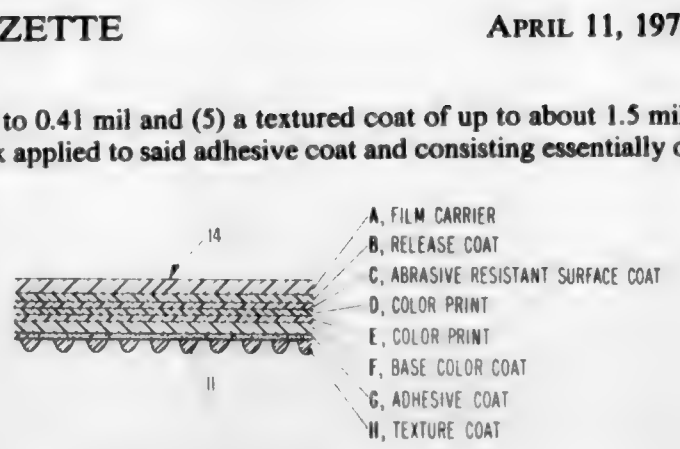
John D. Pasersky, Broomall, Pa., assignor to Kurz-Hastings, Inc.

Continuation-in-part of Ser. No. 539,168, Jan. 7, 1975, abandoned. This application Mar. 1, 1976, Ser. No. 662,919

Int. Cl.[2] B44C *1/16*; B41M *3/12*

U.S. Cl. 428—172 **1 Claim**

1. A hot stamping foil for producing textured surface effects consisting essentially of (1) a carrier sheet, (2) a releasing lacquer coat, applied to said carrier sheet, (3)an opaque color coat applied to said releasing lacquer coat, (4) a heat and pressure activatable resinous adhesive coat applied to said opaque color coat, wherein the combined thickness of (3) and (4) is about 0.35 to 0.41 mil and (5) a textured coat of up to about 1.5 mils thick applied to said adhesive coat and consisting essentially of



a threedimensional pattern ridges and depressions formed from a low viscosity thermoplastic composition high solids ink.

4,084,033

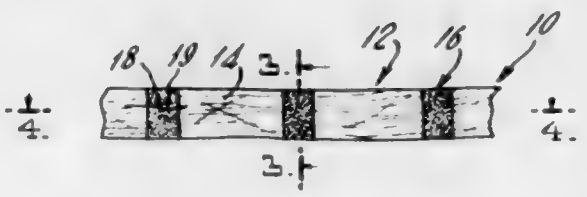
BONDED NONWOVEN FABRICS

Arthur H. Drelich, Plainfield, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 521,430, Nov. 6, 1974, abandoned, which is a continuation of Ser. No. 297,164, Oct. 12, 1972, abandoned, which is a division of Ser. No. 65,880, Aug. 21, 1970, which is a continuation-in-part of Ser. No. 800,265, Feb. 18, 1969, Pat. No. 3,649,330, which is a continuation-in-part of Ser. No. 618,317, Feb. 24, 1967, abandoned, and a continuation-in-part of Ser. No. 623,797, Mar. 10, 1967, Pat. No. 3,536,518, and Ser. No. 2,955, Jan. 14, 1970, abandoned, and a continuation-in-part of Ser. No. 817,177, Apr. 17, 1969, which is a continuation-in-part of Ser. No. 639,011, May 17, 1967, abandoned. This application Jun. 7, 1976, Ser. No. 693,654

Int. Cl.[2] D04H *1/58, 1/62, 1/66*

U.S. Cl. 428—198 **13 Claims**



1. A bonded, fibrous nonwoven textile fabric having excellent strength and textile-like softness, drape and hand comprising: a fibrous web of overlapping, intersecting fibers, said fibrous web comprising bonded areas and unbonded areas having boundaries therebetween, said bonded areas being spaced from said unbonded areas in a predetermined, intermittent pattern; the fibers in said bonded areas being bonded with from about 50% to about 120% by weight, based on the weight of the fibers therein, of a synthetic resin; said boundaries being sharp and distinct and being substantially free of binder feathering and wherein

(a) the optical density at one side of said bonded areas increases from approximately 0 to a value of at least 0.6 in moving a distance of less than about 1 mm. from an unbonded area directly into a bonded area;

(b) the optical density of said bonded areas is at least 0.6; and

(c) the optical density at the other side of said bonded areas decreases to substantially zero in moving a distance of less than about 1 mm. from said bonded area directly into the next unbonded area.

4,084,034

SODIUM CHLORIDE AND POLYDIALLYL DIMETHYL AMMONIUM CHLORIDE AS AN ELECTROCONDUCTIVE ADDITIVE

Roger H. Jansma, Park Forest, and William E. Albrecht, Woodridge, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

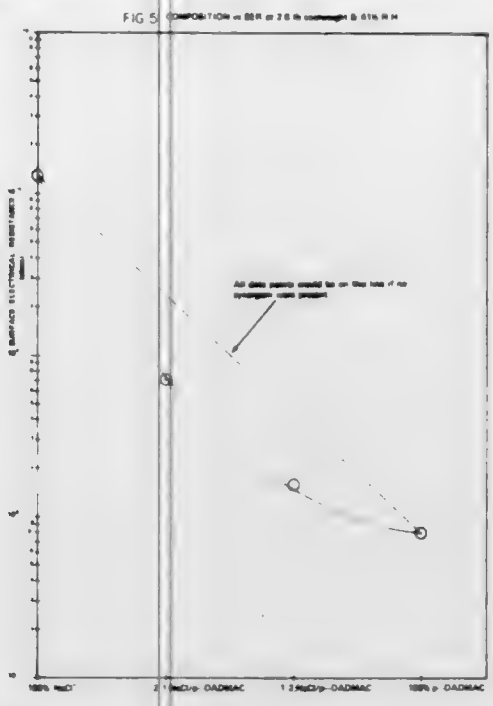
Filed Aug. 23, 1976, Ser. No. 716,395

Int. Cl.[2] B32B *19/02, 23/08, 27/10*

U.S. Cl. 428—342 **2 Claims**

1. Electroconductive paper including a layer of a coating

composition containing sodium chloride and a water-soluble polymer consisting of units derived from diallyl dimethyl ammonium chloride, wherein the electroconductive paper



contains about 0.1 to 3.0 pounds of the coating composition per 3,000 square feet of the paper and the molar ratio of the sodium chloride to the dialkyl dimethyl ammonium chloride ranges from 1:3 to 3:1.

4,084,035

SELF-ADHESIVE POLYESTER FILMS OF A COPOLYMER OF VINYL ACETATE AND MALEATE DIESTER

Rene Arpin, Lyon, and Philippe Tissot, Miribel, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 563,172, Mar. 28, 1975, abandoned. This application Jan. 13, 1977, Ser. No. 759,232
Claims priority, application France, Mar. 29, 1974, 74 11353
Int. Cl.[2] C09J *7/02*
U.S. Cl. 428—352 **6 Claims**

1. A self-adhesive film comprising a support layer in the form of a film of a saturated polyester having, on one face thereof, an adhesive layer which comprises a copolymer of vinyl acetate and a maleate diester of an aliphatic alcohol having 4 to 10 carbon atoms, said copolymer containing 40 to 65% by weight of vinyl acetate units and, correspondingly, 60 to 35% by weight of units of the maleate diester and having a softening point of from 70° to 110° C. and a specific viscosity, measured at 20° C. on a 0.5% by weight solution in cyclohexanone, of from 35 to 65 ml/g.

4,084,036

ASYMMETRIC HOLLOW ACRYLIC FIBERS

Richard L. Leonard, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 497,437, Aug. 14, 1974, Pat. No. 3,975,478. This application Aug. 13, 1976, Ser. No. 714,209
Int. Cl.[2] 428 *400;* D02G *3/00*
U.S. Cl. 428—398 **1 Claim**

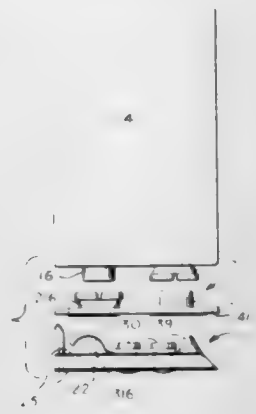
1. An asymmetric hollow acrylic fiber having a dense inner skin and a porous outer skin characterized by the presence of vacuoles adjacent to, but not penetrating, the dense inner skin.

4,084,037

CONSTANT POLARITY BATTERY-CONNECTION SYSTEM

David H. Morton, Upton, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 1, 1977, Ser. No. 783,588
Int. Cl.[2] H01M *2/20*
U.S. Cl. 429—1 **13 Claims**



1. A battery-connection system for a unit to be powered wherein the battery is positionable in either of two reversed positionings relative to a distribution means and having a pair of battery terminals of opposite polarity similarly reversed in said two reversed positionings respectively, comprising:

a said distribution means including a pair of spaced electrical terminals of particular and opposite polarity electrically connected with a unit to be powered; and

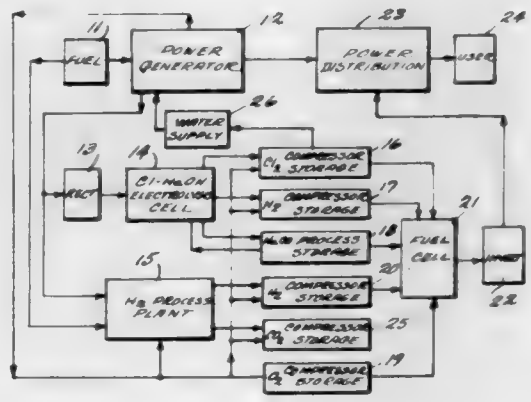
a carrier means including a first pair of spaced electrical contacts for singularly-polarized, electrical contacting engagement with said battery terminals respectively, and a second pair of spaced electrical contacts electrically connected with said first pair of contacts respectively for singularly-polarized electrical contacting engagement with said pair of distribution means terminals respectively, each contact of said second pair of contacts being of opposite polarity to the other and comprising a set of plural alternate contacts of the same polarity, the said alternate contacts of each set being relatively positioned such that the polarity of the connection between said battery terminals and said pair of distribution means terminals is constant for either of the two reversed positionings of the battery relative to said distribution means.

4,084,038

ELECTRICAL POWER GENERATION AND STORAGE SYSTEM

Robert L. Scragg, and Alfred B. Parker, both of 2937 SW. 27th Ave., Miami, Fla. 33133

Continuation-in-part of Ser. No. 534,587, Dec. 19, 1974, abandoned. This application Apr. 1, 1975, Ser. No. 564,086
Int. Cl.[2] H01M *8/06*
U.S. Cl. 429—19 **4 Claims**



1. In a system for generating and distributing electrical

energy and temporarily storing excess generated energy for use during peak demand intervals of the type including power generator means for generating said excess electrical energy; fuel cell means, operative upon oxygen and hydrogen fuel gases and sodium hydroxide electrolyte solution, for selectively combining said fuel gases in said electrolyte to produce electric power upon demand; means responsive to said excess electrical energy for producing said fuel gases; means for storing said fuel gases; and means for applying upon demand said fuel gases to said fuel cell, the improvement wherein said means for producing said fuel gases includes:

electrolysis means, responsive to said excess electrical energy and operative upon a saline-water medium for generating at respective electrodes hydrogen gas and chloride gas and converting a portion of said saline-water medium into a sodium hydroxide solution; and

means, responsive to said excess electrical energy, for producing said oxygen fuel gas;

and wherein said system further includes:

means, operative upon said converted saline-water medium, for extracting said sodium hydroxide solution portion, and selectively applying said extracted portion to said fuel cell as said electrolyte.

4,084,039

GAS VENTING BATTERY PLUG

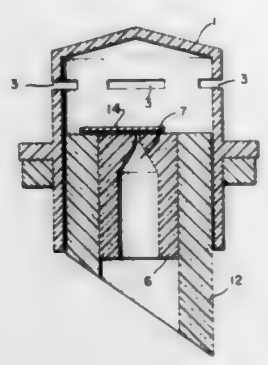
Helmut Laig-Hörstebrock, Frankfurt am Main, Germany, assignor to Varta Batterie Aktiengesellschaft, Germany

Filed Jun. 9, 1976, Ser. No. 694,350

Claims priority, application Germany, May 14, 1976, 2621413

Int. Cl.[2] H01M *2/12*

U.S. Cl. 429—89 **4 Claims**



1. A storage battery gas venting plug having a liquid separator, and comprising;

a nozzle;

an impingement plate positioned to cooperate with the nozzle;

means for ducting the liquid separated at the impingement plate back into the battery,

the nozzle outlet and ducting means being so proportioned that the hydrostatic pressure in the ducting means is higher than the capillary pressure developed in the nozzle by a liquid droplet, and

the impingement plate being in the form of a freely movable flat plate resting on the nozzle outlet.

4,084,040

CELL CASING AND A HERMETICALLY SEALED SODIUM-SULFUR CELL

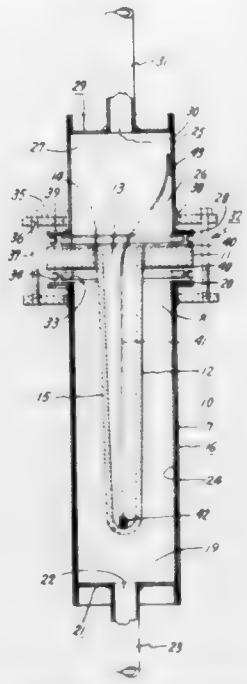
Randall N. King, Johnstown, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 28, 1977, Ser. No. 770,111

Int. Cl.[2] H01M *2/02, 10/38*

U.S. Cl. 429—104 **2 Claims**

1. A cell casing comprising an electrically insulated ring, an inner casing of a solid sodium ion-conductive material with one open end, a glass seal sealing a portion of the outer wall of the inner casing adjacent its open end within and to the ring, a metallic cathode casing portion with at least one open end and a flange at the open end, the cathode casing portion surrounding the inner casing and spaced therefrom, the flange of the cathode casing portion adjacent the ceramic ring, a metallic anode casing portion with at least one open end and a flange at the open end positioned with the flange adjacent the ring whereby the anode casing portion is spaced from and extends in an opposite direction to the cathode casing portion, the



anode casing portion selected from the same metal as the cathode casing portion, a high resistance electrical wire positioned within the inner casing, the wire in contact at one end with the closed end of the inner casing and in contact at the other end with the anode casing portion, and means for joining the cathode and anode casing portions to the ring thereby forming a continuous outer cell casing.

4,084,041

SECONDARY BATTERY OR CELL WITH POLYSULFIDE WETTABLE ELECTRODE - #2

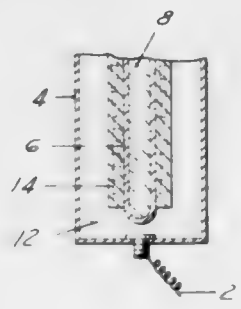
Frank A. Ludwig, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 653,865, Jan. 30, 1976, abandoned. This application Mar. 22, 1977, Ser. No. 779,971

The portion of the term of this patent subsequent to Apr. 11, 1995, has been disclaimed.

Int. Cl.[2] H01M *10/39*

U.S. Cl. 429—104 **11 Claims**



1. In a secondary battery or cell comprising:

(A) an anodic reaction zone containing a molten alkali metal reactant-anode in electrical contact with an external circuit;

(B) a cathodic reaction zone containing a cathodic reactant which, when said battery or cell is at least partially discharged, is selected from the group consisting of (i) a single phase composition comprising molten polysulfide salts of said anodic reactant and (ii) a two-phase composi-

tion comprising molten sulfur and molten sulfur saturated polysulfide salts of said anodic reactant;

(C) a cation-permeable barrier to mass liquid transfer interposed between and in contact with said anodic and cathodic reaction zones; and

(D) an electrode which is disposed within said cathodic reaction zone such that it is (i) at least partially immersed in said cathodic reactant and (ii) in electrical contact with both said cation-permeable barrier and said external circuit,

the improvement wherein at least a portion of said electrode consists essentially of a carbon based porous conductive material which (i) is coated, at least in part, with an oxide or sulfide of a metal selected from the group consisting of

(a) Metals of Groups I, II and III of the Periodic Table of elements,

(b) Transition Series metals, and

(c) Tin, lead, antimony and bismuth

to such a thickness that said electrode portion has a resistivity of less than 4 ohm-cm^2, (ii) does not fill the entire volume of said cathodic reaction zone, and (iii) is, at least in part, adjacent to and contiguous with said cation permeable barrier.

4,084,042

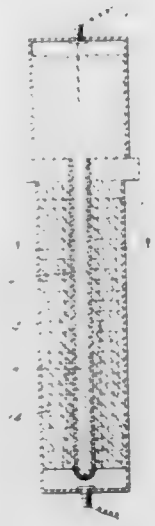
SECONDARY BATTERY OR CELL WITH POLYSULFIDE WETTABLE ELECTRODE #1

Frank A. Ludwig, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 653,865, Jan. 30, 1976, abandoned. This application Mar. 22, 1977, Ser. No. 779,972

Int. Cl.^{2} H01M *10/36*

U.S. Cl. 429—104 **12 Claims**



1. In a secondary battery or cell comprising:

(A) an anodic reaction zone containing a molten alkali metal reactant-anode in electrical contact with an external circuit;

(B) a cathodic reaction zone containing a cathodic reactant which, when said battery or cell is at least partially discharged, is selected from the group consisting of (i) a single phase composition comprising molten polysulfide salts of said anodic reactant, and (ii) a two-phase composition comprising molten sulfur and molten sulfur saturated polysulfide salts of said anodic reactant;

(C) a cation-permeable barrier to mass liquid transfer interposed between and in contact with said anodic and cathodic reaction zones; and

(D) an electrode which is disposed within said cathodic reaction zone such that it is (i) at least partially immersed in said cathodic reactant and (ii) in electrical contact with both said cation-permeable barrier and said external circuit,

the improvement wherein at least a portion of said electrode consists essentially of a porous metal substrate which (i) is coated, at least in part, with an oxide of a metal selected from the group consisting of

(a) metals of Groups I, II and III of the Periodic Table of Elements,

(b) Transition Series metals, and

(c) Tin, lead, antimony and bismuth to a thickness which is greater than about 500 Angstroms, but which results in said electrode portion having a resistivity of less than about 4 ohm-cm^2, (ii) does not fill the entire volume of said cathodic reaction zone, and (iii) is, at least in part, adjacent to and contiguous with said cation-permeable barrier.

4,084,043

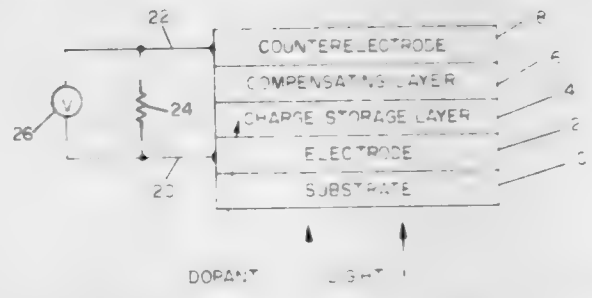
PHOTOGALVANIC CELL HAVING A CHARGE STORAGE LAYER WITH VARYING PERFORMANCE CHARACTERISTICS

Horst Witzke, Princeton, and Satyendra Kumar Deb, East Brunswick, both of N.J., assignors to Optel Corporation, Princeton, N.J. and Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jul. 16, 1976, Ser. No. 706,079

Int. Cl.^{2} H01M *6/30, 6/36*

U.S. Cl. 429—111 **8 Claims**



1. A photogalvanic cell having charge storage capability and comprising:

first and second electrodes positioned in spaced registry from each other;

a charge storage layer covering a preselected one of said electrodes, said one electrode being light transmissive;

a compensating layer covering the other of said electrodes, the compensating layer and charge storage layer forming an interface therebetween; and

a preselected dopant included in the charge storage layer for varying the normal operating characteristics of the charge storage layer and thus the cell.

4,084,044

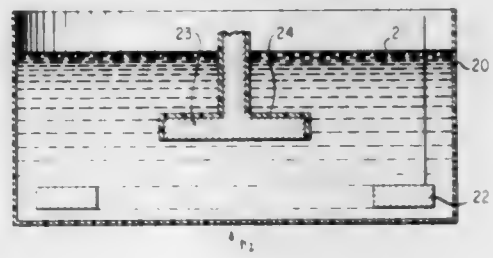
LIQUID-SEMICONDUCTOR PHOTOCELL USING SINTERED ELECTRODE

Adam Heller, Bridgewater; Barry Miller, Murray Hill, and Murray Robbins, Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 18, 1977, Ser. No. 769,949

Int. Cl.^{2} H01M *6/30*

U.S. Cl. 429—111 **5 Claims**



1. A photocell containing a photovoltaic junction beteen a semiconductor material and a liquid electrolyte containing a redox couple CHARACTERIZED IN THAT said photoac-

tive electrode comprises a sintered and metal vapor annealed semiconductor, said semiconductor being formed from a powdered chalcogenide selected from the group consisting of cadmium selenide, cadmium telluride, cadmium sulfide and bismuth sulfide and mixtures thereof, and said metal is selected from the group consisting of cadmium and bismuth.

3. A method for making a photocell comprising:

forming a chalcogenide semiconductor electrode, said chalcogenide being selected from the group consisting of powdered cadmium selenide, cadmium sulfide, cadmium telluride and bismuth sulfide; and

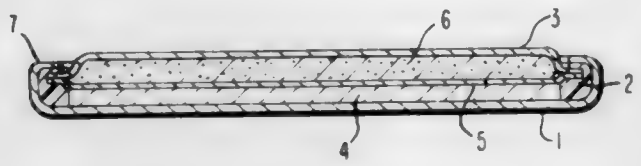
immersing said electrode and a counter electrode in a cell containing a redox electrolyte comprising anions selected from the group consisting of sulfide, selenide, telluride and mixtures thereof; CHARACTERIZED IN THAT said forming step comprises: sintering and metal vapor annealing said chalcogenide semiconductor, said metal being selected from the group consisting of cadmium and bismuth.

4,084,045

GALVANIC CELLS EMPLOYING UNCOMPRESSED PARTICLES OF FES AS THE CATHODE

Matthew Roland Kegelman, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Feb. 24, 1976, Ser. No. 660,854
Int. Cl.[2] H01M 6/14
U.S. Cl. 429—194 **3 Claims**



1. In a sealed galvanic cell comprising a container holding a cathode of cathodically active material, an anode, a conductive nonaqueous liquid electrolyte and a separator between the anode and the cathode, the improvement which comprises FeS particles uncompressed except for minor incidental pressure which results from sealing the cell as the cathodically active material, said particles being about 0.04 to 1 mm in diameter.

4,084,046

RECHARGEABLE ELECTROCHEMICAL CELL WITH CATHODE OF STOICHIOMETRIC TITANIUM DISULFIDE

M. Stanley Whittingham, Fanwood, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

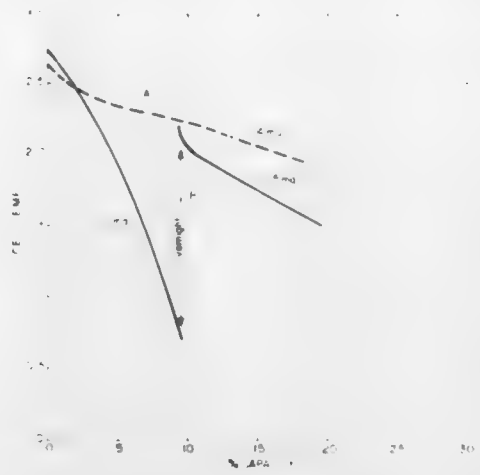
Division of Ser. No. 575,994, May 9, 1975, Pat. No. 4,007,055. This application Mar. 17, 1976, Ser. No. 667,607
Int. Cl.[2] H01M 6/14
U.S. Cl. 429—194 **3 Claims**

1. A rechargeable electrochemical cell, comprising:

(a) a lithium metal anode;

(b) an electrolyte containing lithium perchlorate dissolved in an organic solvent; and

(c) a cathode made of substantially stoichiometric titanium disulfide active cathode material having a single hexagonal phase and a uniform particle size characterized by a



surface area between about 2 and about 4 square meters per gram.

4,084,047

STABLE ALKALINE ZINC ELECTRODE

Albert Himy, University Park, Md., and Otto C. Wagner, Long Branch, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1976, Ser. No. 745,758
Int. Cl.[2] H01M 6/04
U.S. Cl. 429—206 **76 Claims**

1. An zinc electrode comprising a zinc active material and a binary additive mixture selected from the group consisting of:

(a) from about 0.1 to about 5.0 weight percent of Tl_2O_3 with from about 0.5 to about 10.0 weight percent of PbO;

(b) from about 0.1 to about 5.0 weight percent of Tl_2O_3 with from about 0.1 to about 5.0 weight percent of CdO;

(c) from about 0.1 to about 5.0 weight percent of Tl_2O_3 with from about 0.1 to about 5.0 weight percent of SnO_2;

(d) from about 0.1 to about 5.0 weight percent of Tl_2O_3 with from about 0.1 to about 5.0 weight percent of $In(OH)_3$;

(e) from about 0.1 to about 5.0 weight percent of Tl_2O_3 with from about 0.1 to about 5.0 weight percent of Ga_2O_3;

(f) from about 0.5 to about 10.0 weight percent of PbO with from about 0.1 to about 5.0 weight percent of CdO;

(g) from about 0.5 to about 10.0 weight percent of PbO with from about 0.1 to about 5.0 weight percent of SnO_2;

(h) from about 0.5 to about 10.0 weight percent of PbO with from about 0.1 to about 5.0 weight percent of $In(OH)_3$; and

(i) from about 0.5 to about 10.0 weight percent of PbO with from about 0.1 to about 5.0 weight percent of Ga_2O_3;

wherein the weight percentages are based upon the total weight of the zinc active material plus the binary additive mixture when the electrode is uncharged.

39. A silver-zinc alkaline battery which comprises a silver cathode, a zinc anode, an alkaline electrolyte, and a separator between the anode and the cathode, the zinc anode containing a zinc active material and a binary additive mixture selected from the group consisting of:

(a) from about 0.1 to about 5.0 weight percent of Tl_2O_3 with from about 0.5 to about 10.0 weight percent of PbO;

(b) from about 0.1 to about 5.0 weight percent of Tl_2O_3 with from about 0.1 to about 5.0 weight percent of CdO;

(c) from about 0.1 to about 5.0 weight percent of Tl_2O_3 with from about 0.1 to about 5.0 weight percent of SnO_2;

(d) from about 0.1 to about 5.0 weight percent of Tl_2O_3 with from about 0.1 to about 5.0 weight percent of $In(OH)_3$;

(e) from about 0.1 to about 5.0 weight percent of Tl_2O_3 with from about 0.1 to about 5.0 weight percent of Ga_2O_3;

(f) from about 0.5 to about 10.0 weight percent of PbO with from about 0.1 to about 5.0 weight percent of CdO;
(g) from about 0.5 to about 10.0 weight percent of PbO with from about 0.1 to about 5.0 weight percent of SnO_2;
(h) from about 0.5 to about 10.0 weight percent of PbO with from about 0.1 to about 5.0 weight percent of $In(OH)_3$; and
(i) from about 0.5 to about 10.0 weight percent of PbO with from about 0.1 to about 5.0 weight percent of Ga_2O_3;

wherein the weight percentages are based upon the total weight of the zinc active material plus the binary additive mixture when the zinc anode is uncharged.

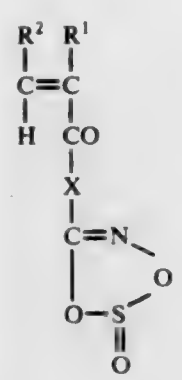
4,084,048

POLYMERS CONTAINING DIOXYTHIAZOLE-2-OXIDE GROUPS

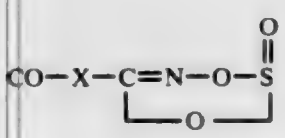
Herbert Naarmann, Wattenheim, and Heinz Pohlemann, Limburgerhof, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 22, 1975, Ser. No. 615,535
Claims priority, application Germany, Oct. 5, 1974, 2447658
Int. Cl.² C08F *28/06*
U.S. Cl. 526—260 **8 Claims**

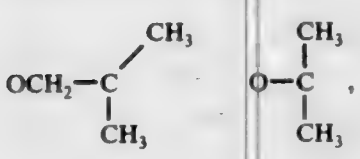
1. A polymer of (a) 1 to 100 weight percent of an ethylenically unsaturated 1,3,2,4-dioxathiazole-2-oxide compound of the formula

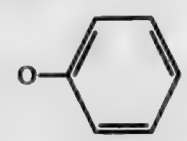


in which R^1 is H or methyl, R^2 is H, COOR, COOM, CONHR or



wherein M is a metal cation and R is H, alkyl, cycloalkyl or aryl, and X is OCH_2,





or $(-OCH_2-CH)_n$ with R below,

in which *n* is from 1 to 50, and (b) 0 to 99 weight percent of a dissimilar ethylenically unsaturated monomer, said dissimilar monomer being devoid of groups which are reactive with cyclic dioxathiazole-2-oxide of said polymer under polymerization conditions, said polymer having a molecular weight of from 1,000 to 3,000,000.

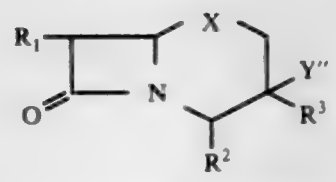
4,084,049

CEPHAM DERIVATIVES

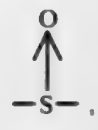
Takashi Kamiya, Suita; Tsutomu Teraji; Masashi Hashimoto, both of Toyonaka; Osamu Nakaguti, Osaka, and Teruo Oku, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 407,962, Oct. 19, 1973, Pat. No. 3,954,732. This application Jan. 12, 1976, Ser. No. 648,491
Claims priority, application Japan, Oct. 20, 1972, 47-105559; Nov. 22, 1972, 47-117384; Dec. 13, 1972, 47-125572; Dec. 13, 1972, 47-125573; Dec. 13, 1972, 47-125575; Dec. 13, 1972, 47-125576; Dec. 23, 1972, 47-1198; Dec. 21, 1972, 47-128902; Dec. 20, 1972, 47-128660; Dec. 20, 1972, 47-128658; Dec. 15, 1972, 47-126637; Aug. 1, 1973, 48-87108; Dec. 23, 1972, 47-1201; Dec. 22, 1972, 47-2270; Dec. 20, 1972, 47-128659; Dec. 20, 1972, 47-128657; Nov. 8, 1972, 47-112348
Int. Cl.² C07D *501/10, 501/20*
U.S. Cl. 544—16 **11 Claims**

1. A compound of the general formula:



wherein R^1 is a conventional, pharmaceutically acceptable acylamino, R^2 is carboxy or a conventionally protected carboxy, X is —S— or



R^3 is lower alkyl and Y″ is a residue of a strong nucleophile selected from the group consisting of azido and arylamino, wherein said arylamino is anilino, toluidino, nitroanilino, nitrotoluidino, or naphthylamino.

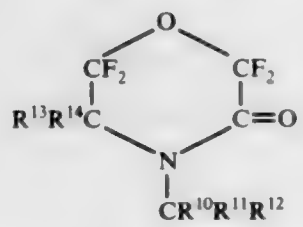
4,084,050

HYDROXY AND OXO FLUORINATED AMINE DERIVATIVES

Frank J. Pavlik, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 123,837, Mar. 12, 1971, Pat. No. 3,956,293, which is a continuation of Ser. No. 703,867, Feb. 8, 1968, abandoned. This application Jan. 12, 1976, Ser. No. 648,506
Int. Cl.² C07D *265/32*
U.S. Cl. 544—87 **7 Claims**

1. The compound represented by the formula



wherein R^{10} through R^{14} inclusive are substituents selected from the class consisting of fluorine and fluoroaliphatic groups.

4,084,051

PYRROLE-2-CARBOXAMIDES

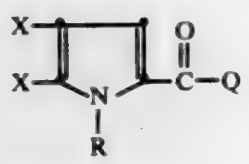
Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 583,280, Jun. 3, 1975, Pat. No. 4,046,775, which is a continuation-in-part of Ser. No. 349,973, Apr. 11, 1973, Pat. No. 3,963,480. This application Jun. 7, 1976, Ser. No. 693,140

Int. Cl.[2] C07D *413/02*

U.S. Cl. 544—141 4 Claims

1. A compound having the formula:



wherein X is chlorine, bromine or iodine, both values of X being identical; R is hydrogen or lower-alkyl; and Q is 4-morpholino.

4,084,052

DIAMINOBENZOQUINONES

Andree Bugaut, Boulogne-sur-Seine, and Monique Laudon, Gagny, both of France, assignors to L'Oreal, Paris, France

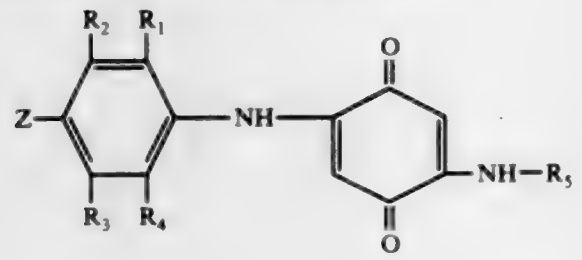
Division of Ser. No. 600,786, Jul. 31, 1975, Pat. No. 4,023,926, which is a division of Ser. No. 370,737, Jun. 18, 1973, Pat. No. 3,919,265. This application Jan. 25, 1977, Ser. No. 762,272

Claims priority, application Luxembourg, Jun. 21, 1972, 65555; Jan. 23, 1973, 66883

Int. Cl.[2] C07D *211/14, 295/12*

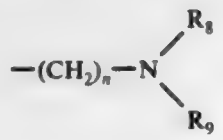
U.S. Cl. 544—165 2 Claims

1. Diaminobenzoquinone of the formula



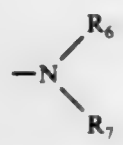
wherein R_1, R_2, R_3 and R_4 each independently represent a member selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy;

R_5 represents a member selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl and amino alkyl of the formula

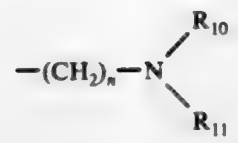


wherein n is 2-6 and R_8 and R_9 each independently represent a member selected from the group consisting of hydrogen, lower alkyl and hydroxy lower alkyl; and

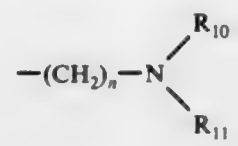
Z is



wherein one of R_6 and R_7 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, carbamyl lower alkyl, acetylamino lower alkyl, mesylamino lower alkyl, benzoylamino lower alkyl and



wherein n is 2-6 and R_{10} and R_{11} each independently are selected from the group consisting of lower alkyl, hydroxy lower alkyl and acetylamino, and the other is



wherein n is 2-6 and R_{10} and R_{11} together with the nitrogen atom to which they are attached form a heterocycle selected from the group consisting of piperidinyl and morpholinyl.

4,084,053

POLYCYCLIC COMPOUNDS

Nalin Binduprasad Desai, Bombay, India, and Visvanathan Ramanathan, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

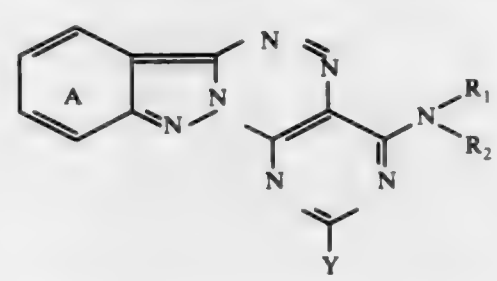
Filed Jun. 16, 1975, Ser. No. 587,478

Claims priority, application Switzerland, Jun. 21, 1974, 8540/74

Int. Cl.[2] C07D *487/14*

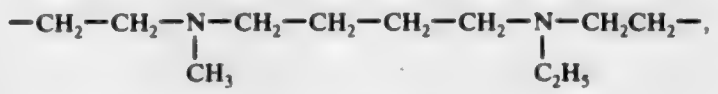
U.S. Cl. 544—184 16 Claims

1. A polycyclic compound of the formula



(I)

in which the nucleus A is unsubstituted or substituted by CN, NO_2, Cl, Br, SO_2NH_2, lower alkyl, lower alkoxy, C_1-C_2-alkylsulphonyl, $-SO_3H$, $-COCH_3$ and $-SO_2-N(CH_3)_2$; Y is H, C_1-C_5-alkyl, phenyl and phenyl substituted by methoxy, methyl, Cl or nitro; and cyclohexyl and benzyl; R_1 and R_2 are hydrogen, C_1-C_{12}-alkyl, C_1-C_{12}-alkyl substituted by OH, CN, C_1-C_4-alkoxy, Cl, Br, alkanoyloxy of up to 5 carbon atoms, C_6H_5-O-, NH_2, di(C_1-C_4-alkyl)amino, $CH_2=CH-CH_2-$, benzoyloxy, $-(CH_2)_3-N-(CH_3)_3Cl$, $-(CH_2)_3-N-(CH_3)_3$ SO_4, $-(CH_2)_3-N-(C_2H_5)_3$ Cl, C_1-C_4-alkyl-aminocarbonyloxy, C_1-C_4-alkoxycarbonyloxy, phenoxyacetoxy, phenoxycarbonyloxy, phenylaminocarbonyloxy, chloroacetyl and phenylacetyl; phenyl or phenyl substituted by Br, Cl, $-SO_3H$; and R_1 and R_2 together are $-CH_2CH_2-O-CH_2CH_2-$, $-CH_2CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2CH_2-$, $-CH_2CH_2-SO_2-CH_2CH_2-$,



or $-CH_2CH_2-N(COCH_3)-CH_2CH_2-$.

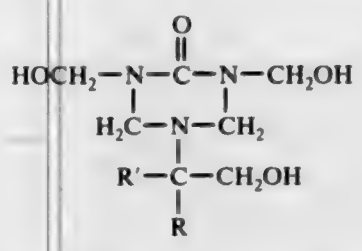
4,084,054

SUBSTITUTED TRIAZONES

John Adams Frump, Terre Haute, Ind., assignor to IMC Chemical Group, Inc., Terre Haute, Ind.

Filed Mar. 22, 1976, Ser. No. 669,357
Int. Cl.[2] C07D *251/22*
U.S. Cl. 544—220 **3 Claims**

1. A compound represented by the formula



where R is hydroxymethyl and R′ is methyl or ethyl.

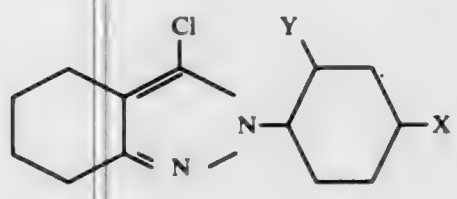
4,084,055

PREPARATION OF CHLORINATED INDAZOLES

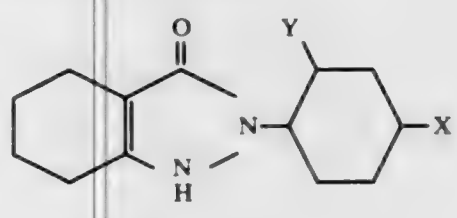
Dennis Lynn Fost, and Anthony David Wolf, both of Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 24, 1977, Ser. No. 780,904
Int. Cl.[2] C07D *231/56*
U.S. Cl. 548—369 **17 Claims**

1. A process for preparing



consisting essentially of contacting



wherein
Y is hydrogen, fluorine or chlorine; and
X is fluorine, chlorine, bromine, iodine, cyano, methoxy or nitro,
with phosgene.

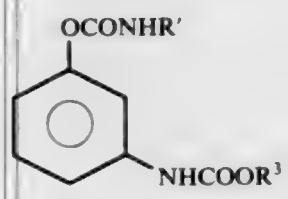
4,084,056

METHOD OF PRODUCING SUBSTITUTED PHENYL CARBAMATES

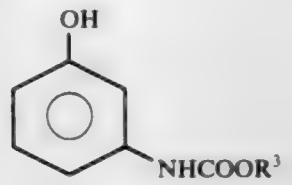
Christer Lennart Håkanson, Lidangsgatan, Sweden, assignor to AB Bofors, Bofors, Sweden

Filed Nov. 6, 1975, Ser. No. 629,430
Claims priority, application Sweden, Nov. 11, 1974, 7414106
Int. Cl.[2] C07C *125/06*
U.S. Cl. 560—29 **16 Claims**

1. A method of producing substituted carbamate esters with the general formula:



wherein R′ equals phenyl group, m-tolyl group, or m-xylyl group and R^3 is CH_3 or C_2H_5 characterized in that an aromatic amide with the general formula $R'CONH_2$ and being benzamide, m-toluamide, or 3,5-dimethyl benzamide is treated at a temperature of 0°–10° C with an aqueous solution of alkali or alkaline earth metal hypochlorite in the presence of a water-miscible organic solvent, after which the reaction mixture thus produced is mixed with a m-alkoxycarbonylamino phenol having the formula:



in which it is allowed to react at a temperature of 10°–65° C, after which the carbamate ester obtained is separated.

4,084,057

PROCESS FOR THE PRODUCTION OF 4-ACYLAMIDO-4, 4-DICARBALKOXY-BUTANALPHENYLHYDRAZONE

Herbert Offermanns, and Horst Weigel, both of Hanau, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Jul. 26, 1977, Ser. No. 819,406
Claims priority, application Germany, Oct. 20, 1976, 2647255
Int. Cl.[2] C07C *101/26*
U.S. Cl. 560—34 **13 Claims**

1. In a process for the production of 4-acylamido-4,4-dicarbalkoxy-butanalphenylhydrazone by addition reaction of an acylamidomalonic acid ester with acrolein in the presence of a catalyst and subsequent reaction of the 4-acylamido-4,4-dicarbalkoxy-butanal with phenylhydrazine the improvement comprising using as the catalyst in the addition of the acylamidomalonic scid ester with acrolein an alkali metal salt of an alkanoic acid or aromatic hydrocarbon carboxylic acid having 2 to 8 carbon atoms.

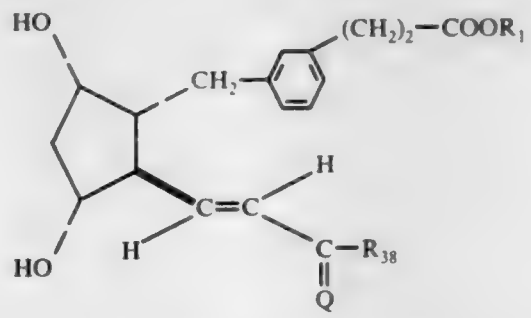
4,084,058

4,5,6-TRINOR-3,7-INTER-M-PHENYLENE PROSTAGLANDIN $F_{1\alpha}$ ANALOGS

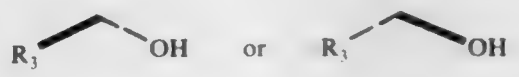
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 678,248, Apr. 19, 1976, abandoned, which is a division of Ser. No. 604,158, Aug. 13, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 764,333
Int. Cl.[2] C07C *69/76*
U.S. Cl. 560—55 **89 Claims**

1. An optically active compound of the formula

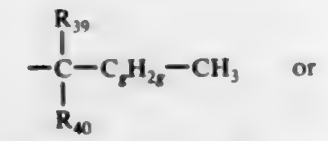


or a mixture comprising that compound and the enantiomer thereof, wherein Q is



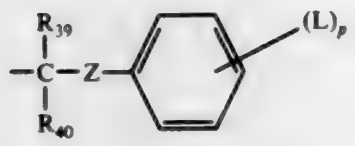
wherein R_3 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms,

inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; including the pharmacologically acceptable salts thereof when R_1 is hydrogen; wherein R_{38} is



(1)

or



(2)

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_{39}R_{40}-$ and terminal methyl, wherein R_{39} and R_{40} are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_{39} and R_{40} is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_{39} nor R_{40} is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between $CR_{39}R_{40}-$ and the phenyl ring; and wherein L is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_{41}-$ wherein R_{41} is alkyl of one to 4 carbon atoms, inclusive, and *p* is zero, one, 2 or 3, with the proviso that not more than two L's are other than alkyl and when *p* is 2 or 3 the L's are either the same or different.

4,084,059

2-HYDROXY-1,1,2,3,3-PENTAHYDRO-PERFLUOROALKYL DERIVATIVES, AND THEIR PRODUCTION AND USE

Atsuo Katsushima, Higashiosaka; Iwao Hisamoto, Suita; Shoshin Fukui, Toyonaka; Chiaki Maeda, Settsu; Akitoshi Iwatani, Yao; Takahisa Kato, Settsu; Masayuki Nagai, Settsu; Hiroyuki Shinkai, Settsu, and Masayuki Asaoka, Kyoto, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 299,741, Oct. 24, 1972, Pat. No. 3,870,748, which is a continuation-in-part of Ser. No. 877,497, Nov. 7, 1969, abandoned. This application Jan. 6, 1975, Ser. No. 538,507

Claims priority, application Japan, Nov. 18, 1968, 43-84276; Feb. 7, 1969, 44-9524; Dec. 5, 1968, 43-89252; Dec. 19, 1968, 43-93513; Dec. 19, 1968, 43-93514; Mar. 10, 1969, 44-18411; Sep. 18, 1969, 44-74146

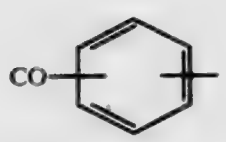
Int. Cl.[2] C07C *69/76, 69/34, 69/52*

U.S. Cl. 560—87 **1 Claim**

1. A compound of the formula:

$$[RfCH_2CH(OH)CH_2OOC]_2Q$$

wherein Rf is a perfluoroalkyl group, an ω-hydro-perfluoroalkyl group or an ω-chloro-perfluoroalkyl group having 4 to 20 carbon atoms and Q is $-AO(CH_2CH_2O)_qA-$ wherein A is $-R^1-$, $-COCH{=}CH-$, $-COCH{=}CHCOO(CH_2CH_2O)_r$-$COCH{=}CH-$ or



in which R^1 is a lower alkylene group having 1 to 3 carbon atoms and *q* and *r* are each 4 to 140.

4,084,060

PROCESS FOR THE SYNTHESIS OF HYDROXYETHYL CELLULOSE WITH IMPROVED RESISTANCE TO ENZYME CATALYZED HYDROLYSIS

Joseph Edward Glass, Jr., Charleston, and Roy Gale Lowther, St. Albans, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 18, 1976, Ser. No. 742,885

Int. Cl.[2] C08B *11/08*

U.S. Cl. 536—96 **11 Claims**

1. In the method of preparing hydroxyethyl cellulose by hydroxyethylating the unsubstituted anhydroglucose units of cellulose with ethylene oxide in an aqueous slurry containing at least one organic dispersant and alkali metal hydroxide catalyst, the improvement which comprises using about 6.5 to about 10.5 weight % of process water based on the total charge weight at a caustic/cellulose ratio of about 0.30 to about 0.38, interrupting the cellulose hydroxyethylation at an intermediate stage of molar substitution in the range of about 0.6 to about 1.3, adjusting the caustic/cellulose ratio at this point to about 0.06 to about 0.12 and then continuing the cellulose hydroxyethylation until a molar substitution of about 3.6 to about 6.0 is reached.

4,084,061

PROCESS FOR PRODUCING BENZYL SODIUM, PHENYLACETIC ACID AND DERIVATIVE THEREOF

Teiichi Kanazawa, Shimizu; Masamichi Shimizu, Kashiwa, and Susumu Shimoyama, Tokyo, all of Japan, assignors to Ibara Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1976, Ser. No. 708,648

Claims priority, application Japan, Jul. 30, 1975, 50-92760

Int. Cl.[2] C07C *63/04, 69/76*

U.S. Cl. 560—105 **12 Claims**

1. A process for producing benzylsodium or chlorobenzylsodium which comprises:

preparing tolylsodium or chlorotolylsodium by reacting chlorotoluene or dichlorotoluene with a dispersion of sodium in an inert organic solvent at a temperature of 0° C to 50° C; and rearranging said tolylsodium or chlorotolylsodium at a temperature in the range of 40° C to 150° C to said benzylsodium or chlorobenzylsodium.

5. In a process for producing phenylacetic acid, salt or esters thereof by preparing benzylsodium or chlorobenzylsodium and reacting said benzylsodium or chlorobenzylsodium with a carboxylating agent, the improvement which comprises:

preparing tolylsodium or chlorotolylsodium by reacting chlorotoluene or dichlorotoluene with a dispersion of sodium in an inert organic solvent at a temperature of 0° C to 50° C; and rearranging the tolylsodium or chlorotolylsodium at a temperature in the range of 40° C to 150° C to said benzylsodium or chlorobenzylsodium.

4,084,062

ACETYLENIC 2,6-DICHLOROBENZOATES AS PLANT GROWTH REGULATORS

Alexander Mihailovski, Kensington, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

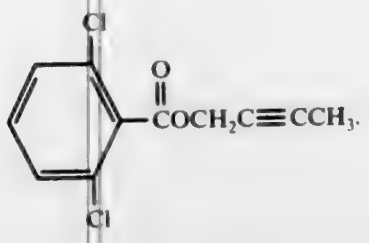
Continuation of Ser. No. 504,574, Sep. 9, 1974, abandoned. This application Dec. 14, 1976, Ser. No. 750,313

The portion of the term of this patent subsequent to Dec. 7, 1993, has been disclaimed.

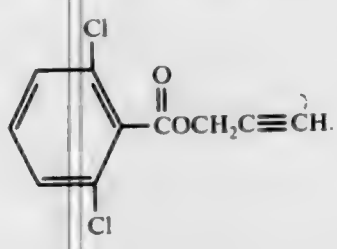
Int. Cl.[2] C07C *69/78*

U.S. Cl. 560—106 **3 Claims**

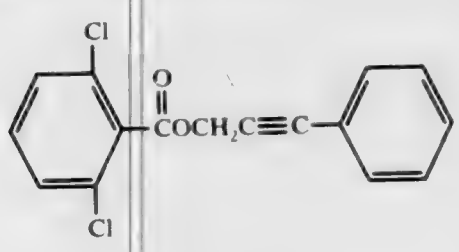
1. A composition of matter having the formula



2. A composition of matter having the formula



3. A composition of matter having the formula



4,084,063

8β,12α-PGF$_{2\alpha}$ COMPOUNDS

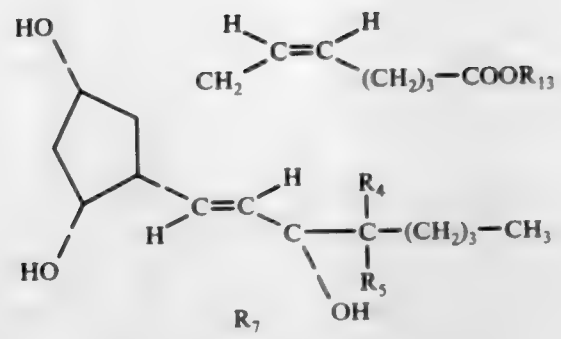
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 518,549, Oct. 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 289,317, Sep. 15, 1972, abandoned. This application Feb. 23, 1976, Ser. No. 660,195

Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—121 9 Claims

1. An optically active compound of the formula

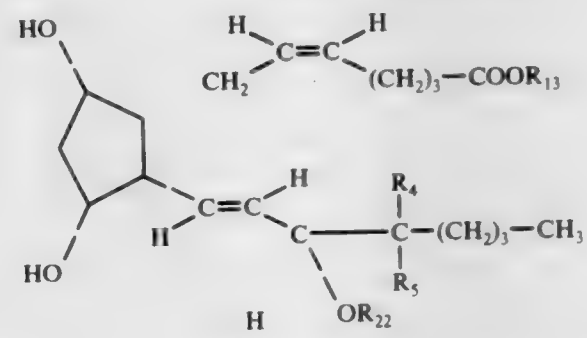


wherein R_4, R_5, and R_7 are hydrogen or methyl, being the same or different;

wherein R_{13} is hydrogen, alkyl of one to 10 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 52 or 3 chloro or alkyl of one to 4 carbon atoms, inclusive;

including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof wherein R_{13} is hydrogen.

9. An optically active compound of the formula



wherein R_4, R_5, and R_7 are hydrogen or methyl, being the same or different;

wherein R_{13} is hydrogen, alkyl of one to 10 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive;

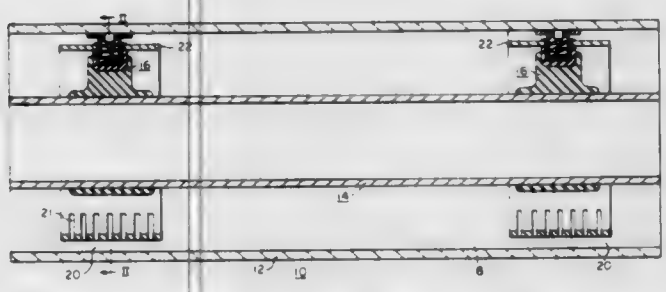
wherein R_{22} is alkyl of one to 4 carbon atoms, inclusive; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof wherein R_{13} is hydrogen.

4,084,064

PARTICLE TRAP CONTACT FOR GAS INSULATED TRANSMISSION LINES

Gary K. Bowman, Westborough, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sep. 2, 1977, Ser. No. 830,248
Int. Cl.[2] H01B *9/04*
U.S. Cl. 174—14 R **10 Claims**



1. A gas-insulated transmission line comprising:
an elongated cylindrical outer sheath at low electrical potential,
an elongated inner conductor disposed within said outer sheath and at high electric potential with respect to said outer sheath;
an insulating gas disposed within said outer sheath and electrically insulating said inner conductor from said outer sheath;
an insulating spacer insulatably supporting said inner conductor within said outer sheath;
an electrically-conducting particle-trapping ring disposed within, and spaced-apart from, said outer sheath intermediate said spacer and said outer sheath, said ring and said outer sheath forming a low field region therebetween for the entrapment of particles therein, said ring having a contact opening therein; and
means for electrically connecting said ring and said outer sheath comprising:
an electrically-conducting retaining cup disposes within said ring contact opening and electrically connected to said ring;
a holding member disposed within said retaining cup and extending outwardly to said outer sheath, said holding member having an opening therein;
a first spring disposed within said retaining cup and contacting said holding member, said spring exerting a force against said holding member to hold said holding member against said outer sheath;
a contact button disposed within said retaining cup and extending outwardly through said holding member opening to said outer sheath; and
an electrically-conducting second spring disposed within said retaining cup and contacting said retaining cup and said contact button, said second spring exerting a force against said contact button to hold said contact button against said outer sheath.

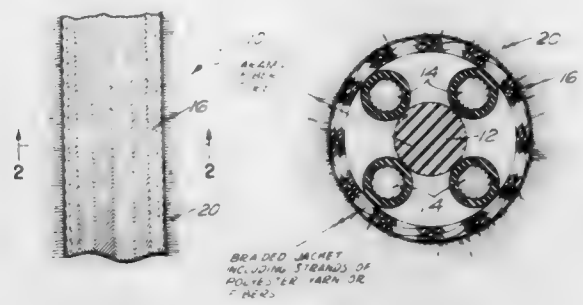
4,084,065

ANTISTRUMMING CABLE

Richard C. Swenson, North Stonington, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 2, 1976, Ser. No. 746,773
Int. Cl.[2] H01B *7/04*; F15D *1/12*; D04C *1/12*
U.S. Cl. 174—70 R **2 Claims**

1. An antistrumming cable comprising:
conducting means for providing a path for electrical signals; and
antistrumming means enclosing said conducting means and constituting the outermost surface of said cable,
said antistrumming means comprising a braided jacket having at least 25 percent of the jacket made of polyester material fibers, said polyester material fibers being substantially uniformly spaced over the entire outer surface of said braided jacket said fibers having been brushed to



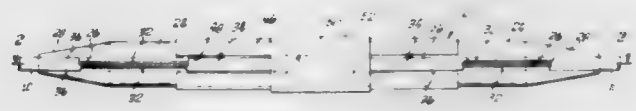
produce a nap which provides a mossy effect that is adapted to reduce vortex shedding in seawater.

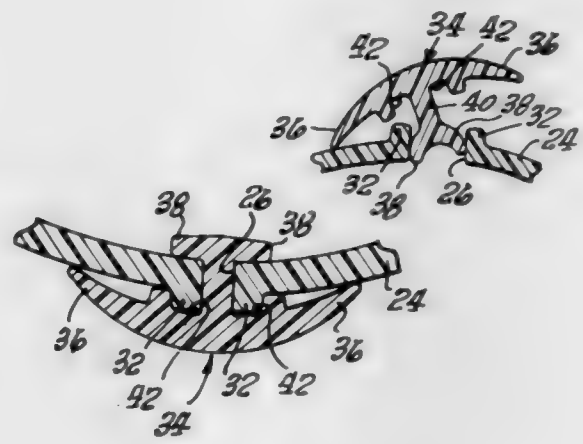
4,084,066

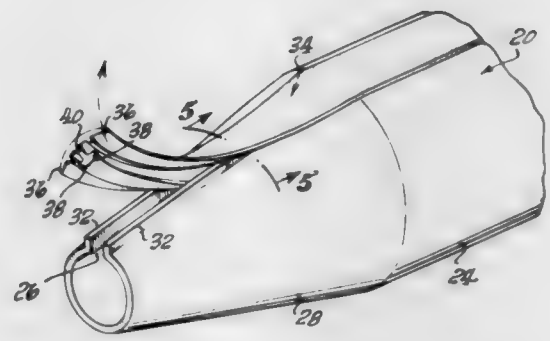
RE-ENTERABLE SPLIT SPLICE HOUSING WITH FLEXIBLE LOCKING STRIP

George W. Gillemot, Santa Monica, Calif., assignor to John T. Thompson, Los Angeles, Calif., a part interest

Continuation of Ser. No. 580,477, May 23, 1975, abandoned. This application Oct. 18, 1976, Ser. No. 733,068
Int. Cl.[2] H02G *15/18*
U.S. Cl. 174—92 **6 Claims**







1. In an enclosure kit for use with a cable splice, or the like, the combination of:
a. a longitudinally slit tubular member having external radial locking ribs respectively extending longitudinally along the edges of the slit therein; and

b. a locking strip of generally H-shaped cross section including two outer flanges and two inner flanges interconnected lengthwise thereof at their respective junctions by a web, said outer flanges respectively having internal longitudinal grooves therein adapted to receive said external locking ribs on said tubular member, said web of said locking strip being insertable longitudinally into said slit in said tubular member from one end of said tubular member with said outer flanges engaging the outer surface of said tubular member on opposite sides of said slit, with said grooves in said outer flanges respectively receiving said locking ribs, and with said inner flanges respectively engaging the inner surface of said tubular member on opposite sides of said slit therein, and said locking strip being materially more flexible than said tubular member so that said inner flanges of said locking strip can be pulled laterally outwardly through said slit in said tubular member with minimum distortion of said tubular member whenever it is desired to remove said said locking strip subsequent to longitudinal insertion thereof, said inner flanges being narrower than said outer flanges so that they can be pulled laterally outwardly through said slit readily.

4,084,067

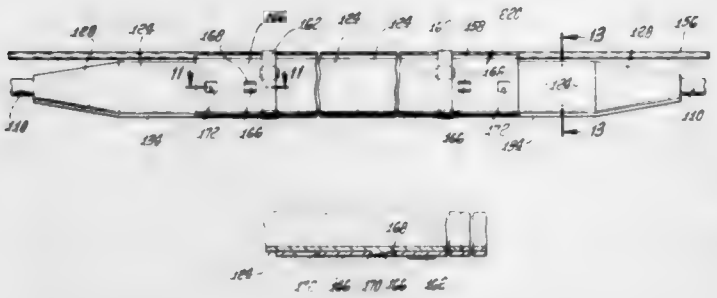
RE-ENTERABLE SPLIT CABLE SPLICE ENCLOSURE WITH LOCKING STRIPS AND COOPERABLE DETENT MEANS

George W. Gillemot, Santa Monica, Calif., assignor to John T. Thompson, Los Angeles, Calif., a part interest

Division of Ser. No. 580,201, May 23, 1975, abandoned, which is a continuation-in-part of Ser. No. 548,425, Feb. 10, 1975, abandoned, which is a continuation of Ser. No. 418,476, Nov. 23, 1973, abandoned. This application Apr. 23, 1976, Ser. No. 679,815

Int. Cl.[2] H02G *15/18*

U.S. Cl. 174—92 2 Claims



2. An enclosure kit for spliced ends of cables, comprising two tubular members having tapered outer ends and cylindrical inner ends and a coupling sleeve the ends of which are respectively telescopically connectible to said inner ends of said tubular members, said tubular members and said coupling sleeve having cooperable detent means thereon for holding said inner ends of said tubular members in either axially spaced or axially abutting relationship.

4,084,068

SUPPORTING DEVICE FOR MOUNTING A MAGNETIC CORE ON A PRINTED CIRCUIT CARD

Toomas Lepik, and Sven-Erik Rödin, both of Huddinge, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

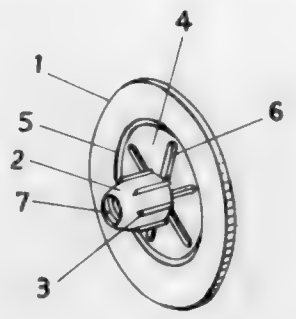
Filed Sep. 15, 1976, Ser. No. 723,592

Claims priority, application Sweden, Oct. 2, 1975, 7511088

Int. Cl.[2] H01F *15/02, 21/06*

U.S. Cl. 174—138 R 2 Claims

1. Supporting device for mounting on a printed circuit card a magnetic core which has a center hole and an adjusting screw for changing the inductance of a coil arranged on the magnetic core, said supporting device comprising a plate of insulating material, a projecting part extending perpendicular from said plate, said projecting part having a threaded passageway for receiving the adjusting screw, said projecting part on its outer surface being provided with longitudinal ridges so that when inserting said projecting part into the center hole of the magnetic core, the sharp edges of the magnetic core will bite into said ridges so as to form a tight engagement between



the projecting part and the magnetic core, and the surface of said plate from which said projecting part extends having an annular recess for providing a receptacle for chips which are produced when the sharp edges of the magnetic core cut into said longitudinal ridges during the pressing of said projecting part into the center hole of the magnetic core.

4,084,069

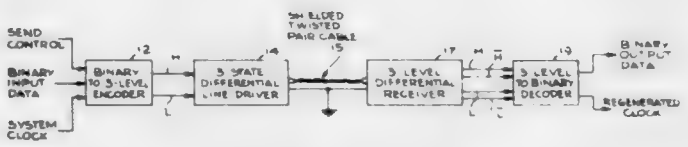
ENCODING AND DRIVING MEANS FOR USE IN A THREE-LEVEL DIGITAL DATA COMMUNICATION SYSTEM

Floyd William Looschen, Laguna Beach, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 1, 1976, Ser. No. 737,731

Int. Cl.[2] H04L *3/00*

U.S. Cl. 178—68 4 Claims



1. For use in a three-level digital data transmission line driving system, the combination comprising:

means for providing high and low binary signals H and L indicative of high and low levels of a three-level signal, and

a three-state balanced differential driving circuit to which said H and L signals are applied, said driving circuit including a pair of dual differential drivers having inputs responsive to said H and L signals and outputs coupled to a pair of output lines for providing driving thereof by a three-level signal having levels responsive to said H and L signals, said dual differential drivers being responsive to said H and L signals so as to provide across said pair of output lines a three-level signal whose levels are represented by the following: (1) a high signal, (2) a low signal, and (3) a high impedance.

4,084,070

OVERCURRENT PROTECTION CIRCUIT

Lamar Nelson Reed, Cherry Hill, and Jacob Richard Khalifeh, Mount Laurel, both of N.J., assignors to RCA Corporation, New York, N.Y.

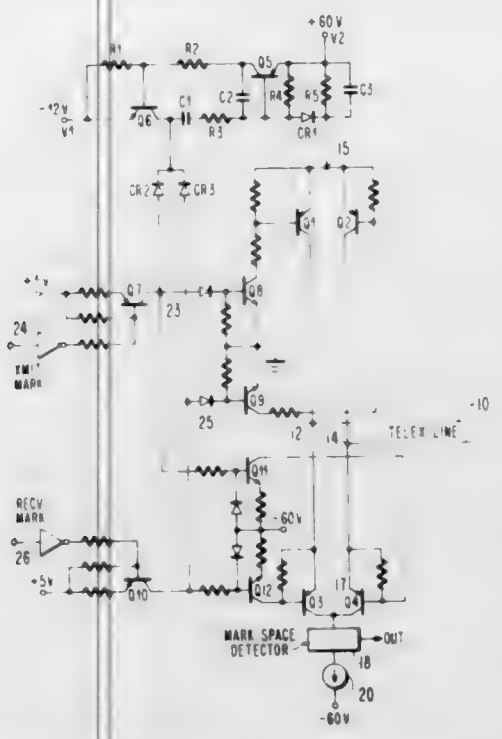
Filed Jan. 21, 1977, Ser. No. 761,448

Int. Cl.[2] H03K *17/26;* H04L *25/02*

U.S. Cl. 178—69 G 6 Claims

1. In a signaling system in which a line driver supplies a signaling current to a communications line, means to protect said line driver from damage due to a short circuit on the line, comprising a monostable circuit having an input circuit coupled to said line driver to be triggered into a relatively long

timed state when the current through the driver exceeds a safe threshold value, and having an output circuit coupled to said line driver to inhibit conduction in the line driver during the



timed state of said monostable circuit, whereafter excessive conduction can resume in said line driver for only a very short time before the monostable circuit is again triggered and inhibits the line driver for a relatively long time.

4,084,071

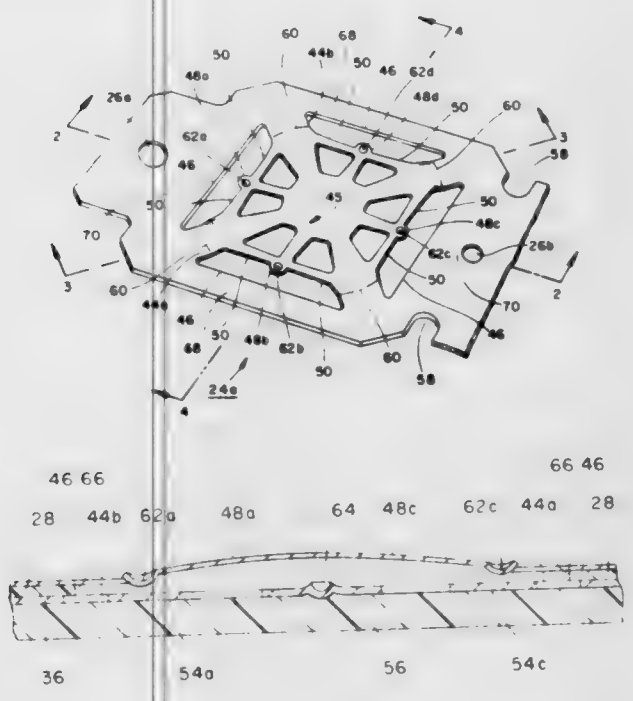
SWITCH MECHANISM FOR A CALCULATOR TYPE KEYBOARD

Theodore Dennis Smith, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 6, 1976, Ser. No. 748,025

Int. Cl.² H01H *13/20, 1/06*

U.S. Cl. 200—5 A **10 Claims**



1. A keyboard switch assembly, comprising:

a generally planar conductive web;

at least one moveable switch contact mechanism formed as an integral part of said web including support arms extending inwardly from the periphery of an aperture in the web to intersect in a crisscross configuration; a portion only of said crisscross configuration being contoured away from the plane of the web to form a dome-like shape so that portions of said support arms lie in the plane of said web; contact blades extending outwardly from the intersection of said support arms; and bridge members connecting the outer ends of said contact blades to adjacent portions of said support arms;

a circuit board having at least one group of conductor pads in general alignment with the outer ends of the contact blades of said moveable switch contact mechanism; and

a dielectric spacer located between said web and said circuit board and having at least one aperture in general alignment with the aperture of said web and being dimensioned so that the planar portions of said support arms extend over the periphery of the aperture of said spacer.

4,084,072

PRESSURE DIFFERENTIAL SWITCH DEVICE

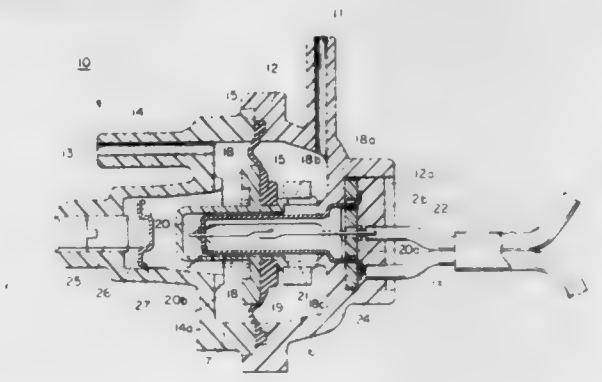
Haruo Tsubota, Toyota; Katsuki Takayama; Naoji Sakakibara, both of Chiryu, and Nobuyuki Hashimoto, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 12, 1976, Ser. No. 685,772

Claims priority, application Japan, May 21, 1975, 50-60497; May 23, 1975, 50-62150

Int. Cl.² H01H *35/34*

U.S. Cl. 200—83 L **5 Claims**

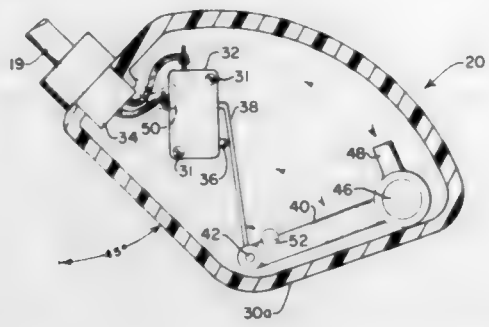


1. A pressure differential switch device comprising a casing, a flexible movable annular diaphragm fixedly mounted about its periphery in said casing to divide said casing into a first chamber and a second chamber, means for admitting fluid pressures into said chambers for moving said diaphragm, a cylindrical member closed at one end and open at the opposed end and mounted axially in the center of said annular diaphragm for movement therewith, stop means within the first chamber of said casing for limiting axial movement of said diaphragm, a permanent annular magnet mounted on the outer wall of said cylindrical member for movement therewith, a reed switch assembly mounted within said cylindrical member, one end of said reed switch assembly passing through the open end of said cylindrical member and being secured to said casing and means for connecting the contacts of said reed switch assembly to lead wires, wherein said means for connecting the contacts of said reed switch assembly to lead wires includes a pair of U-shaped connectors, the intermediate portions of each being securely mounted in said casing, one end of each U-shaped connector being operatively connected to the respective contacts of said reed switch assembly and the other end of each U-shaped connector being disposed for receiving a conventional detachable female plug for connection to said lead wires, whereby when the pressure in said second chamber exceeds that in said first chamber by a predetermined amount said magnet will be moved by said cylindrical member in response to movement of said diaphragm in one direction to a first position in which the magnetic field of said magnet will close the contacts of said reed switch assembly, the movement of said diaphragm being limited by said stop means in said first chamber to prevent continued movement of said magnet in said direction beyond the first position.

4,084,073
FLOAT-TYPE PUMP CONTROL SWITCH

Robert M. Keener, 890TR875, Rte. #3, Ashland, Ohio 44805

Filed Jan. 19, 1977, Ser. No. 760,628
Int. Cl.[2] H01H *35/18;* F04B *49/04*
U.S. Cl. 200—84 R 5 Claims



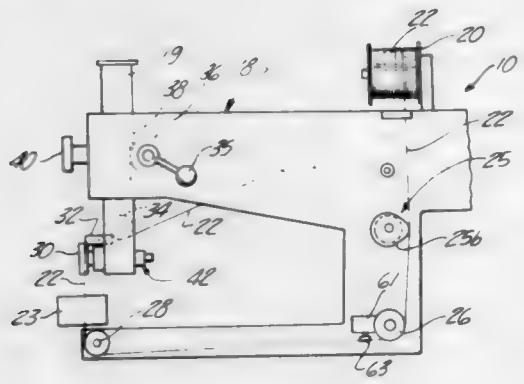
1. A float switch means for control of a sump pump or the like and comprising

a housing, and a switch in the housing and having a control member extending from the switch to turn the switch on and off with movement of the control member, a lead connecting to the switch and extending from the housing in sealed relation thereto, and an activator arm having a free end and an end pivotally positioned in said housing for gravity actuated pivotal movement towards and from said switch to operatively engage and move said control member in one direction when engaged by said activator arm to change connections in said switch whereby said lead can be secured in position adjacent said housing and said float switch means can control a sump pump dependent on the water level in a sump and the angular position of said float switch means in relation to a horizontal axis.

4,084,074
WIRE ELECTRODE PROTECTION SYSTEM FOR ELECTRICAL DISCHARGE MACHINING

Randall C. Gilleland, Statesville, and Frank P. Rietveld, Mathews, both of N.C., assignors to Colt Industries Operating Corporation, New York, N.Y.

Filed Dec. 19, 1974, Ser. No. 534,291
Int. Cl.[2] B23P *1/08*
U.S. Cl. 219—69 W 4 Claims



1. An electrical discharge machining apparatus which provides machining of a workpiece by means of a conductive wire for the electrode mounted on a head, comprising;

a supply reel for the wire mounted on the head in a freely rotatable manner;

a plurality of guide rollers for retaining and transporting said wire in a predetermined path to provide a cutting pass and translational movement relative to the workpiece;

said guide rollers including a separate pair of orthogonal axis guide rollers, respectively, positioned proximate opposite sides of the workpiece;

a drive motor;

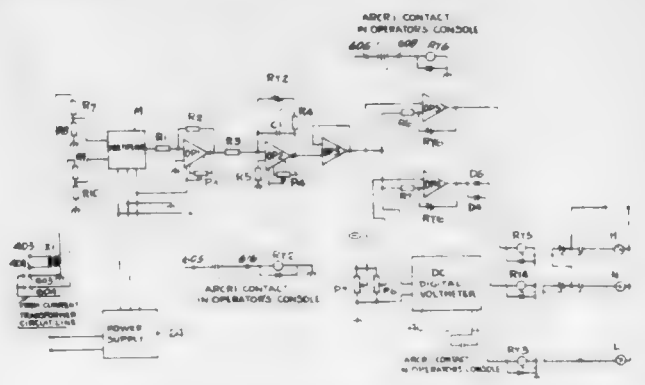
a pair of opposed rollers, one driven by said drive motor and the other idle, biased one against the other to engage and provide a constant and uniform pulling force upon the wire as machining progresses; and

a switching means having its actuator in sensing abutment relative to said wire at a point intermediate said opposed rollers and the last of said guide rollers proximate thereto, said switch operable to interrupt power to said drive motor responsive to loss of tension of the wire at said point.

4,084,075
ENERGY MONITOR FOR FLASH WELDERS

James F. Deffenbaugh, Warren, Ohio, assignor to Wean United Inc., Pittsburgh, Pa.

Filed May 15, 1975, Ser. No. 577,688
Int. Cl.[2] B23K *11/04*
U.S. Cl. 219—97 4 Claims



1. Means for monitoring the energy used in welding work pieces by use of a flash welder having welding transformer means, comprising:

a four quadrant multiplier, having two inputs,

means electrically connecting to one of the inputs of said multiplier a first signal which is substantially proportional to the instantaneous value of the total current required to make a flash weld,

means electrically connecting to the other input of said multiplier a second signal which is substantially proportional to the instantaneous value of the voltage applied across the work pieces being flash welded, said instantaneous values being derived at a substantially simultaneous time,

said multiplier multiplying the instantaneous values of said current and said voltage to produce an output which is proportional to the product of the said inputs, to thereby produce a signal which is proportional to the instantaneous values of the real and reactive power of the flash welding machine circuit from which the said two inputs are derived,

means electrically connecting the output of said multiplier to the input of an integrating circuit, the latter having an output which is substantially proportional to the energy required by the flash welding operation,

and means affected by the output of said integrating circuit to provide for modification of the flash welding operation in accordance with variation of energy required to make a satisfactory flash weld.

4,084,076

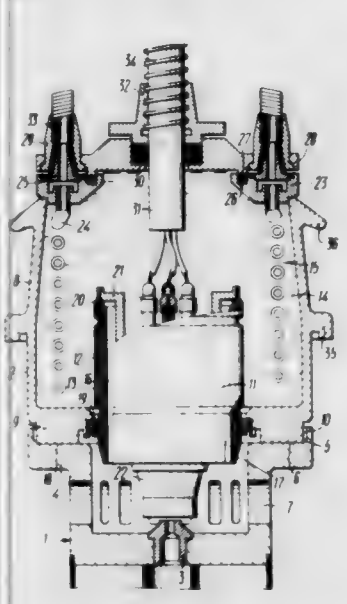
ELECTRON BEAM WELDING GUN

Evgeny Ivanovich Istomin, ulitsa Oktyabrskoi revoljutsii, 22/7, kv. 20; Leonid Pavlovich Strekal, ulitsa Gorkogo, 138, kv. 8; Alexandr Fedorovich Ivanenko, ulitsa Zodchikh, 62, kv. 339; Adolf Alfonsovich Vasiliev, ulitsa Erevanskaya, 8a, kv. 36; Leonid Ignatievich Zhivaga, pereulok Dovatora, 3, kv. 1; Oleg Kuzmich Nazarenko, ulitsa Sapernoe pole, 28, kv. 27; Igor Antonovich Porazhinsky, Rusanovskaya naberezhnaya, 24/51, kv. 46, and Jury Nikolaevich Zhdanov, ulitsa Krasnoarmeiskaya, 114, kv. 240, all of Kiev, U.S.S.R.

Filed May 10, 1977, Ser. No. 795,506

Int. Cl.² B23K *9/00*

U.S. Cl. 219—121 EB **10 Claims**



1. An electron beam welding gun comprising: an anode unit; a cathode unit connected to said anode unit and having a sealed housing whose internal cavity is filled with a liquid dielectric and cooled by a cooler; a cathode assembly arranged in said sealed housing and comprising a high-voltage tubular insulator, whereupon there are mounted sealed current leads; at least part of the external surface of said high-voltage tubular insulator forming part of the surface of said internal cavity of said sealed housing.

4,084,077

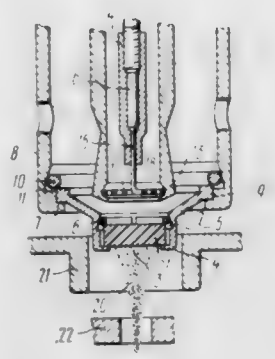
CATHODE ASSEMBLY OF ELECTRON BEAM WELDING GUN

Igor Antonovich Porazhinsky, Rusanovskaya naberezhnaya, 24/51, kv. 46; Alexei Pavlovich Obolonsky, ulitsa Beznyakovskaya, 24, kv. 127; Anatoly Grigorievich Ivaschenko, ulitsa Prazhskaya, 3, kv. 411; Evgeny Ivanovich Istomin, ulitsa Oktyabrskoi revoljutsii, 22/7, kv. 20; Alexandr Fedorovich Ivanenko, ulitsa Zodchikh, 62, kv. 339; Leonid Pavlovich Strekal, ulitsa Gorkogo, 138, kv. 8; Adolf Alfonsovich Vasiliev, ulitsa Erevanskaya, 8a, kv. 36, and Boris Denisovich Vaskin, Andreevsky spusk, 2, kv. 26, all of Kiev, U.S.S.R.

Filed May 10, 1977, Ser. No. 795,505

Int. Cl.² B23K *9/00*

U.S. Cl. 219—121 EB **1 Claim**



1. A cathode assembly of an electron beam welding gun, comprising: a current leads defining a cavity, wherein there is secured a holder housing a sleeve; a disc cathode installed in said holder's sleeve; two more current lead arranged concentrically with respect to each other, said current leads being placed in the cavity of said former current lead, coaxially with it; a flat coil arranged in said concentric current leads, said flat coil having a central end bent at a perpendicular to the coil's axis, said central bent end being corrugated along its axis and installed in one of said current leads which one lead is constructed as a rod with a stepped cavity extending along the rod's axis, whereas the other current lead envelops said current lead and is constructed as a tube with an internal annular recess at its end to receive an outer turn of said flat coil.

4,084,078

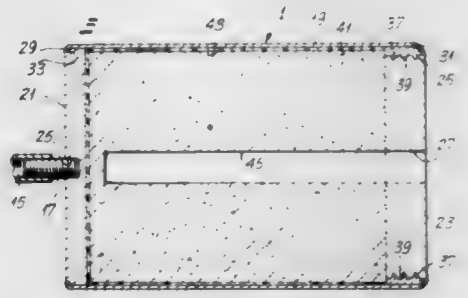
JET PERFORATOR DEVICE

Fred Schroeder, Lakeview Terrace, Calif., assignor to American Service Products, Inc., Newhall, Calif.

Filed Feb. 15, 1977, Ser. No. 768,683

Int. Cl.² B23K *9/00*

U.S. Cl. 219—121 P **13 Claims**



1. A device for perforating a target by means of a hot plasma jet, which device comprises, in combination:

a. an open-ended hollow elongate housing;

b. a first plate forming a closure at one end of the housing;

c. a second plate forming a closure at the other end of the housing and provided with a nozzle opening therethrough;

d. a cast grain of plasma producing pyrotechnic material comprising a mixture of aluminum and calcium sulfate, which grain is disposed within and substantially conforms to the entire internal space defined by the housing and plates and includes:

1. a coating of combustion inhibiting material over a major portion of its external surface, and

2. a longitudinal recess communicating with the exterior of the device through the nozzle opening.

4,084,079

ELECTRICAL VAPORIZER DEVICE

Hal F. Costello, Toledo, Ohio, assignor to Coswell Products, Inc., Toledo, Ohio

Filed Jun. 29, 1977, Ser. No. 810,958

Int. Cl.² F22B *1/28*

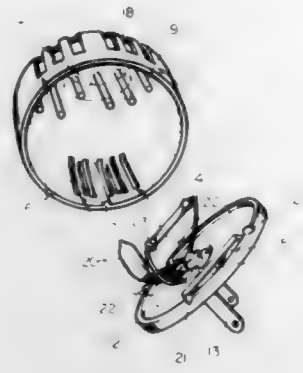
U.S. Cl. 219—271 **2 Claims**

1. In a vaporizer device designed to be plugged into an electrical wall outlet having a hollow casing in which there is a lower chamber and an upper chamber, therebeing air inlet port means in the lower chamber and air outlet port means in the upper chamber, and a back casing member having a resistance-type electrical heating element extending into the lower chamber, the improvement which comprises

1. a row of laterally close spaced parallel pins or tines integral with the projecting from the front of the casing toward the back casing member and disposed above the heating elements, said pins providing a support for a chemically treated diffusable tablet, and spaced from each other to afford a free air passage so that an air stream induced by the heating element flows through the air inlet

port means about a chemically treated tablet and out from the casing through the air outlet port means,

2. the outer ends of said tines being free and so disposed as to



limit the inward movement of the back casing member, and

3. means for preventing outward movement of the back casing member.

4,084,080

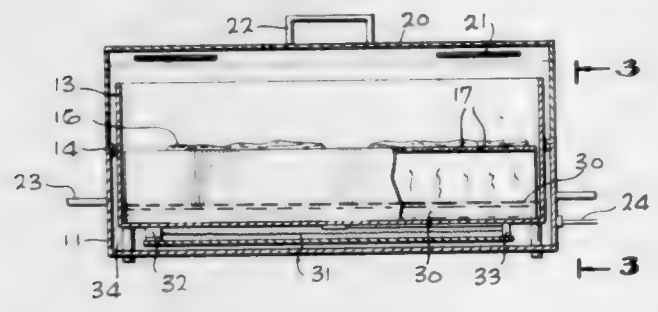
TOWEL HEATER AND DISPENSER

William T. McMahan, 7533 Ontario, Burbank, Calif. 91505

Filed Sep. 28, 1976, Ser. No. 727,471

Int. Cl.[2] F27D *11/02*

U.S. Cl. 219—401 **1 Claim**



1. Apparatus for moistening and heating a towel preparatory for placement against the skin of a user, the combination comprising:

a support frame of box-like construction having a continuous sidewall carried about the periphery of a bottom so as to define an open cavity between the opposing wall surfaces of said sidewall;

a water tray removably carried within said support frame open cavity and havving a continuous sidewall carried about the periphery of a bottom and said tray bottom arranged in spaced apart relationship with respect to said support frame bottom;

an electrical heating element disposed in said space defined between said tray bottom and said support frame bottom;

a perforated table removably disposed in said water tray having a perforated surface elevated about a quantity of water carried on said tray bottom;

control means operably coupled to said electrical heating element for energizing said element for heating said water in said tray so as to create steam about said perforated table;

a vented lid detachably carried on the exposed edge of said support frame sidewall to close said open cavity whereby steam is maintained under said lid;

the height of said tray continuous sidewall is substantially greater than the height of said support frame continuous sidewall;

said water tray includes a plurality of legs arranged at the respective corners thereof for supporting said tray on said support frame and for defining said space between said support frame bottom and said water tray bottom;

said perforated table, said water tray and said support frame are of respective diminishing size so as to provide a nested relationship one within the other;

said water tray further includes mounting means downwardly suspending said heating element from said water tray bottom within said defined space;

said perforated table is on U-shaped cross section incorporating a pair of legs downwardly depending from the opposite side edges of said perforated surface;

said control means further includes a thermocouple connected in series with said switch operable in response to steam temperature to interrupt said circuit; and

a light coupled in said circuit for visually indicating energization of said circuit.

4,084,081

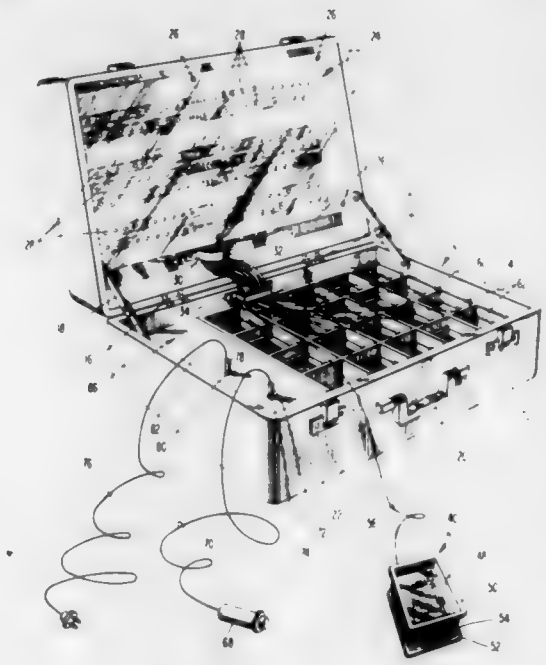
PORTABLE SURVEY SYSTEM

William J. Raheb, 96 Sherman St., Brooklyn, N.Y. 11218

Filed Jun. 21, 1976, Ser. No. 697,718

Int. Cl.[2] G07C *13/00*

U.S. Cl. 235—52 **12 Claims**



1. A portable survey system, comprising:

a case having a base and a cover therefor;

an electronic display assembly fixedly mounted in said cover, said display assembly having a plurality of individually energizable display elements;

a plurality of responder units each coupled with said display assembly to control the selective energization of a group of said display elements thereby to cast a vote, each responder including a main body having a top wall, a plurality of switches on said top wall, and a peripheral rim extending completely around the periphery of said top wall and extending above and below the plane thereof to shield said switches from sight by other than the user of the responder; and

a plurality of separate compartments in said base for receiving said plurality of responders, respectively, for storage,

said responders being nested in said compartments with said cover closed onto said base for storage and transport of said system, and said responders being removed from said compartments with said cover disposed upright to expose said display for use of the system, said cover being connected to said base by a hinge and being movable between a first extreme position closed over said base and a second extreme position pivoted upright from said base and exposing said display.

4,084,082

PROGRAMMABLE COUNTER

Peter H. Alfke, Los Altos Hills, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 12, 1976, Ser. No. 731,242
Int. Cl.[2] H03K *21/36*
U.S. Cl. 235—92 DM 3 Claims



1. A programmable counter for dividing an electrical oscillation frequency which is significantly higher in value than the frequency of a desired output count, said output count falling within a set of potentially desired integer values requiring high divide ratios of a resulting frequency, comprising:

a modulus prescaler for dividing said electrical oscillation frequency by any one of a plurality of relatively prime numbers;

a presettable binary counter for repeating said division of said electrical oscillation frequency for numbers of times respectively corresponding to said relatively prime numbers;

programmable memory means connected to said presettable binary counter for furnishing thereto said numbers of times corresponding to said relatively prime numbers that said divisions of said frequency are to be repeated;

means responsive to repetition of said division by a first one of said relatively prime numbers by directing said modulus prescaler to divide said electrical oscillation frequency also by a second one of said relatively prime numbers, and by directing said presettable binary counter to repeat said division by said second relatively prime number for a number of times corresponding to said second relatively prime number whereby an electrical oscillation is produced having said resulting frequency which is a selected fraction of the frequency of the incoming electrical oscillation frequency;

a binary counter for dividing said resulting frequency at least two relatively prime number of times to advance the divide ratio to provide respectively both said set of potentially desired integer values and the desired output count in said set;

a decoder responsive to said binary counter for directing said programmable memory means to deliver said different relatively prime numbers of times said resulting frequency is to be repeated to said presettable binary counter;

a channel selector connected to said programmable memory means for directing the same to externally introduce information to said presettable binary counter indicative of said numbers of times said divisions are to be repeated; and

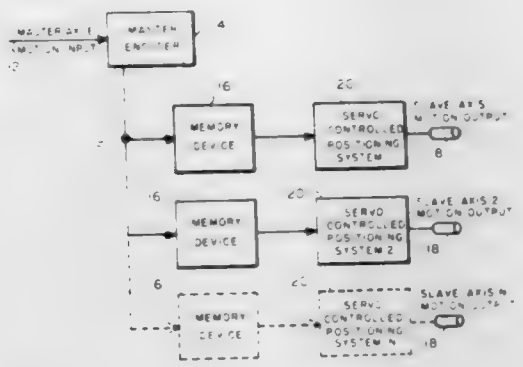
a multiplexer which selectively delivers to said programmable memory means address information provided by said channel selector and said decoder.

4,084,083

MULTI-AXIS ELECTRONIC MOTION GENERATOR

Paul F. McNally, Gibsonia, and Robert G. Burig, Allison Park, both of Pa., assignors to Contraves Goerz Corporation, Pittsburgh, Pa.

Filed Nov. 5, 1975, Ser. No. 629,029
Int. Cl.[2] G05B *19/18*
U.S. Cl. 364—118 21 Claims



1. Position control apparatus for positioning a plurality of movable members comprising:

a master control shaft;

a resolver connected to said master control shaft providing an analog signal output representing the absolute position of said master control shaft;

an analog-to-digital converter connected to said resolver output providing a digital signal equivalent of the position of said master control shaft;

a plurality of memory devices each connected to said analog-to-digital converter and each independently programmed to provide simultaneously an individual digital output which is addressed by the digital signal from said analog-to-digital converter; and,

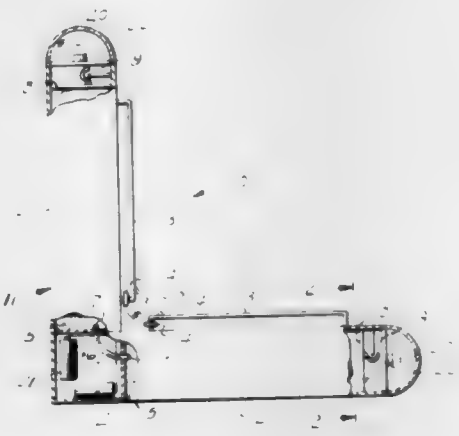
positioning means associated with each memory device for positioning one of the plurality of movable members at a position determined by the individual digital output of the associated memory device so that the plurality of movable members are simultaneously positioned in response to the sequentially changing digital signal.

4,084,084

BUBBLER AND AUTOMATIC LIGHT

Buford W. Allen, Rte. 1, Box 22, Moore, Tex. 78057

Filed Oct. 5, 1976, Ser. No. 729,698
Int. Cl.[2] F21V *33/00*
U.S. Cl. 362—184 4 Claims



1. A buffler and automatic light combination, comprising an L-shaped housing, a pair of diaphragms secured in said housing for closing switch means to at least one bulb means, an arcuate tube secured in said housing for bubbling water from one compartment means of said housing to another, air line means secured to said housing, and valve means secured to said air

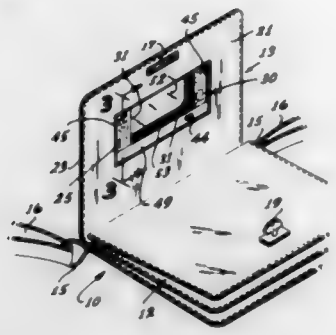
line means, for controlling the length of time said bulb means will stay on.

4,084,085

PURSE WITH LIGHT MIRROR

Sunyong P. Kim, 3805 S. Norton Ave., Los Angeles, Calif. 90008

Filed Nov. 29, 1976, Ser. No. 745,820
Int. Cl.² F21V *33/00*
U.S. Cl. 362—135 **4 Claims**



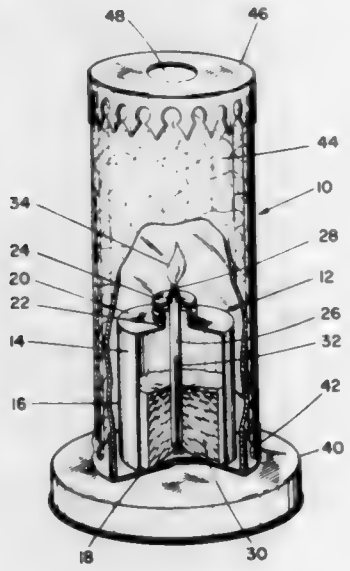
1. A woman's purse comprising a pocket having a flap integrally formed with the back wall thereof and folded down to substantially cover the front wall thereof, said flap comprising an inner and outer sheet of material secured along the peripheral edge thereof, the inner sheet having a rectangular cutout with the edge portions on all four sides thereof folded inwardly and the terminating edges secured to the outer sheet whereby said edge portions form walls of a rectangular well on said flap, a padding material within the peripheral portions of the inner and outer sheets for providing a body for said flap and shaping the walls of said well, a rectangular framework disposed in said well with the sides thereof secured to the walls thereof, said framework including transverse partitions spaced inwardly from either transverse sidewall thereof to provide side light compartments each having a socket means and an electric light bulb therein, and a longitudinal partition spaced from a longitudinal side wall of the framework to provide a battery compartment having a battery and light switch therein, the spacing between the transverse partitions of said framework having a mirror retained therein, translucent covers for each of said light compartments, and a cover for said battery compartment.

4,084,086

SOLID FUEL LAMP

David Bandel, 612 Meyer La. No. 3, Redondo Beach, Calif. 90278

Filed Mar. 22, 1976, Ser. No. 668,721
Int. Cl.² F21V *35/00*
U.S. Cl. 362—161 **5 Claims**



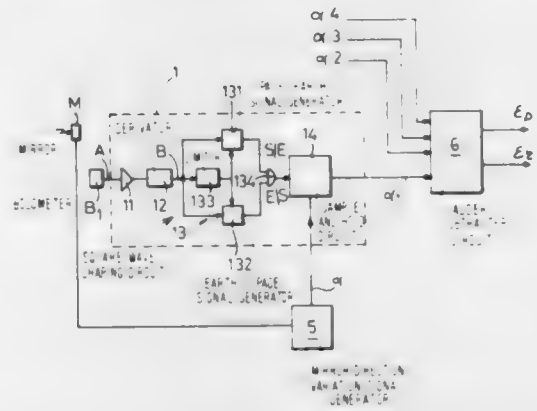
1. A solid fuel lamp cartridge comprising:
a reservoir vessel having closed sides and a closed bottom, said reservoir containing solid fuel, said solid fuel having a melting point between ambient temperature and 160° F;
a closed top on said reservoir, said top being attached to said reservoir sides;
a finless wick holder tube mounted on and extending downwardly through said closed top and extending substantially to the bottom of said reservoir, side openings at least halfway up the length of said wick holder tube for permitting access of molten fuel into said wick holder tube;
said top being penetrated only by said wick holder tube;
a wick extending through said wick holder tube to adjacent the bottom of said reservoir and extending upward out of said wick holder tube to define a flame-holding area, said wick holder tube containing only said wick and flame fuel, said solid fuel having a melting point such that, and said wick holder tube having an internal volume and a thermal transmissivity such that, when the portion of the wick extending above said wick holder has a lighting flame applied thereto, sufficient fuel in the wick is evaporated to permit lighting of an initial flame, and the initial flame provides sufficient heat down through said wick holder to melt the solid fuel in and around said wick holder to smoothly and continuously supply liquid fuel to the top of said wick for a smooth, continuous flame, said reservoir being closed so that all liquid fuel is retained therein when the reservoir is turned on its side even after the flame has been lighted.

4,084,087

ANALOG APPARATUS FOR DETERMINING THE ATTITUDE ERRORS OF A THREE-AXIS STABILIZED SATELLITE

Gunther R. Mehwald, Leiderdorp, Netherlands, assignor to Organisation Europeenne de Recherches Spatiales, Neuilly-sur-Seine, France

Filed May 17, 1976, Ser. No. 687,305
Claims priority, application Belgium, May 16, 1975, 156436
Int. Cl.² G01V *1/20*
U.S. Cl. 250—203 R **2 Claims**



1. An apparatus to be used with a horizon sensor comprising an oscillating mirror and *n* fixed bolometers on board a three-axis stabilised satellite for determining the attitude deviations thereof, said apparatus comprising
first circuit means coupled to the oscillating mirror to generate a signal representing the direction deviation of the optical axis of said mirror,
n second circuit means each connected to the output of one bolometer to generate signals representing the deviation angles of the direction of said optical axis at the instant of the optical axis crossing the earth's horizon,
said second circuit means each comprising amplifier/derivator means adapted to produce a pulse at the occurrence time of each edge of the radiance signal from the bolometer, square shaping circuit means connected at the output of said derivator means and adapted to produce at two outputs thereof square wave signals of opposite polarities respectively corresponding to said pulses, and sample-and-hold circuit means having a first input connected to

each output of the shaping circuit means and a second input connected to the output of said first circuit means, said sample-and-hold circuit means being adapted to sample the deviation signal at the instants of the optical axis crossing the earth's horizon, and

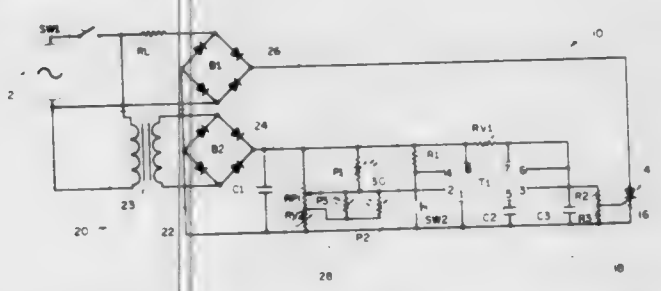
analog circuit means connected to the output of said second circuit means for combining the output signals therefrom to produce error signals.

4,084,088

AUTOMATIC LIGHT SWITCH

Robert R. Moose, P.O. Box 376, Caddo, Okla. 74729

Filed May 12, 1976, Ser. No. 685,644
Int. Cl.[2] H01J *39/12*
U.S. Cl. 250—209 22 Claims



1. A light activated electrical load switch for providing power from a power source to a load and comprising:

a. gatable switching means connected in series with the power source and the load;

b. phototriggered switch control means operably connected to the gatable switching means for selective gating thereof, said control means comprising;

1. power supply;

2. timer means operably connected to the power supply and having an output operably connected to the gatable switching means for gating thereof when the timer means is running;

3. photosensitive triggering sensor means operably connected to the power supply;

4. photosensitive ambient sensor means operably connected to the power supply;

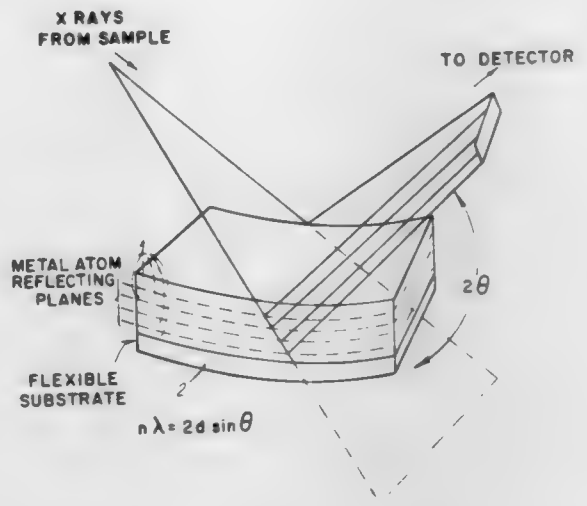
5. comparator means operably connected to the triggering sensor means and the ambient sensor means, the output thereof being connected to an input of the timer means for starting the timer means running when the triggering light source intensity is sufficiently greater than the ambient light source intensity.

4,084,089

LONG WAVE-LENGTH X-RAY DIFFRACTION CRYSTAL AND METHOD OF MANUFACTURING THE SAME

William P. Zingaro, Hartsdale, and Albert Sicignano, Mt. Kisco, both of, NY, assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 20, 1976, Ser. No. 755,683
Int. Cl.[2] G01N *23/20*
U.S. Cl. 250—272 4 Claims



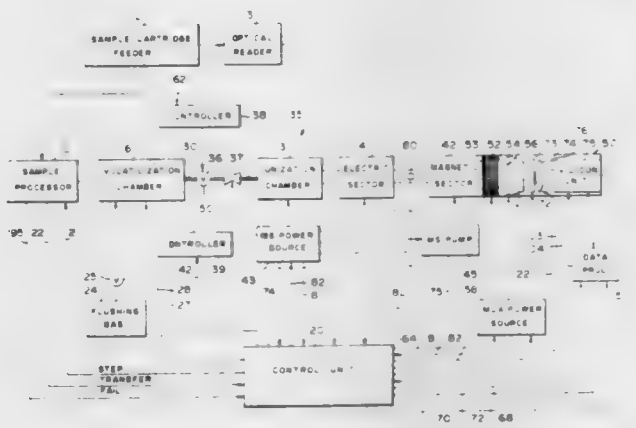
1. An x-ray diffracting crystal comprising a plurality of insoluble monolayer pairs of a heavy metal soap separated by insoluble monolayer pairs of a lighter metal soap.

4,084,090

AUTOMATED MASS SPECTROMETER ANALYSIS SYSTEM

Heinz G. Boettger, La Canada; Charles E. Giffin, Pasadena; William J. Dreyer, and Aron Kuppermann, both of Altadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jun. 16, 1975, Ser. No. 587,097
Int. Cl.[2] B01D *59/44*; H01J *39/34, 39/48*
U.S. Cl. 250—286 37 Claims



1. An analysis system comprising:

volatilization chamber means adapted to volatilize a sample supplied thereto;

mass spectrometer means to which said volatilized sample is applied for generating therefrom a single ion beam and thereafter separate said single ion beam into a plurality of ion beams simultaneously focused at a common focal plane;

detection means for converting said separate ion beams into electrical signals in response to a Read signal;

output means for receiving said electrical signals; and

system control means for generating said Read signals as a function of the current of said single ion beam.

4,084,091

CHROMATOGRAPHIC METHOD FOR DETERMINING ADDITIVE CONCENTRATION IN GASOLINE

Stephen P. Thomas, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 14, 1976, Ser. No. 695,629

Int. Cl.[2] G01N *21/38*

U.S. Cl. 250—302 **1 Claim**

1. A method for determining the approximate concentration of a detergent additive in gasoline which comprises the steps of:

a. obtaining a sample of said gasoline;

b. analyzing said sample by ascending paper chromatography to determine the ratio R_f of the migration distance of said additive relative to migration distance of said gasoline, by contacting a portion of a chromatographic sorbent material with said gasoline containing said additive for a period of time sufficient to allow said gasoline and said additive to migrate upwardly on said sorbent material, removing said sorbent material from contact with said gaoline, noting the initial height of contact of said gasoline with said sorbent material, noting the height of migration of said gasoline on said sorbent material, allowing said gasoline to evaporate from said sorbent material, irradiating said sorbent material with an ultraviolet light source whereby said additive fluoresces, noting the height of the fluorescene corresponding to said additive, and thereafter determining said ratio R_f, and

c. correlating said ratio with the ratio of migration distances of at least one mixture of known concentration of said additive in said gasoline.

4,084,092

RADIATION SCANNING SYSTEM

Herbert Morrison Runciman, Glasgow, Great Britain, assignor to Barr & Stroud Limited, Glasgow, Great Britain

Filed Dec. 9, 1976, Ser. No. 749,085

Claims priority, application United Kingdom, Dec. 13, 1975, 51155/75

Int. Cl.[2] G01J *1/00*

U.S. Cl. 250—347 **4 Claims**



1. A radiation scanning system operating in object space, comprising radiation-sensitive detection means, radiation-focussing means and radiation scanning means, arranged such that substantially parallel bundles of radiation from different parts of a scene are successively directed from a reflection station by said scanning means, and focussed by said focussing means onto said detection means, wherein said radiation scanning means comprises a plurality of optical members mounted for rotation about an axis so as sequentially to pass through said reflection station, each said optical member comprising two planar radiation-reflecting surfaces disposed substantially at right angles to each other, the line of intersection of the planes containing said two radiation-reflecting surfaces being disposed at right angles to said axis of rotation, the arrangement being such that radiation enters said detector after sequential reflection from the two reflective surfaces in said reflector station and wherein the precise angle between the radiation-reflecting surfaces of the optical members differs by a very small angle successively around said axis, whereby contiguous portions of the scanned scene are imaged onto the detection means to produce a two-dimensionally scanned image.

4,084,093

FAN BEAM TRAVERSE-AND-ROTATE CT SCANNER

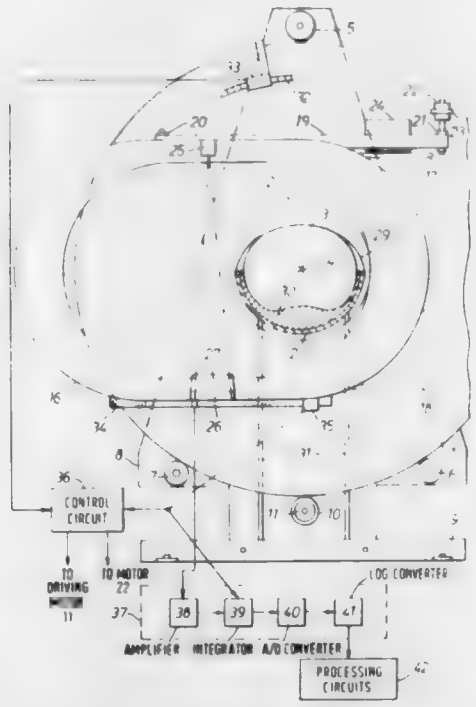
Robin Geoffrey Marsh, Reading, and Ian Alexander Fleming, Maidenhead, both of England, assignors to EMI Limited, Middlesex, England

Filed Nov. 17, 1976, Ser. No. 742,708

Claims priority, application United Kingdom, Dec. 2, 1975, 49347/75

Int. Cl.[2] A61B *6/02*; G01N *23/08*; H05G *1/30*

U.S. Cl. 250—360 **8 Claims**



1. An apparatus for examining a slice of a body by means of penetrating radiation including a source of a fan shaped spread of said radiation irradiating the slice, a plurality of detectors, cooperating with respective collimators, to determine the intensity of the radiation transmitted along a plurality of beams within said fan, means for scanning the source and detectors laterally of the slice to provide determinations of the intensity of radiation transmitted along a plurality of sets of parallel paths, each set provided by one of said detectors in the course of the lateral scan and means for orbiting said source and detectors, about a common axis intersecting the slice, through a plurality of angular steps different from the effective angular spread of said fan.

4,084,094

RADIOGRAPHIC APPARATUS

Robert Justin Froggatt, Southall, England, assignor to EMI Limited, Middlesex, England

Filed Jun. 21, 1976, Ser. No. 698,225

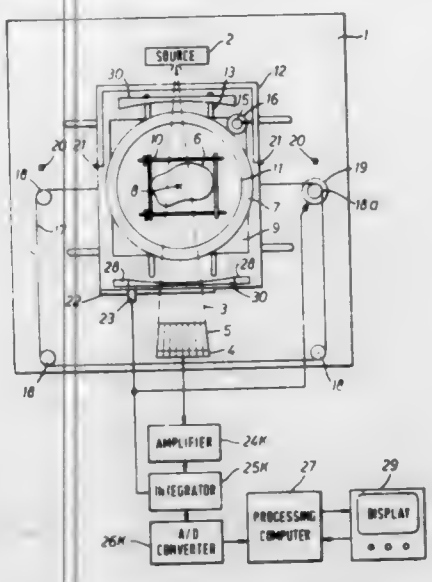
Claims priority, application United Kingdom, Jul. 11, 1975, 29184/75

Int. Cl.[2] G03B *41/16*

U.S. Cl. 250—445 T **4 Claims**

1. An apparatus for examining a planar section of an object by means of penetrating radiation including a source of radiation for irradiating the object, detector means disposed to receive the radiation after passage through the object and provide output signals related to absorption suffered by the radiation during said passage, means arranged to rotate the said object about an axis normal to the said plane to irradiate the object at a plurality of angular positions and means arranged to reciprocate the said axis, in a direction perpendicular to the

mean direction of said radiation, to irradiate the body along and provide output signals related to the absorption suffered in



passage along at least one set of substantially parallel beam paths therethrough for each of said angular positions.

4,084,095

ELECTRON BEAM COLUMN GENERATOR FOR THE FABRICATION OF SEMICONDUCTOR DEVICES

John Edmond Wolfe, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 14, 1977, Ser. No. 768,611
Int. Cl.[2] H01J *37/00*
U.S. Cl. 250—492 A **12 Claims**



1. A system for exposing a sensitized surface to a variable electron beam, said system comprising;

a target positioning means to hold said sensitized surface;

an electron beam source means to generate a high current electron beam along the path to said target positioning means;

an electric potential means mounted along said path to accelerate said beam towards said target positioning means; and

a magnetic focusing means mounted along said path between said electron beam source means and said target positioning means so as to provide an image focal distance longer than the related object focal distance, said focusing means including electro-magnetic means to provide sufficient magnetomotive force to focus said beam on a sensitized surface at said target positioning means.

4,084,096

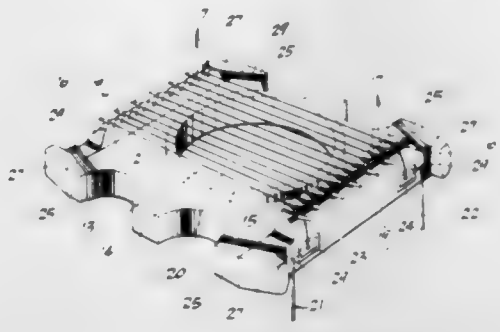
ELECTRICALLY ACTIVATED INFRARED SOURCE

Miles L. Edwards, 13191 Sandhurst Pl., Santa Ana, Calif. 92705

Filed Feb. 14, 1977, Ser. No. 768,392
Int. Cl.[2] G01J *1/00*
U.S. Cl. 250—504 **9 Claims**

1. An infrared source assembly comprising:

a frame member having a pair of substantially parallel sides adapted to receive segments of an elongated wire stretched repeatedly therebetween in a serpentine configuration, each side having a curved surface thereon adapted to receive tangentially thereto and to support thereover end portions of the wire strands stretched therebetween, said curved surface having a multiplicity of ribs therealong with grooves therebetween adapted to receive and accept the wire strands at the point of tangential contact for maintaining the stretched wire strands be-



tween said sides in a spaced relationship one to another, each of said curved surfaces having a plurality of projections therealong adapted to engage therearound end portions of the serpentine loops of stretched wire; and

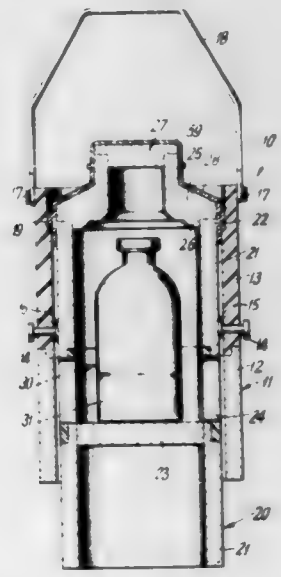
an elongated wire stretched back and forth in a serpentine configuration between said sides, around said projections and along said grooves, said wire adapted to be connected to an electrical source of pulsating energy and to be activated thereby to radiate pulsating infrared energy.

4,084,097

SHIELDED CONTAINER

Thomas V. Czaplinski, North Brunswick, and Robert E. Heyer, Hopatcong, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 15, 1976, Ser. No. 750,927
Int. Cl.[2] G21F *5/00*
U.S. Cl. 250—506 **29 Claims**



1. A shielded container adapted to fit within the measuring well of a radioisotope calibrator comprising an inner open topped cylindrical body having a cylindrical sidewall and a bottom wall both of radioactive shielding material with areas of the cylindrical sidewall just above the bottom wall being nonshielding, an outer rotatable hollow cylindrical sleeve having its lower wall of radioactive shielding material and its upper wall of nonshielding material, a vial containing a radioactive solution housed within the inner cylindrical body and resting on the bottom wall, a radioactive shielding closure for the open topped inner cylindrical body, and positioning means whereby the shielding portion of said outer sleeve can be locked into a position adjacent the nonshielding areas of said inner cylindrical sidewall and then when the container is lo-

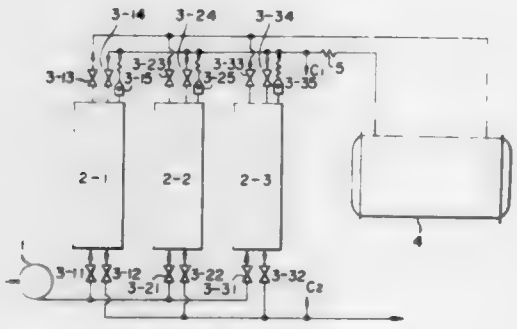
cated in the measuring well of a radioisotope calibrator said outer sleeve will be in a position such that said unshielded upper wall of said sleeve is adjacent the nonshielding areas of said inner cylindrical sidewall.

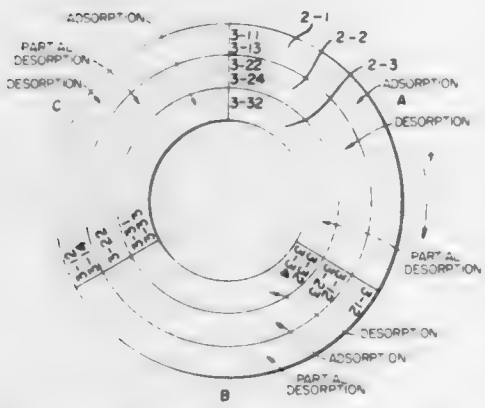
4,084,098

MOISTURE EXCHANGER TYPE OZONE-GENERATING APPARATUS

Norikazu Tabata; Takanori Ueno, and Keisuke Namba, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1976, Ser. No. 722,588
Claims priority, application Japan, Sep. 17, 1975, 50-112339
Int. Cl.[2] C01B *13/11*
U.S. Cl. 250—533 **1 Claim**





1. A moisture exchange type ozone-generating apparatus comprising:

an ozonizer,

a moisture exchanger comprising at least three adsorption towers filled with adsorbent,

means for passing a wet raw air through one of the adsorption towers in an adsorption step to dry the air,

means for passing the dry air through the ozonizer to form a dry ozone-containing air,

means for passing most of the dry ozone-containing air through a second adsorption tower which has previously been saturated with moisture in a desorption step to regenerate the adsorbent,

means for passing the remainder of the dry ozone-containing air through a third adsorption tower which has previously been saturated with moisture in a partial desorption step to saturate the adsorbent, with adsorbed ozone and

means for sequentially operating the adsorption towers in the order of adsorption step — partial desportion step — desorption step with an alternate switching operation.

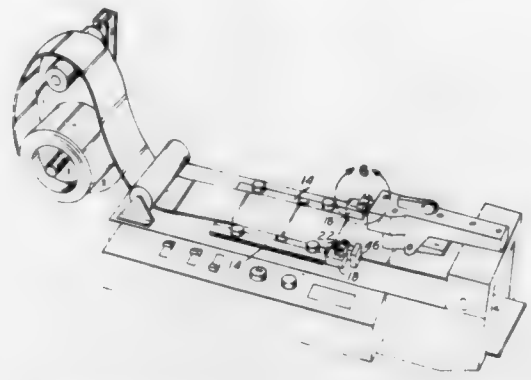
4,084,099

WIDE SCANNING ANGLE SENSOR

Ronald B. Harvey, Minneapolis; Gerald R. Strunc, Maple Grove, and Dwayne H. Putzke, Brooklyn Center, all of Minn., assignors to Pako Corporation, Minn.

Filed Feb. 4, 1977, Ser. No. 765,630
Int. Cl.[2] G01N *21/30*
U.S. Cl. 250—548 **7 Claims**

1. An improvement for use with a photographic print cutter mechanism which includes a power driven strip conveyor for conveying a strip of photographic prints having control indicia positioned along a marginal edge portion thereof, said conveyor including control means actuated by sensing the control indicia, said improvement comprising:



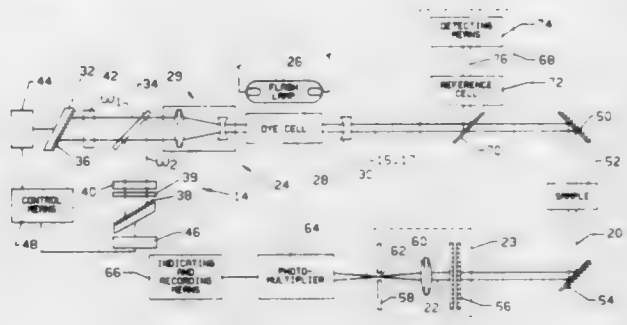
a wide scanning photovoltaic sensor positioned to scan the marginal edge portion of the strip which bears the control indicia, said sensor scanning an area of at least 0.250 inches wide to detect a multiplicity of different configurations, sizes and placements of said control indicia.

4,084,100

GENERATION OF COHERENT ROTATIONAL ANTI-STOKES SPECTRA

Richard F. Begley, Los Alamos, N. Mex., and Joseph J. Barrett, Morris Plains, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 550,801, Feb. 18, 1975, Pat. No. 3,973,134. This application Jul. 1, 1976, Ser. No. 701,721
The portion of the term of this patent subsequent to Aug. 3, 1993, has been disclaimed.
Int. Cl.[2] G01J *3/10, 3/28;* G01N *21/22*
U.S. Cl. 250—574 **6 Claims**



1. Apparatus for analyzing light, comprising:

a. radiation source means for generating first and second coherent radiation beams of monochromatic light, said radiation source means comprising a fixed frequency laser adapted to produce said first radiation beam and a dye laser adapted to be pumped by said fixed frequency laser to produce said second radiation beam;

b. tuning means for adjusting the frequency difference between said beams of light to equal substantially the rotational frequency of a preselected constituent of gaseous material;

c. projecting means for directing said beams of light through said gaseous material to produce scattered radiation containing a detectable signal composed of an anti-Stokes component generated coherently during scattering;

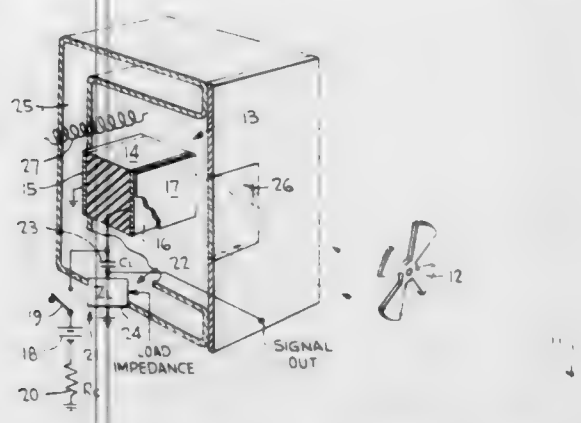
d. filtering means adapted to receive said scattered light and selectively transmit said signal;

e. detecting means for indicating the intensity of said signal.

4,084,101
APPARATUS FOR CONVERTING RADIANT ENERGY TO ELECTRIC ENERGY

Arden Sher, 108 Charles River Landing Rd., Williamsburg, Va. 23185

Filed Nov. 13, 1975, Ser. No. 631,689
Int. Cl.[2] H01G 7/04
U.S. Cl. 290—1 R 30 Claims

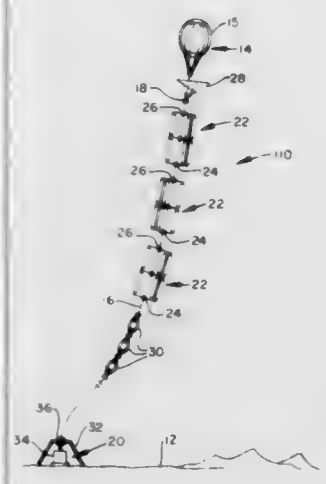


1. Apparatus for converting radiant energy into electric energy comprising a capacitor including an ionic dielectric and a pair of electrodes, means for causing said dielectric to be cyclically heated and cooled by said radiant energy, the properties of said dielectric being dominated by a dipole layer only on or near its surface, the capacitance of the capacitor being modulated in response to the cyclic heating and cooling, and means for connecting a load to the electrodes so the load is responsive to current derived from the capacitor in response to the capacitance modulation.

4,084,102
WIND DRIVEN, HIGH ALTITUDE POWER APPARATUS

Charles Max Fry, 17144 E. Brown Cir., Aurora, Colo. 80013, and Henry W. Hise, 2209 Hancock Dr., Austin, Tex. 78756

Filed Jan. 19, 1976, Ser. No. 650,186
Int. Cl.[2] F03D 11/00
U.S. Cl. 290—55 8 Claims



1. Apparatus for harvesting energy from high velocity winds found at great heights above the ground, comprising:

an elongated, relatively flexible drive shaft having opposed ends, a ground supported energy conversion device for generating power, a plurality of wind driven, vertical axis rotors for driving said shaft, each of said rotors having a plurality of blades circumferentially spaced about the vertical axis thereof for imparting rotational motion into each of said rotors, a shaft swivel means, and an aerial support means by which said swivel means can be supported within the atmosphere at a great height above said energy conversion device;

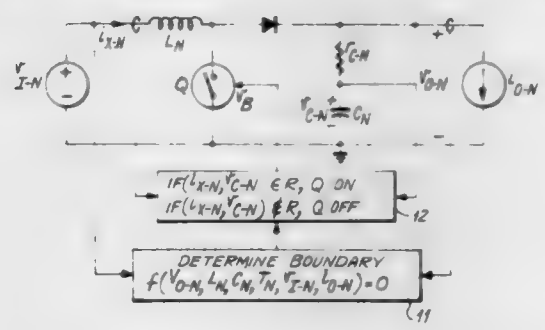
means connecting one end of said shaft to said energy conversion device such that rotation of said shaft operatively actuates said energy conversion device to thereby generate power; means connecting each of said rotors to said shaft with said shaft being received through the central axis of each of said rotors, thereby enabling the blades of each of said rotors to rotate about the vertical axis thereof while rotating said shaft; means by which said shaft is supported from said aerial support means by said shaft swivel means such that each of said rotors imparts relative rotational motion into said shaft respective to said aerial support means in response to the winds aloft blowing thereacross, said shaft being the sole means by which the aerial support means is tethered to the earth;

said means connecting said rotors to said shaft includes a one-way clutch means which causes a relatively slow rotating one of said rotors to be disengaged from the shaft when the wind causes a relatively fast rotating one of said rotors to rotate said shaft at a rotational speed greater than the speed of said slow rotating one of said rotors.

4,084,103
SYSTEM-STATE AND OPERATING CONDITION SENSITIVE CONTROL METHOD AND APPARATUS FOR ELECTRIC POWER DELIVERY SYSTEMS

William Wesley Burns, III, 45-D, Colonial Apts., Durham, N.C. 27707, and Thomas George Wilson, 2721 Sevier St., Durham, N.C. 27705

Filed Jun. 7, 1977, Ser. No. 804,225
Int. Cl.[2] H01H 47/00
U.S. Cl. 307—132 R 31 Claims



1. A new and improved controllable on-off switching type of power delivery system for transferring electrical power from an input source of electrical energy to a load in a controlled manner, the improvement comprising a novel controller for optimizing the on-off period of operation of said on-off switching type power delivery system to thereby provide extremely fast transient response to changed operating conditions imposed on the system, precise regulation and highly stable operation; said controller including in combination:

operating condition sensing means for sensing the operating conditions externally imposed on the power delivery system;

system state variables sensing means for sensing the actual state of selected power handling network components comprising the power delivery system;

fast responding boundary computation circuit means responsive to said operating condition sensing means and supplied with the component values of the selected power handling network components, a desired output operating characteristic for the system and a designer specified timing parameter for deriving dynamic state-space boundary values defining a desired new area of steady state operation and distinct new areas of on-off operation in the operating state-space for the power delivery system under different new externally imposed operating conditons; and

comparison circuit means responsive to said boundary computation circuit means and said system-state sensing means for comparing the values of the system-state variables to the dynamic state-space switching boundary values and deriving respective on-off controlling output signals for controlling the on-off condition of the power delivery system in response to the location of the state of the sys-

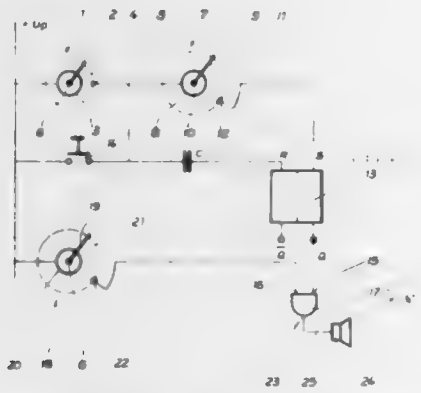
tem variables in the system state-space relative to the switching boundary values.

4,084,104

ELECTRIC SIGNALING ARRANGEMENT FOR DELIVERY OF WAKING SIGNALS

Erich Scheer, St. Georgen-Peterzell, and Manfred Rauer, St. Georgen-Stockwald, both of Germany, assignors to Kieninger & Obergfell, Fabrik fur technische Laufwerke und Apparate, St. Georgen, Germany

Filed Mar. 26, 1976, Ser. No. 670,715
Claims priority, application Germany, Mar. 26, 1975, 2513384
Int. Cl.[2] H01H *7/00*
U.S. Cl. 307—141 **12 Claims**



1. An electrical signaling arrangement especially for the production of waking signals at a predetermined instant in the course of a 24-hour cycle, said arrangement comprising:

a clockwork;

a first contact device operatively connected to said clockwork and switching on temporarily once at a predetermined moment in the course of a 24-hour cycle;

a second contact device operatively connected to said clockwork and electrically connected in circuit with said first contact device, said second contact device operating on a 60-minute cycle and closing an electrical contact for a brief period each hour, said first contact device being settable from hour to hour over said 24-hour cycle within one hour of said predetermined instant;

an electric holding circuit triggerable by said second contact device for producing an output, said holding circuit having a reset input energizable to terminate said output;

a third contact device operating on a 60-minute cycle connected to said clockwork and switching on at a selectable instant for a predetermined duration;

a logic circuit connected to the output of said holding circuit and to said third contact device for producing a control signal upon simultaneous energization by said output and said third contact device;

a waking signal generator connected to said logic circuit and energizable by the control signal therefrom; and

means for automatically resetting said holding circuit to terminate the output thereof connected with one of said contact devices whereby the output from said holding circuit is terminated periodically and automatically.

4,084,105

LSI LAYOUT AND METHOD FOR FABRICATION OF THE SAME

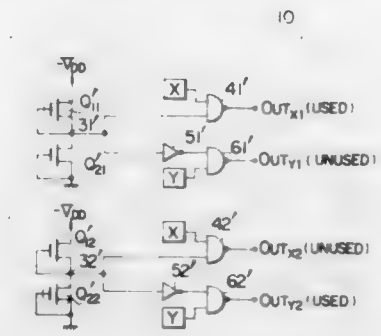
Yuichi Teranishi, Hinodemachi, and Masayoshi Abe, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 11, 1976, Ser. No. 685,529
Claims priority, application Japan, May 28, 1975, 50-62858
Int. Cl.[2] H03K *19/08, 19/20*
U.S. Cl. 307—205 **10 Claims**

1. As LSI layout including, in a semiconductor substrate:

(a) a logic function section having a predetermined logic function;

(b) a MOSFET array having first and second MOSFETs, a drain of the first MOSFET being coupled to a power source voltage, a gate of the first MOSFET being connected with a source thereof, the source of the first MOSFET being connected with a drain of the second MOSFET, a gate of the second MOSFET being connected with a source thereof, the source of the second MOSFET being coupled to a ground potential, one of the first and second MOSFETs being of an enhancement type and the



other MOSFET being of a depletion type to produce a fixed logic output at a junction point between the source of the first MOSFET and the drain of the second MOSFET; and

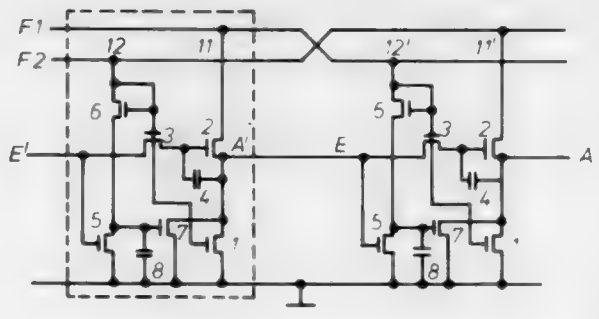
(c) logic means connected with the junction point of the MOSFET array at a first input thereof and with the logic function section at a second input thereof and operable to couple a logic output of the logic function section to an output side thereof.

4,084,106

DYNAMIC SHIFT REGISTER USING INSULATED-GATE FIELD-EFFECT TRANSISTORS

Manfred Fritz Ullrich, Denzlingen, Germany, assignor to ITT Industries, Incorporated, New York, N.Y.

Filed Dec. 2, 1976, Ser. No. 746,984
Claims priority, application Germany, Dec. 17, 1975, 2556828
Int. Cl.[2] G11C *19/28*
U.S. Cl. 307—221 C **1 Claim**



1. A dynamic insulated-gate field-effect transistor shift register of the type which requires first and second non-overlapping clock signals coupled to first and second clock signal inputs for operation, and wherein each half of a stage includes at least one coupling transistor having one end of its controlled current path coupled to an information input, and at least one first switching transistor having one end of its controlled current path coupled to ground, each half stage comprising:

a second switching transistor having its controlled current path coupled in series with that of said first switching transistor and one end of its controlled current path coupled to said first clock signal, the other end of the controlled current path of said coupling transistor coupled to the gate of said second switching transistor, and the gates of said coupling transistor and said first transistor coupled to said second clock input; and

a capacitor coupled between the gate of said second switching transistor and the junction point of the controlled

current paths of said first and second switching transistor for forming the information output of the half stage, said first and second clock signal inputs alternately coupled to said first and second clock signals in alternate half stages;

a third switching transistor;

a load transistor coupled to said third switching transistor such that their controlled current paths are series connected between ground and said second clock signal input;

a charge eliminating transistor having its controlled current path coupled in parallel with that of said first switching transistor; and

a second capacitor coupled between the gate terminal of said charge eliminating transistor and ground, the gate terminal of said third switching transistor coupled to said information input, the gate terminal of said load transistor coupled to said second clock signal input, and the gate terminal of said charge eliminating transistor coupled to the junction of the controlled current paths of said third switching transistor and said load transistor.

4,084,107

CHARGE TRANSFER DEVICE

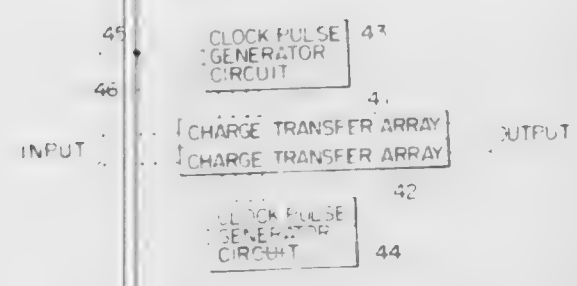
Shinya Ohba, Kokubunji; Masaharu Kubo, Hachioji, and Masakazu Aoki, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 15, 1976, Ser. No. 750,589

Claims priority, application Japan, Dec. 19, 1975, 50-150579

Int. Cl.[2] H01L *29/68;* **G11C** *19/28, 11/40;* **H03K** *17/16*

U.S. Cl. 307—221 D **7 Claims**



1. A charge transfer device comprising:

a semiconductor substrate;

at least two arrays of charge transfer devices disposed on said semiconductor substrate;

a clock pulse generator circuit disposed on said semiconductor substrate and driving simultaneously said at least two arrays of charge transfer devices, said clock pulse generator circuit being divided into at least two blocks arranged on said substrate so as to confine said at least two arrays of charge transfer devices therebetween; and

a conductor line for supplying master clock pulses for externally controlling said at least two blocks of said clock pulse generator.

4,084,108

INTEGRATED CIRCUIT DEVICE

Shoji Fujimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

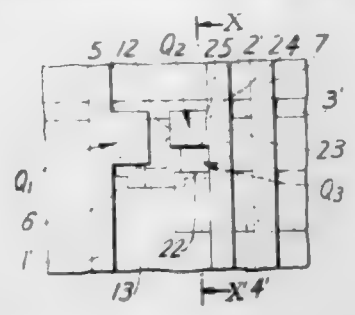
Filed Nov. 4, 1975, Ser. No. 628,463

Claims priority, application Japan, Nov. 9, 1974, 49-129222

Int. Cl.[2] H01L *29/78, 29/60;* **G11C** *11/24, 11/40*

U.S. Cl. 307—238 **3 Claims**

1. A semiconductor integrated circuit device comprising a semiconductor substrate of a first conductivity type; first, second, third and fourth regions of a second conductivity type formed on one major surface of said substrate; a first insulating film formed on said surface of said substrate between said first and second regions; a first electrode formed on said first insulating film; a second insulating film formed on said surface of said substrate between said third and fourth regions; a second electrode formed on said second insulating film and extending from an area above the edge of said third region to an area above said surface of said substrate intermediate said third and fourth regions; a third electrode formed on said second insulating film and extending from an area above the edge of said fourth region to an area above said surface of said substrate intermediate said third and fourth regions; said second and third electrodes being partly superposed on each other, a third insulating film interposed between the superposed portions of



said second and third electrodes, means for connecting said second region to said second electrode; a write address line connected to said first electrode; and a read address line connected to said third electrode; a first capacitance being formed by said second and third electrodes and said third insulating film between said second and third electrodes; and a second capacitance being formed between said second electrode and said substrate; wherein an information on said first region is stored in said second capacitance.

4,084,109

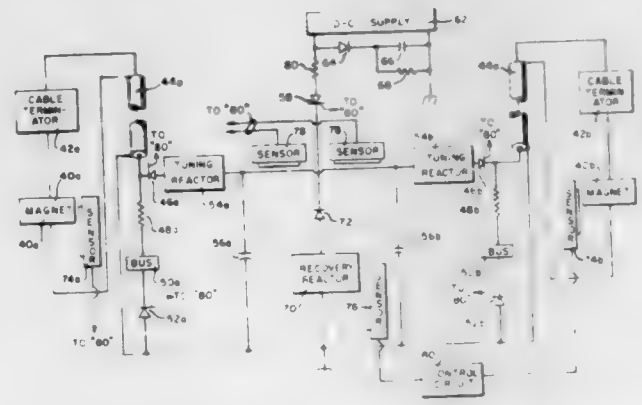
HIGH-CURRENT POWER SUPPLY FOR ACCELERATOR MAGNETS

Kenneth R. Bourkland, Naperville, Ill., and Russell A. Winje, Princeton Junction, N.J., assignors to the United States Department of Energy, Washington, D.C.

Filed Jun. 8, 1976, Ser. No. 694,118

Int. Cl.[2] H03K *3/00*

U.S. Cl. 307—108 **6 Claims**



1. A power supply for delivering a controlled current to a coil comprising:

a capacitor connected at a first end to the coil;

means connected electrically to the capacitor for charging the capacitor to a predetermined value of voltage;

an adjustable tuning inductor connected electrically to the capacitor at a second end;

a first thyristor connected electrically in series with the tuning inductor;

a cable system connected electrically in series with the first thyristor;

a switching reactor connected electrically in series with the cable system and the coil to form a series circuit with the capacitor, the tuning inductor, the first thyristor, and the cable system;

a bypass thyristor connected electrically in parallel with the coil and the switching reactor; and

control means connected to the charging means, the first thyristor, and the bypass thyristor for controlling the predetermined value of voltage and the operation of the thyristors.

4,084,110

SEMICONDUCTOR SWITCH

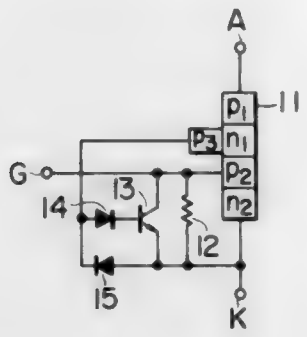
Shinzi Okuhara, Fujisawa; Ichiro Ohhinata, Yokohama; Tatsuya Kamei, and Masayoshi Suzuki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 28, 1976, Ser. No. 727,453

Claims priority, application Japan, Oct. 1, 1975, 50-117723; Oct. 1, 1975, 50-117724

Int. Cl.[2] H03K *17/72*

U.S. Cl. 307—252 G 11 Claims



1. A semiconductor switch comprising: a PNPN switch of a PNPN four-layered equivalent structure including at least three PN-junctions; a transistor connected so as to short-circuit in transient state one of the PN-junctions at one end of said PNPN switch; drive means coupled to said PNPN switch for driving said transistor in transient state; and a diode connected between the emitter and the base of said transistor, wherein said semiconductor switch further comprises a bypass circuit for preventing a back current between an anode and a cathode of said PNPN switch from passing through the base and the collector of said transistor, said bypass circuit being provided between the emitter of said transistor and selected one of the anode gate and a cathode gate of said PNPN switch.

4,084,111

APPARATUS FOR THE DIGITAL CONTROL OF ANALOG SIGNAL

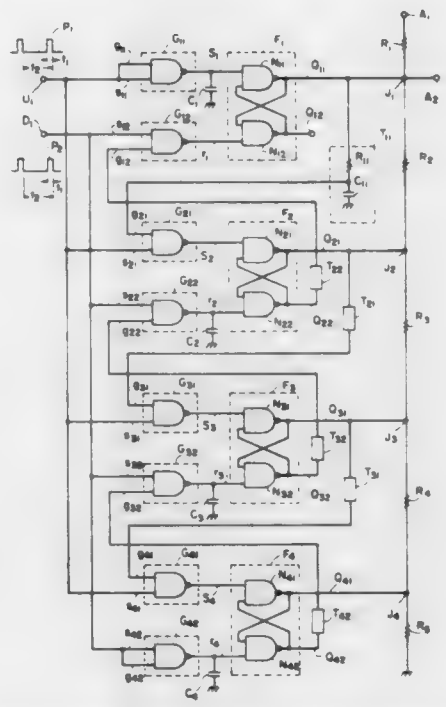
Hirotoshi Matsuda, Osaka, Japan, assignor to New Nippon Electric Company, Ltd., Osaka, Japan

Filed Nov. 26, 1975, Ser. No. 635,640

Int. Cl.[2] H03K *1/14*

U.S. Cl. 307—264 13 Claims

1. A circuit arrangement for the digital control of analog output signal levels, comprising a plurality of impedance elements connected in series to form voltage divider means having a number of connection points between adjacent impedance elements, an analog input terminal and an analog output terminal connected to said voltage divider means, said circuit arrangement further comprising digital control circuit means including memory circuit stages corresponding in number to said number of connection points between adjacent impedance elements, each memory circuit stage having a setting input terminal, a resetting input terminal as well as first and second output terminals for providing different output states, means operatively connecting said first output terminal of each stage to the respective connecting point in said voltage divider means, setting and resetting circuit means operatively connected to the respective setting input terminal and to the respective resetting input terminal of the corresponding memory circuit stage, said setting and resetting circuit means having control input terminal means, first and second digital control signal input means operatively connected to said control input terminal means of said setting and resetting circuit means, first delay circuit means operatively connecting the first output terminal of a preceding memory circuit stage to the appropriate control input terminal means of the next following memory



circuit stage, second delay circuit means operatively connecting the second output terminal of a following memory circuit stage to the appropriate control input terminal means of the next preceding memory circuit stage, and further delay circuit means operatively connected to selected ones of said setting and resetting input terminals of said memory circuit stages, whereby different potential levels may be applied to said connection points in response to digital control input signals supplied respectively to said second and first digital control signal input means.

4,084,112

INCANDESCENT LAMP HAVING TWO-PART INSULATIVE BASE

Roger T. Hebert, Peabody; Bernard T. Pike, Ipswich; Charles E. McCarthy, Gloucester, and Richard J. Shea, Danvers, all of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 20, 1977, Ser. No. 799,069

Int. Cl.[2] H01J *5/48*

U.S. Cl. 313—222 11 Claims

1. A high wattage incandescent lamp comprising:

a light-transmitting envelope of vitreous material having a press-sealed end portion;

a halogen-containing atmosphere within said envelope;

a filament structure fixedly mounted within said envelope;

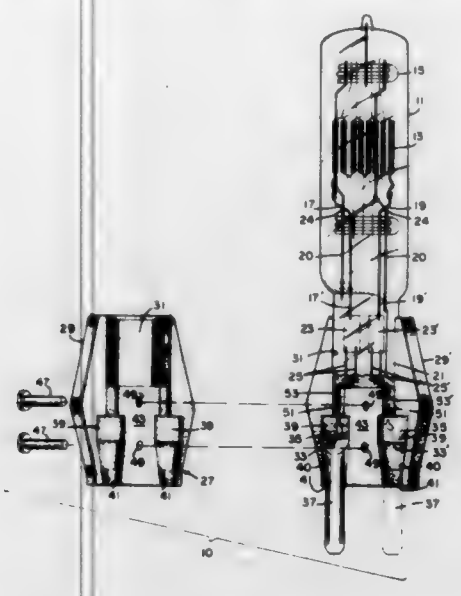
first and second lead-in wires electrically connected to said filament structure, each of said lead-in wires having a portion thereof sealed within said press-sealed end portion of said envelope;

first and second spaced-apart elongated pins electrically connected to said first and second lead-in wires, respectively;

a two-part base of insulative material, said base defining therein a cavity for having said end portion of said envelope positioned therein, first and second spacedly-oriented recesses for securedly retaining therein end portions of said first and second elongated pins, respectively, and a

barrier portion for substantially separating said cavity from said spacedly-oriented recesses;

means for securing the two parts of said base together; and



a quantity of sealing material positioned within said cavity of said base about said press-sealed end portion of said envelope.

4,084,113

COLOR TELEVISION PICTURE TUBE STRUCTURE AND METHOD OF MANUFACTURE

Roland Louis Vogelpohl, Gahanna, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 17, 1976, Ser. No. 667,775

Int. Cl.[2] H01J *29/07, 31/20*

U.S. Cl. 313—408 **6 Claims**



1. A color television picture tube comprising:

a rimless face panel of generally spherical surface contour and generally rectangular outline including a first element of an indexing means for establishing a unique positional relationship between said face panel and a shadow mask;

a glass funnel having a divergent wall terminating at its divergent end in a seal edge for mating with said face panel which is of generally rectangular outline and is scalloped to a spherical contour matching said face panel contour and having a plurality of bosses formed on the insides of said divergent walls adjacent said seal edge, said bosses being formed in pairs to define a groove therebetween;

at least a pair of shadow mask support brackets attached to separate opposed bosses of said plurality of bosses, said brackets each having a mask mounting means formed thereon, said mask support brackets further including upper and lower tab retainers formed thereon for engaging the walls of said groove to position said mask support brackets as they are attached to said bosses; and

a generally rectangular shadow mask color selection device fitting within said funnel adjacent said seal edge and having brackets extending from the sides of said shadow mask, said brackets adopted to engage said mounting means of said mask support brackets, said mask brackets and said mask support brackets forming a second element of said indexing means.

4,084,114

SUBSTRATE ASSEMBLY FOR A LUMINESCENT DISPLAY PANEL WHEREIN GRAPHITE POWDER IS BOUND INTO SEGMENTED ELECTRODES BY GLASS CONTAINING ZINC OXIDE

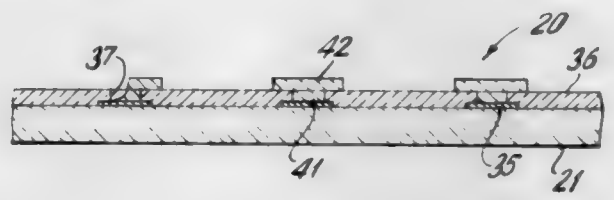
Toshiro Kuroda, and Susumu Kakami, both of Nagoya, Japan, assignors to Narumi China Corporation and Nippon Electric Kagoshima, Limited, both of, Japan

Filed Jul. 1, 1976, Ser. No. 701,996

Claims priority, application Japan, Jul. 11, 1975, 50-85667

Int. Cl.[2] H01J *29/08, 29/30;* **H01B** *1/06*

U.S. Cl. 313—496 **3 Claims**



1. In a substrate assembly for a luminescent display panel comprising a substrate of an electrically insulating material, a plurality of electroconductive leads on said substrate and segmented electrodes coupled to said leads, the improvement wherein:

each of said segmented electrodes is formed of a fired zinc oxide-containing vitreous material with graphite powder bound therein,

the composition of said segmented electrodes comprising by weight about 40% to 70% graphite with 30% to 60% of the vitreous material making up essentially the balance, the amount of zinc oxide in said vitreous material ranging from about 30% to 40% by weight of the vitreous material, the lead content not exceeding about 0.1% by weight.

4,084,115

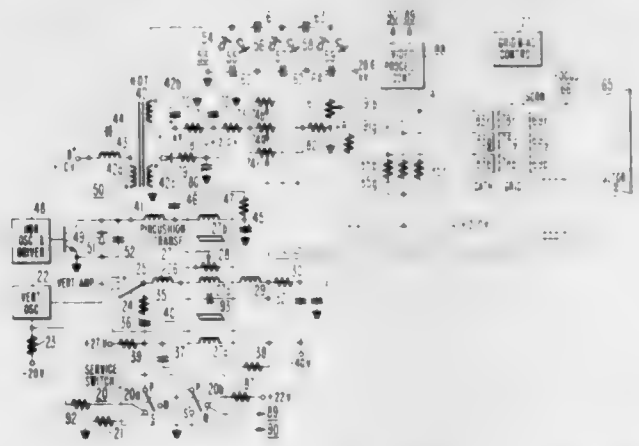
CIRCUIT FOR CORRECTING SETUP ERROR IN A COLOR TELEVISION RECEIVER

John Charles Peer, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 14, 1977, Ser. No. 768,502

Int. Cl.[2] H01J *29/56*

U.S. Cl. 315—371 **18 Claims**



1. In a color television receiver including a vertical deflection circuit and a horizontal deflection circuit including a horizontal deflection winding coupled to a first pincushion correction winding of a pincushion correction means, the inductance of said first pincushion correction winding varying in response to the current generated in the vertical deflection winding of said vertical deflection circuit for providing a pincushion correction signal to said horizontal deflection winding, apparatus comprising:

a horizontal output transformer coupled to said horizontal

deflection circuit for developing a first voltage across a secondary winding of said horizontal output transformer;

first means coupled to said vertical deflection circuit for enabling operation of said vertical deflection circuit when in a first mode of operation and disabling said vertical deflection circuit when in a second mode of operation; and

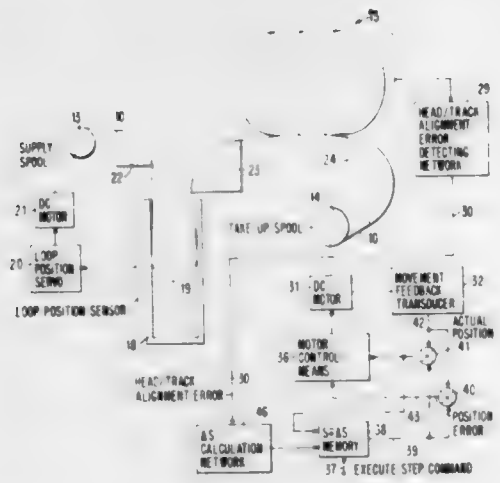
second means coupled to said pincushion correction means for adjusting the inductance of said first pincushion correction winding when in said second mode of operation in order to compensate for a change in the inductance of said first pincushion correction winding when in said second mode of operation for maintaining said first voltage substantially unchanged.

4,084,116

PROCEDURE FOR TIGHTENING TAPE WRAPS ON A SPINDLE

Nelson Kay Arter; Clarence Howard Hammond; Daniel James Pedersen, and Marvin Edward Prahl, all of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 20, 1976, Ser. No. 724,832
Int. Cl.[2] G05B *19/28*
U.S. Cl. 318—6 **20 Claims**



1. In a transport device wherein a length of flexible media is being wound onto a spindle, the improvement comprising in combination:

drive means, operably connected, for rotating said spindle;

first control means operably associated with said drive means for generating and impressing a first voltage waveform to enable the winding of said flexible media at a first velocity;

second control means, operably connected with said drive means, to generate a step voltage profile which is applied to the drive means at the end of the first voltage waveform, said step voltage profile having a controlled magnitude to squeeze out air which is being entrapped in the media layers.

4,084,117

PROCEDURE FOR TIGHTENING TAPE WRAPS ON A SPINDLE

Stephen Martin Vogel, Boulder, and John Walton Woods, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 20, 1976, Ser. No. 724,833
Int. Cl.[2] G05B *19/28*
U.S. Cl. 318—6 **16 Claims**

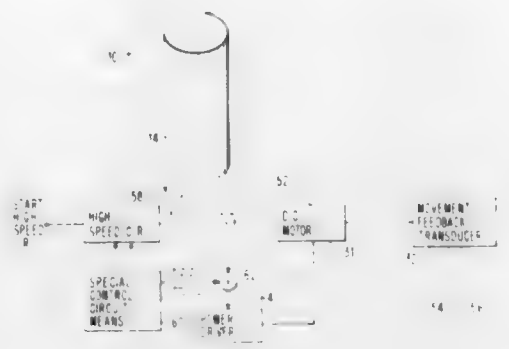
1. In a tape transport device wherein a length of flexible magnetic media is transported past an information processing station from a supply reel to a take-up reel, the improvement comprising in combination:

take-up reel;

drive means, operably connected to said take-up reel, for winding said media thereon;

first control means operable, for generating a first voltage waveform to enable the transporting of said tape at relatively high velocity;

second control means, operable, for generating a second



voltage waveform; said second waveform having a high acceleration component; and

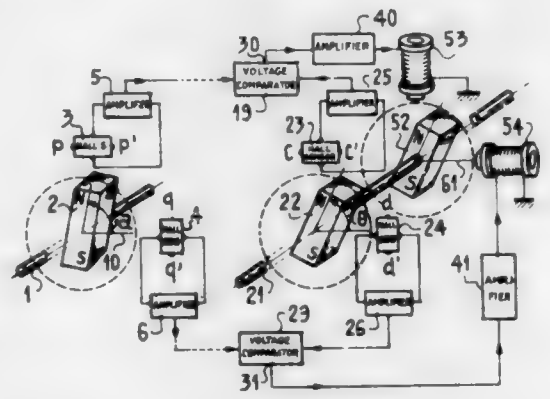
means, operably associated with said drive means, for combining the first and the second waveform and imposing a composite waveform to said drive means whereby a jerking motion is being imparted to said media leaving it tightly wound.

4,084,118

SYNCHROTRANSMISSION SYSTEM CONTROLLED BY HALL EFFECT

Bernard Grancoin, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 22, 1976, Ser. No. 698,777
Claims priority, application France, Jun. 27, 1975, 75 20399
Int. Cl.[2] G05B *11/01*
U.S. Cl. 318—138 **7 Claims**



1. An angular position transmission system between two rotating shafts, comprising a transmitter, provided with a first stator and with a first rotor integral with a first rotating shaft, of which the angular position is to be transmitted, and a receiver provided with a second stator and with a second rotor integral with a second rotating shaft to which said angular position is to be transmitted, said rotors each comprising a permanent magnet of which the magnetic axis is perpendicular to the direction of their respective axes of rotation, and said stators each comprise a plurality of Hall effect magnetic sensors of said rotors, a first one of said sensors of the first stator and of the second stator each being respectively connected to one of the two comparison input terminals of a first comparator circuit and a second one of said sensors of the first stator and of the second stator being each respectively connected to one of the comparison inputs of a second comparator circuit, the output terminals of these circuits being respectively connected to a plurality of control amplifier circuits controlling an

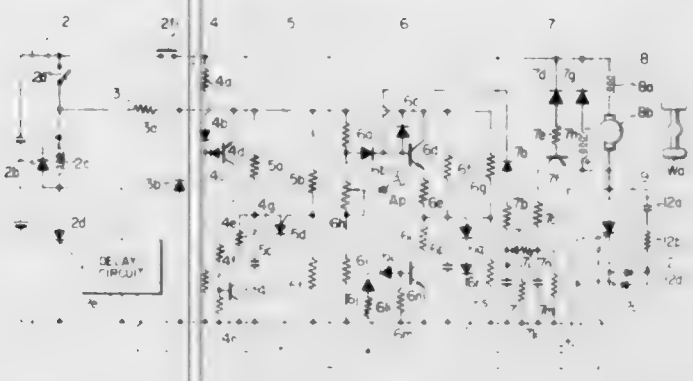
electric motor driving said second rotating shaft, to maintain said first and second shafts in synchronous positions.

4,084,119

CHOPPER CONTROL SYSTEM

Hidetoshi Kato, Nagoya; Masayoshi Niimi, Toyota, and Kenzo Mitani, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 4, 1976, Ser. No. 663,994
Claims priority, application Japan, Mar. 19, 1975, 50-33556
Int. Cl.[2] H02P *7/00*
U.S. Cl. 318—434 **11 Claims**



1. A chopper control system for controlling the supply of power from a DC power source to a load comprising:

a. a main circuit including a DC power source, a chopper circuit for accomplishing the on-off control of the power from said DC power source, and a DC motor having the armature and the field coils in series with each other, said DC power source, said chopper circuit, and said DC motor being connected in series with each other, and said main circuit controlling the duration of power supply from said DC power source to said DC motor in accordance with the duty cycle of said chopper circuit;

b. a duty cycle control circuit connected to said chopper circuit for controlling the duty cycle thereof; and

c. a current limiting circuit including a flywheel circuit having a series-connected circuit of a flywheel diode and a reactor, said series-connected circuit being connected in inverse parallel with the series circuit of said armature coil and said field coil for including thereacross a counter electromotive force each time the power supply from said power source to said DC motor is cut off, and said current limiting circuit further including a detecting circuit connected to said flywheel circuit and said duty cycle control circuit for detecting said counter electromotive force induced in said reactor of said flywheel circuit and applying said detected output to said duty cycle control circuit, whereby the duty cycle of said chopper circuit is limited in accordance with the counter electromotive force induced in said reactor.

4,084,120

STEPPER MOTOR VALVE ACTUATOR CONTROL APPARATUS

Bryant D. Lund, Salt Lake City, Utah, assignor to E-Systems, Inc., Dallas, Tex.

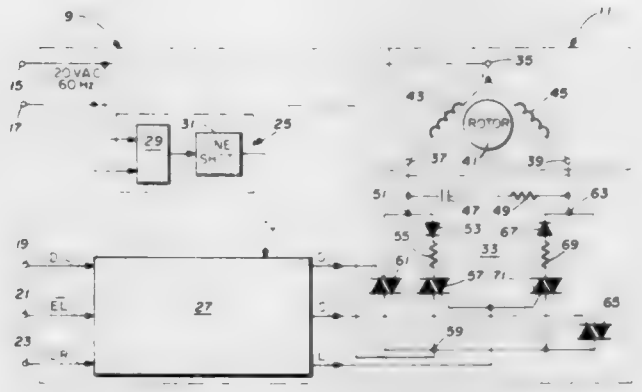
Filed Jun. 16, 1976, Ser. No. 696,602
Int. Cl.[2] G05B *11/28*
U.S. Cl. 318—599 **20 Claims**

1. For use in controlling a regulated device operated by a motor, the combination comprising:

AC power terminal means arranged for connection to a source providing an AC power signal;

timing signal generating means connected to said AC power terminal means for providing a repetitively occurring timing signal having a predetermined phase relationship with said AC power signal;

logic circuit means having first input terminals thereof arranged for receiving an externally generated direction signal representative of a commanded direction in which the regulated device is to move and second input terminals arranged for receiving the timing signal, said logic circuit means including means responsive to said direction signal and said timing signal for providing at least one operational signal representative of the commanded direction of movement, said operational signal repetitively occurring with the timing signal and having a predetermined phase relationship with said timing signal; and



a switching device arranged to repetitively connect said AC power terminal means to the motor, said switching means being responsive to the repetitively occurring characteristic of said operational signal for connecting said AC power terminal means with the motor to enable an application of the AC power signal at repetitive intervals to the motor and conditionally effect a rotation of the motor shaft by a predetermined distance in the commanded direction.

4,084,121

SOLID STATE REPEATER FOR THREE WIRE SYNCHRO WITH SELECTABLE PHASE AND FREQUENCY ADJUSTMENT

Helmar R. Steglich, Marblehead, Mass., assignor to General Electric Company, Wilmington, Mass.

Filed Jan. 3, 1977, Ser. No. 756,057
Int. Cl.[2] G05B *1/06*
U.S. Cl. 318—654 **4 Claims**



1. In a solid state synchro repeater for converting angular output information from a three wire synchro which takes the form of three phase, amplitude modulated signals of a given carrier phase and frequency to three phase, amplitude modulated signals carrying the same angular information on carrier having any selected phase or frequency, the combination comprising;

a. means for receiving the three phase signals from a three wire synchro and converting the three phase signals to a pair of amplitude modulated signals proportional to the sin and cos of the shaft angle θ,

b. means for demodulating said pair of signals to produce a pair of D.C. signals proportional to the sin and cos of a shaft angle θ,

c. individual means for modulating a carrier of selectable frequency and phase with said pair of D.C. signals to

produce modulated signals reproducing the angular shaft informative from said three wire synchro signals, including;

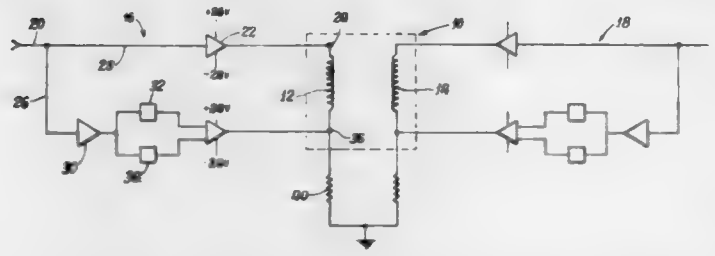
1. a carrier signal source of selectable phase and frequency,
2. individual, closed loop, modulating means,
3. means to apply one of said D.C. signals and the carrier signal of selectable phase and frequency to said individual modulating means to produce modulated signals respectively proportional to the sin and cos of a shaft angle θ,
4. negative feedback means in each of said closed loop, modulating means,
5. means to convert the modulated sin and cos θ signals with selectable carrier phase and frequency to three phase signals.

4,084,122

DRIVE CIRCUIT FOR STEPPER MOTOR

Robert E. Gettings, Northbrook, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Oct. 20, 1976, Ser. No. 734,304
Int. Cl.[2] H02K *37/00*
U.S. Cl. 318—696 **8 Claims**



1. A drive circuit for energizing the winding of a stepper motor in response to an input pulse applied thereto, including in combination:

a source of bipolar voltage,

first circuit means coupled to said voltage source and the first terminal of said stepper motor winding, and second circuit means coupled to said voltage source and the second terminal of said stepper motor winding, said first and second circuit means receiving simultaneously a stepper motor pulse and in response thereto said first circuit means applying to said first terminal a voltage of a first polarity of a predetermined magnitude and said second circuit means applying to said second terminal for a predetermined time period only, a voltage of opposite polarity but of a magnitude substantially equal to that applied to said first terminal, whereby a double voltage is applied across said winding for rapid torque builup in said stepper motor.

4,084,123

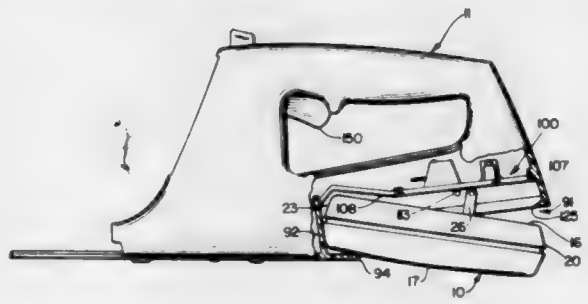
CORDLESS ELECTRIC DEVICES HAVING RECHARGEABLE BATTERY PACK(S)

Lynn D. Lineback, Danville, Va., and James E. Edgell, Senatobia, Miss., assignors to Disston, Inc., Pittsburgh, Pa.

Filed Aug. 25, 1975, Ser. No. 607,376
Int. Cl.[2] H02J *7/00;* **H01M** *45/00*
U.S. Cl. 320—2 **42 Claims**

1. A rechargeable battery pack for external mounting in a portable device comprising an elongated substantially rectangular box-like housing having at least one substantially rectangular flat base wall and side walls, the area of the base wall being greater than the area of any of the side walls and containing electrical battery means, a rectifier and a pair of external contact blades projecting rigidly from said base wall of the pack housing, said blades being adapted for insertion into a conventional household electrical outlet, said blades being disposed intermediate the length and width of said base wall, a circuit within said pack housing comprising a switch having connections to said rectifier and battery means and having an actuator adjacent said base wall, said switch being spring biased to connect said battery means to said blades through said rectifier when the pack is not mounted on the device and adapted to being actuated by means on the device to connect the battery means to discharge through the blades upon mounting the pack in said device, and releasable latch means mounted on one end of said pack housing enabling said pack housing to be releasably secured in a mating outwardly opening recess of said device.

13. In a battery operated device in a group of similar devices each adapted to receive a selected number of battery units for powering the device, in combination, a powered unit having battery-powered apparatus and including a housing mounting such apparatus, said housing having a pocket with an outwardly open side and peripheral side walls, a rectangular base wall located opposite said open side and rigid with said housing and forming the base of said pocket, the area of said base wall being greater than the area of any of said peripheral side walls, said base wall providing receptacle openings adapted to receive a pair of AC household type prongs and with circuit



means to connect such inserted prongs to said apparatus, a rectangular box-shaped battery pack unit having a housing fitting and movable within said powered unit housing pocket side walls towards and from said base wall, said pack unit mounting a battery, rectifier means connected to the battery for recharging the battery, a pair of AC household type prongs projecting from one flat substantially rectangular sidewall of the pack unit housing at a position intermediate the length and width thereof, and a switch mounted within the pack unit housing, said switch having a normal position which acts to connect said battery through said rectifier means to said prongs enabling said pack unit to be recharged by insertion of said prongs in an AC household type receptacle supply and having a second position which said switch is adapted to assume by being engaged whenever said battery unit prongs are inserted into said powered unit housing receptacle openings to connect said battery to said prongs to power said apparatus; actuator means arranged on said units to move said switch to its said second position when said prongs are fully inserted into said powered unit housing receptacle openings; and latching means for securing said units when said pack unit is fully inserted into said powered unit housing pocket.

4,084,124

METHOD AND APPARATUS FOR CONDITIONING OF NICKEL-CADMIUM BATTERIES

Robert E. Kapustka, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 24, 1976, Ser. No. 744,573
Int. Cl.[2] H02J *7/00*
U.S. Cl. 320—9 **11 Claims**

1. A method for reconditioning a battery, having a plurality of cells, connected to an energy source comprising the steps of:

connecting across each cell a means for assuming the load of each cell when the voltage of each cell is reduced to a predetermined value;

removing the battery from the energy source;

placing a load across the battery;

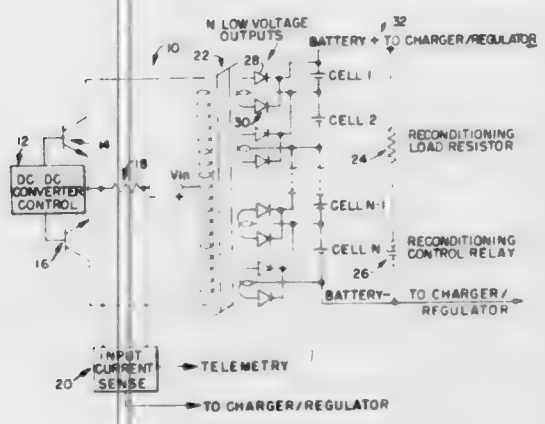
allowing the cells of the battery to discharge until all of the cells have reached said predetermined value;

removing said load from across the battery; and

recharging the battery.

7. A device for reconditioning a battery having a plurality of cells comprising:

monitoring means containing a plurality of outputs, one output placed in parallel with a single cell of the battery, for sensing the voltage of each of the cells;



a control relay placed across all of the cells of the battery;

a load resistor placed in series with said relay whereby each of the outputs of said monitoring means senses the voltage of each cell and if the voltage of each cell reaches a predetermined value, said monitoring means assumes the load thus preventing the voltage in each cell from becoming zero.

4,084,125

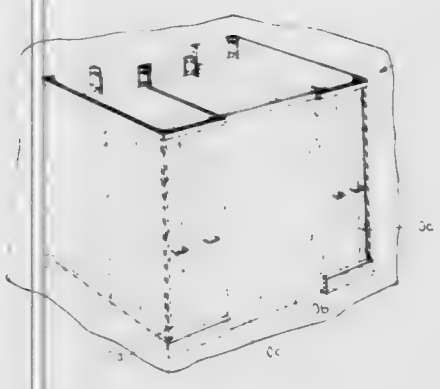
MOBILE SHELVING UNIT

James R. King, 6804 Capstan Dr., Annandale, Va. 22003

Continuation-in-part of Ser. No. 578,893, May 19, 1975, abandoned. This application Aug. 24, 1976, Ser. No. 717,462

Int. Cl.[2] A47B *53/00*

U.S. Cl. 312—199 **14 Claims**



1. A closed mobile shelving system for support on a flat surface comprising a first elongated shelf assembly having only a single one of its sides forming a side access opening, a second elongated shelf assembly having at least a single one of its sides forming a side access opening opposed to the opening of said first assembly, anti-friction means on one of said assemblies positioned to engage said flat surface to allow movement of said one assembly in its lengthwise direction, the other of said assemblies being stationary, means to close said first and second assemblies to form a closed system with substantially no access to the shelves when said assemblies are positioned in juxtaposition, said one assembly being free to separate with sufficient space between the corners of the assemblies to form an open system with full unobstructed access to both openings, and guide means extending longitudinally only along substantially the longitudinal extent of one of said assemblies.

4,084,126

CONTROLLED AND ENERGIZATION CIRCUIT FOR ELECTRICALLY HEATED VEHICLE WINDOWS

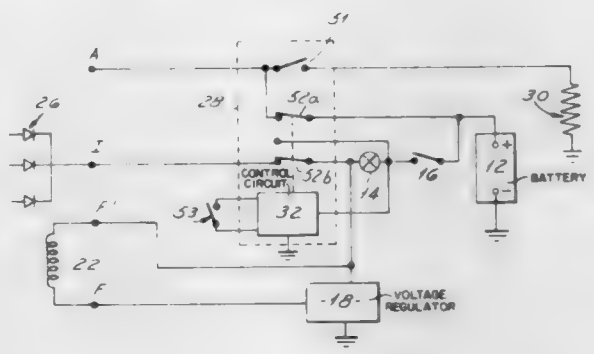
John A. Clements, Billericay, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 31, 1977, Ser. No. 763,777

Claims priority, application United Kingdom, Feb. 11, 1976, 5294/76

Int. Cl.[2] B60L *1/02;* **H02J** *7/14*

U.S. Cl. 322—8 **9 Claims**



1. A circuit for use in a vehicle having an engine operated electrical energy generator with rotor windings and a field winding fed from a voltage regulator, at least one window provided with an electrical resistance heating element, and a battery; the circuit comprising:

first switching means operable to electrically interconnect the heating element to the generator output;

second switching means normally occupying a first state electrically connecting the generator output to the battery and to the voltage regulator, and switchable to a second state in which the battery is disconnected from the generator output and the field winding is electrically connected to the battery;

third switching means; and

a control circuit responsive to manual actuation of said third switching means to controllably switch said second switching means to said second state for a period of time and thereafter to return the second switching means to said first state.

4,084,127

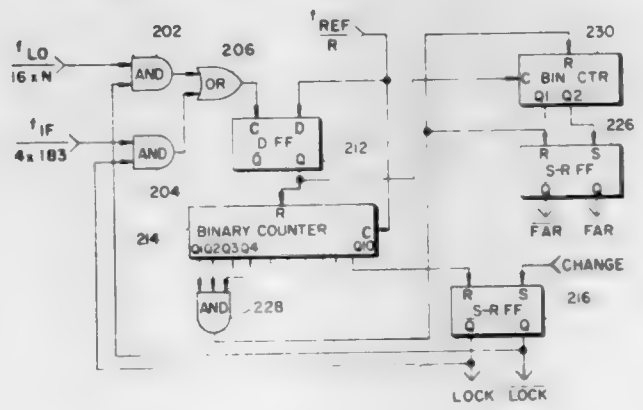
DIGITAL FREQUENCY DEVIATION DETECTOR USEFUL IN A TELEVISION TUNING SYSTEM

Juri Tults, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 29, 1976, Ser. No. 709,924

Int. Cl.[2] H03D *13/00*

U.S. Cl. 328—134 **9 Claims**



1. Apparatus comprising:

means for generating a fixed frequency signal having a frequency proportional to a reference frequency;

means for generating a variable frequency signal;

means for generating a frequency difference signal having a

frequency substantially equal to the difference in frequency between said fixed and variable frequency signals;

means for counting cycles of said fixed frequency signal occurring during a predetermined portion of at least one cycle of said frequency difference signal;

means for generating a first signal when the count accumulated in said counting means exceeds at least a first predetermined count and for generating a second signal when said first predetermined count is not exceeded; and

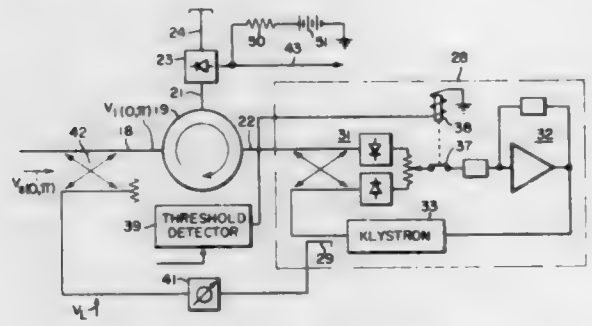
means for delaying the generation of said second signal until a predetermined number of cycles of said frequency difference signal have occurred.

4,084,128

DEMODULATOR FOR PHASE REVERSAL MODULATION SYSTEM

Stephen A. Ames, and Robert J. Martel, both of Baltimore, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 8, 1966, Ser. No. 532,640
Int. Cl.[2] H03K 3/00
U.S. Cl. 329—116 **7 Claims**



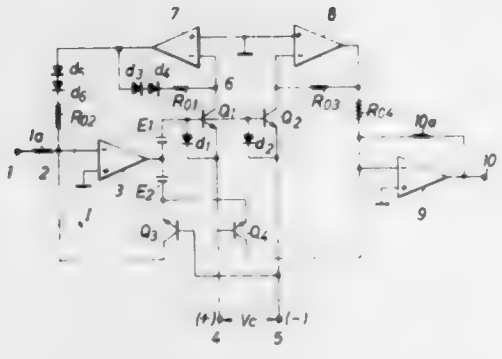
1. A receiver for use in a PSK signal translation system comprising a voltage tunable local oscillator for continuously generating a reference frequency signal from which the suppressed carrier can be reconstructed, input signal means for an incoming PSK signal, means for adding said reference frequency signal to produce a synthesized carrier which is amplitude modulated by said incoming PSK signal, diode switch means for demodulating synthesized PSK amplitude modulated carrier for causing synchronous phase shifts of the PSK signal components of modulated synthetic carrier in response to the demodulated signals, to thereby provide a continuous unmodulated signal synthesizing the suppressed carrier of the incoming PSK signals; a servo loop, including said oscillator, said signal adding means and said phase shifting means, for locking said oscillator onto said synthesized carrier.

4,084,129

VOLTAGE CONTROLLED VARIABLE GAIN CIRCUIT

Masayuki Katakura, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 14, 1977, Ser. No. 768,366
Claims priority, application Japan, Feb. 20, 1976, 51-18424[U]
Int. Cl.[2] H03G 3/30
U.S. Cl. 330—282 **3 Claims**



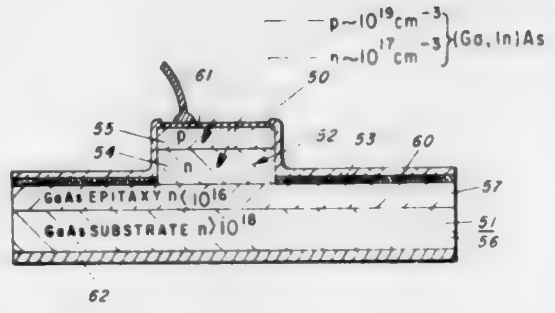
1. A voltage controlled variable gain circuit comprising a first operational amplifier to which an input signal is applied, four same polarity transistors connected with the output terminal of the first operational amplifier and for dividing the output current thereof by dc gain control voltage, a first and a second feedback circuit for negative-feeding back in phase the output currents of two of said four transistors to the input of said first operational amplifier, summing means for summing in phase the output currents of the remaining two transistors, a second operational amplifier of which the inverting input terminal and the output terminal are connected in said first feedback circuit, and first and second resistor elements being connected between the input and the output terminals of said second operational amplifier and between the output terminal of said second operational amplifier and the input terminal of the first operational amplifier, characterized in that said voltage controlled variable gain circuit comprises at least one first PN junction element connected in series with said first resistor element; and at least one second PN junction element connected in series with said second resistor element.

4,084,130

LASER FOR INTEGRATED OPTICAL CIRCUITS

William C. Holton, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 575,862, May 9, 1975, Pat. No. 4,007,978, which is a continuation of Ser. No. 434,469, Jan. 18, 1974, abandoned. This application Jun. 11, 1976, Ser. No. 695,229
Int. Cl.[2] H01S 3/19
U.S. Cl. 331—94.5 H **1 Claim**



1. A monolithic semiconductor laser comprising:

a substrate of semiconductor material taken from the group consisting of III-V semiconductor compounds and mixed ternary III-V semiconductor compositions,

an epitaxial waveguide of semiconductor material disposed on said substrate and being of one type conductivity material,

a mesa of semiconductor material taken from the group consisting of III-V semiconductor compounds and mixed ternary III-V semiconductor compositions mounted on said epitaxial waveguide of said substrate,

said mesa including a first lower region of semiconductor material of said one type conductivity contacting said epitaxial waveguide and a second upper region of semiconductor material of the other type conductivity disposed atop said first region of semiconductor material, thereby defining a p-n junction between said first and second regions of said mesa,

said first and second regions having opposite parallel faceted faces, thereby providing for optical feedback

electrical contacts respectively mounted atop said mesa in engagement with said second region of the other conductivity type semiconductor material and the surface of said substrate remote from said epitaxial layer, and

means attached to said contact atop said mesa for connecting said contact to an electrical power source, whereby said p-n junction formed in said mesa being responsive to said electrical power source is made to lase by the injection of minority carriers across said junction thereby producing

laser radiation that is coupled into said epitaxial waveguide.

4,084,131

PROCESS AND APPARATUS FOR THE DETERMINATION OF THE INVERSION TEMPERATURE OF A QUARTZ PIEZOELECTRIC RESONATOR ELEMENT

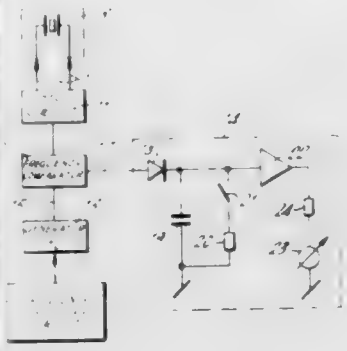
Hubert Matthey, Brugg, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services, S.A., Bienne, Switzerland

Filed Oct. 5, 1976, Ser. No. 729,636

Claims priority, application Switzerland, Sep. 27, 1975, 13863/75

Int. Cl.[2] G01R *29/22*

U.S. Cl. 324—56 **9 Claims**



2. Apparatus for determining the inversion temperature of a piezoelectric resonator element, said apparatus comprising:

a first heat source for producing a first temperature (T_h) higher than the unknown inversion temperature;

a second heat source for producing a second temperature (T_f) lower than the unknown inversion temperature;

means for bringing a resonator element into thermal contact with first one and then the other of said heat sources so that the temperature of said resonator element is brought to first one and then the other of said temperatures;

means for exciting said resonator element to continuously vibrate at its resonance frequency, said exciting means producing an output signal representing said resonance frequency;

controllable generator means for generating a reference signal representing the resonance frequency of said resonator element when it is at said one temperature;

measuring means responsive to said output signal and said reference signal for measuring the frequency variation of said resonator element relative to its resonance frequency at said one temperature; and,

detecting means responsive to said measuring means for detecting the maximum value of said frequency variation as the temperature of said resonator element changes from said one to said other temperature.

4,084,132

SWEPT GROUP DELAY MEASUREMENT

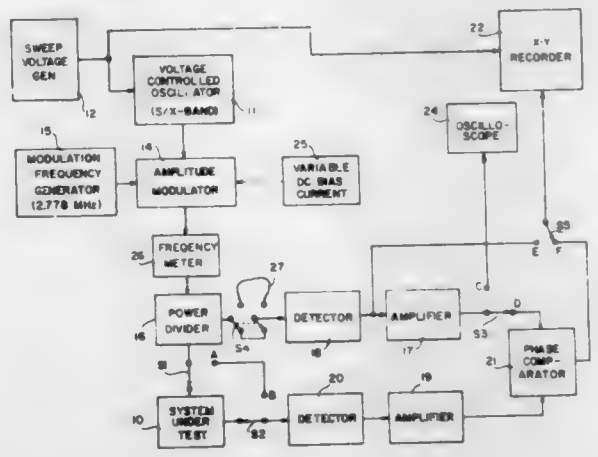
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and David L. Trowbridge, Sunland, Calif.

Filed Nov. 24, 1976, Ser. No. 744,477

Int. Cl.[2] G01R *27/00*

U.S. Cl. 324—57 DE **11 Claims**

1. A method of measuring group delay of a system under test using a sweep voltage generator, a voltage controlled oscillator responsive to the sweep voltage generator to sweep the oscillator frequency over a test bandwidth of interest by controlling the frequency output of said oscillator with the output of said sweep voltage generator, and a modulation frequency generator for amplitude modulating the output of said oscillator with the output of said modulation frequency generator, comprising the steps of applying the modulated sweep signal to both a reference path and a test path containing said system under test, separately demodulating said modulated sweep signal transmitted through said reference and test paths to



provide demodulated signals, and comparing the phase of the demodulated signal from the reference path with the demodulated signal from the test path to determine the phase difference as a measure of group delay.

4,084,133

METHOD OF AND APPARATUS FOR DETERMINING THE DIRECTION OF THE MUTUAL TEMPORAL SHIFT OF AT LEAST TWO SIMILAR STOCHASTIC SIGNALS

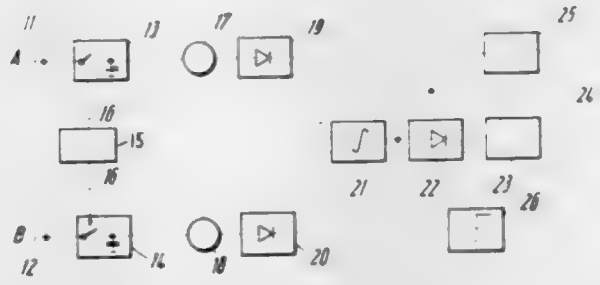
Christian Zimmer, Koniz, and Heinrich Ryser, Schlieren, both of Switzerland, assignors to Hasler AG, Bern, Switzerland

Filed Jan. 21, 1977, Ser. No. 761,277

Claims priority, application Switzerland, Feb. 6, 1976, 14557/76

Int. Cl.[2] G01R *25/00*; H03D *13/00*

U.S. Cl. 324—83 A **5 Claims**



1. A method of determining the direction of the mutual temporal shift T of at least two similar stochastic signals, wherein at regular intervals instantaneous values of the two signals are stored and during a comparison time interval the stored value of each signal is repeatedly or continuously compared with the actual values of the other signal, thereby obtaining two comparison series, the comparison time interval containing a region $T \pm \tau$ after the instant of the storage of the instantaneous value; wherein in an accumulator results, dependent on the comparison, of positive sign of the one comparison series are added, those, equally of positive sign, of the other comparison series are subtracted, and wherein the sign of the value in the accumulator indicates the direction of shift.

4,084,134

VOLTAGE DETECTOR WITH FIELD EFFECT TRANSISTOR AND HIGH INPUT IMPEDANCE

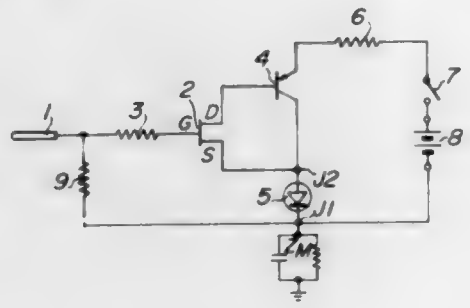
Hideo Nagano, No. 13-5, 5-chome, Shimomeguro, Meguro-ku, Tokyo, Japan

Filed Jun. 23, 1976, Ser. No. 698,814

Claims priority, application Japan, Jul. 11, 1975, 50-85166; Jul. 26, 1975, 50-103531[U]; Sep. 10, 1975, 50-124473[U]; Feb. 14, 1976, 51-16633[U]; Mar. 23, 1976, 51-30803

Int. Cl.[2] G01R *19/16, 31/02*

U.S. Cl. 324—133 **14 Claims**



1. A voltage detector comrising:

a casing of electrically insulating material;

a probe of electrically conductive metal and having a rear portion inserted in a front portion of the casing and a front portion projecting from the casing;

a field effect transistor of depletion type having source, gate and drain electrodes, the gate electrode being connected to the rear portion of said probe;

a transistor having emitter, collector and base, the base being connected to the drain electrode of said field effect transistor;

a light emitting diode arranged in said casing so that emitted light can be seen from the exterior and connected in series with the emitter-collector path of said transistor;

a D.C. power source having two terminals connected across a series circuit of the emitter-collector path of the transistor and light emitting diode; and

high input impedance means connected across said probe and a first junction point between said light emitting diode and said D.C. power source; whereby the source electrode of said field effect transistor being connected to a second junction point between said transistor and said light emitting diode so as to bias said field effect transistor substantially in a pinch-off condition by means of a voltage drop produced across said light emitting diode.

4,084,135

SYSTEM AND METHOD FOR CHECKING THE SENSITIVITY AND PERFORMANCE OF AN ELECTROMAGNETIC FIELD VARIATION DETECTOR

Robert S. Enabnit, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 607,519, Aug. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 452,019, Mar. 18, 1974, abandoned. This application Jan. 10, 1977, Ser. No. 758,269

Int. Cl.[2] G01R *33/12*

U.S. Cl. 324—202 **8 Claims**

1. In combination with an electromagnetic field variation detector including a field generator, a receiver for sensing variances in the field to provide detection signals conditioned to and indicative of a particular time duration of the variances in the field, and an alarm indicator responsive to the receiver to provide an indication indicative of the condition sensed, a sensitivity and performance checking system comprising:

(A) a normally open-circuited test coil within the province of the detector field to provide a variance in the field when close-circuited;

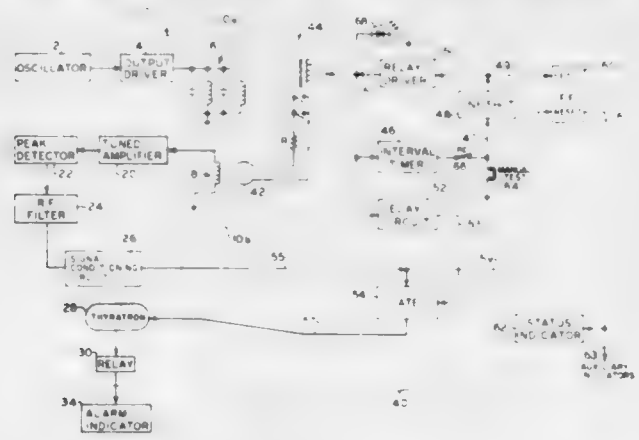
(B) a status indicator to provide an indication of the sensitivity and performance of the system; and

(C) circuit means comprising:

(1) a pulse generator for generating periodic pulses having a time duration substantially that of the field variation desired to be detected;

(2) a driver circuit intercoupling the pulse generator and test coil to close-circuit the test coil in response to and for the duration of the pulse;

(3) a flip-flop having set, output, and reset terminals, the set terminal connected to the pulse generator, the output terminal connected to the status indicator, and the reset terminal connected to the detector receiver, said flip-flop exhibiting a first stable state for holding the status indicator in a normal condition indication and a second stable state for holding the status indicator in an abnormal condition indication, said flip-flop adapted to being switched from its first stable state to its second stable state by a pulse from the pulse generator and



switched back to its original stable state only by a conditioned detection signal from the detector receiver that is indicative of normal detector sensitivity and performance;

(4) gating means coupled to shunt normal detector receiver signals to the alarm indicator when the test coil is open-circuited; and

(5) a delay circuit intercoupling the driver circuit and gating means to close the gating means to the alarm indicator when the test coil is close-circuited such that the field variations due to the test coil and sensed by the detector receiver are sent to the flip-flop, said delay circuit holding the gating means closed for a duration long enough for the detector receiver to condition the signal and return to normal quiescence after which said gate is opened such that normal detection signals are again sent to the alarm indicator.

4,084,136

EDDY CURRENT NONDESTRUCTIVE TESTING DEVICE FOR MEASURING VARIABLE CHARACTERISTICS OF A SAMPLE UTILIZING WALSH FUNCTIONS

Hugo L. Libby, and Bernard P. Hildebrand, both of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Oct. 21, 1976, Ser. No. 734,520

Int. Cl.[2] G01R *33/12*

U.S. Cl. 324—238 **26 Claims**

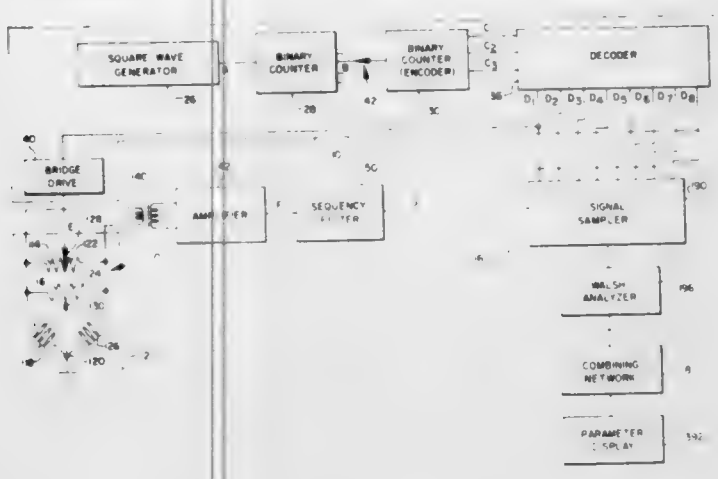
1. An eddy current testing apparatus for measuring one or more variable characteristics of an electrically conductive sample comprising:

test coil means;

means for generating an excitation signal equivalent to a summation of finite number of Walsh functions and for applying said excitation signal to said test coil means while said test coil means is in proximity to said sample to provide an output from said test coil means which varies with variations in the characteristics of the sample;

expander means for producing a representation of said output from said test coil means as a plurality of signals each

proportional to a coefficient of a squarewave expansion of said signal;



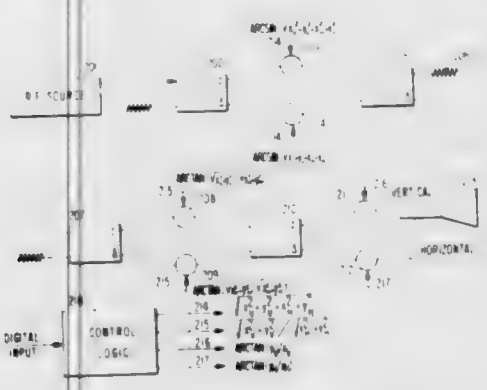
and means responsive to said plurality of signals for producing an output indicating at least one of the variable characteristics of the sample.

4,084,137

MULTIDIMENSIONAL CODE COMMUNICATION SYSTEMS

George R. Welti, Leesburg, Va., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Aug. 24, 1976, Ser. No. 717,439
Int. Cl.[2] H03K *7/10*
U.S. Cl. 325—30 10 Claims



1. A multidimensional code communication system comprising:

encoding means for receiving a multibit digital word and generating at least two pairs of analog voltages, each pair of analog voltages corresponding to the rectangular coordinates of said code plotted in two-dimensional space,

modulator means responsive to said pairs of analog voltages for modulating pulsed radio frequency energy in amplitude, phase and at least one other variable,

receiver means for receiving the modulated pulsed radio frequency energy and demodulating said energy to derive said at least two pairs of analog voltages, and

decoding means responsive to said derived pairs of analog voltages for generating an output corresponding to said multibit digital word, said decoding means including

word generating means responsive to said derived pairs of analog voltages for generating at least two multibit digital words based on the hypotheses that at least one selected bit is a binary 0 or 1, respectively,

difference means responsive to said derived pairs of analog voltages for generating difference signals between each received pair of analog voltages and the rectangular coordinates corresponding to the multibit digital words based on each of said hypotheses, and

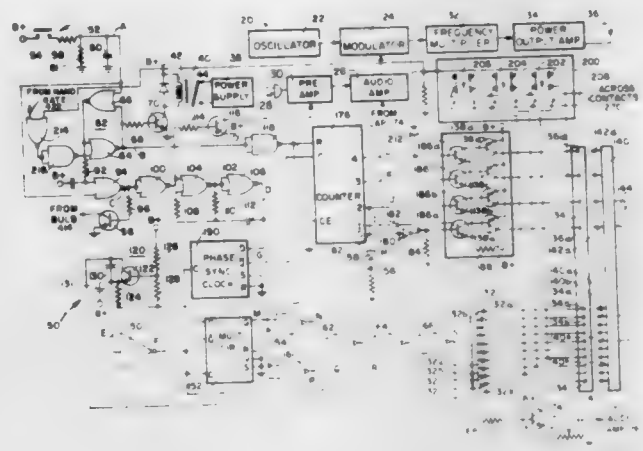
means responsive to said difference signals for selecting one of said multibit digital words from said word generating means as an output.

4,084,138

SELECTIVE CALL COMMUNICATION SYSTEM

Keith H. Wycoff, 1205 N. Tyler St., Lexington, Nebr. 68850

Filed Jun. 13, 1975, Ser. No. 587,333
Int. Cl.[2] H03B *19/00*
U.S. Cl. 325—55 23 Claims



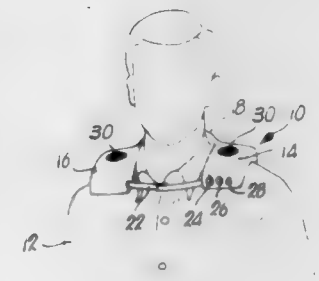
20. An encoder for a selective call transmitter, comprising oscillator means for producing a sequence of first tones, multiplier means coupled to said oscillator means for multiplying the frequencies of said first tones by a predetermined multiplier to produce second tones, and control means coupled to said multiplier means for rendering said multiplier means operative alternately to supply said first tones and said second tones.

4,084,139

SHOULDER SUPPORTED STEREOPHONIC RADIO RECEIVER

Eugene J. Jakobe, 9905 Holly, Kansas City, Mo. 64114

Filed Apr. 25, 1977, Ser. No. 790,699
Int. Cl.[2] H04B *1/08*
U.S. Cl. 325—361 8 Claims



1. In a portable radio receiver to be supported upon the shoulders of a user:

radio signal receiving means;

a pair of loudspeakers operably coupled with said receiving means; and

supporting means comprising a generally U-shaped, yoke-like structure having a pair of spaced side sections interconnected by an intermediate element,

said sections having lower surfaces configured to rest upon and generally conform to the contours of a user's shoulders,

said element being configured to extend behind a user's neck,

said structure being provided with internal chambers for housing said receiving means,

said loudspeakers being supported by said structure on opposite sides of a user's head, with one loudspeaker carried by each section respectively, and with each loudspeaker having its respective field of primary sound radiation directed toward the normal sound sensing zone of the corresponding one of the user's ears.

4,084,140
PROGRAMMABLE NON-DUPLICATION SWITCHING DEVICE

Jack D. Cauldwell, Carroll, and Raymond Louis Weaver, Lancaster, both of Ohio, assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Nov. 5, 1976, Ser. No. 739,298
Int. Cl.[2] H04N 7/18
U.S. Cl. 325—396 8 Claims



1. A non-duplicative switching arrangement for controlling switching of a switch between a first switching state and a second switching state, comprising:

clock means, responsive to a reference signal input, for providing an output indicative of the seconds, minutes, hours and day,

timing means responsive to the output of said clock means for generating timing signals,

a substantially transparent matrix disc having defined thereon a plurality of concentric circular rows of matrix positions, each row corresponding to a day of the week, said matrix positions aligned radially with respect to said matrix disc in columns corresponding to particular daily time segments,

means for altering impermanently the light transmitting characteristics of said substantially transparent matrix disc at selected ones of said matrix positions,

means, responsive to said timing means, for rotating said disc at predetermined times,

optical reader means, responsive to said clock means, for determining the light transmitting characteristics at each successive matrix position along a row corresponding to the day of the week, and

means for actuating said switch into one of its said first and second switching states in dependence upon the output from said optical reader means.

5. In a control mechanism in a cable television system for automatically controlling the switching state of a two-state electric switch to apply one of two switch inputs to the switch output, one of said switch inputs being a distance station television signal and said switch output being applied to the cable distribution system, a programmable member which is readable by an optical reader, comprising:

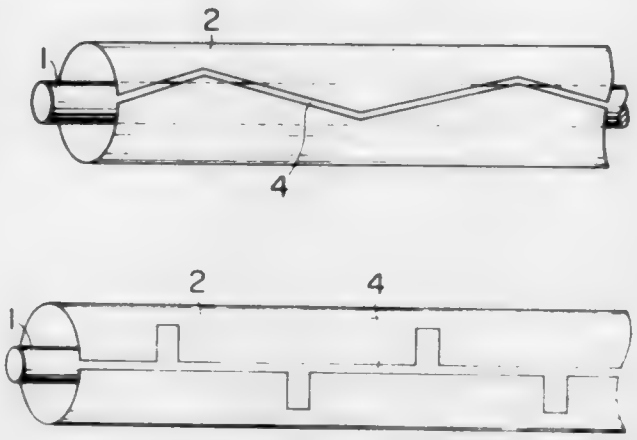
a substantially transparent matrix disc with a plurality of matrix positions defined thereon, said positions forming a plurality of radial columns extending outwardly from the center of said disc and defining a plurality of concentric circular rows, each of said rows corresponding to a day of the week and each of said columns corresponding to a time segment of the day, and

means for reducing the transparency of selected ones of said matrix positions such that the switching state of said two-state switch will be determined for the corresponding day and time segment.

4,084,141
ZIG-ZAG SLOTTED COAXIAL CABLE FOR RADIO FREQUENCY SIGNAL COUPLING

Yoshio Miyamoto, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 28, 1976, Ser. No. 736,602
Claims priority, application Japan, Nov. 1, 1975, 50-131744
Int. Cl.[2] H01P 3/06
U.S. Cl. 333—84 L 7 Claims

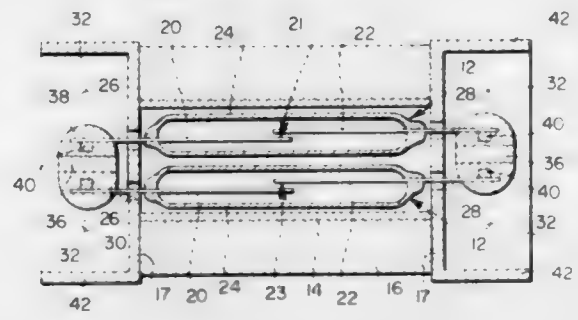


1. In a coaxial cable for radio frequency signal coupling including an inner conductor extending longitudinally with respect to the cable, an outer conductor spaced from and coaxially surrounding the inner conductor, and an electrically continuous slot in the outer conductor along the length thereof, the improvement characterized by: said continuous slot having a regular, transversely alternating configuration over less than the full circumference of the outer conductor.

4,084,142
REED RELAY HAVING LOW DIFFERENTIAL THERMAL EMF

Bruce D. Campbell, Foster, and Ralph Abrams, Warwick, both of R.I., assignors to Coto-Coil Co., Inc., Providence, R.I.

Filed Sep. 27, 1976, Ser. No. 727,387
Int. Cl.[2] H01H 1/66
U.S. Cl. 335—152 8 Claims



1. A reed relay comprising a hollow body, a pair of parallely disposed reed switches, each of said switches including first and second magnetic reeds sealingly positioned within an electrically insulated enclosure and having ends thereof extending outwardly therefrom, said switches in turn positioned within said body, and a reed drive coil supported on an outer portion of said body wherein energization of said coil causes the reeds of each switch to make contact with each other, the adjacent outwardly extending ends of said first and second reeds each respectively positioned for connection to respective pairs of lead wires with which said first and second reed ends form thermoelectrically active junctions, each pair of said first and second ends further being electrically connected to a thermally conductive, electrically insulative member whereby the thermal EMF's created at each end of the relay tend to

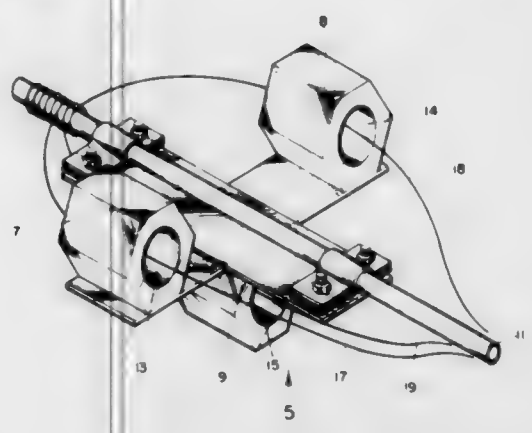
cancel each other thereby reducing the net thermal EMF across said relay.

4,084,143

TRANSFORMER MOUNTING ASSEMBLY

A. D. Nutt, Little Rock, Ark., assignor to Duncan Electric Company, Inc., Lafayette, Ind.

Filed Feb. 4, 1977, Ser. No. 765,626
Int. Cl.[2] H01F *15/02*
U.S. Cl. 336—65 **6 Claims**



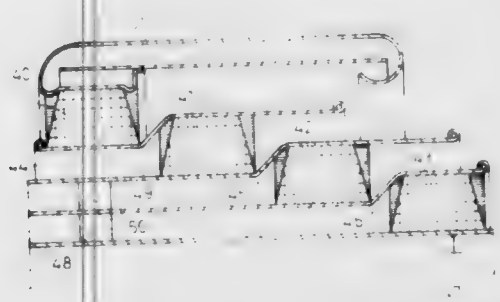
1. A transformer mounting assembly, comprising:
a first elongated, rectangularly shaped, flat mounting plate having mounting thereat at flat opposite end portions, a pair of current transformers extending in a first direction from one side of said first mounting plate;
a second elongated, rectangularly shaped, flat mounting plate substantially normally positioned with respect to said first mounting plate with the flat central portion of said first mounting plate engaging one side of the flat central portion of said second mounting plate and having a third current transformer mounted to the flat central portion of the other side of said first mounting plate and extending in the direction opposite to said first direction; and
mounting means at the opposite end portions of said second mounting plate for enabling mounting of said second plate along a wire so that said second plate is maintained substantially parallel with respect to such a wire when so mounted.

4,084,144

HIGH VOLTAGE WINDING COMPRISING SEVERAL COMPONENT COILS FOR VOLTAGE TRANSFORMERS

Manfred Weniger, Brunswick, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 10, 1977, Ser. No. 805,475
Claims priority, application Germany, Jun. 24, 1976, 2628524
Int. Cl.[2] H01F *15/14*
U.S. Cl. 336—70 **10 Claims**



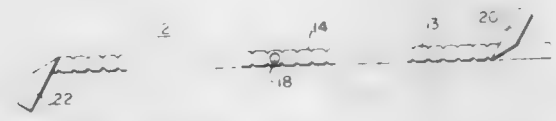
1. A high-voltage winding for voltage transformers comprising:
a plurality of component coils of decreasing diameter arranged one after the other along an axial direction;
a number of connecting elements each connecting adjacent ones of said component coils to thereby form a self-supporting unit, each of said connecting elements comprising a conductive cylindrical member having a first portion which surrounds the one of its associated adjacent coils having the smaller diameter and a second portion which supports the one of its associated adjacent coils having the larger diameter, said cylindrical member having a slot for preventing the formation of a shortcircuited turn.

4,084,145

CURRENT LIMITING FUSE WITH IMPROVED SPACING BETWEEN PARALLEL ELEMENTS

Harold L. Miller, West Elizabeth, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1973, Ser. No. 391,919
Int. Cl.[2] H01H *85/16*
U.S. Cl. 337—231 **2 Claims**



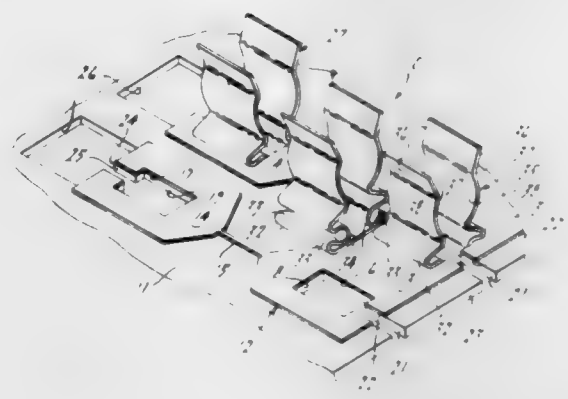
1. An electrical current limiting fuse, comprising:
(a) an electrically insulating tubular fuse housing;
(b) a pair of spaced electrically conducting ferrules disposed at either end of said tubular housing and communicating with the internal portion of said tubular housing, said ferrules being adapted to be connected in circuit relationship to a source of power and a load to be protected by said fuse;
(c) a fuse element support member disposed in said internal portion of said tubular fuse housing, said support member having an elongated arm portion with support means thereon for supporting a portion of a fuse element; and
(d) a coiled fuse element electrically connected between said ferrules and disposed in said internal portion of said hollow tubular housing, said fuse element being supported at one portion thereof by said support means of said arm portion but not significantly enclosing said support member within the periphery of said coiled fuse element.

4,084,146

FUSE ASSEMBLY

Erwin L. Baumann, Laguna Beach, Calif., assignor to Ford Aerospace & Communications Corporation, Dearborn, Mich.

Filed Oct. 13, 1976, Ser. No. 731,883
Int. Cl.[2] H01H *85/16*
U.S. Cl. 337—234 **9 Claims**



1. A fuse assembly comprising a dielectric base plate and a fuse strip laminated to the base plate,
the fuse strip comprising a bus bar and one or more contact portions spaced from the bus bar and each other and joined by a fuse link to the bus bar,
the laminate being apertured at each end of the fuse link,
a fuse clip received in each aperture,
each fuse clip having clamping means thereon constructed

and arranged to have clamping engagement with the laminate and electrical contact with the fuse strip,

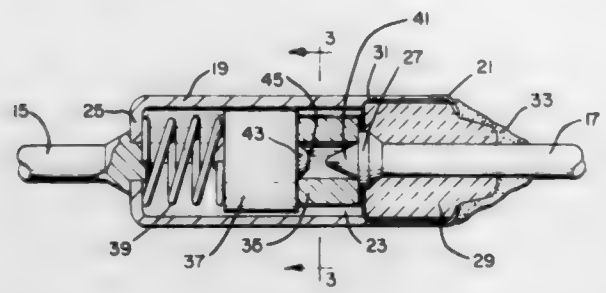
the fuse clips at each end of a fuse link having aligned fuse retention means adapted to receive a fuse link device to provide an electrical bypass for any open fuse link in the fuse strip.

4,084,147

NORMALLY OPEN, THERMAL SENSITIVE ELECTRICAL SWITCHING DEVICE

Kenneth P. Mlyniec, Lebanon, and Raymond B. Vore, Dayton, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed May 31, 1977, Ser. No. 801,781
Int. Cl.[2] H01H *37/76*
U.S. Cl. 337—407 **8 Claims**



1. A temperature sensitive, electrical switching device, having first and second current carrying electrical leads, for completing an electrical circuit between the first and second electrical leads when the temperature of the switching device exceeds a predetermined temperature level, comprising:

a hollow electrically conductive case having a first end defining an opening into a central cavity and a second end which is closed, said case being electrically connected to said first electrical lead,

an electrically conductive member electrically connected to said second lead,

non-conductive means for mounting said conductive member such that it extends into said central cavity, said non-conductive means sealing said opening into said cavity,

a heat fusible electrically conductive pellet, dimensioned to engage said electrically conductive member without electrically contacting said electrically conductive case, said pellet being fusible at said predetermined temperature level to form a volume of electrically conductive liquid sufficient to establish an electrically conductive path between said case and said member,

non-conductive spacer means positioned in said cavity adjacent said heat fusible pellet, and

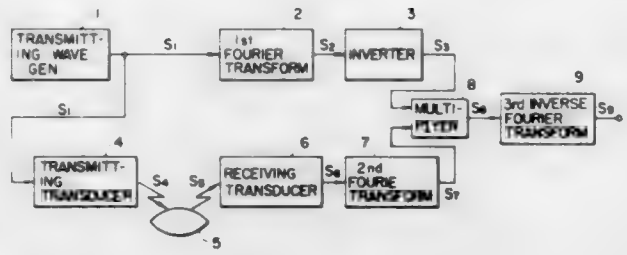
compression spring means in said cavity for urging said non-conductive spacer means against said heat fusible pellet such that said pellet will melt completely at said predetermined temperature level, whereby an open electrical circuit will exist between said first and second electrical leads until said predetermined temperature level is reached and a closed electrical circuit will be formed thereafter between said first and second electrical leads as said spring means and spacer means crush said pellet to insure uniform temperature activation.

4,084,148

OBJECT RECOGNITION SYSTEM

Tsuneji Koshikawa, Sayama, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 7, 1976, Ser. No. 730,529
Claims priority, application Japan, Oct. 13, 1975, 50-122524; Mar. 3, 1976, 51-22101
Int. Cl.[2] G01S *9/66*
U.S. Cl. 340—1 R **3 Claims**



1. Object recognition system having:

a signal generator for generating a pulsed continuous wave signal,

a transmitting transducer for converting a part of the output signal of the signal generator into a sonic or ultrasonic signal and for projecting the sonic or ultrasonic signal towards an object to be recognized,

a receiving transducer for converting an echo signal reflected from the object into an electric signal, and

a signal processing device for analyzing the output signal of the receiving transducer,

characterized in that the signal processing device comprises:

(a) a first Fourier transform device for obtaining a Fourier transformed signal of the output signal of the signal generator,

(b) a second Fourier transform device for obtaining a Fourier transformed signal of the output signal of the receiving transducer,

(c) a circuit device for calculating the ratio of the above two Fourier transformed signals, and

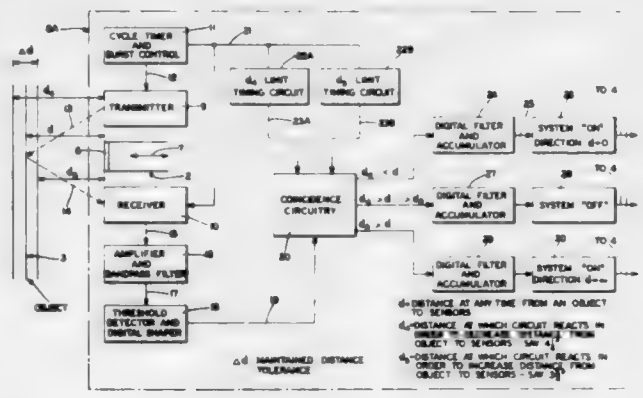
(d) a third Fourier transform device for obtaining an inverse Fourier transformed signal of the output signal of the circuit device.

4,084,149

SONAR ACTUATED CONTROL DEVICE FOR POSITIONING MOVABLE OBJECTS

Don A. Driver, and Franklin M. Theriault, both of Canton, Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Continuation-in-part of Ser. No. 594,314, Jul. 9, 1975, abandoned. This application Mar. 7, 1977, Ser. No. 774,978
Int. Cl.[2] G01S *9/66*; E05F *15/20*
U.S. Cl. 340—1 R **13 Claims**



13. A sonar actuated control system for protective transport service equipment including a power driven deal-type transport drawer having a head; motor drive means for the head for moving the head in either direction between closed and open positions to convey valuable things in the transport drawer between said closed and open positions; ultrasonic means

mounted on the transport drawer controlling the distance relative to an object in the path of movement of the head that the head is moved by the drive means with respect to said object, to position the drawer head and stop drawer head movement at a predetermined fixed distance from said object; said ultrasonic means including control means maintaining said predetermined fixed distance between the head and object after the head has been positioned at said predetermined fixed distance, in event that the object moves in either direction with respect to the positioned head; in which the object is a vehicle that has moved to a location for access to and in the path of movement of the drawer head; and in which the ultrasonic means upon arrival of the vehicle at said location energizes the motor drive means to move the transport drawer toward the vehicle.

4,084,150

UNDERWATER DEPTH SOUNDER WITH VARIABLE BEAM TRANSDUCER

Frank Massa, Randolph, Mass., assignor to Fred M. Dellorfano, Jr. and Donald P. Massa, both of Cohasset, Mass.

Filed May 17, 1976, Ser. No. 687,024
Int. Cl.[2] H04B *13/00*
U.S. Cl. 340—8 R **8 Claims**



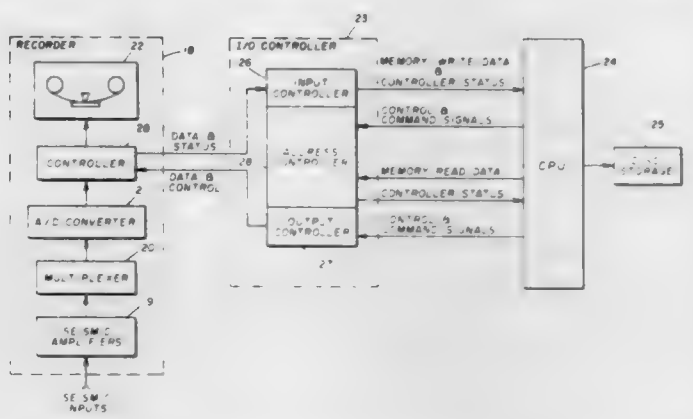
1. In combination in a sonic depth sounder which includes an electrical source of power, a directional electroacoustic transducer and a visual display means with a plurality of selectible range scales for reading the depth of a submerged reflecting target when it appears within the path of the radiated sound from the directional transducer, said transducer characterized in that the vibratile surface of the transducer is divided into a plurality of sections, a plurality of electrical conductors connected to said plurality of transducer sections, switching means connecting said plurality of electrical conductors in any specified combination, whereby a plurality of different specified beam widths are selectively available from said transducer, said visual display means including range selector means for selecting any one of said plurality of range scales on said display means, coupling means between said range selector means and said switching means, said coupling means characterized in that a particular beam width is selected for operation in combination with a particular range setting, said transducer further characterized in that said plurality of transducer beam widths are in approximate inverse proportion to the depth range scales with which the beam widths are selectively combined, whereby the area of the insonified target region at each different full-scale range is approximately the same.

4,084,151

SYSTEM FOR RECORDING AND PROCESSING SEISMIC REFLECTION SIGNALS

Wayne A. Penner, Carrollton, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 572,471, Apr. 28, 1975, Pat. No. 4,016,531. This application Nov. 18, 1976, Ser. No. 742,927
Int. Cl.[2] G01V *1/24*
U.S. Cl. 340—15.5 DP **9 Claims**



1. A method of processing seismic reflection signals, comprising the steps of:

(a) recording a plurality of seismic reflection signals in a plurality of recording channels,

(b) amplifying the seismic reflection signals in each recording channel by a given number of units of amplification,

(c) converting each amplified seismic signal into a plurality of digital samples,

(d) producing a first signal representing the number of units of amplification applied to the seismic reflection signals, said first signal being represented by a plurality of digital bits,

(e) producing a second signal representing a desired scale factor to be applied to the seismic reflection signals, said second signal being represented by a plurality of digital bits,

(f) producing a third signal identifying the combined count represented by the digital bits of said first and second signals, and

(g) shifting said digital samples by the number of bit positions represented by said third signal.

4,084,152

TIME SHARED PROGRAMMABLE LOGIC ARRAY

Gerald Bernard Long, Shokan; Ralph Charles Mitchell, and Shing Chou Pi, both of Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 701,444, Jun. 30, 1976. This application Apr. 4, 1977, Ser. No. 784,744
Int. Cl.[2] G11C *11/40;* H03K *19/08*
U.S. Cl. 340—166 R **5 Claims**

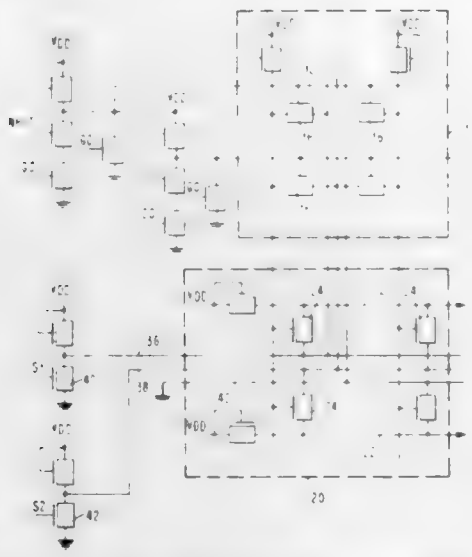
1. In a logic performing arrangement including an array having a plurality of input lines intersected by a plurality of output lines with elements located in the form of a gated three terminal device at at least some of the intersections of the input and output lines with one of the terminals coupled to the input line and the other connected to the output line at that intersection so that logical functions are performed on interrogation signals placed on the input lines and the responses thereto placed on the output lines, the improvements comprising;

a first group of said logic elements for performing a first logic function on input signals placed on the input lines of said array,

a second logic group performing a second conflicting function on input signals placed on the input lines of the array,

different switch means coupling each of said groups to source of excitation potential when the switch means is operative and uncoupling said group of devices from the source of excitation when the switch means is nonopera-

tive so that logic performed in those two groups will depend on whether the said switch means is operative or nonoperative and,



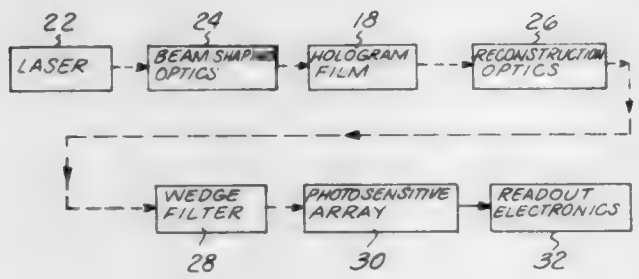
means for rendering said switch operative at different times whereby there is no conflict in the logic functions performed in the logic performing arrangement.

4,084,153

APPARATUS FOR RECONSTRUCTING A BINARY BIT PATTERN

Thomas H. Otten, Indian Harbour Beach, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Mar. 15, 1976, Ser. No. 666,700
Int. Cl.[2] G11C *13/00*
U.S. Cl. 365—125 **12 Claims**



1. Apparatus for reconstructing a binary bit pattern of a known number of bit positions from a block of analog signals corresponding to the bit positions and varying in signal level with both the binary level represented and a characteristic which causes the signal level of said analog signals to vary in a known manner as a function of bit position and wherein at least one of said analog signals has a known binary level bit reconstruction and comprising:

means responsive to said at least one analog signal for providing an output signal having a value dependent thereon;

means for providing a variable threshold signal having a value which varies dependent on said output signal and in said known manner as a function of bit position; and,

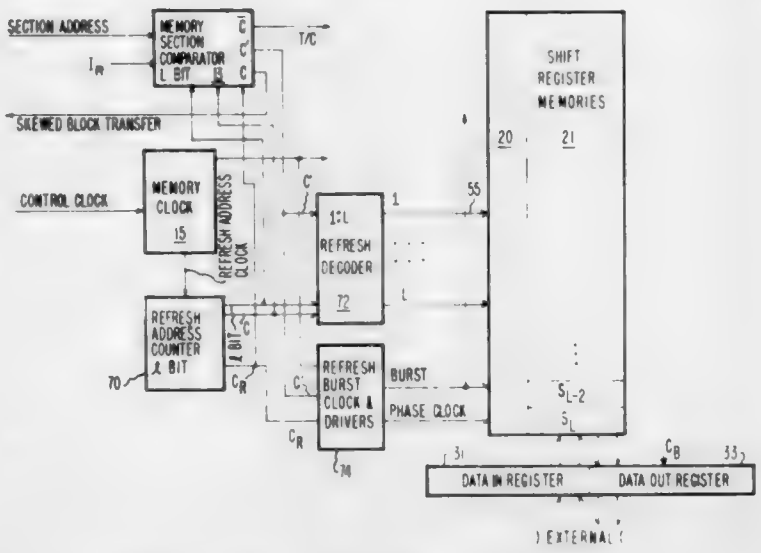
means for sequentially comparing said analog signals with said variable threshold signal and providing a bit decision indication for each of said bit positions dependent upon the respective comparisons for said bit positions.

4,084,154

CHARGE COUPLED DEVICE MEMORY SYSTEM WITH BURST MODE

Godavarish Panigrahi, Piscataway, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 1, 1975, Ser. No. 573,805
Int. Cl.[2] G11C *7/00*
U.S. Cl. 365—222 **18 Claims**



1. A memory system comprising:

memory means having a plurality of memory sections each comprising a plurality of N-bit parallel recirculating charge storage shift registers;

means for cyclically refreshing said memory means by successively refreshing each of said memory sections at predetermined times, complete memory section at a time;

means for selectively accessing the contents of any said memory section in response to a presented memory section address; and

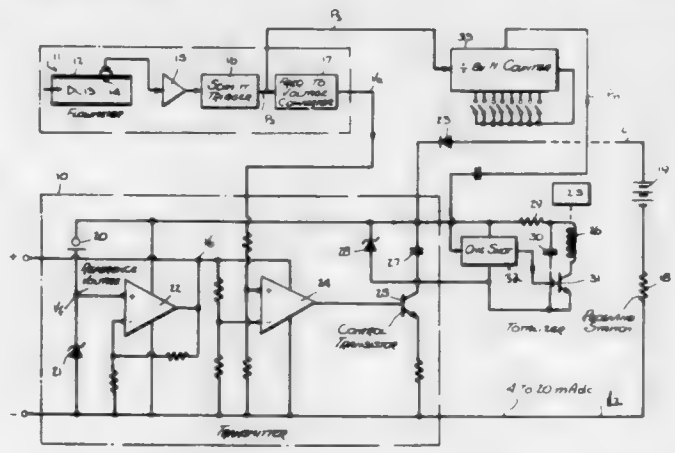
means for suppressing said refreshing means from refreshing a respective memory section during a cycle, if said respective memory section is undergoing access at the time for refreshment and for inhibiting said accessing means from accessing a selected memory section when said selected memory section is undergoing refresh.

4,084,155

TWO-WIRE TRANSMITTER WITH TOTALIZING COUNTER

Peter J. Herzl, Morrisville, and Robert G. Shaffer, New Britain, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Filed Oct. 5, 1976, Ser. No. 729,778
Int. Cl.[2] G01F *1/32*; G01R *23/06*; G08C *19/02*
U.S. Cl. 340—210 **9 Claims**



1. A transmitter responsive to an analog voltage representing a metered variable produced by an associated meter and adapted to generate a corresponding output current which is conveyed over a two-wire line to a receiving station provided

with a d-c power supply whose voltage is fed over the same line to the transmitter to power the transmitter and the meter which draw a predetermined amount of operating current, said transmitter comprising:

A a control transistor effectively shunted across said line and acting as a variable impedance to vary the current carried thereby;

B an amplifier whose output is coupled to said transistor to vary the impedance thereof, said analog voltage being applied to the input of said amplifier to vary said impedance as a function thereof to cause current flow through said transistor to make up the difference between said operating current and said output current; and

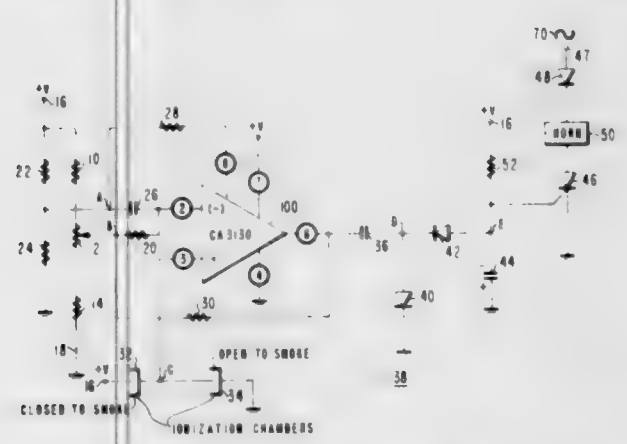
C a totalizer system to totalize the metered variable and including means coupled to said meter to produce count pulses whose number depends on the variable, a digital counter to register said count pulses, and means interposed between the control transistor and the line to extract energy from the make-up current flowing therethrough and to store said energy to provide a power source for energizing the totalizing system.

4,084,156

VOLTAGE MONITORING CIRCUIT

Harold Allen Wittlinger, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 24, 1976, Ser. No. 699,498
Int. Cl.[2] G08B *17/10*
U.S. Cl. 340—237 S **7 Claims**



5. A circuit for monitoring a voltage comprising, in combination:

a voltage controlled oscillator having an input terminal to which said voltage is directly applied for producing oscillations in response to said voltage, at a frequency which is a function of the value of said voltage, and which stops oscillating when said voltage is outside of a given range;

means responsive to the oscillations, when present, for producing a pulse of given polarity once each period of said oscillations;

a capacitor;

means for applying said pulses to said capacitor for charging the same in a given polarity; and

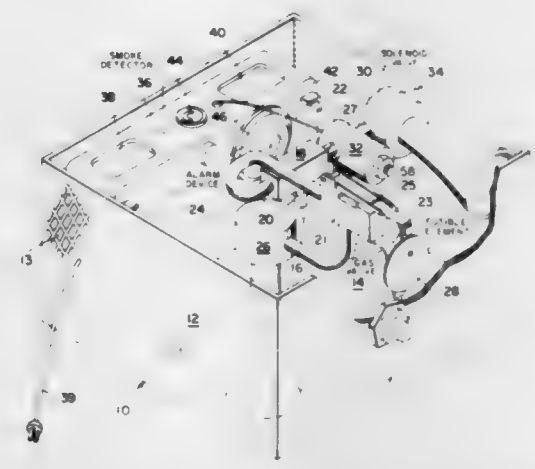
means for discharging said capacitor between pulses towards a charge level of opposite polarity at a rate such that when the frequency of said oscillations is within said given frequency range, the capacitor remains charged in a given polarity, when the frequency of said oscillations is lower than said given frequency range, the capacitor discharges between pulses to said opposite polarity, and when said oscillations cease, said capacitor discharges to and remains at said charge level of said opposite polarity.

4,084,157

SMOKE AND HEAT DETECTOR ALARM

Sidney Jacoby, 1901 Kennedy Bldg., Philadelphia, Pa. 19103

Continuation-in-part of Ser. No. 478,928, Jun. 13, 1974, Pat. No. 3,938,115. This application Jan. 8, 1976, Ser. No. 647,329
Int. Cl.[2] G08B *17/04, 17/10*
U.S. Cl. 340—237 S **9 Claims**



1. In a smoke and heat detector alarm, the combination of

(A) a first, self contained source of energy, (1) said source including an energy outlet;

(B) a first conduit system communicating with the outlet, (1) said first conduit system comprising a first sounding device and a first valve means to regulate the flow of energy from the source to the first sounding device,

(a) said first valve means being movable from a closed condition to an open condition upon sensing a predetermined elevated temperature in the vicinity of the alarm to open the first conduit system and to activate the first sound device,

(b) said first valve means comprising an electrically conductive body and an electrically interconnected operating lever, said lever being movable from a first position to a second position to function the first valve means to the said conditions respectively,

(c) said first valve means further comprising a fusible element, said element being adapted to normally restrain the operating lever to the said first position,

(d) said first valve means further comprising means to move the operating lever upon fusing of the fusible element; and

(C) a second sounding device powered by a second, electrical source of energy,

(1) said second source including an electrical circuit and a circuit open means comprising a pair of spaced contacts to prevent energy flow to the second sounding device,

(2) the said space between the contacts being closed by a portion of the first valve means when the first valve means is moved to the open condition to activate the second sounding device.

4,084,158

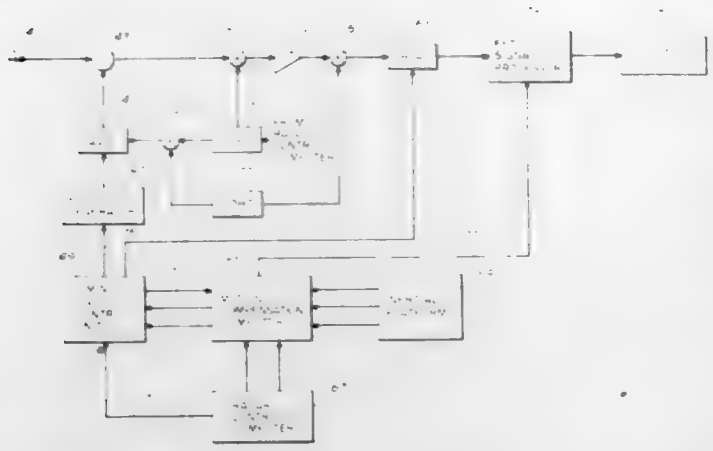
METHOD OF OPERATING SYNTHETIC APERTURE RADAR

Nathan Slawsby, Canton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 3, 1977, Ser. No. 756,455
Int. Cl.[2] G01S *9/02*
U.S. Cl. 343—5 CM **2 Claims**

2. In an airborne coherent side-looking radar having a Fast Fourier Transform signal processor for the generation of real-time high resolution ground map imagery by means of synthetic aperture techniques, and including compensatory phase shift means responsive to the aircraft velocity and the pulse repetition frequency of the radar for maintaining the data from

the radar receiver in range focus, the improvement comprising means for varying, in a predetermined manner, the pulse repe-



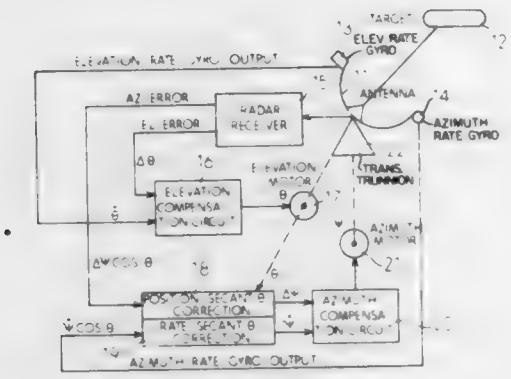
tition frequency of the radar to maintain the data from the radar receiver in azimuth focus.

4,084,159

SECANT CORRECTION CIRCUIT

Wilbert Cleon Anderson, Salt Lake City; Vernal Wynn Thompson, Bountiful, and Lawrence Walter Urry, Woods Cross, all of Utah, assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sep. 2, 1976, Ser. No. 719,768
Int. Cl.[2] G01S *9/02*
U.S. Cl. 343—7.4 **3 Claims**



1. An antenna tracking system, comprising:

an antenna;

motor means for moving the antenna in elevation and azimuth;

a radar receiver connected to said antenna for receiving radar echoes from a target and providing an azimuth error signal proportional to the angular difference between target direction and antenna direction;

a synchro connected to said antenna and providing an electrical output proportional to the elevation angle of said antenna;

converter means connected to said synchro for converting the output of said synchro to the cosine function of said elevation angle; and

first divider circuit means connected to said radar receiver for receiving as an input said azimuth error signal and connected to said converter means for receiving as an input said cosine function of said elevation angle and providing an output proportional to said azimuth error signal divided by the cosine of said elevation angle to said motor means.

4,084,160

ARRANGEMENT FOR CORRECTING DEVIATIONS FROM THE TRUE BEARING CAUSED BY REFLECTING SURFACES IN TARGET TRACKING RADAR INSTALLATIONS

Urs Leuenberger, Bonstetten, and Albert Schenkel, Oberengstringen, both of Switzerland, assignors to Siemens-Albis Aktiengesellschaft, Zurich, Switzerland

Filed Apr. 30, 1976, Ser. No. 682,019
Claims priority, application Switzerland, May 22, 1975, 6587/75
Int. Cl.[2] G01S *3/80*
U.S. Cl. 343—16 M **3 Claims**



1. An arrangement for correcting deviations from the true bearing due to the effects of specular reflecting surfaces in target tracking radar installations comprising at least three primary feeds, at least two of said primary feeds being aligned such that a plane formed by the longitudinal axes of their radiation characteristics is disposed at least approximately perpendicular to the specular reflecting surface, and at least one further primary feed is arranged such that the longitudinal axis of its radiation characteristic is located externally of such plane, a summation-difference network which produces from the echo signals received by the primary feeds a summation signal, two difference signals, and a cross-term signal formed in at least one measurement interval, means for forming a corrected angle error signal F_ϵ from these signals and which angle signal is divided into two components, a signal processing stage for forming a correction signal F_Δ in order to correct the angle error signal E_{EP} falsified by the reflection effects

$$F_E(X_1) = E_{EP} + F_\Delta$$

the correction signal F_Δ being expressed by the following equation

$$F_\Delta = -E_{EQ}/E_{KQ}E_{KP} + F_{\Delta R}$$

wherein

E_{EP} = the angle error signal portion falsified by specular reflection effects and in phase with the summation signal;

E_{EQ} = the angle error signal falsified by the specular reflection effects and in quadrature to the summation signal;

E_{KP} = the angle error signal portion obtained from the cross-term function and in phase with the summation signal;

E_{KQ} = the angle error signal portion obtained from the cross-term function and in quadrature to the summation signal;

$F_{\Delta R}$ = residual correction signal; and

$F_E(X_1)$ = the angle error signal after correction.

4,084,161

HEAT RESISTANT RADAR ABSORBER

William P. Manning, and Walter T. Passiuk, both of Tulsa, Okla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 26, 1970, Ser. No. 48,619
Int. Cl.[2] C09J *5/02*; H01Q *17/00*
U.S. Cl. 343—18 A **3 Claims**

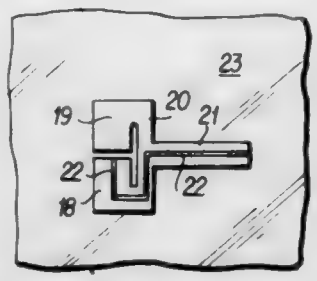
1. A radar absorber adapted for heat resistance comprising a ceramic thermal barrier bonded to an organic RAM substrate, said thermal barrier consisting of a foamed ceramic slab and said substrate consisting of a layered polyimide RAM.

4,084,162

FOLDED BACK DOUBLET MICROSTRIP ANTENNA

Gerard Dubost, Rennes, and Henri Albert Havot, Cession-Sevigny, both of France, assignors to Etat Francais represented by Delegation Ministerielle pour l'Armement, France

Filed May 14, 1976, Ser. No. 686,394
Claims priority, application France, May 15, 1975, 75 15114
Int. Cl.[2] H01Q *1/38, 9/26*
U.S. Cl. 343—700 MS 3 Claims



1. A folded back doublet antenna system comprising:

(a) two symmetrical half-plates separated at their one ends by a cut;

(b) a long, continuous plate separated from one side of each of said half-plates by a gap, said half-plates constituting an input side and said continuous plate constituting a folded back side, said half-plates having a common width which is much larger than the width of said continuous plate, said continuous plate being joined at its ends to, respectively, the other external ends of said half-plates by respective linking sections, said half-plates and continuous plate forming a doublet antenna;

(c) a line feeding the doublet antenna in the vicinity of said cut and extending along the axis of symmetry of said half-plates; and

(d) a plane reflector of appreciably larger dimensions than the doublet antenna, the doublet antenna being at a distance of 3/100 of λ from said reflector and having a length of approximately 0.6 λ, the width of the antenna being less, wherein λ represents the medium wavelength of the band pass of said antenna.

4,084,163

TRUNK LID ANTENNA MOUNT

L. C. Maynard, 1232 Adams St., St. Joseph, Mich. 49085

Filed Jan. 12, 1977, Ser. No. 758,563
Int. Cl.[2] H01Q *1/32*
U.S. Cl. 343—715 7 Claims



1. An antenna mount for attaching a whip-type antenna to a peripheral edge of an extended area sheet comprising:

(a) a housing having top and side walls mutually defining a cavity,

said top wall having an outer surface and an inner surface facing said cavity,

said side wall having a peripheral edge with a first portion thereof being adapted to engage one surface of said sheet adjacent said edge thereof thereby closing a portion of said cavity and with a second portion adapted to extend outwardly beyond said sheet edge thereby defining therewith an opening communicating with said cavity:

(b) a mounting bracket member having a first portion in said cavity and engaging said inner surface of said top wall,

said top wall and said first portion having aligned openings formed therethrough, and a clamp portion adapted to embrace said sheet edge, and having a distal end,

said clamp portion having an elongated slot formed therein having an end spaced from said distal end to define an end section thereof,

said end section having an indentation formed therein aligned with said slot and communicating therewith and with said distal end;

(c) first means for securing said clamp portion to said sheet adjacent said edge;

(d) second means extending through said housing top wall and first bracket member portion openings for securing said bracket member to said housing,

said second securing means including a first portion in engagement with said outer surface of said top wall and adapted to have said antenna attached thereto, and a second portion in said cavity engaging said first bracket member portion; and

(e) an antenna lead having an end in said cavity connected to said securing means,

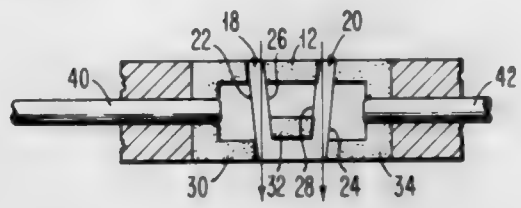
said lead having a portion disposed in said bracket member clamp portion slot and indentation and adapted to extend outwardly between said indentation and said sheet.

4,084,164

INK COLLECTOR IN INK JET PRINTER

Richard Curtis Alt, Vestal, N.Y., and Francis James Perry, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1977, Ser. No. 810,345
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 4 Claims



1. An ink jet printer wherein rows of streams of selectively charged ink droplets are directed towards a record medium comprising:

a gutter electrode assembly having wall portions;

a high voltage electrode disposed between said gutter wall portions and having faces in juxtaposition with said wall portions;

said gutter electrode assembly and high voltage electrode being at different electrical potentials for generating an electrostatic field;

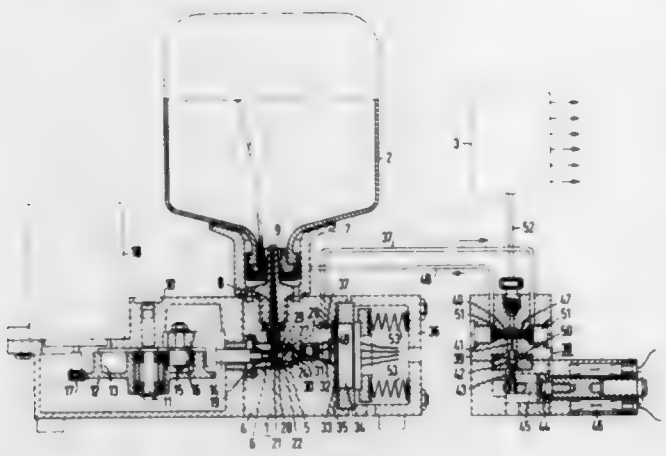
said wall portions and faces of said electrodes being skewed at a predetermined angle relative to the paths of said ink streams and forming narrow channels for passage of said ink droplets, so that the ink droplets pass close to said high voltage electrode upon entry into said channels and the ink droplets that are exiting from said channels pass close to the gutter electrodes.

4,084,165

FLUID-JET WRITING SYSTEM

Bengt Skafvenstedt, Stockholm; Sture Ahlgren, Vaellingby, and Eberhard Tschuertz, Jaerfaella, all of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 29, 1976, Ser. No. 745,575
Claims priority, application Germany, Dec. 22, 1975, 2557869
Int. Cl.[2] G01D *15/18;* **F04B** *49/06*
U.S. Cl. 346—140 R **5 Claims**



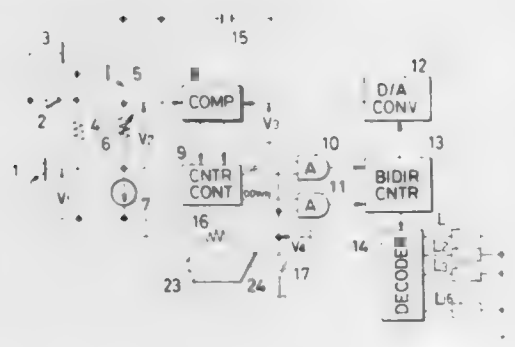
1. A fluid-jet writing system comprising a fluid reservoir, a writing nozzle, conduit means interconnecting said reservoir and said nozzle, fluid pump means in said conduit means for pumping fluid from said reservoir to said nozzle, fluid pressure responsive means in said conduit means for sensing the pressure of the fluid between said pump means and said nozzle, for comparing that pressure with a given pressure and for producing a signal which varies in response to variations in the pressure differential, pump control means operatively interconnecting said pump means and said pressure responsive means, said pump control means being responsive to said signal for varying the operation of said pump means in accordance therewith, and switch-over valve means located in said conduit means between said pump means and said nozzle and comprising an electromagnetically actuatable switch-over valve member movable from a first position, at which the pressurized fluid from said pump means is directed to said nozzle, to a second position, at which the fluid at said nozzle is directed back to said reservoir.

4,084,166

CIRCUIT FOR LOCKING LED LIGHT METER DISPLAY IN RESPONSE TO METER DISPLAY IN RESPONSE TO MIRROR MOVEMENT IN SLR CAMERA

Masahiro Kawasaki, Tokyo; Eiichi Tano, Asaka, and Yoshio Sawada, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1976, Ser. No. 735,660
Claims priority, application Japan, Oct. 27, 1975, 50-129122
Int. Cl.[2] G03B *7/08, 17/20*
U.S. Cl. 354—23 D **4 Claims**



1. In a light meter for a single lens reflex camera including an array of LED display elements, A/D converter means for energizing individual ones of said elements in accordance with a sensed brightness level and predetermined parameters defining the film sensitivity and the lens aperture opening, and a reflex mirror movable between an upper position and a lower position, the improvement comprising:

(a) switch means adapted to be closed at the commencement of the movement of the mirror from its lower position to its upper position, and

(b) logic circuit means responsive to the closure of the switch means for disabling the further operation of the A/D converter means an locking the LED array in its then energized state,

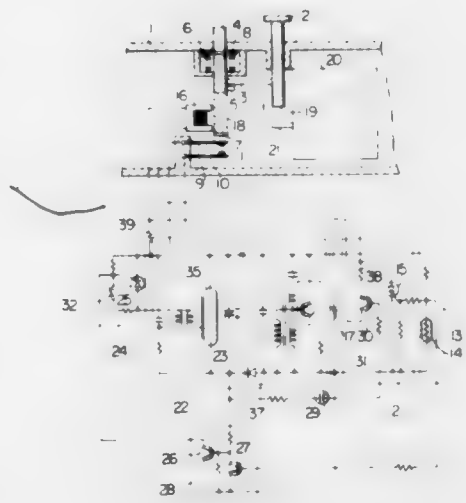
wherein the switch means is adapted to be opened at the termination of the movement of the mirror from its upper position to its lower position, and further comprising delay means responsive to the opening of the switch means for enabling the further operation of the A/D converter means and unlocking the LED array after a predetermined time interval.

4,084,167

FLASH AND CAMERA DEVICE

Hiroshi Iwata, Osaka, Japan, assignor to West Electric Company, Ltd., Osaka, Japan

Filed Mar. 14, 1977, Ser. No. 777,079
Claims priority, application Japan, Mar. 17, 1976, 51-29510
Int. Cl.[2] G03B *15/05*
U.S. Cl. 354—33 **7 Claims**



1. A flash and camera device having in combination a photographic camera device and an electronic flash device in which a charged energy in a main discharge capacitor is consumed by a flash discharge tube to emit flash light, comprising:

a power supply;

a brightness sensing circuit for sensing a brightness of an object;

a first switch means linked to a shutter button such that it is turned on by the depression of said shutter button to permit the application of the power of said power supply to said main discharge capacitor;

a means for maintaining said first switch means at its on state; and

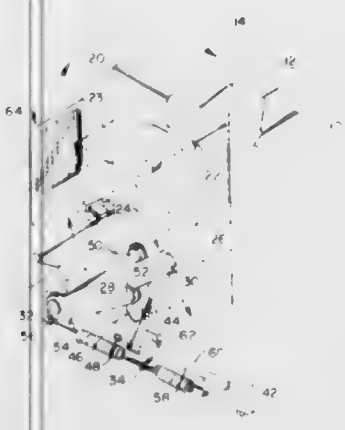
a second switch means operative to activate said maintaining means to maintain said first switch means at its on state when said brightness of said object is low and deactivate said maintaining means when said main discharge capacitor has been charged to a predetermined level.

4,084,168

FLASH UNIT DIFFUSER MECHANISM FOR PHOTOGRAPHIC CAMERAS

Donato F. Pizzuti, Saugus, Mass., and Irving S. Lippert, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1976, Ser. No. 719,844
Int. Cl.[2] G03B *15/02, 17/04*
U.S. Cl. 354—126 **17 Claims**



1. A photographic camera comprising:
a housing having a front face, a side face and a flash unit receptacle on said side face;
cover means movable between a closed position enclosing the side face of said housing and an open position clear of said housing and said side face;
a light diffusing element; and
means supporting said light diffusing element for movement between a retracted position overlying said front face of said housing and an erected position extending beyond said side face in front of said flash unit receptacle automatically upon movement of said cover means between said closed and open positions respectively.

4,084,169

AUTOMATIC FILM ADVANCING SYSTEM

Hiroshi Iwata, Osaka, and Katsuji Ishikawa, Higashi-Osaka, both of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Sep. 10, 1976, Ser. No. 722,039
Claims priority, application Japan, Sep. 19, 1975, 50-114140
Int. Cl.[2] G03B *1/18*
U.S. Cl. 354—173 **5 Claims**



1. A film advancing system for a camera, comprising:
a film advancing motor adapted to be energized by current fed from a power source,
circuit means responsive to operation of a shutter of said camera for producing a control signal when said shutter closes following an exposure,
a first switching circuit responsive to said control signal for connecting said motor to the power source to thereby advance said film,
means for detecting a perforation on said film, said perforation detecting means being movable with said perforation as the film is advanced,
a second switching circuit operatively related to the first switching circuit and to the perforation detecting means whereby when said perforation detecting means is moved as a result of the film being advanced a predetermined amount, said second switching circuit controls the first switching circuit to interrupt the connection of the power source to the motor,
a braking circuit joined to said motor and responsive to an interruption of the connection of the power source to the motor to brake said motor to thereby prevent excessive advancing of the film, and
a detecting circuit responsive to energization of said motor and connected to said second switching means, said detecting circuit including timing means operative upon continuous energization of the film advancing motor for a length of time, in excess of that normally required to advance the film by said predetermined amount, to cause the detecting circuit to actuate the second switching circuit to in turn control the first switching circuit to interrupt the connection of the power source to the motor.

4,084,170

FOCAL PLANE SHUTTER

Akihiko Hashimoto, and Fuzio Enomoto, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1976, Ser. No. 705,546
Claims priority, application Japan, Jul. 22, 1975, 50-89799; Jul. 28, 1975, 50-104930[U]; Jul. 28, 1975, 50-104931[U]; Jul. 28, 1975, 50-104932[U]; Sep. 18, 1975, 50-128620[U]
Int. Cl.[2] G03B *9/34*
U.S. Cl. 354—205 **4 Claims**



4. A focal plane shutter for opening and closing a light path extending through a picture taking lens of a camera; comprising a first shutter screen adapted to run in response to shutter release for opening the light path, a second shutter screen adapted to run at a given time period after the shutter release for closing the light path, a pair of shutter screen take-up drums respectively connected with one end of the first and second screens, resilient means charged in response to a film winding operation for urging the take-up drums in a direction to take up the shutter screens, a pair of shutter screen winding drums connected with the other end of each of the screens a pair of pinions operationally connected with the respective winding drums, a drive gear adapted to mesh with the pair of pinions during a film winding operation and arranged for rotation in response to a film winding operation to drive both pinions to rotate in a direction to wind up their associated winding drums, detent means associated with said first and second screens for locking both winding drums in their position which is reached when both screens are wound up on the

winding drums and from which the rotation of the winding drums is initiated, means for releasing the winding drum associated with the first screen from the detent means in response to a shutter release operation to thereby permit a running of the first shutter screen, and detent control means for maintaining the detent means associated with the second shutter screen locked during a time period subsequent to a shutter release operation which depends on a necessary amount of exposure and for disengaging the winding drum associated with the second shutter screen from the detent means after said time period to allow a running of the second shutter screen, said drive gear being formed with a hiatus of a circumferential length which is sufficient to avoid the meshing engagement thereof with the pair of pinions, the hiatus being normally located opposite to the pair of pinions except during a shutter winding operation to disconnect the pinions from the drive gear, the drive gear being brought into meshing engagement with the pinions in a sequential manner such that the winding drum associated with the first shutter screen is driven first, followed by the winding drum associated with the second shutter screen with a time delay corresponding to the circumferential length of the hiatus in the drive gear;

means for driving said winding drums, and means for adjusting the shutter screens with respect to said winding drums comprising a position adjusting member for each winding drum; an elongated slot formed in and extending lengthwise of each of the winding drums, the position adjusting member for each drum being slidably fitted into said elongated slot;

a skewed elongated slot formed in said position adjusting member; a threaded screw fitted into said skewed elongated slot;

a support shaft for each winding drum;

said threaded screw threadably engaging the associated support shaft for the particular winding drum;

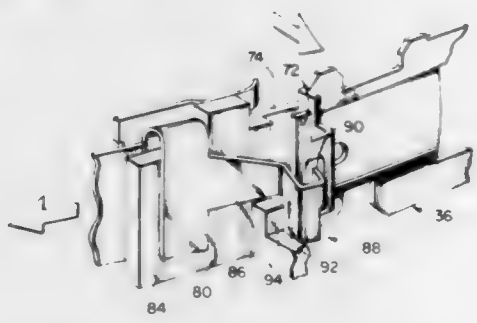
a displacement of the position adjusting member within the slot in the said winding drum when the said screw if loosened effecting an adjustment of the relative position between the winding drum and its associated support shaft and the mounting position of the respective shutter means; said adjusted position being maintained by subsequently tightening said screw.

4,084,171

PHOTOGRAPHIC CASSETTE HAVING PRESSURE PLATE RELEASE OF A PROCESSOR DISABLING VALVE

Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 4, 1976, Ser. No. 729,390
Int. Cl.[2] G03D *5/06*
U.S. Cl. 354—317 **8 Claims**



1. A photographic film handling cassette for use with other apparatus for treating a strip of exposed photographic film material with processing fluid to develop viewable images on the film strip, said cassette comprising:

a housing for retaining the film strip, said housing including an opening for exposing progressive incremental sections of the film strip;

means responsive to drive means of said other apparatus for advancing the film in a given path within said housing, said given path traversing said opening;

a pressure plate located within said housing at said opening, said pressure plate being in a first position when said cassette is not in operable engagement with said other apparatus and being displaceable to a second position, in response to a force from said other apparatus;

film processing means for depositing a layer of processing fluid on the exposed film strip;

selectively operable means for disabling said film processing means following deposit of said fluid layer; and

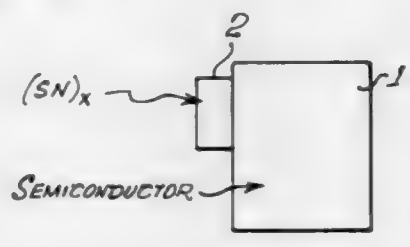
means normally operative for preventing the operation of said disabling means, said means for preventing being rendered inoperable to prevent the operation of said disabling means responsive to the displacement of said pressure plate from its said first position to its said second position.

4,084,172

HIGHLY ELECTRONEGATIVE $(SN)_x$ CONTACTS TO SEMICONDUCTORS

Robert A. Scranton, La Canada, and Thomas C. McGill, Pasadena, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 10, 1977, Ser. No. 805,489
Int. Cl.[2] H01L *29/48*
U.S. Cl. 357—15 **7 Claims**



1. A semiconductor structure comprising:

a semiconductor substrate, and

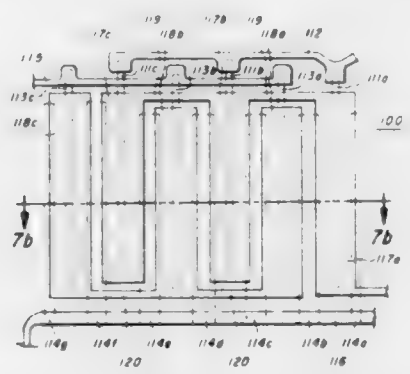
a metallic-like contact material formed on said substrate, said contact material being a polymeric sulfur nitride $(SN)_x$.

4,084,173

INTERDIGITATED TRANSISTOR PAIR

Roberto Luigi Fantechi, Sugar Land, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 23, 1976, Ser. No. 708,239
Int. Cl.[2] H01L *27/02, 29/78*
U.S. Cl. 357—42 **15 Claims**



1. A complementary transistor pair device comprising:

(a) a semiconductive substrate of semiconductive material selected from intrinsic or one conductivity type semiconductive material;

(b) a plurality of first semiconductive regions of opposite conductivity type in said substrate and extending to a major surface thereof, said first semiconducting regions

forming elongated areas in the surface of semiconductive substrate, the major axes thereof being essentially parallel and said first semiconductive regions being electrically interconnected;

(c) a plurality of second semiconductive regions of said opposite conductivity type in said substrate, said second semiconductive regions forming elongated areas in the surface of said substrate, the major axes thereof being essentially parallel and said second semiconductive regions being electrically interconnected;

(d) a plurality of third semiconductive regions of said opposite conductivity type in said substrate, said third semiconductive regions forming elongated areas in the surface of said substrate, the major axes thereof being essentially parallel, said third semiconductive regions being electrically interconnected and interdigitated with said first and second semiconductive regions;

(e) a plurality of first gate electrodes, each of said first gate electrodes being disposed over a major portion of each of said first semiconductive regions, said first gate electrodes being electrically interconnected; and

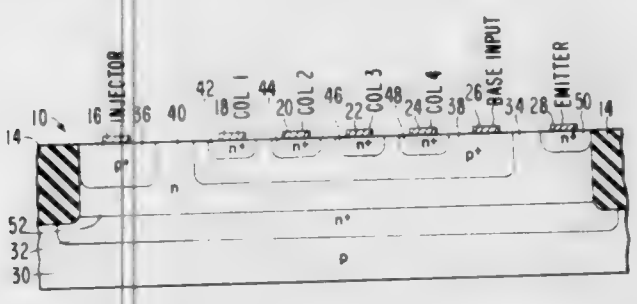
(f) a plurality of second gate electrodes, each of said second gate electrodes being disposed over a major portion of said second semiconducting regions, said second gate electrodes being electrically interconnected.

4,084,174

GRADUATED MULTIPLE COLLECTOR STRUCTURE FOR INVERTED VERTICAL BIPOLAR TRANSISTORS

Richard E. Crippen, Mountain View; Hemraj K. Hingarh, Santa Clara, and Peter W. J. Verhofstadt, Saratoga, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Feb. 12, 1976, Ser. No. 657,439
Int. Cl.² H01L 27/02, 29/72, 29/48, 27/04
U.S. Cl. 357—44 **8 Claims**



1. A semiconductor structure comprising:

a semiconductor substrate of one conductivity type having a substantially planar surface;

an epitaxial layer formed on said substantially planar surface of said semiconductor substrate, said epitaxial layer having a conductivity type opposite said one conductivity type of said semiconductor substrate;

a buried layer region of said opposite conductivity type disposed in said substantially planar surface of said semiconductor substrate;

a first transistor region of said one conductivity type disposed above said buried layer region in said epitaxial layer, said first transistor region extending downwardly from the upper surface of said epitaxial layer to form a first region bounding pn junction therein;

a second transistor region of said one conductivity type disposed above said buried layer region in said epitaxial layer and separated from said first transistor region by an interstitial portion of said epitaxial layer, said second transistor region extending downwardly from the upper surface of said epitaxial layer to form a second region bounding pn junction therein;

a third transistor region of said opposite conductivity type disposed in said second transistor region, said third transistor region extending downwardly from a portion of the upper surface of said second transistor region having a first collector area to form a third region bounding pn junction within said second transistor region;

a fourth transistor region of said opposite conductivity type disposed in said second transistor region substantially colinear with and separated from said first and said third transistor regions, said third transistor region lying laterally between said first and said fourth transistor regions, said fourth transistor region extending downwardly from a portion of the upper surface of said second transistor region having a second coilector area greater than said first collector area to form a fourth region bounding pn junction within said second transistor region, whereby said semiconductor structure forms a lateral bipolar transistor and a merged complementary inverted vertical bipolar transistor having two collectors each with gain greater than a selected minimum value at a selected operating current which results from the unequal lateral displacement of said third and said fourth transistor regions from said first transistor region combined with the graduated collector area relationship; and

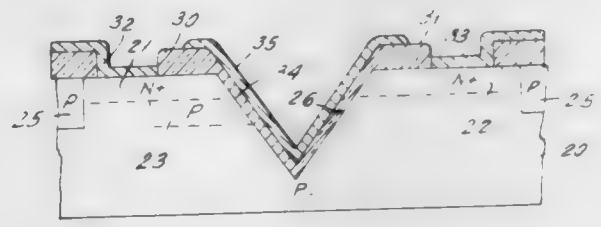
means for applying a bias potential of a polarity which would tend to reverse bias each of said third and fourth region bounding pn junctions.

4,084,175

DOUBLE IMPLANTED PLANAR MOS DEVICE WITH V-GROOVE AND PROCESS OF MANUFACTURE THEREOF

Paul Hsiung Ouyang, Lake Ronkonkoma, N.Y., assignor to Research Corporation, New York, N.Y.

Filed Sep. 30, 1976, Ser. No. 728,264
Int. Cl.² H01L 29/78, 27/02, 29/06
U.S. Cl. 357—55 **11 Claims**



1. A semiconductor device, comprising:

a semiconductor wafer containing a first concentration of impurities of a first conductive type;

first and second spaced regions adjacent one surface of said semiconductor wafer, each of said first and second spaced regions containing a concentration of impurities of a second conductive type;

a V-groove extending from said one surface of said semiconductor wafer intermediate said first and second spaced regions, each of said first and second spaced regions terminating at an opposite surface of said V-groove;

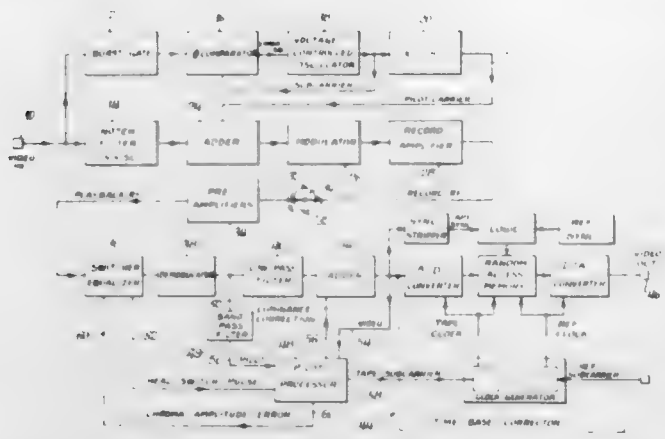
first and second substantially co-planar electrode means connected to said first and second spaced regions respectively, and third electrode means disposed within said V-groove; each of said first, second and third electrode means being insulated from one another;

a third region underlying and adjacent to a portion of said first spaced regions and terminating on one side of said V-groove and extending for only a portion of the depth of said V-groove, said third region containing a higher concentration of impurities of said first conductive type than said first concentration, the side of said V-groove opposite to said one side having impurities of said first conductivity type at said first concentration along its full depth.

4,084,176
PILOT SIGNAL PROCESSING MEANS FOR VIDEO RECORDING APPARATUS

Allen J. Trost, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 19, 1976, Ser. No. 668,391
Int. Cl.[2] H04N *5/785, 9/02;* **G11B** *5/02*
U.S. Cl. 358—8 **10 Claims**



1. In video recording and reproducing apparatus of the type which has one or more transducing heads which cooperates to record on and reproduce from a recording medium and wherein switching of video signals among the heads can occur during operation, the apparatus utilizing frequency modulation of a carrier signal with a video signal, the video signal having a pilot signal at a predetermined frequency included therein prior to recording, a system for processing said pilot signal so that it accurately reflects the phase and frequency distortion that occurs in the record-reproduce process, comprising:

means for recovering said pilot signal from the video signal following demodulation during its reproduction from the medium, said recovering means being of the type which introduces a known phase distortion of the recovered pilot signal that is a function of the frequency applied thereto;

discriminating means associated with said pilot recovering means for generating a voltage output that varies in proportion to the frequency of an input signal applied thereto;

means for filtering said output voltage to eliminate noise therefrom, said filtering means having a frequency response that enables said filtering means to accurately follow errors introduced as a result of said distortion;

phase shifting means connected to said recovering means and adapted to transmit said pilot signal therethrough, the phase of the output therefrom being adjustable relative to the phase of the input in response to an applied voltage, said phase shifting means having a control input connected to said filtering means and adapted to adjust the phase of the signal passing therethrough in proportion to the filtered output voltage provided by said filtering means and applied to said control input;

the control input voltage being therefore adapted to effect a phase correction of said pilot signal introduced by said recovering means.

4,084,177
SECAM SUBCARRIER GENERATOR

Felix Aschwanden, Thalwil, and Theodor Ernst Bart, Zurich, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

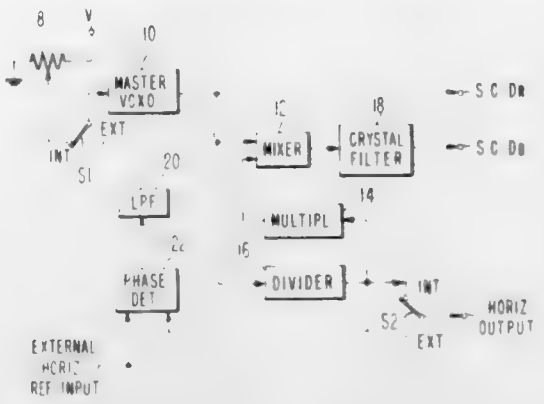
Filed Mar. 23, 1977, Ser. No. 780,334
Claims priority, application United Kingdom, Nov. 15, 1976, 47547/76
Int. Cl.[2] H04N *9/40*
U.S. Cl. 358—25 **3 Claims**

1. A reference signal generator for generating first and second subcarrier reference signals for use in a SECAM color television system, said first and second subcarrier reference signals being first and second multiples of the horizontal line rate of said television system, comprising:

a first source of reference signals at said first multiple of said horizontal line rate for developing said first subcarrier reference signal;

divider means coupled to said first source of reference signals for developing a line rate signal from said first reference signal;

multiplier means coupled to said divider means for multiplying said line rate signals so as to develop an auxiliary signal



source at a third multiple of said line rate signals lower than said first and second multiples;

signal mixing means coupled to said first reference signal source and said auxiliary signal source for mixing said first reference and auxiliary signals; and

filter means coupled to said signal mixing means for providing said second subcarrier reference signal at said second multiple of said horizontal line rate.

4,084,178
AUTOMATIC HUE CONTROL CIRCUIT

Gopal K. Srivastava, Schaumburg, and Dennis W. Rhee, Palatine, both of Ill., assignors to Admiral Corporation, Schaumburg, Ill.

Filed May 5, 1976, Ser. No. 683,317
Int. Cl.[2] H04N *9/535*
U.S. Cl. 358—28 **10 Claims**



1. A color television receiver comprising:

a. source means for providing a chrominance signal;

b. source means for providing a reference signal;

c. first, second and third means for providing first, second and third color difference signals, each coupled to receive the chrominance signal;

d. phase-shift means coupled to receive the reference signal and selectively actuatable for phase-shifting the reference signal to provide at least first and second output signals phased separately from each other to be applied to said first and third means;

e. summing means responsive to the output of each of said first, second and third means for providing a quiescent voltage;

f. comparison means coupled to at least one of said first, second and third means for providing an output when the

output of said one means exceeds the quiescent voltage; and

g. switch means responsive to the output of said comparison means for selectively actuating said phase-shift means to vary a phase-shift angle between its first and second output signals applied to said first and third means.

4,084,179

COLOR TELEVISION CAMERA

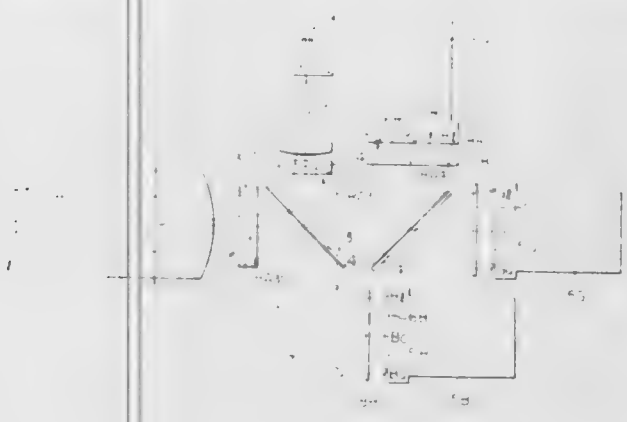
Takeshi Sekiguchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1976, Ser. No. 727,752

Claims priority, application Japan, Oct. 7, 1975, 50-121087

Int. Cl.[2] H04N *9/04*

U.S. Cl. 358—55 **15 Claims**



1. A color television camera comprising:

a plurality of image pick-up devices each having a light receiving surface for receiving a light beam of a predetermined wavelength range and generating an electrical signal corresponding to the distribution of the light quantity of said light beam of the predetermined wavelength range impinging on said light receiving surface;

a lens system optically aligned with an object and each of said plurality of image pick-up devices;

a color separating optical system having at least one dichroic surface disposed in the light path between said lens system and said plurality of image pick-up devices and being inclined with respect to the optical axis of said lens system, said optical system including said dichroic surface being effective to separate the light beam from said object passed through said lens system into a plurality of light beams of predetermined wavelength ranges, and to cause said light beams to impinge on the light receiving surfaces of said plurality of image pick-up devices; and

a color filter having a transmission factor, for the light of at least one said predetermined wavelength range, which continuously varies from one end side thereof to the other, said color filter being disposed in the light path between said lens system and the dichroic surface of said color separating optical system, so that the direction in which its transmission factor for the light of said one predetermined wavelength range varies, corresponds to the direction of variation of the relative light quantity of the light beam of said one predetermined wavelength range.

4,084,180

COLOR SPLITTING PRISM ASSEMBLY

Jacobus Stoffels; Adrianus Ambosius Johannes Bluekens, and Petrus Jacobus,Maria Peters, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

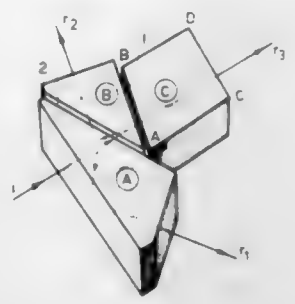
Filed Oct. 7, 1976, Ser. No. 730,164

Claims priority, application Netherlands, Oct. 9, 1975, 7511838

Int. Cl.[2] H04N *9/09;* **G02B** *27/14*

U.S. Cl. 358—55 **3 Claims**

1. A beam splitting prism assembly comprising a plurality of prisms separated by an air gap, the edges of the prism surfaces bounding the air-gap being provided with a small strip at the glass surfaces, said strip comprising an adhering film of a thermoplastic material located thereon forming a beam splitting layer.



4,084,181

APPARATUS FOR TRANSMISSION OF CHROMINANCE SIGNALS DURING BLANKING PERIOD

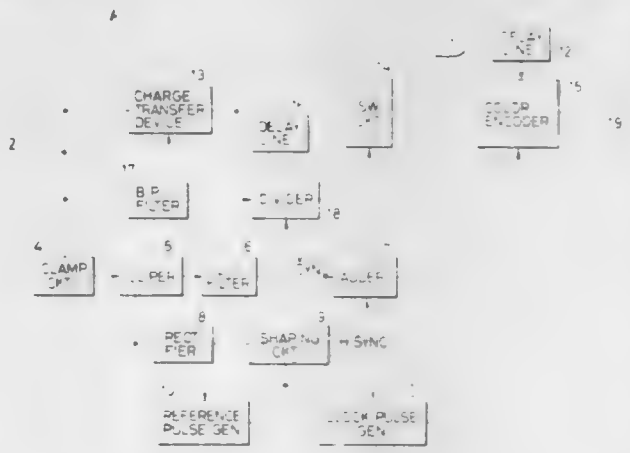
Seiichi Mita; Hiroshi Kuroda, both of Hachioji, and Hisashi Nakamura, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 21, 1977, Ser. No. 761,120

Claims priority, application Japan, Jan. 21, 1976, 51-4940

Int. Cl.[2] H04N *9/32, 7/08*

U.S. Cl. 358—12 **6 Claims**



1. A color television signal processing circuit for reproducing a chrominance signal from a color television signal in which the chrominance signal compressed in time scale is superposed on the horizontal flyback blanking time portion of the color television signal along with a reference signal superimposed on the horizontal synchronizing signal and synchronized with the clock signal used for compressing the chrominance signal, which comprises:

first circuit means responsive to said color television signal for producing a reference reset pulse and a sample pulse derived from said reference signal superimposed on said horizontal synchronizing signal;

second circuit means driven by said sample pulse for producing a high frequency pulse and a low frequency pulse synchronized with said reference reset pulse;

clock pulse generator means capable of being synchronized in response to an external signal for producing a time expansion clock pulse and a comparison reset pulse in response to the output of said second circuit means; and

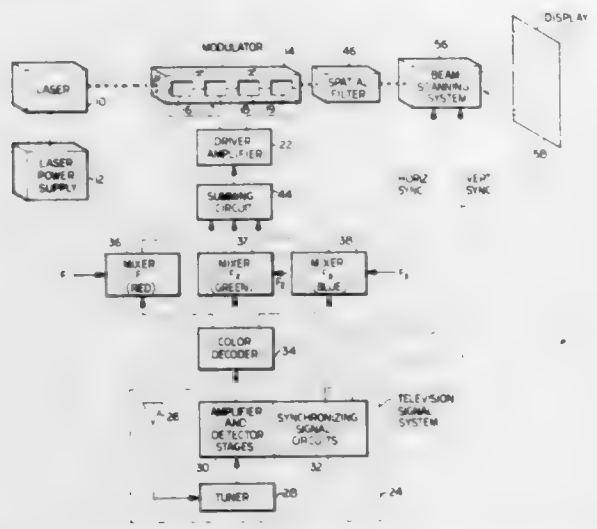
reset pulse judgment circuit means responsive to said reference reset pulse and said comparison reset pulse for producing said reference reset pulse as a reference pulse to synchronize said clock pulse generator means when the reference reset pulse and the comparison reset pulse are coincident in phase and for producing said comparison reset pulse as a reference pulse to synchronize said clock pulse generator means when the reference reset pulse and the comparison reset pulse are not coincident in phase.

4,084,182

MULTI-BEAM MODULATOR AND METHOD FOR LIGHT BEAM DISPLAYS

Theodore H. Maiman, Marina del Rey, Calif., assignor to Laser Video, Inc., Los Angeles, Calif.

Filed Jul. 1, 1974, Ser. No. 484,551
Int. Cl.[2] H04N *9/31*; G02F *1/11*
U.S. Cl. 358—62 **37 Claims**



1. The method of modulating a multi-wavelength laser beam in an acousto-optical modulator element to provide relatively high light output efficiency comprising the steps of:

exciting the modulator element with amplitude modulated frequencies $f_1 \ldots f_n$ for each wavelength $\lambda_1 \ldots \lambda_n$ such that

$$f_1 \lambda_1 = f_n \lambda_n$$

to provide collinear beams for each wavelength component and spurious cross product beams, each beam having sideband beamlets, and

maintaining optimum diffraction efficiency for the collinear beams by maintaining the beam angles such that

$$\frac{f_1 \lambda_1}{2v} = \frac{f_n \lambda_n}{2v} = \theta_B$$

where v is the velocity of light in the modulator element and θ_B is the Bragg angle, while concurrently optically bandpass filtering the video bandwidths within the modulator element by diffracting the cross product beams (i.e., $f_1 \lambda_2$) with low diffraction efficiencies such that they are substantially suppressed to of the order of 5% or less and the suppressed energy appears in the collinear beams.

4,084,183

METHOD FOR THE ELECTRO-OPTICAL REPRODUCTION OF HALF-TONE PICTURES

Hans Keller, Kiel; Roman Koll, Kiel-Wellingdorf, and Heinz Taudt, Kiel, all of Germany, assignors to Dr. Ing. Rudolf Hell GmbH., Kiel, Germany

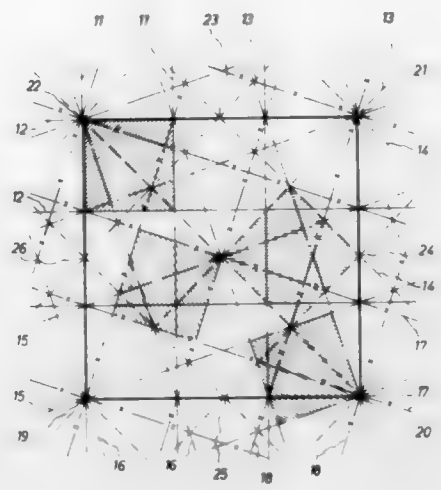
Continuation of Ser. No. 124,864, Mar. 16, 1971, abandoned.
This application Apr. 11, 1975, Ser. No. 567,122
Claims priority, application Germany, Mar. 18, 1970, 2012728
Int. Cl.[2] H04N *1/46*
U.S. Cl. 358—75 **3 Claims**

1. A screen system for use in connection with the electro-optical reproduction of half-tone pictures in multi-color-print comprising, in combination:

a plurality of partial screens each corresponding to a printing color and each being angularly spaced apart with respect to each another;

said partial screens defining screen meshes which define printing points for tone values of the printing colors;

said partial screens having common points of intersections defining rectangular parcels of congruent screen structure;



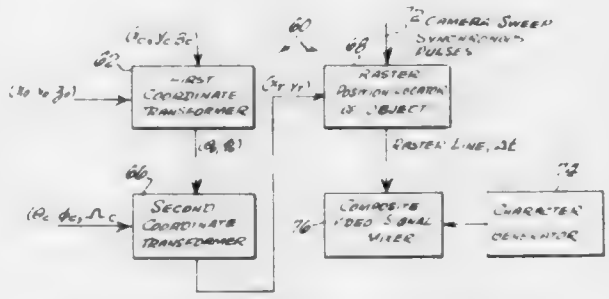
said parcels including orthogonally oriented parcel elements which include said printing points.

4,084,184

TV OBJECT LOCATOR AND IMAGE IDENTIFIER

David W. Crain, 10978 Vivaracho Way, San Diego, Calif. 92124

Filed Jul. 26, 1976, Ser. No. 708,506
Int. Cl.[2] H04N *5/18, 7/18*
U.S. Cl. 358—93 **9 Claims**



APPARATUS FOR THE GENERATION OF AN IMAGE IDENTIFIER FOR A TV TUBE

9. A system for use with a TV camera having a lens defining an axis and a center, for identifying and locating on the screen of the tube of the camera an object located in the field of view observed by the camera, even if the camera is panned in various directions so as to cause the identified object to appear at different parts of the raster, comprising:

means for determining the precise location of the object to be identified with respect to the center and axis of the lens, the axis defining the center, in both horizontal and vertical directions, of the TV raster generated by the TV camera;

means, connected to the camera, for determining the aperture angle Ω_c of the lens; and

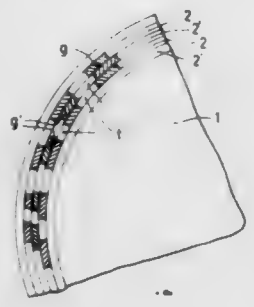
means for computing the precise location on the TV raster of the object to be identified, in the horizontal and vertical directions, the input signals to the means comprising the values (x_T, y_T) and the TV camera sweep synchronous pulses, the output signal comprising information with respect to the specific raster line r on which the object to be identified is located and Δt, the time delay with respect to the beginning of the TV horizontal deflection, so that the image is precisely located on the TV raster.

4,084,185

RECORD CARRIER ON WHICH INFORMATION IS STORED IN AN OPTICALLY READABLE STRUCTURE

Hendrik de Lang, and Gijsbertus Bouwhuis, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 464,843, Apr. 29, 1974, abandoned.
This application Mar. 3, 1976, Ser. No. 663,268
Claims priority, application Netherlands, Feb. 12, 1974, 7401858
Int. Cl.[2] H04N *5/76*; G11B *23/00*
U.S. Cl. 358—128 12 Claims



1. An optically readable record carrier for recorded information comprising areas of a first type serially arranged along elongated path sections, and areas of a second type serially arranged along similarly oriented further elongated path sections, and regions aligned with both types of said path sections between each area of both said first and second types of areas, the relative length of said areas of said first type, said areas of said second type, and said regions between said areas measured along the direction of elongation of said path sections corresponding to said recorded information, a first type of periodic grating having a constant spatial frequency on all of said areas of said first type, a second type of grating having a constant spatial frequency on said areas of said second type, grating lines of all of said second type of gratings being similarly oriented with respect to said path sections in a different direction then the grating lines of the first type of grating, said grating lines of said first type of grating all being similarly oriented with respect to said path sections, said regions influencing a read beam of radiation in a manner different from both said areas of said first type and said areas of said second type, each area of said first type being alternately arranged with an area of said second type in at least one of said directions transverse to said direction of elongation and along said direction of elongation.

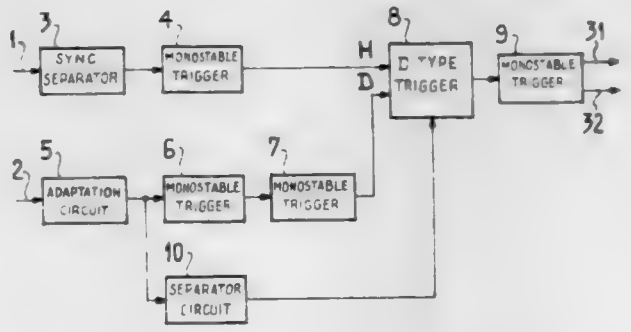
9. An apparatus for reading an optically readable record carrier on which information is stored in the form of areas of a first type serially arranged along elongated path sections, and areas of second type serially arranged along similarly oriented further elongated path sections, and regions aligned with both types of said path sections between each area of both said first and second types of areas, the relative length of said areas of said first type, the areas of said second type and the regions between said areas measured along the direcion of elongation of said track sections corresponding to said recorded information, a first type of periodic grating having a constant spatial frequency on all of said areas of said first type, a second type of grating having a constant spatial frequency on the areas of said second type, grating lines of said first type of grating all being similarly oriented with respect to said path sections, gratings of all of said second type of grating all being similarly oriented with respect to said path sections and being aligned in a different direction than said grating lines of said first type of grating, said regions influencing a read beam of radiation in manner different from both said areas of said first type and said areas of said second type, each area of said first type being alternately arranged with an area of said second type in at least one of said directions transverse to said direction of elongation and along said direction of elongation, whereby said grating lines of said first type direct light in a different direction than said grating lines of said second type, said apparatus comprising a radiation source means for providing a read beam directed onto said record carrier, whereby said first and second types of areas modulate said read beam and redirect it as two angularly separated sub-beams, a separate radiation sensitive detector in the path of each of said sub-beams, and an electronic circuit for processing signals from said radiation sensitive detectors into an information signal.

4,084,186

DETECTION SYSTEM FOR DETECTING SYNCHRONISM BETWEEN TELEVISION VIDEO SIGNALS EMANATING FROM DIFFERENT SOURCES

Georges Labb, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 4, 1976, Ser. No. 683,244
Claims priority, application France, May 7, 1975, 75 14330
Int. Cl.[2] H04N *7/02, 5/04*
U.S. Cl. 358—139 5 Claims



1. A detection system for detecting synchronism at two given points between two black and white television video signals or between two luminance video signals, comprising: two inputs and means for respectively applying thereto the mixed sync signals of the two signals, each mixed sync signal including both the horizontal sync pulses and the vertical sync signal pulses of the corresponding video signal; a first circuit connected to one of said inputs for supplying, for each sync pulse included in the signal which it receives, a gate pulse I_1 the beginning of which is delayed by T_1 ($T_1 \geqq 0$) in relation to the beginning of the corresponding sync pulse and the duration of which is equal to $2\Delta T$, Δt defining the permitted tolerance for synchronism; second means connected to the second input for supplying, for each sync pulse included in the signal which it receives, a pulse I_0 of which one edge F_0 is delayed by T_0 ($T_0 \geqq 0$) in relation to the beginning of the corresponding sync pulse; and a detection circuit for receiving the pulses I_0 and I_1 and detecting the non-coincidences of an edge F_0 with the presence of a pulse I_1, to produce a given output signal and retaining the last output signal detected for a given period T' in the absence of the detection of another non-coincidence, T' being at least equal to a field period of said video signals.

4,084,187

CIRCUIT FOR ACCURATELY EXTRACTING THE SYNCHRONIZATION INFORMATION CONTAINED WITHIN A COMPOSITE VIDEO WAVEFORM

Kenneth George Schlotzhauer, and Stephen Anthony Roth, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

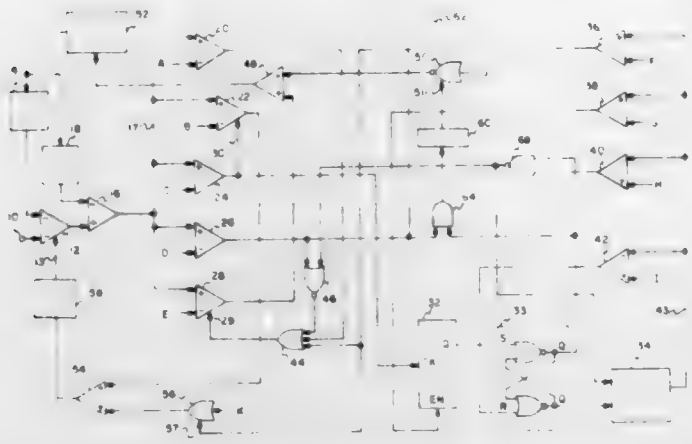
Filed Sep. 7, 1976, Ser. No. 720,854
Int. Cl.[2] H04N *5/08*
U.S. Cl. 358—153 6 Claims

1. A circuit for accurately extracting the synchronization information contained within a composite video waveform, comprising:

first means responsive to the waveform for controllably providing the waveform at an output thereof and including means for modifying the waveform to control the waveform at said output;

second means responsive to the waveform at said output for

detecting amplitude levels of the waveform to establish a time occurrence of the waveform and including means for providing a plurality of control signals to said means for modifying to control the waveform at said output, said time occurrence of the waveform defining the synchronization information extracted from the waveform; and



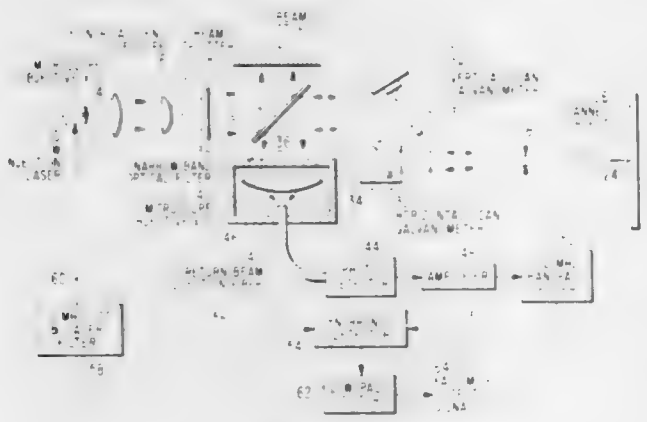
means responsive to said time occurrence of the waveform for regulating the control and detection of the waveform to establish the synchronization information at first and second amplitude levels and extracting the synchronization information at a third level between said first and second amplitude levels.

4,084,188

OPTICAL SCANNER

Istvan Gorog, and Brown F. Williams, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 15, 1976, Ser. No. 741,719
Int. Cl.[2] H04N *3/14*
U.S. Cl. 358—199 **7 Claims**



1. Apparatus for optically scanning an object exposed to ambient light to produce a video facsimile signal unaffected by the ambient light, comprising

a light beam source,

a beam splitter,

a beam deflector,

optical means directing light from said source in a beam passing through said beam splitter and said beam deflector to a place of an object to be scanned,

a narrow-band optical interference filter constructed and positioned to pass light, having the wave-length of said source, which is reflected from a scanned object back through the beam deflector and the beam splitter, and

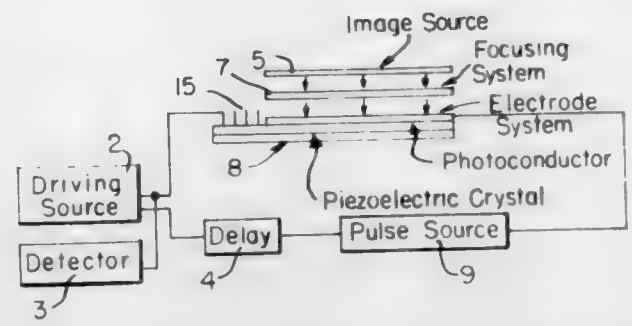
a photodetector positioned to receive light passed by said optical interference filter and operative to produce an electrical video facsimile signal representing the scanned object.

4,084,189

ACOUSTRO-ELECTRIC SCANNER BY PHONON ECHO PHENOMENON

Eric Gung-Hwa Lean, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1975, Ser. No. 645,109
Int. Cl.[2] H04N *3/14*
U.S. Cl. 358—213 **18 Claims**



1. An optical signal scanner for converting a substantially unidimensional optical signal to an electrical signal comprising,

focusing means for focusing said optical signal,

a parametric interaction means including a piezoelectric crystal, an acoustic transducer and an electric field producing means including a pair of electrods for producing an acoustic wave E_b travelling towards said acoustic transducer whose amplitude is $\phi_n SE_2$ where ϕ_n is the number density of filled impurity states in said piezoelectric crystal, S is a forward acoustic wave propagated by said acoustic transducer and E_2 is an electric field applied by said pair of electrodes transverse to the direction of said acoustic wave, wherein said acoustic transducer is effective to transducer E_b to an electrical signal,

wherein the improvement comprises,

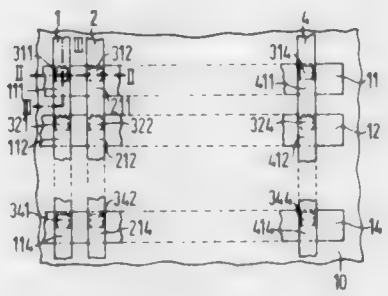
photoconducting means included in said parametric interaction means on which said optical signal is focused, said photoconducting means disposed between at least one of said pair of electrodes and said piezoelectric crystal, said photoconducting means responsive to said optical signal for locally varying the amplitude of E_2 coupled to said piezoelectric crystal to modulate E_b.

4,084,190

IMAGE SENSOR

Karl-Ulrich Stein, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Muhich, Germany

Filed Sep. 22, 1976, Ser. No. 725,536
Claims priority, application Germany, Sep. 26, 1975, 2543083
Int. Cl.[2] H04N *3/14*; H01J *39/12*; H01L *29/06*
U.S. Cl. 358—213 **13 Claims**



1. An image sensor comprising:

an electrically insulating substrate;

a plurality of first strips of doped semiconductor material carried spaced apart on said substrate;

at least one layer of light-permeable electrically insulating material covering said first strips; and

a plurality of second strips of electrically conductive material carried spaced-apart on said layer of light-permeable electrically insulating material transverse to said first

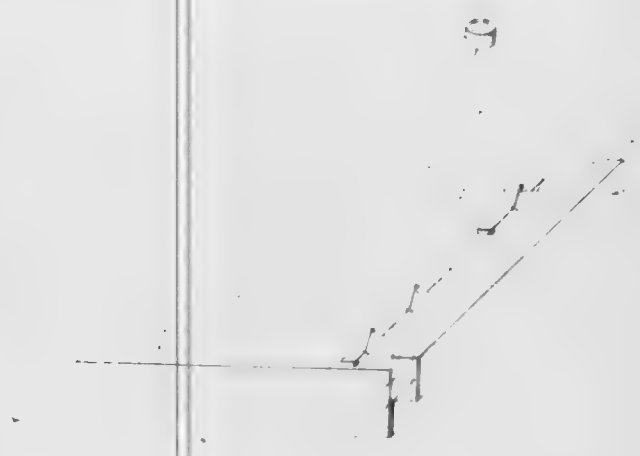
strips, said insulating layer comprising less thickness, at least below said second strips, over one longitudinal half of each of said first strips, than over the remaining areas of said sensor.

4,084,191

ACOUSTO-OPTICAL SCANNER

Eric Gung-Hwa Lean, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1976, Ser. No. 752,758
Int. Cl.[2] H04N *3/12*; H03H *9/00*
U.S. Cl. 358—213 **8 Claims**



8. An optical scanner comprising

a plurality of elongated parallel acoustic waveguides each of a different length,

a common transducer coactively coupled to all of said waveguides and operative when electrically pulsed to launch an acoustic wave in parallel into said waveguides;

a photoconductive element integral with said transducer operative responsive to the intensity distribution of an incident light image thereon to modulate the intensity of the acoustic wave launched into each of said waveguides; and

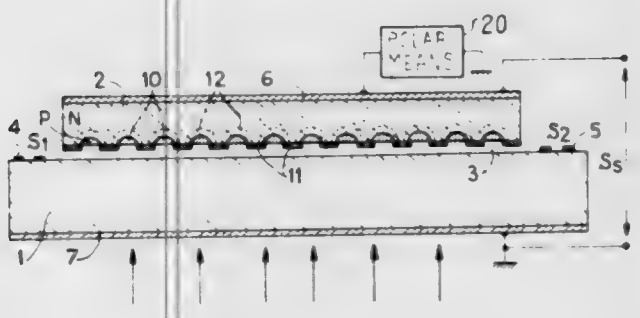
a transducer coactively coupled to the remote ends of said waveguides to receive the acoustic waves at different times as a function of the lengths of the waveguides and convert the waves into electrical signals having an intensity controlled by the intensity of the respective waves.

4,084,192

ELECTRO-ACOUSTIC DEVICES FOR ANALYSING OPTICAL IMAGE

Philippe Defranould, and Bernard Munier, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 8, 1976, Ser. No. 721,569
Claims priority, application France, Sep. 11, 1975, 75 27926
Int. Cl.[2] H04N *3/14*; H01L *27/14*
U.S. Cl. 358—213 **8 Claims**



1. An electro-acoustic device for analysing a one-dimensional optical image, comprising:

a photosensitive semiconductive substrate onto which said image is projected;

a piezoelectric substrate separated from said semiconductive substrate by a thin air gap, the opposite surfaces of the two said substrates being called "interaction surfaces" and defining an "interaction zone";

two transducers for converting high frequency electrical signals applied to them, into acoustic surface waves and disposed respectively at each end of the interaction surface of the piezoelectric substrate;

means for applying to each of said two transducers a high frequency signal such that the two resulting surface waves, propagated in opposite directions, interact non-linearly in an elementary zone of the piezoelectric substrate which moves from one end to the other of its interaction surface, so as to obtain acoustic scanning of the interaction zone;

said interaction surface of said semiconductive substrate comprising discrete junctions, each of which creating a depletion zone in the vicinity of said surface of the semiconductive substrate;

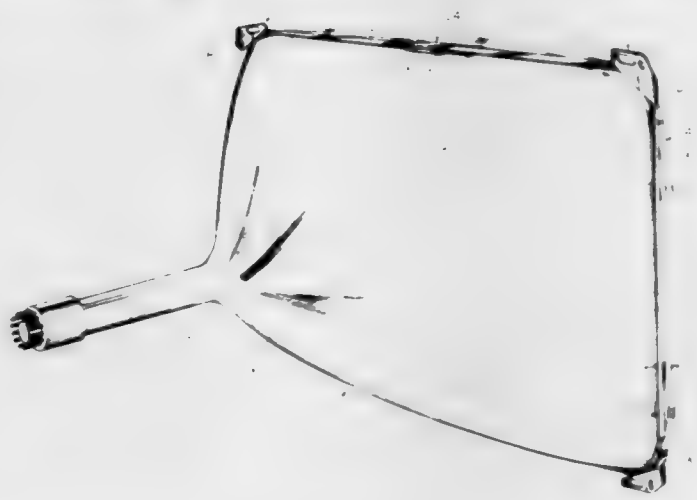
and an output electrode disposed on that surface of the semiconductive substrate which is opposite said interaction surface, for collecting during said acoustic scanning an electrical signal which is the output signal of the electro-acoustic device.

4,084,193

IMPLOSION PROTECTION SYSTEM FOR A CATHODE RAY TUBE WITH A FLANGELESS FACEPLATE

Kazimir Palac, Carpentersville, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Aug. 30, 1976, Ser. No. 718,631
Int. Cl.[2] H01J *29/87*
U.S. Cl. 358—246 **7 Claims**

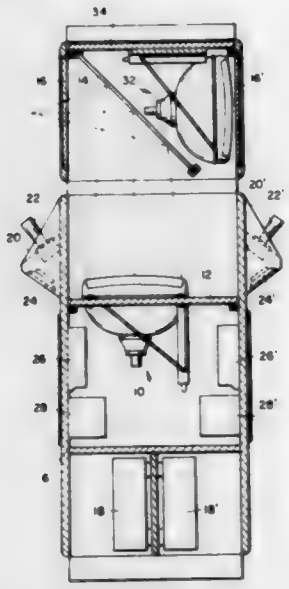


1. A color television picture tube having a glass bulb including an approximately rectangular, flangeless, three-dimensionally curved faceplate having a convex front surface, a concave rear surface and an edge surface which, along the sides of the faceplate, arches away from a reference plane connecting the four corners of the faceplate, the glass bulb also having a funnel with a convex seal land which mates with the concave inner surface of the faceplate, said tube having an implosion protection system comprising a tension member which surrounds said faceplate in straight lines between the faceplate corners, and means for retaining said member on the faceplate corners, said system being characterized by said member being under high tension to produce radially inwardly directed force components on the faceplate corners, and by a lack of significant physical containment of the edge surface of the faceplate along the sides thereof.

4,084,194
GAME CABINET

Roger D. Hector, Santa Clara, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Feb. 14, 1977, Ser. No. 768,281
Int. Cl.[2] H04N *5/64*
U.S. Cl. 358—254 4 Claims

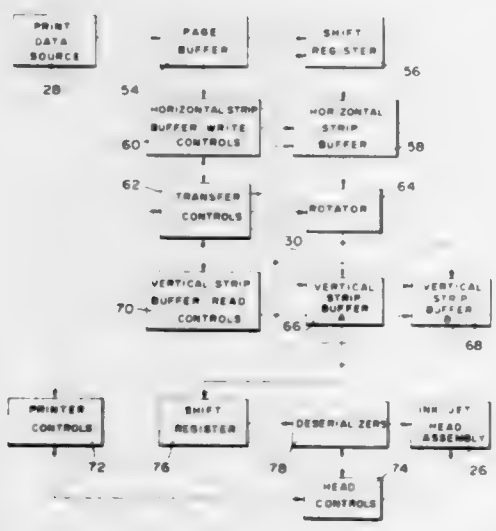


1. A video game cabinet, comprising:
(a) an upright structural frame having at least two vertical walls;
(b) two windows mounted at eye level elevation in separate vertical walls of the cabinet;
(c) a first television monitor mounted on the lower portion of the frame and aligned for projecting the presentation therefrom in a generally upward direction;
(d) a mirror mounted on the frame above the first monitor and positioned for reflecting the presentation therefrom through one of the windows and out of the cabinet; and
(e) a second independent television monitor mounted on the frame above the first monitor and aligned for projecting the presentation therefrom out through the other window in the cabinet.

4,084,195
IMAGE DATA REMAPPING SYSTEM

Lawrence William Pereira, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1976, Ser. No. 755,866
Int. Cl.[2] H04N *1/40;* H04L *17/30*
U.S. Cl. 358—280 18 Claims

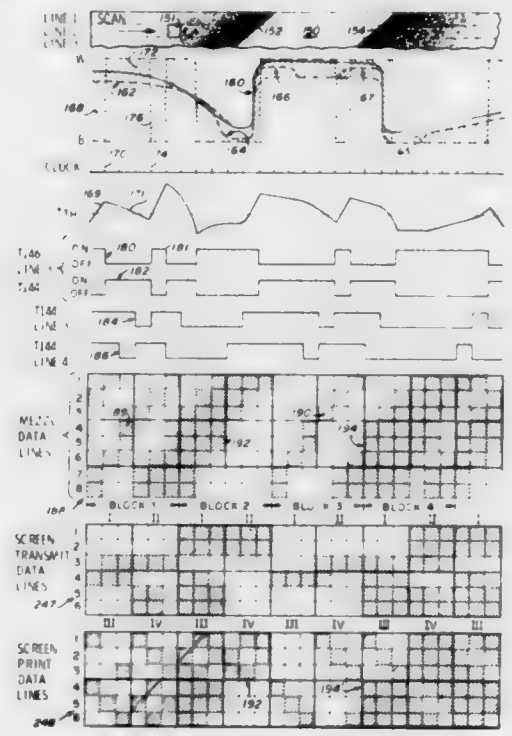


3. An arrangement for remapping image data for use in a printer system comprising:
first storage means;
means for assembling data in the form of an image in the storage means;
second storage means;
means for successively transferring the data comprising each of a succession of elongated strips of the image from the first storage means to the second storage means;
third storage means; and
means for successively transferring the data comprising each of a succession of the elongated portions of each strip stored in the second storage means from the second storage means to the third storage means, the elongated portions having a direction of elongation different from the direction of elongation of the elongated strips.

4,084,196
ELECTRONIC HALF-TONE GENERATING MEANS FOR FACSIMILE REPRODUCTION SYSTEM

James G. Tisue, Mountain View; Donald R. Weber, Santa Clara, and Peter A. Johanson, Los Altos, all of Calif., assignors to Dacom, Inc., Santa Clara, Calif.

Filed Jan. 31, 1977, Ser. No. 763,921
Int. Cl.[2] H04N *1/40*
U.S. Cl. 358—283 24 Claims



15. An electronic half-tone generator means for converting an analog input signal to a digital output signal, comprising:
means providing a first reference potential representing one analog signal state;
means providing a second reference potential representing another analog signal state;
integrating means responsive to a first data signal and operative to integrate the difference between an input analog signal and said first reference potential and to develop a first integral signal commensurate therewith, and responsive to a second data signal and operative to integrate the difference between the input analog signal and said second reference signal and to develop a second integral signal commensurate therewith;
comparator means responsive to said first and second integral signals and operative to develop a comparison signal when said first or second integral signals exceed a predetermined threshold value; and
signal generating means responsive to said comparison signal and operative to develop said first data signal upon each odd numbered occurrence of said comparison signal and to develop said second data signal upon each even numbered occurrence of said comparison signal, said first data signal comprising a series of data bits corresponding to each scan line of the analog signals, each said data bit

identifying the data state of a discrete elemental area of the scanned information.

4,084,197

FLYING SPOT SCANNER WITH SCAN DETECTION

Gary K. Starkweather, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 625,219, Oct. 23, 1975, abandoned, which is a continuation of Ser. No. 309,873, Nov. 27, 1972, abandoned. This application Feb. 25, 1977, Ser. No. 772,159

Int. Cl.[2] H04N *1/04, 5/76*

U.S. Cl. 358—300 **5 Claims**



1. In a scanning mechanism: means for providing a beam of high intensity light,

a medium,

a start of scan detector located spatially from said medium,

means for imaging said beam to a spot at said medium and at said scan detector,

scanning means positioned in the optical path of said beam for scanning said beam across said medium,

means optically located between said scanning means and said medium in the path of said scanned beam for deflecting a portion of the scanned beam to said scan detector,

said imaging means comprising first and second cylindrical lenses,

said first cylindrical lens being optically located between said medium and said scanning means and in the path of only the scanned beam directed to said medium,

said second cylindrical lens being optically located between said deflecting means and said start of scan detector and in the path of only the deflected scanned beam,

said first and second cylindrical lenses being so positioned in the path of the scanned beam that runout errors are substantially corrected at said medium and said scan detector, the plane of no power of said cylindrical lenses being oriented in the direction of scan,

said second cylindrical lens being positioned from said start of scan detector at substantially the same optical distance said first cylindrical lens is positioned from said medium, and

said second cylindrical lens being optically matched with said first cylindrical lens and having substantially the same focal length and aperture as said first cylindrical lens.

4,084,198

CARD SCANNING VIDEO SYSTEM

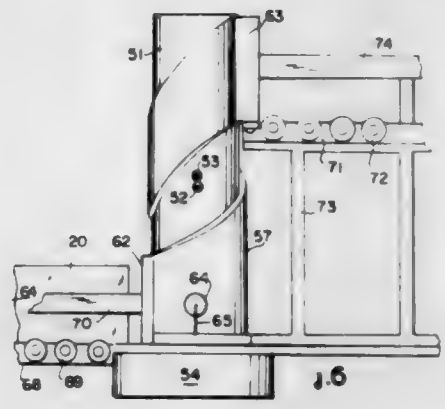
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 458,879, Apr. 8, 1974, Pat. No. 3,943,563, which is a continuation-in-part of Ser. No. 286,056, Sep. 5, 1972, Pat. No. 3,803,350, Continuation-in-part of Ser. No. 83,239, Oct. 22, 1970, abandoned, which is a continuation of Ser. No. 807,877, Mar. 17, 1969, abandoned, which is a continuation-in-part of Ser. No. 417,386, Dec. 10, 1964, Pat. No. 3,434,130. This application Mar. 9, 1976, Ser. No. 665,281

The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.

Int. Cl.[2] H04N *5/78;* **G11B** *25/04*

U.S. Cl. 360—33 **18 Claims**



1. Magnetic transducing apparatus for reproducing signals from magnetic cards and visually displaying the reproduced information for monitoring purposes comprising in combination:

first means for receiving a magnetic record card at a first location wherein said magnetic record card contains full-frame video picture signals magnetically recorded on a plurality of parallel magnetic recording tracks extending transverse to the longitudinal axis of said card, said first means including means for arcuately deforming said card at said first location,

second means including magnetic transducing means defined by a magnetic reproduction head disposed adjacent the card which is arcuately deformed at said first location,

third means for effecting relative movement between said card and said magnetic reproduction head in a first direction to cause said head to scan a selected track of said card,

fourth means for causing relative movement between said transducing means and said record card in a second direction to permit said magnetic reproduction head to scan a plurality of the tracks of a card received and deformed by said first means,

fifth means for energizing said transducing means,

sixth means for controlling said fifth means to energize said transducing means when said magnetic reproduction head is aligned with and scans a selected track of a card, and

seventh means including a video monitor connected to receive the signals generated by said magnetic transducing means and to utilize same to generate images of the information defined by said full-frame video picture signals recorded on a card scanned by said magnetic transducing means.

4,084,199

HIGH DENSITY MULTITRACK MAGNETIC HEAD

Jelmer Dorreboom, Olivenhain, Calif., assignor to Spin Physics, Inc., San Diego, Calif.

Filed Oct. 26, 1976, Ser. No. 735,729

Int. Cl.[2] G11B *5/22*

U.S. Cl. 360—121 **6 Claims**

1. The head face portion of a multitrack magnetic head comprising:

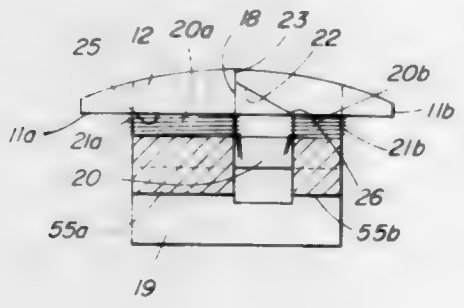
a. pairs of first and second magnetic pole pieces, each said pole pair having a non-magnetic generally planar gap

between the pole pieces of said pole pair, at least one pole piece of each pole pair being cutaway proximate the gap of that pole pair so as to taper generally away from the plane of said gap in a direction generally away from the tape contacting face, thereby to define a depth for the gap of that pole pair and to provide a well proximate the gap,

b. non-magnetic spacer means sandwiched between the first and second pole pairs, said non-magnetic spacer means also being cutaway so as to provide a well therein that is substantially aligned in registry with the wells defined by the cutaways of said pole pairs, said spacer means being further provided with a slot for accepting a magnetic shield piece between said first and second pole pairs.

c. a magnetic shield in said slot,

d. first discrete non-magnetic edge support means (**11***a*) having a face that is substantially parallel to the alignment



of wells, said support means abutting said sandwich of pole pairs and spacer means,

e. second discrete non-magnetic edge support means (**11***b*) having a face that is substantially parallel to the alignment of wells, said second support means abutting said sandwich of pole pairs and spacer means, said first and second edge support means being disposed with respect to each other so as to sandwich said pole pairs between them, said first and second edge support means being both adapted to contact simultaneously a magnetic medium with which said head is cooperative, and

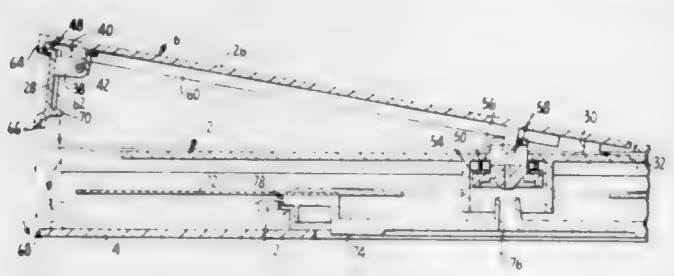
f. glass filling all said wells, the spacings between both said edge support means and said sandwich of pole pairs and spacer means, and the spacing between said spacer means and said shield, said glass being integral and forming a unitary lattice that bonds all the parts of the face assembly together.

4,084,200

MAGNETIC DISC CARTRIDGE

Henry Adair, Mission Viejo; Dean Lester Christensen, La Mirada, and Leon Harold Specktor, Los Angeles, all of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Jul. 26, 1976, Ser. No. 708,534
Int. Cl.² G11B *11/02*
U.S. Cl. 360—133 **7 Claims**



1. A cartridge for holding and protecting a magnetic recording disc during storage and use, comprising

a lower housing member extending generally transversely of the recording disc axis and having an aperture for receiving a portion of the disc hub projecting therethrough;

an upper housing member joined to said lower housing member and including an upwardly facing portion extending generally transversely of the recording disc axis and an edge portion extending downwardly from the periphery of said upwardly facing portion to a point adjacent said lower housing member, said edge portion having an opening therethrough for access by a recording head to the disc within;

a recording head access door movable between a closed position extending transversely across a part of said upper housing member upwardly facing portion and downwardly across and covering said recording head access opening, and an open position deflected upwardly from said upper housing member and exposing said recording head access opening;

a hinge pivotally operable about a single predetermined rotary axis for attaching said recording head access door to said upper housing member, whereby the head access door may be opened by rotatably pivoting about that single rotary axis;

the transversely extending portion of said head access door comprising an upper door attached to said upper housing member, and the downwardly extending portion of said head access door comprising a separate outer door attached to said upper door adjacent said cartridge edge by means of a hinge pivotally operable about a single predetermined rotary axis such that said outer door may pivot about its rotary pivot axis outwardly of said cartridge edge; and

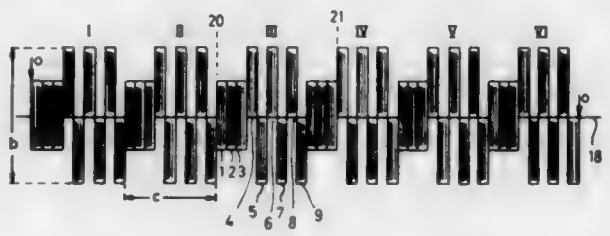
said head access door further including means for limiting the pivotal movement of said outer door to a predetermined amount inwardly of normal to said upper door and means for resiliently urging said outer door toward the pivot limit inwardly of said cartridge, whereby undesired excess inward pivoting of the outer door may be prevented.

4,084,201

MAGNETIC DISC, ESPECIALLY A FLEXIBLE MAGNETIC DISC, FOR TRACK ADJUSTMENT AND AMPLITUDE CONTROL

Joachim Hack; Udo Himmelmann; Peter Rudolf; Klaus Schulze-Berge, all of Ludwigshafen, and Karl-Heinz Meyer, Dackenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Rhineland, Germany

Filed Mar. 29, 1976, Ser. No. 671,385
Int. Cl.² G11B *21/10*
U.S. Cl. 360—135 **10 Claims**



1. A magnetic test disc having at least one test track with magnetic test signals recorded thereon, for testing disc drive apparatus by observing the frequency and amplitude of the reproduced test signals on an oscilloscope, said test signals being symmetrical with respect to said test track and comprising orientation signals and tracking-indicating signals, groups of tracking-indicating signals extending alternately on either side of the center line of the test track, and groups of orientation signals at least some of which have a visibly larger amplitude and frequency than the tracking-indicating signals and being arranged so as to split up the tracking-indicating signals into a plurality of groups.

4,084,202

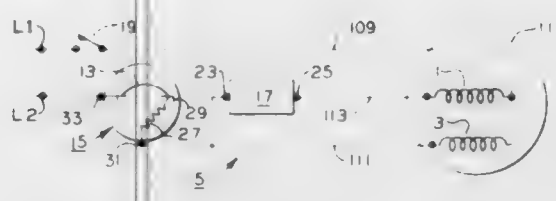
COMBINATION STARTER-PROTECTOR DEVICE, METHOD OF PROTECTING A DYNAMOELECTRIC MACHINE, AND CIRCUIT

Donald H. Stoll, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 508,457, Sep. 23, 1974, abandoned. This application Jun. 7, 1976, Ser. No. 693,409

Int. Cl.[2] H02H *7/08*

U.S. Cl. 361—24 **57 Claims**



27. A method of protecting auxiliary winding means and main winding means in a winding circuit of a dynamoelectric machine in the event of a current overload thereof comprising the steps of:

(a) providing in a housing means for controlling starting of the dynamoelectric machine and means for generating heat at least during the current overload respectively disposed in heat transfer relation with a pair of opposite sides of a bimetal switch actuator adapted for movement between a circuit opening position and a circuit closing position in the housing for respectively interrupting and making the winding circuit to both the auxiliary winding means and the main winding means and mounting with the housing means for connecting the starting controlling means in circuit relation with the auxiliary winding means and for supporting the starting controlling means closely adjacent one of the opposite sides of the bimetal switch actuator;

(b) actuating the bimetal switch actuator in response to at least the heat transferred thereto from the heat generating means upon the occurrence of the current overload to effect the movement of the bimetal switch actuator toward its circuit opening position; and

(c) transmitting heat from the starting controlling means to the bimetal switch actuator for generally maintaining the winding circuit effectively interrupted for at least a predetermined period, the starting controlling means being operable generally in response to current flow therethrough to increase its resistance generally as a function of its temperature for impeding the current flow therethrough to the auxiliary winding means generally at a preselected speed of the dynamoelectric machine.

4,084,203

GROUND FAULT RECEPTACLE

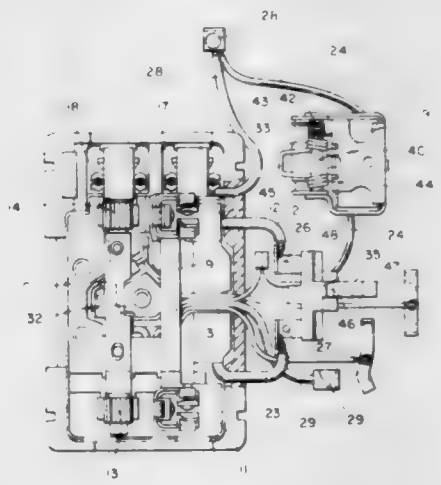
Robert E. Dietz, Cedar Rapids, and Darrell P. Ophaug, Marion, both of Iowa, assignors to Square D Company, Park Ridge, Ill.

Continuation of Ser. No. 567,655, Apr. 14, 1975, abandoned. This application Oct. 22, 1976, Ser. No. 734,796

Int. Cl.[2] H01H *75/04*

U.S. Cl. 361—45 **8 Claims**

1. A compact ground fault receptacle assembly comprising a unitary case having components mounted internally thereof, internal socket means in said case for receiving the plug of an electrical appliance, internal conductor means in said case leading from said socket means for connection to an external power source, including said external power source, internal breaker contact means in said case to interrupt said conductor means, internal contact separation means in said case electrically connected to and powered by said external power source, internal sensing means in said case electrically and magnetically connected to said conductor means to detect an abnormal ground condition therein and to produce an electrical signal on detection thereof, internal signal responsive switching means in said case electrically connected to said contact separation means and said external power source to normally prevent application of full voltage of said external power source to said contact separation means thus rendering said separation means normally inoperative, said signal responsive switching means being electrically connected to said sensing means and being responsive upon receipt of an abnormal ground condition signal to cause full voltage of said external power source to be applied to said contact separation means rendering it operative to separate said breaker contacts and interrupt said conductor means, said internal socket means, internal conductor means, internal breaker contact means, internal contact separation means, and internal signal responsive switching means being operably mounted wholly within said case of said compact ground fault receptacle assembly, including an over-center seating member mounted in said receptacle assembly, a reset button having a body portion being mounted for operable association therewith, said over-center seating member including projecting bead means facing opposite points on said body portion of said reset button, said projecting bead means being biased radially inwardly and being movable radially outwardly



under tension, a laterally projecting annular ring segment provided on said body portion of said reset button, said ring segment having a relatively broader tapered surface facing inwardly of said receptacle assembly and a relatively narrower tapered surface facing outwardly of said receptacle assembly, said tapered surfaces meeting at an annular apex, said ring segment being positioned on said body portion of said reset button whereby said annular apex thereof engages said projecting bead means as said reset button is urged outwardly by bias of said breaker contact means, said bead means being thereby spread apart under tension, and wherein said annular apex begins to slip past said tensioned bead means in an outwardly direction at the moment said internal breaker contact means is moved from a contact open position to a contact closed position, said tensioned bead means bearing against said broader tapered surface of said ring segment as said annular apex slips past in an outward direction causing said reset button to move rapidly in that portion of its stroke between contact open and contact closed positions, thereby preventing manipulation of said reset button to hold said contacts between completely open and completely closed positions.

4,084,204

AUTOMATIC RECYCLE CIRCUIT

Nelson Mortimer Jacobus, Jr., Kensington, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Jan. 27, 1977, Ser. No. 763,213

Int. Cl.[2] H02H *7/20*

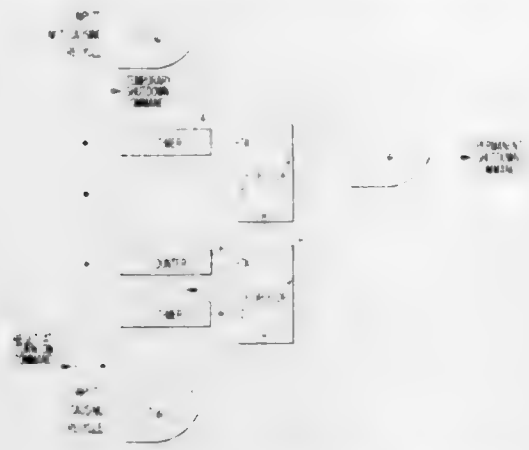
U.S. Cl. 361—72 **10 Claims**

1. In a process or apparatus of the type wherein process or equipment conditions are monitored to detect an abnormal condition, the detection of which causes a temporary shutdown followed by an automatic restart of the process or apparatus, the improvement comprising an automatic recycle circuit capable of permanently shutting down the process or

apparatus if the detected abnormal condition has a duration exceeding a first predetermined time period or abnormal conditions are detected a predetermined number of times within a second predetermined time period, said automatic recycle circuit comprising:

first means for receiving signals representing detected abnormal conditions and generating a temporary shut-down command,

first timing means responsive to said temporary shut-down command for comparing the duration of a detected abnormal condition with said first predetermined time period



and generating a first output signal when said duration is greater than said first predetermined time period,

second timing means responsive to said temporary shut-down command for counting the number of temporary shut-down commands generated by said first means within said second predetermined time period, said second timing means generating a second output signal when the number of detected temporary shut-down commands exceeds said predetermined number, and

second means for receiving said first and second output signals from said first and second timing means, respectively, and generating a permanent shut-down command.

4,084,205

PHASE MONITORING ARRANGEMENT FOR A THREE PHASE NETWORK SUPPLYING A D.C. MOTOR THROUGH A CONTROLLED CONVERTER

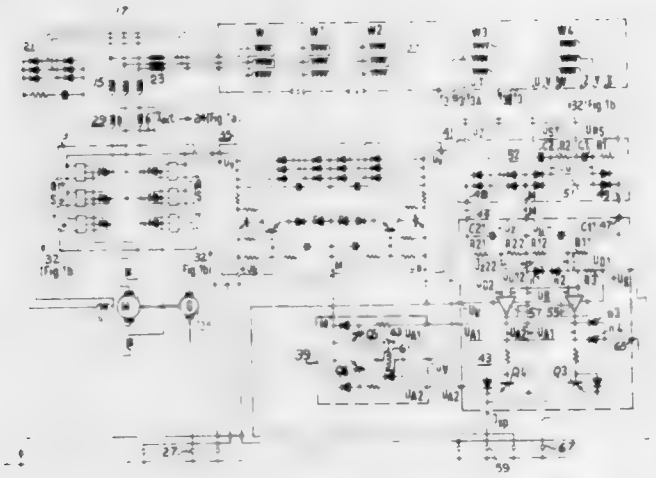
Ulrich Bohnert, Leerstetten, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 28, 1976, Ser. No. 727,694

Claims priority, application Germany, Sep. 29, 1975, 2543467

Int. Cl.[2] H02H *3/26*

U.S. Cl. 361—76 **9 Claims**



1. A phase monitoring arrangement for a three phase network supplying a controllable d.c. motor through a controlled converter having a three phase bridge circuit with a rectifier bridge supplying the field circuit of the motor, said controlled converter having a control circuit generating firing pulses therefor which receives a control input from a regulator circuit, with the regulator circuit, firing pulse control circuit and converter supplied with d.c. current from a power supply coupled to the line through a power line transformer, comprising:

(a) a discriminator coupled to the power line transformer for providing a smoothed monitoring voltage which is dependent on phase sequence and phase failures and a rectified and smoothed supplementary monitoring voltage which depends only on phase failures;

(b) an evaluating circuit having as inputs said monitoring and supplementary monitoring voltage and a constant reference voltage, said evaluating circuit providing first and second output signals if either said monitoring voltage or said supplementary monitoring voltage differ from said constant reference voltage by a predetermined amount;

(c) means coupling said first output signal as a blocking input to said firing pulse control circuit; and

(d) means coupling said second output signal as a control input to said regulator circuit to cause said regulator circuit to control said firing control circuit to the control limit of the converter.

4,084,206

PROTECTION CIRCUIT FOR SERIALLY CONNECTED THYRISTORS

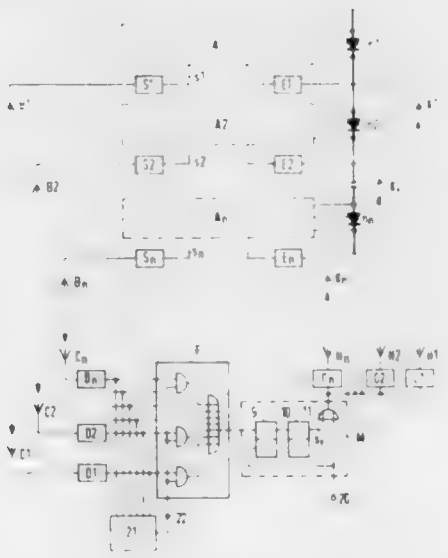
Karl-Friedrich Leowald, Weiher near Erlangen, and Jakob Schenk, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 2, 1976, Ser. No. 747,320

Claims priority, application Germany, Aug. 23, 1976, 2637868

Int. Cl.[2] H02H *7/10*

U.S. Cl. 361—90 **6 Claims**



1. A protection circuit arrangement for protecting each of a plurality of thyristors, said thyristors being connected in series and each having associated therewith a firing circuit which is energized via the anode-cathode voltage of its respective thyristor, said protection circuit comprising:

a plurality of first monitoring means, each of which first monitoring means is associated with and at the potential of a different one of said thyristors, and each of which first monitoring means generates a first switching signal when one of a first and second condition occurs, said first condition being when the current carried by the thyristor associated with that first monitoring means becomes zero and the second condition being when the voltage across the thyristor associated with that first monitoring means falls below a predetermined negative value;

a plurality of first potential-separating transmission means, each of which first transmission means transmits a different one of said first switching signals;

an evaluating means responsive to said transmitted first switching signals for generating at least one timing signal

of duration corresponding to a predetermined monitoring period, said evaluating means being at ground potential;

a plurality of second, potential separating transmission means, each of which second transmission means is associated with a different one of said thyristors and each of which second transmission means transmits a timing signal;

a plurality of second monitoring means, each of which second monitoring means is associated with and at the potential of a different one of said thyristors and each of which monitoring means generates a second switching signal when the voltage across its associated thyristor exceeds a predetermined positive value;

a plurality of logic circuit means each of which is adapted to feed a signal to the firing circuit associated with a different one of said thyristors when the second switching signal generated by the second monitoring means associated with that one thyristor appears during the timing signal transmitted by the second transmission means associated with that one thyristor.

4,084,207

ADJUSTABLE OVERVOLTAGE PROTECTED CIRCUIT FOR HIGH POWER THYRISTORS

Dante Edmond Piccone, Glenmoore, and Istvan Somos, Lansdowne, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Sep. 22, 1976, Ser. No. 725,619
Int. Cl.[2] H02H *3/20*
U.S. Cl. 361—91 **14 Claims**



1. An overvoltage responsive triggering circuit for a main high power thyristor comprising: a plurality of *n* auxiliary thyristors and an electric energy storing means connected in series circuit relation across said main thyristor, said auxiliary thyristors being poled to conduct forward current in the same direction as said main thyristor and having an aggregate forward breakdown voltage greater than an adjustable predetermined threshold magnitude, said threshold magnitude being greater than the aggregate forward breakdown voltage of said *n* auxiliary thyristors minus the forward breakdown voltage of one of said auxiliary thyristors, and secondary voltage breakdown means connected between the anode and another electrode of said one auxiliary thyristor and having a blocking voltage less than the forward breakdown voltage of said one auxiliary thyristor, whereby said triggering circuit becomes conductive in the breakdown mode at said threshold voltage magnitude.

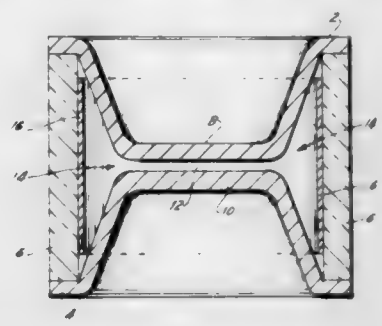
4,084,208

GAS-FILLED SURGE ARRESTORS

A. Bazarian, Colts Neck, and J. S. Bonnesen, Randolph, both of N.J., assignors to General Instrument Corporation, Clifton, N.J.

Filed Mar. 28, 1975, Ser. No. 562,835
Int. Cl.[2] 361 *129;* H02H *3/22*
U.S. Cl. 361—120 **11 Claims**

1. In a surge arrestor having two electrodes separated from each other by, and secured within an insulator tube having a substantially cylindrical interior cavity, said tube and electrodes defining a closed interior space, said electrodes comprising rear portions secured to said tube, intermediate portions extending toward one another, each of said intermediate portions having a continuously tapered surface substantially in the form of the surface of a conical section, such that the distance between the wall of said cavity and said surface varies along the length of said intermediate portion, and front portions laterally spaced from said tube and spaced from one another to define a gap therebetween, and a gas filling the space between said elctrodes within said tube, the improvement comprising;



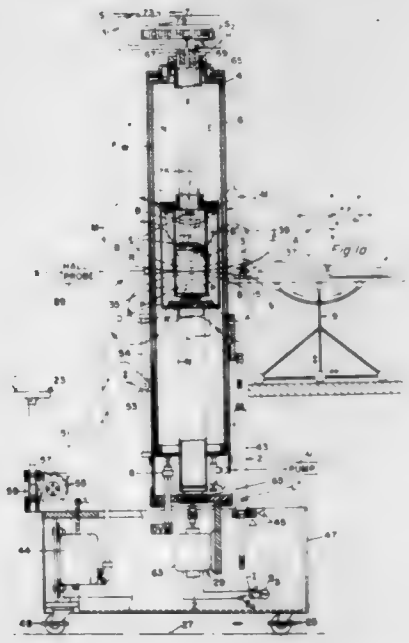
at least one conductor attached to the inner surface of said tube, completely spaced from said electrodes, and having axial edges exposed to said interior space adjacent said electrodes but relatively remote from said gap, wherein said at least one conductor is comprised of two circumferentially spaced conductors with each extending from most of the length of said tube and around a portion of the circumference of said tube.

4,084,209

ROTATING SUPERCONDUCTOR MAGNET FOR PRODUCING ROTATING LOBED MAGNETIC FIELD LINES

Sadek K. Hilal, Englewood Cliffs, N.J.; William B. Sampson, Bellport, N.Y., and Edward F. Leonard, Leonia, N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 21, 1976, Ser. No. 688,873
Int. Cl.[2] H01L *39/14;* H01F *7/22*
U.S. Cl. 361—141 **9 Claims**



1. A rotating superconductor magnet, comprising:

a. a cryostat;

b. a superconducting magnet in the cryostat having an iron collar for producing a four lobed magnetic field having oppositely directed adjacent field lines;

c. rotatable support means for selectively rotating the superconductor magnet in a first direction in a first plane at continuously variable frequencies in the cryostat; and

d. means for energizing the superconductor magnet with a persistent current to produce a persistent magnetic field to produce the four lobed magnetic field lines around the magnet that extend beyond its immediate vicinity, so that the magnet is selectively rotated at continuously variable frequencies to produce a rotating magnetic field having rotating field lines and lobes having opposite field line directions extending beyond the immediate vicinity of the magnet.

4,084,210

ELECTRICALLY INTEGRATED CIRCUIT PACKAGES

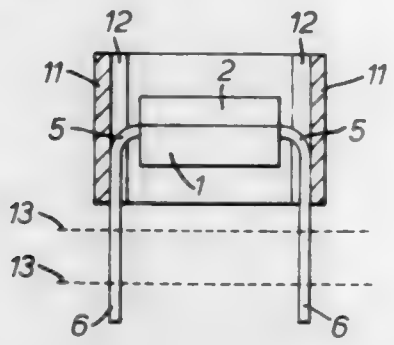
Nicholas Barnett Forrest, Keyworth, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Aug. 17, 1976, Ser. No. 715,106

Claims priority, application United Kingdom, Nov. 28, 1975, 48930/75

Int. Cl.[2] H05F *3/02*

U.S. Cl. 361—212 **9 Claims**



1. An electrical integrated circuit package protector for use in combination with a semiconductor package, said semiconductor package comprising an integrated circuit chip and soldering tags spaced at predetermined intervals around said integrated circuit chip, each of said soldering tags connected to said integrated circuit chip, said protector comprising a girdle, said girdle comprising a plurality of walls connected together to define an enclosed space for accommodating said semiconductor package, a plurality of recesses in said walls spaced apart at predetermined intervals corresponding to said predetermined intervals of the soldering tags, electrical contact means in each said recess and means for electrically connecting together each said electrical contact means such that on insertion of said semi-conductor package in said protector the soldering tags will be within said recesses and held at the same electrical potential.

4,084,211

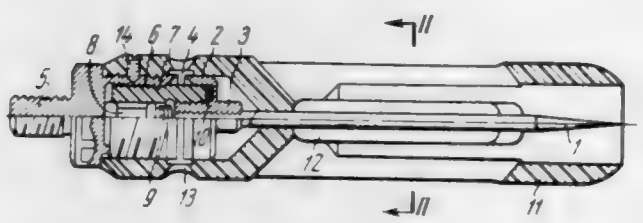
ELECTROSTATIC DISCHARGER WITH IONIZATION GAP

Grigory Gennadievich Okhotnikov, ulitsa Lomonosova, 4, kv. 16, and Ljubov Mikhailovna Troschilo, ulitsa Zhukovskogo, 18, kv. 80, both of Zhukovsky Moskovskoi oblasti, U.S.S.R.

Filed Sep. 1, 1976, Ser. No. 719,353

Int. Cl.[2] B64D *45/02*; H05F *3/00*

U.S. Cl. 361—222 **3 Claims**



1. An electrostatic discharger comprising: a corona electrode; a resistive element mounted coaxially with said corona electrode; an insulating bush, said corona electrode and said resistive element being secured in said insulating bush, said corona electrode extending outward from said insulating bush; a mount placed coaxially with said corona electrode and said resistive element, said mount enveloping said insulating bush at one end of the insulating bush, said mount being electrically connected to said corona electrode and said resistive element; and an annular electrode enveloping said insulating bush at the other end of said insulating bush, an ionization gap being defined between said annular electrode and said mount, said corona electrode being electrically connected to said annular electrode.

4,084,212

CORONA CHARGING UNIT FOR MICROFICHE READER/PRINTER

Emil Tiger, Highland Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 535,478, Dec. 23, 1974, which is a division of Ser. No. 414,064, Nov. 8, 1973, Pat. No. 3,899,248. This application Mar. 25, 1976, Ser. No. 670,472

Int. Cl.[2] H01T *19/00*

U.S. Cl. 361—230 **22 Claims**



1. A corona charging unit comprising:

a corona charging wire including a looped portion and first and second legs extending from said looped portion;

a first support formed from insulating material for supporting said looped portion and including an integral tension member for exerting a tension force against said looped portion in a direction opposite the extent of said legs;

a second support formed from insulating material for supporting the free ends of said legs;

an electrical contact on said second support for engaging said free ends of said legs; and

urging means for urging said free ends and said electrical contact into engagement.

4,084,213

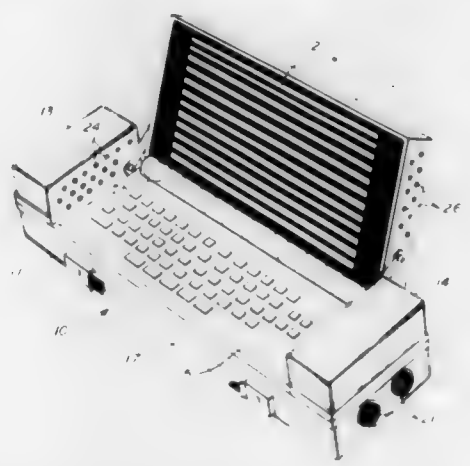
PORTABLE KEYBOARD/DISPLAY TERMINAL

Richard K. Kirchner, Bloomington; Nicholas Cleanthis Andreadakis, and William Norman Mayer, both of White Bear Lake, Minn., assignors to Modern Controls, Inc., Minneapolis, Minn.

Filed Feb. 22, 1977, Ser. No. 770,800

Int. Cl.[2] H02B *1/00*

U.S. Cl. 361—384 **10 Claims**



1. A portable electronic keyboard and display terminal for

self-contained housing of a visual display panel and alphanumeric keyboard, comprising:

a. a hinged case having a bottom portion and an openable cover, said bottom portion housing said keyboard and said cover housing said display panel;

b. a plurality of spaced apart circuit boards beneath said keyboard, said circuit boards having air flow paths therebetween and having a common air flow communication zone adjacent said cover hinge side of said case;

c. an air blower adjacent one end of said spaced apart circuit boards;

d. at least one spaced apart circuit board inside said cover relative to said visual display panel, forming an air flow channel therebetween; and

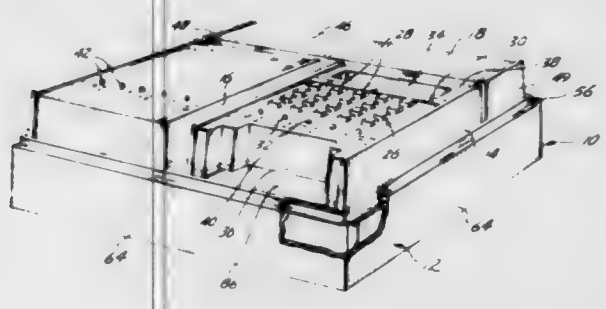
e. a flexible membrane having one end attached to said cover and another end attached to said bottom portion, said membrane extending along the hinged edge of said case to form an air flow communication path between said common air flow communication zone and said cover air flow channel.

4,084,214

MODULAR HOUSING FOR ELECTRONIC APPARATUS

Helmut Eppich, West Vancouver, Canada, assignor to Ebco Industries, Ltd., Richmond, Canada

Filed May 13, 1976, Ser. No. 686,243
Int. Cl.[2] H05K *1/04*
U.S. Cl. 361—394 **9 Claims**



1. A modular housing unit for the mounting of electronic apparatus comprising:

a base unit configured for containing electronic apparatus, said base unit including an upper surface defining at least one rectangular opening therein, each of said rectangular openings including first and second sidewalls located along oppositely disposed edges of each of said rectangular openings, said first and second sidewalls extending downwardly from said upper surface of said base unit, said first sidewall of each of said rectangular openings including a tabular projection extending from said first sidewall toward the central region of said rectangular opening, said tabular projection being substantially coplanar with said upper surface of said base unit, said second sidewalls of each of said rectangular openings including a ridge extending from said second sidewall toward the central region of said rectangular opening, each of said ridges being substantially parallel to said upper surface of said base unit, the ridge and tabular projection of each of said rectangular openings being dimensional to establish a predetermined distance between those boundaries thereof that are positioned most proximate to the central region of said rectangular opening; and

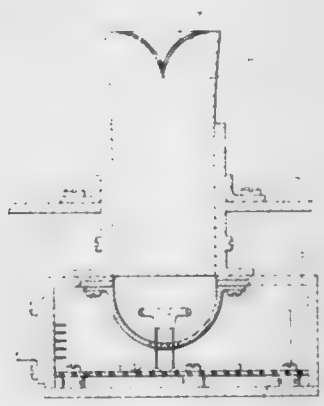
at least one module configured for containing electronic apparatus, each of said modules having two oppositely disposed sidewalls including a slot transversely positioned along each of said oppositely disposed sidewalls, the first one of said slots being dimensioned for engagement with said tabular projection of said rectangular opening of said base unit, the second one of said slots being dimensioned for engagement with said ridge of said rectangular opening of said base unit, the distance between the outer surfaces of said sidewalls of each of said modules being greater than said predetermined distance between said tabular projection and said ridge of each of said rectangular openings of said base unit by an amount sufficient to prevent insertion of one of said modules in one of said rectangular openings when said module is forced downwardly with said slots of said module sidewalls substantially parallel to said ridge and tabular projection of said rectangular opening of said base unit, said module being insertable within said base unit rectangular opening by engaging said first one of said slots in said module sidewall with said tabular projection of said base unit and exerting a force on that sidewall including said second one of said slots to cause said module to elastically deform and enter said base unit rectangular opening, said second slot of said module sidewall slots engaging with said ridge of rectangular opening when said force is removed from said module side wall, said tabular projection and said ridge subjecting said module to a compressive force exerted between said slotted sidewalls to securely retain said module within said rectangular opening.

4,084,215

STROBE LIGHT HAVING REDUCED ELECTROMAGNETIC RADIATION

John C. Willenbrock, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1977, Ser. No. 772,221
Int. Cl.[2] F21V *7/04;* **B64F** *1/20*
U.S. Cl. 362—32 **14 Claims**



1. A high intensity strobe light having reduced electromagnetic radiation comprising,

a source of light,

a reflector,

a light pipe for conducting light from said source of light to said reflector, and

a waveguide surrounding said light pipe and proportioned to attenuate radio frequency energy below the cut-off frequency of said waveguide.

4,084,216

SEWING MACHINE MAGNIFYING AND LIGHTING DEVICE

Homer R. Shonting, 1054 Eaglewood Rd., Apt. #2C, Annapolis, Md. 21403

Filed Jun. 22, 1976, Ser. No. 698,340
Int. Cl.[2] D05B *79/00*
U.S. Cl. 362—90 **8 Claims**

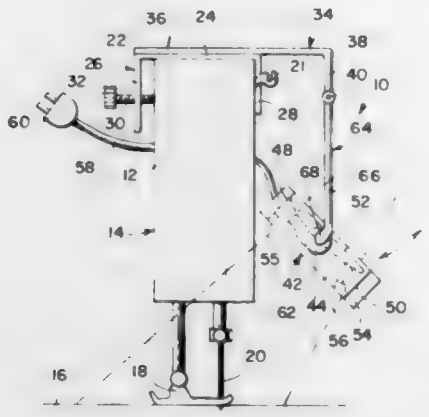
1. A magnifying device adapted to be mounted onto a forward upper head of a sewing machine for magnification of a sewing area on a base of said sewing machine, which comprises:

a. an adjustably positioned clamp member adapted to engage onto said head of said sewing machine,

b. a joining bar communicating with said clamp member,

c. a frame member,

d. a magnifying lens member disposed within said frame,
e. a pair of extension rods,
f. first means having an axis of rotation for rotatably joining each said extension rod to said frame including a pair of bearing block members mounted on said frame, each said bearing block receiving one of said extension rods therein,



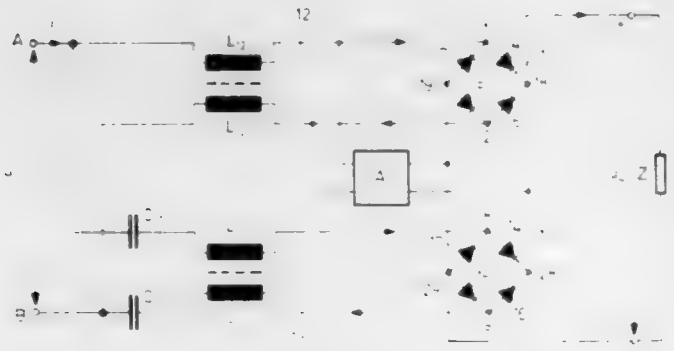
g. second means having an axis of rotation and positioned adjacent the upper head of said sewing machine for rotatably joining each said extension rod to said joining bar,
h. wherein said axes of rotation are substantially parallel to each other.

4,084,217

ALTERNATING-CURRENT FED POWER SUPPLY

Gerold Brandli, Aarau, and Max Dick, Ennetbaden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 19, 1977, Ser. No. 788,931
Int. Cl.[2] H02M *7/06*
U.S. Cl. 363—4 **6 Claims**



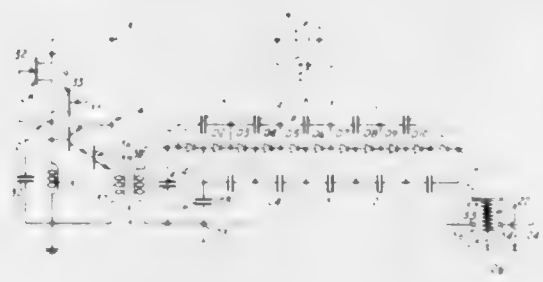
1. A.C. voltage fed power supply for D.C. gas-discharge lamps comprising:
full-wave rectifying means connected on the A.C. side to at least two phase-adjusting networks for forming mutually phase-shifted partial currents and connected together on the D.C. side to superimpose the rectified, phase-shifted partial currents, each phase-adjusting network being connected through the full-wave rectifying means to the same load impedance at the two D.C. voltage output terminals,
said phase-adjusting networks being purely reactive current paths, the reactance values being such that the effective values or the rectified values of the phase-shifted partial currents flowing therein to the full-wave rectifying means are equal to within ±20%,
two Gratz rectifier circuits serving as full-wave rectifying means and wherein the phase-adjusting networks are two reactance branches, each reactance branch being symmetric, reactance-wise, with respect to the associated Gratz rectifier circuit, one of said branches connects to the A.C. terminals of the first Gratz circuit and the other of said branches connects to the A.C. terminals of the second Gratz circuit, and the D.C. terminals of like polarity of the Gratz rectifier circuits are connected together to superimpose the phase-shifted partial currents and are each connected to a D.C. output terminal of the power supply; and,
wherein one said reactance branch has an inductance on each side of its associated Gratz rectifier circuit and the other said reactance branch has a series-connected capacitance and inductance on each side of its associated Gratz rectifier circuit and wherein the reactance values of the inductances in the same reactance branch are equal.

4,084,218

DC VOLTAGE CONVERTER AND SHOCK-TYPE HIGH VOLTAGE UTILIZATION

Frank M. Kenney, Littleton, Colo., assignor to U and I Company, Scottsbluff, Nebr.

Filed Jan. 13, 1976, Ser. No. 648,624
Int. Cl.[2] H02M *7/00*
U.S. Cl. 363—18 **13 Claims**



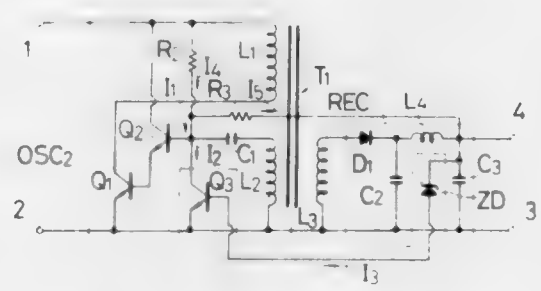
1. A DC voltage step-up converter for a voltage utilization device and the like comprising:
oscillator means including an inductor for converting the DC voltage of a battery to an oscillating voltage that goes positive and then negative in each cycle in relation to a zero reference;
transformer means coupled to said oscillator means by an impedance interface means coupled to said inductor providing a high impedance in parallel with said inductor that drives said transformer means for increasing said oscillating voltage to a higher oscillating voltage; and
a capacitor charging voltage step-up means coupled to said transformer means having an input terminal and an output terminal, said network means converting said higher oscillating voltage applied to said input terminal to an increased substantially DC voltage at said output terminal.

4,084,219

DC-DC CONVERTER

Masamichi Furukawa, Yokohama, and Yoshio Serikawa, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Mar. 23, 1977, Ser. No. 780,459
Claims priority, application Japan, Mar. 23, 1976, 51-31731
Int. Cl.[2] H02M *3/315*
U.S. Cl. 363—21 **3 Claims**



1. In a DC-DC converter comprising a blocking oscillator having input terminals for connection to a dc input source, an oscillating transistor, which oscillates when it is fed with a dc input from the input source, and an ac output, a rectifier converting the ac output of the blocking oscillator into a dc output at output terminals thereof, an output voltage controlling transistor controlling a base current to the oscillating transistor
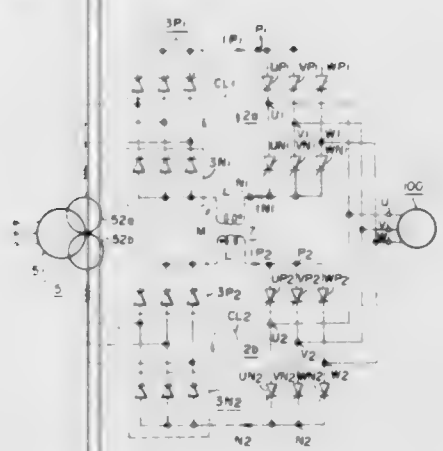
to thereby control the oscillation, and a constant voltage element connected between the base of the output voltage controlling transistor and an output terminal of the rectifier; the improvement which comprises a starting resistor connected between the base of said oscillating transistor and said input source; and a base current supplying resistor connected between the base of said oscillating transistor and said output terminal of said rectifier; whereby a base current to said oscillating transistor is fed from said input source through said starting resistor, to initiate oscillation, and from said rectifier output terminal through said supplying resistor during oscillation, to maintain the output voltage constant irrespective of fluctuations in the input voltage.

4,084,220

POWER CONVERTER

Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1977, Ser. No. 773,695
Claims priority, application Japan, Mar. 9, 1976, 51/25313
Int. Cl.[2] H02M *5/45*
U.S. Cl. 363—37 **19 Claims**



1. A power converter which comprises a plurality of pairs of electrical valve bridges having a plurality of electrical valves connected in each bridge between DC terminals and AC terminals connected to an AC load, and a plurality of controllable DC power means for feeding pulsating unidirectional current into the DC terminals of the electrical valve bridges or out of the DC terminals, wherein said controllable DC power means are electrically connected to each other, and a plurality of reactors magnetically coupled to each other and connected in unidirectional pulsating current lines whereby the unidirectional pulsating current is allotted to the plurality of pairs of electrical valve bridges for feeding to the AC load.

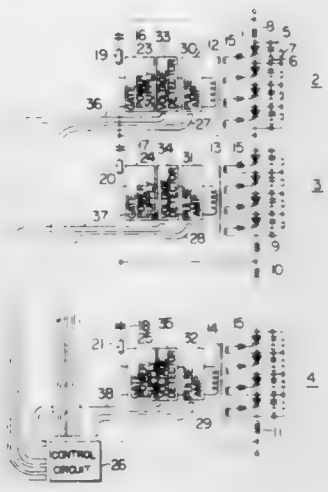
4,084,221

HIGH-VOLTAGE THYRISTOR CONVERTER

Fumio Ogata, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 23, 1976, Ser. No. 744,322
Claims priority, application Japan, Dec. 5, 1975, 50-144009
Int. Cl.[2] H02M *1/18*
U.S. Cl. 363—54 **13 Claims**

1. A high-voltage thyristor converter comprising high-voltage converter means and gate control means, said high-voltage converter means including a plurality of series-connected thyristor units, each of said thyristor units having a plurality of series-connected thyristors and a gate-drive power supply circuit connected between both extreme ends of said series-connected thyristors for supplying gate-drive power to said thyristors, said gate control means detecting whether or not an output voltage of said gate-drive power supply circuit in at least one of said thyristor units is higher than a predetermined value and transmitting a gate signal simultaneously to all of said thyristors only when said detected output voltage of said power supply circuit is higher than said predetermined value.

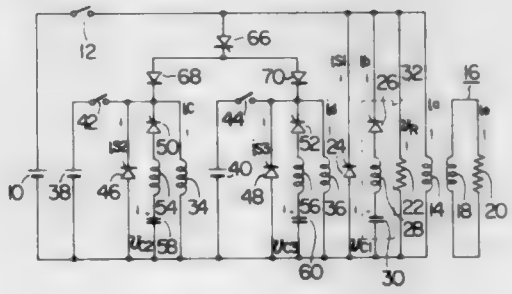


4,084,222

HIGH-VOLTAGE POWER SUPPLY DEVICE

Norikazu Tokunaga, and Kohei Yabuno, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 28, 1976, Ser. No. 727,692
Claims priority, application Japan, Oct. 3, 1975, 50-118878
Int. Cl.[2] H02M *7/00*
U.S. Cl. 363—60 **10 Claims**



1. A high-voltage power supply device comprising first direct current supply means, a first reactor connected to said first direct current supply means for accumulating energy therefrom, a resistor connected in parallel with said first reactor, first switching means for interrupting the flow of direct current supplied to said first reactor, a load circuit coupled magnetically to said first reactor, means including at least one second reactor connected in parallel with said first reactor for supplying to said load circuit the energy accumulating therein after the energy accumulating in said first reactor has been supplied to said load circuit, second direct current supply means for supplying direct current to said second reactor, second switching means for interrupting the flow of direct current supplied to said second reactor, third switching means connected between said first reactor and said second reactor to be turned off when the current is supplied to said first reactor from said first direct current supply means and turned on when the current is supplied to said first reactor from said second reactor, and a diode connected between said third switching means and said second reactor.

4,084,223

CONTROL UNIT

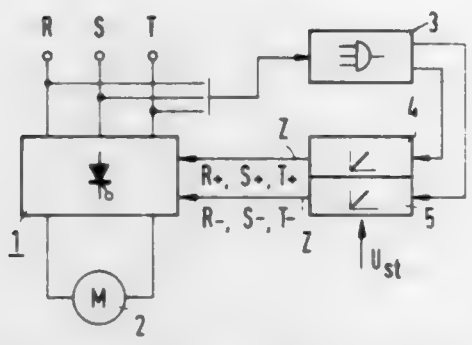
Hans Gross, Neunkirchen a. Brand, Germany, and Eugenio Berti, Milan, Italy, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 10, 1976, Ser. No. 684,499

Claims priority, application Germany, Jun. 4, 1975, 2524869

Int. Cl.[2] H02M *7/155*

U.S. Cl. 363—129 **3 Claims**



1. A control unit for controlling the operation of thyristors of a converter, said thyristors being adapted to be responsive to a three-phase network supplying three-phase voltages, the control unit comprising:

a first integrator for providing a sawtooth voltage for use in control of the thyristors associated with the positive half-waves of said phase voltages;

a second integrator for providing a sawtooth voltage for use in control of the thyristors associated with the negative half-waves of said phase voltages;

and evaluation logic circuit means responsive to the polarities and zero crossings of the phase voltages for controlling the integration performed by each of said integrators during each of the half-waves of a particular phase voltage associated with that integrator so that the integration starts at a point determined by the zero crossing of one of the phase voltages other than said particular phase voltage and by the polarities of the phase voltages other than said one phase voltage and ends at a point determined by the zero crossing of said particular phase voltage and the polarities of the phase voltages other than said particular phase voltage.

4,084,224

SYSTEM OF CONTROLLING PROCEDURE EXECUTION USING PROCESS CONTROL BLOCKS

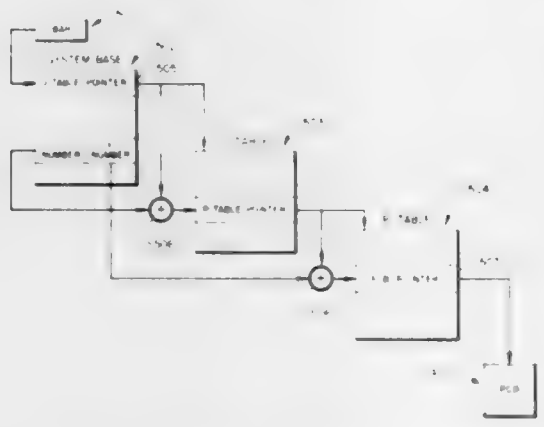
Marc Appell, Paris; John J. Bradley, Garches, both of France, and Benjamin S. Franklin, Cambridge, Mass., assignors to Compagnie Honeywell Bull, Paris, France

Filed Dec. 2, 1974, Ser. No. 529,018

Claims priority, application France, Nov. 30, 1973, 73 42690

Int. Cl.[2] G06F *9/18*

U.S. Cl. 364—200 **10 Claims**



1. In a multi-program computer system for automatically executing a series of instructions, said computer system comprising a plurality of data processing resources including at least one central processing unit (CPU), at least one main memory for storing a plurality of procedures and a plurality of associated process control blocks, and at least one peripheral unit, said computer system for executing said plurality of procedures, each procedure being a predetermined series of instructions, said procedures being in any one of a plurality of states, each of said plurality of procedures being associated with a maximum ring number (i.e. minimum level of privilege) each procedure being further associated with at least one process control block, said computer system further including a dispatcher for determining the state of said procedures and assigning said resources to said selected ones of said procedures, at least a first one of said procedures being in a running state on said CPU, said running state being the state of said first one of said procedures in relation to the computer system wherein the CPU and data processing resources are assigned to said first one procedure by said dispatcher, at least a second one of said procedures being a ready procedure which is in a ready state, said ready state being the state of said ready procedures in relation to said data processing system which is ready for the ordered execution of a second predetermind series of instructions comprising said ready procedure and which ready procedure can assume said running state whenever the data processing resources such as the CPU, main memory and peripheral units which are necessary to the ordered execution of said second predetermined series of instructions comprising said ready procedure are assigned to said ready procedure by said dispatcher, at least a third one of said procedures being a wait procedure which is in the wait state, said wait state being the state of said wait procedure in relation to said computer system which is not ready for the ordered execution of a third predetermined series of instructions comprising said wait procedure and is awaiting the occurrence of an event to be responded to by said wait procedure, and wherein said wait procedure cannot assume the running state even if said data processing resources were made available to said wait procedure by said dispatcher, at least a fourth one of said procedures being a suspended procedure which is in the suspended state, said suspended state being the state of said suspended procedure in relation to said computer system which is not ready for the ordered execution of a fourth predetermined series of instructions comprising said suspended procedure is not awaiting the occurrence of an event which must be responded to by said suspended procedure, each of said procedures further having a procedure name by which each procedure is identified, said main memory further including pushdown stack structures for storing a plurality of coded signals indicative of information stored in groups in said stack structures, said stack structures being accessed when said computer system enters an interrupt mode, said stack structures having a top and bottom of the stack and being associated with a T register for storing stack-coded signals for indicating the top of the stack, and wherein the last group of information stored in said stack structure is stored at the top of the stack indicated by said T register, said groups of information being accessed in response to said T register from the top of the stack thus providing a last-in-first-out (LIFO) access to information, each of said stacks being associated with an address spaced bounded by a stack segment having adjustable bounds and each of said stack segments having a predetermined level of privilege (i.e. ring number) that is required for access to said stack segment by any of said procedures, a virtual processor for determining the location of said stack segments comprising:

(a) first means responsive to said dispatcher and one of said process control blocks and associated with a selected one of said procedures for storing coded first signals for indicating the state of said selected one of said procedures;

(b) second means, responsive to said first means for storing second coded signals for indicating a selected name and address of said selected one of said procedures associated with said first means;

(c) third means addressed by said second means for storing

third coded signals for indicating a first predetermined portion of the address of said first means;

(d) fourth means addressed by said second means for storing third coded signals for indicating a second predetermined portion of the address of said first means;

(e) fifth means, responsive to said third and fourth means, for combining said third and fourth coded signals of said first and second predetermined portions of the address of said first means, whereby an absolute address of said first means is obtained; and,

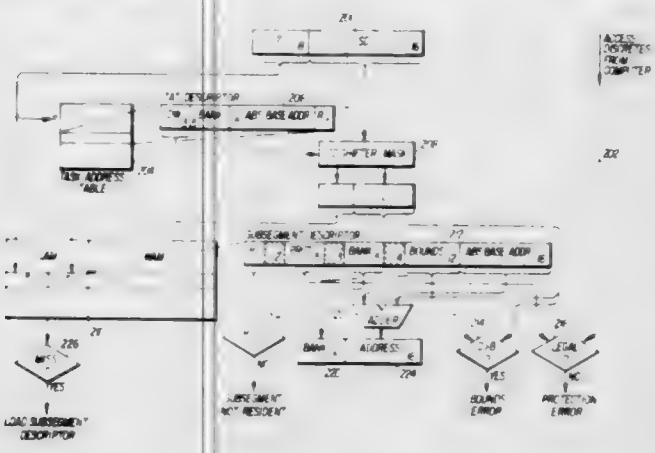
(f) stack base work means in said first means addressed by said fifth means each stack base word means associated with a predetermined one of said stack segments, each of said stack base word means for storing fifth coded signals for indicating the segmented address of the first byte of its associated stack segment, and for thereafter accessing said stack segment.

4,084,225

VIRTUAL ADDRESS TRANSLATOR

Larry Don Anderson, Minneapolis; Donald Bruce Bennett, Burnsville, and Leo John Slechta, Jr., Minneapolis, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sep. 24, 1976, Ser. No. 726,703
Int. Cl.[2] G06F *13/00, 9/00*
U.S. Cl. 364—200 **10 Claims**



1. In a virtual addressing system having a central processor, a main memory having addressable word locations, and a virtual address translator for translating virtual addresses generated by said central processor into absolute memory addresses for addressing said main memory, the improvement wherein:

said central processor includes,

first means for generating a virtual address for each memory reference, said virtual address having a task name field, a subsegment number, and a deflection field;

second means for generating a first signal indicating the virtual address is for a read reference to said main memory and a second signal indicating the virtual address is for a write reference to said main memory; and,

third means for generating a third signal indicating the virtual address is for an instruction reference to said main memory and a fourth signal indicating the virtual address is for an operand reference to said main memory;

and said virtual address translator includes,

associative memory means having a plurality of cells each storing a tag and an associated subsegment descriptor each subsegment descriptor including an absolute base address, a bounds field defining the limiting address of the subsegment to which it relates, and a plurality of privilege bits defining permitted memory references utilizing the subsegment descriptor;

means for applying the task name and subsegment number of said virtual address to said associative memory means as a search tag word, said associative memory means including means for reading out the subsegment descriptor associated with a tag matching said search tag word;

means combining the absolute base address read from said associative memory means with the deflection field of said virtual address to obtain an absolute memory address;

means for addressing said main memory with said absolute memory address to transfer a word between said central processor and said main memory;

first comparison means for comparing the privilege bits of a subsegment descriptor read from said associative memory means with said first, second, third and fourth signals to determine if the memory reference defined by said first, second, third and fourth signals is a permitted reference as defined by the privilege bits of the subsegment descriptor read from said associative memory means;

second comparison means for comparing the bounds field of a subsegment descriptor read from said associative memory means with the deflection field of said virtual address; and,

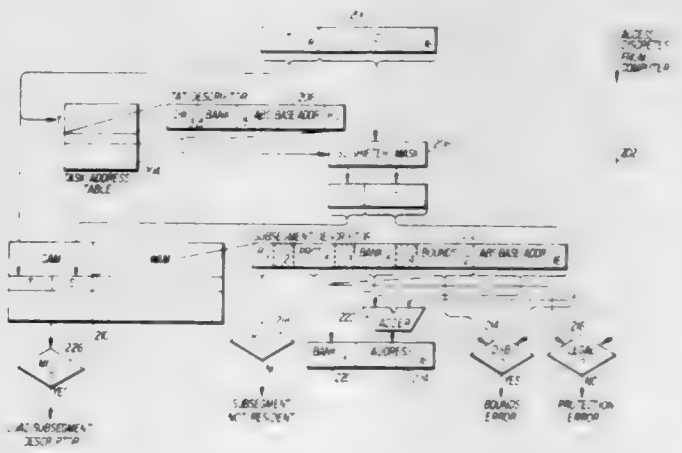
means responsive to said first and second comparison means for inhibiting the transfer of said word between the central processor and the main memory when said first comparison means determines that the memory reference defined by said first, second, third and fourth signals is not one of said permitted memory references, or when said second comparison means determines that said deflection field is greater than said bounds field.

4,084,226

VIRTUAL ADDRESS TRANSLATOR

Larry Don Anderson, Minneapolis; Thomas Ormond Wolff, Fridley, and Leo John Slechta, Jr., Minneapolis, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sep. 24, 1976, Ser. No. 726,701
Int. Cl.[2] G06F *9/20, 13/00*
U.S. Cl. 364—200 **15 Claims**



1. In a virtual addressing system including a central processor and a virtual address translator for translating virtual addresses to absolute memory addresses, the improvement comprising:

means in said central processor for generating a virtual address having a task name field, a subsegment field and a deflection field;

said virtual address translator including,

an associative memory means having a plurality of addressable cells, each cell storing a task name, a subsegment field and a subsegment descriptor including an absolute base address field;

means responsive to said central processor for searching said associative memory means with a tag word comprising said task name field and the subsegment field of a virtual address to read out one of said subsegment descriptors; and,

means responsive to said central processor and said associative memory means for adding the deflection field of

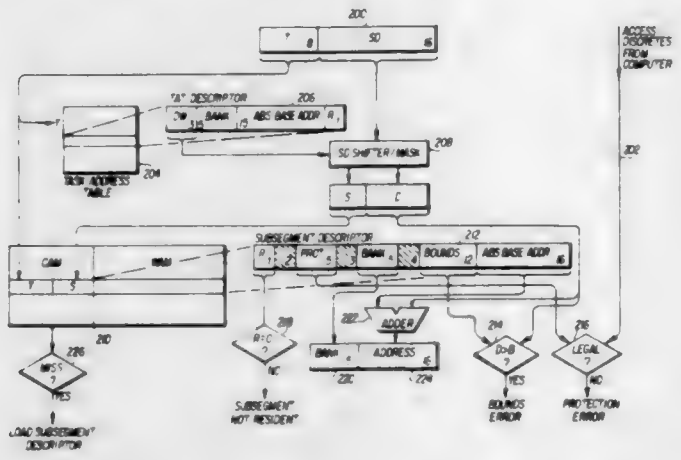
said virtual address to the absolute base address field read from the associative memory means to obtain an absolute memory address.

4,084,227

VIRTUAL ADDRESS TRANSLATOR

Donald Bruce Bennett, Burnsville, and Leo John Slechta, Jr., Minneapolis, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sep. 24, 1976, Ser. No. 726,702
Int. Cl.[2] G06F *9/20, 13/00*
U.S. Cl. 364—200 **8 Claims**



7. In a virtual address translator for translating a virtual address having a task name, subsegment number, and deflection field, said virtual address translator including an associative memory means having a plurality of cells each storing a subsegment descriptor and a tag word, means for searching said associative memory means with a search tag, said search tag comprising the task name and subsegment number of said virtual address, to read a subsegment descriptor from a cell whose tag word matches said search tag, and means combining a portion of said subsegment descriptor with said deflection field from said virtual address to obtain an absolute memory address, the improvement comprising performance monitor means, said performance monitor means including:

storage means storing a plurality of hit counts at a plurality of addressable storage locations, there being one hit count associated with each of said cells with each hit count representing the number of times said associative memory means has been searched with a search tag matching the tag word of the cell with which said hit count is associated;

means producing a match address each time said associative memory means is searched with a search tag matching one of said tag words;

means responsive to said match address for reading a hit count from said storage means;

means connected to said storage means for incrementing said hit count read from said storage means;

means for returning said incremented hit count to said storage means at the storage location from which said hit count was read;

detecting means for detecting the absence of a match between a search tag and any tag word in said associative memory;

means responsive to said detecting means for loading a new subsegment descriptor and its tag word into said associative memory means while flushing an old subsegment descriptor and its tag word therefrom, said means responsive to said detecting means including means producing the address of the cell into which said new subsegment descriptor is loaded;

means responsive to said address of the cell into which the new subsegment descriptor is entered for clearing the associated hit count from said storage means;

means generating a miss message containing data relating to the flushed subsegment descriptor;

a performance monitor processor; and,

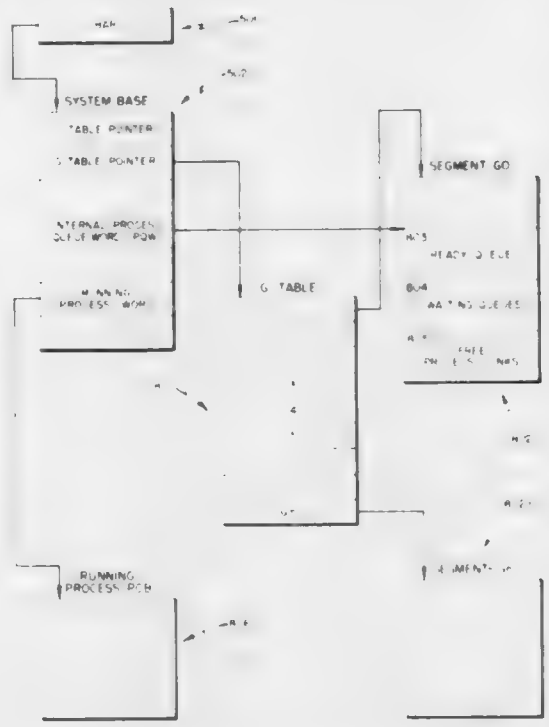
means transferring said miss message to said performance monitor processor.

4,084,228

PROCESS MANAGEMENT STRUCTURES AND HARDWARE/FIRMWARE CONTROL

Patrick Dufond, Paris; Jean-Claude Cassonnet, Conflans-Ste-Honorine; Jean-Louis Bogaert, Clamart; Philippe-Hubert de Rivet, Paris; John J. Bradley, Garches, all of France, and Benjamin S. Franklin, Cambridge, Mass., assignors to Compagnie Honeywell Bull, Paris, France

Filed Dec. 2, 1974, Ser. No. 529,012
Claims priority, application France, Nov. 30, 1973, 73 42693
Int. Cl.[2] G06F *15/16, 9/18*
U.S. Cl. 364—200 **33 Claims**



1. In a multiprogramming computer system CPU, communicating with said main memory and said registers said multiprogramming computer system including a plurality of processes stored in said main memory, and a plurality of queues also stored in said main memory, (i.e. a process being and ordered series of instructions), each of said plurality of said processes having a predetermined priority number with respect to others of said processes and wherein a selected one of said processes is running (i.e. in control of said CPU), with selected others of said plurality of processes being in a ready state (i.e. in condition to obtain control of said CPU) and with information relative to said ready processes being stored in a ready-queue of said plurality of queues, each of said queues located at a starting location in said main memory designated as a queue head the head queue of said ready queue identifying a first process of said plurality of processes, on a basis of the priority number and FIFO arrangement, first in line for control of said CPU, a management unit for resolving priority between the running process and a process activated for CPU utilization comprising:

(a) a plurality of first means, predetermined ones being associated with predetermined ones of said processes (i.e. one each of said first means being associated with one each of said processes), each of said first means for storing signals representing the priority number to its associated process for indicating priority for control of said CPU in relation to other processes in contention for said CPU;

(b) second means for storing signals representing an address location of said ready process first-in-line for control of said CPU;

(c) means responsive to said second means for loading one of said registers with said address location;

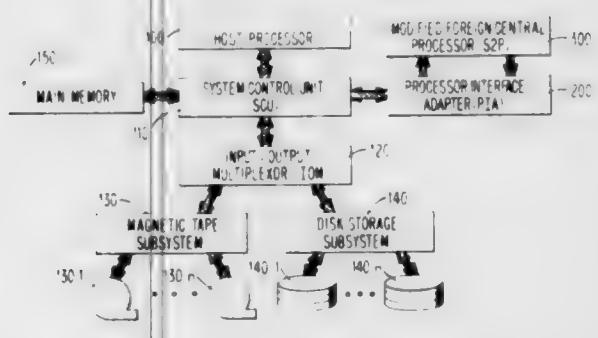
(d) third means in said second means for storing signals representing the address of the head of said ready-queue.
(e) means responsive to said third means for addressing said ready-queue;
(f) fourth means in said head of said ready-queue for storing signals representing the priority number of said first process first-in-line for control of said CPU; and
(g) fifth means communicating with said first, second, third and fourth means for comparing the signals representing the priority number of said running process with the signals representing the priority number of said first process first-in-line for control of said CPU whereby the higher priority between said running process and said first process is determined.

4,084,229

CONTROL STORE SYSTEM AND METHOD FOR STORING SELECTIVELY MICROINSTRUCTIONS AND SCRATCHPAD INFORMATION

Donald R. Taylor, Framingham, and Arthur A. Parmet, Waltham, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 29, 1975, Ser. No. 644,777
Int. Cl.[2] G06F *9/16, 13/00*
U.S. Cl. 364—200 **25 Claims**



1. A data processing system comprising a main store, said main store having a plurality of storage locations for storing data and commands of at least one program and a microprogrammed processing unit operatively coupled to said main store, said microprogrammed processing unit comprising:

a cycled addressable control store including a plurality of storage locations for storing microinstruction words of at least one microprogram referenced during the execution of one of said commands, each of said microinstruction words including a command code portion, a group of said plurality of storage locations storing words coded for reserving said locations for use as scratchpad storage and at least one of said microinstructions words being of a first type having a command code portion coded to specify the writing of data into said control store;

input means coupled to said main store and to said control store for receiving data being manipulated by said microprogrammed processing unit and fetched from said main store for storage in said control store;

an address register coupled to said control store for storing an address for referencing said plurality of storage locations;

an output register coupled to said control store for storing at least said command code portion of each said microinstruction word read out from each of said storage locations; and,

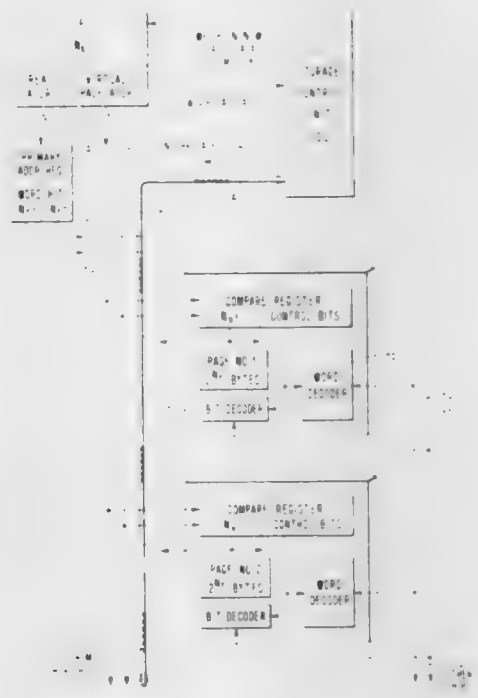
decoder circuit means coupled to said output register and to said address register, said decoder circuit means being conditioned by said command code portion to generate a plurality of control signals for directing the operation of said microprogrammed processing unit, said decoder circuit means including first circuit means responsive to said one of said microinstruction words to generate signals for loading an address specifying a scratchpad location into said address register and for conditioning said control store to write said data from said input means into said scratchpad location.

4,084,230

HYBRID SEMICONDUCTOR MEMORY WITH ON-CHIP ASSOCIATIVE PAGE ADDRESSING, PAGE REPLACEMENT AND CONTROL

Richard Edward Matick, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1976, Ser. No. 746,033
Int. Cl.[2] G06F *13/00*; G11C *15/04*
U.S. Cl. 364—200 **36 Claims**



1. An associative page addressing system for providing virtual paged stores, comprising:

a plurality of integrated circuit chips, each said chip containing the storage cells for data, at least one associative circuit including a virtual page address register for receiving and storing the virtual address bits assigned to each page located on one or more chips, and means for comparing a stored virtual address with an interrogate virtual address from a CPU and providing a direct page enable output upon a match thereof;

address decoder means connected to receive said page enable output and locate data addressed in said storage cells; and

CPU means including a virtual page address register and a real address register, said virtual page address register of said CPU means being connected to said virtual address register on each chip for interrogating said chips when a page request is made, said real address register storing the real address bits which are applied to said address decoder means for selecting a byte of data from said storage cells in the chips; whereby a matched virtual page address produces an enable output from said comparing means and directly enables the selected chip to be accessed at those locations addressed by said real address register.

4,084,231

SYSTEM FOR FACILITATING THE COPYING BACK OF DATA IN DISC AND TAPE UNITS OF A MEMORY HIERARCHIAL SYSTEM

Anthony J. Capozzi, Binghamton; Vincent A. Cordi, Vestal, and Bruce A. Edson, Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

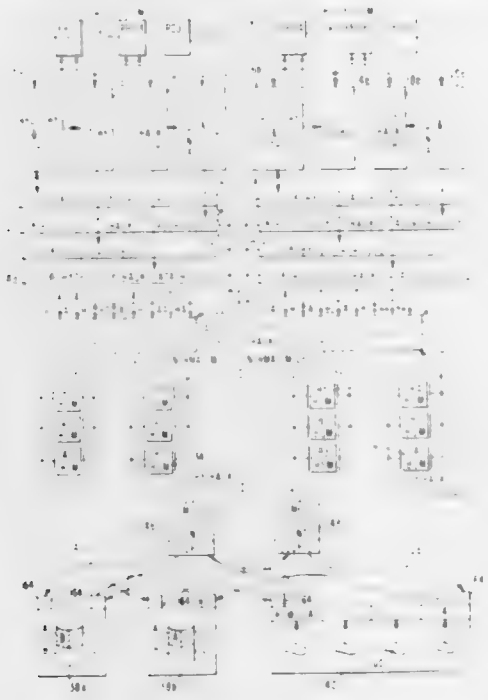
Filed Dec. 18, 1975, Ser. No. 642,034
Int. Cl.[2] G06F *13/08*
U.S. Cl. 364—200 **5 Claims**

1. In a hierarchial memory system made up of a plurality of

levels in the hierarchy including a lowest level containing a tape system and a next to lowest level containing disc units, each level with its own data store having a plurality of storage locations for storing data at that level in the hierarchy, an improvement in the means of copying back by a copy back order, into the disc units and tape system of the next to lowest and the lowest levels of the hierarchy, changes of addition or modification made in data stored in the hierarchy by instruction from a processing unit compressing:

a plurality of said disc units in the next to lowest level each with a plurality of actuators each accessing an area of the disc unit, said actuators each being accessible for operation through a plurality of stations,

an archival tape system on the lowest level containing a plurality of tapes said archival system having a plurality of



stations each capable of reading or writing data in all said tapes in said archival tape system,

two independently operating loops, one loop joining in series one of the plurality of stations in each of the disc units and the tape system and the other loop forming in series a different one of the plurality of stations in each of the disc units and the tape system,

separate powering means for powering the two loops independently of one another, and

copy back area means in each of two separate ones of said plurality of said disc units, each said copy back area means for containing changes in data stored only in disc units other than the one containing the particular copy back area means whereby loss of one of the powering means does not prevent copying back of data to the tape and disc units using the loop with the operating power supply.

4,084,232

POWER CONFIDENCE SYSTEM

John M. Woods, Glendale, and Bruce C. Keene, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

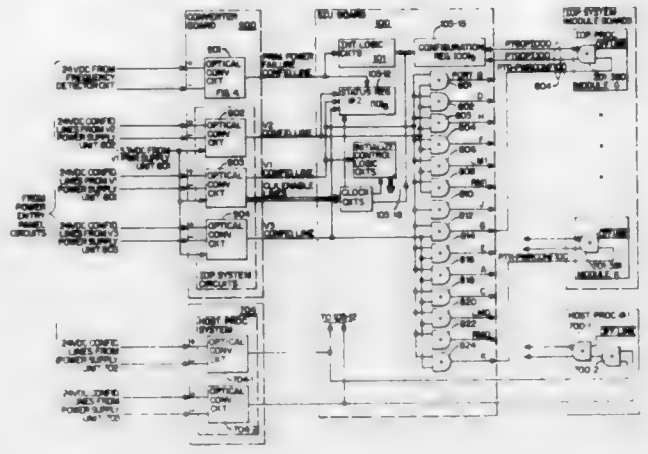
Filed Feb. 24, 1977, Ser. No. 771,606

Int. Cl.[2] **G06F** *11/06;* **G08B** *29/00;* **G05B** *13/02;* **H02H** *7/00*

U.S. Cl. 364—200 **36 Claims**

1. A data processing system including a plurality of modules constructed of high speed low level circuits mounted on a number of circuit boards, said plurality of modules including a plurality of processing unit modules, a system interface unit having a plurality of interface ports, each port being connected to a different one of said modules, said system interface unit being constructed of high speed low voltage circuits mounted on another circuit board and a plurality of regulated power supply units for powering said high speed low voltage level circuits of different ones of said circuit boards and each including means for generating an initial power confidence signal and reference potential signal, said system further including a power confidence system comprising:

a plurality of optically coupled isolator converter circuits, each having an input circuit coupled to receive said initial power confidence signal and reference potential signal from a different one of said regulated power supply units, and an output circuit connected to said input circuit, said converter circuit converting said initial power confidence signal into a noise free ground isolated low voltage logical



level power confidence signal compatible with logic voltage levels and reference potentials of said high speed low voltage level circuits;

a plurality of registers included in said system interface unit, a first one of said registers being connected to said plurality of optically coupled isolator converter circuits, said first register being conditioned by said low voltage power confidence signals to store coded signals individually designating the confidence status of each of said plurality of power supply units for reference by any one of said plurality of processing unit modules.

4,084,233

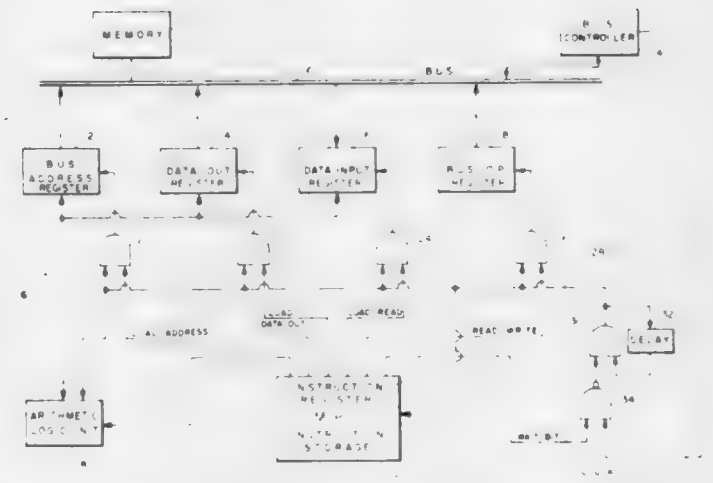
MICROCOMPUTER APPARATUS

Robert J. Handly, and Robert H. Douglas, both of Phoenix, Ariz., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed May 25, 1976, Ser. No. 689,822

Int. Cl.[2] **G06F** *9/00;* **H03K** *3/26, 19/20, 5/13*

U.S. Cl. 364—200 **7 Claims**



1. In a computer system, a processing unit including,

a plurality of functional components,

a microprogram control unit,

said microprogram control unit including storage means for storing operational instructions for said processing unit and means to issue said operational instructions in a desired sequence, said plurality of functional components being controlled by said microprogram control unit,

clock means for clocking the operation of said components and said microprogram control unit, and

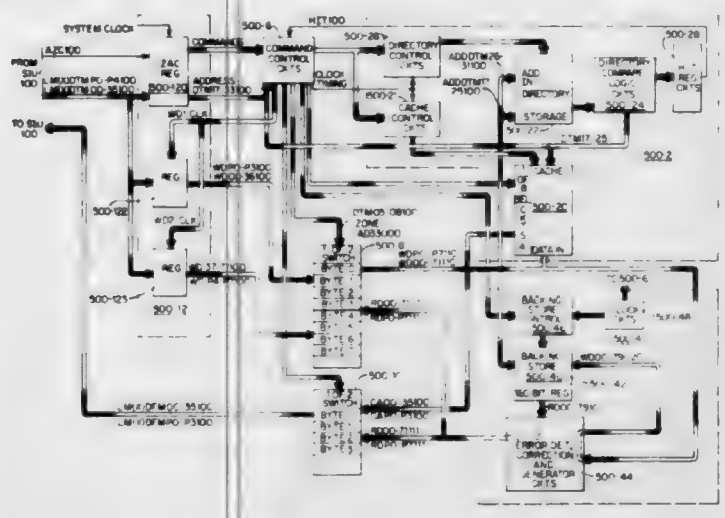
means responsive to a first and a second control signal for interrupting the operation of said clock means.

4,084,234

CACHE WRITE CAPACITY

Jaime Calle, Glendale, and Lawrence W. Chelberg, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 17, 1977, Ser. No. 769,617
Int. Cl.[2] G06F *13/06*
U.S. Cl. 364—200 **27 Claims**



1. An input/output data processing system for controlling input/output operations involving data transfers between a plurality of modules and a plurality of input/output devices, said system comprising:

system interface means having a plurality of ports;

said plurality of modules connected to a different one of said plurality of ports, said modules including at least one memory module and a plurality of command modules, each of said command modules including:

command generating means for generating memory commands, a first type of memory command including an address designating the location in said memory module where data accompanying said memory command is to be stored; and,

said one memory module including:

a cache store operatively connected to said one of said ports for storing blocks of information words in response to said memory commands;

a backing store operatively connected to said one of said ports for storing information words, said backing store including a plurality of word locations, each number of said plurality of word locations defining a block;

control circuit means connected to said cache store and to said backing store for controlling the operation of said cache store and backing store, said control circuit means including:

input register means connected to said one port for receiving said memory commands from said plurality of command modules;

command decode circuit means connected to said input register means for decoding each of said first type of memory commands and generating signals for initiating a memory cycle of operation simultaneously in said backing store and said cache store;

input data switching means connected to said one of said interface ports, said switching means including first input means for receiving said data accompanying said first type of memory command, second input means operatively connected to said backing store for receiving words read out during a cycle of operation in response to each said first type of command and output means coupled to said cache store and said backing store, said data switching means applying to said output means the updated data resulting from merging said data accompanying each of said first type command with said words read out from said backing store during said memory cycle of operation;

a directory store including a plurality of word locations corresponding in number to the number of blocks in said cache store, each word location for storing a block address designating where a particular block of information is stored in said cache store;

comparison means connected to said directory store and to said input register means for comparing said address of said memory command with the block address read out from said directory store in response to said memory command, said comparison means generating an output compare signal indicative of a true address comparison;

hit control means connected to said comparison means and said command decode means, said hit control means generating a hit signal in response to said output compare signal for indicating when the block of information words specified by said first type of command is stored in said cache store; and,

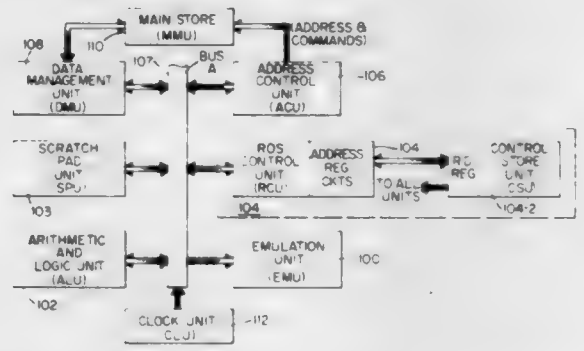
said command decode circuit means when conditioned by said hit signal being operative in response to said each first type of memory command generating control signals for enabling said cache store to write at the same address said updated data thereby facilitating fast access to valid current information within said cache store.

4,084,235

EMULATION APPARATUS

Allen C. Hirtle, Needham, and David B. O'Keefe, Tyngsboro, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 14, 1975, Ser. No. 567,981
Int. Cl.[2] G06F *15/20, 1/00, 9/16, 13/00*
U.S. Cl. 364—200 **26 Claims**



1. A data processing system comprising:

a memory for storing in a first segment instructions of at least one system program, each instruction including an op code, storing in another segment control information including a control mask word, said control mask word having a plurality of bits, each bit being coded to designate the presence of a different one of a number of capabilities including a number of operational options includable within any one of a number of different models of a series of target systems each having a similar architectural structure; and,

processing means for processing instructions of said program received from said memory, said processing means including:

multibit position storage means for storing bit signals representative of said control mask word;

data manipulation means for manipulating operands specified by different ones of said instructions received from said memory to perform those operations specified by the opcodes of said different ones of said instructions;

op code decode means for receiving the op code of each instruction for decoding; and,

means for selectively connecting different bit positions of

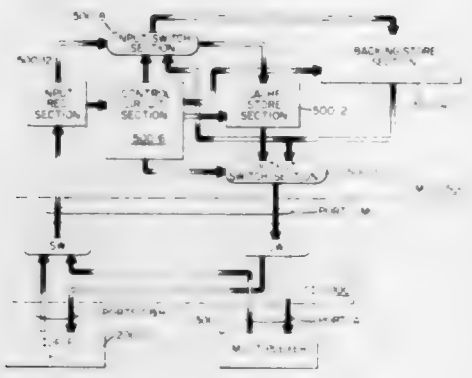
said storage means to said data manipulation means and to said op code decode means, said processing means being conditioned by said means to execute only those target system instructions executable by a particular model of said series of systems having the capabilities specified by the coding of said bits of said control mask word.

4,084,236

ERROR DETECTION AND CORRECTION CAPABILITY FOR A MEMORY SYSTEM

Lawrence W. Chelberg, and James L. King, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 18, 1977, Ser. No. 770,132
Int. Cl.[2] G06F *11/00*
U.S. Cl. 364—200 **27 Claims**



1. A memory system comprising:

a backing store for storing information words, said backing store including a plurality of word locations, each number of said plurality of word locations defining a block of word locations;

error detection and correction circuit means operatively connected to said backing store for detecting and correcting errors in the words read out from said backing store during a backing store cycle of operation;

a cache store for storing blocks of information words, said cache store having a plurality of word locations, each number of said plurality of word locations defining a block of word locations;

cache error detection means operatively connected to said cache store, said error detection means being operative to generate an error signal upon detection of an error in a block of information words read out from said cache store during a cache cycle of operation;

a directory store including a plurality of word locations corresponding in number to the number of blocks in said cache store, each word location for storing a block address designating where a particular block of information is stored in said cache store;

directory error detection means operatively connected to said directory store, said error detection means being operative to generate an error signal upon detection of the occurrence of an error condition in said directory store during said cache cycle of operation;

control means operatively connected to said cache store, to said directory store and to said backing store, said control means for controlling the operation of said cache store, said directory store and said backing store, said control means including:

input register means connected to receive read memory commands, each coded to include an address specifying which ones of said word locations are to be referenced; and,

command decode circuit means connected to said input register means for decoding said memory commands, said decode circuit means in response to each read command being operative to generate control signals for selectively enabling said directory store, said backing store and said cache store for read out of a block address and said information words specified by said read command;

comparison means connected to said directory store and to said input register means for comparing said address to said memory command with said block address read out from said directory store in response to said memory command and for generating an output compare signal indicative of an address comparison; and,

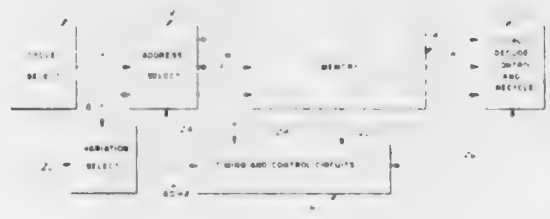
hit control means for generating a hit signal in response to said output compare signal for indicating when the information words specified to be fetched by said read command are stored in said cache store, said hit control means being coupled to said comparison means, said cache error detection means and said directory error detection means, said hit control means being conditioned by the occurrence of any one of said error signals for generating said hit signal in response to said compare signal to simulate a condition which is opposite to that represented by said hit signal thereby enabling a correct version of said information words to be fetched from said backing store.

4,084,237

ELECTRONIC LAUNDRY PROGRAM CONTROL APPARATUS

Ronald G. Beachem, Montrose, and Wayne Ronald Willette, St. Paul, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Mar. 28, 1977, Ser. No. 782,308
Int. Cl.[2] G05B *19/04*
U.S. Cl. 364—400 **24 Claims**



1. An electronic controller for laundry machines of the type having a plurality of electrically controlled subsystems each operable to perform a unique laundering function, comprising:

(a) read only memory means for storing a plurality of uniquely addressable logical instructions, and for providing logical memory output signals responsive to addressing of said instructions, wherein at least a plurality of said instructions each comprises a plurality of preset logical laundry function control commands arranged in a plurality of memory bits which are commonly activated upon addressing of said instruction to respectively each provide one of said logical memory output signals indicative of that said laundry function control command preset into that said memory bit;

(b) laundry cycle select means for producing in response to manual activation, a plurality of cycle select output signals, said laundry cycle select means having a plurality of switching members each identifiably associated with a different laundry cycle, each of said switching members being operable in response to a single manual activation stimulus to produce one of said cycle select output signals, which is uniquely identified with that activated switching member;

(c) laundry cycle execution means operatively connected with said laundry cycle select means and with said read only memory means, responsive to receipt of a single one of said cycle select output signals, for selectively addressing, in timed manner, a plurality of said memory instruc-

tions, to synthesize a complete laundry cycle identifably corresponding to that activated said cycle select switching member from which said cycle select output signal was received; and

(d) output circuit means operatively connecting said read only memory means with the plurality of subsystems of the laundry machine, for automatically activating the plurality of subsystems in response to said logical memory output signals, to execute a plurality of distinct laundering operations which collectively comprise the selected laundry cycle.

4,084,238

ELECTRONIC CASH REGISTER WITH IMPROVED DISPLAY UNIT

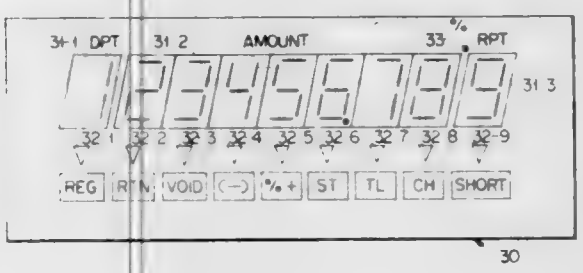
Tetsuya Masuo, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

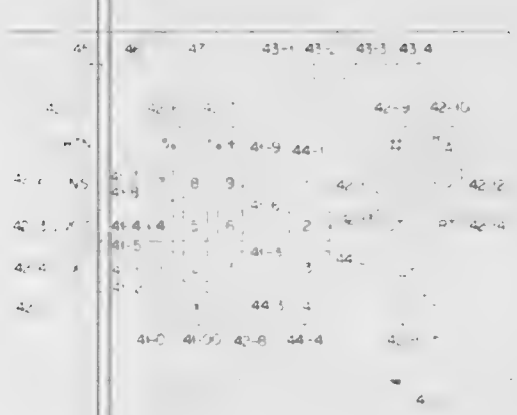
Filed Nov. 8, 1976, Ser. No. 740,043

Claims priority, application Japan, Nov. 12, 1975, 50-135943; Nov. 14, 1975, 50-137012

Int. Cl.[2] **G06F** *15/20*

U.S. Cl. 364—405 **3 Claims**





1. An electronic cash register comprising:

keyboard means including a plurality of entry keys, a plurality of function keys, a plurality of department keys, and a decimal point key, said entry keys, function keys and department keys being selectively operable to register data relating to merchandise items sold;

a data processing unit including storing means and connected to said keyboard means for permitting said storing means to store variable transaction data in response to the operation of said keyboard means; and

a display unit coupled to said data processing unit and including an amount display section having a plurality of digits and a repeat display section having at least one digit,

said data processing unit including means responsive to the operation of said entry keys to set on said amount display section digital data corresponding to the entry keys operated, responsive to the repetitive operations of the same one of said department keys to set on said repeat display section digital data corresponding to the number of operations of said same department key, responsive to the operation of said decimal point key to generate a flag in said storing means and responsive to the operation of the entry keys operated subsequent to the operation of said decimal point key to set on said repeat display section digital data corresponding to the entry keys operated while said flag is being generated in said storing means.

4,084,239

PRECISION PRESSURE GENERATOR

Harry G. Anastasia, Hillsdale; Wallace D. Kineyko, Woodcliff Lake, both of N.J., and Carl H. Ludwig, Cornwall, N.Y., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Nov. 18, 1976, Ser. No. 743,210

Int. Cl.[2] **G01L** *27/00*

U.S. Cl. 364—424 **11 Claims**



1. A system for providing a precision pressure output, comprising:

means for providing a pressure command signal including means for correcting the command signal for non-linearity;

a pressure sensor for providing a signal corresponding to sensed pressure;

means for combining the corrected command signal and the pressure sensor signal and for providing a difference signal;

means for providing a pressure input;

a pressure control valve connected to the pressure input means and receiving the pressure input therefrom;

the pressure control valve connected to the combining means and responsive to the difference signal therefrom for providing a pressure output; and

means for feeding back the pressure output to the pressure sensor so that the signal from the pressure sensor equals the corrected pressure command signal and the system is at null, whereupon the precision pressure is provided.

4,084,240

MASS PRODUCTION OF ELECTRONIC CONTROL UNITS FOR ENGINES

John P. Lappington, Huntsville, Ala., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jul. 28, 1976, Ser. No. 709,467

Int. Cl.[2] **G06F** *15/20*

U.S. Cl. 364—425 **1 Claim**

1. The mass-production method of making the electronic control units of electronic engine control systems for a variety of engine models wherein each engine model requires a corresponding model of electronic control unit which is unique to that engine model, said method comprising the steps of:

first, making a plurality of electronic control units wherein each control unit comprises in assembly a central microprocessor integrated circuit which is adapted to carry out, according to a program, calculations used by a control system in controlling an event associated with operation of the engine, a program memory integrated circuit which is programmed with a program adapted to be executed by said central microprocessor integrated circuit in carrying out said calculations and representing a general control equation potentially suitable for any of said variety of engine models, and an unprogrammed programmable read only memory integrated circuit adapted, when programmed, to convert the program of said program memory integrated circuit from a general control equation into a specific control equation which is unique to a specific engine model; and then,

once the specific engine model with which each assembled

electronic control unit with its unprogrammed programmable read only memory integrated circuit is to be used has been determined, programming the programmable read only memory integrated circuit thereof by means of external programming equipment with specific data unique to the specific engine model with which the electronic control unit is to be used so as to adapt the program of said program memory integrated circuit thereof from a general control equation into a specific control equation unique to the specific engine model with which the electronic control unit is to be used whereby each electronic control unit is rendered unique to a specific engine model.



4,084,241

SYSTEM FOR PROCESSING MOVEMENT INFORMATION OF VEHICLE

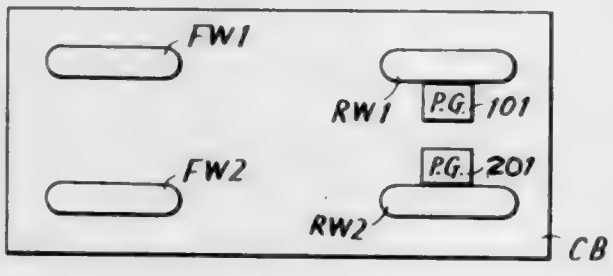
Toshihiro Tsumura, 3-41, Abiko-cho, Sumiyoshi-ku, Osaka-shi, Japan

Continuation-in-part of Ser. No. 621,113, Oct. 9, 1975, abandoned. This application Jan. 19, 1977, Ser. No. 760,588

Claims priority, application Japan, Oct. 19, 1974, 49-120559; Nov. 6, 1974, 49-128480; Feb. 22, 1975, 50-22164; Jun. 3, 1975, 50-67319; Jun. 24, 1975, 50-78981; Aug. 9, 1975, 50-96889

Int. Cl.[2] G06F *15/50*

U.S. Cl. 364—460 **47 Claims**



1. A system for processing positional information of a moving vehicle comprising paired first and second independently rotatable wheels provided at both sides of the moving direction of the vehicle, said system comprising:

first and second means independently and operatively coupled to said paired first and second wheels, respectively, for generating pulse signals in association with the rotation of said paired first and second wheels, respectively;

means for generating, in succession, a timing signal indicative of a predetermined unit time period;

first and second pulse signal withdrawing means responsive to said first and second pulse signal generating means, respectively, and said timing signal generating means for withdrawing, in succession, the pulse signals from said first and second pulse signal generating means, respectively, for providing first and second velocity data signals associated with the velocity of rotations of said first and second wheels, respectively, for each of said successive predetermined unit time periods;

means responsive to the velocity data signal output from at least one of said first and second pulse signal withdrawing means for integrating the velocity data signal for evaluating in succession, the moving distance of said moving vehicle, for each of said successive predetermined unit time periods;

means responsive to said first and second pulse signal withdrawing means for providing, in succession, the difference between said first and second velocity data signals from said first and second pulse signal withdrawing means, respectively, for each of said successive predetermined unit time periods;

means responsive to said difference providing means for evaluating, in succession, a trigonometric function value associated with said difference, for each of said successive predetermined unit time periods; and

means responsive to the output from said moving distance evaluating means and the output from said trigonometric function value evaluating means for multiplying, in succession, said moving distance from said moving distance evaluating means by said trigonometric function value from said trigonometric function value evaluating means for evaluating information for locating the moving position of said moving vehicle.

4,084,242

ELECTRONIC POSTAGE WEIGHING SCALE

Joseph A. Conti, Whitestone, N.Y., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Nov. 10, 1976, Ser. No. 740,431

Int. Cl.[2] G01G *23/22*; G06F *9/14*

U.S. Cl. 364—466 **5 Claims**



1. An electronic postal weighing scale, comprising:

a housing having a number of walls and containing postage electronics for determining a postage value for an article to be weighed;

a weighing pan disposed upon said housing and movable through a weighing range in response to the deposit of an article thereon;

a display connected to the postage electronics for displaying a computed postage value for the article being weighed;

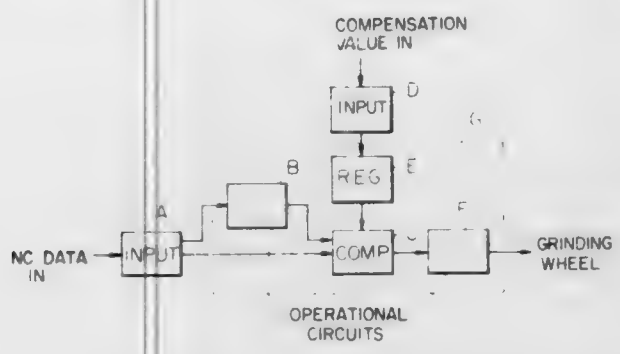
a weighing transducer operatively connected to said pan and said electronics, said transducer responsive to the movement of the pan to provide weighing signals to the electronics for computation of a postage value for said weighing article; and

a slidably movable draw slidably mounted upon one of said side walls of said housing, said draw supporting an array of electronic components for the computation of said postage value for said article to be weighed, said draw being slidable from its side wall to afford easy access to said electronics, said array of electronic components including an IC board containing a removable PROM component containing postage rate information, said PROM being removable for ease of changing said PROM.

4,084,243
CUTTER RADIUS COMPENSATION SYSTEM

Hajimu Kishi, and Masashi Takahashi, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 13, 1976, Ser. No. 686,042
Claims priority, application Japan, May 19, 1975, 50-58721; Jun. 25, 1975, 50-77565
Int. Cl.[2] B24B *17/00*
U.S. Cl. 364—474 2 Claims

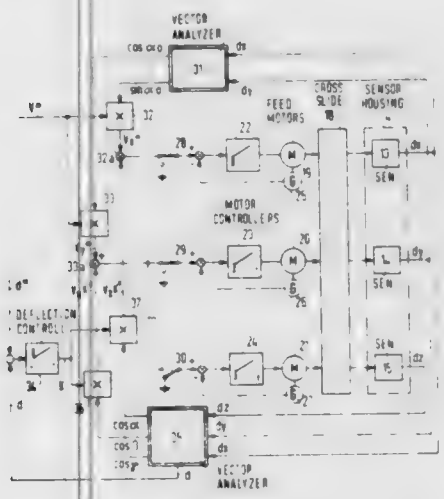


1. A cutter radius compensation method for controlling a machine tool having a linear control axis and a rotational control axis, said method comprising the steps of obtaining NC data from a NC unit, obtaining a compensation value which is the difference between a programmed cutter radius stored in the NC unit and a cutter radius of an actual cutter, calculating using the compensation value the locus of a compensation cutter on a workpiece so that the programmed cutter touches the same point of the workpiece as the compensation cutter does, and controlling simultaneously the linear control axis and the rotational control axis using the result of the above calculation.

4,084,244
ELECTRICAL DUPLICATING CONTROL APPARATUS

Wilfried Flöter, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 23, 1976, Ser. No. 725,732
Claims priority, application Germany, Sep. 30, 1975, 2543629; Aug. 20, 1976, 2637631
Int. Cl.[2] B23Q *35/123;* G05B *19/36*
U.S. Cl. 364—474 9 Claims



1. In electrical duplicating control apparatus, including a sensor which scans a model mechanically and comprises a sensing stylus and orthogonally operating coil sensing systems, means for developing velocity control signals for the individual axes feed drives in the individual machine axes from the output voltages thereof, and means to feed appropriate correction signals to the feed drives to maintain a predetermined amount of the deflection of the sensing stylus, the improvement comprising:

a. a sensing stylus having three sensing systems which operate in three mutually perpendicular directions;

b. a first vector analyzer having as inputs the outputs of said three sensing systems and forming as outputs, voltages proportional to the respective cosines of the direction angles (α, β, γ) of the three dimensional deflection vector of the stylus relative to three orthogonal machine axes and the magnitude of the three dimensional deflection vector;

c. a deflection controller having as an input the difference between a desired value and an actual value which is the magnitude of the three dimensional deflection vector;

d. first and second multipliers each having as one input the output voltage of said deflection controller and as second inputs respectively separate ones of the cosine outputs of the first vector analyzer and forming as outputs two correction signals;

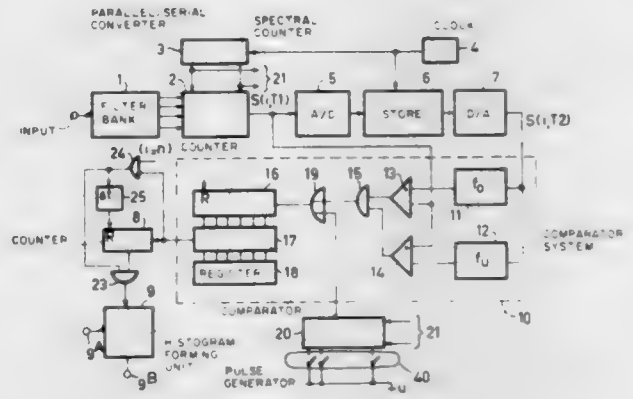
e. a second vector analyzer having as inputs the two output voltages of the sensing systems which operate in the plane formed by two desired feed directions and providing output voltages which correspond to the sine and cosine of the deflection angle in that plane; and

f. third and fourth multipliers having as first inputs the desired feeding velocity and as second inputs respectively the outputs of said first and second multipliers and providing as outputs desired feed velocity signals in that plane.

4,084,245
ARRANGEMENT FOR STATISTICAL SIGNAL ANALYSIS

Ernst Bunge, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 13, 1976, Ser. No. 714,103
Claims priority, application Germany, Aug. 16, 1975, 2536585
Int. Cl.[2] G10L *1/04*
U.S. Cl. 364—485 11 Claims



1. An arrangement for statistical signal analysis of an input analog signal having a plurality of spectral components, comprising:

a filter bank having an input for receiving said analog signal, and an output, said filter bank producing the spectral components of said signal and supplying said components over said output;

means having an input connected to said output of said filter bank, and an output, for storing said spectral components, said storing means generating a predetermined delay between the time of the reception of a signal value at said input of said storing means and the reproduction of the same signal value at said output of said storing means;

comparison means having a first input connected to said output of said filter bank, and a second input connected to said output of said storing means, and an output, said comparison means comprising a comparator for simultaneously comparing the signal value of each spectral component from said first input at a first time with the signal value of the same spectral component from said second input at a second earlier time, an output signal being produced if the instantaneous signal value of at least a predetermined fraction of the spectral component compared

deviates from the corresponding stored signal values by less than a predetermined tolerance range;

a first counter connected to said output of said comparison means for accumulating the successive output signals of said comparison means, while after the comparison the absence of a signal from the comparison device causes the transfer of the position of the first counter; and

histogram-forming means connected to the output of said first counter for separately counting the number of the transfer of each separate counter position of said first counter.

4,084,246

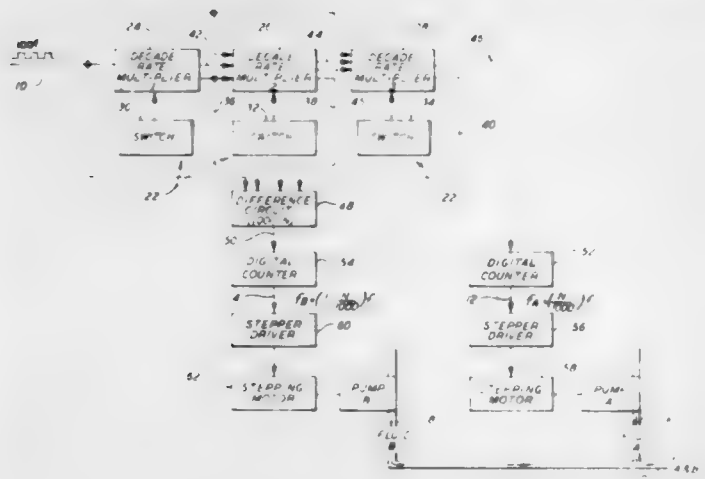
PULSE GENERATOR

Arnold Schwartz, Bridgeport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 733,713, Oct. 18, 1976, abandoned. This application Feb. 25, 1977, Ser. No. 772,223

Int. Cl.[2] **G06F** *15/46;* **H03B** *19/00;* **G05D** *11/02*

U.S. Cl. 364—510 **30 Claims**



7. A control circuit for controlling the rate of flow of two fluids so that the total rate of flow of the two fluids is a constant while the ratio of one fluid flow rate to the other is adjustable, the control circuit comprising, in combination:

a pulse generator producing clock pulses at an adjustable rate wherein the clock pulse rate is correlated to the total flow rate of the two fluids;

selector means for producing signals representative of a plurality of decimal digits correlated to the flow rate of one fluid;

a plurality of synchronous decade rate multipliers connected in cascade and responsive to said pulse generator and said selector means, each decade rate multiplier producing output pulses correlated to the signals representative of one said decimal digit;

summing means responsive to each output from each said decade rate multiplier to produce a first intermediate pulse train with one pulse for each pulse input to said summing means;

difference means responsive to said clock pulses and each said decade rate multiplier to produce a second intermediate pulse train having a pulse occurring at the time each clock pulse occurs in the absence of an output pulse from any said rate multiplier;

first spectral purifying means to produce one pulse in a first train of output pulses for every N pulses in said first intermediate pulse train where N is a whole decimal number;

second spectral purifying means to produce one pulse in a second train of output pulses for every N pulse in said second intermediate pulse train;

first pump means responsive to said first train of output pulses to pump a first fluid at a rate proportional to the pulse rate of said first train of output pulses; and

second pump means responsive to said second train of output pulses to pump a second fluid at a rate proportional to the pulse rate of said second train of output pulses.

27. A pulse generator for producing two pulse trains suitable for controlling the operation of two pumps so that the total flow rate of both pumps remains a constant while the rate of one pump is selectable, the generator comprising, in combination:

a source of clock pulses with one clock pulse occurring per clock cycle;

a plurality of selector means each selectively providing an unique signal representative of a decimal digit correlated to a first pulse rate;

a plurality of first decade rate multipliers each coupled to said source of clock pulses and to one selector means to receive unique signals therefrom, said first decade rate multipliers being connected in cascade so that the first decade rate multiplier is operative during each clock cycle and capable of producing an output pulse during nine out of every ten clock cycles, each successive first decade rate multiplier is operative during only the one clock cycle that the previous first decade rate multiplier cannot produce an output pulse, each said first decade rate multiplier being capable of producing X pulses at its output for each ten clock cycles that it is operative where X corresponds to the setting of the selector means coupled thereto;

summing means responsive to the output pulses from each said first decade rate multiplier to produce a pulse in a first intermediate pulse train for each output pulse from each first decade rate multiplier;

difference means responsive to each said clock pulse and said output pulses from each first decade rate multiplier to produce a second intermediate pulse train having a pulse during each clock cycle occurring in the absence of a pulse from any said first decade rate multiplier;

at least one second decade rate multiplier coupled to first intermediate pulse train and to a selector means for each said second decade rate multiplier to receive unique signals therefrom, said second decade rate multipliers producing a third intermediate pulse train having Y pulses for each 10^p pulses in the first intermediate pulse train where Y corresponds to the setting of the selector means coupled to said second decade rate multipliers and p corresponds to the number of said second decade rate multipliers; and

at least one third decade rate multiplier, each coupled to said second intermediate pulse train and to a selector means to receive unique signals therefrom, said third decade rate multipliers producing a fourth intermediate pulse train having Z pulses for every 10^q pulses in said second intermediate pulse train where Z corresponds to the setting of the selector means coupled to said third decade rate multiplier and where q equals the number of third rate multipliers.

4,084,247

FLUID LOADING ARM ALARM SYSTEM

Peter Ball, Sheffield, England, assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 26, 1976, Ser. No. 735,730

Int. Cl.[2] **G01C** *1/00;* **B65B** *1/04;* **G01B** *3/56*

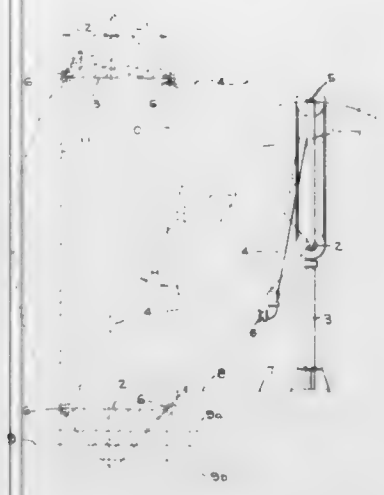
U.S. Cl. 364—559 **9 Claims**

1. An articulated fluid loading arm for interconnecting a fixed conduit and a manifold, said arm comprising

1. a plurality of pivotally connected limbs one of which is pivotally mounted on a fixed support and connected to the conduit, and another of which has an end that functions as the outer end of the loading arm, and

2. an apparatus for sensing the position in space of said loading arm outer end, said apparatus comprising means for sensing a first angle representative of the orientation of one limb with respect to a first axis, means for sensing a second angle representative of the orientation of at least one other limb with respect to a second axis, and means

for determining whether said sensed angles exceed preestablished upper and lower limits with respect to said first



and second axes, whereby an indication of the position in space of the end of the arm can be ascertained.

4,084,248

METHOD AND APPARATUS FOR ERROR CORRECTION

Larkin B. Scott, Fort Worth, Tex., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 654,704, Feb. 2, 1976. This application Jan. 31, 1977, Ser. No. 763,042
Int. Cl.[2] G01J *3/42*
U.S. Cl. 364—571 **27 Claims**



15. In a device having an independent variable which can be changed at least between a first lower limit and a second upper limit the device having an error which is a function of the value of the independent variable, apparatus for correcting the error comprising:

a. means having a plurality of data storage positions for storing, in adjacent data storage positions thereof, a correction value for each of plurality of increments of the independent variable between said first and second limit and also storing a location marker which is different from any correction value;

b. means for initializing the device at said first limit;

c. means for positioning said location marker so as to be adjacent the correction value for the first increment of said independent variable from said first limit toward said second limit while said device is initialized at said first limit;

d. means for moving said location marker so as to be adjacent the stored correction value for the next increment upon movement of said independent variable through an increment; and

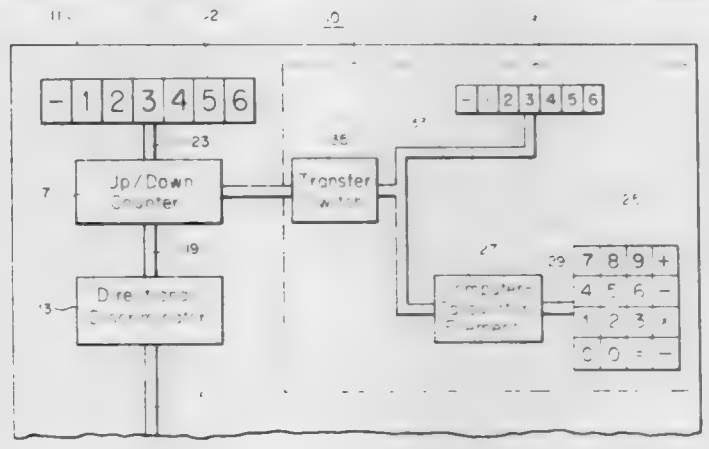
e. means for reading the correction value corresponding to the incremental positon of said device and providing said value as a correction to said device.

4,084,249

ELECTRONIC COUNTING SYSTEM WITH KEYBOARD INPUT

Helmut Schlick, Weissbrunn, Germany, assignor to Firma Dr. Johannes Heidenhain GbmH, Traunreut, Germany

Filed Nov. 26, 1976, Ser. No. 745,235
Claims priority, application Germany, Dec. 6, 1975, 2554927
Int. Cl.[2] G06F *15/02*; H03K *21/18*
U.S. Cl. 364—705 **7 Claims**



1. In combination with an incremental measuring system system having a directional discriminator for accepting input count pulses, an up-down counter, and a counter output display, the improvement comprising:

keyboard means for the manual entry of numerical data;

calculator logic means responsive to said keyboard entry means for accepting the numerical data;

digital display means responsive to said calculator logic means for displaying the manually entered numerical data; and

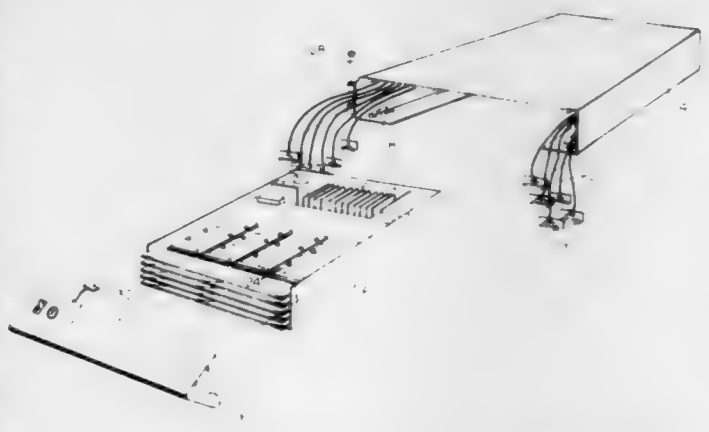
means for transferring the value displayed by the display means to the up-down counter to set the output value of the up-down counter to correspond to the displayed value.

4,084,250

MODULAR ASSEMBLY FOR AN ELECTRONIC COMPUTER

Robert J. Albertine, Marlboro; John W. Blomstedt, Bedford; John E. Edfors, Townsend; Victor L. Quattrini, Westford, and Paul S. Yoshida, Newton, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 27, 1976, Ser. No. 727,063
Int. Cl.[2] H05K *5/00, 7/10, 7/20*
U.S. Cl. 364—708 **35 Claims**



1. Apparatus for electronically processing information, said apparatus comprising:

a plurality of means for receiving the information;
a plurality of means for processing the received information, said plurality of means for processing located in equally spaced planes;
means for detachably connecting said plurality of means for receiving the information with said plurality of means for processing the received information;
means for interfacing said plurality of means for processing the received information, said interfacing means comprising separate and distinct bus structures which are separated by a substantially open space therebetween;
means for supplying electrical power to said interfacing means; and
means for detachably connecting said power supply means to said interfacing means.

4,084,251

FOURIER TRANSFORM GENERATOR FOR BI-LEVEL SAMPLES

Alva Knox Gillis, Jr., Melbourne, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Mar. 10, 1976, Ser. No. 665,709
Int. Cl.[2] G06F *15/34*
U.S. Cl. 364—726 **23 Claims**

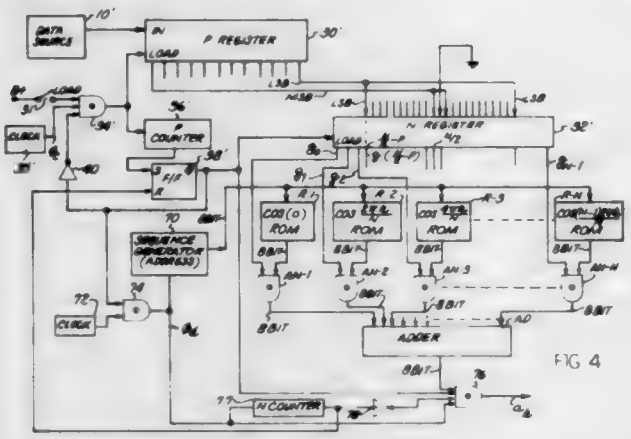


FIG 4

1. Apparatus for generating a Fourier transform of a finite block of bilevel data bits comprising:
a plurality of gated sinusoidal signal generator means each corresponding to respective said data bits of said finite block for selectively providing or not providing a corresponding sinusoidal signal to a summing means depending upon the level of said data bits; and,
summing means for additively combining the signals selectively provided by said gated signal generator means to provide a sum signal substantially corresponding to said transform.

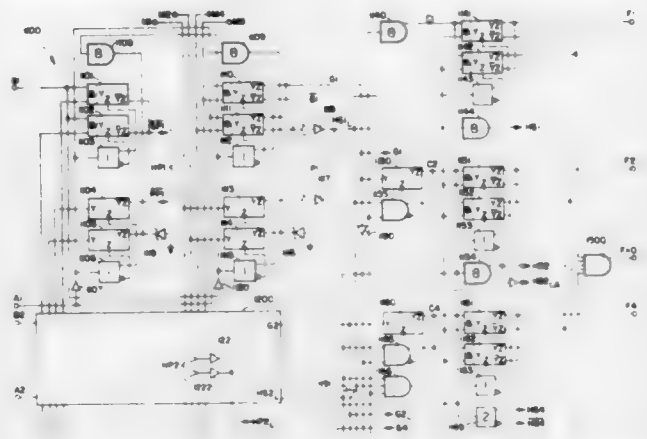
4,084,252

CURRENT MODE 5-BIT ARITHMETIC LOGIC UNIT WITH PARITY

Homer Warner Miller, Peoria, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 3, 1977, Ser. No. 756,456
Int. Cl.[2] G06F *11/10*
U.S. Cl. 364—738 **2 Claims**

1. A current mode 5-bit arithmetic logic unit for performing a repertoire of arithmetic and logic operations on two 5-bit bytes and for generating a plurality of intermediate-level output signals, said 5-bit arithmetic logic unit comprising:
a first portion for receiving said first and second 5-bit bytes Ai and Bi, a carry-in signal CIN, and a mode control signal, said first portion generating a 5-bit binary output resultant signal Fi in response to said mode control signal, said first portion further generating a plurality of intermediate-level signals, a propogate signal P, a generate signal G, and a carry-out signal COUT; and
a second portion responsive to said intermediate-level signals, and further responsive to said carry-in signal CIN and a carry-in duplicate signal CIND, said second portion generating output signals comprising a parity of the carries signal PC, a parity of the half-sum signal HS, a



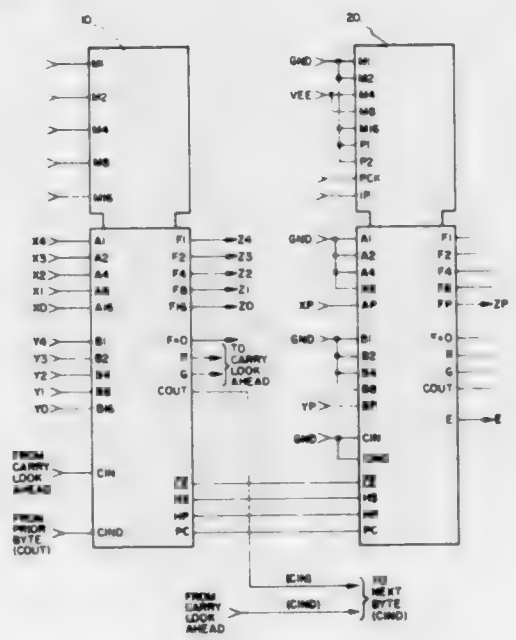
parity of the half-parities signal HP, and a carry error signal CE.

4,084,253

CURRENT MODE ARITHMETIC LOGIC CIRCUIT WITH PARITY PREDICTION AND CHECKING

Homer Warner Miller, Peoria, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 3, 1977, Ser. No. 756,457
Int. Cl.[2] G06F *11/10*
U.S. Cl. 364—738 **2 Claims**



1. A current mode arithmetic logic circuit for performing a repertoire of arithmetic and logic operations on two *n*-bit plus parity bytes A*i* and B*i*, where $n \geqq 5$, and for generating a parity prediction signal FP representing the expected state of the parity bit associated with the resultant binary output F*i*, and for further generating an error signal E in the event that parity or carry errors occur during said operations, said arithmetic logic circuit comprising:
a 5-bit arithmetic logic unit for receiving the five lowest order bits of each of said *n*-bit plus parity bytes, a carry-in input CIN, a duplicate carry-in input CIND, and a mode control signal, said 5-bit arithmetic logic unit generating the five lowest order bits of the binary output resultant of the operation defined by said mode control signal, said 5-bit arithmetic logic unit further generating a propogate signal P, a generate signal G, a carry-out signal COUT, and a group of special output signals comprising a parity of the half-sums signal HS, a parity of the half-parity signal HP, a parity of the carry signal PC, and a carry error signal $\overline{CE}$; and
a 4-bit arithmetic logic unit receiving the *n*-5 highest order bits of each of said *n*-bit plus parity bytes, said 4-bit arith-

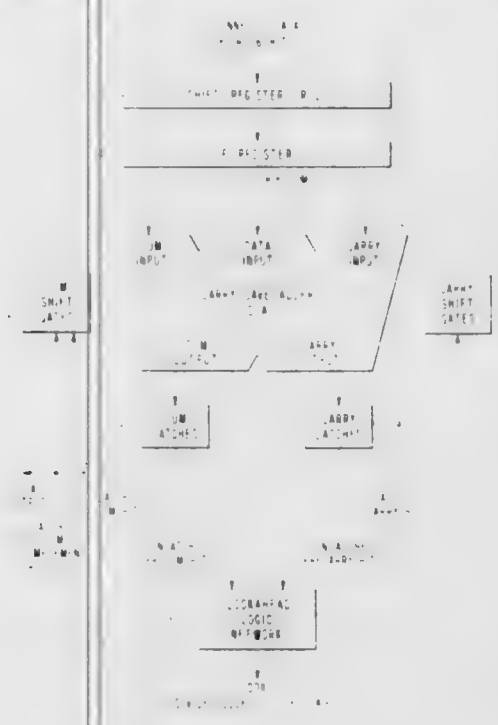
metic logic unit further receiving said group of special outputs from said 5-bit arithmetic logic unit, said 4-bit arithmetic logic unit generating the *n*-5 highest order bits of the binary output resultant of the operation defined by said mode control signal, said 4-bit arithmetic logic unit further generating said parity prediction signal FP and said error signal E in the event that an error occurs during the generation of said carry-out signal COUT or said parity prediction signal FP.

4,084,254

DIVIDER USING CARRY SAVE ADDER WITH NONPERFORMING LOOKAHEAD

Richard Eugene Birney; Joel Calvin Leininger, and George Phillips Taylor, all of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1977, Ser. No. 792,078
Int. Cl.[2] G06F *7/54*
U.S. Cl. 364—766 **12 Claims**



1. In an arithmetic apparatus including a carry save adder for performing division as a series of complemental subtractions, said adder being adapted to receive first and second input bit strings that respectively consist at least in part of sum bits and carry bits previously manifested at the output of said adder and a third input bit string which in some instances will represent a divisor, said adder being operable in response to such inputs for manifesting sum and carry output bit strings and having sum output and carry output storage devices into which selected ones of the sum and carry output strings manifested by said adder are respectively entered for subsequent use in the operations of said adder, each of said subtractions involving a minuend value jointly represented by sum and carry output bit strings already stored in said adder output storage devices, and a subtrahend value represented by the bits of the divisor as included in said third input bit string, one of said minuend and subtrahend values being in complement form and the other being in true form, an improved feature of said apparatus comprising:

first logical network means responsive to the bits stored in certain of said sum and carry output storage devices and to certain of the bits manifested in said sum and carry output bit strings when the divisor is absent from the adder inputs for logically determining the value of the bit in the highest order of the minuend value which is to be used in a currently proposed subtraction, said highest minuend order being to the left of the highest order in said input bit strings,

second logical network means responsive to the sum and carry output bit strings manifested by said adder when the divisor is included in the adder inputs for logically determining the value of the carryout bit produced by complemental subtraction of the divisor from the value jointly represented by the first and second input bit strings, without causing the result of that subtraction to be entered into said adder output storage devices, said carryout bit being in an order higher than the highest order of said input bit strings, and

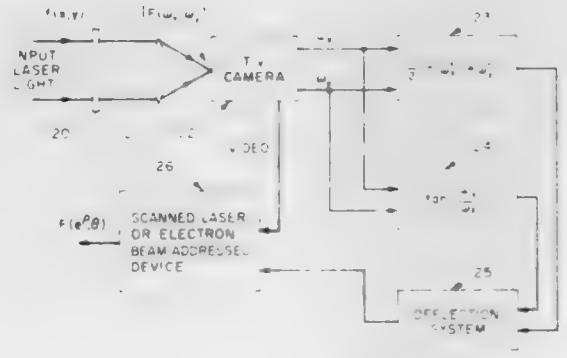
third logical network means jointly responsive to the leftmost minuend bit value determined by said first logical network means and the carryout bit value determined by said second logical network means for producing a signal to indicate whether or not the currently proposed complemental subtraction can be performed without an overdraft and accordingly whether or not the sum and carry output bit strings manifested by said adder as the result of that subtraction should be entered into said sum and carry output storage devices for subsequent use by said adder.

4,084,255

POSITIONAL, ROTATIONAL AND SCALE INVARIANT OPTICAL CORRELATION METHOD AND APPARATUS

David Paul Casasent, Pittsburgh, Pa., and Demetri Psaltis, Thessaloniki, Greece, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 2, 1976, Ser. No. 738,781
Int. Cl.[2] G06G *7/19, 9/00*
U.S. Cl. 364—822 **10 Claims**



8. Apparatus for correlating two functions $f_1(x,y)$ and $f_2(x,y)$ which are shifted, scaled and rotated versions of each other, comprising in combination

an optical correlator having an input plane P_0, a frequency plane P_1 and an output plane P_2;

a film transparency having an interference pattern recorded therein which contain a term proportional to the conjugate Mellin transform $M_2^*(\omega_\rho,\omega_\theta)$, said film transparency being positioned at plane P_1;

means for creating a light pattern leaving plane P_0 that corresponds to $F_1(e^\rho,\theta)$,

said light pattern being Fourier transformed by lens means within said correlator located between planes P_0 and P_1 and the illumination of said film transparency by the resultant light pattern producing a light pattern leaving plane P_1 that corresponds to the product $M_2^*(\omega_\rho,\omega_\theta)$ $M_1(\omega_\rho,\omega_\theta)$,
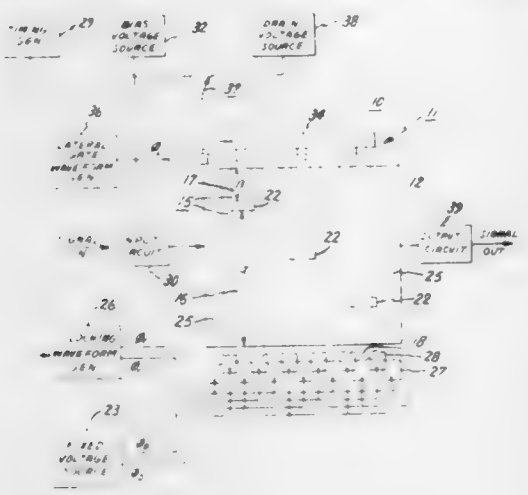
said last-mentioned light pattern being Fourier transformed by other lens means within said correlator located between planes P_1 and P_2; and

means positioned at plane P_2 for recording the results of said last-mentioned Fourier transformation.

4,084,256
SAMPLED DATA ANALOG MULTIPLIER APPARATUS

William E. Engeler, Scotia, and Howard S. Goldberg, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 16, 1976, Ser. No. 751,122
Int. Cl.[2] G06G 7/16
U.S. Cl. 364—862 15 Claims



1. Sampled data apparatus comprising

a substrate of semiconductor material having a major surface,

a plurality of first charge storage cells in said substrate adjacent said major surface forming a first channel, each cell including a first charge storage region and a second charge storage region,

a plurality of first storage electrodes, each electrode associated with a respective cell, each electrode including a first part and a second part, each first part insulatingly overlying and coextensive with a respective first charge storage region and each second part insulatingly overlying and coextensive with a respective second charge storage region, the ratio of the width of the first charge storage region to the width of the second storage region of each of said cells being set to a respective one of a first sequential series of predetermined values,

a first means for introducing into each of said first charge storage cells a respective first quantity of charge representing a respective sample of a signal, said quantity of charge being divided between the first and second storage regions of a cell in proportion to the ratio of the width of the first storage region to width of the second storage region thereof,

a first means for altering the charge in each of the second storage regions of each of said first cells,

a first means for recovering from each of said first charge storage cells a respective resultant quantity of charge stored therein, each resultant quantity being the sum of the initially introduced charge in the first storage region and the altered charge in the second storage region of a respective first cell.

4,084,257
SIGNAL PROCESSING APPARATUS

Hubert K. Burke, Scotia, and Gerald J. Michon, Waterford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 19, 1977, Ser. No. 798,591
Int. Cl.[2] G06G 7/12
U.S. Cl. 364—862 11 Claims

10. In combination,

a substrate of semiconductor material of one type conductivity having a major surface,

first means forming a first charge storage region for opposite type carriers adjacent said major surface of said substrate,

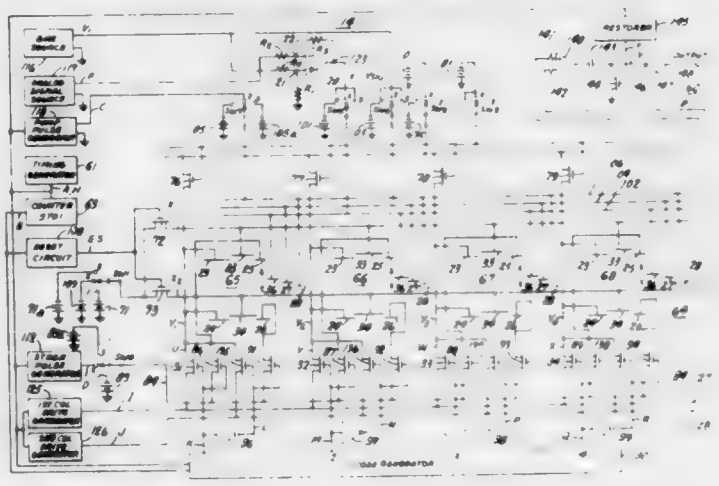
second means forming a second charge storage region for opposite type carriers adjacent said major surface of said substrate and coupled to said first charge storage region to form a first storage cell,

third means forming a third charge storage region for opposite type carriers adjacent said major surface of said substrate,

fourth means forming a fourth charge storage region for opposite type carriers adjacent said major surface of said substrate and coupled to said third charge storage region to form a second charge storage cell,

said first means including a first electrode insulatingly overlying said first storage region, and each connected to said first row line,

said second means including a second electrode insulatingly overlying a said second storage region,



said third means including a third electrode insulatingly overlying said third storage region,

said fourth means including a fourth electrode insulatingly overlying a said fourth storage region and connected to said second electrode,

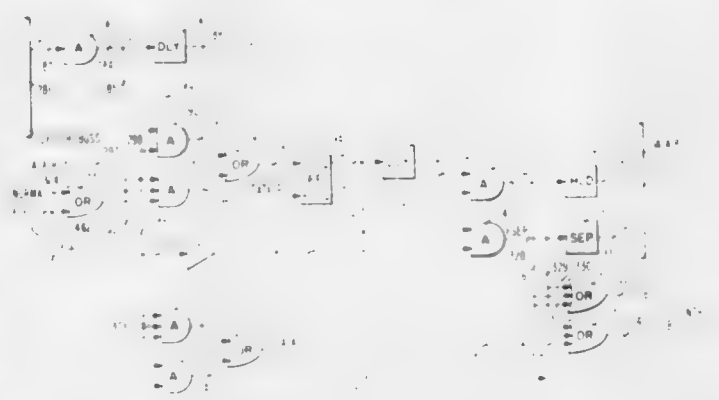
a charge introduction means for developing a sequence of packets of charge in response to an analog signal, each packet of charge of said sequence being proportional to a respective sample of said analog signal,

said charge introduction means including means for transferring a packet of charge alternatively into said first and second storage cells.

4,084,258
APPARATUS FOR PERFORMING MULTIPLE OPERATIONS IN A SHIFT REGISTER MEMORY

Robert Glenn Bluethman, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 214,369, Dec. 30, 1971, abandoned. This application Apr. 22, 1974, Ser. No. 463,028
Int. Cl.[2] G06F 7/00, 13/00
U.S. Cl. 364—900 6 Claims



1. An input/output system for arranging control codes to define sections and zones in a recirculating electronic shift register memory, and performing multiple operations after said control codes have been arranged, said system including a bulk

store, a keyboard, and a printer and comprising in combination:

(I) writing means connected to said memory and including *a*) a buss along which data codes are applied to and from said keyboard, printer, and bulk store, *b*) register and gating means for inserting and writing data and control codes into, deleting data and control codes from, and reading data and control codes out of, said memory, and *c*) a plurality of control lines along which logical signals are applied when data and control codes are to be gated through said gating means;

(II) decode means connected to said memory for decoding control codes in said memory upon each revolution thereof in said memory; and

(III) control means including logical circuitry connected to said decode means and said control lines of said writing means for applying logical signals to said control lines to cause said writing means to initially randomly write a first control code into said memory for defining a normal section, an alternate section, and an expandable input zone in said alternate section, and to write a second control code into said memory adjacent said first control code for defining an expandable revision zone in said normal section; said control means further including means for applying logical signals to said control lines dependent upon the particular operations to be performed and dependent upon said decoding of said control codes by said decode means; said control means further including:

(1) means for performing an input operation wherein a number of data codes and a new first control code are written, by said writing means, into said input zone and over at least said first control code in said memory after said first control code has been decoded by said decode means; wherein said zones and sections are redefined through writing said new first control code into said memory following the last of said data codes written into said memory;

(2) means for performing a revision operation wherein a number of data codes are inserted and written into, and deleted from, said revision zone, by said writing means, after said second control code has been decoded by said decode means; and

(3) means for performing an output operation wherein data codes are read out of said revision zone by said writing means after said second control code has been decoded by said decode means; said control means further including means for performing at least two of said input, output, and revision operations during a revolution of said first control code in said memory.

4,084,259

APPARATUS FOR DOT MATRIX RECORDING

Lysle D. Cahill, Dayton, and Arthur R. Brunswick, Xenia, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 420,639, Nov. 30, 1973, abandoned. This application Oct. 11, 1974, Ser. No. 514,203

Int. Cl.² H04N *1/28, 1/04*

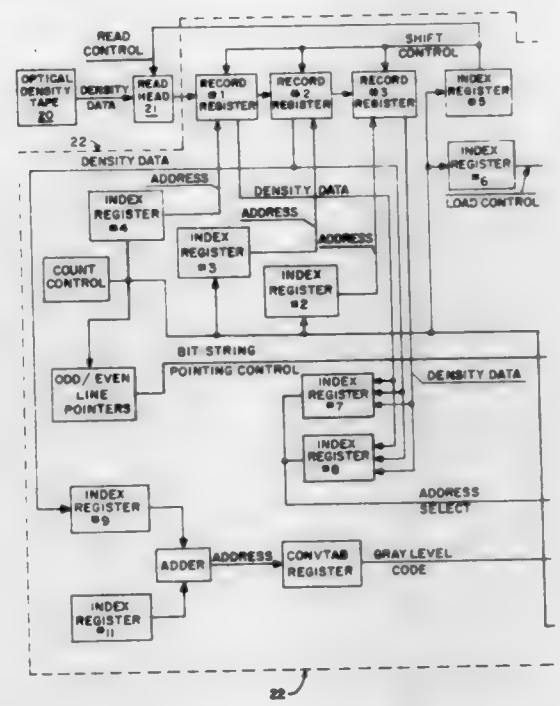
U.S. Cl. 364—900 **6 Claims**

1. Improved apparatus for converting a series of digital words representative of optical densities within an image at locations corresponding to the positions of said words in said series into a series of bit sets for control of a dot matrix recorder comprising:

(a) first storage means for storing a string of bit patterns having bits arranged therein in correspondence with dot positions in a set of dot matrix groups, each of which matrix groups is optically representative of a predetermined optical density and comprises a plurality of dot matrices,

(b) second storage means for storing and reading out of said series of digital words.

(c) pattern selection means for causing said first storage means to read out bit patterns for matrix groups corresponding in optical density to the optical densities represented by the digital words read out of said second storage means, and



(d) bit selection means for selecting from said bit patterns sets of bits corresponding to dot matrices positioned within said matrix groups in accordance with the positioning of said digital words within said series.

4,084,260

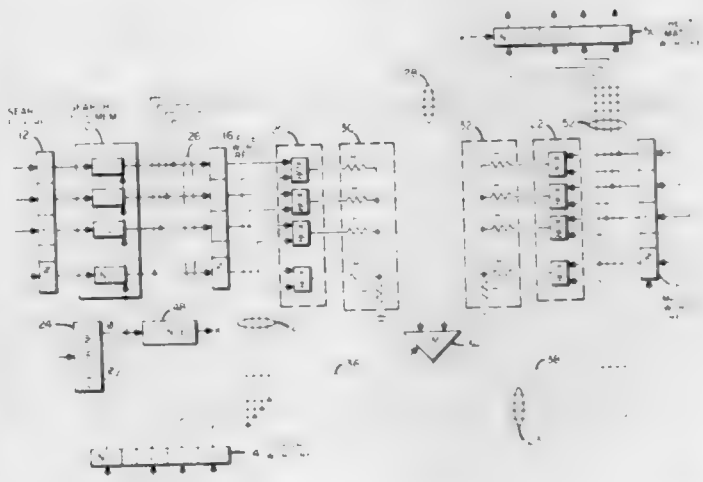
BEST MATCH CONTENT ADDRESSABLE MEMORY

David Leslie Fleming; Leslie Matthew Jenson, and Gerald Francis Sauter, all of St. Paul, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jul. 12, 1976, Ser. No. 704,860

Int. Cl.² G11C *15/00*

U.S. Cl. 364—900 **3 Claims**



1. A best match content addressable memory, comprising:

a search file memory for storing M file words, each of N-bits in length;

a file word register coupled to said search file memory for storing one of said M file words;

a match word register coupled to said search file memory for storing a selected one of said M file words as a match word;

a search word register for storing a search word of N-bits in length;

first means responsively coupled to said file word register and to said search word register for generating a first Hamming distance representation of the file word and the search word;

second means responsively coupled to said match word register and to said search word register for generating a

second Hamming distance representation of the match word and the search word;

comparator means responsively coupled to said first and second means, comparing said first and second Hamming distance representations for transferring said file word into said match word register only if said first Hamming distance is less than said second Hamming distance.

4,084,261

GRAPHICAL DISPLAY APPARATUS

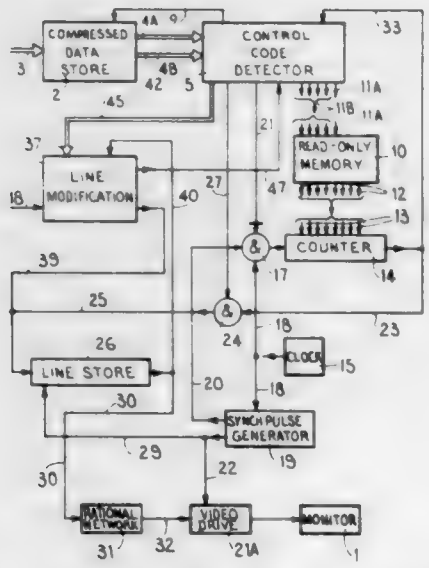
Robert William Laker, Polegate; Harold Charles Arthur Hankins, Glossop, and Gordon Hughes, Macclesfield, all of England, assignors to International Computers Limited, London, England

Filed Feb. 23, 1976, Ser. No. 660,689

Claims priority, application United Kingdom, Feb. 27, 1975, 8152/75

Int. Cl.[2] G06F *3/14*

U.S. Cl. 364—900 **5 Claims**



1. A system for displaying graphics on a refreshed display device, the system comprising:

(a) a beam-type display device that exhibits a television raster scan-line pattern wherein the beam produces a display by repeatedly scanning successive generally parallel scan lines each constituted by a plurality of scan increments, the beam being controllable to produce at least first and second states of illumination from the display device;

(b) circuit means including clocking arrangements for causing the beam to repeatedly scan the said raster scan-line pattern;

(c) first storage means for storing date representing the entire display, said data comprising first code groups each designating a number of scan increments from one transition from one of said states of illumination to another of said states to the next such transition and second code groups each designating at least one correlation between corresponding transitions, in successively scanned lines, from one of said states of illumination to another of said states;

(d) second data storage means having a stage for each scan increment of a scan line, each stage holding data indicative of the state of illumination of that scan increment;

(e) means for feeding the contents of the second storage means to the display device to control the beam accordingly during the display of a scan line;

(f) means for receiving and decoding first code groups from the first storage means to produce first control signals each relating to a transition from one of said states of illumination to another of said states;

(g) means responsive to the first control signals for introducing into the second storage means, during the feeding to the display device of the contents of the second storage means relating to one scan line, data indicative of the state of illumination of at least one scan increment of the following scan line;

(h) means for receiving and decoding second code groups from the first storage means to produce second control signals relating the position of data to be displayed in a scan line to that of data displayed in the preceding scan line;

(i) means responsive to the second control signals for reintroducing into the second storage means, during feeding of the contents of the second storage means to the display device and in a position related to its previous position in accordance with the second control signals, data output from the second storage means; and

(j) means, responsive to the presence in the data being reintroduced into the second storage means of data representing a transition from one state of illumination to another, for terminating said reintroduction.

4,084,262
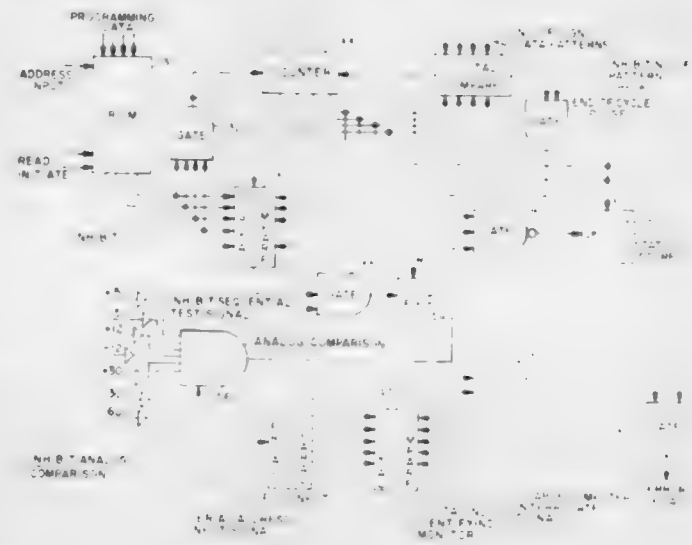
DIGITAL MONITOR HAVING MEMORY READOUT BY THE MONITORED SYSTEM

Raymond A. Lloyd, Laurel, and Thomas A. Keller, Randallstown, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 28, 1976, Ser. No. 691,177

Int. Cl.[2] G06F *11/00*

U.S. Cl. 364—900 **7 Claims**



1. Apparatus for monitoring the operation of a synchronous digital system to detect malfunctions thereof, comprising in combination:

(a) memory means having stored therein at first predetermined storage locations a first predetermined group of digital numbers comprising a sequence of numbers ranging in value from 1 to *m* with each storage location being identified by a digital number having a bit pattern corresponding to a bit pattern generated by said synchronous system when said system is operating normally and stored therein at the remaining memory locations a second predetermined group of digital numbers, said first and second predetermined groups of digital numbers being mutually exclusive;

(b) read means for sequentially reading digital numbers from said memory means utilizing a series of digital bit patterns generated by the system being monitored as addresses;

(c) a digital counter and means for incrementing said digital counter one count each time a digital number containing at least one logic "one" bit is read from said memory means to generate and store in said digital counter a number corresponding to the number of words containing at least one logic "one" bit which are read from said memory means; and

(d) first compare means for comparing said digital numbers from said memory means to the number stored in said digital counter to generate a first error signal when the

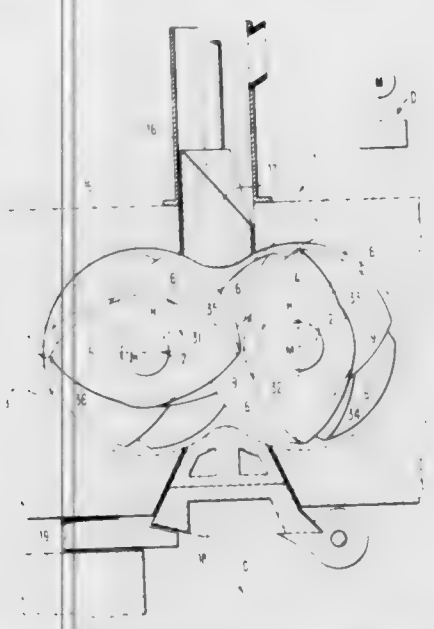
data output of said memory means and said number stored in said digital counter are not identical.

4,084,263

KNEADING AND MIXING MACHINE

Christian Millauer, Stuttgart, Germany, assignor to Firma Werner & Pfleiderer, Stuttgart, Germany

Continuation of Ser. No. 464,333, Apr. 26, 1974, abandoned.
This application Feb. 25, 1977, Ser. No. 772,224
Claims priority, application Germany, Apr. 30, 1973, 2321854
Int. Cl.[2] B29B *1/10*
U.S. Cl. 366—84 4 Claims



1. A kneading and mixing machine, comprising:

a housing in the form of parallel intersecting cylinders of equal diameter;

a pair of radially interengaging rotors of equal diameter and each being mounted to rotate within one of said cylinders for effecting an overall movement of material in said cylinders in a direction parallel to the axes of said cylinders, said rotors being 90° out of phase and rotatable about spaced axes extending parallel to the axes of said cylinders, the spacing between said axes being less than twice the radius of one of said rotors;

means for rotating said rotors in opposite directions and at the same speed;

each of said rotors having a shaft portion and at least first and second axially adjacent, axially threadlike extending opposite-handed blade sections mounted on said shaft portion, each of said first and second blade sections including a pair of 180° spaced blades on said shaft portion, each blade having a trianglelike cross section with the base of said trianglelike blade being adjacent said shaft portion, the apex of said trianglelike blade being opposite said base and forming a cam surface and the sides of said trianglelike blade adjacent said base being joined to a surface of said shaft portion, said blades in each of said axially adjacent second blade sections being separated by a peripheral gap and angularly offset 90° relative to the blades in said first blade sections at a connecting plane perpendicular to the axis of said rotors; and

one of said rotors having a first plane containing the axis of rotation thereof and the apexes of said pair of 180° spaced trianglelike blades in either one of said first and second blade sections mounted thereon, the other of said rotors having a second plane containing the axis of rotation thereof and the apexes of said pair of 180° spaced trianglelike blades in the corresponding laterally spaced one of said first and second blade sections mounted thereon, said first and second planes in a coplanar cross section through said pair of rotors perpendicular to the axes of rotation thereof being parallel when inclined 45° to a plane containing the axes of both of said rotors.

DESIGN PATENTS

GRANTED APRIL 11, 1978

ERRATA

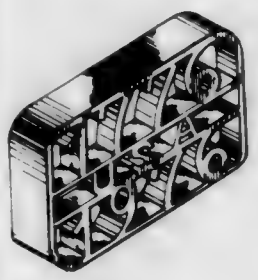
For CLASS	See PATENT NO.
D12–143	247,710
D12–156	247,711

DESIGNS

APRIL 11, 1978

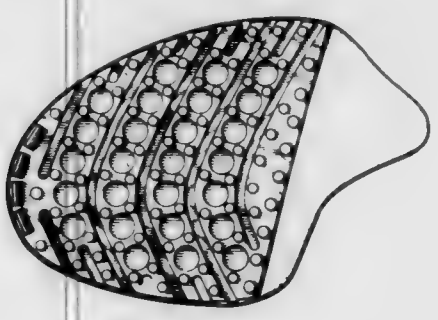
247,691
MACARONI
Rino Gnesi, 38 Case Dr., Revere, Mass. 02151
Filed Jan. 23, 1976, Ser. No. 651,632
Term of patent 14 years
Int. Cl. D1—*01*

U.S. Cl. D1—15



247,692
CLEAT PLATE FOR SPORT SHOE
Masanobu Inohara, Akashi, Japan, assignor to Onitsuka Co., Ltd., Kobe, Japan
Filed Jun. 27, 1975, Ser. No. 590,916
Term of patent 14 years
Int. Cl. D2—*04*

U.S. Cl. D2—317



247,693
MACRAME HOOK
Villa L. Lee, 13238 Trail Hollow Dr., Houston, Tex. 77024
Filed Oct. 8, 1976, Ser. No. 731,001
Term of patent 14 years
Int. Cl. D8—*99*

U.S. Cl. D3—19 R



247,694
DISPLAY FIGURE FOR MERCHANDISE OR SERVICE
Alfred E. Mueh, Milwaukee, and Nick J. Orth, Greenfield, both of Wis., assignors to Tempo Communications, Inc., Milwaukee, Wis.
Filed Aug. 27, 1976, Ser. No. 718,277
Term of patent 14 years
Int. Cl. D20—*02*

U.S. Cl. D6—85

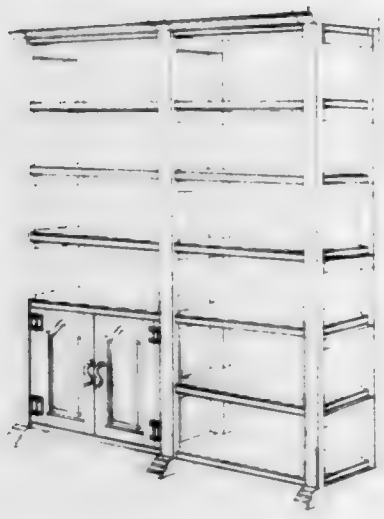


247,695
SUSPENDIBLE SHELVING
Harry Steven Bratton, 14077 Raa Ave., Tallahassee, Fla. 32303
Filed Jul. 25, 1977, Ser. No. 818,468
Term of patent 14 years
Int. Cl. D6—*04*

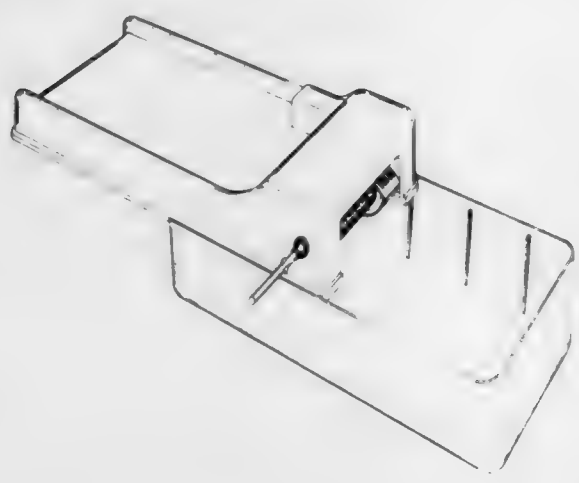
U.S. Cl. D6—113



247,696
ROOM DIVIDER UNIT
Leonard Eisen, Montvale, N.J., assignor to Albert M. Lock & Son, Inc., Boston, Mass.
Filed Apr. 19, 1976, Ser. No. 678,193
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



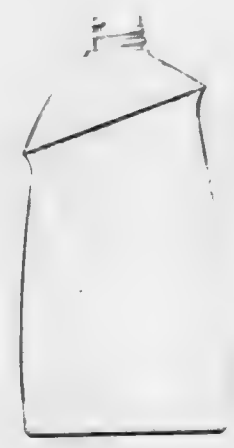
247,697
COMBINED GREEN BEAN AND PEA SHELLER AND GREEN BEAN SHREDDER
Charles E. Bottcher, Oneonta, Ala., assignor to J. B. Esslinger, Oneonta, Ala., a part interest
Filed Mar. 19, 1976, Ser. No. 668,658
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—153



247,698
CAP NUT
Toru Ono, Izumi, Japan, assignor to Kabushiki Kaisha Izumi Seisakusho, Osaka, Japan
Filed May 4, 1976, Ser. No. 682,899
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—397



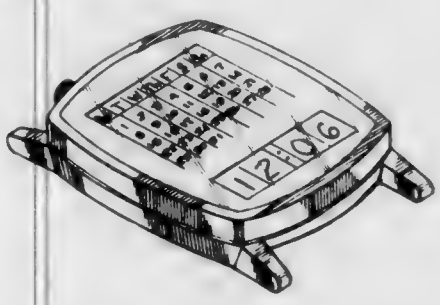
247,699
BOTTLE OR SIMILAR ARTICLE
Guy A. Turnbull, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 22, 1976, Ser. No. 651,497
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60



247,700
BOTTLE OR SIMILAR ARTICLE
Max Garazi, Hialeah, Fla., assignor to Solar Suntan Products Corporation, Hialeah, Fla.
Filed Jun. 24, 1976, Ser. No. 699,497
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143



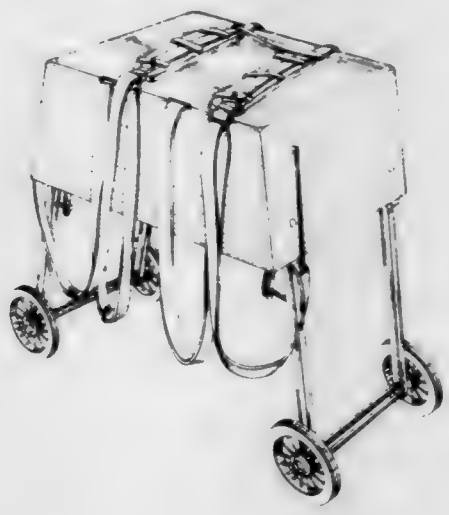
247,701
DIGITAL CALENDAR WATCH
Young D. Kwon, 531 Whitten Way, Placentia, Calif. 92670
Division of Ser. No. 356,582, May 2, 1973. This application Jan. 10, 1975, Ser. No. 540,265
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—31



247,702
MOISTURE MEASURING DEVICE
Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 624,304, Oct. 20, 1975. This application Dec. 8, 1975, Ser. No. 638,681
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—56



247,703
TRANSPORT CART
Rolf Romert, S-180 23 Ljustero, Ekgarden, Sweden
Filed Dec. 10, 1975, Ser. No. 639,458
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—25



247,704
HAND HELD MICROPHONE OR THE LIKE
Daniel Schulman, New Rochelle, and Monte L. Levin, New York, both of N.Y., assignors to Superex Electronics Corporation, Yonkers, N.Y.
Filed Dec. 20, 1976, Ser. No. 755,624
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



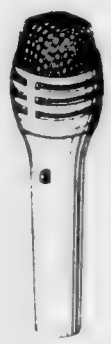
247,705
MICROPHONE
William J. Armstrong, 397 Eastland Dr. SE., Cedar Rapids, Iowa 52403
Filed Apr. 1, 1977, Ser. No. 783,857
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



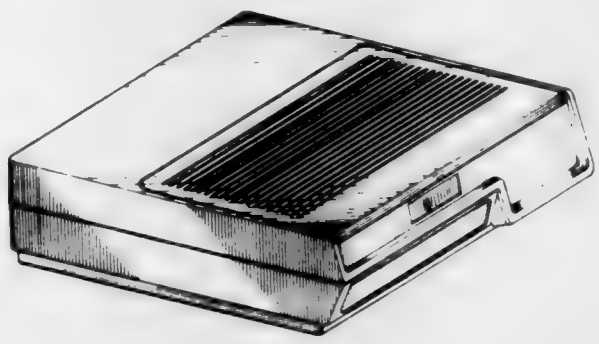
247,706
MICROPHONE
William J. Armstrong, 397 Eastland Dr. SE., Cedar Rapids, Iowa 52403
Filed Apr. 1, 1977, Ser. No. 783,858
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



247,707
MICROPHONE
William J. Armstrong, 397 Eastland Dr. SE., Cedar Rapids, Iowa 52403
Filed Apr. 1, 1977, Ser. No. 783,859
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



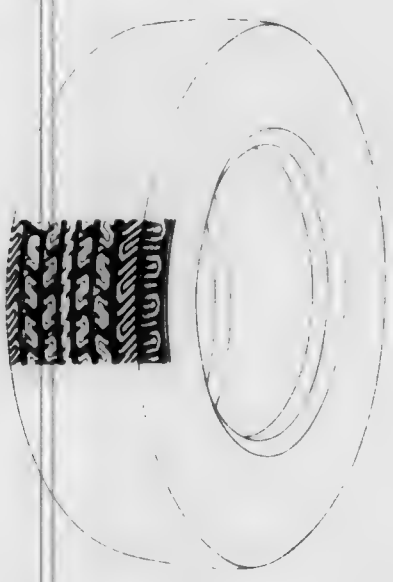
247,708
VEHICULAR RADIO OR SIMILAR ARTICLE
Norman R. Furst, Lombard; Masaru Tokiyama, Bloomingdale, and Rudolph W. Krolopp, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 25, 1976, Ser. No. 670,507
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



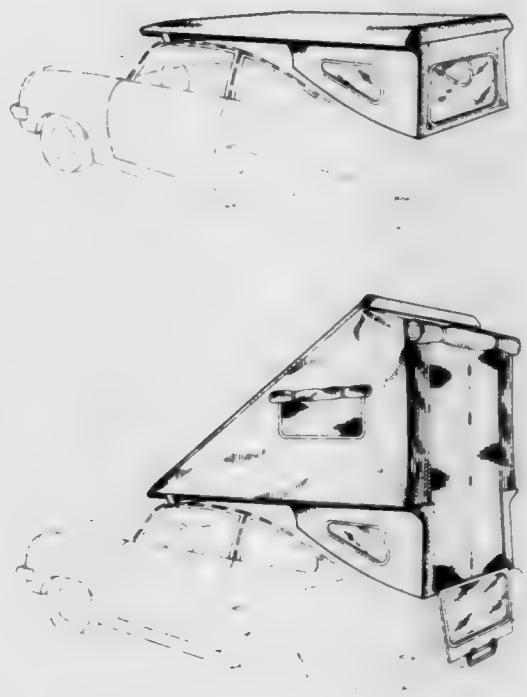
247,709
RADIO ANTENNA OR SIMILAR ARTICLE
Terrance Nelson Taylor, Cary, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 25, 1976, Ser. No. 670,209
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86



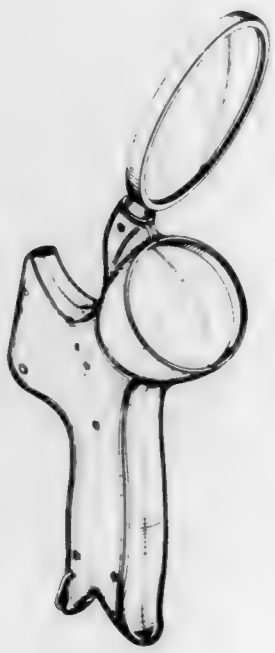
247,710
TIRE
John A. Hutz, New Haven, Conn., and Henry L. L. Gresens, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company
Filed Sep. 27, 1976, Ser. No. 727,061
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143

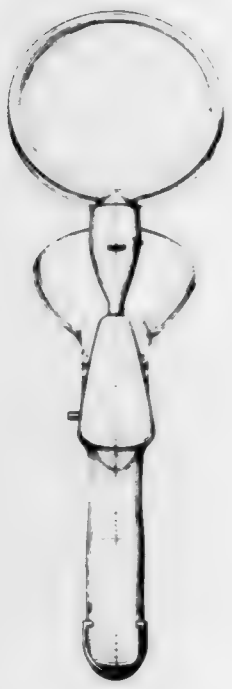


247,711
ATTACHABLE FOLDING SLEEPER UNIT FOR VEHICLES
William I. Pittman, 3228 Nebraska Pl., Costa Mesa, Calif. 92626
Filed Nov. 17, 1976, Ser. No. 742,554
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



247,712
HAND-HELD LIGHT AND MAGNIFIER
Louis P. LaBarge, Irvine, Calif., assignor to Communication Mfg. Co.
Filed Apr. 1, 1976, Ser. No. 672,761
Term of patent 14 years
Int. Cl. D16—*06;* D26—*05*
U.S. Cl. D16—55

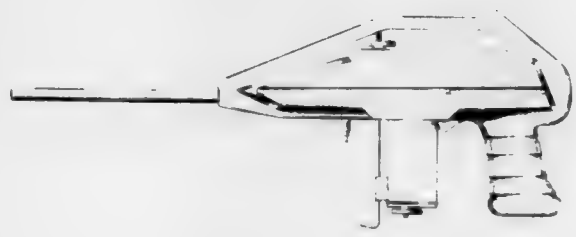




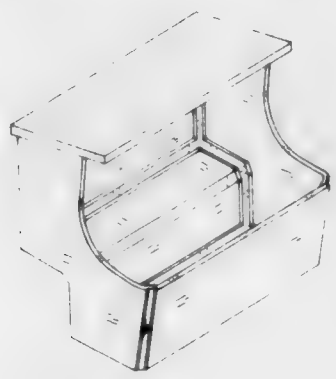
247,713
FISH HOOK KNOT TYING DEVICE
Donald E. Etes, 124 Edgewood Dr., Crystal Lake, Ill. 60014
Filed Feb. 22, 1977, Ser. No. 770,891
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31



247,714
GUN
Eugene Russett Clifford, 935 Osorio Ave., Coral Gables, Fla. 33134, assignor to Eugene Russett Clifford
Filed Jul. 15, 1976, Ser. No. 705,691
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—6



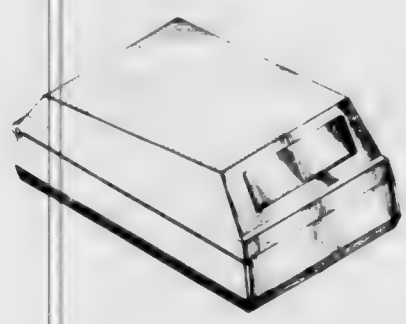
247,715
HUNTING BLIND
Joe D. Worley, Jr., 1201 Big Cove Rd., and Jyles L. Machen, 1515 Locust Cir., both of Huntsville, Ala. 35801
Filed Dec. 27, 1976, Ser. No. 754,732
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—99



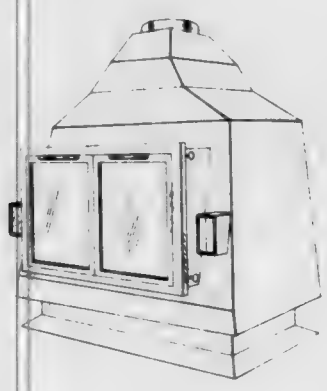
247,716
FISH KNIFE
Robert A. Koob, 5904 Sunrise Dr., Minneapolis, Minn. 55419
Filed Feb. 22, 1977, Ser. No. 770,678
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



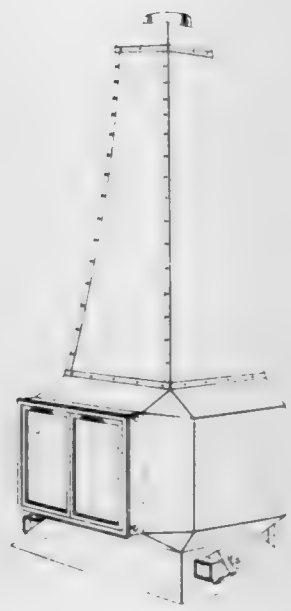
247,717
SPRINKLER SYSTEM CONTROLLER
Oded E. Sturman, and Benjamin Grill, both of Northridge, Calif., assignors to Clifton Burwell, a part interest
Filed May 24, 1976, Ser. No. 689,180
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—38



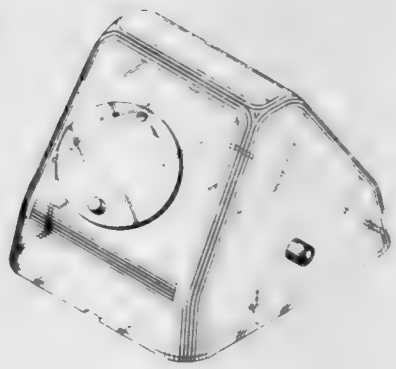
247,718
STOVE
Dale A. Peterman, Rte. 1, Box 6015, Sutherlin, Oreg. 97479
Filed Aug. 4, 1976, Ser. No. 711,543
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—92

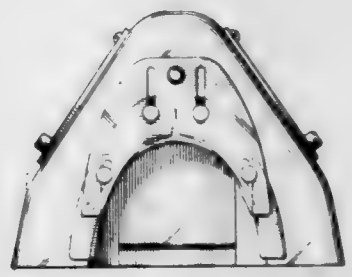


247,719
STOVE
Dale A. Peterman, Rte. 1, Box 6015, Sutherlin, Oreg. 97479
Filed Aug. 4, 1976, Ser. No. 711,544
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—92

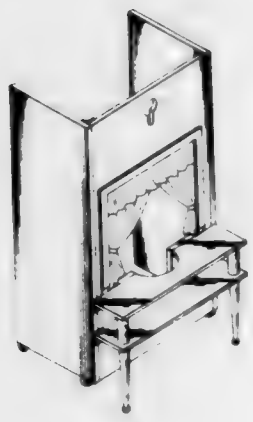


247,720
OXYGEN HOOD
Frank J. Wilhelm, Pomona, Calif., assignor to The Fluorocarbon Company, Anaheim, Calif.
Filed Dec. 15, 1975, Ser. No. 640,505
Term of patent 14 years
Int. Cl. D24—*01, 99*
U.S. Cl. D24—1.1

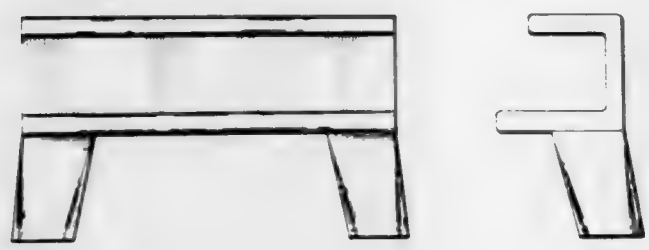




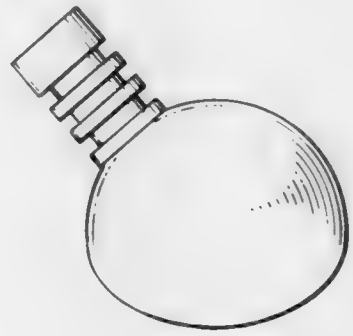
247,721
BOOTH
Miriam P. Wax, Narberth, Pa., assignor to Consumer Idea Centers, Inc., Haverford, Pa.
Filed Aug. 2, 1976, Ser. No. 710,778
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—58



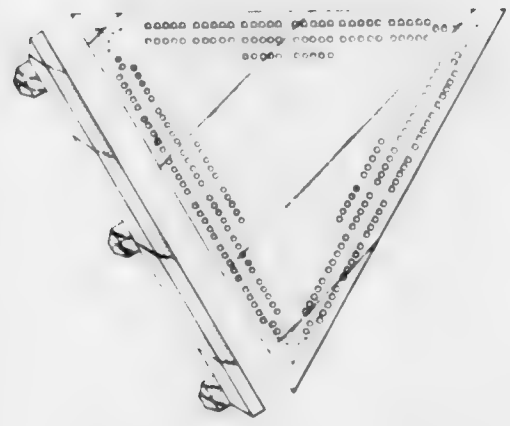
247,722
BRACKET SUPPORT FOR A WORKMAN'S PLANK
Bernhardt E. Lehto, 525 Hilsdale Dr. NW., Warren, Ohio 44485
Filed Nov. 3, 1976, Ser. No. 738,290
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D25—68



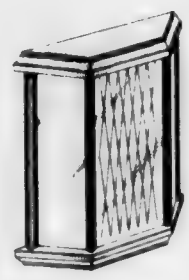
247,723
CIGARETTE EXTINGUISHER
Dorothy M. Lucich, and Bernard P. Lucich, both of 10608 Lindamere Dr., Los Angeles, Calif. 90024
Filed Sep. 7, 1976, Ser. No. 720,679
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—09



247,724
TRANSPARENT CRIBBAGE BOARD
Ernest R. Breault, 26009 E. 6th St., San Bernardino, Calif. 92410
Filed Apr. 8, 1976, Ser. No. 674,825
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 TT



247,725
MULTIMODE LIGHTING FIXTURE
Herbert E. Seymour, Northridge, and John M. Meinecke, Sylmar, both of Calif., assignors to Xantech Corporation, North Hollywood, Calif.
Filed Dec. 15, 1976, Ser. No. 750,864
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—4 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF APRIL, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See—*
Gettings, Robert E., 4,084,122, Cl. 318-696.000.

A/S Selvaagbygg: *See—*
Askjer, Leif, 4,083,527, Cl. 249-91.000.

A-Z International Tool Company: *See—*
Shirley, Kirk R., 4,083,405, Cl. 166-285.000.

AB Bofors: *See—*
Hakanson, Christer Lennart, 4,084,056, Cl. 560-29.000.

AB Karlshamns Oljefabriker: *See—*
Anjou, Klas Orvar Stensson; Fecske, Aurel Jeny; Krook, Carl Goran; and Ohlson, Jan Sven Ragnar, 4,083,836, Cl. 260-123.500.

Abbott, John D. Retractable passenger lift. 4,083,429, Cl. 187-9.00R.

Abbott Laboratories: *See—*
Zaugg, Harold Elmer; and Lee, Cheuk Man, 4,083,868, Cl. 260-562.00N.

Abe, Masayoshi: *See—*
Teranishi, Yuichi; and Abe, Masayoshi, 4,084,105, Cl. 307-205.000.

Abe, Mitsuo: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Abe, Mitsuo; Takeda, Norio; and Miura, Mitsuo, 4,083,869, Cl. 260-566.00R.

Abex Corporation: *See—*
Straut, John E., 4,083,436, Cl. 188-265.000.

Aboelfotoh, M. Osama; and Park, Kyu Chang, to International Business Machines Corporation. Method of manufacturing a gas panel assembly. 4,083,614, Cl. 316-19.000.

Abrams, Ralph: *See—*
Campbell, Bruce D.; and Abrams, Ralph, 4,084,142, Cl. 335-152.000.

Acevedo, Raul. Dental articulator for determining x, y, and z displacement of separate teeth. 4,083,114, Cl. 32-32.000.

ACF Industries, Incorporated: *See—*
Alaniz, Ruben G., 4,083,376, Cl. 137-246.220.

Ackeret Design Studios: *See—*
Ackeret, Peter, 4,083,108, Cl. 30-124.000.

Ackeret, Peter, to Ackeret Design Studios. Device for halving fruit. 4,083,108, Cl. 30-124.000.

Ackermann, Gustav; and Clostermeyer, Gerhard, to Gebr. Claas Maschinenfabrik GmbH. Arrangement for protecting the needles of the tying mechanism of a baler. 4,083,297, Cl. 100-19.00R.

Adair, Henry; Christensen, Dean Lester; and Specktor, Leon Harold, to Memorex Corporation. Magnetic disc cartridge. 4,084,200, Cl. 360-133.000.

Adams Rite Manufacturing Co.: *See—*
Folger, Roger J., 4,083,590, Cl. 292-92.000.

Adamson, Arthur P., to United States of America, National Aeronautics and Space Administration. Gas turbine engine with recirculating bleed. 4,083,181, Cl. 60-39.520.

Admiral Corporation: *See—*
Srivastava, Gopal K.; and Rhee, Dennis W., 4,084,178, Cl. 358-28.000.

Adolphi, Heinrich: *See—*
Kiehs, Karl; Adolphi, Heinrich; and Theobald, Hans, 4,083,971, Cl. 424-200.000.

Aeschlimann, Peter: *See—*
Koller, Stefan; Aeschlimann, Peter; Karlen, Urs; and Liechti, Hans Wilhelm, 4,083,847, Cl. 260-207.000.

Agafonov, Pavel Anatolievich: *See—*
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Kurovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich, 4,083,204, Cl. 66-178.00R.

Agafonov, Vasily Trofimovich: *See—*
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Kurovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich, 4,083,204, Cl. 66-178.00R.

Agar Instrumentation Incorporated: *See—*
Agar, Joram; and Zanker, Klaus Joachim, 4,083,244, Cl. 73-204.000.

Agar, Joram; and Zanker, Klaus Joachim, to Agar Instrumentation Incorporated. Method and apparatus for measuring fluid flow and/or for exercising a control in dependence thereon. 4,083,244, Cl. 73-204.000.

Ahlgren, Sture: *See—*
Skafvenstedt, Bengt; Ahlgren, Sture; and Tschuertz, Eberhard, 4,084,165, Cl. 346-140.00R.

Aikoh Co., Ltd.: *See—*
Yoshida, Hiroshi, 4,083,716, Cl. 75-58.000.

Airrigation Engineering Company, Inc.: *See—*
Horne, Frederick F.; and VanderLans, Gerald G., 4,083,384, Cl. 138-93.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Tsubota, Haruo; Takayama, Katsuki; Sakakibara, Naoji; and Hashimoto, Nobuyuki, 4,084,072, Cl. 200-83.00L.

Aizawa, Hideo; and Moriya, Makoto, to Nissan Motor Company, Limited. Shielding arrangement for exhaust purifier. 4,083,185, Cl. 60-299.000.

Akamatsu, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Power converter. 4,084,220, Cl. 363-37.000.

Akzona Incorporated: *See—*
Hutzezon, Frits, 4,083,276, Cl. 83-37.000.
McNeill, William Allen, 4,083,091, Cl. 28-281.000.
Stanko, Wayne Stephen, 4,083,174, Cl. 57-77.450.
van der Vies, Johannes, 4,083,973, Cl. 424-239.000.

Alaniz, Ruben G., to ACF Industries, Incorporated. Two piece double acting valve seat assembly. 4,083,376, Cl. 137-246.220.

Alar Engineering Corporation: *See—*
White, Harold Robert, 4,083,787, Cl. 210-402.000.

Albertine, Robert J.; Blomstedt, John W.; Edfors, John E.; Quattrini, Victor L.; and Yoshida, Paul S., to Honeywell Information Systems Inc. Modular assembly for an electronic computer. 4,084,250, Cl. 364-708.000.

Albrecht, William E.: *See—*
Jansma, Roger H.; and Albrecht, William E., 4,084,034, Cl. 428-342.000.

Albright, James A.; and Wilkinson, Theodore C., to Velsicol Chemical Corporation. Novel phosphate esters and non-scorching flame retardant polyurethane compositions containing them. 4,083,825, Cl. 260-45.70P.

Albright, James A., to Velsicol Chemical Corporation. Polymeric compositions containing a flame retardant amount of a bis(2,3-dibromopropyl)-chloroalkyl phosphate. 4,083,826, Cl. 260-45.70P.

Alfa-Laval AB: *See—*
Anjou, Klas Orvar Stensson; Fecske, Aurel Jeny; Krook, Carl Goran; and Ohlson, Jan Sven Ragnar, 4,083,836, Cl. 260-123.500.

Alfke, Peter H., to Fairchild Camera and Instrument Corporation. Programmable counter. 4,084,082, Cl. 235-92.0DM.

Allen, Buford W. Bubbler and automatic light. 4,084,084, Cl. 362-184.000.

Allen, Jan K., to Caterpillar Tractor Co. Mounting apparatus for a counterweight assembly. 4,083,459, Cl. 212-8.00B.

Allen, John. Control arrangement for toy and model vehicles. 4,083,143, Cl. 46-204.000.

Allen, Joseph C., to Texaco Inc. Oil recovery process utilizing air and superheated steam. 4,083,404, Cl. 166-261.000.

Allied Chemical Corporation: *See—*
Begley, Richard F.; and Barrett, Joseph J., 4,084,100, Cl. 250-574.000.
Lee, Lester T. C.; and Liu, Kang-Jen, 4,083,768, Cl. 204-296.000.
Lofquist, Robert Alden; and Haylock, John Christopher, 4,083,893, Cl. 260-857.0UN.
Tajkowski, Edward George, 4,083,756, Cl. 204-35.00N.

Allis-Chalmers Corporation: *See—*
Kreitzberg, Ernest A., 4,083,266, Cl. 74-606.00R.

Alston, Otis B.: *See—*
Livingston, Emmett S.; and Alston, Otis B., 4,083,085, Cl. 19-105.000.

Alt, Richard Curtis; and Perry, Francis James, to International Business Machines Corporation. Ink collector in ink jet printer. 4,084,164, Cl. 346-75.000.

Alton Box Board Company: *See—*
Hatfield, Hodge, 4,083,526, Cl. 249-48.000.

Aluminum Company of America: *See—*
Ballain, Marlyn D.; Hardwick, Roy E.; Hargis, Robert L.; and King, Larry K., 4,083,926, Cl. 423-135.000.
Das, Subodh K., 4,083,801, Cl. 252-422.000.
Das, Subodh K., 4,083,940, Cl. 423-449.000.
King, Larry K., 4,083,928, Cl. 423-136.000.
Kinosz, Donald L.; and Haupin, Warren E., 4,083,943, Cl. 423-498.000.

Amemiya, Shinichi: *See—*
Umezaki, Hajime; Oguri, Kyoichi; Nakajima, Hiroshi; Amemiya, Shinichi; and Nozawa, Yoshitomo, 4,083,247, Cl. 74-243.00R.

American Color & Chemical Corporation: *See—*
Botros, Raouf, 4,083,683, Cl. 8-39.00D.

American Cyanamid Co.: *See—*
Sloboda, Adolph Edward; and Hanifin, John William, 4,083,993, Cl. 424-304.000.

American Cyanamid Corporation: *See—*
Brand, William Wayne, 4,083,863, Cl. 260-465.00D.
American Optical Corporation: *See—*
Morton, David H., 4,084,037, Cl. 429-1.000.
American Service Products, Inc.: *See—*
Schroeder, Fred, 4,084,078, Cl. 219-121.00P.
Ameron, Inc.: *See—*
Parson, Lee Minus; and du Fresne, Eugene R., 4,083,726, Cl. 106-14.410.
Ames, Stephen A.; and Martel, Robert J., to Westinghouse Electric Corporation. Demodulator for phase reversal modulation system. 4,084,128, Cl. 329-116.000.
AMP Incorporated: *See—*
Coller, James Ray, 4,083,101, Cl. 29-739.000.
Lynch, James Edward, 4,083,623, Cl. 339-258.00R.
Volinskie, Robert, 4,083,615, Cl. 339-17.00F.
Ampex Corporation: *See—*
Lee, Kenneth K., and Martin, Albert W., 4,083,480, Cl. 224-5.00V.
Rubins, Harry L., 4,083,449, Cl. 206-405.000.
Trost, Allen J., 4,084,176, Cl. 358-8.000.
Amsterdamse Ballast Bagger en Gran, b.v.: *See—*
de Koning, Jan; van den Brink, Theodorus; and Wolters, Tjako Aaldrik, 4,083,135, Cl. 37-58.000.
Amsterdamse Ballast Bagger en Grond: *See—*
Oterdoom, Klaas, 4,083,134, Cl. 37-58.000.
Anagnostou, Evelyn; and Forestieri, Americo F., to United States of America, National Aeronautics and Space Administration. Method of making encapsulated solar cell modules. 4,083,097, Cl. 29-572.000.
Anastasia, Harry G.; Kineyko, Wallace D.; and Ludwig, Carl H., to Bendix Corporation, The. Precision pressure generator. 4,084,239, Cl. 364-424.000.
Anderson, Hugh C., to Quaker Oats Company, The. Blends of furan-aldehyde resins with phenolic resins and molded articles produced therefrom. 4,083,817, Cl. 260-38.000.
Anderson, James R., to Central Sprinkler Corporation. Adjustable drop nipple for sprinkler heads. 4,083,410, Cl. 169-37.000.
Anderson, Larry Don; Bennett, Donald Bruce; and Slechta, Leo John, Jr., to Sperry Rand Corporation. Virtual address translator. 4,084,225, Cl. 364-200.000.
Anderson, Larry Don; Wolff, Thomas Ormond; and Slechta, Leo John, Jr., to Sperry Rand Corporation. Virtual address translator. 4,084,226, Cl. 364-200.000.
Anderson, Philip: *See—*
Malcolm, Richard; Anderson, Philip; Money, Kenneth E.; and Mandler, Walter, 4,083,239, Cl. 73-178.00R.
Anderson, Wilbert Cleon; Thompson, Vernal Wynn; and Urry, Lawrence Walter, to Sperry Rand Corporation. Secant correction circuit. 4,084,159, Cl. 343-7.400.
Andreadakis, Nicholas Cleanthis: *See—*
Kirchner, Richard K.; Andreadakis, Nicholas Cleanthis; and Mayer, William Norman, 4,084,213, Cl. 361-384.000.
Andreae, Johannes Franciscus Reinardus, to Bos Kalis Westminster Group N.V. Draghead for suction dredger. 4,083,132, Cl. 37-58.000.
Andreiko, Craig A.: *See—*
Miller, Frank R.; and Andreiko, Craig A., 4,083,113, Cl. 32-14.00A.
Andres, Rudolf, to Daimler-Benz Aktiengesellschaft. Pneumatic adjusting mechanism. 4,083,290, Cl. 91-357.000.
Andros Incorporated: *See—*
Portner, Peer M.; and LaForge, David H., 4,083,367, Cl. 128-2.070.
Andrus, Ronald L.; and Reade, Richard F., to Corning Glass Works. Glass-ceramics with magnetic surface films. 4,083,727, Cl. 106-39.700.
Andrychuk, Dmetro. Method for cutting ornamental transparent gemstones and products produced therefrom. 4,083,352, Cl. 63-32.000.
Anglo Dutch Dredging Co. Ltd.: *See—*
Oterdoom, Klaas, 4,083,134, Cl. 37-58.000.
Anjou, Klas Orvar Stensson; Fecske, Aurel Jeny; Krook, Carl Goran; and Ohlson, Jan Sven Ragnar, to Alfa-Laval AB; and AB Karlshamns Oljefabriker. Production of rapeseed protein concentrate for human consumption. 4,083,836, Cl. 260-123.500.
Anneman, William Alexander. Developer composition and process for developing photographic film. 4,083,722, Cl. 96-66.0HD.
Anthonioz, Camille, to Societe Normalu. False ceiling or wall. 4,083,157, Cl. 52-222.000.
Anthony, Carl, Jr.; and Wiley, Donald E. Metallurgical sideboard or hot top suspension system. 4,083,528, Cl. 249-198.000
Antoniello, Frank, to T & S Brass and Bronze Works, Inc. Faucet assembly. 4,083,383, Cl. 137-616.700
Antonova, Roza Ivanovna; and Kreinin, Efim Vulfovich. Method of underground gasification of a coal bed. 4,083,402, Cl. 166-251.000.
Anway, Allen R., to Plaunt & Anderson Company, Inc. Method and apparatus for detecting and locating fluid leaks. 4,083,229, Cl. 73-40.50A.
Aoki, Masakazu: *See—*
Ohba, Shinya; Kubo, Masaharu; and Aoki, Masakazu, 4,084,107, Cl. 307-221.00D.
Aoki, Yoshio: *See—*
Asano, Yusuke; Aoki, Yoshio; and Yamazaki, Nagataka, 4,083,733, Cl. 127-42.000
Aono, Shigeo; and Asano, Masahara, to Nissan Motor Company, Limited. Method of and system for detecting misfire in internal combustion engine. 4,083,234, Cl. 73-116.000.
Aoyama, Akira: *See—*
Miwa, Tatsuro; Aoyama, Akira; Shimosaka, Masatoshi; Kusumoto, Hideto; and Kuroda, Katsuhiko, 4,083,749, Cl. 162-168.00N.
Appel, Douglas C.: *See—*
Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., 4,083,399, Cl. 165-95.000.
Appell, Marc; Bradley, John J.; and Franklin, Benjamin S., to Compagnie Honeywell Bull. System of controlling procedure execution using process control blocks. 4,084,224, Cl. 364-200.000.
Applequist, Michael D.: *See—*
White, James F.; and Applequist, Michael D., 4,083,805, Cl. 252-437.000.
Applied Magnetics, Inc.: *See—*
Davis, Walter L., 4,083,084, Cl. 17-73.000.
Arai, Haruhiko: *See—*
Tsuchiya, Yoshimi; Naganuma, Yoshinori; and Arai, Haruhiko, 4,083,954, Cl. 424-47.000.
Arakawa, Hideo; Kuniya, Keiichi; Namekawa, Takashi; and Iizuka, Tomio, to Hitachi, Ltd. Copper-carbon fiber composites and process for preparation thereof. 4,083,719, Cl. 75-229.000.
Arihara, Shigenobu: *See—*
Takemoto, Tsunematsu; Nakajima, Tadashi; Arihara, Shigenobu; and Okuhira, Megumi, 4,084,010, Cl. 426-548.000.
ARMCO Steel Corporation: *See—*
Christ, Christy; and Graff, Hart F., 4,084,019, Cl. 427-32.000.
Armour-Dial, Inc.: *See—*
Schubert, Robert W.; and Hassapis, Thomas J., 4,083,796, Cl 252-132.000.
Armstrong Cork Company: *See—*
Barsy, Imre J., 4,084,031, Cl. 428-95.000.
Dieck, Ronald L.; and Quinn, Edwin J., 4,083,820, Cl. 260-2.5FP
Harris, Thomas G., 4,083,821, Cl. 260-18.0PF.
Harris, Thomas G., 4,083,824, Cl. 260-42.290.
Santosusso, Thomas M., 4,083,831, Cl. 260-77 5AA.
Armstrong, James J.; and Berg, Peter G., to Texas Instruments Incorporated. Condition responsive control device. 4,083,336, Cl. 123-119.00F.
Arnold, James F. Jetting apparatus. 4,083,417, Cl. 175-393.000.
Arnot, Larry K.: *See—*
Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., 4,083,399, Cl. 165-95.000.
Arpin, Rene; and Tissot, Philippe, to Rhone-Poulenc Industries. Self-adhesive polyester films of a copolymer of vinyl acetate and maleate diester 4,084,035, Cl. 428-352.000.
Arter, Nelson Kay; Hammond, Clarence Howard; Pedersen, Daniel James; and Prahl, Marvin Edward, to International Business Machines Corporation. Procedure for tightening tape wraps on a spindle 4,084,116, Cl. 318-6.000.
Arthur G. McKee & Company: *See—*
Chalmers, Franklin S., 4,083,944, Cl. 423-567.00A.
Artzt, Peter; Bausch, Albert; and Egbers, Gerhard, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Method and apparatus for the manufacture of core yarn in an open-end spinning device 4,083,173, Cl. 57-58.950.
Arvin Industries, Inc.. *See—*
Cauldwell, Jack D.; and Weaver, Raymond Louis, 4,084,140, Cl. 325-396.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kusunose, Tetsuhiro; Ideka, Masataka; Kitamura, Kazuyuki; Shima, Tsukasa; and Henmi, Hiroshi, 4,083,894, Cl. 260-857.0PE.
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,083,786, Cl. 210-321.00B
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kawasaki, Masahiro; Tano, Eiichi; and Sawada, Yoshio, 4,084,166, Cl. 354-23.00D.
Asano, Masahara: *See—*
Aono, Shigeo; and Asano, Masahara, 4,083,234, Cl. 73-116.000.
Asano, Yusuke; Aoki, Yoshio; and Yamazaki, Nagataka, to Meiji Milk Products Company Limited; and Taiyo Kagaku Kogyo Company Limited. Method of producing beta-lactose. 4,083,733, Cl. 127-42.000.
Asao, Hiroshi: *See—*
Kobayashi, Masaru; Kamada, Atsuya; Terabayashi, Takao; and Asao, Hiroshi, 4,083,220, Cl. 72-364.000
Asaoka, Hiroyasu: *See—*
Koeda, Takemi; Tsuruoka, Takashi; Asaoka, Hiroyasu; Shibata, Uichi; Inoue, Shigeharu; and Nida, Taro, 4,083,850, Cl. 260-295.50R.
Asaoka, Masayuki: *See—*
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 4,084,059, Cl 560-87.000.
Asari, Akira; and Tsuzuki, Hidehiro, to Kobe Steel, Ltd. Hydrostatic extrusion method. 4,083,214, Cl. 72-60.000.
Aschwanden, Felix; and Bart, Theodor Ernst, to RCA Corporation SECAM Subcarrier generator. 4,084,177, Cl. 358-25.000.
Ashland Oil, Inc.: *See—*
Michelson, Anatol, 4,083,396, Cl. 164-158.000.
Askjer, Leif, to A/S Selvaagbygg. Mould for production of building elements. 4,083,527, Cl. 249-91.000.
Asplund, Herbert Frederick, to United Technologies Corporation. Gas turbine construction. 4,083,648, Cl. 415-137.000.
Asselin, George F.; and Witt, Paul A., to UOP Inc. Aromatic hydrocarbon separation process. 4,083,772, Cl. 208-321.000.
Atari, Inc.: *See—*
Hector, Roger D., 4,084,194, Cl. 358-254.000.
Atlantic Richfield Company: *See—*
Stover, Dennis E., 4,083,603, Cl. 299-4.000.
Styring, Ralph E., 4,083,924, Cl. 423-88.000.

Attwood, Brian William: *See*—
Newns, Michael David; and Attwood, Brian William, 4,083,750, Cl. 162-317.000.
Auer, Max. Apparatus for regeneration of skiing courses. 4,083,131, Cl. 37-13.000.
Aus der Au, Rudolf; and Schurch, Rudolf, to Inventa AG fur Forschung und Patentverwertung. Pressure medium regulating device. 4,083,379, Cl. 137-495.000.
Automation Industries, Inc.: *See*—
McCormick, David Michael; and Cooper, Earl Andrew, 4,083,619, Cl. 339-75.00M.
Automatisme et Technique: *See*—
Gerard, Bardet, 4,083,309, Cl. 104-18.000.
Axelson Fishing Tackle Mfg. Co., Inc.: *See*—
Shedd, William D.; and Belden, Lawrence F., 4,083,141, Cl. 43-22.000.
Babcock Wire Equipment Limited: *See*—
Mander, Keith Anthony; Mitchell, Keith James; Kempster, Barry Arthur; and Rodger, David, 4,083,506, Cl. 242-25.00R.
Babej, Milos; Bartmann, Wilhelm; Beck, Gerhard; and Lerch, Ulrich, to Hoechst Aktiengesellschaft. Cyclopentane derivatives. 4,083,990, Cl. 424-283.000.
Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., to Wynn Oil Company. Valving for engine cooling system flushing apparatus and method. 4,083,399, Cl. 165-95.000.
Bachmann, Robert; Buxbaum, Charley; and Gessinger, Gernot, to BBC Brown, Boveri & Company, Limited. Lanthanated thermionic cathodes. 4,083,811, Cl. 252-509.000.
Back, Gerhard; and Beffa, Fabio, to Ciba-Geigy Corporation. Unsymmetrical mono sulfo containing 1:2 azo, azo chromium complex dyes. 4,083,839, Cl. 260-145.00B.
Bade, Erich, to Readymix Cement Engineering GmbH & Co. KG. Installation for the burning of sintering and cooling of cement clinker, lime, magnesite, dolomite, and the like. 4,083,679, Cl. 432-99.000.
Baecke, Antoine Marinus Rene: *See*—
Oosterling, Pieter Adriaan; and Baecke, Antoine Marinus Rene, 4,083,257, Cl. 74-60.000.
Bailey, Denis M., to Sterling Drug Inc. Pyrrole-2-carboxamides. 4,084,051, Cl. 544-141.000.
Baker, Don R.; and Walker, Francis H., to Stauffer Chemical Company. N-dimethylpropynyl-α-methoxy-α-(3,5-dimethylphenoxy)acetamide and its use as herbicides. 4,083,867, Cl. 260-559.00B.
Baker Perkins Inc.: *See*—
Petry, Basil E., 4,083,353, Cl. 126-21.00R.
Baker, Sandra, to Raymond Lee Organization, Inc., The, a part interest. Portable pet washing device. 4,083,328, Cl. 119-158.000.
Ball, Peter, to FMC Corporation. Fluid loading arm alarm system. 4,084,247, Cl. 364-559.000.
Ballain, Marlyn D.; Hardwick, Roy E.; Hargis, Robert L.; and King, Larry K., to Aluminum Company of America. Cooling aluminum chloride vapors by contact with solid aluminum chloride. 4,083,926, Cl. 423-135.000.
Ballast-Nedam Groep, N.V.: *See*—
de Koning, Jan; van den Brink, Theodorus; and Wolters, Tjako Aaldrik, 4,083,135, Cl. 37-58.000.
Ravesteyn, Cornelis Jan; de Koning, Jan; and Wolters, Tjako Aaldrik, 4,083,133, Cl. 37-72.000.
Ballu, Vincent Pierre Marie, to Tecnoma. Plant permitting spraying proportioning to the space covered, applicable in particular to agricultural sprayers. 4,083,494, Cl. 239-156.000.
Balzers Patent-und Beteiligungs-Aktiengesellschaft: *See*—
Mennenga, Hermann, 4,083,231, Cl. 73-40.700.
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Olinkraft, Inc. Combination shipping and storage container. 4,083,485, Cl. 229-23.0BT.
Bandel, David. Solid fuel lamp. 4,084,086, Cl. 362-161.000.
Bardwick, John, III; and Fenerli, Ligor G. Noodle making machine. 4,083,668, Cl. 425-194.000.
Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See*—
Burkhardt, Klaus, 4,083,505, Cl. 242-18.0PW.
Schippers, Heinz; and Hessenbruch, Rolf, 4,083,914, Cl. 264-147.000.
Barr & Stroud Limited: *See*—
Runciman, Herbert Morrison, 4,084,092, Cl. 250-347.000.
Barrett, Joseph J.: *See*—
Begley, Richard F.; and Barrett, Joseph J., 4,084,100, Cl. 250-574.000.
Barrington, Burchus Q., to Halliburton Company. Full flow bypass valve. 4,083,409, Cl. 166-320.000.
Barsy, Imre J., to Armstrong Cork Company. Static discharging floor covering. 4,084,031, Cl. 428-95.000.
Bart, Theodor Ernst: *See*—
Aschwanden, Felix; and Bart, Theodor Ernst, 4,084,177, Cl. 358-25.000.
Bartmann, Wilhelm: *See*—
Babej, Milos; Bartmann, Wilhelm; Beck, Gerhard; and Lerch, Ulrich, 4,083,990, Cl. 424-283.000.
Basey, Otis, Jr.; and Knoedler, Roy E., to Cosco, Inc. Collapsible infant's stroller. 4,083,579, Cl. 280-650.000.
BASF Aktiengesellschaft: *See*—
Dimroth, Peter; Kurtz, Walter; Radtke, Volker; and Juenemann, Werner, 4,083,686, Cl. 8-41.00R.
Hack, Joachim; Himmelmann, Udo; Rudolf, Peter; Schulze-Berge, Klaus; and Meyer, Karl-Heinz, 4,084,201, Cl. 360-135.000.
Hansen, Guenter; Kaack, Hermann; Kermer, Wolf-Dieter; and Meyer, Guenter, 4,083,684, Cl. 8-41.00R.
Kiehs, Karl; Adolphi, Heinrich; and Theobald, Hans, 4,083,971, Cl. 424-200.000.
Naarmann, Herbert; and Pohlemann, Heinz, 4,084,048, Cl. 526-260.000.
Pohlemann, Heinz; Gausepohl, Hermann; and Naarmann, Herbert, 4,083,835, Cl. 260-79.50C.
Pommer, Ernst-Heinrich; Hagen, Helmut; and Fleig, Helmut, 4,083,986, Cl. 424-270.000.
Quadbeck-Seeger, Hans-Juergen, 4,083,849, Cl. 260-294.900.
Bashkirov, Andrei Nikolaevich: *See*—
Kagan, July Borisovich; Loktev, Sergei Minovich; Nizov, Gennady Alexeevich; Zhilin, Vyacheslav Alexandrovich; Zuev, Alexandr Andreevich; and Bashkirov, Andrei Nikolaevich, 4,083,880, Cl. 260-632.00R
Baston, Irv; Lowery, J. Orbie; and Thomas, O. Leon, to Southwire Company. Insulated wire stripping method. 4,083,096, Cl. 29-427.000.
Batchelor, John Howard. Vacuumizing closure for vacuum pack containers. 4,083,468, Cl. 220-234.000.
Battelle Memorial Institute: *See*—
Courvoisier, Jean-Claude F.; and Meylan, Jean-Luc CH., 4,083,360, Cl. 126-271.000.
Libby, Hugo L.; and Hildebrand, Bernard P., 4,084,136, Cl. 324-238.000.
Baumann, Erwin L., to Ford Aerospace & Communications Corporation. Fuse assembly. 4,084,146, Cl. 337-234.000.
Baumhover, Alfred H.: *See*—
Mitchell, Everett R.; Jacobson, Martin; and Baumhover, Alfred H., 4,083,995, Cl. 424-311.000.
Bausch, Albert: *See*—
Artzt, Peter; Bausch, Albert; and Egbers, Gerhard, 4,083,173, Cl. 57-58.950.
Bawroski, George: *See*—
Geohegan, Kenneth P., Jr.; Collins, Christopher R.; Bawroski, George; and Steiner, George H., 4,083,433, Cl. 188-1.00B.
Baxter, Bobby G., to Binkley Company, The. Cargo carrier. 4,083,573, Cl. 280-43.110.
Bayer Aktiengesellschaft: *See*—
Buysch, Hans-Josef; Ziemek, Peter; and Raue, Roderich, 4,083,870, Cl. 260-570.00D.
Corte, Herbert; Heller, Harold; Lange, Peter Michael; and Netz, Otto, 4,083,712, Cl. 71-28.000.
Gottschlich, Alois; and Leverenz, Klaus, 4,083,844, Cl. 260-174.000.
Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, 4,083,845, Cl. 260-180.000.
Kruckenberg, Winfried, 4,083,685, Cl. 8-41.00R.
Leverenz, Klaus, 4,083,846, Cl. 260-207.100.
Psaar, Hubertus, 4,083,680, Cl. 8-2.50A.
Wolf, Karlheinz; Nonn, Konrad; Hornle, Reinhold; and Petroll, Hans Werner, 4,083,689, Cl. 8-85.00B.
Bayless, Norman Gene. Shoe holder. 4,083,483, Cl. 224-45.00R.
Bazarian, A.; and Bonnesen, J. S., to General Instrument Corporation. Gas-filled surge arrestors. 4,084,208, Cl. 361-120.000.
BBC Brown, Boveri & Company, Limited: *See*—
Bachmann, Robert; Buxbaum, Charley; and Gessinger, Gernot, 4,083,811, Cl. 252-509.000.
Brandli, Gerold; and Dick, Max, 4,084,217, Cl. 363-4.000.
Zboril, Josef, 4,083,650, Cl. 415-174.000.
Beachem, Ronald G.; and Willette, Wayne Ronald, to Economics Laboratory, Inc. Electronic laundry program control apparatus. 4,084,237, Cl. 364-400.000.
Beachler, Robert R., Jr.: *See*—
Kelly, L. Thomas; Beachler, Robert R., Jr.; and Petterson, Tor H., 4,083,364, Cl. 128-2.00H.
Beaton, Stephen Peter; and Kasserra, Hans Peter, to Du Pont of Canada Limited. Treatment of tri(alkaline earth metal) tungstates with acids. 4,083,920, Cl. 423-53.000.
Beck, Christian A.; and Ross, William A., to Pitney-Bowes, Inc. Copy sheet handling apparatus for a copier. 4,083,553, Cl. 271-4.000.
Beck, Gerhard: *See*—
Babej, Milos; Bartmann, Wilhelm; Beck, Gerhard; and Lerch, Ulrich, 4,083,990, Cl. 424-283.000.
Becker, Thomas R.: *See*—
Udwin, Ellis G.; and Becker, Thomas R., 4,083,703, Cl. 55-89.000.
Becker-Udwin, Inc.: *See*—
Udwin, Ellis G.; and Becker, Thomas R., 4,083,703, Cl. 55-89.000.
Beckman Instruments, Inc.: *See*—
Oh, Chan S., 4,083,797, Cl. 252-299.000.
Beckman, Maynard K., Jr., to Xerox Corporation. Fuser wick. 4,083,322, Cl. 118-70.000.
Beddell, Christopher Raymond; Lowe, Lawrence Alfred; and Wilkinson, Samuel, to Burroughs Wellcome Co. Nona- and decapeptides. 4,083,967, Cl. 424-177.000.
Beecham Group Limited: *See*—
Goudie, Alexander Crossan; Seager, Harry; and Fisher, Howard, 4,083,951, Cl. 424-44.000.
Beekmans, Nicolaas Marinus: *See*—
Van de Leest, Renaat Edmond; Beekmans, Nicolaas Marinus; and Heijne, Leopold, 4,083,764, Cl. 204-195.00M.
Beermann, Paul; and Grosse-Benne, Wilhelm, to Hagenuk & Co. GmbH. Water-tight firing cap arrangement and method of making the same. 4,083,307, Cl. 102-45.000.
Beffa, Fabio: *See*—
Back, Gerhard; and Beffa, Fabio, 4,083,839, Cl. 260-145.00B.
Begley, Richard F.; and Barrett, Joseph J., to Allied Chemical Corpora-

tion. Generation of coherent rotational anti-Stokes spectra. 4,084,100, Cl. 250-574.000.
Belcher, Mark D.: *See—*
Hillman, Theodore E.; and Belcher, Mark D., 4,083,273, Cl. 83-2.000.
Belden, Lawrence F.: *See—*
Shedd, William D.; and Belden, Lawrence F., 4,083,141, Cl. 43-22.000.
Bell & Howell Company: *See—*
Mau, Robert C., deceased; and Figge, Erwin E., 4,083,630, Cl. 352-91.00C.
Tiger, Emil, 4,084,212, Cl. 361-230.000.
Bell Telephone Laboratories, Incorporated: *See—*
Heller, Adam; Miller, Barry; and Robbins, Murray, 4,084,044, Cl. 429-111.000.
Bello, Ralph R.; and Bello, Vera C. Credit card verification and printing device. 4,083,302, Cl. 101-269.000.
Bello, Vera C.: *See—*
Bello, Ralph R.; and Bello, Vera C., 4,083,302, Cl. 101-269.000.
Beloit Corporation: *See—*
Langdon, Robert P., 4,083,503, Cl. 241-259.100.
Bemis Company, Inc.: *See—*
Livingston, Wayne W.; and Melin, Gerald W., 4,083,667, Cl. 425-192.00R.
Bendix Corporation, The: *See—*
Anastasia, Harry G.; Kineyko, Wallace D.; and Ludwig, Carl H., 4,084,239, Cl. 364-424.000.
Benedikt, Gerald, to Byk Gulden Lomberg Chemische Fabrik GmbH. New oral form of medicament and a method for producing it. 4,083,949, Cl. 424-19.000.
Benerito, Ruth R.: *See—*
Berni, Ralph J.; Smith, Marilyn M.; and Benerito, Ruth R., 4,084,027, Cl. 427-390.00D.
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar Kison; and Lonnberg, Lars, to Kommanditbolaget United Stirling (Sweden) AB & Co. Seal for piston rod of Stirling engine. 4,083,566, Cl. 277-3.000.
Bennett, Donald Bruce; and Slechta, Leo John, Jr., to Sperry Rand Corporation. Virtual address translator. 4,084,227, Cl. 364-200.000.
Bennett, Donald Bruce: *See—*
Anderson, Larry Don; Bennett, Donald Bruce; and Slechta, Leo John, Jr., 4,084,225, Cl. 364-200.000.
Bennett, Richard Nelson: *See—*
Rosen, Sidney; and Bennett, Richard Nelson, 4,083,389, Cl. 141-179.000.
Benseler, Hans; and Schaefer, Horst, to PUMA-Sportschuhfabriken Rudolf Dassler KG. Outer sole for shoe especially sport shoes as well as shoes provided with such outer sole. 4,083,125, Cl. 36-32.00R.
Berg, Peter G.: *See—*
Armstrong, James J.; and Berg, Peter G., 4,083,336, Cl. 123-119.00F.
Berger, Patricia L.; and Podhora, Ida. Tray with identification means. 4,083,453, Cl. 206-565.000.
Berger, William L. Coupling. 4,083,588, Cl. 285-373.000.
Berges, David A., to SmithKline Corporation. 7-Acylamino-3-(3-sulfomethyl-1,2,4-triazol-5-ylthiomethyl)-3-cephem-4-carboxylic acids. 4,083,975, Cl. 424-246.000.
Bergin, Paul F. Cylinder lock mechanism. 4,083,210, Cl. 70-362.000.
Bergische Stahl-Industrie: *See—*
Gallus, Heinz; Klein, Willi; and Zeuner, Hans, 4,083,435, Cl. 188-218.0XL.
Bergmark, Nils Randolf; and Westermark, Thord Ingvar Eugen, to Futurumverken AB. Kitchen ventilator having a valve for adjustment between evacuation and recirculation. 4,083,361, Cl. 126-299.00D.
Bergmark, Nils Randolf; and Westermark, Thord Ingvar Eugen, to Futurumverken AB. Kitchen ventilator having a downwardly directed air curtain. 4,083,362, Cl. 126-299.00D.
Bergstein, Frank D., to Bergstein Packaging Trust. Carton with sift-proof end closure. 4,083,486, Cl. 229-37.00R.
Bergstein Packaging Trust: *See—*
Bergstein, Frank D., 4,083,486, Cl. 229-37.00R.
Walters, Chester F.; and Bergstein, Robert M., 4,083,447, Cl. 206-45.190.
Bergstein, Robert M.: *See—*
Walters, Chester F.; and Bergstein, Robert M., 4,083,447, Cl. 206-45.190.
Beringer, Monique; and Sporri, Heinz, to Fabriques de Tabac Reunies S.A. Process for production of artificial tobacco. 4,083,371, Cl. 131-2.000.
Bernard, Jacques; and Renaudin, Michel, to Degremont, Societe Generale D'Epuration et D'Assainissement. Biological treatment plant for liquid suspensions. 4,083,785, Cl. 210-195.00S.
Bernard Mercier: *See—*
Claire, Jean Henri; and Claire, Jean-Claude Henri, 4,083,354, Cl. 126-30.000.
Bernardini, Leandro. Devices for neutralizing electrostatic charges and removing dust and particles from recording discs and the like. 4,083,073, Cl. 15-1.50A.
Berni, Ralph J.; Smith, Marilyn M.; and Benerito, Ruth R., to United States of America, Agriculture. Process for imparting durable flame-retardancy to cotton-polyester blended textiles. 4,084,027, Cl. 427-390.00D.
Berry, Robert W., Jr.: *See—*
Still, Norman H.; and Berry, Robert W., Jr., 4,083,416, Cl. 175-263.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., to Pullman Berry Company. Oxygen lance assembly. 4,083,539, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., to Pullman Berry Company. Gas and oxygen steel making lance. 4,083,540, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., to Pullman Berry Company. Oxygen lance assembly. 4,083,541, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., to Pullman Berry Company. Oxygen lance assembly. 4,083,542, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., to Pullman Berry Company. Oxygen lance assembly. 4,083,543, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., to Pullman Berry Company. Oxygen lance assembly. 4,083,544, Cl. 266-225.000.
Bertetto, Donald W.; and Hanson, Chris A., to Hanson Industries Incorporated. Plastic ski boot shell with integral cable retaining structure. 4,083,130, Cl. 36-117.000.
Berti, Eugenio: *See—*
Gross, Hans; and Berti, Eugenio, 4,084,223, Cl. 363-129.000.
Bertling, Johannes-Gerhard; Zeller, Hans; and Brettschneider, Johannes, to Robert Bosch GmbH. Apparatus for controlling the fuel-air mixture of an internal combustion engine. 4,083,338, Cl. 123-119.0EC.
Bertling, Johannes-Gerhard, to Robert Bosch GmbH. Fuel mixture regulator system. 4,083,342, Cl. 123-124.00B.
Bertling, Johannes-Gerhard: *See—*
Brettschneider, Johannes; and Bertling, Johannes-Gerhard, 4,083,341, Cl. 123-124.00B.
Berz, Gerhard, to Schloemann Siemag Aktiengesellschaft. Arrangement for the further treatment of sectional steel. 4,083,218, Cl. 72-201.000.
Besozzi, Alfio J.: *See—*
Foster, Alan W.; and Besozzi, Alfio J., 4,083,887, Cl. 260-680.00E.
Besson, Jean-Pierre: *See—*
Chevalley, Janine; Rostagno, Walter; and Besson, Jean-Pierre, 4,084,011, Cl. 426-580.000.
Betenbaugh, Walter Russel, Jr.: *See—*
Haas, Phil, 4,083,166, Cl. 56-13.700.
Bicker, Uwe; Kampe, Wolfgang; and Steingross, Wolfgang, to Boehringer Mannheim GmbH. 4-Imino-1,3-diazabicyclo-(3.1.0)-hexan-2-one as a cancerostat and immuno-stimulant. 4,083,987, Cl. 424-273.00R.
Bielski, Edward T.; and Fowler, Timothy J., to Monsanto Company. Rotary retort. 4,083,752, Cl. 202-100.000.
Binder, Volker: *See—*
Schwarze, Werner; Merk, Wolfgang; and Binder, Volker, 4,083,872, Cl. 260-584.00R.
Bindman, Jonathan K.: *See—*
Genn, John P.; Verni, Ralph M.; and Bindman, Jonathan K., 4,083,456, Cl. 211-55.000.
Binkley Company, The: *See—*
Baxter, Bobby G., 4,083,573, Cl. 280-43.110.
Birney, Richard Eugene; Leininger, Joel Calvin; and Taylor, George Phillips, to International Business Machines Corporation. Divider using carry save adder with nonperforming lookahead. 4,084,254, Cl. 364-766.000.
Bivins, Henry W., Jr. Flow stabilizer for tube and shell vaporizer. 4,083,707, Cl. 62-51.000.
Black and Decker Manufacturing Company, The: *See—*
Palm, Bernhard, 4,083,112, Cl. 30-335.000.
Black, James A. Stencil exposure seal combination. 4,083,301, Cl. 101-128.300.
Blair, Joe Bob: *See—*
Fallon, John Joseph, Jr.; Blair, Joe Bob; and Phelps, Donald Roy, 4,083,398, Cl. 165-66.000.
Blair Manufacturing Company: *See—*
Ryan, Kelly P., 4,083,501, Cl. 241-101.00A.
Blakeslee, Thomas R.; and Francy, James R., to Logisticon, Inc. Bolt-on guidance system for lift truck. 4,083,422, Cl. 180-98.000.
Blomstedt, John W.: *See—*
Albertine, Robert J.; Blomstedt, John W.; Edfors, John E.; Quattrini, Victor L.; and Yoshida, Paul S., 4,084,250, Cl. 364-708.000.
Bloom Engineering Company, Inc.: *See—*
Hovis, James E., 4,083,677, Cl. 432-19.000.
Blount, David H. Process for the production of silicoformic cyanide and silicoformic dicyanide. 4,083,938, Cl. 423-325.000.
Bluekens, Adrianus Ambosius Johannes: *See—*
Stoffels, Jacobus; Bluekens, Adrianus Ambosius Johannes; and Peters, Petrus Jacobus,Maria, 4,084,180, Cl. 358-55.000.
Bluethman, Robert Glenn, to International Business Machines Corporation. Apparatus for performing multiple operations in a shift register memory. 4,084,258, Cl. 364-900.000.
Bluhm, Henry P. Method of and composition for relieving itch, pain and swelling resulting from insect stings and bites and skin contact with noxious plants. 4,083,965, Cl. 424-128.000.
Board, Lawrence C.: *See—*
Kramer, Daniel E.; Kramer, Israel; Kramer, Harold; Board, Lawrence C.; Chopra, Ram Kumar; and Micai, William, 4,083,195, Cl. 62-196.00B.
Boden, Robert. Cigarette-simulating inhaler. 4,083,372, Cl. 131-8.00A.
Boehmer, Andrew Peter, to Borg-Warner Corporation. Air conditioner control system. 4,083,197, Cl. 62-211.000.
Boehringer Ingelheim GmbH: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,084,002, Cl. 424-330.000.

Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,083,980, Cl. 424-251.000.
Schwartz, Hans; and Franz, Helmut, 4,083,476, Cl. 222-321.000.

Boehringer Mannheim GmbH: *See—*
Bicker, Uwe; Kampe, Wolfgang; and Steingross, Wolfgang, 4,083,987, Cl. 424-273.00R.

Boeing Company, The: *See—*
Johnson, William Rendall; and Welsh, Ralph Raleigh, 4,084,029, Cl. 428-119.000.

Boers, Jan H.: *See—*
McClocklin, Samuel B.; Solie, James C.; and Boers, Jan H., 4,083,381, Cl. 137-596.150.

Boesch, William J., to Special Metals Corporation. Nickel base alloy. 4,083,734, Cl. 148-32.500.

Boettger, Heinz G.; Giffin, Charles E.; Dreyer, William J.; and Kuppermann, Aron, to California Institute of Technology. Automated mass spectrometer analysis system. 4,084,090, Cl. 250-286.000.

Bogaert, Jean-Louis: *See—*
Dufond, Patrick; Cassonnet, Jean-Claude; Bogaert, Jean-Louis; de Rivet, Phillippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., 4,084,228, Cl. 364-200.000.

Bohm, Georg Gustav Anton: *See—*
Schonfeld, Steven Edward; Bohm, Georg Gustav Anton; and Hayes, Michael William, 4,083,901, Cl. 264-25.000.

Bohme, Gunther. Adjustable article of furniture. 4,083,068, Cl. 5-66.000.

Bohn, Jack R.; and Pearson, Durk J., to TRW Inc. Thermomechanical fracture for recovery system in oil shale deposits. 4,083,604, Cl. 299-4.000.

Bohnert, Ulrich, to Siemens Aktiengesellschaft. Phase monitoring arrangement for a three phase network supplying a d.c. motor through a controlled converter. 4,084,205, Cl. 361-76.000.

Bollman, James E.: *See—*
Mailloux, Louis D.; and Bollman, James E., 4,083,632, Cl. 355-3.00R.

Bonnemay, Maurice: *See—*
Landon, Fred; Bonnemay, Maurice; Laverge, Jean-Pierre; Malaterre, Pierre; and Royon, Jean, 4,083,766, Cl. 204-195.00R.

Bonnesen, J. S.: *See—*
Bazarian, A.; and Bonnesen, J. S., 4,084,208, Cl. 361-120.000.

Borden, Marceia L. Sewing aid for handicapped persons. 4,083,479, Cl. 223-100.000.

Borg-Warner Corporation: *See—*
Boehmer, Andrew Peter, 4,083,197, Cl. 62-211.000.
Fogelberg, Mark John, 4,083,419, Cl. 180-44.00R.
Kimpel, Francis A.; and Moore, Walter C., 4,083,397, Cl. 165-26.000.
Silberschlag, Russell Earl, 4,083,440, Cl. 192-3.310.

Borgstrom, Lennart, to Record Taxameter AB. Recording distance measuring instrument at vehicle wheel hub. 4,083,489, Cl. 235-95.00C.

Bornengo, Mario; Grego, Saverio; and Serdi, Sergio, to Montedison S.p.A. Continuous process for the preparation of N-monomethylamide of O,O-dimethyl-dithiophosphoryl acetic acid. 4,083,900, Cl. 260-984.000.

Borreson, Edgar L. Auto driver's valet with trash bag. 4,083,313, Cl. 108-26.000.

Borsh, Richard J.: *See—*
Pate, Harold T.; and Borsh, Richard J., 4,083,465, Cl. 220-3.800.

Bos Kalis Westminster Group N.V.: *See—*
Andreae, Johannes Franciscus Reinardus, 4,083,132, Cl. 37-58.000.

Boston Metal Products Sales Corporation: *See—*
Rubin, Richard J.; and Hollis, Morton, 4,083,592, Cl. 293-71.00R.

Botros, Raouf, to American Color & Chemical Corporation. Metal-containing polypropylene dyed with 1,4-bis-(2'-methyl-6'-ethylanilino)anthraquinone. 4,083,683, Cl. 8-39.00D.

Bourkland, Kenneth R.; Winje, Russell A., to United States of America, Energy. High-current power supply for accelerator magnets. 4,084,109, Cl. 307-108.

Bouwhuis, Gijsbertus: *See—*
de Lang, Hendrik; and Bouwhuis, Gijsbertus, 4,084,185, Cl. 358-128.000.

Bowell, Harold James Perry. Method of emulsifying mineral oil. 4,083,966, Cl. 424-170.000.

Bowers, Lewis H.; Jankowski, Raymond E.; and Sullivan, John L., to Schenectady Chemicals, Inc. Novolak-ABS resin binder in a grinding wheel. 4,083,700, Cl. 51-298.00A.

Bowers, Lewis H.; Jankowski, Raymond E.; and Sullivan, John L., to Schenectady Chemicals, Inc. Novolak-ABS binder for a grinding wheel. 4,083,891, Cl. 260-846.000.

Bowman, Gary K., to Westinghouse Electric Corporation. Particle trap contact for gas insulated transmission lines. 4,084,064, Cl. 174-14.00R.

Box, Eli. Ladder scaffold. 4,083,427, Cl. 182-118.000.

Brackenridge, David R., to Ethyl Corporation. Flame retardant polymers. 4,083,818, Cl. 260-2.5AJ.

Brad Harrison Company: *See—*
Wyatt, Robert S., 4,083,617, Cl. 339-47.00R.

Bradley, John J.: *See—*
Appell, Marc; Bradley, John J.; and Franklin, Benjamin S., 4,084,224, Cl. 364-200.000.
Dufond, Patrick; Cassonnet, Jean-Claude; Bogaert, Jean-Louis; de Rivet, Phillippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., 4,084,228, Cl. 364-200.000.

Brand, William Wayne, to American Cyanamid Corporation. Process for the preparation of cyclopropane carboxylic acids and esters. 4,083,863, Cl. 260-465.00D.

Brandli, Gerold; and Dick, Max, to BBC Brown, Boveri & Company, Limited. Alternating-current fed power supply. 4,084,217, Cl. 363-4.000.

Brandt/Pra, Inc.: *See—*
McInerny, George P., 4,083,303, Cl. 101-415.100.

Brankovic, Obrad. Device for continuously watering plants in flower pots or boxes. 4,083,146, Cl. 47-71.000.

Braswell, James L.; Covington, Cecil E.; Phillips, Nolan B.; Tomerlin, Reggie J.; and Wohlfeld, Robert M., to Textron, Inc. Composite rotor blade. 4,083,656, Cl. 416-226.000.

Braunschweigische Maschinenbauanstalt: *See—*
Dittman, Dietrich, 4,083,502, Cl. 241-189.00R.

BRECO Kunststoffverarbeitungs-GmbH & Co. KG: *See—*
Breher, Rudolf, 4,083,838, Cl. 264-145.000.

Breher, Rudolf, to BRECO Kunststoffverarbeitungs-GmbH & Co. KG. Method of producing in a continuous operation endless toothed belts of any desired circumferential length. 4,083,838, Cl. 264-145.000.

Bremer, Robert Charles, Jr., to Wallace Murray Corporation. Torsional vibration damper. 4,083,265, Cl. 74-574.000.

Brendle, Timothy T. Electronic device for use as a teaching aid. 4,083,120, Cl. 35-9.00B.

Brettschneider, Johannes; and Bertling, Johannes-Gerhard, to Robert Bosch GmbH. Process and apparatus for the regulation of the fuel-air mixture of an internal combustion engine through the admission of auxiliary air. 4,083,341, Cl. 123-124.00B.

Brettschneider, Johannes: *See—*
Bertling, Johannes-Gerhard; Zeller, Hans; and Brettschneider, Johannes, 4,083,338, Cl. 123-119.0EC.

Britt, James O. Portable fence. 4,083,535, Cl. 256-24.000.

Brodrene Gram A/S: *See—*
Gram, Hans, 4,083,199, Cl. 62-341.000.

Brotz, Walter; Illmann, Gunther; and Stetter, Karl Heinz, to Hoechst Aktiengesellschaft. Mixed oxidation product on the basis of bark waxes and other waxes. 4,083,731, Cl. 106-270.000.

Brown Oil Tools, Inc.: *See—*
Milam, Jack J., 4,083,408, Cl. 166-315.000.

Brualdi, Giorgio, to Ing. C. Olivetti & C., S.p.A. Ribbon reversal mechanism for an office machine. 4,083,445, Cl. 197-161.000.

Bruns, Ludwig; Schnuchel, Gunther; and Weber, Joachim, to Erdolchemie GmbH. Process for the preparation of thioglycols. 4,083,876, Cl. 260-609.00R.

Brunswick, Arthur R.: *See—*
Cahill, Lysle D.; and Brunswick, Arthur R., 4,084,259, Cl. 364-900.000.

Bryans, John T., to University of Kentucky Research Foundation, The. Inactivated equine rhinopneumonitis virus vaccine and use thereof. 4,083,958, Cl. 424-89.000.

Bucher-Guyer AG Maschinenfabrik: *See—*
Schnellmann, Klaus; Kilchenmann, Walter; and Hauser, Hans Ulrich, 4,083,665, Cl. 425-144.000.

Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Szirt nee Kiszelly, Eniko; Kosoczky, Ibolya; and Petocz, Lujza E., to Egyt Gyogyszervegyeszeti Gyar. Oxime ethers. 4,083,978, Cl. 424-250.000.

Bugaut, Andree; and Laudon, Monique, to L'Oreal. Diaminobenzoquinones. 4,084,052, Cl. 544-165.000.

Bunge, Ernst, to U.S. Philips Corporation. Arrangement for statistical signal analysis. 4,084,245, Cl. 364-485.000.

Bunker Ramo Corporation: *See—*
Resch, Alois Ruppert, 4,083,269, Cl. 81-9.510.

Burgin, Ralph C. Vehicle radio mount. 4,083,620, Cl. 339-91.00R.

Burig, Robert G.: *See—*
McNally, Paul F.; and Burig, Robert G., 4,084,083, Cl. 364-118.000.

Burke, Hubert K.; and Michon, Gerald J., to General Electric Company. Signal processing apparatus. 4,084,257, Cl. 364-862.000.

Burkhard, Hermann; and Entschel, Roland, to Sandoz Ltd. Diazo compounds containing two optionally substituted-5-arylazo-6-hydroxypyridone-2 radicals linked through their nitrogen atoms. 4,083,842, Cl. 260-156.000.

Burkhardt, Klaus, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Spinning machine with thread applying device. 4,083,505, Cl. 242-18.0PW.

Burnell, Thomas R.: *See—*
Mullins, Keith M.; Cannon, Thomas; Leppert, Thomas K.; and Burnell, Thomas R., 4,083,467, Cl. 220-90.400.

Burnett, Robert A. Knockdown reusable container. 4,083,464, Cl. 217-13.000.

Burns, William Wesley, III; and Wilson, Thomas George. System-state and operating condition sensitive control method and apparatus for electric power delivery systems. 4,084,103, Cl. 307-132.00R.

Burroughs Corporation: *See—*
Looschen, Floyd William, 4,084,069, Cl. 178-68.000.
Panigrahi, Godavarish, 4,084,154, Cl. 365-222.000.
Wolfe, John Edmond, 4,084,095, Cl. 250-492.00A.

Burroughs Wellcome Co.: *See—*
Beddell, Christopher Raymond; Lowe, Lawrence Alfred; and Wilkinson, Samuel, 4,083,967, Cl. 424-177.000.

Burton, Parsons and Company, Inc.: *See—*
Manfuso, John A., Jr., 4,083,991, Cl. 424-291.000.

Busch, Francis W., Jr. Safety enclosure. 4,083,618, Cl. 339-75.00P.

Bushong, Richard L.: *See—*
Speer, Billy L.; and Bushong, Richard L., 4,083,261, Cl. 74-233.000.

Buxbaum, Charley: *See—*
Bachmann, Robert; Buxbaum, Charley; and Gessinger, Gernot, 4,083,811, Cl. 252-509.000.

Buysch, Hans-Josef; Ziemek, Peter; and Raue, Roderich, to Bayer

Aktiengesellschaft. Process for converting polyaminopolyarylmethanes into diaminodiarylmethanes. 4,083,870, Cl. 260-570.00D.

Buzzi, Gunter, to Hans Grohe KG. Apparatus for securing a flange ferrule to the end of a flexible tube, particularly a shower tube. 4,083,584, Cl. 285-258.000.

Byk Gulden Lomberg Chemische Fabrik GmbH: *See—*
Benedikt, Gerald, 4,083,949, Cl. 424-19.000.

Bystrov, Alexandr Ivanovich: *See—*
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Korovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich, 4,083,204, Cl. 66-178.00R.

C. Itoh Electronics, Inc.: *See—*
Norton, Donald C., 4,083,299, Cl. 101-93.030.

C. van der Lely N.V.: *See—*
van der Lely, Ary, 4,083,411, Cl. 172-59.000.

Caesar, Philip Dornin; and Morrison, Roger Allen, to Mobil Oil Corporation. Process for manufacturing ethylene. 4,083,888, Cl. 200-682.000.

Caesar, Philip Dornin; and Morrison, Roger Allen, to Mobil Oil Corporation. Process for manufacturing ethylene. 4,083,889, Cl. 260-682.000.

Cahill, Lysle D.; and Brunswick, Arthur R., to Mead Corporation, The. Apparatus for dot matrix recording. 4,084,259, Cl. 364-900.000.

California Injection Molding Co., Inc.: *See—*
Gilbert, Russell T.; and Pfau, Irwin B., 4,083,903, Cl. 264-40.300.

California Institute of Technology: *See—*
Boettger, Heinz G.; Giffin, Charles E.; Dreyer, William J.; and Kuppermann, Aron, 4,084,090, Cl. 250-286.000.
Heyser, Richard C.; and Nathan, Robert, 4,083,232, Cl. 73-599.000.

Call, Noel Stuart, to Envirogenics Systems Company. Fluid purification system. 4,083,780, Cl. 210-23.00H.

Calle, Jaime; and Chelberg, Lawrence W., to Honeywell Information Systems Inc. Cache write capacity. 4,084,234, Cl. 364-200.000.

Calundann, Gordon W.; Davis, Herbert L.; Gorman, Frederick J.; and Mininni, Robert M., to Celanese Corporation. Melt processable thermotropic wholly aromatic polyester. 4,083,829, Cl. 260-47.00C.

Campbell, Bruce D.; and Abrams, Ralph, to Coto-Coil Co., Inc. Reed relay having low differential thermal EMF. 4,084,142, Cl. 335-152.000.

Canadian Minister of National Defence: *See—*
Malcolm, Richard; Anderson, Philip; Money, Kenneth E.; and Mandler, Walter, 4,083,239, Cl. 73-178.00R.

Cannon, Thomas: *See—*
Mullins, Keith M.; Cannon, Thomas; Leppert, Thomas K.; and Burnell, Thomas R., 4,083,467, Cl. 220-90.400.

Canon Kabushiki Kaisha: *See—*
Momose, Katsumi; and Okutsu, Kazuhisa, 4,083,634, Cl. 355-71.000.
Sekiguchi, Takeshi, 4,084,179, Cl. 358-55.000.

Canron, Inc.: *See—*
Stewart, John Kenneth; and von Beckmann, Helmuth, 4,083,775, Cl. 209-257.000.

Capital Steel & Supply Co., division of Jensen Investment Corporation: *See—*
Hickman, John S.; and Jensen, Andrew Paul, 4,083,149, Cl. 49-147.000.

Capo, James L., to International Paper Company. Separable carton. 4,083,879, Cl. 206-623.000.

Capozzi, Anthony J.; Cordi, Vincent A.; and Edson, Bruce A., to International Business Machines Corporation. System for facilitating the copying back of data in disc and tape units of a memory hierarchial system. 4,084,231, Cl. 364-200.000.

Caramanian, John A. Method of balancing rotors and composition therefor. 4,083,735, Cl. 156-64.000.

Carlin, Joseph T.; and Park, Jack H., to Texaco Inc. Surfactant oil recovery process. 4,083,403, Cl. 166-252.000.

Carlo Erba, S.p.A.: *See—*
Doria, Gianfederico; Giraldi, Pier Nicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,083,953, Cl. 424-45.000.

Carlson, Bruce Arne, to Du Pont de Nemours, E. I., and Company. 2,2'-Azobis(4,5-imidazoledicarbonitrile) and derivatives. 4,083,843, Cl. 260-157.000.

Carlson, Douglas W.; and Nelson, Jack, to Dayco Corporation. Endless power transmission belt. 4,083,260, Cl. 74-233.000.

Carnegie-Mellon University: *See—*
Fetkovich, John G., 4,083,189, Cl. 60-641.000.

Carpat International Inc.: *See—*
Hipp, James P., deceased; and Foster, Carter, Jr., 4,084,007, Cl. 426-430.000.

Carrier Corporation: *See—*
Miller, Arthur J.; and Shields, J. Rodger, 4,083,649, Cl. 415-116.000.

Casasent, David Paul; and Psaltis, Demetri, to United States of America, Navy. Positional, rotational and scale invariant optical correlation method and apparatus. 4,084,255, Cl. 364-822.000.

Cash, Charles. Close combat backup weapon. 4,083,138, Cl. 42-1.00R.

Cassonnet, Jean-Claude: *See—*
Dufond, Patrick; Cassonnet, Jean-Claude; Bogaert, Jean-Louis; de Rivet, Phillippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., 4,084,228, Cl. 364-200.000.

Caterpillar Mitsubishi Ltd.: *See—*
Umezaki, Hajime; Oguri, Kyoichi; Nakajima, Hiroshi; Amemiya, Shinichi; and Nozawa, Yoshitomo, 4,083,247, Cl. 74-243.00R.

Caterpillar Tractor Co.: *See—*
Allen, Jan K., 4,083,459, Cl. 212-8.00B.
Gilkerson, Robert L.; Griggs, Donald W.; and Hadley, James B., 4,083,216, Cl. 72-149.000.
Goloff, Alexander, 4,083,292, Cl. 92-176.000.
McGee, Mary Ann Chute, 4,083,613, Cl. 308-236.000.
Schexnayder, Lawrence Francis, 4,083,469, Cl. 214-82.000.
Thompson, LeRoy R.; and Meints, Edward G., 4,083,180, Cl. 60-39.16R.

Cauldwell, Jack D.; and Weaver, Raymond Louis, to Arvin Industries, Inc. Programmable non-duplication switching device. 4,084,140, Cl. 325-396.000.

Cavanagh, Eric Joseph; and Fenne, Ivor, to Lucas Industries Limited. Fuel injection nozzles. 4,083,498, Cl. 239-533.300.

Celanese Corporation: *See—*
Calundann, Gordon W.; Davis, Herbert L.; Gorman, Frederick J.; and Mininni, Robert M., 4,083,829, Cl. 260-47.00C.
Taylor, Paul D.; and Vanderspurt, Thomas H., 4,083,882, Cl. 260-655.00R.

Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. Polypeptide antibiotic produced by a new subspecies of streptosporangium. 4,083,963, Cl. 424-117.000.

Central Sprinkler Corporation: *See—*
Anderson, James R., 4,083,410, Cl. 169-37.000.

Chagunava, Raul Vladimirovich: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Maisuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sukharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; and Epik, Alexei Pavlovich, 4,083,757, Cl. 204-83.000.

Chakhunashvili, Temuri Alexandrovich: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Maisuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sukharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; and Epik, Alexei Pavlovich, 4,083,757, Cl. 204-83.000.

Chalmers, Franklin S., to Arthur G. McKee & Company. Regenerative process for flue gas desulfurization. 4,083,944, Cl. 423-567.00A.

Chambley, Phillip W.: *See—*
Norris, Alan H.; and Chambley, Phillip W., 4,083,172, Cl. 57-34.0AT.

Champion International Corporation: *See—*
Norris, Alan H.; and Chambley, Phillip W., 4,083,172, Cl. 57-34.0AT.

Champion Spark Plug Company: *See—*
Insley, Robert H.; Nemeth, Joseph; and Rempes, Paul E., Jr., 4,083,905, Cl. 264-44.000.

Chandler, Charles M., to PPG Industries, Inc. Control of the harmful effects of Fusarium upon plants. 4,084,005, Cl. 424-337.000.

Chandler, Leo E. Power collection device for electric powered rail cars. 4,083,439, Cl. 191-31.000.

Chaney, Preston E., to Holder, John E.; Moore, Stanley R.; and Crisman, Thomas L., part interest to each. Method and apparatus for breaking ice with water. 4,083,317, Cl. 114-40.000.

Chasse, Arthur E. Method for molding a decorative layer. 4,083,916, Cl. 264-245.000.

Chelberg, Lawrence W.; and King, James L., to Honeywell Information Systems Inc. Error detection and correction capability for a memory system. 4,084,236, Cl. 364-200.000.

Chelberg, Lawrence W.: *See—*
Calle, Jaime; and Chelberg, Lawrence W., 4,084,234, Cl. 364-200.000.

Chem-Lawn Corporation: *See—*
Rosenberger, Edwin C., 4,083,497, Cl. 239-526.000.

Cheney, Marvin Chapin, Jr.; and Spierings, Petrus A. M., to United Technologies Corporation. Wind turbine with automatic pitch and yaw control. 4,083,651, Cl. 416-18.000.

Chertok, Burton Z. Multiple material solar panel and method and apparatus for manufacturing the same. 4,083,093, Cl. 29-157.30V.

Chevalley, Janine; Rostagno, Walter; and Besson, Jean-Pierre, to Societe d'Assistance Technique pour Produits Nestle S.A. Preparation of milk crumb for milk chocolate manufacture. 4,084,011, Cl. 426-580.000.

Chevron Research Company: *See—*
House, Ralph, 4,083,827, Cl. 260-45.9QA.
Kohn, Gustave K., 4,083,989, Cl. 424-275.000.

Chibana, Masanobu, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,083,285, Cl. 84-1.260.

Chibnik, Sheldon, to Mobil Oil Corporation. Polyoxyethylene polyamine Mannich base products and use of same in fuels and lubricants. 4,083,699, Cl. 44-75.000.

Chicago Lock Co.: *See—*
Scherbing, Frank J., 4,083,211, Cl. 70-363.000.

Choi, Charles K.; and Tassoney, Joseph P., to Occidental Petroleum Corporation. Continuous feed pyrolysis chamber for decomposing solid waste. 4,083,751, Cl. 202-99.000.

Chopra, Ram Kumar: *See—*
Kramer, Daniel E.; Kramer, Israel; Kramer, Harold; Board, Lawrence C.; Chopra, Ram Kumar; and Micai, William, 4,083,195, Cl. 62-196.00B.

Christ, Christy; and Graff, Hart F., to ARMCO Steel Corporation. Electrostatic coating grid and method. 4,084,019, Cl. 427-32.000.

Christensen, Dean Lester: *See—*
Adair, Henry; Christensen, Dean Lester; and Specktor, Leon Harold, 4,084,200, Cl. 360-133.000.
Christiano, Victor: *See—*
Hewitt, John Norman; and Christiano, Victor, 4,083,710, Cl. 65-40.000.
Chrysler Corporation: *See—*
Lappington, John P., 4,084,240, Cl. 364-425.000.
Ciba-Geigy AG: *See—*
Ramanathan, Visvanathan, 4,083,688, Cl. 8-41.00C.
Ciba-Geigy Corporation: *See—*
Back, Gerhard; and Beffa, Fabio, 4,083,839, Cl. 260-145.00B.
Desai, Nalin Binduprasad; and Ramanathan, Visvanathan, 4,084,053, Cl. 544-184.000.
Koller, Stefan; Aeschlimann, Peter; Karlen, Urs; and Liechti, Hans Wilhelm, 4,083,847, Cl. 260-207.000.
Lee, Frank; Fearnley, Charles; and Fordham, Glenda Helen, 4,083,794, Cl. 252-99.000.
Petitpierre, Jean Claude, 4,083,866, Cl. 260-556.00B.
Pugin, Andre; and Wiese, Volkhard, 4,083,687, Cl. 8-42.00D.
Cincinnati Milacron Inc.: *See—*
Jessup, Wilbur F.; and Kimmelaar, Rudolf J. A., 4,083,151, Cl. 51-103.00R.
Citizen Watch Co. Ltd.: *See—*
Nishimura, Katsuo; Yasuda, Tetsuya; Murakami, Tomomi; Yoshida, Masateru; Natori, Minoru; and Iinuma, Yoshio, 4,083,177, Cl. 58-23.00R.
Sekiguchi, Tsunetoshi; and Noguchi, Tsutomu, 4,083,178, Cl. 58-88.00R.
Claessens, Pierre L.: *See—*
Houlachi, George J.; and Claessens, Pierre L., 4,083,761, Cl. 204-130.000.
Claire, Jean-Claude Henri: *See—*
Claire, Jean Henri; and Claire, Jean-Claude Henri, 4,083,354, Cl. 126-30.000.
Claire, Jean Henri; and Claire, Jean-Claude Henri, to Bernard Mercier. Barbecue. 4,083,354, Cl. 126-30.000.
Clarke, William; Glover, Brian; and Jamin, Guillaume Ward, to Imperial Chemical Industries Limited. Textile printing apparatus. 4,083,205, Cl. 68-5.00C.
Clary, Roger, to Howard Machinery Limited. Fruit harvesting machine with leaf separation means. 4,083,773, Cl. 209-134.000.
Cleereman, Kenneth J.: *See—*
Lane, Eckel R.; Cleereman, Kenneth J.; and McLaren, John W., 4,083,568, Cl. 277-81.00R.
Clements, John A., to Ford Motor Company. Controlled and energization circuit for electrically heated vehicle windows. 4,084,126, Cl. 322-8.000.
Clemow, William Mapstone: *See—*
Foote, James Conklin, Jr.; and Clemow, William Mapstone, 4,083,737, Cl. 156-73.100.
Cleveland, Joseph Jerome: *See—*
Dziedzic, Chester John; Cleveland, Joseph Jerome; and Newman, Ray Lewis, 4,083,400, Cl. 165-165.000.
Clifford, Eugene Russett. Rapid-fire, fluid actuated B.B. gun. 4,083,349, Cl. 124-72.000.
Clifford, Roy, to Kangol Magnet Limited. Emergency release systems. 4,083,581, Cl. 280-745.000.
Clostermeyer, Gerhard: *See—*
Ackermann, Gustav; and Clostermeyer, Gerhard, 4,083,297, Cl. 100-19.00R.
Clow Corporation: *See—*
McPherson, Alex L.; and Williams, Hubert L., 4,083,661, Cl. 417-131.000.
Clyde, A. Lofdahl, to Raychem Corporation. Method of sealing a connector. 4,083,902, Cl. 264-26.000.
Cochran, Henry D., Jr., to United States of America, Energy. Method of measuring the mass flow rate of a substance entering a cocurrent fluid stream. 4,083,243, Cl. 73-196.000.
Cochran, Thomas N. Brake actuating system. 4,083,609, Cl. 303-96.000.
Cockshott, John E.: *See—*
Millar, James F.; and Cockshott, John E., 4,083,194, Cl. 62-101.000.
Cohen, Sasson; and Fisher, Abraham, to Purdue Frederick Company, The. 6-Oxa-1-aza tricyclo dodecan-5-ones as psychomotor stimulators. 4,083,985, Cl. 424-267.000.
Cole, Clinie E., to Phillips Petroleum Company. Carbon black pelleter with internal fluid injection. 4,083,669, Cl. 425-222.000.
Cole, Edward L.; and McMahon, Matthew A., to Texaco Inc. Process for desulfurizing pipelined coal. 4,083,696, Cl. 44-1.00R.
College, Michael A.; Hutzell, Clyde G.; Lane, Charles A.; and McKenry, Robert J., to Kennametal Inc. Ripper tooth. 4,083,605, Cl. 299-91.000.
Coller, James Ray, to AMP Incorporated. Tool for installing individual pins in printed circuit board. 4,083,101, Cl. 29-739.000.
Collins, Christopher R.: *See—*
Geohegan, Kenneth P., Jr.; Collins, Christopher R.; Bawroski, George; and Steiner, George H., 4,083,433, Cl. 188-1.00B.
Collins Knives, Inc.: *See—*
Goldin, Jerry H.; and Collins, Walter W., 4,083,110, Cl. 30-155.000.
Collins, Walter W.: *See—*
Goldin, Jerry H.; and Collins, Walter W., 4,083,110, Cl. 30-155.000.
Collombin, Andre Marcel; and Salomon, Georges Pierre Joseph. Articulated casing for ski boots. 4,083,129, Cl. 36-117.000.
Colortex, S.A.: *See—*
Gandia, Manuel Taberner, 4,084,026, Cl. 427-276.000.
Colt Industries Operating Corporation: *See—*
Gilleland, Randall C.; and Rietveld, Frank P., 4,084,074, Cl. 219-69.00W.
Parone, Anthony D., 4,083,643, Cl. 407-59.000.
Combe, Pierre; and Ladet, Jean, to S.E.F.C.A.L. Societe d'Etudes, de Fabrication et de Commercialisation de Colorants Alimentaires. Process for treatment of anthocyane extracts. 4,083,779, Cl. 210-23.00H.
Combes, Marvin G.; and Ripert, Roger L., to Grove Valve and Regulator Company. Apparatus and method for forming cylindrical valve hubs. 4,083,219, Cl. 72-352.000.
Combustion Engineering, Inc.: *See—*
Wivagg, Adrian Peter, 4,083,311, Cl. 105-367.000.
Commiant, Michel, to Compagnie Generale Belge des Isolants. Apparatus for treating fruits and vegetables. 4,083,280, Cl. 83-425.300.
Communications Satellite Corporation: *See—*
Jacobus, Nelson Mortimer, Jr., 4,084,204, Cl. 361-72.000.
Welti, George R., 4,084,137, Cl. 325-30.000.
Compagnie Generale Belge des Isolants: *See—*
Commiant, Michel, 4,083,280, Cl. 83-425.300.
Compagnie Honeywell Bull: *See—*
Appell, Marc; Bradley, John J.; and Franklin, Benjamin S., 4,084,224, Cl. 364-200.000.
Dufond, Patrick; Cassonnet, Jean-Claude; Bogaert, Jean-Louis; de Rivet, Phillippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., 4,084,228, Cl. 364-200.000.
Conger, Franklin E., to Stone & Webster Engineering Corporation. Desalination process system and by-product recovery. 4,083,781, Cl. 210-23.00H.
Congoleum Corporation: *See—*
Hamilton, Artimus C., 4,083,907, Cl. 264-52.000.
Container Corporation of America: *See—*
Goldstein, Ralph S., 4,083,293, Cl. 93-36.010.
Conti, Joseph A., to Pitney-Bowes, Inc. Electronic postage weighing scale. 4,084,242, Cl. 364-466.000.
Continental Scale Corporation: *See—*
Hutchinson, William Y.; and Kushmuk, Walter P., 4,083,418, Cl. 177-247.000.
Contraves Goerz Corporation: *See—*
McNally, Paul F.; and Burig, Robert G., 4,084,083, Cl. 364-118.000.
Controlled Sheet Music Service, Inc.: *See—*
Genn, John P.; Verni, Ralph M.; and Bindman, Jonathan K., 4,083,456, Cl. 211-55.000.
Conwed Corporation: *See—*
Hillman, Theodore E.; and Belcher, Mark D., 4,083,273, Cl. 83-2.000.
Cooper, Earl Andrew: *See—*
McCormick, David Michael; and Cooper, Earl Andrew, 4,083,619, Cl. 339-75.00M.
Cordi, Vincent A.: *See—*
Capozzi, Anthony J.; Cordi, Vincent A.; and Edson, Bruce A., 4,084,231, Cl. 364-200.000.
Cork, Gordon H.: *See—*
Helm, Homer E., 4,083,585, Cl. 285-260.000.
Helm, Homer E., 4,083,586, Cl. 285-323.000.
Corner & Lada Co., Inc.: *See—*
Vandersip, Henry A., 4,083,522, Cl. 248-54.00R.
Corning Glass Works: *See—*
Andrus, Ronald L.; and Reade, Richard F., 4,083,727, Cl. 106-39.700.
Hudson, Marshall C., 4,083,625, Cl. 350-96.150.
Orso, Francis L.; and Pierce, Timothy E., 4,083,728, Cl. 106-52.000.
Reade, Richard F., 4,083,709, Cl. 65-32.000.
Zine, Anthony R., Jr., 4,083,784, Cl. 210-83.000.
Corno, Maria Luisa: *See—*
Doria, Gianfederico; Giraldi, Pier Nicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,083,953, Cl. 424-45.000.
Corte, Herbert; Heller, Harold; Lange, Peter Michael; and Netz, Otto, to Bayer Aktiengesellschaft. Nitrogenous fertilizer compositions. 4,083,712, Cl. 71-28.000.
Cory Food Services, Inc.: *See—*
Petry, Stanton H., 4,083,294, Cl. 99-279.000.
Cosco, Inc.: *See—*
Basey, Otis, Jr.; and Knoedler, Roy E., 4,083,579, Cl. 280-650.000.
Costello, Hal F., to Coswell Products, Inc. Electrical vaporizer device. 4,084,079, Cl. 219-271.000.
Coswell Products, Inc.: *See—*
Costello, Hal F., 4,084,079, Cl. 219-271.000.
Coto-Coil Co., Inc.: *See—*
Campbell, Bruce D.; and Abrams, Ralph, 4,084,142, Cl. 335-152.000.
Cotton, Curran D., to Maytag Company, The. Time-and-temperature dryer control. 4,083,118, Cl. 34-53.000.
Courvoisier, Jean-Claude F.; and Meylan, Jean-Luc CH., to Battelle Memorial Institute. Device for collecting solar energy. 4,083,360, Cl. 126-271.000.
Covington, Cecil E.: *See—*
Braswell, James L.; Covington, Cecil E.; Phillips, Nolan B.; Tomerlin, Reggie J.; and Wohlfeld, Robert M., 4,083,656, Cl. 416-226.000.
Crabbs, Max L. Soil working and seed planting apparatus. 4,083,315, Cl. 111-10.000.
Crain, David W. TV Object locator and image identifier. 4,084,184, Cl. 358-93.000.
Cremona, Angelo. Wood shearing machine for the production of ve-

neers, having the wood-supporting table inclined to the vertical. 4,083,391, Cl. 144-178.000.
Crippen, Richard E.; Hingarh, Hemraj K.; and Verhofstadt, Peter W. J., to Fairchild Camera and Instrument Corporation. Graduated multiple collector structure for inverted vertical bipolar transistors. 4,084,174, Cl. 357-44.000.
Crisman, Thomas L.: *See—*
Chaney, Preston E., 4,083,317, Cl. 114-40.000.
Criterion: *See—*
Hamby, Wayne D.; and Slade, Marvin Dale, 4,083,758, Cl. 204-106.000.
Crouzet: *See—*
Heckel, Alain; and Presset, Rene, 4,083,242, Cl. 73-194.00B.
Cullen, Walter P.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,083,963, Cl. 424-117.000.
Cunningham, John Joseph; Welch, Martin Jeffrey; and Puppolo, Henry Francis. Solar supplemental heating system. 4,083,490, Cl. 237-1.00A.
Curtis, Arvel C., to Mustang Services Co. Multipurpose pipeline pig. 4,083,074, Cl. 15-104.06R.
Curtiss-Wright Corporation: *See—*
Myers, David M., 4,083,329, Cl. 123-205.000.
Czaplinski, Thomas V.; and Heyer, Robert E., to E. R. Squibb & Sons, Inc. Shielded container. 4,084,097, Cl. 250-506.000.
Czerny, Thomas; von Dohren, Hans; Losch, Lothar; Winsel, August; and Ziegler, Kurt, deceased (by Ziegler, Rosemary, heir), to Varta Batterie Aktiengesellschaft. Processing of catalyst powder. 4,083,810, Cl. 252-467.000.
Dacom, Inc.: *See—*
Tisue, James G.; Weber, Donald R.; and Johanson, Peter A., 4,084,196, Cl. 358-283.000.
Daffer, Fred R., Jr., to Daffer, Fred R., Jr. Soccer practice net. 4,083,561, Cl. 273-103.000.
Dafter, Robert Vincent, Jr., to Western Electric Company, Inc. Method for depositing a metal on a surface. 4,084,023, Cl. 427-98.000.
Dagaeva, Ljudmila Ivanovna: *See—*
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Korovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich, 4,083,204, Cl. 66-178.00R.
Dahlquist, Carl A., to Minnesota Mining and Manufacturing Company. Blood compatible vessels and components thereof. 4,083,832, Cl. 260-79.30R.
Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Yamada, Senri; Nagasawa, Kanji; Mori, Tokiaki; and Tanaka, Masaru, 4,083,729, Cl. 106-88.000.
Daikin Kogyo Co., Ltd.: *See—*
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 4,084,059, Cl. 560-87.000.
Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf, 4,083,290, Cl. 91-357.000.
Holzapfel, Immanuel, 4,083,674, Cl. 431-116.000.
Maier, Rolf, 4,083,595, Cl. 296-39.00A.
Dana Corporation: *See—*
Guenther, William D., 4,083,331, Cl. 123-41.170.
Williams, James A.; and Gray, Larry O., 4,083,423, Cl. 180-105.00E.
Danfoss A/S: *See—*
Karll, Bent, 4,083,196, Cl. 62-200.000.
Danielson, Kenneth D.: *See—*
Heikkinen, Leo L.; Danielson, Kenneth D.; and Lundborg, Charlie L., 4,083,394, Cl. 157-1.210.
Das, Subodh K., to Aluminum Company of America. High purity activated carbon produced by calcining acid leached coal containing residual leaching solution. 4,083,801, Cl. 252-422.000.
Das, Subodh K., to Aluminum Company of America. Coal purification and electrode formation. 4,083,940, Cl. 423-449.000.
Das-Gupta, Arun-Kumar: *See—*
Seliger, Dieter; and Das-Gupta, Arun-Kumar, 4,083,259, Cl. 74-191.000.
Data Technology Corporation: *See—*
Pattillo, Luther A., 4,083,508, Cl. 242-68.500.
Davidson, William C.; and Forsyth, Robert W. Multiple socket extension cord. 4,083,621, Cl. 339-119.00C.
Davis, Bryan Terence: *See—*
Elliott, John Scotchford; Davis, Bryan Terence; and Howlett, Richard Martin, 4,083,791, Cl. 252-51.50A.
Davis, Charles W., to Stanadyne, Inc. Fuel injection pump. 4,083,345, Cl. 123-139.0ST.
Davis, Herbert L.: *See—*
Calundann, Gordon W.; Davis, Herbert L.; Gorman, Frederick J.; and Mininni, Robert M., 4,083,829, Cl. 260-47.00C.
Davis, Raymond Vincent; and Fryer, Rodney Ian, to Hoffmann-La Roche, Inc. Benzodiazepine radioimmunoassay using I125-label. 4,083,948, Cl. 424-1.000.
Davis, Walter L., to Applied Magnetics, Inc. Machine for separating meat from crab shells. 4,083,084, Cl. 17-73.000.
Davlyatshin, Garifulla: *See—*
Vydrin, Vladimir Nikolaevich; Dukmasov, Vladimir Georgievich; and Davlyatshin, Garifulla, 4,083,213, Cl. 72-6.000.
Day, Clifford K.; and Pedersen, Herbert N., to United States of America, Energy. On-line ultrasonic gas entrainment monitor. 4,083,225, Cl. 73-19.000.
Dayco Corporation: *See—*
Carlson, Douglas W.; and Nelson, Jack, 4,083,260, Cl. 74-233.000.
Speer, Billy L.; and Bushong, Richard L., 4,083,261, Cl. 74-233.000.
Deb, Satyendra Kumar: *See—*
Witzke, Horst; and Deb, Satyendra Kumar, 4,084,043, Cl. 429-111.000.
Deere & Company: *See—*
Guetzlaff, Robert Paul, 4,083,215, Cl. 72-82.000.
Deering, Roland F., to Union Oil Company of California. Use of control system for gas-solids contacting processes. 4,083,770, Cl. 208-11.00R.
Deffenbaugh, James F., to Wean United Inc. Energy monitor for flash welders. 4,084,075, Cl. 219-97.000.
Defranould, Philippe; and Munier, Bernard, to Thomson-CSF. Electroacoustic devices for analysing optical image. 4,084,192, Cl. 358-213.000.
De Gaetano, Mario: *See—*
Siclari, Francesco; Rossi, Pietro Paolo; Leoni, Roberto; and De Gaetano, Mario, 4,083,833, Cl. 260-79.3MU.
Degens, Alfredo. Composition board with improved polymeric skin. 4,083,743, Cl. 156-278.000.
Degens, Alfredo. Method of preparing composition board with improved polymeric skin. 4,083,744, Cl. 156-306.000.
Degremont, Societe Generale D'Epuration et D'Assainissement: *See—*
Bernard, Jacques; and Renaudin, Michel, 4,083,785, Cl. 210-195.00S.
de Koning, Jan; van den Brink, Theodorus; and Wolters, Tjako Aaldrik, to Ballast-Nedam Groep, N.V.; and Amsterdamse Ballast Bagger en Gran, b.v. Flexible connecting arrangement for suction dredgers. 4,083,135, Cl. 37-58.000.
de Koning, Jan: *See—*
Ravesteyn, Cornelis Jan; de Koning, Jan; and Wolters, Tjako Aaldrik, 4,083,133, Cl. 37-72.000.
de Lang, Hendrik; and Bouwhuis, Gijsbertus, to U.S. Philips Corporation. Record carrier on which information is stored in an optically readable structure. 4,084,185, Cl. 358-128.000.
de Lazzer, Karlheinz: *See—*
Rudert, Wolfgang; and de Lazzer, Karlheinz, 4,083,333, Cl. 123-41.82R.
Dellorfano, Fred M., Jr.: *See—*
Massa, Frank, 4,084,150, Cl. 340-8.00R.
Delvaux, Andre L.: *See—*
Lenoir, Pierre; and Delvaux, Andre L., 4,083,717, Cl. 75-77.000.
Demarcq, Michel, to Produits Chimiques Ugine Kuhlmann. Accelerated process of alcoholysis or phenolysis of phosporus pentasulfide. 4,083,899, Cl. 260-981.000.
Denney, Don W. World globe which can be assembled or disassembled. 4,083,122, Cl. 35-46.00A.
Dennis, Donald I. Air conditioner case with condensation shield. 4,083,198, Cl. 62-285.000.
de Rivet, Phillippe-Hubert: *See—*
Dufond, Patrick; Cassonnet, Jean-Claude; Bogaert, Jean-Louis; de Rivet, Phillippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., 4,084,228, Cl. 364-200.000.
Derstadt, Donna M.: *See—*
Wise, Rodney Mahlon; and Derstadt, Donna M., 4,083,813, Cl. 252-526.000.
Desai, Nalin Binduprasad; and Ramanathan, Visvanathan, to Ciba-Geigy Corporation. Polycyclic compounds. 4,084,053, Cl. 544-184.000.
DeSoto, Inc.: *See—*
Sekmakas, Kazys, 4,083,892, Cl. 260-855.000.
Desoutter, Inc.: *See—*
Tomkinson, Jerry P., 4,083,270, Cl. 81-52.40R.
De Thomas, Waldo; and Hort, Eugene V., to GAF Corporation. Hydrogenation catalyst and method of producing same. 4,083,809, Cl. 252-457.000.
Deutsch, Ralph, to Deutsch Research Laboratories, Ltd. Alterable voice for electronic musical instrument. 4,083,282, Cl. 84-1.190.
Deutsch Research Laboratories, Ltd.: *See—*
Deutsch, Ralph, 4,083,282, Cl. 84-1.190.
Deutsche Babcock Aktiengesellschaft: *See—*
Noack, Rolf, 4,083,701, Cl. 55-20.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Offermanns, Herbert; and Weigel, Horst, 4,084,057, Cl. 560-34.000.
Schwarze, Werner; Merk, Wolfgang; and Binder, Volker, 4,083,872, Cl. 260-584.00R.
Deutsche Texaco Aktiengesellschaft: *See—*
Grodde, Karl-Heinz; and Schulz, Alfred, 4,083,790, Cl. 252-8.50C.
Dewey, Gordon C. Apparatus and method for preventing icing on a snow-making machine. 4,083,492, Cl. 239-2.500.
Dexter, John B. Bomb fuze arming clip. 4,083,304, Cl. 102-2.000.
Diamond International Corporation: *See—*
Reifers, Richard F.; and Lord, Henry A., 4,083,670, Cl. 425-398.000.
Diamond Shamrock Corporation: *See—*
Hlynsky, Alex, 4,083,851, Cl. 260-326.800.
Lieb, Donald F.; Stillman, Neil W.; and Kidon, William E., 4,083,067, Cl. 4-317.000.
Dick, John O., to United States of America, Navy. System for testing proximity fuzes. 4,083,238, Cl. 73-167.000.
Dick, Max: *See—*
Brandli, Gerold; and Dick, Max, 4,084,217, Cl. 363-4.000.
Dickerson, Henry A., to Westinghouse Electric Corporation. Method

and apparatus for determining and controlling wire spacing on a spool. 4,083,515, Cl. 242-158.00R.
Diebold, Incorporated: *See—*
Driver, Don A.; and Theriault, Franklin M., 4,084,149, Cl. 340-1.00R.
Dieck, Ronald L.; and Quinn, Edwin J., to Armstrong Cork Company. Low smoke polyphosphazene compositions. 4,083,820, Cl. 260-2.5FP.
Diekman, Mark T. Piling alignment system. 4,083,192, Cl. 61-63.000.
Dietz, Robert E.; and Ophaug, Darrell P., to Square D Company. Ground fault receptacle. 4,084,203, Cl. 361-45.000.
Dillberg, Raymond E. Transfer gage. 4,083,116, Cl. 33-174.00M.
Dimroth, Peter; Kurtz, Walter; Radtke, Volker; and Juenemann, Werner, to BASF Aktiengesellschaft. Uniformly dyed water-swellable cellulosic fibers. 4,083,686, Cl. 8-41.00R.
Disston, Inc.: *See—*
Lineback, Lynn D.; and Edgell, James E., 4,084,123, Cl. 320-2.000.
Dittman, Dietrich, to Braunschweigische Maschinenbauanstalt. Material shredder, especially for sugar cane. 4,083,502, Cl. 241-189.00R.
Dixie Yarns, Inc.: *See—*
Livingston, Emmett S.; and Alston, Otis B., 4,083,085, Cl. 19-105.000.
Doane, William M.: *See—*
Wing, Robert E.; and Doane, William M., 4,083,783, Cl. 210-54.000.
Dr. C. Otto & Comp. G.m.b.H.: *See—*
Haese, Egon; and Kellermann, Albert, 4,083,695, Cl. 23-289.000.
Dr. Ing. Rudolf Hell GmbH.: *See—*
Keller, Hans; Koll, Roman; and Taudt, Heinz, 4,084,183, Cl. 358-75.000.
Dr. Johannes Heidenhain GbmH, Firma: *See—*
Schlick, Helmut, 4,084,249, Cl. 364-705.000.
Donnelly, Emmett F. Pier for foundation leveling. 4,083,191, Cl. 61-51.000.
Dorawala, Tansukhlal Gokaldas: *See—*
Estes, John Harold; Kerr, Edwin Robert; and Dorawala, Tansukhlal Gokaldas, 4,083,799, Cl. 252-373.000.
Doria, Gianfederico; Giraldi, Pier Nicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, to Carlo Erba, S.p.A. Pharmaceutical composition containing 5:6-benzo-alpha-pyrone derivatives and method of use thereof. 4,083,953, Cl. 424-45.000.
Dorr-Oliver Incorporated: *See—*
Priestley, Robert Joseph, 4,083,929, Cl. 423-167.000.
Dorreboom, Jelmer, to Spin Physics, Inc. High density multitrack magnetic head. 4,084,199, Cl. 360-121.000.
Dosapro Milton Roy: *See—*
Venner, Etienne; and Lenormand, Daniel, 4,083,475, Cl. 222-198.000.
Douglas, Robert H.: *See—*
Handly, Robert J.; and Douglas, Robert H., 4,084,233, Cl. 364-200.000.
Dover Corporation: *See—*
Gingrich, John A., 4,083,430, Cl. 187-29.00R.
Dover Corporation (Canada) Limited: *See—*
Gingrich, John A., 4,083,430, Cl. 187-29.00R.
Dow Chemical Company, The: *See—*
Drake, Stevens S.; and Rossow, Harold E., 4,083,890, Cl. 260-836.000.
Griffin, Thomas J., Jr.; and Moran, Larry K., 4,083,407, Cl. 166-291.000.
Hill, Albert A., 4,083,491, Cl. 238-98.000.
Krumel, Karl L.; Krasnoff, Trudy L.; and Fiero, Terry H., 4,084,012, Cl. 426-590.000.
Lane, Eckel R.; Cleereman, Kenneth J.; and McLaren, John W., 4,083,568, Cl. 277-81.00R.
Sherrod, Fred A.; and Ezzell, Bobby R., 4,083,873, Cl. 260-584.00R.
Dowdy, Ernest Nathan. Folding article of furniture. 4,083,597, Cl. 297-21.000.
Dowdy, Murrell D. Animal grooming apparatus and process. 4,083,327, Cl. 119-85.000.
Dragerwerk Aktiengesellschaft: *See—*
Eckstein, Wolfgang; and Rabenecker, Horst, 4,083,226, Cl. 73-23.000.
Warncke, Ernst, 4,083,065, Cl. 2-424.000.
Drake, Stevens S.; and Rossow, Harold E., to Dow Chemical Company, The. Unsaturated ester resin/monomer blend with hydroperoxide, vanadium compound and ketone peroxide for controlled gel time. 4,083,890, Cl. 260-836.000.
Dreikorn, Barry Allen, to Eli Lilly and Company. Rodenticidal use of diphenylamines. 4,084,004, Cl. 424-330.000.
Drelich, Arthur H., to Johnson & Johnson. Bonded nonwoven fabrics. 4,084,033, Cl. 428-198.000.
Drenzek, Paul J.: *See—*
Moran, James R.; and Drenzek, Paul J., 4,083,896, Cl. 260-876.00R.
Dresser Europe S. A.: *See—*
Goodwin, William Thomas; and Ovens, Christopher William, 4,083,473, Cl. 222-144.500.
Dresser Industries, Inc.: *See—*
Goff, Randall; Radbill, John M.; and Pleasanton, Roger W., 4,083,250, Cl. 73-352.000.
Dreyer, William J.: *See—*
Boettger, Heinz G.; Giffin, Charles E.; Dreyer, William J.; and Kuppermann, Aron, 4,084,090, Cl. 250-286.000.
Driver, Don A.; and Theriault, Franklin M., to Diebold, Incorporated. Sonar actuated control device for positioning movable objects. 4,084,149, Cl. 340-1.00R.
Drohomirecky, Sandy Lynn: *See—*
Drohomirecky, Walter; and Drohomirecky, Sandy Lynn, 4,083,563, Cl. 273-139.000.
Drohomirecky, Walter; and Drohomirecky, Sandy Lynn. Fortune pouch game. 4,083,563, Cl. 273-139.000.
Dromboski, Michael. Universal bracket apparatus for supporting a plurality of flowerpots. 4,083,457, Cl. 211-71.000.
Drury, Emma-Jane E.; and Herting, David C., to Eastman Kodak Company. Treating animal feedstuffs with anti-fungal solutions of solid acids in volatile fatty acids. 4,083,999, Cl. 424-317.000.
Du Pont of Canada Limited: *See—*
Beaton, Stephen Peter; and Kasserra, Hans Peter, 4,083,920, Cl. 423-53.000.
Kasserra, Hans Peter, 4,083,922, Cl. 423-56.000.
Dubost, Gerard; and Havot, Henri Albert, to Etat Francais represented by Delegation Ministerielle pour l'Armement. Folded back doublet microstrip antenna. 4,084,162, Cl. 343-700.0MS.
Dubovik, Alexandr Ivanovich: *See—*
Suslin, Vladimir Isaakovich; Dubovik, Alexandr Ivanovich; Makeev, Boris Anatolievich; Razdymakha, Pavela Semenovich; and Lekarev, Zinovy Abramovich, 4,083,767, Cl. 204-224.00M.
Dudek, Stephen E.: *See—*
Flint, John E.; and Dudek, Stephen E., 4,083,100, Cl. 29-622.000.
Duffy Tool & Stamping, Inc.: *See—*
Whitted, Robert Lee, 4,083,221, Cl. 72-405.000.
Dufond, Patrick; Cassonnet, Jean-Claude; Bogaert, Jean-Louis; de Rivet, Phillippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., to Compagnie Honeywell Bull. Process management structures and hardware/firmware control. 4,084,228, Cl. 364-200.000.
du Fresne, Eugene R.: *See—*
Parson, Lee Minus; and du Fresne, Eugene R., 4,083,726, Cl. 106-14.410.
Dukmasov, Vladimir Georgievich: *See—*
Vydrin, Vladimir Nikolaevich; Dukmasov, Vladimir Georgievich; and Davlyatshin, Garifulla, 4,083,213, Cl. 72-6.000.
Duncan, Carolyn L.: *See—*
Duncan, William D.; and Duncan, Carolyn L., 4,083,083, Cl. 17-11.000.
Duncan Creations, Inc.: *See—*
Duncan, William D.; and Duncan, Carolyn L., 4,083,083, Cl. 17-11.000.
Duncan Electric Company, Inc.: *See—*
Nutt, A. D., 4,084,143, Cl. 336-65.000.
Duncan, Farris N.: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,083,485, Cl. 229-23.0BT.
Duncan, William D.; and Duncan, Carolyn L., to Duncan Creations, Inc. Machine for cutting poultry into selectively variable portions. 4,083,083, Cl. 17-11.000.
Dunlap, Catherine J.: *See—*
Kon, Samuel; and Dunlap, Catherine J., 4,084,016, Cl. 426-634.000.
Du Pont de Nemours, E. I., and Company: *See—*
Carlson, Bruce Arne, 4,083,843, Cl. 260-157.000.
Duvekot, Theodore, 4,083,090, Cl. 28-104.000.
Fost, Dennis Lynn; and Wolf, Anthony David, 4,084,055, Cl. 548-369.000.
Jayawant, Madhusudan Dattatraya; and Meadows, Geoffrey Walsh, 4,083,941, Cl. 423-488.000.
Kegelman, Matthew Roland, 4,084,045, Cl. 429-194.000.
Makar, Kamel Michel, 4,083,935, Cl. 423-379.000.
Schurr, George Alan; and Wildt, Hans-Achim Dietmar, 4,083,946, Cl. 423-613.000.
Durand, Jacques: *See—*
Dussourdd'Hinterland, Lucien; Pradayrol, Lucien; Durand, Jacques; and Normier, Gerard, 4,083,961, Cl. 424-95.000.
Durant, Graham John; Ganellin, Charon Robin; and Sach, George Sidney, to Smith Kline & French Laboratories Limited. Alkoxy pyridine compounds. 4,083,983, Cl. 424-263.000.
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Pharmacologically active compounds. 4,083,988, Cl. 424-273.00R.
Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, to Smith Kline & French Laboratories Limited. Pharmacologically active compounds. 4,084,001, Cl. 424-322.000.
Dussourdd'Hinterland, Lucien; Pradayrol, Lucien; Durand, Jacques; and Normier, Gerard, to Pierre Fabre S.A. Plasminogen activator pharmaceutical compositions. 4,083,961, Cl. 424-95.000.
Dutra, Gerard A., to Monsanto Company. Process for preparing O-aryl, N-phosphonomethylglycinonitriles. 4,083,898, Cl. 260-970.000.
Duvall, Ronald Nash; and Gold, Gerald, to Miles Laboratories, Inc. Stable acetylsalicylic acid and phenylpropanolamine salt composition. 4,083,950, Cl. 424-44.000.
Duvekot, Theodore, to Du Pont de Nemours, E. I., and Company. Non-marking seam in screen used for manufacture of nonwoven fabric. 4,083,090, Cl. 28-104.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Seiler, Claus Dietrich; and Vahlensieck, Hans-Joachim, 4,083,861, Cl. 260-448.80R.
Dzakowic, Thomas J.: *See—*
Fellnor, John R.; and Dzakowic, Thomas J., 4,083,675, Cl. 432-1.000.
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Maisuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sukharulidze,

Nodar Georgievich; Otiashvili, Dali Georgievna; and Epik, Alexei Pavlovich. Electrochemical process for producing manganese dioxide. 4,083,757, Cl. 204-83.000.
Dziedzic, Chester John; Cleveland, Joseph Jerome; and Newman, Ray Lewis, to GTE Sylvania, Incorporated. Heat recuperative apparatus incorporating a cellular ceramic core. 4,083,400, Cl. 165-165.000.
E. R. Squibb & Sons, Inc.: *See—*
Czaplinski, Thomas V.; and Heyer, Robert E., 4,084,097, Cl. 250-506.000.
E-Systems, Inc.: *See—*
Lund, Bryant D., 4,084,120, Cl. 318-599.000.
Eastman Kodak Company: *See—*
Drury, Emma-Jane E.; and Herting, David C., 4,083,999, Cl. 424-317.000.
Foote, James Conklin, Jr.; and Clemow, William Mapstone, 4,083,737, Cl. 156-73.100.
Kroll, Arthur Stanley; and Shuster, Frank Alexander, 4,083,326, Cl. 118-661.000.
Pearlman, Donald, 4,083,919, Cl. 264-332.000.
Ebco Industries, Ltd.: *See—*
Eppich, Helmut, 4,084,214, Cl. 361-394.000.
Eberhard Hoesch & Sohne: *See—*
Schotten, Alfons, 4,083,298, Cl. 100-214.000.
Eckstein, Wolfgang; and Rabenecker, Horst, to Dragerwerk Aktiengesellschaft. Portable explosion-proof gas detector. 4,083,226, Cl. 73-23.000.
Economics Laboratory, Inc.: *See—*
Beachem, Ronald G.; and Willette, Wayne Ronald, 4,084,237, Cl. 364-400.000.
Edfors, John E.: *See—*
Albertine, Robert J.; Blomstedt, John W.; Edfors, John E.; Quattrini, Victor L.; and Yoshida, Paul S., 4,084,250, Cl. 364-708.000.
Edgell, James E.: *See—*
Lineback, Lynn D.; and Edgell, James E., 4,084,123, Cl. 320-2.000.
Edson, Bruce A.: *See—*
Capozzi, Anthony J.; Cordi, Vincent A.; and Edson, Bruce A., 4,084,231, Cl. 364-200.000.
Edwards Engineering Corporation: *See—*
Edwards, Ray C., 4,083,227, Cl. 73-23.000.
Edwards, Miles L. Electrically activated infrared source. 4,084,096, Cl. 250-504.000.
Edwards, Ray C., to Edwards Engineering Corporation. Hydrocarbon vapor analyzer. 4,083,227, Cl. 73-23.000.
Edwin Cooper and Company Limited: *See—*
Elliott, John Scotchford; Davis, Bryan Terence; and Howlett, Richard Martin, 4,083,791, Cl. 252-51.50A.
Egbers, Gerhard: *See—*
Artzt, Peter; Bausch, Albert; and Egbers, Gerhard, 4,083,173, Cl. 57-58.950.
Eguchi, Chihiro: *See—*
Fukutani, Hideo; Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; and Torige, Kazuo, 4,083,725, Cl. 96-115.00R.
Egyt Gyogyszervegyeszeti Gyar: *See—*
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Szirt nee Kiszelly, Eniko; Kosoczky, Ibolya; and Petocz, Lujza E., 4,083,978, Cl. 424-250.000.
Eheim, Franz, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,083,346, Cl. 123-137.0BD.
Eisai Co., Ltd.: *See—*
Tanaka, Satoru; and Watanabe, Hideaki, 4,083,853, Cl. 260-340.50R.
Tanaka, Satoru; and Munakata, Keiichi, 4,083,996, Cl. 424-315.000.
Eisenhauer Manufacturing Company, The: *See—*
Eisenhauer, William A., 4,083,121, Cl. 35-44.000.
Eisenhauer, William A., to Eisenhauer Manufacturing Company, The. Universal planisphere, sight reduction finder and identifier, guidance and computer system. 4,083,121, Cl. 35-44.000.
Ekstroem, Carl Lennart. Apparatus for the wet treatment of textile materials. 4,083,207, Cl. 68-178.000.
Ekstroem, Carl Lennart. Apparatus for the wet treatment of textiles. 4,083,208, Cl. 68-181.00R.
Electricity Council, The: *See—*
Roscoe, Colin; and Lucas, Kevin, 4,083,759, Cl. 204-112.000.
Electroplating Engineers of Japan, Limited: *See—*
Murata, Yasuyuki, 4,083,755, Cl. 204-15.000.
Electrostatic Equipment Corporation: *See—*
Karr, Allan V., 4,084,018, Cl. 427-27.000.
Eli Lilly and Company: *See—*
Dreikorn, Barry Allen, 4,084,004, Cl. 424-330.000.
McDougald, Larry R., 4,083,962, Cl. 424-114.000.
Michel, Karl H.; and Higgens, Calvin E., 4,083,964, Cl. 424-118.000.
Miesel, John Louis, 4,083,977, Cl. 424-250.000.
Ellinger, Bernd; and Holler, Konrad, to Kronseder, Hermann. Inspection apparatus for containers with transparent bottoms. 4,083,637, Cl. 356-240.000.
Elliott, John Scotchford; Davis, Bryan Terence; and Howlett, Richard Martin, to Edwin Cooper and Company Limited. Lubricating oil containing reaction products of polyisobutylphenol, esters of chloroacetic acid, and ethylene polyamine. 4,083,791, Cl. 252-51.50A.
Emerson Electric Co.: *See—*
Mlyniec, Kenneth P.; and Vore, Raymond B., 4,084,147, Cl. 337-407.000.
EMI Limited: *See—*
Froggatt, Robert Justin, 4,084,094, Cl. 250-445.00T.
Marsh, Robin Geoffrey; and Fleming, Ian Alexander, 4,084,093, Cl. 250-360.000.
Emmett, John Colin: *See—*
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 4,083,988, Cl. 424-273.00R.
Emori, Richard Ichiro; and Suzuki, Koji. Vehicle guidance system incorporating track. 4,083,310, Cl. 104-242.000.
Enabnit, Robert S., to Goodyear Tire & Rubber Company, The. System and method for checking the sensitivity and performance of an electromagnetic field variation detector. 4,084,135, Cl. 324-202.000.
Engeler, William E.; and Goldberg, Howard S., to General Electric Company. Sampled data analog multiplier apparatus. 4,084,256, Cl. 364-862.000.
Enomoto, Fuzio: *See—*
Hashimoto, Akihiko; and Enomoto, Fuzio, 4,084,170, Cl. 354-205.000.
Entoleter, Inc.: *See—*
Wattles, Gurdon B.; and Jones, Robert N., 4,083,504, Cl. 241-275.000.
Entschel, Roland: *See—*
Burkhard, Hermann; and Entschel, Roland, 4,083,842, Cl. 260-156.000.
Envirogenics Systems Company: *See—*
Call, Noel Stuart, 4,083,780, Cl. 210-23.00H.
Epik, Alexei Pavlovich: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Maisuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sukharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; and Epik, Alexei Pavlovich, 4,083,757, Cl. 204-83.000.
Epoch Company, Ltd.: *See—*
Matsumoto, Teruo, 4,083,564, Cl. 273-239.000.
Eppich, Helmut, to Ebco Industries, Ltd. Modular housing for electronic apparatus. 4,084,214, Cl. 361-394.000.
Epstein, Joseph; Heggie, Robert M.; and Norman, John J., to United States of America, Army. Detection and estimation of microquantities of alkylating agents. 4,083,692, Cl. 23-232.00R.
Erdolchemie GmbH: *See—*
Bruns, Ludwig; Schnuchel, Gunther; and Weber, Joachim, 4,083,876, Cl. 260-609.00R.
Erickson, Lloyd A., to Illinois Tool Works Inc. Plastic fastener. 4,083,289, Cl. 85-72.000.
Ericsson, Jan-Eje, to Umea Mekaniska AB. Suspension device for felling unit. 4,083,463, Cl. 214-138.00R.
Eriksson, Gosta Harald: *See—*
Kalvenes, Oystein; Eriksson, Gosta Harald; Svensson, Percy; and Goransson, Rolf Erik, 4,083,908, Cl. 264-82.000.
Erwin, Robert, to Research Corporation. Method for the production of N-alkyl beta-hydroxylamine hydrocinnamonyl hydroxamic acids. 4,083,864, Cl. 260-500.50H.
Esner, Stanislav: *See—*
Pospisil, Frantisek; Skoda, Stanislav; Esner, Stanislav; Tyl, Miroslav; Mikulecky, Karel; and Jiskra, Miloslav, 4,083,507, Cl. 242-43.200.
Estandian, Ramon D. Adjustable safety razor. 4,083,103, Cl. 30-47.000.
Estes, John H.: *See—*
Herbstman, Sheldon; and Estes, John H., 4,083,800, Cl. 252-415.000.
Estes, John Harold; Kerr, Edwin Robert; and Dorawala, Tansukhlal Gokaldas, to Texaco Inc. Method of steam reforming. 4,083,799, Cl. 252-373.000.
ETA A.G. Ebauches Fabrik: *See—*
Giger, Urs; and Jakob, Edwin, 4,083,179, Cl. 58-109.000.
Etat Francais represente par le Deleque Ministeriel pour l'Armement: *See—*
Landon, Fred; Bonnemay, Maurice; Laverge, Jean-Pierre; Malaterre, Pierre; and Royon, Jean, 4,083,766, Cl. 204-195.00R.
Etat Francais represented by Delegation Ministerielle pour l'Armement: *See—*
Dubost, Gerard; and Havot, Henri Albert, 4,084,162, Cl. 343-700.0MS.
Ethyl Corporation: *See—*
Brackenridge, David R., 4,083,818, Cl. 260-2.5AJ.
Evans, James E., to Marathon Oil Company. Offshore apparatus and method for installing. 4,083,193, Cl. 61-96.000.
Evers, William J.; and Heinsohn, Howard H., Jr., to International Flavors & Fragrances Inc. α-Oxy(oxo) sulfides and ethers. 4,083,862, Cl. 260-455.00R.
Evers, William J.: *See—*
Vinals, Joaquin F.; Kiwala, Jacob; Evers, William J.; and Heinsohn, Howard H., Jr., 4,083,373, Cl. 131-17.00R.
Exxon Research & Engineering Co.: *See—*
Heath, Carl E.; Grafstein, Daniel; and Milewski, John V., 4,083,708, Cl. 65-23.000.
Oswald, Alexis A.; and Murrell, Lawrence L., 4,083,803, Cl. 252-430.000.
Van Auken, Richard; and Mills, Albert T., Jr., 4,083,140, Cl. 43-18.0GF.
Versteeg, Joseph, 4,083,798, Cl. 252-312.000.
Whittingham, M. Stanley, 4,084,046, Cl. 429-194.000.
Ezzell, Bobby R.: *See—*
Sherrod, Fred A.; and Ezzell, Bobby R., 4,083,873, Cl. 260-584.00R.
F. J. Littell Machine Company: *See—*
Johnson, Kenneth C., 4,083,217, Cl. 72-165.000.

F. L. Smidth & Co.: *See—*
Kartman, Helge Carl Christian, 4,083,500, Cl. 241-54.000.
Fabregas, Juan Brugarolas. Process for sealing anodic oxidation layers on aluminium surfaces and its alloys. 4,084,014, Cl. 427-409.000.
Fabrique Nationale Herstal S.A.: *See—*
Theys, Andre P., 4,083,203, Cl. 66-64.000.
Fabriques de Tabac Reunies S.A.: *See—*
Beringer, Monique; and Sporri, Heinz, 4,083,371, Cl. 131-2.000.
Fairchild Camera and Instrument Corporation: *See—*
Alfke, Peter H., 4,084,082, Cl. 235-92.0DM.
Crippen, Richard E.; Hingarh, Hemraj K.; and Verhofstadt, Peter W. J., 4,084,174, Cl. 357-44.000.
Fallon, John F., Jr.: *See—*
Fallon, John Joseph, Jr.; Blair, Joe Bob; and Phelps, Donald Roy, 4,083,398, Cl. 165-66.000.
Fallon, John Joseph, Jr.; Blair, Joe Bob; and Phelps, Donald Roy, to Fallon, John F., Jr.; and Ritt, Donald. Waste heat recovery system. 4,083,398, Cl. 165-66.000.
Fantechi, Roberto Luigi, to Texas Instruments Incorporated. Interdigitated transistor pair. 4,084,173, Cl. 357-42.000.
Faulkner, Alfred H. Electronic organ keying systems. 4,083,286, Cl. 84-1.260.
Favreau, Dan W.: *See—*
Furr, Clen H.; and Favreau, Dan W., 4,083,340, Cl. 123-122.00E.
Fearnley, Charles: *See—*
Lee, Frank; Fearnley, Charles; and Fordham, Glenda Helen, 4,083,794, Cl. 252-99.000.
Fecske, Aurel Jeny: *See—*
Anjou, Klas Orvar Stensson; Fecske, Aurel Jeny; Krook, Carl Goran; and Ohlson, Jan Sven Ragnar, 4,083,836, Cl. 260-123.500.
Fellnor, John R.; and Dzakowic, Thomas J., to Melting Systems, Inc. Scrap preheating system. 4,083,675, Cl. 432-1.000.
Fenerli, Ligor G.: *See—*
Bardwick, John, III; and Fenerli, Ligor G., 4,083,668, Cl. 425-194.000.
Fenne, Ivor: *See—*
Cavanagh, Eric Joseph; and Fenne, Ivor, 4,083,498, Cl. 239-533.300.
Fenton, Donald M.; and Woertz, Byron B., to Union Oil Company of California. Process for the treatment of hydrogen sulfide gas streams. 4,083,945, Cl. 423-573.00R.
Ferch, Werner: *See—*
Stieber, Albert; and Ferch, Werner, 4,083,387, Cl. 141-95.000.
Ferranti Limited: *See—*
Levis, Peter Stanley, 4,083,308, Cl. 102-70.20R.
Ferrara, Louis T. Blood serum-isolation device. 4,083,788, Cl. 210-516.000.
Fetkovich, John G., to Carnegie-Mellon University. Open cycle method and apparatus for generating energy from ocean thermal gradients. 4,083,189, Cl. 60-641.000.
Fiat-Allis Construction Machinery, Inc.: *See—*
Schaffner, Donald L.; and Miller, James L., 4,083,611, Cl. 305-54.000
Fieder, Donald W.: *See—*
Muzyczko, Thaddeus M.; and Fieder, Donald W., 4,083,724, Cl. 96-115.00R.
Fiero, Terry H.: *See—*
Krumel, Karl L.; Krasnoff, Trudy L.; and Fiero, Terry H., 4,084,012, Cl. 426-590.000.
Figge, Erwin E.: *See—*
Mau, Robert C., deceased; and Figge, Erwin E., 4,083,630, Cl. 352-91.00C.
Firestone Tire & Rubber Company, The: *See—*
Rumpf, Robert John, 4,083,512, Cl. 242-107.40A.
Schonfeld, Steven Edward; Bohm, Georg Gustav Anton; and Hayes, Michael William, 4,083,901, Cl. 264-25.000.
Vaishnav, Dolar Harshadrai, 4,083,672, Cl. 425-457.000.
Fischer, Lawrence. Solar cooker. 4,083,357, Cl. 126-270.000.
Fischer & Porter Co.: *See—*
Herzl, Peter J., 4,083,240, Cl. 73-194.0VS.
Herzl, Peter J., 4,083,241, Cl. 73-194.0VS.
Herzl, Peter J.; and Shaffer, Robert G., 4,084,155, Cl. 340-210.000
Levesque, Peter S., 4,083,237, Cl. 73-141.00R.
Fisher, Abraham: *See—*
Cohen, Sasson; and Fisher, Abraham, 4,083,985, Cl. 424-267.000.
Fisher, Howard: *See—*
Goudie, Alexander Crossan; Seager, Harry; and Fisher, Howard, 4,083,951, Cl. 424-44.000.
Fisher, John L. Fastening device. 4,083,523, Cl. 248-74.00A.
Fisher, Michael H.; and Ruyle, William V., to Merck & Co., Inc. 1-Substituted phenyl-4(1H)-pyridinone hydrazones and composition therewith for treatment of coccidiosis. 4,083,984, Cl. 424-263.000.
Fisons Limited: *See—*
Townend, John; and Hazard, Richard, 4,083,857, Cl. 260-343.440.
Flaum, Dennis Michael; and Fleishman, Herman Lawrence. Process for cutting and assembling multiple paneled toy constructions. 4,083,095, Cl. 29-416.000.
Fleig, Helmut: *See—*
Pommer, Ernst-Heinrich; Hagen, Helmut; and Fleig, Helmut, 4,083,986, Cl. 424-270.000.
Fleishman, Herman Lawrence: *See—*
Flaum, Dennis Michael; and Fleishman, Herman Lawrence, 4,083,095, Cl. 29-416.000.
Fleming, David Leslie; Jenson, Leslie Matthew; and Sauter, Gerald Francis, to Sperry Rand Corporation. Best match content addressable memory. 4,084,260, Cl. 364-900.000.
Fleming, Ian Alexander: *See—*
Marsh, Robin Geoffrey; and Fleming, Ian Alexander, 4,084,093, Cl 250-360.000.
Fletcher, James D. Bowstring draw and trigger release apparatus. 4,083,348, Cl. 124-35.00A.
Fletcher-Terry Company, The: *See—*
Insolio, Thomas A.; and Kozyrski, Vincent T., 4,083,274, Cl. 83-12.000.
Flint, John E.; and Dudek, Stephen E., to Mohawk Data Sciences Corporation. Method of manufacturing a keyboard assembly. 4,083,100, Cl. 29-622.000.
Floter, Wilfried, to Siemens Aktiengesellschaft. Electrical duplicating control apparatus. 4,084,244, Cl. 364-474.000.
Floyd, Roger M.: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,083,485, Cl. 229-23.0BT.
Fluor Engineers and Constructors, Inc.: *See—*
Millar, James F.; and Cockshott, John E., 4,083,194, Cl. 62-101.000.
FMC Corporation: *See—*
Ball, Peter, 4,084,247, Cl. 364-559.000.
Lobunez, Walter; Ilardi, Joseph M.; Wright, R. Martin; and Herring, Allan P., 4,083,939, Cl. 423-421.000.
Fogelberg, Mark John, to Borg-Warner Corporation. Automatic four-wheel drive transfer case. 4,083,419, Cl. 180-44.00R.
Folger, Roger J., to Adams Rite Manufacturing Co. Narrow stile panic exit actuator. 4,083,590, Cl. 292-92.000.
Foote, James Conklin, Jr.; and Clemow, William Mapstone, to Eastman Kodak Company. Method and apparatus for attaching a strip of material transversely of a moving web. 4,083,737, Cl. 156-73.100.
Ford Aerospace & Communications Corporation: *See—*
Baumann, Erwin L., 4,084,146, Cl. 337-234.000.
Ford, Howard. Skis. 4,083,577, Cl. 280-609.000.
Ford Motor Company: *See—*
Clements, John A., 4,084,126, Cl. 322-8.000.
Ludwig, Frank A., 4,084,041, Cl. 429-104.000.
Ludwig, Frank A., 4,084,042, Cl. 429-104.000.
Fordham, Glenda Helen: *See—*
Lee, Frank; Fearnley, Charles; and Fordham, Glenda Helen, 4,083,794, Cl. 252-99.000.
Forestieri, Americo F.: *See—*
Anagnostou, Evelyn; and Forestieri, Americo F., 4,083,097, Cl 29-572.000.
Forjot, Roland. Swim flippers. 4,083,071, Cl. 9-309.000
Forrest, Nicholas Barnett, to Plessey Handel und Investments A.G. Electrically integrated circuit packages. 4,084,210, Cl. 361-212.000.
Forster, Steffen. Pressure gauge. 4,083,251, Cl. 73-738.000.
Forsyth, Robert W.: *See—*
Davidson, William C.; and Forsyth, Robert W., 4,083,621, Cl. 339-119.00C.
Forward, Worthy Joseph, Jr.: *See—*
Miller, William Reed, Jr.; and Forward, Worthy Joseph, Jr., 4,083,271, Cl. 82-8.000.
Fost, Dennis Lynn; and Wolf, Anthony David, to Du Pont de Nemours, E. I., and Company. Preparation of chlorinated indazoles. 4,084,055, Cl. 548-369.000.
Foster, Alan W.; and Besozzi, Alfio J., to Petro-Tex Chemical Corporation. Carbonyl removal from gaseous streams using ZnS. 4,083,887, Cl. 260-680.00E.
Foster, Carter, Jr.: *See—*
Hipp, James P., deceased; and Foster, Carter, Jr., 4,084,007, Cl. 426-430.000
Fowler, Timothy J.: *See—*
Bielski, Edward T.; and Fowler, Timothy J., 4,083,752, Cl 202-100.000.
Francis, Marion David, to Procter & Gamble Company, The. Compositions for inhibiting anomalous deposition and mobilization of calcium phosphate in animal tissue. 4,083,972, Cl. 424-204.000.
Francy, James R.: *See—*
Blakeslee, Thomas R.; and Francy, James R., 4,083,422, Cl 180-98.000.
Frank, Howard A., to Interfrange Ltd. Resealable frangible top for containers. 4,083,471, Cl. 220-269.000.
Frankel, Edwin N.; and Pryde, Everett H., to United States of America, Agriculture. Acetoxymethyl derivatives of polyunsaturated fatty triglycerides as primary plasticizers for polyvinylchloride. 4,083,816, Cl. 260-31.20R.
Franklin, Benjamin S.: *See—*
Appell, Marc; Bradley, John J.; and Franklin, Benjamin S., 4,084,224, Cl. 364-200.000.
Dufond, Patrick; Cassonnet, Jean-Claude; Bogaert, Jean-Louis; de Rivet, Phillippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., 4,084,228, Cl. 364-200.000.
Franz, Helmut: *See—*
Schwartz, Hans; and Franz, Helmut, 4,083,476, Cl. 222-321.000
Franzl, Alois, to Varta Batterie Aktiengesellschaft. Manufacture of primary cells. 4,083,386, Cl. 141-12.000.
Freezer, Winthrop J. Inhaler. 4,083,368, Cl. 128-198.000.
Frei, Alfred; and Schweizer, August, to Sandoz Ltd. Compositions of metal complexes of disazo acid dyes stabilized with amino ethers. 4,083,681, Cl. 8-7.000.
Freight Guard Industries: *See—*
von den Stemmen, Alfons; and Swartz, John R., 4,083,424, Cl. 180-114.000.
Friedenthal, Robert. Reusable karate striking board. 4,083,557, Cl. 272-76.000.

Friedline, Ernest J., to Kennametal Inc. Tool holder. 4,083,644, Cl. 407-67.000.
Friedline, Ernest J., to Kennametal Inc. Tool holder. 4,083,645, Cl. 407-104.000.
Froggatt, Robert Justin, to EMI Limited. Radiographic apparatus. 4,084,094, Cl. 250-445.00T.
Frontier Manufacturing, Inc.: *See—*
Petropoulos, Nick; and Holt, William G., 4,083,175, Cl. 58-4.00A.
Frump, John Adams, to IMC Chemical Group, Inc. Substituted triazones. 4,084,054, Cl. 544-220.000.
Fry, Charles Max; and Hise, Henry W. Wind driven, high altitude power apparatus. 4,084,102, Cl. 290-55.000.
Fryer, Rodney Ian: *See—*
Davis, Raymond Vincent; and Fryer, Rodney Ian, 4,083,948, Cl. 424-1.000.
Fuel Superheater Systems, Inc.: *See—*
Furr, Clen H.; and Favreau, Dan W., 4,083,340, Cl. 123-122.00E.
Fuel Systems, Inc.: *See—*
Wenzel, Edward C.; and Steinmann, Henry W., 4,083,698, Cl. 44-51.000.
Fugner, Armin: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,083,980, Cl. 424-251.000.
Fuji Photo Film Co., Ltd.: *See—*
Inouye, Kozo; Yokota, Yukio; Okumura, Akio; Shiba, Keisuke; and Kubodera, Seiiti, 4,083,721, Cl. 96-56.200.
Miyahara, Junji; and Kato, Hisatoyo, 4,083,626, Cl. 350-117.000.
Shimamura, Isao; and Ogawa, Junkiti, 4,083,723, Cl. 96-66.500.
Fujii, Sakumi: *See—*
Toshimitsu, Itaru; Fujii, Sakumi; Uchida, Masao; and Fujii, Yoshio, 4,083,937, Cl. 423-321.00R.
Fujii, Yoshio: *See—*
Toshimitsu, Itaru; Fujii, Sakumi; Uchida, Masao; and Fujii, Yoshio, 4,083,937, Cl. 423-321.00R.
Fujikawa, Kanichi: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, 4,083,714, Cl. 71-94.000.
Fujimoto, Shoji, to Nippon Electric Co., Ltd. Integrated circuit device. 4,084,108, Cl. 307-238.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Itoh, Masumi; Kamiya, Takashi; and Hagiwara, Daijiro, 4,083,848, Cl. 260-239.100.
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,084,049, Cl. 544-16.000.
Yamada, Senri; Nagasawa, Kanji; Mori, Tokiaki; and Tanaka, Masaru, 4,083,729, Cl. 106-88.000.
Fujita, Fumio: *See—*
Itaya, Nobushige; and Fujita, Fumio, 4,083,855, Cl. 260-343.600.
Fukui, Shoshin: *See—*
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 4,084,059, Cl. 560-87.000.
Fukutani, Hideo; Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; and Torige, Kazuo, to Mitsubishi Chemical Industries Ltd. Photosensitive composition. 4,083,725, Cl. 96-115.00R.
Fuller, Hans-Jurgen: *See—*
Schmidbaur, Hubert; and Fuller, Hans-Jurgen, 4,083,875, Cl. 260-606.50P.
Furr, Clen H.; and Favreau, Dan W., to Fuel Superheater Systems, Inc. Gasoline superheater. 4,083,340, Cl. 123-122.00E.
Furukawa, Kazuhide: *See—*
Noda, Kanji; Kodama, Ryuhei; Yano, Tadanori; Inoue, Hideaki; Furukawa, Kazuhide; Igimi, Hirotsune; and Ide, Hiroyuki, 4,083,994, Cl. 424-311.000.
Furukawa, Masamichi; and Serikawa, Yoshio, to Ricoh Company, Ltd. DC-DC converter. 4,084,219, Cl. 363-21.000.
Furuto, Takashi: *See—*
Yumuro, Tazo; and Furuto, Takashi, 4,083,281, Cl. 83-525.000.
Futurumverken AB: *See—*
Bergmark, Nils Randolf; and Westermark, Thord Ingvar Eugen, 4,083,361, Cl. 126-299.00D.
Bergmark, Nils Randolf; and Westermark, Thord Ingvar Eugen, 4,083,362, Cl. 126-299.00D.
Fuxe, Kjell, to Nelson Research and Development Company. Method of treating schizophrenia. 4,084,000, Cl. 424-319.000.
Fuzisawa, Noriyoshi; Maedai, Akio; and Hattori, Kenichi, to Kao Soap Co., Ltd. Method for cultivation of *Lentinus edodes*. 4,083,144, Cl. 47-1.100.
Fuzisawa, Noriyoshi; Maedai, Akio; and Hattori, Kenichi, to Kao Soap Co., Ltd. Method for vessel cultivation of *Lentinus edodes*. 4,083,145, Cl. 47-1.100.
Gacesa, Gerald R.: *See—*
Krupp, Myron J.; Gacesa, Gerald R.; and Knudtson, John P., 4,083,762, Cl. 204-181.00R.
GAF Corporation: *See—*
De Thomas, Waldo; and Hort, Eugene V., 4,083,809, Cl. 252-457.000.
Gaffney, Edward J. Lift chair with rocker and wheel frame attachments. 4,083,599, Cl. 297-131.000.
Gallacher, Lawrence V., to King Industries, Inc. Catalysis of amino resin cross-linking reactions with high molecular weight sulfonic acids. 4,083,830, Cl. 260-67.60R.
Gallagher, Gerard; and Walker, Derek, to Glaxo Laboratories Limited. Oxidation of hydrazones to the corresponding diazo compound. 4,083,837, Cl. 260-141.000.
Gallant, Richard Paul, to United States of America, Navy. Compressor stall warning system. 4,083,235, Cl. 73-117.300.
Gallus, Heinz; Klein, Willi; and Zeuner, Hans, to Bergische Stahl-Industrie. Brake disc with improved ventilation cooling. 4,083,435, Cl. 188-218.0XL.
Gambill, Richard L., to Rohm and Haas Company. Method for producing variegated nylon yarn. 4,083,682, Cl. 8-15.000.
Gandia, Manuel Taberner, to Colortex, S.A. Method of embossing textile material. 4,084,026, Cl. 427-276.000.
Ganellin, Charon Robin: *See—*
Durant, Graham John; Ganellin, Charon Robin; and Sach, George Sidney, 4,083,983, Cl. 424-263.000.
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 4,083,988, Cl. 424-273.00R.
Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, 4,084,001, Cl. 424-322.000.
Ganz Brothers, Inc.: *See—*
Ganz, Robert H., 4,083,163, Cl. 53-48.000.
Ganz, Robert H., to Ganz Brothers, Inc. Package forming machine. 4,083,163, Cl. 53-48.000.
Garrett Corporation, The: *See—*
Kumm, Emerson L., 4,083,188, Cl. 60-605.000.
Garrett, Jack Warden: *See—*
Suttkus, David John; and Garrett, Jack Warden, 4,083,664, Cl. 418-266.000.
Garrick, Laurence James. Automated planter box system. 4,083,147, Cl. 47-80.000.
Garrison, C. Gene; and Southern, William, to Teledyne McCormick Selph, an operating division of Teledyne Ind. Inc. Mild detonating cord confinement. 4,083,305, Cl. 102-27.00R.
Garrison, James R.; Metzger, Robert W.; and Waldrup, Herman H., to Textron, Inc. Mast torque metering system. 4,083,518, Cl. 244-17.110.
Garvin, George R., to Sam Garvin & Company. Wall depository. 4,083,314, Cl. 109-50.000.
Gault, William Andrew, to Western Electric Company, Inc. Method of forming and growing a single crystal of a semiconductor compound. 4,083,748, Cl. 156-609.000.
Gausepohl, Hermann: *See—*
Pohlemann, Heinz; Gausepohl, Hermann; and Naarmann, Herbert, 4,083,835, Cl. 260-79.50C.
Gayst, Stephen, to University of Sydney, The. Phase transition detector. 4,083,224, Cl. 73-17.00A.
Gearhart-Owen Industries, Inc.: *See—*
Rankin, Emmitt Edward, 4,083,401, Cl. 166-250.000.
Gebr. Claas Maschinenfabrik GmbH: *See—*
Ackermann, Gustav; and Clostermeyer, Gerhard, 4,083,297, Cl. 100-19.00R.
Gebr. Dingerkus: *See—*
Witte, Gunther, 4,083,081, Cl. 16-114.00A.
General Dynamics Corporation: *See—*
Krumweide, Gary C., 4,083,324, Cl. 118-300.000.
Krumweide, Gary C., 4,083,325, Cl. 118-315.000.
General Electric Company: *See—*
Burke, Hubert K.; and Michon, Gerald J., 4,084,257, Cl. 364-862.000.
Engeler, William E.; and Goldberg, Howard S., 4,084,256, Cl. 364-862.000.
King, Randall N., 4,084,040, Cl. 429-104.000.
Mark, Victor; and Wilson, Phillip Steven, 4,083,814, Cl. 260-30.80R.
Olander, Walter Karl, 4,083,828, Cl. 260-47.0ET.
Piccone, Dante Edmond; and Somos, Istvan, 4,084,207, Cl. 361-91.000.
Rairden, John R., III, 4,084,025, Cl. 427-229.000.
Steglich, Helmar R., 4,084,121, Cl. 318-654.000.
Stoll, Donald H., 4,084,202, Cl. 361-24.000.
Terry, Vincent G., 4,083,639, Cl. 403-16.000.
Zampini, Louis, Jr.; and Stefani, Joseph P., 4,083,448, Cl. 206-329.000.
General Foods Corporation: *See—*
Kim, Myung Ki; and Lugay, Joaquin Castro, 4,084,017, Cl. 426-656.000.
General Instrument Corporation: *See—*
Bazarian, A.; and Bonnesen, J. S., 4,084,208, Cl. 361-120.000.
General Mills, Inc.: *See—*
Yueh, Mao H.; and Mueller, Herman W., 4,084,008, Cl. 426-464.000.
General Motors Corporation: *See—*
Westercamp, Kenneth L., 4,083,202, Cl. 64-32.00R.
General Time Corporation: *See—*
Robinson, Ralph C., 4,083,673, Cl. 431-87.000.
Genie Industries, Inc.: *See—*
Notenboom, Leo J., 4,083,534, Cl. 254-186.0HC.
Genn, John P.; Verni, Ralph M.; and Bindman, Jonathan K., to Controlled Sheet Music Service, Inc. Terraced modular rack assembly. 4,083,456, Cl. 211-55.000.
Geohegan, Kenneth P., Jr.; Collins, Christopher R.; Bawroski, George; and Steiner, George H., to Westinghouse Electric Corporation. Active vibration damper with electrodynamic sensor and drive units. 4,083,433, Cl. 188-1.00B.
Geo. A. Hormel & Co.: *See—*
Thissen, Christopher P., 4,083,746, Cl. 156-499.000.
Gerard, Bardet, to Automatisme et Technique. Continuous transport systems. 4,083,309, Cl. 104-18.000.
Gerber, Hermann E., to United States of America, Navy. Hygrometer. 4,083,249, Cl. 73-336.500.

Geri, Don W.: *See—*
Vasudeva, Anil; and Geri, Don W., 4,083,509, Cl. 242-71.800.

Gessinger, Gernot: *See—*
Bachmann, Robert; Buxbaum, Charley; and Gessinger, Gernot, 4,083,811, Cl. 252-509.000.

Gettings, Robert E., to A. B. Dick Company. Drive circuit for stepper motor. 4,084,122, Cl. 318-696.000.

Ghosh, Abha Pal; and Ghosh, Kalyan Kumar, to Shaw University. 2,4-Diamino-6-methyl-5-(halophenylazo) pyrimidines. 4,083,841, Cl. 260-154.000.

Ghosh, Kalyan Kumar: *See—*
Ghosh, Abha Pal; and Ghosh, Kalyan Kumar, 4,083,841, Cl. 260-154.000.

Giffin, Charles E.: *See—*
Boettger, Heinz G.; Giffin, Charles E.; Dreyer, William J.; and Kuppermann, Aron, 4,084,090, Cl. 250-286.000.

Giger, Urs; and Jakob, Edwin, to ETA A.G. Ebauches Fabrik. Regulator key for watch movements. 4,083,179, Cl. 58-109.000.

Gilbert, Russell T.; and Pfau, Irwin B., to California Injection Molding Co., Inc. Method for molding elongated thin wall articles. 4,083,903, Cl. 264-40.300.

Gilkerson, Robert L.; Griggs, Donald W.; and Hadley, James B., to Caterpillar Tractor Co. Support pin for clamping die assembly. 4,083,216, Cl. 72-149.000.

Gilkey, Robert W.: *See—*
Turner, Philip L.; Gilkey, Robert W.; and Lagus, Peter L., 4,083,228, Cl. 73-32.00R.

Gilleland, Randall C.; and Rietveld, Frank P., to Colt Industries Operating Corporation. Wire electrode protection system for electrical discharge machining. 4,084,074, Cl. 219-69.00W.

Gillemot, George W., to Thompson, John T., a part interest. Re-enterable split splice housing with flexible locking strip. 4,084,066, Cl. 174-92.000.

Gillemot, George W., to Thompson, John T., a part interest. Re-enterable split cable splice enclosure with locking strips and cooperable detent means. 4,084,067, Cl. 174-92.000.

Gillette Company, The: *See—*
Nissen, Warren I.; and Perry, Roger L., 4,083,104, Cl. 30-47.000.

Gillis, Alva Knox, Jr., to Harris Corporation. Fourier transform generator for bi-level samples. 4,084,251, Cl. 364-726.000.

Gingrich, John A., to Dover Corporation (Canada) Limited; and Dover Corporation. Apparatus for determining the location of an elevator car or similar vehicle. 4,083,430, Cl. 187-29.00R.

Giraldi, Pier Nicola: *See—*
Doria, Gianfederico; Giraldi, Pier Nicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,083,953, Cl. 424-45.000.

Girard, Harry J. Pipeline pig with longitudinally incompressible member. 4,083,076, Cl. 15-104.06R.

Glass, Joseph Edward, Jr.; and Lowther, Roy Gale, to Union Carbide Corporation. Process for the synthesis of hydroxyethyl cellulose with improved resistance to enzyme catalyzed hydrolysis. 4,084,060, Cl. 536-96.000.

Glaxo Laboratories Limited: *See—*
Gallagher, Gerard; and Walker, Derek, 4,083,837, Cl. 260-141.000.

Glickman, Manuel. Reversible dual purpose box spring. 4,083,069, Cl. 5-345.00R.

Glover, Brian: *See—*
Clarke, William; Glover, Brian; and Jamin, Guillaume Ward, 4,083,205, Cl. 68-5.00C.

Godoshusei Company, Limited: *See—*
Yamashita, Kiyoshi; and Kudo, Hidehiko, 4,083,960, Cl. 424-94.000.

Goff, Randall; Radbill, John M.; and Pleasanton, Roger W., to Dresser Industries, Inc. Audible alarm food thermometer. 4,083,250, Cl. 73-352.000.

Gold, Gerald: *See—*
Duvall, Ronald Nash; and Gold, Gerald, 4,083,950, Cl. 424-44.000.

Goldberg, Arthur H., to Hoffmann-La Roche, Inc. Novel dosage form. 4,083,741, Cl. 156-184.000.

Goldberg, Howard S.: *See—*
Engeler, William E.; and Goldberg, Howard S., 4,084,256, Cl. 364-862.000.

Goldin, Jerry H.; and Collins, Walter W., to Collins Knives, Inc. Foldable blade knife. 4,083,110, Cl. 30-155.000.

Goldmann, Wolf: *See—*
Ritzmann, Horst; Thiemeyer, Heinz; Schepers, Georg; and Goldmann, Wolf, 4,083,676, Cl. 432-14.000.

Goldstein, Ralph S., to Container Corporation of America. Apparatus for placing liners into shipping container. 4,083,293, Cl. 93-36.010.

Goloff, Alexander, to Caterpillar Tractor Co. Piston with high top ring location. 4,083,292, Cl. 92-176.000.

Gombrich, Peter P.; and Harvey, Michael L., to Gombrich, Peter R. Heart beat rate monitor. 4,083,366, Cl. 128-2.05T.

Gombrich, Peter R.: *See—*
Gombrich, Peter P.; and Harvey, Michael L., 4,083,366, Cl. 128-2.05T.

Gomez, Secundino G., to McCaffrey-Ruddock Tagline Corporation. Self-adjusting fairlead for spring rewound tagline device. 4,083,510, Cl. 242-107.000.

Goodale, Clark W.; Morgan, Charles W.; and Rhoton, Albert L., to United Foam Corporation. Textured-foam coated urethane wall and ceiling material. 4,084,030, Cl. 428-141.000.

Goodwin, William Thomas; and Ovens, Christopher William, to Dresser Europe S. A. Liquid blending control system. 4,083,473, Cl. 222-144.500.

Goodyear Tire & Rubber Company, The: *See—*
Enabnit, Robert S., 4,084,135, Cl. 324-202.000.
Kahaner, Joel M., 4,083,738, Cl. 156-92.000.

Goransson, Rolf Erik, to Internationella Siporex Aktiebolaget. Process for manufacturing cellular lightweight concrete products. 4,083,909, Cl. 264-82.000.

Goransson, Rolf Erik: *See—*
Kalvenes, Oystein; Eriksson, Gosta Harald; Svensson, Percy; and Goransson, Rolf Erik, 4,083,908, Cl. 264-82.000.

Gorman, Frederick J.: *See—*
Calundann, Gordon W.; Davis, Herbert L.; Gorman, Frederick J.; and Mininni, Robert M., 4,083,829, Cl. 260-47.00C.

Gorog, Istvan; and Williams, Brown F., to RCA Corporation. Optical scanner. 4,084,188, Cl. 358-199.000.

Gottschlich, Alois; and Leverenz, Klaus, to Bayer Aktiengesellschaft. Phenylazo orthocyano phenylazo or orthocyano phenylazo phenylazo containing dyestuffs. 4,083,844, Cl. 260-174.000.

Goudie, Alexander Crossan; Seager, Harry; and Fisher, Howard, to Beecham Group Limited. Pharmaceutical composition. 4,083,951, Cl. 424-44.000.

Grabenstetter, Robert John; and Gray, John Augustus, III, to Procter & Gamble Company, The. Processes and compositions for remineralization of dental enamel. 4,083,955, Cl. 424-49.000.

Graff, Hart F.: *See—*
Christ, Christy; and Graff, Hart F., 4,084,019, Cl. 427-32.000.

Grafstein, Daniel: *See—*
Heath, Carl E.; Grafstein, Daniel; and Milewski, John V., 4,083,708, Cl. 65-23.000.

Gram, Hans, to Brodrene Gram A/S. Contact freezing apparatus comprising mutually movable freezing plates. 4,083,199, Cl. 62-341.000.

Grancoin, Bernard, to Thomson-CSF. Synchrotransmission system controlled by Hall effect. 4,084,118, Cl. 318-138.000.

Grandview Industries, Limited: *See—*
Ronden, Clifford P.; and Rabel, Imre, 4,083,918, Cl. 264-297.000.

Grapha-Holding AG: *See—*
Muller, Hans, 4,083,745, Cl. 156-380.000.

Grasser, Katalin: *See—*
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Szirt nee Kiszelly, Eniko; Kosoczky, Ibolya; and Petocz, Lujza E., 4,083,978, Cl. 424-250.000.

Grather, Gunter; and Rabus, Friedrich, to Robert Bosch GmbH. High energy spark ignition system, particularly for internal combustion engines. 4,083,347, Cl. 123-148.00E.

Gray, John Augustus, III: *See—*
Grabenstetter, Robert John; and Gray, John Augustus, III, 4,083,955, Cl. 424-49.000.

Gray, Larry O.: *See—*
Williams, James A.; and Gray, Larry O., 4,083,423, Cl. 180-105.00E.

Great Lakes Chemical Corporation: *See—*
Sanders, David C., 4,083,942, Cl. 423-497.000.

Green, John A. S.; and Loynaz, Sergio A., to Martin Marietta Aluminum, Inc. Method for removing ferrous iron from alkali metal aluminate liquor. 4,083,925, Cl. 423-121.000.

Greenspan, Harold Jack. Fluted diamond drill. 4,083,351, Cl. 125-30.00R.

Gregerson, Keith J. Animal snare. 4,083,142, Cl. 43-87.000.

Grego, Saverio: *See—*
Bornengo, Mario; Grego, Saverio; and Serdi, Sergio, 4,083,900, Cl. 260-984.000.

Greiner, John N., II. Anchoring device for climbing ropes. 4,083,521, Cl. 248-1.000.

Griffin, Thomas J., Jr.; and Moran, Larry K., to Dow Chemical Company, The. Spacer composition and method of use. 4,083,407, Cl. 166-291.000.

Griggs, Donald W.: *See—*
Gilkerson, Robert L.; Griggs, Donald W.; and Hadley, James B., 4,083,216, Cl. 72-149.000.

Grodde, Karl-Heinz; and Schulz, Alfred, to Deutsche Texaco Aktiengesellschaft. Aqueous drilling fluid. 4,083,790, Cl. 252-8.50C.

Gross, Hans; and Berti, Eugenio, to Siemens Aktiengesellschaft. Control unit. 4,084,223, Cl. 363-129.000.

Grosse-Benne, Wilhelm: *See—*
Beermann, Paul; and Grosse-Benne, Wilhelm, 4,083,307, Cl. 102-45.000.

Groupe Europeen pour la Technique des Turbines a Vapeur G.E.T.T. S.A.: *See—*
Tempere, Robert, 4,083,655, Cl. 416-196.00R.

Grove Valve and Regulator Company: *See—*
Combes, Marvin G.; and Ripert, Roger L., 4,083,219, Cl. 72-352.000.

Grumman Aerospace Corporation: *See—*
Witzke, Horst; and Deb, Satyendra Kumar, 4,084,043, Cl. 429-111.000.

Gruner + Jahr AG & Co.: *See—*
Wangermann, Jochen, 4,083,461, Cl. 214-8.000.

GTE Laboratories Incorporated: *See—*
Kocher, Robert C.; and Piorkow, Alfred, 4,083,629, Cl. 350-285.000.

GTE Sylvania, Incorporated: *See—*
Dziedzic, Chester John; Cleveland, Joseph Jerome; and Newman, Ray Lewis, 4,083,400, Cl. 165-165.000.
Hebert, Roger T.; Pike, Bernard T.; McCarthy, Charles E.; and Shea, Richard J., 4,084,112, Cl. 313-222.000.

Guenther, William D., to Dana Corporation. Internally cooled rotary exhaust valve. 4,083,331, Cl. 123-41.170.

Guetzlaff, Robert Paul, to Deere & Company. Method and tool for making a sheet metal pulley. 4,083,215, Cl. 72-82.000.
Gugeler, William G. Animated visual effect adaptor for gated still picture projectors. 4,083,631, Cl. 353-120.000.
Gulf Research & Development Company: *See*—
Hildebrand, Richard Emil; Paraskos, John Angelo; and Taylor, Herman, Jr., 4,083,769, Cl. 208-10.000.
McKinney, Joel D.; Mitchell, Bruce R.; and Sebulsky, Raynor T., 4,083,807, Cl. 252-455.00Z.
Gunnewig, Hubert, to Westfalia Separator AG. Centrifugal separator having hydraulically operated outlet valves. 4,083,488, Cl. 233-20.00A.
Gurley, Grey M. Vise. 4,083,547, Cl. 269-156.000.
Gyromat Corporation, The: *See*—
Wiggins, Richard F., 4,083,493, Cl. 239-112.000.
H and W Tool Sales: *See*—
Kerins, Harry A., 4,083,111, Cl. 30-168.000.
Haarman & Reimer Gesellschaft mit Beschrankter Haftung: *See*—
Leidig, Theodor, 4,083,878, Cl. 260-611.00F.
Haas, Phil, to Betenbaugh, Walter Russel, Jr. Mulcher attachment for rotary power mower. 4,083,166, Cl. 56-13.700.
Hachisuka, Sadao: *See*—
Mori, Mamoru; Sasaki, Shiro; and Hachisuka, Sadao, 4,083,602, Cl. 297-389.000.
Hachtmann, William: *See*—
Knight, Arlen M.; and Hachtmann, William, 4,083,077, Cl. 15-321.000.
Hack, Joachim; Himmelmann, Udo; Rudolf, Peter; Schulze-Berge, Klaus; and Meyer, Karl-Heinz, to BASF Aktiengesellschaft. Magnetic disc, especially a flexible magnetic disc, for track adjustment and amplitude control. 4,084,201, Cl. 360-135.000.
Hackbarth, Dale J. Adjustable clamp. 4,083,548, Cl. 269-166.000.
Hadley, James B.: *See*—
Gilkerson, Robert L.; Griggs, Donald W.; and Hadley, James B., 4,083,216, Cl. 72-149.000.
Haese, Egon; and Kellermann, Albert, to Dr. C. Otto & Comp. G.m.b.H. Tubular reactor for endothermic chemical reactions. 4,083,695, Cl. 23-289.000.
Hagedorn, Ewald. Clipping machine for closing bags. 4,083,164, Cl. 53-138.00A.
Hagen, Helmut: *See*—
Pommer, Ernst-Heinrich; Hagen, Helmut; and Fleig, Helmut, 4,083,986, Cl. 424-270.000.
Hagenuk & Co. GmbH: *See*—
Beermann, Paul; and Grosse-Benne, Wilhelm, 4,083,307, Cl. 102-45.000.
Hagiwara, Daijiro: *See*—
Itoh, Masumi; Kamiya, Takashi; and Hagiwara, Daijiro, 4,083,848, Cl. 260-239.100.
Haigh, Harold Edward; and Hofmann, Dietrich Adolf, to Tioxide Group Limited. Closure means. 4,083,538, Cl. 266-172.000.
Hair, George R. Method of heat sealing sheet-form layers of perforated plastic between layers of paperboard. 4,083,451, Cl. 206-461.000.
Hakanson, Christer Lennart, to AB Bofors. Method of producing substituted phenyl carbamates. 4,084,056, Cl. 560-29.000.
Hakansson, Sven Anders Samuel: *See*—
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar Kison; and Lonnberg, Lars, 4,083,566, Cl. 277-3.000.
Hale, C. Clark. Flexible pipe clamp assembly. 4,083,087, Cl. 24-21.000.
Hallerback, Stig Lennart; and Lachonius, Leif, to SKF Industrial Trading and Development Company B.V. Electric machine and method for the production thereof. 4,083,917, Cl. 264-263.000.
Halliburton Company: *See*—
Barrington, Burchus Q., 4,083,409, Cl. 166-320.000.
Hamada, Hideo; Yamaguchi, Hirotsugu; and Takahashi, Koichi, to Nissan Motor Company, Limited. Mechanism for modulating clutch engagement. 4,083,443, Cl. 192-91.00R.
Hamanaka Kabushiki Kaisha: *See*—
Hamanaka, Rikio, 4,083,740, Cl. 156-166.000.
Hamanaka, Rikio, to Hamanaka Kabushiki Kaisha. Method of making fancyworks using pressure-sensitive adhesive. 4,083,740, Cl. 156-166.000.
Hamano Industry Co., Ltd.: *See*—
Miwa, Tatsuro; Aoyama, Akira; Shimosaka, Masatoshi; Kusumoto, Hideto; and Kuroda, Katsuhiko, 4,083,749, Cl. 162-168.00N.
Hamby, Wayne D.; and Slade, Marvin Dale, to Criterion. Process for regenerating and for recovering metallic copper from chloride-containing etching solutions. 4,083,758, Cl. 204-106.000.
Hamilton, Artimus C., to Congoleum Corporation. Process for chemically embossing heat-foamable resinous material using agueous alcoholic, growth-controlling printing ink compositions. 4,083,907, Cl. 264-52.000.
Hammett, Joseph Richard. Wall patching apparatus. 4,083,258, Cl. 74-89.150.
Hammond, Clarence Howard: *See*—
Arter, Nelson Kay; Hammond, Clarence Howard; Pedersen, Daniel James; and Prahl, Marvin Edward, 4,084,116, Cl. 318-6.000.
Handa, Kuninori. Escape device. 4,083,438, Cl. 188-65.300.
Handly, Robert J.; and Douglas, Robert H., to Honeywell, Inc. Microcomputer apparatus. 4,084,233, Cl. 364-200.000.
Hanifin, John William: *See*—
Sloboda, Adolph Edward; and Hanifin, John William, 4,083,993, Cl. 424-304.000.
Hankins, Harold Charles Arthur: *See*—
Laker, Robert William; Hankins, Harold Charles Arthur; and Hughes, Gordon, 4,084,261, Cl. 364-900.000.
Hans Grohe KG: *See*—
Buzzi, Gunter, 4,083,584, Cl. 285-258.000.
Hansen, Guenter; Kaack, Hermann; Kermer, Wolf-Dieter; and Meyer, Guenter, to BASF Aktiengesellschaft. Uniformly dyed water-swellable cellulosic fibers. 4,083,684, Cl. 8-41.00R.
Hansen, Lars J., to Toledo Pickling & Steel Service, Inc. Apparatus for treating waste acids. 4,083,693, Cl. 23-262.000.
Hanson, Chris A., to Hanson Industries Incorporated. Adjustable, pressure-compensating, custom fitting pads having predetermined amount of fitting material and their use in boots. 4,083,127, Cl. 36-93.000.
Hanson, Chris A.: *See*—
Bertetto, Donald W.; and Hanson, Chris A., 4,083,130, Cl. 36-117.000.
Hanson Industries Incorporated: *See*—
Bertetto, Donald W.; and Hanson, Chris A., 4,083,130, Cl. 36-117.000.
Hanson, Chris A., 4,083,127, Cl. 36-93.000.
Hara, Hiromichi: *See*—
Komatsu, Koei; Nishioka, Akinori; Ohshima, Noboru; Takahashi, Masanobu; and Hara, Hiromichi, 4,083,834, Cl. 260-79.5NV.
Hardwick, Roy E.: *See*—
Ballain, Marlyn D.; Hardwick, Roy E.; Hargis, Robert L.; and King, Larry K., 4,083,926, Cl. 423-135.000.
Hardy, Thomas A., to Stauffer Chemical Company. Process for preparing n-alkylated aminoalkylphosphonates. 4,083,897, Cl. 260-970.000.
Hargis, Robert L.: *See*—
Ballain, Marlyn D.; Hardwick, Roy E.; Hargis, Robert L.; and King, Larry K., 4,083,926, Cl. 423-135.000.
Harris Corporation: *See*—
Gillis, Alva Knox, Jr., 4,084,251, Cl. 364-726.000.
Otten, Thomas H., 4,084,153, Cl. 365-125.000.
St. Denis, Robert A., 4,083,551, Cl. 270-55.000.
Harris, Thomas G., to Armstrong Cork Company. Decorative non-vinyl surface covering composition. 4,083,821, Cl. 260-18.0PF.
Harris, Thomas G., to Armstrong Cork Company. Non-vinyl surface covering composition. 4,083,824, Cl. 260-42.290.
Harry W. Dietert Co.: *See*—
Steinmueller, Ralph E., 4,083,236, Cl. 73-141.00A.
Harshberger, Russell P. Vibratory razor with adjustable guards. 4,083,102, Cl. 30-45.000.
Hartigan, Martin Joseph; and Wilson, Francis Paul, to Perkin-Elmer Corporation, The. Chromatographic column fittings. 4,083,702, Cl. 55-67.000.
Harvey, Michael L.: *See*—
Gombrich, Peter P.; and Harvey, Michael L., 4,083,366, Cl. 128-2.05T.
Harvey, Ronald B.; Strunc, Gerald R.; and Putzke, Dwayne H., to Pako Corporation. Wide scanning angle sensor. 4,084,099, Cl. 250-548.000.
Hashimoto, Akihiko; and Enomoto, Fuzio, to Olympus Optical Co., Ltd. Focal plane shutter. 4,084,170, Cl. 354-205.000.
Hashimoto, Masaru; and Ogata, Masaya, to Nissan Motor Company, Limited. Nondestructive inspection method for spot-welded joints. 4,083,223, Cl. 73-15.0FD.
Hashimoto, Masashi: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,084,049, Cl. 544-16.000.
Hashimoto, Nobuyuki: *See*—
Tsubota, Haruo; Takayama, Katsuki; Sakakibara, Naoji; and Hashimoto, Nobuyuki, 4,084,072, Cl. 200-83.00L.
Hasler AG: *See*—
Zimmer, Christian; and Ryser, Heinrich, 4,084,133, Cl. 324-83.00A.
Hassapis, Thomas J.: *See*—
Schubert, Robert W.; and Hassapis, Thomas J., 4,083,796, Cl. 252-132.000.
Hatch, Donald M.; and Lee, George D., to Hitco. Structural sound absorbing panel for underwater use and methods of making same. 4,083,159, Cl. 52-309.100.
Hatfield, Hodge, to Alton Box Board Company. Paperboard tube concrete forms. 4,083,526, Cl. 249-48.000.
Hattori, Kenichi: *See*—
Fuzisawa, Noriyoshi; Maedai, Akio; and Hattori, Kenichi, 4,083,144, Cl. 47-1.100.
Fuzisawa, Noriyoshi; Maedai, Akio; and Hattori, Kenichi, 4,083,145, Cl. 47-1.100.
Hattori, Tadashi; and Nakase, Takamichi, to Nippon Soken, Inc. Air-fuel ratio adjusting system. 4,083,337, Cl. 123-119.0EC.
Haupin, Warren E.: *See*—
Kinosz, Donald L.; and Haupin, Warren E., 4,083,943, Cl. 423-498.000.
Hauser, Hans Ulrich: *See*—
Schnellmann, Klaus; Kilchenmann, Walter; and Hauser, Hans Ulrich, 4,083,665, Cl. 425-144.000.
Hauser, Raimund: *See*—
Schuch, Albert; Hohenecker, Harald; Riegler, Herbert; and Weirich, Friedrich, 4,083,516, Cl. 242-193.000.
Havot, Henri Albert: *See*—
Dubost, Gerard; and Havot, Henri Albert, 4,084,162, Cl. 343-700.0MS.
Hayashi, Takao: *See*—
Shimizu, Akihiko; and Hayashi, Takao, 4,083,822, Cl. 260-29.6HN.
Hayes, John C., to UOP Inc. Hydrocarbon dehydrogenation using a

platinum or palladium, rhodium, nickel, alkaline or alkaline earth metal catalyst. 4,083,883, Cl. 260-668.00D.

Hayes, Michael William: *See—*
Schonfeld, Steven Edward; Bohm, Georg Gustav Anton; and Hayes, Michael William, 4,083,901, Cl. 264-25.000.

Haylock, John Christopher: *See—*
Lofquist, Robert Alden; and Haylock, John Christopher, 4,083,893, Cl. 260-857.0UN.

Hazard, Richard: *See—*
Townend, John; and Hazard, Richard, 4,083,857, Cl. 260-343.440.

Heath, Carl E.; Grafstein, Daniel; and Milewski, John V., to Exxon Research & Engineering Co. Forming a glass on a substrate. 4,083,708, Cl. 65-23.000.

Hebert, Roger T.; Pike, Bernard T.; McCarthy, Charles E.; and Shea, Richard J., to GTE Sylvania Incorporated. Incandescent lamp having two-part insulative base. 4,084,112, Cl. 313-222.000.

Heckel, Alain; and Presset, Rene, to Crouzet. Device for measuring the flow rate of fluid in a duct. 4,083,242, Cl. 73-194.00B.

Hector, Roger D., to Atari, Inc. Game cabinet. 4,084,194, Cl. 358-254.000.

Hege, Lonnie V.: *See—*
Muraco, John M.; Hege, Lonnie V.; and Miller, David G., 4,083,932, Cl. 423-210.000.

Heggie, Robert M.: *See—*
Epstein, Joseph; Heggie, Robert M.; and Norman, John J., 4,083,692, Cl. 23-232.00R.

Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Schilling, Paul; and Pollich, Gerhard, 4,083,556, Cl. 271-204.000.

Heijne, Leopold: *See—*
Van de Leest, Renaat Edmond; Beekmans, Nicolaas Marinus; and Heijne, Leopold, 4,083,764, Cl. 204-195.00M.

Heikkinen, Leo L.; Danielson, Kenneth D.; and Lundborg, Charlie L., to LaFont Corporation. Portable automobile rim crusher. 4,083,394, Cl. 157-1.210.

Heilweil, Israel J.: *See—*
Nnadi, John C.; and Heilweil, Israel J., 4,083,895, Cl. 260-874.000.

Heinsohn, Howard H., Jr.: *See—*
Evers, William J.; and Heinsohn, Howard H., Jr., 4,083,862, Cl. 260-455.00R.
Vinals, Joaquin F.; Kiwala, Jacob; Evers, William J.; and Heinsohn, Howard H., Jr., 4,083,373, Cl. 131-17.00R.

Heller, Adam; Miller, Barry; and Robbins, Murray, to Bell Telephone Laboratories, Incorporated. Liquid-semiconductor photocell using sintered electrode. 4,084,044, Cl. 429-111.000.

Heller, Harold: *See—*
Corte, Herbert; Heller, Harold; Lange, Peter Michael; and Netz, Otto, 4,083,712, Cl. 71-28.000.

Helm, Homer E., to Cork, Gordon H. Tube coupling. 4,083,585, Cl. 285-260.000.

Helm, Homer E., to Cork, Gordon H. Tube coupling. 4,083,586, Cl. 285-323.000.

Henkel Kommandit- Gesellschaft auf Aktien (Henkel KGaA): *See—*
Schwarze, Werner; Merk, Wolfgang; and Binder, Volker, 4,083,872, Cl. 260-584.00R.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Jakobi, Gunter; Krings, Peter; Schwuger, Milan Johann; and Smolka, Heinz, 4,083,793, Cl. 252-99.000.

Henmi, Hiroshi: *See—*
Kusunose, Tetsuhiro; Ideka, Masataka; Kitamura, Kazuyuki; Shima, Tsukasa; and Henmi, Hiroshi, 4,083,894, Cl. 260-857.0PE.

Herbenar, Edward J., to TRW Inc. Spring shackle assembly. 4,083,545, Cl. 267-54.00A.

Herbert Kannegiesser Kommanditgesellschaft: *See—*
Niederst, Jean-Pierre; and Holzinger, Karl, 4,083,671, Cl. 425-450.100.

Herbstman, Sheldon; and Estes, John H., to Texaco Inc. Alkylation process and method for catalyst regeneration. 4,083,800, Cl. 252-415.000.

Herring, Allan P.: *See—*
Lobunez, Walter; Ilardi, Joseph M.; Wright, R. Martin; and Herring, Allan P., 4,083,939, Cl. 423-421.000.

Herting, David C.: *See—*
Drury, Emma-Jane E.; and Herting, David C., 4,083,999, Cl. 424-317.000.

Herzl, Peter J., to Fischer & Porter Co. Balanced sensing system for vortex-type flowmeter. 4,083,240, Cl. 73-194.0VS.

Herzl, Peter J., to Fischer & Porter Co. Multi-channel common-line flowmeter transmission system. 4,083,241, Cl. 73-194.0VS.

Herzl, Peter J.; and Shaffer, Robert G., to Fischer & Porter Co. Two-wire transmitter with totalizing counter. 4,084,155, Cl. 340-210.000.

Hessenbruch, Rolf: *See—*
Schippers, Heinz; and Hessenbruch, Rolf, 4,083,914, Cl. 264-147.000.

Hester, Michael A. Lint pickup device. 4,083,075, Cl. 15-104.00A.

Hewitt, John Norman; and Christiano, Victor, to RCA Corporation. Method of forming a metal pattern on an insulating substrate. 4,083,710, Cl. 65-40.000.

Heyer, Robert E.: *See—*
Czaplinski, Thomas V.; and Heyer, Robert E., 4,084,097, Cl. 250-506.000.

Heyser, Richard C.; and Nathan, Robert, to California Institute of Technology. Medical tomograph system using ultrasonic transmission. 4,083,232, Cl. 73-599.000.

Hickman, John S.; and Jensen, Andrew Paul, to Capital Steel & Supply Co., division of Jensen Investment Corporation. Drop vent wall system. 4,083,149, Cl. 49-147.000.

Higashi, Masato, to Kabushiki Kaisha Daini Seikosha. Time correcting system for electronic timepiece. 4,083,176, Cl. 58-23.00R.

Higgens, Calvin E.: *See—*
Michel, Karl H.; and Higgens, Calvin E., 4,083,964, Cl. 424-118.000.

Hilal, Sadek K.; Sampson, William B.; and Leonard, Edward F., to United States of America, Energy. Rotating superconductor magnet for producing rotating lobed magnetic field lines. 4,084,209, Cl. 361-141.000.

Hildebrand, Bernard P.: *See—*
Libby, Hugo L.; and Hildebrand, Bernard P., 4,084,136, Cl. 324-238.000.

Hildebrand, Richard Emil; Paraskos, John Angelo; and Taylor, Herman, Jr., to Gulf Research & Development Company. Catalytic process for liquefying coal. 4,083,769, Cl. 208-10.000.

Hill, Albert A., to Dow Chemical Company, The. Synthetic railroad crosstie. 4,083,491, Cl. 238-98.000.

Hillman, Theodore E.; and Belcher, Mark D., to Conwed Corporation. Hole punching method and apparatus. 4,083,273, Cl. 83-2.000.

Himmelmann, Udo: *See—*
Hack, Joachim; Himmelmann, Udo; Rudolf, Peter; Schulze-Berge, Klaus; and Meyer, Karl-Heinz, 4,084,201, Cl. 360-135.000.

Himy, Albert; and Wagner, Otto C., to United States of America, Navy. Stable alkaline zinc electrode. 4,084,047, Cl. 429-206.000.

Hingarh, Hemraj K.: *See—*
Crippen, Richard E.; Hingarh, Hemraj K.; and Verhofstadt, Peter W. J., 4,084,174, Cl. 357-44.000.

Hipp, Gretta, administratrix: *See—*
Hipp, James P., deceased; and Foster, Carter, Jr., 4,084,007, Cl. 426-430.000.

Hipp, James P., deceased (by Hipp, Gretta, administratrix); and Foster, Carter, Jr., to Carpat International Inc. Method of producing edible meal from cottonseed. 4,084,007, Cl. 426-430.000.

Hirai, Naoe: *See—*
Matsuda, Shozo; Hirai, Naoe; and Tanaka, Tadashi, 4,083,763, Cl. 204-181.00E.

Hirth, Emil. Dental chair. 4,083,600, Cl. 297-316.000.

Hirtle, Allen C.; and O'Keefe, David B., to Honeywell Information Systems Inc. Emulation apparatus. 4,084,235, Cl. 364-200.000.

Hisamitsu Pharmaceutical Co., Inc.: *See—*
Noda, Kanji; Kodama, Ryuhei; Yano, Tadanori; Inoue, Hideaki; Furukawa, Kazuhide; Igimi, Hirotsune; and Ide, Hiroyuki, 4,083,994, Cl. 424-311.000.

Hisamoto, Iwao: *See—*
Katsushima, Atsuo: Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 4,084,059, Cl. 560-87.000.

Hisano, Akio; Ogura, Shohachi; and Satomo, Kouji, to Osaka Soda Co. Ltd. Process for preparing prepolymers or precopolymers of diallyl phthalate in a solid state. 4,083,819, Cl. 260-2.50R.

Hise, Henry W.: *See—*
Fry, Charles Max; and Hise, Henry W., 4,084,102, Cl. 290-55.000.

Hitachi, Ltd.: *See—*
Arakawa, Hideo; Kuniya, Keiichi; Namekawa, Takashi; and Iizuka, Tomio, 4,083,719, Cl. 75-229.000.
Kobayashi, Masaru; Kamada, Atsuya; Terabayashi, Takao; and Asao, Hiroshi, 4,083,220, Cl. 72-364.000.
Koshikawa, Tsuneji, 4,084,148, Cl. 340-1.00R.
Mita, Seiichi; Kuroda, Hiroshi; and Nakamura, Hisashi, 4,084,181, Cl. 358-12.000.
Ogata, Fumio, 4,084,221, Cl. 363-54.000.
Ohba, Shinya; Kubo, Masaharu; and Aoki, Masakazu, 4,084,107, Cl 307-221.00D.
Okuhara, Shinzi; Ohhinata, Ichiro; Kamei, Tatsuya; and Suzuki, Masayoshi, 4,084,110, Cl. 307-252.00G.
Oohira, Takeshi; and Kurihara, Tomiaki, 4,083,431, Cl. 187-29.00R
Teranishi, Yuichi; and Abe, Masayoshi, 4,084,105, Cl. 307-205.000.
Tokunaga, Norikazu; and Yabuno, Kohei, 4,084,222, Cl. 363-60.000.

Hitco: *See—*
Hatch, Donald M.; and Lee, George D., 4,083,159, Cl. 52-309.100

Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having legato effect. 4,083,283, Cl. 84-1.240.

Hlynsky, Alex, to Diamond Shamrock Corporation. Cis-2,5-dialkylpyrrolidine process. 4,083,851, Cl. 260-326.800.

Hochain, Etienne: *See—*
Santy, Jean; Hochain, Etienne; and Schneider, Andre, 4,083,529, Cl. 251-175.000.

Hoechst Aktiengesellschaft: *See—*
Babej, Milos; Bartmann, Wilhelm; Beck, Gerhard; and Lerch, Ulrich, 4,083,990, Cl. 424-283.000
Brotz, Walter; Illmann, Gunther; and Stetter, Karl Heinz, 4,083,731, Cl. 106-270.000.
Lang, Hans-Jochen; and Muschaweck, Roman, 4,083,979, Cl 424-251.000.
Schindler, Hermann; and Zimmermann, Wolfgang, 4,083,906, Cl. 264-49.000.
Schlegel, Albert, 4,083,933, Cl. 423-308.000.
Schmidbaur, Hubert; and Fuller, Hans-Jurgen, 4,083,875, Cl. 260-606.50P.

Hofer, Gerald; Konrath, Karl; and Weiss, Otmar, to Robert Bosch GmbH. Fuel injection pump for internal combustion engine. 4,083,662, Cl. 417-499.000.

Hoffmann-La Roche: *See—*
Westley, John, 4,083,968, Cl. 424-181.000.
Hoffmann-La Roche, Inc.: *See—*
Davis, Raymond Vincent; and Fryer, Rodney Ian, 4,083,948, Cl. 424-1.000.
Goldberg, Arthur H., 4,083,741, Cl. 156-184.000.
Hofmann, Dietrich Adolf: *See—*
Haigh, Harold Edward; and Hofmann, Dietrich Adolf, 4,083,538, Cl. 266-172.000.
Hohenecker, Harald: *See—*
Schuch, Albert; Hohenecker, Harald; Riegler, Herbert; and Weirich, Friedrich, 4,083,516, Cl. 242-193.000.
Holder, John E.: *See—*
Chaney, Preston E., 4,083,317, Cl. 114-40.000.
Holler, Konrad: *See—*
Ellinger, Bernd; and Holler, Konrad, 4,083,637, Cl. 356-240.000.
Hollingsworth, Elmont E., to Lake Center Industries. Coffee maker with steam flushing cycle. 4,083,295, Cl. 99-283.000.
Hollis, Morton: *See—*
Rubin, Richard J.; and Hollis, Morton, 4,083,592, Cl. 293-71.00R.
Holman, Robert E., Jr. Load holder end fitting. 4,083,312, Cl. 105-469.000.
Holmes, Frank A., to Jaybee Manufacturing Corporation. Concealed self-closing hinge for panel door cabinet structure. 4,083,082, Cl. 16-163.000.
Holt, William G.: *See—*
Petropoulos, Nick; and Holt, William G., 4,083,175, Cl. 58-4.00A.
Holton, William C., to Texas Instruments Incorporated. Laser for integrated optical circuits. 4,084,130, Cl. 331-94.50H.
Holzapfel, Immanuel, to Daimler-Benz Aktiengesellschaft. Film evaporation combustion chamber. 4,083,674, Cl. 431-116.000.
Holzinger, Karl: *See—*
Niederst, Jean-Pierre; and Holzinger, Karl, 4,083,671, Cl. 425-450.100.
Homma, Yuzuru; Shimizu, Takeshi; and Okada, Kazuo, to University of Tokyo, President of the. Therapeutical method for treating infection of mink hemorrhagic pneumonitis. 4,083,959, Cl. 424-92.000.
Homs, Douglas M. Center punch guide and punches. 4,083,109, Cl. 30-368.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Yamazaki, Shuichi; and Kajitani, Ikuo, 4,083,339, Cl. 123-122.0AC.
Honeywell, Inc.: *See—*
Handly, Robert J.; and Douglas, Robert H., 4,084,233, Cl. 364-200.000.
Honeywell Information Systems Inc.: *See—*
Albertine, Robert J.; Blomstedt, John W.; Edfors, John E.; Quattrini, Victor L.; and Yoshida, Paul S., 4,084,250, Cl. 364-708.000.
Calle, Jaime; and Chelberg, Lawrence W., 4,084,234, Cl. 364-200.000.
Chelberg, Lawrence W.; and King, James L., 4,084,236, Cl. 364-200.000.
Hirtle, Allen C.; and O'Keefe, David B., 4,084,235, Cl. 364-200.000.
Miller, Homer Warner, 4,084,252, Cl. 364-738.000.
Miller, Homer Warner, 4,084,253, Cl. 364-738.000.
Taylor, Donald R.; and Parmet, Arthur A., 4,084,229, Cl. 364-200.000.
Woods, John M.; and Keene, Bruce C., 4,084,232, Cl. 364-200.000.
Hooker Chemicals & Plastics Corporation: *See—*
Welcome, James R., deceased; and Welcome, Elizabeth M., administratrix, 4,083,823, Cl. 260-40.00R.
Horne, David Smith; Talbot, Robert Eric; and Russell, Peter John, to Interox Chemicals Limited. Preparation of a peroxide. 4,083,877, Cl. 260-610.00D.
Horne, Frederick F.; and VanderLans, Gerald G., to Airrigation Engineering Company, Inc. Method and apparatus for injecting foam into a pipeline, including an inflatable plug. 4,083,384, Cl. 138-93.000.
Hornle, Reinhold: *See—*
Wolf, Karlheinz; Nonn, Konrad; Hornle, Reinhold; and Petroll, Hans Werner, 4,083,689, Cl. 8-85.00B.
Hort, Eugene V.: *See—*
De Thomas, Waldo; and Hort, Eugene V., 4,083,809, Cl. 252-457.000.
Houlachi, George J.; and Claessens, Pierre L., to Noranda Mines Limited. Arsenic removal from electrolytes with application of periodic reverse current. 4,083,761, Cl. 204-130.000.
Houlihan, William J.; Mattner, Paul G.; and Smith, Joseph A., to Sandoz, Inc. Preparation of 2-sec.-alkylaminobenzophenones. 4,083,871, Cl. 260-570.0AB.
Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz, Inc. 10-(2-Substituted-amino-ethyl)-10,11-dihydro-5-methylene-5H-dibenzo[a,d]cycloheptenes. 4,083,997, Cl. 424-316.000.
House, Ralph, to Chevron Research Company. Dialkylaminobenzaldehyde polypyrrolidone composition. 4,083,827, Cl. 260-45.9QA.
Hovis, James E., to Bloom Engineering Company, Inc. Method and apparatus for heating a furnace chamber. 4,083,677, Cl. 432-19.000.
Howard Machinery Limited: *See—*
Clary, Roger, 4,083,773, Cl. 209-134.000.
Howlett, Richard Martin: *See—*
Elliott, John Scotchford; Davis, Bryan Terence; and Howlett, Richard Martin, 4,083,791, Cl. 252-51.50A.
Huber, William C., to United States of America, National Aeronautics and Space Administration. Fluid valve assembly. 4,083,380, Cl. 137-505.250.
Hubred, Gale L.; Kust, Roger N.; Natwig, David L.; and Pemsler, J. Paul, to Kennecott Copper Corporation. Cobalt stripping process. 4,083,915, Cl. 423-24.000.
Hudson, Marshall C., to Corning Glass Works. Optical fiber junction device. 4,083,625, Cl. 350-96.150.
Hughes, Gordon: *See—*
Laker, Robert William; Hankins, Harold Charles Arthur; and Hughes, Gordon, 4,084,261, Cl. 364-900.000.
Hunter, Jack A., to UOP Inc. Magnetic segregation of mixed non-ferrous solid materials in refuse. 4,083,774, Cl. 209-212.000.
Hutchinson, William Y.; and Kushmuk, Walter P., to Continental Scale Corporation. Beam weighing scale for different weight units. 4,083,418, Cl. 177-247.000.
Hutchisson, James Thomas, to Union Carbide Corporation. Portable hemodialysis system. 4,083,777, Cl. 210-22.00A.
Hutzell, Clyde G.: *See—*
College, Michael A.; Hutzell, Clyde G.; Lane, Charles A.; and McKenry, Robert J., 4,083,605, Cl. 299-91.000.
Hutzezon, Frits, to Akzona Incorporated. Method for cutting tow. 4,083,276, Cl. 83-37.000.
Ichikawa, Kiyoshi: *See—*
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, 4,083,283, Cl. 84-1.240.
Ide, Hiroyuki: *See—*
Noda, Kanji; Kodama, Ryuhei; Yano, Tadanori; Inoue, Hideaki; Furukawa, Kazuhide; Igimi, Hirotsune; and Ide, Hiroyuki, 4,083,994, Cl. 424-311.000.
Ideal Industries, Inc.: *See—*
ViPond, Clyde M., 4,083,105, Cl. 30-90.400.
Ideka, Masataka: *See—*
Kusunose, Tetsuhiro; Ideka, Masataka; Kitamura, Kazuyuki; Shima, Tsukasa; and Henmi, Hiroshi, 4,083,894, Cl. 260-857.0PE.
Ife, Robert John: *See—*
Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, 4,084,001, Cl. 424-322.000.
Igimi, Hirotsune: *See—*
Noda, Kanji; Kodama, Ryuhei; Yano, Tadanori; Inoue, Hideaki; Furukawa, Kazuhide; Igimi, Hirotsune; and Ide, Hiroyuki, 4,083,994, Cl. 424-311.000.
Ihara Chemical Industry Co., Ltd.: *See—*
Kanazawa, Teiichi; Shimizu, Masamichi; and Shimoyama, Susumu, 4,084,061, Cl. 560-105.000.
Iijima, Mochihiro: *See—*
Takemura, Motohiro; Iijima, Mochihiro; Tateno, Yoshiaki; Osada, Yuji; and Maruyama, Hiroyuki, 4,083,881, Cl. 260-635.00C.
Iinuma, Yoshio: *See—*
Nishimura, Katsuo; Yasuda, Tetsuya; Murakami, Tomomi; Yoshida, Masateru; Natori, Minoru; and Iinuma, Yoshio, 4,083,177, Cl. 58-23.00R.
Iizuka, Tomio: *See—*
Arakawa, Hideo; Kuniya, Keiichi; Namekawa, Takashi; and Iizuka, Tomio, 4,083,719, Cl. 75-229.000.
Ikeda, Hideo: *See—*
Takeda, Noriyuki; Ikeda, Hideo; Nakamura, Iwao; and Uchida, Noriaki, 4,083,694, Cl. 23-288.00F.
Ikesue, Haruyuki, to NSK-Warner K. K. Seat belt retractor. 4,083,511, Cl. 242-107.40A.
Ikeya, Taro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Manifold reactor. 4,083,182, Cl. 60-282.000.
Ilardi, Joseph M.: *See—*
Lobunez, Walter; Ilardi, Joseph M.; Wright, R. Martin; and Herring, Allan P., 4,083,939, Cl. 423-421.000.
Illinois Tool Works Inc.: *See—*
Erickson, Lloyd A., 4,083,289, Cl. 85-72.000.
Illmann, Gunther: *See—*
Brotz, Walter; Illmann, Gunther; and Stetter, Karl Heinz, 4,083,731, Cl. 106-270.000.
Imamiya, Tamotsu: *See—*
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,083,786, Cl. 210-321.00B.
IMC Chemical Group, Inc.: *See—*
Frump, John Adams, 4,084,054, Cl. 544-220.000.
Imperial Chemical Industries Limited: *See—*
Clarke, William; Glover, Brian; and Jamin, Guillaume Ward, 4,083,205, Cl. 68-5.00C.
Manson, John Stuart; and Ridyard, Denis Robert Annesley, 4,083,858, Cl. 260-373.000.
Smith, Leslie Harold, 4,083,992, Cl. 424-303.000.
Imperial, George R.; and Lentz, James A., to Xerox Corporation. Sleeved organic rubber pressure rolls. 4,083,092, Cl. 29-132.000.
Inagaki, Kenji: *See—*
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,083,786, Cl. 210-321.00B.
Indian Head Inc.: *See—*
Pate, Harold T.; and Borsh, Richard J., 4,083,465, Cl. 220-3.800.
Industrial Sales and Factoring Corporation: *See—*
Lee, Fu-Ming, 4,083,931, Cl. 423-199.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Brualdi, Giorgio, 4,083,445, Cl. 197-161.000.
Salto, Rinaldo, 4,083,444, Cl. 197-151.000.
Ingham, Robert Edward, to R.E. Ingham & Co., Limited. Grooving of sheet material. 4,083,390, Cl. 144-136.00R.
Inoue, Hideaki: *See—*
Noda, Kanji; Kodama, Ryuhei; Yano, Tadanori; Inoue, Hideaki; Furukawa, Kazuhide; Igimi, Hirotsune; and Ide, Hiroyuki, 4,083,994, Cl. 424-311.000.

Inoue, Shigeharu: *See*—
Koeda, Takemi; Tsuruoka, Takashi; Asaoka, Hiroyasu; Shibata, Uichi; Inoue, Shigeharu; and Niida, Taro, 4,083,850, Cl. 260-295.50R.
Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, to Nippon Shinyaku Co., Ltd. Process for preparing easily absorbable sterol glycoside. 4,083,969, Cl. 424-182.000.
Inoue, Takashi, to Kirin Beer Kabushiki Kaisha. Automatic preparation of sample for analysis. 4,083,690, Cl. 23-230.00M.
Inouye, Kozo; Yokota, Yukio; Okumura, Akio; Shiba, Keisuke; and Kubodera, Seiiti, to Fuji Photo Film Co., Ltd. Photographic phenolic couplers with amido coupling-off groups. 4,083,721, Cl. 96-56.200.
Insley, Robert H.; Nemeth, Joseph; and Rempes, Paul E., Jr., to Champion Spark Plug Company. Open mesh, random fiber, ceramic structure, monolithic catalyst support. 4,083,905, Cl. 264-44.000.
Insolio, Thomas A.; and Kozyrski, Vincent T., to Fletcher-Terry Company, The. Glass cutter. 4,083,274, Cl. 83-12.000.
Interfrange Ltd.: *See*—
Frank, Howard A., 4,083,471, Cl. 220-269.000.
International Business Machines Corporation: *See*—
Aboelfotoh, M. Osama; and Park, Kyu Chang, 4,083,614, Cl. 316-19.000.
Alt, Richard Curtis; and Perry, Francis James, 4,084,164, Cl. 346-75.000.
Arter, Nelson Kay; Hammond, Clarence Howard; Pedersen, Daniel James; and Prahl, Marvin Edward, 4,084,116, Cl. 318-6.000.
Birney, Richard Eugene; Leininger, Joel Calvin; and Taylor, George Phillips, 4,084,254, Cl. 364-766.000.
Bluethman, Robert Glenn, 4,084,258, Cl. 364-900.000.
Capozzi, Anthony J.; Cordi, Vincent A.; and Edson, Bruce A., 4,084,231, Cl. 364-200.000.
Lean, Eric Gung-Hwa, 4,084,189, Cl. 358-213.000.
Lean, Eric Gung-Hwa, 4,084,191, Cl. 358-213.000.
Long, Gerald Bernard; Mitchell, Ralph Charles; and Pi, Shing Chou, 4,084,152, Cl. 340-166.00R.
Matick, Richard Edward, 4,084,230, Cl. 364-200.000.
Pereira, Lawrence William, 4,084,195, Cl. 358-280.000.
Vogel, Stephen Martin; and Woods, John Walton, 4,084,117, Cl. 318-6.000.
International Computers Limited: *See*—
Laker, Robert William; Hankins, Harold Charles Arthur; and Hughes, Gordon, 4,084,261, Cl. 364-900.000.
International Flavors & Fragrances Inc.: *See*—
Evers, William J.; and Heinsohn, Howard H., Jr., 4,083,862, Cl. 260-455.00R.
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,084,009, Cl. 426-538.000.
Vinals, Joaquin F.; Kiwala, Jacob; Evers, William J.; and Heinsohn, Howard H., Jr., 4,083,373, Cl. 131-17.00R.
International Paper Company: *See*—
Capo, James L., 4,083,879, Cl. 206-623.000.
Internationella Siporex Aktiebolaget: *See*—
Goransson, Rolf Erik, 4,083,909, Cl. 264-82.000.
Kalvenes, Oystein; Eriksson, Gosta Harald; Svensson, Percy; and Goransson, Rolf Erik, 4,083,908, Cl. 264-82.000.
Interox Chemicals Limited: *See*—
Horne, David Smith; Talbot, Robert Eric; and Russell, Peter John, 4,083,877, Cl. 260-610.00D.
Inukai, Toshiya: *See*—
Yamamoto, Hisao; Inukai, Toshiya; and Koga, Yoshihiko, 4,083,981, Cl. 424-260.000.
Inventa AG fur Forschung und Patentverwertung: *See*—
Aus der Au, Rudolf; and Schurch, Rudolf, 4,083,379, Cl. 137-495.000.
Irvine, Robert; and Luperti, Harry E., to Pitney-Bowes, Inc. Sheet-material separator and feeder system. 4,083,555, Cl. 271-10.000.
Isaacson, Boris. Inflatable air-driven motor. 4,083,652, Cl. 416-84.000.
Ishihara Sangyo Kaisha, Ltd.: *See*—
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, 4,083,714, Cl. 71-94.000.
Ishikawa, Katsuji: *See*—
Iwata, Hiroshi; and Ishikawa, Katsuji, 4,084,169, Cl. 354-173.000.
Ishino Gasket Mfg. Co., Ltd.: *See*—
Sugawara, Minoru, 4,083,570, Cl. 277-235.00B.
Isii, Sigeki: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, 4,083,283, Cl. 84-1.240.
Isioka, Kunio: *See*—
Shimoiizaka, Junzo; Konosu, Akira; Morita, Kaneji; Sugie, Akio; and Isioka, Kunio, 4,083,776, Cl. 209-452.000.
Isshiki, Tomiya; Tomita, Tetsuo; Abe, Mitsuo; Takeda, Norio; and Miura, Mitsuo, to Mitsubishi Gas Chemical Company, Inc. Process for producing imine compounds. 4,083,869, Cl. 260-566.00R.
Istomin, Evgeny Ivanovich; Strekal, Leonid Pavlovich; Ivanenko, Alexandr Fedorovich; Vasiliev, Adolf Alfonsovich; Zhivaga, Leonid Ignatievich; Nazarenko, Oleg Kuzmich; Porazhinsky, Igor Antonovich; and Zhdanov, Jury Nikolaevich. Electron beam welding gun. 4,084,076, Cl. 219-121.0EB.
Istomin, Evgeny Ivanovich: *See*—
Porazhinsky, Igor Antonovich; Obolonsky, Alexei Pavlovich; Ivaschenko, Anatoly Grigorievich; Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,084,077, Cl. 219-121.0EB.
Itaya, Nobushige; and Fujita, Fumio, to Sumitomo Chemical Company, Limited. Method for producing a γ-lactone. 4,083,855, Cl. 260-343.600.
Itoh, Masumi; Kamiya, Takashi; and Hagiwara, Daijiro, to Fujisawa Pharmaceutical Co., Ltd. Process for protecting amino and/or imino groups. 4,083,848, Cl. 260-239.100.
ITT Industries, Incorporated: *See*—
Ullrich, Manfred Fritz, 4,084,106, Cl. 307-221.00C.
Ivanenko, Alexandr Fedorovich: *See*—
Istomin, Evgeny Ivanovich; Strekal, Leonid Pavlovich; Ivanenko, Alexandr Fedorovich; Vasiliev, Adolf Alfonsovich; Zhivaga, Leonid Ignatievich; Nazarenko, Oleg Kuzmich; Porazhinsky, Igor Antonovich; and Zhdanov, Jury Nikolaevich, 4,084,076, Cl. 219-121.0EB.
Porazhinsky, Igor Antonovich; Obolonsky, Alexei Pavlovich; Ivaschenko, Anatoly Grigorievich; Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,084,077, Cl. 219-121.0EB.
Ivaschenko, Anatoly Grigorievich: *See*—
Porazhinsky, Igor Antonovich; Obolonsky, Alexei Pavlovich; Ivaschenko, Anatoly Grigorievich; Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,084,077, Cl. 219-121.0EB.
Iwai, Ken: *See*—
Nishino, Yasushi; Karashima, Koji; and Iwai, Ken, 4,083,319, Cl. 114-260.000.
Iwasa, Yoshio: *See*—
Ushijima, Takashi; and Iwasa, Yoshio, 4,083,184, Cl. 60-293.000.
Iwata, Hiroshi, to West Electric Company, Ltd. Flash and camera device. 4,084,167, Cl. 354-33.000.
Iwata, Hiroshi; and Ishikawa, Katsuji, to West Electric Company, Ltd. Automatic film advancing system. 4,084,169, Cl. 354-173.000.
Iwatani, Akitoshi: *See*—
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 4,084,059, Cl. 560-87.000.
Iyeta, Motoi, to Nippon Gakki Seizo Kabushiki Kaisha. Device for correcting offset angle of pickup arm in tracking pickup apparatus. 4,083,565, Cl. 274-23.00A.
J. C. Schumacher Co.: *See*—
Schumacher, Joseph C., 4,084,024, Cl. 427-215.000.
J. I. Case Company: *See*—
Khatti, Ramkishan; and Johnson, Donald K., 4,083,382, Cl. 137-596.120.
Jackson, Andrew W., Sr. Apparatus and method for converting hydrostatic energy to electrical energy. 4,083,186, Cl. 60-325.000.
Jacobsen, Evan L. Smoking device. 4,083,374, Cl. 131-178.000.
Jacobson, Martin: *See*—
Mitchell, Everett R.; Jacobson, Martin; and Baumhover, Alfred H., 4,083,995, Cl. 424-311.000
Jacobus, Nelson Mortimer, Jr., to Communications Satellite Corporation. Automatic recycle circuit. 4,084,204, Cl. 361-72.000.
Jacoby, Sidney. Smoke and heat detector alarm. 4,084,157, Cl. 340-237.00S.
Jager, Egon: *See*—
Tratz, Josef; and Jager, Egon, 4,084,022, Cl. 427-96.000
Jakob, Edwin: *See*—
Giger, Urs; and Jakob, Edwin, 4,083,179, Cl. 58-109.000.
Jakobe, Eugene J. Shoulder supported stereophonic radio receiver. 4,084,139, Cl. 325-361.000.
Jakobi, Gunter; Krings, Peter; Schwuger, Milan Johann; and Smolka, Heinz, to Henkel Kommanditgesellschaft auf Aktien. Washing compositions containing aluminosilicates and nonionics and method of washing textiles. 4,083,793, Cl. 252-99.000.
James D. Easton Inc.: *See*—
Shedd, William D.; and Belden, Lawrence F., 4,083,141, Cl. 43-22.000.
Jamin, Guillaume Ward: *See*—
Clarke, William; Glover, Brian; and Jamin, Guillaume Ward, 4,083,205, Cl. 68-5.00C.
Jankowski, Raymond E.: *See*—
Bowers, Lewis H.; Jankowski, Raymond E.; and Sullivan, John L., 4,083,700, Cl. 51-298.00A.
Bowers, Lewis H.; Jankowski, Raymond E.; and Sullivan, John L., 4,083,891, Cl. 260-846.000.
Janome Sewing Machine Co. Ltd.: *See*—
Kasuga, Noboru, 4,083,316, Cl. 112-274.000.
Jansma, Roger H.; and Albrecht, William E., to Nalco Chemical Company. Sodium chloride and polydiallyl dimethyl ammonium chloride as an electroconductive additive. 4,084,034, Cl. 428-342.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Komatsu, Koei; Nishioka, Akinori; Ohshima, Noboru; Takahashi, Masanobu; and Hara, Hiromichi, 4,083,834, Cl. 260-79.5NV.
Jayawant, Madhusudan Dattatraya; and Meadows, Geoffrey Walsh, to Du Pont de Nemours, E. I., and Company. Purification of anhydrous hydrogen fluoride. 4,083,941, Cl. 423-488.000.
Jaybee Manufacturing Corporation: *See*—
Holmes, Frank A., 4,083,082, Cl. 16-163.000.
Jensen, Andrew Paul: *See*—
Hickman, John S.; and Jensen, Andrew Paul, 4,083,149, Cl. 49-147.000.
Jensen, Thomas H., to PPG Industries, Inc. Glass forehearth having a viscosity pump. 4,083,711, Cl. 65-346.000.

Jenson, Leslie Matthew: *See—*
Fleming, David Leslie; Jenson, Leslie Matthew; and Sauter, Gerald Francis, 4,084,260, Cl. 364-900.000.

Jernigan, John D.; and Whitehurst, Brooks M., to Texasgulf Inc. Process for obtaining pure orthophosphoric acid from superphosphoric acid. 4,083,934, Cl. 423-317.000.

Jessup, Wilbur F.; and Kimmelaar, Rudolf J. A., to Cincinnati Milacron Inc. Angular feed centerless grinder. 4,083,151, Cl. 51-103.00R.

Jiskra, Miloslav: *See—*
Pospisil, Frantisek; Skoda, Stanislav; Esner, Stanislav; Tyl, Miroslav; Mikulecky, Karel; and Jiskra, Miloslav, 4,083,507, Cl. 242-43.200.

Johanson, Peter A.: *See—*
Tisue, James G.; Weber, Donald R.; and Johanson, Peter A., 4,084,196, Cl. 358-283.000.

Johns-Manville Corporation: *See—*
Wester, Thomas Joseph; and Petersen, Svend Aage, 4,083,279, Cl. 83-347.000.

Johnson Controls, Inc.: *See—*
Rajagopal, Ramamoorthy, 4,083,356, Cl. 126-270.000.

Johnson, Donald K.: *See—*
Khatti, Ramkishan; and Johnson, Donald K., 4,083,382, Cl. 137-596.120.

Johnson, Dwight N. Pilot regulator. 4,083,375, Cl. 137-86.000.

Johnson & Johnson: *See—*
Drelich, Arthur H., 4,084,033, Cl. 428-198.000.
Michalak, Sylvia S., 4,083,124, Cl. 36-7.10R.

Johnson, Kenneth C., to F. J. Littell Machine Company. Overlapping gear drive for straightening machines. 4,083,217, Cl. 72-165.000.

Johnson, Philip L.: *See—*
Wolma, Rodney J., 4,083,158, Cl. 52-300.000.

Johnson, Wayne O.: *See—*
Yih, Roy Y.; Johnson, Wayne O.; and Kollman, Gerald E., 4,083,713, Cl. 71-92.000.

Johnson, William Rendall; and Welsh, Ralph Raleigh, to Boeing Company, The. Sine wave beam web and method of manufacture. 4,084,029, Cl. 428-119.000.

Jones, Arthur R., Jr.: *See—*
McCormack, Lawrence M.; Silvestri, Achille; and Jones, Arthur R., Jr., 4,083,691, Cl. 23-230.00R.

Jones, Robert N.: *See—*
Wattles, Gurdon B.; and Jones, Robert N., 4,083,504, Cl. 241-275.000.

Jordan, Alfons: *See—*
Krude, Werner; and Jordan, Alfons, 4,083,201, Cl. 64-21.000.

Joubert, Daniel, to Rhone-Poulenc Industries. New solid, non-corrosive detergent compositions. 4,083,795, Cl. 252-99.000.

Journee, Maurice Andre, to Paul Journee S.A. Device for securing a wiper blade to an arm. 4,083,642, Cl. 403-316.000.

Juenemann, Werner: *See—*
Dimroth, Peter; Kurtz, Walter; Radtke, Volker; and Juenemann, Werner, 4,083,686, Cl. 8-41.00R.

Jung, Fritz: *See—*
Kwech, Ludwig; and Jung, Fritz, 4,083,730, Cl. 106-89.000.

K-P Manufacturing Co., Inc.: *See—*
Ness, Kenneth P., 4,083.428, Cl. 184-105.00A.

Kaack, Hermann: *See—*
Hansen, Guenter; Kaack, Hermann; Kermer, Wolf-Dieter; and Meyer, Guenter, 4,083,684, Cl. 8-41.00R.

Kabel-und Metallwerke Gutehoffnungshutte AG: *See—*
Polizzano, Fred F., deceased; Stein, Dimitri R.; and Ziemek, Gerhard, 4,083,484, Cl. 228-130.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Higashi, Masato, 4,083,176, Cl. 58-23.00R.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Yokoyama, Masao; Sughihira, Tsuneo; and Ohta, Koji, 4,083,414, Cl. 172-804.000.
Yumuro, Tazo; and Furuto, Takashi, 4,083,281, Cl. 83-525.000.

Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,083,300, Cl. 101-103.000.

Kagan, July Borisovich; Loktev, Sergei Minovich; Nizov, Gennady Alexeevich; Zhilin, Vyacheslav Alexandrovich; Zuev, Alexandr Andreevich; and Bashkirov, Andrei Nikolaevich. Process for producing C_3—C_{20} aliphatic alcohols. 4,083,880, Cl. 260-632.00R.

Kahaner, Joel M., to Goodyear Tire & Rubber Company, The. Method and apparatus for splicing tire cord fabric. 4,083,738, Cl. 156-92.000.

Kajitani, Ikuo: *See—*
Yamazaki, Shuichi; and Kajitani, Ikuo, 4,083,339, Cl. 123-122.0AC.

Kakami, Susumu: *See—*
Kuroda, Toshiro; and Kakami, Susumu, 4,084,114, Cl. 313-496.000.

Kaken Chemical Co., Ltd.: *See—*
Yamashita, Kiyoshi; and Kudo, Hidehiko, 4,083,960, Cl. 424-94.000.

Kalvenes, Oystein; Eriksson, Gosta Harald; Svensson, Percy; and Goransson, Rolf Erik, to Internationella Siporex Aktiebolaget. Manufacture of cellular lightweight concrete slabs. 4,083,908, Cl. 264-82.000.

Kamada, Atsuya: *See—*
Kobayashi, Masaru; Kamada, Atsuya; Terabayashi, Takao; and Asao, Hiroshi, 4,083,220, Cl. 72-364.000.

Kamei, Tatsuya: *See—*
Okuhara, Shinzi; Ohhinata, Ichiro; Kamei, Tatsuya; and Suzuki, Masayoshi, 4,084,110, Cl 307-252.00G.

Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, to Fujisawa Pharmaceutical Co., Ltd. Cepham derivatives. 4,084,049, Cl. 544-16.000.

Kamiya, Takashi: *See—*
Itoh, Masumi; Kamiya, Takashi; and Hagiwara, Daijiro, 4,083,848, Cl. 260-239.100.

Kampe, Wolfgang: *See—*
Bicker, Uwe; Kampe, Wolfgang; and Steingross, Wolfgang, 4,083,987, Cl. 424-273.00R.

Kanazawa, Teiichi; Shimizu, Masamichi; and Shimoyama, Susumu, to Ihara Chemical Industry Co., Ltd. Process for producing benzyl sodium, phenylacetic acid and derivative thereof. 4,084,061, Cl 560-105.000.

Kangol Magnet Limited: *See—*
Clifford, Roy, 4,083,581, Cl. 280-745.000.

Kao Soap Co., Ltd.: *See—*
Fuzisawa, Noriyoshi; Maedai, Akio; and Hattori, Kenichi, 4,083,144, Cl. 47-1.100.
Fuzisawa, Noriyoshi; Maedai, Akio; and Hattori, Kenichi, 4,083,145, Cl. 47-1.100.
Tsuchiya, Yoshimi; Naganuma, Yoshinori; and Arai, Haruhiko, 4,083,954, Cl. 424-47.000.

Kapp & Co. Werkzeugmaschinenfabrik: *See—*
Lorenz, Manfred, 4,083,152, Cl. 51-166.0MH.

Kapustka, Robert E., to United States of America, National Aeronautics and Space Administration. Method and apparatus for conditioning of nickel-cadmium batteries. 4,084,124, Cl. 320-9.000.

Karashima, Koji: *See—*
Nishino, Yasushi; Karashima, Koji; and Iwai, Ken, 4,083,319, Cl 114-260.000.

Karlen, Urs: *See—*
Koller, Stefan; Aeschlimann, Peter; Karlen, Urs; and Liechti, Hans Wilhelm, 4,083,847, Cl. 260-207.000.

Karll, Bent, to Danfoss A/S. Compressor refrigeration plant. 4,083,196, Cl. 62-200.000.

Karr, Allan V., to Electrostatic Equipment Corporation. Method of ionizing gaseous flow in fluidization chamber. 4,084,018, Cl. 427-27.000.

Kartman, Helge Carl Christian, to F. L. Smidth & Co. Tube mill. 4,083,500, Cl. 241-54.000.

Kasserra, Hans Peter, to Du Pont of Canada Limited. Process for the manufacture of ammonium and alkali metal tungstates. 4,083,922, Cl 423-56.000.

Kasserra, Hans Peter: *See—*
Beaton, Stephen Peter; and Kasserra, Hans Peter, 4,083,920, Cl 423-53.000.

Kasuga, Noboru, to Janome Sewing Machine Co. Ltd. Sewing machine. 4,083,316, Cl. 112-274.000.

Katakura, Masayuki, to Tokyo Shibaura Electric Co., Ltd. Voltage controlled variable gain circuit. 4,084,129, Cl. 330-282.000.

Kato, Hidetoshi; Niimi, Masayoshi; and Mitani, Kenzo, to Nippondenso Co., Ltd. Chopper control system. 4,084,119, Cl. 318-434.000.

Kato, Hisatoyo: *See—*
Miyahara, Junji; and Kato, Hisatoyo, 4,083,626, Cl. 350-117.000.

Kato, Takahisa: *See—*
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 4,084,059, Cl. 560-87.000.

Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, to Daikin Kogyo Co., Ltd. 2-Hydroxy-1,1,2,3,3-pentahydro-perfluoroalkyl derivatives, and their production and use. 4,084,059, Cl. 560-87.000.

Kaverina, Natalya Veniaminovna: *See—*
Likhosherstov, Arkady Mikhailovich; Nazarova, Liya Semenovna; Skoldinov, Alexandr Petrovich; Markova, Galina Alexandrovna; and Kaverina, Natalya Veniaminovna, 4,083,976, Cl. 424-247.000.

Kawakita, Katsuhiko: *See—*
Murabayashi, Hideki; Kawakita, Katsuhiko; Nakamura, Kisaku; and Kobatake, Sadao, 4,083,718, Cl. 75-134.00B.

Kawamata, Masanobu: *See—*
Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, 4,083,969, Cl. 424-182.000.

Kawasaki, Kazuyoshi: *See—*
Outsuka, Koremitsu; Kawasaki, Kazuyoshi; and Tanaka, Yutaka, 4,083,754, Cl. 204-1.00T.

Kawasaki, Masahiro; Tano, Eiichi; and Sawada, Yoshio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Circuit for locking led light meter display in response to meter display in response to mirror movement in SLR camera. 4,084,166, Cl. 354-23.00D.

Keating, Martin, Jr., to Universal Folding Box Co., Inc. Reclosable carton and blank therefor. 4,083,455, Cl. 206-625.000.

Keene, Bruce C.: *See—*
Woods, John M.; and Keene, Bruce C., 4,084,232, Cl. 364-200.000.

Keener, Robert M. Float-type pump control switch. 4,084,073, Cl. 200-84.00R.

Kegelman, Matthew Roland, to Du Pont de Nemours, E. I., and Company. Galvanic cells employing uncompressed particles of FeS as the cathode. 4,084,045, Cl. 429-194.000.

Keller, Hans; Koll, Roman; and Taudt, Heinz, to Dr. Ing. Rudolf Hell GmbH. Method for the electro-optical reproduction of half-tone pictures. 4,084,183, Cl. 358-75.000.

Keller, Thomas A.: *See—*
Lloyd, Raymond A.; and Keller, Thomas A., 4,084,262, Cl. 364-900.000.

Kellermann, Albert: *See—*
Haese, Egon; and Kellermann, Albert, 4,083,695, Cl. 23-289.000.

Kelly, L. Thomas; Beachler, Robert R., Jr.; and Petterson, Tor H. Head mounted animal information means. 4,083,364, Cl. 128-2.00H.

Kelly, Robert C., to Upjohn Company, The. 4,5-Didehydro-6-oxo-2-aryl-methoxymethyl-3α-tetrahydropyranacetic acids. 4,083,854, Cl. 260-343.500.

Kempster, Barry Arthur: *See*—
Mander, Keith Anthony; Mitchell, Keith James; Kempster, Barry Arthur; and Rodger, David, 4,083,506, Cl. 242-25.00R.

Kendall Company, The: *See*—
Marshall, Preston F., 4,083,913, Cl. 264-121.000.

Kenigsberg, Irwin Jeffrey; and Paul, William Francis, to United Technologies Corporation. Extended arm bifilar and method to eliminate second order vibration excitation. 4,083,654, Cl. 416-145.000.

Kennametal Inc.: *See*—
College, Michael A.; Hutzell, Clyde G.; Lane, Charles A.; and McKenry, Robert J., 4,083,605, Cl. 299-91.000.
Friedline, Ernest J., 4,083,644, Cl. 407-67.000.
Friedline, Ernest J., 4,083,645, Cl. 407-104.000.
Kita, John F.; and MacIntyre, Ray C., 4,083,415, Cl. 173-132.000.

Kennecott Copper Corporation: *See*—
Hubred, Gale E.; Kust, Roger N.; Natwig, David L.; and Pemsler, J. Paul, 4,083,915, Cl. 423-24.000.
Wesely, Rolf Jurgen, 4,083,921, Cl. 423-55.000.

Kenney, Frank M., to U and I Company. DC Voltage converter and shock-type high voltage utilization. 4,084,218, Cl. 363-18.000.

Kerins, Harry A., to H and W Tool Sales. Nut cutter. 4,083,111, Cl. 30-168.000.

Kermer, Wolf-Dieter: *See*—
Hansen, Guenter; Kaack, Hermann; Kermer, Wolf-Dieter; and Meyer, Guenter, 4,083,684, Cl. 8-41.00R.

Kerr, Edwin Robert: *See*—
Estes, John Harold; Kerr, Edwin Robert; and Dorawala, Tansukhlal Gokaldas, 4,083,799, Cl. 252-373.000.

Kervalishvili, Zurab Yasonovich: *See*—
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Maisuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sukharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; and Epik, Alexei Pavlovich, 4,083,757, Cl. 204-83.000.

Khalifeh, Jacob Richard: *See*—
Reed, Lamar Nelson; and Khalifeh, Jacob Richard, 4,084,070, Cl. 178-69.00G.

Khatti, Ramkishan; and Johnson, Donald K., to J. I. Case Company. Regulating valve with hydraulic detent. 4,083,382, Cl. 137-596.120.

Kidon, William E.: *See*—
Lieb, Donald F.; Stillman, Neil W.; and Kidon, William E., 4,083,067, Cl. 4-317.000.

Kiehs, Karl; Adolphi, Heinrich; and Theobald, Hans, to BASF Aktiengesellschaft. Pyridylphosphoric acid derivatives. 4,083,971, Cl. 424-200.000.

Kieninger & Obergfell, Fabrik fur technische Laufwerke und Apparate: *See*—
Scheer, Erich; and Rauer, Manfred, 4,084,104, Cl. 307-141.000.

Kikuchi, Takayuki; Yamada, Fumiharu; Nakamura, Satoshi; and Koyama, Fumio, to Nishi Nippon Denki Co., Ltd. Target arrangement for a light pulse beam comprising crosswise arranged and grouped phototransistors. 4,083,560, Cl. 273-102.20B.

Kilchenmann, Walter: *See*—
Schnellmann, Klaus; Kilchenmann, Walter; and Hauser, Hans Ulrich, 4,083,665, Cl. 425-144.000.

Kim, Myung Ki; and Lugay, Joaquin Castro, to General Foods Corporation. Fibrous protein materials. 4,084,017, Cl. 426-656.000.

Kim, Sunyong P. Purse with light mirror. 4,084,085, Cl. 362-135.000.

Kimmelaar, Rudolf J. A.: *See*—
Jessup, Wilbur F.; and Kimmelaar, Rudolf J. A., 4,083,151, Cl. 51-103.00R.

Kimpel, Francis A.; and Moore, Walter C., to Borg-Warner Corporation. Heating-cooling control system. 4,083,397, Cl. 165-26.000.

Kineyko, Wallace D.: *See*—
Anastasia, Harry G.; Kineyko, Wallace D.; and Ludwig, Carl H., 4,084,239, Cl. 364-424.000.

King Industries, Inc.: *See*—
Gallacher, Lawrence V., 4,083,830, Cl. 260-67.60R.

King, James L.: *See*—
Chelberg, Lawrence W.; and King, James L., 4,084,236, Cl. 364-200.000.

King, James R. Mobile shelving unit. 4,084,125, Cl. 312-199.000.

King, Larry K., to Aluminum Company of America. Production of aluminum chloride, 4,083,928, Cl. 423-136.000.

King, Larry K.: *See*—
Ballain, Marlyn D., Hardwick, Roy E.; Hargis, Robert L.; and King, Larry K., 4,083,926, Cl. 423-135.000.

King, Randall N., to General Electric Company. Cell casing and a hermetically sealed sodium-sulfur cell. 4,084,040, Cl. 429-104.000.

Kinosz, Donald L.; and Haupin, Warren E., to Aluminum Company of America. Production of magnesium chloride. 4,083,943, Cl. 423-498.000.

Kirchner, Richard K.; Andreadakis, Nicholas Cleanthis; and Mayer, William Norman, to Modern Controls, Inc. Portable keyboard/display terminal. 4,084,213, Cl. 361-384.000.

Kirin Beer Kabushiki Kaisha: *See*—
Inoue, Takashi, 4,083,690, Cl. 23-230.00M.

Kishi, Hajimu; and Takahashi, Masashi, to Oki Electric Industry Co., Ltd. Cutter radius compensation system. 4,084,243, Cl. 364-474.000.

Kissel, Ralph R.: *See*—
Rupp, Charles C.; and Kissel, Ralph R., 4,083,520, Cl. 244-167.000.

Kita, John F.; and MacIntyre, Ray C., to Kennametal Inc. Mining bit with replaceable work engaging member. 4,083,415, Cl. 173-132.000.

Kitamura, Kazuyuki: *See*—
Kusunose, Tetsuhiro; Ideka, Masataka; Kitamura, Kazuyuki; Shima, Tsukasa; and Henmi, Hiroshi, 4,083,894, Cl. 260-857.0PE.

Kiwala, Jacob: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo and Shuster, Edward J., 4,084,009, Cl. 426-538.000.
Vinals, Joaquin F.; Kiwala, Jacob; Evers, William J.; and Heinsohn, Howard H., Jr., 4,083,373, Cl. 131-17.00R.

Klein, Willi: *See*—
Gallus, Heinz; Klein, Willi; and Zeuner, Hans, 4,083,435, Cl. 188-218.0XL.

Klink, Leon F. Modular home. 4,083,154, Cl. 52-79.900.

Klockner-Werke AG: *See*—
Langhammer, Hans Jurgen, 4,083,715, Cl. 75-43.000

Knight, Arlen M.; and Hachtmann, William. Hand tool for cleaning fabric. 4,083,077, Cl. 15-321.000.

Knoedler, Roy E.: *See*—
Basey, Otis, Jr.; and Knoedler, Roy E., 4,083,579, Cl. 280-650.000.

Knopf, Hans. Device for the separation of the cleaning agent from the exhaust air of dry cleaning machines. 4,083,704, Cl. 55-237.000

Knudtson, John P.: *See*—
Krupp, Myron J.; Gacesa, Gerald R.; and Knudtson, John P., 4,083,762, Cl. 204-181.00R.

Kobatake, Sadao: *See*—
Murabayashi, Hideki; Kawakita, Katsuhiko; Nakamura, Kisaku; and Kobatake, Sadao, 4,083,718, Cl. 75-134.00B.

Kobayashi, Masaru; Kamada, Atsuya; Terabayashi, Takao; and Asao, Hiroshi, to Hitachi, Ltd. Sub-zero temperature plastic working process for metal. 4,083,220, Cl. 72-364.000.

Kobayashi, Yoshimatsu, to Yoshida Kogyo K K. Combined basket and bag construction. 4,083,392, Cl. 150-51.000.

Kobe Steel, Ltd.: *See*—
Asari, Akira; and Tsuzuki, Hidehiro, 4,083,214, Cl. 72-60.000.

Kober, Marvin, to O.K. Machine and Tool Corporation. Electrical wire dispenser with cutter and stripper. 4,083,268, Cl. 81-9.50R.

Kocher, Robert C.; and Piorkow, Alfred, to GTE Laboratories Incorporated. Beam splitting system for a welding laser. 4,083,629, Cl. 350-285.000.

Kodama, Ryuhei: *See*—
Noda, Kanji; Kodama, Ryuhei; Yano, Tadanori; Inoue, Hideaki; Furukawa, Kazuhide; Igimi, Hirotsune; and Ide, Hiroyuki, 4,083,994, Cl. 424-311.000.

Koeda, Takemi; Tsuruoka, Takashi; Asaoka, Hiroyasu; Shibata, Uichi; Inoue, Shigeharu; and Niida, Taro, to Meiji Seika Kaisha Ltd. 3-Substituted-2(1H)pyridon-6-carboxylic acids and process for preparation of same. 4,083,850, Cl. 260-295.50R.

Koga, Yoshihiko: *See*—
Yamamoto, Hisao; Inukai, Toshiya;; and Koga, Yoshihiko, 4,083,981, Cl. 424-260.000.

Kohl, Arthur L.; Rennick, Robert D.; and Savinsky, Martin W., to Rockwell International Corporation. Method of treating alkali metal sulfide and carbonate mixtures. 4,083,930, Cl. 423-189.000.

Kohn, Gustave K., to Chevron Research Company. Insect control employing certain benzoates. 4,083,989, Cl. 424-275.000.

Koizumi, Toshimichi, to Olympus Optical Co., Ltd. Copying objective lens system. 4,083,628, Cl. 350-220.000.

Kolesnikova, Elena Nikolaevna: *See*—
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Korovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich, 4,083,204, Cl. 66-178.00R.

Koll, Roman: *See*—
Keller, Hans; Koll, Roman; and Taudt, Heinz, 4,084,183, Cl. 358-75.000.

Koller, Stefan; Aeschlimann, Peter; Karlen, Urs; and Liechti, Hans Wilhelm, to Ciba-Geigy Corporation. Transiently water-soluble disperse mono-azo dyes containing a diamino-methylene-carbacyl group. 4,083,847, Cl. 260-207.000.

Kollman, Gerald E.: *See*—
Yih, Roy Y.; Johnson, Wayne O.; and Kollman, Gerald E., 4,083,713, Cl. 71-92.000.

Komatsu, Koei; Nishioka, Akinori; Ohshima, Noboru; Takahashi, Masanobu; and Hara, Hiromichi, to Japan Synthetic Rubber Co., Ltd. Process for producing polymer having functional groups at its chain terminals. 4,083,834, Cl. 260-79.5NV.

Kominami, Naoya: *See*—
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,083,786, Cl. 210-321.00B.

Kommanditbolaget United Stirling (Sweden) AB & Co.: *See*—
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar Kison; and Lonnberg, Lars, 4,083,566, Cl. 277-3.000.

Kon, Samuel; and Dunlap, Catherine J., to United States of America, Agriculture. Preparation of legume chips. 4,084,016, Cl. 426-634.000.

Konig, Reinhard; and Langer, Stefan, to Schubert & Salzer. Method and apparatus for eliminating an abnormality in a thread to be wound onto the bobbin of an open-end spinning device. 4,083,171, Cl. 57-34.00R.

Konosu, Akira: *See—*
Shimoiizaka, Junzo; Konosu, Akira; Morita, Kaneji; Sugie, Akio; and Isioka, Kunio, 4,083,776, Cl. 209-452.000.

Konrath, Karl: *See—*
Hofer, Gerald; Konrath, Karl; and Weiss, Otmar, 4,083,662, Cl. 417-499.000.

Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing a 1-phenoxy-2-hydroxy-3-alkynylamino-propane and method of use. 4,084,002, Cl. 424-330.000.

Koppers Company, Inc.: *See—*
Rogers, Robert C.; and Sustarsic, John D., 4,083,753, Cl. 202-227.000.

Korovnikov, Jury Prokopievich: *See—*
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Korovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich, 4,083,204, Cl. 66-178.00R.

Koshikawa, Tsuneji, to Hitachi, Ltd. Object recognition system. 4,084,148, Cl. 340-1.00R.

Kosoczky, Ibolya: *See—*
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Szirt nee Kiszelly, Eniko; Kosoczky, Ibolya; and Petocz, Lujza E., 4,083,978, Cl. 424-250.000.

Koyama, Fumio: *See—*
Kikuchi, Takayuki; Yamada, Fumiharu; Nakamura, Satoshi; and Koyama, Fumio, 4,083,560, Cl. 273-102.20B.

Kozyrski, Vincent T.: *See—*
Insolio, Thomas A.; and Kozyrski, Vincent T., 4,083,274, Cl. 83-12.000.

Kramer, Daniel E.; Kramer, Israel; Kramer, Harold; Board, Lawrence C.; Chopra, Ram Kumar; and Micai, William, to Kramer Trenton Company, by said Israel Kramer, Harold Kramer, Lawrence C. Board, Ram Kumar Chopra, William Micai. Refrigerating and defrosting system with dual function liquid line. 4,083,195, Cl. 62-196.00B.

Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, to Bayer Aktiengesellschaft. Polyazo dyestuffs having a dianisidine component, a diaminophenyl sulfonic acid component, and a naphthol component. 4,083,845, Cl. 260-180.000.

Kramer, Harold: *See—*
Kramer, Daniel E.; Kramer, Israel; Kramer, Harold; Board, Lawrence C.; Chopra, Ram Kumar; and Micai, William, 4,083,195, Cl. 62-196.00B.

Kramer, Israel: *See—*
Kramer, Daniel E.; Kramer, Israel; Kramer, Harold; Board, Lawrence C.; Chopra, Ram Kumar; and Micai, William, 4,083,195, Cl. 62-196.00B.

Kramer Trenton Company: *See—*
Kramer, Daniel E.; Kramer, Israel; Kramer, Harold; Board, Lawrence C.; Chopra, Ram Kumar; and Micai, William (said Israel Kramer, Harold Kramer, Lawrence C. Board, Ram Kumar Chopra, William Micai assors. to), 4,083,195, Cl. 62-196.00B.

Krasnoff, Trudy L.: *See—*
Krumel, Karl L.; Krasnoff, Trudy L.; and Fiero, Terry H., 4,084,012, Cl. 426-590.000.

Kreinin, Efim Vulfovich: *See—*
Antonova, Roza Ivanovna; and Kreinin, Efim Vulfovich, 4,083,402, Cl. 166-251.000.

Kreitzberg, Ernest A., to Allis-Chalmers Corporation. Power shift transmission with replaceable control unit. 4,083,266, Cl. 74-606.00R.

Krings, Peter: *See—*
Jakobi, Gunter; Krings, Peter; Schwuger, Milan Johann; and Smolka, Heinz, 4,083,793, Cl. 252-99.000.

Kroll, Arthur Stanley; and Shuster, Frank Alexander, to Eastman Kodak Company. Single component developer applicator apparatus. 4,083,326, Cl. 118-661.000.

Kronseder, Hermann: *See—*
Ellinger, Bernd; and Holler, Konrad, 4,083,637, Cl. 356-240.000.

Krook, Carl Goran: *See—*
Anjou, Klas Orvar Stensson; Fecske, Aurel Jeny; Krook, Carl Goran; and Ohlson, Jan Sven Ragnar, 4,083,836, Cl. 260-123.500.

Kruchowski, John. Bearing assembly utilizing a tapered bushing holder. 4,083,610, Cl. 305-25.000.

Kruckenberg, Winfried, to Bayer Aktiengesellschaft. Process for dyeing synthetic fibre materials from an organic water-immiscible solvent. 4,083,685, Cl. 8-41.00R.

Krude, Werner; and Jordan, Alfons, to Uni-Cardan AG. Constant velocity universal joint. 4,083,201, Cl. 64-21.000.

Krumel, Karl L.; Krasnoff, Trudy L.; and Fiero, Terry H., to Dow Chemical Company, The. Edible oil emulsions. 4,084,012, Cl. 426-590.000.

Krumweide, Gary C., to General Dynamics Corporation. Apparatus for coating a structure with a uniform foam layer. 4,083,324, Cl. 118-300.000.

Krumweide, Gary C., to General Dynamics Corporation. Apparatus for continuously coating a large structure with a uniform foam layer. 4,083,325, Cl. 118-315.000.

Krupp, Myron J.; Gacesa, Gerald R.; and Knudtson, John P., to PPG Industries, Inc. Control of staining in electrodeposition of coatings. 4,083,762, Cl. 204-181.00R.

Kubo, Masaharu: *See—*
Ohba, Shinya; Kubo, Masaharu; and Aoki, Masakazu, 4,084,107, Cl. 307-221.00D.

Kubodera, Seiiti: *See—*
Inouye, Kozo; Yokota, Yukio; Okumura, Akio; Shiba, Keisuke; and Kubodera, Seiiti, 4,083,721, Cl. 96-56.200.

Kudo, Hidehiko: *See—*
Yamashita, Kiyoshi; and Kudo, Hidehiko, 4,083,960, Cl. 424-94.000.

Kuka, James. Citrus peeling knife. 4,083,107, Cl. 30-123.700.

Kumm, Emerson L., to Garrett Corporation, The. Engine turbocharger system. 4,083,188, Cl. 60-605.000.

Kummer, Werner: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,084,002, Cl. 424-330.000.

Kunin, Robert, to Rohm and Haas Company. Water conditioning process. 4,083,782, Cl. 210-32.000.

Kuniya, Keiichi: *See—*
Arakawa, Hideo; Kuniya, Keiichi; Namekawa, Takashi; and Iizuka, Tomio, 4,083,719, Cl. 75-229.000.

Kuppermann, Aron: *See—*
Boettger, Heinz G.; Giffin, Charles E.; Dreyer, William J.; and Kuppermann, Aron, 4,084,090, Cl. 250-286.000.

Kurihara, Tomiaki: *See—*
Oohira, Takeshi; and Kurihara, Tomiaki, 4,083,431, Cl. 187-29.00R.

Kurisu, Katsuyasu. Interlocking system of manual change speed gear. 4,083,420, Cl. 180-82.00C.

Kuroda, Hiroshi: *See—*
Mita, Seiichi; Kuroda, Hiroshi; and Nakamura, Hisashi, 4,084,181, Cl. 358-12.000.

Kuroda, Katsuhiko: *See—*
Miwa, Tatsuro; Aoyama, Akira; Shimosaka, Masatoshi; Kusumoto, Hideto; and Kuroda, Katsuhiko, 4,083,749, Cl. 162-168.00N.

Kuroda, Nobuyuki: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; and Miyoshi, Mitsuji, 4,083,802, Cl. 252-429.00C.

Kuroda, Toshiro; and Kakami, Susumu, to Narumi China Corporation; and Nippon Electric Kagoshima, Limited. Substrate assembly for a luminescent display panel wherein graphite powder is bound into segmented electrodes by glass containing zinc oxide. 4,084,114, Cl. 313-496.000.

Kurtz, Walter: *See—*
Dimroth, Peter; Kurtz, Walter; Radtke, Volker; and Juenemann, Werner, 4,083,686, Cl. 8-41.00R.

Kurz-Hastings, Inc.: *See—*
Pasersky, John D., 4,084,032, Cl. 428-172.000.

Kushmuk, Walter P.: *See—*
Hutchinson, William Y.; and Kushmuk, Walter P., 4,083,418, Cl 177-247.000.

Kust, Roger N.: *See—*
Hubred, Gale L.; Kust, Roger N.; Natwig, David L.; and Pemsler, J. Paul, 4,083,915, Cl. 423-24.000.

Kusumoto, Hideto: *See—*
Miwa, Tatsuro; Aoyama, Akira; Shimosaka, Masatoshi; Kusumoto, Hideto; and Kuroda, Katsuhiko, 4,083,749, Cl. 162-168.00N.

Kusunose, Tetsuhiro; Ideka, Masataka; Kitamura, Kazuyuki; Shima, Tsukasa; and Henmi, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyamide prepared in the presence of sulfopolyester. 4,083,894, Cl. 260-857.0PE.

Kuwagaki, Hiroshi: *See—*
Yano, Kozo; Kuwagaki, Hiroshi; and Takechi, Sadatoshi, 4,083,099, Cl. 29-592.00R.

Kwech, Ludwig; and Jung, Fritz, to Perlmooser Zementwerke A.G. Cement, process and device for its production. 4,083,730, Cl. 106-89.000.

Kwikform Limited: *See—*
Lovering, Dennis William, 4,083,640, Cl. 403-246.000.

Labb, Georges, to Thomson-CSF. Detection system for detecting synchronism between television video signals emanating from different sources. 4,084,186, Cl. 358-139.000.

Lachonius, Leif: *See—*
Hallerback, Stig Lennart; and Lachonius, Leif, 4,083,917, Cl. 264-263.000.

Ladet, Jean: *See—*
Combe, Pierre; and Ladet, Jean, 4,083,779, Cl. 210-23.00H.

LaFont Corporation: *See—*
Heikkinen, Leo L.; Danielson, Kenneth D.; and Lundborg, Charlie L., 4,083,394, Cl. 157-1.210.

LaForge, David H.: *See—*
Portner, Peer M.; and LaForge, David H., 4,083,367, Cl. 128-2.070.

Lagus, Peter L.: *See—*
Turner, Philip L.; Gilkey, Robert W.; and Lagus, Peter L., 4,083,228, Cl. 73-32.00R.

Laig-Horstebrock, Helmut, to Varta Batterie Aktiengesellschaft. Gas venting battery plug. 4,084,039, Cl. 429-89.000.

Lake Center Industries: *See—*
Hollingsworth, Elmont E., 4,083,295, Cl. 99-283.000.

Laker, Robert William; Hankins, Harold Charles Arthur; and Hughes, Gordon, to International Computers Limited. Graphical display apparatus. 4,084,261, Cl. 364-900.000.

La Mar, Ridge L. Pipe-tape spool. 4,083,450, Cl. 206-416.000.

Lampert, Albert J. Thermally insulated enclosure. 4,083,155, Cl. 52-93.000.

Landon, Fred; Bonnemay, Maurice; Laverge, Jean-Pierre; Malaterre, Pierre; and Royon, Jean, to Etat Francais represente par le Deleque

Ministeriel pour l'Armement. Apparatus to detect toxic ions in the atmosphere or dissolved in water. 4,083,766, Cl. 204-195.00R.

Lane, Charles A.: *See*—
College, Michael A.; Hutzell, Clyde G.; Lane, Charles A.; and McKenry, Robert J., 4,083,605, Cl. 299-91.000.

Lane, Eckel R.; Cleereman, Kenneth J.; and McLaren, John W., to Dow Chemical Company, The. Injection mold. 4,083,568, Cl. 277-81.00R.

Lane, Robert; and Whiteley, John, to Platt Saco Lowell Limited. Open-end spinning machines. 4,083,169, Cl. 57-34.00R.

Lang, Hans-Jochen; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. Thiazolidine derivatives and their use as salidiuretics. 4,083,979, Cl. 424-251.000.

Lang, John L. Process for the alteration of the sex-ratio of mammals. 4,083,957, Cl. 424-78.000.

Langdon, Robert P., to Beloit Corporation. Paper stock rotor axial position controlling and locking device. 4,083,503, Cl. 241-259.100.

Lange, Peter Michael: *See*—
Corte, Herbert; Heller, Harold; Lange, Peter Michael; and Netz, Otto, 4,083,712, Cl. 71-28.000.

Langer, Stefan: *See*—
Konig, Reinhard; and Langer, Stefan, 4,083,171, Cl. 57-34.00R.

Langhammer, Hans Jurgen, to Klockner-Werke AG. Smelting plant and method. 4,083,715, Cl. 75-43.000.

Lappington, John P., to Chrysler Corporation. Mass production of electronic control units for engines. 4,084,240, Cl. 364-425.000.

Large, George B.; and Pitt, Leland S., to Stauffer Chemical Company. Activated insecticide composition employing a certain phosphorodithioate and an activator. 4,083,970, Cl. 424-200.000.

Larsson, Leif, to Volvo BM AB. Device for cross-cutting tree trunks. 4,083,291, Cl. 91-412.000.

LaRussa, Salvador P.: *See*—
Rome, Daniel J., Sr.; and LaRussa, Salvador P., 4,083,230, Cl. 73-40.50R.

Laser Video, Inc.: *See*—
Maiman, Theodore H., 4,084,182, Cl. 358-62.000.

Laudon, Monique: *See*—
Bugaut, Andree; and Laudon, Monique, 4,084,052, Cl. 544-165.000.

Lauria, Francesco: *See*—
Doria, Gianfederico; Giraldi, Pier Nicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,083,953, Cl. 424-45.000.

Laverge, Jean-Pierre: *See*—
Landon, Fred; Bonnemay, Maurice; Laverge, Jean-Pierre; Malaterre, Pierre; and Royon, Jean, 4,083,766, Cl. 204-195.00R.

Lawson, Daniel D., to United States of America, National Aeronautics and Space Administration. Polymeric electrolytic hygrometer. 4,083,765, Cl. 204-195.00W.

Lay nee Konya, Aranka: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Szirt nee Kiszelly, Eniko; Kosoczky, Ibolya; and Petocz, Lujza E., 4,083,978, Cl. 424-250.000.

Leach, Byron E. Method of using dialkylphenols an antiviral agents. 4,084,006, Cl. 424-346.000.

Lean, Eric Gung-Hwa, to International Business Machines Corporation. Acoustro-electric scanner by phonon echo phenomenon. 4,084,189, Cl. 358-213.000.

Lean, Eric Gung-Hwa, to International Business Machines Corporation. Acousto-optical scanner. 4,084,191, Cl. 358-213.000.

LeBron, Richard C.; and LeBron, Shelden P. Anti-pickpocket warning device. 4,083,321, Cl. 116-84.000.

LeBron, Shelden P.: *See*—
LeBron, Richard C.; and LeBron, Shelden P., 4,083,321, Cl. 116-84.000.

Leczycki, Moshe, to Plasson Maagan Michael Industries Ltd. Split-ring type pipe couplings. 4,083,587, Cl. 285-343.000.

Lee, Cheuk Man: *See*—
Zaugg, Harold Elmer; and Lee, Cheuk Man, 4,083,868, Cl. 260-562.00N.

Lee, Frank; Fearnley, Charles; and Fordham, Glenda Helen, to Ciba-Geigy Corporation. Detergent composition. 4,083,794, Cl. 252-99.000.

Lee, Fu-Ming, to Industrial Sales and Factoring Corporation. Process for treating aldol condensation polyol waste liquor. 4,083,931, Cl. 423-199.000.

Lee, George D.: *See*—
Hatch, Donald M.; and Lee, George D., 4,083,159, Cl. 52-309.100.

Lee, Kenneth K.; and Martin, Albert W., to Ampex Corporation. Stabilizing apparatus for body-carried equipment. 4,083,480, Cl. 224-5.00V.

Lee, Lester T. C.; and Liu, Kang-Jen, to Allied Chemical Corporation. Preparation of high performance polyelectrolyte membrane. 4,083,768, Cl. 204-296.000.

Leen, Morris W.: *See*—
Sandrock, Harold E.; Leen, Morris W.; and Stark, Edward W., 4,083,638, Cl. 356-246.000.

Leidig, Theodor, to Haarman & Reimer Gesellschaft mit Beschrankter Haftung. 1-Methoxy-4-(8-hydroxytricyclo[5,2,1,$0^{2,6}$]-decyl-8)-buten-1-ine-3. 4,083,878, Cl. 260-611.00F.

Leininger, Joel Calvin: *See*—
Birney, Richard Eugene; Leininger, Joel Calvin; and Taylor, George Phillips, 4,084,254, Cl. 364-766.000.

Lekarev, Zinovy Abramovich: *See*—
Suslin, Vladimir Isaakovich; Dubovik, Alexandr Ivanovich; Makeev, Boris Anatolievich; Razdymakha, Pavela Semenovich; and Lekarev, Zinovy Abramovich, 4,083,767, Cl. 204-224.00M.

Lemelson, Jerome H. Card scanning video system. 4,084,198, Cl. 360-33.000.

Lemon, Maurice Charles; and Spear, John Francis, to Universal Towel Company Limited. Washing machines and rinsing machines. 4,083,206, Cl. 68-22.00R.

Lenoir, Pierre; and Delvaux, Andre L., to Metallurgie Hoboken-Overpelt. Separation of three metallurgical phases by decantation. 4,083,717, Cl. 75-77.000.

Lenormand, Daniel: *See*—
Venner, Etienne; and Lenormand, Daniel, 4,083,475, Cl. 222-198.000.

Lentz, James A.: *See*—
Imperial, George R.; and Lentz, James A., 4,083,092, Cl. 29-132.000.

Leonard, Edward F.: *See*—
Hilal, Sadek K.; Sampson, William B.; and Leonard, Edward F., 4,084,209, Cl. 361-141.000.

Leonard, Richard L., to Monsanto Company. Asymmetric hollow acrylic fibers. 4,084,036, Cl. 428-398.000.

Leoni, Roberto: *See*—
Siclari, Francesco; Rossi, Pietro Paolo; Leoni, Roberto; and De Gaetano, Mario, 4,083,833, Cl. 260-79.3MU.

Leowald, Karl-Friedrich; and Schenk, Jakob, to Siemens Aktiengesellschaft. Protection circuit for serially connected thyristors. 4,084,206, Cl. 361-90.000.

Lepik, Toomas; and Rodin, Sven-Erik, to Telefonaktiebolaget L M Ericsson. Supporting device for mounting a magnetic core on a printed circuit card. 4,084,068, Cl. 174-138.00R.

Leppert, Thomas K.: *See*—
Mullins, Keith M.; Cannon, Thomas; Leppert, Thomas K.; and Burnell, Thomas R., 4,083,467, Cl. 220-90.400.

Leppich, Erhard. Shock absorber valve. 4,083,437, Cl. 188-322.000.

Lerch, Ulrich: *See*—
Babej, Milos; Bartmann, Wilhelm; Beck, Gerhard; and Lerch, Ulrich, 4,083,990, Cl. 424-283.000.

Letov, Nikolai Nikolaevich: *See*—
Tatkov, Viktor Arsentievich; Letov, Nikolai Nikolaevich; Sharapov, Boris Nikolaevich; and Rozhkov, Vladimir Petrovich, 4,083,647, Cl. 415-113.000.

Leuenberger, Urs; and Schenkel, Albert, to Siemens-Albis Aktiengesellschaft. Arrangement for correcting deviations from the true bearing caused by reflecting surfaces in target tracking radar installations. 4,084,160, Cl. 343-16.00M.

Leverenz, Klaus, to Bayer Aktiengesellschaft. Process for the preparation of azo dyestuffs. 4,083,846, Cl. 260-207.100.

Leverenz, Klaus: *See*—
Gottschlich, Alois; and Leverenz, Klaus, 4,083,844, Cl. 260-174.000.

Levesque, Peter S., to Fischer & Porter Co. Differential reluctance motion detector. 4,083,237, Cl. 73-141.00R.

Levin, Nathan. Yarn tensioning device. 4,083,514, Cl. 242-152.100.

Levis, Peter Stanley, to Ferranti Limited. Projectile fuzes. 4,083,308, Cl. 102-70.20R.

Libby, Hugo L.; and Hildebrand, Bernard P., to Battelle Memorial Institute. Eddy current nondestructive testing device for measuring variable characteristics of a sample utilizing Walsh functions. 4,084,136, Cl. 324-238.000.

Lieb, Donald F.; Stillman, Neil W.; and Kidon, William E., to Diamond Shamrock Corporation. Recirculating toilet and method. 4,083,067, Cl. 4-317.000.

Liebertz, Josef: *See*—
Weingartner, Fritz; and Liebertz, Josef, 4,083,911, Cl. 264-118.000.

Liechti, Hans Wilhelm: *See*—
Koller, Stefan; Aeschlimann, Peter; Karlen, Urs; and Liechti, Hans Wilhelm, 4,083,847, Cl. 260-207.000.

Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., to International Flavors & Fragrances Inc. Flavoring with a hydroxy cyclohexenone derivative. 4,084,009, Cl. 426-538.000.

Likhosherstov, Arkady Mikhailovich; Nazarova, Liya Semenovna; Skoldinov, Alexandr Petrovich; Markova, Galina Alexandrovna; and Kaverina, Natalya Veniaminovna. 10'-(ω-N)-1,4-Diazabicyclo(4,3,0)-alkanyl-lacyl) -phenothiazine compositions. 4,083,976, Cl. 424-247.000.

Lindblom, Curtis H.; Shriver, Joe E.; Wagstaff, Robert A.; and Priepke, Edward H., to Sperry Rand Corporation. Multi-row crop header. 4,083,167, Cl. 56-98.000.

Lindsay Manufacturing Company: *See*—
Stearns, Richard H., 4,083,378, Cl. 137-344.000.

Lineback, Lynn D.; and Edgell, James E., to Disston, Inc. Cordless electric devices having rechargeable battery pack(s). 4,084,123, Cl. 320-2.000.

Lingl Corporation: *See*—
Lingl, Hans, 4,083,275, Cl. 83-27.000.

Lingl, Hans, to Lingl Corporation. Method and apparatus for the spreading and transferring of rows of brick-like articles. 4,083,275, Cl. 83-27.000.

Linnepe, Kurt. Elongatable telescoping support. 4,083,530, Cl. 254-95.000.

Lippert, Irving S.: *See*—
Pizzuti, Donato F.; and Lippert, Irving S., 4,084,168, Cl. 354-126.000.

Lippman, Alfred; and Sebenik, Roger Frank, to Toth Aluminum Corporation. Process for the production of aluminum chloride and related products. 4,083,923, Cl. 423-79.000.

Liu, Kang-Jen: *See—*
Lee, Lester T. C.; and Liu, Kang-Jen, 4,083,768, Cl. 204-296.000.
Livermore, Cynthia S. Jigsaw puzzle with extra interlock. 4,083,123, Cl. 35-73.000.
Livingston, Emmett S.; and Alston, Otis B., to Dixie Yarns, Inc. Apparatus for blending and paralleling textile fibers. 4,083,085, Cl. 19-105.000.
Livingston, Wayne W.; and Melin, Gerald W., to Bemis Company, Inc. Apparatus for extruding plastic netting. 4,083,667, Cl. 425-192.00R.
Lloyd, Raymond A.; and Keller, Thomas A., to Westinghouse Electric Corporation. Digital monitor having memory readout by the monitored system. 4,084,262, Cl. 364-900.000.
Lobunez, Walter; Ilardi, Joseph M.; Wright, R. Martin; and Herring, Allan P., to FMC Corporation. Use of tributoxyethylphosphate to control foam in the production of soda ash from trona. 4,083,939, Cl. 423-421.000.
Lockard, William W.: *See—*
Parise, Carl; Uhlig, Karl R.; and Lockard, William W., 4,083,705, Cl. 55-257.0NP.
Lofquist, Robert Alden; and Haylock, John Christopher, to Allied Chemical Corporation. Ozone resistant, cationic dyeable nylon containing lithium, magnesium or calcium salts of sulfonated polystyrene. 4,083,893, Cl. 260-857.0UN.
Logisticon, Inc.: *See—*
Blakeslee, Thomas R.; and Francy, James R., 4,083,422, Cl. 180-98.000.
Loktev, Sergei Minovich: *See—*
Kagan, July Borisovich; Loktev, Sergei Minovich; Nizov, Gennady Alexeevich; Zhilin, Vyacheslav Alexandrovich; Zuev, Alexandr Andreevich; and Bashkirov, Andrei Nikolaevich, 4,083,880, Cl. 260-632.00R.
Long, Gerald Bernard; Mitchell, Ralph Charles; and Pi, Shing Chou, to International Business Machines Corporation. Time shared programmable logic array. 4,084,152, Cl. 340-166.00R.
Lonnberg, Lars: *See—*
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar Kison; and Lonnberg, Lars, 4,083,566, Cl. 277-3.000.
Looschen, Floyd William, to Burroughs Corporation. Encoding and driving means for use in a three-level digital data communication system. 4,084,069, Cl. 178-68.000.
Lord, Henry A.: *See—*
Reifers, Richard F.; and Lord, Henry A., 4,083,670, Cl. 425-398.000.
L'Oreal: *See—*
Bugaut, Andree; and Laudon, Monique, 4,084,052, Cl. 544-165.000.
Lorenz, Manfred, to Kapp & Co. Werkzeugmaschinenfabrik. Apparatus for grinding of internal axially extending profiles. 4,083,152, Cl. 51-166.0MH.
Losch, Lothar: *See—*
Czerny, Thomas; von Dohren, Hans; Losch, Lothar; Winsel, August; and Ziegler, Kurt, deceased, 4,083,810, Cl. 252-467.000.
Losson, Jean-Marie: *See—*
Tits, Hubert; and Losson, Jean-Marie, 4,083,910, Cl. 264-94.000.
Lotz, Walter Edward. Method and means for re-spacing chip steaks on a conveyor. 4,083,277, Cl. 83-89.000.
Lovering, Dennis William, to Kwikform Limited. Builders scaffolding. 4,083,640, Cl. 403-246.000.
Lowe, Lawrence Alfred: *See—*
Beddell, Christopher Raymond; Lowe, Lawrence Alfred; and Wilkinson, Samuel, 4,083,967, Cl. 424-177.000.
Lowery, J. Orbie: *See—*
Baston, Irv; Lowery, J. Orbie; and Thomas, O. Leon, 4,083,096, Cl. 29-427.000.
Lowther, Roy Gale: *See—*
Glass, Joseph Edward, Jr.; and Lowther, Roy Gale, 4,084,060, Cl. 536-96.000.
Loynaz, Sergio A.: *See—*
Green, John A. S.; and Loynaz, Sergio A., 4,083,925, Cl. 423-121.000.
Lucas Industries Limited: *See—*
Cavanagh, Eric Joseph; and Fenne, Ivor, 4,083,498, Cl. 239-533.300.
Lucas, Kevin: *See—*
Roscoe, Colin; and Lucas, Kevin, 4,083,759, Cl. 204-112.000.
Luckenbill, Lawrence F., to Mueller Co. Fire hydrant with improved weather cap and bonnet arrangement. 4,083,377, Cl. 137-296.000.
Ludwig, Carl H.: *See—*
Anastasia, Harry G.; Kineyko, Wallace D.; and Ludwig, Carl H., 4,084,239, Cl. 364-424.000.
Ludwig, Frank A., to Ford Motor Company. Secondary battery or cell with polysulfide wettable electrode - 2. 4,084,041, Cl. 429-104.000.
Ludwig, Frank A., to Ford Motor Company. Secondary battery or cell with polysulfide wettable electrode 1. 4,084,042, Cl. 429-104.000.
Lugay, Joaquin Castro: *See—*
Kim, Myung Ki; and Lugay, Joaquin Castro, 4,084,017, Cl. 426-656.000.
Lund, Bryant D., to E-Systems, Inc. Stepper motor valve actuator control apparatus. 4,084,120, Cl. 318-599.000.
Lundborg, Charlie L.: *See—*
Heikkinen, Leo L.; Danielson, Kenneth D.; and Lundborg, Charlie L., 4,083,394, Cl. 157-1.210.
Lundholm, Sven Gunnar Kison: *See—*
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar Kison; and Lonnberg, Lars, 4,083,566, Cl. 277-3.000.
Lundquist, Charles W. Motorcycle gear shifter. 4,083,263, Cl. 74-474.000.
Luperti, Harry E.: *See—*
Irvine, Robert; and Luperti, Harry E., 4,083,555, Cl. 271-10.000.
Lusti, John, to Otis Elevator Company. Safety arrangement. 4,083,432, Cl. 187-89.000.
Luxa A.G.: *See—*
Merz, Otto, 4,083,531, Cl. 254-134.30R.
Luxem, Paul L., to Stoelting Brothers Company. Slush freezer. 4,083,200, Cl. 62-342.000.
Lynch, James Edward, to AMP Incorporated. Mini spring socket with plastic base. 4,083,623, Cl. 339-258.00R.
Lynn, James R., to Phillips Fibers Corporation. Method and apparatus suitable for grasping an annular workpiece. 4,083,593, Cl. 294-97.000.
Lytle, Loy D.: *See—*
Messing, Rita B.; and Lytle, Loy D., 4,083,982, Cl. 424-260.000.
MacDonald, Edward J.; and MacDonald, Kenneth A. Relief panel and method of making same. 4,083,160, Cl. 52-316.000.
MacDonald, Kenneth A.: *See—*
MacDonald, Edward J.; and MacDonald, Kenneth A., 4,083,160, Cl. 52-316.000.
MacIntyre, Ray C.: *See—*
Kita, John F.; and MacIntyre, Ray C., 4,083,415, Cl. 173-132.000.
Maeda, Chiaki: *See—*
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 4,084,059, Cl. 560-87.000.
Maedai, Akio: *See—*
Fuzisawa, Noriyoshi; Maedai, Akio; and Hattori, Kenichi, 4,083,144, Cl. 47-1.100.
Fuzisawa, Noriyoshi; Maedai, Akio; and Hattori, Kenichi, 4,083,145, Cl. 47-1.100.
Maier, Lawrence C., to Simmonds Precision Products, Inc. Digital liquid-level gauging systems. 4,083,248, Cl. 73-304.00C.
Maier, Rolf, to Daimler-Benz Aktiengesellschaft. Multi-layer sound- and vibration-absorbing cover panels for body parts and method for applying same. 4,083,595, Cl. 296-39.00A.
Mailloux, Louis D.; and Bollman, James E., to Xerox Corporation. Multi-frequency screen. 4,083,632, Cl. 355-3.00R.
Maiman, Theodore H., to Laser Video, Inc. Multi-beam modulator and method for light beam displays. 4,084,182, Cl. 358-62.000.
Maisuradze, Venera Romanovna: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Maisuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sukharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; and Epik, Alexei Pavlovich, 4,083,757, Cl. 204-83.000.
Makar, Kamel Michel, to Du Pont de Nemours, E. I., and Company. Sodium cyanide crystallization process control. 4,083,935, Cl. 423-379.000.
Makeev, Boris Anatolievich: *See—*
Suslin, Vladimir Isaakovich; Dubovik, Alexandr Ivanovich; Makeev, Boris Anatolievich; Razdymakha, Pavela Semenovich; and Lekarev, Zinovy Abramovich, 4,083,767, Cl. 204-224.00M.
Malaterre, Pierre: *See—*
Landon, Fred; Bonnemay, Maurice; Laverge, Jean-Pierre; Malaterre, Pierre; and Royon, Jean, 4,083,766, Cl. 204-195.00R.
Malcolm, Richard; Anderson, Philip; Money, Kenneth E.; and Mandler, Walter, to Canadian Minister of National Defence. Peripheral vision horizon device. 4,083,239, Cl. 73-178.00R.
Maldina, Paolo. Stacking and transferring device for cellowrappers for cigarette packs. 4,083,165, Cl. 53-164.000.
Mander, Keith Anthony; Mitchell, Keith James; Kempster, Barry Arthur; and Rodger, David, to Babcock Wire Equipment Limited. Wire spooler. 4,083,506, Cl. 242-25.00R.
Mandler, Walter: *See—*
Malcolm, Richard; Anderson, Philip; Money, Kenneth E.; and Mandler, Walter, 4,083,239, Cl. 73-178.00R.
Manfuso, John A., Jr., to Burton, Parsons and Company, Inc. Topical treatment of herpes infections with thimerosal. 4,083,991, Cl. 424-291.000.
Manning, William P.; and Passiuk, Walter T., to United States of America, Army. Heat resistant radar absorber. 4,084,161, Cl. 343-18.00A.
Manson, John Stuart; and Ridyard, Denis Robert Annesley, to Imperial Chemical Industries Limited. Anthraquinone dyes. 4,083,858, Cl. 260-373.000.
Marathon Oil Company: *See—*
Evans, James E., 4,083,193, Cl. 61-96.000.
Marine Construction & Design Co.: *See—*
McGrew, Jay L., 4,083,778, Cl. 210-23.00R.
Mark, Victor; and Wilson, Phillip Steven, to General Electric Company. Polycarbonate compositions plasticized with urea compounds. 4,083,814, Cl. 260-30.80R.
Markova, Galina Alexandrovna: *See—*
Likhosherstov, Arkady Mikhailovich; Nazarova, Liya Semenovna; Skoldinov, Alexandr Petrovich; Markova, Galina Alexandrovna; and Kaverina, Natalya Veniaminovna, 4,083,976, Cl. 424-247.000.
Marsh, Lawrence B., to Marsh-McBirney, Inc. Fluid flow meter. 4,083,246, Cl. 73-227.000.
Marsh-McBirney, Inc.: *See—*
Marsh, Lawrence B., 4,083,246, Cl. 73-227.000.
Marsh, Robin Geoffrey; and Fleming, Ian Alexander, to EMI Limited. Fan beam traverse-and-rotate CT scanner. 4,084,093, Cl. 250-360.000.

Marshall, Preston F., to Kendall Company, The. Stabilization of mixed-fiber webs. 4,083,913, Cl. 264-121.000.

Martel, Robert J.: *See—*
Ames, Stephen A.; and Martel, Robert J., 4,084,128, Cl. 329-116.000.

Martin, Albert W.: *See—*
Lee, Kenneth K.; and Martin, Albert W., 4,083,480, Cl. 224-5.00V.

Martin Marietta Aluminum, Inc.: *See—*
Green, John A. S.; and Loynaz, Sergio A., 4,083,925, Cl. 423-121.000.

Martin MariettaCorporation: *See—*
Owen, William J., 4,083,636, Cl. 356-141.000.

Martin, Michael Dudley, to RFD Inflatables Limited. Inflatable liferafts of thermoplastic material and methods for their manufacture. 4,083,070, Cl. 9-11.00A.

Maruyama, Hiroyuki: *See—*
Takemura, Motohiro; Iijima, Mochihiro; Tateno, Yoshiaki; Osada, Yuji; and Maruyama, Hiroyuki, 4,083,881, Cl. 260-635.00C.

Massa, Donald P.: *See—*
Massa, Frank, 4,084,150, Cl. 340-8.00R.

Massa, Frank, to Dellorfano, Fred M., Jr.; and Massa, Donald P. Underwater depth sounder with variable beam transducer. 4,084,150, Cl. 340-8.00R.

Massachusetts Institute of Technology: *See—*
Messing, Rita B.; and Lytle, Loy D., 4,083,982, Cl. 424-260.000.

Massey, Cecil D. Booster dolly. 4,083,574, Cl. 280-47.150.

Masuo, Tetsuya, to Tokyo Electric Co., Ltd. Electronic cash register with improved display unit. 4,084,238, Cl. 364-405.000.

Mathias, Eckart; and Morgan, Charles Robert, to W. R. Grace & Co. Radiation polymerizable polyenes derived from hydantoin acids, amines and esters. 4,084,020, Cl. 427-41.000.

Mathis, Thomas C.: *See—*
Morgan, Albert W.; and Mathis, Thomas C., 4,083,789, Cl. 252-8.100.

Matick, Richard Edward, to International Business Machines Corporation. Hybrid semiconductor memory with on-chip associative page addressing, page replacement and control. 4,084,230, Cl. 364-200.000.

Matsuda, Hirotoshi, to New Nippon Electric Company, Ltd. Apparatus for the digital control of analog signal. 4,084,111, Cl. 307-264.000.

Matsuda, Shozo; Hirai, Naoe; and Tanaka, Tadashi, to Nippon Steel Corporation. Method for manufacturing colored metal sheets. 4,083,763, Cl. 204-181.00E.

Matsumoto, Teruo, to Epoch Company, Ltd. Board game. 4,083,564, Cl. 273-239.000.

Matsuo, Jon T., to United States of America, Navy. Manual ripcord handle assembly mounting. 4,083,519, Cl. 244-149.000.

Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; and Miyoshi, Mitsuji, to Nippon Oil Company Limited. Polymerization of olefins and catalysts therefor. 4,083,802, Cl. 252-429.00C.

Matthey, Hubert, to Societe Suisse pour l'Industrie Horlogere Management Services, S.A. Process and apparatus for the determination of the inversion temperature of a quartz piezoelectric resonator element. 4,084,131, Cl. 324-56.000.

Mattner, Paul G.: *See—*
Houlihan, William J.; Mattner, Paul G.; and Smith, Joseph A., 4,083,871, Cl. 260-570.0AB.

Mau, Donna M., administratrix: *See—*
Mau, Robert C., deceased; and Figge, Erwin E., 4,083,630, Cl. 352-91.00C.

Mau, Robert C., deceased (by Mau, Donna M., administratrix); and Figge, Erwin E., to Bell & Howell Company. Fade in and fade out arrangement for a motion picture camera. 4,083,630, Cl. 352-91.00C.

Maupetit, Pierre; and Teisseire, Paul Jose, to Societe Anonyme Roure Bertrand Dupont. Certain ketoalcohol tricyclic norsesquiterpene derivatives and compositions containing the same. 4,083,812, Cl. 252-522.000.

May, Clifford J., Jr. Ski attachment. 4,083,572, Cl. 280-11.37E.

Mayer, William Norman: *See—*
Kirchner, Richard K.; Andreadakis, Nicholas Cleanthis; and Mayer, William Norman, 4,084,213, Cl. 361-384.000.

Maynard, L. C. Trunk lid antenna mount. 4,084,163, Cl. 343-715.000.

Maytag Company, The: *See—*
Cotton, Curran D., 4,083,118, Cl. 34-53.000.

McBeth, John L., to Raymond Lee Organization, Inc., The, a part interest. Foul weather outdoor chair. 4,083,601, Cl. 297-184.000.

McCaffrey-Ruddock Tagline Corporation: *See—*
Gomez, Secundino G., 4,083,510, Cl. 242-107.000.

McCarthy, Charles E.: *See—*
Hebert, Roger T.; Pike, Bernard T.; McCarthy, Charles E.; and Shea, Richard J., 4,084,112, Cl. 313-222.000.

McClocklin, Samuel B.; Solie, James C.; and Boers, Jan H., to Owatonna Tool Company. Control valve. 4,083,381, Cl. 137-596.150.

McConaghy, J. S., Jr.; and Paulik, F. E., to Monsanto Company. Process for production of allylamines from Pi-allyl palladium complexes. 4,083,874, Cl. 260-585.00R.

McCormack, Lawrence M.; Silvestri, Achille; and Jones, Arthur R., Jr., to United States of America, Army. Method for detecting contaminants in water. 4,083,691, Cl. 23-230.00R.

McCormick, David Michael; and Cooper, Earl Andrew, to Automation Industries, Inc. Electrical connector. 4,083,619, Cl. 339-75.00M.

McDougald, Larry R., to Eli Lilly and Company. Coccidiocidal combinations. 4,083,962, Cl. 424-114.000.

McElroy, Arthur H. Adjustable polyethylene pipe outside bead remover. 4,083,106, Cl. 30-280.000.

McGee, Mary Ann Chute, to Caterpillar Tractor Co. Retainer for resiliently loading a bearing. 4,083,613, Cl. 308-236.000.

McGill, Thomas C.: *See—*
Scranton, Robert A.; and McGill, Thomas C., 4,084,172, Cl. 357-15.000.

McGrew, Jay L., to Marine Construction & Design Co. Method for coalescing. 4,083,778, Cl. 210-23.00R.

McInerny, George P., to Brandt/Pra, Inc. Endorser assembly having semipermanent print means and clamping means therefor. 4,083,303, Cl. 101-415.100.

McKechnie, John C., to United States of America, Navy. Hydro-optic vibration detector. 4,083,255, Cl. 73-655.000.

McKelvey, Thomas H. Dental saliva ejector. 4,083,115, Cl. 32-33.000.

McKenry, Robert J.: *See—*
College, Michael A.; Hutzell, Clyde G.; Lane, Charles A.; and McKenry, Robert J., 4,083,605, Cl. 299-91.000.

McKinney, Joel D.; Mitchell, Bruce R.; and Sebulsky, Raynor T., to Gulf Research & Development Company. Method for preparing crystalline aluminosilicate cracking catalysts. 4,083,807, Cl. 252-455.00Z.

McLane, Jack E., to Wirtz Manufacturing Company, Inc. Molten metal shut-off valve utilizing cooling to solidify metal flow. 4,083,478, Cl. 222-592.000.

McLaren, John W.: *See—*
Lane, Eckel R.; Cleereman, Kenneth J.; and McLaren, John W., 4,083,568, Cl. 277-81.00R.

McMahan, William T. Towel heater and dispenser. 4,084,080, Cl. 219-401.000.

McMahon, Matthew A.: *See—*
Cole, Edward L.; and McMahon, Matthew A., 4,083,696, Cl. 44-1.00R.

McManaway, C. Chalmer. Paint container extension for supporting a paint roller distributor. 4,083,466, Cl. 220-90.000.

McNally, Paul F.; and Burig, Robert G., to Contraves Goerz Corporation. Multi-axis electronic motion generator. 4,084,083, Cl. 364-118.000.

McNeill, William Allen, to Akzona Incorporated. Method for developing bulk in a strand of synthetic textile yarn. 4,083,091, Cl. 28-281.000.

McNiece, Reginald C.; and Porter, Warren W., to Stromberg-Carlson Corporation. Printed wiring board levered inject-eject cam. 4,083,616, Cl. 339-45.00M.

McPherson, Alex L.; and Williams, Hubert L., to Clow Corporation. Pneumatic sewage ejector. 4,083,661, Cl. 417-131.000.

Mead Corporation, The: *See—*
Cahill, Lysle D.; and Brunswick, Arthur R., 4,084,259, Cl. 364-900.000.

Meadows, Geoffrey Walsh: *See—*
Jayawant, Madhusudan Dattatraya; and Meadows, Geoffrey Walsh, 4,083,941, Cl. 423-488.000.

Mechanex Corporation, The: *See—*
Thumm, Herbert H., 4,083,567, Cl. 277-37.000.

Mede, George; Mede, Roberto R.; and Mede, Thomas. Crepe making machine. 4,083,296, Cl. 99-423.000.

Mede, Roberto R.: *See—*
Mede, George; Mede, Roberto R.; and Mede, Thomas, 4,083,296, Cl. 99-423.000.

Mede, Thomas: *See—*
Mede, George; Mede, Roberto R.; and Mede, Thomas, 4,083,296, Cl. 99-423.000.

Mehwald, Gunther R., to Organisation Europeenne de Recherches Spatiales. Analog apparatus for determining the attitude errors of a three-axis stabilized satellite. 4,084,087, Cl. 250-203.00R.

Meiji Milk Products Company Limited: *See—*
Asano, Yusuke; Aoki, Yoshio; and Yamazaki, Nagataka, 4,083,733, Cl. 127-42.000.

Meiji Seika Kaisha Ltd.: *See—*
Koeda, Takemi; Tsuruoka, Takashi; Asaoka, Hiroyasu; Shibata, Uichi; Inoue, Shigeharu; and Niida, Taro, 4,083,850, Cl. 260-295.50R.

Meinert, Leo L.: *See—*
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,539, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,540, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,541, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,542, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,543, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,544, Cl. 266-225.000.

Meints, Edward G.: *See—*
Thompson, LeRoy R.; and Meints, Edward G., 4,083,180, Cl. 60-39.16R.

Melin, Gerald W.: *See—*
Livingston, Wayne W.; and Melin, Gerald W., 4,083,667, Cl. 425-192.00R.

Melting Systems, Inc.: *See—*
Fellnor, John R.; and Dzakowic, Thomas J., 4,083,675, Cl. 432-1.000.

Memorex Corporation: *See—*
Adair, Henry; Christensen, Dean Lester; and Specktor, Leon Harold, 4,084,200, Cl. 360-133.000.
Vasudeva, Anil; and Geri, Don W., 4,083,509, Cl. 242-71.800.

Mendicino, Frank D. Addition of unsaturated epoxy monomer to Si-H with chloroplatinic acid and HCl-acceptor. 4,083,856, Cl. 260-348.120.

Mennenga, Hermann, to Balzers Patent-und Beteiligungs-Aktiengesellschaft. Self-calibrating leak detector circuit arrangement. 4,083,231, Cl. 73-40.700.

Mentrup, Anton: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,083,980, Cl. 424-251.000.

Merck & Co., Inc.: *See—*
Fisher, Michael H.; and Ruyle, William V., 4,083,984, Cl. 424-263.000.

Merk, Wolfgang: *See—*
Schwarze, Werner; Merk, Wolfgang; and Binder, Volker, 4,083,872, Cl. 260-584.00R.

Merkert Enterprises Co.: *See—*
O'Neill, James L., 4,083,454, Cl. 206-605.000.

Merz, Otto, to Luxa A.G. System and device for mechanically and simultaneously stretching out a plurality of wires or a plurality of traction ropes on aerial electrical lines. 4,083,531, Cl. 254-134.30R.

Messerschmitt-Boelkow-Blohm GmbH Gesellschaft mit beschraenkter Haftung: *See—*
Nissl, Norbert, 4,083,254, Cl. 73-517.00R.

Messing, Rita B.; and Lytle, Loy D., to Massachusetts Institute of Technology. Process for producing analgesia. 4,083,982, Cl. 424-260.000.

Metallurgie Hoboken-Overpelt: *See—*
Lenoir, Pierre; and Delvaux, Andre L., 4,083,717, Cl. 75-77.000.

Metz, Thomas L. Method and apparatus for sealing drill casing. 4,083,406, Cl. 166-286.000.

Metzger, Robert W.: *See—*
Garrison, James R.; Metzger, Robert W.; and Waldrup, Herman H., 4,083,518, Cl. 244-17.110.

Meyer, Guenter: *See—*
Hansen, Guenter; Kaack, Hermann; Kermer, Wolf-Dieter; and Meyer, Guenter, 4,083,684, Cl. 8-41.00R.

Meyer, Karl-Heinz: *See—*
Hack, Joachim; Himmelmann, Udo; Rudolf, Peter; Schulze-Berge, Klaus; and Meyer, Karl-Heinz, 4,084,201, Cl. 360-135.000.

Meylan, Jean-Luc CH.: *See—*
Courvoisier, Jean-Claude F.; and Meylan, Jean-Luc CH., 4,083,360, Cl. 126-271.000.

Mezei, Tibor: *See—*
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Szirt nee Kiszelly, Eniko; Kosoczky, Ibolya; and Petocz, Lujza E., 4,083,978, Cl. 424-250.000.

Micai, William: *See—*
Kramer, Daniel E.; Kramer, Israel; Kramer, Harold; Board, Lawrence C.; Chopra, Ram Kumar; and Micai, William, 4,083,195, Cl. 62-196.00B.

Michalak, Sylvia S., to Johnson & Johnson. Protective shoe coverings. 4,083,124, Cl. 36-7.10R.

Michalko, Edward, to UOP Inc. Transalkylation of alkylaromatic hydrocarbons. 4,083,886, Cl. 260-672.00T.

Michel, Karl H.; and Higgens, Calvin E., to Eli Lilly and Company. Antibiotic A-35512 for increasing feed utilization efficiency in an animal. 4,083,964, Cl. 424-118.000.

Michelson, Anatol, to Ashland Oil, Inc. Rotary type core-making machine. 4,083,396, Cl. 164-158.000.

Michon, Gerald J.: *See—*
Burke, Hubert K.; and Michon, Gerald J., 4,084,257, Cl. 364-862.000.

Mickelson, Grant A., to Union Oil Company of California. Desulfurization of residual petroleum oils and catalysts therefor. 4,083,808, Cl. 252-455.00R.

Miesel, John Louis, to Eli Lilly and Company. Novel insecticidal 1-(substituted benzoyl)-3-(substituted pyrazinyl)ureas. 4,083,977, Cl. 424-250.000.

Mihailovski, Alexander, to Stauffer Chemical Company. Acetylenic 2,6-dichlorobenzoates as plant growth regulators. 4,084,062, Cl. 560-106.000.

Mikkelson, Marvin O.; and Rasmus, Boyd R., to Pillsbury Company, The. Process for forming simulated nut-like foods. 4,084,013, Cl. 426-601.000.

Mikulecky, Karel: *See—*
Pospisil, Frantisek; Skoda, Stanislav; Esner, Stanislav; Tyl, Miroslav; Mikulecky, Karel; and Jiskra, Miloslav, 4,083,507, Cl. 242-43.200.

Milam, Jack J., to Brown Oil Tools, Inc. Well completion apparatus. 4,083,408, Cl. 166-315.000.

Miles Laboratories, Inc.: *See—*
Duvall, Ronald Nash; and Gold, Gerald, 4,083,950, Cl. 424-44.000.

Milewski, John V.: *See—*
Heath, Carl E.; Grafstein, Daniel; and Milewski, John V., 4,083,708, Cl. 65-23.000.

Millar, James F.; and Cockshott, John E., to Fluor Engineers and Constructors, Inc. Process for recovery of liquid hydrocarbons. 4,083,194, Cl. 62-101.000.

Millauer, Christian, to Werner & Pfleiderer, Firma. Kneading and mixing machine. 4,084,263, Cl. 366-84.000.

Miller, Arthur J.; and Shields, J. Rodger, to Carrier Corporation. Cooling system for turbomachinery. 4,083,649, Cl. 415-116.000.

Miller, Barry: *See—*
Heller, Adam; Miller, Barry; and Robbins, Murray, 4,084,044, Cl. 429-111.000.

Miller, David G.: *See—*
Muraco, John M.; Hege, Lonnie V.; and Miller, David G., 4,083,932, Cl. 423-210.000.

Miller, Donald M., to United States of America, Energy. Omega-X micromachining system. 4,083,272, Cl. 82-12.000.

Miller, Frank R.; and Andreiko, Craig A. Brazing process for orthodontic assemblies. 4,083,113, Cl. 32-14.00A.

Miller, Harold L., to Westinghouse Electric Corporation. Current limiting fuse with improved spacing between parallel elements. 4,084,145, Cl. 337-231.000.

Miller, Homer Warner, to Honeywell Information Systems Inc. Current mode 5-bit arithmetic logic unit with parity. 4,084,252, Cl. 364-738.000.

Miller, Homer Warner, to Honeywell Information Systems Inc. Current mode arithmetic logic circuit with parity prediction and checking. 4,084,253, Cl. 364-738.000.

Miller, James L.: *See—*
Schaffner, Donald L.; and Miller, James L., 4,083,611, Cl. 305-54.000.

Miller, Maurice E. Harrow disc gang. 4,083,413, Cl. 172-601.000.

Miller, William Reed, Jr.; and Forward, Worthy Joseph, Jr., to USM Corporation. Lathe apparatus. 4,083,271, Cl. 82-8.000.

Mills, Albert T., Jr.: *See—*
Van Auken, Richard; and Mills, Albert T., Jr., 4,083,140, Cl. 43-18.0GF.

Minami, Tadashi, to Yoshida Kogyo Kabushiki Kaisha. Sliding clasp fastener. 4,083,089, Cl. 24-205.16R.

Mininni, Robert M.: *See—*
Calundann, Gordon W.; Davis, Herbert L.; Gorman, Frederick J.; and Mininni, Robert M., 4,083,829, Cl. 260-47.00C.

Minnesota Mining and Manufacturing Company: *See—*
Dahlquist, Carl A., 4,083,832, Cl. 260-79.30R.
Pavlik, Frank J., 4,084,050, Cl. 544-87.000.
Sandvig, Timothy C., 4,084,021, Cl. 427-44.000.
Wharam, John L., 4,083,472, Cl. 220-334.000.

Minolta Camera Kabushiki Kaisha: *See—*
Okano, Yukio, 4,083,627, Cl. 350-162.0SF.

Misener, Doyle R. Flood guard warning system, apparatus and process. 4,083,657, Cl. 417-4.000.

Mita, Seiichi; Kuroda, Hiroshi; and Nakamura, Hisashi, to Hitachi, Ltd. Apparatus for transmission of chrominance signals during blanking period. 4,084,181, Cl. 358-12.000.

Mitani, Kenzo: *See—*
Kato, Hidetoshi; Niimi, Masayoshi; and Mitani, Kenzo, 4,084,119, Cl. 318-434.000.

Mitchell, Bruce R.: *See—*
McKinney, Joel D.; Mitchell, Bruce R.; and Sebulsky, Raynor T., 4,083,807, Cl. 252-455.00Z.

Mitchell, Everett R.; Jacobson, Martin; and Baumhover, Alfred H., to United States of America, Agriculture. (Z)-9-Tetradecen-1-ol formate and its use as a communication disruptant for Heliothis. 4,083,995, Cl. 424-311.000.

Mitchell, Keith James: *See—*
Mander, Keith Anthony; Mitchell, Keith James; Kempster, Barry Arthur; and Rodger, David, 4,083,506, Cl. 242-25.00R.

Mitchell, Ralph Charles: *See—*
Long, Gerald Bernard; Mitchell, Ralph Charles; and Pi, Shing Chou, 4,084,152, Cl. 340-166.00R.

Mitsubishi Chemical Industries Ltd.: *See—*
Fukutani, Hideo; Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; and Torige, Kazuo, 4,083,725, Cl. 96-115.00R.
Miwa, Tatsuro; Aoyama, Akira; Shimosaka, Masatoshi; Kusumoto, Hideto; and Kuroda, Katsuhiko, 4,083,749, Cl. 162-168.00N.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Akamatsu, Masahiko, 4,084,220, Cl. 363-37.000.
Tabata, Norikazu; Ueno, Takanori; and Namba, Keisuke, 4,084,098, Cl. 250-533.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Abe, Mitsuo; Takeda, Norio; and Miura, Mitsuo, 4,083,869, Cl. 260-566.00R.

Mitsubishi Jukogo Kabushiki Kaisha: *See—*
Nishino, Yasushi; Karashima, Koji; and Iwai, Ken, 4,083,319, Cl. 114-260.000.

Mitsubishi Kasei Kobyo Kabushiki Kaisha: *See—*
Outsuka, Koremitsu; Kawasaki, Kazuyoshi; and Tanaka, Yutaka, 4,083,754, Cl. 204-1.00T.

Mitsuchi Corporation: *See—*
Okada, Hirosi, 4,083,393, Cl. 151-19.00A.

Miura, Konoe: *See—*
Fukutani, Hideo; Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; and Torige, Kazuo, 4,083,725, Cl. 96-115.00R.

Miura, Mitsuo: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Abe, Mitsuo; Takeda, Norio; and Miura, Mitsuo, 4,083,869, Cl. 260-566.00R.

Miwa, Tatsuro; Aoyama, Akira; Shimosaka, Masatoshi; Kusumoto, Hideto; and Kuroda, Katsuhiko, to Mitsubishi Chemical Industries Ltd.; and Hamano Industry Co., Ltd. Method of making sized paper. 4,083,749, Cl. 162-168.00N.

Miyahara, Junji; and Kato, Hisatoyo, to Fuji Photo Film Co., Ltd. Rear projection screens. 4,083,626, Cl. 350-117.000.

Miyamoto, Yoshio, to Sumitomo Electric Industries, Ltd. Zig-zag slotted coaxial cable for radio frequency signal coupling. 4,084,141, Cl. 333-84.00L.

Miyazawa, Hiroshi, to Tokico Ltd. Door closer. 4,083,080, Cl. 16-66.000.

Miyoshi, Mitsuji: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; and Miyoshi, Mitsuji, 4,083,802, Cl. 252-429.00C.

Mlyniec, Kenneth P.; and Vore, Raymond B., to Emerson Electric Co.

Normally open, thermal sensitive electrical switching device. 4,084,147, Cl. 337-407.000.

Mobil Oil Corporation: *See—*
Caesar, Philip Dornin; and Morrison, Roger Allen, 4,083,888, Cl. 200-682.000.
Caesar, Philip Dornin; and Morrison, Roger Allen, 4,083,889, Cl. 260-682.000.
Chibnik, Sheldon, 4,083,699, Cl. 44-75.000.
Nnadi, John C., 4,083,792, Cl. 252-18.000.
Nnadi, John C.; and Heilweil, Israel J., 4,083,895, Cl. 260-874.000.
Penner, Wayne A., 4,084,151, Cl. 340-15.5DP.
Rodewald, Paul G., 4,083,885, Cl. 260-671.00C.

Modern Controls, Inc.: *See—*
Kirchner, Richard K.; Andreadakis, Nicholas Cleanthis; and Mayer, William Norman, 4,084,213, Cl. 361-384.000.

Moen, George A. Anchor bolt assembly. 4,083,161, Cl. 52-699.000.

Moen, Lenard E. Fluid powered article feeding mechanism. 4,083,554, Cl. 271-9.000.

Mohawk Data Sciences Corporation: *See—*
Flint, John E.; and Dudek, Stephen E., 4,083,100, Cl. 29-622.000.

Momose, Katsumi; and Okutsu, Kazuhisa, to Canon Kabushiki Kaisha. Pattern exposure apparatus using polychromatic light source. 4,083,634, Cl. 355-71.000.

Money, Kenneth E.: *See—*
Malcolm, Richard; Anderson, Philip; Money, Kenneth E.; and Mandler, Walter, 4,083,239, Cl. 73-178.00R.

Monks, Reginald; and Riley, Anthony Leonard Mark, to Radiochemical Centre Limited, The. Organ visualization. 4,083,947, Cl. 424-1.000.

Monsanto Company: *See—*
Bielski, Edward T.; and Fowler, Timothy J., 4,083,752, Cl. 202-100.000.
Dutra, Gerard A., 4,083,898, Cl. 260-970.000.
Leonard, Richard L., 4,084,036, Cl. 428-398.000.
McConaghy, J. S., Jr.; and Paulik, F. E., 4,083,874, Cl. 260-585.00R.
Moran, James R.; and Drenzek, Paul J., 4,083,896, Cl. 260-876.00R.
Morgan, Albert W.; and Mathis, Thomas C., 4,083,789, Cl. 252-8.100.

Montalvo, Lionel Morales. Rotary engine with pistons and lenticular valves. 4,083,663, Cl. 418-183.000.

Montedison S.p.A.: *See—*
Bornengo, Mario; Grego, Saverio; and Serdi, Sergio, 4,083,900, Cl. 260-984.000.

Moog Inc.: *See—*
Moog, William C.; and Taeger, Colin M., 4,083,578, Cl. 280-618.000.

Moog, William C.; and Taeger, Colin M., to Moog Inc. Toe clip for a ski binding. 4,083,578, Cl. 280-618.000.

Moore, Stanley R.: *See—*
Chaney, Preston E., 4,083,317, Cl. 114-40.000.

Moore, Walter C.: *See—*
Kimpel, Francis A.; and Moore, Walter C., 4,083,397, Cl. 165-26.000.

Moose, Robert R. Automatic light switch. 4,084,088, Cl. 250-209.000.

Moppett, Charles E.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,083,963, Cl. 424-117.000.

Moran, James R.; and Drenzek, Paul J., to Monsanto Company. Transparent polyblends. 4,083,896, Cl. 260-876.00R.

Moran, Larry K.: *See—*
Griffin, Thomas J., Jr.; and Moran, Larry K., 4,083,407, Cl. 166-291.000.

Morgan, Albert W.; and Mathis, Thomas C., to Monsanto Company. Composition containing halogenated polyphosphates. 4,083,789, Cl. 252-8.100.

Morgan, Charles Robert: *See—*
Mathias, Eckart; and Morgan, Charles Robert, 4,084,020, Cl. 427-41.000.

Morgan, Charles W.: *See—*
Goodale, Clark W.; Morgan, Charles W.; and Rhoton, Albert L., 4,084,030, Cl. 428-141.000.

Mori, Mamoru; Sasaki, Shiro; and Hachisuka, Sadao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Webbing guide for a seat belt. 4,083,602, Cl. 297-389.000.

Mori, Tokiaki: *See—*
Yamada, Senri; Nagasawa, Kanji; Mori, Tokiaki; and Tanaka, Masaru, 4,083,729, Cl. 106-88.000.

Morita, Kaneji: *See—*
Shimoiizaka, Junzo; Konosu, Akira; Morita, Kaneji; Sugie, Akio; and Isioka, Kunio, 4,083,776, Cl. 209-452.000.

Morita, Masayoshi. Operating table for transurethral resection. 4,083,549, Cl. 269-327.000.

Moriya, Kiyoshi: *See—*
Saito, Shigeru; Sasaki, Yutaka; Nakamura, Tomio; Moriya, Kiyoshi; Nakamura, Yoshimi; and Utsumi, Hiroshi, 4,083,804, Cl. 252-432.000.

Moriya, Makoto: *See—*
Aizawa, Hideo; and Moriya, Makoto, 4,083,185, Cl. 60-299.000.

Morris, Alberto Jorge, to R. A. Lister & Company Limited. Piston for an internal combustion engine. 4,083,330, Cl. 123-32.00B.

Morrison, Roger Allen: *See—*
Caesar, Philip Dornin; and Morrison, Roger Allen, 4,083,888, Cl. 200-682.000.
Caesar, Philip Dornin; and Morrison, Roger Allen, 4,083,889, Cl. 260-682.000.

Morton, David H., to American Optical Corporation. Constant polarity battery-connection system. 4,084,037, Cl. 429-1.000.

Morton, Douglas Ross, Jr., to Upjohn Company, The. 13,14-Dihydro-PGD_2 compounds. 4,083,859, Cl. 260-408.000.

Morton, Douglas Ross, Jr., to Upjohn Company, The. Inter-oxa-13,14-dihydro-PGD_1 compounds. 4,083,865, Cl. 260-514.00D.

Motoren-und Turbinen-Union Friedrichshafen GmbH: *See—*
Rudert, Wolfgang; and de Lazzer, Karlheinz, 4,083,333, Cl. 123-41.82R.

Motorola, Inc.: *See—*
Selinko, George Joseph, 4,083,481, Cl. 224-5.00H.

Mott, Lambert H. Gas transport system for powders. 4,083,607, Cl. 302-59.000.

MTU Motoren-und Turbinen-Union Munchen GmbH: *See—*
Puhr-Westerheide, Jorg, 4,083,760, Cl. 204-129.550.

MTU Munchen GmbH: *See—*
Seliger, Dieter; and Das-Gupta, Arun-Kumar, 4,083,259, Cl. 74-191.000.

Muacevic, Gojko: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,084,002, Cl. 424-330.000.

Mueller Co.: *See—*
Luckenbill, Lawrence F., 4,083,377, Cl. 137-296.000.

Mueller, Herman W.: *See—*
Yueh, Mao H.; and Mueller, Herman W., 4,084,008, Cl. 426-464.000.

Mulitz, Lewis, to Pico Safe Stairs Co. Adjustable railing. 4,083,536, Cl. 256-47.000.

Muller, Hans, to Grapha-Holding AG. Apparatus for promoting the setting of adhesive on stacks of sheets in bookbinding machines. 4,083,745, Cl. 156-380.000.

Mullins, Keith M.; Cannon, Thomas; Leppert, Thomas K.; and Burnell, Thomas R., to Teledyne Industries, Inc. Infant training tumbler. 4,083,467, Cl. 220-90.400.

Multi-Contact AG: *See—*
Neidecker, Rudolf, 4,083,622, Cl. 339-256.00R.

Multinorm B.V.: *See—*
Oosterling, Pieter Adriaan; and Baecke, Antoine Marinus Rene, 4,083,257, Cl. 74-60.000.

Munakata, Keiichi: *See—*
Tanaka, Satoru; and Munakata, Keiichi, 4,083,996, Cl. 424-315.000.

Munier, Bernard: *See—*
Defranould, Philippe; and Munier, Bernard, 4,084,192, Cl. 358-213.000.

Murabayashi, Hideki; Kawakita, Katsuhiko; Nakamura, Kisaku; and Kobatake, Sadao, to Tokyo Shibaura Electric Co., Ltd. Bismuth-tin-indium-lead alloy. 4,083,718, Cl. 75-134.00B.

Muraco, John M.; Hege, Lonnie V.; and Miller, David G., to PPG Industries, Inc. Method and apparatus for treating gases. 4,083,932, Cl. 423-210.000.

Murakami, Shigeo: *See—*
Sakurai, Shigenori; Murakami, Shigeo; and Torii, Masanori, 4,083,344, Cl. 123-136.000.

Murakami, Tomomi: *See—*
Nishimura, Katsuo; Yasuda, Tetsuya; Murakami, Tomomi; Yoshida, Masateru; Natori, Minoru; and Iinuma, Yoshio, 4,083,177, Cl. 58-23.00R.

Murata, Yasuyuki, to Electroplating Engineers of Japan, Limited. Method and apparatus for selectively plating rectangular sheet continuously or intermittently. 4,083,755, Cl. 204-15.000.

Murrell, Lawrence L.: *See—*
Oswald, Alexis A.; and Murrell, Lawrence L., 4,083,803, Cl. 252-430.000.

Muschaweck, Roman: *See—*
Lang, Hans-Jochen; and Muschaweck, Roman, 4,083,979, Cl. 424-251.000.

Mustang Services Co.: *See—*
Curtis, Arvel C., 4,083,074, Cl. 15-104.06R.

Muzyczko, Thaddeus M.; and Fieder, Donald W., to Richardson Company, The. Method of making light sensitive polymerizable compositions. 4,083,724, Cl. 96-115.00R.

Myers, David M., to Curtiss-Wright Corporation. Rotary engine with a pilot fuel nozzle downstream of top center. 4,083,329, Cl. 123-205.000.

Naarmann, Herbert; and Pohlemann, Heinz, to BASF Aktiengesellschaft. Polymers containing dioxythiazole-2-oxide groups. 4,084,048, Cl. 526-260.000.

Naarmann, Herbert: *See—*
Pohlemann, Heinz; Gausepohl, Hermann; and Naarmann, Herbert, 4,083,835, Cl. 260-79.50C.

Nadelson, Jeffrey, to Sandoz, Inc. Pivaloyl benzyl amines and method of use thereof. 4,084,003, Cl. 424-330.000.

Nadelson, Jeffrey: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 4,083,997, Cl. 424-316.000.

Nagai, Masayuki: *See—*
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 4,084,059, Cl. 560-87.000.

Nagano, Hideo. Voltage detector with field effect transistor and high input impedance. 4,084,134, Cl. 324-133.000.

Naganuma, Yoshinori: *See—*
Tsuchiya, Yoshimi; Naganuma, Yoshinori; and Arai, Haruhiko, 4,083,954, Cl. 424-47.000.
Nagasawa, Kanji: *See—*
Yamada, Senri; Nagasawa, Kanji; Mori, Tokiaki; and Tanaka, Masaru, 4,083,729, Cl. 106-88.000.
Nagashima, Tugio, to Tokico Ltd. Actuator for emergency operation. 4,083,187, Cl. 60-407.000.
Nakada, Akira, to Nippon Gakki Seizo Kabushiki Kaisha. Delayed vibrato arrangement for an electronic musical instrument. 4,083,284, Cl. 84-1.250.
Nakada, Akira: *See—*
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, 4,083,283, Cl. 84-1.240.
Nakaguti, Osamu: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,084,049, Cl. 544-16.000.
Nakai, David S.: *See—*
Smith, Richard W.; and Nakai, David S., 4,083,575, Cl. 280-696.000.
Nakajima, Hiroshi: *See—*
Umezaki, Hajime; Oguri, Kyoichi; Nakajima, Hiroshi; Amemiya, Shinichi; and Nozawa, Yoshitomo, 4,083,247, Cl. 74-243.00R.
Nakajima, Tadashi: *See—*
Takemoto, Tsunematsu; Nakajima, Tadashi; Arihara, Shigenobu; and Okuhira, Megumi, 4,084,010, Cl. 426-548.000.
Nakamichi, Koichi: *See—*
Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, 4,083,969, Cl. 424-182.000.
Nakamura, Hisashi: *See—*
Mita, Seiichi; Kuroda, Hiroshi; and Nakamura, Hisashi, 4,084,181, Cl. 358-12.000.
Nakamura, Iwao: *See—*
Takeda, Noriyuki; Ikeda, Hideo; Nakamura, Iwao; and Uchida, Noriaki, 4,083,694, Cl. 23-288.00F.
Nakamura, Kisaku: *See—*
Murabayashi, Hideki; Kawakita, Katsuhiko; Nakamura, Kisaku; and Kobatake, Sadao, 4,083,718, Cl. 75-134.00B.
Nakamura, Satoshi: *See—*
Kikuchi, Takayuki; Yamada, Fumiharu; Nakamura, Satoshi; and Koyama, Fumio, 4,083,560, Cl. 273-102.20B.
Nakamura, Tomio: *See—*
Saito, Shigeru; Sasaki, Yutaka; Nakamura, Tomio; Moriya, Kiyoshi; Nakamura, Yoshimi; and Utsumi, Hiroshi, 4,083,804, Cl. 252-432.000.
Nakamura, Yoshimi: *See—*
Saito, Shigeru; Sasaki, Yutaka; Nakamura, Tomio; Moriya, Kiyoshi; Nakamura, Yoshimi; and Utsumi, Hiroshi, 4,083,804, Cl. 252-432.000.
Nakase, Takamichi: *See—*
Hattori, Tadashi; and Nakase, Takamichi, 4,083,337, Cl. 123-119.0EC.
Nakatomi, Takayoshi: *See—*
Yaegashi, Takehisa; and Nakatomi, Takayoshi, 4,083,183, Cl. 60-290.000.
Nakatsubo, Toshio; Nishikawa, Masaji; and Sato, Eiichi, to Olympus Optical Co., Ltd. Photosensitive grid useful for screen type electrographic apparatuses and the method of manufacturing the photosensitive grid. 4,083,720, Cl. 96-1.50R.
Nalco Chemical Company: *See—*
Jansma, Roger H.; and Albrecht, William E., 4,084,034, Cl. 428-342.000.
Namba, Keisuke: *See—*
Tabata, Norikazu; Ueno, Takanori; and Namba, Keisuke, 4,084,098, Cl. 250-533.000.
Namekawa, Takashi: *See—*
Arakawa, Hideo; Kuniya, Keiichi; Namekawa, Takashi; and Iizuka, Tomio, 4,083,719, Cl. 75-229.000.
Narumi China Corporation: *See—*
Kuroda, Toshiro; and Kakami, Susumu, 4,084,114, Cl. 313-496.000.
Nathan, Robert: *See—*
Heyser, Richard C.; and Nathan, Robert, 4,083,232, Cl. 73-599.000.
National Instrument Company: *See—*
Rosen, Sidney; and Bennett, Richard Nelson, 4,083,389, Cl. 141-179.000.
Natori, Minoru: *See—*
Nishimura, Katsuo; Yasuda, Tetsuya; Murakami, Tomomi; Yoshida, Masateru; Natori, Minoru; and Iinuma, Yoshio, 4,083,177, Cl. 58-23.00R.
Natwig, David L.: *See—*
Hubred, Gale L.; Kust, Roger N.; Natwig, David L.; and Pemsler, J. Paul, 4,083,915, Cl. 423-24.000.
Naval Project Development Sarl: *See—*
Verolme, Cornelis, 4,083,318, Cl. 114-74.00A.
Nazarenko, Oleg Kuzmich: *See—*
Istomin, Evgeny Ivanovich; Strekal, Leonid Pavlovich; Ivanenko, Alexandr Fedorovich; Vasiliev, Adolf Alfonsovich; Zhivaga, Leonid Ignatievich; Nazarenko, Oleg Kuzmich; Porazhinsky, Igor Antonovich; and Zhdanov, Jury Nikolaevich, 4,084,076, Cl. 219-121.0EB.
Nazarova, Liya Semenovna: *See—*
Likhosherstov, Arkady Mikhailovich; Nazarova, Liya Semenovna; Skoldinov, Alexandr Petrovich; Markova, Galina Alexandrovna; and Kaverina, Natalya Veniaminovna, 4,083,976, Cl. 424-247.000.
Negro, Giorgio. Frontal seal, in particular for tracked vehicles. 4,083,569, Cl. 277-92.000.
Neidecker, Rudolf, to Multi-Contact AG. Electrical connector. 4,083,622, Cl. 339-256.00R.
Nelson, Jack: *See—*
Carlson, Douglas W.; and Nelson, Jack, 4,083,260, Cl. 74-233.000.
Nelson, Norman A., to Upjohn Company, The. 4,5,6-Trinor-3,7-inter-m-phenylene prostaglandin $F_{1\alpha}$ analogs. 4,084,058, Cl. 560-55.000.
Nelson Research and Development Company: *See—*
Fuxe, Kjell, 4,084,000, Cl. 424-319.000.
Nemeth, Joseph: *See—*
Insley, Robert H.; Nemeth, Joseph; and Rempes, Paul E., Jr., 4,083,905, Cl. 264-44.000.
Ness, Kenneth P., to K-P Manufacturing Co., Inc. Plunger for hand grease guns. 4,083,428, Cl. 184-105.00A.
Netz, Otto: *See—*
Corte, Herbert; Heller, Harold; Lange, Peter Michael; and Netz, Otto, 4,083,712, Cl. 71-28.000.
Neveux, Rene Elie, to Societe Anonyme Francaise de Ferodo. Fitting of a fluid temperature switch in a wall. 4,083,332, Cl. 123-41.150.
New Nippon Electric Company, Ltd.: *See—*
Matsuda, Hirotoshi, 4,084,111, Cl. 307-264.000.
Newbrough, Joseph S. Gas drive oil well pumping system having mixing means for the gas/oil mixture. 4,083,660, Cl. 417-108.000.
Newman, Ray Lewis: *See—*
Dziedzic, Chester John; Cleveland, Joseph Jerome; and Newman, Ray Lewis, 4,083,400, Cl. 165-165.000.
Newns, Michael David; and Attwood, Brian William, to St. Anne's Board Mill Company Limited. Flowbox with convergent wall portions. 4,083,750, Cl. 162-317.000.
Nicholas, Keith H., to U.S. Philips Corporation. Method of manufacturing electronic devices. 4,083,098, Cl. 29-578.000.
Nickel, Horst: *See—*
Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, 4,083,845, Cl. 260-180.000.
Niederst, Jean-Pierre; and Holzinger, Karl, to Herbert Kannegiesser Kommanditgesellschaft. Device for the production of molded articles from foamable plastics. 4,083,671, Cl. 425-450.100.
Nienow, Harvey Charles. Fluid sampling apparatus. 4,083,253, Cl. 73-425.40R.
Niida, Taro: *See—*
Koeda, Takemi; Tsuruoka, Takashi; Asaoka, Hiroyasu; Shibata, Uichi; Inoue, Shigeharu; and Niida, Taro, 4,083,850, Cl. 260-295.50R.
Niimi, Masayoshi: *See—*
Kato, Hidetoshi; Niimi, Masayoshi; and Mitani, Kenzo, 4,084,119, Cl. 318-434.000.
Nippon Electric Co., Ltd.: *See—*
Fujimoto, Shoji, 4,084,108, Cl. 307-238.000.
Nippon Electric Kagoshima, Limited: *See—*
Kuroda, Toshiro; and Kakami, Susumu, 4,084,114, Cl. 313-496.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Chibana, Masanobu, 4,083,285, Cl. 84-1.260.
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, 4,083,283, Cl. 84-1.240.
Iyeta, Motoi, 4,083,565, Cl. 274-23.00A.
Nakada, Akira, 4,083,284, Cl. 84-1.250.
Nippon Kogaku K. K.: *See—*
Shio, Megumu, 4,083,256, Cl. 74-10.520.
Nippon Oil Company Limited: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; and Miyoshi, Mitsuji, 4,083,802, Cl. 252-429.00C.
Nippon Shinyaku Co., Ltd.: *See—*
Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, 4,083,969, Cl. 424-182.000.
Nippon Shoji Kaisha, Ltd.: *See—*
Takemoto, Tsunematsu; Nakajima, Tadashi; Arihara, Shigenobu; and Okuhira, Megumi, 4,084,010, Cl. 426-548.000.
Nippon Soken, Inc.: *See—*
Hattori, Tadashi; and Nakase, Takamichi, 4,083,337, Cl. 123-119.0EC.
Nippon Steel Corporation: *See—*
Matsuda, Shozo; Hirai, Naoe; and Tanaka, Tadashi, 4,083,763, Cl. 204-181.00E.
Nippondenso Co., Ltd.: *See—*
Kato, Hidetoshi; Niimi, Masayoshi; and Mitani, Kenzo, 4,084,119, Cl. 318-434.000.
Nishi Nippon Denki Co., Ltd.: *See—*
Kikuchi, Takayuki; Yamada, Fumiharu; Nakamura, Satoshi; and Koyama, Fumio, 4,083,560, Cl. 273-102.20B.
Nishikawa, Masaji: *See—*
Nakatsubo, Toshio; Nishikawa, Masaji; and Sato, Eiichi, 4,083,720, Cl. 96-1.50R.
Nishimura, Katsuo; Yasuda, Tetsuya; Murakami, Tomomi; Yoshida, Masateru; Natori, Minoru; and Iinuma, Yoshio, to Citizen Watch Co. Ltd. Liquid crystal display wrist watch. 4,083,177, Cl. 58-23.00R.
Nishino, Yasushi; Karashima, Koji; and Iwai, Ken, to Mitsubishi Jukogo Kabushiki Kaisha. Barge ship dual trucks to transport barges thereon. 4,083,319, Cl. 114-260.000.
Nishioka, Akinori: *See—*
Komatsu, Koei; Nishioka, Akinori; Ohshima, Noboru; Takahashi, Masanobu; and Hara, Hiromichi, 4,083,834, Cl. 260-79.5NV.
Nissan Motor Company, Limited: *See—*
Aizawa, Hideo; and Moriya, Makoto, 4,083,185, Cl. 60-299.000.
Aono, Shigeo; and Asano, Masahara, 4,083,234, Cl. 73-116.000.

Hamada, Hideo; Yamaguchi, Hirotsugu; and Takahashi, Koichi, 4,083,443, Cl. 192-91.00R.
Hashimoto, Masaru; and Ogata, Masaya, 4,083,223, Cl. 73-15.0FD.
Takeda, Noriyuki; Ikeda, Hideo; Nakamura, Iwao; and Uchida, Noriaki, 4,083,694, Cl. 23-288.00F.
Ushijima, Takashi; and Iwasa, Yoshio, 4,083,184, Cl. 60-293.000.

Nissen, Warren I.; and Perry, Roger L., to Gillette Company, The. Razor handle. 4,083,104, Cl. 30-47.000.

Nissl, Norbert, to Messerschmitt-Boelkow-Blohm GmbH Gesellschaft mit beschraenkter Haftung. Accelerometer. 4,083,254, Cl. 73-517.00R.

Nitto Chemical Industry Co., Ltd.: *See*—
Saito, Shigeru; Sasaki, Yutaka; Nakamura, Tomio; Moriya, Kiyoshi; Nakamura, Yoshimi; and Utsumi, Hiroshi, 4,083,804, Cl. 252-432.000.

Nizov, Gennady Alexeevich: *See*—
Kagan, July Borisovich; Loktev, Sergei Minovich; Nizov, Gennady Alexeevich; Zhilin, Vyacheslav Alexandrovich; Zuev, Alexandr Andreevich; and Bashkirov, Andrei Nikolaevich, 4,083,880, Cl. 260-632.00R.

NM Uranium, Inc.: *See*—
Stover, Dennis E., 4,083,603, Cl. 299-4.000.

Nnadi, John C., to Mobil Oil Corporation. Overbased metal complexes and compositions thereof with lubricants. 4,083,792, Cl. 252-18.000.

Nnadi, John C.; and Heilweil, Israel J., to Mobil Oil Corporation. Modified block copolymers and process of preparing the same. 4,083,895, Cl. 260-874.000.

Noack, Rolf, to Deutsche Babcock Aktiengesellschaft. Process and apparatus for removing undesirable gases from flue gases. 4,083,701, Cl. 55-20.000.

Noda, Kanji; Kodama, Ryuhei; Yano, Tadanori; Inoue, Hideaki; Furukawa, Kazuhide; Igimi, Hirotsune; and Ide, Hiroyuki, to Hisamitsu Pharmaceutical Co., Inc. Choleretics. 4,083,994, Cl. 424-311.000.

Noguchi, Tsutomu: *See*—
Sekiguchi, Tsunetoshi; and Noguchi, Tsutomu, 4,083,178, Cl. 58-88.00R.

Nonn, Konrad: *See*—
Wolf, Karlheinz; Nonn, Konrad; Hornle, Reinhold; and Petroll, Hans Werner, 4,083,689, Cl. 8-85.00B.

Noranda Mines Limited: *See*—
Houlachi, George J.; and Claessens, Pierre L., 4,083,761, Cl. 204-130.000.

Nordstrom, Edward R.; and Ufferfilge, Roger K., to Seaquist Valve Company, Div. of Pittway Corporation. Filter mounting apparatus. 4,083,736, Cl. 156-73.100.

Norman, John J.: *See*—
Epstein, Joseph; Heggie, Robert M.; and Norman, John J., 4,083,692, Cl. 23-232.00R.

Normier, Gerard: *See*—
Dussourdd'Hinterland, Lucien; Pradayrol, Lucien; Durand, Jacques; and Normier, Gerard, 4,083,961, Cl. 424-95.000.

Norris, Alan H.; and Chambley, Phillip W., to Champion International Corporation. Control system for pneumatically treated yarns. 4,083,172, Cl. 57-34.0AT.

North American Philips Corporation: *See*—
Zingaro, William P.; and Sicignano, Albert, 4,084,089, Cl. 250-272.000.

Norton, Donald C., to C. Itoh Electronics, Inc. Electromagnetic striking members selectively actuated in time from alternating current power. 4,083,299, Cl. 101-93.030.

Notenboom, Leo J., to Genie Industries, Inc. Low noise, self-locking winch. 4,083,534, Cl. 254-186.0HC.

Nozawa, Yoshitomo: *See*—
Umezaki, Hajime; Oguri, Kyoichi; Nakajima, Hiroshi; Amemiya, Shinichi; and Nozawa, Yoshitomo, 4,083,247, Cl. 74-243.00R.

NSK-Warner K. K.: *See*—
Ikesue, Haruyuki, 4,083,511, Cl. 242-107.40A.

Nutt, A. D., to Duncan Electric Company, Inc. Transformer mounting assembly. 4,084,143, Cl. 336-65.000.

O.K. Machine and Tool Corporation: *See*—
Kober, Marvin, 4,083,268, Cl. 81-9.50R.

Oaden, Lois I.: *See*—
Schwabe, Willie Carl, 4,083,533, Cl. 254-134.400.

Obolonsky, Alexei Pavlovich: *See*—
Porazhinsky, Igor Antonovich; Obolonsky, Alexei Pavlovich; Ivaschenko, Anatoly Grigorievich; Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,084,077, Cl. 219-121.0EB.

Occidental Petroleum Corporation: *See*—
Choi, Charles K.; and Tassoney, Joseph P., 4,083,751, Cl. 202-99.000.

O'Connor, Chadwell. Panhead drag mechanism. 4,083,524, Cl. 248-183.000.

Oetiker, Hans. Tightening device for attaching a hose clamp. 4,083,086, Cl. 81-9.300.

Offermanns, Herbert; and Weigel, Horst, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of 4-acylamido-4, 4-dicarbalkoxy-butanalphenylhydrazone. 4,084,057, Cl. 560-34.000.

Ogata, Fumio, to Hitachi, Ltd. High-voltage thyristor converter. 4,084,221, Cl. 363-54.000.

Ogata, Masaya: *See*—
Hashimoto, Masaru; and Ogata, Masaya, 4,083,223, Cl. 73-15.0FD.

Ogawa, Junkiti: *See*—
Shimamura, Isao; and Ogawa, Junkiti, 4,083,723, Cl. 96-66.500.

Ogura, Shohachi: *See*—
Hisano, Akio; Ogura, Shohachi; and Satomo, Kouji, 4,083,819, Cl. 260-2.50R.

Oguri, Kyoichi: *See*—
Umezaki, Hajime; Oguri, Kyoichi; Nakajima, Hiroshi; Amemiya, Shinichi; and Nozawa, Yoshitomo, 4,083,247, Cl. 74-243.00R.

Oh, Chan S., to Beckman Instruments, Inc. Nematic liquid crystal compositions. 4,083,797, Cl. 252-299.000.

O'Hara, Mark J., to UOP Inc. Hydrorefining of petroleum fraction utilizing a catalyst prepared with an anion complex of a group VI-B and a group VIII metal component. 4,083,771, Cl. 208-216.000.

Ohata, Akira, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling the ignition timing of an internal combustion engine. 4,083,335, Cl. 123-117.00A.

Ohba, Shinya; Kubo, Masaharu; and Aoki, Masakazu, to Hitachi, Ltd. Charge transfer device. 4,084,107, Cl. 307-221.00D.

Ohhinata, Ichiro: *See*—
Okuhara, Shinzi; Ohhinata, Ichiro; Kamei, Tatsuya; and Suzuki, Masayoshi, 4,084,110, Cl. 307-252.00G.

Ohlson, Jan Sven Ragnar: *See*—
Anjou, Klas Orvar Stensson; Fecske, Aurel Jeny; Krook, Carl Goran; and Ohlson, Jan Sven Ragnar, 4,083,836, Cl. 260-123.500.

Ohshima, Noboru: *See*—
Komatsu, Koei; Nishioka, Akinori; Ohshima, Noboru; Takahashi, Masanobu; and Hara, Hiromichi, 4,083,834, Cl. 260-79.5NV.

Ohta, Koji: *See*—
Yokoyama, Masao; Sughihira, Tsuneo; and Ohta, Koji, 4,083,414, Cl. 172-804.000.

Okada, Hirosi, to Mitsuchi Corporation. Nut. 4,083,393, Cl. 151-19.00A.

Okada, Kazuo: *See*—
Homma, Yuzuru; Shimizu, Takeshi; and Okada, Kazuo, 4,083,959, Cl. 424-92.000.

Okada, Toshihiko: *See*—
Terasawa, Tadao; and Okada, Toshihiko, 4,083,852, Cl. 260-327.0TH.

Okano, Yukio, to Minolta Camera Kabushiki Kaisha. Two dimensional optical phase grating filter. 4,083,627, Cl. 350-162.0SF.

O'Keefe, David B.: *See*—
Hirtle, Allen C.; and O'Keefe, David B., 4,084,235, Cl. 364-200.000.

Okhotnikov, Grigory Gennadievich; and Troschilo, Ljubov Mikhailovna. Electrostatic discharger with ionization gap. 4,084,211, Cl. 361-222.000.

Oki Electric Industry Co., Ltd.: *See*—
Kishi, Hajimu; and Takahashi, Masashi, 4,084,243, Cl. 364-474.000.

Oku, Teruo: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,084,049, Cl. 544-16.000.

Okuhara, Shinzi; Ohhinata, Ichiro; Kamei, Tatsuya; and Suzuki, Masayoshi, to Hitachi, Ltd. Semiconductor switch. 4,084,110, Cl. 307-252.00G.

Okuhira, Megumi: *See*—
Takemoto, Tsunematsu; Nakajima, Tadashi; Arihara, Shigenobu; and Okuhira, Megumi, 4,084,010, Cl. 426-548.000.

Okumura, Akio: *See*—
Inouye, Kozo; Yokota, Yukio; Okumura, Akio; Shiba, Keisuke; and Kubodera, Seiiti, 4,083,721, Cl. 96-56.200.

Okutsu, Kazuhisa: *See*—
Momose, Katsumi; and Okutsu, Kazuhisa, 4,083,634, Cl. 355-71.000.

Olander, Walter Karl, to General Electric Company. Preparation of polyphenylene oxides by the oxidative coupling of a phenolic monomer in the presence of a manganese salt, base and a secondary amine. 4,083,828, Cl. 260-47.0ET.

Olin Corporation: *See*—
Woodring, William B., 4,083,306, Cl. 102-38.000.

Olinkraft, Inc.: *See*—
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,083,485, Cl. 229-23.0BT.

Olson, Wallace Fred, to Smith International, Inc. Non-rotating stabilizer for earth boring and bearing therefor. 4,083,612, Cl. 308-4.00A.

Olympus Optical Co., Ltd.: *See*—
Hashimoto, Akihiko; and Enomoto, Fuzio, 4,084,170, Cl. 354-205.000.
Koizumi, Toshimichi, 4,083,628, Cl. 350-220.000.
Nakatsubo, Toshio; Nishikawa, Masaji; and Sato, Eiichi, 4,083,720, Cl. 96-1.50R.

O'Neill, James L., to Merkert Enterprises Co. Mailing and storage box. 4,083,454, Cl. 206-605.000.

Oohira, Takeshi; and Kurihara, Tomiaki, to Hitachi, Ltd. Elevator control apparatus. 4,083,431, Cl. 187-29.00R.

Oosterling, Pieter Adriaan; and Baecke, Antoine Marinus Rene, to Multinorm B.V. Agricultural implement. 4,083,257, Cl. 74-60.000.

Ophaug, Darrell P.: *See*—
Dietz, Robert E.; and Ophaug, Darrell P., 4,084,203, Cl. 361-45.000.

Optel Corporation: *See*—
Witzke, Horst; and Deb, Satyendra Kumar, 4,084,043, Cl. 429-111.000.

Organisation Europeenne de Recherches Spatiales: *See*—
Mehwald, Gunther R., 4,084,087, Cl. 250-203.00R.

Orso, Francis L.; and Pierce, Timothy E., to Corning Glass Works. Method for making glass. 4,083,728, Cl. 106-52.000.

Osada, Yuji: *See*—
Takemura, Motohiro; Iijima, Mochihiro; Tateno, Yoshiaki; Osada, Yuji; and Maruyama, Hiroyuki, 4,083,881, Cl. 260-635.00C.

Osaka Soda Co. Ltd.: *See—*
Hisano, Akio; Ogura, Shohachi; and Satomo, Kouji, 4,083,819, Cl. 260-2.50R.
Osborn, John J., to Research Development Corporation. Variable orifice gas flow sensing head. 4,083,245, Cl. 73-207.000.
Oscarsson, Jerker Evert, to Stiga AB. Casing for a lawn mower with a horizontally rotating knife. 4,083,168, Cl. 56-320.200.
Oshima, Isao; and Yokogi, Akira, to Takeda Chemical Industries, Ltd. Atomizer. 4,083,496, Cl. 239-327.000.
Oswald, Alexis A.; and Murrell, Lawrence L., to Exxon Research & Engineering Co. Anchored silylhydrocarbyl phosphine transition metal complex catalysts and their method of preparation. 4,083,803, Cl. 252-430.000.
Oterdoom, Klaas, to Anglo Dutch Dredging Co. Ltd.; and Amsterdamse Ballast Bagger en Grond. Suction head for dredgers. 4,083,134, Cl. 37-58.000.
Otiashvili, Dali Georgievna: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Maisuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sukharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; and Epik, Alexei Pavlovich, 4,083,757, Cl. 204-83.000.
Otis Elevator Company: *See—*
Lusti, John, 4,083,432, Cl. 187-89.000.
Otten, Thomas H., to Harris Corporation. Apparatus for reconstructing a binary bit pattern. 4,084,153, Cl. 365-125.000.
Outsuka, Koremitsu; Kawasaki, Kazuyoshi; and Tanaka, Yutaka, to Mitsubishi Kasei Kobyo Kabushiki Kaisha. Voltammetric apparatus and method. 4,083,754, Cl. 204-1.00T.
Ouyang, Paul Hsiung, to Research Corporation. Double implanted planar MOS device with V-groove and process of manufacture thereof. 4,084,175, Cl. 357-55.000.
Ovens, Christopher William: *See—*
Goodwin, William Thomas; and Ovens, Christopher William, 4,083,473, Cl. 222-144.500.
Owatonna Tool Company: *See—*
McClocklin, Samuel B.; Solie, James C.; and Boers, Jan H., 4,083,381, Cl. 137-596.150.
Owen, George, Jr. Sports training apparatus. 4,083,559, Cl. 273-26.00A.
Owen, William J., to Martin MariettaCorporation. Navigational instrument. 4,083,636, Cl. 356-141.000.
Owens-Illinois, Inc.: *See—*
Steffan, Leonard D., 4,083,278, Cl. 83-169.000.
Vogelpohl, Roland Louis, 4,084,113, Cl. 313-408.000.
P.B. Bettinson & Company Limited: *See—*
Stocks, Richard Alexander, 4,083,412, Cl. 172-462.000.
Pako Corporation: *See—*
Harvey, Ronald B.; Strunc, Gerald R.; and Putzke, Dwayne H., 4,084,099, Cl. 250-548.000.
Pal, Rajendra. Multiple copy sorting apparatus. 4,083,550, Cl. 270-53.000.
Palac, Kazimir, to Zenith Radio Corporation. Implosion protection system for a cathode ray tube with a flangeless faceplate. 4,084,193, Cl. 358-246.000.
Paley, Lewis A. Sugar juice treatment. 4,083,732, Cl. 127-48.000.
Palm, Bernhard, to Black and Decker Manufacturing Company, The. Clamp arrangement for clamping saw blades to the blade holder of a power driven saw. 4,083,112, Cl. 30-335.000.
Palm, Leonard R., to Raymond Lee Organization, Inc., The, a part interest. Rug holder. 4,083,546, Cl. 269-152.000.
Palmerino, Henry. Vehicle security system. 4,083,589, Cl. 292-336.300.
Panigrahi, Godavarish, to Burroughs Corporation. Charge coupled device memory system with burst mode. 4,084,154, Cl. 365-222.000.
Panin, Stanislav Alexeevich: *See—*
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Korovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich, 4,083,204, Cl. 66-178.00R.
Paraskos, John Angelo: *See—*
Hildebrand, Richard Emil; Paraskos, John Angelo; and Taylor, Herman, Jr., 4,083,769, Cl. 208-10.000.
Parise, Carl; Uhlig, Karl R.; and Lockard, William W., to Parise & Sons, Inc. Dump bucket for a wet/dry vacuum system. 4,083,705, Cl. 55-257.0NP.
Parise & Sons, Inc.: *See—*
Parise, Carl; Uhlig, Karl R.; and Lockard, William W., 4,083,705, Cl. 55-257.0NP.
Parisien, Rudolph E. Gate latch. 4,083,591, Cl. 292-202.000.
Park, Jack H.: *See—*
Carlin, Joseph T.; and Park, Jack H., 4,083,403, Cl. 166-252.000.
Park, Kyu Chang: *See—*
Aboelfotoh, M. Osama; and Park, Kyu Chang, 4,083,614, Cl. 316-19.000.
Parker, Alfred B.: *See—*
Scragg, Robert L.; and Parker, Alfred B., 4,084,038, Cl. 429-19.000.
Parmet, Arthur A.: *See—*
Taylor, Donald R.; and Parmet, Arthur A., 4,084,229, Cl. 364-200.000.
Parone, Anthony D., to Colt Industries Operating Corporation. Roughing cutter. 4,083,643, Cl. 407-59.000.
Parson, Lee Minus; and du Fresne, Eugene R., to Ameron, Inc. Magnesium containing protective coating for ferrous metal. 4,083,726, Cl. 106-14.410.
Pasersky, John D., to Kurz-Hastings, Inc. Process for making hot stamping foil for producing textured surface effects. 4,084,032, Cl. 428-172.000.
Passerell, David P.: *See—*
Volgstadt, Frank R.; and Passerell, David P., 4,083,583, Cl. 285-55.000.
Passiuk, Walter T.: *See—*
Manning, William P.; and Passiuk, Walter T., 4,084,161, Cl. 343-18.00A.
Pate, Harold T.; and Borsh, Richard J., to Indian Head Inc. Retainer clip and synthetic resin box combination. 4,083,465, Cl. 220-3.800.
Paton, John W., III. Fuel vaporizer. 4,083,343, Cl. 123-124.00R.
Patterson, Michael P. Cage ornament and card. 4,084,015, Cl. 428-9.000.
Pattillo, Luther A., to Data Technology Corporation. Tape storage reel with insert for decreasing tape storage capacity. 4,083,508, Cl. 242-68.500.
Paul Journee S.A.: *See—*
Journee, Maurice Andre, 4,083,642, Cl. 403-316.000.
Paul, William Francis: *See—*
Kenigsberg, Irwin Jeffrey; and Paul, William Francis, 4,083,654, Cl. 416-145.000.
Paulik, F. E.: *See—*
McConaghy, J. S., Jr.; and Paulik, F. E., 4,083,874, Cl. 260-585.00R.
Pavlik, Frank J., to Minnesota Mining and Manufacturing Company. Hydroxy and oxo fluorinated amine derivatives. 4,084,050, Cl. 544-87.000.
Pearlman, Donald, to Eastman Kodak Company. Beta-alumina composites and methods for producing them. 4,083,919, Cl. 264-332.000.
Pearson, Durk J.: *See—*
Bohn, Jack R.; and Pearson, Durk J., 4,083,604, Cl. 299-4.000.
Pedersen, Daniel James: *See—*
Arter, Nelson Kay; Hammond, Clarence Howard; Pedersen, Daniel James; and Prahl, Marvin Edward, 4,084,116, Cl. 318-6.000.
Pedersen, Herbert N.: *See—*
Day, Clifford K.; and Pedersen, Herbert N., 4,083,225, Cl. 73-19.000.
Peer, John Charles, to RCA Corporation. Circuit for correcting setup error in a color television receiver. 4,084,115, Cl. 315-371.000.
Pelletier, Henri, to Raymond Lee Organization, Inc., The, a part interest. Studded boots for firefighters. 4,083,126, Cl. 36-67.00D.
Pemsler, J. Paul: *See—*
Hubred, Gale L.; Kust, Roger N.; Natwig, David L.; and Pemsler, J. Paul, 4,083,915, Cl. 423-24.000.
Penner, Wayne A., to Mobil Oil Corporation. System for recording and processing seismic reflection signals. 4,084,151, Cl. 340-15.5DP.
Pereira, Lawrence William, to International Business Machines Corporation. Image data remapping system. 4,084,195, Cl. 358-280.000.
Perfection Corporation: *See—*
Volgstadt, Frank R.; and Passerell, David P., 4,083,583, Cl. 285-55.000.
Perkin-Elmer Corporation, The: *See—*
Hartigan, Martin Joseph; and Wilson, Francis Paul, 4,083,702, Cl. 55-67.000.
Schwartz, Arnold, 4,084,246, Cl. 364-510.000.
Scott, Larkin B., 4,084,248, Cl. 364-571.000.
Perlmooser Zementwerke A.G.: *See—*
Kwech, Ludwig; and Jung, Fritz, 4,083,730, Cl. 106-89.000.
Perry, Francis James: *See—*
Alt, Richard Curtis; and Perry, Francis James, 4,084,164, Cl. 346-75.000.
Perry, Roger L.: *See—*
Nissen, Warren I.; and Perry, Roger L., 4,083,104, Cl. 30-47.000.
Peters, Petrus Jacobus,Maria: *See—*
Stoffels, Jacobus; Bluekens, Adrianus Ambosius Johannes; and Peters, Petrus Jacobus,Maria, 4,084,180, Cl. 358-55.000.
Petersen, Svend Aage: *See—*
Wester, Thomas Joseph; and Petersen, Svend Aage, 4,083,279, Cl. 83-347.000.
Petitpierre, Jean Claude, to Ciba-Geigy Corporation. Sulfonylamidino aminobenzaldehyde compounds. 4,083,866, Cl. 260-556.00B.
Petocz, Lujza E.: *See—*
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Szirt nee Kiszelly, Eniko; Kosoczky, Ibolya; and Petocz, Lujza E., 4,083,978, Cl. 424-250.000.
Petro-Data C.A.: *See—*
Rankin, Emmitt Edward, 4,083,401, Cl. 166-250.000.
Petro-Tex Chemical Corporation: *See—*
Foster, Alan W.; and Besozzi, Alfio J., 4,083,887, Cl. 260-680.00E.
Purdy, Charles C., 4,083,884, Cl. 260-669.00A.
Petroll, Hans Werner: *See—*
Wolf, Karlheinz; Nonn, Konrad; Hornle, Reinhold; and Petroll, Hans Werner, 4,083,689, Cl. 8-85.00B.
Petropoulos, Nick; and Holt, William G., to Frontier Manufacturing, Inc. Solid state watch with single time and date selector button. 4,083,175, Cl. 58-4.00A.
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Korovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich. Single ply hosiery welt and method of attachment. 4,083,204, Cl. 66-178.00R.
Petry, Basil E., to Baker Perkins Inc. Food processing oven system. 4,083,353, Cl. 126-21.00R.
Petry, Stanton H., to Cory Food Services, Inc. Multipurpose beverage brewer structure. 4,083,294, Cl. 99-279.000.

Petterson, Tor H.: *See—*
Kelly, L. Thomas; Beachler, Robert R., Jr.; and Petterson, Tor H., 4,083,364, Cl. 128-2.00H.
Peugh, H. Mark. Loud speaker apparatus. 4,083,426, Cl. 181-156.000.
Pey, Raul. Fundamental armor module in breakwater net linked system. 4,083,190, Cl. 61-4.000.
Pfarrawaller, Erwin, to Sulzer Brothers Limited. Warp beam. 4,083,513, Cl. 242-118.600.
Pfarrwaller, Erwin, to Sulzer Brothers Limited. Coupling for securing a heddle frame to a drive lifter. 4,083,385, Cl. 139-59.000.
Pfau, Irwin B.: *See—*
Gilbert, Russell T.; and Pfau, Irwin B., 4,083,903, Cl. 264-40.300.
Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,083,963, Cl. 424-117.000.
Phelps, Donald Roy: *See—*
Fallon, John Joseph, Jr.; Blair, Joe Bob; and Phelps, Donald Roy, 4,083,398, Cl. 165-66.000.
Philip Morris Incorporated: *See—*
Thatcher, Richard Eugene, 4,083,499, Cl. 241-24.000.
Phillips Fibers Corporation: *See—*
Lynn, James R., 4,083,593, Cl. 294-97.000.
Phillips, Nolan B.: *See—*
Braswell, James L.; Covington, Cecil E.; Phillips, Nolan B.; Tomerlin, Reggie J.; and Wohlfeld, Robert M., 4,083,656, Cl. 416-226.000.
Phillips Petroleum Company: *See—*
Cole, Clinie E., 4,083,669, Cl. 425-222.000.
Thomas, Stephen P., 4,084,091, Cl. 250-302.000.
Philpot, Van B., Jr. Blood viscosity determination device. 4,083,363, Cl. 128-2.00G.
Pi, Shing Chou: *See—*
Long, Gerald Bernard; Mitchell, Ralph Charles; and Pi, Shing Chou, 4,084,152, Cl. 340-166.00R.
Piccone, Dante Edmond; and Somos, Istvan, to General Electric Company. Adjustable overvoltage protected circuit for high power thyristors. 4,084,207, Cl. 361-91.000.
Pico Safe Stairs Co.: *See—*
Mulitz, Lewis, 4,083,536, Cl. 256-47.000.
Pierce, Timothy E.: *See—*
Orso, Francis L.; and Pierce, Timothy E., 4,083,728, Cl. 106-52.000.
Pierre Fabre S.A.: *See—*
Dussourdd'Hinterland, Lucien; Pradayrol, Lucien; Durand, Jacques; and Normier, Gerard, 4,083,961, Cl. 424-95.000.
Pike, Bernard T.: *See—*
Hebert, Roger T.; Pike, Bernard T.; McCarthy, Charles E.; and Shea, Richard J., 4,084,112, Cl. 313-222.000.
Pillsbury Company, The: *See—*
Mikkelson, Marvin O.; and Rasmus, Boyd R., 4,084,013, Cl. 426-601.000.
Pinter, Henry J. Brake disc with anti-oxidation peripheral covering. 4,083,434, Cl. 188-73.200.
Piorkow, Alfred: *See—*
Kocher, Robert C.; and Piorkow, Alfred, 4,083,629, Cl. 350-285.000.
Pitney-Bowes, Inc.: *See—*
Beck, Christian A.; and Ross, William A., 4,083,553, Cl. 271-4.000.
Conti, Joseph A., 4,084,242, Cl. 364-466.000.
Irvine, Robert; and Luperti, Harry E., 4,083,555, Cl. 271-10.000.
Schubert, Keith E., 4,083,262, Cl. 74-436.000.
Pitt, Leland S.: *See—*
Large, George B.; and Pitt, Leland S., 4,083,970, Cl. 424-200.000.
Pizzuti, Donato F.; and Lippert, Irving S., to Polaroid Corporation. Flash unit diffuser mechanism for photographic cameras. 4,084,168, Cl. 354-126.000.
Plasson Maagan Michael Industries Ltd.: *See—*
Leczycki, Moshe, 4,083,587, Cl. 285-343.000.
Platt Saco Lowell Limited: *See—*
Lane, Robert; and Whiteley, John, 4,083,169, Cl. 57-34.00R.
Platte, Friedrich; and Wiedemann, Wolfgang, to Wasagchemie GmbH. Process for the compression of black powder. 4,083,912, Cl. 264-120.000.
Plaunt & Anderson Company, Inc.: *See—*
Anway, Allen R., 4,083,229, Cl. 73-40.50A.
Pleasanton, Roger W.: *See—*
Goff, Randall; Radbill, John M.; and Pleasanton, Roger W., 4,083,250, Cl. 73-352.000.
Plessey Handel und Investments A.G.: *See—*
Forrest, Nicholas Barnett, 4,084,210, Cl. 361-212.000.
Podhora, Ida: *See—*
Berger, Patricia L.; and Podhora, Ida, 4,083,453, Cl. 206-565.000.
Pohlemann, Heinz; Gausepohl, Hermann; and Naarmann, Herbert, to BASF Aktiengesellschaft. Coating processes, compositions and substrates coated with maleic anhydride copolymers having the anhydride moieties reacted with hydrozine or its derivatives. 4,083,835, Cl. 260-79.50C.
Pohlemann, Heinz: *See—*
Naarmann, Herbert; and Pohlemann, Heinz, 4,084,048, Cl. 526-260.000.
Pola, Carlo A. Electrical wire attachment. 4,083,532, Cl. 254-134.3FT.
Polaroid Corporation: *See—*
Pizzuti, Donato F.; and Lippert, Irving S., 4,084,168, Cl. 354-126.000.
Scholz, Donald T., 4,083,517, Cl. 242-201.000.
Stella, Joseph A., 4,084,171, Cl. 354-317.000.
Polizzano, Anita, executrix: *See—*
Polizzano, Fred F., deceased; Stein, Dimitri R.; and Ziemek, Gerhard, 4,083,484, Cl. 228-130.000.
Polizzano, Fred F., deceased (by Polizzano, Anita, executrix); Stein, Dimitri R.; and Ziemek, Gerhard, to Kabel-und Metallwerke Gutehoffnungshutte AG. Process and apparatus for manufacturing flexible shielded coaxial cable. 4,083,484, Cl. 228-130.000.
Pollich, Gerhard: *See—*
Schilling, Paul; and Pollich, Gerhard, 4,083,556, Cl. 271-204.000.
Polysius AG: *See—*
Ritzmann, Horst; Thiemeyer, Heinz; Schepers, Georg; and Goldmann, Wolf, 4,083,676, Cl. 432-14.000.
Pommer, Ernst-Heinrich; Hagen, Helmut; and Fleig, Helmut, to BASF Aktiengesellschaft. 2-Trichloromethyl-1,3,4-thiadiazole. 4,083,986, Cl. 424-270.000.
Pont-a-Mousson S.A.: *See—*
Santy, Jean; Hochain, Etienne; and Schneider, Andre, 4,083,529, Cl. 251-175.000.
Porazhinsky, Igor Antonovich; Obolonsky, Alexei Pavlovich; Ivaschenko, Anatoly Grigorievich; Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich. Cathode assembly of electron beam welding gun. 4,084,077, Cl. 219-121.0EB.
Porazhinsky, Igor Antonovich: *See—*
Istomin, Evgeny Ivanovich; Strekal, Leonid Pavlovich; Ivanenko, Alexandr Fedorovich; Vasiliev, Adolf Alfonsovich; Zhivaga, Leonid Ignatievich; Nazarenko, Oleg Kuzmich; Porazhinsky, Igor Antonovich; and Zhdanov, Jury Nikolaevich, 4,084,076, Cl. 219-121.0EB.
Porter, Warren W.: *See—*
McNiece, Reginald C.; and Porter, Warren W., 4,083,616, Cl. 339-45.00M.
Portescap: *See—*
Stawiski, Wladyslaw, 4,083,222, Cl. 73-6.000.
Portner, Peer M.; and LaForge, David H., to Andros Incorporated. Method and apparatus for pulmonary function analysis. 4,083,367, Cl. 128-2.070.
Pospisil, Frantisek; Skoda, Stanislav; Esner, Stanislav; Tyl, Miroslav; Mikulecky, Karel; and Jiskra, Miloslav, to Vyzkumny ustav bavlnarsky. Grooved, yarn-distributing traversing cylinders in textile machines. 4,083,507, Cl. 242-43.200.
PPG Industries, Inc.: *See—*
Chandler, Charles M., 4,084,005, Cl. 424-337.000.
Jensen, Thomas H., 4,083,711, Cl. 65-346.000.
Krupp, Myron J.; Gacesa, Gerald R.; and Knudtson, John P., 4,083,762, Cl. 204-181.00R.
Muraco, John M.; Hege, Lonnie V.; and Miller, David G., 4,083,932, Cl. 423-210.000.
Pradayrol, Lucien: *See—*
Dussourdd'Hinterland, Lucien; Pradayrol, Lucien; Durand, Jacques; and Normier, Gerard, 4,083,961, Cl. 424-95.000.
Prahl, Marvin Edward: *See—*
Arter, Nelson Kay; Hammond, Clarence Howard; Pedersen, Daniel James; and Prahl, Marvin Edward, 4,084,116, Cl. 318-6.000.
Presset, Rene: *See—*
Heckel, Alain; and Presset, Rene, 4,083,242, Cl. 73-194.00B.
Priepke, Edward H.: *See—*
Lindblom, Curtis H.; Shriver, Joe E.; Wagstaff, Robert A.; and Priepke, Edward H., 4,083,167, Cl. 56-98.000.
Priestley, Robert Joseph, to Dorr-Oliver Incorporated. Beneficiation of phosphate rock. 4,083,929, Cl. 423-167.000.
Procter & Gamble Company, The: *See—*
Francis, Marion David, 4,083,972, Cl. 424-204.000.
Grabenstetter, Robert John; and Gray, John Augustus, III, 4,083,955, Cl. 424-49.000.
Shelton, David Lee, 4,083,956, Cl. 424-66.000.
Wise, Rodney Mahlon; and Derstadt, Donna M., 4,083,813, Cl. 252-526.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Demarcq, Michel, 4,083,899, Cl. 260-981.000.
Proefrock, Paul R., to Sargent & Greenleaf, Inc. Rotary disc tumbler cylinder lock. 4,083,212, Cl. 70-366.000.
Pryde, Everett H.: *See—*
Frankel, Edwin N.; and Pryde, Everett H., 4,083,816, Cl. 260-31.20R.
Psaar, Hubertus, to Bayer Aktiengesellschaft. Printing inks for transfer printing. 4,083,680, Cl. 8-2.50A.
Psaltis, Demetri: *See—*
Casasent, David Paul; and Psaltis, Demetri, 4,084,255, Cl. 364-822.000.
Pugin, Andre; and Wiese, Volkhard, to Ciba-Geigy Corporation. Process for the dyeing of thermoplastics. 4,083,687, Cl. 8-42.00D.
Puhr-Westerheide, Jorg, to MTU Motoren-und Turbinen-Union Munchen GmbH. Electrolytic precision drilling device and process. 4,083,760, Cl. 204-129.550.
Pullman Berry Company: *See—*
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,539, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,540, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,541, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,542, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,543, Cl. 266-225.000.

Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,544, Cl. 266-225.000.
Pullman Incorporated: *See—*
Yacura, Stephen B., 4,083,119, Cl. 34-105.000.
PUMA-Sportschuhfabriken Rudolf Dassler KG: *See—*
Benseler, Hans; and Schaefer, Horst, 4,083,125, Cl. 36-32.00R.
Puppolo, Henry Francis: *See—*
Cunningham, John Joseph; Welch, Martin Jeffrey; and Puppolo, Henry Francis, 4,083,490, Cl. 237-1.00A.
Purdue Frederick Company, The: *See—*
Cohen, Sasson; and Fisher, Abraham, 4,083,985, Cl. 424-267.000.
Purdy, Charles C., to Petro-Tex Chemical Corporation. Calcium oxide modified zinc ferrite oxidative dehydrogenation catalysts and use. 4,083,884, Cl. 260-669.00A.
Putzke, Dwayne H.: *See—*
Harvey, Ronald B.; Strunc, Gerald R.; and Putzke, Dwayne H., 4,084,099, Cl. 250-548.000.
Quadbeck-Seeger, Hans-Juergen, to BASF Aktiengesellschaft. Process for preparation of 5-cyanopyrid-6-ones. 4,083,849, Cl. 260-294.900.
Quaker Oats Company, The: *See—*
Anderson, Hugh C., 4,083,817, Cl. 260-38.000.
Quattrini, Victor L.: *See—*
Albertine, Robert J.; Blomstedt, John W.; Edfors, John E.; Quattrini, Victor L.; and Yoshida, Paul S., 4,084,250, Cl. 364-708.000.
Quinn, Edwin J.: *See—*
Dieck, Ronald L.; and Quinn, Edwin J., 4,083,820, Cl. 260-2.5FP.
R. A. Lister & Company Limited: *See—*
Morris, Alberto Jorge, 4,083,330, Cl. 123-32.00B.
R.E. Ingham & Co., Limited: *See—*
Ingham, Robert Edward, 4,083,390, Cl. 144-136.00R.
Raasch, Hans, to W. Schlafhorst & Co. Devices for replacing the sliver containers in a rotor spinning machine. 4,083,170, Cl. 57-34.00R.
Raaz, Paul John. Fuel control device for internal combustion engine. 4,083,267, Cl. 74-860.000.
Rabel, Imre: *See—*
Ronden, Clifford P.; and Rabel, Imre, 4,083,918, Cl. 264-297.000.
Rabenecker, Horst: *See—*
Eckstein, Wolfgang; and Rabenecker, Horst, 4,083,226, Cl. 73-23.000.
Rabus, Friedrich: *See—*
Grather, Gunter; and Rabus, Friedrich, 4,083,347, Cl. 123-148.00E.
Radbill, John M.: *See—*
Goff, Randall; Radbill, John M.; and Pleasanton, Roger W., 4,083,250, Cl. 73-352.000.
Radiochemical Centre Limited, The: *See—*
Monks, Reginald; and Riley, Anthony Leonard Mark, 4,083,947, Cl. 424-1.000.
Radtke, Volker: *See—*
Dimroth, Peter; Kurtz, Walter; Radtke, Volker; and Juenemann, Werner, 4,083,686, Cl. 8-41.00R.
Raevich, Vladimir Konstantinovich: *See—*
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Korovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich, 4,083,204, Cl. 66-178.00R.
Raheb, William J. Portable survey system. 4,084,081, Cl. 235-52.000.
Rairden, John R , III, to General Electric Company. Process of applying protective aluminum coatings for non-super-strength nickel-chromium alloys. 4,084,025, Cl. 427-229.000.
Rajagopal, Ramamoorthy, to Johnson Controls, Inc. Solar energy apparatus. 4,083,356, Cl. 126-270.000.
Ramanathan, Visvanathan, to Ciba-Geigy AG. Disazo pyrazolyl dyed polyester fibers. 4,083,688, Cl. 8-41.00C.
Ramanathan, Visvanathan: *See—*
Desai, Nalin Binduprasad; and Ramanathan, Visvanathan, 4,084,053, Cl. 544-184.000.
Ramm, Claus, to Siemens Aktiengesellschaft. Liquid ring compressor including a calibrated gas input opening. 4,083,658, Cl. 417-68.000.
Rankin, Emmitt Edward, to Gearhart-Owen Industries, Inc.; and Petro-Data C.A. Apparatus and methods for testing earth formations. 4,083,401, Cl. 166-250.000.
Rasmus, Boyd R.: *See—*
Mikkelson, Marvin O.; and Rasmus, Boyd R., 4,084,013, Cl. 426-601.000.
Rasmussen, Ole-Bendt. High strength laminate. 4,084,028, Cl. 428-105.000.
Rath, Richard W. Fastener for hanging pictures. 4,083,525, Cl. 248-496.000.
Raue, Roderich: *See—*
Buysch, Hans-Josef; Ziemek, Peter; and Raue, Roderich, 4,083,870, Cl. 260-570.00D.
Rauer, Manfred: *See—*
Scheer, Erich; and Rauer, Manfred, 4,084,104, Cl. 307-141.000.
Ravesteyn, Cornelis Jan; de Koning, Jan; and Wolters, Tjako Aaldrik, to Ballast-Nedam Groep N.V. Swingable water and slush tube assembly for suction dredgers. 4,083,133, Cl. 37-72.000.
Raychem Corporation: *See—*
Clyde, A. Lofdahl, 4,083,902, Cl. 264-26.000.
Raymond Lee Organization, Inc., The: *See—*
Baker, Sandra, 4,083,328, Cl. 119-158.000.
McBeth, John L., 4,083,601, Cl. 297-184.000.
Palm, Leonard R., 4,083,546, Cl. 269-152.000.
Pelletier, Henri, 4,083,126, Cl. 36-67.00D.
Raytheon Company: *See—*
Slawsby, Nathan, 4,084,158, Cl. 343-5.0CM.
Razdymakha, Pavela Semenovich: *See—*
Suslin, Vladimir Isaakovich; Dubovik, Alexandr Ivanovich; Makeev, Boris Anatolievich; Razdymakha, Pavela Semenovich; and Lekarev, Zinovy Abramovich, 4,083,767, Cl. 204-224.00M.
RCA Corporation: *See—*
Aschwanden, Felix; and Bart, Theodor Ernst, 4,084,177, Cl. 358-25.000.
Gorog, Istvan; and Williams, Brown F., 4,084,188, Cl. 358-199.000.
Hewitt, John Norman; and Christiano, Victor, 4,083,710, Cl. 65-40.000.
Peer, John Charles, 4,084,115, Cl. 315-371.000.
Reed, Lamar Nelson; and Khalifeh, Jacob Richard, 4,084,070, Cl. 178-69.00G.
Smith, Theodore Dennis, 4,084,071, Cl. 200-5.00A.
Tults, Juri, 4,084,127, Cl. 328-134.000.
Wittlinger, Harold Allen, 4,084,156, Cl. 340-237.00S.
Reade, Richard F., to Corning Glass Works. Method for making glass-ceramics with ferrimagnetic surfaces. 4,083,709, Cl. 65-32.000.
Reade, Richard F.: *See—*
Andrus, Ronald L.; and Reade, Richard F., 4,083,727, Cl. 106-39.700.
Readymix Cement Engineering GmbH & Co. KG: *See—*
Bade, Erich, 4,083,679, Cl. 432-99.000.
Reckitt & Colman Products Limited: *See—*
Smith, Thomas F.; and Timmons, Alban, 4,083,697, Cl. 44-7.00D.
Record Taxameter AB: *See—*
Borgstrom, Lennart, 4,083,489, Cl. 235-95.00C.
Reed, Lamar Nelson; and Khalifeh, Jacob Richard, to RCA Corporation. Overcurrent protection circuit. 4,084,070, Cl. 178-69.00G.
Reed, Thomas K., Jr. Method of producing positive identification checks. 4,083,635, Cl. 355-77.000.
Regan, Joseph F.; and Regan, Robert R. Connector assembly. 4,083,162, Cl. 52-699.000.
Regan, Robert R.: *See—*
Regan, Joseph F.; and Regan, Robert R., 4,083,162, Cl. 52-699.000.
Reifers, Richard F.; and Lord, Henry A., to Diamond International Corporation. Apparatus for making high strength open bottom packaging tray. 4,083,670, Cl. 425-398.000.
Rempes, Paul E., Jr.: *See—*
Insley, Robert H.; Nemeth, Joseph; and Rempes, Paul E., Jr., 4,083,905, Cl. 264-44.000.
Renaudin, Michel: *See—*
Bernard, Jacques; and Renaudin, Michel, 4,083,785, Cl. 210-195.00S.
Rennick, Robert D.: *See—*
Kohl, Arthur L.; Rennick, Robert D.; and Savinsky, Martin W., 4,083,930, Cl. 423-189.000.
Renth, Ernst-Otto: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,083,980, Cl. 424-251.000.
Resch, Alois Ruppert, to Bunker Ramo Corporation. Tool for stripping the insulation from electrical conductors. 4,083,269, Cl. 81-9.510.
Research Corporation: *See—*
Erwin, Robert, 4,083,864, Cl. 260-500.50H.
Ouyang, Paul Hsiung, 4,084,175, Cl. 357-55.000.
Research Development Corporation: *See—*
Osborn, John J., 4,083,245, Cl. 73-207.000.
RFD Inflatables Limited: *See—*
Martin, Michael Dudley, 4,083,070, Cl. 9-11.00A.
Rhee, Dennis W.: *See—*
Srivastava, Gopal K.; and Rhee, Dennis W., 4,084,178, Cl. 358-28.000.
Rhone-Poulenc Industries: *See—*
Arpin, Rene; and Tissot, Philippe, 4,084,035, Cl. 428-352.000.
Joubert, Daniel, 4,083,795, Cl. 252-99.000.
Rhoton, Albert L.: *See—*
Goodale, Clark W.; Morgan, Charles W.; and Rhoton, Albert L., 4,084,030, Cl. 428-141.000.
Richardson Company, The: *See—*
Muzyczko, Thaddeus M.; and Fieder, Donald W., 4,083,724, Cl. 96-115.00R.
Richardson, Walker L. Cookie press. 4,083,666, Cl. 425-183.000.
Rickards, Michael A., to Rohr Industries, Incorporated. Passive stern seal for air cushion vehicle. 4,083,425, Cl. 180-127.000.
Rickman, Tommy L., to Tennessee River Pulp & Paper Company. Rotary kiln. 4,083,678, Cl. 432-61.000.
Ricoh Company, Ltd.: *See—*
Furukawa, Masamichi; and Serikawa, Yoshio, 4,084,219, Cl. 363-21.000.
Ridyard, Denis Robert Annesley: *See—*
Manson, John Stuart; and Ridyard, Denis Robert Annesley, 4,083,858, Cl. 260-373.000.
Riegler, Herbert: *See—*
Schuch, Albert; Hohenecker, Harald; Riegler, Herbert; and Weirich, Friedrich, 4,083,516, Cl. 242-193.000.
Rietveld, Frank P.: *See—*
Gilleland, Randall C.; and Rietveld, Frank P., 4,084,074, Cl. 219-69.00W.
Riley, Anthony Leonard Mark: *See—*
Monks, Reginald; and Riley, Anthony Leonard Mark, 4,083,947, Cl. 424-1.000.
Ring Around Products, Inc.: *See—*
Smith, Eldrew P., 4,083,537, Cl. 366-147.000.

Ripert, Roger L.: *See*—
Combes, Marvin G.; and Ripert, Roger L., 4,083,219, Cl. 72-352.000.
Ritt, Donald: *See*—
Fallon, John Joseph, Jr.; Blair, Joe Bob; and Phelps, Donald Roy, 4,083,398, Cl. 165-66.000.
Ritzmann, Horst; Thiemeyer, Heinz; Schepers, Georg; and Goldmann, Wolf, to Polysius AG. Method for heat treating fine-grain material. 4,083,676, Cl. 432-14.000.
Robbins, Murray: *See*—
Heller, Adam; Miller, Barry; and Robbins, Murray, 4,084,044, Cl. 429-111.000.
Robert, Andre, to Upjohn Company, The. Treatment of inflammatory diseases of the mammalian large intestine with cytoprotective prostaglandins. 4,083,998, Cl. 424-317.000.
Robert Bosch GmbH: *See*—
Bertling, Johannes-Gerhard; Zeller, Hans; and Brettschneider, Johannes, 4,083,338, Cl. 123-119.0EC.
Bertling, Johannes-Gerhard, 4,083,342, Cl. 123-124.00B.
Brettschneider, Johannes; and Bertling, Johannes-Gerhard, 4,083,341, Cl. 123-124.00B.
Eheim, Franz, 4,083,346, Cl. 123-137.0BD.
Grather, Gunter; and Rabus, Friedrich, 4,083,347, Cl. 123-148.00E.
Hofer, Gerald; Konrath, Karl; and Weiss, Otmar, 4,083,662, Cl. 417-499.000.
Schadlich, Fritz; and Schramm, Heribert, 4,083,571, Cl. 279-61.000.
Robertson, Robert H., to Ronbil Industries. Raisable topper. 4,083,596, Cl. 296-100.000.
Robinson, Ralph C., to General Time Corporation. Portable heating apparatus. 4,083,673, Cl. 431-87.000.
Rochla, Kurt, to Windmoller & Holscher. Apparatus for making stacks of plastics bags. 4,083,747, Cl. 156-510.000.
Rockwell International Corporation: *See*—
Kohl, Arthur L.; Rennick, Robert D.; and Savinsky, Martin W., 4,083,930, Cl. 423-189.000.
Rodewald, Paul G., to Mobil Oil Corporation. Alkylation with catalyst of graphite containing intercalated fluoride. 4,083,885, Cl. 260-671.00C.
Rodger, David: *See*—
Mander, Keith Anthony; Mitchell, Keith James; Kempster, Barry Arthur; and Rodger, David, 4,083,506, Cl. 242-25.00R.
Rodin, Sven-Erik: *See*—
Lepik, Toomas; and Rodin, Sven-Erik, 4,084,068, Cl. 174-138.00R.
Rogers, Robert C.; and Sustarsic, John D., to Koppers Company, Inc. One-spot coke quencher car. 4,083,753, Cl. 202-227.000.
Rohm and Haas Company: *See*—
Gambill, Richard L., 4,083,682, Cl. 8-15.000.
Kunin, Robert, 4,083,782, Cl. 210-32.000.
Yih, Roy Y.; Johnson, Wayne O.; and Kollman, Gerald E., 4,083,713, Cl. 71-92.000.
Rohr Industries, Incorporated: *See*—
Rickards, Michael A., 4,083,425, Cl. 180-127.000.
Romano, Paul L. Acoustic drape. 4,083,395, Cl. 160-84.00R.
Romco Pipe Testing, Inc.: *See*—
Rome, Daniel J., Sr.; and LaRussa, Salvador P., 4,083,230, Cl. 73-40.50R.
Rome, Daniel J., Sr.; and LaRussa, Salvador P., to Romco Pipe Testing, Inc. Tubing testing tool. 4,083,230, Cl. 73-40.50R.
Ronbil Industries: *See*—
Robertson, Robert H., 4,083,596, Cl. 296-100.000.
Roncon, Carlos Alberto Ferrari. Hydraulic valve lifter. 4,083,334, Cl. 123-90.350.
Ronden, Clifford P.; and Rabel, Imre, to Grandview Industries, Limited. Method for belling plastic pipe. 4,083,918, Cl. 264-297.000.
Roscoe, Colin; and Lucas, Kevin, to Electricity Council, The. Method for reducing sludge formation in the continuous production of iron by electrolysis of ferrous electrolyte. 4,083,759, Cl. 204-112.000.
Rosen, Sidney; and Bennett, Richard Nelson, to Rosen, Sidney; and National Instrument Company. Star-wheel indexing system for automatic filling machines. 4,083,389, Cl. 141-179.000.
Rosenberger, Edwin C., to Chem-Lawn Corporation. Spray gun. 4,083,497, Cl. 239-526.000.
Ross, William A.: *See*—
Beck, Christian A.; and Ross, William A., 4,083,553, Cl. 271-4.000.
Rossi, Pietro Paolo: *See*—
Siclari, Francesco; Rossi, Pietro Paolo; Leoni, Roberto; and De Gaetano, Mario, 4,083,833, Cl. 260-79.3MU.
Rossman, Robert A. Adjustable boot. 4,083,128, Cl. 36-97.000.
Rossmo, William. Container for medications and the like including locking device. 4,083,452, Cl. 206-533.000.
Rossow, Harold E.: *See*—
Drake, Stevens S.; and Rossow, Harold E., 4,083,890, Cl. 260-836.000.
Rostagno, Walter: *See*—
Chevalley, Janine; Rostagno, Walter; and Besson, Jean-Pierre, 4,084,011, Cl. 426-580.000.
Rote, Everett Arthur, to Xerox Corporation. Pneumatic system for solder leveling apparatus. 4,083,323, Cl. 118-6.000.
Roth, Stephen Anthony: *See*—
Schlotzhauer, Kenneth George; and Roth, Stephen Anthony, 4,084,187, Cl. 358-153.000.
Routien, John B.: *See*—
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,083,963, Cl. 424-117.000.
Royon, Jean: *See*—
Landon, Fred; Bonnemay, Maurice; Laverge, Jean-Pierre; Malaterre, Pierre; and Royon, Jean, 4,083,766, Cl. 204-195.00R.
Rozhkov, Vladimir Petrovich: *See*—
Tatkov, Viktor Arsentievich; Letov, Nikolai Nikolaevich; Sharapov, Boris Nikolaevich; and Rozhkov, Vladimir Petrovich, 4,083,647, Cl. 415-113.000.
Rozmanith, Anthony I. Display system adapted for philatelic materials. 4,083,137, Cl. 40-158.00R.
Rubin, Richard J.; and Hollis, Morton, to Boston Metal Products Sales Corporation. Protective strip assembly. 4,083,592, Cl. 293-71.00R.
Rubins, Harry L., to Ampex Corporation. Reel container. 4,083,449, Cl. 206-405.000.
Rudert, Wolfgang; and de Lazzer, Karlheinz, to Motoren-und Turbinen-Union Friedrichshafen GmbH. Cylinder head construction for an internal combustion engine. 4,083,333, Cl. 123-41.82R.
Rudolf, Peter: *See*—
Hack, Joachim; Himmelmann, Udo; Rudolf, Peter; Schulze-Berge, Klaus; and Meyer, Karl-Heinz, 4,084,201, Cl. 360-135.000.
Ruf, Erich, to Th. Goldschmidt AG. Metal compounds of monoesters of phosphoric acid. 4,083,860, Cl. 260-429.700.
Rumpf, Robert John, to Firestone Tire & Rubber Company, The. Independent redundant clutchless retractor. 4,083,512, Cl. 242-107.40A.
Runciman, Herbert Morrison, to Barr & Stroud Limited. Radiation scanning system. 4,084,092, Cl. 250-347.000.
Rupp, Charles C.; and Kissel, Ralph R., to United States of America, National Aeronautics and Space Administration. Tetherline system for orbiting satellites. 4,083,520, Cl. 244-167.000.
Russell, Anthony William; and Russell, Michael King, to Sperry-Sun, Inc. All angle borehole tool. 4,083,117, Cl. 33-313.000.
Russell, Michael King: *See*—
Russell, Anthony William; and Russell, Michael King, 4,083,117, Cl. 33-313.000.
Russell, Peter John: *See*—
Horne, David Smith; Talbot, Robert Eric; and Russell, Peter John, 4,083,877, Cl. 260-610.00D.
Ruyle, William V.: *See*—
Fisher, Michael H.; and Ruyle, William V., 4,083,984, Cl. 424-263.000.
Ryan, Kelly P., to Blair Manufacturing Company. Material disintegrating apparatus. 4,083,501, Cl. 241-101.00A.
Ryan, William J. Connection system for marine structures. 4,083,072, Cl. 14-69.500.
Rymarchyk, Nicholas M.: *See*—
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,539, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,540, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,541, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,542, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,543, Cl. 266-225.000.
Berry, William W.; Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,083,544, Cl. 266-225.000.
Ryser, Heinrich: *See*—
Zimmer, Christian; and Ryser, Heinrich, 4,084,133, Cl. 324-83.00A.
S.E.F.C.A.L. Societe d'Etudes, de Fabrication et de Commercialisation de Colorants Alimentaires: *See*—
Combe, Pierre; and Ladet, Jean, 4,083,779, Cl. 210-23.00H.
S I G Schweizerische Industrie-Gesellschaft: *See*—
Tuns, Joseph, 4,083,388, Cl. 141-172.000.
Sach, George Sidney: *See*—
Durant, Graham John; Ganellin, Charon Robin; and Sach, George Sidney, 4,083,983, Cl. 424-263.000.
Sado, Yukio, to Yoshida Kogyo K.K. T-Shaped structural joint. 4,083,641, Cl. 403-260.000.
St. Anne's Board Mill Company Limited: *See*—
Newns, Michael David; and Attwood, Brian William, 4,083,750, Cl. 162-317.000.
St. Denis, Robert A., to Harris Corporation. Method and apparatus for on-line tipping of inserts. 4,083,551, Cl. 270-55.000.
Saito, Shigeru; Sasaki, Yutaka; Nakamura, Tomio; Moriya, Kiyoshi; Nakamura, Yoshimi; and Utsumi, Hiroshi, to Nitto Chemical Industry Co., Ltd. Catalyst for use in and process for preparing acrylonitrile. 4,083,804, Cl. 252-432.000.
Sakakibara, Naoji: *See*—
Tsubota, Haruo; Takayama, Katsuki; Sakakibara, Naoji; and Hashimoto, Nobuyuki, 4,084,072, Cl. 200-83.00L.
Sakashita, Nobuyuki: *See*—
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, 4,083,714, Cl. 71-94.000.
Sakurai, Shigenori; Murakami, Shigeo; and Torii, Masanori, to Toyota Jidosha Kogyo Kabushiki Kaisha. System for controlling vaporized hydrocarbon of fuel for a gasoline engine. 4,083,344, Cl. 123-136.000.
Salomon, Georges Pierre Joseph: *See*—
Collombin, Andre Marcel; and Salomon, Georges Pierre Joseph, 4,083,129, Cl. 36-117.000.
Salto, Rinaldo, to Ing. C. Olivetti & C., S.p.A. Removable cartridge for an inked ribbon and ribbon feed mechanism for printing machines. 4,083,444, Cl. 197-151.000.
Sam Garvin & Company: *See*—
Garvin, George R., 4,083,314, Cl. 109-50.000.

Sampson, William B.: *See—*
Hilal, Sadek K.; Sampson, William B.; and Leonard, Edward F., 4,084,209, Cl. 361-141.000.
Sanders, David C., to Great Lakes Chemical Corporation. Process for producing metal bromides. 4,083,942, Cl. 423-497.000.
Sandoz, Inc.: *See—*
Houlihan, William J.; Mattner, Paul G.; and Smith, Joseph A., 4,083,871, Cl. 260-570.0AB.
Houlihan, William J.; and Nadelson, Jeffrey, 4,083,997, Cl. 424-316.000.
Nadelson, Jeffrey, 4,084,003, Cl. 424-330.000.
Sandoz Ltd.: *See—*
Burkhard, Hermann; and Entschel, Roland, 4,083,842, Cl. 260-156.000.
Frei, Alfred; and Schweizer, August, 4,083,681, Cl. 8-7.000.
Schoefberger, Georg, 4,083,840, Cl. 260-153.000.
Sandrock, Harold E.; Leen, Morris W.; and Stark, Edward W., to Technicon Instruments Corporation. Cuvette and method of use. 4,083,638, Cl. 356-246.000.
Sandvig, Timothy C., to Minnesota Mining and Manufacturing Company. Method for rendering substrates resistant to abrasion. 4,084,021, Cl. 427-44.000.
Sano, Takezo; and Shimomura, Takatoshi, to Sumitomo Chemical Company, Limited. Method for manufacturing phosphorylated cellulose ester membranes for use in the separation or concentration of substances. 4,083,904, Cl. 264-41.000.
Santosusso, Thomas M., to Armstrong Cork Company. Process for the preparation of granular urethane-urea polymers. 4,083,831, Cl. 260-77.5AA.
Santy, Jean; Hochain, Etienne; and Schneider, Andre, to Pont-a-Mousson S.A. Butterfly valve. 4,083,529, Cl. 251-175.000.
Sargent & Greenleaf, Inc.: *See—*
Proefrock, Paul R., 4,083,212, Cl. 70-366.000.
Sasaki, Shiro: *See—*
Mori, Mamoru; Sasaki, Shiro; and Hachisuka, Sadao, 4,083,602, Cl. 297-389.000.
Sasaki, Yutaka: *See—*
Saito, Shigeru; Sasaki, Yutaka; Nakamura, Tomio; Moriya, Kiyoshi; Nakamura, Yoshimi; and Utsumi, Hiroshi, 4,083,804, Cl. 252-432.000.
Sato, Eiichi: *See—*
Nakatsubo, Toshio; Nishikawa, Masaji; and Sato, Eiichi, 4,083,720, Cl. 96-1.50R.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Cartridge-type ink supply device for labeling machines. 4,083,300, Cl. 101-103.000.
Satomo, Kouji: *See—*
Hisano, Akio; Ogura, Shohachi; and Satomo, Kouji, 4,083,819, Cl. 260-2.50R.
Saucier, Ernest R. Window insulating apparatus. 4,083,148, Cl. 49-125.000.
Sauter, Gerald Francis: *See—*
Fleming, David Leslie; Jenson, Leslie Matthew; and Sauter, Gerald Francis, 4,084,260, Cl. 364-900.000.
Savinsky, Martin W.: *See—*
Kohl, Arthur L.; Rennick, Robert D.; and Savinsky, Martin W., 4,083,930, Cl. 423-189.000.
Sawada, Yoshio: *See—*
Kawasaki, Masahiro; Tano, Eiichi; and Sawada, Yoshio, 4,084,166, Cl. 354-23.00D.
Sberze, Piero: *See—*
Doria, Gianfederico; Giraldi, Pier Nicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,083,953, Cl. 424-45.000.
Schadlich, Fritz; and Schramm, Heribert, to Robert Bosch GmbH. Drill chuck arrangement. 4,083,571, Cl. 279-61.000.
Schaefer, Horst: *See—*
Benseler, Hans; and Schaefer, Horst, 4,083,125, Cl. 36-32.00R.
Schaffner, Donald L.; and Miller, James L., to Fiat-Allis Construction Machinery, Inc. Master link assembly for crawler tractor track assembly. 4,083,611, Cl. 305-54.000.
Scheer, Erich; and Rauer, Manfred, to Kieninger & Obergfell, Fabrik fur technische Laufwerke und Apparate. Electric signaling arrangement for delivery of waking signals. 4,084,104, Cl. 307-141.000.
Schenectady Chemicals, Inc.: *See—*
Bowers, Lewis H.; Jankowski, Raymond E.; and Sullivan, John L., 4,083,700, Cl. 51-298.00A.
Bowers, Lewis H.; Jankowski, Raymond E.; and Sullivan, John L., 4,083,891, Cl. 260-846.000.
Schenk, Jakob: *See—*
Leowald, Karl-Friedrich; and Schenk, Jakob, 4,084,206, Cl. 361-90.000.
Schenkel, Albert: *See—*
Leuenberger, Urs; and Schenkel, Albert, 4,084,160, Cl. 343-16.00M.
Schepers, Georg: *See—*
Ritzmann, Horst; Thiemeyer, Heinz; Schepers, Georg; and Goldmann, Wolf, 4,083,676, Cl. 432-14.000.
Scherbing, Frank J., to Chicago Lock Co. Axial split-pin tumbler-type lock mechanism for a handle lock. 4,083,211, Cl. 70-363.000.
Schexnayder, Lawrence Francis, to Caterpillar Tractor Co. Brake cooling circuit. 4,083,469, Cl. 214-82.000.
Schilling, Paul; and Pollich, Gerhard, to Heidelberger Druckmaschinen Aktiengesellschaft. Sheet delivery for rotary printing machines. 4,083,556, Cl. 271-204.000.
Schindler, Hermann; and Zimmermann, Wolfgang, to Hoechst Aktiengesellschaft. Process for the manufacture of open-pore shaped articles of polyvinyl alcohol-acetal sponge. 4,083,906, Cl. 264-49.000.
Schippers, Heinz; and Hessenbruch, Rolf, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Methods for production of filaments from foils. 4,083,914, Cl. 264-147.000.
Schlegel, Albert, to Hoechst Aktiengesellschaft. Process for preparing $AlH_3(PO_4)_2 \cdot 3H_2O$. 4,083,933, Cl. 423-308.000.
Schlick, Helmut, to Dr. Johannes Heidenhain GbmH, Firma. Electronic counting system with keyboard input. 4,084,249, Cl. 364-705.000.
Schloemann Siemag Aktiengesellschaft: *See—*
Berz, Gerhard, 4,083,218, Cl. 72-201.000.
Schlotzhauer, Kenneth George; and Roth, Stephen Anthony, to Tektronix, Inc. Circuit for accurately extracting the synchronization information contained within a composite video waveform. 4,084,187, Cl. 358-153.000.
Schmidbaur, Hubert; and Fuller, Hans-Jurgen, to Hoechst Aktiengesellschaft. Trimethyl phosphinimino dimethyl methylene phosphorane and process for making it. 4,083,875, Cl. 260-606.50P.
Schmidt, Heribert, to Siemens Aktiengesellschaft. Motor-driven liquid-ring pump including a liquid separator. 4,083,659, Cl. 417-68.000.
Schmitz, Heribert; and Stocklin, Walter, to Solco Basel AG. Heterologous arterial transplants. 4,083,066, Cl. 3-1.400.
Schneider, Andre: *See—*
Santy, Jean; Hochain, Etienne; and Schneider, Andre, 4,083,529, Cl. 251-175.000.
Schneider, Keith M. Infant thermal shield. 4,083,064, Cl. 2-69.500.
Schnellmann, Klaus; Kilchenmann, Walter; and Hauser, Hans Ulrich, to Bucher-Guyer AG Maschinenfabrik. Apparatus for manufacturing a foamed article formed or pre-expanded polystyrene. 4,083,665, Cl. 425-144.000.
Schnuchel, Gunther: *See—*
Bruns, Ludwig; Schnuchel, Gunther; and Weber, Joachim, 4,083,876, Cl. 260-609.00R.
Schoefberger, Georg, to Sandoz Ltd. Disazo dyes having a 6-amino or substituted triazinylamino-1-hydroxynaphthalene-3-sulfonic acid coupling component radical. 4,083,840, Cl. 260-153.000.
Scholz, Donald T., to Polaroid Corporation. Reversible drive transmission for strip handling systems. 4,083,517, Cl. 242-201.000.
Schonfeld, Steven Edward; Bohm, Georg Gustav Anton; and Hayes, Michael William, to Firestone Tire & Rubber Company, The. Method for curing polyurethanes. 4,083,901, Cl. 264-25.000.
Schotten, Alfons, to Eberhard Hoesch & Sohne. Plate filter press with adjustable end plate. 4,083,298, Cl. 100-214.000.
Schramm, Heribert: *See—*
Schadlich, Fritz; and Schramm, Heribert, 4,083,571, Cl. 279-61.000.
Schroeder, Fred, to American Service Products, Inc. Jet perforator device. 4,084,078, Cl. 219-121.00P.
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, to Boehringer Ingelheim GmbH. Derivatives of quinazolone. 4,083,980, Cl. 424-251.000.
Schubert, Keith E., to Pitney-Bowes, Inc. Postage meter conversion apparatus. 4,083,262, Cl. 74-436.000.
Schubert, Robert W.; and Hassapis, Thomas J., to Armour-Dial, Inc. Dye system for soap and synthetic detergent bars. 4,083,796, Cl. 252-132.000.
Schubert & Salzer: *See—*
Konig, Reinhard; and Langer, Stefan, 4,083,171, Cl. 57-34.00R.
Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Artzt, Peter; Bausch, Albert; and Egbers, Gerhard, 4,083,173, Cl. 57-58.950.
Schuch, Albert; Hohenecker, Harald; Riegler, Herbert; and Weirich, Friedrich, to Vockenhuber, Karl; and Hauser, Raimund. Reel mounting for recording or reproducing apparatus. 4,083,516, Cl. 242-193.000.
Schuchman, Frederick E., Sr. Combination card holder and decorative element. 4,083,446, Cl. 206-38.000.
Schulz, Alfred: *See—*
Grodde, Karl-Heinz; and Schulz, Alfred, 4,083,790, Cl. 252-8.50C.
Schulze-Berge, Klaus: *See—*
Hack, Joachim; Himmelmann, Udo; Rudolf, Peter; Schulze-Berge, Klaus; and Meyer, Karl-Heinz, 4,084,201, Cl. 360-135.000.
Schumacher, Joseph C., to J. C. Schumacher Co. Process for the production of silicon of high purity. 4,084,024, Cl. 427-215.000.
Schundehutte, Karl-Heinz: *See—*
Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, 4,083,845, Cl. 260-180.000.
Schurch, Rudolf: *See—*
Aus der Au, Rudolf; and Schurch, Rudolf, 4,083,379, Cl. 137-495.000.
Schurr, George Alan; and Wildt, Hans-Achim Dietmar, to Du Pont de Nemours, E. I., and Company. Process for removing chloride impurities from TiO_2. 4,083,946, Cl. 423-613.000.
Schwabe, Willie Carl, to Oaden, Lois I. Technique for placing tensile elements in conduits. 4,083,533, Cl. 254-134.400.
Schwank, Bernd, to Schwank GmbH. Gas range. 4,083,355, Cl. 126-39.00J.
Schwank GmbH: *See—*
Schwank, Bernd, 4,083,355, Cl. 126-39.00J.
Schwartz, Arnold, to Perkin-Elmer Corporation, The. Pulse generator. 4,084,246, Cl. 364-510.000.
Schwartz, Hans; and Franz, Helmut, to Boehringer Ingelheim GmbH. Snap device for manually actuated liquid-atomizing pumps. 4,083,476, Cl. 222-321.000.
Schwarze, Werner; Merk, Wolfgang; and Binder, Volker, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler; and Henkel Kommandit- Gesellschaft auf Aktien (Henkel KGaA). N-2,3-Dihydroxy-

propyl-N-2-hydroxyalkyl-amine and its salts. 4,083,872, Cl. 260-584.00R.
Schweizer, August: *See*—
Frei, Alfred; and Schweizer, August, 4,083,681, Cl. 8-7.000.
Schwend, Gerald M. Ice fishing apparatus. 4,083,139, Cl. 43-16.000.
Schwuger, Milan Johann: *See*—
Jakobi, Gunter; Krings, Peter; Schwuger, Milan Johann; and Smolka, Heinz, 4,083,793, Cl. 252-99.000.
Scott, Larkin B., to Perkin-Elmer Corporation, The. Method and apparatus for error correction. 4,084,248, Cl. 364-571.000.
Scott, William J. Solar reflector collector. 4,083,358, Cl. 126-271.000.
Scragg, Robert L.; and Parker, Alfred B. Electrical power generation and storage system. 4,084,038, Cl. 429-19.000.
Scranton, Robert A.; and McGill, Thomas C., to United States of America, Navy. Highly electronegative $(SN)_x$ contacts to semiconductors. 4,084,172, Cl. 357-15.000.
Scruggs, Charles. Wheel cover locking device. 4,083,606, Cl. 301-37.0AT.
Seager, Harry: *See*—
Goudie, Alexander Crossan; Seager, Harry; and Fisher, Howard, 4,083,951, Cl. 424-44.000.
Seal, James D. Drag adjusting device for fishing reels. 4,083,233, Cl. 73-95.000.
Seaquist Valve Company, Div. of Pittway Corporation: *See*—
Nordstrom, Edward R.; and Ufferfilge, Roger K., 4,083,736, Cl. 156-73.100.
Sebenik, Roger Frank: *See*—
Lippman, Alfred; and Sebenik, Roger Frank, 4,083,923, Cl. 423-79.000.
Sebulsky, Raynor T.: *See*—
McKinney, Joel D.; Mitchell, Bruce R.; and Sebulsky, Raynor T., 4,083,807, Cl. 252-455.00Z.
Seiler, Claus Dietrich; and Vahlensieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Unsaturated silicon organic compounds containing keto groups. 4,083,861, Cl. 260-448.80R.
Sekiguchi, Takeshi, to Canon Kabushiki Kaisha. Color television camera. 4,084,179, Cl. 358-55.000.
Sekiguchi, Tsunetoshi; and Noguchi, Tsutomu, to Citizen Watch Co. Ltd. Watch case. 4,083,178, Cl. 58-88.00R.
Sekmakas, Kazys, to DeSoto, Inc. High solids coating compositions containing tetrahydric adduct. 4,083,892, Cl. 260-855.000.
Seliger, Dieter; and Das-Gupta, Arun-Kumar, to MTU Munchen GmbH. Apparatus for cranking the rotor of a turbo machine. 4,083,259, Cl. 74-191.000.
Selinko, George Joseph, to Motorola, Inc. Detachable mounting clip arrangement for miniature portable apparatus or the like. 4,083,481, Cl. 224-5.00H.
Serdi, Sergio: *See*—
Bornengo, Mario; Grego, Saverio; and Serdi, Sergio, 4,083,900, Cl. 260-984.000.
Serikawa, Yoshio: *See*—
Furukawa, Masamichi; and Serikawa, Yoshio, 4,084,219, Cl. 363-21.000.
Shaffer, Robert G.: *See*—
Herzl, Peter J.; and Shaffer, Robert G., 4,084,155, Cl. 340-210.000.
Shaner, Robert J. Bushing assembly. 4,083,580, Cl. 280-689.000.
Shanly, Alan L., to Xerox Corporation. Blade cleaning holder. 4,083,633, Cl. 355-15.000.
Sharapov, Boris Nikolaevich: *See*—
Tatkov, Viktor Arsentievich; Letov, Nikolai Nikolaevich; Sharapov, Boris Nikolaevich; and Rozhkov, Vladimir Petrovich, 4,083,647, Cl. 415-113.000.
Sharp Kabushiki Kaisha: *See*—
Yano, Kozo; Kuwagaki, Hiroshi; and Takechi, Sadatoshi, 4,083,099, Cl. 29-592.00R.
Sharp, Ronald L. Water spray device. 4,083,495, Cl. 239-287.000.
Shaw University: *See*—
Ghosh, Abha Pal; and Ghosh, Kalyan Kumar, 4,083,841, Cl. 260-154.000.
Shea, Richard J.: *See*—
Hebert, Roger T.; Pike, Bernard T.; McCarthy, Charles E.; and Shea, Richard J., 4,084,112, Cl. 313-222.000.
Shedd, William D.; and Belden, Lawrence F., to Axelson Fishing Tackle Mfg. Co., Inc.; and James D. Easton Inc. Swaged integral butt and reel seat for fishing rod. 4,083,141, Cl. 43-22.000.
Shelton, David Lee, to Procter & Gamble Company, The. Anhydrous antiperspirant creams. 4,083,956, Cl. 424-66.000.
Sher, Arden. Apparatus for converting radiant energy to electric energy. 4,084,101, Cl. 290-1.00R.
Sherrod, Fred A.; and Ezzell, Bobby R., to Dow Chemical Company, The. Novel bisulfate and sulfate salts of bis(2-aminoethyl) ether and methods of preparation. 4,083,873, Cl. 260-584.00R.
Shiba, Keisuke: *See*—
Inouye, Kozo; Yokota, Yukio; Okumura, Akio; Shiba, Keisuke; and Kubodera, Seiiti, 4,083,721, Cl. 96-56.200.
Shibakawa, Riichiro: *See*—
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,083,963, Cl. 424-117.000.
Shibata, Uichi: *See*—
Koeda, Takemi; Tsuruoka, Takashi; Asaoka, Hiroyasu; Shibata, Uichi; Inoue, Shigeharu; and Niida, Taro, 4,083,850, Cl. 260-295.50R.
Shields, J. Rodger: *See*—
Miller, Arthur J.; and Shields, J. Rodger, 4,083,649, Cl. 415-116.000.
Shima, Tsukasa: *See*—
Kusunose, Tetsuhiro; Ideka, Masataka; Kitamura, Kazuyuki; Shima, Tsukasa; and Henmi, Hiroshi, 4,083,894, Cl. 260-857.0PE.
Shimamura, Isao; and Ogawa, Junkiti, to Fuji Photo Film Co., Ltd. Process for color photographic processing. 4,083,723, Cl. 96-66.500.
Shimizu, Akihiko; and Hayashi, Takao, to Toyo Soda Manufacturing Co., Ltd. Process for producing a polymer emulsion. 4,083,822, Cl. 260-29.6HN.
Shimizu, Hiromichi. Toothbrush. 4,083,078, Cl. 15-244.00R.
Shimizu, Masamichi: *See*—
Kanazawa, Teiichi; Shimizu, Masamichi; and Shimoyama, Susumu, 4,084,061, Cl. 560-105.000.
Shimizu, Takeshi: *See*—
Homma, Yuzuru; Shimizu, Takeshi; and Okada, Kazuo, 4,083,959, Cl. 424-92.000.
Shimoiizaka, Junzo; Konosu, Akira; Morita, Kaneji; Sugie, Akio; and Isioka, Kunio, to Yamamura Glass Kabushiki Kaisha. Method and apparatus for removing extraneous matter from waste glass with use of flow of water. 4,083,776, Cl. 209-452.000.
Shimomura, Takatoshi: *See*—
Sano, Takezo; and Shimomura, Takatoshi, 4,083,904, Cl. 264-41.000.
Shimosaka, Masatoshi: *See*—
Miwa, Tatsuro; Aoyama, Akira; Shimosaka, Masatoshi; Kusumoto, Hideto; and Kuroda, Katsuhiko, 4,083,749, Cl. 162-168.00N.
Shimoyama, Susumu: *See*—
Kanazawa, Teiichi; Shimizu, Masamichi; and Shimoyama, Susumu, 4,084,061, Cl. 560-105.000.
Shinkai, Hiroyuki: *See*—
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Maeda, Chiaki; Iwatani, Akitoshi; Kato, Takahisa; Nagai, Masayuki; Shinkai, Hiroyuki; and Asaoka, Masayuki, 4,084,059, Cl. 560-87.000.
Shio, Megumu, to Nippon Kogaku K. K. Single-axis coarse and fine adjustment device provided with medium adjustment. 4,083,256, Cl. 74-10.520.
Shionogi & Co., Ltd.: *See*—
Terasawa, Tadao; and Okada, Toshihiko, 4,083,852, Cl. 260-327.0TH.
Shiraishi, Takeichi: *See*—
Matsuura, Kazuo; Kuroda, Nobuyuki; Shiraishi, Takeichi; and Miyoshi, Mitsuji, 4,083,802, Cl. 252-429.00C.
Shirey, Frank W., to Westinghouse Air Brake Company. Air compressor lay-over control circuit. 4,083,608, Cl. 303-11.000.
Shirley, Kirk R., to A-Z International Tool Company. Well drilling method and apparatus therefor. 4,083,405, Cl. 166-285.000.
Shonting, Homer R. Sewing machine magnifying and lighting device. 4,084,216, Cl. 362-90.000.
Shriver, Joe E.: *See*—
Lindblom, Curtis H.; Shriver, Joe E.; Wagstaff, Robert A.; and Priepke, Edward H., 4,083,167, Cl. 56-98.000.
Shuster, Edward J.: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,084,009, Cl. 426-538.000.
Shuster, Frank Alexander: *See*—
Kroll, Arthur Stanley; and Shuster, Frank Alexander, 4,083,326, Cl. 118-661.000.
Sicignano, Albert: *See*—
Zingaro, William P.; and Sicignano, Albert, 4,084,089, Cl. 250-272.000.
Siclari, Francesco; Rossi, Pietro Paolo; Leoni, Roberto; and De Gaetano, Mario, to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A. Method for the production of cellulosic fibres having a high resistance to combustion, and textile products prepared by said method. 4,083,833, Cl. 260-79.3MU.
Siemens Aktiengesellschaft: *See*—
Bohnert, Ulrich, 4,084,205, Cl. 361-76.000.
Floter, Wilfried, 4,084,244, Cl. 364-474.000.
Gross, Hans; and Berti, Eugenio, 4,084,223, Cl. 363-129.000.
Leowald, Karl-Friedrich; and Schenk, Jakob, 4,084,206, Cl. 361-90.000.
Ramm, Claus, 4,083,658, Cl. 417-68.000.
Schmidt, Heribert, 4,083,659, Cl. 417-68.000.
Skafvenstedt, Bengt; Ahlgren, Sture; and Tschuertz, Eberhard, 4,084,165, Cl. 346-140.00R.
Stein, Karl-Ulrich, 4,084,190, Cl. 358-213.000.
Tratz, Josef; and Jager, Egon, 4,084,022, Cl. 427-96.000.
Weniger, Manfred, 4,084,144, Cl. 336-70.000.
Siemens-Albis Aktiengesellschaft: *See*—
Leuenberger, Urs; and Schenkel, Albert, 4,084,160, Cl. 343-16.00M.
Silberschlag, Russell Earl, to Borg-Warner Corporation. Engaging mechanism. 4,083,440, Cl. 192-3.310.
Silvestri, Achille: *See*—
McCormack, Lawrence M.; Silvestri, Achille; and Jones, Arthur R., Jr., 4,083,691, Cl. 23-230.00R.
Silvestri, Giovanni J. Gear tooth alignment by accommodation. 4,083,094, Cl. 29-159.200.
Simmonds Precision Products, Inc.: *See*—
Maier, Lawrence C., 4,083,248, Cl. 73-304.00C.
Singer Company, The: *See*—
Vermillion, Don William, 4,083,079, Cl. 15-354.000.
Sinnreich, Manfred. Surgical instruments. 4,083,369, Cl. 128-276.000.
Sioman, Carl F., to Team Industries. Folder and stacker for towels, or other articles. 4,083,552, Cl. 270-85.000.
Skafvenstedt, Bengt; Ahlgren, Sture; and Tschuertz, Eberhard, to

Siemens Aktiengesellschaft. Fluid-jet writing system. 4,084,165, Cl. 346-140.00R.

SKF Industrial Trading and Development Company B.V.: *See—*
Hallerback, Stig Lennart; and Lachonius, Leif, 4,083,917, Cl. 264-263.000.

Skoda, Stanislav: *See—*
Pospisil, Frantisek; Skoda, Stanislav; Esner, Stanislav; Tyl, Miroslav; Mikulecky, Karel; and Jiskra, Miloslav, 4,083,507, Cl. 242-43.200.

Skoldinov, Alexandr Petrovich: *See—*
Likhosherstov, Arkady Mikhailovich; Nazarova, Liya Semenovna; Skoldinov, Alexandr Petrovich; Markova, Galina Alexandrovna; and Kaverina, Natalya Veniaminovna, 4,083,976, Cl. 424-247.000.

Skvortsov, Evgeny Nikolaevich: *See—*
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Korovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich, 4,083,204, Cl. 66-178.00R.

Slade, Marvin Dale: *See—*
Hamby, Wayne D.; and Slade, Marvin Dale, 4,083,758, Cl. 204-106.000.

Slawsby, Nathan, to Raytheon Company. Method of operating synthetic aperture radar. 4,084,158, Cl. 343-5.0CM.

Slechta, Leo John, Jr.: *See—*
Anderson, Larry Don; Bennett, Donald Bruce; and Slechta, Leo John, Jr., 4,084,225, Cl. 364-200.000.
Anderson, Larry Don; Wolff, Thomas Ormond; and Slechta, Leo John, Jr., 4,084,226, Cl. 364-200.000.
Bennett, Donald Bruce; and Slechta, Leo John, Jr., 4,084,227, Cl. 364-200.000.

Sloan, Paul H., Jr., to Stant Manufacturing Company, Inc. Low profile threaded lock cap. 4,083,209, Cl. 70-165.000.

Sloboda, Adolph Edward; and Hanifin, John William, to American Cyanamid Co. Compositions containing benzoylacetonitrile and method of use to treat inflammation. 4,083,993, Cl. 424-304.000.

Smith, Eldrew P., to Ring Around Products, Inc. Lint removing apparatus. 4,083,537, Cl. 366-147.000.

Smith, Frederick A. Solar heater units. 4,083,359, Cl. 126-271.000.

Smith International, Inc.: *See—*
Olson, Wallace Fred, 4,083,612, Cl. 308-4.00A.
Still, Norman H.; and Berry, Robert W., Jr., 4,083,416, Cl. 175-263.000.

Smith, Joseph A.: *See—*
Houlihan, William J.; Mattner, Paul G.; and Smith, Joseph A., 4,083,871, Cl. 260-570.0AB.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham John; Ganellin, Charon Robin; and Sach, George Sidney, 4,083,983, Cl. 424-263.000.
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 4,083,988, Cl. 424-273.00R.
Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, 4,084,001, Cl. 424-322.000.

Smith, Leslie Harold, to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,083,992, Cl. 424-303.000.

Smith, Marilyn M.: *See—*
Berni, Ralph J.; Smith, Marilyn M.; and Benerito, Ruth R., 4,084,027, Cl. 427-390.00D.

Smith, Richard W.; and Nakai, David S. Vehicle suspension system. 4,083,575, Cl. 280-696.000.

Smith, Theodore Dennis, to RCA Corporation. Switch mechanism for a calculator type keyboard. 4,084,071, Cl. 200-5.00A.

Smith, Thomas F.; and Timmons, Alban, to Reckitt & Colman Products Limited. Combustible composition. 4,083,697, Cl. 44-7.00D.

Smith, Wesley A. Door construction. 4,083,150, Cl. 49-387.000.

SmithKline Corporation: *See—*
Berges, David A., 4,083,975, Cl. 424-246.000.
Snader, Kenneth M.; and Willis, Chester R., 4,083,952, Cl. 424-45.000.

Smolka, Heinz: *See—*
Jakobi, Gunter; Krings, Peter; Schwuger, Milan Johann; and Smolka, Heinz, 4,083,793, Cl. 252-99.000.

Snader, Kenneth M.; and Willis, Chester R., to SmithKline Corporation. Substituted aurones. 4,083,952, Cl. 424-45.000.

SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Siclari, Francesco; Rossi, Pietro Paolo; Leoni, Roberto; and De Gaetano, Mario, 4,083,833, Cl. 260-79.3MU.

Societe Anonyme Francaise de Ferodo: *See—*
Neveux, Rene Elie, 4,083,332, Cl. 123-41.150.

Societe Anonyme Roure Bertrand Dupont: *See—*
Maupetit, Pierre; and Teisseire, Paul Jose, 4,083,812, Cl. 252-522.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Chevalley, Janine; Rostagno, Walter; and Besson, Jean-Pierre, 4,084,011, Cl. 426-580.000.

Societe Normalu: *See—*
Anthonioz, Camille, 4,083,157, Cl. 52-222.000.

Societe Suisse pour l'Industrie Horlogere Management Services, S.A.: *See—*
Matthey, Hubert, 4,084,131, Cl. 324-56.000.

Solco Basel AG: *See—*
Schmitz, Heribert; and Stocklin, Walter, 4,083,066, Cl. 3-1.400.

Solie, James C.: *See—*
McClocklin, Samuel B.; Solie, James C.; and Boers, Jan H., 4,083,381, Cl. 137-596.150.

Solvay & Cie: *See—*
Tits, Hubert; and Losson, Jean-Marie, 4,083,910, Cl. 264-94.000.

Somann, Gert P. Strap connector buckle. 4,083,088, Cl. 24-74.00A.

Somos, Istvan: *See—*
Piccone, Dante Edmond; and Somos, Istvan, 4,084,207, Cl. 361-91.000.

Southern, William: *See—*
Garrison, C. Gene; and Southern, William, 4,083,305, Cl. 102-27.00R.

Southwire Company: *See—*
Baston, Irv; Lowery, J. Orbie; and Thomas, O. Leon, 4,083,096, Cl. 29-427.000.

Spear, John Francis: *See—*
Lemon, Maurice Charles; and Spear, John Francis, 4,083,206, Cl. 68-22.00R.

Special Metals Corporation: *See—*
Boesch, William J., 4,083,734, Cl. 148-32.500.

Specktor, Leon Harold: *See—*
Adair, Henry; Christensen, Dean Lester; and Specktor, Leon Harold, 4,084,200, Cl. 360-133.000.

Speer, Billy L.; and Bushong, Richard L., to Dayco Corporation. Endless power transmission belt. 4,083,261, Cl. 74-233.000.

Spencer, Bette M.: *See—*
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,084,009, Cl. 426-538.000.

Sperry Rand Corporation: *See—*
Anderson, Larry Don; Bennett, Donald Bruce; and Slechta, Leo John, Jr., 4,084,225, Cl. 364-200.000.
Anderson, Larry Don; Wolff, Thomas Ormond; and Slechta, Leo John, Jr., 4,084,226, Cl. 364-200.000.
Anderson, Wilbert Cleon; Thompson, Vernal Wynn; and Urry, Lawrence Walter, 4,084,159, Cl. 343-7.400.
Bennett, Donald Bruce; and Slechta, Leo John, Jr., 4,084,227, Cl. 364-200.000.
Fleming, David Leslie; Jenson, Leslie Matthew; and Sauter, Gerald Francis, 4,084,260, Cl. 364-900.000.
Lindblom, Curtis H.; Shriver, Joe E.; Wagstaff, Robert A.; and Priepke, Edward H., 4,083,167, Cl. 56-98.000.
Young, Robert G., 4,083,441, Cl. 192-28.000.

Sperry-Sun, Inc.: *See—*
Russell, Anthony William; and Russell, Michael King, 4,083,117, Cl. 33-313.000.

Spierings, Petrus A. M.: *See—*
Cheney, Marvin Chapin, Jr.; and Spierings, Petrus A. M., 4,083,651, Cl. 416-18.000.

Spin Physics, Inc.: *See—*
Dorreboom, Jelmer, 4,084,199, Cl. 360-121.000.

Sporri, Heinz: *See—*
Beringer, Monique; and Sporri, Heinz, 4,083,371, Cl. 131-2.000.

Square D Company: *See—*
Dietz, Robert E.; and Ophaug, Darrell P., 4,084,203, Cl. 361-45.000.

Srivastava, Gopal K.; and Rhee, Dennis W., to Admiral Corporation. Automatic hue control circuit. 4,084,178, Cl. 358-28.000.

Stahl, Lloyd E., to Woodall Industries Inc. Fabricated parts and method and apparatus for producing the same. 4,083,739, Cl. 156-163.000.

Stahle, Helmut: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,084,002, Cl. 424-330.000.

Stanadyne, Inc.: *See—*
Davis, Charles W., 4,083,345, Cl. 123-139.0ST.

Standard Oil Company, The: *See—*
White, James F.; and Applequist, Michael D., 4,083,805, Cl. 252-437.000.

Stanko, Wayne Stephen, to Akzona Incorporated. Coupled false twist spindle aggregate arrangement. 4,083,174, Cl. 57-77.450.

Stant Manufacturing Company, Inc.: *See—*
Sloan, Paul H., Jr., 4,083,209, Cl. 70-165.000.

Stark, Edward W.: *See—*
Sandrock, Harold E.; Leen, Morris W.; and Stark, Edward W., 4,083,638, Cl. 356-246.000.

Starkweather, Gary K., to Xerox Corporation. Flying spot scanner with scan detection. 4,084,197, Cl. 358-300.000.

Stauffer Chemical Company: *See—*
Baker, Don R.; and Walker, Francis H., 4,083,867, Cl. 260-559.00B.
Hardy, Thomas A., 4,083,897, Cl. 260-970.000.
Large, George B.; and Pitt, Leland S., 4,083,970, Cl. 424-200.000.
Mihailovski, Alexander, 4,084,062, Cl. 560-106.000.

Stawiski, Wladyslaw, to Portescap. Apparatus for measuring the rate of a watch. 4,083,222, Cl. 73-6.000.

Stearns, Richard H., to Lindsay Manufacturing Company. Water drive system for a mobile agricultural irrigation unit. 4,083,378, Cl. 137-344.000.

Stefani, Joseph P.: *See—*
Zampini, Louis, Jr.; and Stefani, Joseph P., 4,083,448, Cl. 206-329.000.

Stefanik, Paul; and Voytko, John. Grain box cover. 4,083,470, Cl. 220-254.000.

Steffan, Leonard D., to Owens-Illinois, Inc. Shear spray apparatus. 4,083,278, Cl. 83-169.000.

Steglich, Helmar R., to General Electric Company. Solid state repeater

for three wire synchro with selectable phase and frequency adjustment. 4,084,121, Cl. 318-654.000.

Stein, Dimitri R.: *See—*
Polizzano, Fred F., deceased; Stein, Dimitri R.; and Ziemek, Gerhard, 4,083,484, Cl. 228-130.000.

Stein, Karl-Ulrich, to Siemens Aktiengesellschaft. Image sensor. 4,084,190, Cl. 358-213.000.

Steiner, George H.: *See—*
Geohegan, Kenneth P., Jr.; Collins, Christopher R.; Bawroski, George; and Steiner, George H., 4,083,433, Cl. 188-1.00B.

Steingross, Wolfgang: *See—*
Bicker, Uwe; Kampe, Wolfgang; and Steingross, Wolfgang, 4,083,987, Cl. 424-273.00R.

Steinmann, Henry W.: *See—*
Wenzel, Edward C.; and Steinmann, Henry W., 4,083,698, Cl. 44-51.000.

Steinmueller, Ralph E., to Harry W. Dietert Co. Load cell. 4,083,236, Cl. 73-141.00A.

Stella, Joseph A., to Polaroid Corporation. Photographic cassette having pressure plate release of a processor disabling valve. 4,084,171, Cl. 354-317.000.

Sterling Drug Inc.: *See—*
Bailey, Denis M., 4,084,051, Cl. 544-141.000.

Stetter, Karl Heinz: *See—*
Brotz, Walter; Illmann, Gunther; and Stetter, Karl Heinz, 4,083,731, Cl. 106-270.000.

Stewart, John Kenneth; and von Beckmann, Helmuth, to Canron, Inc. Ballast cleaner. 4,083,775, Cl. 209-257.000.

Stieber, Albert; and Ferch, Werner. Means controlling the delivery of oil to a storage tank. 4,083,387, Cl. 141-95.000.

Stiffler, Hugh A. Stirring device. 4,083,653, Cl. 416-142.000.

Stiga AB: *See—*
Oscarsson, Jerker Evert, 4,083,168, Cl. 56-320.200.

Still, Norman H.; and Berry, Robert W., Jr., to Smith International, Inc. Collapsible cutterhead for drilling upward. 4,083,416, Cl. 175-263.000.

Stillman, Neil W.: *See—*
Lieb, Donald F.; Stillman, Neil W.; and Kidon, William E., 4,083,067, Cl. 4-317.000.

Stocklin, Walter: *See—*
Schmitz, Heribert; and Stocklin, Walter, 4,083,066, Cl. 3-1.400.

Stocks, Richard Alexander, to P.B. Bettinson & Company Limited. Agricultural soil-working apparatus. 4,083,412, Cl. 172-462.000.

Stoelting Brothers Company: *See—*
Luxem, Paul L., 4,083,200, Cl. 62-342.000.

Stoffels, Jacobus; Bluekens, Adrianus Ambosius Johannes; and Peters, Petrus Jacobus,Maria, to U.S. Philips Corporation. Color splitting prism assembly. 4,084,180, Cl. 358-55.000.

Stoll, Donald H., to General Electric Company. Combination starter-protector device, method of protecting a dynamoelectric machine, and circuit. 4,084,202, Cl. 361-24.000.

Stone & Webster Engineering Corporation: *See—*
Conger, Franklin E., 4,083,781, Cl. 210-23.00H.

Stookey, Lawrence Lynn. Flow proportional liquid sampler. 4,083,252, Cl. 73-421.00B.

Stover, Dennis E., to Atlantic Richfield Company; NM Uranium, Inc.; and United States Steel Corporation. Method for the solution mining of a mineral. 4,083,603, Cl. 299-4.000.

Straut, John E., to Abex Corporation. Brake apparatus including locking means therefor. 4,083,436, Cl. 188-265.000.

Strekal, Leonid Pavlovich: *See—*
Istomin, Evgeny Ivanovich; Strekal, Leonid Pavlovich; Ivanenko, Alexandr Fedorovich; Vasiliev, Adolf Alfonsovich; Zhivaga, Leonid Ignatievich; Nazarenko, Oleg Kuzmich; Porazhinsky, Igor Antonovich; and Zhdanov, Jury Nikolaevich, 4,084,076, Cl. 219-121.0EB.
Porazhinsky, Igor Antonovich; Obolonsky, Alexei Pavlovich; Ivaschenko, Anatoly Grigorievich; Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,084,077, Cl. 219-121.0EB.

Strenczewilk, Anthony F. Cup caddy. 4,083,482, Cl. 224-45.00G.

Stromberg-Carlson Corporation: *See—*
McNiece, Reginald C.; and Porter, Warren W., 4,083,616, Cl. 339-45.00M.

Strunc, Gerald R.: *See—*
Harvey, Ronald B.; Strunc, Gerald R.; and Putzke, Dwayne H., 4,084,099, Cl. 250-548.000.

Styring, Ralph E., to Atlantic Richfield Company. Method of regenerating used contaminant-removing material. 4,083,924, Cl. 423-88.000.

Sugawara, Minoru, to Ishino Gasket Mfg. Co., Ltd. Gasket reinforced by slit grommet. 4,083,570, Cl. 277-235.00B.

Sughihira, Tsuneo: *See—*
Yokoyama, Masao; Sughihira, Tsuneo; and Ohta, Koji, 4,083,414, Cl. 172-804.000.

Sugie, Akio: *See—*
Shimoiizaka, Junzo; Konosu, Akira; Morita, Kaneji; Sugie, Akio; and Isioka, Kunio, 4,083,776, Cl. 209-452.000.

Sugimoto, Takehiko. Process for producing ornamental standing toys. 4,083,742, Cl. 156-227.000.

Sukharulidze, Nodar Georgievich: *See—*
Dzhaparidze, Levan Nikolaevich; Chakhunashvili, Temuri Alexandrovich; Maisuradze, Venera Romanovna; Chagunava, Raul Vladimirovich; Kervalishvili, Zurab Yasonovich; Sukharulidze, Nodar Georgievich; Otiashvili, Dali Georgievna; and Epik, Alexei Pavlovich, 4,083,757, Cl. 204-83.000.

Sullivan, John L.: *See—*
Bowers, Lewis H.; Jankowski, Raymond E.; and Sullivan, John L., 4,083,700, Cl. 51-298.00A.
Bowers, Lewis H.; Jankowski, Raymond E.; and Sullivan, John L., 4,083,891, Cl. 260-846.000.

Sulzer Brothers Limited: *See—*
Pfarrawaller, Erwin, 4,083,513, Cl. 242-118.600.
Pfarrwaller, Erwin, 4,083,385, Cl. 139-59.000.

Sumitomo Chemical Company, Limited: *See—*
Itaya, Nobushige; and Fujita, Fumio, 4,083,855, Cl. 260-343.600.
Sano, Takezo; and Shimomura, Takatoshi, 4,083,904, Cl. 264-41.000.
Yamamoto, Hisao; Inukai, Toshiya; and Koga, Yoshihiko, 4,083,981, Cl. 424-260.000.

Sumitomo Electric Industries, Ltd.: *See—*
Miyamoto, Yoshio, 4,084,141, Cl. 333-84.00L.

Sumpter, Gary T. Ceiling and wall structures having curved panels. 4,083,153, Cl. 52-28.000.

Superior Concrete Accessories, Inc.: *See—*
Tye, Dennis W., 4,083,156, Cl. 52-127.000.

Suslin, Vladimir Isaakovich; Dubovik, Alexandr Ivanovich; Makeev, Boris Anatolievich; Razdymakha, Pavela Semenovich; and Lekarev, Zinovy Abramovich. Apparatus for electrochemical machining of workpieces. 4,083,767, Cl. 204-224.00M.

Sustarsic, John D.: *See—*
Rogers, Robert C.; and Sustarsic, John D., 4,083,753, Cl. 202-227.000.

Suttkus, David John; and Garrett, Jack Warden, to TRW Inc. Rotary hydraulic device with retaining means for pumping element biasing springs. 4,083,664, Cl. 418-266.000.

Suzuki, Koji: *See—*
Emori, Richard Ichiro; and Suzuki, Koji, 4,083,310, Cl. 104-242.000.

Suzuki, Masayoshi: *See—*
Okuhara, Shinzi; Ohhinata, Ichiro; Kamei, Tatsuya; and Suzuki, Masayoshi, 4,084,110, Cl. 307-252.00G.

Suzuki, Yoshiro. Wind instrument. 4,083,287, Cl. 84-377.000.

Svensson, Percy: *See—*
Kalvenes, Oystein; Eriksson, Gosta Harald; Svensson, Percy; and Goransson, Rolf Erik, 4,083,908, Cl. 264-82.000.

Swartz, John R.: *See—*
von den Stemmen, Alfons; and Swartz, John R., 4,083,424, Cl. 180-114.000.

Swenson, Richard C., to United States of America, Navy. Antistrumming cable. 4,084,065, Cl. 174-70.00R.

Swiss Aluminium Ltd.: *See—*
Weingartner, Fritz; and Liebertz, Josef, 4,083,911, Cl. 264-118.000.

Systems, Science and Software: *See—*
Turner, Philip L.; Gilkey, Robert W.; and Lagus, Peter L., 4,083,228, Cl. 73-32.00R.

Szirt nee Kiszelly, Eniko: *See—*
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Szirt nee Kiszelly, Eniko; Kosoczky, Ibolya; and Petocz, Lujza E., 4,083,978, Cl. 424-250.000.

T & S Brass and Bronze Works, Inc.: *See—*
Antoniello, Frank, 4,083,383, Cl. 137-616.700.

Tabata, Norikazu; Ueno, Takanori; and Namba, Keisuke, to Mitsubishi Denki Kabushiki Kaisha. Moisture exchanger type ozone-generating apparatus. 4,084,098, Cl. 250-533.000.

Taeger, Colin M.: *See—*
Moog, William C.; and Taeger, Colin M., 4,083,578, Cl. 280-618.000.

Taiyo Kagaku Kogyo Company Limited: *See—*
Asano, Yusuke; Aoki, Yoshio; and Yamazaki, Nagataka, 4,083,733, Cl. 127-42.000.

Tajkowski, Edward George, to Allied Chemical Corporation. Process for improving corrosion resistance of anodized metal surfaces and treated product. 4,083,756, Cl. 204-35.00N.

Takahashi, Koichi: *See—*
Hamada, Hideo; Yamaguchi, Hirotsugu; and Takahashi, Koichi, 4,083,443, Cl. 192-91.00R.

Takahashi, Masanobu: *See—*
Komatsu, Koei; Nishioka, Akinori; Ohshima, Noboru; Takahashi, Masanobu; and Hara, Hiromichi, 4,083,834, Cl. 260-79.5NV.

Takahashi, Masashi: *See—*
Kishi, Hajimu; and Takahashi, Masashi, 4,084,243, Cl. 364-474.000.

Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, to Ishihara Sangyo Kaisha, Ltd. Alkoxyalkyl esters of substituted pyridyloxyphenoxy-2-propanoic acids, herbicidal composition containing the same and method of use thereof. 4,083,714, Cl. 71-94.000.

Takahashi, Yoshihiro: *See—*
Fukutani, Hideo; Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; and Torige, Kazuo, 4,083,725, Cl. 96-115.00R.

Takahashi, Yutaka: *See—*
Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, 4,083,969, Cl. 424-182.000.

Takayama, Katsuki: *See—*
Tsubota, Haruo; Takayama, Katsuki; Sakakibara, Naoji; and Hashimoto, Nobuyuki, 4,084,072, Cl. 200-83.00L.

Takechi, Sadatoshi: *See—*
Yano, Kozo; Kuwagaki, Hiroshi; and Takechi, Sadatoshi, 4,083,099, Cl. 29-592.00R.

Takeda Chemical Industries, Ltd.: *See—*
Oshima, Isao; and Yokogi, Akira, 4,083,496, Cl. 239-327.000.

Takeda, Norio: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Abe, Mitsuo; Takeda, Norio; and Miura, Mitsuo, 4,083,869, Cl. 260-566.00R.

Takeda, Noriyuki; Ikeda, Hideo; Nakamura, Iwao; and Uchida, Noriaki, to Nissan Motor Company, Limited. Heat insulating device for an engine exhaust system. 4,083,694, Cl. 23-288.00F.

Takemoto, Tsunematsu; Nakajima, Tadashi; Arihara, Shigenobu; and Okuhira, Megumi, to Takemoto, Tsunematsu; and Nippon Shoji Kaisha, Ltd. Glycosides having sweetness. 4,084,010, Cl. 426-548.000.

Takemura, Motohiro; Iijima, Mochihiro; Tateno, Yoshiaki; Osada, Yuji; and Maruyama, Hiroyuki, to Towa Kasei Kogyo Co., Ltd. Process for preparing D-mannitol. 4,083,881, Cl. 260-635.00C.

Talbot, Robert Eric: *See—*
Horne, David Smith; Talbot, Robert Eric; and Russell, Peter John, 4,083,877, Cl. 260-610.00D.

Tanaka, Masaru: *See—*
Yamada, Senri; Nagasawa, Kanji; Mori, Tokiaki; and Tanaka, Masaru, 4,083,729, Cl. 106-88.000.

Tanaka, Satoru; and Watanabe, Hideaki, to Eisai Co., Ltd. 1,3-Benzodioxol derivatives. 4,083,853, Cl. 260-340.50R.

Tanaka, Satoru; and Munakata, Keiichi, to Eisai Co., Ltd. Novel hydroxamic acid derivatives and medicaments for treatment of urolithiasis and pyelonephrosis comprising such derivatives. 4,083,996, Cl. 424-315.000.

Tanaka, Tadashi: *See—*
Matsuda, Shozo; Hirai, Naoe; and Tanaka, Tadashi, 4,083,763, Cl. 204-181.00E.

Tanaka, Yutaka: *See—*
Outsuka, Koremitsu; Kawasaki, Kazuyoshi; and Tanaka, Yutaka, 4,083,754, Cl. 204-1.00T.

Tano, Eiichi: *See—*
Kawasaki, Masahiro; Tano, Eiichi; and Sawada, Yoshio, 4,084,166, Cl. 354-23.00D.

Tassoney, Joseph P.: *See—*
Choi, Charles K.; and Tassoney, Joseph P., 4,083,751, Cl. 202-99.000.

Tateno, Yoshiaki: *See—*
Takemura, Motohiro; Iijima, Mochihiro; Tateno, Yoshiaki; Osada, Yuji; and Maruyama, Hiroyuki, 4,083,881, Cl. 260-635.00C.

Tatkov, Viktor Arsentievich; Letov, Nikolai Nikolaevich; Sharapov, Boris Nikolaevich; and Rozhkov, Vladimir Petrovich. Seal means for a centrifugal pump. 4,083,647, Cl. 415-113.000.

Taudt, Heinz: *See—*
Keller, Hans; Koll, Roman; and Taudt, Heinz, 4,084,183, Cl. 358-75.000.

Taylor, Donald R.; and Parmet, Arthur A., to Honeywell Information Systems Inc. Control store system and method for storing selectively microinstructions and scratchpad information. 4,084,229, Cl. 364-200.000.

Taylor, George Phillips: *See—*
Birney, Richard Eugene; Leininger, Joel Calvin; and Taylor, George Phillips, 4,084,254, Cl. 364-766.000.

Taylor, Herman, Jr.: *See—*
Hildebrand, Richard Emil; Paraskos, John Angelo; and Taylor, Herman, Jr., 4,083,769, Cl. 208-10.000.

Taylor, John D. Bloat relief tube and holder. 4,083,370, Cl. 128-347.000.

Taylor, Paul D.; and Vanderspurt, Thomas H., to Celanese Corporation. Production of 1,4-butanediol. 4,083,882, Cl. 260-655.00R.

Team Industries: *See—*
Sioman, Carl F., 4,083,552, Cl. 270-85.000.

Technicon Instruments Corporation: *See—*
Sandrock, Harold E.; Leen, Morris W.; and Stark, Edward W., 4,083,638, Cl. 356-246.000.

Tecnoma: *See—*
Ballu, Vincent Pierre Marie, 4,083,494, Cl. 239-156.000.

Teisseire, Paul Jose: *See—*
Maupetit, Pierre; and Teisseire, Paul Jose, 4,083,812, Cl. 252-522.000.

Tektronix, Inc.: *See—*
Schlotzhauer, Kenneth George; and Roth, Stephen Anthony, 4,084,187, Cl. 358-153.000.

Teledyne Industries, Inc.: *See—*
Mullins, Keith M.; Cannon, Thomas; Leppert, Thomas K.; and Burnell, Thomas R., 4,083,467, Cl. 220-90.400.

Teledyne McCormick Selph, an operating division of Teledyne Ind. Inc.: *See—*
Garrison, C. Gene; and Southern, William, 4,083,305, Cl. 102-27.00R.

Telefonaktiebolaget L M Ericsson: *See—*
Lepik, Toomas; and Rodin, Sven-Erik, 4,084,068, Cl. 174-138.00R.

Temco Products, Inc.: *See—*
Thomas, Morton I., 4,083,598, Cl. 297-45.000.

Tempere, Robert, to Groupe Europeen pour la Technique des Turbines a Vapeur G.E.T.T. S.A. Turbin rotor. 4,083,655, Cl. 416-196.00R.

Tennessee River Pulp & Paper Company: *See—*
Rickman, Tommy L., 4,083,678, Cl. 432-61.000.

Terabayashi, Takao: *See—*
Kobayashi, Masaru; Kamada, Atsuya; Terabayashi, Takao; and Asao, Hiroshi, 4,083,220, Cl. 72-364.000.

Teraji, Tsutomu: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,084,049, Cl. 544-16.000.

Teranishi, Yuichi; and Abe, Masayoshi, to Hitachi, Ltd. LSI layout and method for fabrication of the same. 4,084,105, Cl. 307-205.000.

Terasawa, Tadao; and Okada, Toshihiko, to Shionogi & Co., Ltd. Oxa- and thia-steroids. 4,083,852, Cl. 260-327.0TH.

Terry, Vincent G., to General Electric Company. Shaft end coupling for a dynamoelectric machine. 4,083,639, Cl. 403-16.000.

Teske, Fritz; and Teske, Lothar. Apparatus for discharging bulk material from storage tanks. 4,083,462, Cl. 214-17.00D.

Teske, Lothar: *See—*
Teske, Fritz; and Teske, Lothar, 4,083,462, Cl. 214-17.00D.

Texaco Inc.: *See—*
Allen, Joseph C., 4,083,404, Cl. 166-261.000.
Carlin, Joseph T.; and Park, Jack H., 4,083,403, Cl. 166-252.000.
Cole, Edward L.; and McMahon, Matthew A., 4,083,696, Cl. 44-1.00R.
Estes, John Harold; Kerr, Edwin Robert; and Dorawala, Tansukhlal Gokaldas, 4,083,799, Cl. 252-373.000.
Herbstman, Sheldon; and Estes, John H., 4,083,800, Cl. 252-415.000.

Texas Instruments Incorporated: *See—*
Armstrong, James J.; and Berg, Peter G., 4,083,336, Cl. 123-119.00F.
Fantechi, Roberto Luigi, 4,084,173, Cl. 357-42.000.
Holton, William C., 4,084,130, Cl. 331-94.50H.

Texasgulf Inc.: *See—*
Jernigan, John D.; and Whitehurst, Brooks M., 4,083,934, Cl. 423-317.000.

Textron, Inc.: *See—*
Braswell, James L.; Covington, Cecil E.; Phillips, Nolan B.; Tomerlin, Reggie J.; and Wohlfeld, Robert M., 4,083,656, Cl. 416-226.000.
Garrison, James R.; Metzger, Robert W.; and Waldrup, Herman H., 4,083,518, Cl. 244-17.110.

Th. Goldschmidt AG: *See—*
Ruf, Erich, 4,083,860, Cl. 260-429.700.

Thatcher, Richard Eugene, to Philip Morris Incorporated. Cigarette package ripper with recycling air leg. 4,083,499, Cl. 241-24.000.

Theobald, Hans: *See—*
Kiehs, Karl; Adolphi, Heinrich; and Theobald, Hans, 4,083,971, Cl. 424-200.000.

Theriault, Franklin M.: *See—*
Driver, Don A.; and Theriault, Franklin M., 4,084,149, Cl. 340-1.00R.

Theys, Andre P., to Fabrique Nationale Herstal S.A. Knitting process utilizing multi-level presser foot. 4,083,203, Cl. 66-64.000.

Thiemeyer, Heinz: *See—*
Ritzmann, Horst; Thiemeyer, Heinz; Schepers, Georg; and Goldmann, Wolf, 4,083,676, Cl. 432-14.000.

Thissen, Christopher P., to Geo. A. Hormel & Co. Apparatus for making biological discs. 4,083,746, Cl. 156-499.000.

Thomas, Morton I., to Temco Products, Inc. Collapsible wheelchair. 4,083,598, Cl. 297-45.000.

Thomas, O. Leon: *See—*
Baston, Irv; Lowery, J. Orbie; and Thomas, O. Leon, 4,083,096, Cl. 29-427.000.

Thomas, Stephen P., to Phillips Petroleum Company. Chromatographic method for determining additive concentration in gasoline. 4,084,091, Cl. 250-302.000.

Thompson, Edward J., to Upjohn Company, The. Polyurethane coating compositions and process of preparation. 4,083,815, Cl. 260-31.20N.

Thompson, John T.: *See—*
Gillemot, George W., 4,084,066, Cl. 174-92.000.
Gillemot, George W., 4,084,067, Cl. 174-92.000.

Thompson, LeRoy R.; and Meints, Edward G., to Caterpillar Tractor Co. Gas turbine engine internal insulation. 4,083,180, Cl. 60-39.16R.

Thompson, Vernal Wynn: *See—*
Anderson, Wilbert Cleon; Thompson, Vernal Wynn; and Urry, Lawrence Walter, 4,084,159, Cl. 343-7.400.

Thomson-CSF: *See—*
Defranould, Philippe; and Munier, Bernard, 4,084,192, Cl. 358-213.000.
Grancoin, Bernard, 4,084,118, Cl. 318-138.000.
Labb, Georges, 4,084,186, Cl. 358-139.000.

Thumm, Herbert H., to Mechanex Corporation, The. Lubricant seal. 4,083,567, Cl. 277-37.000.

Tibolla, Marcello: *See—*
Doria, Gianfederico; Giraldi, Pier Nicola; Lauria, Francesco; Corno, Maria Luisa; Sberze, Piero; and Tibolla, Marcello, 4,083,953, Cl. 424-45.000.

Tiger, Emil, to Bell & Howell Company. Corona charging unit for microfiche reader/printer. 4,084,212, Cl. 361-230.000.

Timmer, Henry. Terminal clamp. 4,083,624, Cl. 339-264.00R.

Timmons, Alban: *See—*
Smith, Thomas F.; and Timmons, Alban, 4,083,697, Cl. 44-7.00D.

Tioxide Group Limited: *See—*
Haigh, Harold Edward; and Hofmann, Dietrich Adolf, 4,083,538, Cl. 266-172.000.

Tissot, Philippe: *See—*
Arpin, Rene; and Tissot, Philippe, 4,084,035, Cl. 428-352.000.

Tisue, James G.; Weber, Donald R.; and Johanson, Peter A., to Dacom, Inc. Electronic half-tone generating means for facsimile reproduction system. 4,084,196, Cl. 358-283.000.

Tits, Hubert; and Losson, Jean-Marie, to Solvay & Cie. Process for molding plastic articles. 4,083,910, Cl. 264-94.000.

Tokico Ltd.: *See—*
Miyazawa, Hiroshi, 4,083,080, Cl. 16-66.000.
Nagashima, Tugio, 4,083,187, Cl. 60-407.000.

Tokunaga, Norikazu; and Yabuno, Kohei, to Hitachi, Ltd. High-voltage power supply device. 4,084,222, Cl. 363-60.000.

Tokyo Electric Co., Ltd.: *See—*
Masuo, Tetsuya, 4,084,238, Cl. 364-405.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Katakura, Masayuki, 4,084,129, Cl. 330-282.000.
Murabayashi, Hideki; Kawakita, Katsuhiko; Nakamura, Kisaku; and Kobatake, Sadao, 4,083,718, Cl. 75-134.00B.
Toledo Pickling & Steel Service, Inc.: *See—*
Hansen, Lars J., 4,083,693, Cl. 23-262.000.
Tomerlin, Reggie J.: *See—*
Braswell, James L.; Covington, Cecil E.; Phillips, Nolan B.; Tomerlin, Reggie J.; and Wohlfeld, Robert M., 4,083,656, Cl. 416-226.000.
Tomita, Tetsuo: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Abe, Mitsuo; Takeda, Norio; and Miura, Mitsuo, 4,083,869, Cl. 260-566.00R.
Tomkinson, Jerry P., to Desoutter, Inc. Air motor having angular displacement control means. 4,083,270, Cl. 81-52.40R.
Tone, Junsuke: *See—*
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,083,963, Cl. 424-117.000.
Torige, Kazuo: *See—*
Fukutani, Hideo; Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; and Torige, Kazuo, 4,083,725, Cl. 96-115.00R.
Torii, Masanori: *See—*
Sakurai, Shigenori; Murakami, Shigeo; and Torii, Masanori, 4,083,344, Cl. 123-136.000.
Toshimitsu, Itaru; Fujii, Sakumi; Uchida, Masao; and Fujii, Yoshio, to Toyo Soda Manufacturing Co., Ltd. Process for preparing pure phosphoric acid. 4,083,937, Cl. 423-321.00R.
Toth Aluminum Corporation: *See—*
Lippman, Alfred; and Sebenik, Roger Frank, 4,083,923, Cl. 423-79.000.
Wyndham, Ronald, 4,083,927, Cl. 423-136.000.
Towa Kasei Kogyo Co., Ltd.: *See—*
Takemura, Motohiro; Iijima, Mochihiro; Tateno, Yoshiaki; Osada, Yuji; and Maruyama, Hiroyuki, 4,083,881, Cl. 260-635.00C.
Townend, John; and Hazard, Richard, to Fisons Limited. Process. 4,083,857, Cl. 260-343.440.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Shimizu, Akihiko; and Hayashi, Takao, 4,083,822, Cl. 260-29.6HN.
Toshimitsu, Itaru; Fujii, Sakumi; Uchida, Masao; and Fujii, Yoshio, 4,083,937, Cl. 423-321.00R.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ikeya, Taro, 4,083,182, Cl. 60-282.000.
Mori, Mamoru; Sasaki, Shiro; and Hachisuka, Sadao, 4,083,602, Cl. 297-389.000.
Ohata, Akira, 4,083,335, Cl. 123-117.00A.
Sakurai, Shigenori; Murakami, Shigeo; and Torii, Masanori, 4,083,344, Cl. 123-136.000.
Ushijima, Fumihiro, 4,083,442, Cl. 192-54.000.
Yaegashi, Takehisa; and Nakatomi, Takayoshi, 4,083,183, Cl. 60-290.000.
Tratz, Josef; and Jager, Egon, to Siemens Aktiengesellschaft. Method for tin plating printed boards. 4,084,022, Cl. 427-96.000.
Troschilo, Ljubov Mikhailovna: *See—*
Okhotnikov, Grigory Gennadievich; and Troschilo, Ljubov Mikhailovna, 4,084,211, Cl. 361-222.000.
Trost, Allen J., to Ampex Corporation. Pilot signal processing means for video recording apparatus. 4,084,176, Cl. 358-8.000.
Trowbridge, David L.: *See—*
United States of America, National Aeronautics and Space Administration; and Trowbridge, David L., 4,084,132, Cl. 324-57.0DE.
Truth Incorporated: *See—*
Van Klompenburg, Marlo G., 4,083,264, Cl. 74-545.000.
TRW Inc.: *See—*
Bohn, Jack R.; and Pearson, Durk J., 4,083,604, Cl. 299-4.000.
Herbenar, Edward J., 4,083,545, Cl. 267-54.00A.
Suttkus, David John; and Garrett, Jack Warden, 4,083,664, Cl. 418-266.000.
Tschuertz, Eberhard: *See—*
Skafvenstedt, Bengt; Ahlgren, Sture; and Tschuertz, Eberhard, 4,084,165, Cl. 346-140.00R.
Tsubota, Haruo; Takayama, Katsuki; Sakakibara, Naoji; and Hashimoto, Nobuyuki, to Aisin Seiki Kabushiki Kaisha. Pressure differential switch device. 4,084,072, Cl. 200-83.00L.
Tsuchiya, Yoshimi; Naganuma, Yoshinori; and Arai, Haruhiko, to Kao Soap Co., Ltd. Aerosol composition. 4,083,954, Cl. 424-47.000.
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, to Asahi Kasei Kogyo Kabushiki Kaisha. Apparatus for treating ascites. 4,083,786, Cl. 210-321.00B.
Tsujii, Yasuhiro: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, 4,083,714, Cl. 71-94.000.
Tsumura, Toshihiro, System for processing movement information of vehicle. 4,084,241, Cl. 364-460.000.
Tsuruoka, Takashi: *See—*
Koeda, Takemi; Tsuruoka, Takashi; Asaoka, Hiroyasu; Shibata, Uichi; Inoue, Shigeharu; and Niida, Taro, 4,083,850, Cl. 260-295.50R.
Tsuzuki, Hidehiro: *See—*
Asari, Akira; and Tsuzuki, Hidehiro, 4,083,214, Cl. 72-60.000.
Tullock, Ronald F., Wheel chair holding means. 4,083,594, Cl. 296-1.00A.
Tults, Juri, to RCA Corporation. Digital frequency deviation detector useful in a television tuning system. 4,084,127, Cl. 328-134.000.
Tuns, Joseph, to S I G Schweizerische Industrie-Gesellschaft. Fill metering system. 4,083,388, Cl. 141-172.000.
Turi, Joseph S., to Upjohn Company, The. Topical steroidal anti-inflammatory preparations containing polyoxypropylene 15 stearyl ether. 4,083,974, Cl. 424-241.000.
Turner, Philip L.; Gilkey, Robert W.; and Lagus, Peter L., to Systems, Science and Software. Gas comparison pycnometer. 4,083,228, Cl. 73-32.00R.
Tye, Dennis W., to Superior Concrete Accessories, Inc. Apparatus for bracing a tilt-up wall panel. 4,083,156, Cl. 52-127.000.
Tyl, Miroslav: *See—*
Pospisil, Frantisek; Skoda, Stanislav; Esner, Stanislav; Tyl, Miroslav; Mikulecky, Karel; and Jiskra, Miloslav, 4,083,507, Cl. 242-43.200.
U and I Company: *See—*
Kenney, Frank M., 4,084,218, Cl. 363-18.000.
Uchida, Masao: *See—*
Toshimitsu, Itaru; Fujii, Sakumi; Uchida, Masao; and Fujii, Yoshio, 4,083,937, Cl. 423-321.00R.
Uchida, Noriaki: *See—*
Takeda, Noriyuki; Ikeda, Hideo; Nakamura, Iwao; and Uchida, Noriaki, 4,083,694, Cl. 23-288.00F.
Udwin, Ellis G.; and Becker, Thomas R., to Becker-Udwin, Inc. Processing of gas streams. 4,083,703, Cl. 55-89.000.
Ueno, Takanori: *See—*
Tabata, Norikazu; Ueno, Takanori; and Namba, Keisuke, 4,084,098, Cl. 250-533.000.
Ufferfilge, Roger K.: *See—*
Nordstrom, Edward R.; and Ufferfilge, Roger K., 4,083,736, Cl. 156-73.100.
Uhlig, Karl R.: *See—*
Parise, Carl; Uhlig, Karl R.; and Lockard, William W., 4,083,705, Cl. 55-257.0NP.
Ullrich, Manfred Fritz, to ITT Industries, Incorporated. Dynamic shift register using insulated-gate field-effect transistors. 4,084,106, Cl. 307-221.00C.
Umea Mekaniska AB: *See—*
Ericsson, Jan-Eje, 4,083,463, Cl. 214-138.00R.
Umezaki, Hajime; Oguri, Kyoichi; Nakajima, Hiroshi; Amemiya, Shinichi; and Nozawa, Yoshitomo, to Caterpillar Mitsubishi Ltd. Apparatus for reducing noise of a carrier roller. 4,083,247, Cl. 74-243.00R.
Uni-Cardan AG: *See—*
Krude, Werner; and Jordan, Alfons, 4,083,201, Cl. 64-21.000.
Union Carbide Corporation: *See—*
Glass, Joseph Edward, Jr.; and Lowther, Roy Gale, 4,084,060, Cl. 536-96.000.
Hutchisson, James Thomas, 4,083,777, Cl. 210-22.00A.
Union Oil Company of California: *See—*
Deering, Roland F., 4,083,770, Cl. 208-11.00R.
Fenton, Donald M.; and Woertz, Byron B., 4,083,945, Cl. 423-573.00R.
Mickelson, Grant A., 4,083,808, Cl. 252-455.00R.
United Foam Corporation: *See—*
Goodale, Clark W.; Morgan, Charles W.; and Rhoton, Albert L., 4,084,030, Cl. 428-141.000.
United States of America
Agriculture: *See—*
Berni, Ralph J.; Smith, Marilyn M.; and Benerito, Ruth R., 4,084,027, Cl. 427-390.00D.
Frankel, Edwin N.; and Pryde, Everett H., 4,083,816, Cl. 260-31.20R.
Kon, Samuel; and Dunlap, Catherine J., 4,084.016, Cl. 426-634.000.
Mitchell, Everett R.; Jacobson, Martin; and Baumhover, Alfred H., 4,083,995, Cl. 424-311.000.
Wing, Robert E.; and Doane, William M., 4,083,783, Cl. 210-54.000.
Army: *See—*
Epstein, Joseph; Heggie, Robert M.; and Norman, John J., 4,083,692, Cl. 23-232.00R.
Manning, William P.; and Passiuk, Walter T., 4,084,161, Cl. 343-18.00A.
McCormack, Lawrence M.; Silvestri, Achille; and Jones, Arthur R., Jr., 4,083,691, Cl. 23-230.00R.
Energy: *See—*
Bourkland, Kenneth R.; and Winje, Russell A., 4,084,109, Cl. 307-108.
Cochran, Henry D., Jr., 4,083,243, Cl. 73-196.000.
Day, Clifford K.; and Pedersen, Herbert N., 4,083,225, Cl. 73-19.000.
Hilal, Sadek K.; Sampson, William B.; and Leonard, Edward F., 4,084,209, Cl. 361-141.000.
Miller, Donald M., 4,083,272, Cl. 82-12.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Trowbridge, David L. Swept group delay measurement. 4,084,132, Cl. 324-57.0DE.
National Aeronautics and Space Administration: *See—*
Adamson, Arthur P., 4,083,181, Cl. 60-39.520.
Anagnostou, Evelyn; and Forestieri, Americo F., 4,083,097, Cl. 29-572.000.
Huber, William C., 4,083,380, Cl. 137-505.250.
Kapustka, Robert E., 4,084,124, Cl. 320-9.000.
Lawson, Daniel D., 4,083,765, Cl. 204-195.00W.
Rupp, Charles C.; and Kissel, Ralph R., 4,083,520, Cl. 244-167.000.

Navy: *See*—
Casasent, David Paul; and Psaltis, Demetri, 4,084,255, Cl. 364-822.000.
Dick, John O., 4,083,238, Cl. 73-167.000.
Gallant, Richard Paul, 4,083,235, Cl. 73-117.300.
Gerber, Hermann E., 4,083,249, Cl. 73-336.500.
Himy, Albert; and Wagner, Otto C., 4,084,047, Cl. 429-206.000.
Matsuo, Jon T., 4,083,519, Cl. 244-149.000.
McKechnie, John C., 4,083,255, Cl. 73-655.000.
Scranton, Robert A.; and McGill, Thomas C., 4,084,172, Cl. 357-15.000.
Swenson, Richard C., 4,084,065, Cl. 174-70.00R.
Willenbrock, John C., 4,084,215, Cl. 362-32.000.
U.S. Philips Corporation: *See*—
Bunge, Ernst, 4,084,245, Cl. 364-485.000.
de Lang, Hendrik; and Bouwhuis, Gijsbertus, 4,084,185, Cl. 358-128.000.
Nicholas, Keith H., 4,083,098, Cl. 29-578.000.
Stoffels, Jacobus; Bluekens, Adrianus Ambosius Johannes; and Peters, Petrus Jacobus,Maria, 4,084,180, Cl. 358-55.000.
Van de Leest, Renaat Edmond; Beekmans, Nicolaas Marinus; and Heijne, Leopold, 4,083,764, Cl. 204-195.00M.
United States Steel Corporation: *See*—
Stover, Dennis E., 4,083,603, Cl. 299-4.000.
United Technologies Corporation: *See*—
Asplund, Herbert Frederick, 4,083,648, Cl. 415-137.000.
Cheney, Marvin Chapin, Jr.; and Spierings, Petrus A. M., 4,083,651, Cl. 416-18.000.
Kenigsberg, Irwin Jeffrey; and Paul, William Francis, 4,083,654, Cl. 416-145.000.
Universal Folding Box Co., Inc.: *See*—
Keating, Martin, Jr., 4,083,455, Cl. 206-625.000.
Universal Oil Products Company: *See*—
Wilhelm, Frederick C., 4,083,806, Cl. 252-442.000.
Universal Towel Company Limited: *See*—
Lemon, Maurice Charles; and Spear, John Francis, 4,083,206, Cl. 68-22.00R.
University of Kentucky Research Foundation, The: *See*—
Bryans, John T., 4,083,958, Cl. 424-89.000.
University of Sydney, The: *See*—
Gayst, Stephen, 4,083,224, Cl. 73-17.00A.
University of Tokyo, President of the: *See*—
Homma, Yuzuru; Shimizu, Takeshi; and Okada, Kazuo, 4,083,959, Cl. 424-92.000.
UOP Inc.: *See*—
Asselin, George F.; and Witt, Paul A., 4,083,772, Cl. 208-321.000.
Hayes, John C., 4,083,883, Cl. 260-668.00D.
Hunter, Jack A., 4,083,774, Cl. 209-212.000.
Michalko, Edward, 4,083,886, Cl. 260-672.00T.
O'Hara, Mark J., 4,083,771, Cl. 208-216.000.
Upjohn Company, The: *See*—
Kelly, Robert C., 4,083,854, Cl. 260-343.500.
Morton, Douglas Ross, Jr., 4,083,859, Cl. 260-408.000.
Morton, Douglas Ross, Jr., 4,083,865, Cl. 260-514.00D.
Nelson, Norman A., 4,084,058, Cl. 560-55.000.
Robert, Andre, 4,083,998, Cl. 424-317.000.
Thompson, Edward J., 4,083,815, Cl. 260-31.20N.
Turi, Joseph S., 4,083,974, Cl. 424-241.000.
Yankee, Ernest W., 4,084,063, Cl. 560-121.000.
Urry, Lawrence Walter: *See*—
Anderson, Wilbert Cleon; Thompson, Vernal Wynn; and Urry, Lawrence Walter, 4,084,159, Cl. 343-7.400.
Ushijima, Fumihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for automatic transmissions of motor vehicles. 4,083,442, Cl. 192-54.000.
Ushijima, Takashi; and Iwasa, Yoshio, to Nissan Motor Company, Limited. System to supply air into the exhaust conduit of an internal combustion engine. 4,083,184, Cl. 60-293.000.
Ushimaru, Hirokazu: *See*—
Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, 4,083,969, Cl. 424-182.000.
USM Corporation: *See*—
Miller, William Reed, Jr.; and Forward, Worthy Joseph, Jr., 4,083,271, Cl. 82-8.000.
Utsumi, Hiroshi: *See*—
Saito, Shigeru; Sasaki, Yutaka; Nakamura, Tomio; Moriya, Kiyoshi; Nakamura, Yoshimi; and Utsumi, Hiroshi, 4,083,804, Cl. 252-432.000.
Vahlensieck, Hans-Joachim: *See*—
Seiler, Claus Dietrich; and Vahlensieck, Hans-Joachim, 4,083,861, Cl. 260-448.80R.
Vaishnav, Dolar Harshadrai, to Firestone Tire & Rubber Company, The. Automatic hub and apparatus for disassembly of the hub. 4,083,672, Cl. 425-457.000.
Van Auken, Richard; and Mills, Albert T., Jr., to Exxon Research & Engineering Co. Fishing rod ferrule. 4,083,140, Cl. 43-18.0GF.
Van de Leest, Renaat Edmond; Beekmans, Nicolaas Marinus; and Heijne, Leopold, to U.S. Philips Corporation. Ion-selective electrode. 4,083,764, Cl. 204-195.00M.
van den Brink, Theodorus: *See*—
de Koning, Jan; van den Brink, Theodorus; and Wolters, Tjako Aaldrik, 4,083,135, Cl. 37-58.000.
VanderLans, Gerald G.: *See*—
Horne, Frederick F.; and VanderLans, Gerald G., 4,083,384, Cl. 138-93.000.
van der Lely, Ary, to C. van der Lely N.V. Soil cultivating implements. 4,083,411, Cl. 172-59.000.
Vandersip, Henry A., to Corner & Lada Co., Inc. Spring support device. 4,083,522, Cl. 248-54.00R.
Vanderspurt, Thomas H.: *See*—
Taylor, Paul D.; and Vanderspurt, Thomas H., 4,083,882, Cl. 260-655.00R.
van der Vies, Johannes, to Akzona Incorporated. Pharmaceutical preparation adapted for oral administration. 4,083,973, Cl. 424-239.000.
Van Horn, Donald R.: *See*—
Van Horn, Ronald L.; Van Horn, Donald R.; and Van Horn, Roy B., 4,083,421, Cl. 180-88.000.
Van Horn, Ronald L.; Van Horn, Donald R.; and Van Horn, Roy B. Two speed motorcycle hub transmission. 4,083,421, Cl. 180-88.000.
Van Horn, Roy B.: *See*—
Van Horn, Ronald L.; Van Horn, Donald R.; and Van Horn, Roy B., 4,083,421, Cl. 180-88.000.
Van Klompenburg, Marlo G., to Truth Incorporated. Rotatable knob assembly. 4,083,264, Cl. 74-545.000.
Varta Batterie Aktiengesellschaft: *See*—
Czerny, Thomas; von Dohren, Hans; Losch, Lothar; Winsel, August; and Ziegler, Kurt, deceased, 4,083,810, Cl. 252-467.000.
Franzl, Alois, 4,083,386, Cl. 141-12.000.
Laig-Horstebrock, Helmut, 4,084,039, Cl. 429-89.000.
Vasiliev, Adolf Alfonsovich: *See*—
Istomin, Evgeny Ivanovich; Strekal, Leonid Pavlovich; Ivanenko, Alexandr Fedorovich; Vasiliev, Adolf Alfonsovich; Zhivaga, Leonid Ignatievich; Nazarenko, Oleg Kuzmich; Porazhinsky, Igor Antonovich; and Zhdanov, Jury Nikolaevich, 4,084,076, Cl. 219-121.0EB.
Porazhinsky, Igor Antonovich; Obolonsky, Alexei Pavlovich; Ivaschenko, Anatoly Grigorievich; Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,084,077, Cl. 219-121.0EB.
Vaskin, Boris Denisovich: *See*—
Porazhinsky, Igor Antonovich; Obolonsky, Alexei Pavlovich; Ivaschenko, Anatoly Grigorievich; Istomin, Evgeny Ivanovich; Ivanenko, Alexandr Fedorovich; Strekal, Leonid Pavlovich; Vasiliev, Adolf Alfonsovich; and Vaskin, Boris Denisovich, 4,084,077, Cl. 219-121.0EB.
Vasudeva, Anil; and Geri, Don W., to Memorex Corporation. Reel for magnetic recording tape. 4,083,509, Cl. 242-71.800.
Velsicol Chemical Corporation: *See*—
Albright, James A.; and Wilkinson, Theodore C., 4,083,825, Cl. 260-45.70P.
Albright, James A., 4,083,826, Cl. 260-45.70P.
Venner, Etienne; and Lenormand, Daniel, to Dosapro Milton Roy. Apparatus for feeding and proportioning pulverulent materials. 4,083,475, Cl. 222-198.000.
Venturi, Romano. Method and device for forming groups of rodlike articles. 4,083,460, Cl. 214-6.00H.
Verhofstadt, Peter W. J.: *See*—
Crippen, Richard E.; Hingarh, Hemraj K.; and Verhofstadt, Peter W. J., 4,084,174, Cl. 357-44.000.
Vermillion, Don William, to Singer Company, The. Vacuum cleaners with nozzle height adjusting mechanisms. 4,083,079, Cl. 15-354.000.
Verni, Ralph M.: *See*—
Genn, John P.; Verni, Ralph M.; and Bindman, Jonathan K., 4,083,456, Cl. 211-55.000.
Verolme, Cornelis, to Naval Project Development Sarl. LNG tanker. 4,083,318, Cl. 114-74.00A.
Versteeg, Joseph, to Exxon Research & Engineering Co. Stabilized static liquid membrane compositions. 4,083,798, Cl. 252-312.000.
Villafana, Jesus Mario Aguirre. Book protector. 4,083,582, Cl. 281-20.000.
Vinals, Joaquin F.; Kiwala, Jacob; Evers, William J.; and Heinsohn, Howard H., Jr., to International Flavors & Fragrances Inc. Novel tobacco product comprising one or more sulfides and process. 4,083,373, Cl. 131-17.00R.
Vinals, Joaquin F.: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,084,009, Cl. 426-538.000.
Vindez, Pierre G., to Zephyr Manufacturing Co., Inc. Positive feed drill with rapid advance. 4,083,646, Cl. 408-133.000.
ViPond, Clyde M., to Ideal Industries, Inc. Wire strippers. 4,083,105, Cl. 30-90.400.
Vock, Manfred Hugo: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,084,009, Cl. 426-538.000.
Vockenhuber, Karl: *See*—
Schuch, Albert; Hohenecker, Harald; Riegler, Herbert; and Weirich, Friedrich, 4,083,516, Cl. 242-193.000.
Vogel, Stephen Martin; and Woods, John Walton, to International Business Machines Corporation. Procedure for tightening tape wraps on a spindle. 4,084,117, Cl. 318-6.000.
Vogelpohl, Roland Louis, to Owens-Illinois, Inc. Color television picture tube structure and method of manufacture. 4,084,113, Cl. 313-408.000.
Volgstadt, Frank R.; and Passerell, David P., to Perfection Corporation. Pipe fitting having a non-metallic sealing member. 4,083,583, Cl. 285-55.000.
Volinskie, Robert, to AMP Incorporated. Connector for terminating a flat multi-wire cable. 4,083,615, Cl. 339-17.00F.

Volvo BM AB: *See—*
Larsson, Leif, 4,083,291, Cl. 91-412.000.
von Beckmann, Helmuth: *See—*
Stewart, John Kenneth; and von Beckmann, Helmuth, 4,083,775, Cl. 209-257.000.
von Besser, Kurt. Adjustable ski brake. 4,083,576, Cl. 280-605.000.
von den Stemmen, Alfons; and Swartz, John R., to Freight Guard Industries. Push-button combination lock for vehicles. 4,083,424, Cl. 180-114.000.
von Dohren, Hans: *See—*
Czerny, Thomas; von Dohren, Hans; Losch, Lothar; Winsel, August; and Ziegler, Kurt, deceased, 4,083,810, Cl. 252-467.000.
Vore, Raymond B.: *See—*
Mlyniec, Kenneth P.; and Vore, Raymond B., 4,084,147, Cl. 337-407.000.
Voytko, John: *See—*
Stefanik, Paul; and Voytko, John, 4,083,470, Cl. 220-254.000.
Vydrin, Vladimir Nikolaevich; Dukmasov, Vladimir Georgievich; and Davlyatshin, Garifulla. Device for automatic adjustment of the roll gap in a mill stand. 4,083,213, Cl. 72-6.000.
Vyzkumny ustav bavlnarsky: *See—*
Pospisil, Frantisek; Skoda, Stanislav; Esner, Stanislav; Tyl, Miroslav; Mikulecky, Karel; and Jiskra, Miloslav, 4,083,507, Cl. 242-43.200.
W. R. Grace & Co.: *See—*
Mathias, Eckart; and Morgan, Charles Robert, 4,084,020, Cl. 427-41.000.
W. Schlafhorst & Co.: *See—*
Raasch, Hans, 4,083,170, Cl. 57-34.00R.
Wagner, Otto C.: *See—*
Himy, Albert; and Wagner, Otto C., 4,084,047, Cl. 429-206.000.
Wagstaff, Robert A.: *See—*
Lindblom, Curtis H.; Shriver, Joe E.; Wagstaff, Robert A.; and Priepke, Edward H., 4,083,167, Cl. 56-98.000.
Waite, Mearle J.; and Wislocker, Frank, to Weyerhaeuser Company. Applicator gun for multi-component resin systems. 4,083,474, Cl. 222-145.000.
Waldrup, Herman H.: *See—*
Garrison, James R.; Metzger, Robert W.; and Waldrup, Herman H., 4,083,518, Cl. 244-17.110.
Walker, Derek: *See—*
Gallagher, Gerard; and Walker, Derek, 4,083,837, Cl. 260-141.000.
Walker, Francis H.: *See—*
Baker, Don R.; and Walker, Francis H., 4,083,867, Cl. 260-559.00B.
Wallace Murray Corporation: *See—*
Bremer, Robert Charles, Jr., 4,083,265, Cl. 74-574.000.
Walters, Chester F.; and Bergstein, Robert M., to Bergstein Packaging Trust. Cartons with cradle forming end closures. 4,083,447, Cl. 206-45.190.
Wangermann, Jochen, to Gruner + Jahr AG & Co. System for storing of printing products and for transporting them to a treatment machine. 4,083,461, Cl. 214-8.000.
Warncke, Ernst, to Dragerwerk Aktiengesellschaft. Protective helmet and full face mask construction. 4,083,065, Cl. 2-424.000.
Wasagchemie GmbH: *See—*
Platte, Friedrich; and Wiedemann, Wolfgang, 4,083,912, Cl. 264-120.000.
Watanabe, Hideaki: *See—*
Tanaka, Satoru; and Watanabe, Hideaki, 4,083,853, Cl. 260-340.50R.
Wattles, Gurdon B.; and Jones, Robert N., to Entoleter, Inc. Rotary processing apparatus. 4,083,504, Cl. 241-275.000.
Watts, Paul C.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Watts, Paul C.; Shibakawa, Riichiro; and Tone, Junsuke, 4,083,963, Cl. 424-117.000.
Wean United Inc.: *See—*
Deffenbaugh, James F., 4,084,075, Cl. 219-97.000.
Weaver, Raymond Louis: *See—*
Cauldwell, Jack D.; and Weaver, Raymond Louis, 4,084,140, Cl. 325-396.000.
Weber, Donald R.: *See—*
Tisue, James G.; Weber, Donald R.; and Johanson, Peter A., 4,084,196, Cl. 358-283.000.
Weber, Joachim: *See—*
Bruns, Ludwig; Schnuchel, Gunther; and Weber, Joachim, 4,083,876, Cl. 260-609.00R.
Weigel, Horst: *See—*
Offermanns, Herbert; and Weigel, Horst, 4,084,057, Cl. 560-34.000.
Weingartner, Fritz; and Liebertz, Josef, to Swiss Aluminium Ltd. Granular active alumina with high apparent density and high mechanical durability. 4,083,911, Cl. 264-118.000.
Weirich, Friedrich: *See—*
Schuch, Albert; Hohenecker, Harald; Riegler, Herbert; and Weirich, Friedrich, 4,083,516, Cl. 242-193.000.
Weiss, Otmar: *See—*
Hofer, Gerald; Konrath, Karl; and Weiss, Otmar, 4,083,662, Cl. 417-499.000.
Welch, Martin Jeffrey: *See—*
Cunningham, John Joseph; Welch, Martin Jeffrey; and Puppolo, Henry Francis, 4,083,490, Cl. 237-1.00A.
Welcome, Elizabeth M., administratrix: *See—*
Welcome, James R., deceased; and Welcome, Elizabeth M., administratrix, 4,083,823, Cl. 260-40.00R.
Welcome, James R., deceased; and by Welcome, Elizabeth M., administratrix, to Hooker Chemicals & Plastics Corporation. No-bake foundry binder system. 4,083,823, Cl. 260-40.00R.
Welsh, Ralph Raleigh: *See—*
Johnson, William Rendall; and Welsh, Ralph Raleigh, 4,084.029, Cl. 428-119.000.
Welti, George R., to Communications Satellite Corporation. Multidimensional code communication systems. 4,084,137, Cl. 325-30.000.
Weniger, Manfred, to Siemens Aktiengesellschaft. High voltage winding comprising several component coils for voltage transformers. 4,084,144, Cl. 336-70.000.
Wenzel, Edward C.; and Steinmann, Henry W., to Fuel Systems, Inc. Clear and stable liquid fuel compositions for internal combustion engines. 4,083,698, Cl. 44-51.000.
Werner & Pfleiderer, Firma: *See—*
Millauer, Christian, 4,084,263, Cl. 366-84.000.
Wesely, Rolf Jurgen, to Kennecott Copper Corporation. Purifying molybdenum flotation concentrates. 4,083,921, Cl. 423-55.000.
West Electric Company, Ltd.: *See—*
Iwata, Hiroshi, 4,084,167, Cl. 354-33.000.
Iwata, Hiroshi; and Ishikawa, Katsuji, 4,084,169, Cl. 354-173.000.
Wester, Thomas Joseph; and Petersen, Svend Aage, to Johns-Manville Corporation. Apparatus for chopping strand. 4,083,279, Cl. 83-347.000.
Westercamp, Kenneth L., to General Motors Corporation. Stroking universal joint housing. 4,083,202, Cl. 64-32.00R.
Westermark, Thord Ingvar Eugen: *See—*
Bergmark, Nils Randolf; and Westermark, Thord Ingvar Eugen, 4,083,361, Cl. 126-299.00D.
Bergmark, Nils Randolf; and Westermark, Thord Ingvar Eugen, 4,083,362, Cl. 126-299.00D.
Western Electric Company, Inc.: *See—*
Dafter, Robert Vincent, Jr., 4,084,023, Cl. 427-98.000.
Gault, William Andrew, 4,083,748, Cl. 156-609.000.
Westfalia Separator AG: *See—*
Gunnewig, Hubert, 4,083,488, Cl. 233-20.00A.
Westinghouse Air Brake Company: *See—*
Shirey, Frank W., 4,083,608, Cl. 303-11.000.
Westinghouse Electric Corporation: *See—*
Ames, Stephen A.; and Martel, Robert J., 4,084,128, Cl. 329-116.000.
Bowman, Gary K., 4,084,064, Cl. 174-14.00R.
Dickerson, Henry A., 4,083,515, Cl. 242-158.00R.
Geohegan, Kenneth P., Jr.; Collins, Christopher R.; Bawroski, George; and Steiner, George H., 4,083,433, Cl. 188-1.00B.
Lloyd, Raymond A.; and Keller, Thomas A., 4,084,262, Cl. 364-900.000.
Miller, Harold L., 4,084,145, Cl. 337-231.000.
Westley, John, to Hoffmann-La Roche. Therapeutic agent for improving cardiovascular function. 4,083,968, Cl. 424-181.000.
Weyerhaeuser Company: *See—*
Waite, Mearle J.; and Wislocker, Frank, 4,083,474, Cl. 222-145.000.
Wharam, John L., to Minnesota Mining and Manufacturing Company. Tape cartridge with hinged housing sections. 4,083,472, Cl. 220-334.000.
White, Harold Robert, to Alar Engineering Corporation. Rotary vacuum filter. 4,083,787, Cl. 210-402.000.
White, James F.; and Applequist, Michael D., to Standard Oil Company, The. Preparation of methacrylic acid from methacrolein. 4,083,805, Cl. 252-437.000.
Whitehurst, Brooks M.: *See—*
Jernigan, John D.; and Whitehurst, Brooks M., 4,083,934, Cl. 423-317.000.
Whiteley, John: *See—*
Lane, Robert; and Whiteley, John, 4,083,169, Cl. 57-34.00R.
Whitted, Robert Lee, to Duffy Tool & Stamping, Inc. Parts forming apparatus and method. 4,083,221, Cl. 72-405.000.
Whittingham, M. Stanley, to Exxon Research & Engineering Co. Rechargeable electrochemical cell with cathode of stoichiometric titanium disulfide. 4,084,046, Cl. 429-194.000.
Wiedemann, Wolfgang: *See—*
Platte, Friedrich; and Wiedemann, Wolfgang, 4,083,912, Cl. 264-120.000.
Wiese, Volkhard: *See—*
Pugin, Andre; and Wiese, Volkhard, 4,083,687, Cl. 8-42.00D.
Wiggins, Richard F., to Gyromat Corporation, The. Positive check valve control unit for color change system. 4,083,493, Cl. 239-112.000.
Wildt, Hans-Achim Dietmar: *See—*
Schurr, George Alan; and Wildt, Hans-Achim Dietmar, 4,083,946, Cl. 423-613.000.
Wiley, Corless W. Sterile trap accessory for use with surgical aspirator. 4,083,706, Cl. 55-385.00R.
Wiley, Donald E.: *See—*
Anthony, Carl, Jr.; and Wiley, Donald E., 4,083,528, Cl. 249-198.000.
Wilhelm, Frederick C., to Universal Oil Products Company. Hydrocarbon conversion with an acidic, sulfur-free trimetallic catalytic composite. 4,083,806, Cl. 252-442.000.
Wilkinson, Samuel: *See—*
Beddell, Christopher Raymond; Lowe, Lawrence Alfred; and Wilkinson, Samuel, 4,083,967, Cl. 424-177.000.
Wilkinson, Theodore C.: *See—*
Albright, James A.; and Wilkinson, Theodore C., 4,083,825, Cl. 260-45.70P.
Willenbrock, John C., to United States of America, Navy. Strobe light having reduced electromagnetic radiation. 4,084,215, Cl. 362-32.000.

Willette, Wayne Ronald: *See—*
Beachem, Ronald G.; and Willette, Wayne Ronald, 4,084,237, Cl. 364-400.000.
Williams, Brown F.: *See—*
Gorog, Istvan; and Williams, Brown F., 4,084,188, Cl. 358-199.000.
Williams, Hubert L.: *See—*
McPherson, Alex L.; and Williams, Hubert L., 4,083,661, Cl. 417-131.000.
Williams, James A.; and Gray, Larry O., to Dana Corporation. Vehicle road speed signal source. 4,083,423, Cl. 180-105.00E.
Williams, Patrick Yelverton. Split nuts. 4,083,288, Cl. 85-33.000.
Willis, Chester R.: *See—*
Snader, Kenneth M.; and Willis, Chester R., 4,083,952, Cl. 424-45.000.
Wilson, Francis Paul: *See—*
Hartigan, Martin Joseph; and Wilson, Francis Paul, 4,083,702, Cl. 55-67.000.
Wilson, Phillip Steven: *See—*
Mark, Victor; and Wilson, Phillip Steven, 4,083,814, Cl. 260-30.80R.
Wilson, Thomas George: *See—*
Burns, William Wesley, III; and Wilson, Thomas George, 4,084,103, Cl. 307-132.00R.
Windmoller & Holscher: *See—*
Rochla, Kurt, 4,083,747, Cl. 156-510.000.
Wing, Robert E.; and Doane, William M., to United States of America, Agriculture. Removal of heavy metal ions from aqueous solutions with insoluble crosslinked-starch-xanthates. 4,083,783, Cl. 210-54.000.
Winje, Russell A.: *See—*
Bourkland, Kenneth R.; and Winje, Russell A., 4,084,109, Cl. 307-108.
Winsel, August: *See—*
Czerny, Thomas; von Dohren, Hans; Losch, Lothar; Winsel, August; and Ziegler, Kurt, deceased, 4,083,810, Cl. 252-467.000.
Wirtz Manufacturing Company, Inc.: *See—*
McLane, Jack E., 4,083,478, Cl. 222-592.000.
Wise, Rodney Mahlon; and Derstadt, Donna M., to Procter & Gamble Company, The. Process for making granular detergent composition. 4,083,813, Cl. 252-526.000.
Wislocker, Frank: *See—*
Waite, Mearle J.; and Wislocker, Frank, 4,083,474, Cl. 222-145.000.
Witt, Paul A.: *See—*
Asselin, George F.; and Witt, Paul A., 4,083,772, Cl. 208-321.000.
Witte, Gunther, to Gebr. Dingerkus. Handle securing device. 4,083,081, Cl. 16-114.00A.
Wittlinger, Harold Allen, to RCA Corporation. Voltage monitoring circuit. 4,084,156, Cl. 340-237.00S.
Witzke, Horst; and Deb, Satyendra Kumar, to Optel Corporation; and Grumman Aerospace Corporation. Photogalvanic cell having a charge storage layer with varying performance characteristics. 4,084,043, Cl. 429-111.000.
Wivagg, Adrian Peter, to Combustion Engineering, Inc. Articulated Schnabel car. 4,083,311, Cl. 105-367.000.
Woertz, Byron B.: *See—*
Fenton, Donald M.; and Woertz, Byron B., 4,083,945, Cl. 423-573.00R.
Wohlfeld, Robert M.: *See—*
Braswell, James L.; Covington, Cecil E.; Phillips, Nolan B.; Tomerlin, Reggie J.; and Wohlfeld, Robert M., 4,083,656, Cl. 416-226.000.
Wolf, Anthony David: *See—*
Fost, Dennis Lynn; and Wolf, Anthony David, 4,084,055, Cl. 548-369.000.
Wolf, Karlheinz; Nonn, Konrad; Hornle, Reinhold; and Petroll, Hans Werner, to Bayer Aktiengesellschaft. Solid ϵ-caprolactam dyestuff preparations. 4,083,689, Cl. 8-85.00B.
Wolfe, John Edmond, to Burroughs Corporation. Electron beam column generator for the fabrication of semiconductor devices. 4,084,095, Cl. 250-492.00A.
Wolff, Thomas Ormond: *See—*
Anderson, Larry Don; Wolff, Thomas Ormond; and Slechta, Leo John, Jr., 4,084,226, Cl. 364-200.000.
Wolma, Rodney J., to Johnson, Philip L. Coping mounting plate. 4,083,158, Cl. 52-300.000.
Wolters, Tjako Aaldrik: *See—*
de Koning, Jan; van den Brink, Theodorus; and Wolters, Tjako Aaldrik, 4,083,135, Cl. 37-58.000.
Ravesteyn, Cornelis Jan; de Koning, Jan; and Wolters, Tjako Aaldrik, 4,083,133, Cl. 37-72.000.
Woodall Industries Inc.: *See—*
Stahl, Lloyd E., 4,083,739, Cl. 156-163.000.
Woodring, William B., to Olin Corporation. Novel cartridge. 4,083,306, Cl. 102-38.000.
Woods, John M.; and Keene, Bruce C., to Honeywell Information Systems Inc. Power confidence system. 4,084,232, Cl. 364-200.000.
Woods, John Walton: *See—*
Vogel, Stephen Martin; and Woods, John Walton, 4,084,117, Cl. 318-6.000.
Woodward, Fred E. Manufacture of phosphoric acid using acid phosphate ester antifoaming compositions. 4,083,936, Cl. 423-320.000.
Wright, R. Martin: *See—*
Lobunez, Walter; Ilardi, Joseph M.; Wright, R. Martin; and Herring, Allan P., 4,083,939, Cl. 423-421.000.
Wyatt, Robert S., to Brad Harrison Company. Electrical connector. 4,083,617, Cl. 339-47.00R.
Wycoff, Keith H. Selective call communication system. 4,084,138, Cl. 325-55.000.
Wyndham, Ronald, to Toth Aluminum Corporation. Controlled carbochlorination of kaolinitic ores. 4,083,927, Cl. 423-136.000.
Wynn Oil Company: *See—*
Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., 4,083,399, Cl. 165-95.000.
Xerox Corporation: *See—*
Beckman, Maynard K., Jr., 4,083,322, Cl. 118-70.000.
Imperial, George R.; and Lentz, James A., 4,083,092, Cl. 29-132.000.
Mailloux, Louis D.; and Bollman, James E., 4,083,632, Cl. 355-3.00R.
Rote, Everett Arthur, 4,083,323, Cl. 118-6.000.
Shanly, Alan L., 4,083,633, Cl. 355-15.000.
Starkweather, Gary K., 4,084,197, Cl. 358-300.000.
Yabuno, Kohei: *See—*
Tokunaga, Norikazu; and Yabuno, Kohei, 4,084,222, Cl. 363-60.000.
Yacura, Stephen B., to Pullman Incorporated. Roller dryer for clay pipe. 4,083,119, Cl. 34-105.000.
Yaegashi, Takehisa; and Nakatomi, Takayoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine for a vehicle. 4,083,183, Cl. 60-290.000.
Yamada, Fumiharu: *See—*
Kikuchi, Takayuki; Yamada, Fumiharu; Nakamura, Satoshi; and Koyama, Fumio, 4,083,560, Cl. 273-102.20B.
Yamada, Senri; Nagasawa, Kanji; Mori, Tokiaki; and Tanaka, Masaru, to Fujisawa Pharmaceutical Co., Ltd.; and Dai-Ichi Kogyo Seiyaku Co., Ltd. Hydraulic cement composition. 4,083,729, Cl. 106-88.000.
Yamada, Shigeru: *See—*
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Ichikawa, Kiyoshi; and Isii, Sigeki, 4,083,283, Cl. 84-1.240.
Yamaguchi, Hirotsugu: *See—*
Hamada, Hideo; Yamaguchi, Hirotsugu; and Takahashi, Koichi, 4,083,443, Cl. 192-91.00R.
Yamamoto, Hisao; Inukai, Toshiya; and Koga, Yoshihiko, to Sumitomo Chemical Company, Limited. Analgetic composition. 4,083,981, Cl. 424-260.000.
Yamamura Glass Kabushiki Kaisha: *See—*
Shimoiizaka, Junzo; Konosu, Akira; Morita, Kaneji; Sugie, Akio; and Isioka, Kunio, 4,083,776, Cl. 209-452.000.
Yamashita, Kiyoshi; and Kudo, Hidehiko, to Kaken Chemical Co., Ltd.; and Godoshusei Company, Limited. Method of preventing diarrhea for young pig and calf. 4,083,960, Cl. 424-94.000.
Yamazaki, Nagataka: *See—*
Asano, Yusuke; Aoki, Yoshio; and Yamazaki, Nagataka, 4,083,733, Cl. 127-42.000.
Yamazaki, Shuichi; and Kajitani, Ikuo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for heating intake mixture from exhaust gases of internal combustion engine. 4,083,339, Cl. 123-122.0AC.
Yancey, Don Robert. Dual integrator EEG analyzer. 4,083,365, Cl. 128-2.10B.
Yankee, Ernest W., to Upjohn Company, The. 8β,12α-PGF$_{2\alpha}$Compounds. 4,084,063, Cl. 560-121.000.
Yano, Kozo; Kuwagaki, Hiroshi; and Takechi, Sadatoshi, to Sharp Kabushiki Kaisha. Manufacture of a twisted nematic field effect mode liquid crystal display cell. 4,083,099, Cl. 29-592.00R.
Yano, Tadanori: *See—*
Noda, Kanji; Kodama, Ryuhei; Yano, Tadanori; Inoue, Hideaki; Furukawa, Kazuhide; Igimi, Hirotsune; and Ide, Hiroyuki, 4,083,994, Cl. 424-311.000.
Yasuda, Tetsuya: *See—*
Nishimura, Katsuo; Yasuda, Tetsuya; Murakami, Tomomi; Yoshida, Masateru; Natori, Minoru; and Iinuma, Yoshio, 4,083,177, Cl. 58-23.00R.
Yih, Roy Y.; Johnson, Wayne O.; and Kollman, Gerald E., to Rohm and Haas Company. Selective herbicidal activity of fluoroaminopyridazines. 4,083,713, Cl. 71-92.000.
Yokogi, Akira: *See—*
Oshima, Isao; and Yokogi, Akira, 4,083,496, Cl. 239-327.000.
Yokomichi, Isao: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Sakashita, Nobuyuki, 4,083,714, Cl. 71-94.000.
Yokota, Yukio: *See—*
Inouye, Kozo; Yokota, Yukio; Okumura, Akio; Shiba, Keisuke; and Kubodera, Seiiti, 4,083,721, Cl. 96-56.200.
Yokoyama, Masao; Sughihira, Tsuneo; and Ohta, Koji, to Kabushiki Kaisha Komatsu Seisakusho. Combination angling-tilting bulldozer. 4,083,414, Cl. 172-804.000.
Yoshida, Hiroshi, to Aikoh Co., Ltd. Magnesium base treating agent of molten iron. 4,083,716, Cl. 75-58.000.
Yoshida Kogyo K.K.: *See—*
Kobayashi, Yoshimatsu, 4,083,392, Cl. 150-51.000.
Sado, Yukio, 4,083,641, Cl. 403-260.000.
Yoshida Kogyo Kabushiki Kaisha: *See—*
Minami, Tadashi, 4,083,089, Cl. 24-205.16R.
Yoshida, Masateru: *See—*
Nishimura, Katsuo; Yasuda, Tetsuya; Murakami, Tomomi; Yoshida, Masateru; Natori, Minoru; and Iinuma, Yoshio, 4,083,177, Cl. 58-23.00R.
Yoshida, Paul S.: *See—*
Albertine, Robert J.; Blomstedt, John W.; Edfors, John E.; Quattrini, Victor L.; and Yoshida, Paul S., 4,084,250, Cl. 364-708.000.
Yost, John V. Non-broaching boat hull. 4,083,320, Cl. 114-271.000.
Young, Bruce, Jr. Shelf-supporting standards. 4,083,458, Cl. 211-187.000.
Young, Carl Wilfred. Method of playing a game of chance. 4,083,558, Cl. 273-1.00R.

Young, Robert G., to Sperry Rand Corporation. Clutch assembly. 4,083,441, Cl. 192-28.000.

Yueh, Mao H.; and Mueller, Herman W., to General Mills, Inc. Instantized potato products and method of making same. 4,084,008, Cl. 426-464.000.

Yumuro, Tazo; and Furuto, Takashi, to Kabushiki Kaisha Komatsu Seisakusho. Device for positioning the backward stroke end of shearing blade for use in bolt forming headers. 4,083,281, Cl. 83-525.000.

Zampini, Louis, Jr.; and Stefani, Joseph P., to General Electric Company. Wall plate package with wax screw socket. 4,083,448, Cl. 206-329.000.

Zanker, Klaus Joachim: *See*—
Agar, Joram; and Zanker, Klaus Joachim, 4,083,244, Cl. 73-204.000.

Zattoni, Reinaldo Rela. Safety package of toothpick holder. 4,083,487, Cl. 229-38.000.

Zaugg, Harold Elmer; and Lee, Cheuk Man, to Abbott Laboratories. 2-(α-Amidobenzyl)-5-alkylresorcinols. 4,083,868, Cl. 260-562.00N.

Zboril, Josef, to BBC Brown, Boveri & Company, Limited. Arrangement for maintaining optimum minimum operating clearance between rotor and stator components of fluid-flow machines and the like. 4,083,650, Cl. 415-174.000.

Zelenko, Harry. Compact note scroll. 4,083,136, Cl. 40-518.000.

Zeller, Hans: *See*—
Bertling, Johannes-Gerhard; Zeller, Hans; and Brettschneider, Johannes, 4,083,338, Cl. 123-119.0EC.

Zenith Radio Corporation: *See*—
Palac, Kazimir, 4,084,193, Cl. 358-246.000.

Zephyr Manufacturing Co., Inc.: *See*—
Vindez, Pierre G., 4,083,646, Cl. 408-133.000.

Zepper, Allen O. Game goal with flexible object impacting curtain. 4,083,562, Cl. 273-127.00B.

Zetterberg, Niklas F. Baiting tool for storing and dispensing fish bait. 4,083,477, Cl. 222-386.000.

Zeuner, Hans: *See*—
Gallus, Heinz; Klein, Willi; and Zeuner, Hans, 4,083,435, Cl. 188-218.0XL.

Zhdanov, Jury Nikolaevich: *See*—
Istomin, Evgeny Ivanovich; Strekal, Leonid Pavlovich; Ivanenko, Alexandr Fedorovich; Vasiliev, Adolf Alfonsovich; Zhivaga, Leonid Ignatievich; Nazarenko, Oleg Kuzmich; Porazhinsky, Igor Antonovich; and Zhdanov, Jury Nikolaevich, 4,084,076, Cl. 219-121.0EB.

Zhernovaya, Zinaida Vyacheslavovna: *See*—
Petrov, Evgeny Ivanovich; Raevich, Vladimir Konstantinovich; Kolesnikova, Elena Nikolaevna; Zhernovaya, Zinaida Vyacheslavovna; Skvortsov, Evgeny Nikolaevich; Dagaeva, Ljudmila Ivanovna; Korovnikov, Jury Prokopievich; Agafonov, Pavel Anatolievich; Bystrov, Alexandr Ivanovich; Panin, Stanislav Alexeevich; and Agafonov, Vasily Trofimovich, 4,083,204, Cl. 66-178.00R.

Zhilin, Vyacheslav Alexandrovich: *See*—
Kagan, July Borisovich; Loktev, Sergei Minovich; Nizov, Gennady Alexeevich; Zhilin, Vyacheslav Alexandrovich; Zuev, Alexandr Andreevich; and Bashkirov, Andrei Nikolaevich, 4,083,880, Cl. 260-632.00R.

Zhivaga, Leonid Ignatievich: *See*—
Istomin, Evgeny Ivanovich; Strekal, Leonid Pavlovich; Ivanenko, Alexandr Fedorovich; Vasiliev, Adolf Alfonsovich; Zhivaga, Leonid Ignatievich; Nazarenko, Oleg Kuzmich; Porazhinsky, Igor Antonovich; and Zhdanov, Jury Nikolaevich, 4,084,076, Cl. 219-121.0EB.

Ziegler, Kurt, deceased: *See*—
Czerny, Thomas; von Dohren, Hans; Losch, Lothar; Winsel, August; and Ziegler, Kurt, deceased, 4,083,810, Cl. 252-467.000.

Ziegler, Rosemary, heir: *See*—
Czerny, Thomas; von Dohren, Hans; Losch, Lothar; Winsel, August; and Ziegler, Kurt, deceased, 4,083,810, Cl. 252-467.000.

Ziemek, Gerhard: *See*—
Polizzano, Fred F., deceased; Stein, Dimitri R.; and Ziemek, Gerhard, 4,083,484, Cl. 228-130.000.

Ziemek, Peter: *See*—
Buysch, Hans-Josef; Ziemek, Peter; and Raue, Roderich, 4,083,870, Cl. 260-570.00D.

Zimmer, Christian; and Ryser, Heinrich, to Hasler AG. Method of and apparatus for determining the direction of the mutual temporal shift of at least two similar stochastic signals. 4,084,133, Cl. 324-83.00A.

Zimmermann, Wolfgang: *See*—
Schindler, Hermann; and Zimmermann, Wolfgang, 4,083,906, Cl. 264-49.000.

Zine, Anthony R., Jr., to Corning Glass Works. Stabilized blood separating composition. 4,083,784, Cl. 210-83.000.

Zingaro, William P.; and Sicignano, Albert, to North American Philips Corporation. Long wave-length X-ray diffraction crystal and method of manufacturing the same. 4,084,089, Cl. 250-272.000.

Zogas, George V. Diamond grinding wheel precision convex radii dressing apparatus. 4,083,350, Cl. 125-11.0CP.

Zuev, Alexandr Andreevich: *See*—
Kagan, July Borisovich; Loktev, Sergei Minovich; Nizov, Gennady Alexeevich; Zhilin, Vyacheslav Alexandrovich; Zuev, Alexandr Andreevich; and Bashkirov, Andrei Nikolaevich, 4,083,880, Cl. 260-632.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF APRIL, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Delalande S. A.: *See—*
Fauran, Claude P.; Raynaud, Guy M.; Oliver, Rene A.; and Douzon, Colette A., Re. 29,607, Cl. 260-307.00C.

Douzon, Colette A.: *See—*
Fauran, Claude P.; Raynaud, Guy M.; Oliver, Rene A.; and Douzon, Colette A., Re. 29,607, Cl. 260-307.00C.

Dunwell, David William: *See—*
Evans, Delme; Dunwell, David William; and Hicks, Terence Alan, Re. 29,608, Cl. 260-307.00D.

Eliot, Sigdon A., to Thermetics, Inc. Scrap reclamation. Re. 29,606, Cl. 100-92.000.

Evans, Delme; Dunwell, David William; and Hicks, Terence Alan, to Lilly Industries Limited. Benzoxazole derivatives. Re. 29,608, Cl. 260-307.00D.

Fauran, Claude P.; Raynaud, Guy M.; Oliver, Rene A.; and Douzon, Colette A., to Delalande S. A. Derivatives of 5-hydroxymethyl-3-substituted-2-oxazolidinones, process of preparation thereof and therapeutic application. Re. 29,607, Cl. 260-307.00C.

Gill, Harnek S.: *See—*
Wadia, Gurinder S.; and Gill, Harnek S., Re. 29,609, Cl. 219-494.000.

Hicks, Terence Alan: *See—*
Evans, Delme; Dunwell, David William; and Hicks, Terence Alan, Re. 29,608, Cl. 260-307.00D.

Knogo Corporation: *See—*
Minasy, Arthur J.; and Pruzick, Ronald, Re. 29,610, Cl. 340-280.000.

Lilly Industries Limited: *See—*
Evans, Delme; Dunwell, David William; and Hicks, Terence Alan, Re. 29,608, Cl. 260-307.00D.

McGraw-Edison Company: *See—*
Wadia, Gurinder S.; and Gill, Harnek S., Re. 29,609, Cl. 219-494.000.

Minasy, Arthur J.; and Pruzick, Ronald, to Knogo Corporation. Field strength uniformity control system. Re. 29,610, Cl. 340-280.000.

Oliver, Rene A.: *See—*
Fauran, Claude P.; Raynaud, Guy M.; Oliver, Rene A.; and Douzon, Colette A., Re. 29,607, Cl. 260-307.00C.

Pruzick, Ronald: *See—*
Minasy, Arthur J.; and Pruzick, Ronald, Re. 29,610, Cl. 340-280.000.

Raynaud, Guy M.: *See—*
Fauran, Claude P.; Raynaud, Guy M.; Oliver, Rene A.; and Douzon, Colette A., Re. 29,607, Cl. 260-307.00C.

Thermetics, Inc.: *See—*
Eliot, Sigdon A., Re. 29,606, Cl. 100-92.000.

Wadia, Gurinder S.; and Gill, Harnek S., to McGraw-Edison Company. Electric cooking apparatus with safety control. Re. 29,609, Cl. 219-494.000.

LIST OF PLANT PATENTEES

Ecke, Paul, Jr. Poinsettia plant. 4,238, 4-11-78, Cl. 86.000.

Holtkamp, Reinhold. African violet plant. 4,239, 4-11-78, Cl. 69.000.

Middelburg B.V.: *See—*
Middelburg, Nicolaas, 4,240, Cl. 74.000.

Middelburg, Nicolaas, to Middelburg B.V. Chrysanthemum. 4,240, 4-11-78, Cl. 74.000.

Zaiger, Chris Floyd. Apricot tree. 4,237, 4-11-78, Cl. 39.000.

LIST OF DESIGN PATENTEES

Albert M. Lock & Son, Inc.: *See—*
Eisen, Leonard, 247,696, Cl. D6-186.000.

Armstrong, William J. Microphone. 247,705, 4-11-78, Cl. D14-12.000.

Armstrong, William J. Microphone. 247,706, 4-11-78, Cl. D14-12.000.

Armstrong, William J. Microphone. 247,707, 4-11-78, Cl. D14-12.000.

Bottcher, Charles E., to Esslinger, J. B., a part interest. Combined green bean and pea sheller and green bean shredder. 247,697, 4-11-78, Cl. D7-153.000.

Bratton, Harry Steven. Suspendible shelving. 247,695, 4-11-78, Cl. D6-113.000.

Breault, Ernest R. Transparent cribbage board. 247,724, 4-11-78, Cl. D34-5.0TT.

Burwell, Clifton: *See—*
Sturman, Oded E.; and Grill, Benjamin, 247,717, Cl. D23-38.000.

Clifford, Eugene Russett, to Clifford, Eugene Russett. Gun. 247,714, 4-11-78, Cl. D22-6.000.

Communication Mfg. Co.: *See—*
LaBarge, Louis P., 247,712, Cl. D16-55.000.

Consumer Idea Centers, Inc.: *See—*
Wax, Miriam P., 247,721, Cl. D25-58.000.

Dow Chemical Company, The: *See—*
Turnbull, Guy A., 247,699, Cl. D9-60.000.

Eisen, Leonard, to Albert M. Lock & Son, Inc. Room divider unit. 247,696, 4-11-78, Cl. D6-186.000.

Esslinger, J. B.: *See—*
Bottcher, Charles E., 247,697, Cl. D7-153.000.

Etes, Donald E. Fish hook knot tying device. 247,713, 4-11-78, Cl. D22-31.000.

Fluorocarbon Company, The: *See—*
Wilhelm, Frank J., 247,720, Cl. D24-1.100.

Furst, Norman R.; Tokiyama, Masaru; and Krolopp, Rudolph W., to Motorola, Inc. Vehicular radio or similar article. 247,708, 4-11-78, Cl. D14-68.000.

Garazi, Max, to Solar Suntan Products Corporation. Bottle or similar article. 247,700, 4-11-78, Cl. D9-143.000.

Gnesi, Rino. Macaroni. 247,691, 4-11-78, Cl. D1-15.000.

Goodyear Tire & Rubber Company, The: *See—*
Hutz, John A.; and Gresens, Henry L. L., 247,710, Cl. D12-143.000.

Gresens, Henry L. L.: *See—*
Hutz, John A.; and Gresens, Henry L. L., 247,710, Cl. D12-143.000.

Grill, Benjamin: *See—*
Sturman, Oded E.; and Grill, Benjamin, 247,717, Cl. D23-38.000.

Hutz, John A.; and Gresens, Henry L. L., to Goodyear Tire & Rubber Company, The. Tire. 247,710, 4-11-78, Cl. D12-143.000.

Inohara, Masanobu, to Onitsuka Co., Ltd. Cleat plate for sport shoe. 247,692, 4-11-78, Cl. D2-317.000.

Kabushiki Kaisha Izumi Seisakusho: *See—*
Ono, Toru, 247,698, Cl. D8-397.000.

Koob, Robert A. Fish knife. 247,716, 4-11-78, Cl. D22-1.000.

Krolopp, Rudolph W.: *See—*
Furst, Norman R.; Tokiyama, Masaru; and Krolopp, Rudolph W., 247,708, Cl. D14-68.000.

Kwon, Young D. Digital calendar watch. 247,701, 4-11-78, Cl. D10-31.000.

LaBarge, Louis P., to Communication Mfg. Co. Hand-held light and magnifier. 247,712, 4-11-78, Cl. D16-55.000.

Lee, Villa L. Macrame hook. 247,693, 4-11-78, Cl. D3-19.00R.

Lehto, Bernhardt E. Bracket support for a workman's plank. 247,722, 4-11-78, Cl. D25-68.000.

Levin, Monte L.: *See—*
Schulman, Daniel; and Levin, Monte L., 247,704, Cl. D14-12.000.

Lucich, Bernard P.: *See*—
Lucich, Dorothy M.; and Lucich, Bernard P., 247,723, Cl. D27-09.000.
Lucich, Dorothy M.; and Lucich, Bernard P. Cigarette extinguisher. 247,723, 4-11-78, Cl. D27-09.000.
Machen, Jyles L.: *See*—
Worley, Joe D., Jr.; and Machen, Jyles L., 247,715, Cl. D22-99.000.
Meinecke, John M.: *See*—
Seymour, Herbert E.; and Meinecke, John M., 247,725, Cl. D48-4.00B.
Motorola, Inc.: *See*—
Furst, Norman R.; Tokiyama, Masaru; and Krolopp, Rudolph W., 247,708, Cl. D14-68.000.
Taylor, Terrance Nelson, 247,709, Cl. D14-86.000.
Mueh, Alfred E.; and Orth, Nick J., to Tempo Communications, Inc. Display figure for merchandise or service. 247,694, 4-11-78, Cl. D6-85.000.
Onitsuka Co., Ltd.: *See*—
Inohara, Masanobu, 247,692, Cl. D2-317.000.
Ono, Toru, to Kabushiki Kaisha Izumi Seisakusho. Cap nut. 247,698, 4-11-78, Cl. D8-397.000.
Orth, Nick J.: *See*—
Mueh, Alfred E.; and Orth, Nick J., 247,694, Cl. D6-85.000.
Peterman, Dale A. Stove. 247,718, 4-11-78, Cl. D23-92.000.
Peterman, Dale A. Stove. 247,719, 4-11-78, Cl. D23-92.000.
Pittman, William I. Attachable folding sleeper unit for vehicles. 247,711, 4-11-78, Cl. D12-156.000.
Rite Autotronics Corporation: *See*—
Schwartz, Edwin L., 247,702, Cl. D10-56.000.
Romert, Rolf. Transport cart. 247,703, 4-11-78, Cl. D12-25.000.
Schulman, Daniel; and Levin, Monte L., to Superex Electronics Corporation. Hand held microphone or the like. 247,704, 4-11-78, Cl. D14-12.000.
Schwartz, Edwin L., to Rite Autotronics Corporation. Moisture measuring device. 247,702, 4-11-78, Cl. D10-56.000.
Seymour, Herbert E.; and Meinecke, John M., to Xantech Corporation. Multimode lighting fixture. 247,725, 4-11-78, Cl. D48-4.00B.
Solar Suntan Products Corporation: *See*—
Garazi, Max, 247,700, Cl. D9-143.000.
Sturman, Oded E.; and Grill, Benjamin, to Burwell, Clifton, a part interest. Sprinkler system controller. 247,717, 4-11-78, Cl. D23-38.000.
Superex Electronics Corporation: *See*—
Schulman, Daniel; and Levin, Monte L., 247,704, Cl. D14-12.000.
Taylor, Terrance Nelson, to Motorola, Inc. Radio antenna or similar article. 247,709, 4-11-78, Cl. D14-86.000.
Tempo Communications, Inc.: *See*—
Mueh, Alfred E.; and Orth, Nick J., 247,694, Cl. D6-85.000.
Tokiyama, Masaru: *See*—
Furst, Norman R.; Tokiyama, Masaru; and Krolopp, Rudolph W., 247,708, Cl. D14-68.000.
Turnbull, Guy A., to Dow Chemical Company, The. Bottle or similar article. 247,699, 4-11-78, Cl. D9-60.000.
Wax, Miriam P., to Consumer Idea Centers, Inc. Booth. 247,721, 4-11-78, Cl. D25-58.000.
Wilhelm, Frank J., to Fluorocarbon Company, The. Oxygen hood. 247,720, 4-11-78, Cl. D24-1.100.
Worley, Joe D., Jr.; and Machen, Jyles L. Hunting blind. 247,715, 4-11-78, Cl. D22-99.000.
Xantech Corporation: *See*—
Seymour, Herbert E.; and Meinecke, John M., 247,725, Cl. D48-4.00B.

CLASSIFICATION OF PATENTS

ISSUED APRIL 11, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

69.5	4,083,064
424	4,083,065

CLASS 3

1.4	4,083,066

CLASS 4

317	4,083,067

CLASS 5

66	4,083,068
345 R	4,083,069

CLASS 8

2.5 A	4,083,680
7	4,083,681
15	4,083,682
39 D	4,083,683
41 C	4,083,688
41 R	4,083,684
	4,083,685
	4,083,686
42 D	4,083,687
85 B	4,083,689

CLASS 9

11 A	4,083,070
309	4,083,071

CLASS 14

69.5	4,083,072

CLASS 15

1.5 A	4,083,073
104 A	4,083,075
104.06 R	4,083,074
	4,083,076
244 R	4,083,078
321	4,083,077
354	4,083,079

CLASS 16

66	4,083,080
114 A	4,083,081
163	4,083,082

CLASS 17

11	4,083,083
73	4,083,084

CLASS 19

105	4,083,085

CLASS 23

230 M	4,083,690
230 R	4,083,691
232 R	4,083,692
262	4,083,693
288 F	4,083,694
289	4,083,695

CLASS 24

21	4,083,087
74 A	4,083,088
205.16 R	4,083,089

CLASS 28

104	4,083,090
281	4,083,091

CLASS 29

132	4,083,092
157.3 V	4,083,093
159.2	4,083,094
416	4,083,095
427	4,083,096
572	4,083,097
578	4,083,098
592 R	4,083,099
622	4,083,100
739	4,083,101

CLASS 30

45	4,083,102
47	4,083,103
	4,083,104
90.4	4,083,105
123.7	4,083,107
124	4,083,108
155	4,083,110
168	4,083,111
280	4,083,106
335	4,083,112
368	4,083,109

CLASS 32

14 A	4,083,113
32	4,083,114
33	4,083,115

CLASS 33

174 M	4,083,116
313	4,083,117

CLASS 34

53	4,083,118
105	4,083,119

CLASS 35

9 B	4,083,120
44	4,083,121
46 A	4,083,122
73	4,083,123

CLASS 36

7.1 R	4,083,124
32 R	4,083,125
67 D	4,083,126
93	4,083,127
97	4,083,128
117	4,083,129
	4,083,130

CLASS 37

13	4,083,131
58	4,083,132
	4,083,134
	4,083,135
72	4,083,133

CLASS 40

158 R	4,083,137
518	4,083,136

CLASS 42

1 R	4,083,138

CLASS 43

16	4,083,139
18 GF	4,083,140
22	4,083,141
87	4,083,142

CLASS 44

1 R	4,083,696
7 D	4,083,697
51	4,083,698
75	4,083,699

CLASS 46

204	4,083,143

CLASS 47

1.1	4,083,144
	4,083,145
71	4,083,146
80	4,083,147

CLASS 49

125	4,083,148
147	4,083,149
387	4,083,150

CLASS 51

103 R	4,083,151
166 MH	4,083,152
298 A	4,083,700

CLASS 52

28	4,083,153
79.9	4,083,154
93	4,083,155
127	4,083,156
222	4,083,157
300	4,083,158
309.1	4,083,159
316	4,083,160
699	4,083,161
	4,083,162

CLASS 53

48	4,083,163
138 A	4,083,164
164	4,083,165

CLASS 55

20	4,083,701
67	4,083,702
89	4,083,703
237	4,083,704
257 NP	4,083,705
385 R	4,083,706

CLASS 56

13.7	4,083,166
98	4,083,167
320.2	4,083,168

CLASS 57

34 AT	4,083,172
34 R	4,083,169
	4,083,170
	4,083,171
58.95	4,083,173
77.45	4,083,174

CLASS 58

4 A	4,083,175
23 R	4,083,176
	4,083,177
88 R	4,083,178
109	4,083,179

CLASS 60

39.16 R	4,083,180
39.52	4,083,181
282	4,083,182
290	4,083,183
293	4,083,184
299	4,083,185
325	4,083,186
407	4,083,187
605	4,083,188
641	4,083,189

CLASS 61

4	4,083,190
51	4,083,191
63	4,083,192
96	4,083,193

CLASS 62

51	4,083,707
101	4,083,194
196 B	4,083,195
200	4,083,196
211	4,083,197
285	4,083,198
341	4,083,199
342	4,083,200

CLASS 63

32	4,083,352

CLASS 64

21	4,083,201
32 R	4,083,202

CLASS 65

23	4,083,708
32	4,083,709
40	4,083,710
346	4,083,711

CLASS 66

64	4,083,203
178 R	4,083,204

CLASS 68

5 C	4,083,205
22 R	4,083,206
178	4,083,207
181 R	4,083,208

CLASS 70

165	4,083,209
362	4,083,210
363	4,083,211
366	4,083,212

CLASS 71

28	4,083,712
92	4,083,713
94	4,083,714

CLASS 72

6	4,083,213
60	4,083,214
82	4,083,215
149	4,083,216
165	4,083,217
201	4,083,218
352	4,083,219
364	4,083,220
405	4,083,221

CLASS 73

6	4,083,222
15 FD	4,083,223
17 A	4,083,224
19	4,083,225
23	4,083,226
	4,083,227
32 R	4,083,228
40.5 A	4,083,229
40.5 R	4,083,230
40.7	4,083,231
95	4,083,233
116	4,083,234
117.3	4,083,235
141 A	4,083,236
141 R	4,083,237
167	4,083,238
178 R	4,083,239
194 B	4,083,242
194 VS	4,083,240
	4,083,241
196	4,083,243
204	4,083,244
207	4,083,245
227	4,083,246
304 C	4,083,248
336.5	4,083,249
352	4,083,250
421 B	4,083,252
425.4 R	4,083,253
517 R	4,083,254
599	4,083,232
655	4,083,255
738	4,083,251

CLASS 74

10.52	4,083,256
60	4,083,257
89.15	4,083,258
191	4,083,259
233	4,083,260
	4,083,261
243 R	4,083,247
436	4,083,262
474	4,083,263
545	4,083,264
574	4,083,265
606 R	4,083,266
860	4,083,267

CLASS 75

43	4,083,715
58	4,083,716
77	4,083,717
134 B	4,083,718
229	4,083,719

CLASS 81

9.3	4,083,086
9.5 R	4,083,268
9.51	4,083,269
52.4 R	4,083,270

CLASS 82

8	4,083,271
12	4,083,272

CLASS 83

2	4,083,273
12	4,083,274
27	4,083,275
37	4,083,276
89	4,083,277
169	4,083,278
347	4,083,279
425.3	4,083,280
525	4,083,281

CLASS 84

1.19	4,083,282
1.24	4,083,283
1.25	4,083,284
1.26	4,083,285
	4,083,286
377	4,083,287

CLASS 85

33	4,083,288
72	4,083,289

CLASS 91

357	4,083,290
412	4,083,291

CLASS 92

176	4,083,292

CLASS 93

36.01	4,083,293

CLASS 96

1.5 R	4,083,720
56.2	4,083,721
66 HD	4,083,722
66.5	4,083,723
115 R	4,083,724
	4,083,725

CLASS 99

279	4,083,294
283	4,083,295
423	4,083,296

CLASS 100

19 R	4,083,297
92	Re.29,606
214	4,083,298

CLASS 101

93.03	4,083,299
103	4,083,300
128.3	4,083,301
269	4,083,302
415.1	4,083,303

CLASS 102

2	4,083,304
27 R	4,083,305
38	4,083,306
45	4,083,307
70.2 R	4,083,308

CLASS 104

18	4,083,309
242	4,083,310

CLASS 105

367	4,083,311
469	4,083,312

CLASS 106

14.41	4,083,726
39.7	4,083,727
52	4,083,728
88	4,083,729
89	4,083,730
270	4,083,731

CLASS 108

26	4,083,313

CLASS 109

50	4,083,314

CLASS 111

10	4,083,315

CLASS 112

274	4,083,316

CLASS 114

40	4,083,317
74 A	4,083,318
260	4,083,319
271	4,083,320

CLASS 116

84	4,083,321

CLASS 118

6	4,083,323
70	4,083,322
300	4,083,324
315	4,083,325
661	4,083,326

CLASS 119

85	4,083,327
158	4,083,328

CLASS 123

32 B	4,083,330
41.15	4,083,332
41.17	4,083,331
41.82 R	4,083,333
90.35	4,083,334
117 A	4,083,335
119 EC	4,083,337
	4,083,338
119 F	4,083,336
122 AC	4,083,339
122 E	4,083,340
124 B	4,083,341
	4,083,342
124 R	4,083,343
136	4,083,344
137 BD	4,083,346
139 ST	4,083,345
148 E	4,083,347
205	4,083,329

CLASS 124

35 A	4,083,348
72	4,083,349

CLASS 125

11 CP	4,083,350
30 R	4,083,351

CLASS 126

21 R	4,083,353
30	4,083,354
39 J	4,083,355
270	4,083,356
	4,083,357
271	4,083,358
	4,083,359
	4,083,360
299 D	4,083,361
	4,083,362

CLASS 127

42	4,083,733
48	4,083,732

CLASS 128

2 G	4,083,363
2 H	4,083,364
2.05 T	4,083,366
2.07	4,083,367
2.1 B	4,083,365
198	4,083,368
276	4,083,369
347	4,083,370

CLASS 131

2	4,083,371
8 A	4,083,372
17 R	4,083,373
178	4,083,374

CLASS 137

86	4,083,375
246.22	4,083,376
296	4,083,377
344	4,083,378
495	4,083,379
505.25	4,083,380
596.12	4,083,382
596.15	4,083,381
616.7	4,083,383

CLASS 138

93	4,083,384

CLASS 139

59	4,083,385

CLASS 141

12	4,083,386
95	4,083,387
172	4,083,388
179	4,083,389

CLASS 144

136 R	4,083,390
178	4,083,391

CLASS 148

32.5	4,083,734

CLASS 150

51	4,083,392

CLASS 151

19 A	4,083,393

CLASS 156

64	4,083,735
73.1	4,083,736
	4,083,737
92	4,083,738

163 4,083,739
166 4,083,740
184 4,083,741
227 4,083,742
278 4,083,743
306 4,083,744
380 4,083,745
499 4,083,746
510 4,083,747
609 4,083,748

CLASS 157

1.21 4,083,394

CLASS 160

84 R 4,083,395

CLASS 162

168 N 4,083,749
317 4,083,750

CLASS 164

158 4,083,396

CLASS 165

26 4,083,397
66 4,083,398
95 4,083,399
165 4,083,400

CLASS 166

250 4,083,401
251 4,083,402
252 4,083,403
261 4,083,404
285 4,083,405
286 4,083,406
291 4,083,407
315 4,083,408
320 4,083,409

CLASS 169

37 4,083,410

CLASS 172

59 4,083,411
462 4,083,412
601 4,083,413
804 4,083,414

CLASS 173

132 4,083,415

CLASS 174

14 R 4,084,064
70 R 4,084,065
92 4,084,066
4,084,067
138 R 4,084,068

CLASS 175

263 4,083,416
393 4,083,417

CLASS 177

247 4,083,418

CLASS 178

68 4,084,069
69 G 4,084,070

CLASS 180

44 R 4,083,419
82 C 4,083,420
88 4,083,421
98 4,083,422
105 E 4,083,423
114 4,083,424
127 4,083,425

CLASS 181

156 4,083,426

CLASS 182

118 4,083,427

CLASS 184

105 A 4,083,428

CLASS 187

9 R 4,083,429
29 R 4,083,430
4,083,431
89 4,083,432

CLASS 188

1 B 4,083,433
65.3 4,083,438
73.2 4,083,434
218 XL 4,083,435
265 4,083,436
322 4,083,437

CLASS 191

31 4,083,439

CLASS 192

3.31 4,083,440
28 4,083,441
54 4,083,442
91 R 4,083,443

CLASS 197

151 4,083,444
161 4,083,445

CLASS 200

5 A 4,084,071
83 L 4,084,072
84 R 4,084,073
682 4,083,888

CLASS 202

99 4,083,751
100 4,083,752
227 4,083,753

CLASS 204

1 T 4,083,754
15 4,083,755
35 N 4,083,756
83 4,083,757
106 4,083,758
112 4,083,759
129.55 4,083,760
130 4,083,761
181 E 4,083,763
181 R 4,083,762
195 M 4,083,764
195 R 4,083,766
195 W 4,083,765
224 M 4,083,767
296 4,083,768

CLASS 206

38 4,083,446
45.19 4,083,447
329 4,083,448
405 4,083,449
416 4,083,450
461 4,083,451
533 4,083,452
565 4,083,453
605 4,083,454
623 4,083,879
625 4,083,455

CLASS 208

10 4,083,769
11 R 4,083,770
216 4,083,771
321 4,083,772

CLASS 209

134 4,083,773
212 4,083,774
257 4,083,775
452 4,083,776

CLASS 210

22 A 4,083,777
23 H 4,083,779
4,083,780
4,083,781
23 R 4,083,778
32 4,083,782
54 4,083,783
83 4,083,784
195 S 4,083,785
321 B 4,083,786
402 4,083,787
516 4,083,788

CLASS 211

55 4,083,456
71 4,083,457
187 4,083,458

CLASS 212

8 B 4,083,459

CLASS 214

6 H 4,083,460
8 4,083,461
17 D 4,083,462
82 4,083,469
138 R 4,083,463

CLASS 217

13 4,083,464

CLASS 219

69 W 4,084,074
97 4,084,075
121 EB 4,084,076
4,084,077
121 P 4,084,078
271 4,084,079
401 4,084,080
494 Re.29,609

CLASS 220

3.8 4,083,465
90 4,083,466
90.4 4,083,467
234 4,083,468
254 4,083,470
269 4,083,471
334 4,083,472

CLASS 222

144.5 4,083,473
145 4,083,474
198 4,083,475
321 4,083,476
386 4,083,477
592 4,083,478

CLASS 223

100 4,083,479

CLASS 224

5 H 4,083,481
5 V 4,083,480
45 G 4,083,482
45 R 4,083,483

CLASS 228

130 4,083,484

CLASS 229

23 BT 4,083,485
37 R 4,083,486
38 4,083,487

CLASS 233

20 A 4,083,488

CLASS 235

52 4,084,081
92 DM 4,084,082
95 C 4,083,489

CLASS 237

1 A 4,083,490

CLASS 238

98 4,083,491

CLASS 239

2.5 4,083,492
112 4,083,493
156 4,083,494
287 4,083,495
327 4,083,496
526 4,083,497
533.3 4,083,498

CLASS 241

24 4,083,499
54 4,083,500
101 A 4,083,501
189 R 4,083,502
259.1 4,083,503
275 4,083,504

CLASS 242

18 PW 4,083,505
25 R 4,083,506
43.2 4,083,507
68.5 4,083,508
71.8 4,083,509
107 4,083,510
107.4 A 4,083,511
4,083,512
118.6 4,083,513
152.1 4,083,514
158 R 4,083,515
193 4,083,516
201 4,083,517

CLASS 244

17.11 4,083,518
149 4,083,519
167 4,083,520

CLASS 248

1 4,083,521
54 R 4,083,522
74 A 4,083,523
183 4,083,524
496 4,083,525

CLASS 249

48 4,083,526
91 4,083,527
198 4,083,528

CLASS 250

203 R 4,084,087
209 4,084,088
272 4,084,089
286 4,084,090
302 4,084,091
347 4,084,092
360 4,084,093
445 T 4,084,094
492 A 4,084,095
504 4,084,096
506 4,084,097
533 4,084,098
548 4,084,099
574 4,084,100

CLASS 251

175 4,083,529

CLASS 252

8.1 4,083,789
8.5 C 4,083,790
18 4,083,792
51.5 A 4,083,791
99 4,083,793
4,083,794
4,083,795
132 4,083,796
299 4,083,797
312 4,083,798
373 4,083,799
415 4,083,800
422 4,083,801
429 C 4,083,802
430 4,083,803
432 4,083,804
437 4,083,805
442 4,083,806
455 R 4,083,808
455 Z 4,083,807
457 4,083,809
467 4,083,810
509 4,083,811
522 4,083,812
526 4,083,813

CLASS 254

95 4,083,530
134.3 FT 4,083,532
134.3 R 4,083,531
134.4 4,083,533
186 HC 4,083,534

CLASS 256

24 4,083,535
47 4,083,536

CLASS 260

2.5 AJ 4,083,818
2.5 FP 4,083,820
2.5 R 4,083,819
18 PF 4,083,821
29.6 HN 4,083,822
30.8 R 4,083,814
31.2 N 4,083,815
31.2 R 4,083,816
38 4,083,817
40 R 4,083,823
42.29 4,083,824
45.7 P 4,083,825
4,083,826
45.9 QA 4,083,827
47 C 4,083,829
47 ET 4,083,828
67.6 R 4,083,830
77.5 AA 4,083,831
79.3 MU 4,083,833
79.3 R 4,083,832
79.5 C 4,083,835
79.5 NV 4,083,834
123.5 4,083,836
141 4,083,837
145 B 4,083,839
153 4,083,840
154 4,083,841
156 4,083,842
157 4,083,843
174 4,083,844
180 4,083,845
207 4,083,847
207.1 4,083,846
239.1 4,083,848
294.9 4,083,849
295.5 R 4,083,850
307 C Re.29,607
307 D Re.29,608
326.8 4,083,851
327 TH 4,083,852
340.5 R 4,083,853
343.44 4,083,857
343.5 4,083,854
343.6 4,083,855
348.12 4,083,856
373 4,083,858
408 4,083,859
429.7 4,083,860
448.8 R 4,083,861
455 R 4,083,862
465 D 4,083,863
500.5 H 4,083,864
514 D 4,083,865
556 B 4,083,866
559 B 4,083,867
562 N 4,083,868
566 R 4,083,869
570 AB 4,083,871
570 D 4,083,870
584 R 4,083,872
4,083,873
585 R 4,083,874
606.5 P 4,083,875
609 R 4,083,876
610 D 4,083,877
611 F 4,083,878
632 R 4,083,880
635 C 4,083,881
655 R 4,083,882
668 D 4,083,883
669 A 4,083,884
671 C 4,083,885
672 T 4,083,886
680 E 4,083,887
682 4,083,889
836 4,083,890
846 4,083,891
855 4,083,892
857 PE 4,083,894
857 UN 4,083,893
874 4,083,895
876 R 4,083,896
970 4,083,897
4,083,898
981 4,083,899
984 4,083,900

CLASS 264

25 4,083,901
26 4,083,902
40.3 4,083,903
41 4,083,904
44 4,083,905
49 4,083,906
52 4,083,907
82 4,083,908
4,083,909
94 4,083,910
118 4,083,911
120 4,083,912
121 4,083,913
145 4,083,838
147 4,083,914
245 4,083,916
263 4,083,917
297 4,083,918
332 4,083,919

CLASS 266

172 4,083,538
225 4,083,539
4,083,540
4,083,541
4,083,542
4,083,543
4,083,544

CLASS 267

54 A 4,083,545

CLASS 269

152 4,083,546
156 4,083,547
166 4,083,548
327 4,083,549

CLASS 270

53 4,083,550
55 4,083,551
85 4,083,552

CLASS 271

4 4,083,553
9 4,083,554
10 4,083,555
204 4,083,556

CLASS 272

76 4,083,557

CLASS 273

1 R 4,083,558
26 A 4,083,559
102.2 B 4,083,560
103 4,083,561
127 B 4,083,562
139 4,083,563
239 4,083,564

CLASS 274

23 A 4,083,565

CLASS 277

3 4,083,566
37 4,083,567
81 R 4,083,568
92 4,083,569
235 B 4,083,570

CLASS 279

61 4,083,571

CLASS 280

11.37 E 4,083,572
43.11 4,083,573
47.15 4,083,574
605 4,083,576
609 4,083,577
618 4,083,578
650 4,083,579
689 4,083,580
696 4,083,575
745 4,083,581

CLASS 281

20 4,083,582

CLASS 285

55 4,083,583
258 4,083,584
260 4,083,585
323 4,083,586
343 4,083,587
373 4,083,588

CLASS 290

1 R 4,084,101
55 4,084,102

CLASS 292

92 4,083,590
202 4,083,591
336.3 4,083,589

CLASS 293

71 R 4,083,592

CLASS 294

97 4,083,593

CLASS 296

1 A 4,083,594
39 A 4,083,595
100 4,083,596

CLASS 297

21 4,083,597
45 4,083,598
131 4,083,599
184 4,083,601
316 4,083,600
389 4,083,602

CLASS 299

4 4,083,603
4,083,604
91 4,083,605

CLASS 301

37 AT 4,083,606

CLASS 302

59 4,083,607

CLASS 303

11 4,083,608
96 4,083,609

CLASS 305

25 4,083,610
54 4,083,611

CLASS 307

108 4,084,109
132 R 4,084,103
141 4,084,104
205 4,084,105
221 C 4,084,106
221 D 4,084,107
238 4,084,108
252 G 4,084,110
264 4,084,111

CLASS 308

4 A 4,083,612
236 4,083,613

CLASS 312

199 4,084,125

CLASS 313

222 4,084,112
408 4,084,113
496 4,084,114

CLASS 315

371 4,084,115

CLASS 316

19 4,083,614

CLASS 318

6 4,084,116
4,084,117
138 4,084,118
434 4,084,119
599 4,084,120
654 4,084,121
696 4,084,122

CLASS 320

2 4,084,123
9 4,084,124

CLASS 322

8 4,084,126

CLASS 324

56 4,084,131
57 DE 4,084,132
83 A 4,084,133
133 4,084,134
202 4,084,135

238 4,084,136

CLASS 325

30 4,084,137
55 4,084,138
361 4,084,139
396 4,084,140

CLASS 328

134 4,084,127

CLASS 329

116 4,084,128

CLASS 330

282 4,084,129

CLASS 331

94.5 H 4,084,130

CLASS 333

84 L 4,084,141

CLASS 335

152 4,084,142

CLASS 336

65 4,084,143
70 4,084,144

CLASS 337

231 4,084,145
234 4,084,146
407 4,084,147

CLASS 339

17 F 4,083,615
45 M 4,083,616
47 R 4,083,617
75 M 4,083,619
75 P 4,083,618
91 R 4,083,620
119 C 4,083,621
256 R 4,083,622
258 R 4,083,623
264 R 4,083,624

CLASS 340

1 R 4,084,148
4,084,149
8 R 4,084,150
15.5 DP 4,084,151
166 R 4,084,152
210 4,084,155
237 S 4,084,156
4,084,157
280 Re.29,610

CLASS 343

5 CM 4,084,158
7.4 4,084,159
16 M 4,084,160
18 A 4,084,161
700 MS 4,084,162
715 4,084,163

CLASS 346

75 4,084,164
140 R 4,084,165

CLASS 350

96.15 4,083,625
117 4,083,626
162 SF 4,083,627
220 4,083,628
285 4,083,629

CLASS 352

91 C 4,083,630

CLASS 353

120 4,083,631

CLASS 354

23 D 4,084,166
33 4,084,167
126 4,084,168
173 4,084,169
205 4,084,170
317 4,084,171

CLASS 355

3 R 4,083,632
15 4,083,633
71 4,083,634
77 4,083,635

CLASS 356

141 4,083,636
240 4,083,637
246 4,083,638

CLASS 357

15 4,084,172
42 4,084,173
44 4,084,174
55 4,084,175

CLASS 358

8 4,084,176
12 4,084,181
25 4,084,177
28 4,084,178
55 4,084,179
4,084,180
62 4,084,182
75 4,084,183
93 4,084,184
128 4,084,185
139 4,084,186
153 4,084,187
199 4,084,188
213 4,084,189
4,084,190
4,084,191
4,084,192
246 4,084,193
254 4,084,194
280 4,084,195
283 4,084,196
300 4,084,197

CLASS 360

33 4,084,198
121 4,084,199
133 4,084,200
135 4,084,201

CLASS 361

24 4,084,202
45 4,084,203
72 4,084,204
76 4,084,205
90 4,084,206
91 4,084,207
120 4,084,208
141 4,084,209
212 4,084,210
222 4,084,211
230 4,084,212
384 4,084,213
394 4,084,214

CLASS 362

32 4,084,215
90 4,084,216
135 4,084,085
161 4,084,086
184 4,084,084

CLASS 363

4 4,084,217
18 4,084,218
21 4,084,219
37 4,084,220
54 4,084,221
60 4,084,222
129 4,084,223

CLASS 364

118 4,084,083
200 4,084,224
4,084,225
4,084,226
4,084,227
4,084,228
4,084,229
4,084,230
4,084,231
4,084,232
4,084,233
4,084,234
4,084,235
4,084,236
400 4,084,237
405 4,084,238
424 4,084,239
425 4,084,240
460 4,084,241
466 4,084,242
474 4,084,243
4,084,244
485 4,084,245
510 4,084,246
559 4,084,247
571 4,084,248
705 4,084,249
708 4,084,250
726 4,084,251
738 4,084,252
4,084,253
766 4,084,254
822 4,084,255
862 4,084,256
4,084,257
900 4,084,258
4,084,259
4,084,260
4,084,261
4,084,262

CLASS 365

125 4,084,153
222 4,084,154

CLASS 366

84 4,084,263
147 4,083,537

CLASS 403

16 4,083,639
246 4,083,640
260 4,083,641
316 4,083,642

CLASS 407

59 4,083,643
67 4,083,644
104 4,083,645

CLASS 408

133 4,083,646

CLASS 415

113 4,083,647
116 4,083,649
137 4,083,648
174 4,083,650

CLASS 416

18 4,083,651
84 4,083,652
142 4,083,653
145 4,083,654
196 R 4,083,655
226 4,083,656

CLASS 417

4 4,083,657
68 4,083,658
4,083,659
108 4,083,660
131 4,083,661
499 4,083,662

CLASS 418

183 4,083,663
266 4,083,664

CLASS 423

24 4,083,915
53 4,083,920
55 4,083,921
56 4,083,922
79 4,083,923
88 4,083,924
121 4,083,925
135 4,083,926
136 4,083,927
4,083,928
167 4,083,929
189 4,083,930
199 4,083,931
210 4,083,932
308 4,083,933
317 4,083,934
320 4,083,936
321 R 4,083,937
325 4,083,938
379 4,083,935
421 4,083,939
449 4,083,940
488 4,083,941
497 4,083,942
498 4,083,943
567 A 4,083,944
573 R 4,083,945
613 4,083,946

CLASS 424

1 4,083,947
4,083,948
19 4,083,949
44 4,083,950
4,083,951
45 4,083,952
4,083,953
47 4,083,954
49 4,083,955
66 4,083,956
78 4,083,957
89 4,083,958
92 4,083,959
94 4,083,960
95 4,083,961
114 4,083,962
117 4,083,963
118 4,083,964
128 4,083,965
170 4,083,966
177 4,083,967
181 4,083,968
182 4,083,969
200 4,083,970
4,083,971
204 4,083,972
239 4,083,973
241 4,083,974
246 4,083,975
247 4,083,976
250 4,083,977
4,083,978
251 4,083,979
4,083,980
260 4,083,981
4,083,982
263 4,083,983
4,083,984
267 4,083,985
270 4,083,986
273 R 4,083,987
4,083,988
275 4,083,989
283 4,083,990
291 4,083,991
303 4,083,992
304 4,083,993
311 4,083,994
4,083,995
315 4,083,996
316 4,083,997
317 4,083,998
4,083,999
319 4,084,000
322 4,084,001
330 4,084,002
4,084,003
4,084,004
337 4,084,005
346 4,084,006

CLASS 425

144 4,083,665
183 4,083,666
192 R 4,083,667
194 4,083,668
222 4,083,669
398 4,083,670
450.1 4,083,671
457 4,083,672

CLASS 426

430 4,084,007
464 4,084,008
538 4,084,009
548 4,084,010
580 4,084,011
590 4,084,012
601 4,084,013
634 4,084,016
656 4,084,017

CLASS 427

27 4,084,018
32 4,084,019
41 4,084,020
44 4,084,021
96 4,084,022
98 4,084,023
215 4,084,024
229 4,084,025
276 4,084,026
390 D 4,084,027
409 4,084,014

CLASS 428

9 4,084,015
95 4,084,031
105 4,084,028
119 4,084,029
141 4,084,030
172 4,084,032
198 4,084,033
342 4,084,034
352 4,084,035
398 4,084,036

CLASS 429

1 4,084,037
19 4,084,038
89 4,084,039
104 4,084,040
4,084,041
4,084,042
111 4,084,043
4,084,044
194 4,084,045
4,084,046
206 4,084,047

CLASS 431

87 4,083,673
116 4,083,674

CLASS 432

1 4,083,675
14 4,083,676
19 4,083,677
61 4,083,678
99 4,083,679

CLASS 526

260 4,084,048

CLASS 536

96 4,084,060

CLASS 544

16 4,084,049
87 4,084,050
141 4,084,051
165 4,084,052
184 4,084,053
220 4,084,054

CLASS 548

369 4,084,055

CLASS 560

29 4,084,056
34 4,084,057
55 4,084,058
87 4,084,059
105 4,084,061
106 4,084,062
121 4,084,063

CLASSIFICATION OF DESIGNS

D1— 15 247,691
D2— 317 247,692
D3— 19 R 247,693
D6— 85 247,694
113 247,695
186 247,696
D7— 153 247,697
D8— 397 247,698
D9— 60 247,699
143 247,700
D10— 31 247,701
56 247,702
D12— 25 247,703
143 247,710
156 247,711
D14— 12 247,704
247,705
247,706
247,707
68 247,708
86 247,709
D16— 55 247,712
D22— 1 247,716
6 247,714
31 247,713
99 247,715
D23— 38 247,717
92 247,718
247,719
D24— 1.1 247,720
D25— 58 247,721
68 247,722
D27— 09 247,723
D34— 5 TT 247,724
D48— 4 B 247,725

CLASSIFICATION OF PLANTS

P.— 39 4,237
69 4,239
74 4,240
86 4,238

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,083,186		4,083,398		4,084,066		4,083,815		4,083,350		4,083,962
	4,083,508		4,083,399		4,084,067		4,083,830		4,083,374		4,083,964
	4,083,520		4,083,416		4,084,069		4,083,929		4,083,377		4,083,977
	4,083,537		4,083,421		4,084,078		4,083,963		4,083,406		4,084,004
	4,084,124		4,083,422		4,084,080		4,084,018		4,083,418		4,084,054
	4,084,240		4,083,424		4,084,082		4,084,065		4,083,440		4,084,071
2 :	4,083,161		4,083,425		4,084,085		4,084,221		4,083,459		4,084,115
4 :	4,083,188		4,083,429		4,084,086		4,084,246		4,083,469		4,084,215
	4,084,102		4,083,449		4,084,090	10 :	4,083,090		4,083,471	19 :	4,083,118
	4,084,232		4,083,468		4,084,095		4,083,843		4,083,526		4,083,215
	4,084,233		4,083,480		4,084,096		4,083,941		4,083,576		4,083,252
	4,084,234		4,083,509		4,084,146		4,083,946		4,083,606		4,083,620
	4,084,236		4,083,510		4,084,172		4,084,045		4,083,611		4,084,203
	4,084,252		4,083,519		4,084,174		4,084,055		4,083,613	20 :	4,083,153
	4,084,253		4,083,524		4,084,176	11 :	4,083,536		4,083,617		4,083,315
5 :	4,084,143		4,083,525		4,084,182	12 :	4,083,255		4,083,630		4,084,013
6 :	4,083,077		4,083,547		4,084,184		4,083,349		4,083,631	21 :	4,083,212
	4,083,102		4,083,548		4,084,194		4,083,396		4,083,661		4,083,958
	4,083,103		4,083,552		4,084,195		4,083,466		4,083,707	22 :	4,083,072
	4,083,109		4,083,554		4,084,196		4,083,481		4,083,724		4,083,230
	4,083,113		4,083,561		4,084,197		4,083,483		4,083,732		4,083,485
	4,083,116		4,083,575		4,084,199		4,083,616		4,083,736		4,083,923
	4,083,123		4,083,590	8 :	4,083,127		4,083,936		4,083,771		4,083,927
	4,083,141		4,083,604		4,083,130		4,083,995		4,083,772		4,084,027
	4,083,155		4,083,619		4,083,426		4,084,038		4,083,774	24 :	4,083,112
	4,083,156		4,083,621		4,083,467		4,084,153		4,083,783		4,083,235
	4,083,159		4,083,646		4,083,495		4,084,251		4,083,787		4,083,246
	4,083,175		4,083,652		4,083,567		4,084,254		4,083,789		4,083,258
	4,083,219		4,083,660		4,083,601	13 :	4,083,085		4,083,816		4,083,304
	4,083,228		4,083,703		4,083,636		4,083,096		4,083,817		4,083,389
	4,083,232		4,083,722		4,083,778		4,083,110		4,083,868		4,083,433
	4,083,238		4,083,726		4,084,116		4,083,115		4,083,883		4,083,551
	4,083,245		4,083,751		4,084,117		4,083,172		4,083,886		4,083,691
	4,083,253		4,083,765		4,084,218		4,083,439		4,083,892		4,083,692
	4,083,263		4,083,770	9 :	4,083,250		4,083,597		4,083,926		4,083,752
	4,083,282		4,083,780		4,083,262		4,084,005		4,084,034		4,083,925
	4,083,286		4,083,797		4,083,274	16 :	4,083,666		4,084,109		4,083,991
	4,083,299		4,083,808		4,083,302	17 :	Re.29,609		4,084,122		4,084,020
	4,083,305		4,083,827		4,083,306		4,083,095		4,084,178		4,084,047
	4,083,323		4,083,867		4,083,311		4,083,105		4,084,193		4,084,128
	4,083,324		4,083,902		4,083,345		4,083,111		4,084,202		4,084,204
	4,083,325		4,083,903		4,083,493		4,083,180		4,084,212		4,084,216
	4,083,348		4,083,930		4,083,504		4,083,197	18 :	4,083,083		4,084,262
	4,083,351		4,083,938		4,083,553		4,083,211		4,083,210	25 :	4,083,069
	4,083,357		4,083,945		4,083,555		4,083,216		4,083,221		4,083,087
	4,083,358		4,083,965		4,083,607		4,083,217		4,083,265		4,083,104
	4,083,364		4,083,970		4,083,618		4,083,289		4,083,331		4,083,126
	4,083,366		4,083,982		4,083,643		4,083,292		4,083,419		4,083,148
	4,083,367		4,083,989		4,083,648		4,083,293		4,083,423		4,083,160
	4,083,372		4,084,016		4,083,651		4,083,294		4,083,579		4,083,454
	4,083,375		4,084,024		4,083,654		4,083,313		4,083,653		4,083,503
	4,083,384		4,084,030		4,083,670		4,083,314		4,083,814		4,083,517
	4,083,395		4,084,062		4,083,702		4,083,343		4,083,942		4,083,532
									4,083,950		

4,083,557
4,083,559
4,083,589
4,083,592
4,083,629
4,083,639
4,083,762
4,083,896
4,083,907
4,083,913
4,083,915
4,084,037
4,084,064
4,084,112
4,084,121
4,084,150
4,084,158
4,084,168
4,084,171
4,084,229
4,084,235
4,084,250
26 : 4,083,150
4,083,158
4,083,192
4,083,202
4,083,209
4,083,236
4,083,270
4,083,301
4,083,320
4,083,353
4,083,478
4,083,479
4,083,491
4,083,512
4,083,523
4,083,545
4,083,568
4,083,572
4,083,585
4,083,586
4,083,594
4,083,624
4,083,664
4,083,668
4,083,693
4,083,739
4,083,806
4,083,818
4,083,825
4,083,826
4,083,854
4,083,859
4,083,865
4,083,890
4,083,905
4,083,957
4,083,974
4,083,998
4,084,012
4,084,041
4,084,042
4,084,058
4,084,063
4,084,163
27 : 4,083,233
4,083,264
4,083,273
4,083,295
4,083,381
4,083,428
4,083,472
4,083,562

4,083,610
4,083,667
4,083,746
4,083,832
4,084,008
4,084,050
4,084,099
4,084,213
4,084,237
4,084,260
28 : 4,083,363
29 : 4,083,260
4,083,261
4,083,573
4,083,874
4,083,898
4,084,139
30 : 4,083,142
31 : 4,083,321
4,083,413
4,083,501
4,084,138
32 : 4,083,107
4,083,705
33 : 4,083,916
34 : 4,083,124
4,083,137
4,083,140
4,083,162
4,083,163
4,083,227
4,083,329
4,083,373
4,083,432
4,083,436
4,083,451
4,083,455
4,083,457
4,083,514
4,083,609
4,083,698
4,083,699
4,083,710
4,083,741
4,083,748
4,083,768
4,083,781
4,083,798
4,083,803
4,083,809
4,083,829
4,083,862
4,083,863
4,083,871
4,083,882
4,083,885
4,083,888
4,083,889
4,083,939
4,083,948
4,083,968
4,083,984
4,083,997
4,084,003
4,084,009
4,084,023
4,084,033
4,084,044
4,084,046
4,084,070
4,084,097
4,084,109
4,084,127
4,084,154
4,084,156

4,084,188
4,084,198
4,084,208
4,084,209
4,084,239
35 : 4,083,635
4,084,100
36 : Re.29,610
4,083,064
4,083,092
4,083,093
4,083,100
4,083,136
4,083,147
4,083,268
4,083,271
4,083,326
4,083,328
4,083,369
4,083,383
4,083,456
4,083,482
4,083,484
4,083,490
4,083,492
4,083,535
4,083,578
4,083,598
4,083,614
4,083,625
4,083,632
4,083,633
4,083,638
4,083,696
4,083,700
4,083,709
4,083,727
4,083,728
4,083,734
4,083,737
4,083,756
4,083,784
4,083,788
4,083,799
4,083,800
4,083,823
4,083,828
4,083,864
4,083,891
4,083,897
4,083,919
4,083,993
4,083,999
4,084,017
4,084,025
4,084,040
4,084,043
4,084,051
4,084,081
4,084,089
4,084,152
4,084,164
4,084,175
4,084,189
4,084,191
4,084,230
4,084,231
4,084,242
4,084,256
4,084,257
37 : 4,083,091
4,083,166
4,083,673
4,083,682

4,083,841
4,083,932
4,083,934
4,084,036
4,084,074
4,084,103
39 : Re.29,606
4,083,067
4,083,097
4,083,121
4,083,181
4,083,278
4,083,279
4,083,427
4,083,434
4,083,447
4,083,465
4,083,486
4,083,497
4,083,528
4,083,583
4,083,672
4,083,735
4,083,738
4,083,805
4,083,813
4,083,851
4,083,856
4,083,879
4,083,901
4,083,931
4,083,944
4,083,955
4,083,956
4,083,972
4,084,019
4,084,073
4,084,075
4,084,079
4,084,113
4,084,135
4,084,140
4,084,147
4,084,149
4,084,259
40 : 4,083,106
4,083,407
4,083,408
4,083,409
4,084,088
4,084,091
4,084,161
41 : 4,083,084
4,083,154
4,083,477
4,083,521
4,084,187
42 : 4,083,075
4,083,101
4,083,119
4,083,128
4,083,167
4,083,189
4,083,195
4,083,237
4,083,240
4,083,241
4,083,303
4,083,397
4,083,400
4,083,410
4,083,415
4,083,441

4,083,446
4,083,539
4,083,540
4,083,541
4,083,542
4,083,543
4,083,544
4,083,563
4,083,580
4,083,588
4,083,605
4,083,608
4,083,615
4,083,623
4,083,644
4,083,645
4,083,649
4,083,675
4,083,677
4,083,683
4,083,711
4,083,713
4,083,753
4,083,769
4,083,782
4,083,801
4,083,807
4,083,820
4,083,821
4,083,824
4,083,831
4,083,940
4,083,943
4,083,952
4,083,975
4,084,031
4,084,032
4,084,083
4,084,145
4,084,155
4,084,157
4,084,207
4,084,255
43 : 4,083,114
44 : 4,083,094
4,083,336
4,083,448
4,083,522
4,084,142
45 : 4,083,079
4,083,174
4,083,593
4,083,775
47 : 4,083,243
4,083,458
4,083,678
4,083,796
4,083,928
4,083,935
4,084,006
48 : 4,083,074
4,083,076
4,083,138
4,083,191
4,083,193
4,083,198
4,083,267
4,083,312
4,083,317
4,083,322
4,083,327
4,083,352
4,083,370

4,083,376
4,083,378
4,083,380
4,083,403
4,083,404
4,083,405
4,083,417
4,083,518
4,083,533
4,083,574
4,083,596
4,083,603
4,083,612
4,083,656
4,083,657
4,083,669
4,083,706
4,083,873
4,083,884
4,083,887
4,083,924
4,084,007
4,084,084
4,084,130
4,084,151
4,084,173
4,084,248
4,084,258
49 : 4,083,758
4,083,802
4,083,921
4,084,120
4,084,132
4,084,159
50 : 4,083,248
4,083,558
51 : 4,083,120
4,083,249
4,083,499
4,083,515
4,083,893
4,084,101
4,084,123
4,084,125
4,084,137
4,084,225
4,084,226
4,084,227
53 : 4,083,122
4,083,225
4,083,272
4,083,464
4,083,474
4,083,534
4,083,546
4,083,777
4,084,029
4,084,136
54 : 4,083,340
4,084,060
55 : 4,083,149
4,083,200
4,083,229
4,083,266
4,083,356
4,083,382
4,083,394
4,083,453
4,083,599
4,084,015
4,084,021
56 : 4,083,139
4,083,450

DESIGN PATENTS

1 :	247,697		247,717	12 :	247,695		247,713	26 :	247,699	41 :	247,718
	247,715		247,720		247,700	19 :	247,705	27 :	247,716		247,719
6 :	247,701		247,723		247,714		247,706	34 :	247,696	42 :	247,721
	247,702		247,724	17 :	247,708		247,707	36 :	247,704	48 :	247,693
	247,711		247,725		247,709	25 :	247,691	39 :	247,722	55 :	247,694
	247,712	9 :	247,710								

PLANT PATENTS

6 :	4,237	4,238					

U. S. GOVERNMENT PRINTING OFFICE : O - 1978

Vol. 969 Number 3

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

APRIL 22

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

April 18, 1978 Volume 969 Number 3

CONTENTS

	Page
Patent and Trademark Notices	
Patent Suits	969 OG 14
Reissue Applications Filed	969 OG 14
Patent Notices	
Certificates of Correction for the Week of April 18, 1978	969 OG 16
Disclaimers	969 OG 16
Dedication	969 OG 17
Disclaimer and Dedication	969 OG 17
National Technical Information Service	969 OG 17
Condition of Patent Applications	969 OG 19
Reissue Patents Granted (29,611)	793
Plant Patents Granted (4,241)	795
Patents Granted	
General and Mechanical (4,084,264)	797
Chemical (4,084,936)	1027
Electrical (4,085,284)	1125
Design Patents Granted (247,726)	1189
Index of Patentees	PI 1
Indices of Reissues, Plants and Designs	PI 41
Classification of	
Patents (Including Reissues)	PI 43
Designs and Plants	PI 45
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 46
Designs and Plants	PI 47
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $342.20 per annum for first class mailing, also available as fourth-class mail at $250.00; foreign mailing $85.55 additional; single copies $6.60 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $88.40 per annum, foreign mailing $22.10 additional; single copies $1.70 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS, price 60 cents each.

CIRCULARS OF GENERAL INFORMATION concerning TRADEMARKS, price 50 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,006,186, T. L. Berry, FREE POINT INDICATOR FOR DETERMINING THE POINT AT WHICH STUCK PIPE IS FREE IN A WELL, **filed** Sept. 9, 1977, D.C., E.D. La. (New Orleans), Doc. 77–2763, *Dia-Log Company* v. *Crutcher Resources Corporation.*

3,009,235, G. De Mestral, SEPARABLE FASTENING DEVICE, **filed** May 4, 1977, D.C., S.D.N.Y., Doc. 77–C–2167, *Actief N.V.* v. *Consolidated Foods Corp.* The above-entitled action is hereby dismissed by plaintiff in accordance with Rule 41(a) of F.R.C.P., Sept. 22, 1977.

3,090,605, Copeland and Neier, FEED MIXER, **filed** Mar. 28, 1977, D.C. Colo. (Denver), Doc. 77–M–308, *B/J Manufacturing Co., Inc.* v. *Mohrland Manufacturing, Inc.* Judgment is entered against defendant for infringing of said patent, Sept. 1, 1977.

3,237,438, P. A. Tesson, PIPE LINE LAYING APPARATUS, **filed** Oct. 7, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77–3778–RF, *Martech Int'l Inc.* v. *Santa Fe Int'l Corp.*

3,293,665, S. Langer, POOL COVER LOCKING MECHANISM, **filed** Sept. 26, 1977, D.C., E.D.N.Y. (Brooklyn), Doc. 77–C–1901, *Andray Products, Inc.* v. *Vornado, Inc.*

3,472,486, J. A. Hastings, VALVE, **filed** Oct. 7, 1977, D.C., E.D.N.Y. (Brooklyn), Doc. 77–C–2000, *John A. Hastings* v. *W. A. Baum, Co., Inc.*

3,485,736, O. A. Vesterberg, METHOD OF ISOELECTRIC FRACTIONATION, **filed** Mar. 21, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c937, *LKB-Produkter AB* v. *Brinkman Instruments, Inc.* By stipulation of the parties, it is ordered that this cause is hereby dismissed with prejudice, Sept. 1, 1977.

3,557,796, Keller, Terry and *Davies, DIGITAL COUNTER* DRIVEN PACER; **3,805,796,** Terry and Davies, IMPLANTABLE CARDIAC PACER HAVING ADJUSTABLE OPERATING PARAMETERS, **filed** Oct. 5, 1977, D.C. Mass. (Boston), Doc. 77–3044–F, *Cordis Corporation* v. *Cardiac Pacemakers, Inc. and Edward J. Luzcek.*

3,560,669, Foulkes and Bender, ECHO SUPPRESSOR, **filed** Nov. 1, 1976, D.C., N.D. Ill. (Chicago), Doc. 76c4040, *Wescom, Inc.* v. *Tellabs, Inc.* Order that this cause is dismissed with prejudice. The order of dismissal is entered without prejudice, as to issue of patent validity, Sept. 26, 1977.

3,565,451, R. L. Stevenson, SKATEBOARD WITH INCLINED FOOT-DEPRESSIBLE LEVER, **filed** Aug. 11, 1977, D.C., N.D. Calif. (San Francisco), Doc. C77–1771–WWS, *Richard Lawrence Stevenson* v. *Sears, Roebuck and Co.*

3,628,529, W. D. Steimle, HYDRO-MASSAGE ASSEMBLY, **filed** June 30, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77–2444–IH, *Wayne Steimle* v. *John A. Robbins.*

3,640,595, Staller and Staller, MOTORIZED MOBILE SHELVING UNITS, **filed** Sept. 22, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77–3557–HP, *IPC, Inc.* v. *Spacesaver Corp.*

3,674,444, A. Otani, IRON SCRAP BUNDLES, **filed** May 28, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1452, *Akemasa Otani* v. *Tezuka Kosan Co., Ltd. et al.* Cause dismissed, Oct. 11, 1977.

3,714,462, D. E. Blackmer, MULTIPLIER CIRCUITS, **filed** Oct. 6, 1977, D.C., M.D. Tenn. (Nashville), Doc. 77–3453–NA–CV, *David E. Blackmer* v. *Allison Research, Inc.*

3,765,030, E. J. Peham, NESTABLE PLASTIC HAT WITH HEAD SIZE ADJUSTMENT, **filed** Sept. 26, 1977, D.C. M.D. Pa. (Scranton), Doc. 77–887, *Peham Plastics, Inc.* v. *Jacobson Hat Company.*

3,805,796. (See 3,557,796.)

3,827,490, Moore, Jr. and McGowen, Jr. APPARATUS FOR INSTALLING AND REMOVING FLOW VALVES, **filed** Sept. 16, 1977, D.C., N.D. Tex. (Dallas), Doc. CA3–77–1262–C, *Camco Incorporated, Perry R. Bass, Inc. and Sid W. Richardson Foundation, Inc.* v. *Teledyne Industries, Inc., doing business as Teledyne Merla.*

3,860,771, Lynn and Seeger, KEYBOARD SWITCH ASSEMBLY WITH DOME SHAPED ACTUATOR HAVING ASSOCIATED UNDERLYING CONTRACTOR MEANS, **filed** Aug. 25, 1977, D.C. Conn. (Hartford), Doc. H–77–418, *Chomerics Inc.* v. *Hewlett-Packard Company, Incorporated.*

3,905,638, G. J. Persico, TOP AND SIDE DOOR VAN CONVERSION ASSEMBLY, **filed** Sept. 13, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77–3403–LEW, *Recreational Industries, Inc.* v. *National Coach Corporation.*

3,919,407, A. L. Fernandez de Castro, METHOD FOR QUANTITATIVE DETERMINATION OF RENIN ACTIVITY IN BLOOD, **filed** Sept. 23, 1977, D.C. N.J. (Trenton), Doc. 77–1989, *Aurora Fernandez de Castro et al.* v. *Baxter Travenol Laboratories, Inc. et al.*

3,961,460, Jelling, Kahn, Moore and Friedman, BAGGING APPARATUS WITH BAG SPREADING DEVICE AND BRAKING DEVICE; **3,987,603,** same, BAGGING PROCESS; **3,990,625,** same, SPECIAL BAGS FOR BAGGING APPARATUS; **4,027,461,** same, FLOATING HOOK ARRANGEMENT FOR AN APPARATUS FOR BAGGING GARMENTS, **filed** Sept. 8, 1977, D.C., E.D.N.Y. (Brooklyn), Doc. 77–C–1813, *Poly-Pak Industries, Inc.* v. *Murray Jelling et al.*

3,973,095, T. R. Greene, INTRUSION DETECTOR SENSITIVE TO RESONANT FREQUENY OF BREAKING GLASS, **filed** Oct. 4, 1977, D.C., N.D. Calif. (San Francisco), Doc. C77–2213–WWS, *Emergency Products Corp.* v. *United Security Products Inc. et al.*

3,990,625. (See 3,961,460.)

3,987,603. (See 3,961,460.)

3,999,050, S. G. Pitroda, ELECTRONIC DIARY, **filed** Aug. 31, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3246, *Satyan G. Pitroda* v. *American Express Company.* Notice of dismissal pursuant to Rule 41(a)(1)(i), Oct. 3, 1977.

4,027,461. (See 3,961,460.)

4,035,132, T. M. Smith, GAS-FIRED RADIANT HEATER, **filed** Oct. 4, 1977, D.C., N.D. Ohio (Cleveland), Doc. C77–1058, *Slyman Manufacturing Corp.* v. *Hunt Associates, Inc.*

Re. 26,267, B. H. Matthews, ELECTRICAL SWITCH WITH CAMMING BRIDGING CONTACT, **filed** in the United States Court of Appeals, Sixth Circuit, Ohio (Cincinnati), Doc. 76–1983, *Lucerne Products, Inc. et al* v. *Cutler-Hammer, Inc.* Judgment, said reissue is invalid for obviousness. The judgment of the District Court is vacated and dismissal of Lucerne's infringement action is remanded, Sept. 29, 1977.

P.P. 2,434, K. K. Meserve, ILEX (HOLLY) PLANT, **filed** Sept. 16, 1977, D.C.N.J. (Camden), Doc. C–77–1936, *The Conrad-Pyle Company* v. *Ray Contarino and Raycon Windy Acres, doing business as Windy Acres Nursery.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,098,578, Re. S.N. 869,978, Filed Dec. 29, 1977, Cl. 220/5, PRESSURE VESSEL, John Rudelick, Owner of Record: *Park International Corp., Long Beach, Calif.,* Attorney or Agent: Ira Milton Jones, et al., Ex. Gp.: 241

3,395,800, Re. S.N. 856,195, Filed Nov. 30, 1977, Cl. 210/66, SEWAGE TREATMENT AND APPARATUS THEREFOR, Leon S. Kraus, et al., Owner of Record: *Ecodyne Corp., Chicago, Ill.,* Attorney or Agent: Fred S. Lockwood, et al., Ex. Gp.: 177

3,874,932, Re. S.N. 865,907, Filed Dec. 30, 1977, Cl. 429/200, DRY CELLS, Yoshio Uetani, et al., Owner of Record: *Hitach Maxell, Ltd., Osaka, Japan,* Attorney or Agent: Raymond C. Stewart, et al., Ex. Gp.: 114

3,911,202, Re. S.N. 875,591, Filed Feb. 6, 1978, Cl. 174/120 SR, ELECTRICAL CONDUCTORS INSULATED WITH ELECTRON CURED ELASTOMER, Clifford R.

Stine, et al., Owner of Record: *Samuel Moore & Co., Mantua, Ohio,* Attorney or Agent: Davidson C. Miller, et al., Ex. Gp.: 213

3,939,145, Re. S.N. 878,938, Filed Feb. 17, 1978, Cl. 536/4, NOVEL ETHEREALLY MONOSUBSTITUTED MONOSACCHARIDES, Paul Gordon, Owner of Record: *Strategic Medical Research Corp., Greenwich, Conn.,* Attorney or Agent: Joseph M. Lane, et al., Ex. Gp.: 124

3,939,146, Re. S.N. 878,937, Filed Feb. 17, 1978, Cl. 536/4, NOVEL ETHEREAL MONOSUBSTITUTIONS OF MONOSACCHARIDE DERIVATIVES, Paul Gordon, Owner of Record: *Strategic Medical Research Corp., Greenwich, Conn.,* Attorney or Agent: Joseph M. Lane, et al., Ex. Gp.: 124

3,940,897, Re. S.N. 879,797, Filed Feb. 21, 1978, Cl. 52/395, STRUCTURAL ASSEMBLIES, Richard Lewis Stoakes, Owner of Record: *Inventor,* Attorney or Agent: Roy C. Hopgood, et al., Ex. Gp.: 354

4,002,572, Re. S.N. 866,179, Filed Dec. 30, 1977, Cl. 252/99, ALKALINE PROTEASE PRODUCED BY A BACILLUS, Bauke te Nijenhuis, Owner of Record: *Gist-Brocades N.V. Delft, The Netherlands,* Attorney or Agent: Nelson Littell, et al., Ex. Gp.: 166

4,034,717, Re. S.N. 872,015, Filed Jan. 25, 1978, Cl. 122/359, MULTI-SECTION HEAT EXCHANGER MEANS, David N. Clum, et al., Owner of Record: *Heater Technology, Inc., Ponca City, Okla.,* Attorney or Agent: William R. Laney, et al., Ex. Gp.: 342

4,043,113, Re. S.N. 879,310, Filed Feb. 21, 1978, Cl. 58/23 BA, ELECTRIC WATCH BATTERY RETAINER, William D. Hart, Owner of Record: *Hughes Aircraft Company, Culver City, Calif.,* Attorney or Agent: W. H. MacAllister, Ex. Gp.: 217

PATENT NOTICES

Certificates of Correction for the Week of Apr. 18, 1978

P.P. 4,087	4,026,115	4,053,520	4,060,532
P.P. 4,167	4,026,927	4,053,528	4,060,642
Re. 29,346	4,027,251	4,053,555	4,060,796
Re. 29,417	4,028,218	4,053,836	4,060,799
D. 242,401	4,029,900	4,053,871	4,060,885
D. 246,717	4,030,123	4,054,219	4,060,933
3,524,956	4,030,409	4,054,353	4,061,101
3,777,649	4,031,077	4,055,427	4,061,270
3,804,879	4,032,419	4,055,842	4,061,868
3,810,003	4,034,023	4,056,181	4,061,941
3,886,276	4,034,774	4,056,409	4,062,158
3,894,747	4,035,225	4,057,007	4,062,263
3,933,891	4,035,415	4,057,050	4,062,341
3,936,948	4,036,030	4,057,448	4,062,594
3,946,138	4,036,360	4,057,475	4,062,668
3,957,988	4,036,954	4,057,497	4,063,187
3,960,866	4,037,487	4,057,579	4,063,391
3,964,898	4,038,664	4,057,590	4,063,466
3,969,723	4,038,886	4,057,644	4,063,677
3,971,501	4,040,039	4,057,645	4,063,738
3,978,156	4,040,992	4,057,723	4,063,839
3,982,103	4,041,064	4,057,736	4,064,284
3,982,183	4,042,044	4,058,200	4,064,334
3,987,067	4,042,059	4,058,261	4,064,525
3,989,118	4,042,612	4,058,293	4,064,741
3,989,957	4,042,974	4,058,404	4,064,983
3,991,072	4,043,318	4,058,476	4,065,121
3,999,214	4,043,327	4,058,553	4,065,135
4,001,395	4,043,344	4,058,643	4,065,186
4,003,042	4,043,739	4,058,715	4,065,240
4,004,161	4,044,060	4,058,794	4,065,395
4,007,627	4,044,541	4,058,891	4,065,587
4,011,704	4,045,491	4,059,199	4,065,729
4,011,894	4,045,493	4,059,221	4,065,803
4,012,061	4,046,611	4,059,287	4,066,279
4,012,229	4,046,995	4,059,420	4,066,438
4,013,693	4,047,447	4,059,478	4,066,451
4,013,763	4,047,533	4,059,479	4,066,618
4,014,445	4,047,601	4,059,512	4,066,625
4,014,752	4,049,734	4,059,545	4,066,684
4,015,339	4,049,847	4,059,658	4,066,690
4,015,756	4,050,887	4,059,680	4,067,023
4,015,907	4,051,103	4,059,699	4,067,073
4,016,763	4,051,159	4,059,712	4,067,102
4,018,507	4,051,309	4,059,725	4,067,165
4,018,853	4,051,523	4,059,875	4,067,249
4,019,697	4,051,820	4,059,876	4,067,430
4,021,564	4,052,000	4,059,925	4,067,594
4,023,496	4,052,313	4,060,035	4,067,608
4,024,428	4,052,936	4,060,042	4,067,646
4,025,426	4,053,276	4,060,322	4,067,779
4,025,976	4,053,296	4,060,433	4,068,005

Disclaimers

3,253,613.—*Robert R. Richolt,* Bellevue, Wash. FAIL SAFE SERVO VALVE. Patent dated May 31, 1966. Disclaimer filed Jan. 20, 1978, by the assignee, *The Boeing Company.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 9, 10, 11, 12 and 13 of said patent.

3,355,298.—*Ira Loter,* Fair Lawn, N.J. PROCESS OF MAKING CHEMICALLY ACIDIFIED SOUR CREAM TYPE PRODUCTS. Patent dated Nov. 28, 1967. Disclaimer filed Feb. 13, 1978, by the assignee, *Diamond Shamrock Corporation.*

Hereby enters this disclaimer to claims 1 and 5 of said patent.

3,437,494.—*Ira Loter,* Fair Lawn, and *John E. Long,* Murray Hill, N.J. PROCESS FOR MAKING CHEMICALLY-ACIDIFIED SOUR CREAM TYPE PRODUCT. Patent dated Apr. 8, 1969. Disclaimer filed Feb. 13, 1978, by the assignee, *Diamond Shamrock Corporation.*

Hereby enters this disclaimer to claims 1, 4 and 7 of said patent.

3,818,447.—*David John Craft,* Chandlers Ford, England. PRIORITY DATA HANDLING SYSTEM AND METHOD. Patent dated June 18, 1974. Disclaimer filed Jan. 26, 1978, by the assignee, *International Business Machines Corporation, Inc.*

Hereby enters this disclaimer to claims 1 through 12 of said patent.

3,823,576.—*John B. Colletti,* Grosse Point Park, and *Leonard J. Zukowski,* Sterling Heights, Mich. UNIVERSAL JOINT FOR VEHICLE STEERING COLUMN. Patent dated July 16, 1974. Disclaimer filed Dec. 5, 1977, by the assignee, *TRW Inc.*

Hereby enters this disclaimer to claims 1–6 of said patent.

3,850,687.—*Werner Kern,* Belle Mead, N.J. METHOD OF DENSIFYING SILICATE GLASSES. Patent dated Nov. 26, 1974. Disclaimer filed Mar. 1, 1978, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1 through 7 of said patent.

3,862,645.—*Donald L. Bianchetta,* Coal City, and *Kenneth R. Lohbauer,* Joliet, Ill. PILOT CONTROL VALVE. Patent dated Jan. 28, 1975. Disclaimer filed Feb. 13, 1978, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 3 and 4 of said patent.

3,890,347.—*David Middlemiss,* London, England. ISOINDOLINE DERIVATIVES. Patent dated June 17, 1975. Disclaimer filed Feb. 21, 1978, by the assignee, *Allen & Hanburys Limited.*

Hereby enters this disclaimer to claim 48 of said patent.

3,909,845.—*Kurt Rothlisberger,* Morton Grove, and *Richard F. Vee,* Chicago, Ill. APPARATUS AND METHOD FOR SENSING THE CONDITION OF A TAPE WITHIN A TAPE CASSETTE. Patent dated Sept. 30, 1975. Disclaimer filed Feb. 9, 1978, by the assignee, *Teletype Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,928,037.—*Louis Maria De Haes,* Edegem, Belgium, and *Hans-Georg Völz,* Krefeld-Bockum, Germany. TITANIUM DIOXIDE WITH ALUMINUM OXIDE OR ALUMINUM OXIDE PLUS SILICON DIOXIDE PRECIPITATED THEREON AS PIGMENT FOR DIFFUSION TRANSFER. Patent dated Dec. 23, 1975. Disclaimer filed Dec. 12, 1977, by the assignee, *Agfa-Gevaert N.V.*

Hereby enters this disclaimer to claims 1–25 of said patent.

3,937,812.—*James Long Bittle,* Doylestown, Pa., and *Wayne J. Rubic,* Titusville, N.J. FELINE CALICIVIRUS VACCINE AND PRODUCTION THEREOF. Patent dated Feb. 10, 1976. Disclaimer filed Feb. 27, 1978, by the assignee, *Pitman-Moore, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,939,718.—*James W. Banks,* Bozman, Md. MECHANISM TO CONVERT ROTARY MOTION TO TRANSVERSE

MOTION. Patent dated Feb. 24, 1976. Disclaimer filed Feb. 13, 1978, by the assignee, *Chemetron Corporation.*

Hereby enters this disclaimer to claims 1–7 of said patent.

3,954,273.—*Harry B. Shaper,* East Hills, and *Donald G. Litcher,* Commack, N.Y. PHONOGRAPH PICKUP CARTRIDGE. Patent dated May 4, 1976. Disclaimer filed Nov. 25, 1977, by the inventors.

Hereby enter this disclaimer to claims 1, 2 and 3 of said patent.

3,981,716.—*Eugene G. Teach,* El Cerrito, Calif. GEM-BIS AMIDE HERBICIDE ANTIDOTE COMPOSITIONS AND METHODS OF USE. Patent dated Sept. 21, 1976. Disclaimer filed Nov. 21, 1977, by the assignee, *Stauffer Chemical Company.*

Hereby enters this disclaimer to claims 1 through 28 of said patent.

4,007,235.—*Leigh E. Walker,* Lewiston, N.Y. METHOD OF PREPARING VINYL HALIDE POLYMERS AND COPOLYMERS WITH POLYOLEFINS. Patent dated Feb. 8, 1977. Disclaimer filed Nov. 21, 1977, by the assignee, *Hooker Chemicals & Plastics Corp.*

Hereby enters this disclaimer to claim 10 of said patent.

4,023,185.—*Allen Bloom,* East Windsor, *Robert Alfred Bartolini,* Trenton, and *Alan Edward Bell,* East Windsor, N.J. ABLATIVE OPTICAL RECORDING MEDIUM. Patent dated May 10, 1977. Disclaimer filed Feb. 22, 1978, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 5 and 12 of said patent.

4,033,030.—*Max S. Robinson,* Richland, Wash., and *Thomas J. Studebaker,* Boulder, Colo. METHOD OF MANUFACTURING KEYSWITCH ASSEMBLIES. Patent dated July 5, 1977. Disclaimer filed Feb. 10, 1978, by the assignee, *Mohawk Data Sciences Corp.*

The term subsequent to Apr. 19, 1994 has been disclaimed.

Dedication

3,976,370.—*Narendra S. Goel,* Henrietta, and *Gerald M. Fletcher,* Pittford, N.Y. BELT TRANSFER AND FUSING SYSTEM. Patent dated Aug. 24, 1976. Dedication filed Feb. 6, 1978, by the assignee, *Xerox Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimer and Dedication

3,599,409.—*Martin J. Whitney,* East Moline, and *William L. Forsberg,* Moline, Ill. MAIN FRAME FOR CORN HEADS. Patent dated Aug. 17, 1971. Disclaimer filed Dec. 12, 1977, by the assignee, *International Harvester Company.*

Hereby enters this disclaimer to all claims and dedicates to the Public the remaining term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St. SW.,
Washington, D.C. 20314

Patent application 838,437. Nonvolatile Punch Through Memory Cell. Filed Sept. 30, 1977.

Patent application 844,082. High Pressure Hydrazine Gas Generator. Filed Oct. 20, 1977.

Patent application 850,327. Line-of-Sight Stabilization Reflector Assembly. Filed Nov. 10, 1977.

Patent application 852,771. Internal Arresting Beam Clipper. Filed Nov. 18, 1977.

Patent 4,057,899. Staked Bearing Cutter. Filed Jan. 5, 1977. Patented Nov. 5, 1977. Not available NTIS.

Patent 4,058,002. Dispersive Electromagnetic Surface Acoustic Wave Transducer. Filed Dec. 23, 1976. Patented Nov. 15, 1977. Not available NTIS.

Patent 4,058,263. Adjustable Pintle Spray Manifold Assembly. Filed Aug. 16, 1976. Patented Nov. 15, 1977. Not available NTIS.

Patent 4,058,413. Ion Implantation Method for the Fabrication of Gallium Arsenide Semiconductor Devices Utilizing an Aluminum Nitride Protective Capping Layer. Filed May 13, 1976. Patented Nov. 15, 1977. Not available NTIS.

Patent 4,059,343. Prismatic Anamorphic System for Optical Correlators. Filed Feb. 26, 1976. Patented Nov. 22, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington, Va. 22217

Patent application 728,709. Process to Remove Iron Sulfide From Coal to Reduce Pollution. Filed Oct. 1, 1976.

Patent application 740,690. Twin Electric Microstrip Dipole Antennas. Filed Nov. 10, 1976.

Patent application 740,691. Coupled Fed Magnetic Microstrip Dipole Antenna. Filed Nov. 10, 1976.

Patent application 740,692. Circularly Polarized Electric Microstrip Antennas. Filed Nov. 10, 1976.

Patent application 740,693. Offset Fed Magnetic Microstrip Dipole Antenna. Filed Nov. 10, 1976.

Patent application 826,508. Gas-Actuated Valves. Filed Aug. 22, 1977.

Patent application 833,425. Repeatable Release Holdback Bar. Filed Sept. 15, 1977.

Patent application 838,696. Separable Fiber Optic Cable Connector. Filed Oct. 3, 1977.

Patent application 840,201. Pilot Training Simulator. Filed Oct. 7, 1977.

Patent application 846,945. Fiber Optic Coupler. Filed Oct. 31, 1977.

Patent application 849,738. Digital C/kT Meter. Filed Nov. 16, 1977.

Patent 3,989,944. Parallel-Beam X-Ray Optics for Measuring Asbestos. Filed Sept. 5, 1975. Patented Nov. 2, 1976. Not available NTIS.

Patent 4,027,938. Fiber Optic Cable Connector. Filed July 1, 1976. Patented June 7, 1977. Not available NTIS.

Patent 4,033,388. Bending and Cutting Tool. Filed May 3, 1976. Patented July 5, 1977. Not available NTIS.

Patent 4,042,830. Solid State Programmable Dynamic Load Simulator. Filed Nov. 25, 1975. Patented Aug. 16, 1977. Not available NTIS.

Patent 4,047,990. Plastic Bonded Explosive Composition. Filed Aug. 1, 1967. Patented Sept. 13, 1977. Not available NTIS.

Patent 4,054,786. Running Average Computer. Filed Sept. 24, 1973. Patented Oct. 18, 1977. Not available NTIS.

Patent 4,056,789. Electric Discharge Gas Dynamic Laser. Filed July 2, 1976. Patented Nov. 1, 1977. Not available NTIS.

Patent 4,062,057. Regulated Power Supply Having a Series Arrangement of Inverters. Filed Apr. 15, 1977. Patented Dec. 6, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St. SW.,
Washington, D.C. 20314

Patent application 837,135. Single Dispersive Delay Line Compressive Receiver. Filed Sept. 28, 1977.

Patent application 841,776. Ramp Toe Stowage System. Filed Oct. 13, 1977.

Patent application 844,163. Parachute Canopy Deployment Control Apparatus. Filed Oct. 21, 1977.

Patent application 848,622. Degasser and Liquid Seal Reservoir. Filed Nov. 4, 1977.

Patent application 852,112. Parachute Inspection Arch. Filed Nov. 16, 1977.

Patent 4,058,141. Supersonic Flow Diffuser With Energy Redistribution. Filed July 19, 1976. Patented Nov. 15, 1977. Not available NTIS.

Patent 4,058,331. Remotely Actuated Two Stage Structural Latch. Filed Oct. 29, 1976. Patented Nov. 15, 1977. Not available NTIS.

Patent 4,058,734. Passive Infrared Resolution Target. Filed July 19, 1976. Patented Nov. 15, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent application 828,562. Liquid Propellant Gun Breech Pressure Axial Injector. Filed Aug. 29, 1977.

Patent application 831,635. Wing in Ground Effect Vehicle. Filed Sept. 8, 1977.

Patent application 833,852. Ignitor. Filed Sept. 16, 1977.

Patent 3,351,463. High Strength Nickel-Base Alloys. Filed Aug. 20, 1965. Patented Nov. 7, 1967. Not available NTIS.

Patent 3,594,239. Method of Treating Unique Martensitic Alloys. Filed Feb. 26, 1968. Patented July 20, 1971. Not available NTIS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 11, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-11-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-8-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-20-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	4-6-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-11-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-10-76
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-17-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-9-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-8-77
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-27-76
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-10-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-22-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-15-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-3-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-16-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures: Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-18-77

Expiration of patents: The patents within the range of numbers indicated below expire during March 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,973,519 to 2,977,597, inclusive
Plant Patents..... Numbers 2,032 to 2,039, inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,611

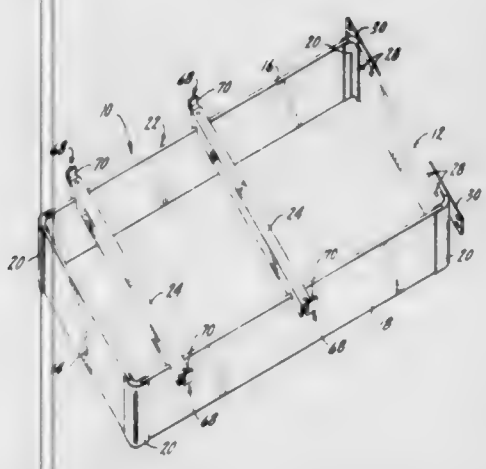
BED BASE FOR SUPPORTING A BOX SPRING

James Roger Lawrence, Carthage, Mo., assignor to Steadley Company, Inc., Carthage, Mo.

Original No. 3,869,738, dated Mar. 11, 1975, Ser. No. 432,659, Jan. 11, 1974. Application for reissue Dec. 17, 1976, Ser. No. 751,643

Int. Cl.[2] A47C *19/00*

U.S. Cl. 5—200 R 16 Claims



1. A bed base for supporting a box spring for a mattress and elevating said box spring a predetermined distance above a floor, comprising

panels of equal width resting on their edges and connected at their ends to form a rectangular frame,

[a pair of notches in] *at least one notch formed in each of* a pair of opposed panels at the upper edges in each one of said opposed panels, said [pair of] notches in one panel being in registration with the [pair of] notches in the other panel, and

[a pair of spaced cross-supports] *at least one cross-support* resting crosswise between the pair of notched panels, each of said cross-supports having a generally flat support surface which is generally parallel to the floor and on which the box spring rests, and a downwardly pointing brace,

each of said cross-supports being at right angles to the notched panels and aligned with opposed notches in opposed notched panels so that the respective braces of each one of said cross-supports nest in the opposed notches and the support surfaces of said cross-supports are essentially flush with the unnotched portion of the notched edges of said panels.

Re. 29,612

MACHINE TOOL WITH INDEXIBLE TOOL SUPPORT

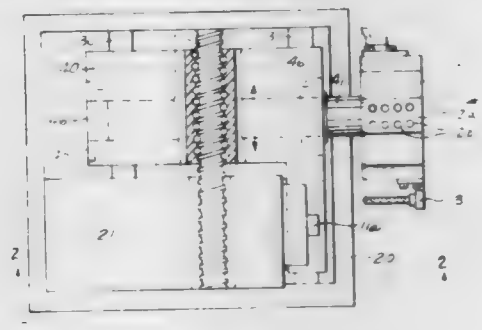
Baxter T. Fullerton, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Original No. 3,835,516, dated Sep. 17, 1974, Ser. No. 292,982, Sep. 28, 1972. Continuation-in-part of Ser. No. 148,729, Jun. 1, 1971, abandoned. Application for reissue Sep. 14, 1976, Ser. No. 723,308

Int. Cl.[2] B23B *3/18*

U.S. Cl. 29—47 20 Claims

1. A machine tool comprising a frame, a rotatable member having an axis of rotation and having an outer end for supporting a workpiece to be machined for rotation with said member about said axis, an indexible tool support displaced to one side of said axis and comprising means for mounting tools on said tool support in a plurality of angular positions about an indexing axis parallel to said axis of rotation, a carrier, means supporting said tool support on said carrier for indexing movement relative to said carrier to index said tools to a position for machining a workpiece and for advance movement relative to said carrier in a work stroke parallel to said axis of rotation to effect the machining of said workpiece and for return movement, said tool support projecting outwardly of said carrier in a direction parallel to said axis of rotation to a retracted position and movable toward said carrier from said retracted position to a maximum advanced position, which positions define the maximum work stroke of said tool support, means supporting said carrier for movement toward and away from said axis to move a tool on said tool support transversely of said axis of rotation, said means supporting said carrier being disposed on said frame alongside said rotatable member and comprising a way extending transversely to said axis of rotation and alongside said rotatable member, and power driven means operatively connected to said tool support for indexing the latter and moving it through its work stroke.



5. An machine tool as define in claim 1 wherein said tool mounting means of said tool support comprises means for mounting a turning tool with its cutting edge in a plane to machine the outer periphery of a workpiece at least at the beginning of the work stroke with the tool support in its retracted position and for mounting an end-working tool with its cutting edge in said plane and at least a shank portion of the end-working tool extending parallel to the axis of the rotatable member for a distance at least approximately equal to the length of the maximum work stroke of said tool support whereby said end working tool is adapted to machine the workpiece inwardly from the outer end thereof for substantially the full length of the maximum work stroke as the tool support is moved through its work stroke, and said driven means comprising means for moving said tool support relative to said carrier in a direction substantially parallel to the axis of said rotatable member in different length work strokes.

Re. 29,613

INHALER APPARATUS

Georg Kropfhammer, Seebruck, Germany

Original No. 3,964,478, dated Jun. 22, 1976, Ser. No. 489,898, Jul. 19, 1974. Application for reissue Apr. 11, 1977, Ser. No. 786,475

Claims priority, application Germany, Jul. 19, 1973, 2336879; Jun. 20, 1974, 2429508

Int. Cl.[2] A61M *16/00*

U.S. Cl. 128—203 22 Claims

1. An inhaler apparatus comprises a housing and a breathing system mounted within said housing;

said breathing system includes a source of gas, an applicator for said gas, a feed hose connected between said source and said applicator, and valve means for controlling the flow of said gas to said applicator;

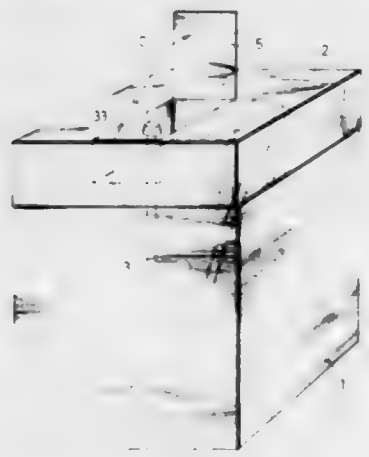
said housing includes a lid which is movable between an open position in which said applicator can be withdrawn

from said housing and a closed position which prevents access to said applicator;

locking means to hold said lid in said closed position, and unlocking means to disengage said locking means;

timer means connected to said valve means for actuating said valve means for a predetermined period of time;

actuating means connected to said timer means for actuating said timer means; and



connecting means connecting said lid and said timer means, said connecting means including a shaft fixedly connected to said lid; a first member fixedly connected to said shaft and extending radially outwardly therefrom, and first lever means connected between said first member and said actuating means whereby when said lid is moved into an open position said timer means actuates the valve means and thereby communicates the source with the applicator for said predetermined period time.

Re. 29,614

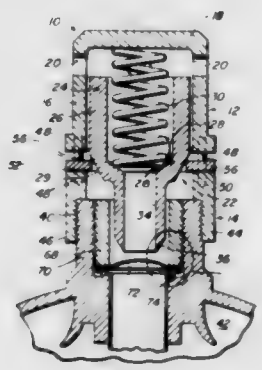
RUPTURING HEAD FOR FIRE EXTINGUISHERS

William J. Zehr, Des Plaines, Ill., assignor to The Protectoseal Co., Bensenville, Ill.

Original No. 4,006,780, dated Feb. 8, 1977, Ser. No. 689,098, May 24, 1976. Application for reissue Mar. 4, 1977, Ser. No. 774,375

Int. Cl.[2] A62C *35/02*; F16K *13/04*; A62C *37/30*

U.S. Cl. 169—26 **4 Claims**



1. A head for rupturing a disk in the cylindrical neck of a container for emission of fire extinguishing material, said neck having male threads around the exterior wall of the neck and a rupturable disk in said neck, in combination with a hollow housing having a top and side wall, the upper portion being cylindrical, and having an integrally formed substantially square in cross-section lower portion, *an opening in said cylindrical upper portion,* said lower portion having a top and side and end walls, the lower end of said lower portion being internally threaded for securement to the neck of the container, said lower portion provided with a pair of opposed slots in said side walls and partially into said end walls, a pair of vertically disposed roll pins anchored to said side walls and each spanning one of said slots, a hollow punch having a cylindrical spring loaded seat positioned interiorally in the upper portion of said housing and a hollow tubular member integrally formed on the lower end of said seat and offset from said seat, the free end of said tubular member being sharpened to form a cutting edge, a pair of arms each positioned in one of said slots, one end of each of said arms pivotally secured to one of said roll pins, a hooked portion on the opposite end of each of said arms and a fusible link secured to said hooked portions to position said arms in parallel and support said seat in inoperative position.

Re. 29,615

OFF-PHOTOMETRIC-RANGE INDICATOR FOR EXPOSURE METER

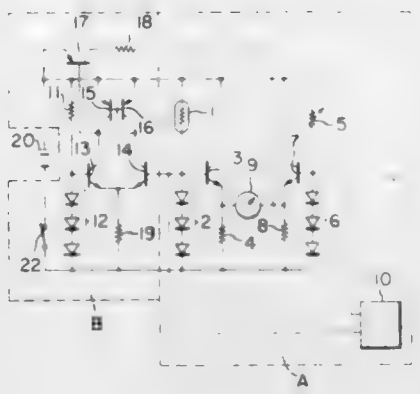
Kenji Toyoda, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Original No. 3,975,747, dated Aug. 17, 1976, Ser. No. 573,396, May 1, 1975. Application for reissue May 13, 1977, Ser. No. 796,659

Claims priority, application Japan, May 9, 1974, 49-51645[U]

Int. Cl.[2] G03B *7/00*; G01J *1/44*

U.S. Cl. 354—60 E **7 Claims**



1. In a device for indicating off-photometric-range of a photometric circuit in an exposure indicator, the indicating device including:

a photometric circuit **[(1, 2)]** adapted to generate a first voltage in correspondence to the object brightness of an object to be photographed;

an exposure factor introduction circuit **[(5, 6)]** adapted to generate a second voltage which varies according to exposure factors; and

an indicator **[(9)** connected at one input terminal to said photometric circuit and at its other input terminal to said exposure factor introduction circuit and**]** adapted to indicate a proper value of exposure corresponding to the difference between said first and second voltages,

the improvements comprising:

a. a detection circuit **[(11, 12, 13, 13, 15, 16, 19)]** connected to said photometric circuit and adapted to detect the object brightness and issue an output signal when the detected value of the object brightness is off the photometric range of said **[**indicator,**]** *photometric circuit;*

b. a switching circuit **[(17, 25)]** connected to said detection circuit and arranged to operate when receiving said output signal; and

c. a circuit **[(18, 26, 27)]** connected between said switching circuit and said indicator and actuated by operation of said switching circuit to scale out said indicator thereby to give the off-photometric-range indication.

PLANT PATENTS

GRANTED APRIL 18, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,241

ROSE PLANT

Jan Van Veen, Aalsmeer, Netherlands, assignor to Carlton Rose Nurseries, Inc., Carlton, Oreg.

Filed Apr. 5, 1977, Ser. No. 784,782
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea Class obtained as a seedling from a seed parent of the White Satin variety and an unnamed pollen parent U.S. Plant Pat. No. 2,603 characterized by its ability to yield large long lasting blooms on a continuous basis in a greenhouse, substantially as shown and described.

4,242

DOGWOOD TREE — IMPERIAL WHITE VARIETY

Elizabeth Parris Blow, 911 Westwood Dr., Raleigh, N.C. 27607, and Muriel Fiscus Steppe, 3800 New Bern Ave., Raleigh, N.C. 27610

Filed Jan. 24, 1977, Ser. No. 762,120
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of white Flowering Dogwood tree, botanically known as *Cornus florida*, substantially as illustrated and described, characterized particularly as to novelty by the unique combination of (1) the unusually large size of solid white bracts which appear adjacent the flowers, (2) the unusually large size of the leaves, (3) a more vigorous and a more spreading growth habit, and (4) an improved drought tolerance.

PATENTS

GRANTED APRIL 18, 1978

ERRATA

For CLASS	See PATENT NO.
053–112 A	4,084,390
053–120	4,084,391
053–131	4,084,392
053–137	4,084,393
056–014.6	4,084,394
056–015.4	4,084,395
056–098	4,084,396
056–255	4,084,397
057–034 R	4,084,398
057–140 C	4,084,399
057–156	4,084,400
058–004 A	4,084,401
058–023 R	4,084,402
058–023 D	4,084,403
0589–050 R	4,084,404
081–010	4,084,460
181–241	4,084,658
297–453	4,084,775
366–177	4,084,795
366–137	4,084,796
316–019	4,084,871
350–151	4,084,908
209–071	4,085,038
252–470	4,085,131
560–075	4,085,132
526–122	4,085,276
544–027	4,085,277
544–111	4,085,278
544–111	4,085,279
544–140	4,085,280
544–185	4,085,281
544–197	4,085,282
544–214	4,085,283
235–306	4,085,312
235–419	4,085,313
235–487	4,085,314
362–116	4,085,315
362–016	4,085,316
362–072	4,085,317
362–217	4,085,318

PATENTS

GRANTED APRIL 18, 1978

GENERAL AND MECHANICAL

4,084,264

BATTER TRAINING SAFETY JACKET

Sebastino T. Marion, 28029 Elmdale, St. Clair Shores, Mich. 48081

Filed Apr. 9, 1976, Ser. No. 675,578
Int. Cl.[2] A41D *13/00*
U.S. Cl. 2—2 **4 Claims**



1. In a jacket for a batter playing baseball, the improvements comprising:

a body portion;

a sleeve portion;

said sleeve portion being affixed to the left side of said body portion;

said sleeve portion having a first relatively thin fabric portion;

said sleeve portion having a relatively thick padding portion;

said sleeve padding portion located on said sleeve portion in such a manner that said padding covers the elbow and adjacent fore arm and adjacent upper arm regions;

said sleeve portion having a relatively thin fabric portion at the interior crux of the elbow;

said body portion having padding extending from the buttocks to the neck on the back thereof and extending from the thigh through collar bone in a vertical direction, and in a horizontal direction to the beginning of the rib cage on the front of said jacket said body portion comprising a back portion with integral left and right front vest portions;

said right portion of said jacket being sleeveless;

adjustable fastening means attached to the left and right front vest portions of said jacket;

said fastening portions having means for quickly engaging and disengaging the fasteners for fastening said jacket front portions in a safety position and for defastening said portions for quick removal of said jacket.

4,084,265

PROTECTIVE GLOVE

Bertil Anfelt, Stockholm, Sweden, assignor to Landstingens Inkopscentral, Lic, Ekonomisk Forening, Solna, Sweden

Filed Jul. 21, 1976, Ser. No. 707,256
Claims priority, application Sweden, Jul. 31, 1975, 7508686
Int. Cl.[2] A41D *19/00*
U.S. Cl. 2—163 **1 Claim**

1. A protective glove constructed of two overlying plastic films each having a thickness of 0.01 to 0.10 mm and both films having been deformed by embossing them simultaneously in overlying relationship so as to exhibit on one side a large number of embossed impressions each of which forms on the other side of the film a corresponding protuberance having a height of from 0.02 to 0.10 mm, said impressions and corresponding protuberances being substantially evenly distributed over the whole surface of the films and being spaced apart from 0.5 to 2 mm center-to-center, one of the films having its protuberances on the outside of the glove and the other film having its protuberances on the inside of the glove, and the



protuberances on one film being displaced relative to the protuberances on the other film so that the protuberances do not lie opposite each other when the glove lies flat.

4,084,266

ARTIFICIAL IMPLANT WITH FIBER-FLOCKED BLOOD-CONTACTING SURFACE

Victor L. Poirier, Chelmsford, and John T. Keiser, Acton, both of Mass., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 602,385, Aug. 6, 1975, Pat. No. 4,016,303.
This application Nov. 1, 1976, Ser. No. 737,271
Int. Cl.[2] A61F *1/00, 1/24;* A61M *1/03*
U.S. Cl. 3—1 **2 Claims**



1. In an artificial implant device adapted to be implanted in blood-contacting position in the body of a living creature such as a human being, said device having its blood-contacting surface flocked with fibers of a blood-compatible polymeric material adhesively secured at their bases to said surface, the improvement wherein said fibers are interlocked with each other by means of bonds of adhesive material formed at the points of contact of said fibers with each other, thereby substantially reducing the possibility of fiber separation and release from said surface when said device is in implanted position, said fibers being substantially uncoated with said adhesive material except at their points of contact with each other and with said surface.

4,084,267

DRIVE FOR AN ORTHOSIS OR A PROSTHESIS

Alfred Zadina, Vienna, Austria, assignor to Viennatone Gesellschaft m.b.H., Vienna, Austria

Filed Sep. 20, 1976, Ser. No. 724,870
Claims priority, application Austria, Sep. 18, 1975, 7183/75
Int. Cl.[2] A61F *1/06, 1/00, 5/10*
U.S. Cl. 3—1.1 14 Claims



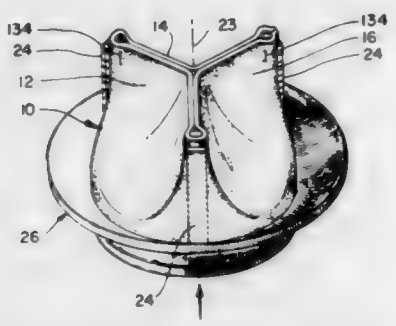
1. A limb rehabilitation device comprising a stationary part and a part movably mounted on the stationary part, a drive unit mounted on the stationary part and a transmission for converting a rotary motion produced by the drive unit into a reciprocating linear motion for driving the movably mounted part, the transmission including a transmission member coupled to the drive unit for rotation therewith, the transmission member having two separate threads of opposite pitch, two transmission elements respectively threadedly mounted on a respective one of the threads of opposite pitch for linear movement in relation thereto, the transmission elements being non-rotatable in relation to the transmission member whereby rotation of the member causes the linear movement of the elements, and a tackle with flexible elongated motion-transmitting means having two ends facing the drive unit, a respective one of the motion-transmitting means ends being affixed to a respective one of the transmission elements and the tackle being connected to the movably mounted part for moving the same in response to the rotary motion of the drive unit.

4,084,268

PROSTHETIC TISSUE HEART VALVE

Marian I. Ionescu, Leeds, England, and Bruce E. Fettel, Diamond Bar, Calif., assignors to Shiley Laboratories, Incorporated, Santa Ana, Calif.

Filed Apr. 22, 1976, Ser. No. 679,406
Int. Cl.[2] A61F *1/22*
U.S. Cl. 3—1.5 14 Claims



4. A cloth covered stent for a prosthetic heart valve comprising:

a stent having an annular base and plural upright posts;

cloth fabric covering the interior surface of said stent;

cloth fabric covering the exterior surface of said stent;

a cylindrical tissue valve circumscribing said stent posts and said exterior cloth fabric;

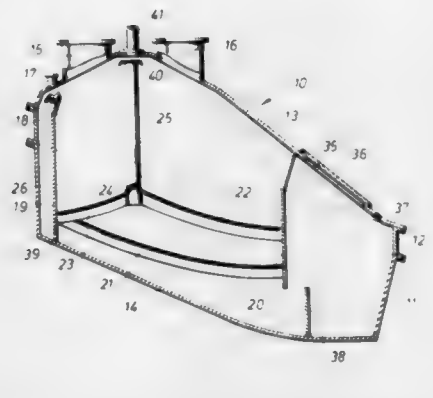
said interior fabric being tightly wrapped around the bottom edge of said stent covering the bottom edge of said exterior fabric, and preventing loose cloth at the bottom edge.

4,084,269

ARRANGEMENT FOR MOULDERING ORGANIC WASTE MATERIAL

Rikard Emanuel Lindström, Tonstigen 6, 135 00 Tyreso, Sweden

Filed Jun. 10, 1976, Ser. No. 694,699
Claims priority, application Sweden, Jun. 10, 1975, 7506661
Int. Cl.[2] A47K *11/02;* C05F *3/04*
U.S. Cl. 4—111 5 Claims



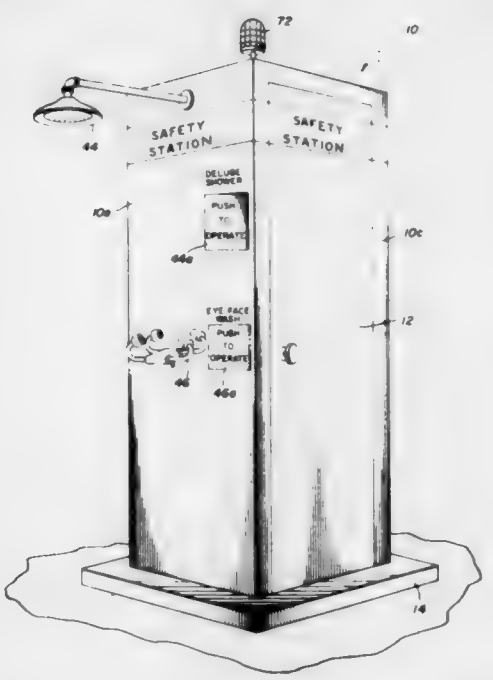
1. An arrangement for mouldering organic waste material in which liquids are supplied to a container separately from other waste, comprising a container having a waste supply opening located above an inclined surface provided at the bottom of the container along which waste material supplied to the container through said opening may slide under the action of gravity while undergoing a mouldering process, characterized by liquid conducting means arranged to conduct urine and other liquid, which is supplied to the container separated from other waste material, to a region within the container located adjacent to the highest portion of the inclined surface.

4,084,270

FREEZE PROOF EMERGENCY SHOWER UNIT

Samuel D. Kersten, Jr., Highland Park, Ill., assignor to Water Saver Faucet Co., Inc., Chicago, Ill.

Filed Jul. 6, 1976, Ser. No. 702,525
Int. Cl.[2] A47K *3/22, 3/00, 3/08*
U.S. Cl. 4—145 6 Claims



1. A stationary freeze proof emergency shower unit capable of supplying a high volume of pretempered water at a desired temperature to an individual using the unit irrespective of the temperature of the ambient air surrounding the unit, comprising an insulated walled enclosure rigidly anchored in place at a preselected site, said enclosure having top, bottom and side walls, one of the side walls having a door permitting access to the interior of the enclosure, a deluge shower extending

through and outwardly from a side wall of the enclosure and positioned at a height with relation to the bottom wall of the enclosure to enable a person standing under the deluge shower on the outside of the enclosure to stand in a substantially upright position, a tempered water storage tank within the enclosure connected to a source of water and to the deluge shower, water temperature control means within the enclosure associated with the tempered water storage tank for automatically maintaining the water in the storage tank at a preselected temperature irrespective of the temperature of the air on the outside of the enclosure, and deluge shower control means including valve means positioned within the enclosure between the storage tank and the deluge shower and valve control means operable from outside the enclosure for enabling a person to open the valve means within the enclosure to cause a high volume of tempered water at a preselected temperature to flow from the tempered water storage tank in the enclosure to the deluge shower on the outside of the enclosure.

4,084,271

STEAM BATH DEVICE FOR SHOWER

Irwin L. Ginsberg, 1236 Glenview St., Philadelphia, Pa. 19111

Filed Jan. 12, 1977, Ser. No. 758,747
Int. Cl.² A61H *33/06*
U.S. Cl. 4—161 **4 Claims**



1. Apparatus for use in a stall shower of a building to simulate a steam bath from hot water, comprising nozzle means, means mounting said nozzle means on a wall of said stall and means coupling said nozzle means to a pipe carrying the hot water supplied by said building, said nozzle means including an orifice for producing an aerosol mist of a multitude of fine droplets of hot water in a well defined flat spray pattern, and being constructed to have a low water flow rate to thereby produce a large volume of said fine water droplets from a small volume of water, said nozzle means being so mounted withrespect to said wall that the spray pattern is directed at an angle to the wall to impact the wall and produce a cloud of fine hot water droplets simulating live steam.

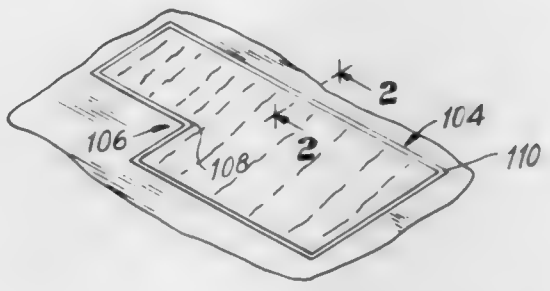
4. Apparatus for use in a stall shower of a building to simulate a live steam bath from hot water supplied by the building and carried in a pipe, said shower including a conventional shower head, said apparatus being connected by a diverter valve between said shower head and said pipe and comprising nozzle means, securement means for mounting said nozzle means on the wall of said stall, flexible hose means connected between said diverter valve and said nozzle means, and a protective shroud disposed over said nozzle means, said nozzle means including an orifice for producing an aerosol mist of a multitude of fine droplets of hot water in a well defined spray pattern, and being constructed to have a low water flow rate to thereby produce a large volume of said fine water droplets from a small volume of water, said nozzle being so mounted with respect to said wall that the spray pattern is directed at an angle to the wall to impact the wall and produce a cloud of fine hot water droplets simulating live steam.

4,084,272

SWIMMING POOLS WITH OVERFLOW GUTTERS

Merrill L. Laven, 4 Marion Ave., Albany, N.Y. 12203

Division of Ser. No. 428,882, Dec. 27, 1973, Pat. No. 3,938,199.
This application Jan. 22, 1976, Ser. No. 651,245
Int. Cl.² E04H *3/16, 3/18*
U.S. Cl. 4—172.17 **6 Claims**



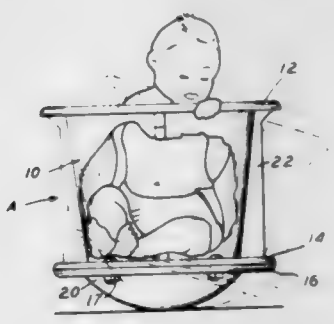
1. For use with a swimming pool, an elongated plastic extrusion of channel-shaped configuration forming a gutter for receiving liquid which overflows from the pool, said gutter having an outer upper region, and concrete-retaining means connected with said outer upper region of said gutter and extending upwardly from said outer upper region of said gutter, said concrete-retaining means having at an elevation higher than said outer upper region of said gutter an outwardly directed hollow interior for receiving concrete, said concrete-retaining means being itself in the form of a plastic extrusion, the latter having a lower end provided with a pair of opposed inwardly directed flanges, and said outer upper region of the gutter having springy tongues for extending around and releasably holding said flanges connected to said gutter.

4,084,273

REVOLVABLE ROCKABLE PLAYPEN

Elwood W. Haynes, 6303 Pizzaro St., Duluth, Minn. 55807

Continuation of Ser. No. 589,474, Jun. 23, 1975, abandoned.
This application Jul. 15, 1976, Ser. No. 705,705
Int. Cl.² A47D *9/02, 9/04;* A63G *1/00*
U.S. Cl. 5—105 **1 Claim**



1. A revolvable rockable playpen comprising:
a. a hollow continuous frusto-conical body having the smaller diameter end positioned lowermost and an open upper end, and
b. a circular bottom secured to the other end,
c. a first flat annular flange formed on the lower edge of said hollow body extending outwardly therefrom and coextensive with said bottom,
d. a flat circular bottom member directly connected to and substantially coextensive with said annular flange,
e. said flat circular bottom member having a semi-spherical rocker portion formed directly on said circular bottom, the outer edge of which is spaced radially inwardly from the outer edge of said circular bottom,
f. means connecting said circular bottom to said annular flange, and
g. a second flat annular flange formed on the upper edge of said hollow body member extending outwardly therefrom

substantially at a right angle and of a diameter substantially equal to the diameter of said annular flange and said circular bottom member, and

h. spaced elongated flat supports extending between and connected to said first and second annular flanges.

4,084,274

TURNING BED

David John Willis, Lower Hutt; Dennis Clifford Stevenson, and William Bettle, both of Christchurch, all of New Zealand, assignors to Betstone Industries Limited, Christchurch, New Zealand

Filed Apr. 21, 1976, Ser. No. 678,769

Claims priority, application New Zealand, May 1, 1976, 117001

Int. Cl.[2] A61G *7/10*

U.S. Cl. 5—61 **18 Claims**



1. A tilting assembly for a bed comprising:

a longitudinally divided mattress frame including a centre section which is pivotally supportable from the frame of a bed, and an outer section adjacent each longitudinal side of said centre section, each said outer section being pivotally connected to the centre section;

wherein the pivotal connection between the centre section and each outer section comprises a plate secured across each end of each said section, the plane of each said plate being substantially perpendicular to the plane of said section, adjacent plates being arranged to butt against each other when the centre section is not titled, and a bracket extending across said adjacent plates, said bracket being pivotally secured to one of said plates and rigidly secured to the other of said plates, such that tilting the centre section to raise one longitudinal side thereof causes tilting of the outer section adjacent said longitudinal side of the centre section, the longitudinal side furthest from the centre section of said outer section being raised;

a lever secured at one end to the centre section, the other end of said lever being moveable so as to tilt the center section;

and means for moving said lever.

4,084,275

COVER FOR A LIFTING DEVICE AND METHOD OF UTILIZING SAME

Bengt Erland Ilon, Benzholzstrasse 39, CH-6045 Meggen/Luzern, Switzerland

Division of Ser. No. 561,976, Mar. 25, 1975, Pat. No. 3,978,531. This application Aug. 5, 1976, Ser. No. 711,961

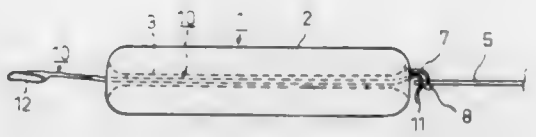
Claims priority, application Sweden, Apr. 1, 1974, 7443431

Int. Cl.[2] A61G *7/10*; A47B *83/04*

U.S. Cl. 5—81 R **10 Claims**

1. A disposable protective cover for a lifting device, said lifting device comprising a hollow member of thin, flexible material having ends and a recess extending entirely through the member from one end to the other, said recess being open at each end of the member, said member having an inner portion surrounding and defining said recess and an outer portion surrounding said inner portion and defining the exterior surface of said member, said inner and outer portions defining an enclosed chamber in said member, said chamber surrounding said recess and having a generally elongate, flattened, toroidal configuration, said inner and outer portions forming a continuous, uninterrupted surface, and means for driving said member in a rolling action, said driving means comprising an elongate driving member of greater length than the recess of said hollow member adapted to extend through said recess, said disposable cover comprising

an elongate tubular cover member having a body and first and second ends, said tubular cover member being made of flexible material of greater length than the length of said hollow member and being of such girth as to be adapted to surround said hollow member to cover said hollow member, said tubular cover member being con-



structed to fit within said recess of said hollow member, said first end of said tubular cover member being open, said tubular cover member being formed adjacent said first end for outwardly everting folding around the one end of the hollow member of the lifting device when part of the body of the tubular cover member is disposed within the recess of the hollow member, said first end also being constructed for releasable gripping engagement with the exterior surface of the hollow member to move in unison with said exterior surface as the hollow member moves in an everting motion, said tubular member being formed adjacent its second end for being releasably coupled to the end portion of said driving member extending through said recess for pulling said cover member into said recess by pulling said driving member into said recess, while enabling said cover member to be uncoupled from said driving member.

4,084,276

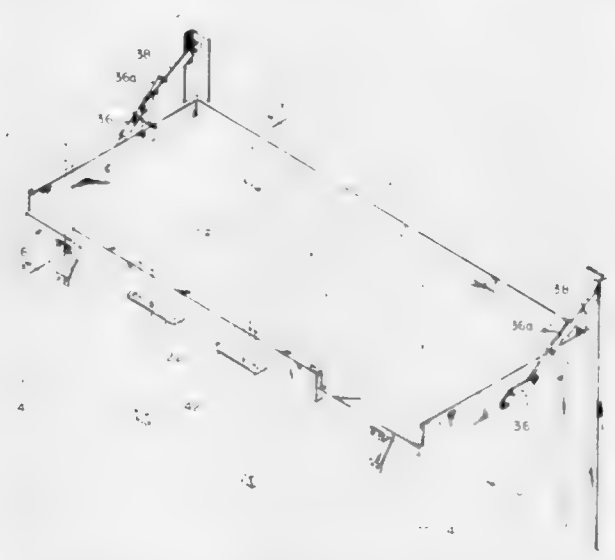
SWING-AWAY BUNK

Ray W. Trexler, Jr., Federal Way, and Donald J. Teodoro, Seattle, both of Wash., assignors to PACCAR Inc., Bellevue, Wash.

Filed Oct. 22, 1976, Ser. No. 735,090

Int. Cl.[2] A47K *11/02*

U.S. Cl. 5—118 **6 Claims**



1. A swing-away bunk for automotive truck cabs of the type

having a driving compartment and a sleeping compartment, comprising:

a sleeping compartment having a rear wall and forward vertical supports,

a bunk having a frame assembly and a mattress secured to said frame assembly,

said frame assembly including a forward frame member, a rearward frame member and a cam follower on the rearward frame member,

each of said rear wall and forward vertical supports having support brackets provided with horizontal ledges for supporting the forward and rearward frame members when the bunk is in a horizontal condition,

link means pivotally mounting the frame assembly to the rear wall,

handle means on the frame assembly forward frame member for pulling the bunk forwardly, and

cam means on the rear wall aligned with the cam follower, said cam means having forwardly and upwardly directed cam surfaces for guiding the frame assembly rearward frame member past said rear wall support brackets as the bunk is pulled sharply forward into the horizontal position.

4,084,277

COLLAPSIBLE GUARD RAIL

Raymond M. Conrad, 745 Woodruff Rd., Milford, Conn. 06460, and Charles R. Whitcomb, Rowley Rd., Woodbury, Conn. 06798

Division of Ser. No. 537,683, Dec. 30, 1974, Pat. No. 3,997,792.
This application Sep. 27, 1976, Ser. No. 727,267
The portion of the term of this patent subsequent to Aug. 31, 1993, has been disclaimed.
Int. Cl.[2] A47D *7/02*; A47C *21/00*
U.S. Cl. 5—331 **10 Claims**



1. A collapsible guard rail assembly for a table or the like, said guard rail assembly comprising means for mounting said guard rail assembly on a table, a hollow elongated top rail, means for supporting said top rail on said mounting means for movement relative thereto between active and inactive positions, said top rail in its inactive position being supported generally adjacent said mounting means by said supporting means, said top rail in its active position being maintained in spaced relation to said mounting means by said supporting means, and means for releasably retaining said top rail in said active position, said supporting means, said retaining means and at least a portion of said mounting means being wholly disposed generally within the interior confines of said top rail when said top rail is in said inactive position.

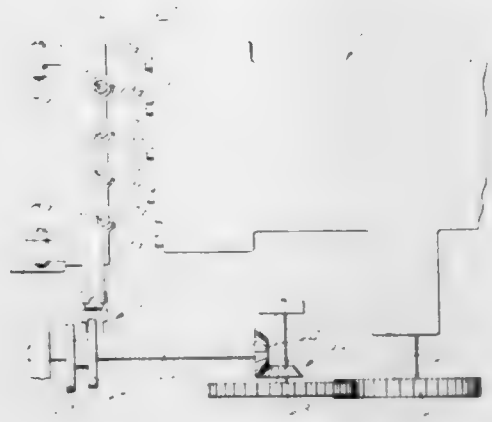
4,084,278

HIGH SPEED TRANSFER

Gene E. Allebach, and Robert E. Wisebaker, both of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Filed Aug. 2, 1976, Ser. No. 710,550
Int. Cl.[2] B21D *43/10, 53/24*
U.S. Cl. 10—76 T **19 Claims**

1. A transfer forging machine or the like comprising a frame, a slide reciprocable on said frame, tools and dies on said frame and slide cooperating to provide a plurality of die stations having working axes spaced from each other along a transfer plane extending in the direction of slide reciprocating movement, a transfer operable in timed relation to the movement of said slide for progressively transferring a workpiece from one die station to the subsequent die station; said transfer including a shaft pivoted for rotation about an axis midway between adjacent die stations and substantially perpendicular to said transfer plane, said shaft extending substantially to said transfer plane, a drive means for rotatably oscillating said shaft through substantially 180° between a pick-up position and a delivery position, and a gripper assembly supported on such shaft substantially at said transfer plane and extending substantially perpendicular to said shaft along said transfer plane, said gripper assembly including a support portion and gripper portion at the distal end thereof to grip a workpiece at one station when said shaft is in said pick-up position and to transport and deliver such workpiece to a subsequent die station when such shaft moves to said delivery position, said gripper and support portions each extending substantially exclusively in a direction away from the axis of said shaft, whereby said gripper and support portions are adapted to provide the sole offset from said shaft to either of said pick-up or delivery positions whereby said transfer is constructed to provide a relatively small eccentric mass to reduce eccentric loads and inertia forces developed during the operation of said transfer.

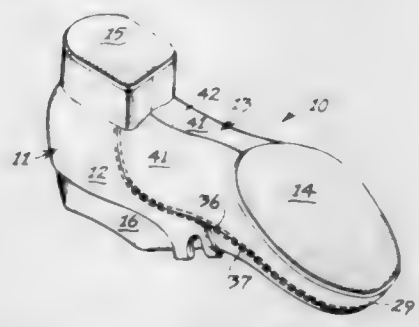


4,084,279

METHOD OF MAKING MUDGUARD STYLE SHOE

Newton C. Turner, Jr., Nashville, Tenn., assignor to Genesco, Inc., Nashville, Tenn.

Division of Ser. No. 620,873, Oct. 28, 1975, Pat. No. 4,001,955.
This application Jan. 5, 1977, Ser. No. 756,957
Int. Cl.[2] A43D *9/00*
U.S. Cl. 12—142 R **10 Claims**



1. A method of making a shoe comprising the steps of:

a. forming an upper having a forepart, intermediate side portions, a heel portion, said forepart and said intermediate side portions having lower marginal edge portions,

b. forming a mudguard piece substantially coextensive with the forepart and the intermediate side portions of said upper and having an upper edge portion, a forepart bottom edge, and opposed intermediate side portions depending below said forepart bottom edges a predetermined amount and terminating in mating intermediate bottom edges,

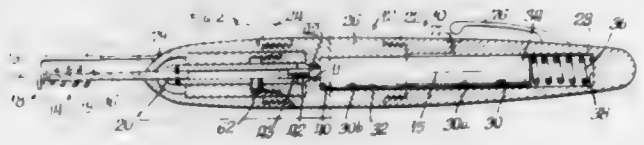
c. securing the upper edge portion of said mudguard piece to the lower marginal edge portions of the forepart and the intermediate side portions of said upper.
d. securing said intermediate bottom edges together in mating relationship,
e. inserting at least one insole member having a bottom face within the forepart of said upper, within said heel portion and within said secured intermediate side portions of said mudguard piece,
f. securing said forepart marginal edges to said insole member, and
g. securing an outsole to the bottom face of said insole member.

4,084,280

TOOTH BRUSH

Bob May, P.O. Box 212, River Forest, Ill. 60305

Filed Feb. 25, 1977, Ser. No. 772,304
Int. Cl.[2] A46B *13/02*
U.S. Cl. 15—22 R **1 Claim**



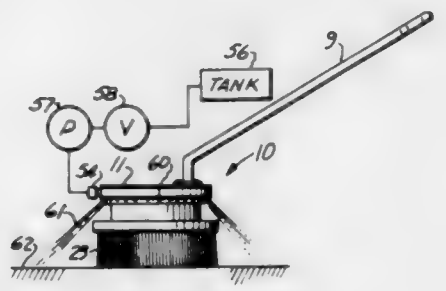
1. A tooth brush of the character disclosed, comprising,
a barrel having a rear end and a front end and made up of three sections, a middle section, a front section and a rear section, the sections being normally connected together for use of the device, but being separable,
the middle section and the rear section having bore portions which are axially algined when those sections are fitted together, and which form a rear main bore,
the middle section and the front section having bore portions which are aligned when those sections are fitted together and which form a front main bore,
the middle section having a reduced bore interconnecting the rear main bore and front main bore, and the middle section having a rearwardly facing annular shoulder surrounding the reduced bore and forming the front end surface of the rear main bore and also having a forwardly facing annular shoulder surrounding the reduced bore and forming the rear end surface of the front main bore,
the front section having an aperture at its front end leading from the front main bore to the exterior,
a motor in the rear main bore having a drive shaft extending through the reduced bore into the front main bore,
a battery in the rear main bore in operative engagement with the motor,
a spring in the rear main bore biasing the battery into engagement with the motor and the motor into engagement with said front end surface of the bore,
the rear barrel section having contacts for establishing an electrical circuit through the motor and battery, and also having a pocket clip normally in an inactive position, but movable by the hand into engagement with the motor contacts for completing an electrical circuit through the battery and motor,
a drive unit in the front main bore including an outer sleeve made up of relatively longitudinally positioned sections normally fitted together in the assembled device, and the sleeve being confined in the front main bore between said front annular shoulder and a surface of the front section adjacent the front end of the latter,
the sections of the outer sleeve having interfacing end surfaces spaced apart when they are assembled and defining therebetween an annular cam track disposed at an acute angle to the main longitudinal axis of the device,
the drive unit also including an inner sleeve rotationally and reciprocally disposed in the outer sleeve and having an element at its rear end in drive transmitting connection with the shaft of the motor, said inner sleeve having a radial pin extending into said cam track,
the tooth brush also including a brush member having a brush element on the exterior of the barrel an a shank extending through the front end aperture of the barrel into the front end of the inner sleeve of the drive unit, and normally frictionally held in and carried by that inner sleeve, but detachable therefrom through the front end of the barrel,
the inner sleeve, in response to rotation by said motor, following a reciprocatory movement by the interconnection between said pin and cam track for reciprocating the sleeve and thereby reciprocating the brush member.

4,084,281

FLUID-POWERED ROTARY BRUSH

Eugene David Smith, 3100 Hollins, Bakersfield, Calif. 93305

Filed Jul. 16, 1976, Ser. No. 705,950
Int. Cl.[2] A46B *13/06*
U.S. Cl. 15—29 **3 Claims**

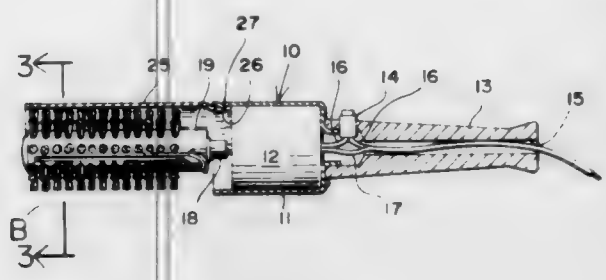


1. A fluid-powered rotary brush comprising:
a housing having a cavity;
a shaft positioned on a normally vertical axis within the cavity and extending below the cavity;
a turbine wheel within the cavity and rotatable on said axis;
brush support means rotatable on said axis at a position below, and spaced from the turbine wheel housing;
a circular brush attached to and depending from the brush support means;
means for injecting pressurized fluid into the cavity to rotate the turbine wheel;
means interconnecting the turbine wheel and the brush support means to produce rotation of the brush support means when the turbine wheel rotates; and
fluid outlet means through the housing positioned with axes of fluid flow directed downwardly and outwardly relative to the housing and clearing the periphery of the brush so as to spray fluid from the cavity over and beyond, and not contacting, the periphery of the brush; said turbine wheel having a plurality of peripheral bores spaced from each other, each bore being slanted with a component of direction radially inward and another component of direction tangential in the direction which the wheel will turn, and said fluid injecting means being directed to inject fluid into each bore successively as the wheel turns, thereby torquing the wheel, a wall surface of the turbine wheel being provided with a plurality of spaced grooves extending in a generally radial direction from the periphery of the wheel toward the axis of the wheel, and a plurality of holes through the housing wall adjacent the grooves, through which atmospheric air is aspirated into the cavity while fluid is flowing through the cavity from the fluid injecting means to the fluid outlet means;
whereby the sending of pressurized fluid through the fluid injection means into the cavity produces rotation of the turbine wheel and of the brush and causes fluid to spray from the cavity through the opening means onto a surface being brushed beyond the periphery of the rotating brush.

4,084,282
ROTARY BRUSH FOR REMOVING HAIR FROM HAIR BRUSHES

Madeleine M. Calvert, 17861 NE. 13th Ave., North Miami Beach, Fla. 33162

Filed Jun. 27, 1977, Ser. No. 810,414
Int. Cl.[2] A46B *17/06, 15/00*
U.S. Cl. 15—38 3 Claims



1. A rotary hair removing brush for removing hair entangled in conventional hair brushes having a motor, a substantially cylindrical bristle holding member connected to said motor, a slotted portion mounted on said cylindrical member along substantially the full length thereof and hair cutting means slidably mounted in said slotted portion for cutting hair wound about said cylindrical member.

4,084,283
FLOOR SWEEPER

Henry J. Rosendall, Grand Rapids, Mich., assignor to Bissell, Inc., Grand Rapids, Mich.

Filed Dec. 17, 1976, Ser. No. 751,724
Int. Cl.[2] A47L *11/33*
U.S. Cl. 15—48 18 Claims

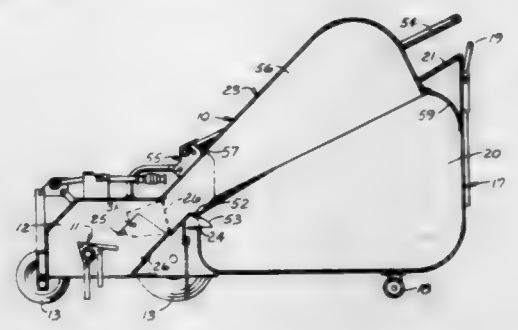


1. In a floor sweeper:
a. a housing,
b. a brush mounted on a fixed axis within said housing for delivering dust to a dust-receiving area upon reciprocal translation of the sweeper over a floor,
c. said brush being disposed to contact and freely rotate on the floor in a direction to deliver dust to the dust-receiving area upon translation of the sweeper in one direction,
d. a coupling wheel on said brush,
e. and means to positively drive said brush through said coupling wheel and in the same direction as its aforementioned free rotation upon translation of the sweeper in the opposite direction, said drive means comprising:
   1. a unitary assembly disposed within said housing adjacent said brush and with said assembly including a sweeper supporting wheel and a dust pan defining said dust-receiving area,
   2. and means mounting said assembly and housing for relative horizontal longitudinal movement therebetween so that translation of said sweeper in one direction causes said relative movement to thereby mutually engage said first and second-named wheels to drive said brush, and so that translation of said sweeper in the opposite direction causes said relative movement to thereby mutually disengage said first and second-named wheels to release said brush from the drive.

4,084,284
LAWN AND YARD IMPLEMENT

Paul F. Hastings, c/o Yard Marvel Mfg. Co., N. 5509 Market St., Spokane, Wash. 99207

Filed Aug. 20, 1976, Ser. No. 716,132
Int. Cl.[2] E01H *1/04*
U.S. Cl. 15—79 A 11 Claims

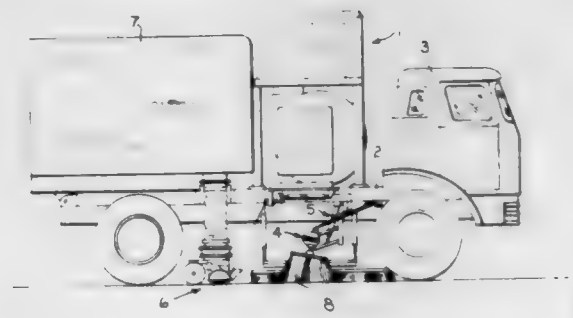


1. A lawn and yard implement, comprising:
a wheel supported housing;
ground working means on the housing for forcibly removing trash from the ground surface and projecting it outwardly from the housing;
a wheel supported pushcart having an open trash receiving bin and a pushbar mounted thereto;
latching means for releasably fixing the pushcart to the housing;
chute means for guiding the projected trash from the housing into the pushcart bin; and
deflector means associated with the latching means for blocking passage of the trash from the housing when the pushcart is detached therefrom.

4,084,285
STREET SWEEPER WITH MULTI-POSITION GUTTER BRUSH

Fritz W. Herzog, Cedarburg, Wis., assignor to Central Engineering Co., Inc., Milwaukee, Wis.

Filed Apr. 18, 1977, Ser. No. 788,142
Int. Cl.[2] E01H *1/04*
U.S. Cl. 15—87 12 Claims



1. In a vehicular street sweeper;
a. a frame,
b. a gutter brush rotatable on a first generally vertical axis for sweeping debris from the street,
c. linkage means mounted at its forward end for rotation about a second vertical axis and extending rearwardly to a connection with said brush, said linkage means and brush being pivotable together in a vertical direction,
d. connector means mounted at its forward end to said frame and forwardly of said linkage means, with said connector means extending rearwardly to a connection with said brush,
e. said connector means defining a longitudinal axis, the length of which corresponds to the radius of horizontal swing component of said brush, and with said longitudinal axis extending generally parallel to said linkage means,
f. motive means connected between said frame and said linkage means for causing said brush to swing com-

poundly with said linkage means and said connector means from a retracted position inboard of the vehicle perimeter and out of engagement with the street to an operating position,

g. and means for selectively adjusting the length of said radius of horizontal swing component of said brush so that said brush is movable by said motive means to selected operating positions including: overlapping said vehicle perimeter, substantially inboard or outboard of the said perimeter, and at or above street level.

4,084,286

SELF-MOISTENING CLEANING DEVICE

Herman D. Post, 7 Chester Dr., Great Neck, N.Y. 11021

Filed Apr. 8, 1976, Ser. No. 675,190
Int. Cl.[2] B08B *9/00*
U.S. Cl. 15—104.93 **9 Claims**



1. A self-moistening cleaning device, particularly for cleaning phonograph records and similar objects, comprising, in combination, a receptacle having a chamber; means for closing said chamber; a cleaning body normally accommodated in said chamber and exposable to ambient atmosphere when it is desired to use said cleaning body to clean an object, said cleaning body having an outer circumferential surface and a layer of moisture-accepting material provided on and covering at least said outer circumferential surface; and means for controlledly moistening said layer of said cleaning body with a cleaning liquid in readiness for use of said cleaning body for cleaning an object, including means for confining a quantity of the cleaning liquid in said chamber, at least when said cleaning body is accommodated therein and said closing means closes said chamber, at a location remote from said layer of said cleaning body, for the cleaning liquid to evaporate and saturate the atmosphere in said chamber with a vapor of the cleaning liquid which penetrates into said layer of said cleaning body and thus controlledly moistens the same.

4,084,287

SCRUBBER FOR GOLF BALLS

Arlen E. Ingram, and Norman H. Ingram, both of 12843 Artesian, Detroit, Mich. 48223

Filed May 28, 1976, Ser. No. 691,133
Claims priority, application Japan, Jun. 24, 1975, 50-95227[U]
Int. Cl.[2] A63B *57/00*
U.S. Cl. 15—210 R **3 Claims**

1. In a washer device for golf balls which includes a hollow toroidal housing to contain water and soap retaining material and having a central hole on each side slightly larger than the diameter of a golf ball, that improvement which comprises a laminate filler for said housing composed of a first inner ring of sponge-like material for retaining water and a cleaning substance, and an outside ring on each side and laterally adjacent said inner ring substantially concentric with said inner ring, said outside rings having a central hole slightly smaller than the diameter of a golf ball and being formed of material which is flexible but which does not soften in the presence of water,



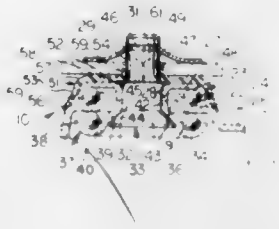
whereby said outside rings will flex to admit golf balls into said washer device but will retain a ball until released under pressure.

4,084,288

SHOCK ABSORBER FOR SWIVEL CASTER

John W. Black, Hickory Corners, Mich., assignor to Pemco-Kalamazoo, Inc., Kalamazoo, Mich.

Filed Jan. 12, 1977, Ser. No. 758,775
Int. Cl.[2] B60B *33/00*
U.S. Cl. 16—21 **10 Claims**

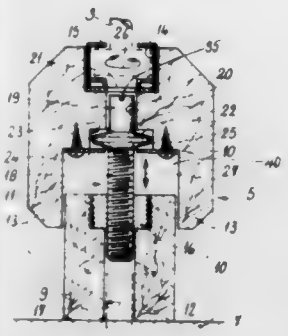


1. In a device for use with a bearing construction for a caster mountable on a caster mounting plate including a yoke and securing means for securing said yoke to said caster mounting plate, wherein said securing means includes pin means rigidly secured to and coaxial with said bearing construction, the axes of said pin means and said bearing construction extending in a normal position perpendicular to said caster mounting plate through an opening therein, the improvement comprising first means for facilitating a tilting of said axes relative to said mounting plate, an elastomeric member mounted between said bearing construction and said caster mounting plate, said elastomeric member having a compressible characteristic sufficient to maintain said caster firmly connected to said mounting plate to maintain said axes in said normal position while simultaneously being capable of yielding to a sufficiently large force applied to said yoke to permit a relative movement between said mounting plate and said yoke to thereby prevent permanent deformation to said yoke when an abnormally high force is applied thereto and wherein said securing means includes second means for limiting the initial preload of said elastomeric member between said bearing construction and said mounting plate to maintain said axes in said normal position while simultaneously facilitating a relative tilting movement of said axes relative to said mounting plate, said elastomeric member effecting a return of said axes to said normal position.

4,084,289
GUIDE RAIL FOR SLIDING PANELS, DOORS AND THE LIKE

Jean-Pierre Naimo, Rillieux-la-Pape, France, assignor to A.T.M.B. Societe Anonyme, Puteaux, France

Filed Jan. 12, 1977, Ser. No. 758,788
Claims priority, application France, Jan. 14, 1976, 76 01485
Int. Cl.[2] A47H *1/04, 15/00*
U.S. Cl. 16—96 R 12 Claims



1. A rail for the guidance of a sliding structural component, comprising:

an elongate base member fixedly securable to a support;

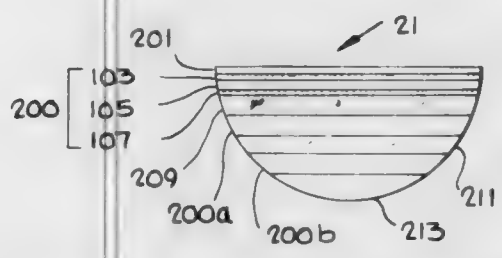
an elongate track member extending substantially parallel to said base member with an intervening longitudinal clearance and with a longitudinally extending guide channel parallel to said clearance slidingly engageable with said component; and

a plurality of adjustable connectors joining said members to each other at longitudinally spaced locations, each connector including a male threaded element and a female threaded element matingly engaging each other, one of said threaded elements being nonrotatably anchored to said base member, the other of said threaded elements being rotatably anchored to said track member for enabling limited changes in the separation and relative orientation of said members at any of said locations.

4,084,290
SLIDING DOOR AND WINDOW STOP

Wasyl Lymar, 607 Williams St., Broderick, Calif. 95605, and Alice Jean Manley, 1710 V St., Sacramento, Calif. 95818

Filed Feb. 25, 1977, Ser. No. 772,247
Int. Cl.[2] A47H *1/04, 15/00*
U.S. Cl. 16—96 R 16 Claims

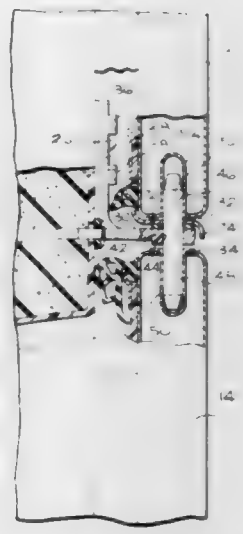


1. A sliding door or window removal prevention device which comprises a plurality of layers, in superposed relationship upon a body portion comprises a segmented body consisting of a plurality of alternating superposed layers of body material, and adhesive, terminating in a body material layer, which has a flat top surface, the uppermost being release layer, followed by an adhesive structure, said adhesive structure being disposed upon said surface, wherein the device is dimensioned vertically to fit above the door or window and does not interfere with the lateral movement of said door or window, when inserted into operative position on the underside of the top track.

4,084,291
CENTER HINGE FOR TOP-MOUNT, TWO-DOOR REFRIGERATOR

William P. Crowe, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 2, 1976, Ser. No. 747,047
Int. Cl.[2] E05D *7/02, 15/50*
U.S. Cl. 16—170 2 Claims



1. An arrangement for reversibly mounting upper and lower vertically aligned doors on a refrigerator cabinet, comprising:

upper pivot means removably mountable on said cabinet substantially adjacent either the right- or left-hand side thereof, said upper pivot means adapted to cooperatively engage the top edge of the upper door adjacent either side thereof;

lower pivot means removably mountable on said cabinet substantially adjacent either the right- or left-hand side thereof in vertical alignment with said upper pivot means, said lower pivot means adapted to cooperatively engage the bottom edge of the lower door adjacent either side thereof;

a non-symmetrical hinge pin bracket mountable generally between the upper and lower doors adjacent either the right-or left-hand side of the cabinet,

said non-symmetrical bracket having a vertical mounting strap for attachment to the front face of the cabinet by means of a mounting screw, and having a horizontal support portion joined to one end of said mounting strap, with an elongated horizontal side arm joined to the support portion, the distal end of the side arm extending inwardly and connectable to the horizontally-extending front frame of the cabinet to stabilize said bracket,

whereby, when said bracket is mounted generally adjacent one side of the cabinet, the mounting strap is directed upwardly and extends above the upper edge of the lower door, and, when said bracket is mounted generally adjacent the other side of the cabinet, the mounting strap is directed downwardly and extends below the upper edge of the lower door, the lower door blocking access to the mounting screw;

said support portion including a pivot hole in vertical alignment with the corresponding upper and lower pivot means; and

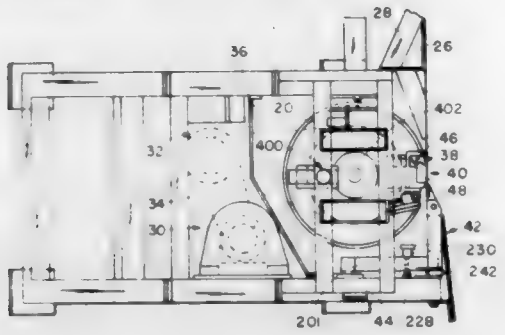
a double hinge pin loosely received in the pivot hole with the lower portion of the double hinge pin telescoped into a mating sleeve in the top edge of the lower door, and the upper portion of the hinge pin telescoped into a mating sleeve in the bottom edge of the upper door.

4,084,292

DRUM SKINNER

Martin L. Harian; John A. Krause, both of Grand Rapids, and Ronald L. Brooks, Lowell, all of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.

Filed Oct. 29, 1976, Ser. No. 736,710
Int. Cl.[2] A22C *17/12*
U.S. Cl. 17—50 **62 Claims**



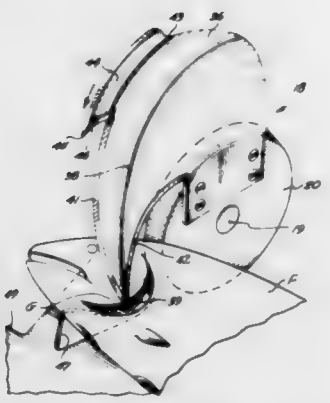
1. Hog carcass skinning apparatus for removing the skin with retained hair directly from a hog carcass, comprising:
a carcass-abutting and slide surface;
a drum rotatably mounted adjacent said carcass-abutting and slide surface, said drum having an axially orientated ditch opening through its periphery;
clamping means on said drum at said ditch for clamping an edge flap of skin on the hog carcass;
a skin scraper positioned adjacent said ditch;
extensible-retractable skin flap gripping and infeeding means in said ditch extensible out of said ditch and retractable into said ditch for gripping and infeeding the edge flap into said ditch to allow clamping thereof whereby upon an edge flap of skin being gripped and pulled into said ditch and clamped, rotation of said drum through a revolution causes the carcass to rotate on said abutting and slide surface and the skin to be scraped off the carcass by said scraper.

4,084,293

FISH-BEHEADING MACHINE AND PROCESS

Elmer R. Hogan, Bellevue; Charles Edward Hollis, and John I. Simpson, both of Seattle, all of Wash., assignors to Smith-Berger Manufacturing Corporation, Seattle, Wash.

Filed Apr. 15, 1976, Ser. No. 677,157
Int. Cl.[2] A22C *25/14*
U.S. Cl. 17—52 **3 Claims**



1. In a fish-beheading machine including fish-supporting means, a fish-beheading knife and means for effecting relative movement of the fish-supporting means and the knife to effect a relative chopping movement of the knife and the fish to behead the fish, the improvement comprising the knife being of one-piece plate structure having a single blunt tip portion formed integral with and disposed in continuation of a cutting portion, said cutting portion having opposite convex and concave sides, said convex side being contoured to correspond approximately to the profile of the headward side of the pectoral girdle of a fish supported by the fish-supporting means and said cutting portion of the fish-beheading knife having opposite edges sharpened over the major portion of the knife length and width and converging toward said single blunt tip portion located generally centrally of the knife width for punching engagement of said tip portion with the gill cover of the fish, said converging edges of the knife cutting portion being sharpened by being chamfered only on the convex side of the knife cutting portion, which chamfered edges merge adjacent to said blunt tip portion and provide said tip portion with oppositely-sloping sides meeting in a crest engageable with the headward side of the pectoral girdle of the fish for locating the fish lengthwise and guiding head-severing movement of the knife cutting portion following the same path traversed by said tip portion precisely along the headward side of the pectoral girdle.

4,084,294

FISH PROCESSING MACHINE

Franz Dohrendorf, Lubeck, Germany, assignor to Nordischer Maschinenbau Rud. Baader, Lubeck, Germany

Filed Aug. 13, 1976, Ser. No. 714,337
Int. Cl.[2] A22C *25/08, 25/12*
U.S. Cl. 17—57 **9 Claims**



1. Fish processing machine having an endless loading conveyor including a horizontal upper run and a horizontal lower run and adapted to convey fish along said horizontal upper run with said fish lying on their sides in fish troughs transversely to their longitudinal axis, a feed section having opposed walls forming a V-shape and adapted to advance the fish in the direction of their longitudinal axis and substantially perpendicular to the direction of feed of the upper run of said loading conveyor, and a filleting section provided with belly filleting knives, rib knives and a pair of endless conveyors, wherein the feed section is positioned between the upper and lower runs of the loading conveyor, each fish trough has a tipping trough pivotally mounted on said endless loading conveyor for tilting movement thereon about a pivotal axis substantially transverse to its direction of movement as said tipping trough moves along said upper horizontal run above said feed section, whereby to deliver fish turned through 90° to said feed section, and said machine includes actuating means for tilting each tipping trough about its pivotal axis as said tipping trough reaches a selected position along said upper horizontal run above said feed section.

4,084,295

BUTTON

Hidenosuke Ishizaki, 6-13, 6-chome, Kobe-shi, Japan

Filed Jun. 29, 1977, Ser. No. 811,317
Int. Cl.[2] A44B *1/42*
U.S. Cl. 24—95 **5 Claims**

1. A button comprising:
a button face member,
a support plate having a center hole for supporting the face member,
a hollow button shank having upper and lower open ends, a constricted neck at its upper portion and a shoulder extending downward from the constricted neck, the neck

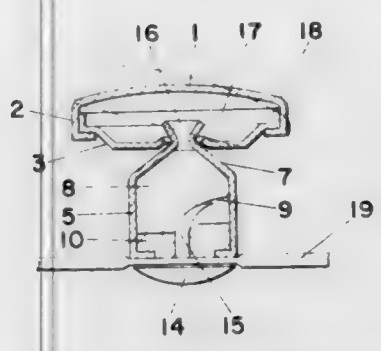
having a smaller diameter than the center hole, the shoulder having a larger diameter than the center hole,

a bending guide member disposed within the shank and having a slanting surface at its bottom for bending and guiding,

an engaging member having a center bore extending therethrough and disposed within the shank and under the bending guide member, and

a fastening member having a piercing needle,

the support plate being loosely fitted around the neck of the



shank and retained thereon by an enlarged top portion formed at the upper end of the neck after the support plate has been loosely fitted around the neck,

the button face member being fitted over the support plate to form a button head from the face member and the support plate, the button head being pivotably turnably supported by the shank with the enlarged top portion of the shank positioned within the space defined by the face member and the support plate,

the shank being fastenable to a fabric or like sheet-like material by the piercing needle of the fastening member.

4,084,296

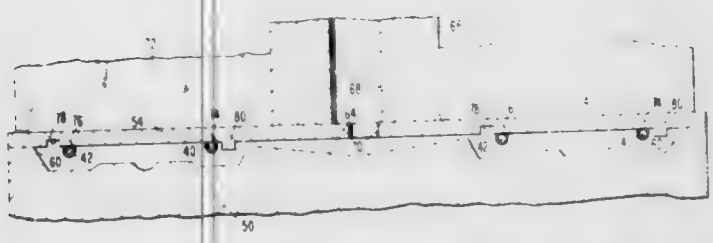
METHOD OF MANUFACTURE OF ORIENTED SLIDE FASTENING ELEMENT

George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Aug. 4, 1975, Ser. No. 601,787

Int. Cl.² B29D *5/00*

U.S. Cl. 24—205.13 **12 Claims**



1. An interlocking element for a slide fastener comprising

a molded elongated body of synthetic polymer resin including a head portion and a pair of leg portions extending from opposite sides of the head portion;

said body being formed by substantially laminar flow of flowable synthetic polymer resin in a mold cavity sequentially along one of the pair of leg portions, the head portion, and the other of the pair of the leg portions, and then hardening the synthetic polymer resin in the cavity; and

said flowable synthetic polymer resin including long chain molecules which are oriented along the direction of laminar flow.

4,084,297

SLIDE FASTENER

Alfons Frohlich, and Franz Hochlehnert, both of Essen, Germany, assignors to OPTI Patent- Forschungs- und Fabrikations-AG, Glarus, Switzerland

Filed Sep. 10, 1976, Ser. No. 722,047

Claims priority, application Germany, Sep. 10, 1975, 2540272; May 18, 1976, 2622070

Int. Cl.² A44B *19/12*

U.S. Cl. 24—205.13 C **8 Claims**



1. In a slide fastener having a pair of rows of interdigitatable coupling elements formed from respective continuous synthetic-resin monofilaments, each of said coupling elements comprising a loop-forming coupling eye provided with a head, a pair of shanks extending away from said eye and respective bights connecting the shanks to the shanks of adjacent coupling elements, the improvement wherein:

(a) the monofilament forming each of said rows is of generally ellipsoidal cross-section with major and minor axes;

(b) the major axis of the cross-section of the monofilament in the region of each of said eyes lies generally parallel to the slide fastener plane;

(c) the minor axis of the cross-section in the region of the bights lies generally parallel to the slide fastener plane; and

(d) at least one transition twist is provided along each shank between the respective head and bight.

4,084,298

CLOSURE FOR SAFETY BELTS

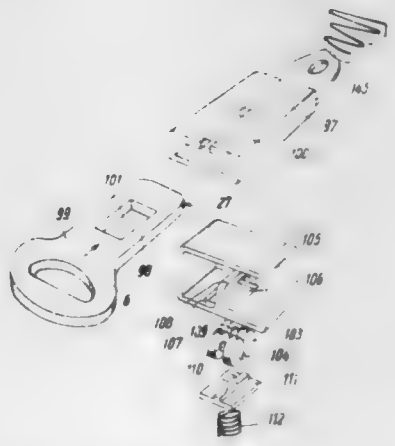
Artur Fohl, Schelmenwasenstr. 68, 7061 Haubersbronn, Germany

Continuation-in-part of Ser. No. 480,029, Jun. 17, 1974, Pat. No. 3,935,618. This application Dec. 1, 1975, Ser. No. 636,541

Claims priority, application Germany, Jun. 20, 1973, 7322931[U]

Int. Cl.² A44B *19/00*

U.S. Cl. 24—230 AL **6 Claims**



1. A releasable latch especially for passenger seat belts, comprising: a housing having a slot, a member having a tongue

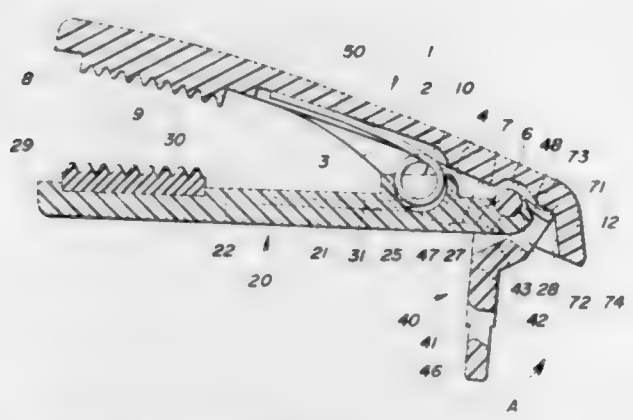
with a plane in a length defined thereby and with a flat side of the tongue insertable into the slot in the housing, notch means in the tongue substantially perpendicular to the plane of the tongue, roller bodies having axes in the housing engageable with said notch means when the tongue is inserted into said slot to latch the said housing and the said member together, said roller bodies having the axes thereof extending laterally to the length of the tongue and disposed for rolling engagement of the roller bodies with the tongue upon insertion of the tongue into the slot, said roller bodies rollingly engaging one another and lying in the path of said notch means, resilient means biasing said roller bodies in notch means engaging direction, and means for moving at least one of said roller bodies against the bias of said resilient means in the direction of disengagement from said notch means, said roller bodies being generally cylindrical, said housing having an opening on one side toward which said flat side of the tongue faces, a release member arranged in said opening, and a release cam in said housing actuated by movement of said release member and operable when so actuated to move said roller bodies out of engagement with said tongue.

4,084,299

PLASTIC CLIP

Taizo Noda, Nishinomiya, Japan, assignor to Kohshoh Limited, Kyoto, Japan

Filed Mar. 10, 1977, Ser. No. 776,134
Claims priority, application Japan, Nov. 26, 1976, 51-158846[U]
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—250 **13 Claims**



1. A plastic clip comprising:

(a) an upper clip member comprising an upper plate portion having a front clipping end, a rear end, a pair of elongated sides extending between the front and rear ends, a pair of support portions extending downwardly from the sides of the upper plate portion adjacent the rear end thereof, each of the support portions having a bearing portion, the upper plate member having a slide surface positioned laterally inside of the support portions and rearwardly of the bearing portions,

(b) a lower clip member comprising a lower plate portion having a front clipping end, a rear end, and a pair of elongated sides, a pair of journal supports extending upwardly from the lower plate portion adjacent the rear end thereof, a journal extending laterally outwardly from each of the journal supports beyond one of the sides of the lower plate portion, each of the journals being rotatably positioned in one of the bearing portions of the upper clip member and the sides of the lower plate portion adjacent the journals being positioned laterally inwardly of the support portions of the upper clip member whereby the upper and lower clip members are pivotally connected, the lower portion having an engagement groove therein rearwardly of the journals,

(c) a resilient member positioned between the upper and lower clip members for resiliently urging the clipping ends thereof to pivot away from each other, and

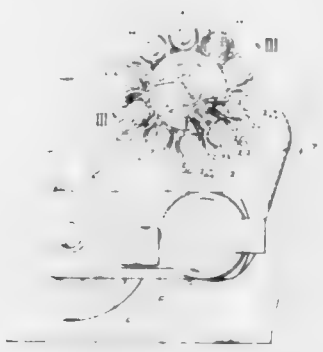
(d) an operative member having a rear attachment plate portion, a pair of spaced-apart side walls extending forwardly from the attachment plate portion, and a pivotal shaft extending between the side walls, the pivotal shaft of the operative member being rotatably positioned in the engagement groove of the lower clip member and the rear end of the lower clip member being positioned laterally inwardly of the side walls of the operative member, the side walls of the operative member being positioned laterally inwardly of the support portions of the upper clip member whereby the operative member is pivotally mounted on the lower clip member, the operative member, upper clip member, and lower clip member being movable between a first position in which the clipping ends of the upper and lower clip members are separated and a second position in which the clipping ends are brought together, the side walls of the operative member having arm portions which engage the upper plate portion of the upper clip member rearwardly of the slide surface when the members are in their first position and which engage the slide surface of the upper plate portion when the members are in the second position, pivoting movement of the operative member from its first position to its second position causing the upper clip member to pivot from its first position to its second position against the urging of the resilient member.

4,084,300

AUTOMATIC TOOL CHANGING METHOD AND APPARATUS

Hiroshi Narushima, Nagoya, and Takayosi Hotta, Gifu, both of Japan, assignors to Okuma Machinery Works, Ltd., Nagoya, Japan

Filed Sep. 9, 1976, Ser. No. 721,697
Claims priority, application Japan, May 8, 1976, 51-52609
Int. Cl.[2] B23Q *3/157*
U.S. Cl. 29—26 A **7 Claims**



1. In a machine tool having an axially extending main spindle, a tool holding chuck supported by said main spindle, said chuck being adapted to releasably hold a tool therein and a tool magazine adapted to hold a plurality of tools, said main spindle and said magazine being movable to a tool changing region an automatic tool changing method comprising the steps of:

a. moving said main spindle together with said magazine in a direction perpendicular to the axial line of the main spindle and in response to said movement to loosen a chuck of the main spindle in said tool changing region;

b. elevating said main spindle in the axial direction thereof so as to draw an old tool out of said loosened chuck;

c. turning further said main spindle together with said magazine and in response to said further turning movement to rotate said magazine for indexing a new tool for receipt into said chuck;

d. lowering said main spindle in the axial direction thereof so as to insert said new tool into said loosened chuck; and

e. turning said main spindle together with said magazine in a direction perpendicular to the axial direction of said main spindle and in response to said turning movement to fasten

said chuck into gripping engagement with said new tool inserted thereinto.

4,084,301

TROLLEY RAIL ASSEMBLY

Donald R. Ross, Pittsburgh, Pa., assignor to U-S Safety Trolley Corporation, Pittsburgh, Pa.

Filed May 19, 1977, Ser. No. 798,302

Int. Cl.[2] B23P *23/04*

U.S. Cl. 29—33 K **5 Claims**



1. In combination with a line of rails disposed end to end and having a front side provided with parallel slots extending lengthwise thereof for receiving electric current pick-up members movable lengthwise of the rails, apparatus for feeding metal bars from a coil lengthwise into said slots to form continuous straight electrical conductors in said rails, said apparatus comprising supporting means attached to one end of said line of rails and extending away from it, a roll support, means rigidly connecting the roll support to said supporting means at said end of said line, and a plurality of staggered straightening rolls rotatably mounted in said roll support to form a roll pass substantially in line with one of said slots, whereby a conductor bar fed through said roll pass will be straightened therein and directed into said one slot.

4,084,302

METHOD OF MANUFACTURING, FOR A PAPER MACHINE OR THE LIKE, A ROLL HAVING A GROOVED EXTERIOR SURFACE

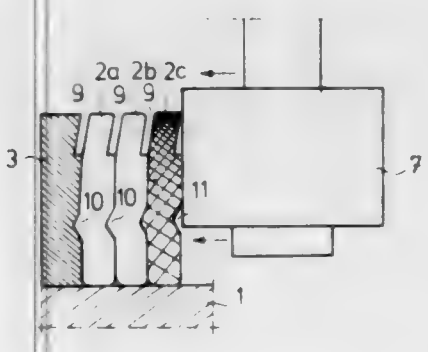
Eino Aatinen, Jyvaskyla, Finland, assignor to Valmet Oy, Finland

Filed Oct. 6, 1975, Ser. No. 620,229

Claims priority, application Finland, Oct. 9, 1974, 2944/74

Int. Cl.[2] B21K *1/02*

U.S. Cl. 29—148.4 D **8 Claims**



1. In a method of manufacturing, for a paper machine or the like, a roll having a grooved exterior surface, the steps of winding onto an exterior cylindrical surface of an inner roll body an elongated strip which initially is straight and which curves while being wound onto the inner roll body with an inner edge region of the strip engaging the exterior surface of the roll body while an outer edge region of the strip is distant from the roll body and has a thickness less than the thickness of the remainder of the strip so that when the turns of the strip engage each other after winding of the strip onto the inner roll body, a helical groove will be defined between the successive turns of the strip at the outer edge region thereof, and elongating the strip simultaneously with the winding thereof onto the inner roll body at a longitudinal portion of the strip which is spaced outwardly from the exterior surface of the inner roll body which is engaged by the inner region of the strip, for facilitating the curving of the strip while it is wound onto the inner roll body, the elongation of said longitudinal portion of said strip being brought about by pressing the strip at an outer exposed side surface region thereof simultaneously with the winding of the strip onto the inner roll body toward the turns of the strip which have previously been wound onto the inner roll body, with said outer side surface region which is thus pressed being spaced from the exterior surface of the inner roll body and with the pressing being carried out with a force which is sufficient to compress the strip against the previously formed turns thereof while deforming and elongating the strip at said longitudinal portion thereof, said longitudinal portion of the strip being in line with said outer side surface region thereof.

4,084,303

FORMING ROLL FOR ROLLING CYLINDRICAL BODIES FROM CYLINDRICAL ROD STOCK, AND A METHOD OF MAKING THE SAME

Kenneth Charles Skinner, Longlevens, England, assignor to Helipebs Limited, Ore, England

Filed Jan. 6, 1977, Ser. No. 757,322

Claims priority, application United Kingdom, Jan. 7, 1976, 571/76

Int. Cl.[2] B21H *8/02*

U.S. Cl. 29—148.4 D **4 Claims**



1. A forming roll for forming cylindrical metal slugs from cylindrical rod stock, comprising a helical groove having a cylindrical base portion of constant radius and substantially constant axial length, said groove being defined by a helical rib of progressively increasing height for parting said rod stock into slugs, said helical rib having leading and trailing flanks of which the pitch is changed progressively along the axial length of the roll in stages including a first stage occupying an arc of not more than 360° wherein the pitch of the trailing flank of the rib is smaller than the pitch of the remainder of said trailing flank, and a second stage wherein the pitch of the leading flank has a smaller pitch than that of the trailing flank whereby the axial length of the helical rib is increased along the axis of the roll, and wherein the said pitch of the trailing flank in the first stage and the said pitch of the leading flank in the second stage are approximately the same and the respective portions of said flanks are axially opposed to one another, whereby the increase in axial length of the said rib is accommodated substantially without reduction in the axial length of the helical groove.

4,084,304

METHOD OF CONSTRUCTING A VALVE

Bruce B. Myers, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Apr. 5, 1977, Ser. No. 784,763

Int. Cl.[2] B23P *15/00*

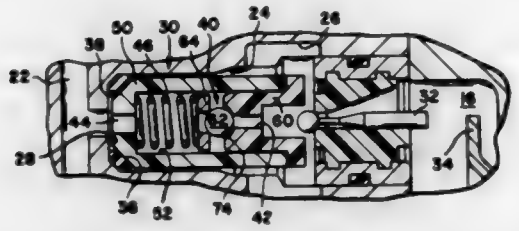
U.S. Cl. 29—157.1 R **3 Claims**

1. A method of constructing a valve having a valve member retained within a casing by means of a plug cooperating with the casing, said method comprising:

providing a surface on the plug such that the valve member engages the surface;

biasing the valve member into engagement with the plug by a resilient member; and

energizing the plug and casing to join the plug and casing;



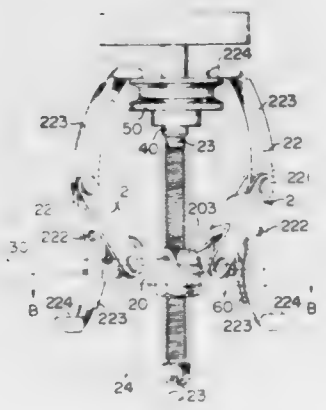
said energizing also cooperating with the biased valve member and the plug surface to form a valve seat on the plug surface.

4,084,305

PULLEY PULLER

Yun-Te Chang, 47, Li Te 11 Road, Lin 8, Ta Te Li Tainan, China /Taiwan

Filed Dec. 23, 1976, Ser. No. 753,865
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—261 5 Claims



1. A puller for removing a pulley or the like from a shaft comprising an elongated base having a substantially central threaded hole therethrough, a screw rod rotatably mounted in said hole and adapted at one end to engage the end of a shaft carrying a pulley to be removed, a pair of pull pawls extending along opposite sides of said screw rod and formed at their ends corresponding to said shaft engaging end of the screw rod with pulley engaging lips, said pawls having intermediate oppositely facing inner portions bearing on opposite end portions of said base, tractive members pivoted at opposite ends to said pawls and to said base at opposite sides of said threaded hole, and slidably interfitting flange and groove means on said pawl and base end portions extending longitudinally of said pawls.

4,084,306

METHOD AND APPARATUS FOR TRANSPORTING AND WRAPPING PIPE INSULATION

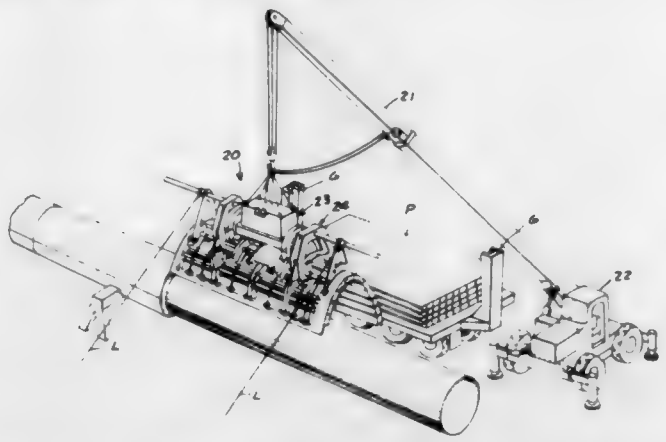
Loren B. Barker, Salem, Ill., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.

Filed Oct. 17, 1975, Ser. No. 623,368
Int. Cl.[2] B21D *39/02*
U.S. Cl. 29—431 11 Claims

1. A method of using an apparatus for transporting and wrapping pipe insulation comprising a frame, a pair of arms, means for mounting said arms on said frame for swinging movement about a longitudinal axis, a row of longitudinally spaced vacuum pads on each arm, a pair of transversely spaced rows of longitudinally spaced vacuum pads positioned inwardly of said first-mentioned rows on said arms, a second pair of vacuum pads fixedly mounted on said frame for engagement with the insulation of the pipe, means for selectively supplying vacuum to each said row of vacuum pads, and means for swinging said arms toward and away from one another, a member extending circumferentially and radially inwardly on the end of one said arm and functioning to tuck the one edge of the insulation onto the other edge of the insulation, said one of each said vacuum pads on said arm being interconnected with one of said pair of vacuum pads by a flexible member, said flexible member passing over pulleys rotatably mounted on said frame such that as the arms are moved toward one another, said vacuum pads of said pair of rows are moved upwardly and when said arms are extended, said vacuum pads of said pair of rows move downwardly under the action of gravity, which method comprises

extending said arms,

bringing said arms adjacent a panel to engage said panel with said vacuum pads on said arms,



lifting and transporting said frame to lift and transport said panel toward a pipeline,

swinging said arms toward one another to form said panel into a U shape,

lowering said frame to move said panel over said pipe,

continuing said lowering of said frame until said panel engages said pipe and said second pair of vacuum pads engage said panel,

releasing the vacuum on the outer rows of said vacuum pads on said arms,

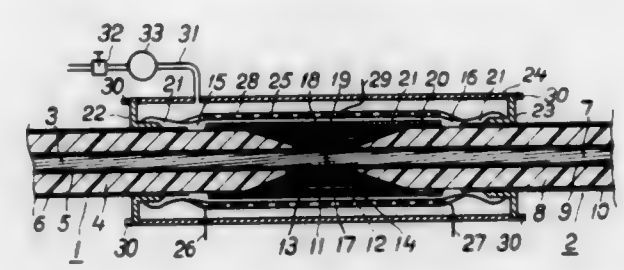
and moving said arms toward one another to completely wrap said panel about said pipe.

4,084,307

METHOD OF JOINING TWO CABLES WITH AN INSULATION OF CROSS-LINKED POLYETHYLENE OR ANOTHER CROSS LINKED LINEAR POLYMER

Göran Schultz, Sundsvall, and Karl-Gunnar Wiberg, Stockholm, both of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation of Ser. No. 482,850, Jun. 25, 1974, abandoned.
This application Nov. 11, 1976, Ser. No. 740,969
Claims priority, application Sweden, Jul. 11. 1973, 7309706
Int. Cl.[2] B29C *27/26;* H01R *5/00*
U.S. Cl. 29—460 6 Claims



1. The method of forming a splice between two electrical conductors having a cross-linked polymer insulation, comprising: removing the insulation from said conductors adjacent the ends thereof to be joined so as to leave the end portions of said conductors bare, joining the bare ends of said conductors, wrapping the joined ends of said conductors and portions of insulation adjacent said joined ends with plural layers of a

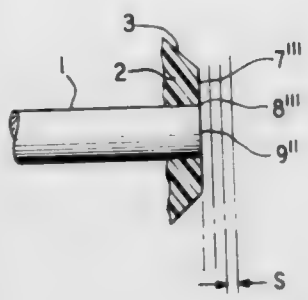
cross-linkable linear polymer tape containing a cross-linking agent for said polymer, forming a tape-wrapped joint, disposing a heating means about and in thermally conducting solid contact with said tape-wrapped joint, disposing a pressure envelope about said tape-wrapped joint and said heating means so as to encompass said heating means therewithin, heating said tape-wrapped joint by said heating means and supplying gas having a pressure above atmospheric pressure to said pressure envelope so as to concurrently compress said tape-wrapped joint and melt said layers together and crosslink said polymer.

4,084,308

SLICING METHOD IN FIBER END PREPARATION

Peter Klaus Runge, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 22, 1976, Ser. No. 743,588
Int. Cl.[2] B23P *17/00, 25/00*
U.S. Cl. 29—527.2 **21 Claims**



1. In a method of preparing one or more brittle fiber ends each one of which has a respective axis and sliceable material shrunk thereon, the steps comprising

initially slicing through said material and each said fiber end in a slicing plane, thereby to produce with respect to each said end a substantially planar cut fiber end surface oblique relative to said slicing plane, each said cut end having a longitudinal dimension along its respective axis;

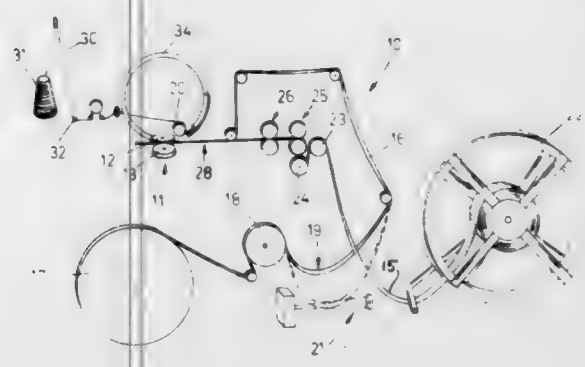
and again slicing in a parallel plane with an advancement of said slicing plane not in excess of said longitudinal dimension so that a portion of each said oblique cut end surface is replaced with a respective surface portion parallel to said slicing plane.

4,084,309

APPARATUS AND METHOD OF MANUFACTURING FLEXIBLE DUCTING

Cecil Howard Wood, 129 Arnold Ave., Thornhill, Canada

Filed Aug. 9, 1976, Ser. No. 712,483
Int. Cl.[2] B23Q *5/00*
U.S. Cl. 29—561 **2 Claims**



1. An apparatus for forming flexible ducting from a channel-shaped strip of metal and a strip of flexible material wherein said metal strip is formed into a spiral with said material forming a web between adjacent coils of the spiral and wherein said metal is exposed outwardly of the ducting formed thereby to protect the flexible material forming the webbing of the ducting, comprising in combination;

a work station having a bed thereon;

a means for feeding said strip of metal to said work station to underlie said strip of flexible material disposed parallel to said metal strip, said flexible material being drawn onto said bed of said work station by movement of said metal strip underlying said material;

a roll member rotatably mounted above said bed to urge an edge of said material downwardly between the arms of said channel-shaped strip of metal when said strip of metal is fed thereunder;

a crimping means to close the channel arms of said metal strip over overlapping edges of flexible material caught therebetween;

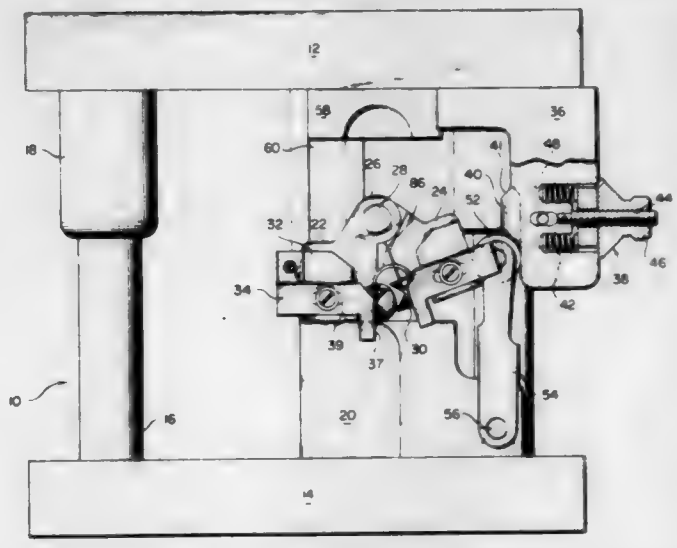
a ring-shaped guide means fastened to said work station adapted to upwardly direct the channel-shaped metal strip with the flexible material held therein, into a spiral shape and to guide them around to lie adjacent and parallel to the incoming strip of flexible material with an edge of said material held by said metal channel strip in overlapping relationship with an edge of said incoming strip of flexible material.

4,084,310

APPARATUS FOR STRIPPING AND POSITIONING AN INSULATION CONDUCTOR

Joseph Dragisic, Cicero, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 23, 1977, Ser. No. 771,105
Int. Cl.[2] H02B *1/12*
U.S. Cl. 29—564.4 **8 Claims**



1. An apparatus for stripping insulation from the end of an insulated conductor and for positioning the stripped conductor for a termination operation, said apparatus comprising:

two support members each carrying an insulation-piercing knife and a conductor-gripping means, one said member being stationary and the other member being pivotally mounted to move between an open position wherein said knives and gripping means are spaced apart and a closed position wherein said knives pierce the insulation of the conductor and the gripping means engage and hold the conductor therebetween;

first cam means coacting with said other member to shift said other member from said open position to said closed position;

second cam means coacting with said gripping means to displace said gripping means along the longitudinal axis of said conductor;

means cooperating with said first cam means for adjusting the closed position of said other member to accommodate conductors of varying diameters;

means cooperating with said gripping means for adjusting

the displacement of said gripping means to properly position the conductor for the termination operation; and

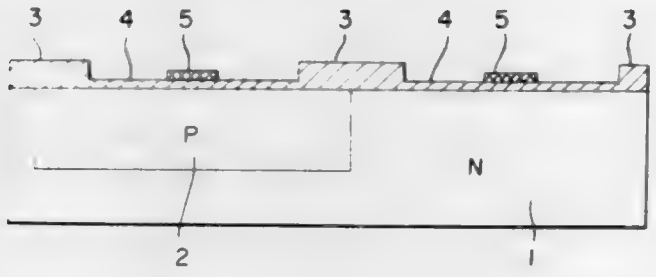
means for actuating both said first and second cam means in a predetermined operating sequence.

4,084,311

PROCESS FOR PREPARING COMPLEMENTARY MOS INTEGRATED CIRCUIT

Akihiko Yasuoka, and Hiroshi Shibata, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1976, Ser. No. 732,859
Claims priority, application Japan, Oct. 17, 1975, 50/124917
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—571 6 Claims



1. A process for preparing complementary MOS integrated circuit which comprises the steps of:

forming a second semiconductor layer having the second conductive type in a region of a first semiconductor layer having the first conductive type;

forming a oxide membrane on a first predetermined surface zone of said first semiconductor layer and said second semiconductor layer;

forming a gate electrode on a second predetermined surface zone on said oxide membrane;

forming a first masking layer at the surface of said first semiconductor layer except said first predetermined surface zone;

forming a first source and drain regions of a P channel transistor by injecting ions of an impurity having the scond conductive type from the surface of the body of said semiconductor;

forming a second masking layer at the part of said second semiconductor layer except said first predetermined surface zone;

forming the first source and drain regions of a N channel transistor by injecting ions of an impurity having the first conductive type from the surface of the body of said semiconductor;

forming a silicon nitride membrane on said oxide membrane and said gate electrode;

forming contact holes in said silicon nitride layer on a third predetermined surface zone on said first source and drain regions which is narrower than the silicon nitride layer;

removing said oxide membrane from beneath the contact holes;

forming the second source and drain regions of said P-channel transistor by diffusing an impurity having the second conductive type from said contact holes on said P-channel transistor region;

forming the second source and drain regions of said N channel transistor by diffusing an impurity having the first conductive type from said contact holes of said N channel transistor region; and

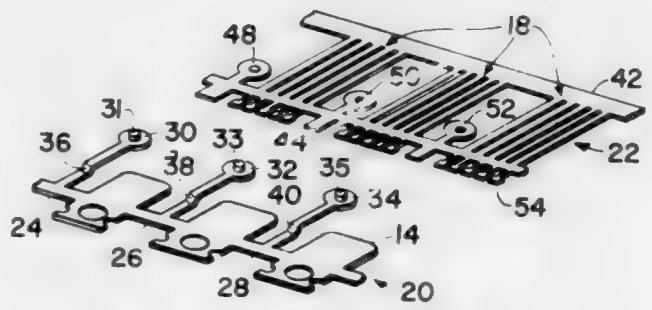
forming contacts at said source and drain regions.

4,084,312

ELECTRICALLY ISOLATED HEAT SINK LEAD FRAME FOR PLASTIC ENCAPSULATED SEMICONDUCTOR ASSEMBLIES

Glenn E. Kirk, Mesa, and Alfred L. Medesha, Apache Junction, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 7, 1976, Ser. No. 647,234
Int. Cl.[2] H01L *23/28, 23/48*
U.S. Cl. 29—588 6 Claims



1. A process for the automated manufacture of semiconductor devices characterized by the steps of:

(a) forming a first preassembly structure comprising a plurality of die mount portions and first joining means interposed between said die mount portions;

(b) forming a second preassembly structure comprising groups of separated lead members and second joining means interspersed between said groups;

(c) forming a composite lead frame by joining said first and said second joining means;

(d) mounting semiconductor die on said die mount portions and wire bonding said die to said lead members;

(e) plastic encapsulating said semiconductor devices; and

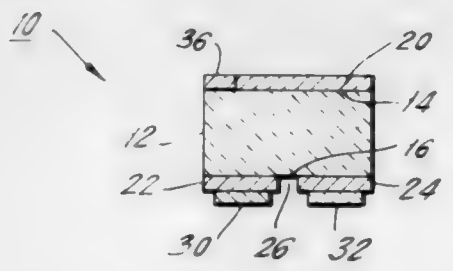
(f) shearing away said joining means to produce individual semiconductor devices each having a die mount portion which is electrically isolated from its device leads.

4,084,313

METHOD OF ADJUSTING RESISTANCE OF A THERMISTOR

Milton Schonberger, 195 Fern St., Westwood, N.J. 07885

Filed Apr. 14, 1977, Ser. No. 787,422
Int. Cl.[2] H01C *7/04*
U.S. Cl. 29—593 38 Claims



1. A method of adjusting the resistance of a thermistor, comprising:

forming a first and a second electric contact on one surface area of an element of thermistor semiconductor material;

forming a third electric contact on another surface area of the element of thermistor semiconductor material, whereby the element of thermistor semiconductor material and the first, second and third contacts together comprise a thermistor;

adjusting the resistance of the thermistor by trimming off part of at least one contact to reduce its area.

4,084,314

PRODUCING THICK FILM CIRCUITS HAVING TERMINAL ELEMENTS

Naresh Chakrabarty, Germering, and Artur Weitze, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 22, 1977, Ser. No. 770,368

Claims priority, application Germany, Feb. 20, 1976, 2606963

Int. Cl.² H05K *3/30, 3/34*

U.S. Cl. 29—626 **26 Claims**

1. A process for the production of a thick film circuit with terminal elements on an inorganic substrate comprising the steps of

(A) applying a metal powder layer to predetermined localized surface portions of said substrate, said metal powder comprising on a 100 weight percent total powder weight basis from about 92 to 96 weight percent of silver having a particle size of from about 1 to 10 microns, and from about 4 to 8 weight percent of copper oxide having a particle size of less than about 2 microns,

(B) sintering said metal powder layer at a temperature of from about 930° to 935° C., and

(C) hard soldering to predetermined locations over individual conductor paths a plurality of respective individual terminal elements at a temperature of about 820° C.

4,084,315

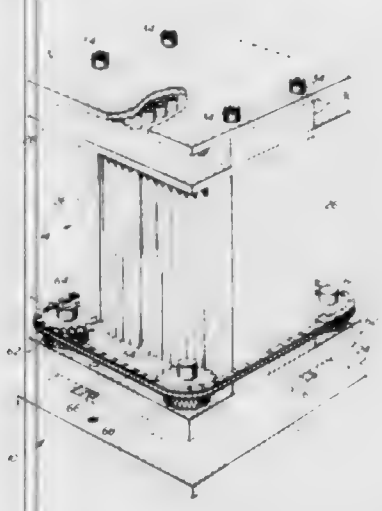
FIXTURE FOR SOLDERING INTEGRATED CIRCUIT CHIPS TO A MULTILAYER SUBSTRATE

Mark Joseph Michaels, Glendale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 30, 1976, Ser. No. 755,525

Int. Cl.² H01L *21/60*

U.S. Cl. 29—740 **8 Claims**



1. A fixture for use in batch soldering integrated circuit chips to a substantially rectangular multilayer substrate,

said substrate having a top surface,

a plurality of chip pads on the top surface of the substrate said chip pads having a predetermined location on the top surface, each chip pad having a center,

a plurality of chip lead pads surrounding each chip pad on the top surface of the substrate, the position of the chip lead pads with respect to a chip pad being predetermined;

integrated circuit chips having a bottom and top surface, the top surface having a center, the bottom surface of each integrated circuit chip having attached to it a back metal layer,

a plurality of flexible beam leads, one end of each beam lead being bonded to an electrical contact on the top surface of each chip, said chips being positioned on the substrate so that the back metal layer is substantially directly above a chip pad and so that the beam leads of each chip are above corresponding chip lead pads; said fixture comprising:

a base, a rectangular aperture in said base, the dimensions of the aperture being such that a multilayer substrate fits within the aperture; and

a force structure having force pin alignment means,

a plurality of force pins mounted for limited linear reciprocal movement in the pin alignment means, a tip formed at the bottom of each force pin;

means for aligning the force structure with the base comprising a pair of alignment bores formed in one and a pair of alignment pins mounted on the other, said bores and pins being positioned so that when the alignment pins are inserted into the alignment bores, the tips of the force pins are substantially aligned with the centers of chips positioned on chip pads of a substrate positioned in the base, and

means for varying the distance between the force structure and the base so that the weight of the force pins can be gradually applied to and removed from the chips positioned on chips pads of a substrate placed in said base.

4,084,316

SAFETY RAZORS

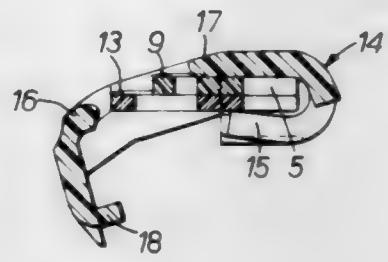
John Frederick Francis, Horsell, England, assignor to The Gillette Company, Boston, Mass.

Division of Ser. No. 618,634, Oct. 1, 1975, abandoned. This application Dec. 8, 1976, Ser. No. 748,761

Claims priority, application United Kingdom, Oct. 8, 1974, 43528/74

Int. Cl.² B26B *21/22, 21/52*

U.S. Cl. 30—47 **8 Claims**



1. A shaving unit comprising narrow elongated blade means having a cutting edge means thereon, frame means including a thin elongated first portion, a thin elongated second portion, said first and second portions being joined by thin elongated end portions, said first, second and end portions defining a slot therebetween, said first portion having a support portion having a substantially flat surface thereon, said blade means being permanently secured over its full length to said surface and being over its full length adjacent thereto, said cutting edge means projecting clear of said support portion, and metal housing means disposed about said frame means and retaining said frame means and said blade means therein, said housing means providing a guard surface extending parallel to said blade means, said frame means including mounting portions retained in said housing by a deformed portion of said housing clamped about said mounting portions.

4,084,317

SHEARING TOOL FOR SYNTHETIC RESIN TUBES

Masahiko Nakamura, Matsuzaka, and Hidehiko Itou, Hisai, both of Japan, assignors to Matsuzaka Iron Works, Inc., Tsu, Japan

Filed May 3, 1977, Ser. No. 793,320

Claims priority, application Japan, Dec. 11, 1976, 51-166532[U]

Int. Cl.² B23D *21/06;* **B26B** *27/00;* **B26D** *3/16*

U.S. Cl. 30—94 **6 Claims**

1. A shearing tool for synthetic resin tubes comprising: an upper handle portion;

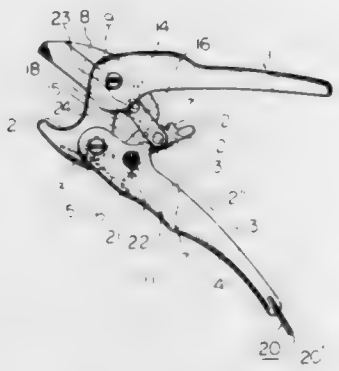
a lower jaw connected to the leading end of said upper handle portion and provided with an arcuate tube receiving recess in the upper surface of said jaw;

said upper handle portion being further provided with a blade receiving opening extending from the forward portion of said upper handle portion to the leading end of said lower jaw;

a lower handle portion pivoted at the leading end of said lower handle portion to said lower jaw;

a shearing blade pivoted in an intermediate position of the length of said blade to said upper handle portion within said opening and having an engaging pawl formed at and extending downwardly from the rear end of said blade;

said shearing blade further including a slot formed in the rear portion thereof;



a rocking bar pivoted at one end to the forward portion of said lower handle portion and provided with notches in the upper surface of the rocking bar;

a connection link pivoted at one end to an intermediate position of the length of said rocking bar and having at the other end a pin freely received within said slot in the blade;

a spring normally urging said rocking bar against said engaging pawl; and

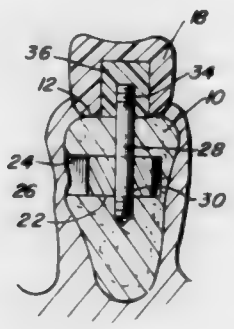
a return spring for returning said lower handle portion to the initial position when a gripping force is released from said upper and lower handle portions.

4,084,318

STABILIZED DENTAL IMPLANT

Charles M. McEachern, 3114 Old Canton Rd., Jackson, Mich. 39216

Filed Apr. 9, 1974, Ser. No. 459,373
Int. Cl.[2] A61C *13/22*
U.S. Cl. 32—10 A **4 Claims**



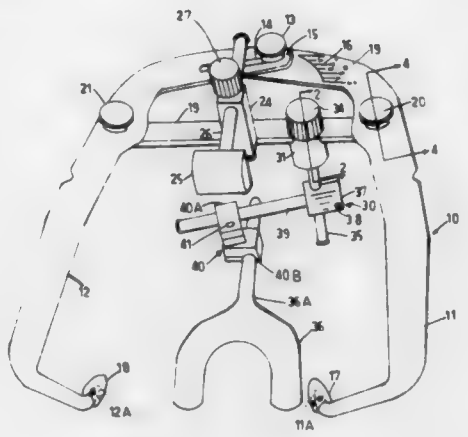
1. A method of attaching dental appliances to the jawbone of a user comprising the steps of: forming a first hole transversely through the jawbone; inserting a drill jig into said first hole to establish a guide axis through the jawbone intersecting said first hole; drilling a second hole in the jawbone along said guide axis; withdrawing the drill jig from the first hole; inserting an anchor element into the first hole, said anchor element having a length less that that of the first hole and a transverse bore adapted to be axially aligned with the second hole; inserting a fastener to which a dental appliance is secured at one end through said second hole and the bore in the inserted anchor element; and securing the fastener to the jawbone independently of the anchor element.

4,084,319

FACE BOW

William Basil Dragan, R.F.D. No. 1 Burr St., Fairfield, Conn. 06430

Filed Aug. 2, 1976, Ser. No. 710,551
Int. Cl.[2] A61C *9/00*
U.S. Cl. 32—21 **11 Claims**



1. A face bow comprising:

a pair of side arms having one end thereof inturned for insertion into the depression anterior and medial to the tragi of a patient's ears,

an ear piece detachably connected to the inturned end of each of said side arms, said ear piece being adapted to be inserted in a patient's ear when said face bow is fitted to a patient and adapted for mounting said face bow to a given articulator.

a cross bar interconnected between said side arms intermediate the length thereof about which said side arms pivot for adjusting said side arms to a patient's intercondylar size,

means for connecting the other ends of said side arms for facilitating said adjustment for said intercondylar size and for securing said side arms in said adjusted position,

indicies means formed on said side arms for indicating said intercondylar size,

a nasion gauge means mounted on said cross bar for engaging the nasion when fitted to a patient,

a bite fork for supporting an impression of a patient's bite,

a toggle means for adjustably supporting said bite fork to said cross bar,

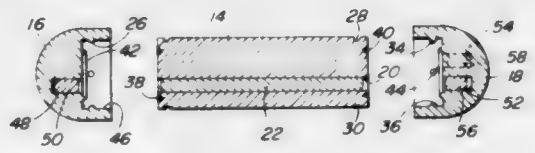
and means for detachably connecting said toggle means and bite fork supported thereon to said cross bar whereby said toggle means and bite fork secured thereby can be readily removed and put aside until the casts are to be mounted thereon whereby the mandible and maxilla relationship of one's bite relative to the oribital plane of the patient's head is maintained and which relationship can be readily re-established to a given articulator.

4,084,320

SYSTEM FOR MIXING AND DISPENSING DENTAL AMALGAM

Lewis Skeirik, 24 Central St., Georgetown, Mass. 01833

Filed Jul. 21, 1976, Ser. No. 707,296
Int. Cl.[2] A61C *5/04*
U.S. Cl. 32—60 **10 Claims**



1. A system for mixing and dispensing dental amalgam, comprising

(a) a capsule adapted to contain constituents for said amalgam, and

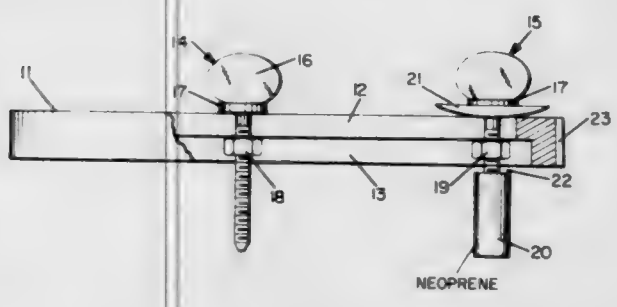
(b) a dispenser operatively connectable to said capsule and adapted to discharge said amalgam from said capsule,
(c) said capsule being formed with separate chambers for separately storing said constituents and means for connecting said chambers for mixing said constituents,
(d) said capsule including a body portion formed with a through passage adapted to contain one of said constituents and at least one cap formed with a cavity adapted to contain another of said constituents,
(e) said cap being movably connected to said body portion whereby said cavity may be moved from a misaligned position to an aligned position with respect to said passage.

4,084,321

MASON'S GUIDE

Charles W. Huston, 6931 Waterloo Rd., NW., Canal Wilchester, Ohio 43110

Filed Jun. 11, 1975, Ser. No. 586,065
Int. Cl.[2] B44D *3/00*
U.S. Cl. 33—86 **3 Claims**



1. A device for anchoring and positioning an aligning cord, comprising in combination:
(a) a clamp element having an elongated aperture and having a channel parallel with and substantially co-incident in length with said aperture;
(b) two protruding elements each consisting of a screw having a head at one end and each extending slidably through said aperture and each having at least one end formed with external screw threads extending outwardly a substantial distance from said aperture;
(c) retaining means comprising internally threaded nuts acting in cooperation with the external threads of said protruding elements for holding said elements attached to said clamp element while allowing manual positional adjustment of said protruding elements within said aperture;
(d) a cord securing means comprising a convex washer having a centrally disposed aperture positioned on the same end of one of the protruding elements as is the head thereof for securing an aligning cord to the element; and
(e) a neoprene sleeve member located on the end of one of the protruding members opposite to the side of said clamp element on which said convex washer is positioned and spaced sightly from said clamp element to provide a space for positioning the aligning cord.

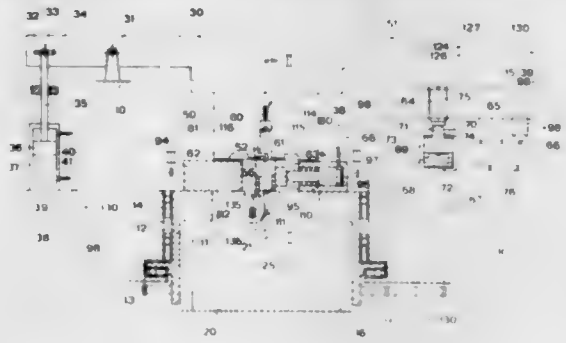
4,084,322

APPARATUS FOR MEASURING GEOMETRICAL DIMENSIONS AND/OR ERRORS ON A MECHANICAL PART

Gastone Albertazzi, Bologna, Italy, assignor to Finike Italiana Marposs Soc. In. Accomandita Semplice di Mario Possati & C., Bentivoglio, Italy

Filed May 25, 1976, Ser. No. 689,839
Claims priority, application Italy, Jun. 13, 1975, 3442 A/75
Int. Cl.[2] G01B *7/00, 7/12*
U.S. Cl. 33—174 L **11 Claims**

1. Apparatus for measuring geometrical dimensions and/or errors on a mechanical part, comprising:
a base;
a first support carried by said base;
a second support carried by said base, the second support being movable with respect to the base;
measuring means mounted on at least one of said first and second supports, said measuring means comprising movable feeler means with at least one movable arm having a direct-contact feeler and position transducer means responsive to the position of the feeler means;
first actuating means coupled with said second support to control a relative displacement between the two supports in order to move said supports toward and away from each other;
a locking device movably carried by said base and adapted to cooperate with said part to lock and support the part in a fixed position with respect to said locking device;
second actuating means adapted to cause a relative movement between said locking device with said part and said base in order to permit said feeler means to explore the respective portion of said part;
processing means connected with said measuring means to process the signals supplied by the transducer means during the exploration of the feeler means on said part;



thrust means carried by said first support for cooperating with said part and applying a supporting thrust to the latter;
first reference means carried by the second support in order to cooperate mechanically with said part and push it towards the first support after the action of said first actuating means, overcoming the action of said thrust means;
second reference means associated with at least said second support to cause the stopping of said first actuating means at a first relative position of said supports;
first control means connected to said locking device to control the locking of said part when the first relative position of the two supports is reached;
second control means adapted to deactivate said first actuating means in response to the two supports reaching said first relative position; and
further thrust means adapted to cause, upon deactivation of said first actuating means, the movement of said second support and of said first reference means from said part to a predetermined measuring position with respect to said base to permit said relative movement between said part and the measuring means and the consequent effecting of the measurements.

4,084,323

MEASURING APPARATUS

David Roberts McMurtry, Wooton-under-Edge, England, assignor to Rolls-Royce Limited and Renishaw Electrical Limited, Great Britain

Filed May 10, 1976, Ser. No. 685,072
Claims priority, application United Kingdom, May 13, 1975, 20019/75
Int. Cl.[2] G01B *5/00, 7/00*
U.S. Cl. 33—174 L **4 Claims**

1. A probe for use in measuring apparatus having stylus support structure comprising:

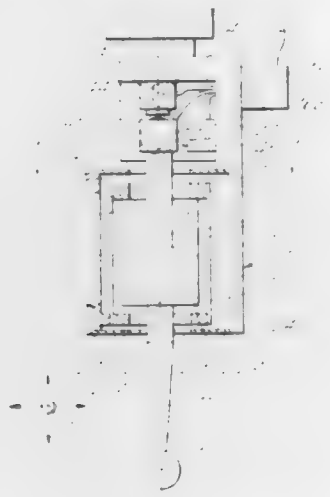
a first and a second rigid member arranged in spaced relationship;

a first pair of generally flat resilient members arranged in spaced parallelism and secured to the first and second rigid members in position therebetween;

a third rigid member having a first part situated adjacent the first rigid member;

a second pair of generally flat resilient members arranged in spaced parallelism and in positions forming with the first resilient members four sides of a notational six-sided rectangular block, the second pair of resilient members being secured to the second rigid member and to said first part of the third rigid member in position therebetween, the third rigid member having a second part extending from said first part towards the second rigid member;

a fourth rigid member, the fourth rigid member and said



second part of the third rigid member being situated at opposite sides of the assembly comprising the first and second pairs of resilient members;

a third pair of spaced apart generally flat resilient members arranged in parallel planes perpendicular to the planes of the first and second resilient members and in positions to form the fifth and sixth sides of said notional block, the third pair of resilient members being secured to the fourth rigid member and said second part of the third rigid member in positions therebetween, wherein said resilient and rigid members are positioned and dimensioned such that the first and fourth rigid members are movable relative to one another in three orthogonal dimensions, and wherein one of the first and fourth rigid members constitutes a support for said stylus support structure and the other one of the first and fourth rigid members constitutes a support for a stylus.

4,084,324

MEASURING INSTRUMENT

David John Whitehouse, Melton Mowbray, England, assignor to The Rank Organisation Limited, London, England

Filed Apr. 23, 1976, Ser. No. 679,819

Claims priority, application United Kingdom, Apr. 23, 1975, 16813/75; Jan. 7, 1976, 00475/76

Int. Cl.² G01B *7/34, 7/28*

U.S. Cl. 33—174 L **31 Claims**

1. In a surface measurement apparatus of the type wherein a sensor is traversed along a path in sensing relation with the surface of a component under test and operates to produce sensor output signals representing the surface under test,

the improvement wherein:

said sensor comprises first, second and third transducers,

each said transducer being individually and equally sensitive to surface variations and operating to produce an output signal P_1, P_2, P_3 respectively,

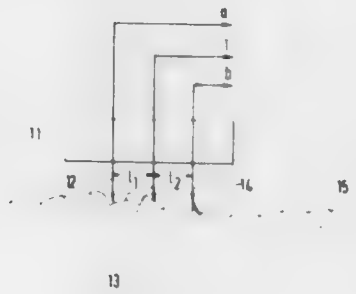
common support means mounting said first, second and third transducers spaced from one another by respective predetermined distances, and in relative positions such that each transducer traverses substantially the same path over the surface of the component upon relative movement of said common support and the component under test, the spacing of said common support from the surface of the component under test providing a reference datum for the transducers in generating the output signals thereof, amplifier means for amplifying the said output signals P_1, P_2, P_3 from said first, second and third transducers respectively such that said output signals are related by relative factors of a, l and b respectively, and

means for combining the output signals from the transducers to produce a composite signal S of the form $S = aP_2 + bP_3 - 2P_1$ which includes no component due to significant imperfections in the reference datum.

18. In a surface measurement apparatus of the type wherein a sensor is traversed along a path in sensing relation with the surface of a component under test and operates to produce sensor output signals representing the surface under test,

the improvement wherein:

said sensor comprises first, second, third and fourth transducers,



each said transducer being individually sensitive to surface variations and operating to produce an output signal P_1, P_2, P_3, P_4 respectively,

common support means mounting said first, second, third and fourth transducers spaced from one another by respective predetermined distances, and in relative positions such that each transducer traverses substantially the same path over the surface of the component upon relative movement of said common support and the component under test, the spacing of said common support from a fixed surface providing a reference datum for the transducers in generating the output signals thereof, amplifier means for amplifying said output signals P_1, P_2, P_3 and P_4 from said first, second, third and fourth transducers in such a way that, after amplification, said output signals are related by factors l, a, b, and c respectively where $l+a+b+c=0$, and

means for combining the output signals from the transducers to produce a composite signal S of the form $S = P_1+aP_2+bP_3+cP_4$ which includes no component due to significant imperfections in the reference datum.

4,084,325

CENTER FINDER

Hiram Jones, Jr., R.D. No. 1, Box 130B, Ellwood City, Pa. 16117

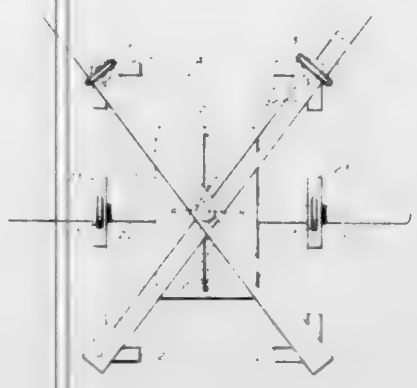
Filed Apr. 15, 1976, Ser. No. 677,080

Int. Cl.² B25B *5/02;* B25D *5/00*

U.S. Cl. 33—191 **6 Claims**

1. In an improved center-finding assembly for accurately locating the center of a workpiece of substantially symmetrical shape, a pair of longitudinal gauging arm members, a center-seeking indicator of spool-like shape cross-connecting said pair of arm members together in a slidable-pivotal relation with respect to each other, a pair of edge-engaging guide elements for each of said arm members, one guide element for each said arm member being pivotally non-slidably mounted thereon adjacent one end thereof, the other guide element for each said arm member being a slide guide element pivotally and end-wise-adjustably mounted thereon adjacent the opposite end

thereof for relative movement into and out of a substantially complementary engagement against an edge portion of the workpiece that is opposite to the edge portion thereof that is being engaged by said one guide element, said indicator permitting said pair of arm members to be adjusted as to their cross-extending angular relationship with respect to each other and being automatically slidable into a centering position with respect to a face of the workpiece when said pair of guide elements of each of said arm members are moved into opposite edge-engaging positions with respect to the workpiece, said pair of guide elements for each of said arms having an open



concave-shaped side for aligned engagement with opposed edges of the workpiece, said pair of arm members in their mounted center-locating positioning defining opposite pairs of open angle-shaped spaces therebetween of the same angular relation with respect to each other, a plate-like protractor having central mounting means for positioning it on and with respect to said center indicator, said protractor having slot portions therealong in an aligned and outwardly extending relation from said central mounting means, and graduations along said slot portions for determining points therealong of selected distance from a center point determined by said indicator.

4,084,326

GUN SIGHT

Jody L. Numbers, 7908 E. Oak, Scottsdale, Ariz. 85257

Filed Jun. 28, 1976, Ser. No. 700,385
Int. Cl.[2] F41G *1/38*
U.S. Cl. 33—245 **9 Claims**



1. A sight mechanism for a weapon having a barrel, said mechanism comprising:

an elongated housing for mounting on a gun,

a telescopic sight mounted in said housing for receiving said target image through a given line of sight,

said telescopic sight having a first reflective means for reflecting said target image from said given line of sight to intersect another line of sight,

a second reflective means mounted on said housing for selective movement to a first position out of said another line of sight, and to a second position to receive the reflected target image and to direct it along said another line of sight, and

means for selectively moving said second reflective means into said first and second positions

said means for selectively moving said second reflective means being actuated to move said second reflective means to said second position by pulling a trigger arried by the gun,

and being actuated to return said second reflective means to said first position upon release of the trigger.

6. A sighting mechanism for a gun comprising:

an elongated housing for mounting on a barrel of a gun longitudinally thereof,

a pair of iron sights one mounted at each end of said housing for presenting a target image therethrough in a first line of sight,

a telescopic sight mounted in said housing parallel with said iron sights for receiving and enlarging at least a part of said target image through a second line of sight,

said telescopic sight having a first reflective means for reflecting said target image from said first line of sight to intersect with said second line of sight,

a second reflective means movable from a first position out of said first line of sight to a second position for receiving said target image from said first reflective means of the telescopic sight and to direct it along said first line of sight, and

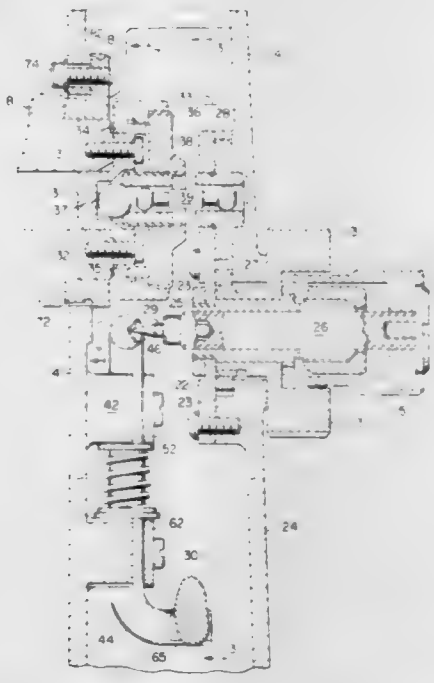
means for selectingly moving said second reflective means into said first and second positions.

4,084,327

THEODOLITE ADJUSTING MEANS

J. Peter E. Kooi, Succasunna, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Aug. 18, 1976, Ser. No. 715,602
Int. Cl.[2] G01C *1/00*
U.S. Cl. 33—299 **7 Claims**



1. In a geodetic instrument comprising an alidade including a pair of standard housings and an axle journalled therebetween mounting a telescope for line of sight elevation displacement, the improvement in means for controlling and effecting fine adjustment in said elevation displacement, said improvement comprising:

(a) means presenting an annular shoulder situated within one of said pair of standard housings and affixed to one end of said axle, said annular shoulder being arranged for coaxial rotation with said axle;

(b) means presenting an annular flange loosely encompassing said shoulder within the confines of said annular flange and being capable of coaxial rotation and limited axial displacement with respect to said shoulder means, said encompassing means having a threaded axial bore;

(c) threaded nipple means engaged in said encompassing means axial bore and bearing axially upon said axle end, whereby rotation of said nipple means in a first direction will result in the generation of an axial force acting be-

tween said axle end and said encompassing means to effect said encompassing means axial displacement with resulting clutching engagement between said annular shoulder and said encompassing means annular flange portion, thereby fixing said encompassing means to said axle for coaxial rotation therewith;

(d) first drive means accessible from the exterior of said one housing, whereby a rotary force applied thereto may be transferred to the interior of said housing;

(e) means linking said first drive means to said nipple means whereby rotation of said nipple means may be effected by application of rotary force to the exterior accessible element of said first drive means;

(f) a lever arm affixed to said encompassing means and extending radially therefrom within said one housing;

(g) lever means within said one housing arranged to shift the direction of an applied rectilinear force from one substantially parallel to the axis of said axle to one substantially tangent to a path of circular revolution about said axis, and to transfer said redirected force to said lever arm;

(h) second drive means accessible from the exterior of said one housing, whereby a rotary force applied thereto may be converted to an axial rectilinear force directed to the interior of said housing; and

(i) means linking said second drive means to said lever means, whereby displacement of said lever arm and concurrent rotation of said encompassing means therewith may be effected by application of rotary force to the exterior accessible element of said second drive means.

4,084,328

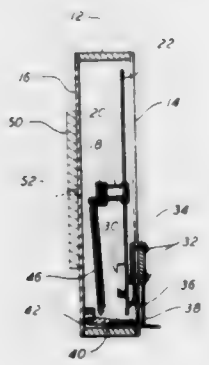
METHOD OF ADJUSTING ANGULARITY OF LIGHT FIXTURES

Arthur S. Shai, Fayetteville, N.Y., assignor to Jaquith Industries, Inc., Syracuse, N.Y.

Division of Ser. No. 617,182, Sep. 26, 1975, abandoned. This application Nov. 23, 1976, Ser. No. 744,428

Int. Cl.[2] G01C 9/00

U.S. Cl. 33—368 **6 Claims**



1. A method of adjusting to a desired vertical angle the major axis of a lighting fixture rotatably mounted upon a rigid tower having an erected position wherein the lighting fixture is at a height inaccessible from ground level, said method comprising:

a. pivoting at least the portion of the tower carrying the lighting fixture about a horizontal axis to a position of repose wherein the fixture is accessible from ground level, and noting the vertical plane defined by the major axis during pivoting of the tower about said horizontal axis;

b. attaching a gravity-operated angle measuring device to said portion of the tower to measure the vertical angle of the major axis thereof when in said position of repose;

c. attaching said device to the fixture to measure the vertical angle of the major axis thereof with the tower in said position of repose;

d. rotating the fixture about an axis perpendicular to said plane and trough an angle which is the sum of the desired angle of elevation and the previously measured angle of repose of step (b) substracted from 90° as measured by said device;

e. pivoting the tower about said horizontal axis to its erected position, returning the fixture to the inaccessible height with said device attached thereto;

f. allowing said device to come to an equilibrium position, indicating the angle of elevation of said major axis of the fuxture with the tower in its erected position and locking said device in said equilibrium position by locking means controlled at ground level;

g. pivoting the tower about said horizontal axis back to its position of repose;

h. reading the angle locked on said device; and

i. rotating the fixture about said axis of adjustment of step (d) in a direction and by a number of degrees reflecting any difference between the desired vertical angle of said major axis of the fixture with the tower in its erected position and the angle locked on said device.

4,084,329

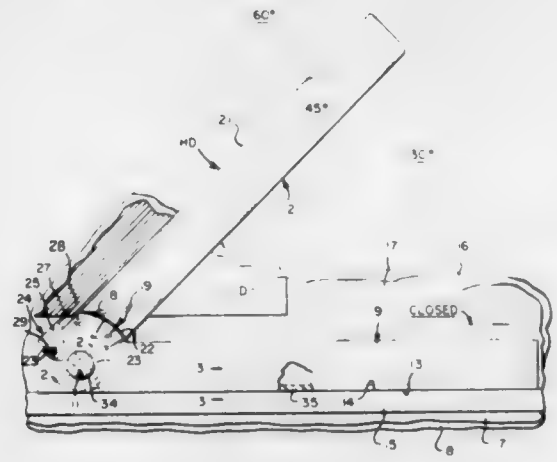
PROTRACTOR-TYPE HATCHING CONTROL DEVICE

Glenn Talley Randol, 3 E. 2nd Ave., Mountain Lake Park, Md. 21550

Filed Oct. 5, 1976, Ser. No. 729,691

Int. Cl.[2] B43L 13/24

U.S. Cl. 33—115 **3 Claims**



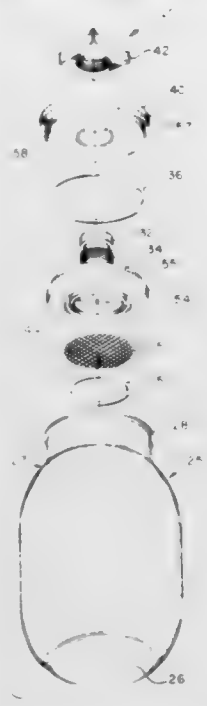
1. A protractor-type hatching control device having a base segment movable along a straight-edge or the like, and a hatching control segment having a leading drawing-edge and adjustable with respect to the base segment to establish different angularities of hatching, a pair of overlying protractor portions on said segments, respectively, and concentrically-oriented with respect to a common axis with one portion graduated in degrees selectively registrable with a reference mark on the other portion to facilitate setting the control segment in its selected hatching angularity, wherein the improvement comprises: a control flange defining the working-edge of the base segment slidable along the straight-edge, said flange producing in the base segment space for reception of the control segment when the device is inoperative; a transverse channel indented normal to the drawing-edge in the protractor portion of the control segment; a line-spacing control member slidably disposed in the channel between the protractor portions for establishing the selected hatching space; a threaded stem defining the common axis with one end fast on one of the protractor portions, and projecting through an aligned-hole in the other protractor portion; and a locknut threadingly engaging the free end of the threaded stem to lock the protractor portions and slidably interposed control member in adjusted positions to move as a unit with their respective segments for hatching.

4,084,330

FLASK FOR FREEZE DRYING WITH ADJUSTABLE SEAL

Douglas S. Fraser, New Platz, N.Y., assignor to FTS Systems, Inc., Stone Ridge, N.Y.

Filed Jul. 2, 1976, Ser. No. 702,345
Int. Cl.[2] F26B *13/30*
U.S. Cl. 34—92 7 Claims



1. A vessel assembly for freeze drying formed of materials reisstant to chemical action and extremes in temperature and pressure comprising a sample container having a mouth and an interior wall surface at an open end thereof, a cover assembly, said cover assembly being adapted for mounting in a positive fluid-tight manner to close said mouth, said cover assembly including a compression plate and a retainer plate, said retainer plate having an annular channel on an upper surface, said retainer plate being integral with an upstanding neck, said neck having a passageway for attachment to a vacuum source for the application of vacuum to said sample container, said passageway being in communication with the interior of said sample container when said cover assembly is mounted on said mouth of said container, said compression plate having a radially extending flange providing a seat for placement of said cover assembly on said mouth, said retainer plate being adjustably movable towards said compression plate, a resilient annular sealing means in a given position between said retainer plate and said compression plate, said retainer plate and said compression plate engaging said sealing means on opposing sides and compressing said sealing means for radial expansion outward while being retained in said given position, said compression being caused by the movement of said retainer plate towards said compression plate for the engagement of said compression sealing means with said interior wall surface of said sample container in a reliable thermally resistant fluid-tight seal while retaining said constant radius.

4,084,331

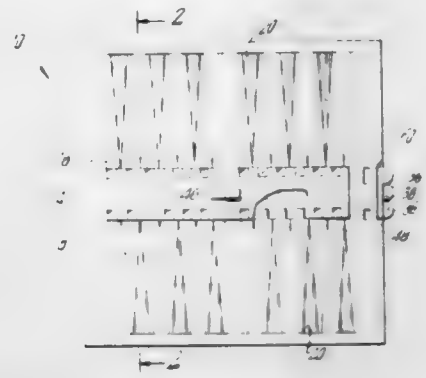
BACKGAMMON TEACHING DEVICE

Le Roi G. Nottoli, 5843 N. Cicero Ave., Chicago, Ill. 60646

Filed Oct. 27, 1976, Ser. No. 723,260
Int. Cl.[2] G09B *19/22;* A63F *3/00*
U.S. Cl. 35—8 R 4 Claims

1. A Backgammon Teaching Device comprising a board of conventional Backgammon design,

trough extending across the central portion of the board adaptable to contain a plurality of movable components, means embodying a plurality of window like openings adapted to slide within the trough, and a plurality of



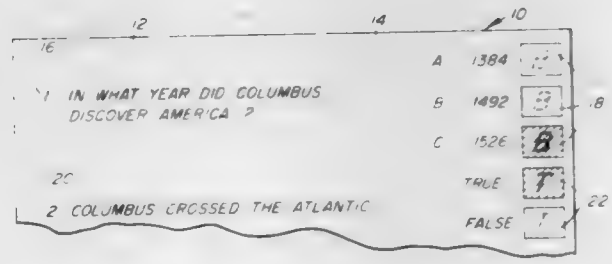
instruction cards within said trough and readable upon removing the panel.

4,084,332

SYSTEM FOR VISUAL COMMUNICATION

John S. Waloszyk, 540 Wilder St., and Bernard W. Jacobs, 432 S. LaSalle St., both of Aurora, Ill. 60506

Filed Mar. 7, 1977, Ser. No. 775,390
Int. Cl.[2] G09B *3/08*
U.S. Cl. 35—9 G 20 Claims



1. A system for visual communication comprising:
(A) a substrate defining a marking surface,
(B) a visible stable dye,
(C) a normally visible reactive dye of a color different than that of the stable dye,
(D) an activator chemically isolated from said reactive dye prior to use of the system, and
(E) a solvent common to both the said dyes and the said activator,
(F) at least one of said dyes being deposited on said surface to form a first visible indicia thereon,
(G) the said other dye being deposited on said surface,
(H) said activator changing or substantially eliminating the color of said reactive dye upon contact between said activator and said dyes in the presence of said solvent,
(I) said stable dye retaining substantially its original color during said contact to provide a second indicium on said surface of a color distinctly different than that of the first indicium.

4,084,333

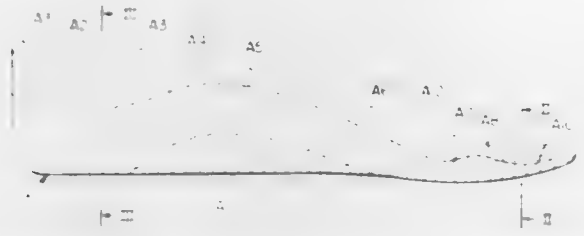
FOOTWEAR INNER SOLE

Oscar Del Vecchio, Via Manara 6, Falconara Marittima, Ancona, Italy

Filed Feb. 24, 1976, Ser. No. 661,045
Claims priority, application Italy, Jun. 20, 1975, 24630 A/75
Int. Cl.[2] A43B *13/38*
U.S. Cl. 36—43 4 Claims

1. A footwear inner sole, particularly for open top footwear articles, comprising a resilient shaped element having a contour which reproduces the profile of the foot, said shaped element including a heel portion, an arch portion and a toe portion, said shaped element further including a lateral upturned wall encompassing said contour at the lateral edges thereof from said heel portion to said toe portion to confine

and hold the foot to the wearer laterally, said heel portion being provided with a depression into which the heel of the foot of the wearer is received and held, said lateral wall extending substantially vertically from said depression at the rear thereof, said heel portion extending upwardly and forwardly at the front of said deepression to merge smoothly with said arch portion, said toe portion including a transversely arranged



raised portion having corrugations to receive the toes of the foot of the wearer, the height of the shaped element at the heel portion being comparable to the width thereof, the depression at the heel portion being about one-half the height thereat, said heel portion having a thickness substantially greater than the thickness at the toe portion and positioning the heel of the wearer at a higher level than the toes.

4,084,334

SUCTION DREDGE WITH SWELL COMPENSATING LADDER MOUNT

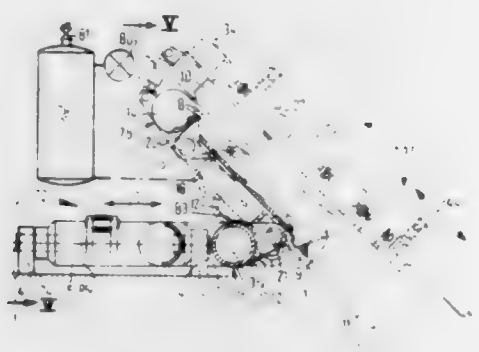
Tjako Aaldrik Wolters, Zeist, and Jan de Koning, Amsterdam, both of Netherlands, assignors to Ballast-Nedam Groep N.V., Amstelveen and Amsterdamse Ballast Bagger, Nieuwegein, both of, Netherlands

Filed Apr. 7, 1976, Ser. No. 674,446

Claims priority, application Netherlands, Apr. 15, 1975, 7504487

Int. Cl.[2] E02F *3/90*

U.S. Cl. 37—67 **14 Claims**



1. A cutting-head suction-dredger comprising a floating body, anchoring means for anchoring the floating body, bearing means connecting said ladder with the floating body for allowing said ladder to pivot relative to said body about an axis transverse of said body and to allow said ladder to shift back and forth longitudinally relative to said body, said ladder being rigid from its top end above the water to the lower end, and a cutting head rotatably driven and journalled at the lower end of the ladder, the bearing means comprising a rail guide extending substantially in the direction of length of the ladder and being adapted to pivot with respect to the floating body about said transverse axis and guide members adapted to move along the rail guide.

4,084,335

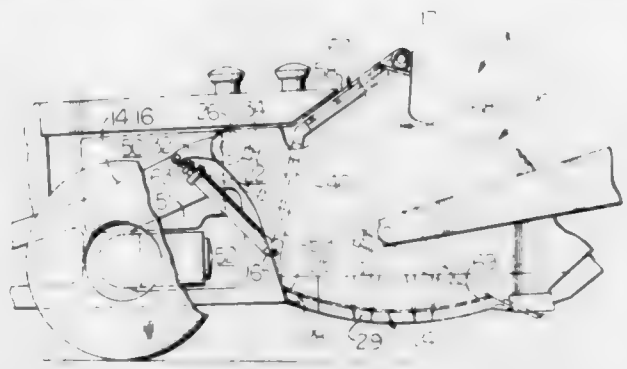
BOWL AND EJECTOR APPARATUS

Carroll R. Cole, and Robert L. Christian, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 19, 1977, Ser. No. 788,853

Int. Cl.[2] E02F *3/85*

U.S. Cl. 37—126 AE **6 Claims**



1. In a scraper having a frame with first and second spaced apart side elements, a bowl having sidewalls and a floor member with curvilinear surface, a lower transverse member extending across and supporting a back portion of the bowl floor member, an upper transverse member extending across and being fixedly connected at a middle portion to the front of said first and second frame side elements and at end portions to respective bowl sidewalls, the improvement comprising:

an ejector system including a blade connected above the top of the bowl and being pivotally movable relative thereto for receiving and removing material into and from the bowl,

first and second motors, each being connected to the upper transverse member at locations outwardly of said first and second spaced apart side elements, and

a power means connected to and positioned between said first and second side elements at a location below said upper transverse member.

4,084,336

VIBRATOR EQUIPPED GRAB BUCKET

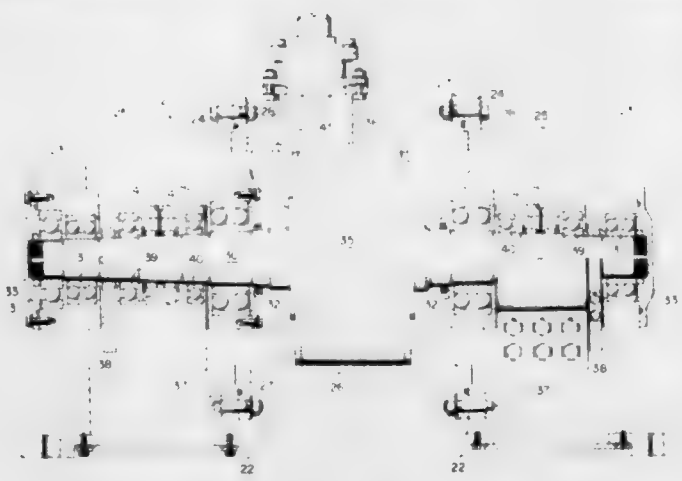
Yutaka Mizutani, Toyonaka, and Takashi Aoki, Kochi, both of Japan, assignors to Kensetsu Kikai Chosa Kabushiki Kaisha, Osaka, Japan

Filed Jul. 16, 1976, Ser. No. 705,832

Claims priority, application Japan, Jul. 17, 1975, 50-86723

Int. Cl.[2] E02F *3/44;* B66C *3/02*

U.S. Cl. 37—184 **1 Claim**



1. A grab bucket having a pair of openable and closable shells with each shell having a bottom wall and parallel side walls extending from said bottom wall, a frame, each bottom wall having means pivotably attaching one end thereof to said frame, a shaft, each side wall of each said shells having one end thereof pivotably mounted on said shaft, each said shell having another end and teeth fixed to said another end, said bottom

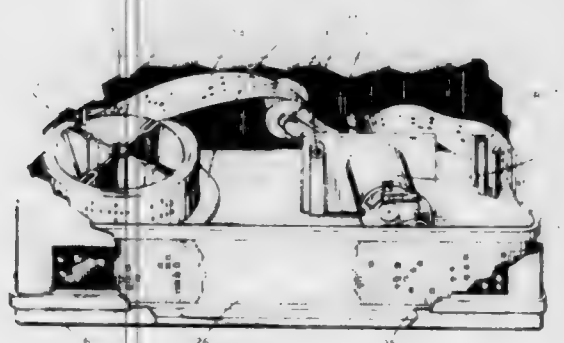
and side walls of each shell defining an interior portion thereof, one of said shells having vibrator means secured between said side walls on said interior portion of said shell so that, when said shells are opened, said vibrator means is disposed above said teeth of said shell, said vibrator means comprising a watertight casing, a shaft member rotatably secured to said casing through bearings, an electric motor having a rotor fixed on said shaft intermediate the ends thereof and a weight mounted eccentrically on each end of said shaft, each said weight comprising a stator housed in said casing, a pair of weight plates, each weight plate of each pair of weight plates having a different weight from the other weight plate of its pair, one weight plate of each pair being secured on said shaft through a one-way clutch and the other weight plate of each pair being fixedly secured on said shaft so that said two weight plates of each pair rotate simultaneously with said shaft in one direction, while only one weight plate of each pair rotates with said shaft in the opposite direction.

4,084,337

VISIBLE MESSAGE DISPLAY APPARATUS

Zane G. Tucker, 704 Greenbriar Way, Las Vegas, Nev. 89121

Filed Dec. 8, 1975, Ser. No. 638,898
Int. Cl.[2] G09F *11/28*
U.S. Cl. 40—472 **2 Claims**



1. In an apparatus for continuously displaying a visible message including a case member for housing components and having a window through which said message is displayed, a continuous tape having said message thereon for being viewed through said window, the improvement comprising:

a drop-in storage reel on which said tape is wound for being continuously taken up and played out, said reel including removable tab members against which said tape is initially wound on said reel without regard to tension, and drive means for engaging and driving said tape independent of said storage reel.

4,084,338

VEHICLE-TOP SIGN DISPLAY ASSEMBLY

David J. Ross, 60 Willy Ave., Liberty, N.Y. 12754

Filed Jul. 22, 1976, Ser. No. 707,828
Int. Cl.[2] G09F *21/04*
U.S. Cl. 40—592 **8 Claims**



1. A vehicle-top sign assembly for displaying a pair of signs disposed edgewise in arched back-to-back relation, said assembly including:

a pair of corner supports each comprising a pair of vertically extended planes forming between them an open acute internal angle, said corner supports constructed to be fastened in spaced-apart relation on said vehicle top with their open angular ends in opposed relation to accommodate opposite lateral edges of the signs of said pair,

means for maintaining the lateral edges of said signs in rigid edgewise position inside of said corner supports comprising a pair of vertically extended wedge-shaped members, the bodies of said wedge-shaped members each comprising a pair of faces disposed at an external angle approximating the acute internal angle of a respective one of said corner supports,

means for supporting the respective edge portions of each of said signs in sandwich relation between one of the inner faces of said corner supports and a corresponding external face of one of said wedge-shaped members,

spreader means imposed transversely across said assembly including said signs, in a horizontal plane in an area intermediate between said corner supports,

each said spreader means including a pair of grippers respectively disposed to engage corresponding horizontal edge portions of each of said signs for securing the centers of said signs in back-to-back relation,

wherein said spreader means comprise an upper and a lower member each including a horizontally disposed coupling bar,

said grippers being integral with the ends of said coupling bar and extending in a direction substantially normal to the plane of said coupling bar,

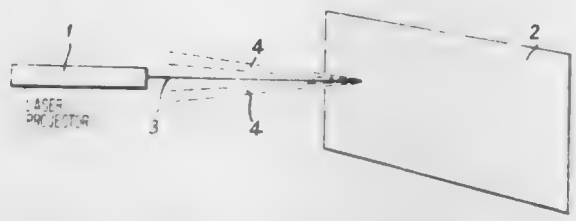
each of said grippers including two series of vertical panels disposed in slightly off-set relation to form between them a series of aligned slots constructed to accommodate the respective upper and lower horizontal edges of said signs.

4,084,339

ILLUMINATED DISPLAY APPARATUS

Raymond Peltier, 11, Square Jasmin, 75016 Paris, France, and Jean-Paul Meric, 10, rue du Dr. Roux, 75015 Paris, France

Filed Jun. 25, 1976, Ser. No. 699,686
Claims priority, application France, Jun. 26, 1975, 75 20087
Int. Cl.[2] G09F *13/00;* B06Q *1/00;* G03B *21/14*
U.S. Cl. 40—560 **8 Claims**



1. An illuminated display apparatus comprising a roadway a retro-reflective screen means positioned near said roadway and visible from said roadway, at least one laser projector means for emitting at least one coherent light beam towards said retro-reflective screen means, and means interposed between said laser projector means and said retro-reflective screen means for acting upon the at least one coherent light beam to produce an intelligible display on said retro-reflective screen means.

4,084,340

GUN BORE RUST INHIBITING METHOD AND APPARATUS

Gilbert Galde Scudder, 725 N. Fig, Escondido, Calif. 92025

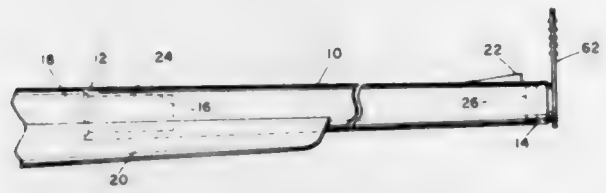
Filed Aug. 30, 1976, Ser. No. 718,557
Int. Cl.[2] F41C *27/08*
U.S. Cl. 42—1 N **4 Claims**

1. Apparatus for inhibiting rust in the bore of a barrel of a gun having a muzzle and a breech, said apparatus comprising:

first generally cylindrically shaped hollow capsule means

with one end open and containing a desiccant therein and having a passage means in said one end, said first capsule means having a slightly tapered outer surface toward said one end, the outer surface being of a size so that said first capsule means can be inserted into the muzzle of the gun in substantially sealing engagement, with the passage means in communication with the bore of the gun;

second generally cylindrically shaped hollow capsule means with one end open and containing desiccant therein and having passage means in said one end, the passage means of said second capsule means being located axially inward from said one end thereof so that a cylindrical side wall extends beyond said passage means, the inside surface of



said side wall being slightly smaller than the outer surface of said one end of said first capsule means, said second capsule means having a slightly tapered outer surface toward said one end, the outer surface being of a size so that said second capsule means can be inserted into the breech of the gun in substantially sealing engagement, with the passage means in communication with the bore of the gun;

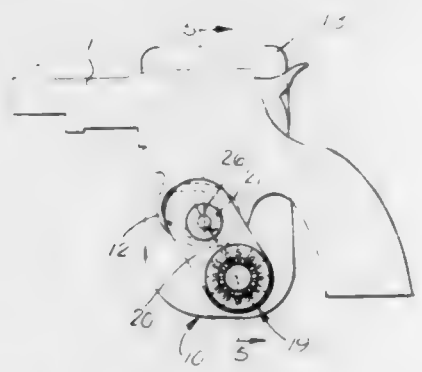
the first and second capsule means being adapted to be interfitted with the outer surface of said one end of said first capsule means engaging the inside surface of said one end of said second capsule means so that said respective passage means only communicates with each other and thereby substantially prevent depletion of said desiccant.

4,084,341

DETACHABLE GUN LOCK

Ramon H. Cervantes, 4600 78th St., Sacramento, Calif. 95820

Filed Sep. 28, 1976, Ser. No. 727,574
Int. Cl.² F41C *27/10*
U.S. Cl. 42—1 Y **4 Claims**



1. A detachable handgun lock comprising a back plate, a post extending integrally upwardly from said back plate and adapted to engage in a trigger guard of a gun, a lock secured to said back plate, a swingable bolt on said lock adapted to swing to a position confronting said post to secure said post in said trigger guard, said swingable bolt including a battery actuated light mounted on said bolt for illuminating said lock in the dark.

4,084,342

FISHING DEVICE

Charles R. Philip, Box 116, Haugen, Wis. 54841

Filed Jul. 16, 1976, Ser. No. 705,947
Int. Cl.² A01K *87/00*
U.S. Cl. 43—19.2 **13 Claims**



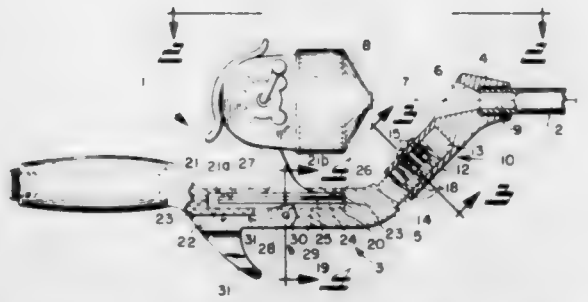
1. A fishing device, comprising: a handle; an elongate rod secured to the handle and having an end portion extending forwardly therefrom; line guide members positioned longitudinally of the rod, at least one of said guide members being spaced laterally of the rod; a line secured at one end to the handle and having a free end suspended from the end portion of the rod, the line extending through the guide members to afford a line extension between an adjacent pair of guide members; a drive motor carried by the handle; an arm spaced laterally of the rod and rotatively driven by said motor, said arm having an eccentric portion which moves through an arcuate path when the motor rotates the arm, the eccentric portion being positioned to engage and deflect said line extension to cause movement of the free end of the line; and means for varying the relative positions of the arm and the line extension to vary the deflection of the line by the eccentric portion.

4,084,343

ADJUSTABLE EYELESS FISHING ROD

Nunzio N. Genovese, 6703 Balsam Dr., Bedford Heights, Ohio 44146

Filed Oct. 15, 1976, Ser. No. 732,757
Int. Cl.² A01K *87/06*
U.S. Cl. 43—22 **16 Claims**



1. An apparatus for mounting and securing a reel to the holder portion of a fishing rod having a rear holder portion comprising cavity means in said rear holder portion for receiving the base mounting plate of a reel, said cavity means having a top, bottom and side walls, cam means extending into said cavity means for urging the base mounting plate into abutment with said top wall of said cavity means thereby locking the reel to said rear holder portion, and means for varying the maximum extent of protrusion of said cam means into said cavity means when in the locked position to accommodate different sized reel base mounting plates.

4,084,344

TOY CONSTRUCTION SET

Kiyoji Asano, Tokyo, Japan, assignor to Shinsei Kogyo Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1976, Ser. No. 666,440
Int. Cl.² A63H *33/00*
U.S. Cl. 46—28 **1 Claim**

1. A toy construction set, comprising:

a plurality of one-piece corner posts comprising:

a first group each comprising a leg, first and second groups

of two arms each extending outwardly from the ends of said leg, a locking cavity formed within the end of each of said arms, and a locking cavity formed within one end of said leg; and

a second group each comprising a leg, first and second groups of two arms each extending outwardly from an end and midportion of said leg, respectively, a locking cavity formed within the end of each of said arms, a locking cavity formed within said end of said leg, and a locking projection formed at the other end of said leg;

a plurality of one-piece middle post comprising:

a first group each comprising a leg, first and second groups of three arms each extending outwardly from the ends of said leg, a locking cavity formed within the end of each of said arms, and a locking cavity formed within one end of said leg;

a second group each comprising a leg, first and second groups of three arms each extending outwardly from an end and midportion of said leg, respectively, a locking cavity formed within the end of each of said arms, a locking cavity formed within said end of said leg, and a locking projection formed at the other end of said leg;

a plurality of one-piece center posts comprising:

a first group each comprising a leg, first and second groups of four arms each extending outwardly from the end of said leg, a locking cavity formed within the end of each of said arms, and a locking cavity formed within one end of said leg;

a second group each comprising a leg, first and second groups of four arms each extending outwardly from an end and midportion of said leg, respectively, a locking cavity formed within the end of each of said arms, a locking cavity formed within said end of said leg, and a locking projection formed at the other end of said leg;

a plurality of one-piece beams terminating at each end thereof in locking projections;

said locking projections of said second group of said corner, middle and center posts, respectively, being complimentary in configuration with respect to said locking cavities of said legs of said first and second groups of said corner, middle and center posts, respectively; and

said locking projections of said beams being complimentary in configuration with respect to said locking cavities of said arms of said first and second groups of said corner, middle, and center posts, respectively;

said legs of said first and second groups of said corner, middle, and center posts being of uniform cross-sectional area between the respective groups of arms, and wherein said locking cavities of said legs of said first and second groups of said corner, middle and center posts are square in cross-section and wherein said locking projections of said second group of said corner, middle and center posts are square in cross-section enabling same to be fitted within said locking cavities of said legs of said first and second groups of said corner, middle and center posts;

said arms of said first and second groups of said corner, middle and center posts being rectangular in cross-section and of the same dimension, and wherein said locking cavities of said arms of said first and second groups of said corner, middle and center posts are rectangular in cross-section and said locking projections of said beams are rectangular in cross-section enabling same to be fitted within said locking cavities of said arms;

wherein certain of said locking cavities formed within the ends of said arms of said first and second groups of said corner, middle and center posts each comprise a first wall provided with an opening therein, a second wall spaced from said first wall and positioned opposite said opening in said first wall, and top and bottom walls connecting said first and second walls.

4,084,345

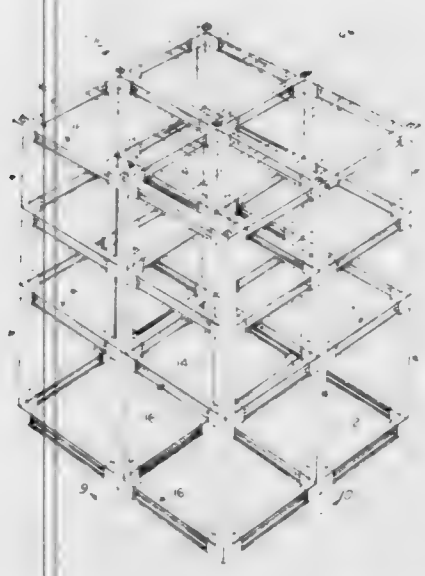
TOY HELICOPTER

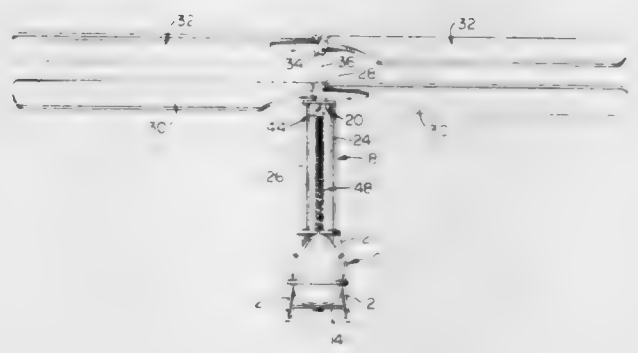
Yutaka Tanaka, Urawa, Japan, assignor to Toytown Corporation, Tokyo, Japan

Filed Jun. 24, 1977, Ser. No. 809,682

Int. Cl.[2] A63H *27/12*

U.S. Cl. 46—75 **1 Claim**





1. A toy helicopter, comprising:

a body provided with a supporting member in the vicinity of the bottom thereof, a shaft extending upwardly from said supporting member, and an opening at the top of said body which is generally circular in cross-section,

a generally rectangular frame having top, bottom and side connecting members, said bottom member having an opening therein through which said shaft of said body extends while said side members are spaced apart from each other a distance permitting said frame to rotate about said shaft and within said opening in said body, said top member having an opening therein, and a hook provided on one of said side members in the vicinity of the bottom thereof,

a wire spindle extending through said opening in said top member and provided with a hook at the lower end thereof,

a first hub fixedly secured to said top member of said frame and provided with an opening therein through which said spindle extends, a cylindrical housing positioned on top of said first hub and provided with an opening extending longitudinally therethrough through which said spindle extends, and a second hub positioned on top of said cylindrical housing and provided with an opening through which said spindle passes, the top of said spindle being fixedly secured to said second hub, such that said second hub rotates with said spindle,

a resilient band connecting said hook of said spindle and said hook provided on said side member,

a first wing operatively connected to said first hub to rotate with said first hub and frame, and

a second wing operatively connected to said second hub to rotate therewith, the pitch of said first and second wings being reversed.

4,084,346

METHOD AND ARRANGEMENT FOR OPTIMALLY SUPPLYING AUTOTROPHIC ORGANISMS WITH CO_2 NUTRIENT

Eberhard Stengel, Dortmund, and Carl Johannes Soeder, Dortmund-Brucherhof, both of Germany, assignors to Gesellschaft fur Strahlen- und Umweltforschung mbH, Munich, Germany

Filed Dec. 13, 1976, Ser. No. 749,893
Claims priority, application Germany, Dec. 13, 1975, 2556290
Int. Cl.[2] A01G 7/00
U.S. Cl. 47—1.4 6 Claims



1. Arrangement for optimally supplying autotrophic organisms with CO_2 nutrient comprising:

(a) a culture channel in which a suspension of the organisms can be continuously moved in one direction, with the suspension being in open air and subjected to fluctuations of the intensity of the sun;

(b) at least one discharge means in the channel for introducing CO_2 gas into the channel;

(c) at least one control member connected to the discharge means for controlling the operation of the discharge means;

(d) at least one pH measuring means in the channel for immersion into the suspension;

(e) a circuit connecting the pH measuring means and the control member to actuate the control member for introducing the CO_2 in response to the pH measured by the pH measuring means; and

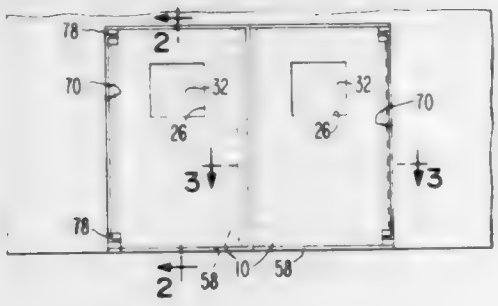
(f) a light transmitting, but gas impermeable barrier layer in parallel with the direction of flow of the suspension above and downstream of the CO_2 discharge means to hold the CO_2 discharged into the channel below the barrier layer and thereby prevent the CO_2 from immediately rising to the surface of the suspension.

4,084,347

HIGH IMPACT RESISTANCE DOOR

James W. Brown, 1612 Canyon Park Dr., Bend, Oreg. 97701

Continuation-in-part of Ser. No. 489,861, Jul. 19, 1974, abandoned. This application Mar. 25, 1976, Ser. No. 670,295
Int. Cl.[2] E05D 7/00
U.S. Cl. 49—397 10 Claims



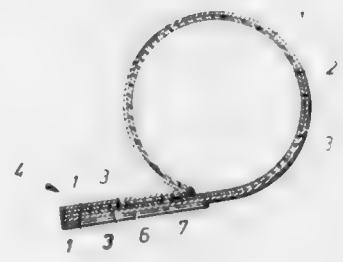
1. An industrial door adapted for use in environments which require the door to be subjected to impact forces exerted thereon comprising: a hollow body of a molded plastic material having the characteristic of being relatively highly resistant to an impact force exerted on the body, said body being formed from said material in a single molding process to present a pair of spaced vertical sidewalls, a top wall, a bottom wall and a pair of opposed vertical end walls interconnecting the top and bottom walls, the sidewalls, the top and bottom walls, and the end walls being integral with each other to present a monolithic construction for the body; a mass of applied-in-place insulating material within said body and bonded to the inner surfaces of said sidewalls and said top, bottom and end walls; and rod means embedded within said insulating material mass and spaced inwardly from said sidewalls and said end walls for reinforcing said body, there being means adjacent to one end wall for mounting hinge structure on the body, whereby the body can be swingably mounted on a door jamb.

4,084,348

SEALING STRIP

Gunnar Hast, Eknasvagen 4, 112 64 Stockholm, Sweden

Filed Mar. 29, 1977, Ser. No. 782,487
Claims priority, application Sweden, Mar. 29, 1976, 7603754
Int. Cl.[2] E06B 7/16
U.S. Cl. 49—475 3 Claims



1. A sealing strip for doors, windows and the like, comprising, in combination

(a) an elongated, resilient, porous core of a synthetic foam material;

(b) a flexible covering enclosing said core and consisting of an outer layer of textile material an an inner layer of a gas-proof, flexible foil material;

(c) said outer and inner layers both being prolongated circumferentially so as to jointly form an elongated mounting flange and being bound together only in the region of said mounting flange;

(d) the thickness of the outer and inner layers being dimensioned so as to permit resilient expansion of the core without substantial resistance from said layers while permitting sliding movement between those portions of said layers which enclose the core.

4,084,349

SHAPE GRINDER AND METHOD

John H. Farrell, Buffalo, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Jul. 23, 1976, Ser. No. 707,947
Int. Cl.[2] B24B 7/02, 1/00
U.S. Cl. 51—5 D 6 Claims

1. Grinding apparatus for forming noncircular punching tools comprising,

a grinding wheel having a cylindrical peripheral surface and rotable on a central grinding wheel axis,

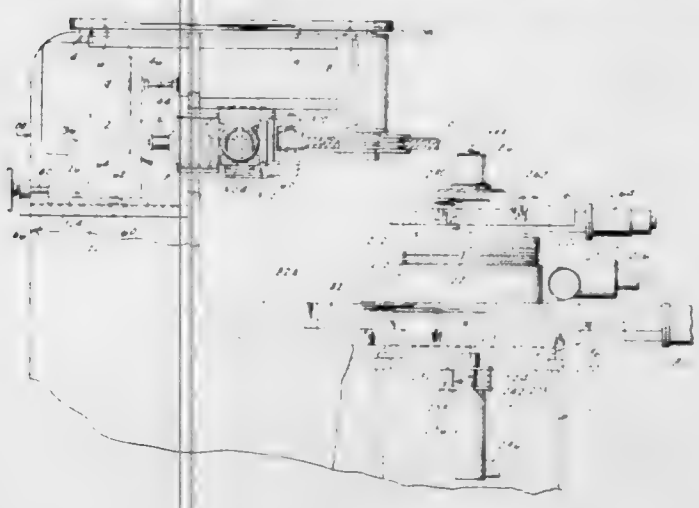
a first slide mounted for movement along a first axis toward and away from said peripheral surface of said grinding wheel and carrying a rotary table rotatable on a table axis parallel to said grinding wheel axis,

a second slide mounted on said rotary table and reciprocally movable along a second axis,

a third slide mounted on said second slide and reciprocally movable along a third axis disposed at right angles to said second axis, and having means for securing a tool blank

therewith with its tool axis parallel with said grinding wheel axis, and

drive means coupled with said slides and with said rotary table for moving a tool blank into grinding contact with said peripheral surface and for sequentially activating said second and third slides and said rotary table to progres-



sively remove material at four sides of said tool blank in succession in a grinding cycle and to advance the work further toward said grinding wheel and to repeat such grinding cycle a sufficient number of times to essentially form a noncircular punching tool of a predetermined noncircular cross sectional configuration.

4,084,350

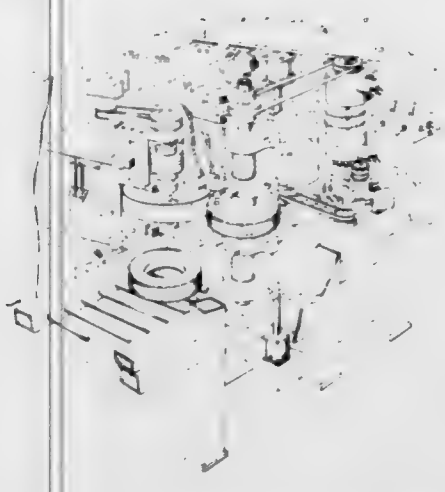
CORRECTION OF RUBBER TIRES FOR FORCES GENERATED BY DYNAMIC NON-UNIFORMITIES

Theodore Ongaro, Columbus, Ohio, assignor to Ongaro Dynamics, Ltd., Columbus, Ohio

Continuation-in-part of Ser. No. 525,011, Nov. 18, 1974, abandoned. This application Jun. 9, 1976, Ser. No. 694,339

Int. Cl.[2] B24B *5/00*

U.S. Cl. 51—106 R **33 Claims**



1. The system for correcting an automobile rubber tire or the like for centrifugally generated non-uniformities comprising:

means for rotating the tire under load and at speeds in excess of 35 m.p.h. to generate centrifugal non-uniform areas of growth in said tire;

sensors means to sense the forces developed by the centrifugally generated non-uniform areas and to develop force signals having an amplitude and duration representative of the areas of non-uniform growth of the tire;

cutter means, and means to movably position said cutter means relative to the outside periphery of the tire;

signal control means responsive to said force signals operative to actuate said movable cutter positioning means to cause said cutter means to engage the tire in the areas of non-uniform growth as the tire is rotated at said centrifugal growth speed;

encoder means for developing a rotational reference position on the circumference of the tire, and mechanical means driven in timed relation to the rotational speed of the tire for correlating said rotational reference position with said force signals to accurately locate the positions on the tire of said areas of non-uniform growth.

4,084,351

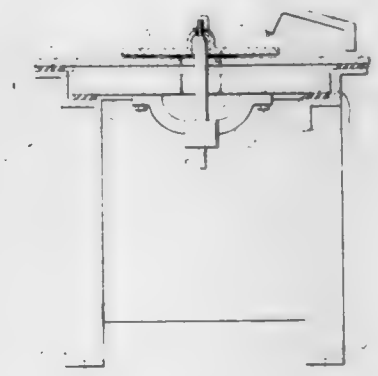
VIBRATION FREE DIAMOND POLISHING WORKBENCH

David Nicholas Lam, 217 N. Queens Ave., Massapequa, N.Y. 11758, and Stephen Joseph Lam, 34-35 76th St., Jackson Heights, N.Y. 11372

Filed Mar. 18, 1977, Ser. No. 778,843

Int. Cl.[2] B24B *41/06, 7/22;* **B28D** *5/00*

U.S. Cl. 51—109 R **9 Claims**



1. A diamond polishing workbench having a top working table substantially free of vibration comprising

(A) a frame of connected lateral members having common upper and lower surfaces, said members having interior and exterior surfaces,

(B) a step of predetermined height in the interior surface of each of said members thereby defining an interior ledge,

(C) a support means supported from said ledge and means to dampen vibration interposed between said support means and said ledge, said support means being out of direct contact with said frame,

(D) a work table seated on said upper surfaces of said lateral members and means to dampen vibration interposed between said work table and said upper surfaces, said work table being out of direct contact with said support means and said frame.

4,084,352

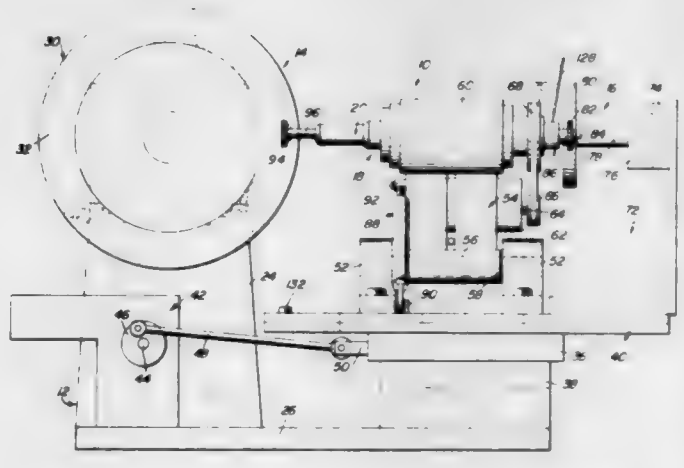
LAPIDARY MACHINE

Bradford J. Wheeler, P.O. Box 629, Lemmon, S. Dak. 57638

Filed Mar. 1, 1977, Ser. No. 773,151

Int. Cl.[2] B24B *17/02*

U.S. Cl. 51—127 **7 Claims**



1. A fluid-actuated chuck, comprising, in combination:

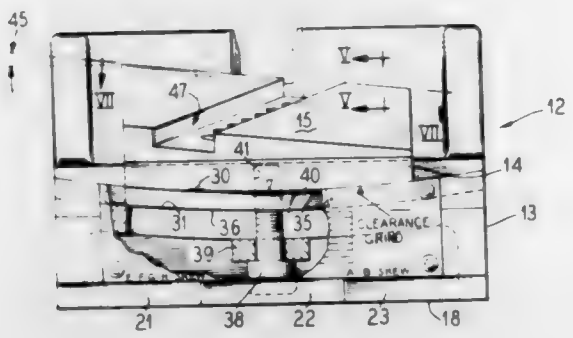
(a) a collet provided with a square hole for receiving a dopstick having a mating square shaft;
(b) a nose cap having front and rear openings and a through passage extending between the openings, the passage decreasing in diameter toward the front of the openings, with the collet being slidably disposed within the passage of the nose cap;
(c) a push rod connected to the collet and extending away from the rear of the opening of the nose cap, a cylinder connected to a source of fluid under pressure and connected to the nose cap, a piston connected to the push rod and normally biased away from the nose cap, the fluid under pressure moving the piston toward the nose cap and moving the collet toward the front of the openings of the nose cap, the collet being provided with a tapered nose including means for increasing the resiliency of the tapered nose and being matably received in the decreasing diameter portion of the passage of the nose cap in order to be clamped against the dopstick and retain the dopstick in the hole provided in the collet;
(d) a hub attached to the cylinder and extending longitudinally away from the collet and nose cap, the hub having a square cross section; and
(e) a stone guide provided with a square hole mating with the hub, the stone guide being removably mounted on the hub, with a consistent orientation thus being assured between the stone guide and dopstick.

4,084,353

SPADE DRILL SHARPENING FIXTURE

Reginald O. Schulz, and Larry R. Rivett, both of Bridgeport, Mich., assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Filed May 6, 1976, Ser. No. 683,668
Int. Cl.[2] B24B *19/00*
U.S. Cl. 51—220 **9 Claims**



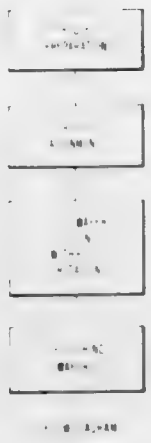
1. A fixture for holding spade drills on a reciprocable grinder table during grinding of the dip angle thereof, comprising:
(a) a base having a lower support surface for resting directly on the grinder table;
(b) means for adjusting the dip angle to be ground comprising a rocker directly supported on said base and pivotable about a horizontal axis disposed well above the fixture to a selected fixed position for setting at a selected dip angle;
(c) means for supporting the spade drill on the upper side of said rocker comprising a surface for directly supporting the spade drill in a predetermined angular relation with respect to said horizontal axis, and said angular relation providing the rake angle for enabling grinding the top-rake flat of the drill at the selected adjustable dip angle, whereby said upper side is disposed well below said horizontal axis; and
(d) indicia on said base and on said rocker for indicating the actual dip angle in fractional increments less than one degree for any setting of said rocker.

4,084,354

PROCESS FOR SLICING BOULES OF SINGLE CRYSTAL MATERIAL

Johannes Grandia, and John Charles Hill, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 3, 1977, Ser. No. 803,082
Int. Cl.[2] B24B *1/02*
U.S. Cl. 51—283 R **10 Claims**



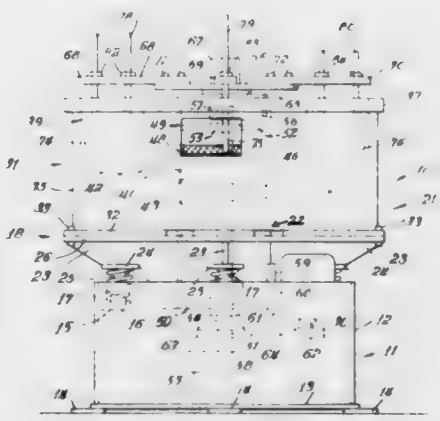
1. A method of slicing a boule of a hard single crystal material comprising the steps of
treating the surface of said boule to provide said boule with a longitudinal axis that is substantially the same as the crystallographic axis,
positioning said treated boule to have an orientation substantially perpendicular to an inner diameter rotatable saw blade,
rotating said boule about said longitudinal axis while maintaining said orientation, and
engaging said rotating boule against said rotating saw blade whereby a wafer is sliced from said boule.

4,084,355

FINISHING METHOD

Gunther W. Balz, Kalamazoo, Mich., assignor to Roto-Finish Company, Kalamazoo, Mich.

Division of Ser. No. 414,656, Nov. 12, 1973, Pat. No. 3,981,693.
This application May 14, 1976, Ser. No. 686,512
The portion of the term of this patent subsequent to Sep. 21, 1993, has been disclaimed.
Int. Cl.[2] B24B *1/00*
U.S. Cl. 51—313 **5 Claims**



1. A process for finishing a part or parts in a finishing chamber by vibration together with loose finishing material including the step of imparting vibratory movement to said finishing chamber to cause parts contained therein to be finished by interaction with finishing material and to cause said parts and finishing material to move along said finishing chamber while maintaining said part or parts and finishing material in a compartment in said finishing chamber defined by part-isolating

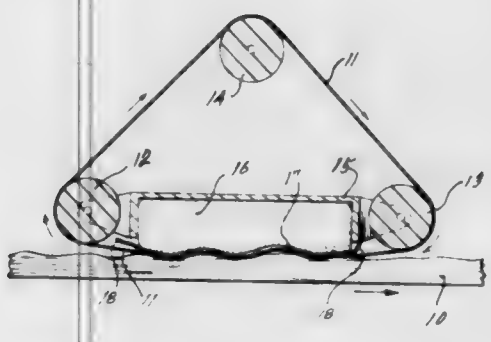
means comprising a plurality, of partitions in said finishing chamber, characterized in moving said partitions along said finishing chamber by the movement of the contents of the compartment defined thereby.

4,084,356

METHOD OF FINISHING A RANDOM CONTOURED SURFACE

John H. Brears, North Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed Jun. 1, 1976, Ser. No. 691,306
Int. Cl.[2] B24B *1/00, 21/08*
U.S. Cl. 51—328 **8 Claims**



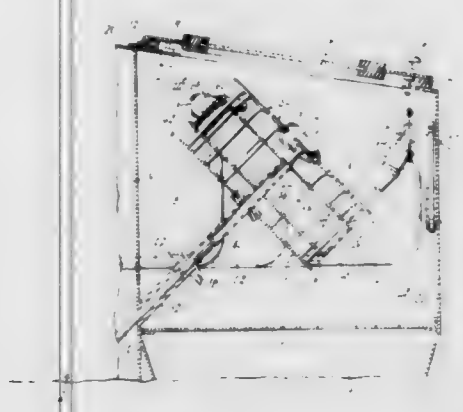
1. A method of finishing a longitudinally and transversely random contoured surface of a panelboard initially having a slippery surface with individual wood particles side by side on the surface comprising the steps of advancing a panelboard in contact with a sanding surface of a sanding belt, pressing a thin flexible membrane, deformable to follow the random contoured surface of the panelboard, with an even pressure onto a portion of the sanding belt to force the sanding surface to follow the random contoured surface of the panelboard and leaving a finished surface which is non-slippery, as compared to the panelboard's original surface.

4,084,357

VALVE CLEANING MACHINE

Robert W. Moses, Council Grove, Kans., assignor to Peterson Machine Tool, Inc., Merriam, Kans.

Filed Apr. 22, 1977, Ser. No. 789,787
Int. Cl.[2] B24C *3/22*
U.S. Cl. 51—419 **5 Claims**



1. A machine for cleaning valves of automotive engines, each valve comprising a flat circular head and an integral cylindrical stem projecting coaxially from said head, said machine comprising:

a. a cabinet,

b. a jet nozzle positioned within said cabinet and operable when actuated to eject a jet of air containing particles of abrasive material,

c. a carousel carried within said cabinet for rotation on its axis, said carousel comprising a generally cylindrical cage and having a circular pattern of holes formed therethrough, said holes being parallel to and equidistant from the cage axis, one end wall of said cage facing upwardly,

d. a support plate carried by said carousel beneath and parallel to the bottom of said cage, each of said valves being mountable in said carousel by slidably inserting its stem downwardly through one of the holes of the cage and resting it at its lower end on said support plate, with the valve head disposed in spaced relation above the top of the cage, said nozzle being directed toward the periphery of the circle of valve heads of the valves inserted in the carousel so as to be disposed in operative relation to the head of the closest of said valves, whereby as said carousel turns, all of said valve heads are presented successively in operative relation to said nozzle, said support plate being adjustably movable relative to said cage in a direction toward and from the lower end wall of said cage, whereby the length of the portions of the valve stems disposed between the valve heads and the upwardly facing end wall of the cage way be adjusted,

e. means operable to rotate said carousel, and

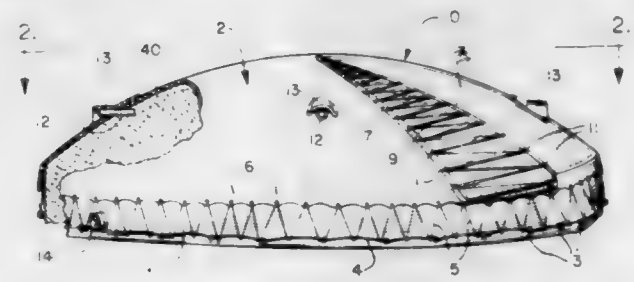
f. means operable to actuate said nozzle.

4,084,358

GRAIN STORAGE APPARATUS

Raymond S. Winters, La Grange, Ill., assignor to Environetics, Inc., Bridgeview, Ill.

Filed Sep. 23, 1976, Ser. No. 725,940
Int. Cl.[2] E04D *1/34*
U.S. Cl. 52—4 **11 Claims**



1. An improved storage apparatus of the type which includes a tarpaulin for covering a pile of dry material in bulk, wherein the improvement comprises:

a plurality of anchors for the tarpaulin, said anchors so positioned as to encircle the pile of dry material at spaced intervals,

a first cable attached to said anchors so as to define a circuit about the pile of dry material, and

flexible means for attaching a peripheral edge of said tarpaulin to said first cable at spaced intervals along the circuit of said first cable whereby the length of said flexible attaching means adjusts in response to stress exerted upon the tarpaulin.

4,084,359

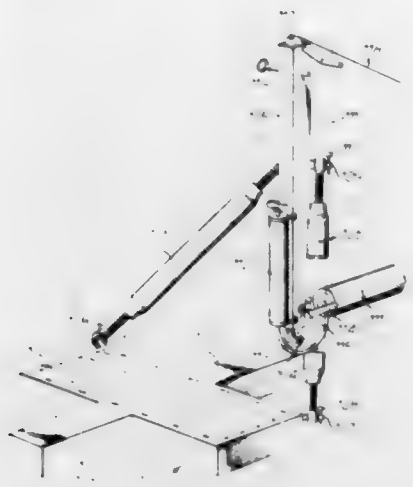
SURVEY APPARATUS

Thomas Bartlett Snell, Yeovil, England

Filed Oct. 7, 1975, Ser. No. 620,424
Int. Cl.[2] E04H *12/34*
U.S. Cl. 52—40 **2 Claims**

1. Survey apparatus comprising a base structure, a telescopic mast carriable by said base structure at a position which leaves the base structure with a substantial ballast supporting zone to one side of the mast, means for mounting an assembly for transmitting and/or receiving signals, visual and/or other, at the upper extremity of the mast, and a rigid mast staying and tilt adjusting linkage between the base structure and mast and including two transversely oriented lead screw mechanisms by which the mast can be tilted into a desired attitude in more than one vertical plane, the mast having a base support column and an extendable section, the base support column being mountable on the base structure and held in position by said linkage,

the extendable section being carried by said column, the bottom of the extendable section being pivotally attached to the



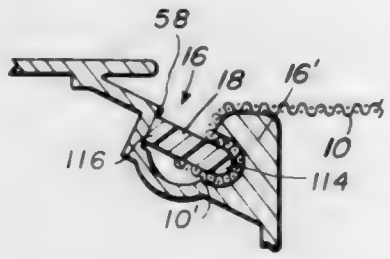
support column, and means on said column for drawing the extendable section up into an operative position with the extendable structure pivoting at its lower end.

4,084,360

COMBINATION SPLINE GROOVE

Harry Reckson, 2750 NE. 183 St., Apt. 2610, North Miami Beach, Fla. 33161

Filed Jun. 8, 1976, Ser. No. 693,797
Int. Cl.[2] E04B *1/343*; E06B *9/24*; A47H *13/00*
U.S. Cl. 52—63 **12 Claims**



1. In combination with an elongated structural body member (11 inter alia) such as a door stile (11) or window stile, which body member (11) forms at least a portion of a frame (11') over which a screening material (10) is retained, edge portions (10') of the screening material (10) being held within a spline groove (16) formed in the body member (11) by means of a spline strip (17, 18), the improvement comprising:

spaced first and second wall members (50, 52) formed in a planar wall (54) of the elongated body member (11), planar inner wall surfaces (56, 58) of the wall member (50, 52) being parallel and being disposed at an angle to an outer planar surface (60) of the planar wall (54), spaced parallel edges (62, 64) of outer ends (66, 68) of the wall members (50, 52) defining an elongated opening (70) therein, the second wall member (52) having a recess (72) formed longitudinally therein, the recess (72) being bounded by two spaced wall surfaces (74, 76), the planes of said wall surfaces (74, 76) near outer portions (78, 80) thereof being parallel and perpendicularly intersecting the plane of the inner wall surface (58) of the second wall member (52) to form first and second lateral edges (82, 84), the recess (72) further being bounded at innermost portions (86) thereof by an arcuate wall surface (88) formed essentially by inwardly curving inner portions (90, 92) of the two spaced wall surfaces (74, 76);

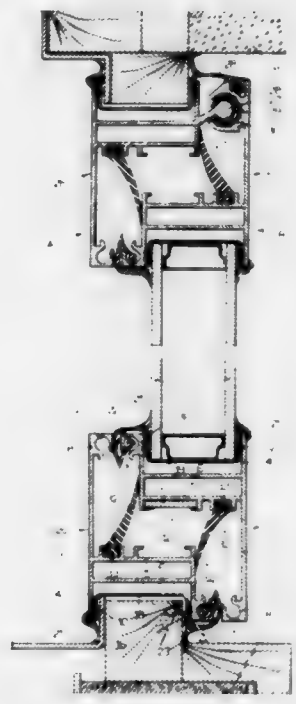
a recessed wall member (94) joined to inner ends (96, 98) of the first and second wall members (50, 52), the recessed wall member (94) having an arcuate recess (100) formed longitudinally therein, the arcuate recess (100) being bounded along a first lateral edge (102) thereof by a planar wall surface (104) of the recessed wall member (94), the plane of the wall surface (104) being perpendicular to the plane of the inner wall surface (56) of the first wall member (50), a second lateral edge (106) of the arcuate recess (100) being substantially coincidental with the second lateral edge (84) of the recess (72) formed in the second wall member (52), the first and second wall members (50, 52) and the recessed wall member (94) defining the spline groove (16) in the elongated body member (11), the spline groove (16) being capable of receiving into retaining relation with the edge portions (10') of the screening material (10) spline strips (17, 18) of varying axial cross-sectional configuration.

4,084,361

FRAME AND SASH FOR DOORS AND WINDOWS

Finn Aspaas, 19 Tollbodgt, 4600 Kristiansand S, Norway

Filed Jul. 20, 1976, Ser. No. 706,997
Claims priority, application Norway, Jan. 14, 1976, 760125
Int. Cl.[2] E06B *3/00*
U.S. Cl. 52—204 **5 Claims**



1. In a frame and sash for doors and windows, composed of similar profiled beams having a chair-shaped cross-section including:

(i) a chair-seat portion with protruding ribs having respective opposed flanges and defining a substantially dove tail-shaped slot to receive a foot portion of a lip-shaped strip the free edge portion of which is intended to contact another opposed such beam

(ii) a foremost leg portion having a free edge formed with an elongated slot,

(iii) a rear leg portion,

(iv) a longitudinal wall disposed between the leg portions and beneath the seat portion and defining with said leg portions and with said seat portion a longitudinal channel,

(v) a backrest portion extending upwardly from said rear leg portion,

the improvements that, in combination,

(a) the opening of said elongated slot is directed upwardly towards said seat portion and serves to receive a bead of a sealing gasket formed with elongated lips and disposed in said elongated slot and about the free edge of the rear leg portion and between said foremost leg and rear leg, said gasket forming a packing for the edge of a respective plate-shaped window pane and mounting ledge entering between said foremost leg and rear leg,

(b) the backrest portion has a greater height than the rear leg portion

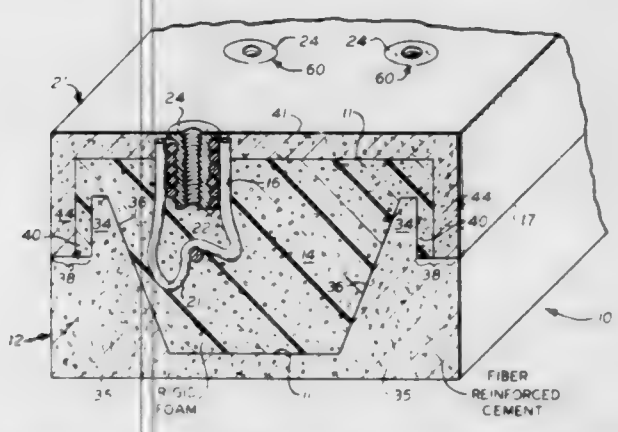
(c) the seat portion is formed with a further pair of ribs having opposed facing flanges, and
(d) the sides of the two leg portions facing each other are provided with parallel grooves to cooperate with ribs of said sealing gasket.

4,084,362

ANCHORED COMPOSITE BUILDING MODULE

Matthew R. Piazza, Nichols, Conn., assignor to Maso-Therm Corporation, Bridgeport, Conn.

Filed Dec. 31, 1975, Ser. No. 645,850
Int. Cl.[2] E04B *1/60*; E04C *1/40*
U.S. Cl. 52—309.2 **3 Claims**



1. Composite building module comprising a rigid foam core encased in an enclosed shell made of fiber reinforced cement having at least one aperture therethrough and at least one anchor means each extending through only one wall through one aperture for attaching said module to a supporting structure having an anchoring portion extending through the aperture in said one wall of said shell and an interlocking portion having an attaching portion attached to the anchoring portion along the length thereof and an extending portion extending radially outwardly from the periphery of the anchoring portion and into said foam core, wherein each aperture decreases in size towards the exterior of the shell to closely receive only the anchoring portion at the exterior of the shell and to provide a clearance between the remaining shell wall and anchoring portion to receive the anchoring portion and the attaching portion of the interlocking portion, said foam core being formed within the enclosed shell filling the interior thereof and enveloping at least the interlocking portion of the anchor means and coacting with the interlocking portion in conjunction with the blocking effected by the decreased aperture size at the exterior of the shell to resist removal of the anchor means in response to an outwardly directed force thereon.

4,084,363

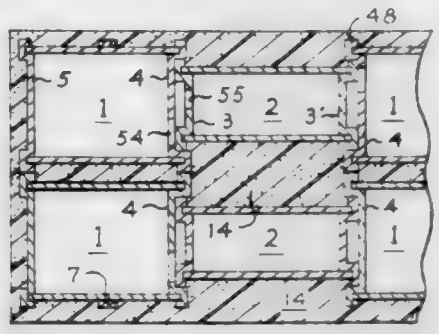
LIGHT-WEIGHT, INSULATED, CAN-COMPRISING CONSTRUCTION MEMBER

Alvin Edward Moore, Manini Way, Diamondhead, Bay St. Louis, Miss. 39520

Continuation of Ser. No. 714,613, Aug. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 543,661, Jan. 24, 1975, Pat. No. 3,979,870, which is a continuation-in-part of Ser. No. 359,800, May 14, 1973, Pat. No. 3,878,661, which is a continuation of Ser. No. 102,317, Dec. 29, 1970, abandoned. This application Aug. 1, 1977, Ser. No. 820,606
Int. Cl.[2] E04B *1/00, 1/74*
U.S. Cl. 52—309.4 **29 Claims**

1. A construction member, adapted for assembly with other elements of a composite structure, including:

a bundle comprising a plurality of at least three rows of end-joined cans, assembled around an interior line of the member, said line being within a cavity between and surrounded by sidewall portions of cans of said plurality of rows, the axes of said rows of cans being grouped thru three hundred and sixty degrees around said line; each of said cans having row-strengthening can ends, one of said ends being an imperforate can-end cap; each of said rows having a said imperforate can-end cap at each of its ends and including a plurality of row-strengthening joints between abutting pairs of can ends; each of said joints including: a can-end cap of one can of an adjacent pair of



cans; a can end of the other of said pair of cans, abutting said last-named can-end cap; and connecting means fastening together said abutting can-end cap and can end; and

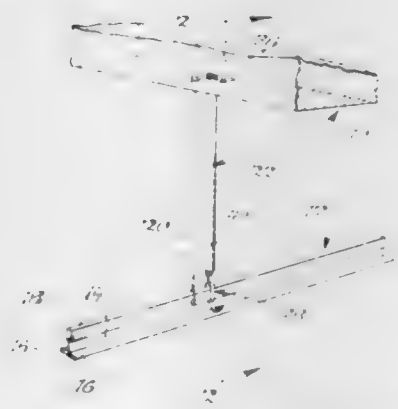
tie elements surrounding said bundle, contacting can sidewalls of said rows of cans, holding said rows assembled in said bundle.

4,084,364

COMPRESSION STRUT FOR SUSPENDED CEILING

Donald P. Jones, Lockeford, Calif., assignor to Roblin Industries, Inc., Buffalo, N.Y.

Filed Apr. 12, 1976, Ser. No. 675,706
Int. Cl.[2] E04B *5/52*
U.S. Cl. 52—484 **9 Claims**



1. The combination of a suspended ceiling grid system and an overhead structural framework extending thereabove from which said grid system is supportably suspended by a plurality of hanger means, and at least one compression strut extending between said grid system and said overhead framework, said compression strut including freely resilient spring means whereby said strut presses downwardly on said grid system in a resilient manner so that the latter resists upward movement at all times.

4,084,365

ONE-PIECE ROOFING TILE

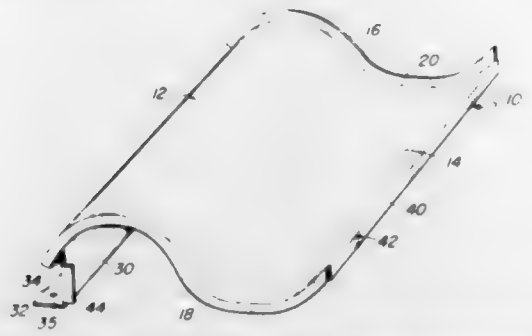
John Cecil Read, 1252 La Jolla Rancho Rd., La Jolla, Calif. 92037

Filed Feb. 18, 1977, Ser. No. 769,896
Int. Cl.[2] E04D *1/00*
U.S. Cl. 52—529 **6 Claims**

1. A one piece roofing tile structure comprising:

a relatively thin sheet material shaped to define a double convoluted panel having an upslope end defined by an upturned vertically extending flange of said sheet, a downslope end spaced from the upslope end defined by a downturned flange, and generally parallel first and second side edges,

one of said side edges defined by an overlapping overhang defined by a return fold of said sheet material and a vertical support wall defined by a downward fold of said sheet material defining a locking channel therebetween, and



connecting flange on the foot of said wall extending outwardly at a right angle to said wall,

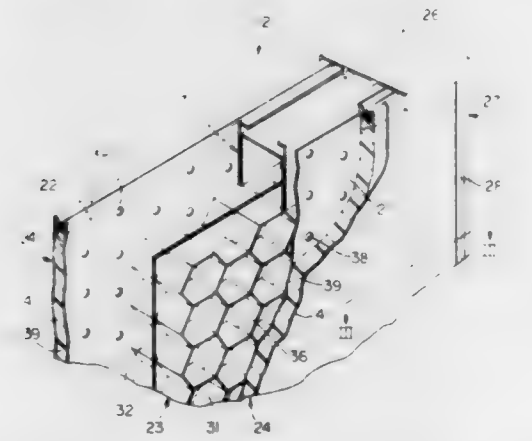
the other of said side edges defining locking means for engaging into a locking channel of an adjacent tile.

4,084,366

SOUND ABSORBING PANEL

Charles J. Saylor, Zeeland; Richard G. Haworth, Holland, both of Mich., and Lyle F. Yerges, Downers Grove, Ill., assignors to Haworth Mfg., Inc., Holland, Mich.

Filed Nov. 14, 1975, Ser. No. 631,855
Int. Cl.² E04B *2/28*
U.S. Cl. 52—615 **23 Claims**



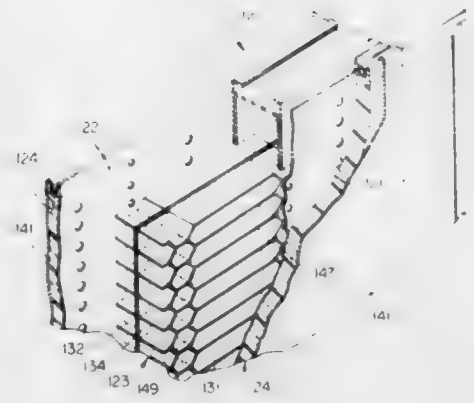
1. In a portable interior space divider panel having opposed enlarged side surfaces and a sound absorbing core structure disposed between said side surfaces and extending substantially coextensively over the area thereof, comprising the improvement wherein said core structure includes first means for absorbing sound waves of lower frequency and second means for absorbing sound waves of substantially higher frequency, one of said sound absorbing means including a plurality of Helmholtz resonators each defined by a small substantially closed chamber disposed interiorly of the wall panel and communicating with the surrounding environment through small opening means which projects outwardly from the respective chamber toward one of the side surfaces of the panel, said plurality of Helmholtz resonators including pluralities of first and second resonators of different size for absorbing sound waves of different frequency, each said first resonator being defined by a first interior chamber which is substantially closed except for first opening means which extends through the side surface of the panel and provides communication between said first chamber and the surrounding environment, each said second resonator being defined by a second interior chamber which is substantially closed and communicates with the surrounding environment through second opening means which extends through the side surface of the panel, and the other sound absorbing means comprising a layer of porous sound absorbing material which overlies said plurality of Helmholtz resonators and is substantially coextensive therewith.

4,084,367

SOUND ABSORBING PANEL

Charles J. Saylor, Zeeland; Richard G. Haworth, Holland, both of Mich., and Lyle F. Yerges, Downers Grove, Ill., assignors to Haworth Mfg., Inc., Holland, Mich.

Continuation-in-part of Ser. No. 631,855, Nov. 14, 1975. This application Jan. 24, 1977, Ser. No. 761,777
Int. Cl.² E04B *2/28*
U.S. Cl. 52—615 **11 Claims**



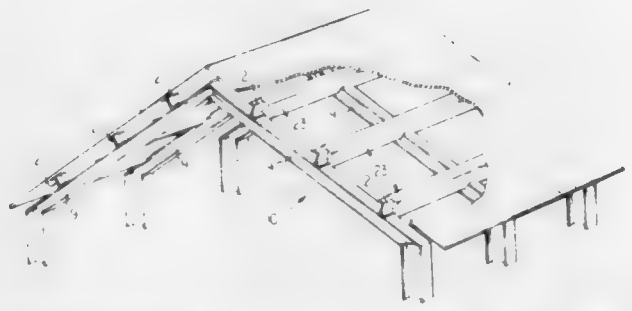
1. In a portable interior space divider panel having opposed enlarged side surfaces and a sound absorbing core structure disposed between said side surfaces and extending substantially coextensively over the area thereof, comprising the improvement wherein said core structure includes first means for absorbing sound waves of lower frequency and second means for absorbing sound waves of substantially higher frequency, one of said sound absorbing means including a plurality of Helmholtz resonators each defined by a small substantially closed chamber disposed interiorly of the wall panel and communicating with the surrounding environment through small opening means which projects outwardly from the respective chamber toward one of the side surfaces of the panel, said plurality of Helmholtz resonators including pluralities of first and second resonators of different size for absorbing sound waves of different frequency, each said first resonator being defined by a first interior chamber which is substantially closed except for first opening means which extends through the side surface of the panel and provides communication between said first chamber and the surrounding environment, each said second resonator being defined by a second interior chamber which is substantially closed and communicates with the surrounding environment through second opening means which extends through the side surface of the panel, and said first opening means being of substantially greater cross-sectional area than said second opening means.

4,084,368

APPARATUS FOR INSULATING PURLINS

Kenneth Morris Stilts, P.O. Box 17087, Nashville Tenn. 37217

Filed Jan. 23, 1976, Ser. No. 651,958
Int. Cl.² E04C *3/30, 1/34*
U.S. Cl. 52—728 **13 Claims**



1. A purlin insulated to reduce heat transfer from outside of

a building into the building and from inside the building to outside of the building, said purlin including:

a blanket of flexible thermal insulating material folded around the purlin; and

a sleeve of thin flexible material surrounding the blanket to hold the blanket in place on the purlin.

4,084,369

CHAIN LINK ASSEMBLY AND DISASSEMBLY TOOL

Herman E. Luebbers, Rte. 1, Box 194C, Randolph, Nebr. 68771

Filed May 2, 1977, Ser. No. 792,689

Int. Cl.[2] B21L *21/00*

U.S. Cl. 59—7 **4 Claims**



1. A chain link disassembly and assembly apparatus for use with detachable sprocket chains of the type with links which include a generally rectangular shaped frame with a male end or pintle and an open-sided female end or sleeve at the other end, the pintle of one link being received and the sleeve of an adjoining link to connect the two, said apparatus comprising:

(a) a vise means including:

(i) a base member with an upstanding bucking block at one end thereof;

(ii) a support block having a threaded opening therein secured to said base toward the other end thereof from said bucking block and receiving a theaded rod therein;

(iii) a movable vise jaw loosely mounted on said threaded rod and movable toward and away from said bucking block responsive to a turning movement of said rod to effect a clamping action on the portion of said sprocket chain placed therebetween;

(b) an impact punch having a large and a smaller end, a slot extending transversely across the smaller end forming a groove therein with a base wall and a pair of side walls, the distance between said side walls being substantially the same or slightly greater than the thickness of the material forming the links of said chain; and

(c) whereby when the link chain is secured within said vise and the impact punch assembled onto the edge and closely adjacent the male end or pintle of the nearest chain link adjacent the vise said nearest chain link may be twisted to align the pintle thereof with the sleeve of the clamped adjacent link, sharp impact blows applied to the large end of said impact punch will dislodge the two links.

4,084,370

APPARATUS FOR FASTENING A COVERING ON AN ENERGY CONDUCTING CHAIN

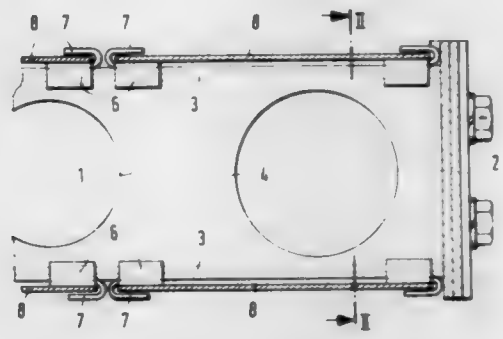
Werner Moritz, Siegen, Germany, assignor to Kabelschlepp Gesellschaft mit beschrankter Haftung, Siegen, Germany

Filed Jun. 30, 1977, Ser. No. 811,611

Claims priority, application Germany, Aug. 5, 1976, 7624583[U]

Int. Cl.[2] F16G *13/16*

U.S. Cl. 59—78.1 **6 Claims**



1. An apparatus for fastening a cover made of steel band or the like on an energy conducting chain, the latter being formed of two link chains and webs of at least one piece connecting the latter with one another, comprising

a web having an upper belt and a lower belt,

said upper belt and said lower belt each being formed with lateral grooves,

clasp means for securing a steel band therein, respectively, said clasp means including lateral clamps cooperating with said grooves, said clasp means engaging in said grooves.

4,084,371

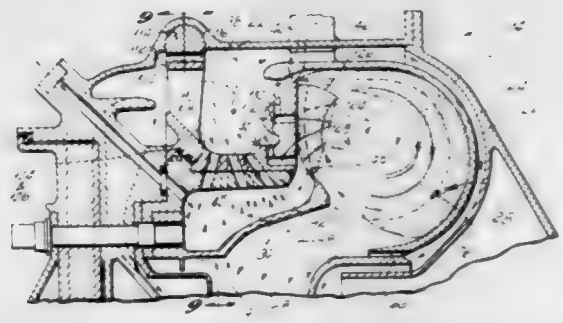
COMBUSTION APPARATUS INCLUDING AN AIR-FUEL PREMIXING CHAMBER

Werner E. Howald, 5970 Crabtree La., Cincinnati, Ohio 45243

Continuation of Ser. No. 491,611, Jul. 24, 1974, abandoned. This application Jul. 21, 1976, Ser. No. 707,326

Int. Cl.[2] F02C *7/22*

U.S. Cl. 60—39.36 **11 Claims**



1. A combustor for generating a hot gas stream by the combustion of a pressurized, premixed air-fuel stream, said combustor comprising:

a housing;

an arcuate combustor liner and baffle mounted within said housing and defining a generally toroidal-shaped combustion chamber;

an air inlet orifice adjacent to the outer periphery of said combustion chamber providing for the entry of a main pressurized airstream thereto;

an air-fuel premixing chamber having an upstream end and a downstream orifice opening into said combustion chamber;

means for injecting fuel into said premixing chamber at said upstream end thereof;

an air inlet plenum chamber formed by said housing and said baffle;

means interconnecting said plenum chamber with said pre-

mixing chamber, whereby pressurized air flows from said plenum chamber into said premixing chamber to form a substantially homogeneous vapor-phase air-fuel mixture in said premixing chamber;

the downstream orifice of said premixing chamber being spaced from said air inlet orifice, whereby said pressurized air-fuel premixture is introduced into said main airstream adjacent to said air inlet orifice;

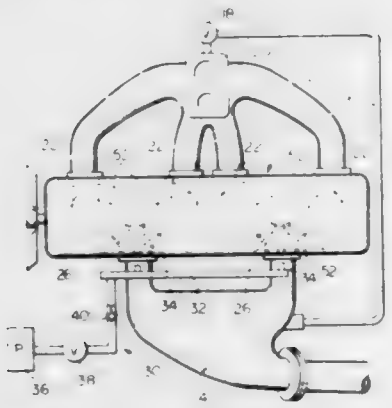
said housing having a circumferential exit formed therein spaced downstream of said liner, said liner presenting a concave surface disposed transversely of the flow of gases in said combustion chamber, whereby the gases in said combustion chamber are forced by the liner to flow in a generally toroidal path from said premixing chamber and said air inlet to said exit.

4,084,372

INTERNAL COMBUSTION ENGINE

Hiroshi Kuroda, No. 2-40-3, Okusawa, Setagaya-ku, Tokyo; Yasuo Nakajima, No. 1-16, Kubiri, Yokosuka City; Yoshimasa Hayashi, Kuden-danchi 4-201, No. 740, Kuden-cho, Totsuka-ku, Yokohama City; Kunihiko Sugihara, No. 1-9-9, Morigaoka, Isogo-ku, Yokohoma City, and Yasuo Takagi, No. 1757-70, Kamigo-cho, Totsuka-ku, Yokohama City, all of Japan

Filed Jun. 16, 1976, Ser. No. 696,707
Claims priority, application Japan, Jun. 24, 1975, 50-78351
Int. Cl.[2] F01N *3/10*; F02M *25/06*
U.S. Cl. 60—278 **4 Claims**



1. In an engine system:

a cylinder block having a plurality of cylinders;

a cylinder head closing said plurality of cylinders, said cylinder head having a plurality of recesses corresponding in number to said plurality of cylinders, said recesses arranged to close said plurality of cylinders, respectively, each of said plurality of recesses having a spherical surface with its center of radius of curvature disposed on the cylinder axis of the corresponding one of said plurality of cylinders,

said cylinder head having a first lateral side and a second lateral side opposite to said first lateral side, having a plurality of intake port bores, each extending from an inlet port within said first lateral side inwardly toward an intake valve port of adjacent one of said cylinders, and having a plurality of exhaust port bores, each extending from an outlet port within said second lateral side inwardly toward at least one of exhaust valve ports of said plurality of cylinders;

a plurality of pistons reciprocally disposed in said plurality of cylinders, respectively, each of said plurality of pistons having a top surface having a non-squish area coextending with the shadow of said spherical surface of the corresponding one of said plurality of recesses which is projected along the cylinder axis, each of said top surfaces having a squish area around and outside of the non-squish area thereof;

an intake manifold disposed on one side of said cylinder head and connected to said inlet ports within said first lateral side of said cylinder head;

an exhaust manifold disposed on the opposite side of said cylinder head and connected to said outlet ports within said second lateral side of said cylinder head;

each of said intake valve ports being offset from a transverse plane passing through the cylinder axis of the corresponding one of said plurality of cylinders in a direction along a longitudinal axis of said cylinder head, said transverse planes being perpendicular to said longitudinal axis of said cylinder head, and said intake valve ports being offset from the cylinder axis of the corresponding one of said plurality of cylinders toward said first lateral side of said cylinder head;

means for introducing a portion of exhaust gases within said exhaust manifold into said plurality of cylinders through their respective intake valve ports;

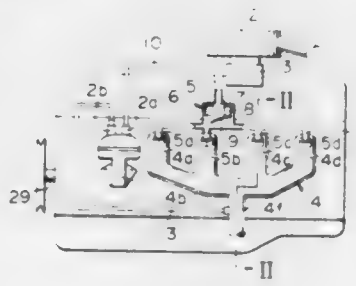
ignition means for causing combustion within said plurality of cylinders, said ignition means comprising a plurality of spark plugs arranged adjacent said plurality of cylinders, each of said plurality of spark plugs having its electrode disposed within an area which is in the neighborhood of a location where thickness of a combustion chamber, as measured from a point on the spherical surface of the recess to the top surface of the corresponding piston along the cylinder axis, is maximum and which is disposed nearer to said first lateral side than said cylinder axis.

4,084,373

SECONDARY AIR SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Masanao Hashimoto; Tadashi Saitou, both of Toyota; Tatsuo Kobayashi, and Isamu Suzuki, both of Oobu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisan Kogyo Kabushiki Kaisha, Oobu, both of, Japan

Filed Jun. 23, 1976, Ser. No. 698,960
Claims priority, application Japan, Mar. 18, 1976, 51-29628
Int. Cl.[2] F02B *75/10*
U.S. Cl. 60—293 **8 Claims**



4. A secondary air supply system for an internal combustion engine having an output shaft and exhaust manifolds, comprising:

a first air supply system including an air passage means having an upstream end opened to the atmosphere and a downstream end connected to the exhaust manifold of the engine;

a reed check valve provided in said air passage means for allowing air to flow only from said upstream end towards said downstream end;

a second air supply system including an air pump having an air delivery port;

a mechanical driving connection for driving said air pump from the output shaft of the engine at a speed proportional to that of the rotational speed of the output shaft;

an air conduit means connecting said air delivery port of said air pump to the exhaust manifold of the engine; and

said air conduit means being a direct conduit and free of control valve means positioned therein.

4,084,374
HYDRODYNAMIC COUPLING

Robert Schlitz, Tettnang, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed Feb. 16, 1977, Ser. No. 769,201
Claims priority, application Germany, Feb. 18, 1976, 2606430
Int. Cl.[2] F16D *33/00*
U.S. Cl. 60—330 7 Claims



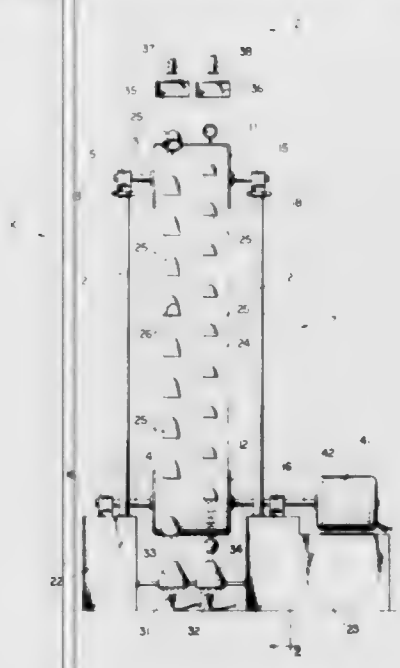
1. In a hydrodynamic coupling comprising two coaxial wheels with confronting annular gorges together defining a toroidal channel of generally circular cross-section, each wheel being provided in its annular gorge with a multiplicity of blades tilted forwardly in its direction of rotation relative to the other wheel, each blade having a leading flank and a trailing flank converging at a free edge proximal to the opposite wheel, said free edge lying in a plane transverse to the axis of rotation,

the improvement wherein said leading and trailing flanks are planar and include with each other a vertex angle in a range of substantially 15° to 20°, said leading flank including with the axial direction a mean angle in a range of substantially 35° to 45°.

4,084,375
METHOD AND APPARATUS FOR GENERATING BUOYANCY POWER VIA ELECTROLYSIS

Janos Horvath, R.R. 1, Box 44, Martinsville, Ind. 46151

Filed Mar. 3, 1977, Ser. No. 774,196
Int. Cl.[2] E02B *9/08;* F03B *13/12*
U.S. Cl. 60—496 11 Claims



1. A buoyancy power-generating device comprising:

(a) means for electrolytically generating hydrogen and oxygen gases under water;

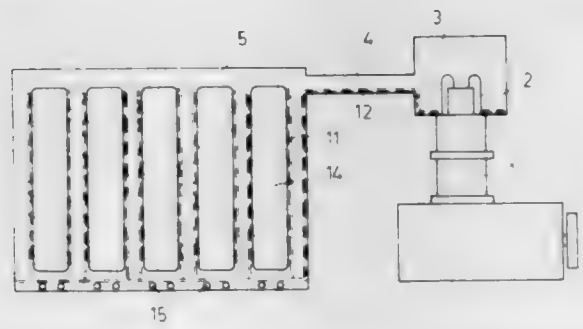
(b) means positioned between said means for generating and the water surface for separately harnessing the buoyant energy contained in the rising hydrogen and oxygen gas bubbles;

(c) and means for separately collecting the hydrogen and oxygen gases for later use.

4,084,376
HEATING SYSTEM

George Albert Apolonia Asselman; Herman Henricus Maria Van der AA, and Roelf Jan Meijer, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 81,337, Oct. 16, 1970. This application Jun. 14, 1972, Ser. No. 262,665
Claims priority, application Netherlands, Oct. 30, 1969, 6916336
Int. Cl.[2] F02G *1/04*
U.S. Cl. 60—523 7 Claims



7. In combination a hot-gas engine operable with a primary heat source, the engine including a heater part and a heating means for said heater part formed as a heat-pipe comprising a heat discharging portion in which at least, a part of said heater part is situated, a heat-receiving portion for receiving heat from said primary heat source, and a duct connecting said two portions, heat-transporting, vaporizable liquid medium in said heat pipe, a continuous first capillary layer on inner surfaces of said heat pipe for conducting condensate from the heater to said heat-receiving portion, and a secondary heat source within said heat-receiving portion of the heat pipe comprising at least one inner container containing a heat-accumulating, meltable solid material and a second capillary layer thereon communicating with said first capillary layer, said secondary heat source operable to provide heat to said heat transporting-liquid medium in said heat-receiving portion of the heat pipe independent of heat from said primary heat source, whereby when heat is conducted from the primary heat source to said heat-receiving portion, said liquid medium vaporizes, and flows to, condenses on, and transmits heat to said heater and to said secondary heat source inner container wherein said heat-accumulating material becomes melted, said condensate forming on said heater in said heat-discharging region flowing via said capillary layers to said heat-receiving portion, for re-evaporation.

4,084,377
BRAKE SYSTEM FAILURE CONDITION INDICATOR

Robert F. Gaiser, Stevensville, Mich., assignor to The Bendix Corporation, South Bend, Ind.

Filed Nov. 5, 1976, Ser. No. 739,240
Int. Cl.[2] B60T *11/20*
U.S. Cl. 60—535 5 Claims

1. A master cylinder comprising:

a housing having a reservoir connected to a first bore and second bore located therein, said first bore being connected to said second bore;

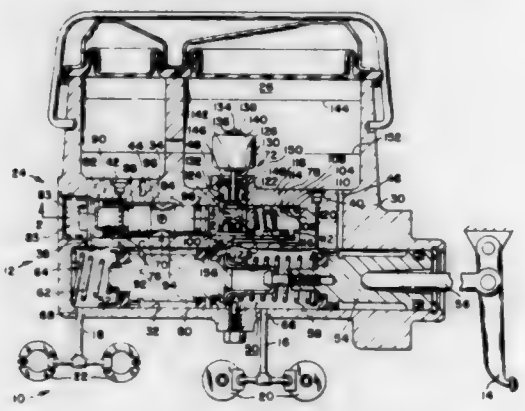
fluid level responsive means for controlling the communication of fluid between said reservoir and second bore, said

fluid level responsive means including a fleat, a stem and a valve, said float being located in said reservoir, said stem extending from said float into said second bore, said valve being attached to said stem and located in said second bore, said float holding said valve against a seat when the fluid in said reservoir is above a predetermined level;

a first operational piston located in said first bore;

a second operational piston located in said first bore, said first and second operational pistons defining a first power chamber therebetween and a second power chamber between said second operational piston and a closed wall of said first bore, said first and second operational pistons initially responding to an input force for interrupting communication of fluid beween said reservoir and said first and second power chambers and thereafter pressurizing the fluid in the first and second power chambers to produce first and second fluid output signals which are communicated to said second bore;

shuttle piston means including a first spool, a sleeve and a second spool located in said second bore, said first spool having a first diameter separated from a second diameter by a shoulder, said first spool having a groove located in



said second diameter, said sleeve surrounding said first diameter of said first spool, said first fluid output signal acting on said sleeve and said first diameter of the spool to position said groove adjacent a switch means, said second spool being separated from said first spool to establish a fluid actuation chamber in said second bore, said valve of the fluid level responsive means being located in said fluid actuation chamber, said float holding said valve means against its seat to allow said second fluid output signal to act on the second spool and pressurize fluid in said actuation chamber to maintain the first spool in stationary position; and

said switch means being responsive to movement of said shuttle piston means for informing an operator of a fluid condition resulting from a pressure differential across said shuttle piston means, said pressure differential occurring in a first condition whenever a predetermined fluid level in said reservoir moves said fluid level responsive means and permits fluid communication between the second bore and said reservoir and in a second condition whenever a differential pressure exists across the second operational piston.

4,084,378

WASTE GATE CONTROL FOR SUPERCHARGED ENGINES

William J. Blake, Rte. 1, Box 403, Muskogee, Okla. 74401

Filed Sep. 1, 1976, Ser. No. 719,882
Int. Cl.[2] F03B *23/00*
U.S. Cl. 60—602 4 Claims

1. A waste gate for an internal combustion engine having an exhaust gas driven supercharger interposed in its exhaust gas pipe supplying air under pressure greater than atmospheric to the engine intake manifold, comprising:

a housing having a base portion provided with a passageway therethrough forming an inlet port and an outlet port,

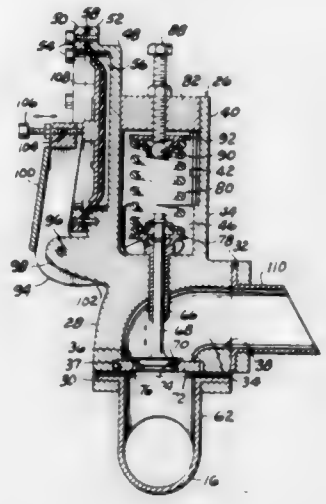
said housing having a hollow cylindrical portion and having a transversely apertured web securing said cylindrical portion to said base in spaced-apart relation coaxial with the inlet port;

means connecting said base with the exhaust gas pipe upstream with respect to the location of said supercharger for exhaust gas communication with the passageway,

said base having a bore coaxial with the inlet port;

a valve having one end portion of its stem disposed between said base and said cylindrical portion and slidable intermediate its ends within the housing bore and having a head including a seat for opening and closing the passageway inlet port;

spring means supported by said cylindrical portion for normally biasing said valve to an inlet port closed position;



a substantially dish-shaped diaphragm support formed on said cylindrical portion;

a diaphragm overlying and secured by its marginal edge portion to the marginal edge portion of said support for forming a chamber remote from said valve and said spring means;

tubular means connecting the chamber with said intake manifold,

said diaphragm being movable in one direction in response to an increased intake manifold pressure; and,

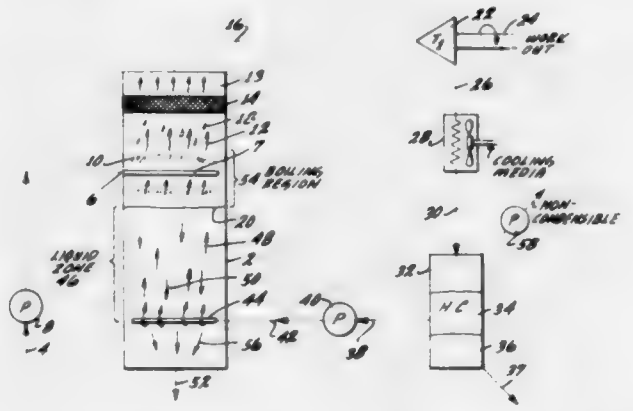
lever means pivotally supported by said housing and operatively contacted by said spring means for normally biasing said diaphragm in an opposite direction in response to a decrease in intake manifold pressure.

4,084,379

ENERGY CONVERSION SYSTEM

Everett H. Schwartzman, 2751 Toledo St., Unit 309, Torrance, Calif. 90503

Filed Aug. 22, 1975, Ser. No. 606,790
Int. Cl.[2] F03G *7/00*; F01K *25/00*
U.S. Cl. 60—641 22 Claims



1. An energy conversion system for extracting heat from a heated aqueous fluid source material selected from the group

consisting of geothermal and solar heated source fluids, and waste heat water solutions from power plants and industrial processes, which may contain dissolved solutes therein, comprising the steps of:

introducing a working fluid and said heated fluid source material into a vessel to effect contact therebetween for effecting direct heat transfer from said heated fluid source material to said working fluid whereby the combined vapor pressure of the heated aqueous source material and of working fluid being equal to the working pressure in the vessel thereby to effect boiling of the mixture of heated aqueous fluid source material and the working fluid, the temperature of boiling of said mixture being lower than the individual boiling points of each of the heated aqueous fluid source material and of the working fluid at the working pressure of said vessel such that said working fluid is vaporized to produce a vapor effluent while said heated fluid source material is cooled,

effecting substantially unobstructed counter current flow of said working fluid and said heated aqueous fluid source material through said vessel to inhibit and to minimize precipitation of dissolved solutes in said vessel as said heated aqueous fluid source material is cooled and preventing accumulation of precipitated solids from said fluid source material on the walls of said vessel by flowing a portion of the working fluid along the walls of said vessel,

said working fluid being immiscible with said heated fluid source material,

withdrawing said cooled fluid source material from said vessel,

condensing the working vapor from said vessel into a working liquid, and

recirculating said condensed working liquid to effect introduction of the formed working liquid into said vessel on a continuous basis.

9. A method of generating power from a heated aqueous fluid source material selected from the group consisting of geothermal and solar heated source fluids, and waste heat water solutions from power plants and industrial processes, which may contain dissolved solutes therein, comprising the steps of:

bringing a transfer fluid into direct heat transfer relationship with the heated fluid source material to effect transfer of heat from said source material to said transfer fluid,

bringing said transfer fluid into direct heat transfer relationship with a working fluid to effect transfer of heat to said working fluid to vaporize the working fluid to form a working vapor effluent,

said step of direct heat transfer from said transfer fluid to said working fluid being conducted in a third fluid in which at least said working fluid is substantially insoluble so as to prevent loss of at least said working fluid,

condensing said vapor effluent to a working liquid after said vapor has passed through said power extracting device,

pressurizing and recirculating said working liquid to carry out the process on a continuous basis, and

recirculating said transfer fluid to carry out the process on a continuous basis.

4,084,380

OIL FENCE

Rudolf G. Hallhagen, Goteborg, Sweden, assignor to AB Sjuntorp, Sjuntorp, Sweden

Filed Jun. 3, 1976, Ser. No. 692,282

Int. Cl.[2] E02B *15/04*

U.S. Cl. 61—1 F **5 Claims**

1. Oil fence adapted for the defining of impurities on a water surface, comprising an elongated web of preferably impregnated fabric forming a first portion stretching in the longitudinal direction of the web at a first border of the same and comprising double layers of fabric separated from each other and extending about a floating body, at least one second portion stretching in the longitudinal direction of the web at a second border of the same and comprising separate double layers of fabric and containing sinking weights, and at least one third portion between the first and the second portions comprising a single layer of fabric, said fabric being a woven textile material in one single piece forming said double and single layers, the



threads weft of which in the double layers of the first and second portions being divided into two groups, each one forming one layer and in the single layer of the third portion the threads of the weft being interwoven with each other to form an integrated single layer.

4,084,381

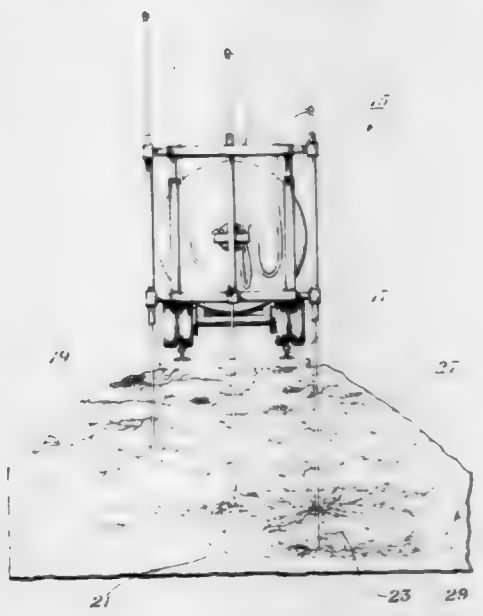
STABILIZATION OF EARTH SUBSURFACE LAYERS

Gene Cain; Joe Doyle Teague, both of Fort Worth, and Paul James Wright, Euless, all of Tex., assignors to Woodbine Corporation, Fort Worth, Tex.

Filed Jan. 19, 1977, Ser. No. 760,454

Int. Cl.[2] E02D *3/14*; E01B *1/00*

U.S. Cl. 61—36 C **15 Claims**



1. A method of treating sub-surface layers of the earth for controlling movement of sub-surface water and building strength of said sub-surface layers comprising injecting at a plurality of predetermined depths and at a plurality of predetermined, spaced-apart locations a lime-fly ash slurry consisting essentially of water, particulate hydrated lime, particulate fly ash and surfactant; said particulate lime and fly ash being present as particulate solids in a proportion within the range of 25–60 percent by weight of said water; said particulate solids comprising lime in a proportion of 25–50 percent by weight and fly ash in a proportion of 75–50 per cent by weight; and said surfactant being present in a concentration within the range of 0.01–1 percent by volume; such that said sub-surface layers are treated insitu to obtain additional strength and to obtain stabilized moisture content without requiring removal,

admixture into homogeneous mass, replacement, and compaction.

4,084,382

METHOD AND COMPOSITION FOR PREVENTING WATER CONTAMINATED WITH INDUSTRIAL WASTE SEEPING THROUGH SOIL CONTAINING SAID WATER

Arthur G. Clem, Des Plaines, Ill., assignor to American Colloid Company, Skokie, Ill.

Division of Ser. No. 605,234, Aug. 18, 1975, Pat. No. 4,021,402, which is a division of Ser. No. 472,668, May 23, 1974, Pat. No. 3,949,560, which is a continuation-in-part of Ser. No. 330,200, Feb. 27, 1973, abandoned. This application Dec. 23, 1976, Ser. No. 753,712

Int. Cl.[2] E02D *3/12*

U.S. Cl. 61—36 R **6 Claims**

1. A method for producing a composition useful in forming an enclosure for containing water contaminated with water-soluble industrial waste salts which comprises forming an intimate admixture of dry soil and a sealing effective amount of soil sealant composition consisting essentially of an intimate dry admixture of (a) unhydrated bentonite; (b) a water-soluble dispersing agent selected from the group consisting of a water-soluble salt of phosphoric acid, a water-soluble sulfate of the formula $ROSO_3X$ where R is hydrocarbon of from 8 to 32 carbon atoms, and X is a member selected from the group consisting of an alkaline metal or ammonium, and a water-soluble salt of leonardite; and, (c) a water-soluble polymer selected from the group consisting of polyacrylic acid, water-soluble salts of polyarcylic acid, hydrolyzed poly-acrylonitrile, polyvinyl acetate, polyvinyl alcohol, copolymers of the foregoing, and a copolymer of acrylic acid and maleic anhydride, the amount of water-soluble polymer in said soil sealant composition being from 0.1% to 3.0%, by weight, the weight ratio of water-soluble dispersent to water-soluble polymer being from 6:1–36;

and contacting the resulting dry mixture of soil and soil sealant composition with water containing substantially no water-soluble industrial waste salts thereby hydrating the bentonite.

4,084,383

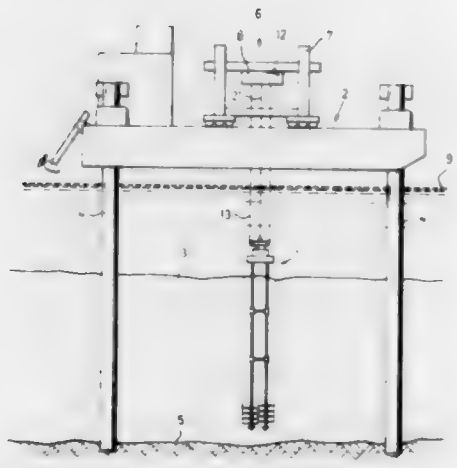
APPARATUS AND METHOD FOR MULTIPLE SPINDLE KNEADING FOR IMPROVING GROUND

Yoshinori Kukino; Mitsuo Miura, both of Tokyo, and Hayao Aoyagi, Chiba, all of Japan, assignors to Takenaka Komuten Co., Ltd., Osaka, Japan

Filed Nov. 26, 1976, Ser. No. 744,990

Int. Cl.[2] E02D *3/12*

U.S. Cl. 61—36 R **11 Claims**



1. A method for improving ground by using a kneading apparatus comprising a plurality of agitation spindles disposed in parallel to one another for agitating and kneading soft soil layers and the like, agitation vanes attached to the lower portion of each agitation spindle to form a kneading zone and means for feeding a hardener selectively to the upper portion or the lower portion of said kneading zones, said method comprising piercing said agitating apparatus into a ground to be improved along a desired depth while preliminarily disturbing a soil layer of the ground, injecting and supplying the hardener to said kneading zone of the agitation spindle, agitating and kneading soft soil with the hardener to thereby harden and improve the lower portion of the soil layer to be improved, then drawing up the kneading apparatus and injecting and supplying the hardener above the kneading zone while the kneading apparatus is being drawn up, to thereby harden and improve the preliminarily disturbed soil layer entirely up to the top end thereof.

4,084,384

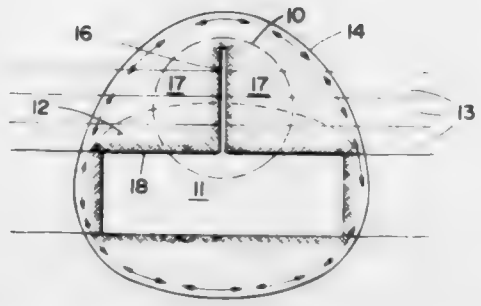
ADVANCED SLOT STRESS CONTROL METHOD OF UNDERGROUND EXCAVATION

Shosei Serata, 1229 8th St., Berkeley, Calif. 94710

Filed Sep. 13, 1976, Ser. No. 722,792

Int. Cl.[2] E01G *3/00*

U.S. Cl. 61—42 **5 Claims**



1. A method for excavating a longitudinally extending underground opening, comprising the steps of initiating said underground opening at an excavation face, cutting at least one longitudinally extending slot through said excavation fact to interrupt and relieve the lateral shear stresses in the boundary formation around said excavation face, and thereafter excavating said face and continuing to cut said longitudinally extending slot ahead of said excavation face and wherein said longitudinally extending slot is cut generally orthogonally to the strata through which the excavation is proceeding to form a stress envelope beyond the distal extent of said at least one slot.

4,084,385

PILE HANDING METHODS

George I. Boyadjieff, Anaheim, Calif., assignor to Varco International, Inc., Orange, Calif.

Division of Ser. No. 710,450, Aug. 2, 1976, Pat. No. 4,051,587. This application Jan. 10, 1977, Ser. No. 758,078

Int. Cl.[2] E02D *7/00*; B23P *19/04*

U.S. Cl. 61—53.5 **15 Claims**



1. The method of driving a pile into an offshore seabed that comprises:

supporting on a pile guide the weight of a pile handling tool which includes a jacking mechanism and pile aligning means above the jacking mechanism;

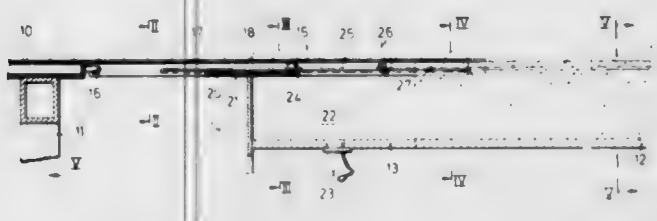
aligning a pile section with said jacking mechanism by said aligning means;
jacking said pile section longitudinally downwardly relative to and within said pile guide by operation of the jacking mechanism while said tool is supported by the guide;
moving said aligning means laterally from an active position to a retracted position;
moving a second pile section to a position above the first section while said aligning means are in said retracted position;
returning said aligning means to said active position;
aligning said second section with said first section by said aligning means,
connecting said sections together,
moving said aligning means to retracted position again; and
driving said connected pile sections downwardly within said jacking mechanism and guide and into the seabed by force exerted against an upper portion of said second section while said aligning means are in said retracted position.

4,084,386

APPARATUS FOR AND A METHOD OF TUNNELLING

Walter Hohn, Lunen, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Germany

Filed Dec. 22, 1976, Ser. No. 753,514
Claims priority, application Germany, Dec. 24, 1975, 2558670
Int. Cl.[2] E21D *9/06*
U.S. Cl. 61—85 **18 Claims**



1. A drive shield for use in tunnel driving operations; said shield comprising elongate drive members arranged side-by-side, means for supporting and guiding the drive members for individual displacement in the driving direction, a rear tail member provided for each drive member, the rear tail members being shaped to provide recesses open at the interior and combining to form a rear shield, means, including at least part of the rear shield, for defining a concrete reception space into which fluid concrete is introduced to create a tunnel lining, a bearing surface provided at least partially by covers extending over the recesses of the tail members wherein the defining means comprises a structure forming a front wall nearest the drive members which structure engages on said bearing surface.

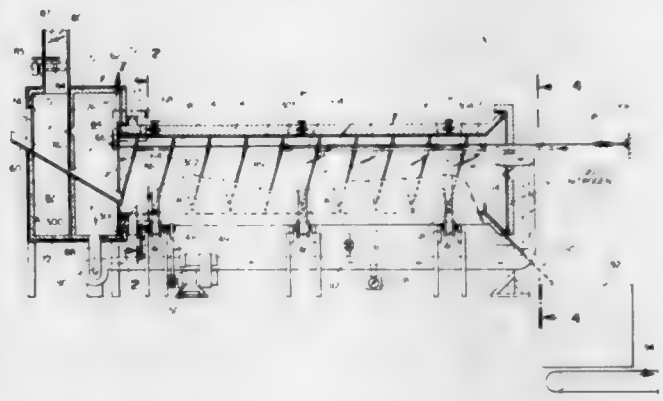
4,084,387

APPARATUS AND PROCESS FOR REFRIGERATING MATERIALS

John B. Schorsch, Rydal; William E. Graul, Drexel Hill, both of Pa., and David Barash, Ridgefield, Conn., assignors to The Union Corporation, Verona, Pa.

Division of Ser. No. 587,546, Jun. 17, 1975, Pat. No. 4,033,142, which is a continuation of Ser. No. 365,117, May 30, 1973, Pat. No. 3,906,743. This application Mar. 11, 1977, Ser. No. 776,599
Int. Cl.[2] F25D *13/06*
U.S. Cl. 62—63 **5 Claims**

1. A process for refrigerating material, comprising the steps of: introducing the material into a drum having an interior configuration which will transport the material through the drum upon rotation of the drum; rotating said drum so that said material is transported through said drum; and simultaneously introducing a refrigerant into said drum so as to refrigerate said material, said refrigerant being introduced in the form of a low temperature gas and causing said gas to flow in a direction counter to the direction of travel of said material through said drum by withdrawing some of the gas and re-introducing it at



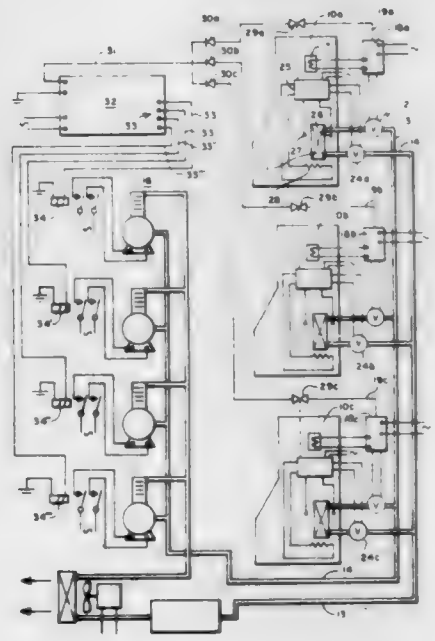
and through the end of the drum which is downstream when viewed in the direction of travel of material through said drum.

4,084,388

REFRIGERATION CONTROL SYSTEM FOR OPTIMUM DEMAND OPERATION

Lorne W. Nelson, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 8, 1976, Ser. No. 739,405
Int. Cl.[2] F25D *21/06*
U.S. Cl. 62—152 **1 Claim**



1. In an energy conservation control system for controlling a plurality of refrigeration compressors to maintain the operating capacity of the operating compressors at a level to satisfy the load to each of a plurality of evaporators controlled by a control device thereby maintaining the total operating capacity dependent upon the load of the evaporator having the greatest load comprising;
a control having an input adapted to be connected to the control device of each of the evaporators wherein a control signal from each control device is indicative of the cooling load of the evaporator and an output adapted to be connected to each of the refrigeration compressors,
said input comprising means for selecting the control signal of the control device of the evaporator having the greatest load to control said output,
said output being adapted to selectively energize the refrigeration compressors dependent upon the magnitude of said control signal to maintain the total operating refrigeration capacity sufficient to satisfy the load of the evaporator having the greatest demand,
said control device is a temperature controlled valve to

control the flow of refrigerant of each evaporator to maintain the temperature at a predetermined value,

said control signal of each control device is an electric signal proportional to the flow of refrigerant of the evaporator so that as the flow increases to a maximum said control signal is a maximum,

said means for selecting a signal of said input comprising a diode to allow the largest of said control signals to pass to said output, and

said output being an electric signal providing for the control of the total operating capacity of the refrigeration compressors proportional to said control signal passing to said input,

said output comprising a circuit for a sequential operator for energizing the plurality of refrigeration compressors in sequence, said output increasing the number of compressors in operation depending on the magnitude of said control signal passing through said diode from the control device of the evaporator having the greatest load, and

said circuit comprising circuit means adapted to be controlled by means responsive to a need of defrost of the evaporator to disconnect said input from the control device of the evaporator being defrosted to allow another control signal of a control device to control the operating capacity of the refrigeration compressors.

4,084,389

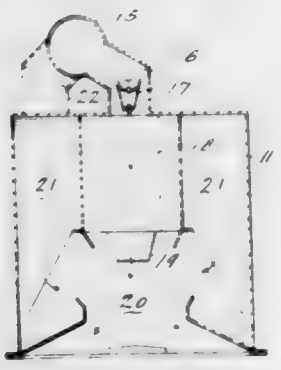
AIR CONDITIONING APPARATUS

Gershon Meckler, 7425 Democracy Blvd. Unit 212, Bethesda, Md. 20034

Continuation of Ser. No. 572,792, Apr. 29, 1975, abandoned. This application Oct. 26, 1976, Ser. No. 735,548

Int. Cl.[2] F25D *17/00, 17/06;* **F24F** *7/00, 13/00*

U.S. Cl. 62—179 **2 Claims**



1. Apparatus for delivering air for air conditioning a zone of a building, said apparatus comprising, in combination, a chamber operatively connected to receive a first stream of primary, conditioned air and to deliver such air to the zone, means associated with said chamber operable to cause such air being delivered to the zone to induce a flow of air from within said chamber for mixture and delivery to the zone with such primary conditioned air, means providing a path for circulation of air from the zone to the interior of said chamber, means operable to deliver a second stream of primary, conditioned air to the interior of said chamber, and means for controlling the flow of air through said means providing a path and through said means operable to deliver a second stream of primary air.

4,084,390

APPARATUS FOR PACKAGING BULK MATERIAL

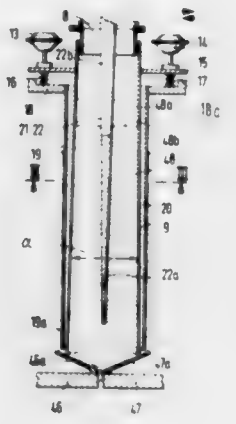
Florian Schmachtel, Grossen-Linden, and Heinrich Mueller, Lindenstruth, both of Germany, assignors to Rovema Verpackungsmaschinen GmbH & Co. KG., Giessen, Germany

Filed Apr. 1, 1977, Ser. No. 783,956

Claims priority, application Germany, Apr. 8, 1976, 2615270

Int. Cl.[2] B65B *31/04*

U.S. Cl. 53—112 A **18 Claims**



1. An apparatus for packaging of powdery bulk materials, comprising:

a flexible tube bag forming machine having a generally vertically aligned hollow fill pipe means thereon around which is formed a flexible tube container;

cross sealing jaw means located below the lower end of said hollow pipe means and movable laterally back and forth for periodically closing and sealing the lower end of the material forming said flexible tube container;

bulk material measuring and dispensing means for measuring and dispensing of bulk material portions, said dispensed bulk material portion being received in said fill pipe means only after said cross sealing jaw means has closed and sealed said lower end of said flexible tube container;

suction means for evacuating gas contained in said bulk material portion in said fill pipe means, said suction means comprising at least one suction probe having suction openings over the outer surface thereof, said suction probe being arranged in the interior of said fill pipe means; and

expelling means for simultaneously expelling said bulk material portion from said fill pipe means into said flexible tube container and effecting the removal of said flexible tube container from said lower end of said fill pipe means.

4,084,391

AUTOMATIC PACKAGING APPARATUS

Winfried Wilbur Williams, Sr., Salisbury, and David Clancy, Canaan, both of Conn., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 557,093, Mar. 10, 1975, Pat. No. 3,973,373. This application Jun. 1, 1976, Ser. No. 691,870

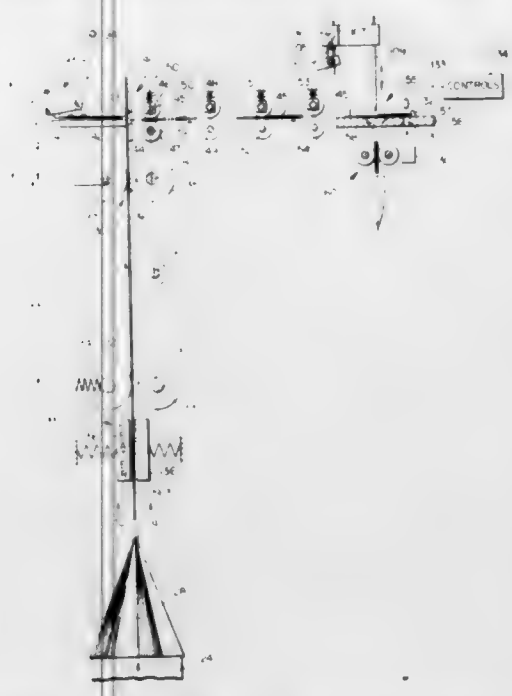
The portion of the term of this patent subsequent to Aug. 10, 1993, has been disclaimed.

Int. Cl.[2] B65B *63/04*

U.S. Cl. 53—120 **8 Claims**

1. Apparatus for automatically packaging towelettes and comprising means for positioning open envelopes in succession at an insertion station, characterized by means for feeding the longitudinally folded leading end of a web of absorbent towellete material in a substantially vertical upward path, means for severing successive strips of predetermined length from said longitudinally folded moving leading end at the end of said path, first transverse fold means for folding each of said strips in succession into a J-fold condition wherein the longer leg of the J is about twice the length of the shorter leg and each first folded strip is moved along a substantially horizontal path, and second transverse fold means for folding the longer leg of the J of each said first folded strip in succession substantially about

its midpoint to form a folded towelette of about three times the original longitudinal folded strip thickness while at the same



time thrusting it substantially vertically downward into an envelope positioned at said station in timed relation to receive it.

4,084,392

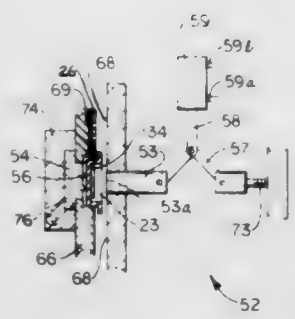
APPARATUS FOR PRINTING AND FEEDING CAPS TO A BOTTLE CAPPING MACHINE

Leo J. Von Hagel, North Massapequa, N.Y., assignor to Honeywell Farms, Inc., New York, N.Y.

Division of Ser. No. 522,731, Nov. 11, 1974, abandoned. This application Oct. 7, 1976, Ser. No. 730,589

Int. Cl.[2] B65B *61/00*

U.S. Cl. 53—131 5 Claims



1. In an apparatus for filling, capping and dating bottles, comprising means for feeding bottles through said apparatus, bottle filling means, means for feeding plastic caps to the filled bottles and means for applying said caps to said bottles, the improvement comprising means for printing a date on said caps before they are applied to the bottles, said printing means including cap-imprinting means and indexing means for accurately locating the caps successively in printing position in fixed relationship to said imprinting means, said indexing means including pawl means, means for driving said pawl means, cap engaging means, a toothed ratchet wheel operatively connected to said cap engaging means and driven by said pawl means, the construction and arrangement being such that during the driving of said pawl means said pawl means engages a tooth of said ratchet wheel to move said ratchet wheel and means to wedge said pawl means against the teeth of said ratchet wheel to prevent movement of said ratchet wheel.

4,084,393

APPARATUS FOR MAKING AND FILLING HINGED BOXES OF A FOLDABLE MATERIAL

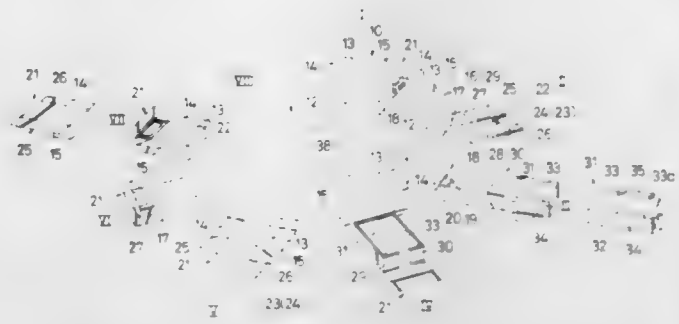
Heinz Focke, Verden, Aller, Germany, assignor to Focke & Pfuhl, Verden, Aller, Germany

Filed Aug. 21, 1975, Ser. No. 606,826

Claims priority, application Germany, Aug. 21, 1974, 2440006

Int. Cl.[2] B65B *19/20*

U.S. Cl. 53—137 84 Claims



1. In an apparatus for producing and filling hinged boxes from a foldable, blank, said blank having front, rear and end walls, side walls formed from lateral flaps, and a blank section forming a hinged lid; the improvement comprising: a rotating turret, said turret having a number of pockets; each pocket open radially outwards and upwards for receiving a blank, punch means for pressing said blank into a pocket, said punch means comprising a punch plate, wherein a free surface of said pocket is covered by said rear wall of the blank, means for folding said end wall, said front wall and side walls into an upright position on the radial inner side of said pocket and said lateral flaps into an upright position and wherein said blank sections forming the hinged lid lie in the same plane as the rear wall of said blank and contents are insertable in said pocket in a radial direction in the plane of said rear wall of the blank.

4,084,394

HARVESTER

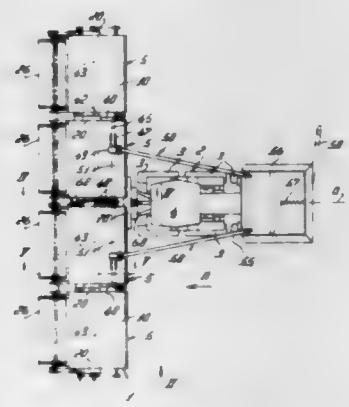
Cornelis van der Lely, Zug, Switzerland, assignor to C. van der Lely N.V., Maasland, Netherlands

Filed Aug. 26, 1975, Ser. No. 607,762

Claims priority, application Netherlands, Sep. 2, 1974, 7411599

Int. Cl.[2] A01D *45/02*

U.S. Cl. 56—14.6 7 Claims



1. A harvester machine for attachment to a tractor comprising a plurality of harvester units, said units each having a frame and the frames of the units being interconnected by pivot means which are provided at their adjacent sides, said units extending transversely side by side relative to the direction of operative travel, each said unit comprising cutting, threshing and cleaning mechanisms, common coupling means for said units on the machine for connection to a three point lifting hitch provided at the front of the tractor, a container attached at the rear of the tractor wherein a delivery device is posi-

tioned to receive processed crop from at least one harvester unit, said device having at least one outlet conduit extending over the tractor to its rear with an opening above said container.

4,084,395

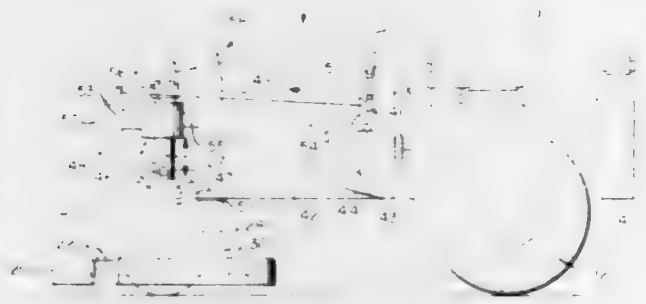
WORKING VEHICLE

William G. Nannen, P.O. Box 242, Smethport, Pa. 16749

Continuation-in-part of Ser. No. 520,153, Nov. 1, 1974, abandoned. This application Apr. 14, 1976, Ser. No. 676,891

Int. Cl.[2] A01D *35/26*

U.S. Cl. 56—15.4 **9 Claims**



1. A lawn mower comprising:

a body, including a plurality of ground-engaging wheels and a frame which includes a hood member secured to said frame, said hood member including a lower portion and an upwardly extending generally cylindrical upper portion adapted to receive a rotatable member therein;

a bell-shaped rotatable cutting member including grass cutting means secured to a main portion thereof, said rotatable cutting member including a sleeve portion extending vertically from a top part of said main portion and rotatably secured in a journaled relationship by at least a pair of bearings within and spaced along said upper portion of said hood member, the rotation of said cutting means defining a path contained within the area of said lower portion of said hood member, said cutting means including a flange portion extending outwardly from a bottom edge of said main portion, and a plurality of blades secured at spaced intervals to said flange portion;

power means supported on said body for rotating said rotatable member to perform work by the rotation of said grass cutting means at a predetermined position relative to ground;

a spindle operatively connected to at least one of said ground-engaging wheels and including a portion rotatably journaled substantially entirely within and closely adjacent to the sleeve portion of said rotatable member along substantially the entire length thereof by at least a second pair of bearings spaced along said sleeve portion of said rotatable member, said first and said second pairs of bearings being on a common axis, whereupon said one wheel is rotatable within the area circumscribed by the rotation of said work portion of said rotatable member; and

means secured to said frame and to said hood member for adjusting the cutting height of said cutting means as a unit which includes said hood member.

4,084,396

ADJUSTABLE ROW SPACING FORAGE HEAD

David P. Fritz; Rex O. Weigand, and Gary L. Fleming, all of Newton, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jan. 19, 1976, Ser. No. 650,142

Int. Cl.[2] A01D *45/02*

U.S. Cl. 56—98 **20 Claims**

1. In a mobile crop harvester:

a frame;

a pair of normally inclined row crop harvesting units, each of said units having mechanism which includes:

means defining an elongated, fore-and-aft extending passage and having a normally elevated rear discharge end and a normally lowered front inlet end,

cutting means at said inlet end for severing standing crops approaching the passage as the harvester advances, and

a pair of opposed cooperating conveyors along said passage-defining means for elevating the crops severed by said cutting means through said passage and out said discharge end;

drive means on said frame for said mechanisms; and



means mounting said units on said frame for lateral swinging movement relative to one another to permit selective changing of the spacing of the passages at said inlet ends without changing the spacing at said discharge ends,

said conveyors being swingable with their respective units and each including a pair of rotatable members at said opposite ends and an endless, flexible element looped about said members, at least one of said units having its axis of swinging movement coinciding with the axis of rotation of one of the members at said discharge end.

4,084,397

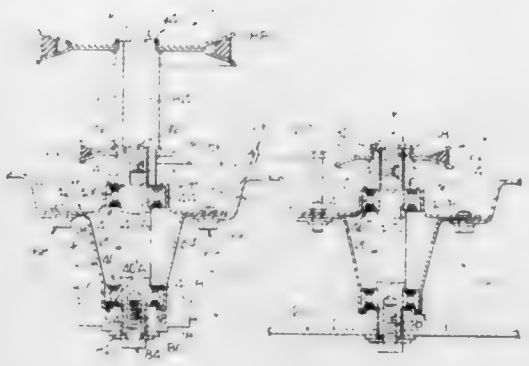
ARBOR ASSEMBLY FOR ROTARY MOWERS

Laurence R. McGrath, Cedarburg, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 644,881, Dec. 29, 1975, abandoned. This application Mar. 7, 1977, Ser. No. 774,813

Int. Cl.[2] A01D *55/18*

U.S. Cl. 56—255 **7 Claims**



1. In combination, an arbor assembly for use with rotary mowers comprising a shaft, said shaft having an intermediate portion of greater diameter and opposite upper and lower end portions of reduced diameter whereby to define a shoulder between each of said end portions and said intermediate portion, an upper and a lower antifriction bearing assembly respectively positioned on the respective opposite end portions, each of said antifriction bearing assemblies comprising an inner race and an outer race, the inner race of each of said antifriction bearing assemblies being engaged with its corresponding reduced diameter end portion with an interference fit and also seating against the shoulder contiguous the corresponding

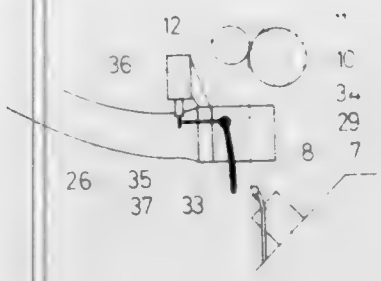
reduced diameter end portion of said shaft, the outer race of each of said bearing assemblies being adapted to be engaged by a corresponding bearing retainer means supported by the mower housing, the outermost portion of each of said reduced diameter end portions lying beyond the corresponding bearing assembly and being splined on the exterior surface thereof, a pulley subassembly in splined engagement with the splines of said upper end portion of said shaft, and a mower blade subassembly carried by said lower end portion of said shaft, with a portion of said mower blade subassembly being in splined engagement with the splines of said lower end portion, each of the opposite end portions of said shaft being tapped with an internal thread for receiving a cap screw, the cap screw at said upper end portion serving to retain said pulley subassembly assembled to said upper end portion of said shaft, the cap screw at said lower end portion of said shaft serving to retain said mower blade subassembly assembled to said lower end portion of said shaft, said mower blade subassembly comprising a blade adaptor positioned immediately contiguously beneath said lower bearing assembly, said blade adaptor being positioned coaxially about the reduced diameter lower end portion of said shaft and including splines which are in splined engagement with the splines on said reduced diameter lower end portion of said shaft, a mower blade positioned coaxially about said reduced diameter lower end portion of said shaft and immediately contiguous the under surface of said blade adaptor, said mower blade having a radial clearance relative to said reduced diameter lower end portion of said shaft permitting relative rotation between said mower blade and said shaft under shock load conditions on said mower blade, said cap screw at said lower end portion of said shaft being engaged with the internally tapped thread at said lower end portion of said shaft to retain said mower blade subassembly assembled to said lower end portion of said shaft.

4,084,398

MOBILE SERVICING ARRANGEMENT FOR OPEN-END SPINNING MACHINES

Fritz Stahlecker, Josef-Neidhart-Str. 18, 7341 Bad Uberkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Sussen, both of Germany

Filed Jun. 7, 1976, Ser. No. 693,150
Claims priority, application Germany, Jun. 7, 1975, 2525560
Int. Cl.² D01H *13/22*
U.S. Cl. 57—34 R **29 Claims**



18. A servicing arrangement displaceable along an open-end spinning machine having a plurality of individual spinning stations, each of which produces a running thread, the arrangement comprising: means for monitoring the thread at each spinning station including at least one measuring head means associated with the running thread for selectively detecting the quality of the running thread and providing a control signal to a spinning machine control means, and

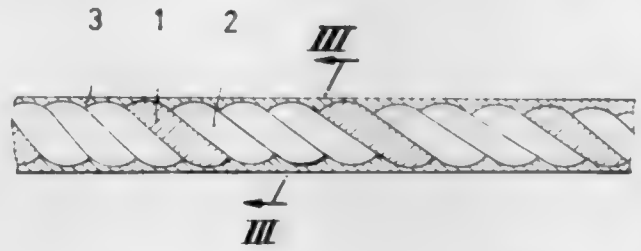
wherein a plurality of measuring head means are provided and arranged so as to be selectively aligned with an equal number of adjacent spinning stations, and a common setting means for displacing said measuring head means from a rest position to a thread detecting position in response to a signal from the control means is provided.

4,084,399

GUT FOR RACKET

Toyonosuke Kanemaru, Tokyo; Yukuo Hisatomi, and Takafumi Nishimoto, both of Yokohama, all of Japan, assignors to Nippon Carbon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1976, Ser. No. 716,685
Claims priority, application, Japan, Mar. 31, 1976, 51-34316
Int. Cl.² D02G *3/04, 3/36, 3/44*
U.S. Cl. 57—140 C **20 Claims**



1. A gut for a racket comprising a combination of carbon fibers and organic fibers, and synthetic resin mixed with said carbon fibers which are in the form of chopped carbon fiber filaments.

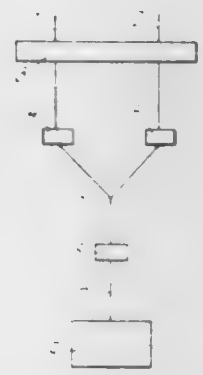
6. A gut for a racket comprising a combination of carbon fibers and synthetic fibers and at least one of the two kinds of fibers is twisted to produce a combined fiber gut having a substantially linear relation between tensile modulus and elongation and wherein the modulus value ranges from about 260 Kg./gut to about 290 Kg./gut.

4,084,400

METHOD OF MAKING SELF-TWISTED FIBROUS PRODUCT FROM AT LEAST TWO STRANDS

Pavel Mikhailovich Movshovich, Pechatnikov pereulok, 3, kv. 8, Moscow; Viktor Pavlovich Khavkin, ulitsa Vatutina, 11, kv. 4, Moskovskaya oblast, Khimki; Gennady Konstantinovich Maximov, Kaspiiskaya ulitsa, 20, korpus 3, kv. 137, Moscow; Lev Nikolaevich Ivanov, Kotelnicheskaya naberezhnaya, 25/8, kv. 74, Moscow; Natalya Borisovna Babushkina, Chasovaya ulitsa, 5b, kv. 15, Moscow; Vasily Ivanovich Kulikov, Varshavskoe shosse, 18, korpus 3, kv. 412, Moscow; Boris Semenovich Shkrabov, ulitsa Udaltsova, 73a, kv. 34, Moscow; Sergei Vladimirovich Nezelenov, Kineshemskoe shosse, 8a, kv. 6, Kostroma; Gennady Nikolaevich Shutov, ulitsa Sovetskaya, 119, kv. 101, Kostroma; Leonid Nikiforovich Tsygulev, Prospekt textilschikov, 94a, kv. 103, Kostroma, and Vadim Sergeevich Ilin, ulitsa 8 Okruzhnaya, 11, kv. 11, Kostroma, all of U.S.S.R.

Filed Aug. 17, 1976, Ser. No. 715,167
Int. Cl.² D01H *7/90;* D02G *3/26*
U.S. Cl. 57—156 **5 Claims**



1. A method of making a self-twisted fibrous product from at least two strands, comprising the steps of: continuously feeding two strands, applying simultaneously and identically to each one of said continuously fed strands a torque imparting to said strands an alternating twist, with each strand having between successive portions to which alternating twist is applied a portion which is devoid of twist; then uniting said strands at a free point of engagement therebetween without exerting any

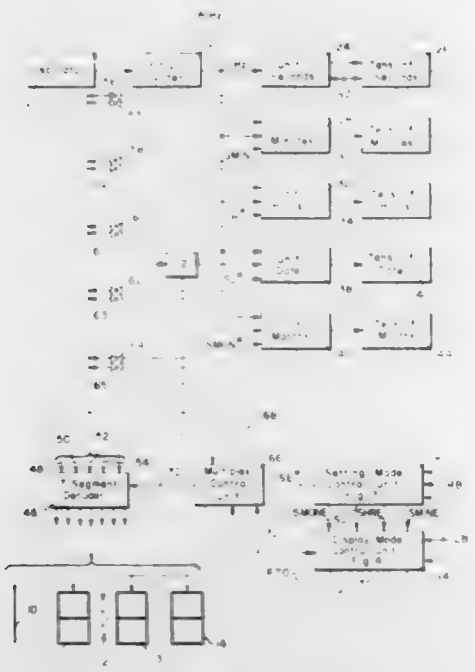
frictional action on said strands for plying said strands together while they untwist about one another during travel beyond said point of engagement and to form only from said plied strands the product which is subsequently wound into a package; positively applying to said plied strands, as they are untwisting about one another, during travel beyond said point of engagement, a final torque coinciding with the direction of their untwisting about one another, with the frequency of the variation of the direction of said final torque equalling the frequency of the variation of the sense of the twist imparted to each one of said strands prior to said point of engagement, said final torque being superimposed on the untwisting plied strands travelling beyond said point of engagement in a manner which intensifies the untwisting of the plied strands about one another while reducing the length of the portions of said strands which are devoid of twist.

4,084,401

DIGITAL WATCH WITH TWO BUTTONS AND IMPROVED SETTING AND DISPLAY CONTROL

Richard J. Belardi, Anaheim; Norman E. Moyer, and Ernest C. Ho, both of Newport Beach, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 9, 1975, Ser. No. 594,384
Int. Cl.[2] G04B *19/24*
U.S. Cl. 58—4 A **6 Claims**



1. A digital watch including a push button recessed in the case, and means for sequentially selecting, month, date, hours, or minutes for setting by successive pushes of said recessed button, means responsive to said selecting means for displaying said selected horological data in assigned first and second pairs of digit positions with a dash when the data selected is either month or date and a colon when the data selected is either hours or minutes, and means for setting the data selected in response to pushing another protruding button while that data is displayed for viewing.

4,084,402

TIMING CIRCUIT FOR DISPLAY SEQUENCING IN A DIGITAL WRISTWATCH

Norman E. Moyer, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 22, 1975, Ser. No. 579,998
Int. Cl.[2] G04C *3/00*; G04B *19/30*
U.S. Cl. 58—23 R **6 Claims**

1. A digital timing circuit in a digital watch with two electro-optical display elements, when said circuit is activated by a manually operable switch, the timing sequence begins and said display elements display a first set of horological information, then said display elements are blank for a short duration, and finally display a second set of horological information and are then blank again, comprising:

a clock pulse source;

first gate means having first and second input connections and an output connection;

said first input of said first gate connected to said clock pulse source;

second gate means having first and second input connections and an output connection;

said second input of said first gate connected to said output of said second gate;

third gate means having first and second input connections and an output connection;

fourth gate means having first and second input connections and an output connection;

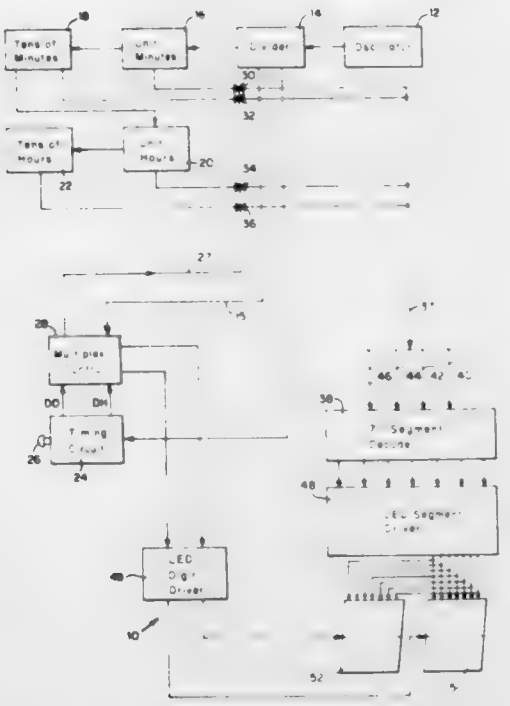
said output of said third gate connected to said first input of said second gate and to said first input of said fourth gate;

said output of said fourth gate connected to said input of said third gate;

a manually operable switch for activating said digital timing circuitry, said switch connected to said first input to said third gate;

fifth gate means having first, second, third, and fourth input connections and an output connection;

first flip-flop having first and second input connections and first and second output connections;



second flip-flop having first and second input connections and first and second output connections;

third flip-flop having first and second input connections and first and second output connections;

fourth flip-flop having first and second input connections and first and second output connections;

two phase clock generating means having an input connection connected to said output of said first gate means and having a first output connected to said first input of said first flip-flop and a second output connected to said second input of said first flip-flop;

said first output of said first flip-flop connected to said first input of said second flip-flop, to said second input to said second gate and to said first input to said fifth gate;

said second output of said first flip-flop connected to said second input of said second flip-flop;

sixth gate means having first and second input connections and an output connection;

said first output of said second flip-flop connected to said first input of said third flip-flop and to said first input of said sixth gate;

said second output of said second flip-flop connected to said

second input of said third flip-flop, and to said second input of said fifth gate;

said second output from said third flip-flop connected to said third input to said fifth gate and to said second input of said fourth gate for forcing said flip-flop into a known state;

said first output of said third flip-flop connected to said first input of said fourth flip-flop;

said second output of said third flip-flop connected to said second input of said fourth flip-flop;

said first output of said fourth flip-flop connected to said second input of said sixth gate;

said second output of said fourth flip-flop connected to said fourth input of said fifth gate;

first and second electro-optical display elements which display the digits of first and second sets of horological information;

said output of said sixth gate being connected to said first electro-optical display elements;

said second output of said third flip-flop being connected to said second electro-optical display elements;

said second set of horological information is displayed on said electro-optical display elements when said output of said sixth gate is at a logical binary high level and said second output of said third flip-flop is at a logical binary low level; and

said first set of horological information is displayed on said electro optical display elements when said outputs of said sixth gate and said second output of said third flip-flop are at a logical binary high level.

4,084,403

DRIVING MECHANISM FOR A TIMEPIECE

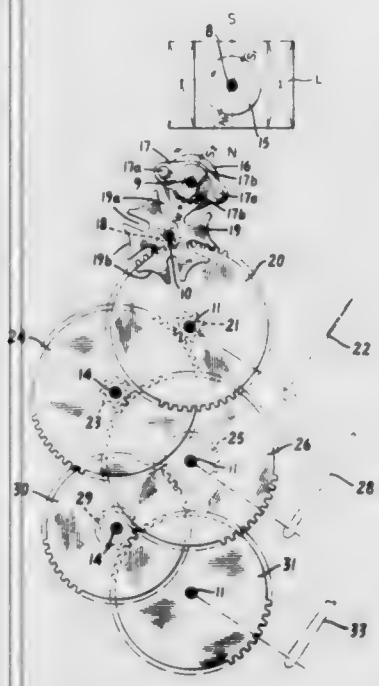
Kiyoshi Kitai, Tokyo; Masuo Ogihara, Chiba; Kozo Sato, Yotsukaido; Nobuo Shinozaki, Chiba; Yuzuru Takazawa, Togane, and Yoichi Seki, Kamiiwahashi, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Feb. 2, 1976, Ser. No. 654,224

Claims priority, application Japan, Feb. 7, 1975, 50-15998; Feb. 7, 1975, 50/15998

Int. Cl.² G04C *3/00;* H02K *33/00*

U.S. Cl. 58—23 D **3 Claims**



1. A driving mechanism, for use in a timepiece, comprising: an electrical stepping motor having a rotor which rotates in one direction through a predetermined angular interval each time said stepping motor is energized; a driving member mounted for rotation and driven by said rotor to rotate as said rotor rotates; a driven member mounted for rotation and driven to rotate by said driving member; a time wheel having a pointer for indicating time and driven to rotate upon rotation of said driven member; and said driving member and said driven member together including means comprising an intermittent driving mechanism for enabling said driving member to drive said driven member only during a portion of the predetermined angle of rotation of said driving member.

4,084,404

ELECTRONIC WATCH

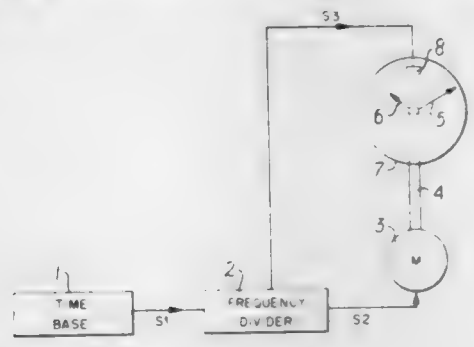
Fridolin Wiget, Neuchatel, Switzerland, assignor to Ebauches S.A., Switzerland

Continuation of Ser. No. 603,121, Aug. 8, 1975, abandoned, and a continuation-in-part of Ser. No. 399,717, Sep. 24, 1973, abandoned. This application Dec. 23, 1976, Ser. No. 753,844

Claims priority, application Switzerland, Oct. 17, 1972, 15177/72

Int. Cl.² G04B *19/30;* G04C *3/00;* G04B *27/00*

U.S. Cl. 58—50 R **6 Claims**



1. An electronic watch, comprising;

a time base of at least sonic frequency;

frequency divider means for driving said frequency to deliver output pulses at a low output frequency of N/60 cycles per second, where N is a whole number included between 1 and 16, and with a pulse duration (pulse width) ranging from about 10 to about 30 milliseconds;

a low-frequency step motor having at most 10,600 windings of wire of at least 25 micron thickness energized step-by-step by said output pulses; and

a time display unit, including as a most rapidly rotating element thereof, a minutes display member driven directly by said motor by one step per output pulse, and a watch dial for the driven display member.

4,084,405

REFRIGERATING SYSTEM

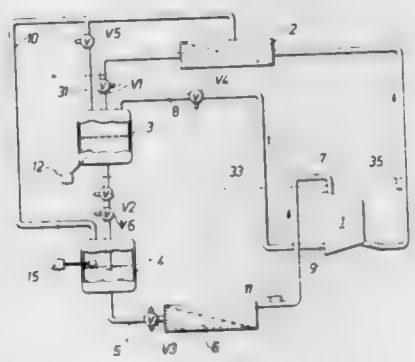
Hjalmar Schibbye, Saltsjobaden, and Tord Holmström, Saltsjo-Boo, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Sep. 30, 1976, Ser. No. 728,156

Claims priority, application United Kingdom, Sep. 30, 1975, 39986/75

Int. Cl.² F25B *41/00*

U.S. Cl. 62—197 **11 Claims**



1. A refrigerating system comprising:

an evaporator (6) having an inlet and an outlet;

a condenser (2) having an inlet and an outlet;

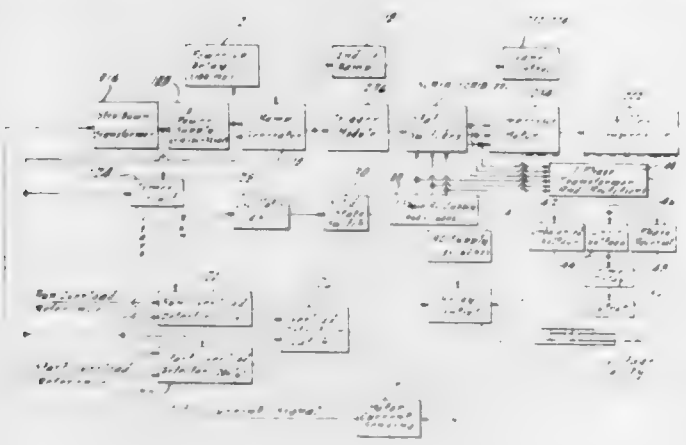
a compressor device (1), the output of which is coupled to said condenser inlet;
a supply line (5) coupled to said inlet of said evaporator (6);
a throttle valve (V3) located in said supply line (5) to said inlet of said evaporator (6);
a closed receiver tank (3) containing a liquid refrigerant and having an inlet and an outlet;
an inlet valve (V1; V11) coupling an inlet of said closed receiver tank (3) to said outlet of said condenser (2);
an outlet valve (V2; V21) coupling an outlet of said closed receiver tank (3) to said supply line (5) for said evaporator (6);
control means (12; 121) coupled to said closed receiver tank (3) for controlling the amount of liquid refrigerant in said closed receiver tank (3), said control means being further controllably coupled to said inlet and outlet valves for controlling the operation of said inlet and outlet valves;
said compressor device (1) including a first inlet channel (7) permanently communicating with said outlet of said evaporator (6), and an additional inlet channel (9);
means including an additional valve (V4; V41) coupling said additional inlet channel (9) of said compressor device (1) to the top of said closed receiver tank (3), said additional valve (V4; V41) being coupled to said control means (12; 121);
said control means (12; 121) controlling said valves (V1, V2, V4; V11, V21, V41) for intermittent disconnection of said closed receiver tank (3) from said condenser (2) and evaporator (6) and corresponding intermittent connection of the top of said closed receiver tank (3) to said additional inlet channel (9) for a time interval; and
an additional receiver tank (4) containing a controlled amount of liquid refrigerant coupled to said condenser (2) and further coupled to said evaporator (6) for feeding said evaporator (6) under the influence of the condenser pressure supplied to said additional receiver tank (4), thereby maintaining the refrigerating cycle during said intermittent time interval.

4,084,406

CHILLER CONTROLS

Daniel A. Brenneman, Kettering, Ohio, assignor to Fedders Corporation, Edison, N.J.

Filed Jan. 22, 1976, Ser. No. 651,386
Int. Cl.[2] H02P *1/26*; F25B *49/00*
U.S. Cl. 62—211 **10 Claims**



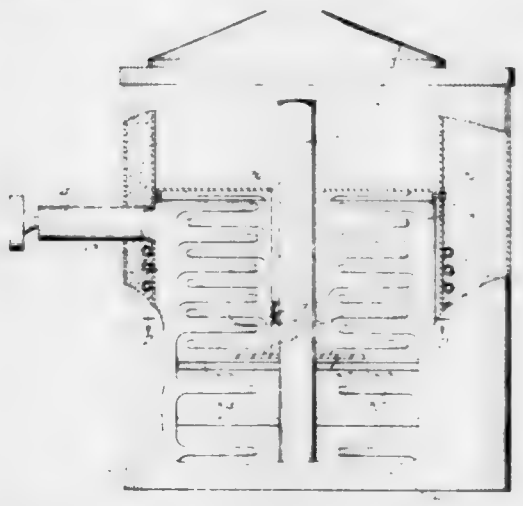
1. In combination:
a chiller system for providing cooling to a medium to be cooled, said chiller system including an AC electric motor for driving a compressor;
controlled conduction solid state switch means having a line side and a load side;
means for coupling said line side of said solid state switch means to a source of AC electric power;
means for coupling said load side of said solid state switch means to said AC electric motor; and
means for accelerating said AC electric motor to running speed comprising means for controllably applying trigger signals to said solid state switch means such that the firing angle at which said solid state switch means is fired in relation to the voltage phase angle of the source of AC electric power is progressively increased from a minimum firing angle to a maximum firing angle to thereby start and accelerate the motor to running speed;
said electric motor being of the polyphase type;
said solid state switch means comprising a solid state switch in each of said phases;
and voltage safety means for protecting said motor against a fault in the voltage actually applied to the motor;
said voltage safety means comprising a transformer for each of said phases; each of said transformers having a respective primary and a secondary winding;
each of said transformers having a primary winding connected between a line side of said switch associated with a respective phase and a load side of said switch associated with another phase;
monitoring circuit means connected across the respective secondary windings of each of said transformers for monitoring a parameter of the voltage waveform of each of said phases, and for generating a signal when the monitored parameter exceeds a preselected value;
and disconnect means responsive to said monitoring circuit means signal for disconnecting said motor from the source of AC electric power.

4,084,407

SLUSH FREEZER

Alfred E. Anhalt, Kiel, Wis., assignor to Stoelting Brothers Company, Kiel, Wis.

Filed Feb. 2, 1977, Ser. No. 765,015
Int. Cl.[2] F25C *5/12*
U.S. Cl. 62—342 **4 Claims**



4. In a slush freezer having a stationary baffle with a set of stationary fingers and a rotatable agitator having a shaft and a set of movable fingers which interact with the stationary fingers of the baffle, the improvement for preventing interference between the movable and stationary fingers and comprising a thrust bearing between the agitator and the baffle, said thrust bearing comprising a washer about the agitator shaft and having one side against the baffle and its other side against the agitator, said agitator comprising a comb having a back from which the fingers extend inwardly toward the agitator shaft, an arm spanning between the comb back and the shaft to support the comb, said fingers having tips spaced from the shaft a distance greater than the radius of the washer to permit the washer to slide along the shaft to a position engaging the arm without interference with the fingers.

4,084,408

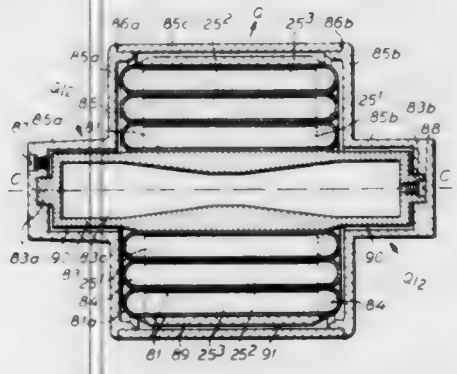
METHOD OF RECOVERING ENERGY BY MEANS OF A CYCLIC THERMODYNAMIC PROCESS

Baltzar von Platen, Ystad, Sweden, assignor to Fondation Cum Plate, Vaduz, Liechtenstein

Continuation of Ser. No. 510,616, Sep. 30, 1974, abandoned. This application Feb. 9, 1976, Ser. No. 656,305

Int. Cl.[2] F25B *3/00*

U.S. Cl. 62—467 R **17 Claims**



1. A method of transferring heat energy by means of a cyclic thermodynamic process comprising the steps of:

providing an axis of rotation,

providing a plurality of rigid annular containers positioned adjacent one to another concentric about said axis and located at progressively greater radial distances from the axis of rotation,

providing good thermal conductivity between said chambers,

providing in each of said chambers a mixture of propane and an inert gas sealed therein,

mounting said concentric annular chambers in an enclosing hermetically sealed static chamber closely spaced from said annular chambers for defining a narrow gap therebetween,

filling said narrow gap with hydrogen,

rotating said concentric annular containers at high speed about said axis,

allowing heat energy to enter the innermost of said concentric annular chambers, and

allowing heat energy to be released from the outermost of said chambers across said gap.

4,084,409

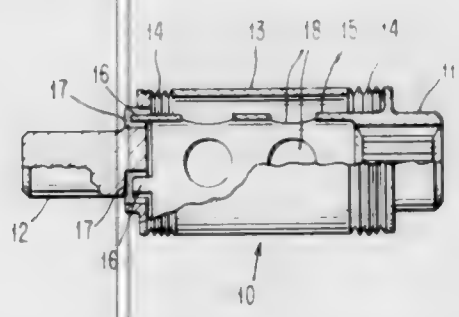
FLEXIBLE COUPLING FOR ROTATABLE SHAFTS

John C. Wolf, New Fairfield, Conn., and Thomas G. Costello, Fishkill, N.Y., assignors to Controlex Corporation of America, Croton Falls, N.Y.

Filed May 6, 1976, Ser. No. 683,910

Int. Cl.[2] F16D *3/52*

U.S. Cl. 64—11 B **8 Claims**



1. A flexible coupling for rotatable shafts which comprises a metal bellows as the primary connecting element between the two ends of said coupling, said bellows having corrugations disposed only adjacent said two ends of said coupling, and a concentric sleeve attached to one of said ends and extending toward the other of said ends, said other end having a plurality of slots and the free end of said sleeve having a plurality of keys projecting into said slots without making contact therewith so long as said bellows is not ruptured, and said sleeve being disposed out of contact with said bellows.

4,084,410

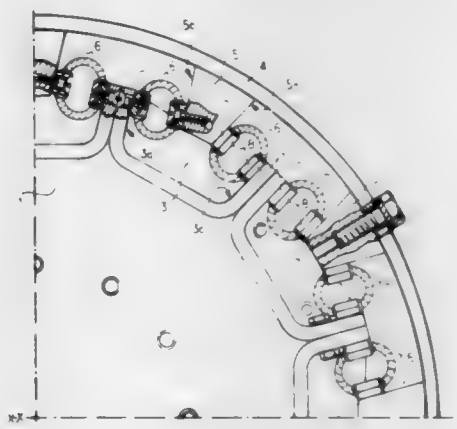
FLEXIBLE COUPLING DEVICE

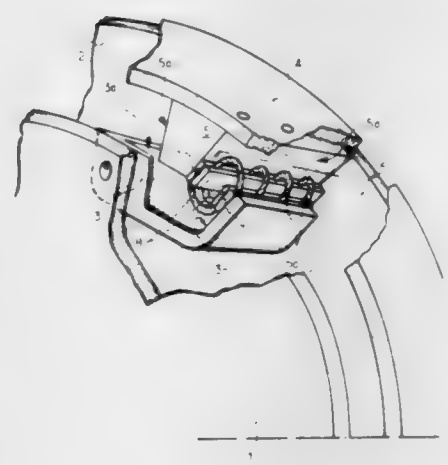
Pierre Michon, Chatillon-sous-Bagneux, France, assignor to Societe d'Etudes de Machines Thermiques, Saint Denis, France

Filed Apr. 27, 1976, Ser. No. 680,745

Int. Cl.[2] F16D *3/58*

U.S. Cl. 64—12 **14 Claims**





1. A flexible coupling and vibration damping device for a driving member and a driven member comprising a first cable loop element defined by a plurality of parallel loops of cable, said loops being substantially coaxial, first clamping means connected to a first peripheral portion of each of said loops, second clamping means connected to a second peripheral portion of each of said loops, first means for joining one of said members to one of said clamping means and second means for joining the other said member to the other said clamping means.

4,084,411

RADIAL MISALIGNMENT COUPLING

Alfred B. Mayfield, Halstead, Kans. 67056

Filed Oct. 19, 1976, Ser. No. 733,765

Int. Cl.[2] F16D *3/30*

U.S. Cl. 64—19 **10 Claims**

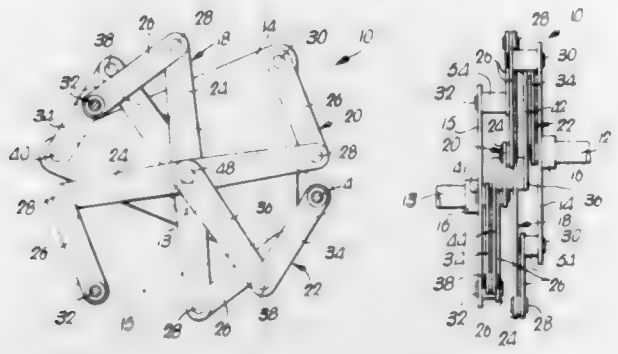
1. A torque transmitting device for operably coupling end-to-end two rotatable members having generally parallel axes of rotation shiftable relative to one another, said device including:

a plurality of linkages disposed between and interconnecting the adjacent ends of said members,

each of said linkages comprising a central link and a first and second connecting link respectively, pivotally mounted on opposite ends of said central link;

first means pivotally securing said first connecting links to one of said members;

second means pivotally securing said second connecting links to the other of said members; and



means coupling said central links intermediate the ends thereof for relative swinging movement of the central links about an axis extending substantially parallel to said axes of rotation.

4,084,412

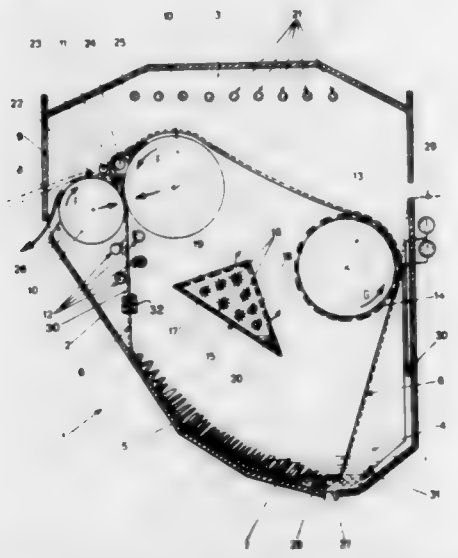
APPARATUS FOR DYEING TEXTILE LENGTHS

Jean Levielle, Troyes, Aube, France, assignor to Teinturerie de Champagne, Troyes, Aube, France

Filed Jul. 9, 1976, Ser. No. 704,052

Int. Cl.² D06B *21/02*

U.S. Cl. 68—5 C **13 Claims**



1. Apparatus for dyeing textile lengths comprising:

a vessel having an opening for the entry and exit of the textile material, said vessel including a hood in its upper part and a cuvette in its lower part, said cuvette holding a dyestuff and a washing liquor,

heating means in said hood for heating the hood,

temperature measuring apparatus to ascertain the temperature of the dyestuff and washing liquor, as well as the temperature in the interior of the vessel,

a station in said vessel for padding or impregnating and dyeing said textile material,

a cylinder for carrying the textile material along a path from said station, and

means disposed along said path in said vessel including washing elements for washing said textile material,

a steam box,

a protective device to protect against the intrusion into the vessel of a hand or the like of the operator of the apparatus,

guide rolling members for guiding said textile material, and

an auxiliary guiding member adjacent to said guide rolling members for insuring that a length of textile material follows a predetermined path.

4,084,413

APPARATUS FOR LIQUID TREATMENT AND DRYING OF BOBBINS

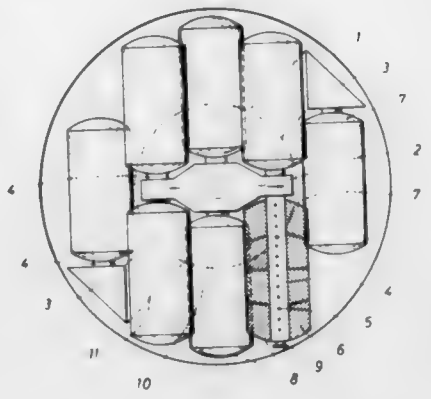
Hans Børge Nielsen, Reinbach, Switzerland, assignor to Vald. Henriksen A/S, Denmark

Filed Oct. 7, 1976, Ser. No. 730,240

Claims priority, application Denmark, Oct. 8, 1975, 4531/75; Aug. 3, 1976, 3498/76

Int. Cl.² D06B *5/18*

U.S. Cl. 68—189 **2 Claims**



1. An apparatus for liquid treatment and drying of bobbins comprising a vertical, cylindrical container having a removable insert with horizontal distributor pipes on which the bobbins may be arranged, said apparatus furthermore being provided with means for circulating liquid or air through the distributor pipes, characterized in that the insert comprises a diametrically arranged, oblong distribution chamber and two or more distribution chambers located along the container wall, from which distribution chamber distributor pipes of equal length extend in parallel.

4,084,414

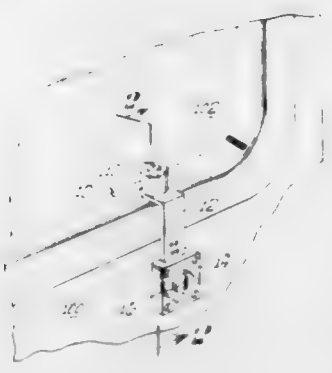
ANTI-THEFT DEVICE FOR AUTOMOBILE DOORS

Michael D. Martin, 1626 S. Regene St., Pomona, Calif. 91766

Filed May 27, 1976, Ser. No. 690,590

Int. Cl.² F16C *3/00*

U.S. Cl. 70—181 **3 Claims**



1. An anti-theft device to prevent the unauthorized operation of an automobile door latch button reciprocable in a vertical direction, provided with a substantially cylindrical shank and an enlarged head portion, and projecting from the inward sill of said door, comprising:

a generally cylindrical sleeve disposed about said latch button,

strap means depending from said sleeve,

a plurality of locating stops vertically spaced from one another in the surface of said strap means,

lock means, attached to the inner surface of said door, for lockingly engaging one of said locating stops,

said sleeve having its inner orifice in sliding engagement with the shank of said latch button and having an outer diameter larger than the diameter of said head portion, and

said sleeve having a depression in its upper surface for receiving the head of said button in the lowermost position thereof, whereby said head is rendered inaccessible to unauthorized persons.

4,084,415

CIGARETTE CASE WITH TIMER

Warren Corman, 59 Vicksburg St., San Francisco, Calif. 94114

Filed Mar. 18, 1977, Ser. No. 779,048
Int. Cl.[2] G04B *19/02, 37/12;* E05B *43/00*
U.S. Cl. 70—269 **4 Claims**



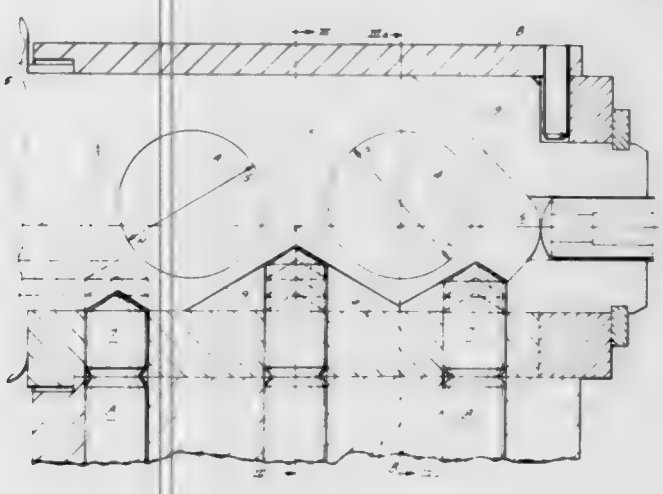
1. A cigarette case including a box having a swingable lid for closing the same,
said lid having a flap superposed over one side of said box when said lid is closed,
a clasp on said flap adjacent the free edge thereof,
a timer secured to said one side,
said timer including an outer rotatable dial normally overlying said clasp for preventing swinging of said flap,
said dial being formed with a slot adapted to register with said clasp in one position of said dial to permit opening of said flap and lid.

4,084,416

MAGNETIC-TYPE LOCK

Kurt Prunbauer, Herzogenburg, Austria, assignor to EVVA Werk Spezialerzeugung von Zylinder- und Sicherheitsschlossern Gesellschaft m.b.H. & Co. Kommanditgesellschaft, Vienna, Austria

Filed Jun. 28, 1976, Ser. No. 700,207
Claims priority, application Austria, Jul. 3, 1975, 5119/75
Int. Cl.[2] E05B *47/00*
U.S. Cl. 70—276 **10 Claims**



1. A lock comprising:
a generally nonrotatable housing;
a cylinder rotatable in said housing and formed with a keyhole defining an axis;
at least one tumbler radially displaceable into said keyhole and having a housing part and a cyliner part radially slidable in said housing and cylinder between a locked position with one of said parts extending between said housing and said cylinder and inhibiting relative rotation of said cylinder and housing and an unlocked position with said housing part in said housing and said cylinder part in said cylinder and permitting said rotation;
at least one magnetic rotor element rotatable in said cylinder between a ready position and an unready position;
a retaining element engageable with said housing and with said rotor element and displaceable generally axially in said cylinder only when said rotor element is in said ready position from an engaged position inhibiting said rotation into a disengaged position permitting said rotation, one of said elements being formed with an open notch and the other of said elements having a part axially engageable therein only in said ready position; and
a key insertable axially into said keyhole and carrying a magnet juxtaposable with said rotor element to rotate same into said ready position and formed with at least one bit radially engageable with said tumbler to displace same radially into said unlocked position.

4,084,417

SIMULATED DEADLOCK FOR DOORS

William H. Daniel, 541 Putman Rd., Rogers, Ark. 72756

Filed May 7, 1976, Ser. No. 684,162
Int. Cl.[2] E05B *17/00*
U.S. Cl. 70—431 **1 Claim**



1. A simulated deadlock for doors, comprising a member which has a flat rear surface and forward surfaces which simulate only those portions of a deadlock which protrudes from the forward surface of a door to which the deadlock is applied, whereby said member may be adhesively applied to a door to discourage attempts at unauthorized entry through the door, said member being in the form of a hollow plastic shell, said shell having a peripheral flange which is hollow and opens rearwardly and in which a flat base plate is secured, the rear surface of said base plate comprising said flat rear surface of the simulated deadlock, said shell having in its forward central region a rearwardly extending protrusion which is pierced by a simulated key slot, horizontal ribs on said protrusion, said ribs extending into said key slot, a pressure-sensitive adhesive on said flat rear surface, and a quick-release film covering said adhesive prior to use, the outer surface of said shell being brass plated.

4,084,418

DEVICE FOR CONTROLLING THE MANIPULATOR MOVEMENTS IN A FORMING MACHINE, IN PARTICULAR IN A HAMMER FORGING PRESS

Walter Willenbrock, Leverkusen, and Helmut Winkler, Meerbusch, all of Germany, assignors to Eumuco Aktiengesellschaft fur Maschinenbau, Leverkusen, Germany

Continuation of Ser. No. 368,324, Jun. 8, 1973, abandoned. This application Jun. 16, 1976, Ser. No. 696,808
Int. Cl.[2] B21D *43/10;* B21J *13/12*
U.S. Cl. 72—31 **11 Claims**

1. In a system for selectively establishing a program of forging a workpiece in which a workpiece is translated with re-

spect to a forging ram under control of a manipulator, the combination of:

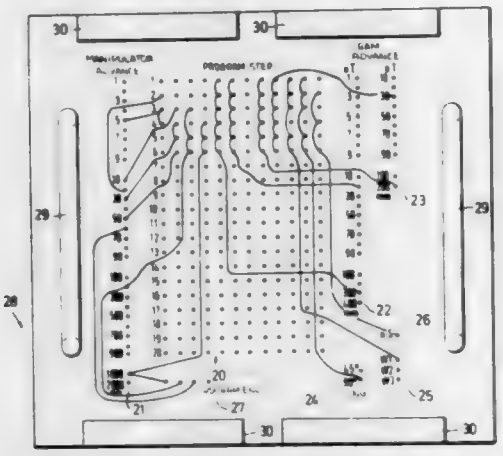
a contact field including a plurality of separate rows of contacts, a first group of contacts and at least one further group of contacts;

coder means having a plurality of output lines connected with said first group of contacts for producing patterns of signals of one value on said output lines in accord with the position of the manipulator;

a plurality of connectors selectively connected between said first group of contacts and a sequential set of said rows of contacts;

sequencing means for producing a sequence of signals;

first gate means for controlling said sequencing means to initiate said sequence of signals when all of the inputs from



said coder means as connected to a row are of said one value;

a plurality of further connectors selectively connected between said second group of contacts and selected ones of said set of rows;

data storage counter means having a plurality of output lines connected with said second group of contacts for producing signals of said one value in accord with the count stored therein;

a source of count storage pulses; and

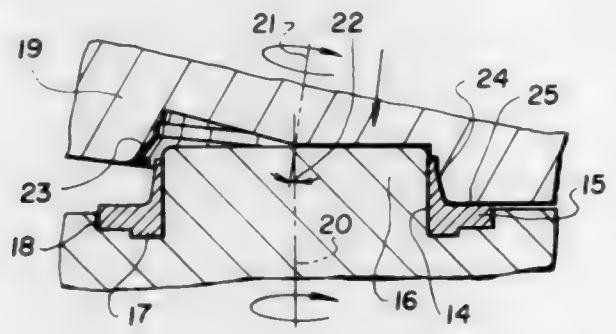
second gate means connecting said source of count storage pulses to said counter means only in response to one of said sequence of signals for controlling said sequencing means to produce the next signal of said sequence when all of the inputs from said data storage counter means as connected to a row are of said one value.

4,084,419

METHOD FOR MANUFACTURING ANNULAR METAL WORKPIECES

Erich Dittrich, and Siegfried Grone, both of Dortmund, Germany, assignors to Thyssen Industrie AG, Germany

Filed Mar. 7, 1977, Ser. No. 775,199
Claims priority, application Germany, Mar. 19, 1976, 2611568
Int. Cl.² B21H *1/06*
U.S. Cl. 72—68 **4 Claims**



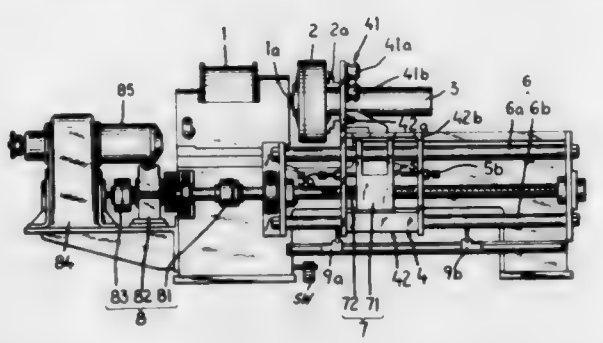
1. A method of manufacturing annular metal parts having a deeply profiled cross-section, such as blank flanges, comprising heating a workpiece bloom to a forging temperature, upsetting and piercing the workpiece to form a pierced blank, roughing the pierced blank by applying a force acting at least on the outside and inside periphery of the blank while the blank is being rotated in order to form the blank into a ring having a substantially rectangular cross-section and an inside diameter which is equal to or slightly larger than the inside diameter of the finished part and, thereupon, rotating the ring and shaping it to the desired profile by directing a force on the front faces of the rotating ring and finish-rolling the ring to the final internal and external diameters of the part.

4,084,420

METHOD AND AN APPARATUS FOR PRODUCING A COILED SPRING

Takeyoshi Tsutsumino, Itamishi, Japan, assignor to Kabushiki Kaisha Taiheiseisakusho, Osakashi, Japan

Filed Oct. 8, 1976, Ser. No. 731,026
Claims priority, application Japan, Oct. 13, 1975, 50-123622
Int. Cl.² B21F *3/04*
U.S. Cl. 72—138 **5 Claims**



1. Apparatus for producing a coiled spring comprising:

(a) a rotatable coil supporter and means for rotating said coil supporter;

(b) means for supplying wire to said coil supporter including wire guiding means;

(c) said coil supporter including wire catching means for catching wire supplied to it;

(d) said wire guiding means being carried on an assembly movable along the axis of said coil supporter, movement of said assembly moving the position at which wire is supplied to said coil supporter;

(e) means for moving said assembly, said means including drive means which rotates a screw which is in engagement with a nut;

(f) said screw being rotatable independently of said means for rotating said coil supporter;

(g) opposed ends of said assembly being spaced along the axis of said screw and being engageable for movement by said nut;

(h) said nut being spaced from one said end whereby initial rotation of said screw will drive said nut without resulting in movement of said assembly;

(i) continued driving of said nut by said screw resulting in movement of said assembly with respect to the axis of said coil supporter; and

(j) a limit switch effective to stop rotation of said screw after a predetermined travel of said assembly.

4,084,421

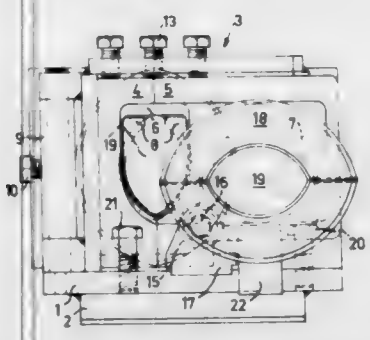
APPARATUS FOR TWISTING AND GUIDING STOCK INTO ROLL GROOVES

Walter Johann Karlberger, Smedjebacken, Sweden, assignor to Morgardshammar Aktiebolag, Smedjebacken, Sweden

Filed Dec. 7, 1976, Ser. No. 748,325
Claims priority, application Sweden, Dec. 10, 1975, 7513933
Int. Cl.² B21B *39/28*
U.S. Cl. 72—231 **2 Claims**

1. Apparatus for twisting and guiding stock into a roll groove, comprising guide means adapted to be mounted in

front of a said groove, said guide means comprising a funnel having a noncircular crosssectional shape of about the same size and shape as the stock to be fed, for receiving the end of stock passing toward the groove, said guide means having means defining a through path for said stock, means mounting said funnel for swinging movement about an axis parallel to said through path, between a first position in which said funnel is out of line with said through path and a second position in



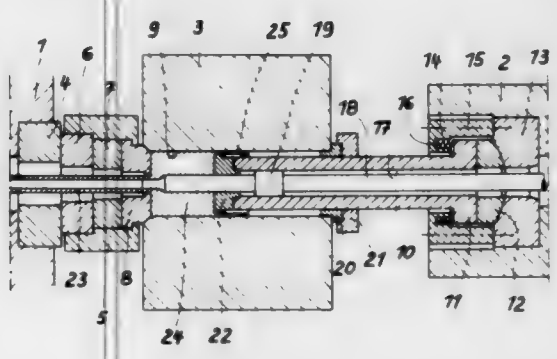
which said funnel is in line with said through path, and cam means disposed between said funnel and said means defining said through path for receiving the leading end of said stock emerging from said funnel when said funnel is in said first position and diverting said leading end into line with said through path, whereby said stock deflected by said cam causes said funnel to swing about said axis from said first position to said second position thereby to twist said leading end of said stock.

4,084,422

EXTRUSION PRESS

Franz Josef Zilges, Monchen-Gladbach, and Klaus Siegert, Berlin, both of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 22, 1975, Ser. No. 570,368
Claims priority, application Germany, Apr. 24, 1974, 2419709
Int. Cl.[2] B21C *23/04, 23/08*
U.S. Cl. 72—253 R **16 Claims**



1. An extrusion press for direct extrusion with shell, comprising a billet container,

a billet containing bore in the billet container,

a displaceable cross-head movable towards and away from the billet container,

a press stem mounted in the displaceable cross-head and movable along the billet containing bore spaced from the walls thereof when the cross-head is displaced towards and away from the bore,

means mounted on the billet container and separate and distinct therefrom for centering the press stem as it moves along said bore, and

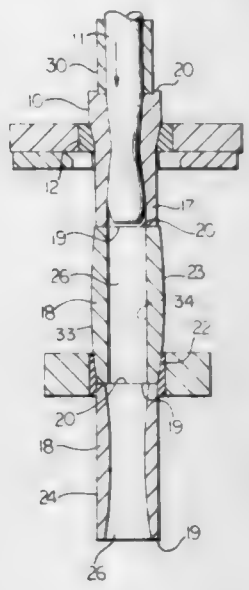
means articulately mounting said press stem for relative movement to and in the displaceable cross-head.

4,084,423

METHOD FOR FORMING A TRACK LINK BUSHING HAVING A CONTOURED OPENING

Charles H. Schlecht, York, Pa., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 3, 1976, Ser. No. 682,813
Int. Cl.[2] B21C *25/04, 25/08;* B21D *45/08*
U.S. Cl. 72—256 **10 Claims**



1. A method for forming a track pin bushing having a contoured opening and a generally cylindrical outer surface, comprising:

Step 1: Positioning a metal slug between a mandrel and a first ring die, said mandrel having an enlarged end portion and a double contoured middle portion;

Step 2: Urging the mandrel against the metal slug and through the first ring die for extruding the metal slug and forming a first metal blank having first and second ends and a generally cylindrical outer surface and a double contoured inner surface of preselected configuration;

Step 3: Passing the enlarged end portion of the mandrel through the blank while maintaining the outer walls of the blank free to expand outwardly for forming a generally cylindrical blank opening, moving outer walls of the blank outwardly and forming an outer surface of a preselected configuration in response to passing the mandrel through the blank; and

Step 4: Passing the first blank through a second ring die while maintaining the inner walls of the blank free to expand inwardly for forming a generally cylindrical blank outer surface, moving inner walls of the blank inwardly, and forming a second blank having a double contoured blank opening having a diameter progressing outwardly from a middle portion of the second blank toward each end of the second blank in response to passing the first blank through the second ring die.

4,084,424

TWIN MOTOR AND SCREW DRIVE FOR WORKPIECE POSITIONING STOPS AND FOR PRESS RAM DRIVE AND THE LIKE

Gerald V. Roch, and Chris L. Hadley, both of Indianapolis, Ind., assignors to Hurco Manufacturing Company Inc., Indianapolis, Ind.

Division of Ser. No. 630,011, Nov. 7, 1975. This application Aug. 6, 1976, Ser. No. 712,236
Int. Cl.[2] B21D *11/22, 7/06*
U.S. Cl. 72—389 **19 Claims**

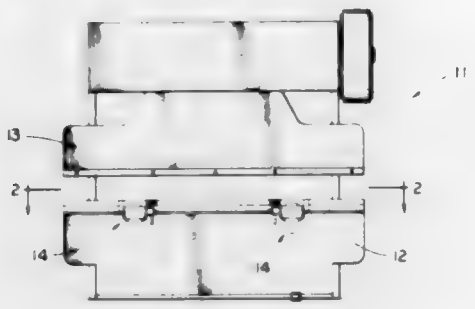
1. A gauging apparatus for presses and the like comprising:

frame means having first and second lead screws therein;

first and second screw drive motors, said first motor being coupled to said first screw for driving said first screw, and

said second motor being coupled to said second screw for driving said second screw;

first and second gauge mounting carriages coupled to said first and second screws respectively and linearly drivable thereby;



control means coupled to said motors for controlling the drive of said motors and thereby controlling drive of said screws, and control means including electric synchronizing means for causing said motors to drive said carriages in synchronism,

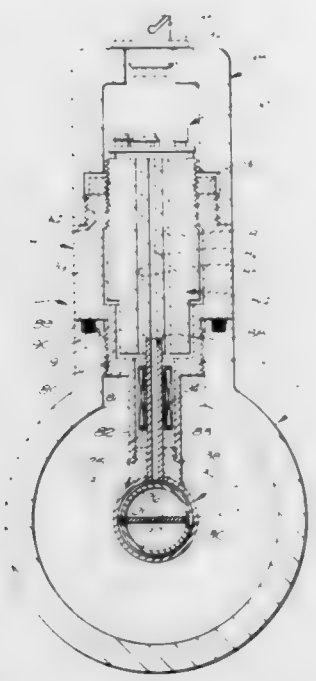
said control means including a microprocessor.

4,084,425

VIBRATION DENSITOMETER

Hyung Du Bae, Brea, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 11, 1977, Ser. No. 795,963
Int. Cl.[2] G01N *9/00*
U.S. Cl. 73—32 A **2 Claims**



1. A vibration densitometer comprising: an electromechanical oscillator including a probe and a feedback circuit connected in a loop; a function generator connected from said feedback circuit; and utilization means connected from said function generator, said probe including inner and outer concentric cylinders fixed relative to each other, said outer cylinder having a hole extending radially therethrough, a shaft slidable through said hole in engagement with said inner cylinder, and means to vibrate said shaft in the direction of its axis to cause vibration of said inner cylinder, both cylinders being hollow completely therethrough, a diametral vane vibratable at least with said inner cylinder and having opposite ends fixed relative to said inner and outer cylinders, said cylinders having an interference fit, reduction in the diameter of one or both of said cylinders causing an increase in the longitudinal compression of said vane between said ends thereof, said interference fit producing a pressure on the said ends of said vane such that the sensitivity is substantially zero, where said sensitivity, S, is defined by

$$S = f_2 - f_1/f_1,$$

where

f_2 is a larger temperature vane vibrational frequency, and

f_1 is a smaller temperature or zero vibrational frequency, and where

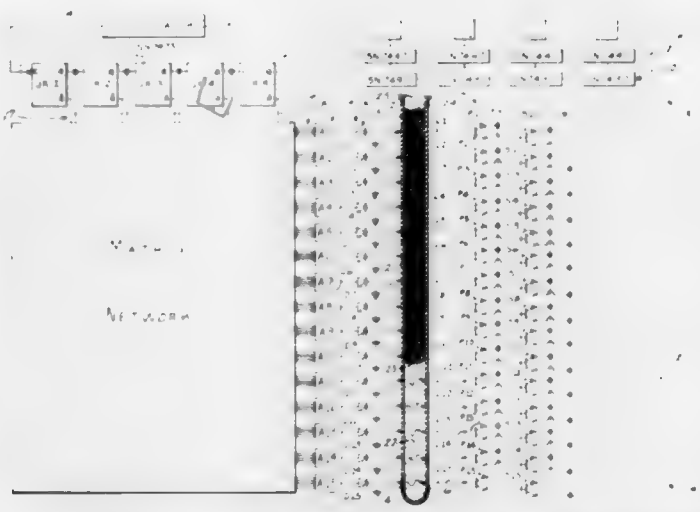
f_2 and f_1 are functions of the inside and outside diameters of said cylinders and the respective moduli of elasticity thereof.

4,084,426

FOAM MONITOR AND METHOD

Peter W. Gales, Whitefish Bay, Wis., assignor to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed Aug. 6, 1976, Ser. No. 712,141
Int. Cl.[2] G01F *23/28*
U.S. Cl. 73—60.1 **15 Claims**



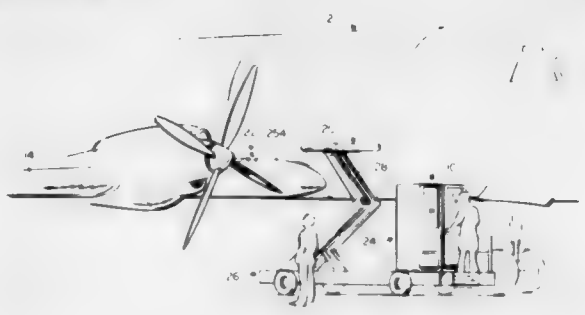
1. A foam monitor, comprising a container having an opening retaining a foam, means scanning said container opening at a plurality of vertically spaced levels and providing a first signal for each scanned level containing foam and a second signal for each scanned level void of foam, and means responding to said first and second signals provided by said scanning means and providing an output responsive to the dissipation of foam and indicative of the state of foam dissipation within said container.

4,084,427

HOLOGRAPHIC RECORDING INSTRUMENT FOR STRUCTURAL INTEGRITY VERIFICATION AND OTHER APPLICATIONS

Jerold L. Jacoby, Long Beach; William S. Tierney, Palos Verdes Peninsula; James E. Wright, Long Beach, and Pravin G. Bhuta, Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 598,901, Jul. 24, 1975, Pat. No. 4,049,336.
This application Oct. 29, 1976, Ser. No. 736,923
Int. Cl.[2] G01M *7/00*
U.S. Cl. 73—88 A **3 Claims**



1. A holographic recording instrument comprising:

holographic recording means including a pulsed laser for recording on the same holographic recording medium

two successive holograms of a structure of interest by operating the laser to emit two short laser pulses in rapid succession, and a shutter for controlling light passage to said recording medium,

an impulser including a plunger and means for driving said plunger into impact with said structure for impulsively loading said structure to generate stress waves which propagate through and create varying stress conditions in the structure, and

means for operating said shutter, loading means, and laser in timed relation in such a way that said laser pulses occur while said shutter is open and in different timed relation to the propagation of said stress waves through the structure to record on said recording medium a first hologram of said structure while the latter is in one stress condition and a second hologram of said structure while the latter is in another stress condition, said operating means comprising means for actuating said shutter to momentarily open the shutter, means for sensing and actuating said plunger driving means in response to a selected condition of said shutter, and means for sensing and actuating said laser in response to movement of said plunger by said plunger driving means.

4,084,428

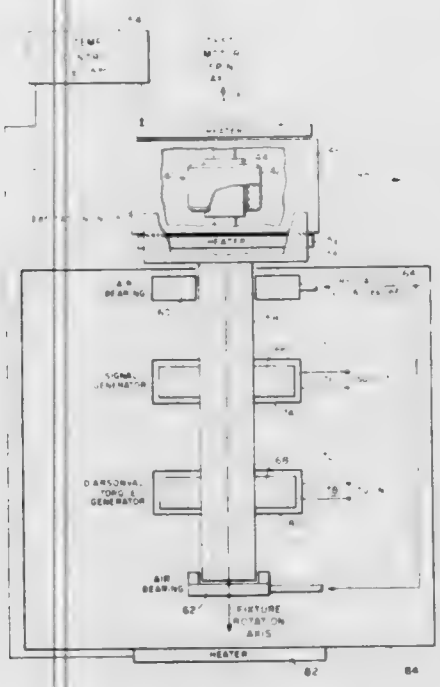
TORQUE REACTION MOTOR PERFORMANCE EVALUATION

Byong-Ho Ahn, Wayland; Philip J. Gilinson, Jr., Chelmsford, and Anthony Michael Moscaritolo, Saugus, all of Mass., assignors to Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed May 12, 1977, Ser. No. 796,151

Int. Cl.[2] G01M *15/00*

U.S. Cl. 73—117.3 **29 Claims**



1. A process for analyzing the motor characteristics of an electrical motor mounted within and energizable through a housing which is mounted in a rotation mount for rotation about an axis other than orthogonal to the motor spin axis, said process comprising the steps of:

applying an energization signal to said motor to produce rotation of the rotor thereof about its spin axis;

sensing rotation of said housing from a predetermined position with respect to said mounting to provide a rotation signal;

generating a restraint signal representative of said rotation signal;

restraining the rotation of said housing in response to said restraint signal against rotation from a predetermined position;

providing a signal representative of motor speed;

providing an indication of a plurality of motor performance characteristics in response to said restraint signal and said speed representing signal.

4,084,429

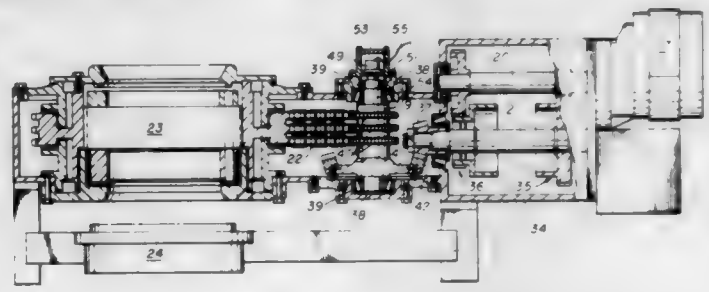
POWER TONG APPARATUS

John Gordon Boland, Wichita Falls, Tex., assignor to Foster Cathead Corporation, Houston, Tex.

Filed May 3, 1976, Ser. No. 682,574

Int. Cl.[2] B25B *23/14*; G01L *5/24*

U.S. Cl. 73—139 **1 Claim**



1. An apparatus for making or breaking connections between tubular members, comprising:

means for supplying motive forces;

an internally mounted transfer shaft coupled to the means for supplying motive forces whereby the motive forces are transformed into high-torque forces;

means coupled to the transfer shaft for transmitting the high-torque forces of the transfer shaft to the tubular members;

a slip ring assembly for conducting electrical signals secured to a selected end of the transfer shaft; and

means associated with the internally mounted transfer shaft for determining the torque experienced by the transfer shaft whereby the torque applied by the apparatus to the tubular members is determined accurately independent of the physical constraints and mounting of the apparatus, such torque determining means including:

two holes counterbored in the transfer shaft diametrically opposite each other and a passage bored in the longitudinal axis of the transfer shaft providing communication between the two counterbored holes and the end of the transfer shaft onto which the slip ring assembly is secured;

a strain gauge installation is secured to the transfer shaft in each of the holes for transducing the angular deformation for the transfer shaft into an electrical signal representative thereof; and

electrical conductors extend from the counterbored holes and through the passage and connect each strain gauge installation to the slip ring assembly for conducting the electrical signal external of the transfer shaft whereby the torque experienced by the transfer shaft can be externally displayed.

4,084,430

LOAD MEASUREMENT

Henry Bryant Boyle, Laleham, and Alexander James Johnson, Greyshott, both of England, assignors to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the, London, England

Filed Sep. 9, 1976, Ser. No. 721,860

Claims priority, application United Kingdom, Sep. 10, 1975, 37303/75

Int. Cl.[2] G01L *1/02*

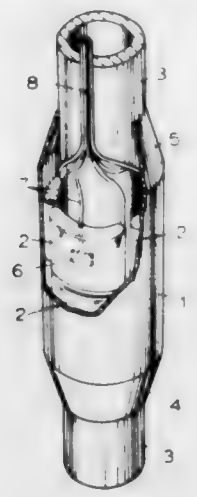
U.S. Cl. 73—141 R **11 Claims**

1. A device for measuring an externally applied load on a structural member, comprising:

one or more flexible fluid-filled cells;

means for sensing the fluid pressure within the or each cell or the relative fluid pressures within different cells; and

a flexible casing for constraining the or each cell between itself and the surface of the structural member the load on which is to be measured, said casing being adapted to



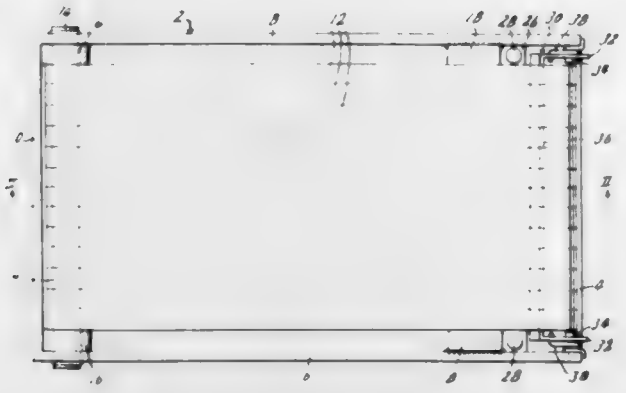
surround the structural member and to transmit the whole of the externally applied load to said surface solely through the fluid within the or each cell, the pressure of said fluid thereby varying with said load.

4,084,431

TIRE INFLATION GAUGE

Jack C. Newby, 113 S. Oak St., Eureka, Kans. 67045

Filed Feb. 9, 1977, Ser. No. 766,925
Int. Cl.[2] B60C *23/06*
U.S. Cl. 73—146.2 **5 Claims**



1. An inflation gauge for a vehicle tire operating on a principle that the tread face of said tire will tend to assume a transversely convex curvature if over-inflated, a transversely concave curvature if under-inflated, and a transversely straight configuration if properly inflated, said gauge comprising:

a. a frame,

b. a series of elongated tread bars all pivoted coaxially at one end in said frame and extending generally horizontally from said pivot in side by side relation, whereby the upper surfaces thereof in aggregate form a treadway for supporting the weight of a tire positioned thereon with its vertical plane parallel to the longitudinal extent of said tread bars, the transverse width of each tread bar being a small fraction of the tread width of the tire and the aggregate width of said tread bars being at least as great as the tread width of the tire, and

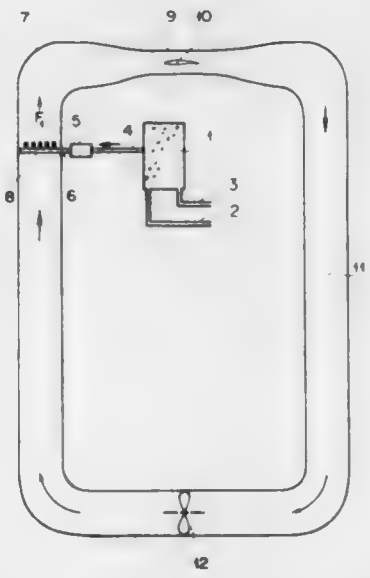
c. resiliently yieldable means supporting the end of each of said tread bars opposite from its pivot, and operable to support all of said tread bars at equal elevations when not loaded by a tire, whereby said treadway is substantially planar, and being of equal elastic moduli whereby all of said tread bars will be equally depressed by equal tire weights imposed thereon, as a result of which said tread bars will be unequally depressed by an improperly inflated tire supported on said treadway, the pattern of said unequal depression indicating the nature of the improper inflation, said treadway being of sufficient length to support the entire road-engaging surface of said tire intermediate the ends thereof, whereby the proportion of the weight imposed by said tire on said tread bars which is supported by said resiliently yieldable means may be varied by centering said tire relatively closer to or further from the ends of said bars supported by said resiliently yieldable means.

4,084,432

METHOD OF SIMULATING CAVITATION BY HYDRAULIC TESTING

Yves Lecoffre, Echirolles, France, assignor to Societe Generale de Constructions Electriques et Mecaniques Alsthom S.A., Paris, France

Filed Jan. 26, 1977, Ser. No. 762,595
Claims priority, application France, Feb. 10, 1976, 76 03616
Int. Cl.[2] G01M *10/00*
U.S. Cl. 73—148 **2 Claims**



1. A method for simulating cavitation on models including the step of introducing micro-bubbles into a test liquid stream upstream of an immersed model which produce effects similar to those of a prototype operating at the same cavitation number, the improvement comprising the step of varying the distance between the point of injection of the bubbles into the test liquid and the model downstream thereof as a function of the quantity of gas dissolved in the test liquid, the kind of gas, the kind of test liquid, rate of flow of the test liquid and pressure of the test liquid, to insure homogeny of bubbles in the test zone and to prevent the bubbles from disappearing completely by gaseous diffusion prior to reaching the test zone and from exceeding 200 microns in size at said test zone.

4,084,433

METHOD AND APPARATUS FOR QUANTITATIVELY AND QUALITATIVELY DETERMINING THE DUST CONTENT OF FIBROUS MATERIAL

Willem J. Naarding, Stad Delden, Netherlands, assignor to Hergeth KG Maschinenfabrik und Apparatebau, Dulmen, Germany

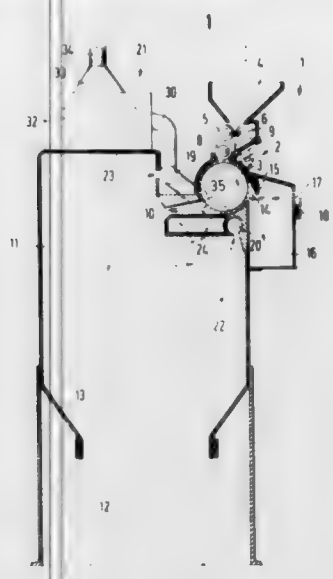
Filed Sep. 30, 1976, Ser. No. 728,055
Claims priority, application Germany, Oct. 4, 1975, 2544563
Int. Cl.[2] G01N *5/00*
U.S. Cl. 73—159 **17 Claims**

1. A method for determining the content of fine dust contained in a given amount of fibrous material, which fine dust is detrimental to open-end spinning, which comprises the steps of:

(a) opening said given amount of fibrous material to provide individual fibers and fine dust released therefrom;

(b) entraining the individual fibers and fine dust in a flow of

air and subjecting the individual fibers and fine dust to constriction while thus entrained;
(c) separating said fine dust from said individual fibers;
(d) collecting said individual fibers;



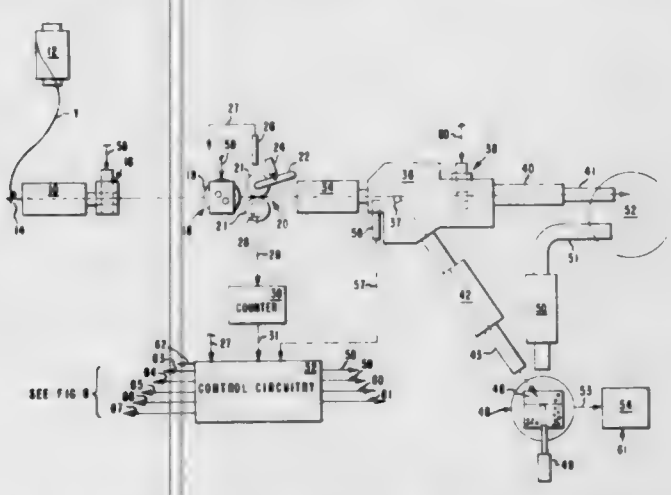
(e) collecting said fine dust; and
(f) weighing the collected individual fibers and collected fine dust.

4,084,434

APPARATUS FOR DETERMINING DENIER OF YARN

Lewis Charles Goodrich, Wilmington; Theron Robert Holt, Newark; Joseph Cyril Osborne, Wilmington, all of Del.; Donald Kirk Pusey, West Grove, Pa., and James William Roxlo, Rockaway, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 29, 1977, Ser. No. 782,325
Int. Cl.[2] D01H *13/32*
U.S. Cl. 73—160 **4 Claims**



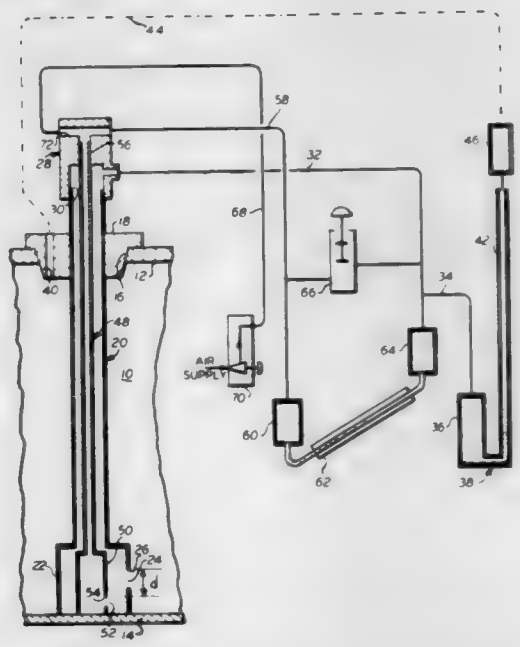
1. In an apparatus for determining denier of yarn that includes a source of supply of said yarn, a scale for weighing a measured length of said yarn, and a transport system for measuring and transferring said measured length of yarn from said source of supply to said scale, a yarn diverter to permit stripping of said source of supply to a waste receptacle and transferring said measured length of yarn to said scale in a continuous operation, said yarn diverter comprising: a block positioned between said transport system, said waste receptacle and said scale, said block having a through passage aligned with said transport system and said waste receptacle and a branch passage leading from an intermediate location on said through passage toward said scale, said through passage having inlet and outlet ends; means for cutting said yarn between said intermediate location and said outlet end; and means for aspirating said through passage both at its inlet and outlet end and said branch passage at its outlet end according to a preselected operating mode that provides for directing said yarn to said waste receptacle and then to said scale without stopping movement of said yarn.

4,084,435

SYSTEM FOR MEASURING WATER LEVEL IN GASOLINE TANK

Edward Weik, Williston Park, and Roger Thomson, Bayshore, both of N.Y., assignors to Petrometer Corporation, New Hyde Park, N.Y.

Filed Apr. 1, 1977, Ser. No. 783,680
Int. Cl.[2] G01F *23/14*
U.S. Cl. 73—299 **9 Claims**



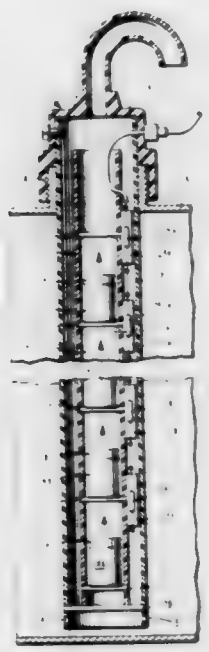
1. A system for measuring the water level within a predetermined range at the bottom of a tank containing gasoline comprising,
(a) a first air bell adapted to be inserted into said tank and having an opening in the lower part thereof to define a first interface,
(b) a second air bell adapted to be inserted into said tank and having an opening in the lower part thereof to define a second interface which is lower than said first interface,
(c) a manometer containing liquid between opposite legs thereof,
(d) one leg of said manometer being in communication with the upper end of said second air bell for transmitting the hydrostatic pressure at said second interface to said one leg, and the other leg of said manometer being in communication with the upper end of said first air bell for transmitting the hydrostatic pressure at said first interface to said front leg, causing displacement of manometer liquid as a function of the pressure difference between said interfaces, whereby said displacement is a function of the water level between said interfaces, there being minimum displacement when said water level is at said second interface and maximum displacement when said water level is at said first interface,
(e) the upper end of said first air bell being in communication with the rear leg of another manometer whose front leg is vented whereby the liquid displacement in said another manometer is a function of the gasoline level in said tank when the latter is vented.

4,084,436

FUEL OIL LEVEL MEASURING APPARATUS

Ray C. Smitherman, Spencer, N.C., assignor to RTR Incorporated, Spencer, N.C.

Filed Dec. 1, 1975, Ser. No. 636,758
Int. Cl.[2] G01F *23/12*
U.S. Cl. 73—313 7 Claims



1. An apparatus for indicating the level of fuel oil in a fuel oil storage tank, said apparatus comprising:

a substantially vertically extending substantially straight conduit;

a plurality of stop means, each of said stop means extending inwardly from the interior wall of said conduit, said stop means being spaced from each other along said conduit;

a plurality of floats positioned in said conduit, each float being positioned between a respective pair of next adjacent ones of said plurality of said stop means;

a plurality of magnets each of which is mounted on a respective one of said floats;

a plurality of reed switches electrically connected in series to each other, each of said reed switches being mounted on the exterior of said conduit immediately adjacent and having a portion vertically coextensive with a respective one of said stop means;

a plurality of resistors electrically connected in series to each other, each of said resistors being electrically in parallel with a respective one of said plurality of reed switches; and

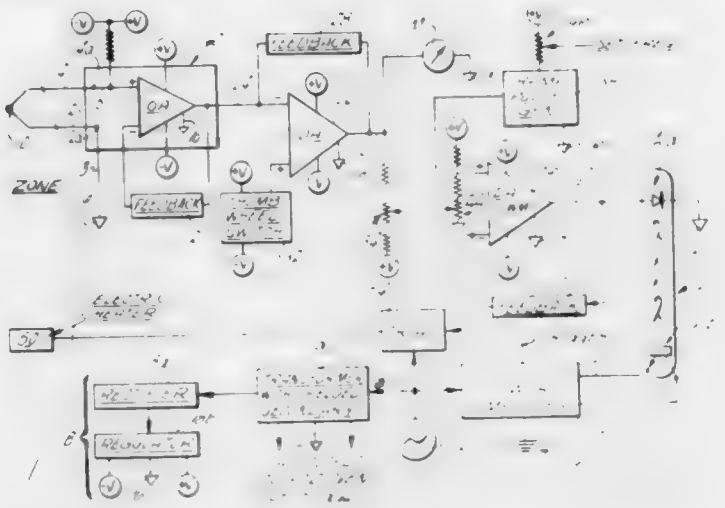
a meter electrically connected to said reed switches and said resistors so that as the level of fuel oil in a fuel oil storage tank in which said conduit is positioned, rises, each of said floats and magnets thereon successively, from the lowermost to the uppermost, rises and actuates the reed switch adjacent one of the two stop means between which it is positioned whereby said meter can indicate that the level of fuel oil is adjacent that reed switch and as the level of fuel oil falls, each of said floats and magnets thereon successively, from the uppermost to the lowermost, falls and deactuates the reed switch adjacent one of the two stop means between which it is positioned whereby said meter can indicate that the level of fuel oil is no longer adjacent that reed switch.

4,084,437

THERMOCOUPLE CIRCUIT

Francis Finnegan, Wrentham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 629,937, Nov. 7, 1975, abandoned, which is a continuation of Ser. No. 427,863, Apr. 2, 1974, abandoned. This application Aug. 23, 1976, Ser. No. 716,750
Int. Cl.[2] G01K *7/12*
U.S. Cl. 73—361 5 Claims



1. A thermocouple circuit comprising

(a) a pair of dissimilar conductors adapted to extend into a zone, the temperature of which is to be monitored, the pair of conductors having ends and opposite ends,

(b) a transducer defined by the ends of said dissimilar conductors,

(c) an operational amplifier coupled to the opposite ends of said conductors,

(d) a disk like capsule of thermally conductive material, said opposite ends of said conductors embedded in said capsule disposed adjacent to the operational amplifier in heat transfer relation thereto, and

(e) a self regulating oven comprising a heating element formed of a material having a relatively steeply sloped positive temperature coefficient (PTC) of resistivity, the oven defining a chamber therein, the heating element adapted to heat the chamber to a predetermined temperature, the capsule and amplifier disposed in the chamber.

4,084,438

CAPACITIVE PRESSURE SENSING DEVICE

Shih-Ying Lee, Lincoln, and Dennis K. Briefer, Berlin, both of Mass., assignors to Setra Systems, Inc., Natick, Mass.

Filed Mar. 29, 1976, Ser. No. 671,612
Int. Cl.[2] G01L *9/12*
U.S. Cl. 73—706 33 Claims

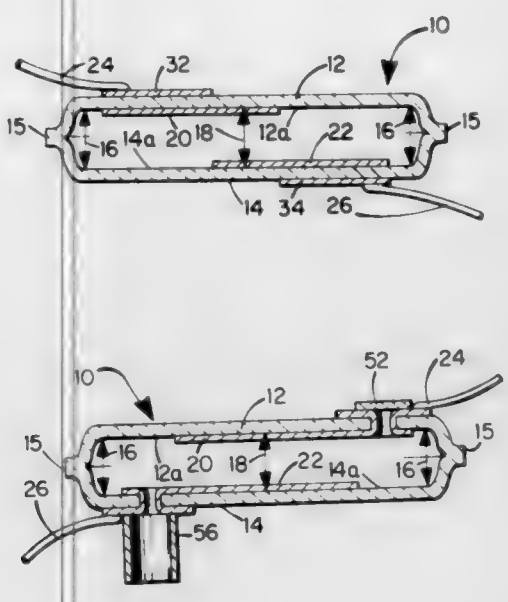
1. A pressure sensing device comprising:

A. a pair of dielectric disc elements, each having at least one nominally planar surface peripherally bounded by a predetermined curve, said disc elements being fused together at their peripheral boundary to form a hollow monolithic capsule having nominally planar opposed inner surfaces, wherein said opposed inner planar surfaces are mutually separated by a uniform, predetermined gap near said peripheral boundary and by a distance related to the difference in pressure exterior and interior to said capsule otherwise, and wherein said capsule includes inner conductive film members disposed on opposed portions of said opposed inner surfaces, and

B. coupling means for electrically coupling said inner film members to conductive terminal elements exterior to said capsule,

wherein the outer surface of said capsule has an outer conduc-

tive film member disposed on a portion thereof opposite each inner conductive film member, each of said outer conductive



film members being in good electrical contact with one of said terminal elements.

4,084,439

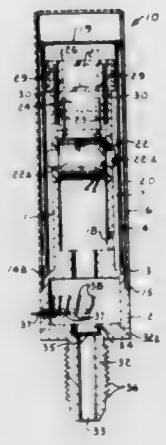
PRESSURE TRANSDUCER WITH CAPACITOR PICK-UP MEANS

Robert D. Teter, Olathe; James W. Maddock, Merriam, and Paul L. Rothers, Gardner, all of Kans., assignors to King Radio Corporation, Olathe, Kans.

Continuation of Ser. No. 618,395, Oct. 1, 1975, abandoned. This application Jan. 3, 1977, Ser. No. 756,075

Int. Cl.[2] G01L *9/12*

U.S. Cl. 73—718 **2 Claims**



1. A method of producing an electric signal indicative of the pressure differential between a fluid and a reference pressure, said method comprising the steps of:

providing a vibrational membrane;

maintaining said reference pressure on one side of said membrane;

bringing said fluid into contact with the other side of said membrane;

effecting vibration of said membrane in the fifth order vibrational mode thereof;

locating five capacitor plates at spaced positions in proximity to said membrane to cooperate therewith in providing a capacitor to sense the vibrations of said membrane; and

producing an oscillatory output signal from said capacitor corresponding in frequency to the vibrational frequency of said membrane, said output signal thereby being related to the pressure differential between said fluid and said reference pressure.

4,084,440

CHROMATOGRAPH INJECTION SYSTEM

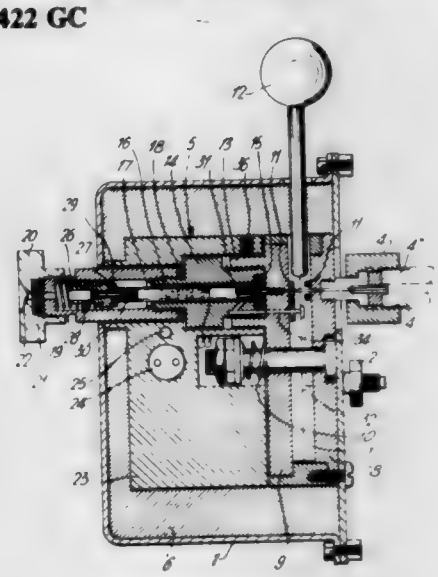
Wilfred C. Carpenter, Ralston; Gary N. Schmitz, and Walter J. Fenrick, both of Medicine Hat, all of Canada, assignors to Her Majesty in Right of Canada as Represented by the Minister of National Defence, Ottawa, Canada

Filed Oct. 4, 1976, Ser. No. 729,382

Claims priority, application Canada, Mar. 31, 1976, 249316

Int. Cl.[2] G01N *1/22*

U.S. Cl. 73—422 GC **20 Claims**



16. A method for rapid quantitative transfer of a sample into a gas chromatograph comprising the steps:

(a) flowing a carrier gas through a bypass passage in an injection device and into said chromatograph until substantially equilibrium conditions are attained;

(b) inserting a sample housing containing a sample to be tested into an isolated chamber in said injection device while continuing said gas flow through said bypass; and

(c) diverting said gas flow from said bypass passage so as to pass through said sample housing thereby desorbing and transferring said sample to said chromatograph without interruption of said gas flow.

4,084,441

DEVICE FOR OBTAINING A SAMPLE OF MOLTEN MATERIAL AND DEOXIDIZING ELEMENT FOR USE THEREWITH

Robert F. McDevitt, Ogden Dunes, Ind., assignor to Charles S. Penfold, Fort Wayne, Ind.

Division of Ser. No. 720,697, Sep. 7, 1976. This application Apr. 29, 1977, Ser. No. 792,340

Int. Cl.[2] G01N *1/12*

U.S. Cl. 73—425.4 R **12 Claims**



12. A deoxidizing means adapted for use in a device for obtaining a sample of molten metal, said means comprising a piece of metal which is formed into a generally cylindrical structure for contraction and expansion when placed in a tube of such a device.

4,084,442

CONTROL OF PROCESSES

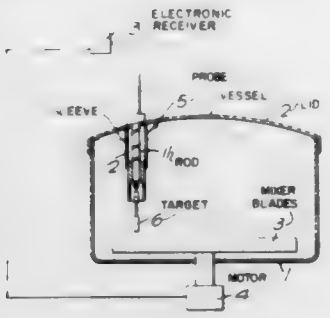
David Kay, Castle Donnington, England, assignor to The Boots Company Limited, England

Filed Nov. 24, 1976, Ser. No. 744,895

Claims priority, application United Kingdom, Nov. 27, 1975, 48907/75

Int. Cl.² G01N *15/00*

U.S. Cl. 73—432 PS **11 Claims**



1. An apparatus for determining the end-point of an operation in which the flow properties of particulate material are being altered during agitation comprising an agitation vessel provided with agitation means and a probe extending into the agitation vessel, said probe deflecting when hit by particulate material being agitated, and means for detecting when the amplitude and/or frequency of the deflections of the probe changes to a given level.

4,084,443

ACCELEROMETERS

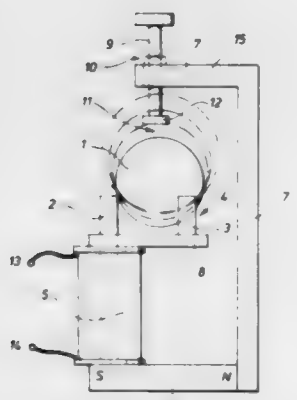
Derek Oscar Walter, London, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed Mar. 25, 1977, Ser. No. 781,453

Claims priority, application United Kingdom, Mar. 30, 1976, 12748/76

Int. Cl.² G01P *15/08*

U.S. Cl. 73—517 R **5 Claims**



6

3. An accelerometer including at least one body, a plurality of supports for supporting the body in a state of stable equilibrium except when the accelerometer is subjected to an acceleration exceeding a threshold value wherein movement of the body relative to the supports causes a change in a physical parameter of the accelerometer and wherein the body is of generally mushroom shape having a head and a stem and the accelerator also comprises an annular parmanent magnetic element or an annular permanent magnetisable element, three substantially parallel and equally spaced core members carried by the said element and each having an associated solenoid, one end of each core constituting one of said supports for the body so that when at rest, the stem is located in a space within the solenoids and passes with clearance through the said annular element, the head is supported on the three supports constituted by the ends of the cores, and undisturbed flux linkages exist in magnetic circuits between the individual solenoids or portions of the said annular element a spacial gap between the annular element and the stem, the head and the appropriate core, the flux changing when the accelerometer is subjected to an acceleration which dislodges the head from at least one support to establish a space therebetween.

4,084,444

ROTARY ULTRASONIC TESTING APPARATUS

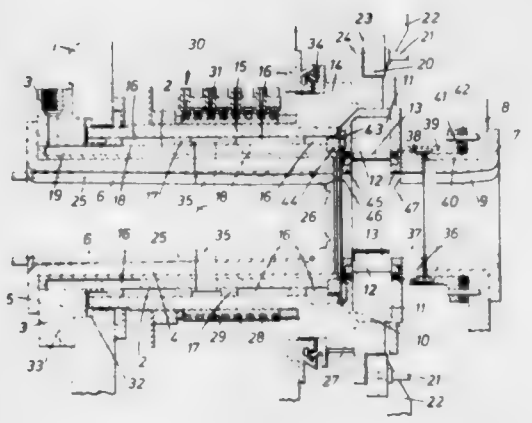
Richard Lewis, Rushden, England, assignor to British Steel Corporation, London, England

Filed May 11, 1976, Ser. No. 685,158

Claims priority, application United Kingdom, May 13, 1975, 20149/75

Int. Cl.² G01N *29/04*

U.S. Cl. 73—622 **6 Claims**



1. In a rotary ultrasonic testing apparatus comprising an annular stator; a replaceable annular ultrasonic probe assembly mounted for rotation on the stator; first and second fixed replaceable annular guideways for the articles to be tested located one on each side of the probe assembly, said guideways having internal configurations arranged to conform to the cross-section of the article to be tested and provide a close tolerance guide therefor, the improvement wherein the internal dimension of said guideways adjacent said probe assembly is smaller than the internal dimension of said probe assembly and said guideways each have an end surface adjacent the probe assembly which serve as radially inwardly extending side walls immediately adjacent the opposite sides of the probe assembly.

4,084,445

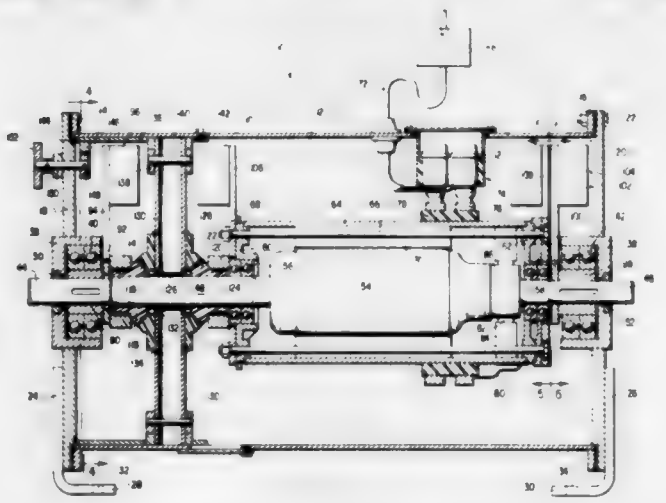
CONTRA-ROTATING VIBRATOR

Arthur F. Erwin, 305 Woodland La., Oconomowoc, Wis. 53066

Filed Dec. 11, 1975, Ser. No. 639,773

Int. Cl.² F16H *33/00*

U.S. Cl. 74—61 **18 Claims**



1. A device for producing vibratory motion, comprising:
a frame;
a motor carried by said frame comprising first and second

members which impose reactive forces on one another and which rotate in opposite directions about a common axis in response to said forces;

a first weight connected to and rotating about said common axis with said first member, the center of gravity of said first weight being offset from said common axis; and

a second weight connected to and rotating about said common axis with said second member, the center of gravity of said second weight being offset from said common axis, said second weight rotating in the opposite direction from said first weight.

4,084,446

VIBRATORY MACHINE

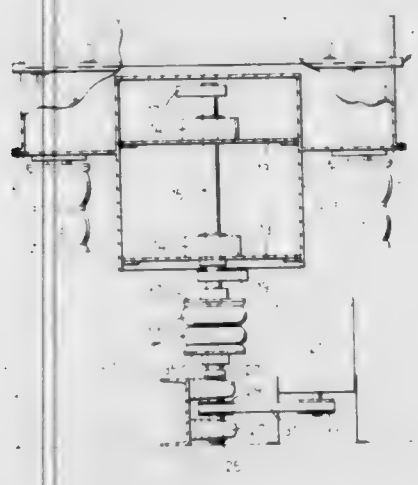
George Terah Gough, Newcastle, England, assignor to Gough & Company (Hanley) Limited, Stoke on Trent, England

Filed Jun. 14, 1976, Ser. No. 695,819

Claims priority, application United Kingdom, Jun. 17, 1975, 25750/75

Int. Cl.² F16H *33/00*

U.S. Cl. 74—61 **9 Claims**



1. A vibratory machine comprising a support frame, at least one flexible suspension device supported on said support frame, a vibratable member supported by said at least one suspension device, an output shaft for vibrating said vibratable member, at least one bearing means connecting said output shaft to said vibratable member and at least one out-of-balance weight carried by said output shaft and rotatable thereby about the longitudinal axis of said output shaft, an input shaft, at least one bearing rotatably mounting said input shaft on the support frame, drive means coupled to said input shaft for rotating said input shaft, and a flexible resiliently deformable member said deformable member having a second end connected to said output shaft, said flexible resiliently deformable member defining coupling means for rotationally coupling said input shaft to said output shaft without transmitting other movements of said output shaft to said input shaft, there being two of said out-of-balance weights adjustably mounted on said output shaft one adjacent each end of the shaft, said bearings mounting said input shaft in line with said output shaft, and said drive means including a belt pulley mounted on said input shaft and a drive belt connecting said belt pulley to a power source which comprises a motor mounted on the machine frame, said bearings mounting said input and output shafts for rotation about a common vertical axis, two transverse plates connected to said vibratable member, and there being two of said bearing means, said two bearing means being vertically spaced heavy duty bearings connecting said output shaft to said transverse plates.

4,084,447

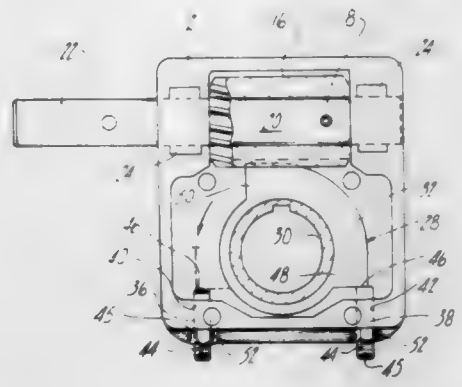
VALVE ACTUATOR

Thomas B. Dalton, Muskegon, Mich., assignor to Westran Corporation, Muskegon, Mich.

Filed Apr. 1, 1976, Ser. No. 672,839

Int. Cl.² F16H *27/02*

U.S. Cl. 74—89.14 **4 Claims**



1. A valve actuator for use with a valve having an actuator shaft the rotation of which actuates the valve, said valve actuator comprising

a housing,

a worm gear mounted for rotation in said housing, said worm gear having a shaft portion extending externally of said housing,

a segmented gear mounted for rotation in said housing along an axis substantially perpendicular to and spaced from the axis of rotation of said worm gear so that said segmented gear meshes with said worm gear,

means for securing said actuator shaft to said segmented gear, and

two elongated stop members threadably engaged in threaded bores in said housing so that the longitudinal axis of each stop member is substantially perpendicular to rotational axis of said segmented gear and so that a first axial end of each stop member is accessible exteriorly of said housing while the second axial end of each stop member is positioned interiorly of said housing whereby the axial position of the second axial ends of said stop members can be adjusted by rotation of said stop members, and wherein the second end of one stop member is adapted to abut against one of the outer teeth of said segmented gear at the extreme rotational travel of said segmented gear in one direction to thereby limit the rotation of said segmented gear in said last mentioned direction, and wherein the second end of the other stop member is adapted to abut against the other outer tooth of said segmented gear at the extreme rotational travel of said segmented gear in the other direction to thereby limit the rotation of said segmented gear in the last mentioned direction.

4,084,448

ESCAPEMENT ASSEMBLY FOR SHIFT CONTROL MECHANISM

Robert W. Wolfe, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Feb. 23, 1977, Ser. No. 771,230

Int. Cl.² G05G *5/12, 7/00*

U.S. Cl. 74—475 **20 Claims**

1. In a transmission shift control mechanism having a main housing, means for shifting a transmission, and a shift lever, movable in an arc, for controlling said shifting means through a plurality of settings corresponding in number to the number of in-gear and neutral positions of said transmission, wherein the improvement takes the form of an escapement assembly comprising:

a. a control member mounted on said housing, said control member having an arcuate surface provided with a plurality of spaced detent cut-outs corresponding to the location

of said in-gear and neutral positions of said transmission and in number exceeding said number of in-gear and neutral positions;

b. an escapement latch pivotally secured to said shift lever, each end of said escapement latch including a depending portion, one or the other of which, depending on the direction of movement of said shift lever, is capable of entering into one of said detent cut-outs, upon pivoting of said escapement latch so as to inhibit further movement of said shift lever; and



c. bias means operatively interposed between said control member and said escapement latch for sequentially pivoting and then again centering said escapement latch relative to said control member for each of said in-gear and neutral positions of said tranmission, whereby all but the slowest movement of said shift lever will cause a momentary entry and subsequent momentary interference between said escapement latch and one of said detent cut-outs, thereby producing sequential single-step shifts of said transmission.

4,084,449

BRAKE LEVER FOR A BICYCLE

Masayoshi Kine, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jul. 23, 1976, Ser. No. 708,113
Claims priority, application Japan, Aug. 1, 1975, 50-107780
Int. Cl.² G05G *11/00;* B62K *23/06;* B62L *3/02*
U.S. Cl. 74—480 R **5 Claims**



1. A brake lever means mounted on a drop type bicycle handle comprising a straight rod section and a substantially U-shaped bent rod section extending downward and forward from the straight rod section, said brake lever means comprising:

a bracket means fixed to said bent rod section of the drop type handle;

a lever spindle;

a main lever pivotally mounted above a first axis to said bracket means through said lever spindle, said main lever being substantially parallel to said bent rod section;

a wire retainer on said main lever for retaining one end of a control wire for controlling a brake of the bicycle;

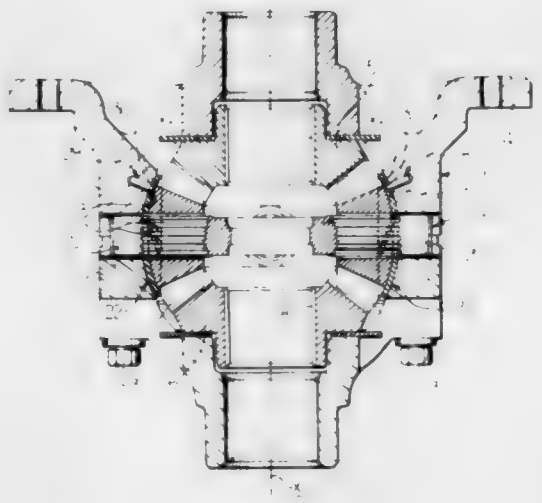
an auxiliary lever pivotally mounted about a second axis to one side outer surface of said bracket means, said second axis being more remote from said wire retainer than said first axis of said main lever, said auxiliary lever being engagable with said main lever to actuate same, whereby the bicycle brake is operable by both said levers, and the position of said second axis is changeable so that the distance between said auxiliary lever and said straight rod section of the drop type handle may be adjusted.

4,084,450

THRUST WASHER ARRANGEMENT FOR DIFFERENTIALS

William E. Conroy, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 27, 1976, Ser. No. 727,190
Int. Cl.² F16H *1/40*
U.S. Cl. 74—713 **7 Claims**



1. A differential comprising

a housing,

a spider comprising at least one stub shaft mounted on said housing,

a pinion gear rotatably mounted on said stub shaft,

a thrust washer disposed between an outboard side of said pinion gear and said housing,

means defining a closed and elongated slot through said thrust washer, said slot disposed entirely within the confines of said thrust washer and further disposed adjacent to an edge thereof, and

a pin having a first end thereof secured to said housing and a second end thereof disposed in the slot defined through said thrust washer.

4,084,451

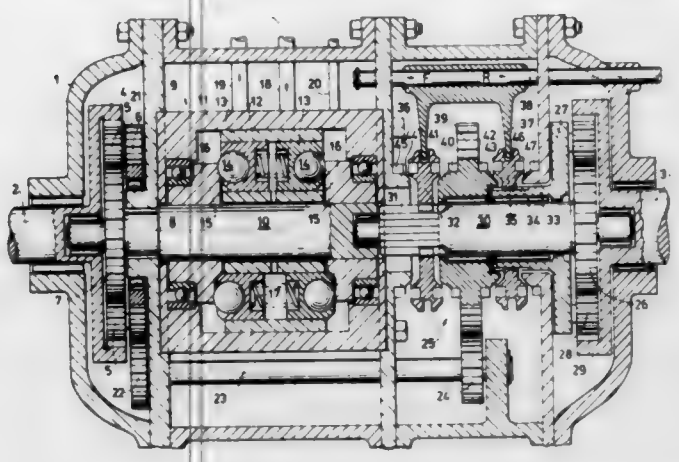
DRIVE-TRANSMITTING MECHANISMS

John Lionel Raymond Ward, Ivy Rock, Tidenham, Chepstow, Gwent, Wales

Filed Dec. 9, 1976, Ser. No. 748,890
Claims priority, application United Kingdom, Jul. 2, 1976, 50335/76; Jul. 23, 1976, 27755/76; Jul. 23, 1976, 30911/76
Int. Cl.² B60K *41/04;* F16H *37/06*
U.S. Cl. 74—867 **13 Claims**

1. A drive-transmitting arrangement comprising a gear assembly having an input member and two output members, wherein one of the output members is connected to the operating element of a hydraulic pump and valve means is provided in the outlet line of the hydraulic pump, which valve means is

adjustable to adjust the resistance to movement of the operating element of the hydraulic pump and thereby to adjust the



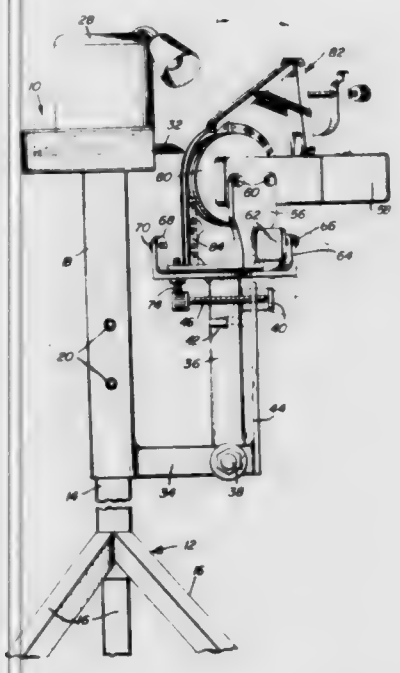
ratio between the rates of rotation of the input member and the other output member.

4,084,452

OSCILLATING SAW CHAIN SHARPENER

Jack F. Simington, Chiloquin, Oreg., assignor to Simington Products Co., Chiloquin, Oreg.

Filed Nov. 10, 1976, Ser. No. 740,718
Int. Cl.[2] B23B *63/16*
U.S. Cl. 76—42 **7 Claims**



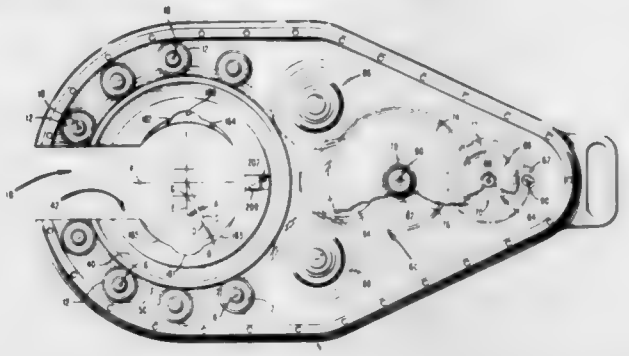
1. In combination, a a support from which a drivable rotary grinding wheel is journaled for rotation about a first predetermined axis, a mount, support means supporting said mount from said support for guided back and forth shifting relative to said support toward and away from the outer periphery of said grinding wheel along a predetermined path extending at least generally radially of said axis and for limited oscillation of said mount about a second axis generally paralleling said first axis, said mount including means operative to support a length of saw chain therefrom, said support means including a mounting arm having one end pivotally supported from said support for rotation about a third axis generally normal to said first axis, said mount being supported from the other end of said mounting arm.

4,084,453

POWER TONGS

Emery Lee Eckel, Odessa, Tex., assignor to Eckel Manufacturing Co., Inc., Odessa, Tex.

Filed Mar. 30, 1976, Ser. No. 671,959
Int. Cl.[2] B25B *17/00*
U.S. Cl. 81—57.18 **9 Claims**



1. A power tong for rotating a pipe of selected outside diameter to make up or break apart a threaded joint comprising a frame having a throat for receiving a pipe, a partial ring rotatably mounted on said frame about a center of rotation defining a first reference point and having an opening therein which is adapted to be aligned with said throat so that a pipe may be positioned within said partial ring, said partial ring defining first and second cam surfaces positioned on opposite sides of the center line of said opening, said first and second cam surfaces each including a neutral cam surface and two gripping cam surfaces, said neutral cam surface of said first and second cam surfaces being radially outwardly of said two gripping cam surfaces of said first and second cam surfaces, respectively, relative to said center line of said opening to permit said pipe to be positioned in said opening, said two gripping cam surfaces of said first and second cam surfaces forming portions of circles whose centers are at second reference points lying between said first reference point and said neutral cam surface of said first and second cam surfaces, respectively, said second reference points lying on a line which is perpendicular to the center line of said partial ring and passes through said first reference point, means for rotating said partial ring about said center of rotation, and die means operatively associated with said partial ring, said die means having a size and radius of curvature corresponding to said selected outside diameter of said pipe and including dies and cam followers positioned on opposite sides of said center line of said opening, said cam followers being received in said neutral cam surfaces when said power tong is in its neutral position so that said dies are out of gripping engagement with said pipe, said cam followers being adapted to move along said gripping cam surfaces to move said die means inwardly so that said dies grip said pipe on opposite sides thereof on rotation of said partial ring, the position of said cam followers along said gripping cam surfaces when said dies grip said pipe defining third reference points, first and second lines originating at said first and second reference points, respectively, and terminating at said third reference points relative to each of said first and second cam surfaces defining a cam angle of about ½° to 5½° whereby rotation of said partial ring causes said dies to grip said pipe at said cam angle for turning movement of said pipe to make up or break apart a threaded joint.

4,084,454

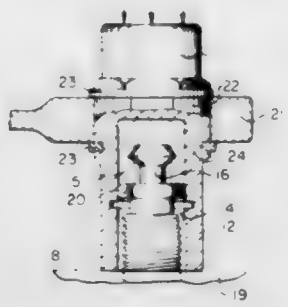
SOCKET HEAD TOOL

Leon E. Day, West Memphis, Ark., assignor to Polygon, Inc., Essex, Conn.

Filed Jan. 8, 1976, Ser. No. 647,649
Int. Cl.[2] B25B *13/48*
U.S. Cl. 81—121 R **2 Claims**

1. A tool for loosening a frozen threaded part of the type which is screw-threaded into a work-piece and has a unitary turning head freely exposed outwardly of a surface of the

work-piece, said tool comprising a generally cup-shaped, elongated socket tool body having means for receiving hammer-like blows, said means comprising a solid upper axial head and an axially downwardly extending hollow skirt portion below said head terminating in a peripheral lower rim, said skirt portion having an internal depth greater than the height of the work-piece head above the work-piece to completely house the head when said lower rim is in engagement with said work-piece, said solid head being spaced from the upper end of said threaded part, said skirt portion being provided with an internal non-circular surface to provide driving engagement



with the gripping portions of the threaded part, said tool socket body having non-circular outer surface axially intermediate said upper head and said lower rim for engagement by a complementary non-circular opening of a wrench but slidable axially relative to the wrench, whereby, with said tool socket body positioned over the head of said threaded part and with its lower rim resting on said work-piece, application of hammer-like blows to said solid upper axial socket head produces jarring forces passing from said upper head through the skirt to the work-piece without substantial transfer of said forces to the threaded part and to the wrench.

4,084,455

ADJUSTABLE WRENCH

Charles R. Budrose, Melrose, Mass., assignor to Upaya, Inc., Saugus, Mass.

Filed Sep. 2, 1976, Ser. No. 719,934
Int. Cl.[2] B25B *13/14*
U.S. Cl. 81—140 **9 Claims**



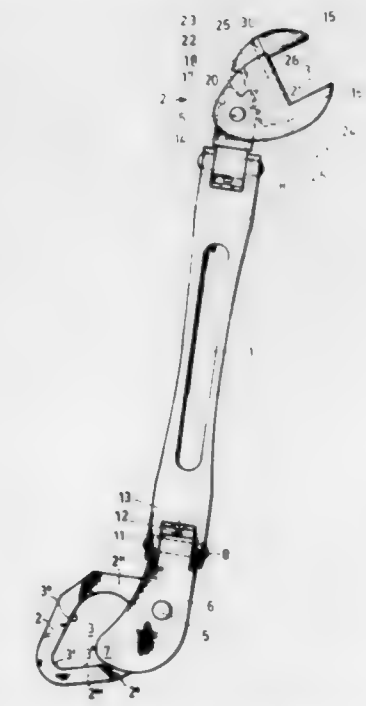
1. An adjustable wrench comprising;
a pair of jaws,
means for supporting the jaws for relative movement therebetween to open and close the jaws,
teeth on one of said jaws disposed along a linear track,
an annular pinion gear associated with the other of said jaws,
annular, uni-directionally rotatable means for supporting the pinion gear permitting rotation of the pinion gear in only one direction,
means for supporting said uni-directionally rotatable means,
actuating means coupled to said means for supporting said uni-directionally rotatable means for pivoting said pinion gear away from the teeth,
and means for biasing the pinion gear into engagement with the teeth.

4,084,456

WRENCH

Max Pasbrig, Casa Luce, via Eco, 6644 Orselina, Switzerland

Filed Dec. 19, 1974, Ser. No. 534,641
Claims priority, application Germany, Feb. 1, 1974, 7403522
Int. Cl.[2] B25B *13/00*; B25G *1/00*
U.S. Cl. 81—177.8 **10 Claims**



1. A tool for turning components comprising an elongated handle, a head provided at one end of said handle, said head being adapted for engagement with a component for the turning of said component, a member engageable with said head and said handle, means for pivotably mounting said member at said handle for movement about a pivot axis lying in a plane extending substantially at right angles to a plane extending lengthwise of said handle and substantially at right angles to said handle, means for pivotably mounting said head at said member for movement about a pivot axis extending substantially perpendicular to said member, said head being pivotably connected to the handle for pivotable movement relative to the handle about an axis lying such that when the head engages the component to be turned the handle can be pivoted relative to the head from a position which is generally radial to a position in which it is more axial with respect to the axis about which the component is to be turned, and means cooperating with said head for automatically opening and closing the effective size of said head engageable with said component as a function of the movement of said handle, said head including a gripping strap in the form of a closed loop to be located about a component to be gripped, said cooperating means including nose formation means pivotable relative to said gripping strap for gripping the component between the gripping strap and the nose formation means of said gripping nose member, said gripping nose member having a forked portion including arms, said gripping strap being generally flat and having shoulders defining a thin portion and a thick portion, said thin portion being pivotably mounted between the arms of said forked portion, said thick portion being of substantially the same thickness as the forked portion of said gripping nose member which is also generally flat.

4,084,457

SCREW REMOVING TOOL

Donald L. Berg, 114 N. Douglas St., Dodgeville, Wis. 53533

Filed Jun. 29, 1977, Ser. No. 810,936
Int. Cl.[2] B25B 7/02
U.S. Cl. 81—425 R 10 Claims



1. A tool for removing embedded screws and the like, comprising:

a. a pair of connected handles,

b. a pair of screw removal heads mounted one to each of said handles in opposed relation in position to engage a screw between said heads when said handles are forced toward a closed position, each of said screw removal heads having,

1. a pair of parallel clinching edges disposed in laterally spaced relation,

2. a third clinching edge disposed between and perpendicular to said pair of parallel clinching edges and connecting the same to form a generally U-shaped jaw, said perpendicular clinching edge forming the bottom innermost edge of each said screw removal head,

whereby firm engagement of said screw removal heads with opposite sides of a screw head will force said parallel edges into the sides of the screw head to allow rotational torque to be applied to the screw to allow the same to be turned out by rotation of said handles and will cause said perpendicular edges to engage the screw head to oppose movement of the tool off the screw head.

4,084,458

MANUFACTURE OF CONTACT LENSES

Geoffrey Harrison Galley, Radlett, England, assignor to Global Vision (U.K.) Limited, Southampton, United Kingdom

Continuation-in-part of Ser. No. 511,091, Oct. 1, 1974, abandoned. This application Sep. 29, 1975, Ser. No. 610,244
Claims priority, application United Kingdom, Oct. 6, 1973, 46775/73
Int. Cl.[2] B23B 1/00, 5/40
U.S. Cl. 82—1 C 12 Claims

1. In a method of manufacturing a contact lens having a first and second lens surfaces, said method including the steps of:

a. centering a contact lens blank on the chuck of a lens lathe having at least a radius cutting tool and edge cutting tools means,

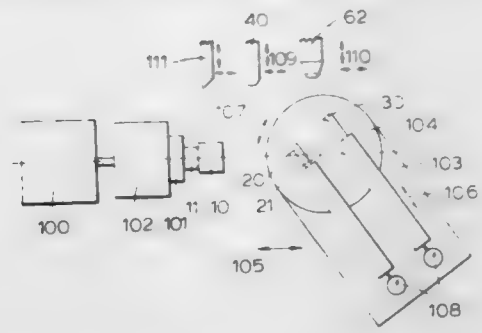
b. machining the centered blank with said radius cutting tool to form the first curved lens surface, and

c. machining the second opposite curved lens surface, the improvement comprising machining a peripheral edge portion with the edge tool cutting means while the blank is still centered on the chuck, after performing step (b), so as to form a circumferential edge surface adjacent said first curved surface and to separately form a frusto-conical surface adjoining said circumferential edge surface and opposite the peripheral portion of said first curved surface.

11. A machine for manufacturing a contact lens from a contact lens blank said machine comprising:

i. a lens blank support rotatable about an axis;

ii. first and second material removing tools mounted on a table on a radius arm, said radius arm being traversable in an arc about an axis and adapted to permit said first tool to



contact said lens blank and machine a curved lens surface thereon, and to permit said second tool to thereafter contact said blank and machine a circumferential edge surface thereon without removing the blank from the support, and

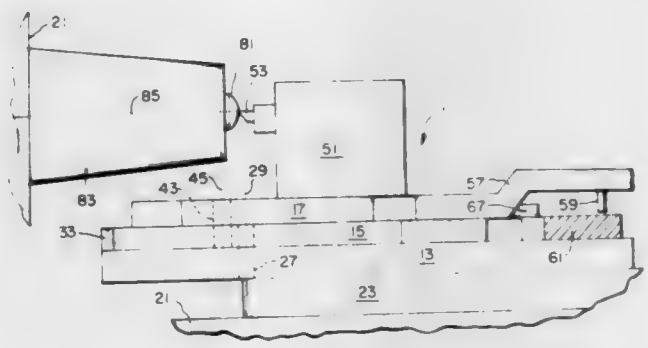
iii. a third material removing tool adapted to advance transversely of the axis of rotation of the blank support and to form a frusto-conical surface on the blank at its periphery.

4,084,459

METHOD AND APPARATUS FOR LENS TURNING

James A. Clark, Honeoye Falls, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Mar. 7, 1977, Ser. No. 775,001
Int. Cl.[2] B23B 5/40, 25/06
U.S. Cl. 82—1 C 11 Claims



1. Apparatus for forming a surface on a workpiece, said apparatus comprising:

(a) support means;

(b) a first member pivotally connected to said support means for rotation about a first axis;

(c) a second member pivotally connected to said first member for rotation about a second axis, said second axis being offset from and substantially parallel to said first axis; and

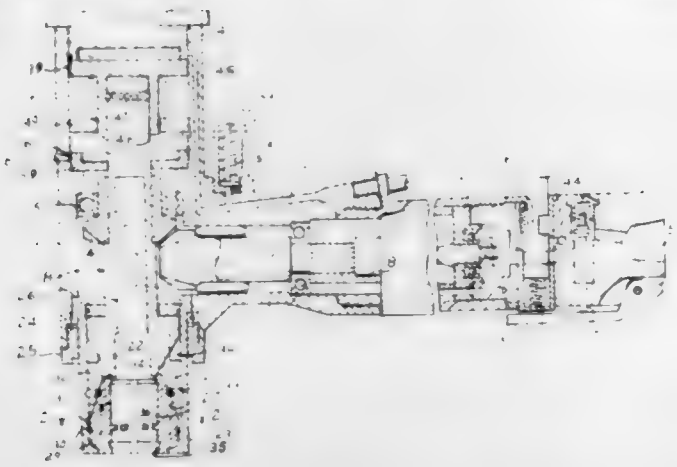
(d) means, responsive to rotation of the second member about said second axis, for rotating said first member about said first axis, said rotation of said first member about said first axis being simultaneous with at least a portion of said rotation of said second member about said second axis whereby said second axis may rotate about said first axis while said second member rotates about said second axis.

4,084,460

HAND HELD NUT RUNNING AND CRIMPING POWER TOOL

Nicholas J. Garofalo, 259-09 81st Ave., Floral Park, N.Y. 11004

Filed Mar. 4, 1977, Ser. No. 774,513
Int. Cl.[2] B25B *23/00*
U.S. Cl. 81—10 8 Claims



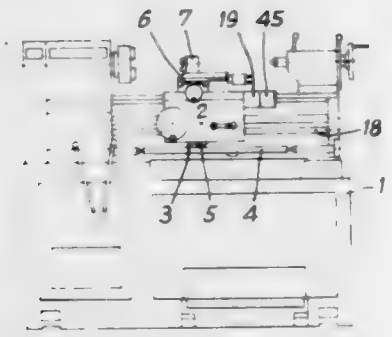
1. A hand held portable tool comprising a housing, a group of levers supported in the housing, the levers having a normal position in hexagonal array defining a hexagonal opening adapted to slidably receive a hexagonal work nut, the levers being adapted for rotation to carry the received nut around with them, the levers also being pivotable from the normal position inwardly of the opening to effect a crimping action upon the side faces of the received nut, a cam member having rotatable and axial movement in the housing, means for transmitting rotation of the cam member to the levers, means for translating the axial movement of the cam member into pivotal movement of the levers, air motor means for transmitting rotation to the cam member, air powered piston means for imparting axial movement to the cam member, and control means selectively operable for causing application of operating air to either the motor means or to the piston means, wherein the cam member has a ball bearing and groove connection with the piston enabling the cam member to have rotation relative to the piston and to have axial movement as a unit with the piston.

4,084,461

AUTOMATIC FEED FOR A LATHE

Marcel Champeau, Niort, and André Tabutin, La Celle-St-Cloud, both of France, assignors to Societe Ramo S.A., Niort, France

Filed Mar. 25, 1977, Ser. No. 781,483
Claims priority, application France, Mar. 31, 1976, 76 09350
Int. Cl.[2] B23B *3/00*
U.S. Cl. 82—21 B 6 Claims



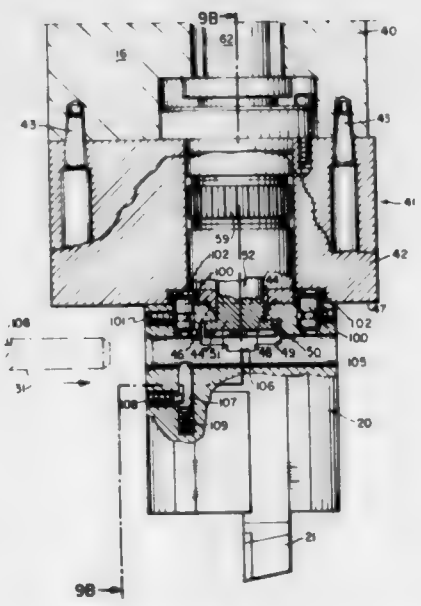
1. A lathe including:
a bed;
means for mounting a workpiece for rotational movement about an axis extending along said bed;
a tool holder carriage mounted for movement along said bed in a direction parallel to said axis;
a tool holder cross-slide mounted for movement relative to said tool holder carriage in a direction extending transversely of said bed;
a tool holder supported by said tool holder cross-slide;
means for driving said tool holder with respect to said bed;
first drive propulsion means operable to drive said tool holder driving means at a slow speed of movement, said first drive propulsion means including a guide bar extending along said bed for guiding said tool holder carriage, a first gear train engageable with said guide bar and carried by said tool holder carriage, first clutch means operable to connect said first gear train to said tool holder driving means, and a first solenoid actuatable to engage said first clutch means;
second drive propulsion means operable to drive said tool holder driving means for rapid movement of said tool holder, said rapid drive propulsion means including a drive motor carried by said tool holder carriage, a second gear train carried by said tool holder carriage and operably connected to be driven by said motor, second clutch means engageable to connect said second drive propulsion means with said tool holder driving means, and a second solenoid actuable to engage said second clutch means;
first control means for selecting slow driving movement of said tool holder driving means;
a first electric circuit connecting said first solenoid to said first control means;
a first switch means in said first electric circuit effective to interrupt energization of said first solenoid;
second control means for selecting rapid driving movement of said tool holder;
second switch means for interrupting energisation of said second solenoid;
and a second electric circuit connecting said second solenoid to said second switch means.

4,084,462

CLAMPING MEANS FOR A TOOL BLOCK IN A VERTICAL BORING MACHINE OR THE LIKE

Claude M. Grinage, Stratford, Conn., assignor to The Bullard Company, Bridgeport, Conn.

Continuation-in-part of Ser. No. 506,584, Sep. 16, 1974. This application Sep. 2, 1975, Ser. No. 609,429
Int. Cl.[2] B23B *29/00, 29/14;* B23Q *3/155*
U.S. Cl. 82—36 R 7 Claims



1. A changeable tool block and clamping means for a machine tool having automatic clamping tool means, which comprises
a. tool block body mounting a cutting tool,
b. said body being provided with a guide slot in its upper portion extending from one side to the other and having overlying flanges partially restricting the upper opening of the slot,

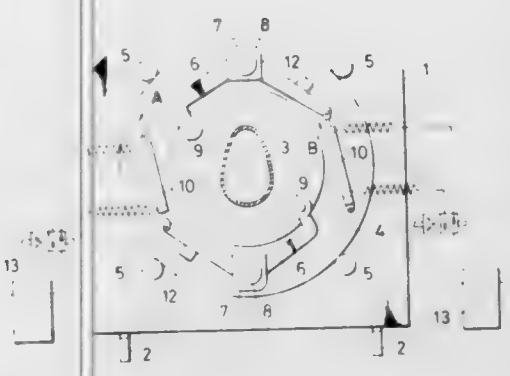
c. clamping means including a clamping element of generally inverted "T"-shaped cross-section,
d. said guide slot being adapted for the latter slideable reception of said clamping element, and accommodating the entry of said clamping element at one side and its exit at the other side,
e. said overlying flanges having upwardly diverging alignment surfaces spaced from said clamping means upon the initial reception of said clamping element in said guide slot and operative when said tool block is tightly clamped to mate with said clamping means whereby the tool block is oriented and positioned in said clamping means,
f. said tool block having a plurality of upwardly extending locating lugs, and
g. said clamping means having locating recess means for the reception of said lugs for effecting lateral alignment of the tool block.

4,084,463

APPARATUS FOR CUTTING AND CHAMFERING IRREGULAR SHAPED PIPES

Takahiro Kanbara, Kusatsu, and Toshihiko Mituhara, Moriyama, both of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 14, 1977, Ser. No. 759,523
Int. Cl.[2] B23B *37/00, 3/28*
U.S. Cl. 82—53.1 **7 Claims**



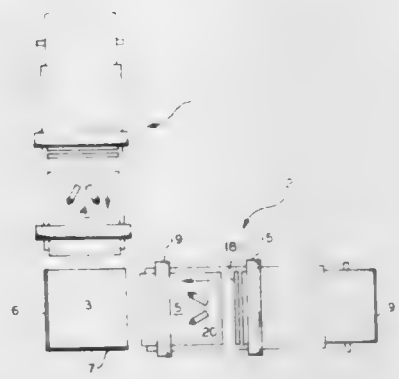
1. An apparatus for cutting circular and non-circular pipes, comprising:
a. a rotatable drum through which the pipe to be cut extends,
b. a first lever pivotally mounted on an end face of said drum,
c. a first fluid pressure cylinder pivotally mounted on said end face,
d. a first piston rod extending out of said cylinder and connected to one end of said lever,
e. a first cutting member rotatably mounted on said lever and extending toward the pipe,
f. first dirve means for rotating said cutting member
g. a first guide roller rotatably mounted on said lever adjacent said cutting member and axially aligned therewith, whereby said lever, cutting member, and guide roller may be pivoted toward the pipe by the actuation of said fluid pressure cylinder, whereby said cutting member cuts into the pipe to a depth determined by the guide roller, the latter engaging and following the surface of the pipe as the drum rotates thereabout, and
h. a first accumulator means coupled to said cylinder for maintaining the pressing force of said guide roller against the periphery of said pipe as said guide roller follows the periphery of said pipe.

4,084,464

APPARATUS FOR PREPARING CROSS-LAPPED FILM STRUCTURES

John R. Bowers, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 27, 1970, Ser. No. 58,245
Int. Cl. B65h *39/06, 29/28*
U.S. Cl. 83—94 **8 Claims**



1. An apparatus for crosslapping film comprising a first delivery means and a second delivery means, wherein said first delivery means and said second delivery means are adjacent and at an angle to each other and cooperate one with the other such that cut lengths of said film are delivered to a common location from said first delivery means and said second delivery means in alternating order, said first and said second delivery means each comprising, in combination, means for introducing a continuous sheet of said film into a first transporting means, said first transporting means comprising at least a first pair of powered counter-rotating rollers for passing said film therebetween to a cutting means, a cutting means for severing said film into said cut lengths, a second transporting means comprising at least a second pair of powered counter-rotating rollers for passing said cut lengths of film therebetween from said cutting means to said common location, and means for directing a moving stream of gas positioned between said cutting means and said second transporting means wherein said moving stream of gas is directed toward the nip of said second pair of rollers.

4,084,465

SUGAR CANE PLANTER

Clet Dugas, Box 535, Loreauville, La. 70552

Filed Jul. 2, 1976, Ser. No. 702,028
Int. Cl.[2] B23D *53/00*
U.S. Cl. 83—103 **23 Claims**



1. A suger cane planter, which comprises:
means for receiving a plurality of sugar cane stalks to be cut comprising a wheeled vehicle having substantially parallel side walls defining a stalk receiving area therebetween;
means mounted on said receiving means and positioned on a cutting assembly located adjacent one end of said vehicle for cutting said plurality of stalks of sugar cane;
means operatively connected to said cutting means for moving same across said receiving means transversely through said plurality of sugar cane stalks located therein; and
wherein said vehicle includes hopper means positioned below said cutting assembly for delivering the cut sugar cane to the ground therebelow which comprises a pair of guide plates respectively attached to said parallel side walls and extending downwardly therefrom towards one

another at an inclination so as to form a cane receiving aperture therebetween.

4,084,466

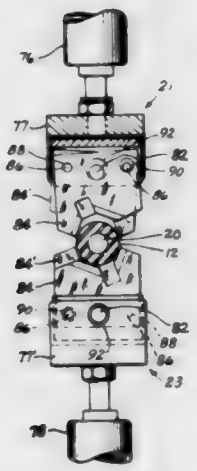
APPARATUS FOR SEVERING THIN-WALLED TUBING ON A MANDREL

Frank Sipusic, Brookfield, and Arthur L. Sheridan, Woodridge, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 468,106, May 8, 1974, Pat. No. 3,942,221. This application Dec. 29, 1975, Ser. No. 645,037

Int. Cl.[2] B23D *21/00*

U.S. Cl. 83—193 11 Claims



1. Severing apparatus for flexible, thin-walled tubing material sheathed about a support mandrel comprising at least two severing blades disposed in a substantially uniform circular planar arrangement about a mandrel and adapted to be reciprocated to and from the surface of said mandrel, each of said severing blades being pivotally mounted about an axis parallel to said mandrel on a blade mount and having two spaced apart, angularly spaced tubing engaging edges, the bisector of the angle subtended by said engaging edges on said blade defining a pivot point with an axis parallel to said mandrel for mounting said severing blade on said mount and means for reciprocating said blade mount with said severing blade mounted thereon.

4,084,467

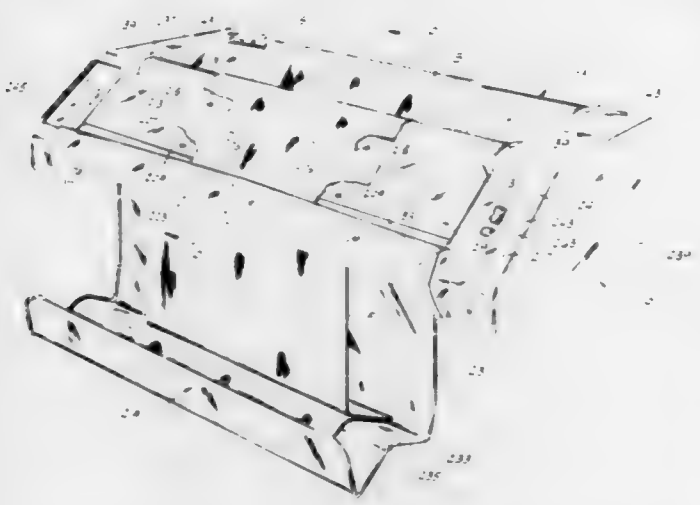
APPARATUS FOR DISPENSING FABRIC FROM A BOLT

Gail B. Schwarz, Belleville, Ill., assignor to The Measuregraph Company, St. Louis, Mo.

Division of Ser. No. 560,358, Mar. 20, 1975, Pat. No. 4,004,148, which is a continuation-in-part of Ser. No. 477,166, Jun. 6, 1974, Pat. No. 3,902,500. This application Nov. 8, 1976, Ser. No. 739,959

Int. Cl.[2] B26D *5/00*

U.S. Cl. 83—208 8 Claims



1. Apparatus for dispensing fabric from a bolt thereof comprising a panel over which the fabric is fed, said panel having means for guiding a cutting instrumentality for cutting the fabric on a line extending transversely across the fabric, means for unwinding fabric from the bolt and feeding it over the panel, means for measuring the length of fabric unwould from the bolt, means for presetting the length of fabric to be dispensed, means for starting the unwinding means, means for starting operation of the measuring means in response to arrival of the leading edge of the fabric generally at said line, means for comparing the length measured by the measuring means with the preset length, and means controlled by the comparing means for stopping the unwinding means when the preset length has been fed past said line.

4,084,468

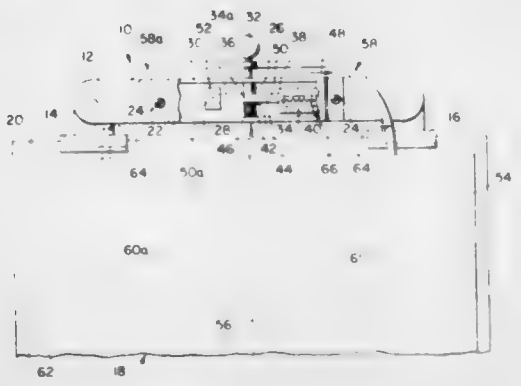
ELECTRIC PAGE TURNER

Frank M. Butler, 10 Weber Ter., S. Amboy, N.J. 08879

Filed Jul. 19, 1976, Ser. No. 706,139

Int. Cl.[2] G10G *7/00*

U.S. Cl. 84—500 5 Claims



1. A page turning apparatus comprising a page turning arm, a portion of said arm being disposed behind a page of an open book when said page turning arm is in a locked position, means to releasably engage said page turning arm in said locked position, said releasably engaging means including a shaft, a housing, said shaft being journalled to said housing, an arm, said arm extending radially outwardly from said shaft and disposed within said housing, a solenoid coil, said solenoid coil having a moving core portion, a portion of said moving core portion disposed outwardly from said solenoid coil and in touching engagement with the free end of said arm when said page turning arm is in said locked position, bias means to urge said page turning arm from said locked position into a released position, said portion of said page turning arm causing said page to be turned when said page turning arm traverses from said locked position to said released position, means to manually engage said page turning arm from said released position into said locked position.

4,084,469

WEB CUTTING DEVICE

Herbert Ray Gray, 26 Russell St., Littleton, Mass. 01460

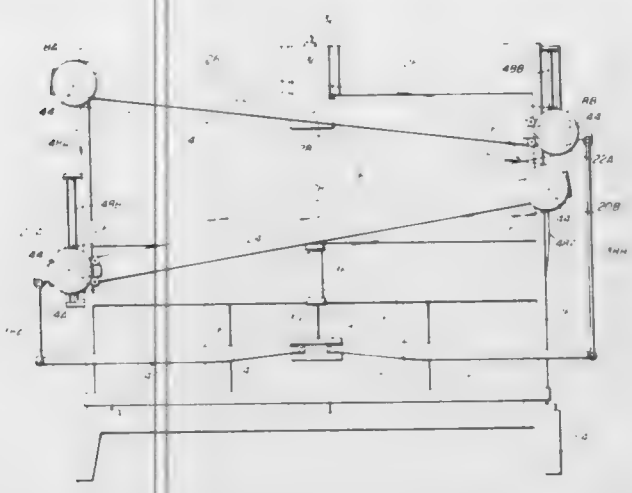
Filed Dec. 17, 1976, Ser. No. 751,387

Int. Cl.[2] B26F *3/00*

U.S. Cl. 83—542 12 Claims

1. Cutting apparatus comprising first and second wire segments that contact each other at substantially a single point and that are segments of a single continuous loop of wire, means for maintaining each wire segment taut comprising first and second spaced apart beams, each supported for limited rotational motion about a pivot point and each including spaced apart

bearing members about which said single wire is trained, and means for moving at least one of said segments relative to the



other to cause the point of contact to move along each of the segments.

4,084,470

CARBIDE TIPPED INSERTABLE SAW TOOTH

Jack K. Reed, c/o Reed's Carbide Service 1210 12th St., Lynchburg, Va. 24504

Filed May 10, 1976, Ser. No. 685,100

Int. Cl.² B27B *5/29*

U.S. Cl. 83—841 **2 Claims**



1. A slasher for use in paper pulp manufacture comprising a flat steel disc rotatable about an axis perpendicular to the center of the disc, the disc having a plurality of radially extending slots in the periphery thereof for receiving insertable teeth and a plurality of insertable teeth fixed in the slots, each tooth comprising a flat elongated plate of steel of even thickness having a rounded base, substantially parallel leading and following edges with a V-shaped groove extending along a lower major portion of the leading and following edges engaging the edges of the slots, a planar top angularly extending from an inner point on the following edge of the tooth toward an outer point near the leading edge of the tooth, the inner and outer points being radially outside of the outer edge of the disc, a notch at the outer point receiving a blade of material having a hardness of at least 9 MOHS in the form of a cubic trapezoid the base of which is arranged from 0.00 to 0.15 inches ahead of said leading edge, parallel to a radial line extending from the center of the disc, and perpendicular to the plane of the disc, the width of the base being between 1.2 and 1.8 times the thickness of said plate, the sides of the blade being relieved from the base at an angle of between 2° and 20°, the upper surface of the blade being arranged essentially coplanarly with but radially outward from said planar top, the blade being retained in said notch by brazing the blade to the plate.

4,084,471

CIRCUIT ARRANGEMENT FOR OBTAINING A CHORUS EFFECT

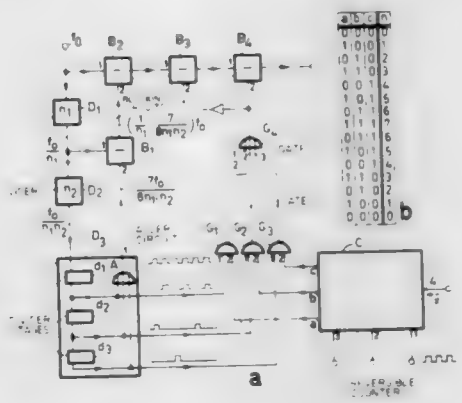
Nico Valentinus Franssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1976, Ser. No. 672,131

Claims priority, application Netherlands, Apr. 9, 1975, 7504203

Int. Cl.² G10H *1/00*

U.S. Cl. 84—1.01 **4 Claims**



4. A circuit arrangement for generating the tones of a tonal scale, comprising:

means for supplying a signal of a predetermined frequency;

a first divider having an input connected to said means for supplying a signal, and an output at which a signal of a frequency equal to the desired frequency shift is produced,

a second divider with an adjustable dividend, having an input connected to the output of said first divider, and an output;

a first blocking circuit having a first input connected to the output of said first divider, a second input to which a blocking signal may be applied, and an output;

a third divider comprising a plurality of divider stages having an input connected to the output of said second divider, and a plurality of outputs on which non-coincidental pulse trains are generated, and adder means having inputs connected to corresponding outputs of said divider stages and an output on which a signal having the sum frequency of the signals on said inputs is generated, said output being connected to said second input of said first blocking circuit;

a multiple gate circuit having a plurality of first inputs connected to corresponding outputs of said divider stages, second inputs, and an output on which a signal having the sum frequency of the signals on said inputs is generated;

a reversible counter having a control input, an input for blocking the counter in a predetermined position, an input for reversing the counter direction, and a plurality of outputs connected to corresponding second inputs of said multiple gate circuit, the frequency of the counting cycles of the counter being equal to a predetermined vibrato frequency;

a second blocking circuit having a first input connected to said means for supplying a signal, a second input connected to said output of said first blocking circuit, and an output;

a third blocking circuit having a first input connected to said output of said second blocking circuit, a second input connected to said output of said multiple gate circuit, and an output; and

a fourth blocking circuit having a first input connected to said output of said third blocking circuit, a second input connected to said output of said multiple gate circuit, and an output for producing the desired output signal.

4,084,472

ELECTRONIC MUSICAL INSTRUMENT WITH TONE GENERATION BY RECURSIVE CALCULATION

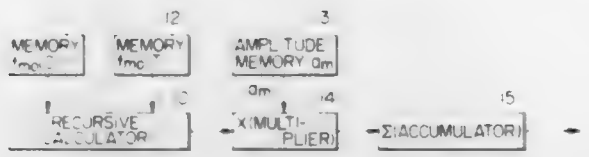
Koji Niimi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 13, 1977, Ser. No. 758,913

Claims priority, application Japan, Jan. 14, 1976, 51-3322; Jan. 14, 1976, 51-3323; Jan. 14, 1976, 51-3324

Int. Cl.[2] G10H *1/02*; G10F *1/00*

U.S. Cl. 84—1.01 **8 Claims**



1. An electronic musical instrument having digital recursive calculation means and capable of generating a superposition of a group of partial tones comprising:

a recursive calculating circuit for calculating partial tone functions from a pair of initial values and a pair of recursion parameters predetermined for each of the partial tone functions;

initial value memory means for supplying said pairs of initial values for the respective partial tone functions to said recursive calculating circuit, at least each one of said pairs of initial values being a common constant for all the partial tone functions; and

amplitude memory means for storing each one constant for the respective partial tone functions for compensating for the amplitude of the outputs of said regression operation circuit.

4,084,473

ELECTRIC PIANO

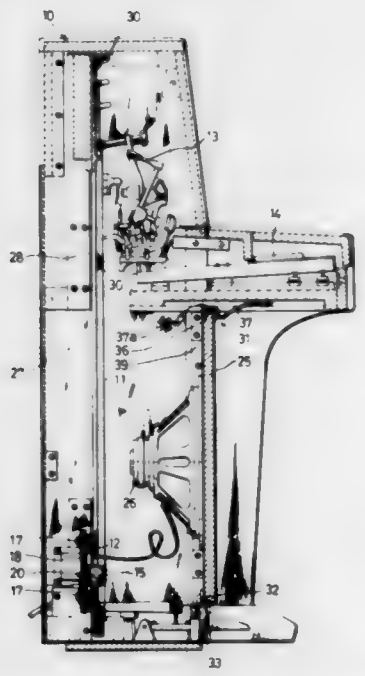
Riichi Kitashima, Iwata; Masakazu Matsumoto, and Shinji Tagaki, both of Hamamatsu, all of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Aug. 13, 1976, Ser. No. 714,267

Claims priority, application Japan, Aug. 19, 1975, 50-114226[U]; Nov. 1, 1975, 50-149508[U]; Nov. 1, 1975, 50-149509[U]; Nov. 10, 1975, 50-152804[U]; Nov. 19, 1975, 50-157082[U]; Dec. 17, 1975, 50-170910[U]; Dec. 22, 1975, 50-174124[U]

Int. Cl.[2] G10C *3/04*

U.S. Cl. 84—1.14 **12 Claims**



1. In an electric piano having a casing with a frame, a plurality of strings stretched on the frame, a bridge member supporting the strings at intermediate portions thereof, a plurality of hammers for striking the strings, a plurality of keys for actuating the hammers, electrical pickups for detecting vibrations of the strings, an amplifier connected to the pickups and a speaker connected to the amplifier, the improvement comprising a vibratable supporting member supporting said bridge member, means including shock absorbing members dampingly supporting the supporting member on said frame, said pickups comprising piezoelectric elements mounted on the supporting member, said pickups including first pickups mounted between the bridge member and the supporting member in the low and middle frequency range and second pickups attached to the outer surface of the supporting member in the high frequency range, the number of pickups being considerably less than the number of strings, said bridge member being elongated to extend over a multitude of strings, said bridge member constituting a sound-board.

4,084,474

SELECTIVE HIGH FREQUENCY COMPRESSION DEVICE FOR SPEAKER SYSTEM

Donald James Leslie, 1561 Gaywood Dr., Altadena, Calif. 91001

Filed Feb. 4, 1976, Ser. No. 655,106

Int. Cl.[2] G10H *1/00, 5/00*

U.S. Cl. 84—1.27 **3 Claims**



1. In an audio system for an electronic musical instrument including a composite generating means and a multiband speaker system:

(a) a high frequency speaker section; (b) a low frequency speaker section;

(c) a divider network having an input and having a plurality of spectrally distinct outputs respectively connected to said speaker sections;

(d) power sensing means continuously associated only with said high frequency section and operative to compress the high frequency response as a gradual function of increased power level;

(e) said high frequency speaker section being operative at all power levels to translate electrical impulses into sound.

4,084,475

GUITAR CONSTRUCTION

William M. Horowitz, 2849 W. Jerome St., Chicago, Ill. 60645

Filed Sep. 16, 1976, Ser. No. 723,750

Int. Cl.[2] G10D *3/00*

U.S. Cl. 84—291 **3 Claims**

1. A stringed instrument of the guitar variety having

A. a soundbox of wood with a head end and a foot end and formed of soundboard, back and sidewalls,

B. a neck,

C. a head,

D. a sound hole provided in the soundboard,

E. a transverse bridge firmly secured to the surface of the soundboard between the sound hole and the foot end of the soundbox,

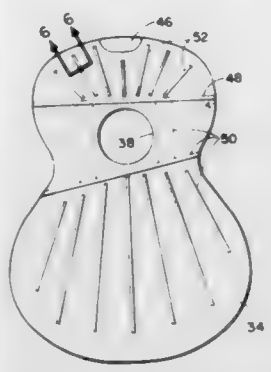
F. a plurality of strings stretched from the head to the soundbox, the soundbox ends of the strings being anchored only to the bridge,

G. a fingerboard extending from the head along the neck and over the soundboard to the sound hole,

H. the neck being secured to the soundbox at the head end opposite the foot end,

I. that portion of the fingerboard between the head end of the soundbox and the sound hole being spaced from the soundboard to provide a substantial cantilevered length overlying the soundboard,

J. means bracing the soundboard and secured to its undersurface comprising a series of relatively thin struts extending from the general location of the hole and fanning out-



wardly away from the soundhole toward the foot end of the soundbox, and other struts generally framing the sound hole and

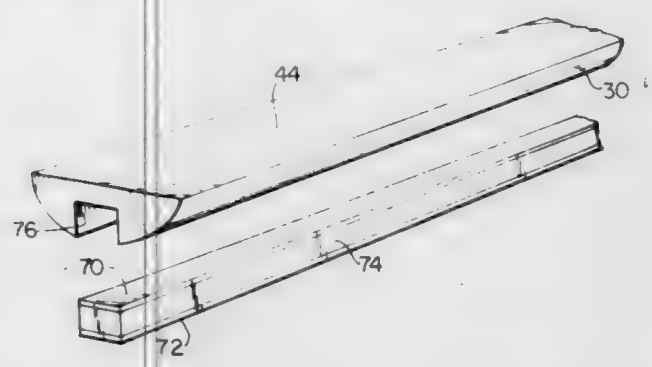
K. means bracing the portion of the soundboard beneath the overlying cantilevered length secured to the undersurface of the soundboard and comprising a series of thin struts extending from the vicinity of the sound hole and fanned about the hole substantially to encompass the majority of the central area of the soundboard between the sound hole and the head end of the soundbox.

4,084,476

REINFORCED STRINGED MUSICAL INSTRUMENT NECK

James H. Rickard, Harwinton, Conn., assignor to Ovation Instruments, Inc., New Hartford, Conn.

Filed Jun. 25, 1976, Ser. No. 699,869
Int. Cl.² G10D *3/00*
U.S. Cl. 84—293 **19 Claims**



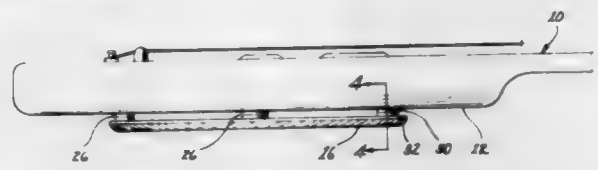
1. In a stringed musical instrument the combination comprising: a neck having an elongated body with a generally flat forward surface extending longitudinally thereof and a transversely curved rear surface also extending longitudinally thereof, a fingerboard attached to said neck body and overlying said generally flat forward surface thereof, and an elongated reinforcing member extending longitudinally of said neck body and fixed relative thereto, said reinforcing member being made of a composite material consisting of filaments of a material having a modulus of elasticity of over 28×10^6 psi embedded in a resin matrix, and said reinforcing member being spaced in the direction perpendicular to said forward surface from the neutral bending axis of said neck body and fingerboard in combination with regard to bending of said neck body in a plane parallel to the longitudinal axis of said neck body and perpendicular to said forward surface.

4,084,477

PROTECTIVE PAD FOR MUSICAL INSTRUMENTS

Richard Lee Dominguez, 3835 W. Eva Ave., Phoenix, Ariz. 85021

Filed Oct. 20, 1976, Ser. No. 734,341
Int. Cl.² G10D *3/00*
U.S. Cl. 84—327 **4 Claims**



1. An article for protecting a surface finish of musical instruments such as guitars and basses comprising:

(a) a pad releasably secured to said surface in a position spaced from said surface, said pad comprising:

(i) a self-supporting backing layer,

(ii) a matt adherably bonded to and substantially covering a first major surface of said backing layer, said matt comprising a mass of soft, pliant fibers extending from said backing layer,

(iii) a smooth, substantially non-abrasive layer bonded to and substantially covering a second major surface of said backing, said second major surface opposing said first major surface of said backing layer, and

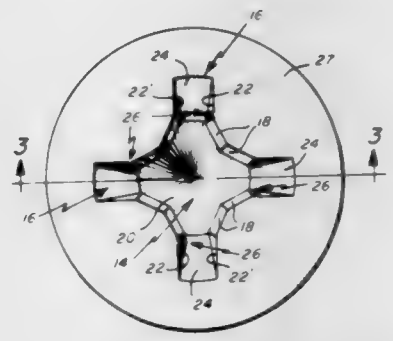
(b) a plurality of spaced pedestal members located on said non-abrasive layer, said pedestal members comprising a first section bonded to said non-abrasive layer and a second section adapted to be bonded to said surface to be protected, said first section comprising first mating means and said second section comprising second mating means, said mating means being mutually releasably couplable whereby said pad including said first section of said pedestal members can be releasably detached from said second section when said second section is bonded to the surface to be protected.

4,084,478

SCREW HEADS

Frederick A. Simmons, Framingham, Mass., assignor to Phillips Screw Company, Natick, Mass.

Filed Sep. 12, 1974, Ser. No. 505,324
Int. Cl.² F16B *23/00*
U.S. Cl. 85—45 **33 Claims**



1. In a screw having driver-engageable surfaces at one end thereof for mating with a driver to enable said mated driver to rotatably drive said screw, said driver having surfaces and edges, the improvement comprising a projection formed on at least one of said driver-engageable surfaces and at a location which is displaced radially from the longitudinal axis of the screw and at which the projection is capable of being engaged by an edge formed on the driver, said projection extending from said driver engageable surface and being of sufficiently small dimensions as to be deformable to enable said edge on said driver to dig into and deform said projection in response to application of driving torque by said mated driver, said projection being oriented to cooperate with said edge of said driver

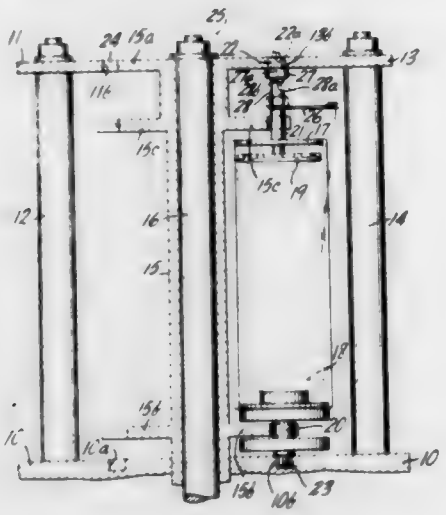
to retard withdrawal of the driver from the screw during application of driving torque.

4,084,479

BRAIDING MACHINE

Eliseo Ratera, Polgono Industrial "ELS DOLORS" s/n. P.O. Box 228, Manresa (Barcelona), Spain

Filed Dec. 13, 1976, Ser. No. 750,195
Claims priority, application Spain, Dec. 23, 1975, 217.673
Int. Cl.[2] D04C *3/42, 3/20*
U.S. Cl. 87—48 **1 Claim**



1. A braiding machine comprising a carrier for a bobbin, a pair of spaced apart tracks for guiding the carrier along a closed sinuous path, said pair of spaced apart tracks including a base plate for supporting the carrier and having a recessed sinuous track formed in the upper surface thereof and an upper star shaped plate surrounded by an outer ring plate both supported above the base plate, drive means for imparting movement to the carrier along said sinuous path, a track follower at the lower end of the carrier and riding within said recessed sinuous track in the base plate, a plurality of circular discs carried by said driving means intermediate the star shaped and outer ring plates, a recess formed in the outer periphery of each of said discs and moving relative to the outer edge of the star shaped plate and the inner edge of the outer ring plate, a track follower for said carrier interposed within said recess in the disc, so that as the driving means advances the carrier the track follower is guided along an outer edge of the star shaped plate or an inner edge of the outer ring plate within said recess, and means for guiding the yarn as it is unwound from a bobbin of a carrier, said guiding means including a yarn guiding passage for receiving the yarn on one side of the track, guiding it through the track follower and discharging it on the opposite side of the track.

4,084,480

LIGHTWEIGHT SMALL CRAFT GUN SYSTEM

William Matthew Moscrip, King George City, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1975, Ser. No. 606,906
Int. Cl.[2] F41F *19/14*
U.S. Cl. 89—42 B **5 Claims**

1. A light-weight, rapid-fire gun utilizing fire-out-of-battery and straight through ammunition feed principles for firing expendable breechcase ammunition comprising:

a frame:

a slide assembly trunion mounted on said frame, said slide assembly being provided with a pair of opposed feed and ejection slots;

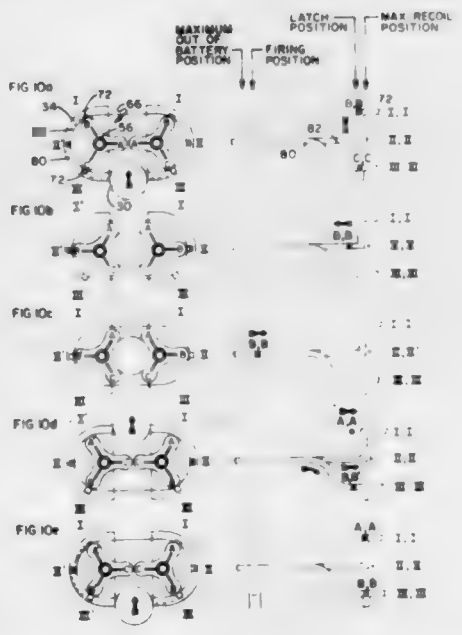
a receiver assembly disposed within said slide assembly for reciprocating movement along the firing axis between an ammunition feed and breechcase ejection battery position and a forward firing out-of-battery position, said receiver assembly being provided with a central feed and ejection slot;

a pair of internal fixed hollow shafts disposed within said receiver assembly on axes parallel to and on each side of the firing axis, the forward ends of said shafts being closed;

a barrel fixed to the forward end of said receiver assembly and reciprocable therewith;

an indexing clip feed mechanism fixed to said slide assembly adjacent said feed slot for feeding expendable breechcase ammunition into said receiver assembly through said feed slot;

a breechcase mechanism assembly disposed within said receiver assembly for receiving ammunition from said clip feed mechanism, supporting said ammunition during firing, and subsequently ejecting empty breechcases through said ejection slot in said slide assembly;



recoil spring means on said slide assembly normally urging said receiver assembly forward toward the out-of-battery position, said recoil spring means comprising:

a pair of hollow pistons fixed to the rearward end of said slide assembly and disposed within with hollow shafts, and

a source of pressurized compressible liquid hydraulically connected to the exterior ends of said pistons to constitute a liquid spring; releasable means for latching said receiver assambly in the battery position against the urging of said recoil spring means;

cam means interconnecting said receiver and slide assemblies for releasing said latching means upon injection of ammunition into said breechcase mechanism assembly and for cycling said breechcase mechanism assembly; and

means for firing the ammunition as the forwardly moving receiver assembly nears the maximum out-of-battery position.

4,084,481

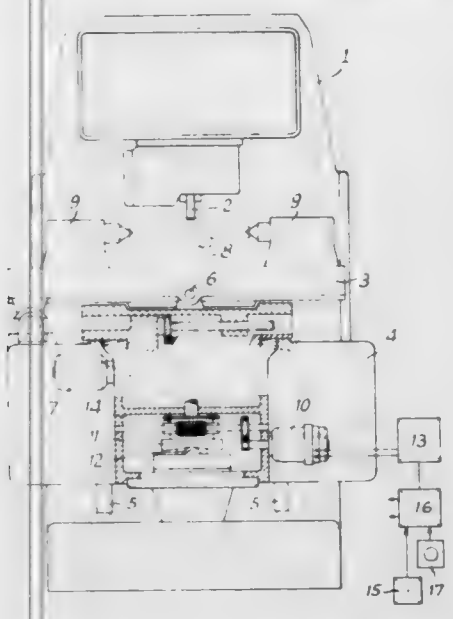
PROCESS FOR MACHINING GEARS AND MACHINE FOR PERFORMING THE SAME

Oscar G. Bossi, Milan, Italy, assignor to Societe Diete: Stabilimento Industriale Construzione Macchinario Attrezzature, Pianezza, Italy

Filed Jun. 3, 1976, Ser. No. 692,315
Claims priority, application France, Jun. 13, 1975, 75 18633
Int. Cl.[2] B26F *19/06, 21/28*
U.S. Cl. 90—1.6 R **5 Claims**

1. A continuous process for machining gears to final predetermined dimensions in a shaving machine including means for supporting a shaving tool and means for supporting the gear to be shaved by performing a continuous shaving process comprising the steps of performing a first step of moving at least

one of said supporting members towards the other in a single continuous movement to a predetermined position at which the spacing therebetween theoretically corresponds to that required to obtain the desired final predetermined dimension of the gear by shaving with said tool; immediately thereafter performing a withdrawal step of moving said at least one



supporting member slightly away from the other supporting member to relieve stresses in the shaving machine and gear built up during said first step; and immediately thereafter performing a finishing step of moving said at least one supporting member towards the other supporting member to said predetermined position.

4,084,482

MACHINE TOOLS HAVING A ROTATING SPINDLE SUCH AS MILLING MACHINES

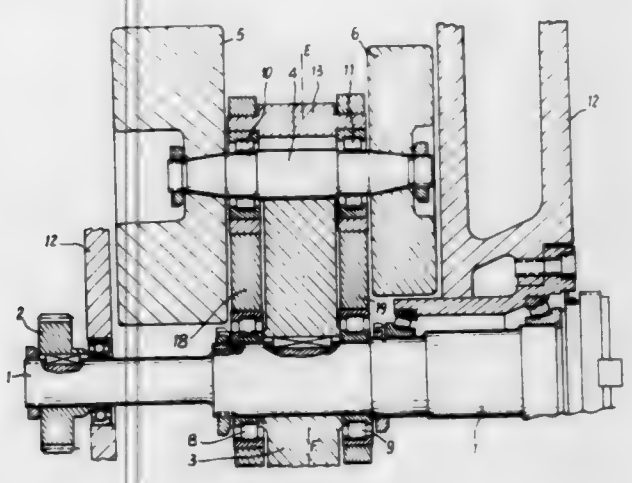
Robert F. Derrien, Montgeron, France, assignor to Societe Hure S A, Bagneux, France

Filed Mar. 16, 1976, Ser. No. 667,364

Claims priority, application France, Mar. 21, 1975, 75 08869; Jul. 9, 1975, 75 21517

Int. Cl.[2] B23C *9/00*; B23Q *5/22*

U.S. Cl. 90—11 R **10 Claims**



1. A machine tool comprising:

a rotatable spindle having means for receiving a tool therein, flywheel means,

first roller means carried by said spindle,

further roller means adapted for rolling engagement with said first roller means to be rotated thereby, said flywheel means coupled to said further roller means to be rotated as said further roller means is rotated,

and selectively operable means for engaging and disengaging the first roller means from said further roller means to thereby selectively provide and remove power from said flywheel means.

4,084,483

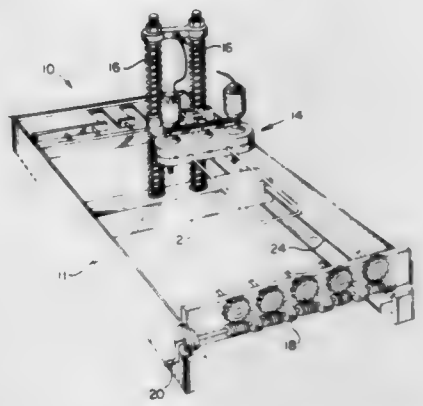
PANTOGRAPH APPARATUS

James B. Walker, 3151 W. Argyle, Chicago, Ill. 60625

Filed Jan. 27, 1977, Ser. No. 765,926

Int. Cl.[2] B23C *1/18*

U.S. Cl. 90—13.3 **6 Claims**



1. A pantograph apparatus for making duplicates from a master comprising a frame having horizontally disposed guide means, a copying means for engraving said duplicates secured by support means for reciprocal linear travel on said guide means, and adapted to engrave at least one duplicate according to an original work, wherein the improvement lies in said copying means being positioned at a desired height by resilient compression means positioned on said support means, said resilient compression means being formed by selected interchangeable and complementary sets of resilient compression members, each set being formed of an upper and lower member, each set positioning said copying means at different selected heights to accommodate original works having cross sections of different sizes, said lower members supporting the copying assembly and said upper members biasing the copying assembly against lower members thereby securing said copying means in a vibration free manner and allowing said copying means to accurately reproduce said master.

4,084,484

DEVICE FOR REMOVING INTERNAL CIRCULAR FLASH

Leonid Pavlovich Shklyanov, ulitsa Zhulyabina, 8, kv. 14; Vladimir Nikitich Baranov, prospekt Lenina, 30/13, kv. 16; Dmitry Nikiforovich Koltyrev, prospekt Juzhny, 22, korpus 3, kv. 78, all of Elektrostal Moskovskoi oblasti; Viktor Senderovich Lifshits, Kavkazsky bulvar, 21, korpus 2, kv. 41, Moscow; Ivan Ivanovich Polyansky, prospekt Lenina, 30/13, kv. 13, and Tamila Iosifovna Osinskaya, ulitsa Zhulyabina, 3, kv. 91, both of Elektrostal Moskovskoi oblasti, all of U.S.S.R.

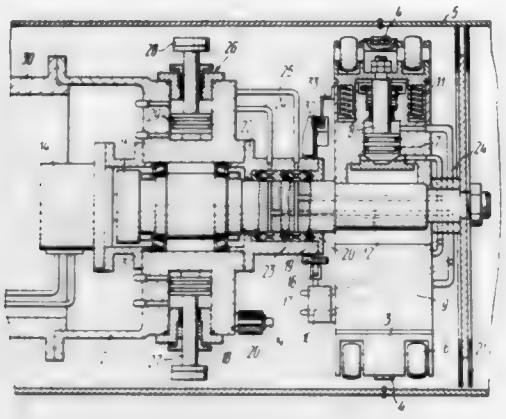
Filed Jun. 24, 1976, Ser. No. 699,634

Int. Cl.[2] B23D *1/24*

U.S. Cl. 90—24 C **3 Claims**

1. A device for removing internal circular flash during resistance butt-welding of pipes comprising: a tool head; an appliance for bringing said tool head to the flash removing zone; a rod, one end of which is cantilevered on said appliance for bringing said tool head to the flash-removing zone while its other end is connected to said tool head; said tool head comprises: a body; a holder with a cutting tool secured in it; a master form with a profiled surface, rigidly secured on said body of said tool head; a slide valve; a rod of said slide valve interacting with the profiled surface of said master form; a mechanism for radial feed of said holder carrying said slide valve; a housing on said radial feed mechanism; a rotary drive of said radial feed mechanism; said radial feed mechanism is made in the form of a hydraulic cylinder; a rod of said hydraulic cylinder, rigidly connected with said holder; springs ensur-

ing the cutting force of said cutting tool; said springs bear at one end against said housing of the radial feed mechanism while their other ends bear against said holder; a rotary drive



of said holder, installed on said body of said tool head; a shaft of said rotary drive of said holder, rigidly connected with said housing of said radial feed mechanism; rollers for tracing the internal surface of the welded pipes, installed on said holder.

4,084,485

DRIVING MECHANISMS AND HOUSINGS FOR SUCH MECHANISMS

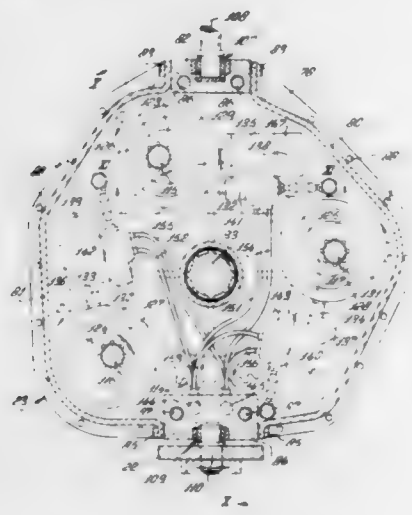
Cornelis van der Lely, Zug, Switzerland, assignor to C. van der Lely N.V., Maasland, Netherlands

Filed Jun. 19, 1975, Ser. No. 588,140

Claims priority, application Netherlands, Jun. 25, 1974, 7408501

Int. Cl.[2] F01B *15/04*

U.S. Cl. 91—210 **27 Claims**



1. A driving mechanism which comprises:
a source of hydraulic fluid under pressure substantially greater than the ambient pressure;
a rotary power output shaft;
a plurality of hydraulic piston and cylinder assemblies, each of said assemblies in communication with said source of hydraulic fluid under pressure;
a non-revolving housing, means mounting said assemblies on said housing whereby each said assembly is rockable relative to said housing;
a plurality of pinions mounted in said housing, at least one corresponding pinion being rotated by reciprocation of each said piston in its respective cylinder and each said assembly caused to rock in an arc from its mounting on said housing by such reciprocating action rotating said pinion;
a corresponding control valve means for each said assembly for governing the admission of hydraulic fluid communicated thereto from said hydraulic fluid source, each said control valve means connected in part to said housing and in part to its respective assembly whereby it is actuated by the rocking thereof relative to said housing and causes the reciprocation of its corresponding piston; and
a central pinion connected to said shaft, said central pinion in mesh with each of the aforementioned pinions of said plurality of pinions.

4,084,486

HYDRAULICALLY DRIVEN STRIKING DEVICE

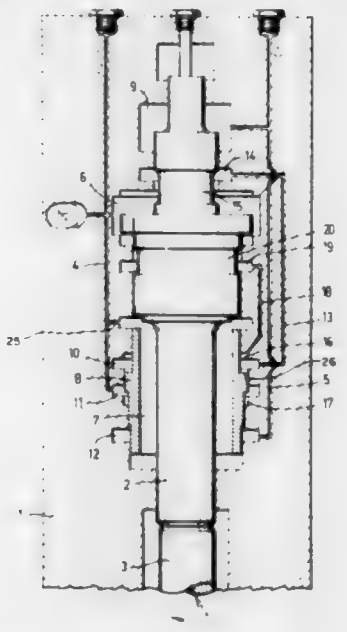
Väinö Esko Juvonen, Klaukkala, Finland, assignor to Linden-Alimak AB, Skellefteå, Sweden

Filed Jun. 15, 1976, Ser. No. 696,412

Claims priority, application Finland, Jun. 26, 1975, 751895

Int. Cl.[2] F01B *7/18*; F01L *25/06, 17/00*

U.S. Cl. 91—276 **3 Claims**



1. In a hydraulically operated percussion apparatus comprising a housing having a bore in which an impact piston is reciprocatingly movable between a retracted end position and an impact end position in contact with an impact tool for transferring impact energy to said impact tool, pressure chambers defined between said housing and said piston and a channel system including a high pressure and a low pressure branch for conducting hydraulic pressure fluid to and from said pressure chambers, a first one of said pressure chambers surrounding said piston and being defined, at the end of said chamber remote from said impact tool, by an annular shoulder on said piston, and at its opposite end, by an annular surface of said housing, a second pressure chamber being open to said low pressure branch, a third pressure chamber being open to said high pressure branch, first and second port means opening into said first chamber and communicating respectively with said high pressure branch and low pressure branch, said second port means being located between said first port means and said annular surface of said housing, a sleeve shaped distribution valve member surrounding said piston in said first pressure chamber and being reciprocatingly movable in response to the reciprocating movement of said piston, a first valve chamber defined between said distribution valve member and a first recess in the surface of said bore between said first and second port means, said valve member having a first shoulder means facing toward said first port means and communicating with said first valve chamber, said valve member being movable between
(a) a first end position in which said first port means is covered and said second port means is uncovered,
(b) an intermediate position in which both port means are covered, and in which, during operation of said apparatus, said valve member and said piston are in contact in said impact position of the latter, and,
(c) a second end position, out of contact with said piston, in which said first port means is uncovered and said second port means is covered,

the improvement comprising:

first valve means connecting said first valve chamber to said high pressure branch through said second pressure chamber in response to said piston moving a selected distance from said retracted end position,

second valve means connecting said first valve chamber to said low pressure branch through said third pressure chamber in response to said piston moving a distance less than said selected distance from said retracted end position,

a second valve chamber communicating with said high pressure branch and defined by a portion of said distribution valve member and a second recess in the surface of said bore between said first and second port means,

said distribution valve member having a second shoulder means facing said second port means and communicating with said second valve chamber,

said first shoulder means having a greater surface area than said second shoulder means,

said distribution valve member having at its opposite ends pressure actuated surfaces in said first pressure chamber which at one of said ends has a greater surface area facing in the direction of said tool than the surface area of the other end of said valve member facing in the direction of the said retracted end position of said piston,

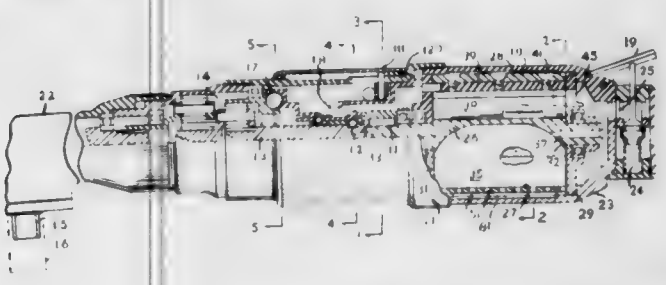
the pressure actuated surfaces of said first and second shoulder means of said valve member and the pressure actuated surfaces of said piston being dimensioned such that said piston hits said valve member shortly before said piston impacts against said tool.

4,084,487

PULSE MOTOR IN A NUT RUNNER

William K. Wallace, Barneveld, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Division of Ser. No. 636,911, Dec. 2, 1975, Pat. No. 4,019,589.
This application Nov. 29, 1976, Ser. No. 745,870
Int. Cl.² F01C *9/00*; F01L *21/02*
U.S. Cl. 91—325 **4 Claims**



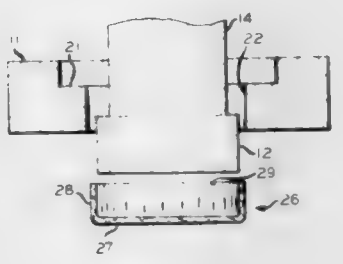
1. In a pneumatically powered nut running tool, a pulse torque transmitting air motor comprising a liner defining a rotor chamber, a rotor supported in the chamber for relative angular movement, a single blade co-extensive with the rotor projecting radially from the latter into bearing relation with a cylindrical wall of the chamber, and means for causing live air to be alternately admitted and vented from areas of the chamber at opposite faces of the blade so as to cause the rotor to oscillate forwardly and reversely about its axis said means including a live air inlet passage, wherein a channel extending longitudinally of the cylindrical wall communicates with the inlet passage, a row of exhaust ports through the cylindrical wall is disposed in parallel opposed relation to the axes of the channel and the rotor, the channel having common communication with the areas of the chamber at opposite faces of the blade, the channel having a first longitudinal side adjacent a first one of said areas of the chamber and on opposed second longitudinal side adjacent a second one of said areas, and valve means resting upon the rotor and loosely disposed in the channel is adapted to be pneumatically shifted from one of said sides of the channel to the other so as to seal the channel off from that one of said areas adjacent to the side to which the valve means has been shifted.

4,084,488

METHOD AND APPARATUS FOR FORMING PLEATED CLOSURE CONSTRUCTION

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 10, 1975, Ser. No. 630,577
Int. Cl.² B31F *1/00*
U.S. Cl. 93—36 B **25 Claims**



19. A method for converting a substantially flat closure blank into a closure member having an annular closure flange folded to extend from a central portion, the inner surface of the flange having at preselected locations inwardly protruding pleats formed therein extending generally perpendicular to the perimeter of the flange, the outer surface of the flange being substantially smooth and continuous with substantially the only irregularities in the otherwise smooth outer surface of the flange being hairlines each of which coincides with the location of a respective one of said pleats on the inner surface of said flange, the outer surface of said flange providing said closure member with improved capability for mating with and sealing to a corresponding sidewall member, said method comprising simultaneously:

reforming a peripheral portion of a substantially flat closure blank to form an annular flange extending from a central portion of said blank;

maintaining the outer surface of said annular flange in contact with an annular surface having the size and at least substantially smooth surface characteristics of the desired closure flange; and

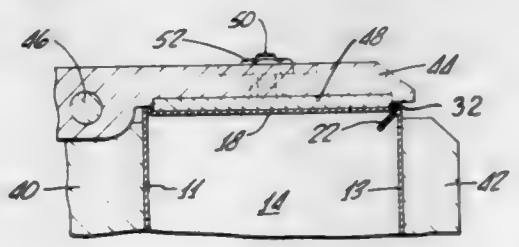
shaping inwardly protruding pleats extending generally perpendicular to the perimeter of said flange at preselected locations along the inside of said annular flange.

4,084,489

METHOD OF FORMING CARTON

Mitchel J. Matovich, Jr., 19100 Bainter Ave., Los Gatos, Calif. 95030

Division of Ser. No. 628,444, Nov. 3, 1975, Pat. No. 4,011,984.
This application Nov. 5, 1976, Ser. No. 739,368
Int. Cl.² B31B *49/02*
U.S. Cl. 93—36.8 **5 Claims**



1. The method of forming a carton from components comprising an open-ended tube of polygonal cross section having inwardly foldable sealing tabs integral with at least some of the walls of the tube at at least one end of the tube and an end closure panel integral with a side wall at at least an end of the tube having said sealing tabs, said end closure panel having a polygonal configuration matching that of the tube and being marginally embossed along its free edges, which comprises the steps of:

establishing a condition for permanent interengagement between the outer surfaces of the sealing tabs and the inner surface of the end closure panel;

folding the sealing flaps inwardly and bringing the integral end closure panel into generally flush closure relation to the end of the tube with the inner surface of the end closure panel in surface engagement with the sealing tabs; and

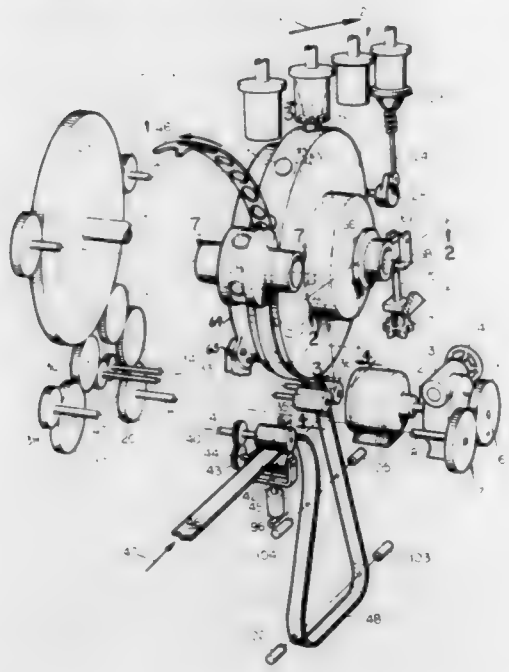
applying pressure directly on the marginally embossed portion of the end closure panel and concurrently applying pressure directly on the portion of the end closure panel confined by said marginally embossed portion to effect attachment of said end closure panel to said sealing tabs accompanied by depression of the sealing tabs by the embossed end closure panel into a downwardly sloping attitude inside the carton.

4,084,490

CONTAINER BOTTOM CUTTING APPARATUS AND METHOD

Thomas E. Doherty, Setauket, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 14, 1977, Ser. No. 768,245
Int. Cl.[2] B65H *17/42*; B26D *5/20*
U.S. Cl. 93—55.1 R **17 Claims**



14. The method of cutting and translating container bottoms including the steps of;

(a) feeding a continuous web of container bottom material to a transfer wheel,

(b) advancing said web along with said wheel as it rotates,

(c) subjecting said web to the action of a rotary die that coacts with said transfer wheel,

(d) severing container bottoms from said web by means of a cutting edge positioned on said die,

(e) translating said container bottoms in spaced apart array along the peripheral surface of said transfer wheel,

(f) moving the container bottoms in a radial direction away from the surface of said wheel while said container bottoms are being rotated with said wheel,

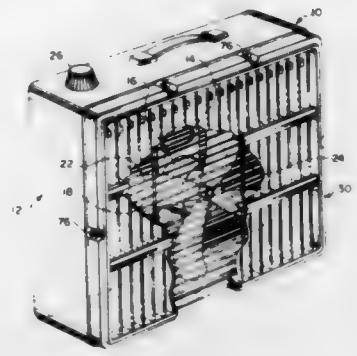
(g) depositing each of said container bottoms against a mandrel bottom so that the container bottom can be incorporated into a finished article.

4,084,491

OSCILLATED LOUVER ASSEMBLY FOR BREEZE BOX FAN

Willard Spotts, Boonville; Thomas P. Arrandale, and Glenn R. Spotts, both of Moberley, all of Mo., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Apr. 12, 1976, Ser. No. 675,711
Int. Cl.[2] F04D *25/08*
U.S. Cl. 98—121 A **7 Claims**



1. In combination, a breeze box fan having a generally rectangular case, blade means that rotate within the case to give unidirectional air discharge axially of the case, front and rear protective grills attached to said case on opposite sides of said blade means and a separate air redirection assembly constructed to be removably mounted as a unit on said fan case adjacent said front grill, said assembly including a generally rectangular frame having interconnected opposed pairs of edge sections, a plurality of separate narrow air direction vanes, opposed shaft means on each of the vanes inserted respectively in opposed openings along one pair of the edge sections for pivotally supporting the vanes crosswise to the normal air discharge on parallel pivot axes, an actuator bar, means pivotally connecting the bar to the vanes at aligned locations thereon along a single plane offset from the shaft means and on the side thereof upstream of the air flow over the vanes, operable to hold all of the vanes parallel relative to one another and to pivot them in unison, motor means mounted on said frame at a corner thereof, said front grill being cut away in alignment with said motor means to permit the latter to extend through said grill into said fan case and means connecting the output of the motor means to the actuator bar operable to reciprocate the bar and thereby oscillate the vanes about said pivot axes for side to side shifting of the vanes according to a perdetermined sweep, at least one rigid cross member conneected at its ends to the other pair of edge sections of the frame, means pivotally connecting the cross member to the vanes at aligned locations crosswise of the vanes and on centers with the pivot axes of said vanes and means for removably mounting said assembly on said fan, said means including fastener means for securing said frame to said fan case with said vanes being positioned adjacent said front grill downstream thereof in the path of air discharge from said blade means.

4,084,492

SYSTEM FOR PROVIDING LIKE COOKING MEDIUM VOLUME IN SUCCESSIVE COOKING CYCLES

Neal Sullivan, Nashville, Tenn., assignor to KFC Corporation, Louisville, Ky.

Filed Oct. 8, 1975, Ser. No. 620,560
Int. Cl.[2] A47J *27/66*
U.S. Cl. 99—330 **13 Claims**

1. A system for use in cooking food parts comprising:

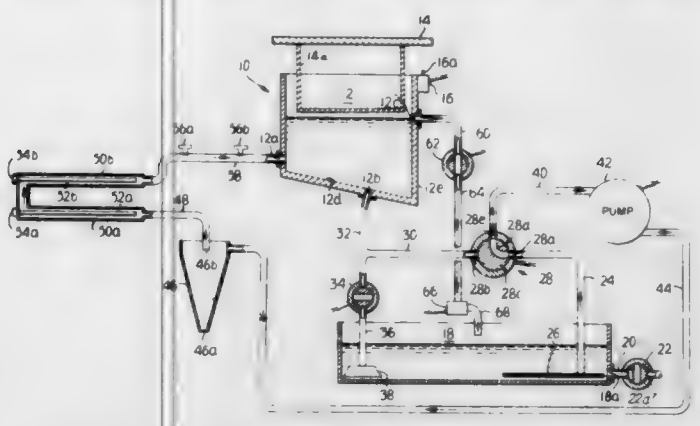
(a) a source containing cooking liquid;

(b) a cooking chamber having an inlet, an outlet and an overflow port for issuing from said chamber cooking liquid in volume exceeding a preselected volume;

(c) first conduit means connected between said chamber inlet and outlet and including means for pumping cooking liquid and first valve means having a first state providing

flow of cooking liquid from said source to said chamber and settable to alternate second state for recirculating cooking liquid from said chamber outlet to said chamber inlet;

(d) second conduit means including second valve means connected between said overflow port and said source, said second valve means having a first state providing flow of said cooking liquid therethrough and settable to



alternate second state for discontinuing flow of cooking liquid therethrough, and sensor means operated upon flow of cooking liquid through said second valve means; and

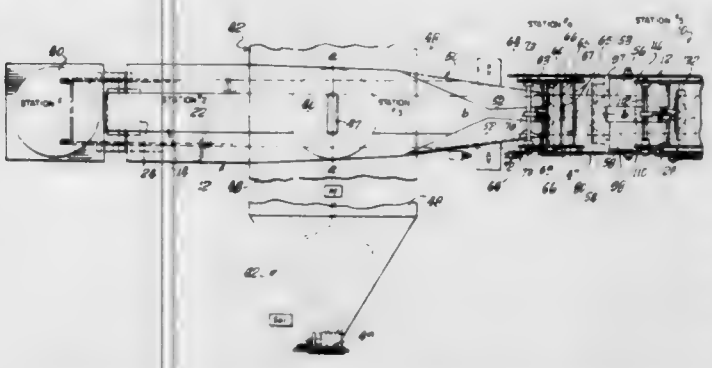
(e) control means for setting said first valve means in said second state thereof upon operation of said sensor means and including switch means connected to said second valve means for setting said second valve means in said second state thereof.

4,084,493

APPARATUS FOR PRODUCING FOODSTUFF PRODUCTS

Elias Dennis Quintana, 7601 Quebec Dr., Huntington Beach, Calif. 92648

Filed Feb. 14, 1977, Ser. No. 772,438
Int. Cl.² A21C 9/06
U.S. Cl. 99—450.7 **17 Claims**



1. An apparatus for producing a foodstuff product wherein a food-filler material is encapsulated within a thin sheet of dough, said apparatus comprising:

a supporting frame structure;

a conveyer system sequentially activated for transporting said sheet of dough thereon;

drive means connected to said conveyor system for sequentially moving said conveyor system longitudinally along said frame structure;

a foodstuff-dispensing means arranged to deposit a predetermined quantity of said filler onto said sheet of dough in a transverse manner to that of the travel of the conveyor system, said means being removably attached to said frame structure thereof;

a folding chute having oppositely disposed curling side walls whereby the longitudinal edges of said sheet of dough are folded inwardly thereby, said chute being positioned rearwardly of said dispensing means;

a first folding means positioned following said folding chute whereby the leading edge of said dough is folded over said filler and longitudinal edges thereof, and including a pressing means formed therewith to press down said longitudinal edges of said sheet of dough during the folding of said leading edge thereof;

a second folding means positioned rearwardly of said first folding means whereby said sheet of dough, along with said filler, is folded over said previously folded leading edge thereof;

a third folding means positioned rearwardly of said second folding means whereby the filler material is further folded over the trailing edge of said sheet of dough, wherein said foodstuff produce is completely formed thereby; and

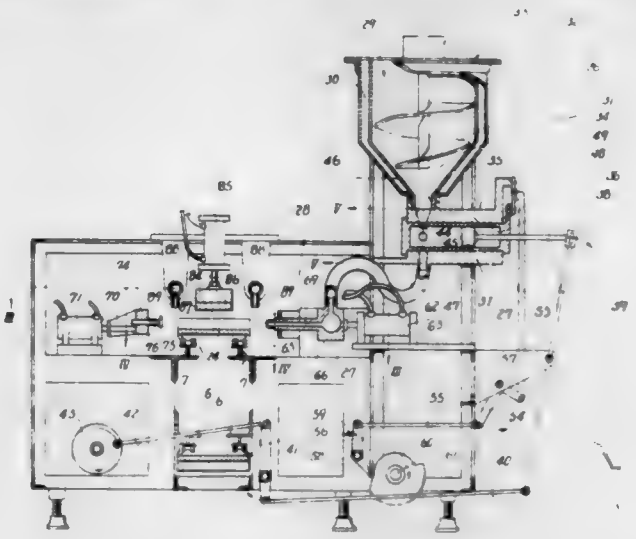
a sequential actuating means interconnecting said folding means and said conveyor system to said drive means.

4,084,494

FOOD PROCESSING DEVICE

Masatsugu Ezaki, 29-3-chome, Kohama-honmachi, Sumiyoshi-ku, Osaka, Japan

Filed Jan. 21, 1976, Ser. No. 651,035
Int. Cl.² A21C 9/06
U.S. Cl. 99—450.7 **1 Claim**



1. A food processing device comprising a conveyor for intermittently conveying cylindrical shell foods having a pair of open ends, a keep plate positioned above the conveyor and mounted for reciprocation toward and away from the conveyor when the conveyor is stopped to hold the shell foods, measuring means for measuring pasty flavour, an extruding nozzle for extruding the measured pasty flavour into the shell foods on the conveyor, the extruding nozzle being reciprocably mounted and having an open end which is reciprocable when the conveyor is stopped between a first position in which the open end is positioned outside of a cylindrical shell and a filling position in which the open end is positioned slightly inwardly of one of the open ends of a cylindrical shell, a stopper mounted for reciprocation toward and away from the open end of the shell food opposite the extruding nozzle when the conveyor is stopped, and an air jet nozzle for jetting air into the flavour inserted cylindrical shell foods and for thinly coating the pasty flavour on the inner surface of the shell food, the air jet nozzle being reciprocably mounted and having an open end which is reciprocable when the conveyor is stopped between a first position in which the open end is positioned outside of a cylindrical shell and a coating position in which the open end is positioned slightly inwardly of one of the open ends of a cylindrical shell, the air jet nozzle being spaced from the extruding nozzle in the direction in which the conveyor advances whereby the open ends of the extruding nozzle and the air jet nozzle are substantially simultaneously reciprocated into their second positions into cylindrical shell foods spaced along the conveyor when the conveyor is stopped, whereby each food shell is treated first by an extruding nozzle then by a downstream airjet nozzle.

4,084,495

APPARATUS FOR COLLECTING AND HANDLING RECYCLEABLE PAPER

Roy A. Paul, 2902 Wycliff Rd., Raleigh, N.C. 27607

Division of Ser. No. 546,412, Feb. 3, 1975, Pat. No. 3,983,799.
This application Sep. 29, 1976, Ser. No. 728,462
Int. Cl.[2] B65B *13/02*
U.S. Cl. 100—34 2 Claims



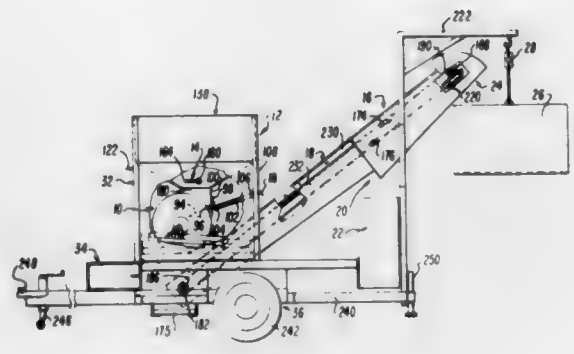
1. A recycleable waste paper collection box comprising: a relatively tall and narrow box structure having a bottom, a pair of laterally spaced vertically extending side retaining walls extending upwardly from said bottom and disposed generally perpendicular thereto, and a back retaining wall extending upwardly from said bottom and disposed in a plane generally perpendicularly to the plane of said side walls and said bottom, said bottom and side and back retaining walls forming an open front receptacle having a continuous uninterrupted waste paper stacking area forming said bottom of said collection box to the upper portion of said side and back walls for receiving recycleable waste paper therein and confining such waste paper such that access may be readily gained to said collection box and wherein paper may be deposited in said collection box to form a stack of paper; a first elongated strap groove formed about the interior side of said back wall and extending in a generally straight line from a top portion of said back wall to a lower portion thereof; a second elongated strap groove formed about the upper surface of said bottom and which extends from a rear edge of said bottom to a front portion thereof with said second elongated strap groove being aligned with said first strap groove and wherein both said first and second strap grooves are adapted to receive a baling strap therein with the baling strap being used to bale a stack of waste paper formed within said collection box; said first and second strap grooves being grooved into the surface of said back wall and said bottom respectively, with each groove being a depth less than the thickness of the member in which they are formed such that each groove includes a groove bottom and two opposed groove sides, thereby assuring that said back wall and bottom are structurally continuous; and an opening formed about the lower edge of said back wall between and adjacent said first elongated strap groove with said opening so disposed with respect to said back wall and bottom such that the fingers of an individual may be inserted through said opening so as to manipulate and guide a portion of a strap from the first groove around the rear lower edge of the formed stack of paper within said collection box and into said second elongated strap groove in the upper surface of said bottom, thereby allowing said strap to be properly threaded and guided around the formed stack of waste material within said collection box such that the strap may be fastened around the entire formed stack to yield a bale of waste paper.

4,084,496

METHOD AND APPARATUS FOR CRUSHING AND SEPARATING METALLIC CONTAINERS

John E. Ehernberger, Westminster, and Bud Mazza, Denver, both of Colo., assignors to G.B.C., Inc., Lakewood, Colo.

Continuation-in-part of Ser. No. 681,829, Apr. 30, 1976, abandoned. This application Jan. 31, 1977, Ser. No. 766,601
Int. Cl.[2] B30B *3/04*
U.S. Cl. 100—35 36 Claims



28. A method of crushing metallic containers comprising:
supplying containers to a hopper means;
feeding the containers from the hopper means to a pocket means for receiving containers in a container crushing means for crushing the containers, the pocket means being defined by a pair of rotatable cone shaped members in the crushing means, each cone shaped member having oppositely extending conically shaped container engaging surfaces and means on each of said container engaging surfaces for transferring force from the cone shaped members to the containers in the pocket means, a first cone shaped member of the pair being rotatably supported in a fixed position and a second cone shaped member of the pair being movably rotatably supported relative to the first cone shaped member between a first inwardly located position of direct engagement with the first cone shaped member and variable outwardly displaced second positions of indirect engagement with the first cone shaped member through containers located therebetween, the second cone shaped member having an axis of rotation inclined in a first direction relative to a vertical plane including the axis of rotation of the first cone shaped member and inclined in a second direction relative to a horizontal plane including the axis of rotation of the first cone shaped member;
resiliently biasing the second cone shaped member into direct engagement with the first cone shaped member in the first position and into indirect engagement with the first cone shaped member through containers located therebetween in the variably outwardly displaced second positions with sufficient force to crush the containers as they pass between the container engaging surfaces of the cone shaped members; and
rotating the first cone shaped member whereby the second cone shaped member is rotated by direct transfer of force from the first cone shaped member to the second cone shaped member, containers in the pocket means are drawn toward the portions of the cone shaped members which are in engagement by interaction of the containers and the force transferring means on the container engaging surfaces of the cone shaped members and the containers are crushed as they pass between the container engaging surfaces of the cone shaped members.

4,084,497

REFUSE COMPACTOR

Aman Ullah Khan, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 4, 1977, Ser. No. 774,329
Int. Cl.[2] B30B *1/18*
U.S. Cl. 100—53 26 Claims



1. In a refuse compactor structure including a ram and a carrier for removably carrying an upwardly opening container in which refuse may be collected to be compacted by movement of said ram forcibly downwardly into said container against collected refuse therein, the improvement comprising:

sidewall means arranged to surround said container; and

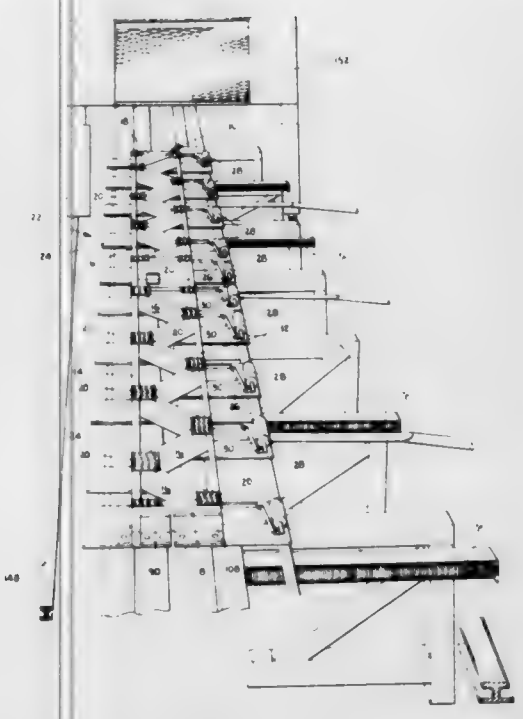
means for causing the sidewall means to be constricted as a result of a preselected movement of said ram during a compacting cycle to provide a lateral support about said container during the compacting operation.

4,084,498

TRUSS MAKING APPARATUS

Austin S. Weaver, Zeeland, Mich., assignor to Ottawa Roof Truss, Inc., Zeeland, Mich.

Filed Jul. 2, 1976, Ser. No. 702,055
Int. Cl.[2] B30B *3/02*
U.S. Cl. 100—210 14 Claims



1. An apparatus for making trusses having parallel first and second elongated truss plates, end truss plates at the ends of the first and second truss plates and angle truss plates disposed in bracing relationship between the first and second truss plates, the apparatus comprising in combination:

a supporting base;

a first rail mounted on the base;

a second rail mounted on the base;

means for evenly and simultaneously adjusting spacing between the first and second rails;

a plurality of first positioning pads adjustably secured to the first rail in spaced relationship to each other;

the end and another of the first positioning pads having means for retaining a first elongated truss plate parallel to the first rail;

a plurality of second positioning pads adjustably mounted on the second rail in spaced relationship to each other;

at least the end ones of the first and second positioning pads having stop means to retain an end truss member thereon perpendicular to the first and second rails;

the end and another of the second positioning pads having means for retaining a second elongated truss member parallel to the first and second rails;

means on the first and second positioning pads for retaining nail plates thereon in a given predetermined location;

means on the second positioning pads for applying pressure to the second elongated truss plate to firmly seat all of the truss plates together prior to seating of the nail plates;

the first and second pads being so spaced and aligned so as to support the opposite ends of angle truss plates extending between the first and second truss plates; and

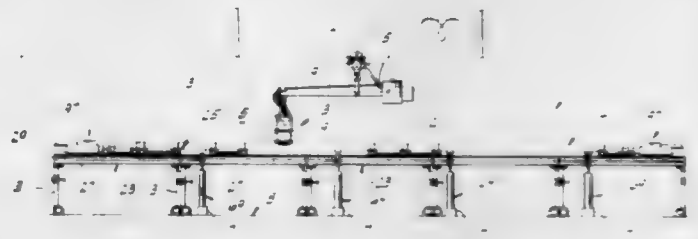
means for at least partially pressing the nail plates simultaneously into the top and bottom of truss plates positioned at the positioning pads.

4,084,499

APPARATUS FOR FABRICATING WOOD STRUCTURES

Walter G. Moehlenpah, 9906 Old Warson Rd., Ladue, Mo. 63124

Filed Jan. 21, 1977, Ser. No. 761,488
Int. Cl.[2] B30B *9/00*
U.S. Cl. 100—231 12 Claims



1. Apparatus for fabricating wood structures, such as trusses of the type having parallel upper and lower chord members and web members extending between the upper and lower chord members, said apparatus comprising a press having an upper and a lower platen which are relatively movable toward and away from one another for pressing nailing plates into two or more of the wood members of the truss from above and below, means for supporting said press for movement along the truss being fabricated into an operating position at a first station for simultaneously driving nailing plates into the wood members from above and below at said first station and for movement from said first station into its operating position at another station, and means for supporting the wood members which are to be joined together by said nailing plates, said supporting means comprising a plurality of elongate frames securable together in end-to-end abutting relation so as to form a support for the truss to be fabricated, each of said frames having a track extending from one end to the other thereof, a plurality of wood member support platforms carried by said track for supporting the upper and lower chord members and the web members of the truss to be fabricated with the platforms for the upper chord members and the platforms for the lower chord members being arranged in back-to-back arrangement on said track and being adjustably movable relative to one another along said track for supporting the wood members at locations along the truss corresponding to the joints of the truss, each of said platforms constituting one of said stations, each said frame having two or more legs for supporting the frame on a base, each of said frames having means thereon

cooperable with means on an adjacent frame for aligning the tracks of said adjacent frames in end-to-end abutting relation, and means for releasably clamping said adjacent frames together in end-to-end abutting relation.

4,084,500

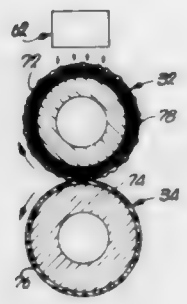
SYNTHETIC RESIN CURED IN PLACE ROTARY EMBOSSING COUNTER ROLLER

William E. Brown; Ramon J. Magee, both of Independence, and Dennis R. McCoy, Gladstone, all of Mo., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Continuation-in-part of Ser. No. 656,361, Feb. 9, 1976, abandoned. This application Jan. 12, 1977, Ser. No. 758,677

Int. Cl.[2] B44B *5/02*

U.S. Cl. 101—28 8 Claims



1. A rotary counter roller comprising:

a cylindrical core;

a continuous wrap of reinforcing roving material comprising individual lays of continuous glass fiber strands spirally wound in essentially one direction circumferentially about said core under tension and bonded to the core along the length of the latter; and

at least one layer of hardened ultraviolet cured resin material over said pre-tensioned roving, the outer surface of said material being configured to conform to a die as the reverse thereof, said resin having a viscosity of at least about 6000 cps. prior to hardening thereof.

4,084,501

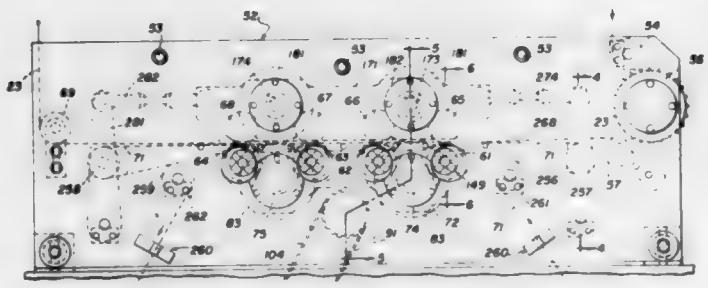
PRINTING MACHINE FOR PRINTING GROUPS OF SYMBOLS

Daniel Kerwin, Lombard; Walter B. Zoberis, Oak Lawn; John W. Grec, Westmont, and James A. McDonald, Palos Heights, all of Ill., assignors to The Meyercord Co., Carol Stream, Ill.

Filed Jun. 21, 1976, Ser. No. 698,052

Int. Cl.[2] B41F *5/06*

U.S. Cl. 101—76 17 Claims



1. A machine for printing a plurality of grouped symbols on a rapidly moving web, comprising an angularly adjustable printing cylinder associated with each symbol of said group, each of said cylinders having a plurality of angularly spaced printing elements on the periphery thereof, said plurality of printing elements of each cylinder being arranged in a row which extends longitudinally of said web, the printing element of each row closest to the web being in printing position for printing the symbol associated therewith, drive means for cyclically moving said cylinders against and away from the web and thereby printing said symbols on said web, said cylinders being spaced apart in the direction of moveement of the web and said printing elements of the respective cylinders being spaced apart laterally of said direction of movement relative to each other and forming an associated group of printing elements, whereby said cylinders cooperate to print said grouped symbols in laterally spaced relation.

4,084,502

ELECTRIC ACUTATING DEVICE

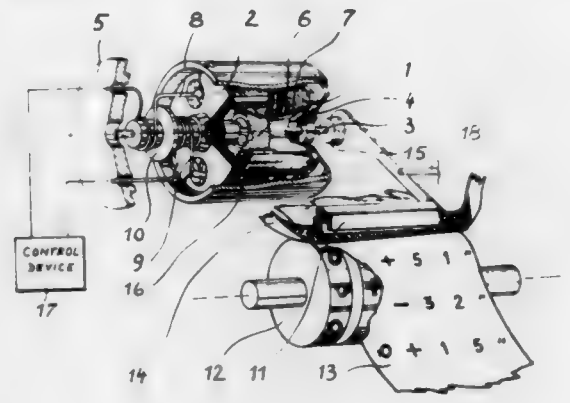
Marc Heyraud, Les Geneveys-sur-Coffrane, and Andre´ Martin, La-Chaux-de-Fonds, both of Switzerland, assignors to Portescap, La Chaus-de-Fonds, Switzerland

Filed May 3, 1976, Ser. No. 682,796

Claims priority, application Switzerland, May 2, 1975, 5691/75

Int. Cl.[2] H01F *7/08*

U.S. Cl. 101—93.29 7 Claims



1. An electric actuating device for producing limited angular displacements, comprising an ironless coil mounted for rotation within the air gap of a magnetic circuit and connected to a source of electric control pulses, the poles of the magnetic circuit and the coil being arranged for producing a torque upon occurrence of a control pulse, and further comprising mechanical means for limiting the angle of rotation at least in the direction of the torque and magnetic return means for producing a return torque acting on the coil for bringing the same back into a rest position, said magnetic return means comprising a member of magnetically permeable material associated with the rotor for rotation therewith, at least a part of said member being arranged in eccentric relationship with the rotor axis.

4,084,503

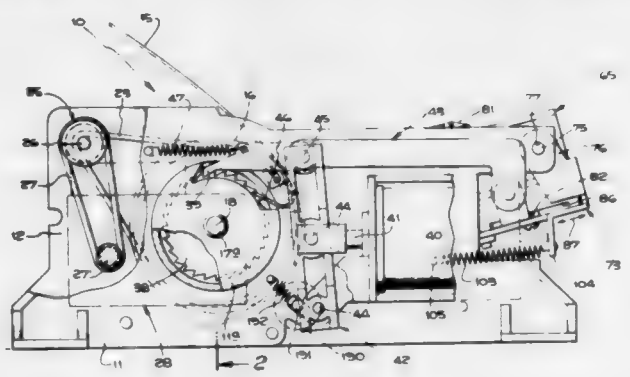
PRINTER APPARATUS

John D. Pylant, Irvine; Paul R. Lozeau, Placentia, and Newton R. Packard, Los Alamitos, all of Calif., assignors to Sheldon-Sodeco Printer, Inc., Elmsford, N.Y.

Continuation of Ser. No. 572,067, Apr. 28, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,859

Int. Cl.[2] B41J *7/70*

U.S. Cl. 101—96 16 Claims



1. In compact printer apparatus operable to rapidly print characters on a print sheet in lines and columns,

a. a frame,

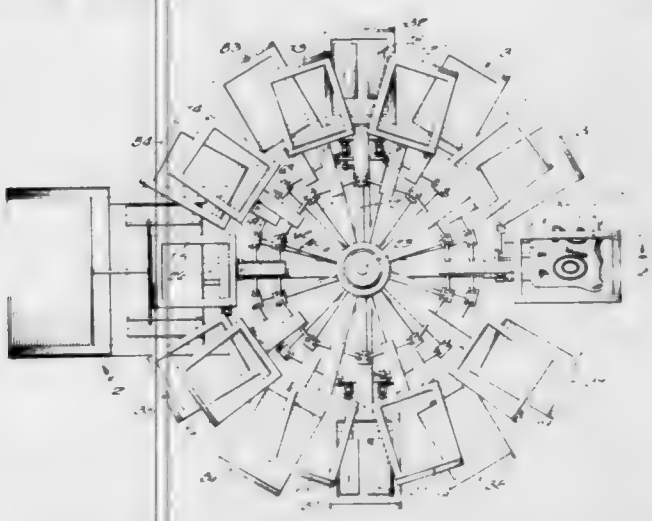
b. a continuously rotating rotary drum carried by the frame and having type font means thereon,
c. hammer means carried by the frame for movement toward and away from the drum and the type font means thereon during rotation of the drum,
d. an inked ribbon and carrier therefor carried by the frame to feed a local ribbon extent between the hammer means and rotating drum, there being ribbon advancing means engaging the ribbon and operable to effect endwise transport of the ribbon onto and off the carrier,
e. print sheet advancing means carried by the frame to advance the sheet endwise between the drum and said local ribbon extent, and
f. drive means operatively connected with the ribbon advancing means and with the sheet advancing means to interruptedly advance the sheet and the ribbon advancing means,
g. said print sheet advancing means including a sheet advancing friction rotor peripherally and frictionally engageable with the sheet, the drive means including shoulders on the rotor, and pawl means engageable with the shoulders to interruptedly rotatably index the rotor, the frame supporting said friction rotor to rotate independently of but coaxially with said continuously rotating drum at one end thereof, the friction rotor periphery being annular and having a diameter approximately the same as the drum outer diameter.

4,084,504

MULTIPLE TIER SCREEN PRINTER

Alvin J. Fuchs, Milwaukee, Wis., assignor to Medalist Industries, Inc., Milwaukee, Wis.

Filed Apr. 28, 1977, Ser. No. 791,764
Int. Cl.[2] B41F *15/10, 15/36*
U.S. Cl. 101—115 **6 Claims**



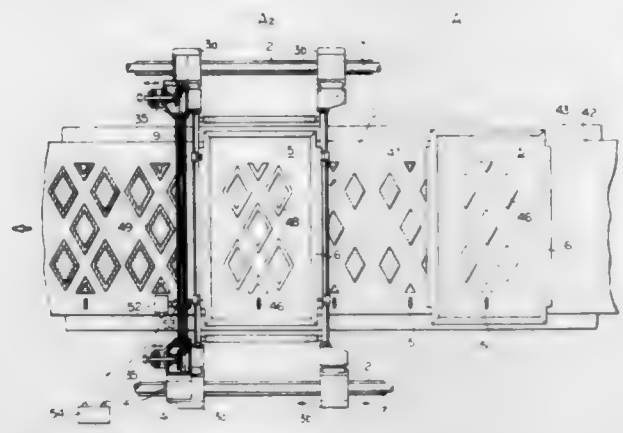
1. Apparatus for printing on flexible material comprising:
a lower, an intermediate and an upper carriage means arranged axially adjacent each other and mounted for rotation about a common axis,
platen means supported by said lower carriage means,
a first tier of silk screen supporting means and silk screen means mounted thereon, said supporting means being mounted on said intermediate carriage means for pivoting toward and away from said platen means, said supporting means being spaced angularly about said axis, and
a second tier of silk screen supporting means and silk screen means mounted on said supporting means, said supporting means of said second tier being mounted on said upper carriage means for pivoting toward and away from said platen means, said screen supporting means of said second tier being spaced angularly about said axis at angles which permit said supporting means of said second tier to pivot to said platen means in a path between certain of the supporting means in said first tier which is supported on said intermediate carriage means.

4,084,505

DEVICE FOR ADJUSTING PHASE OF FLAT SCREEN

Shiro Ichinose, 11-8, 4-chome, Shinohara, Kita-machi, Nada-ku Kobe-shi, Hyogo-ken, Japan

Filed Jun. 14, 1976, Ser. No. 695,928
Int. Cl.[2] B41F *15/10, 15/36*
U.S. Cl. 101—123 **7 Claims**



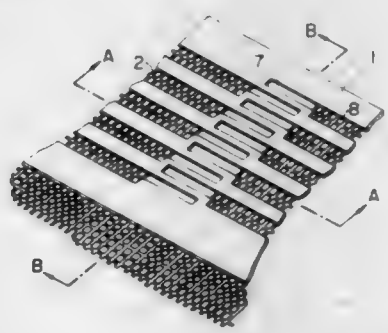
1. A flat screen printing machine wherein a web of material is advanced in a first direction past a printing station wherein said printing station includes:
a printing screen for printing a pattern on said web;
carriage means for supporting said printing screen above said web;
drive means for moving said carriage means and said printing screen at the same speed as said web so that the pattern on the printing screen can be transferred to said web accurately during printing;
means for mounting said printing screen on said carriage means wherein said mounting means includes means allowing relative movement between said screen and said carriage means;
adjustment means for driving said screen to move relative to said carriage both with and opposite to the direction of carriage motion;
indicating means on said web;
detector means rigidly mounted with said screen for sensing misalignment with said indicating means, and
motor means activated by said detector means to drive said adjustment means until said detector means is aligned with said indicating means so that the pattern on said screen remains properly aligned with the web during the printing process.

4,084,506

METAL MASK FOR USE IN SCREEN PRINTING

Mitsuo Nakatani, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 3, 1976, Ser. No. 738,395
Claims priority, application Japan, Nov. 7, 1975, 50-133096
Int. Cl.[2] B41F *15/36*
U.S. Cl. 101—127 **2 Claims**



1. A metal mask for screen-printing comprising a metal plate having a printing pattern layer including at least one first printing pattern opening portion for forming first printed lines

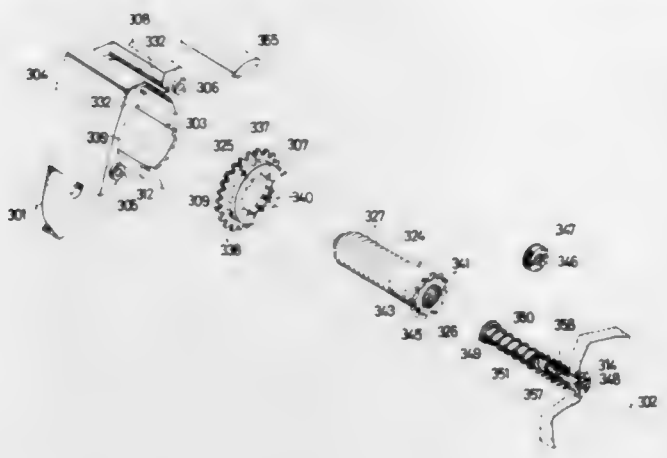
each having a width no larger than 300 microns and at least one second printing pattern opening portion for forming second printed lines each having a larger width than that of said first printed lines, and a mesh layer consisting of fine mesh-like lines formed on said printing pattern layer, wherein said mesh layer is provided over said second printing pattern opening portion, while said first printing pattern opening portion is free from said mesh layer.

4,084,507

PRINTING DEVICE FOR PORTABLE LABEL PRINTING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Jul. 12, 1976, Ser. No. 704,443
Claims priority, application Japan, Jul. 15, 1975, 50-85869
Int. Cl.[2] B41J *1/32*
U.S. Cl. 101—110 **14 Claims**



1. A printing device for a labeling machine, or the like, comprising:

a first array of wheels arranged side-by-side on a first common axis; a frame for supporting said first array of wheels; said wheels of said first array each having an engageable periphery;

a second array of type wheels arranged side by side on a second common axis, and all said type wheels also being supported on said frame; each said type wheel being provided with a respective set of imprintable types; each said type wheel having a periphery that is engageable with said periphery of a wheel of said first array such that rotation of a said wheel of said first array rotates the respective said type wheel; each said set of types being attached to a respective said type wheel to be moved to place a different said type at a print position by means of rotation of the corresponding said type wheel;

all said wheels of said first array having a respective central opening therethrough, and each said central opening having a respective first cross-section and being defined by a respective profiled surface having a respective first profile; said central openings being on said common axis; all said first profiled surfaces being identically shaped and sized;

an indexing shaft extending into said frame and adapted and shaped to pass through and be slidable through all said central openings; a pinion on said shaft; said pinion having a second cross-section that is smaller than all said respective first cross-sections; said pinion having a second profile that is adapted to engage any of said respective first profiled surfaces at a first rotative orientation of said pinion and to be completely disengaged from that said first profiled surface at a different, second rotative orientation of said pinion, and such that at said second orientation of said pinion, there is a clearance space between said pinion and said first profiled surface of a said wheel in which said pinion is then located;

wheel rotative position establishing means for establishing discrete rotative positions for every said wheel of said first array such that at every established discrete position of every said wheel of said first array, all said profiled surfaces are identically aligned, whereby said pinion at its said second orientation may freely pass through all said wheel central openings with clearance space;

said frame comprising a side frame extending axially the width of said first array of wheels, said side frame having a blind hole therein defined by a side wall and extending axially of said wheels; said first array of wheels all sitting in and being guided for rotation by said side wall of said blind hole; said blind hole side wall and said periphery of all said first array wheels being respectively profiled such that said first array wheels are supported by their said peripheries in said blind hole for rotation around their said axis;

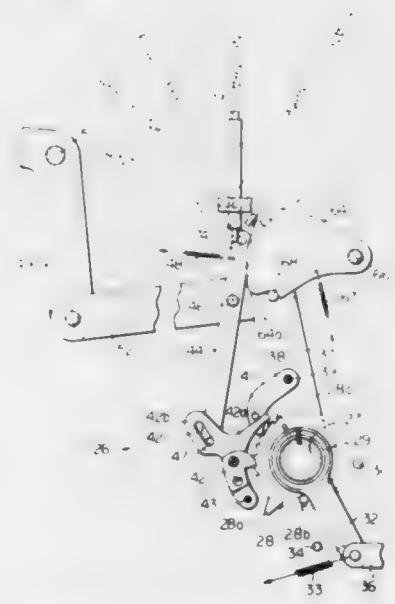
an opening in said blind hole side wall for enabling engagement between each said first array wheel and its respective said type wheel.

4,084,508

OFFSET PRINTING MACHINE COMPRISING IMPROVED CONTROL MECHANISM

Tamaki Kaneko, and Tugio Okuzawa, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 17, 1976, Ser. No. 715,022
Claims priority, application Japan, Aug. 18, 1975, 50-99932
Int. Cl.[2] B41F *7/06*
U.S. Cl. 101—142 **8 Claims**



1. In a printing machine including a printing means, a sheet feed means for feeding sheets to the printing means for printing and a control member movable between a neutral position for de-activating the printing means and sheet feed means and a print position for activating the printing means, an improvement for activating the sheet feed means after a predetermined length of time after the control member is moved from the neutral position to the print position, said improvement comprising the combination of:

a ratchet formed with an actuating member, the ratchet being rotatable between a reset position in which the actuating member is disengaged from the sheet feed means thereby de-activating the sheet feed means and an actuating position in which the actuating member engages with the sheet feed means thereby activating the sheet feed means;

a drive pawl arranged to be reciprocatingly driven to engage with and advance the ratchet from the reset position to the actuating position in a predetermined number of reciprocations thereof corresponding to the predetermined length of time;

drive means for reciprocatingly driving the drive pawl;

a holding pawl for engaging with and thereby preventing

rotation of the ratchet from the actuating position to the reset position;

reset means actuated by the control member to move the drive pawl and the holding pawl out of engagement with the ratchet thereby allowing the ratchet to move to the reset position when the control member is moved from the neutral position to an intermediate position between the neutral position and the print position, the reset means moving the drive pawl and the holding pawl into engagement with the ratchet when the control member is moved from the intermediate position to the print position; and

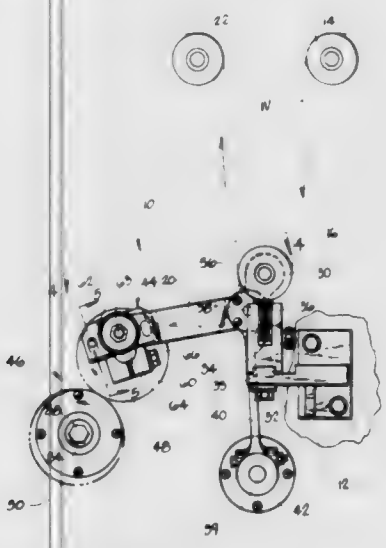
latch means actuated by the control member for disconnecting the drive means from the drive pawl when the control member is in the neutral position and connecting the drive means to the drive pawl when the control member is moved from the neutral position to the print position, the latch means continuing to disconnect the drive means from the drive pawl when the control member is in the intermediate position.

4,084,509

APPARATUS FOR PRINTING ON AN ADVANCING WEB

Lawrence W. Schoppee, Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed Sep. 20, 1976, Ser. No. 724,861
Int. Cl.[2] B41F *3/54, 3/64, 3/44*
U.S. Cl. 101—261 **6 Claims**



1. Apparatus for cyclically printing information at spaced intervals on a continuously advancing web of the sheet material comprising:

a printer situated at a printing station adjacent to the advancing web and having a printing head facing a broad side of the web for producing printed information on the broad side;

a web guide roller supported at the printing station adjacent the printing head for free rotation about its own axis to guide the advancing web through the station;

a linkage including a rocker arm mounted at one end for rocking motion about a given axis and pivotally connected at the opposite end with a movable link to provide a shiftable pivot axis for the link at said opposite end of the rocker arm, the rocking motion of the arm about the given axis at said one end being accomadated by shifting of the pivot axis for the link at said opposite end the movable link supporting the roller with the advancing web guided thereon for shifting motion back and forth over the printing head with the shiftable pivot axis parallel to the axis of the roller; and

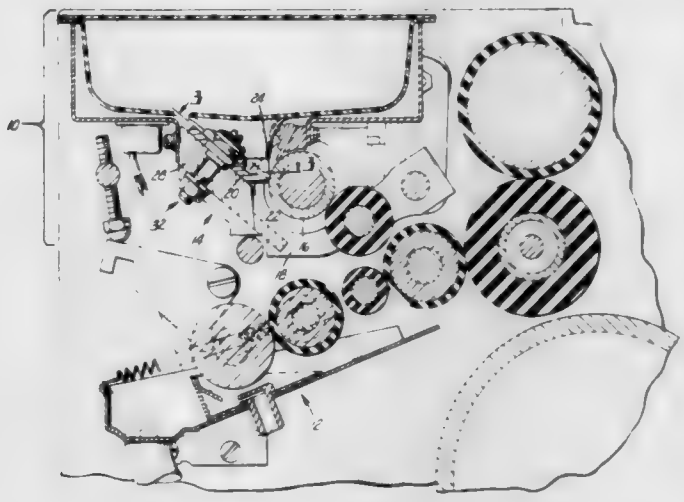
drive means connected to the linkage for cyclically rocking the arm, shifting the pivot axis for the link and moving the link and roller back and forth relative to the printing head and also simultaneously tilting the link about the shiftable pivot axis to sweep the roller and web over the printing head in one direction opposite the direction of web advancement with the web in contact with the head and to return the web and roller in the reverse direction with the advancing web out of contact with the head.

4,084,510

INK FOUNTAIN

Roy C. Schweitzer, Hoffman Estates, and Lee B. Fiori, Leyden Township, Cook County, both of Ill., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation of Ser. No. 607,238, Aug. 25, 1975, abandoned.
This application May 26, 1977, Ser. No. 800,814
Int. Cl.[2] B41F *31/04*
U.S. Cl. 101—365 **3 Claims**



1. An ink fountain for a lithographic duplicator comprising:

a fountain roller;

a blade support anvil adjacent the fountain roller and having a flat blade support and guiding surface;

an ink supporting and doctor blade with its long axis parallel to said roller and provided with an edge portion out of contact with, but in close proximity to, the surface of said roller defining therewith a minute ink metering gap, said blade having a flat body portion lying in contact with the blade support surface of said anvil and being longitudinally flexible in a widthwise direction to a degree such that segments of its length are somewhat independently movable so as to allow adjustment in conformity with roller surface variations to achieve a gap of the required degree of minuteness and uniformity, said blade including a plurality of follower openings spaced along its length; and

independently acting adjusting devices mounted on said anvil, each positioned to enter one of said follower openings and coact with the edges thereof, said adjusting devices each comprising:

a post rotatable on the anvil passing through the corresponding blade opening and carrying a first eccentric cam for coarse adjustment;

means for clamping the first eccentric cam in desired rotary position;

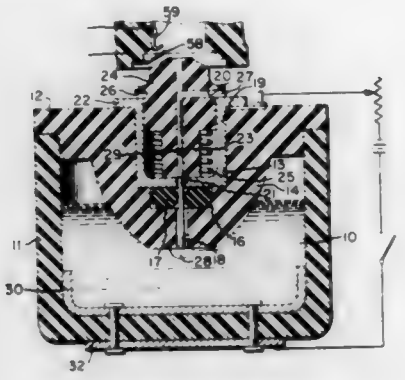
a second eccentric cam embracing the first eccentric cam and rotatable thereon, said second eccentric cam including a cam profile for fine adjustment engaging the edges of its corresponding follower opening; and

drive means for setting the second eccentric cam in desired rotary position.

4,084,511
ELECTROLYTIC TIMING ELEMENT

Benjamin W. Svrjcek, Jr., Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 7, 1960, Ser. No. 34,598
Int. Cl.[2] F42B *5/08*
U.S. Cl. 102—70.2 GA **4 Claims**

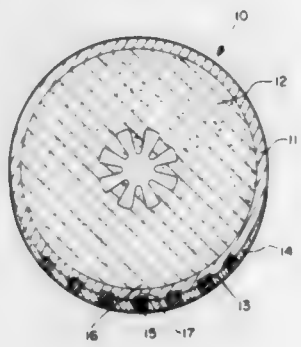


1. An electro-chemical interval timing device comprising a casing, an electrolyte within said casing, a cap sealing said casing, a lead cathode carried by said cap and extending into said casing contained electrolyte at one end and extending beyond said cap outwardly of said casing at the other end, a plurality of silver anodes, means for mounting said anodes in said cap to provide outside connection posts for one end of each of said anodes, the other end of each anode being formed with a rounded head of exact predetermined size and shape, said head extending into said electrolyte, a plurality of cups carried by said caps respectively, each cup partially housing one of said anodes, a plurality of spring biased plugs, each of said plugs being partially housed by one of said cups and connected to one of said anodes, means retaining each of said anodes to their attached plug, a plurality of battery energized circuits each connected to said cathode and to one of said anodes, a variable resistance in each of said circuits, means initiating said battery energized circuits, a second plurality of circuits, each of said second circuits including an open switch positioned adjacent one of said spring biased plugs whereby the energization of said battery energized circuits will cause current to pass through the electrolyte and dissolve the heads of said anodes at an equal rate, said plugs and their attached anodes being released by the dissolving of said anode heads in accordance with their different sizes and shapes.

4,084,512
PRESSURE RELIEF CONSTRUCTION FOR CONTROLLED COMBUSTION OF ORDNANCE ITEMS

Anthony San Miguel, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 18, 1976, Ser. No. 733,484
Int. Cl.[2] F42B *13/12*
U.S. Cl. 102—103 **10 Claims**

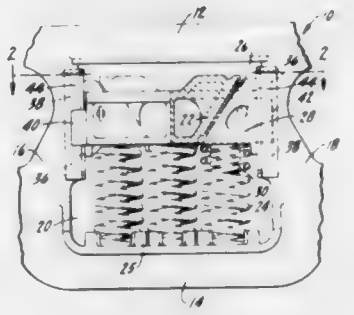


1. A casing structure for an ordnance item comprising:
a wall having an inner and an outer surface, said inner surface at least partially defining a chamber for containing high energy fuel, said outer surface defining at least one cavity and corresponding zone of reduced wall thickness;
a thermally insulating doubler rigidly attached to said outer surface and having at least one aperture aligned with each cavity; and
a thermally conducting plug occupying said cavity and aligned aperture.

4,084,513
RAILROAD CAR SIDE FRAME CONSTRUCTION

Robert L. Bullock, Lombard, Ill., assignor to Standard Car Truck Company, Chicago, Ill.

Continuation-in-part of Ser. No. 590,291, Jun. 25, 1975, abandoned. This application Aug. 25, 1976, Ser. No. 717,517
Int. Cl.[2] B61F *5/06, 5/12, 5/50;* F16F *1/06*
U.S. Cl. 105—197 DB **1 Claim**

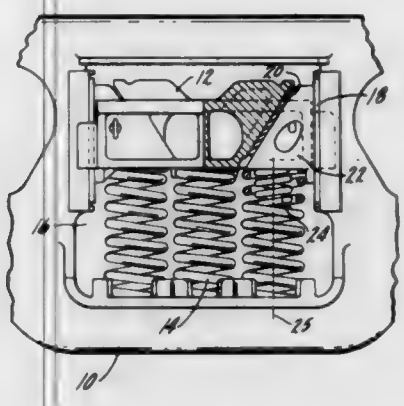


1. In combination, a railroad truck side frame having a window, a bolster extending through said window, said side frame including an upper compression member and a lower tension member, spaced vertical columns extending between and connecting said compression member and tension member and defining the inboard and outboard sides of said window, said bolster having lugs projecting from both sides thereof on opposite sides of said columns, a widened area forming a reinforcing mass on the same side of each vertical column extending away from the side frame on the inboard side, with the opposite side of each column being substantially coplanar with the side frame, the widened area on each vertical column extending a vertical distance less than the distance between said tension member and compression member, the space between lugs on each side of the bolster being substantially greater than the width of said side frame, and being slightly greater than the distance between the outside of said widened area and the opposite side of said vertical column, said lugs being positioned adjacent and extending outside of said widened area and coplanar side, a wear plate on each vertical column facing the bolster, with the surface of each wear plate facing said bolster being substantially coplanar with a surface on said widened area facing said bolster, a pocket in each side of the bolster having a wear plate and a friction member in each pocket opposite its corresponding wear plate, relative rotation between said bolster and side frame causing wear contact at diagonally opposed portions of said bolster and side frame, said diagonally opposed portions being: each widened area reinforcing mass and the opposing bolster area adjacent one of said lugs (48), and between opposing edge portions of each vertical wear plate and its corresponding friction member (58), a line drawn between said diagonally opposed bolster and side frame portions (48 and 58) crossing the bolster center line (50) inboard of the side frame center line (52).

4,084,514
DAMPING RAILWAY TRUCK BOLSTER FRICTION SHOE

Robert L. Bullock, Lombard, Ill., assignor to Standard Car Truck Company, Chicago, Ill.

Continuation-in-part of Ser. No. 590,292, Jun. 25, 1975, abandoned. This application Sep. 2, 1976, Ser. No. 719,827
Int. Cl.[2] B61F 5/06, 5/12, 5/50; F16D 65/04
U.S. Cl. 105—197 DB 10 Claims

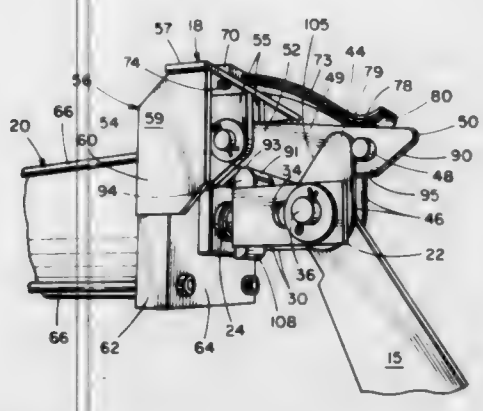


1. A friction member for use in the bolster pocket of a stabilized railroad car truck including a friction surface adapted to bear against a generally flat slanted wear surface within the bolster pocket, said friction surface having a generally flat portion of substantial length generally conforming to the generally flat slanted bolster pocket wear surface and an adjoining arcuate portion of substantial length, gradually diverging from the generally flat slanted bolster pocket wear surface, said generally flat portion being tangent to said adjoining arcuate portion and extending from the area of tangency to one end of said friction surface, the arcuate portion extending from the area of tangency to the other end of said friction surface.

4,084,515
LOCKING MECHANISM FOR HOPPER DOOR ACTUATOR ASSEMBLY

Andrew M. Kunz, Dolton; Donald B. Yates, Park Forest, both of Ill., and Richard L. Tuck, Highland, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Sep. 16, 1976, Ser. No. 723,862
Int. Cl.[2] F15B 15/26; B61D 7/28
U.S. Cl. 105—240 10 Claims



9. A locking device for a piston and cylinder and an actuating lever pivoted intermediate its ends to the piston on a transverse axis, said lever having first and second legs and said one leg at one side of said axis adapted for connection to a mechanism operable thereby, said device comprising:

mounting means on the cylinder,

a latch pivoted at one end above the piston to said mounting means on an axis generally parallel with said transverse axis and having means at the other end providing a locking surface facing toward the cylinder, a

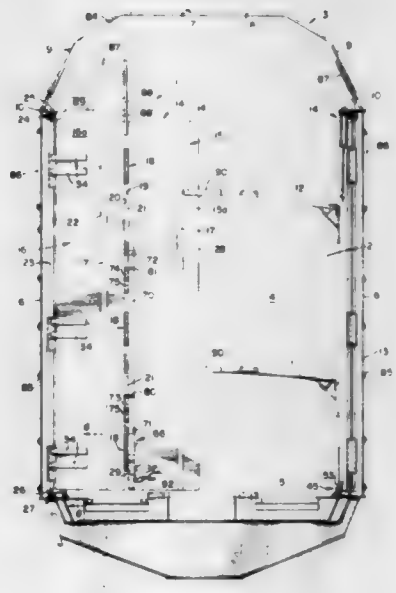
generally planar locking surface on the second leg at the opposite side of said axis facing away from the cylinder in the locked position and engaging behind said cylinder facing surface on said latch,

and means on said latch and piston for lifting said latch to a position disposing said surface thereon above said locking surface on the leg pursuant to extension of the piston for operating said lever and for lowering said latch upon said leg being located in loading position in consequence of and attendant to said piston retracting.

4,084,516
FOLDABLE SLIDABLE VEHICLE END ENCLOSURE

Chandrakant D. Ravani, Farmington; James C. Robertson, Ypsilanti, and Jaroslaw J. Rostafinski, Ferndale, all of Mich., assignors to Portec, Inc., Oak Brook, Ill.

Filed Mar. 22, 1977, Ser. No. 780,226
Int. Cl.[2] B60J 5/06, 5/10; B61D 17/06, 19/00
U.S. Cl. 105—368 R 15 Claims



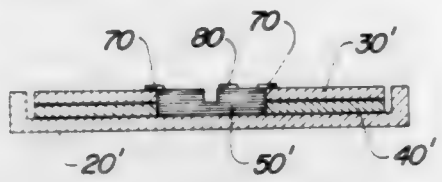
1. An end enclosure for a transport vehicle having a floor and two side walls defining an end opening therebetween including, a pair of door assemblies each having an inner door panel and an outer door panel, each said panel provided with an outside face and an inside face and having an inner edge and an outer edge, intermediate hinge means pivotally joining the respective inner edge of each said outer panel to the respective outer edge of each said inner panel of each said door assembly in a manner providing a vertically extending clearance therebetween and whereby said inner and outer panels may be folded into a juxtaposed parallel condition, slidable vertically disposed hinge means carried by each said outer panel adjacent its outer edge, hanger means within said vehicle adjacent each said side wall and connected to said slidable hinge means, track means fixedly disposed within said vehicle and extending longitudinally of each said side wall, each said hanger means supported by a respective one of said track means to permit sliding displacement of said folded door assemblies to and from a stored position within said vehicle in a direction parallel to said side wall, intermediate lock means carried by each said door panel adjacent said vertically extending clearance and independently operable to lock each said pair of joined door panels to one another in a co-planar position as when disposed in a closed position normal to said vehicle side walls and storage lock means carried by said vehicle and operable to engage and retain said folded door assemblies in said stored position within said vehicle.

4,084,517

COLLAPSABLE TABLE

Westphal Claude Guess, 2121 Leadville, Boise, Id. 83706

Filed Jun. 13, 1977, Ser. No. 806,003
Int. Cl.[2] A47B *3/06*
U.S. Cl. 108—153 **9 Claims**



1. A collapsable table comprising:

a table top having substantially planar upper and lower horizontal surfaces;

a leg receiving block securely attached to the undersurface of said table top, said block including a pair of rectilinear, horizontally extending, intersecting notches adapted to interlockingly engage a pair of table legs;

a pair of table legs; each leg having a thickness equal to one-half the thickness of said block; each leg having vertical coplanar opposing surfaces; each of said legs including an uppermost terminal edge defining a pair of horizontally extending, rectilinear, table top contacting surfaces separated by a first recede portion having a horizontally extending, rectilinear, top surface, the first recede portion being operable to engage a notch in said leg receiving block; each of said legs including a pair of floor contacting surfaces separated by a central second recede portion; each of said legs including a centrally located opening adapted to encase said leg receiving block when in the stored position; one of said legs including a vertical slit communicating between the opening and the first recede portion and a vertical groove aligned with the slit communicating between the opening and the second recede portion; and the other of said legs including a vertical groove communicating between the opening and the first recede portion and a vertical slit aligned with the groove communicating between the opening and the second recede portion; the grooves of one leg adapted to interlockingly engage the slit of the other leg whereby said legs may be juxtaposed over one another at right angles one to the other.

4,084,518

SWIVEL DRAWER ASSEMBLY

David T. Carlson, 923 S. Cardiff, Anaheim, Calif. 92805

Filed Apr. 4, 1977, Ser. No. 784,481
Int. Cl.[2] E05G *7/00*
U.S. Cl. 109—19 **7 Claims**

1. A swivel drawer assembly adapted to be mounted in an opening in a wall, or the like, comprising:

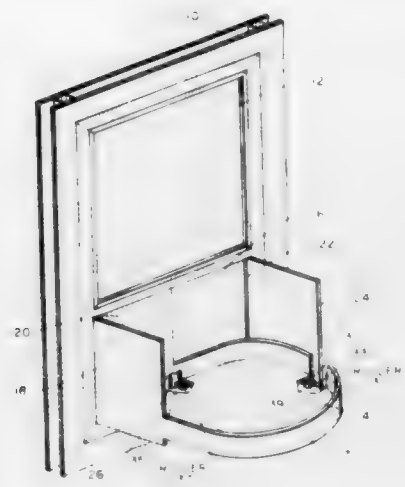
a tray pivotally mounted to one side of said opening for swivel movement through said opening from one side of said wall to the other in a horizontal plane about a first vertical axis disposed at said one side of said opening;

first and second vertical doors mounted on said tray extending at right angles to one another from said first vertical axis for swivel movement with said tray;

third and fourth vertical doors pivotally mounted to the opposite side of said opening for rotation about a common second vertical axis at said opposite side of the opening;

cam means formed on said tray coupling said third and fourth vertical doors for rotation with said tray;

whereby swivel movement of said tray to one side of said wall causes said first and third doors to come together closing said opening and swivel movement of the tray about the first vertical axis to the opposite side of said wall



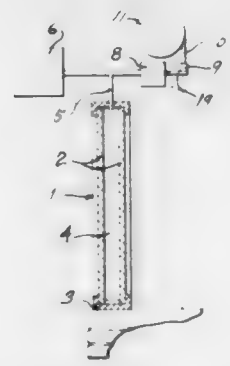
causes the second and fourth doors to come together to close said opening.

4,084,519

ANTI-BURGLAR WINDOW SHIELDING SYSTEM AND LATCH MECHANISM THEREFOR

Uldéric Sylvio Hill, P.O. Box 68, Rock Island, County of Stanstead, Canada

Filed Apr. 27, 1976, Ser. No. 680,965
Int. Cl.[2] G08B *13/04*
U.S. Cl. 109—42 **5 Claims**



1. An anti-burglar shielding system comprising a window having a fluid-tight space formed against one face thereof and capable of communicating with atmospheric air upon breakage of said window, a bellows, a fluid line connecting said bellows with said space, a vacuum pump means communicating with said space to produce at least a partial vacuum in the latter and in said bellows to maintain said bellows in contracted position, said bellows taking an expanded position when communicating with atmospheric air upon breakage of said window, a window shielding curtain mounted across the top of said window, held in a roll when in inoperative position and deploying to an operative window shielding position on one side of said window under the action of gravity and a latch device to hold said shielding curtain in rolled-up inoperative position and operable by expansion of said bellows to release said shielding curtain and allow gravity to deploy said curtain to its window shielding position, said latch device comprising a support, a cylindrical latch finger including a root portion and a latch pin portion freely pivotably connected at one end to the root portion about a transverse pivot relative to the longitudinal axis of the latch finger, said transverse pivot carried by said root portion, said root portion rotatably journalled in said support and extending substantially horizontally, said latch pin portion retained in a substantially horizontal latching position coaxial with said root portion and overhanging from said support, when said transverse pivot is upright in a first rotated position of said root portion, and taking a downwardly hanging release position

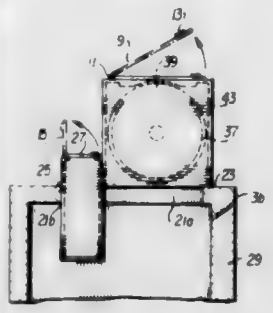
when said transverse pivot is substantially horizontal in a second rotated position of said root portion, said latch pin portion, when in said latching position, underlying a portion of said shielding curtain when in rolled-up position and constituting a stop holding said shielding curtain in said rolled-up position, said latch pin portion, when in said downwardly hanging release position, releasing said shielding curtain to deploy under gravity, means biasing said root portion to its second rotated position, a catch device releasably holding said root portion in its first rotated position, wherein said transverse pivot is upright, and a trigger device actuated by expansion of said bellows to operate said catch device to cause the latter to release said root portion and allow its rotation to its second rotated position under the action of said biasing means.

4,084,520

CURRENCY DROP SAFE

David Lee Frier, Columbia, S.C., assignor to Bankers Trust of South Carolina, Columbia, S.C.

Filed Sep. 3, 1976, Ser. No. 720,216
Int. Cl.[2] E05G *1/08*
U.S. Cl. 109—56 **3 Claims**



1. An attachment for a safe comprising a first container having side walls and defining top and bottom openings, a second container attached to one of said side walls but projecting beyond the plane of said bottom opening, said second container defining a top opening, a door for closing each of said top openings, means mounting said first container on the exterior of a safe with the bottom opening of said first container affording communication with the safe interior and with said second container projecting into the safe interior, a third container having a single opening, means mounting said third container within said first container for movement between a position in which its opening is in registry with said top opening of said first container to a position in registry with the bottom opening of said first container whereby money may be placed in the safe through said first container.

4,084,521

METHOD AND APPARATUS FOR THE PYROLYSIS OF WASTE PRODUCTS

Oskar Herbold, Meckesheim, and Dieter Dittloff, Sinsheim, both of Germany, assignors to Helma Lampl, Sinsheim-Rohrbach, Germany

Filed Oct. 23, 1975, Ser. No. 625,311
Claims priority, application Germany, May 9, 1975, 2520754
Int. Cl.[2] F23G *5/02, 5/12*
U.S. Cl. 110—242 **20 Claims**

1. A method for carrying out the pyrolysis of waste products containing hydrocarbons comprising the steps of:

disintegrating the waste products into cuttings;

drying the cuttings;

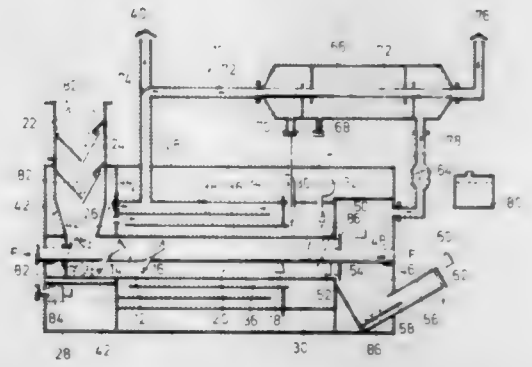
driving the dried cuttings through a reactor vessel having an entrance end and a delivery end;

heating the cuttings as they are being driven from the entrance end to the delivery end of the reactor vessel to the decomposition temperature of the cuttings, said reactor vessel being maintained at a sub-atmospheric pressure, said reactor vessel further being maintained airtight and substantially free of oxygen;

damming the cuttings at the delvery end of the reactor vessel such that the entire reactor becomes filled with the cuttings, said uttings being kept compressed at a predetermined dynamic pressure; and

passing the decomposition gases and residue of undecomposed cuttings into a delivery chamber where said gases and residue are separately removed, said delivery chamber being maintained at sub-atmospheric pressure and substantially oxygen free by the exclusion of air.

7. Apparatus for carrying out the pyrolysis of waste products containing hydrocarbons comprising a reactor vessel having an entrance end and delivery end, a driven feed device provided in the reactor vessel for driving waste products in the form of cuttings between the entrance and delivery end



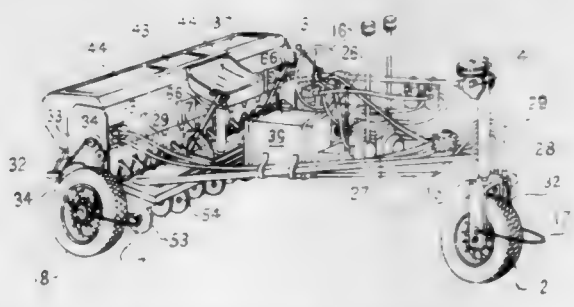
thereof, a heating device arranged coaxially around the reactor vessel for heating the waste material cuttings, a charging hopper, which is at least partially heated, being connected airtightly to the reactor vessel at its entrance end, airtight closures of the hopper being provided, a delivery chamber connecting with the reactor vessel at its delivery end for receiving the decomposed products of the waste products, means for keeping the delvery chamber airtightly closed, a delivery closure separating the delivery chamber from the reactor tube means for biassing the delivery closure to its closed position and a blower, the suction side of which is connected to the delivery chamber to remove the gaseous products and maintain both the delivery chamber and reactor vessel at sub-atmospheric pressure.

4,084,522

APPARATUS AND METHOD FOR SOWING SECOND CROP IN STANDING CROP

Lloyd Younger, 215 N. Church St., Bethany, Ill. 61914

Filed Oct. 3, 1975, Ser. No. 619,202
Int. Cl.[2] A01C *5/06*
U.S. Cl. 111—14 **2 Claims**



1. Apparatus for planting seeds between rows of growing grain comprising a frame, three wheels supporting said frame above the ground, said wheels comprising a front wheel and a pair of rear wheels, the distance measured transversly to the direction of movement of said apparatus between said front wheel and either of said rear wheels being a distance which is an even multiple of the distance "*x*" between conventionally planted rows of grain, the widths of said wheels being less than "*x*", and which futher comprises first wheel mounting means on the front of said frame for turning said front wheel relative to a vertical axis, a steering mechanism for said first wheel

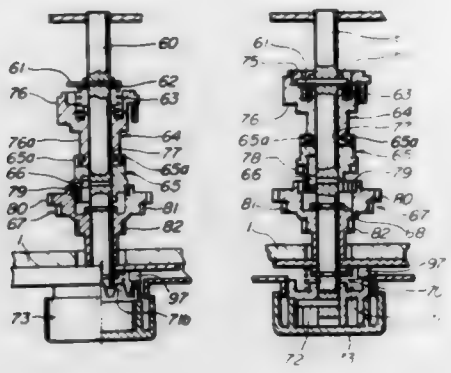
mounting means to steer said apparatus and second wheel mounting means for each of said rear wheels, a hydraulic motor for each said wheels, a prime mover on said frame, a pump driven by said prime mover, and control means for driving each of said motors from said pump, a drill on said frame having a hopper extending transversely of said frame formed on its bottom with a plurality of apertures, seed discharge means for releasing seeds from said hopper at spaced intervals through said apertures, and for each of said apertures a tube supported by and depending from said hopper receiving seeds discharged through said apertures, said second wheel mounting means being connected to the outer ends of said hopper, and planting means on the lower end of said tube for planting said planting means comprising a separate axle for each said tube, bearing means supporting said axle from said frame, pair of discs having their axes transverse to the direction of movement of said frame, said discs being rotatable on said axle mounted so that said discs are downwardly converging with a gap between the top edges of said discs, a cover for said gap, said tube discharging seeds through said cover and into said gap, said discs being laterally separated from each other by a distance "x" and offset laterally from each said wheel a multiple of "x", said hopper and all transversly extending portions of said apparatus below said hopper being elevated above the ground a distance at least equal to the height of grain which has been planted before the winter and allowed to grow until about June 1.

4,084,523

CAM SELECTING DEVICE FOR A SEWING MACHINE

Norboru Kasuga, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Aug. 2, 1976, Ser. No. 711,078
Claims priority, application Japan, Aug. 11, 1975, 50-97970
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 A **19 Claims**



1. In a sewing machine wherein a drive shaft rotates relative to the machine frame in order vertically to reciprocate a needle and to rotate a pack of pattern cams, and wherein a cam follower is displaceable along said pack and engageable with each of said cams for controlling the stitch pattern of the needle, the improvement comprising:

selector means operable for displacing said follower along said pack of cams;

actuating means connected to said follower for displacing same from an engaged position riding on a one of said cams into a disengaged position clear of said cams and displaceable along said pack;

operating means including an operator element displaceable in a predetermined manner and connected to said selector means and to said actuating means for displacement of said cam follower into said disengaged position on displacement of said operator element in said manner and then displacement of said cam follower along said pack on continued displacement of said operator element in the same manner;

holding means connected to said follower for retaining same in said disengaged position after displacement of same by said actuating means through said operator element into said disengaged position; and

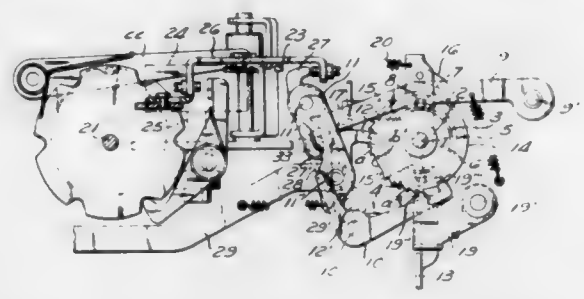
releasing means connected to said follower for displacing same from said disengaged position into said engaged position.

4,084,524

TWO-STEP BUTTONHOLE MECHANISM FOR SEWING MACHINE

Syoogo Hasegawa, Ibaragi, Japan, assignor to White Sewing Machine Company, Cleveland, Ohio

Filed Aug. 30, 1976, Ser. No. 718,808
Claims priority, application Japan, Sep. 11, 1975, 50-127557[U]
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 B **5 Claims**



1. In a sewing machine having a needle bar, a feed mechanism, an upper shaft, a device for sewing of buttonholes comprising a control shaft journaled on the frame of the machine, an amplitude cam for controlling the amplitude of lateral oscillations of the needle, a base line cam for causing lateral needle oscillation to occur left, right, or centered with respect to the center needle position and a work feed control cam for determining the direction and rate of work feed, said cams each being fixed to said control shaft, a manually engageable control knob operably connected to said control shaft and adapted to determine two positions for said control shaft, follower means associated with each of said cams and connected to said needle bar and said feed mechanism for effecting appropriate operation of said needle bar and said feed mechanism to produce a buttonhole, a ratchet wheel fixed on said control shaft, a pawl operated by said upper sheet to advance said ratchet wheel from either of said two positions, one incremental rotational step for each rotation of said upper shaft, means for limiting the number of incremental rotational steps taken by said shaft from each of said two positions, means operable by said cams for sewing each end of the buttonhole to produce relatively little or no feed movement and a large amplitude during stitches formed while said shaft is being incrementally stepped from either of said two positions, means operable by said cams for sewing each side of the buttonhole by producing a moderate feed rate at the last step of said shaft from each of said positions and during subsequent stitching, means operable by said cams to cause sewing to continue in a first direction at the right side upon reaching the last step from one of said positions and during subsequent stitches and to cause sewing to continue in an opposite direction at the left side upon reaching the last step from the other of said positions and during subsequent stitches.

4,084,525

METHOD OF FORMING A HERMETICALLY SEALED CONTAINER AND THE TOOLS USED THEREWITH

Morris A. Booth, Traverse City, Mich., assignor to Swanco, Acme, Mich.

Filed May 30, 1975, Ser. No. 582,371
Int. Cl.[2] B21D *51/48*
U.S. Cl. 113—1 K **19 Claims**

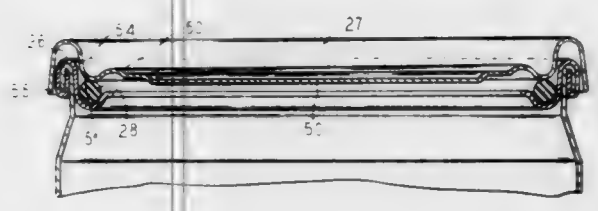
1. A method of forming a hermetically sealed container from a previously used can comprising the steps of

providing a can having a continuous side wall with a bottom

and a top attached thereto, said top having an annular portion crimped on the side wall to form a rim, an integral opening means, and an annular depression adjacent said rim, said annular depression having an inner edge spaced radially inward of the rim;

removing a portion of the top disposed radially inward of said inner edge of the annular depression to provide an opening surrounded by the annular depression;

placing a continuous sealing member in said annular depression;



assemblying a lid on the top, said lid having an annular shoulder for engaging the sealing member and an annular flange having a reversed bend, said flange extending from the shoulder over the rim and providing an annular skirt extending along an outer surface of the rim to terminate therebelow;

forcing the lid into sealing engagement with the sealing member; and

while holding the lid in sealing engagement, crimping the annular skirt radially inward beneath the rim to hold the lid in said sealing engagement.

4,084,526

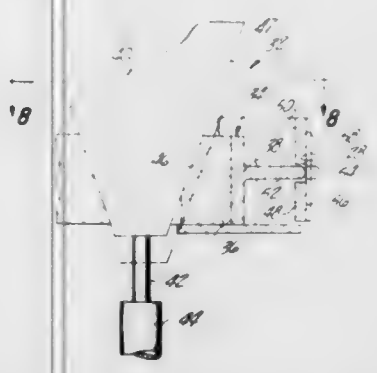
METHOD OF FORMING RINGS

Edward G. Spisak, 35700 Oakwood La., Westland, Mich. 48185

Filed Dec. 10, 1975, Ser. No. 639,397

Int. Cl.[2] B21D *53/32*

U.S. Cl. 113—116 E **12 Claims**



1. The method of forming an annular ring comprising the steps of supporting a cylindrical member at marginal edge portions along the entire inner periphery at opposite sides of a selected annular portion on supporting apparatus having support members for engaging the inner periphery of the cylindrical member and defining an annular opening therebetween, the width of said opening corresponding to the width of the selected annular portion, and displacing said selected annular portion of said cylindrical member radially outwardly while maintaining the outer periphery of said cylindrical member unsupported on forming apparatus having a plurality of forming members movable radially outwardly between said support members, the selected annular portion being displaced to form a radially extending formed portion constituting a substantial portion of the annular ring and having a cross section with substantially parallel leg parts extending from immediately adjacent said support members and extending radially to a predetermined radius.

4,084,527

HOPPER BARGE BOTTOM SEAL CONSTRUCTION

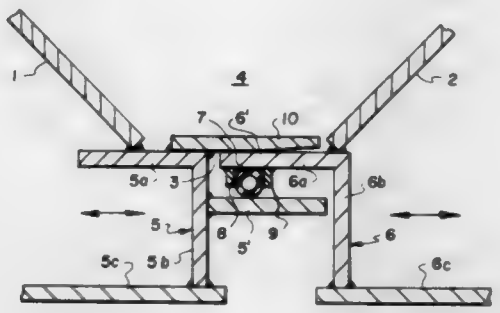
Gerhard Hellmich, Deggendorf, Germany, assignor to DeggendorferWerft und Eisenbau G.m.b.H., Germany

Filed Jul. 8, 1976, Ser. No. 703,585

Claims priority, application Germany, Jul. 11, 1975, 2530929

Int. Cl.[2] B63B *35/30*

U.S. Cl. 114—36 **2 Claims**



1. A hopper barge bottom seal construction, comprising a barge having first and second pivotal parts extending longitudinally and having lower ends extending obliquely downwardly toward each other, seal means provided at the lower ends of said parts sealing the space therebetween and comprising a first support having a first top horizontal member engaged below and secured to the bottom end of the first part, a second support having a second top horizontal member alongside said first top horizontal member in a closed position and being secured to said second barge part, said first support having a lower support plate extending below said second top horizontal member and the top of said lower support plate, an elastic cylindrical hollow tubular seal body filled with gas under pressure and disposed between the bottom of said second top horizontal member and the top or said lower support plate, a locking strip secured to said first top horizontal member and projecting outwardly therefrom into locking engagement over said second top horizontal member, and a substantially vertical rib on each side of said seal body extending substantially vertically downwardly from said second top horizontal member and holding the elastic seal body in position so that said seal body projects beyond said ribs toward the opposite lower support plate.

4,084,528

WORKING METHOD OF BREAKING UP SHIP

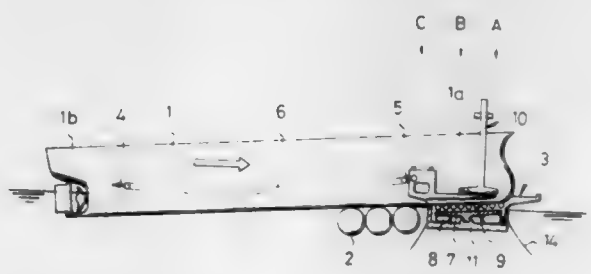
Mituo Itani, Chiba; Hiroyuki Kawashima, Yokohama; Takasuke Inoue, Kunitachi, and Mikio Maruyama, Tokyo, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1977, Ser. No. 757,292

Claims priority, application Japan, Mar. 18, 1976, 51-29607; Mar. 18, 1976, 51-29613; Mar. 18, 1976, 51-29615; Mar. 18, 1976, 51-29617

Int. Cl.[2] B63C *1/06*

U.S. Cl. 114—45 **5 Claims**



1. A method of breaking up a ship hull said method comprising supporting a portion of said hull with bouyant means such that the stem or stern of the hull is above the water surface the other portions of the hull remaining in the water; positioning

the portion of the stem or stern above the water surface within a marine workshop; breaking up said portion of the hull positioned within the marine workshop; and drawing an additional portion of the hull into the marine workshop after said portion of the hull in the marine workshop has been broken up.

4,084,529

FLOATING DRY DOCK WITH LIFTING PONTOONS

Helmut Katernberg, Oberhausen, Germany, assignor to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Germany

Filed Jul. 27, 1976, Ser. No. 709,073
Claims priority, application Germany, Jul. 31, 1975, 2534171
Int. Cl.² B63C *1/02*
U.S. Cl. 114—46 **3 Claims**



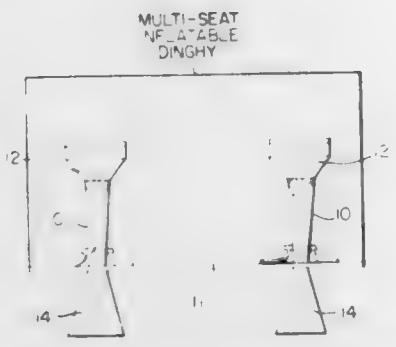
1. A floating dry dock system comprising a central unit of a floodable and drainable box having lateral walls and a bottom with transverse beams extending thereacross at spaced longitudinal locations, at least one smaller lifting pontoon on which the central unit can be placed and which has a positive buoyancy dimensioned so that said central unit can be lifted from the water, with said central unit of the dock being designed as a box dock and said lifting pontoon being adapted to engage the dock from below along the entire corss-sectional width of said central unit and having a top deck, a plurality of steel beams on said top deck defining supporting surfaces for the docked central unit, said lifting pontoon having a lateral console-like extension at at least one side, pump and drain means for flooding and emptying said pontoon, said steel beams of the deck being arranged athwartships and spaced from each other by distances corresponding to the spacing of the transverse beams of the dock and are provided with a wooden bearing surface.

4,084,530

BALING OF WATERBORNE CRAFT

Gordon Colin Harris, Bridgend, Wales; Robert Paul Vere, Cirencester, and Ronald Walker, Denton, both of England, assignors to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Brittannic Majesty's Government of the, London, England

Filed Jun. 3, 1976, Ser. No. 692,502
Int. Cl.² B63B *13/00*
U.S. Cl. 114—183 R **33 Claims**



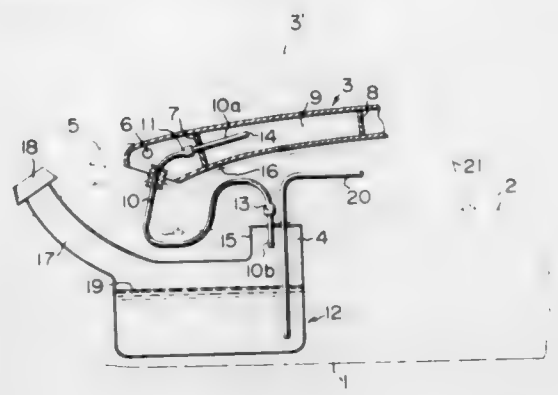
1. A craft having at least one manually operable baler assembly comprising a flexible waterproof tube within the craft and sealed to the floor thereof and at least one non-return valve arranged to permit only flow of liquid out of the craft via the tube by gravity, the tube having a funnel mouth within the craft, said tube being long enough for the funnel mouth to be raised in use above the normal level of water exterior to the craft when loaded.

4,084,531

FUEL TANK BREATHING MEANS FOR SMALL SIZE BOATS

Takashi Fujiura, Hyogo; Kunio Tsutsui, and Hiroshi Nishida, both of Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Continuation of Ser. No. 553,011, Feb. 25, 1975, abandoned.
This application Oct. 18, 1976, Ser. No. 733,312
Claims priority, application Japan, Feb. 26, 1974, 49-23553
Int. Cl.² B63H *2/00*
U.S. Cl. 114—211 **5 Claims**



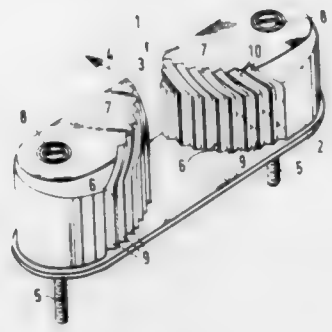
1. Fuel tank breathing means for a boat having a body equipped with an internal combustion engine, a fuel tank, and a hollow handle column pivotally mounted at one end thereof on said body of the boat, said breathing means comprising breathing conduit means having one end communicating with the fuel tank at its upper portion and the other end projecting into and opening to a chamber defined in the column outside the body of the boat, said chamber having ventilating and drain aperture means formed at a lower portion thereof.

4,084,532

LINE CLEATS FOR SECURING ROPES, BUT ESPECIALLY FOR LINES TO SAILS OF SAILBOATS

Emil Feder, Koelnische Strasse 101, 3599 Kassel, Germany

Filed Jul. 29, 1976, Ser. No. 709,721
Claims priority, application Germany, Aug. 1, 1975, 2534474; Nov. 17, 1975, 2551486
Int. Cl.² B63B *21/08*
U.S. Cl. 114—218 **13 Claims**



1. A cam cleat, comprising:
a base;
a cam element pivoted to said base about a pivot axis perpendicular to said base and having a first surface thereon;
means confronting said cam element on said base coacting therewith to form a line-receiving nip, said cam element being relatively displaceable in an opening direction about said pivot axis to vary the size of said nip for the accommodation of lines of different diameters;
spring means biasing said cam element and said confronting means toward each other;
first serration defining means on said first surface of said cam element extending parallel to each other in a first direction;
a second surface on said cam element extending upwardly

from said first surface and diverging at an angle therefrom to define a V-shaped entry in the latter in cooperation with said confronting means; and

second serration defining means on said second surface means extending in a second direction upwardly from the upper end of said first serration defining means and inclined to said base so that the upper end of said second serration defining means is laterally spaced on said second surface in said opening direction from the lower end thereof.

4,084,533

REVERSIBLE RUBRAIL FOR VESSELS

Edward J. Boyer, Attleboro, Mass., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Mar. 21, 1977, Ser. No. 779,642

Int. Cl.[2] B63B *59/02*

U.S. Cl. 114—219 **8 Claims**



1. An improved invertible rubrail for use with vessels with overlapping decks with planar surfaces and vessels with flush decks with planar surfaces, said rubrail comprising an elongated flexible resilient strip having:

(a) an upstanding rear wall with a continuous rear surface, the length of which is adapted to lie flush with the planar surface on which is it used;

(b) spaced first and second front walls connected to said rear wall adjacent to upper and lower ends of the rear wall, said two front walls projecting forward of said rear wall, having releasably contacting overlapping openable ends and defining with said rear wall a compressible cavity accessible through said openable ends; and,

(c) an end wall connected at one of said ends of said rear wall and extending rearwardly thereof generally perpendicular thereto.

4,084,534

ROLL DAMPING TANKS FOR SHIPS AND LIKE VEHICLES

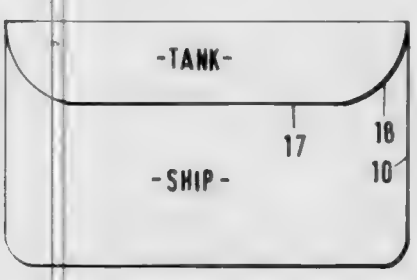
Ewan Christian Brew Corlett, Basingstoke, England, assignor to Hydroconic Limited, Ramsey, Isle of Man

Continuation-in-part of Ser. No. 564,122, Apr. 1, 1975, abandoned. This application Jun. 29, 1976, Ser. No. 700,844

Claims priority, application United Kingdom, May 28, 1974, 23689/74

Int. Cl.[2] B63B *39/03*

U.S. Cl. 114—125 **4 Claims**



1. In a ship, a roll-damping tank to contain liquid that moves in the direction from end to end of the tank upon occurrence of the roll to be damped, said tank having a generally rectangular cross-section and ends that are contiguous with the ship's hull side walls, and wherein the tank walls are configured so that in plan the tank appears as having straight sides and continuously curved ends to which the ship's sides are tangential, the curved ends being such that consecutive points on the curved ends have tangents at different angles, and in elevation the tank appears as being generally rectangular with ends that reduce in cross-section, the upper end corners forming right angles with the top of the tank and the tank bottom having end portions that ascend progressively as the extreme ends of the tank are approached to produce said reduction in cross-section.

4,084,535

APPARATUS FOR CLEANING SUBMERGED SURFACES

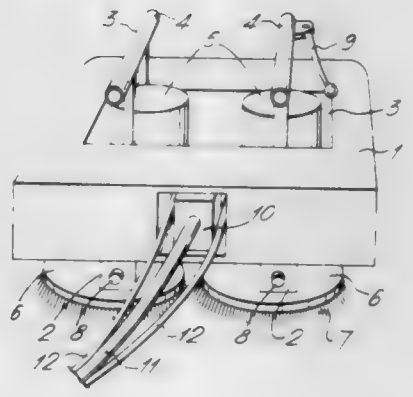
Robin Gore Rees, Portmarnock, Ireland, assignor to Institute for Industrial Research and Standards, Dublin, Ireland

Filed Feb. 22, 1977, Ser. No. 770,430

Claims priority, application Ireland, Mar. 1, 1976, 409/76; Aug. 26, 1976, 1910/76

Int. Cl.[2] B63B *59/00*

U.S. Cl. 114—222 **2 Claims**



1. An apparatus for cleaning submerged surfaces, said apparatus comprising a frame, two rotary brushes, mounting means mounting said rotary brushes on said frame in side-by-side relation and for independent pivotal movement with respect to said frame for inclination towards or away from the other, a handle associated with each brush for manually effecting pivotal movement of each brush, and drive means connected to said brushes for rotating said brushes in opposite directions, said drive means including a separate motor for each brush, each motor having a shaft, said motors forming part of said mounting means with each brush being mounted on the shaft of its respective motor, each brush, motor and respective handle forming a brushing unit, said frame defining an aperture for said brushing units with each brushing unit being mounted for pivoting as a whole in said aperture, and each brush projecting from said aperture on one side of said frame and each handle projects from said aperture on an opposite side of said frame.

4,084,536

SAFETY CONTROL SYSTEM FOR HYDRAULIC JET TURBINES

Thomas A. Stansbury, 7237 S. Shore Dr., Chicago, Ill. 60649

Filed Nov. 7, 1973, Ser. No. 413,685

Int. Cl.[2] B63H *11/02*

U.S. Cl. 115—16 **3 Claims**

1. A hydraulic jet propulsion system for a vessel comprising,

a hydraulic jet turbine mounted in a vessel having a venturi section and a main propulsion opening in said venturi section through which water is ejected into the atmosphere,

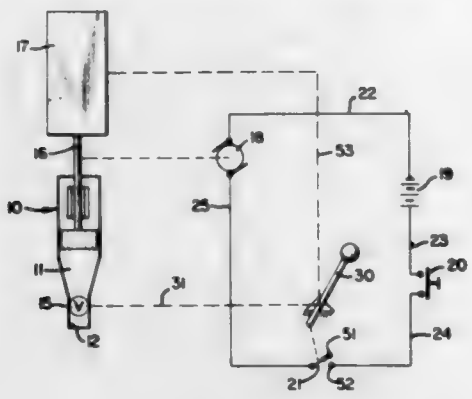
a shutoff valve closing said main propulsion opening,

manually operated control means operatively connected to said shutoff valve to close and open said valve,

an engine having a drive shaft connected to said hydraulic jet turbine to drive said turbine, said engine having an electrically energized starter,

a manually operated switch electrically connected in series with said starter,

a switch operatively connected to said manually operated control means to be closed when said shutoff valve is closing said main propulsion opening and electrically



connected in series with said starter and said manually operated switch, said control means operated switch comprising a magnet and a magnetic electrical switch, and

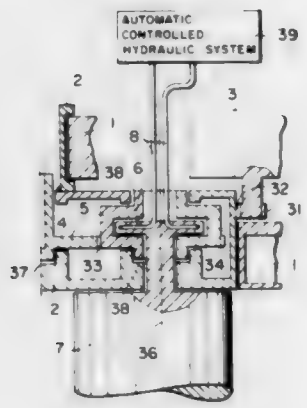
a source of electrical power connected in series with said starter, said manually operated switch and control means operated switch.

4,084,537

FLANK DRIVE FOR PLANING HULL AND DISPLACEMENT CRAFT

Horst Eichler, Aufdem Sande 12, 54 Koblenz, Germany

Continuation of Ser. No. 549,558, Mar. 17, 1975, abandoned.
This application Oct. 18, 1976, Ser. No. 733,146
Int. Cl.[2] B63H *1/10*
U.S. Cl. 115—50 **13 Claims**



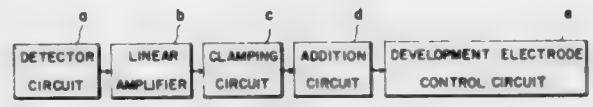
1. A flank drive for a watercraft, comprising: a wheel body mounted for rotation about an axis in said watercraft; propulsion means for rotating said wheel body about its axis; a plurality of propeller housings mounted on said wheel body in peripherally spaced relationship around said wheel body axis for rotation with said wheel body about said wheel body axis when said wheel body is driven by said propulsion means, and each of said propeller housings being rotatably mounted with respect to said wheel body about respective propeller housing axes so that each propeller housing axis follows a stationary sinuating line as the watercraft moves rectilinarilly through the water with rotation of said wheel body; normally stationary reaction means drivingly coupled with said propeller housings so that said propeller housings undergo epicyclic motion when said wheel body is driven by said propulsion means; a propeller drivingly carried by each of said propeller housings, respectively, to extend from said watercraft into the water during movement of said watercraft through the water; each of said propellers being mounted for limited pivotal movement relative to its housing; angle of attack control means for controlling the pivoting of each of said propellers relative to its propeller housing for positioning each propeller blade at an effective angle of attack relative to said sinuating line, over at least a major portion of said sinuating line, so as to exert forces on the surrounding water transverse to the driving direction of said watercraft for propulsion of the watercraft.

4,084,538

AMBIENT TEMPERATURE COMPENSATING DEVICE FOR POWER SOURCE APPARATUS FOR DEVELOPING ELECTRODES

Masaaki Tanaka, Ebina, Japan, assignor to Rank Xerox, Ltd., London, England

Filed Jan. 3, 1977, Ser. No. 756,524
Claims priority, application Japan, Feb. 9, 1976, 51-12213
Int. Cl.[2] G03G *15/06*
U.S. Cl. 118—4 **4 Claims**



1. A power source for a developing electrode comprising:

a detector for detecting the temperature of a photosensitive body;

a linear amplification circuit for amplifying signals of the detector,

a clamping circuit for clamping output voltages of the linear amplification circuit in excess of normal temperature;

an addition circuit for permitting the output voltages of the linear amplification circuit to move in parallel within a range of ambient temperatures; and

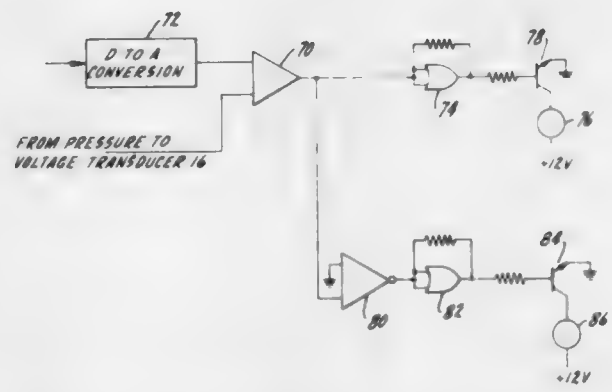
means for supplying the output of the addition circuit to the developing electrode.

4,084,539

VOLTAGE TO AIR PRESSURE TRANSDUCER

Robert W. Schmidt, Oak Lawn, Ill., assignor to Copar Corporation, Oak Lawn, Ill.

Filed Sep. 24, 1976, Ser. No. 726,451
Int. Cl.[2] B05C *11/00*
U.S. Cl. 118—8 **3 Claims**



1. A means for controlling the pressure of liquid adhesive in response to movement of the article to which the adhesive is to be applied, including a pressure regulating valve, the input of which is connected to a source of liquid adhesive, the output of which is connected to a means for applying adhesive, said pressure regulating valve including a passage between said input and output and a valve member controlling adhesive flow through said passage, means for providing a variable air pressure upon said valve member, which air pressure varies in response to changes in movement of the article to which adhesive is to be applied,

said means for providing a variable air pressure including an air pressure reservoir, a pressure-to-voltage transducer connected at the output of said reservoir, and electrically controlled air pressure supply valve and an electrically controlled exhaust valve connected to said reservoir,

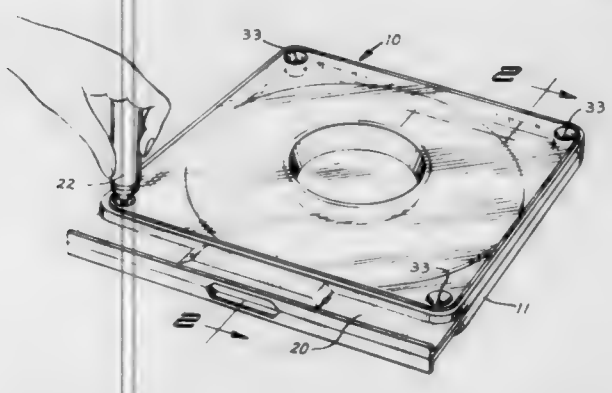
means for providing an electrical signal representative of movement of the article to which adhesive is to be applied, comparison means for poviding a signal representing the difference between said electrical signal and the output from said transducer, and means connecting and utilizing said difference signal to control said supply valve and exhaust valve.

4,084,540

APPARATUS FOR APPLYING LUBRICATING AND PROTECTIVE FILM TO PHONOGRAPH RECORDS

Bruce R. Maier, Columbia, Mo., assignor to Discwasher, Inc., Columbia, Mo.

Filed May 19, 1977, Ser. No. 798,382
Int. Cl.[2] C23C *13/08*
U.S. Cl. 118—48 **18 Claims**



8. Apparatus for applying a protective film to the face of a disc type phonograph record from a gaseous source of such film material, comprising

a broad and generally flat housing having top, bottom and side walls defining an interior chamber to entirely enclose such a phonograph record and isolate the environment in the chamber from the atmosphere at the exterior of the housing, the interior chamber and side walls having a height which is significantly less than the length and width of the top and bottom walls, the housing being provided with the means for obtaining access into the chamber for inserting and removing such a phonograph record, the housing having gas flow receiving port means directing the inflowing film material in gaseous form in a direction generally between and substantially parallel to the top and bottom of the housing to facilitate substantially uniform deposition of the film material on the phonograph record, said port means including a plurality of stationary nozzles disposed spacedly about the periphery of the housing, and each nozzle having an inlet socket through which the gaseous film material delivery means is received and an outlet orifice directed between and substantially parallel to the top and bottom of the housing.

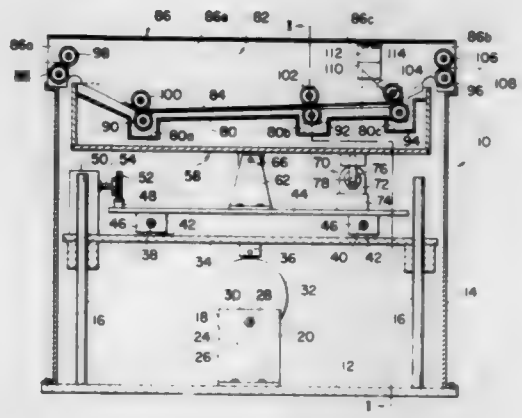
4,084,541

DYEING AND DECOLORIZATION APPARATUS FOR USE IN A BLOOD SERUM ANALYZER OF AN ELECTROPHORETIC TYPE

Hiromi Ito, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Apr. 20, 1976, Ser. No. 678,712
Claims priority, application Japan, Apr. 22, 1975, 50-48135; Dec. 8, 1975, 50-146168; Jan. 17, 1976, 51-4512; Jan. 17, 1976, 51-4513
Int. Cl.[2] B05C *3/00*
U.S. Cl. 118—421 **10 Claims**

1. An apparatus for dyeing and decolorizing a predetermined length of a specimen carrier having a front and rear end of a belt-like shape, carrying a plurality of specimens such as blood serums which have been treated by an electrophoretic apparatus comprising a carrier transport mechanism for receiving and holding the specimen carrier therein during dyeing and decolorization processes for the specimen carrier and for transporting the specimen carrier out of the dyeing and decolorization apparatus after the completion of said processes, a dyeing trough containing a dyeing liquid agent and supported movably with respect to the carrier transport mechanism, a decolorization trough containing a decolorization liquid agent and supported movably with respect to the carrier transport mechanism, a first drive means for moving said dyeing and decolorization troughs in a vertical direction and a second drive means for moving said dyeing and decolorization troughs in a horizontal direction, said carrier transport mechanism comprising a drum having a center shaft, a pair of support plates rotatably mounted on said shaft at a position adjacent both side walls of the drum so that said drum lies therebetween, two pairs of rollers rotatably supported between the support plates with the pairs being spaced apart a given distance along the periphery



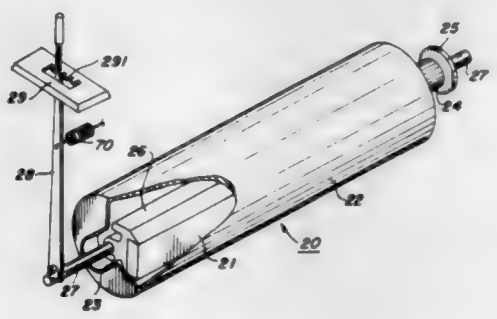
of the drum, said distance being less than the length of the specimen carrier so that the peripheries of each roller engage the periphery of the drum, a third drive means for rotating only the drum and a fourth drive means for rotating the drum and the support plates together so that after said third drive means rotates said drum so that the specimen carrier is fed onto the carrier transport mechanism with both ends held between said two pairs of rollers and said drum, said drum and said plates are rotated together by said fourth drive means only until the specimen carrier is positioned so that the longitudinal center of the specimen carrier is at its lower most position in a treating position thereby allowing thorough treatment in each of said dyeing and decolorization troughs when they are subsequently moved into treating positions with respect to the specimen carrier.

4,084,542

POSITIONING APPARATUS FOR MAGNETIC BRUSH DEVELOPING DEVICE

Ryuzo Okada, and Yoshikazu Okamoto, both of Ebina, Japan, assignors to Rank Xerox, Ltd., London, England

Filed Jun. 7, 1977, Ser. No. 804,217
Claims priority, application Japan, Jun. 16, 1976, 51-069746
Int. Cl.[2] G03G *15/09*
U.S. Cl. 118—658 **1 Claim**



1. An improved magnetic brush developing device for developing an electrostatic latent image on a photosensitive member disposed adjacent to the device, the device including a magnet and a cylinder mounted to rotate around the magnet

to bring developer into contact with the photosensitive member, the improvement comprising:

means for rotating the magnet to and fixedly holding the magnet in any one of a plurality of predetermined positions relative to the photosensitive member, the rotating and holding means including means having a plurality of grooves formed therein, each of the grooves defining one of the predetermined positions, a handle mounted for movement between the grooves, and means for holding the handle in any one of the grooves.

4,084,543

AQUATIC BIOTAL MONITOR

Willis E. Pequegnat, College Station, Tex., assignor to TerEco Corporation, College Station, Tex.

Filed Aug. 25, 1976, Ser. No. 717,701
Int. Cl.[2] A01K *61/00*
U.S. Cl. 119—3 **6 Claims**



1. A biological monitoring device for monitoring in situ samples of biota in a body of water comprising:

a top hexagonally shaped mounting ring defining an opening;

a bottom hexagonally shaped mounting ring;

a water permeable mesh extending between and interconnected to said mounting rings to form an open-topped cylindrical enclosure, said mesh having apertures therethrough with dimensions for retaining the biotal samples while permitting the free exchange of ambient water from exterior of said enclosure to within said enclosure, thereby uniformly exposing the samples of biota to aquatic pollution found within the body of water;

a receptacle for collecting material from within said cylindrical enclosure comprising a conical funnel being open at its ends and decreasing in cross-sectional area from one end to the other, the larger end thereof being secured to said cylindrical enclosure and opening thereinto and the smaller end thereof being removably secured to a collection enclosure and opening thereinto for retaining material therein which has fallen to the bottom of said cylindrical enclosure, said collection enclosure being cylindrical in shape with an integral bottom;

a plurality of floats;

a plurality of rectangular frame members extending across said open-topped cylindrical enclosure and being interconnected to said top mounting ring at points interior of the exterior ends of said frame members;

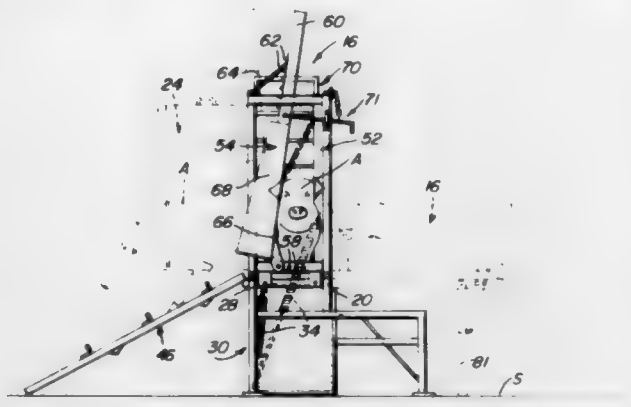
means on said exterior ends of said frame members for receiving at least one of said floats, such that said floats support said frame members to permit said frame members to suspend said top mounting ring above the surface of the body of water to allow the free circulation of ambient water throughout the entire length of said cylindrical enclosure between said mounting rings, thereby uniformly exposing the biotal sample to the ambient water outside said enclosure and to suspend said enclosure in the body of water to permit the biological monitor to freely drift with extant currents to monitor the impact of changing aquatic environments on the biotal sample.

4,084,544

HOLDER AND OPERATING TABLE FOR SWINE AND OTHER ANIMALS

Richard L. Wehmeyer, R.F.D. No. 1, Creighton, Mo. 64739

Filed Oct. 22, 1976, Ser. No. 735,066
Int. Cl.[2] A61D *3/00*
U.S. Cl. 119—103 **1 Claim**

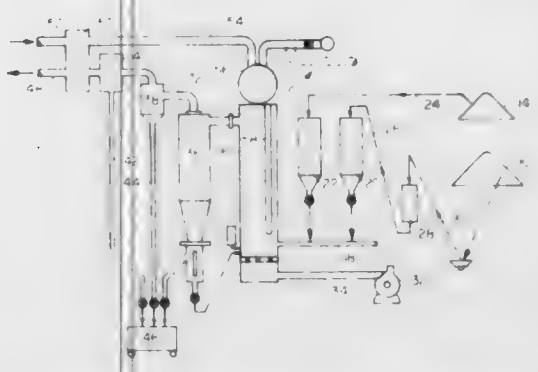


1. In an animal handling and operating table including a chute comprising a framework including a first side wall, a second side wall spaced from and disposed substantially parallel to the first side wall, and a floor affixed to the first side wall, and a head gate affixed to the first side wall and disposed for selectively restraining an animal between the first side wall and second side wall, the first side wall being pivotally mounted for vertical swinging movement upwardly and downwardly and forming an operating table when in a downward position, and the second side wall having a portion adjacent the head gate being pivoted for forming a side gate permitting an animal to exit following an operation thereon, the improvement wherein the first side wall is a floating table provided with means for biasing the wall against a downward swing for preventing a sudden drop of the first side wall when an animal is retained on the first side wall, and for assisting an operator in swinging the first side wall upwardly and downwardly, the floor being a solid sheet and disposed extending perpendicularly from the first side wall at the axis of swinging of the first side wall, and a stand supporting the framework on the chute, an on-ramp extending from the level of the support surface on which the stand is resting to the chute for permitting animals to ascend from the chute, the floor forming a solid bottom for the chute when the first side wall is in an upward position, and an off-ramp extending from the support surface to the side gate of the second side wall for permitting an animal to descend from the chute, the means for biasing including two tension springs normally disposed beneath the chute, each attached to and arranged extending between the stand from adjacent the support surface and a substantially common point on the floor of the first side wall, the substantially common point being spaced from the first side wall and the springs diverging from one another from the substantially common point on the floor toward the stand for exerting a torque on the first side wall, the head gate comprising a head frame disposed at a head end of the chute and attached to the first side wall for movement therewith, a head stock pivotally mounted at an adjustable pivot on the head frame, a retaining arm extending from the head stock and provided with a plurality of teeth, and a lock arm pivotally mounted on the framework of the chute for selectively engaging one of the teeth of the retaining arm and preventing the head stock from moving away from a position restraining an animal in the head gate, and animal retaining means including a flexible element removably attachable to the first side wall about an animal for holding the animal against the first side wall.

4,084,545
OPERATING METHOD

Herman Nack, Upper Arlington, and Ke-Tien Liu, Columbus, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation of Ser. No. 624,542, Oct. 21, 1975. This application Jun. 6, 1977, Ser. No. 803,831
Int. Cl.[2] F22B *1/02*; F23D *1/00*
U.S. Cl. 122—4 D 51 Claims



1. A method of operating a fluidized bed system, which comprises

forming an entrained fluidized bed in a first space region containing a first relatively fine solid bed particle component,

forming in a more limited space region within the first region a dense fluidized bed containing a second relatively coarse solid bed particle component essentially comprising a material having long-term physical and chemical stability in the fluidized bed system so as to be substantially non-agglomerating and not subject to substantial attrition therein,

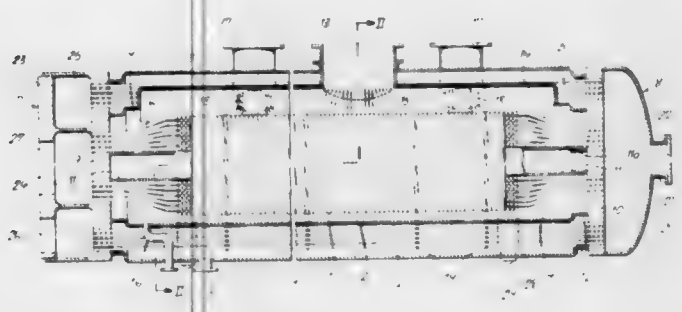
providing a recirculation path for the first particle component from the first space region through the dense fluidized bed in the more limited space region, and

operating the fluidized bed system at a velocity such that the second component particles are effectively retained in a fluidized state in the dense fluidized bed in the more limited space region, whereas the first component particles recirculate and interpenetrate therethrough, co-mingling with the second component particles.

4,084,546
HEAT EXCHANGER

Martin Schneeberger, Wolfratshausen, and Dieter Wittmann, Geretsried, both of Germany, assignors to Linde AG, Wiesbaden, Germany

Filed Sep. 3, 1976, Ser. No. 720,427
Claims priority, application Germany, Sep. 4, 1975, 2539440
Int. Cl.[2] F22B *1/16*; F28D *7/10*; F28F *9/22*
U.S. Cl. 122—32 7 Claims



1. A heat exchanger comprising:

at least two cylindrical shells in nested relation defining an outer annular compartment and an inner annular compartment;

means for passing at least one first heat exchange fluid through said compartments;

a straight-tube bundle extending through one of said compartments;

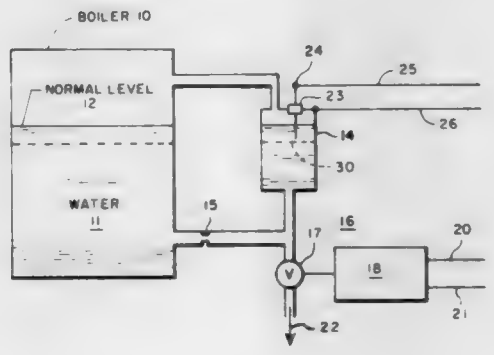
a coiled-tube bundle received within said inner compartment; and

means for passing at least one second heat exchange fluid through said tube bundles, said tube bundles having flow cross sections connected in series with said second fluid passing through said coiled-tube bundle in a direction opposite the direction of flow of said second fluid through said straight-tube bundle, said annular compartments being sealed from one another, said means for passing at least one first fluid through said compartments including a respective inlet and outlet for each compartment, said inner compartment including means forming an inlet chamber extending substantially the full length of said inner compartment.

4,084,547
SAFE START CHECKING LIQUID PROCESSING SYSTEM

Frederick T. Deziel, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 24, 1976, Ser. No. 669,777
Int. Cl.[2] F22B *37/42*
U.S. Cl. 122—504 12 Claims



1. A liquid processing system which verifies the proper condition of the system prior to the initiation of the processing of a liquid, including: liquid level sensing means having at least two contact means; a first of said contact means being open circuited upon the indication of said liquid being at a level at which said processing is desired to be initiated and close circuited upon an indication of said liquid being below said level; a second of said contact means being close circuited with said liquid indicated as at said level and open circuited with said liquid indicated as below said level; switching means energized by said first contact means being close circuited to indicate said liquid is below said level; said switching means latching itself into said energized state upon once being energized; and said switching means further including control circuit means in electrical series with said second contact means to complete an energizing circuit to initiate the processing of the liquid upon said liquid being at said level after the operation of said switching means.

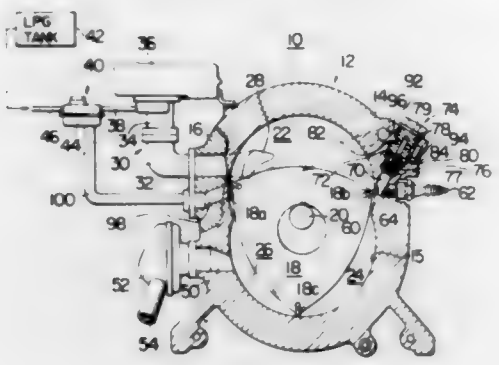
4,084,548
ROTARY PISTON ENGINE

Hachiro Sasakura, Inuyama, and Hitoshi Kanmura, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 15, 1976, Ser. No. 696,367
Claims priority, application Japan, Jun. 25, 1975, 50-90377[U]; Mar. 12, 1976, 51-30557[U]
Int. Cl.[2] F02B *53/12*
U.S. Cl. 123—205 9 Claims

1. An improved rotary piston engine comprising a housing defining a cavity therein, a rotor disposed in said cavity for planetary motion therein, said housing and said rotor cooperating to define therebetween a plurality of working chambers, the planetary rotary motion of said rotor causing each of said

working chambers to sequentially act as intake compression, combustion-expansion and exhaust chambers, said rotor having three apexes with adjacent apexes defining, respectively, the leading and trailing edges of each of said working chambers, an intake port formed in said housing and so positioned as to be open to said intake chamber, means for supplying a mixture of air and fuel through said intake port into the intake chamber, a plug hole formed in said housing and so positioned as to be opened to a working chamber, an ignition plug having a set of electrodes disposed in said plug hole to ignite the air-fuel



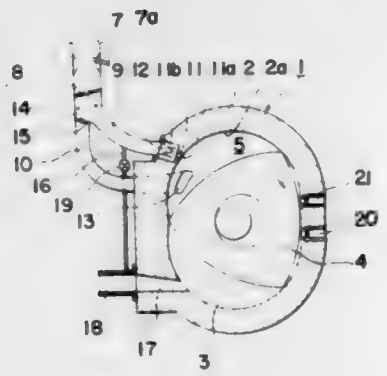
mixture in said intake chamber, said engine including a passage means for introducing a scavenging gaseous fluid through said plug hole into said intake chamber, check valve means disposed in said passage means for allowing said scavenging gaseous fluid to flow through said passage means toward said intake chamber, said plug hole being positioned in said housing with respect to said intake port such that said intake chamber's leading edge passes said plug hole to establish communication between said plug hole and said intake chamber as said trailing edge of said intake chamber begins to pass said intake port in the final stage of the intake stroke.

4,084,549

ROTARY PISTON ENGINE EXHAUST GAS RECYCLING MEANS

Haruhiko Satow, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Japan

Filed Mar. 19, 1976, Ser. No. 668,513
Claims priority, application Japan, Apr. 3, 1975, 50-40636
Int. Cl.² F02B *53/10*
U.S. Cl. 123—217 **10 Claims**



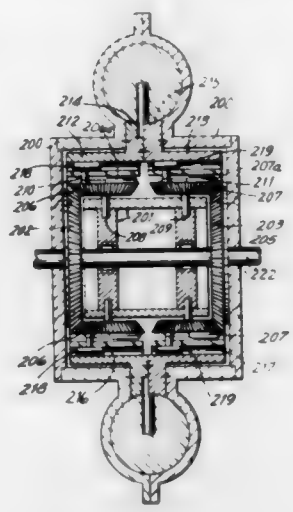
1. A rotary piston engine comprising a casing which includes a peripheral wall having an epitrochiodal inner surface and a pair of side walls secured to the opposite sides of the peripheral wall to define therein a cavity, a three-lobed rotor which rotates eccentrically in the cavity and has apex portions in sliding contact with the epitrochiodal inner surface for simultaneously defining intake, compression, combustion, expansion and exhaust chambers between the epitrochiodal inner surface and flanks of the rotor, first intake port means provided in the casing and directed into said intake chamber toward the leading, with respect to the direction of rotation of said rotor, portion of the intake chamber, first intake passage means connected to the first intake port means for supplying a combustion charge to the intake chamber, second intake port means provided in the casing and communicated with the intake chamber, second intake passage means connected to the second intake port means, said first intake port means being provided in the peripheral wall of said casing and having a smaller opening than that of the second intake port means for tending to cause the combustion charge to be present in the leading portion of the intake chamber, throttle valve means provided in the second intake passage means and adapted to be opened under a high load operation of the engine, an exhaust system including exhaust port means provided in the casing and communicated with the exhaust chamber and exhaust passage means connected to the exhaust port means, first exhaust gas recycling passage means connecting the exhaust system to the first intake passage means for continuously supplying the recycled exhaust gas to the first intake passage means so that the recycled exhaust gas is obtained in said leading portion of the intake chamber in which the combustion charge tends to be present, and ignition means provided on the casing.

4,084,550

ROTARY ENGINES

Peter Gaspar, 1567 Parker Ave., Fort Lee, N.J. 07024

Continuation-in-part of Ser. No. 375,706, Jul. 2, 1973, abandoned. This application Mar. 8, 1976, Ser. No. 664,512
Int. Cl.² F02B *55/14*; F01C *1/00*; F04C *17/00*
U.S. Cl. 123—245 **17 Claims**



1. An apparatus having a main rotary axis, said apparatus including a hollow casing so shaped that parts of its surfaces define within them a substantial part of a hollow toroidal piston cylinder whose central axis is the main rotary axis of the apparatus, and two rotatable piston carriers which have generally circular rim portions and which are concentric with the hollow toroidal piston cylinder at the main rotary axis and form portions of said cylinder's enclosing surfaces, each of those piston carriers mounting along its periphery a pair of diametrically opposite pistons, which fit within the said cylinder, with pistons of the two pairs alternating in circumferential occurrence within that cylinder, a central rotary member mounted at least indirectly on said casing with its axis at the main rotary axis, drum structure carried by said central rotary member for rotation therewith, at least one traveling bevel gear carried by said drum structure, with each such traveling bevel gear having its own axis of rotation angled significantly away from parallelism with the main rotary axis, at least one fixed bevel gear fixedly mounted in relation to the casing and coaxial with the main rotary axis, each traveling bevel gear being so mounted on the drum that it meshes with the fixed bevel gear, each fixed bevel gear having twice the pitch diameter and number of teeth of each traveling bevel gear, such that when the central rotary member rotates, each traveling bevel gear rolls around the fixed bevel gears it meshes with and in the course of doing so rotates twice about its own axis, each such traveling bevel gear being linked eccentrically of itself to a piston carrier to connect that piston carrier to that traveling

bevel gear and cause the traveling bevel gear's eccentric linkage point and the piston carrier to travel rotatively about the main axis in unison at a rate that has one component from the rotation of the central rotary member and another component from the rotary excursions of the eccentric point around the axis of its traveling bevel gear whereby as the central rotary member makes one rotation a piston carrier makes two rotations with four strokes superimposed thereon.

4,084,551

INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Masaharu Sumiyoshi, Toyota; Yukiyasu Tanaka, Okazaki, and Taro Tanaka, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

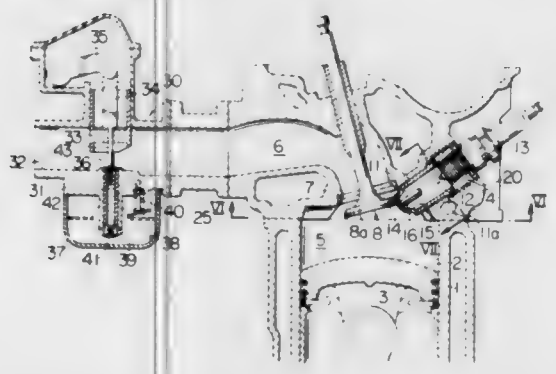
Continuation-in-part of Ser. No. 434,216, Jan. 17, 1974, Pat. No. 3,974,818. This application Sep. 5, 1975, Ser. No. 610,889

Claims priority, application Japan, Jan. 22, 1973, 48-9748; Feb. 27, 1973, 48-23919; Mar. 8, 1973, 48-27277; Apr. 3, 1977, 52-38467; Oct. 31, 1973, 48-123227; Jan. 10, 1975, 50-5750

The portion of the term of this patent subsequent to Aug. 17, 1993, has been disclaimed.

Int. Cl.² F02B *19/10, 19/16*

U.S. Cl. 123—32 SP **20 Claims**



1. An internal combustion engine comprising:

a cylinder;

a piston in said cylinder;

a cylinder head cooperating with said cylinder and said piston to define a main combustion chamber;

an intake valve having a valve stem and a valve head connected thereto;

an intake port for supplying an air-fuel mixture;

a trap chamber disposed in said cylinder head for receiving a portion of said air-fuel mixture to produce a torch jet ignition;

said trap chamber having at least one suction aperture through which said portion of said air-fuel mixture is supplied into said trap chamber only when said intake valve is opened and said main combustion chamber is communicated with said intake port, said trap chamber also having at least one discharge aperture through which residual gas remaining in said trap chamber is discharged into said main combustion chamber;

said suction and discharge apertures being small enough to achieve the torch jet ignition and always being in communication with said main combustion chamber during the time when said intake valve is kept closed so that the torch jet can spurt through both of said apertures; and

a spark plug having a set of electrodes for igniting said air-fuel mixture in said trap chamber.

4,084,552

METHOD AND APPARATUS FOR FUEL INJECTION CONTROL

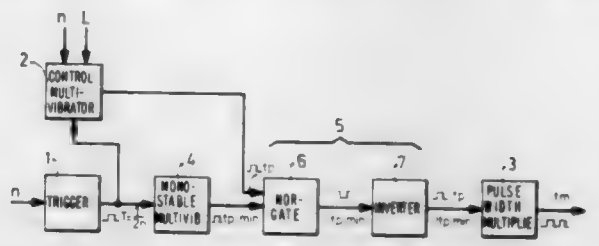
Ulrich Drews, Vaihingen-Pulverdingen; Peter Werner, Stuttgart, and Lothar Winkelmann, Ludwigsburg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 6, 1976, Ser. No. 702,929

Claims priority, application Germany, Jul. 8, 1975, 2530308

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EA **10 Claims**



1. A method for defining the minimum duration of fuel injection control pulses in a fuel injection system for an internal combustion engine comprising the steps of:

generating a trigger signal proportional to the rotational speed of the engine;

feeding said trigger signal to a first monostable multivibrator for generating minimum length control pulses;

feeding said trigger signal to a control multivibrator for generating preliminary fuel control pulses, in dependence on engine load and speed (rpm);

feeding said preliminary control pulses and said minimum length pulses to a logical circuit which chooses from these pulses those having the longer duration;

and feeding the output pulses from said logical circuit to a pulse width modulator circuit within the fuel injection system; whereby the delivery of fuel to said internal combustion engine is controlled by the pulses from said pulse width modulator circuit.

4,084,553

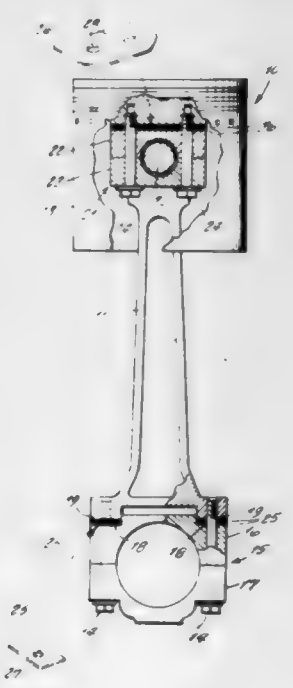
PISTON AND ROD ASSEMBLY WITH DISPLACEMENT FEATURES

Louis Forde, and Diane Forde, both of 482 Berriman St., Brooklyn, N.Y. 11208

Continuation-in-part of Ser. No. 569,090, Apr. 17, 1975, abandoned. This application Sep. 20, 1976, Ser. No. 724,779

Int. Cl.² F02B *75/04;* F15B *15/24*

U.S. Cl. 123—48 B **1 Claim**



1. A piston and rod assembly including compression adjustment shims comprising a piston having a crown and skirt

depending therefrom, a pin supported at its opposite ends by said piston, the support at each end comprising a separate pair of directly abutting bearing blocks with a hole therethrough for supporting the respective pin end, a plurality of shims between the uppermost bearing block and the crown, and a pair of screws extending through said bearing blocks and shims and threadingly engaged in said crown, a piston rod at one end thereof having means fitted onto said pin and at the other end of said rod defining a pair of spaced feet members, a crankshaft bearing assembly comprising a pair of directly abutting bearing blocks defining a crankshaft opening therethrough, the upper crankshaft bearing block defining a spaced pair of generally right angled shoulders defined by walls supporting a respective plurality of shims therein, said spaced pair of piston rod feet members respectively engaging both a wall of said spaced pair of crankshaft shoulders and said shims, and a pair of screws each respectively passing through said crankshaft bearing blocks and shims and threadingly engaging a respective one of said pair of feet members.

4,084,554

MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

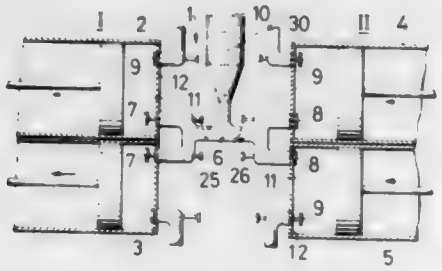
Horst Böhnlein, Friedhofstrasse 4, 6651 Altenkirchenuber Waldmohr, Germany

Filed Oct. 21, 1974, Ser. No. 516,734

Claims priority, application Germany, Apr. 11, 1974, 2417679; Sep. 5, 1974, 2442448

Int. Cl.[2] F02B *75/18*

U.S. Cl. 123—52 MF 4 Claims



1. A multi-cylinder internal combustion engine, some of the cylinders operating in cycle phases displaced relative to each other, comprising

a plurality of cylinders each having a cylinder head and an inlet valve and an outlet valve, said plurality of cylinders constituting at least two cylinder units,

one common carburettor means for feeding an air-fuel mixture to all of said plurality of cylinders and centrally disposed relative thereto,

a common intake manifold having an elongated central portion communicatingly centrally connected to said carburettor means, and said common intake manifold having branched end portions communicating with said elongated central portion and to said plurality of cylinders at said inlet valves, respectively,

cam control means for opening said inlet valves after closing of said outlet valves, respectively,

means for operatively completely sealing said inlet valves and said respective cylinders from said intake manifold at inlet sides of said cylinder heads, respectively,

at least two check valve means in said elongated central portion of said intake manifold operatively coordinated to each of said cylinder units, respectively, said two check valve means being disposed in said elongated central portion of said common intake manifold adjacent to and on opposite sides of said carburettor means, respectively,

one of said check valve means for automatically opening by means of suction from a first of and said cylinder units coordinated thereto via an opening of said inlet valve of said first cylinder unit, and with another of said check valve means for automatically opening by means of suction from a second of said cylinder units coordinated thereto via an opening of said inlet valve of said second cylinder unit, said one of said check valve means being disposed relative to that of said second cylinder unit, said another of said check valve means being disposed relative to that of said first cylinder unit is closed, said one and said another of said check valve means reversing in operation is reversed cycle phases respectively of the coordinated cylinder units and inlet valves, and

said carburettor means including a nozzle forming a nozzle opening having a bottom fuel outlet, and a carburettor nozzle pin means operatively connected to an accelerator pedal and said nozzle pin means being formed conically on a lower end thereof adjustably axially moveably cooperatively positioned and guided in said nozzle opening for regulating said fuel outlet of said nozzle opening, said nozzle opening and said lower end of said nozzle pin means are cooperatively formed such that at full load, and at each adjustment position of said nozzle pin means relative to said nozzle opening, respectively, the correct air-fuel mixture for the stoichiometrical equilibrium is provided, thereby for providing correct dosed fuel admission into said manifold for stoichiometric equilibrium at each adjustable position.

4,084,555

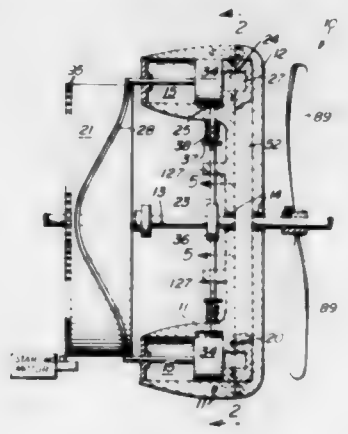
RADIAL ENGINE

Homer G. Outlaw, 1824 Nie Pkwy., New Orleans, La. 70114

Filed Jun. 18, 1976, Ser. No. 697,531

Int. Cl.[2] F02B *75/26*

U.S. Cl. 123—58 AA 8 Claims



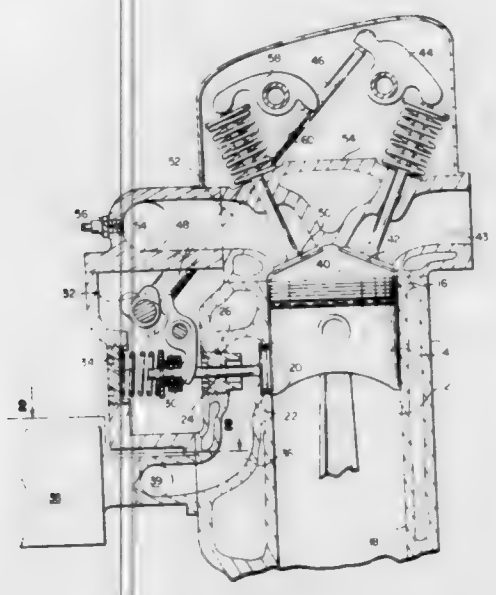
1. An internal combustion engine comprising; an engine block having at least one combustion chamber therein, means for inducting an air/fuel mixture into the engine block combustion chamber, means for igniting said mixture therein, and means for exhausting the combustion produsts thereof, a drive shaft, a rotator affixed to said drive shaft, additional means for increasing the compression of the fuel/air mixture within said combustion chamber, further means for sealing the space between the combustion chamber within the engine block and the rotator as it passes adjacent the combustion chamber, the additional means including a piston cylinder connecting with the combustion chamber in the engine block, and a reciprocating piston contained within the piston cylinder functions to increase the compression thereof, actuating means connected to said piston for effecting said increase in compression at least twice for each revolution of the drive shaft, the actuating means including a drum cam having a specially configured cam slot on the outer surface thereof in order to effect the aforesaid function, with a cam follower connected between the piston and the cam slot, the further means consists of an oval shaped compression ring mounted in an oval shaped recess in the engine block, the compression ring having a tapering concave surface facing inwardly towards the combustion chamber

4,084,556

INTERNAL COMBUSTION ENGINE

Tony R. Villella, 2030 N. Black Canyon, Phoenix, Ariz. 85009

Filed May 14, 1976, Ser. No. 686,264
Int. Cl.[2] F02B *75/02*
U.S. Cl. 123—75 B 9 Claims



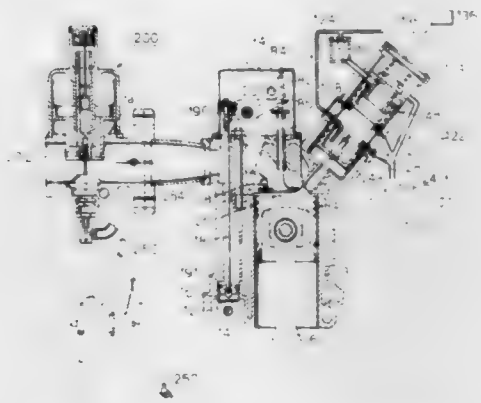
1. In a multi cylinder four cycle internal combustion engine; an engine block provided with cylinders therein; said cylinders each having a head end and a crank case end; a cam operated exhaust valve communicating with the interior of each cylinder at said head end thereof; a cam operated intake valve communicating with the interior of each cylinder at said head end thereof; an auxiliary intake manifold communicating with all of said intake valves; said cylinders each having an intake port in the sides thereof; said intake port being spaced from the head end of each respective cylinder; pistons reciprocably moveable in said cylinders; said pistons each having a top surface facing toward said head end of a respective cylinder; each top surface of each piston being moveable in each cylinder to a position between a respective intake port and a respective crank case end of the respective cylinder; air fuel mixture delivery means communicating with each of said ports whereby movement of each piston, toward said crank case end of a respective cylinder, creates a partial vacuum in a respective cylinder and in communication with the interior of said auxilliary intake manifold, when a respective one of said intake valves is open; and whereby said partial vacuum also admits an air fuel mixture to flow into said cylinder through said respective port from said air fuel mixture delivery means and whereby the next subsequent movement of said piston toward said head end of said cylinder compresses said mixture in said cylinder and thereby forces a surplus portion of said last mentioned mixture into said auxilliary intake manifold before said intake valve closes; whereupon the remainder of said mixture in said cylinder after said intake valve closes may be compressed by further movement of said piston, toward the head end of said cylinder, preparatory to the firing of said compressed remainder of said mixture in said cylinder when said piston is in the general area of its top dead center position depending upon the desired ignition location; said auxiliary intake manifold is enclosed and communicates only with said intake valves such that substantial flow from a respective one

4,084,557

PISTON-TYPE INTERNAL COMBUSTION ENGINE

David Luria, 81B University St., Tel Aviv, Israel

Filed May 6, 1976, Ser. No. 683,704
Claims priority, application Israel, Jul. 24, 1975, 47787
Int. Cl.[2] F01L *1/34*
U.S. Cl. 123—90.15 12 Claims



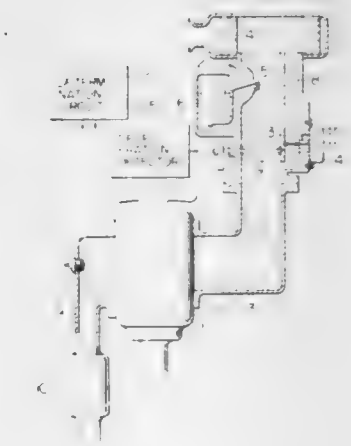
1. An internal combustion engine including a cylinder, a piston displaceable therein, a control member movable to control the engine output, means including an intake valve for effecting the induction of a fuel-air mixture into the cylinder, timing means including a main cam shaft having a cam for opening and closing the intake valve, and phase-shifting means including an auxiliary cam shaft having a cam shifting the phase of closing of the intake valve in response to the movement of the control member to thereby control the quantity of fuel-air mixture in the cylinder at the time of combustion.

4,084,558

AIR-TO-FUEL RATIO CONTROLLING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Tadashi Hattori, Okazaki, and Takamichi Nakase, Gamagori, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 24, 1976, Ser. No. 660,976
Claims priority, application Japan, Feb. 27, 1975, 50-24585
Int. Cl.[2] G01N *3/00;* F02M *23/04*
U.S. Cl. 123—97 B 6 Claims



1. An air-to-fuel ratio controlling system for an internal combustion engine comprising;

a carburetor connected to an intake pipe of the internal combustion engine for supplying air-fuel mixture to said engine,

said carburetor including a first passage through which the air-fuel mixture is passed and a throttle valve for controlling the amount of said air-fuel mixture passing therethrough,

depending therefrom, a pin supported at its opposite ends by said piston, the support at each end comprising a separate pair of directly abutting bearing blocks with a hole therethrough for supporting the respective pin end, a plurality of shims between the uppermost bearing block and the crown, and a pair of screws extending through said bearing blocks and shims and threadingly engaged in said crown, a piston rod at one end thereof having means fitted onto said pin and at the other end of said rod defining a pair of spaced feet members, a crankshaft bearing assembly comprising a pair of directly abutting bearing blocks defining a crankshaft opening therethrough, the upper crankshaft bearing block defining a spaced pair of generally right angled shoulders defined by walls supporting a respective plurality of shims therein, said spaced pair of piston rod feet members respectively engaging both a wall of said spaced pair of crankshaft shoulders and said shims, and a pair of screws each respectively passing through said crankshaft bearing blocks and shims and threadingly engaging a respective one of said pair of feet members.

4,084,554

MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

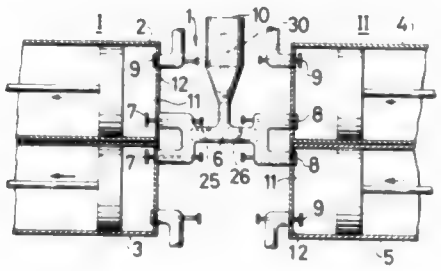
Horst Böhnlein, Friedhofstrasse 4, 6651 Altenkirchenuber Waldmohr, Germany

Filed Oct. 21, 1974, Ser. No. 516,734

Claims priority, application Germany, Apr. 11, 1974, 2417679; Sep. 5, 1974, 2442448

Int. Cl.² F02B 75/18

U.S. Cl. 123—52 MF **4 Claims**



1. A multi-cylinder internal combustion engine, some of the cylinders operating in cycle phases displaced relative to each other, comprising

a plurality of cylinders each having a cylinder head and an inlet valve and an outlet valve, said plurality of cylinders constituting at least two cylinder units,

one common carburettor means for feeding an air-fuel mixture to all of said plurality of cylinders and centrally disposed relative thereto,

a common intake manifold having an elongated central portion communicatingly centrally connected to said carburettor means, and said common intake manifold having branched end portions communicating with said elongated central portion and to said plurality of cylinders at said inlet valves, respectively,

cam control means for opening said inlet valves after closing of said outlet valves, respectively,

means for operatively completely sealing said inlet valves and said respective cylinders from said intake manifold at inlet sides of said cylinder heads, respectively,

at least two check valve means in said elongated central portion of said intake manifold operatively coordinated to each of said cylinder units, respectively, said two check valve means being disposed in said elongated central portion of said common intake manifold adjacent to and on opposite sides of said carburettor means, respectively,

one of said check valve means for automatically opening by means of suction from a first of and said cylinder units coordinated thereto via an opening of said inlet valve of said first cylinder unit, and with another of said check valve means for automatically simultaneously closing when said inlet valve of a coordinated second of said cylinder units operatively with phase displaced cycle relative to that of said first cylinder unit is closed, said one and said another of said check valve means reversing in operation is reversed cycle phases respectively of the coordinated cylinder units and inlet valves, and

said carburettor means including a nozzle forming a nozzle opening having a bottom fuel outlet, and a carburettor nozzle pin means operatively connected to an accelerator pedal and said nozzle pin means being formed conically on a lower end thereof adjustably axially moveably cooperatively positioned and guided in said nozzle opening for regulating said fuel outlet of said nozzle opening, said nozzle opening and said lower end of said nozzle pin means are cooperatively formed such that at full load, and at each adjustment position of said nozzle pin means relative to said nozzle opening, respectively, the correct air-fuel mixture for the stoichiometrical equilibrium is provided, thereby for providing correct dosed fuel admission into said manifold for stoichiometric equilibrium at each adjustable position.

4,084,555

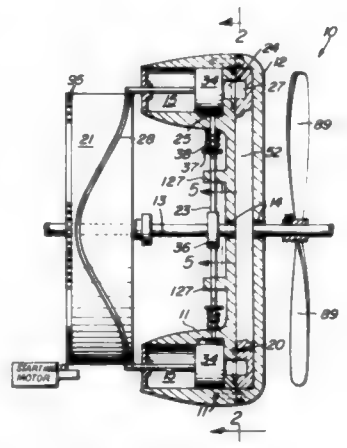
RADIAL ENGINE

Homer G. Outlaw, 1824 Nie Pkwy., New Orleans, La. 70114

Filed Jun. 18, 1976, Ser. No. 697,531

Int. Cl.² F02B 75/26

U.S. Cl. 123—58 AA **8 Claims**

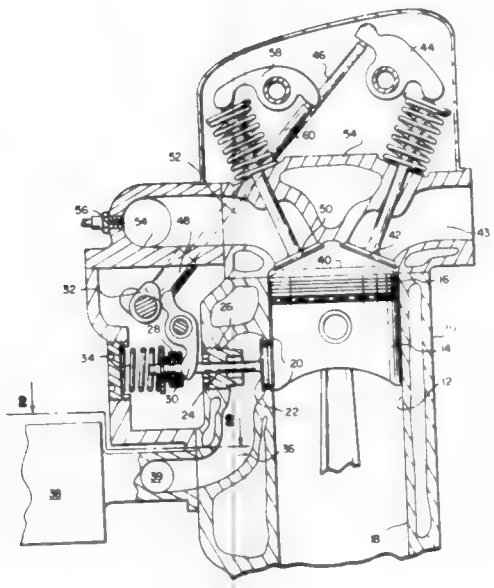


1. An internal combustion engine comprising; an engine block having at least one combustion chamber therein, means for inducting an air/fuel mixture into the engine block combustion chamber, means for igniting said mixture therein, and means for exhausting the combustion produsts thereof, a drive shaft, a rotator affixed to said drive shaft, additional means for increasing the compression of the fuel/air mixture within said combustion chamber, further means for sealing the space between the combustion chamber within the engine block and the rotator as it passes adjacent the combustion chamber, the additional means including a piston cylinder connecting with the combustion chamber in the engine block, and a reciprocating piston contained within the piston cylinder functions to increase the compression thereof, actuating means connected to said piston for effecting said increase in compression at least twice for each revolution of the drive shaft, the actuating means including a drum cam having a specially configured cam slot on the outer surface thereof in order to effect the aforesaid function, with a cam follower connected between the piston and the cam slot, the further means consists of an oval shaped compression ring mounted in an oval shaped recess in the engine block, the compression ring having a tapering concave surface facing inwardly towards the combustion chamber and a smooth flat outer face which engages with the rotator, so that an increase in compression within the combustion chamber will increase the sealing action of the compression ring.

4,084,556
INTERNAL COMBUSTION ENGINE

Tony R. Villella, 2030 N. Black Canyon, Phoenix, Ariz. 85009

Filed May 14, 1976, Ser. No. 686,264
Int. Cl.[2] F02B *75/02*
U.S. Cl. 123—75 B 9 Claims

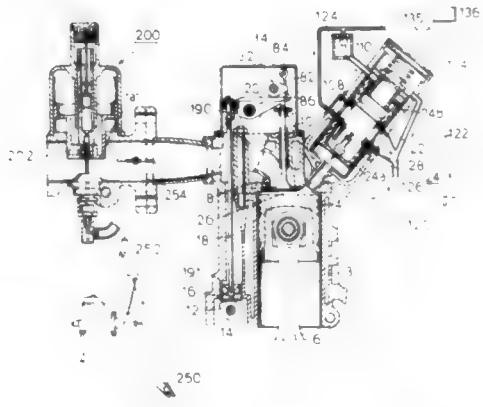


1. In a multi cylinder four cycle internal combustion engine; an engine block provided with cylinders therein; said cylinders each having a head end and a crank case end; a cam operated exhaust valve communicating with the interior of each cylinder at said head end thereof; a cam operated intake valve communicating with the interior of each cylinder at said head end thereof; an auxiliary intake manifold communicating with all of said intake valves; said cylinders each having an intake port in the sides thereof; said intake port being spaced from the head end of each respective cylinder; pistons reciprocably moveable in said cylinders; said pistons each having a top surface facing toward said head end of a respective cylinder; each top surface of each piston being moveable in each cylinder to a position between a respective intake port and a respective crank case end of the respective cylinder; air fuel mixture delivery means communicating with each of said ports whereby movement of each piston, toward said crank case end of a respective cylinder, creates a partial vacuum in a respective cylinder and in communication with the interior of said auxilliary intake manifold, when a respective one of said intake valves is open; and whereby said partial vacuum also admits an air fuel mixture to flow into said cylinder through said respective port from said air fuel mixture delivery means and whereby the next subsequent movement of said piston toward said head end of said cylinder compresses said mixture in said cylinder and thereby forces a surplus portion of said last mentioned mixture into said auxilliary intake manifold before said intake valve closes; whereupon the remainder of said mixture in said cylinder after said intake valve closes may be compressed by further movement of said piston, toward the head end of said cylinder, preparatory to the firing of said compressed remainder of said mixture in said cylinder when said piston is in the general area of its top dead center position depending upon the desired ignition location; said auxiliary intake manifold is enclosed and communicates only with said intake valves such that substantial flow from a respective one of said cylinders into said auxilliary intake manifold and from said auxilliary intake manifold into said cylinder can only occur through a respective intake valve when open.

4,084,557
PISTON-TYPE INTERNAL COMBUSTION ENGINE

David Luria, 81B University St., Tel Aviv, Israel

Filed May 6, 1976, Ser. No. 683,704
Claims priority, application Israel, Jul. 24, 1975, 47787
Int. Cl.[2] F01L *1/34*
U.S. Cl. 123—90.15 12 Claims

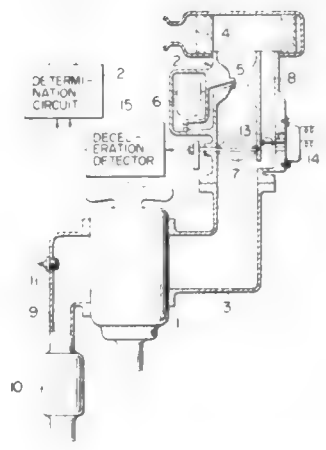


1. An internal combustion engine including a cylinder, a piston displaceable therein, a control member movable to control the engine output, means including an intake valve for effecting the induction of a fuel-air mixture into the cylinder, timing means including a main cam shaft having a cam for opening and closing the intake valve, and phase-shifting means including an auxiliary cam shaft having a cam shifting the phase of closing of the intake valve in response to the movement of the control member to thereby control the quantity of fuel-air mixture in the cylinder at the time of combustion.

4,084,558
AIR-TO-FUEL RATIO CONTROLLING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Tadashi Hattori, Okazaki, and Takamichi Nakase, Gamagori, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 24, 1976, Ser. No. 660,976
Claims priority, application Japan, Feb. 27, 1975, 50-24585
Int. Cl.[2] G01N *3/00;* F02M *23/04*
U.S. Cl. 123—97 B 6 Claims



1. An air-to-fuel ratio controlling system for an internal combustion engine comprising;

a carburetor connected to an intake pipe of the internal combustion engine for supplying air-fuel mixture to said engine,

said carburetor including a first passage through which the air-fuel mixture is passed and a throttle valve for controlling the amount of said air-fuel mixture passing therethrough,

a second passage for introducing additional air into said intake pipe,

a control valve mounted in said second passage for control-

ling the amount of additional air passing therethrough to compensate for the air-to-fuel ratio of said air-fuel mixture,

a drive motor coupled to said control valve for driving the same,

air-to-fuel ratio sensing means mounted in an exhaust gas system of said engine for detecting the change in the composition of the exhaust gas to determine an air-to-fuel ratio of the air-fuel mixture supplied to said engine for producing an electrical signal representing the detected ratio,

deceleration detecting means for detecting the deceleration of said engine and producing an electrical signal, and

an electrical control circuit connected to said air-to-fuel ratio sensing means and said deceleration detecting means and responsive to the electrical signal from said air-to-fuel ratio sensing means to actuate said drive motor for controlling the amount of the additional air so that the air-to-fuel ratio of said air-fuel mixture has a preset value,

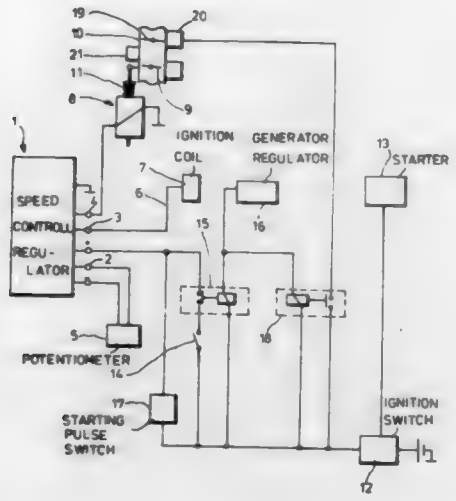
said electrical control circuit being also responsive to the electrical signal from said deceleration detecting means to stop said drive motor for a predetermined period after the start of the deceleration of said engine, independently of the electrical signal from said air-to-fuel ratio sensing means for interrupting the operation of said control valve.

4,084,559

SPEED CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Hellmut Wallbaum, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Germany

Filed Oct. 14, 1976, Ser. No. 732,458
Claims priority, application Germany, Oct. 15, 1975, 2546076
Int. Cl.² F02D *11/10*
U.S. Cl. 123—102 **6 Claims**



1. Apparatus for controlling the speed of an internal combustion engine, said apparatus comprising, in combination:

a. a throttle valve arranged in an intake pipe of the engine;

b. a speed control regulator including means for producing signals representative of the actual value and the desired value of engine speed, and comparator means, connected to said signal producing means, for producing a signal representative of the difference between the actual and desired speed values;

c. throttle adjusting means, in constant mechanical connection with said throttle valve and connected to said speed control regulator, for actuating said throttle valve in dependence upon said difference signal during non-idling operation of the engine;

d. means, connected to said throttle valve, for moving said throttle valve into its idling position when the voltage supply to the speed control regulator is interrupted; and

e. means for supplying a voltage to aid speed control regulator comprising:

(1) a voltage source;

(2) first switch means, connected between said voltage source and said speed control regulator, for interrupting the voltage supply to said speed control regulator when the engine speed is below a minimum speed, said minimum speed being below the normal idling speed of the engine; and

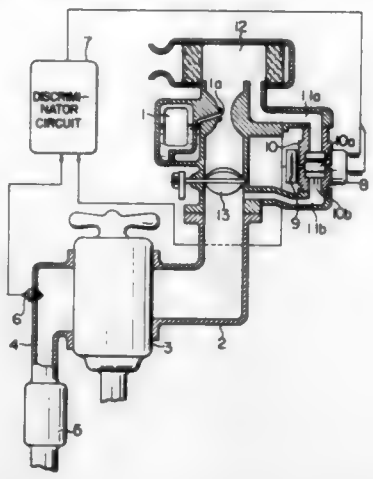
(3) pulse switch means, connected in parallel with said first switch means, for supplying a voltage pulse to said speed control regulator determinative of the starting position of said throttle valve.

4,084,560

ENGINE AIR-TO-FUEL RATIO CONTROL SYSTEM

Tadashi Hattori, Nishio; Toshiharu Iwata, Okazaki, and Takamichi Nakase, Gamagori, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 21, 1975, Ser. No. 606,587
Claims priority, application Japan, Aug. 24, 1974, 49-97287
Int. Cl.² F02M *23/04*
U.S. Cl. 123—119 EC **6 Claims**



1. An air-to-fuel ratio control system for an internal combustion engine comprising:

a carburetor connected to an intake pipe of an internal combustion engine for supplying air-fuel mixture to said engine;

said carburetor including:

a main passage provided with a throttle valve for controlling the amount of the air-fuel mixture, and

a bypass passage provided with a bypass valve for compensating air-to-fuel ratio of the air-fuel mixture by controlling the amount of air flowing therethrough;

an air-to-fuel ratio detecting means mounted in an exhaust pipe of said engine for detecting the air-to-fuel ratio of the mixture supplied to said engine;

valve position detecting means for detecting a valve position of said bypass valve;

a bypass valve control circuit connected to said air-to-fuel ratio detecting means and said valve position detecting means in which a bypass valve control signal is produced in accordance with the respective outputs of said air-to-fuel ratio detecting means and said valve position detecting means; and

driving means coupled to and driving said bypass valve in response to said bypass valve control signal so that the driving speed of said valve increases as the valve opening increases .

4,084,561

THROTTLE TRIMMING DEVICE

Harvey R. Miller, 3655 E. Amazon, Eugene, Oreg. 97405

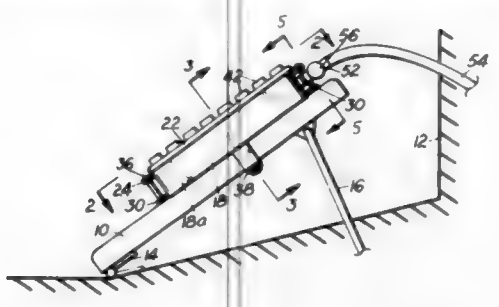
Filed Feb. 9, 1976, Ser. No. 656,123
Int. Cl.² F02D *11/08*; G05G *1/14*
U.S. Cl. 123—103 C **3 Claims**

1. A throttle trimming device operative with an internal

combustion engine of the type having a vacuum operating fuel intake system and throttle means for controlling the flow to the fuel intake system, comprising

(a) a flexible air tight bag arranged to be supported on throttle means of an internal combustion engine and arranged to be connected in communication with a vacuum operating fuel intake system of an internal combustion engine,

(b) foot engaging means supported on said air bag,



(c) said air bag being arranged to be collapsible and expandable by vacuum conditions in the fuel intake system for moving said foot engaging means under the operator's foot and automatically backing off or applying the throttle,

(d) and a resilient filler in said air bag arranged in selected vacuum conditions to hold said foot engaging member in extended position.

4,084,562

FUEL METERING DEVICE

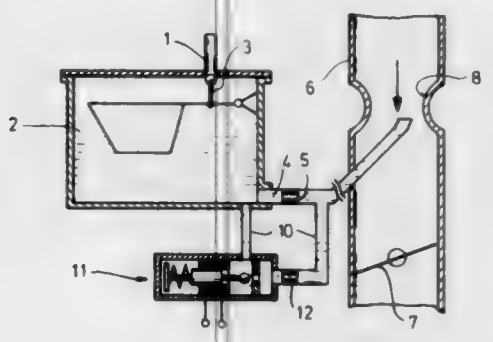
Konrad Eckert, Stuttgart-Feuerbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 365,633, May 31, 1973, abandoned. This application Jul. 16, 1975, Ser. No. 596,261

Claims priority, application Germany, Aug. 8, 1972, 2238990

Int. Cl.[2] F02M *7/00, 13/04;* F02H *5/02*

U.S. Cl. 123—119 EC **9 Claims**



1. A fuel metering device for low fuel feed pressures and adapted for use in an externally ignited internal combustion engine of the air/fuel mixture-compressing type, having an air-intake suction tube, which device comprises:

(a) conduit means for conveying fuel to the said suction tube of the engine,

(b) throttle means of determinable cross-sectional throttle area disposed in said conduit means,

(c) bypass duct means for bypassing said throttle means, and

(d) electrical control means responsive to characteristic engine data for switching said bypass means into the fuel flow through said conduit means to bypass said throttle means, thereby varying the ratio of the amounts of fuel and air in the mixture being formed in said suction pipe, wherein said electrical control means is adapted to a work cycle and switches in said bypass means intermittently in dependence on the work cycle, the frequency of which corresponds to the suction frequency of the engine.

4,084,563

ADDITIONAL AIR CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

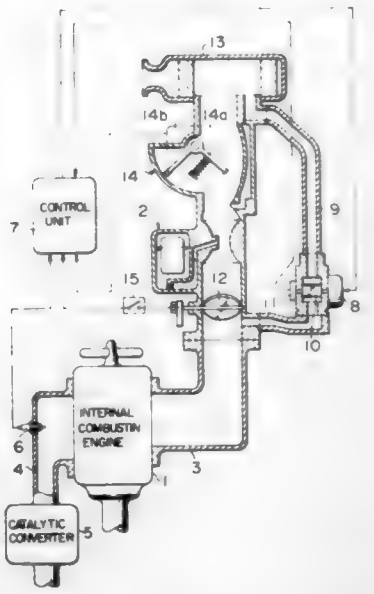
Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Aichi, and Takamichi Nakase, Gamagori, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 9, 1976, Ser. No. 740,175

Claims priority, application Japan, Nov. 11, 1975, 50-135395

Int. Cl.[2] F01N *3/15;* F02B *75/10;* F02M *37/00*

U.S. Cl. 123—119 EC **5 Claims**



1. An additional air control device for an internal combustion engine having an intake system and an exhaust system comprising:

a carburetor connected to the intake system of said internal combustion engine and including a main passage and a bypass passage, for supplying air-fuel mixture to said engine;

said main passage being provided with a throttle valve for controlling an amount of main air-flow and said bypass passage being provided with a control valve for compensating the air-fuel ratio of said air-fuel mixture by controlling an amount of additional air-flow flowing therethrough;

a drive motor coupled to said control valve for driving the same in order to control the opening degree of said control valve;

gas sensing means mounted in the exhaust system of said engine for sensing the oxygen content of the exhaust gases therein and driving an electrical gas sensing signal;

intake air flow sensing means mounted in the intake system of said engine for sensing the rate of intake air flow to said engine and thereby producing an electrical intake air flow signal;

deceleration sensing means coupled to said throttle valve for sensing deceleration of said engine in accordance with the opening degree of said throttle valve and thereby producing an electrical deceleration signal; and

electronic control means electrically connected to said gas sensing means, said intake air flow sensing means, said deceleration sensing means and said drive motor, said electronic control means being responsive to said intake air flow signal and said deceleration signal for alternately driving and stopping said drive motor repeatedly in a direction determined in accordance with said gas sensing means;

said electronic control means including a comparison circuit for receiving and comparing said gas sensing signal with a preset value as to relative magnitude and thereby determining the direction of operation of said drive motor, a time control circuit responsive to said intake air flow signal to thereby control a duty ratio $\tau a/\tau b$ between a running time τa and a stopping time τb of said drive motor, and a command circuit responsive to said deceleration

signal to increase said duty ratio independently of said time control circuit during the deceleration period of said engine, whereby the air-fuel ratio of mixture supplied to said engine is maintained substantially constant.

4,084,564

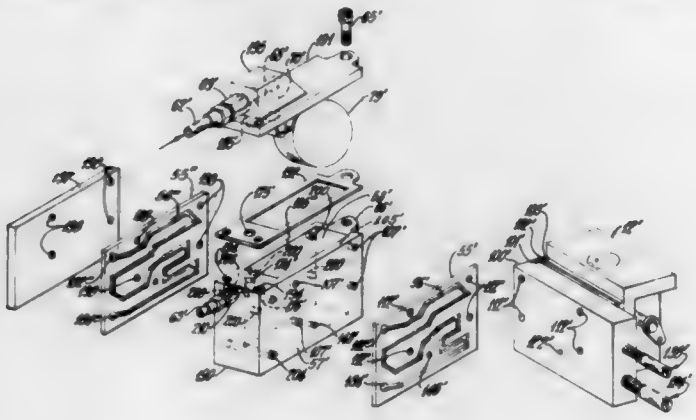
HEAT EXCHANGER SYSTEM FOR CHARGE FORMING APPARATUS

Paul E. Rickert, Oregon, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 504,371, Sep. 9, 1974, abandoned. This application Aug. 19, 1976, Ser. No. 715,695

Int. Cl.[2] F02M *5/10, 15/00*

U.S. Cl. 123—139 AV **21 Claims**



1. Charge forming apparatus including, in combination, a body construction having a fuel and air mixing passage, aperture means for discharging fuel into the mixing passage, a fuel chamber in the body construction, passages in the body construction for conveying fuel from the fuel chamber to the aperture means, means associated with the fuel chamber for regulating flow of liquid fuel into the fuel chamber, means for conveying fuel under pressure from a supply through an inlet passage to the fuel flow regulating means, a heat exchanger member secured to said body construction in heat-transferring relation with a surface of the body construction, said heat exchanger member having an elongated fuel circulating channel therein, the channel in the heat exchanger member being a perforate region of undulated configuration, passage means for delivering fuel from the inlet passage to the channel in said heat exchanger member, a fuel outlet passage in communication with the channel, and means connected with the outlet passage for returning fuel circulating in said channel to the fuel supply.

4,084,565

COMBUSTION AIR SUPPLY APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Heinz Dorsch, Weissach-Flacht, Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Germany

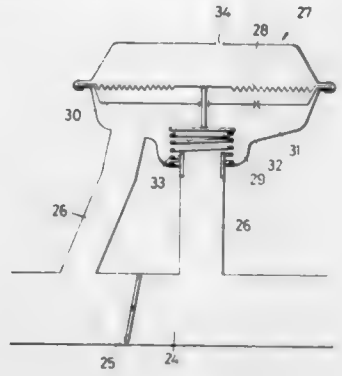
Filed Sep. 2, 1976, Ser. No. 719,706

Claims priority, application Germany, Sep. 2, 1975, 2538921

Int. Cl.[2] F02D *1/04;* **F02M** *7/00*

U.S. Cl. 123—140 MP **7 Claims**

1. An internal combustion engine comprising:
- an air supply line for supplying combustion air to combustion chamber means of said engine,
- a load regulating member disposed in said air supply line for controlling the flow of combustion air therethrough,
- a by-pass line extending in by-passing relationship to said load regulating member from a position upstream of said load regulating member to a position downstream thereof,
- a supplementary air valve disposed in said by-pass line for controlling the flow of combustion air therethrough,
- and supplementary air valve control means for controlling said supplementary air valve as a function of the suction pressure in said air supply line of a position downstream of said load regulating member, wherein said supplementary air valve includes:
- a housing,
- a valve means for controlling the opening of said by-pass line in dependence on its position,
- a membrane connected to and moveable with the valve disk,
- atmosphere opening means in said housing for communicating atmospheric air to one side of said membrane,



- means for communicating the suction pressure in said air supply line to the other side of said membrane,
- and spring means engaged between the housing and the valve means, and
- wherein a separation wall is arranged in the housing between the membrane and the valve means, and wherein a throttle opening is provided in said separation wall.

4,084,566

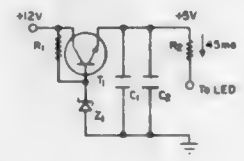
ELECTRONIC BREAKER POINTS FOR THE IGNITION SYSTEM OF A GASOLINE ENGINE

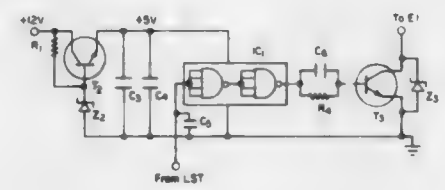
Kurt W. Weiler, P.O. Box 26018, Tempe, Ariz. 85282

Filed Jun. 19, 1975, Ser. No. 588,511

Int. Cl.[2] F02P *1/00, 5/04*

U.S. Cl. 123—148 E **6 Claims**





C_1 = 1000 µf	R_1 = 470 Ohm	T_1 = 2N 1711	Z_1 = 5.6 V
C_2 = 68 nf	R_2 = 85 Ohm	T_2 = 2N 1711	Z_2 = 5.6 V
C_3 = 1000 µf	R_3 = 470 Ohm	T_3 = 2N 1711	Z_3 = 47 V
C_4 = 68 nf	R_4 = 330 Ohm		
C_5 = 10 nf			
C_6 = 330 nf			
IC_1 = SN 7413			

1. Electronic breaker points for gasoline engines adaptable to conventional distributors comprising:
- a radiation source and a radiation detector mounted so that the latter receives the emission from the former through an air gap with both mounted within the confines of the distributor such that the physical position of said radiation source and radiation detector changes with the working of the normal advance and retard mechanisms of the distributor;
- a chopping wheel with teeth about its periphery mounted fixedly to the rotor shaft of the distributor such that the teeth pass freely between said radiation source and said radiation detector, the said teeth having width, spacing, and number appropriate to the timing and dwell of the engine being controlled;
- a supply circuit to provide a constant current to the radiation source independent of the temperature of said radiation source;

an output transistor to provide switching control to an independent electronic ignition system;

a pulse shaping circuit to receive the output from said radiation detector and provide control to the output transistor;

a supply circuit to provide constant voltage to said pulse shaping circuit independent of the primary automobile supply voltage;

said pulse shaping circuit consisting chiefly of a commercial integrated circuit package containing first and second Schmidt triggers;

a coupling capacitor between the second Schmidt trigger and the output transistor producing a sharp negative pulse at the input of said output transistor to switch said output transistor sharply off which produces an abrupt transition at the collector of said output transistor to switch an electronic ignition system.

4,084,567

CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

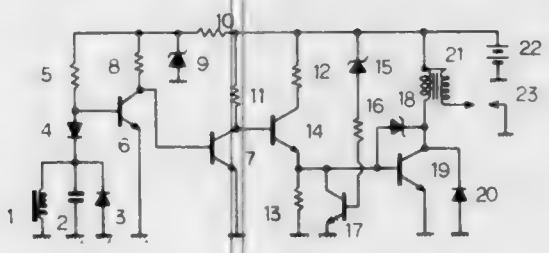
Takasi Hachiga, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 5, 1976, Ser. No. 664,175

Claims priority, application Japan, Mar. 14, 1975, 50-31608

Int. Cl.² F02P *3/02*

U.S. Cl. 123—148 E **2 Claims**



1. An ignition system for an internal combustion engine comprising:

a source of alternating current ignition signals produced in time relationship with the engine;

a direct current power source;

an ignition coil having a primary and a secondary winding;

a switching transistor having a base and a collector-emitter path connected in series with said primary winding;

means for connecting said primary winding and said collector-emitter path across said direct current power source;

means responsive to each cycle of said alternating current ignition signals for operating said switching transistor conductive and nonconductive in timed relationship with the engine; and

means, connected to said direct current power source, and said switching transistor, for bypassing a portion of the base current of said switching transistor when the voltage of said direct current power source exceeds a predetermined value thereby limiting the magnitude of primary current flowing through said primary winding to a predetermined magnitude, said bypassing means including a zener diode for sensing the predetermined value of said power source of voltage; and a bypassing transistor for bypassing a portion of the base current of said switching transistor; said zener diode being connected between said power source and the base of said bypassing transistor, and said bypassing transistor having a collector-emitter path connected across the base-emitter path of said switching transistor.

4,084,568

DECOMPRESSION-TYPE INTERNAL-COMBUSTION ENGINE AND METHOD OF IMPROVING THE CHARACTERISTICS OF SUCH ENGINE

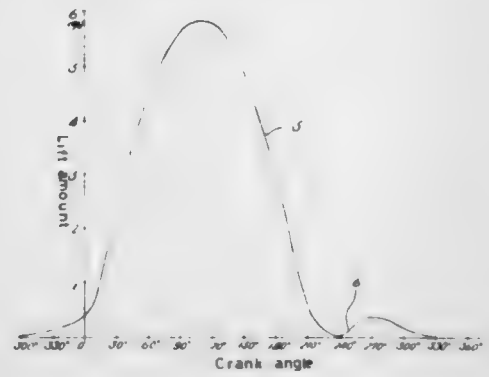
Kazunobu Sato, Wako; Takanori Suzuki; Tadataka Kobayashi, both of Tokyo, and Takeshi Miyazawa, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1976, Ser. No. 646,398

Claims priority, application Japan, Jan. 7, 1975, 50-4285

Int. Cl.² F01L *13/08*

U.S. Cl. 123—182 **4 Claims**



1. A four-cycle internal-combustion engine having a compression chamber, a reciprocable piston, at least one intake valve therefor and a cam for controlling the opening and closing of said intake valve, said cam being shaped to open said intake valve to a maximum degree of lift during the intake stroke and then gradually close said valve to momentarily effect substantial closure of the intake valve in the compression stroke at a crank angle of 240° and then to partially re-open said valve from said crank angle of 240° in gradually increasing amount up to 270° and thereafter to gradually close said valve and effect full closure at 330° whereby compression pressure at engine starting is reduced and at maximum operating speed is substantially unaffected.

4,084,569

TILE CUTTER

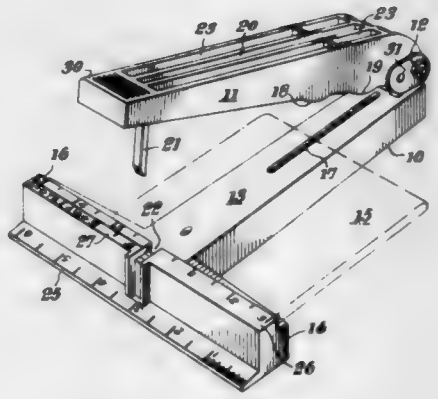
Alan Gould Chrismas, 8 Cleveland Close, Worthing, West Sussex, England

Filed May 17, 1976, Ser. No. 686,818

Claims priority, application United Kingdom, May 20, 1975, 21387/75

Int. Cl.² B28D *1/32*

U.S. Cl. 125—23 R **20 Claims**



1. A tile cutter comprising a longitudinally extending base member, an arm hingedly connected to said base member at one end thereof, a ridge upstanding fom a surface of said base member and extending along a portion of said base member from the region of said one end, a slot extending along said arm from the region of the hinge connection, a pair of shoulders dependent from said arm on either side of said slot and extending along a portion of said arm from the region of said hinge

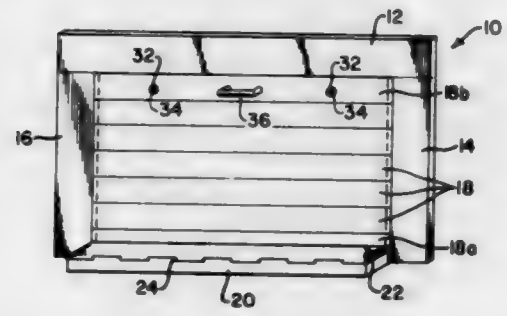
connection, and means for maintaining said slot substantially parallel to the ridge on the base member during hinging motion of said arm, wherein the surface of each shoulder adjacent to the base member is in the form of a part of the surface of a right circular cylinder, the axis of which is parallel to the axis of said hinge connection.

4,084,570

FIREPLACE CLOSURE AND SAFETY DEVICE

Adrian O. Rule, and William E. Bartley, both of Chagrin Falls, Ohio, assignors to Integrated Development & Manufacturing Co., Chagrin Falls, Ohio

Filed Sep. 10, 1976, Ser. No. 721,969
Int. Cl.[2] F24C *15/02*
U.S. Cl. 126—140 **5 Claims**



1. A fireplace heat retaining and safety closure device comprising

a frame means designed to partially extend over a fireplace opening in flush contact with the opening,

a storage box comprising the bottom horizontal member of the frame, said box having a top closure which is hinged to pivot toward the fireplace opening,

a plurality of hinged, horizontal, metal slats of sufficient width and height to extend over the full opening of the frame means, and

means to secure one end of the metal slats across the top of the frame means whereby a slat adjacent the storage box is pressed against the frame means by the top of the storage box when it is pivoted toward the fireplace opening to hold the metal slats in a flush relationship to the face of the frame means around the periphery thereof.

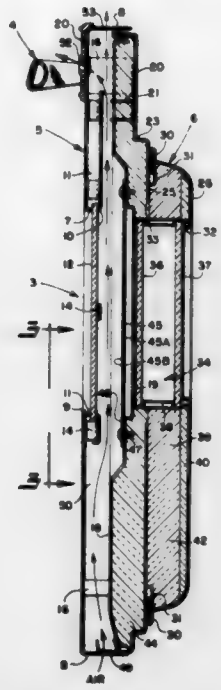
4,084,571

SEE-THROUGH OVEN DOOR WITH RETICULATED HEAT SHIELD

Robert Henry McFarland, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Sep. 20, 1976, Ser. No. 724,946
Int. Cl.[2] F23M *7/04*
U.S. Cl. 126—198 **10 Claims**

1. In combination with a domestic range having an oven cavity capable of being cleaned by heat, a see-through oven door comprising an outer panel containing a glass window, an inner frame inwardly spaced from and attached to said outer panel and containing a window pack aligned with said window for viewing the oven cavity, said window pack being surrounded by insulation, a reticulated metallic heat shield fixedly secured in said space between said window and window pack to assist in retaining the heat in the oven cavity and thus correspondingly to decrease the surface temperature of the outer panel and glass window, and means for circulating cooling air upwardly through the space between said outer panel and inner frame and past the reticulated metallic heat shield to



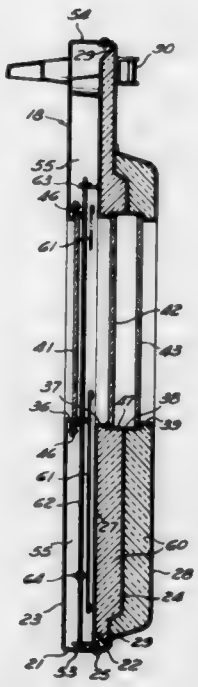
provide a cooling air wash therefor to assist in decreasing the surface temperature of the outer panel and glass window.

4,084,572

SELF-CLEANING OVEN SHUTTER DOOR

Alvin J. Schetti, and Charles R. Gorski, both of Grand Rapids, Mich., assignors to Kelvinator, Inc., Grand Rapids, Mich.

Filed Oct. 28, 1976, Ser. No. 736,552
Int. Cl.[2] F24C *15/04*
U.S. Cl. 126—200 **2 Claims**



1. An oven assembly comprising a frame enclosing an oven cavity, an opening in the frame for access to the cavity, a door hinged at one side thereof on the frame for closing the opening, a window in the door for viewing the contents of the cavity during cooking operation, the window being closed by glass sheet means, manually operable shutter means selectively movable within the door, means guiding said shutter means for translation when the door is open between an open position allowing visual inspection of the interior of the cavity through the window when the door is closed, and a closed position preventing direct radiation through the window from the cavity when the door is closed, indicator means within the door remote from the hinge side thereof means for guiding said indicator means for translation in a direction parallel to the movement of said shutter means responsive to the position of

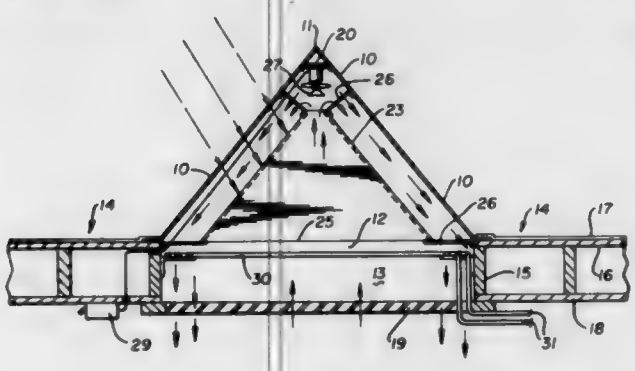
the shutter, said indicator being in a first position when the shutter is in its open position and in a second position when the shutter is in its closed position, sensor means arranged on the frame to protrude into the door to sense the presence of the indicator means in the second position when the door is closed, the sensor means being arranged to sense an open condition of the door and/or the first position of the indicator means in a manner detectably different from the manner in which both the closed door and the second position of the indicator are simultaneously sensed whereby the sensor means is adapted to be used to control operation of the oven heater by permitting operation thereof only when the door and shutter are closed and by preventing operation of the oven heater for pyrolytic cleaning when the door is open and/or the shutter is open.

4,084,573

PYRAMIDAL SOLAR HEATER

Nick J. Shubert, 893 E. Indianola Ave., Youngstown, Ohio 44502

Filed Jul. 15, 1976, Ser. No. 705,588
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 7 Claims



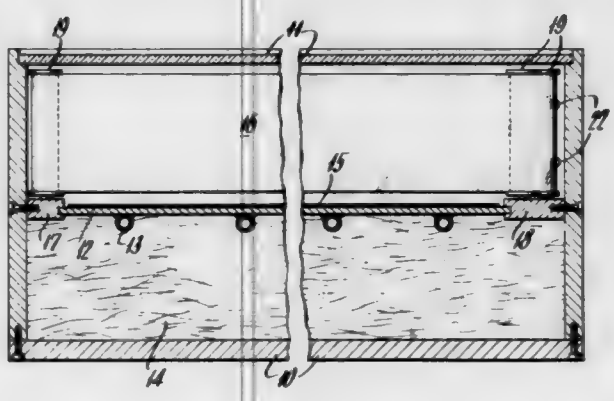
1. A solar heater comprising a pyramidal shaped structure having a square base and sloping sides meeting at an apex, said sides formed of translucent material, said base defining an open bottom positioned in registry with an opening in a supporting structure, a smaller similarly formed pyramidal shaped structure disposed within said first mentioned pyramidal shaped structure in spaced relation thereto and having an opening in its uppermost end, air moving means positioned in the apex of said first mentioned pyramidal shaped structure for moving air downwardly in wiping relation to said first mentioned pyramidal shaped structure.

4,084,574

HEAT INSULATOR

Marcel J. E. Golay, 1095 Lutry, Vaud, Switzerland, assignor to Marcel Golay, Switzerland

Filed Jun. 30, 1975, Ser. No. 591,694
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 4 Claims



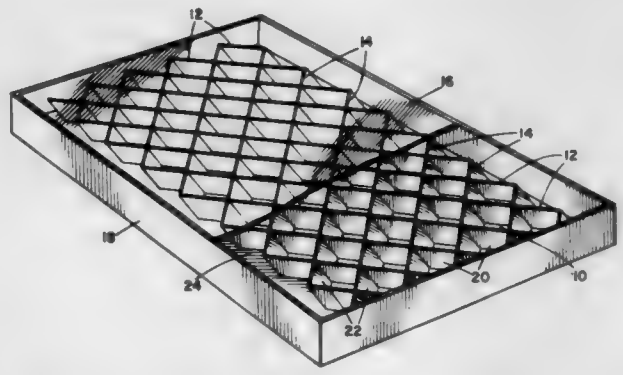
1. Radiant heat absorbing apparatus comprising a housing having at least one clear side, radiation absorbing means in said housing comprising a radiation absorbing surface facing said clear side, a radiation transparent plate closing said clear side of the housing and a plurality of spaced ribbonlike elements extending between and spaced from said radiation absorbing surface and said transparent plate to restrict circulation of gas between said surface and said plate and minimize loss of heat through convection, said ribbonlike elements being very thin and said housing includes ribbon supporting means along a pair of opposite edges of said radiation absorbing means, said supporting means maintaining said ribbons in tension, said supporting means each comprising a plurality of rollers, said ribbon is threaded about said rollers and tensioning means is attached to at least one end of said ribbon to maintain it under tension at all times.

4,084,575

SOLAR HEATER UNIT

Dwight Harold Nicewonger, Rte. 1, Box 495H, Ramona, Calif. 92065

Filed Sep. 13, 1976, Ser. No. 722,566
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 9 Claims



1. A solar heating unit being adapted for mounting in proximity to a heated building comprising:

a planar floor section,

a plurality of intersecting panels positioned on said floor section and forming a plurality of cells,

means interconnecting said panels at the intersections of said panels,

each of said cells having mutually abutting rear side walls and front side walls, said rear side and front side walls being at an acute angle to said planar floor section,

each cell including a front side wall and a rear side wall that are in parallel planes,

at least some of said side walls of each cell being coated black,

a cover means over said cells for admitting light energy and retaining heated air,

circulation means for circulating a working fluid in heat transfer relationship with said cells for extracting heat converted from solar energy by said cells and for delivering said extracted heat to the heated building.

4,084,576

BULB-TYPE SOLAR ENERGY COLLECTOR

Yu Kun Pei, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 3, 1976, Ser. No. 682,705
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 21 Claims

1. A solar collector apparatus comprising a unitary hollow glass member defining

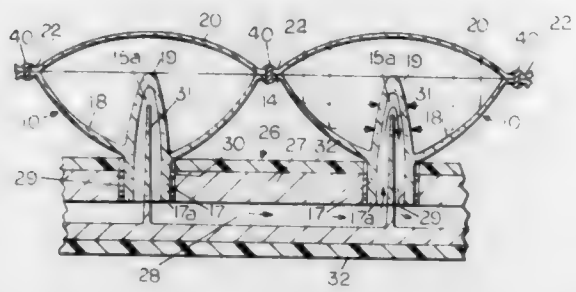
an endless annular parabolic wall surface disposed about a focal axis having an enlarged open end and an apex end, and

an elongated hollow tubular wall coaxial with said axis at said apex end of the parabolic surface, and inwardly depending along the focal axis and encircled by said para-

bolic surface, the inner depending axial of end of said tubular wall being closed and the opposite axial end thereof being open and disposed outwardly of the apex end of the parabolic surface, said tubular wall defining an internal fluid chamber,

a continuous reflective coating layer on said parabolic surface and facing the focal axis,

an energy absorbing coating on the outer surface of the



tubular wall disposed within said encircling parabolic surface,

a transparent glass cover member for covering the enlarged open end of said unitary member, and

means for sealingly connecting the glass cover member about the periphery of said open end of the parabolic wall of the said hollow glass member thereby providing a sealed closed chamber of the latter, said chamber being evacuated to subatmospheric pressure.

4,084,577

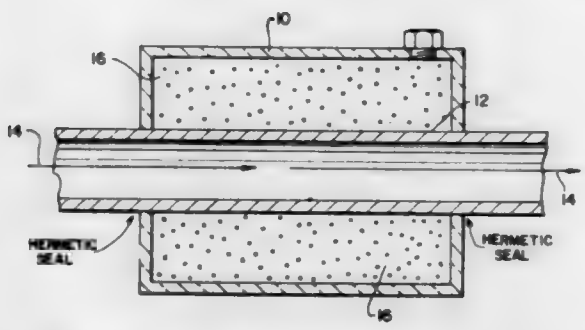
SOLAR RADIATION CONVERTING METHOD AND MEANS

William A. Rhodes, 4421 N. 13th Pl., Phoenix, Ariz. 85014

Continuation-in-part of Ser. No. 710,278, Jul. 30, 1976, abandoned. This application Aug. 20, 1976, Ser. No. 716,247

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—270 12 Claims



1. A method whereby a halogen is introduced in fluid suspension into a hermetically sealed light transmitting enclosure; said enclosure being exposed to radiant light energy; said radiation passing through a surface sealing said enclosure; then into a halogen in suspension in said enclosure; said halogen to transmit infrared heat energy onto a receiving surface wherein said heat is extracted for use; said halogen intercepts and converts visible light spectra into infrared heat energy which likewise impinges upon said receiving surface thereby to increase the available heat energy over and above the amount received from the usual infrared radiation of the spectra.

4,084,578

SOLAR WATER HEATER OF NATURAL CIRCULATION TYPE

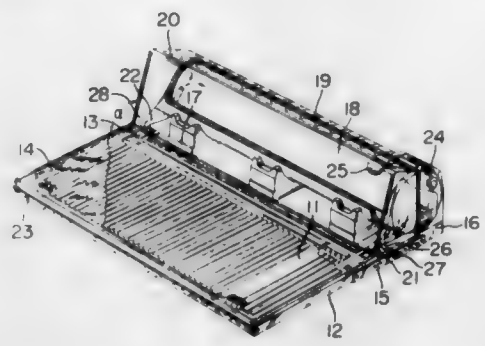
Toshihiro Ishibashi, Kosai, Japan, assignor to Yazaki Sogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1976, Ser. No. 668,190

Claims priority, application Japan, Mar. 24, 1975, 50-39187[U]

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 3 Claims



1. A solar water heater of natural circulation type comprising a water reservoir containing a controlled amount of water therein, a flat heat collector lying in a plane and disposed in inclined relation with respect to the horizontal and connected to said water reservoir for collecting the energy of solar radiation incident thereupon thereby heating water supplied from said water reservoir, and means for causing natural circulation of water between said water reservoir and said heat collector thereby raising the temperature of water up to a value suitable for use in utilities requiring hot water supply, wherein the improvement comprises that said heat collector includes a pair of thin metal sheets defining a plurality of parallel spaced water passages, said water passages being formed by parallel immediately adjacent corrugations in at least one of said sheets having edge portions contacting the other of said sheets, one edge portion of each corrugation being welded to the other of said sheets and the second edge portion of each corrugation normally being in physical contact only with the other of said sheets.

4,084,579

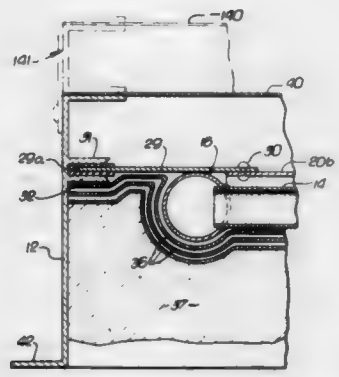
LIGHTWEIGHT SOLAR HEATER EMPLOYING TUBES AND CHANNELS

Ying-Nien Yu, Marina del Rey, Calif., assignor to Ying Mfg. Corporation, Gardena, Calif.

Filed Jun. 14, 1976, Ser. No. 695,775

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 8 Claims



1. In a solar collector, the combination comprising

a. a multiplicity of tubes to pass fluid and to receive heat, and

b. channel shaped heat transfer members having flanges, the members having webs interconnecting the flanges and presented to receive solar radiation,

c. the tubes clamped between and in heat transfer contact with flanges on successive of said members to form a tube and member assembly, whereby the solar heated channel

members transfer heat via the tube clamping flanges to the tubes,

d. there being retainers directly attached to certain of said members and independently of said tubes for exerting force acting through said members to hold the flanges and tubes in clamped enterengagement,

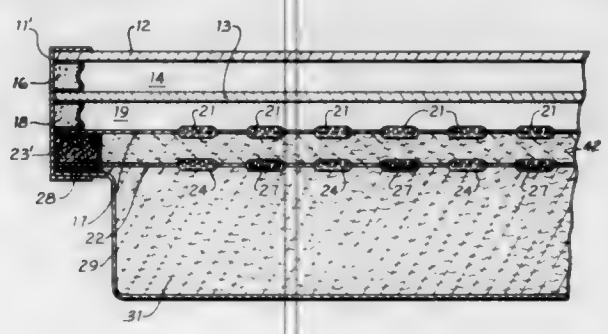
e. there also being a first header pipe in communication with certain ends of said tubes, at least one of said retainers overlying said header pipe and attached to certain ends of said members to exert force thereon.

4,084,580

COMBINATION SOLAR COLLECTOR AND HEAT EXCHANGER

Charles Frederick Roark, 24 Maple La., Brownsburg, Ind. 46112

Filed Jul. 28, 1976, Ser. No. 709,379
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **13 Claims**



1. A solar energy collector/heat exchanger assembly comprising:

a frame;

first and second window panes secured in said frame in parallel spaced relation and having a dry gas filled and sealed space between them for thermal insulation betweeen them;

a collector panel secured in said frame under and in parallel spaced relation to said second window pane and having a first passageway therein for a working fluid;

a heat exchanger panel secured in said frame in parallel spaced relation to said collector panel and having a second passageway therein for said working fluid and a third passageway therein for a utilization fluid;

and means coupling said first and second passageways together to make a working fluid circuit in said frame whereby heat energy collected in said working fluid in said collector panel is made available for heat exchange to said utilization fluid in said heat exchanger panel.

4,084,581

APPARATUS FOR FOCUSING AND USING SOLAR ENERGY

Francis E. Vigoureux, Residence la Grande Candelle-Allee des Pins, Marseille, France (13009)

Filed Sep. 29, 1976, Ser. No. 727,842
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **8 Claims**

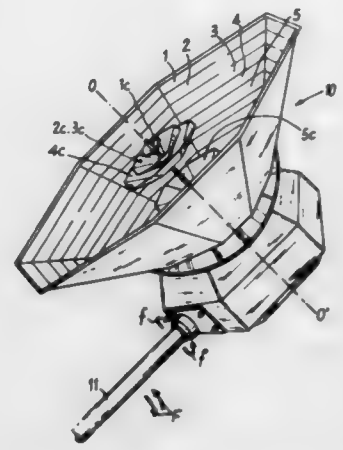
1. Apparatus for focusing by reflection and for using solar energy and comprising: outer reflectors and inner back-reflectors arranged according to an invariable geometry and distributed symmetrically with respect to an axis;

means adapted to maintain said axis directed towards the sun during daylight hours;

and heat-collecting means situated along said axis at a position such that said means receive the solar rays reflected by said reflectors and back-reflectors,

each of said reflectors and back-reflectors having a rectilinear appearance in section through any plane passing through said axis and being arranged so that said heat-collecting means are placed beyond the arrangement of said reflectors and back-reflectors, in the direction of arrival of the incident solar rays;

said reflectors being grouped so as to form a practically continuous surface whose general appearance is that of a truncated cone or pyramid but whose section through said



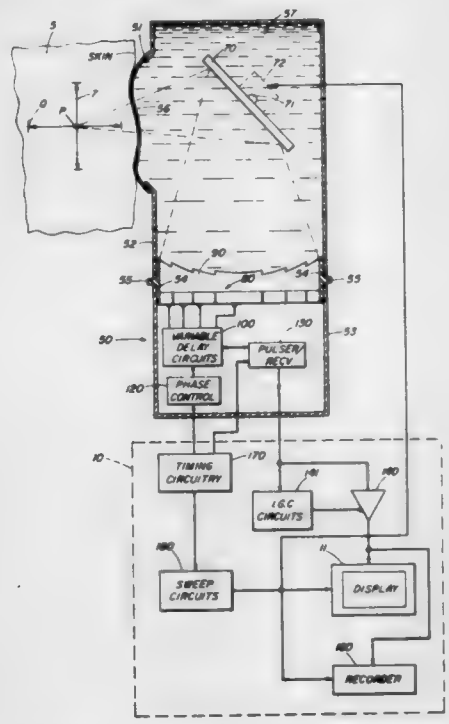
plane is a broken line whilst the back-reflectors are staggered axially and radially so that solar rays reflected directly by said reflectors and reflected a second time by said back-reflectors arrive at the heat-collecting means without being intercepted by another of said reflectors and back-reflectors.

4,084,582

ULTRASONIC IMAGING SYSTEM

Anant K. Nigam, Plantation, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed Mar. 11, 1976, Ser. No. 665,898
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 V **24 Claims**



1. A portable scanning module for use with an ultrasonic apparatus for imaging sections of a body by transmitting ultrasonic energy into the body and determining the characteristics of the ultrasonic energy reflected therefrom, said apparatus including timing means for generating timing signals; an energizer/receiver operative in response to the timing signals; and display/record means synchronized with said timing signals for displaying and/or recording image-representative signals from the energizer/receiver; said portable scanning module comprising:

a fluid-tight enclosure having a scanning window;

transducer means in said enclosure for converting energy

from said energizer/receiver to periodic ultrasonic energy and for converting reflected ultrasonic energy to electrical signals;

a fluid contained in said enclosure, said fluid serving as a transmission medium for ultrasound;

reflective scanning means disposed in said fluid for reflecting ultrasonic energy as between said transducer means and said window; and

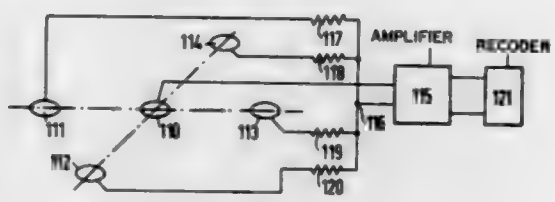
driving means synchronized with said timing signals for moving said scanning means in periodic fashion in said fluid.

4,084,583

METHOD AND APPARATUS FOR MEASURING THE BIOELECTRICAL ACTIVITY UNDER AN ELECTRODE RESTING ON A PATIENT

Bo Hjort, Sollentuna, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 7, 1976, Ser. No. 674,607
Claims priority, application Germany, Apr. 24, 1975, 2518269
Int. Cl.[2] A61B *5/04*
U.S. Cl. 128—2.06 R 5 Claims



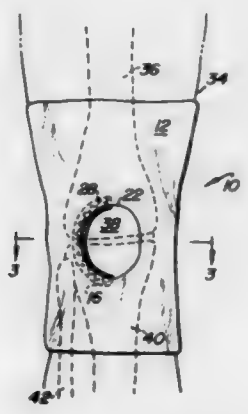
1. A method of measuring the bioelectrical activity occurring in the region under a signal electrode placed on a patient, wherein a plurality of auxiliary electrodes placed on the patient are used, said method comprising producing a mean potential value of the potentials of said auxiliary electrodes, forming a difference value between said mean potential value and the potential of said signal electrode, and supplying said difference value to a recording device, said auxiliary electrodes being exclusively electrodes disposed adjacent said signal electrode, and said auxiliary electrodes being arranged about the signal electrode to form a polygon if connected, with said signal electrode disposed in the center of said polygon.

4,084,584

KNEE SLEEVE

Garnett E. Detty, 525 General Muhlenberg Rd., King of Prussia, Pa. 19406

Filed Oct. 15, 1976, Ser. No. 732,554
Int. Cl.[2] A61F *3/00*
U.S. Cl. 128—80 C 8 Claims



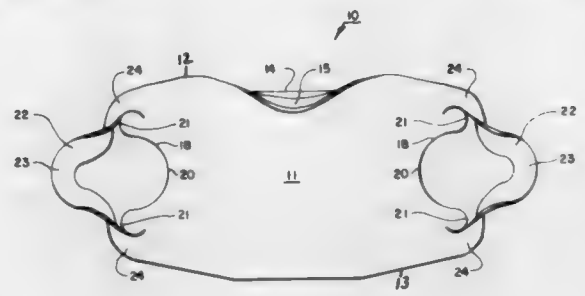
1. A sleeve adapted to be placed over the knee, said sleeve being configured to anotomically conform to the thigh, knee and upper calf, said sleeve comprising a resilient elastomeric foam sheath having a fabric covering, said sheath being formed from two pieces, with a first piece being configured to encircle the knee and sides of the leg in the area of the knee and the second piece being secured to said first piece by a pair of spaced, substantially parallel seams, said seams being on opposite sides of the center of the leg and knee, an opening formed in the front of said sleeve, said opening being adapted to permit the patella to project therethrough when the sleeve is on a user's leg, and restrictor means adjacent said opening, said restrictor means being adapted to bear against the patella and to prevent the patella from moving when the sleeve is on a leg.

4,084,585

FACE MASK

Howard J. Venaleck, 5869 Hillside Dr., Watertown, N.Y. 13601

Filed Jan. 12, 1977, Ser. No. 758,658
Int. Cl.[2] A62B *23/00*
U.S. Cl. 128—146.2 9 Claims



1. A face mask shaped to cover the nose and mouth of the wearer, said face mask comprising:

a. a blank of resilient, foamed resin material having a central region and opposite end regions, each opposite end region of said mask having a slit spaced inward from the end of said mask;

b. each of said slits extending from upper to lower regions of said mask;

c. a central portion of each of said slits being U-shaped and curving inward toward said central region of said mask;

d. said end regions of said mask having a peripheral edge spaced approximately equidistant from said slits so said material between said slits and said ends of said mask has an approximately uniform width and forms a pair of ear loops having U-shaped portions; and

e. said ear loops being bendable in a one-half turn to dispose said U-shaped portions to extend outwardly away from said central region for resiliently looping over the ears of the wearer to hold said mask in place.

4,084,586

TUBULAR SUPPORT FOR ENCLOSING A BODY MEMBER

Lon R. Hettick, 5050 Garford, Long Beach, Calif. 90815

Filed Oct. 13, 1976, Ser. No. 731,616
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—157 15 Claims

1. A tubular support for enclosing a body member, comprising:

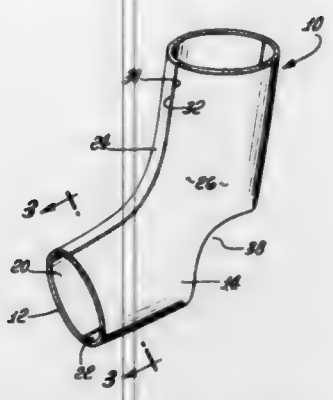
an elastic generally tubular member having an opening for receiving a body member,

said elastic member being stretchable in all directions, and

a facing on the interior surface of said elastic member having a relatively low coefficient of friction,

said facing having the same stretch rate in all directions as

the elastic member and being free of tension when not stretched on the body member,



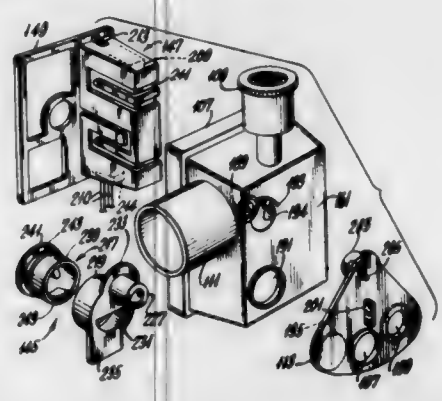
said facing and elastic member having absolute memory and constant equal gripping pressure on all parts of the body member covered and intended to be supported.

4,084,587

FLUID HEATING APPARATUS

Joseph W. Lindsey, Salt Lake City, Utah, assignor to Arbrook, Inc., Arlington, Tex.

Filed Jul. 17, 1975, Ser. No. 596,789
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—193 1 Claim



1. In combination with a medical device including a nebulizer having a venturi-type nozzle and a fluid supply, a fluid heating apparatus, comprising:

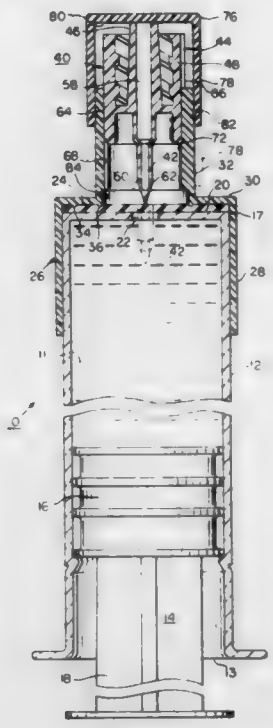
a housing having a chamber provided therein, said chamber having a truncated pyramidal shape and having access openings through the walls thereof connected to said fluid supply and connected to said nozzle; a truncated pyramidal shaped insert positioned in said housing and having situated therewithin a heating element having electrical leads thereto, said heating element including a rectilinearly shaped, wound resistance wire heater element, and a rubber coating material surrounding said heater element, the outer surface of said coating material providing a truncated pyramidal shape and including a relieved channel in the outer surface thereof, said channel traversing said insert surface in rectilinear maze fashion, and forming a passageway from said fluid supply opening to said nozzle opening at the interfacing surfaces of said chamber walls and said insert when said insert is inserted into said chamber in a pressure fit.

4,084,588

PARENTERAL DRUG STORAGE DEVICE WITH CLOSURE PIERCING COUPLING MEMBER

Elmer A. Koenig, Kirkwood, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Mar. 19, 1976, Ser. No. 668,388
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—218 R 27 Claims



1. A parenteral drug storage device comprising a container for receiving the parenteral drug, movable piston means disposed in said container and closing one end thereof, said container having an opening at the opposite end, cap means connected to said opposite end of said container in fixed relation thereto, separate pierceable seal means sealingly closing said opening, and a movable fluid coupling member connected to said cap means having a fluid coupling portion with a luer slip connector at one end thereof adapted for direct contact fluid tight connection with a complementary luer fluid coupling element for passing drug from said container to the complementary coupling element, a seal piercing portion at the opposite end thereof for piercing said seal means, and means connecting said couplng portion in fluid communication with said piercing portion, said fluid coupling member being slidable relative to said cap means from an initial unarmed position to an armed position wherein said piercing portion has pierced said seal means and has moved through said opening to thereby connect said coupling portion in fluid communication with the interior of said container, said piston means being movable toward said opposite end of said container for forcing parenteral drug from said container into said coupling portion.

4,084,589

URINE COLLECTION APPARATUS

Ruth L. Kulvi, 3337 Cockator Rd., Augusta, Ga. 30907

Filed Jun. 7, 1976, Ser. No. 693,648
Int. Cl.[2] A61F *5/44;* A61M *1/00*
U.S. Cl. 128—278 10 Claims

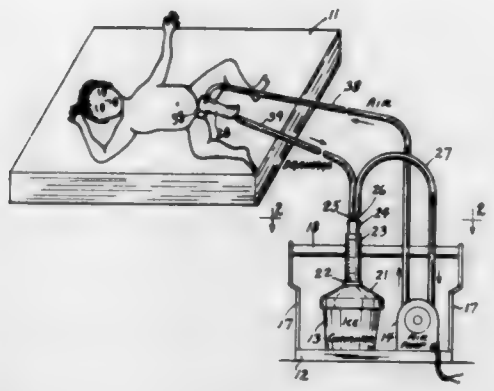
10. A urine collection device particularly adapted for use with children, and for collecting precise quantities of uncontaminated urine, comprising

a bag formed of thin flexible plastic material having a urine-receiving opening at its top end portion, means to adhesively sealingly secure said bag to a patient in a position to receive urine through said opening with the bag sealed to the patient's skin around said opening, said bag having a urine outlet at its lower end and an air inlet opening at its top portion;

urine receiving and measuring means to receive and precisely measure the amount of urine passing into said bag;

drainage conduit means to pass the urine from the urine outlet of said bag to said urine receiving and measuring means;

means to provide air flow to said bag through said air inlet opening to induce flow of urine out of said bag and



through said drainage conduit and to keep the interior of said bag dry, said means comprising an air pump and an air conduit passing from said air pump to the air inlet opening at the top end portion of said bag; and

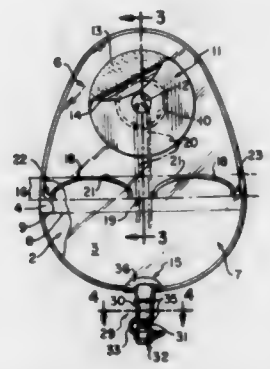
means to cool said urine receiving and measuring means.

4,084,590

STOMA DRAINAGE APPLIANCE

William Russell Caraway, Walnut, Calif., and Clarence Mark Falkingham, Largo, Fla., assignors to Howmedica, Inc., New York, N.Y.

Filed Aug. 18, 1975, Ser. No. 605,553
Int. Cl.[2] A61F *5/44*; A61M *3/00*
U.S. Cl. 128—283 **9 Claims**



1. In a stoma drainage appliance having a pouch with upper and lower sections, the upper section being constructed of four superimposed layers of flexible material defined by two outside sheets and two inside sheets, and the lower section being constructed of two, superimposed layers of flexible material defined by extensions of said outside sheets, all of said layers being sealed to each other about their periphery to form said pouch, the lower edges of the two inside sheets extending freely across the pouch from one peripheral side edge to the other, an inlet opening in the upper section of the pouch communicating with the space between the two inside sheets and through which drainage fluid from the stoma is received, an outlet opening in the lower section of the pouch communicating with the space between the two outside sheets for draining collected fluid from said pouch, and sealing means disposed between said inlet opening and the lower edges of the two inside sheets for sealing said sheets together along a zone spaced from and extending generally along the lower edges to enable said lower edges to function as a valve deterring fluid collected in said lower section from flowing in an upward direction between said two inner sheets and into said upper section, the improvement wherein:

(a) said sealing means is defined by two spaced arcuately shaped seal lines disposed along said zone with the concave sides facing away from said inlet opening and with an unsealed space between the seal lines and an unsealed space between each seal line and the peripheral side edges of the pouch;

(b) the unsealed space between the seal lines is centrally located between the sides of the pouch directly below said inlet opening to provide a direct path between said inlet opening and the lower section of the pouch for passage of drain tubes entering said inlet opening, the convex sides of said seal lines defining arcuate guiding surfaces for guiding the drain tubes entering said inlet opening in a generally straight path through said space and into the lower section of the pouch; and

(c) the seal lines unite the two inside sheets to each other and to the adjacent outside sheets.

4,084,591

WATER DISPERSIBLE ABSORBER FOR BLOOD AND THE LIKE

Toshio Takebe, Ohmiya, and Takashi Yamazaki, Ohtsu, both of Japan, assignors to Eisai Co., Ltd., Japan

Filed Feb. 11, 1976, Ser. No. 657,264
Claims priority, application Japan, Feb. 14, 1975, 50-17969
Int. Cl.[2] A61F *13/20*
U.S. Cl. 128—285 **8 Claims**

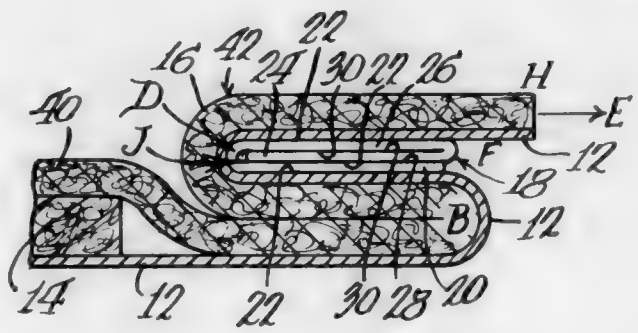
1. A soft vaginal tampon for the absorption of menstrual blood, which comprises a filamentary material of a one to three carbon alkyl or a one to three carbon hydroxyalkyl substituted cellulose ether having thermogelation properties in water which material is substantially water soluble at room temperature yet is substantially insoluble in menstural blood at body temperature, and which maintains its softness without immediately dissolving after absorbing menstural blood in the vagina.

4,084,592

DISPOSABLE PREFOLDED DIAPER WITH PERMANENTLY ATTACHED ADHESIVE CLOSURE SYSTEM

Ludwig Tritsch, Wilmette, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 8, 1975, Ser. No. 539,554
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—287 **12 Claims**



1. A disposable diaper, comprising:

an absorbent pad assembly having a front surface, a back surface, a pair of side edges, a longitudinally extending central panel, and panel means overlying the front surface of the central panel adjacent its sides, said panel means including a pair of longitudinally extending outermost panels defining the side edges of the pad assembly;

a pair of pressure-sensitive tape strips having a first portion fixedly secured to the back surface of said outermost panels adjacent the side edges of the pad assembly and a second securement portion extending from an end of the first portions adjacent the side edges of the pad assembly for use in securing the diaper about an infant during placement of the diaper; and

release sheet means positioned on the pad assembly at a location on another panel to cover adhesive on the securement portions of the strips, said securement portions of the

strips being attached to the release sheet means to retain the outermost pleats in their overlying relationship prior to placement of the diaper.

4,084,593

BLADDER TRAINING APPARATUS

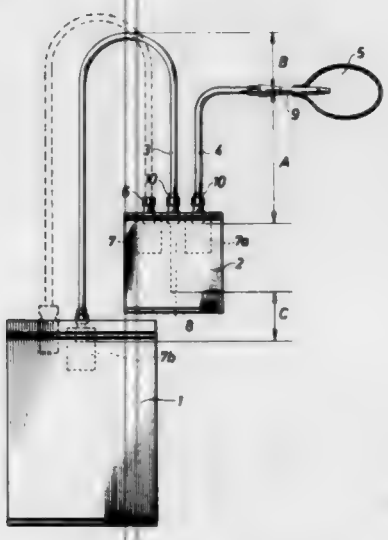
Harry Sigurd Valdemar Järund, Lund, Sweden, assignor to Jarund Develio AB, Fjallbacka, Sweden

Filed Apr. 12, 1976, Ser. No. 676,144

Claims priority, application Sweden, Apr. 15, 1975, 7504312; Jul. 16, 1975, 7508120

Int. Cl.[2] A61F *5/44*

U.S. Cl. 128—295 **13 Claims**



1. Apparatus for continuously emptying the urine bladder while at the same time training the bladder of an incontinent patient, comprising a pressure chamber locatable below the bladder and having an inlet at its upper end connectable to said bladder, a collecting container connected to said pressure chamber and located below said pressure chamber, the connection between the pressure chamber and the collecting container being formed as a pipette to permit filling of said pressure chamber to a predetermined level, and force the air therein to escape through said inlet to achieve a gradual pressure increase in the bladder resulting in expansion thereof, followed by automatic emptying of bladder and pressure chamber resulting in a contraction of the urine bladder, and uni-directional valve means arranged in association with said pressure chamber to permit air to be introduced therein to equalize the partial vacuum occuring within said chamber after emptying.

4,084,594

SURGICAL INSTRUMENT AND HANDLE ASSEMBLY THEREFOR

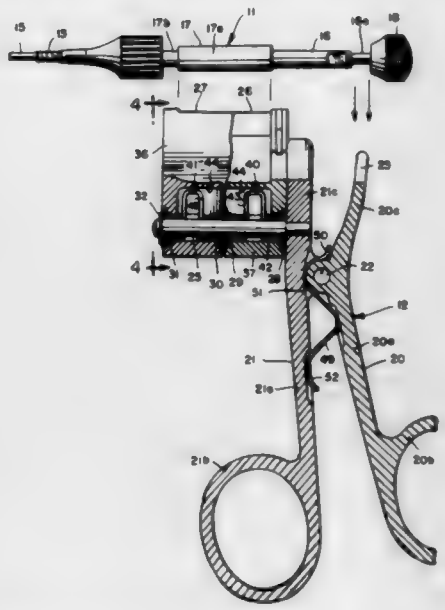
Donald J. Mosior, Mundelein, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 8, 1976, Ser. No. 730,870

Int. Cl.[2] A61B *17/32*

U.S. Cl. 128—311 **28 Claims**

18. In combination, a surgical instrument having an elongated sheath with distal and proximal ends, a jaw assembly at the sheath's distal end, a housing at the sheath's proximal end, an operating rod extending through said sheath and distally connected to said jaw assembly for operating the same, and a plunger connected to said rod within said housing and having a stem projecting axially from said housing, and a handle assembly engagable with and disengagable from said instrument for operating the same, said handle assembly comprising a pair of vertically extending handles pivotally connected to each other by pivot means having a horizontally-extending pivot axis, said handles having finger-gripping portions disposed below the pivot means and stem-engaging portions projecting above said pivot means, one of said handles having a support shaft projecting away from the other of said handles, and a pair of wing lock members pivotally mounted upon said shaft, said wing lock members having upper clamping portions disposed above said shaft and wing portions projecting below said shaft, said clamping portions having complementary recesses together defining a bore receiving said housing of said instrument, spring means urging said wing lock members into closed positions wherein said housing is clamped within said bore and said wing portions are spaced apart, said wing lock members being pivotal into open positions for releasing said instrument housing by manually squeezing said wing portions together to overcome the force of said spring means.



4,084,595

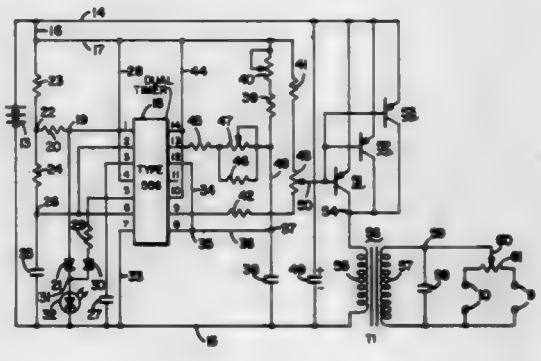
TRANSCUTANEOUS NERVE STIMULATOR

Curtis H. Miller, Burnsville, Minn., assignor to Med General, Inc., Minneapolis, Minn.

Filed Jul. 15, 1976, Ser. No. 705,677

Int. Cl.[2] A61N *1/36*

U.S. Cl. 128—422 **7 Claims**



1. A transcutaneous nerve stimulator comprising in combination:

(a) an astable multivibrator having a first resistance/capacitance timing circuit for controlling the frequency of the output pulses produced by said astable multivibrator and a second resistance/capacitance timing circuit for controlling the pulse width of said output pulses;

(b) semiconductor current control means coupled by variable impedance means to receive said output pulses from said multivibrator;

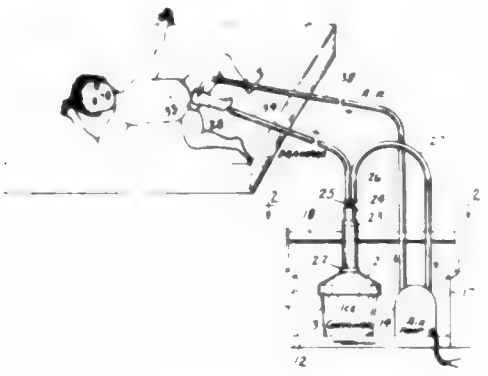
(c) a source of direct current voltage connected to said multivibrator, said first and second resistance/capacitance circuits and to said semiconductor current control means;

(d) a transformer having a primary winding connected in series with said semiconductor current control means, the series combination being connected across said source of direct current voltage, and a secondary winding;

(e) means coupling said secondary winding to first and sec-

outlet of said bag to said urine receiving and measuring means;

means to provide air flow to said bag through said air inlet opening to induce flow of urine out of said bag and



through said drainage conduit and to keep the interior of said bag dry, said means comprising an air pump and an air conduit passing from said air pump to the air inlet opening at the top end portion of said bag; and

means to cool said urine receiving and measuring means.

4,084,590

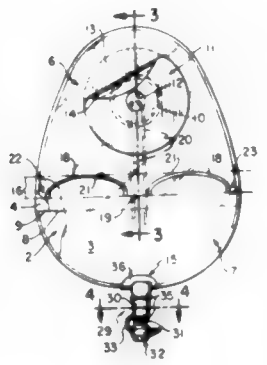
STOMA DRAINAGE APPLIANCE

William Russell Caraway, Walnut, Calif., and Clarence Mark Falkingham, Largo, Fla., assignors to Howmedica, Inc., New York, N.Y.

Filed Aug. 18, 1975, Ser. No. 605,553

Int. Cl.[2] A61F *5/44;* **A61M** *3/00*

U.S. Cl. 128—283 **9 Claims**



1. In a stoma drainage appliance having a pouch with upper and lower sections, the upper section being constructed of four superimposed layers of flexible material defined by two outside sheets and two inside sheets, and the lower section being constructed of two, superimposed layers of flexible material defined by extensions of said outside sheets, all of said layers being sealed to each other about their periphery to form said pouch, the lower edges of the two inside sheets extending freely across the pouch from one peripheral side edge to the other, an inlet opening in the upper section of the pouch communicating with the space between the two inside sheets and through which drainage fluid from the stoma is received, an outlet opening in the lower section of the pouch communicating with the space between the two outside sheets for draining collected fluid from said pouch, and sealing means disposed between said inlet opening and the lower edges of the two inside sheets for sealing said sheets together along a zone spaced from and extending generally along the lower edges to enable said lower edges to function as a valve deterring fluid collected in said lower section from flowing in an upward direction between said two inner sheets and into said upper section, the improvement wherein:

(a) said sealing means is defined by two spaced arcuately shaped seal lines disposed along said zone with the concave sides facing away from said inlet opening and with an space between each seal line and the peripheral side edges of the pouch;

(b) the unsealed space between the seal lines is centrally located between the sides of the pouch directly below said inlet opening to provide a direct path between said inlet opening and the lower section of the pouch for passage of drain tubes entering said inlet opening, the convex sides of said seal lines defining arcuate guiding surfaces for guiding the drain tubes entering said inlet opening in a generally straight path through said space and into the lower section of the pouch; and

(c) the seal lines unite the two inside sheets to each other and to the adjacent outside sheets.

4,084,591

WATER DISPERSIBLE ABSORBER FOR BLOOD AND THE LIKE

Toshio Takebe, Ohmiya, and Takashi Yamazaki, Ohtsu, both of Japan, assignors to Eisai Co., Ltd., Japan

Filed Feb. 11, 1976, Ser. No. 657,264

Claims priority, application Japan, Feb. 14, 1975, 50-17969

Int. Cl.[2] A61F *13/20*

U.S. Cl. 128—285 **8 Claims**

1. A soft vaginal tampon for the absorption of menstrual blood, which comprises a filamentary material of a one to three carbon alkyl or a one to three carbon hydroxyalkyl substituted cellulose ether having thermogelation properties in water which material is substantially water soluble at room temperature yet is substantially insoluble in menstural blood at body temperature, and which maintains its softness without immediately dissolving after absorbing menstural blood in the vagina.

4,084,592

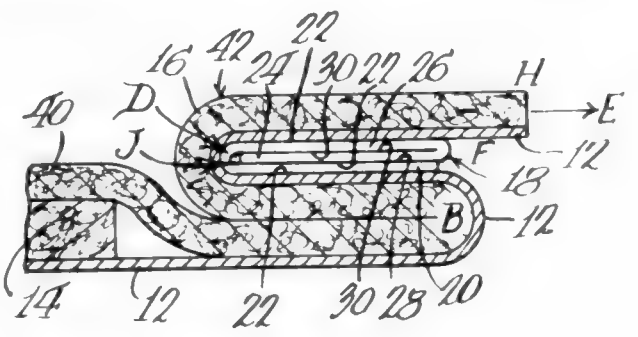
DISPOSABLE PREFOLDED DIAPER WITH PERMANENTLY ATTACHED ADHESIVE CLOSURE SYSTEM

Ludwig Tritsch, Wilmette, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 8, 1975, Ser. No. 539,554

Int. Cl.[2] A61F *13/16*

U.S. Cl. 128—287 **12 Claims**



1. A disposable diaper, comprising:

an absorbent pad assembly having a front surface, a back surface, a pair of side edges, a longitudinally extending central panel, and panel means overlying the front surface of the central panel adjacent its sides, said panel means including a pair of longitudinally extending outermost panels defining the side edges of the pad assembly;

a pair of pressure-sensitive tape strips having a first portion fixedly secured to the back surface of said outermost panels adjacent the side edges of the pad assembly and a second securement portion extending from an end of the first portions adjacent the side edges of the pad assembly for use in securing the diaper about an infant during placement of the diaper; and

release sheet means positioned on the pad assembly at a location on another panel to cover adhesive on the securement portions of the strips, said securement portions of the

the outermost pleats in their overlying relationship prior to placement of the diaper.

4,084,593

BLADDER TRAINING APPARATUS

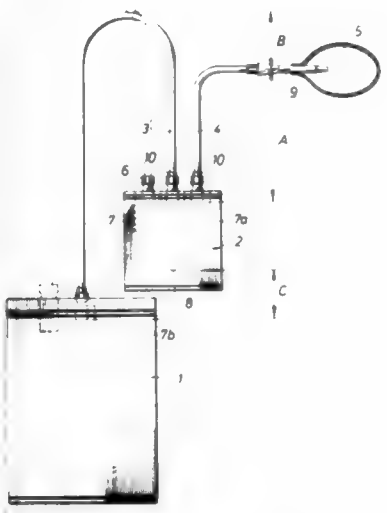
Harry Sigurd Valdemar Järund, Lund, Sweden, assignor to Jarund Develio AB, Fjallbacka, Sweden

Filed Apr. 12, 1976, Ser. No. 676,144

Claims priority, application Sweden, Apr. 15, 1975, 7504312; Jul. 16, 1975, 7508120

Int. Cl.[2] A61F *5/44*

U.S. Cl. 128—295 13 Claims



1. Apparatus for continuously emptying the urine bladder while at the same time training the bladder of an incontinent patient, comprising a pressure chamber locatable below the bladder and having an inlet at its upper end connectable to said bladder, a collecting container connected to said pressure chamber and located below said pressure chamber, the connection between the pressure chamber and the collecting container being formed as a pipette to permit filling of said pressure chamber to a predetermined level, and force the air therein to escape through said inlet to achieve a gradual pressure increase in the bladder resulting in expansion thereof, followed by automatic emptying of bladder and pressure chamber resulting in a contraction of the urine bladder, and uni-directional valve means arranged in association with said pressure chamber to permit air to be introduced therein to equalize the partial vacuum occuring within said chamber after emptying.

4,084,594

SURGICAL INSTRUMENT AND HANDLE ASSEMBLY THEREFOR

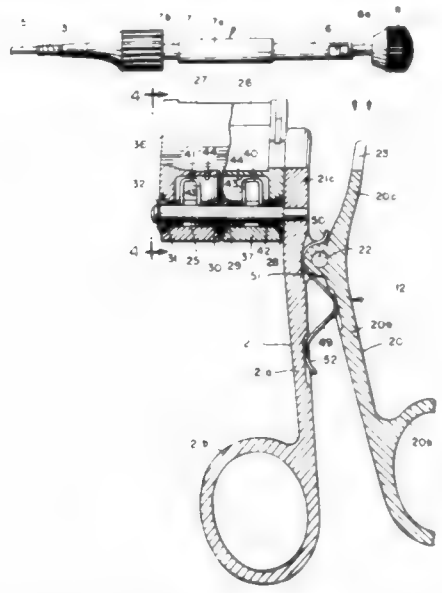
Donald J. Mosior, Mundelein, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 8, 1976, Ser. No. 730,870

Int. Cl.[2] A61B *17/32*

U.S. Cl. 128—311 28 Claims

18. In combination, a surgical instrument having an elongated sheath with distal and proximal ends, a jaw assembly at the sheath's distal end, a housing at the sheath's proximal end, an operating rod extending through said sheath and distally connected to said jaw assembly for operating the same, and a plunger connected to said rod within said housing and having a stem projecting axially from said housing, and a handle assembly engagable with and disengagable from said instrument for operating the same, said handle assembly comprising a pair of vertically extending handles pivotally connected to each other by pivot means having a horizontally-extending pivot axis, said handles having finger-gripping portions disposed below the pivot means and stem-engaging portions projecting above said pivot means, one of said handles having a support shaft projecting away from the other of said handles, and a pair wing lock members having upper clamping portions disposed above said shaft and wing portions projecting below said shaft, said clamping portions having complementary recesses together defining a bore receiving said housing of said instrument, spring means urging said wing lock members into closed positions wherein said housing is clamped within said bore and said wing portions are spaced apart, said wing lock members being pivotal into open positions for releasing said instrument housing by manually squeezing said wing portions together to overcome the force of said spring means.



4,084,595

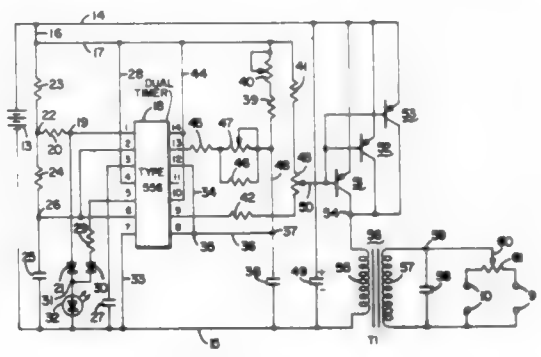
TRANSCUTANEOUS NERVE STIMULATOR

Curtis H. Miller, Burnsville, Minn., assignor to Med General, Inc., Minneapolis, Minn.

Filed Jul. 15, 1976, Ser. No. 705,677

Int. Cl.[2] A61N *1/36*

U.S. Cl. 128—422 7 Claims



1. A transcutaneous nerve stimulator comprising in combination:

(a) an astable multivibrator having a first resistance/capacitance timing circuit for controlling the frequency of the output pulses produced by said astable multivibrator and a second resistance/capacitance timing circuit for controlling the pulse width of said output pulses;

(b) semiconductor current control means coupled by variable impedance means to receive said output pulses from said multivibrator;

(c) a source of direct current voltage connected to said multivibrator, said first and second resistance/capacitance circuits and to said semiconductor current control means;

(d) a transformer having a primary winding connected in series with said semiconductor current control means, the series combination being connected across said source of direct current voltage, and a secondary winding;

(e) means coupling said secondary winding to first and sec-

ond pairs of output terminals to which stimulator electrodes may be connected;
(f) a third resistance/capacitance timing circuit connected across said source of direct current voltage;
(g) a voltage divider connected to said source of direct current voltage for sensing the magnitude thereof;
(h) indicating means connected to said voltage divider; and
(i) a second astable multivibrator energized by said source of direct current voltage having an output terminal coupled to said indicating means and a trigger terminal connected to said third resistance/capacitance timing network, whereby said indicating means is continously energized when the magnitude of said direct current voltage is above a predetermined level and is alternately energized and deenergized when the magnitude of said direct current voltage drops said predetermined level, at a rate determined by said third resistance/capacitance timing circuit.

4,084,596

BODY OF TOBACCO WITH A DEPOSIT OF PARTICLES ADDED THERETO

Harold Groesman, Silver Spring, Md., assignor to Montclair Research Corporation, Silver Spring, Md.

Division of Ser. No. 479,103, Jun. 13, 1974, abandoned. This application Jul. 20, 1976, Ser. No. 707,071
Int. Cl.² A24B *15/02*
U.S. Cl. 131—17 R **3 Claims**

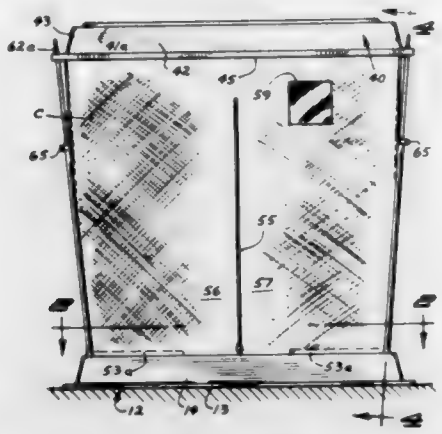
1. A body of divided tobacco to be burned, the tobacco having a deposit thereon of particles of a water-insoluble, hydrophobic, moisture-laden substance which releases moisture upon the burning of the tobacco, the major ingredient of the substance being water.

4,084,597

FISH HOUSE

Richard B. Compton, Rte. 3, E. River Dr., Cambridge, Minn. 55008

Filed Oct. 18, 1976, Ser. No. 733,318
Int. Cl.² A45F *1/16*
U.S. Cl. 135—1 R **1 Claim**



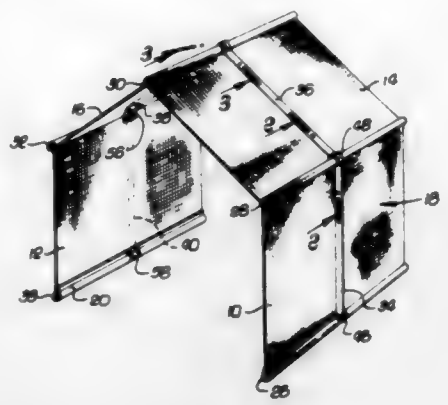
1. A fish house comprising a base having a floor and walls joined to the floor to extend over the floor in surrounding relationship thereto, a roof of a size and shape to have the base nestingly extended thereinto, the roof being of sufficient rigidity to normally maintain a preselected shape, and means extending between the roof and the base to support the roof in an elevated condition relative the base and in conjunction with the roof and base define an openable chamber, the base walls including interior front, rear and side walls joined to said floor to extend upwardly and horizontally outwardly thereof, a top perimetric flange joined to the interior walls to extend outwardly thereof at a substantially higher elevation than the floor, an exterior perimetric wall joined to the top perimetric flange to extend downwardly and outwardly thereof, said exterior wall having a lower edge, and a base perimetric flange joined to the exterior wall lower edge to extend generally horizontally outwardly thereof, the roof including a top roof wall of a size and shape to completely overhang the base top flange, said roof top wall having a peripheral outer edge, a perimetric roof wall having a lower peripheral outer edge and being joined to the roof top wall peripheral outer edge to extend downwardly and outwardly thereof, and a lower perimetric roof portion joined to the perimetric roof wall peripheral edge, each of the base top flange and the roof lower portion being rectangular and defining a rectangular opening, the maximum length and width dimensions of the base top flange being substantially smaller than the corresponding dimensions of the roof lower portion opening, each of the roof lower portion and the base top flange having a plurality of pole openings, and the above mentioned means including a plurality of poles removably mounted in the pole openings for supporting the roof in an elevated condition relative to the base, and collapsible means having a upper peripheral edge attached to the roof lower portion and a lower peripheral edge mounted on the base top flange for acting in cooperation with the roof and base to enclose an occupant chamber, said collapsible means having means forming a closable entry.

4,084,598

LINKED COLLAPSIBLE SHELTER STRUCTURE

Orman M. Rainwater, 947-½ N. Wilcox Ave., Los Angeles, Calif. 90038

Filed Sep. 30, 1976, Ser. No. 728,181
Int. Cl.² A45F *1/16*
U.S. Cl. 135—3 E **4 Claims**



1. In a collapsible shelter structure:
a. a resilient stretchable webbing having a plurality of transverse pockets spaced along the length of the webbing and dividing the webbing into a series of panels, each pocket being at least partially discontinuous at its midlength position to provide an opening on the outside of said shelter;
b. a corresponding plurality of tubular bars or poles accommodated in the pockets, there being two end bars for the pockets at the ends of the webbing and intermediate bars for the other pockets, the intermediate bars or poles having a circular cross-sectional configuration;
c. a corresponding plurality of links, each of the links having a hub journalled at the center of the corresponding bars in alignment with the opening of the corresponding pocket;
d. each of the links for the intermediate bars or poles having rigidly connected to its corresponding hub, a pair of angularly spaced pins projecting radially therefrom in substantially coplanar relationship on the outside of said shelter;
e. each of the links for the end bars or poles having rigidly connected to its corresponding hub, a single pin projecting radially therefrom on the outside of shelter;
f. a plurality of tubular struts on the outside of said shelter having opposite ends telescoped over pins of links for adjacent poles or bars to hold said poles or bars apart with the webbing taut; said struts being of fixed length and movable into connected relationship with said pins one after the other, the connection to the second connector

element being established by stretching the webbing until the telescopic connection is made; and

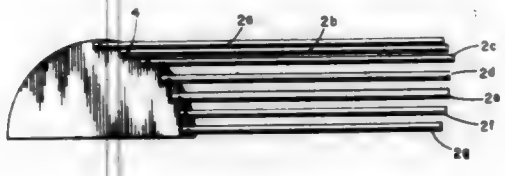
g. the angular spacing of the pins of said intermediate links determining the angularity between adjacent panels and, thereby, the angular orientation of all panels of said shelter structure.

4,084,599

COLLAPSIBLE TEMPORARY OUTDOOR ENCLOSURE

Billy H. Matthews, 2659 Heritage Cir., Las Vegas, Nev. 89121

Filed Nov. 22, 1976, Ser. No. 743,866
Int. Cl.² A45F *1/16*
U.S. Cl. 135—4 R **17 Claims**



1. A collapsible shelter comprising:

a pair of spaced base members;

a plurality of shaped struts spanning between said base members, said struts mounted at hinge points on said base members for swinging movement between a collapsed position and an erected position, said hinge points arranged in an arcuate pattern on each base member along a line extending from adjacent the bottom edge of said base member upward and curving through an arc of approximately 90°;

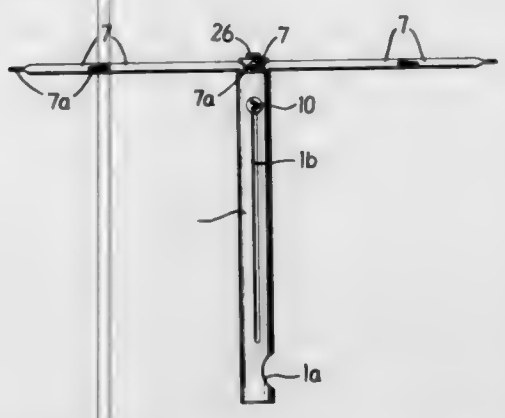
a sheet of flexible material supported on said plurality of shaped struts, so that when said struts are in said collapsed position all of said struts lie horizontally on top of one another and generally parallel to one another with the sheet folded therewith, and when said struts are in said erected position they assume a fan-like relationship, extending radially outward from said base members, and said sheet is stretched across said struts to provide a shelter in accordance with the shapes of said struts.

4,084,600

UMBRELLA

Harry Rudolph dePolo, 480 Park Ave., New York, N.Y. 10022

Filed May 12, 1977, Ser. No. 796,439
Int. Cl.² A45B *11/00, 15/00, 19/00*
U.S. Cl. 135—20 R **10 Claims**



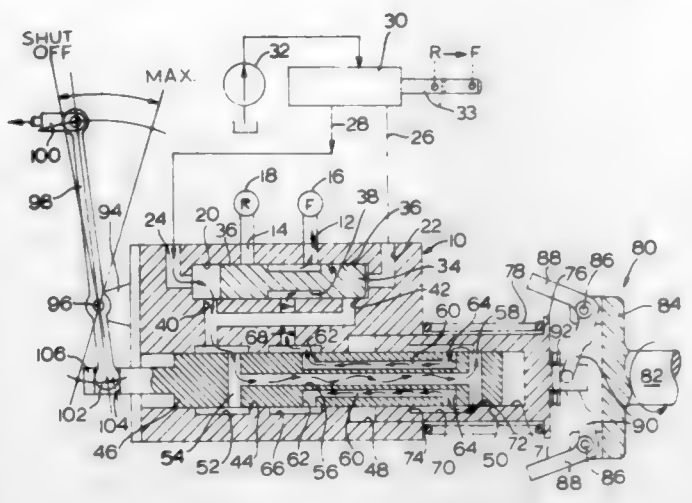
1. An umbrella comprising an elongate tubular shaft having upper and lower ends and having a longitudinally extending slot between said ends, rib carrier means longitudinally movable in said shaft, a plurality of elongate rib members having inner and outer ends, means pivotally connecting said rib members near their inner ends to said rib carrier means, means fixed to said rib carrier means and projecting out through said slot in said shaft for moving said rib carrier means longitudinally in said shaft between a closed position in which said rib carrier means is near the lower end of said shaft and said rib members are in said shaft and an open condition in which said rib carrier means is at the upper end of said shaft and said rib members radiate from said rib carrier means, latch means for releasably securing said rib carrier means in said open and closed positions, locking means on said rib carrier means for retaining said rib members approximately normal to said shaft when in open position, a flexible fabric cover secured at its center to said rib carrier means and at its periphery to outer ends of said rib members, said cover overlying and being supported by said rib members when in open position and being drawn down into said shaft with said rib members when said rib carrier means is moved to closed position.

4,084,601

SPEED CONTROL VALVE FOR A FLUID OPERATED CLUTCH

Harold E. Rowen, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 13, 1976, Ser. No. 731,967
Int. Cl.² G05D *13/34*
U.S. Cl. 137—49 **6 Claims**



1. A control valve for a fluid operated clutch or the like, comprising:

a valve body having an inlet and an outlet;

a first valve mounted for reciprocation in said body;

a second valve mounted for reciprocation in said body and relative to said first valve;

one of said valves being concentrically disposed on an end of the other of said valves and having an internal groove;

axial passages in said other valve and opening to said groove to define a throttling port at the interface of said valves and to said inlet and said outlet;

a manual actuator for reciprocally shifting one of said valves; and

a rotatable flyweight assembly for reciprocally shifting the other of said valves.

4,084,602

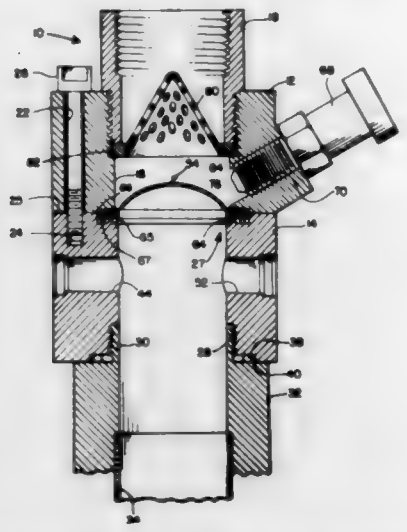
EXPLOSION DISCHARGE VALVE

Kenneth C. Cook, Walnut Creek, Calif., assignor to Systron-Donner Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 637,582, Dec. 4, 1975, Pat. No. 4,046,156. This application Oct. 26, 1976, Ser. No. 735,159
Int. Cl.² F16K *17/40*
U.S. Cl. 137—68 A **2 Claims**

1. A valve for discharging pressurized fire extinguisher fluid from a container, including the combination of a valve housing formed with a flow passage, said housing including a valve body adapted for connection with plumbing for distributing the fluid to a remote zone, a manifold body adapted for connection with said container and communicating with the fluid therein, means forming annular flat surfaces on the facing ends of the respective valve body and manifold body to form metal-

to-metal connection at the interface therebetween, means forming an annular recess in said facing end of the manifold body, means forming an annular knife edge in the recess about the passage with the edge pointed toward the valve body, the apex of the edge lying in a plane within the recess and under the plane of the facing end of the manifold body for protecting the knife edge against damage such as during assembly of the valve or during replacement of the diaphragm, a diaphragm in the valve body mounted across the passage for normally occluding flow therethrough, said diaphragm including a peripheral rim which is mounted in the recess, an elastomeric ring disposed in the recess about the knife edge seal with the ring compressed into sealing contact between the diaphragm rim and manifold body when the latter are mounted together by fastener means, and releasable fastener means for mounting the valve body and manifold body together at their interface and for compressing the diaphragm rim into sealing engagement about the knife edge.

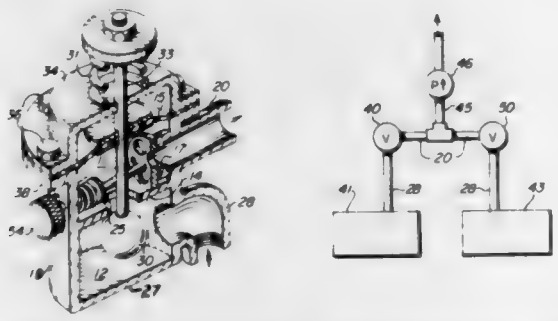


4,084,603

FLUID-BLENDING SYSTEM

Charles W. Howard, San Dimas, Calif., assignor to Early California Industries, Inc., Los Angeles, Calif.

Filed Oct. 18, 1976, Ser. No. 733,439
Int. Cl.[2] G05D *11/03*
U.S. Cl. 137—88 **10 Claims**



1. A blender for maintaining a pre-established ratio of a plurality of fluids supplied thereto in an output thereof including, in combination:

an output conduit;

at least first and second fluid supply chambers, each having an outlet orifice coupled in common with said output supply conduit, the ratio of the sizes of said outlet orifices establishing the ratio of fluids in the output conduit of the blender, and each of said chambers having an inlet orifice for connection with a supply of fluid;

first and second valve means biased for normally closing said first and second inlet orifices, respectively and capable of opening in various amounts to permit varying amounts of fluid to pass therethrough; and

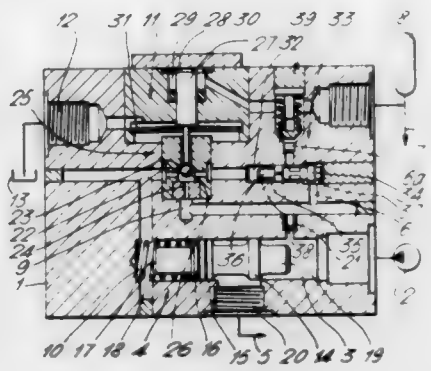
first and second valve control means mounted in said first and second chambers, respectively, said valve control means responsive to fluid demand in said output conduit and coupled with said first and second valve means, respectively, for controlling the amount of opening thereof in accordance with such fluid demand.

4,084,604

PRESSURE RESPONSIVE DISTRIBUTING VALVE

Ludwig Budecker, Frankfurt, and Klaus Winter, Schwalbach, both of Germany, assignors to ITT Industries, Incorporated, New York, N.Y.

Filed Sep. 13, 1976, Ser. No. 722,446
Int. Cl.[2] G05D *15/00*
U.S. Cl. 137—101 **15 Claims**



1. A pressure responsive distributing valve means for distributing fluid under pressure delivered by a source of fluid pressure from an inlet port portion to outlet port portions for at least first and second user components, through at least first and second lines, one of said user components having an accumulator associated therewith, said distributing valve means including:

a control valve means disposed in said first line connecting said source of fluid pressure with said first user component, said control valve governing the cross-sectional area of the passageway provided by said first line, said control valve including a control chamber and means for reducing the cross-sectional area of the flow of fluid through said first line when said control chamber is in communication with said source through a separate line and for increasing said cross-sectional area when said control chamber is in communication with a return line;

a dual seat pilot and/or stop valve means whose position is dependent upon the pressure at said second user component including pilot valve dual seat closure means in a valve chamber, said pilot and/or stop valve means connecting said source to said control chamber for providing communication through said separate line between said control chamber and said source below a predetermined switching pressure existing at said second user component when said pilot and/or stop valve closure means is in a first position and for connecting said control chamber with said return line when said switching pressure is exceeded and said pilot valve closure means is in a second position; and

means associated with said second line for connecting said source with a second user component when said control chamber is in communication with said return line.

4,084,605

ADDITIVE METERING SYSTEM USING A CENTRIFUGAL PUMP

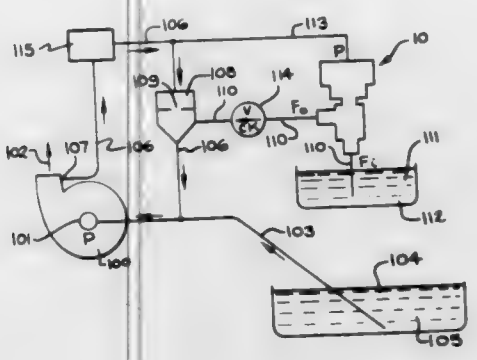
Norman C. Franz, 4665 West Tenth Ave., Vancouver, British Columbia, Canada

Filed Aug. 2, 1976, Ser. No. 711,090
Int. Cl.[2] G05D *11/00*
U.S. Cl. 137—101.11 **6 Claims**

1. An additive metering system for dispersing a viscous fluid into a less viscous fluid which comprises:

(a) a centrifugal pump having a suction inlet and at least one discharge outlet stage;

(b) a first conduit connected to the suction inlet for intake of a less viscous fluid to which an additive viscous fluid is to be mixed;
(c) a second conduit connected between the suction inlet and an outlet stage of the centrifugal pump;
(d) a venturi mixer with an upstream and downstream side between the venturi provided in the second conduit such that fluid flow is towards the first conduit;
(e) a third conduit connected into the downstream side of the venturi and adapted to draw fluid from a supply of a viscous fluid;



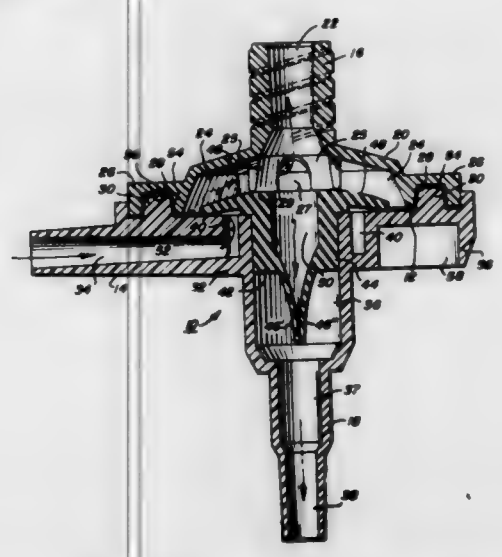
(f) a fluid pressure responsive valve in the third conduit adapted for metering decreasing or increasing amounts of a viscous fluid in inverse relation to the pressure on a fluid pressure responsive means which moves a linearly slideable needle valve having a point taper angle between about 1° and 20° into an orifice for constricting fluid flow through the valve; and
(g) a forth conduit connected between a pump outlet stage and the fluid pressure responsive means in the pressure responsive valve.

4,084,606

FLUID TRANSFER DEVICE

Herbert Mittleman, Deerfield, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 23, 1974, Ser. No. 463,221
Int. Cl. G05d *9/00*
U.S. Cl. 137—102 **7 Claims**



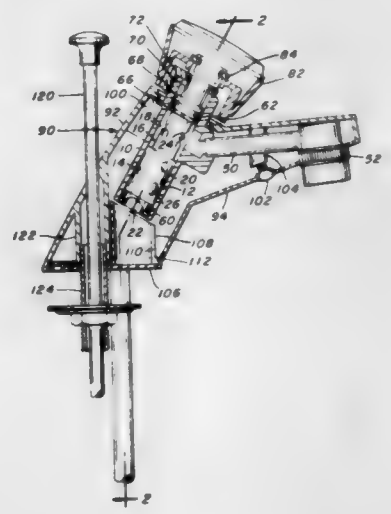
1. A fluid transfer device for the transfer of medical solution which comprises:
a housing including a first inlet for coupling to the medical solution, a second inlet the axis of which is at an angle with respect to the axis of said first inlet for coupling to pump means, and an outlet;
said housing defining a first fluid flow path between said first and second inlets;
said housing defining a second fluid flow path between said second inlet and said outlet;
an umbrella valve comprising a tubular body portion, a resilient normally closed outlet portion and a resilient umbrella portion;
said umbrella valve being interposed in both said first and second flow paths;
said tubular body portion and said resilient outlet portion being located in said second flow path to permit flow under pressure from said second inlet to said outlet but to block flow from said outlet to said first and second inlets, and said resilient umbrella portion being located in said first flow path to permit flow from the first inlet to said second inlet but to block flow from said second inlet to said first inlet;
means for coupling said second inlet to pump means, said coupling means being constructed to space the pump means from said umbrella portion so that contact between said umbrella portion and the pump means is prevented;
said housing having an extending member which rests upon said umbrella portion on the side of said umbrella portion that is toward said second inlet.

4,084,607

LEAKAGE DRAIN FOR SINGLE LEVER CONTROL VALVE

Russell Bruce Fagert, Morgantown, W. Va., and John Louis Fogle, Lanaconing, Md., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 585,941, Jun. 11, 1975, abandoned.
This application May 17, 1976, Ser. No. 686,981
Int. Cl.[2] **F16K** *11/02, 51/00*
U.S. Cl. 137—312 **4 Claims**



1. A valve adapted to be mounted on a deck comprising a body having a bore open at least at one end, inlet and outlet ports in said body communicating with said bore, a closure member mounted for movement in said bore between a closed position where flow between said inlet and outlet ports is blocked and an open position where said inlet and outlet ports are in communication with each other, a base member adapted to be mounted on said deck beneath said body, conduit means formed integrally on said base member directly beneath said one end of said bore for conducting fluid leakage between said bore and said closure member away from the vicinity of said one end of said bore.

4,084,608

COCKS HAVING ROTATING VALVES AND SLIDING SEATS

Raymond A. Laignel, Ginestas, and Patrick F. Mommeja, Arles, both of France, assignors to Constructions Metalliques de Provence, Levallois-Perret, France

Filed Jul. 1, 1976, Ser. No. 701,816
Int. Cl.[2] **F16K** *43/00*
U.S. Cl. 137—316 **3 Claims**

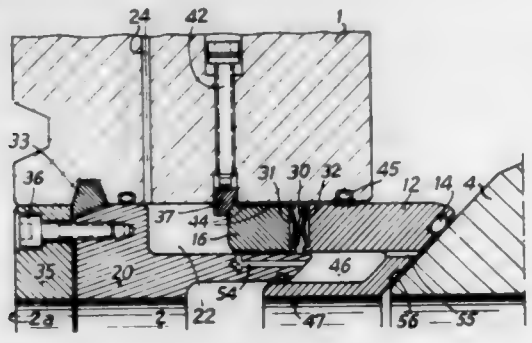
1. A cock having a rotating valve and consisting of:
a body defining a central chamber with cylindrical ducts for

the passage of fluid, each duct having an axis and two opposing ends including a first end opening to the outside of the body and a second end opening into said chamber;

a valve rotating about an axis which is located within said chamber, and through which a bore passes from one end to the other;

annular seats carrying seals co-operating with said valve, each of the said seats being located near the second end of one of said ducts, coaxially therewith, and adapted to slide axially within said duct;

an annular piston associated with each seat, but separate therefrom, said piston being accommodated in an annular space coaxial with said seat and located therebehind, on the opposite side of the valve;



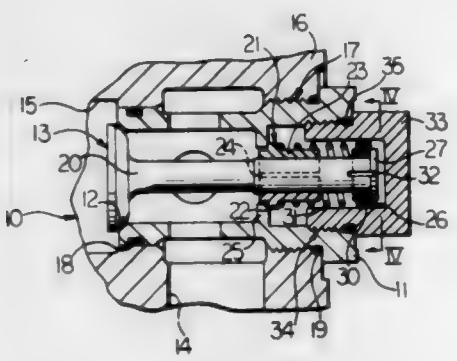
hydraulic means for displacing said pistons axially, including hydraulic means for pushing each of said annular pistons towards the seat with which it is associated, into a position such that the seat is applied to the valve; and mechanical means for locking said annular piston in this position; said body of the cock having a groove formed therein at the periphery of each of said fluid passage ducts; a split ring located in said groove; threaded holes drilled through said body and having two opposed ends including a first end opening at the external periphery of the body and a second end opening into said groove; and a screw in each of said threaded holes bearing against the external surface of said split ring when it is screwed into said hole.

4,084,609

CARTRIDGE TYPE CHECK VALVE

Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 17, 1976, Ser. No. 724,145
Int. Cl.[2] F16K *43/00*
U.S. Cl. 137—327 **11 Claims**



1. A valve comprising

a housing defining a valve seat thereon,

a valve member movably mounted in said housing and normally engaging said seat for blocking fluid flow therepast,

stop means on said valve member,

spring means mounted on said valve member for biasing said valve member into its normal engagement with said seat,

semi-annular retaining means mounted on said valve member and disposed between said stop means and said spring means for retaining said spring means on said valve member, and

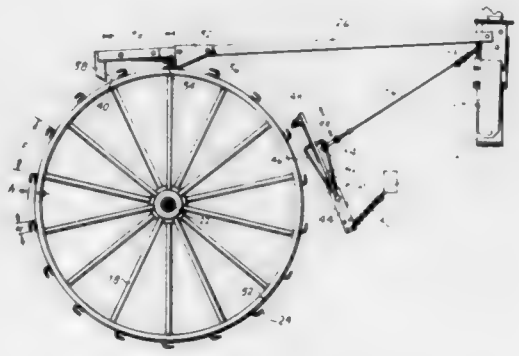
slot means formed through said stop means and in said valve member to expose said spring means whereby insertion of a tool in said slot means will compress said spring means to facilitate installation or removal of said retaining means.

4,084,610

TWO-STEP ROLL AHEAD IRRIGATION SYSTEM

Ralph D. Boone, and Charles Griffin, both of 6020 N. Prince, Clovis, N. Mex. 88101

Filed Oct. 27, 1976, Ser. No. 735,882
Int. Cl.[2] B05B *3/18*
U.S. Cl. 137—1 **15 Claims**



1. In an agricultural irrigation system having

a. an elongated pipe adapted to carry a plurality of sprinklers and adapted to carry water under pressure,

b. a plurality of vehicles movingly supporting said pipe,

c. at least one drive wheel on each of the vehicles,

d. lugs at a regular pitch on the drive wheel,

e. at least one drive bar on the vehicle,

f. drive means on the vehicle for oscillating the drive bar forward and back,

g. a drive pawl on the bar having a drive face for drivingly engaging said lugs, and

h. a detent drive pawl means mounted on the vehicle for preventing the vehicle from rolling back;

the improved roll ahead structure comprising in combination:

j. a roll ahead pawl on the drive bar having a working face for contacting said lugs spaced from the drive pawl, and

k. a detent roll ahead pawl means mounted on the vehicle for movement toward and away from the lugs for preventing the vehicle from rolling ahead.

4,084,611

SINGLE-HANDLE MIXING VALVE

Francois-Régis Mahrer, Avenue Dufnas 14, 1206 Geneva, Switzerland

Filed Nov. 4, 1975, Ser. No. 628,804
Claims priority, application Switzerland, Nov. 4, 1974, 14725/74; May 1, 1975, 5610/75
Int. Cl.[2] F16K *11/18*
U.S. Cl. 137—454.2 **6 Claims**

1. A mixing valve comprising

a base with first and second fluid passages,

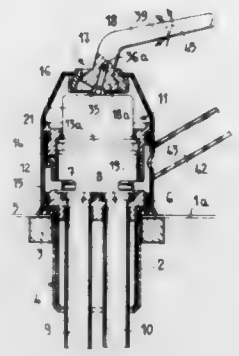
an outer casing mounted on said base and having a discharge opening for the mixed fluid,

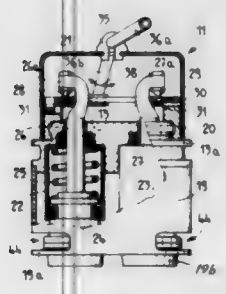
a valve-assembly cartridge removably mounted as a unit within said casing, said valve-assembly cartridge containing first and second valve elements disposed for communication with said first and second fluid passages, respectively, in said base for producing adjustments in the total volume of flow of said fluids from said passages and in the ratio of the volume of flow of one of said fluids to that of the other, said valve-assembly cartridge having an outlet passage communicating with said discharge opening in said casing,

control-means carried by said valve-assembly cartridge for operating said valve elements,

an operating handle independently mounted on said outer casing by means of an articulated coupling formed in part

by an inner facing surface of said outer casing such that the forces due to manipulation of said operating handle are substantially exerted on said outer casing, and





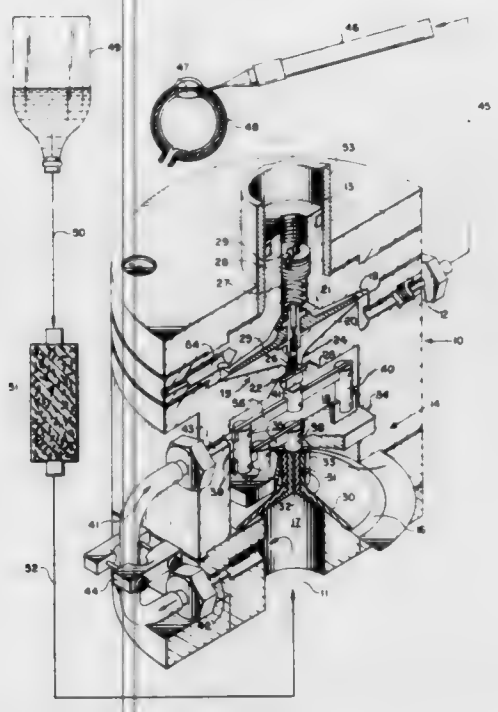
means for removably interconnecting said operating handle and control-means for actuation of said control-means upon manipulation of said operating handle.

4,084,612

FLOW COMPENSATING PRESSURE REGULATOR

Edward F. Baehr, Berea, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 21, 1977, Ser. No. 779,428
Int. Cl.[2] F16K *17/34*
U.S. Cl. 137—484.2 **17 Claims**



1. A pressure regulator comprising:

a body having an inlet port, an oulet port, an ambient port, and including a first chamber and a second chamber;

a flow sensing diaphragm disposed in said first chamber and forming an inlet subchamber and a flow control subchamber, said diaphragm having therein a signal generating orifice, said inlet subchamber being in communication with said inlet port;

a pressure regulating diaphragm disposed in said second chamber and forming a regulated outlet subchamber and an ambient pressure subchamber, said regulated outlet subchamber being in communication with said outlet port;

flow control valve means disposed between said flow control subchamber and said regulated outlet subchamber;

means operatively connecting said pressure regulation diaphragm to said valve means;

bias means urging said pressure regulating diaphragm into said regulated outlet subchamber and thereby urging said valve means to an open position; and

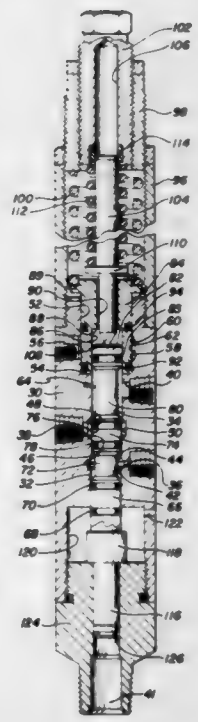
means operatively connecting said flow sensing diaphragm to said valve means, said flow sensing diaphragm urging said valve means to an open position due to pressure drop across said orifice when fluid flows therethrough.

4,084,613

COMBINATION HIGH-LOW PILOT VALVE

Clifford M. Peters, Longview, Tex., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Dec. 13, 1976, Ser. No. 750,296
Int. Cl.[2] F16K *11/00*
U.S. Cl. 137—596.18 **14 Claims**



1. A pressure responsive pilot valve mechanism for bleeding a pilot controlled fluid pressure system and responsive to the sensing of a predetermined high or low pressure condition in an associated pressurized primary system, said pilot valve mechanism comprising:

a valve body having an elongated bore therein forming a valve chamber with an open end of said bore being in fluid communication with said pressurized primary system, said valve body having an inlet port, an outlet port, and a bleed port in fluid communication with the bore, said outlet port being connected to an outlet fluid line for the fluid pressure system;

a first valve means comprising a main elongated slide valve mounted within said bore for sliding movement and having an end thereof at one end of said bore exposed to fluid pressure from said pressurized primary system; said slide valve movable between a low pressure position permitting fluid communication between said outlet port and said bleed port, a normal operating position permitting fluid communication between said inlet port and said outlet port while blocking fluid communication to said bleed port, and a high pressure position blocking fluid communication from the outlet port to the inlet port;

means continuously urging said slide valve toward the open end of said bore against fluid pressure from said pressurized system;

a secondary valve means comprising a secondary valve member mounted within the bore adjacent the other end

of said slide valve for longitudinal sliding movement relative to said slide valve at least for a portion of its travel, means continuously urging said secondary valve member toward the elongated slide valve;

said slide valve in normal operating position being spaced longitudinally from said secondary valve member and movable longitudinally a limited distance relative to and toward said secondary valve after a predetermined high pressure is reached in said pressurized primary system, said slide valve upon continued movement resulting from the high pressure contacting said secondary valve member and moving with said secondary valve member to said high pressure position; and

a high pressure bleed port in said valve body in fluid communication with said outlet fluid line, said secondary valve member in the low pressure and normal operating positions of said slide valve closing the high pressure port and blocking the bleeding of fluid from the fluid line through the high pressure bleed port, said secondary valve member in said high pressure position opening said high pressure bleed port and permitting fluid from the outlet fluid line to by-pass the outlet port to be bled through the high pressure bleed port when the secondary valve member is moved by the slide valve to said high pressure position.

4,084,614

FLUID COUPLING DEVICE

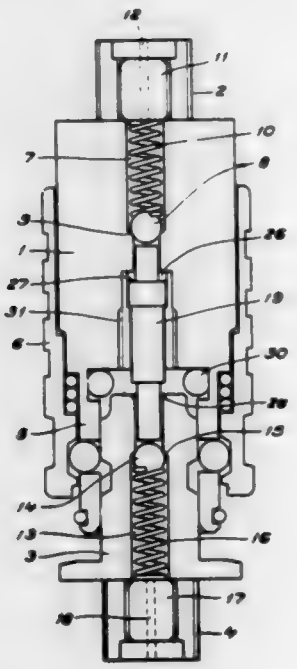
Bror Fridolf Thure Ekman, Slalomvagen 12, 541 00 Skovde, Sweden

Continuation of Ser. No. 624,691, Oct. 22, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 764,268

Claims priority, application Sweden, Oct. 30, 1974, 7413663

Int. Cl.[2] F16L *37/28*

U.S. Cl. 137—614.03 **3 Claims**



1. Fluid coupling apparatus which is particularly adapted for the detachable connection of fluid pressure responsive equipment to a fluid pressure line at a selected measuring location comprising:

a first coupling part and a second coupling part each defining therein an axial through passage,

a fluid flow blocking element for each said coupling part for at times blocking said through passage in the respective coupling part,

means in each said coupling part for normally urging the respective blocking element into a fluid flow blocking position relative to the corresponding axial passage,

means for releasably engaging said first and second coupling parts with the respective through passages therein being axially aligned in a fluid-tight coupling relationship,

actuating means including a push rod defining therein over at least a portion of its length at least one axial groove and being slidably supported in the axially aligned through passages of said first and second coupling parts,

means including a portion of reduced cross-sectional area at each end of said rod which is axially movable in a mating bore in a corresponding coupling part, each said portion forming a peripheral shoulder which coacts with an abutment in the respective coupling part to limit thereby the extent of insertion of each end of said rod into the corresponding coupling part in accordance with the length of the respective end of said portion of reduced cross-sectional area and thereby also the extent of movement of the corresponding fluid flow blocking element from its blocking position in response to the coupling of said parts,

said push rod having a collar portion over a part of its length which is of greater diameter than that of the remainder of said push rod,

an externally threaded bushing member threadably engaging with one of said coupling parts and having an abutment which cooperates with said collar portion on said push rod to limit the extent of withdrawal of said push rod from said one coupling part, said bushing member defining a sleeve portion to slidingly receive a portion of said push rod to thereby guard against tilting movement of said push rod.

4,084,615

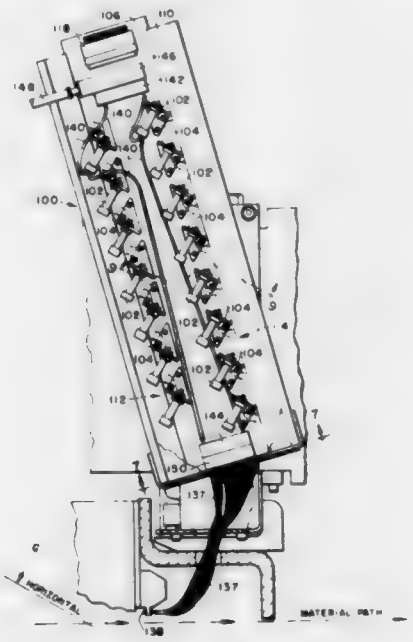
DYEING AND PRINTING OF MATERIALS

Norman E. Klein, Inman, and William H. Stewart, Jr., Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 493,186, Jul. 30, 1974, abandoned, which is a continuation-in-part of Ser. No. 430,450, Jan. 3, 1974, abandoned. This application Oct. 20, 1976, Ser. No. 734,076

Int. Cl.[2] F17D *3/00*

U.S. Cl. 137—624.11 **5 Claims**



1. A compact arrangement for valves for controlling fluid flow comprising a plurality of electrically operated solenoid valves, each of said valves having a magnetic coil and a magnetizable valve element mounted on the magnetic axes of the coil for movement therealong to activate the valve, and means supporting said valves in a compact, closely spaced, three dimensional lattice with the magnetic axis of each of the valves of said theee dimensional lattice being substantially parallel, each plane of said three dimensional lattice including therein at least three valves which are nonlinearly arranged therein, said valves of said three dimensional lattice being further characterized in that valves in one plane of said lattice are positioned intermediate the valves in the adjacent parallel plane of said lattice such that a straight line connecting like points on any of said valves to its nearest neighbor valves, either in a common

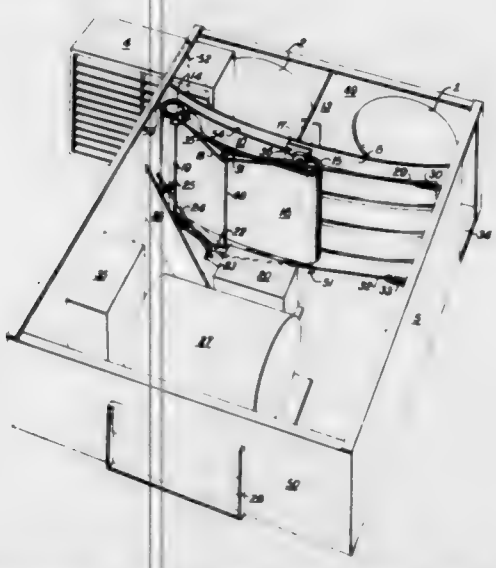
plane or an adjacent plane, forms an angle, with the magnetic axis of such nearest neighbor valve of between 35° to 55° so that the magnetic forces emitted by any nearest neighbor valve crosses the magnetic axes of its nearest neighbor valves at about a right angle.

4,084,616

FLUID PROPORTIONING DEVICE

William Tragert, Rockville, Md., assignor to KTA Corporation, Rockville, Md.

Filed Sep. 30, 1976, Ser. No. 728,326
Int. Cl.[2] F16K *11/02*
U.S. Cl. 137—625.4 **7 Claims**



1. A substantially linearly operating fluid proportioner comprising, an enclosure having a first port therein, and having as a part a curved plate having two mutually exclusive aperture areas in fluid connection with said first port, each of said aperture areas having at least one aperture, a sheet of flexible material, means for mounting said sheet so that at least a part of it is flush against said plate, said at least a part being large enough to completely overlie only one of said aperture areas, and means for moving said sheet while keeping a part of it flush against said plate to overlie selected respective percentages of said two aperture areas and for stopping said sheet at a selected position, said sheet of flexible material being mounted on an assembly which is moved by said means for moving in the direction of curvature of said curved plate, said assembly comprising two cylindrical members and at least a rigid spacing member connecting them, said assembly being mounted so that the axial direction of said cylindrical members is perpendicular to the direction of movement thereof, and said sheet of flexible material being wrapped around said cylindrical members so that two parallel surfaces of said sheet spaced from each other by approximately the outside diameter of said cylindrical members extend in the region between said two cylindrical members, and means for preventing said sheet from moving relative to said plate at a region between said aperture areas.

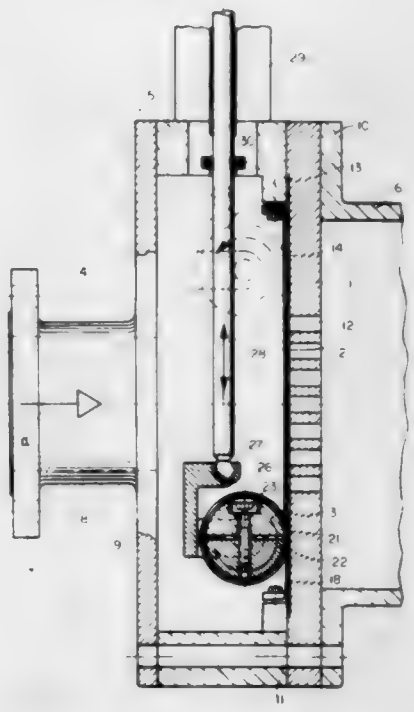
4,084,617

PIPELINE CUTOFF DEVICE

Peter Happe, Eggenstein, Germany, assignor to Johann Baptist Rombach, Karlsruhe, GmbH & Co. KG, Germany

Filed May 17, 1976, Ser. No. 686,689
Claims priority, application Germany, May 17, 1975, 2522084
Int. Cl.[2] F16K *13/00*
U.S. Cl. 137—625.28 **8 Claims**

1. In a cutoff device for pipelines having a housing, a flexible closure strip which can be unrolled onto a valve seat wall having through-flow openings, part of said strip being secured to said housing, a winding roll for rolling and unrolling said strip, said roll being connected to said strip, and means for reciprocating said winding roll across said openings, the improvement comp rising means in addition to said reciprocating means for applying a rotational torque to said winding roll so as to cause said strip to be wound upon said roll as said roll is reciprocated across said parts, and characterized in that an annular part of the housing is provided over the valve seat



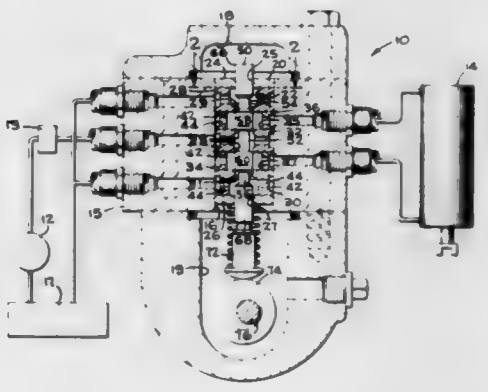
wall, which annular part has fastening means for the closure strip and guide strips are provided which roll on and off the roll in opposition to the closure strip and in that a gasket is seated in a recess of the valve seat wall.

4,084,618

SPOOL VALVE

Raymond A. Gurries, San Jose, Calif., assignor to CMI Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 249,915, May 3, 1972, abandoned. This application Nov. 3, 1975, Ser. No. 628,355
The portion of the term of this patent subsequent to Apr. 18, 1994, has been disclaimed.
Int. Cl.[2] F15B *13/04*
U.S. Cl. 137—625.48 **8 Claims**



1. A control valve which comprises

a sleeve having a longitudinal bore defined by axially-spaced control and bearing lands and inlet and outlet passages connected to said bore at axially-spaced positions,

a spool member having circumferential grooves separated by control lands and arranged for slidable motion in said sleeve bore to control communication between said inlet and outlet passages,

said spool member also having bearing lands at positions axially separated from said control lands and arranged to slidably support said spool member on adjacent bearing lands in said bore, the diametral clearance between said spool bearing lands and said sleeve bearing lands being slightly less than that between said spool control lands and the adjacent control lands of said sleeve thereby to elimi-

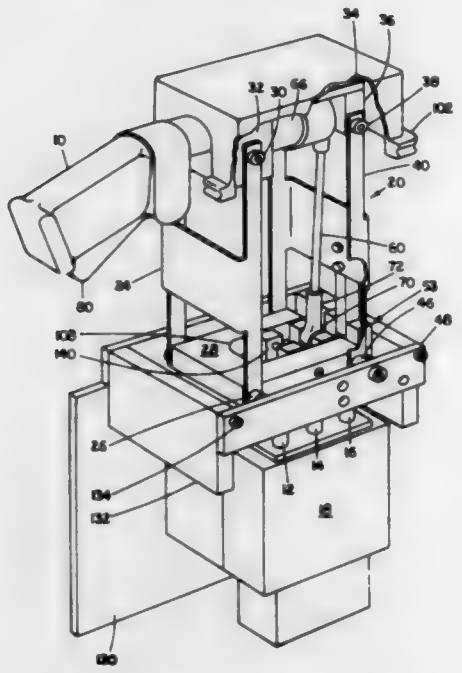
nate contact between said control lands, said clearance difference being so slight as to substantially preclude fluid flow between adjacent surfaces of said control lands of said sleeve and spool.

4,084,619

ACTUATOR FOR HYDRAULIC SYSTEMS IN TRANSPORTABLE MOBILE PLATFORMS

Leonard L. Johnson, Ft. Wayne, Ind., assignor to Teco, Inc., Ft. Wayne, Ind.

Filed Dec. 2, 1976, Ser. No. 746,661
Int. Cl.² E04G *1/22*
U.S. Cl. 137—636.2 **6 Claims**



1. A control for regulating the duration and character of connections in a hydraulic system effecting three dimensional movement, comprising: an actuator connected to an actuator linkage having three articulated output connections, a reciprocal valve means one associated with each of the three articulated output connections of said actuator linkage and adapted for individual operation each independently of the others; said actuator linkage comprising a first parallelogram linkage displaceable by said actuator and movable in a vertical plane to effect actuation of one of the independent valve means by displacement movement thereon and a second parallelogram linkage pivotally movable by horizontal displacement of said actuator to effect independent movement of a second one of said valve means and,

means responsive to rotation of said handle to effect a third independent valve means movement, whereby said valves are individually, independently and coordinately actuated in accordance with movements of said actuator.

4,084,620

DIAPHRAGM SPOUT ASSEMBLY

Ernest H. Bucknell, 1700 E. 58th Pl., Los Angeles, Calif. 90058; Jack K. Rauh, 2830 Kiska Ave., Hacienda Heights, Calif. 91745, and Tony Radecki, 1943 Rodney Dr., Apt. 108, Los Angeles, Calif. 90027

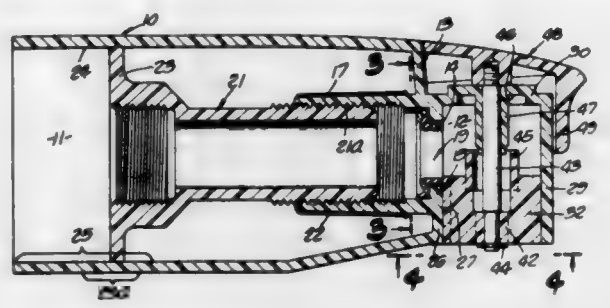
Continuation of Ser. No. 348,641, Apr. 6, 1973, abandoned, which is a division of Ser. No. 186,292, Oct. 4, 1971, Pat. No. 3,739,806. This application Feb. 6, 1975, Ser. No. 547,506
The portion of the term of this patent subsequent to Aug. 18, 1993, has been disclaimed.
Int. Cl.² F16L *5/00*
U.S. Cl. 137—801 **4 Claims**

2. A spout assembly comprising:

a body member having a fluid inlet chamber, a fluid outlet chamber and a partition wall integrally formed with said body member and extending inwardly thereof, separating said inlet chamber from said outlet chamber, said partition wall having an aperture therein;

connector means integrally formed with said partition for supplying fluid through said aperture in said partition; and

adaptor means mounted within said inlet chamber for connecting said spout assembly to a plumbing system, said adaptor means including an adapter member having a first end adjustably coupled with said connector means in a



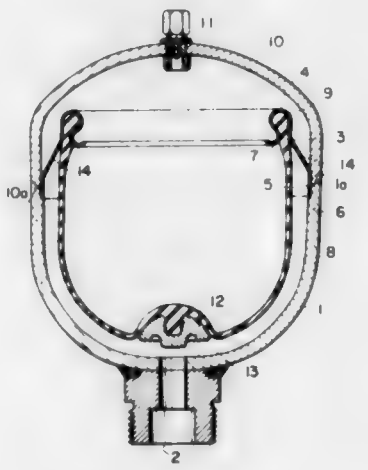
relatively fluid-tight relationship, and having a second end adapted to be coupled with a plumbing system, said adapter member having laterally extending means engaging the inner wall of said inlet chamber of said body member for supporting said adapter member therein, and said adapter member being axially adjustable for enabling the spout assembly to be coupled with a plumbing system through walls of different thicknesses by nipple means.

4,084,621

ACCUMULATOR CONSISTING OF WELDED VESSEL AND LID

Kazuo Sugimura, and Nobuyuki Sugimura, both of 308 Mabase, Shimizu, Shizuoka, Japan

Filed Feb. 11, 1977, Ser. No. 767,752
Int. Cl.² F16L *55/04*
U.S. Cl. 138—30 **5 Claims**



1. A hydraulic accumulator of the type that comprises a rigid, hollow vessel having its interior divided by a resilient bladder into a gas compartment and a liquid compartment that are sealed from one another, said vessel having a port through which liquid under pressure can flow into and out of said liquid compartment to be maintained under pressure by gas in the gas compartment, said accumulator being characterized by:

A. said vessel comprising a lower bowl-shaped body member and an upper bowl-shaped lid member, which members have their edges sealingly connected with one another;

B. said bladder

1. being bowl-shaped and

2. when in relaxed condition being mostly located in the body member with its concave surface facing upwardly, and

3. having an increased thickness portion all around its edge that defines a circumferential flange; and

C. said bladder being secured in the vessel by means of a securement ring having

1. a large diameter bottom portion that is sealingly received in a radially inwardly opening circumferential recess in the edge portion of the body member,
2. a top portion that is curled radially inwardly and downwardly upon itself all around the ring to define a groove in which said flange is sealingly received, said top portion being of substantially smaller diameter than said bottom portion to support the relaxed bladder completely out of contact with the interior surface of the vessel; and
3. **a medial portion that coaxially connects said top and bottom portions and tapers axially upwardly and radially inwardly from said bottom portion to said top portion to dispose the top portion at a substantial distance above the connected edges of said body and lid members.**

4,084,622

TEXTURED POLYESTER YARNS AND PROCESS FOR THE PRODUCTION THEREOF

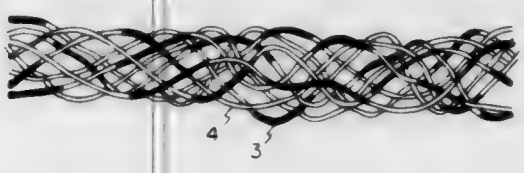
Kiyoshi Nakagawa; Yukio Otaki; Masatoshi Mineo, all of Mishima; Yoshio Aratani, Otsu; Yoshio Tatsuoka, Otsu, and Haruhiko Kusakabe, Otsu, all of Japan, assignors to Toray Industries Inc., Tokyo, Japan

Continuation of Ser. No. 692,137, Jun. 2, 1976, abandoned. This application Mar. 28, 1977, Ser. No. 781,709

Claims priority, application Japan, Jun. 11, 1975, 50-69585; Jun. 11, 1975, 50-69586; Jun. 11, 1975, 50-69587; Jun. 11, 1975, 50-69588

Int. Cl.[2] D03D *15/10;* D01D *5/20;* D02G *3/34*

U.S. Cl. 139—420 R **14 Claims**



1. A textured polyester yarn having improved variation in dyeability along its length, comprising a plurality of individual filaments each having thick and thin sections randomly distributed along the filament axis and having an Uster evenness value of 1.0 to 10.0%, a T index of 3 to 30, **a variation in reflected light intensity of** ±0.15 to 0.80 and a broken filament count of not more than 100 per 2,000 m of the yarn length.

8. A woven fabric comprising a textured polyester yarn according to claim **1**, in which the friction coefficient is not more than 1.2 in both warp and weft directions, the ratio of the higher friction coefficient to the lower friction coefficient is not more than 1.5 in both warp and weft directions and the specific volume is not less than 2.0 cm^3/g.

4,084,623

FLUID JET LOOM WITH A YARN WASTE REMOVING APPARATUS

Akio Tojo, Higashi-murayama, and Kimimasa Ohnishi, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Nov. 15, 1976, Ser. No. 741,956

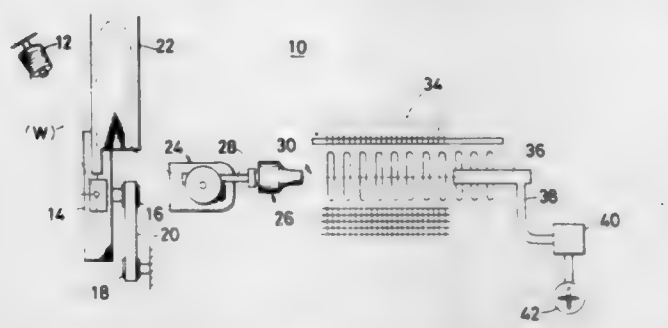
Claims priority, application Japan, Jun. 17, 1976, 51-70369

Int. Cl.[2] D03D *47/30*

U.S. Cl. 139—435 **13 Claims**

1. A fluid jet loom, comprising: grasping means operable to secure a weft yarn passing therethrough;

shooting means for shooting said weft yarn into a shed formed by warp yarns to weave fabrics, said shooting means including a nozzle with a bore fluidly communicable in use with a compressed air supply for producing for each picking action a jet of air inducing a partial vacuum in said bore of the nozzle to cause said weft yarn to be passed through and be ejected from said nozzle; a casing disposed about said grasping means, in which casing yarn waste is collectable, said casing being provided at its generally opposite sides, respectively, with a weft yarn inlet opening and a weft yarn outlet opening, a tube fluidly connecting said outlet opening to said nozzle, whereby



when said shooting means operates to cause said weft yarn to be ejected from said nozzle, a flow of air passing through the casing and said tube toward said nozzle is produced thereby scavenging any yarn waste and miscellanea collected in said casing to shoot same through said shed into the open air.

4,084,624

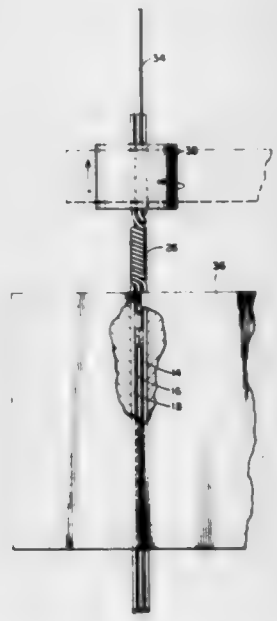
METHOD OF FABRICATING A POT HANGER

Hubert J. Moineau, Bolton, Mass., assignor to Automatic Specialties, Inc., Marlboro, Mass.

Division of Ser. No. 645,808, Dec. 31, 1975. This application Apr. 22, 1977, Ser. No. 789,936

Int. Cl.[2] B21F *15/04, 45/00*

U.S. Cl. 140—80 **10 Claims**



1. A method of manufacturing a hanger for use in supporting planters and the like, which method comprises the steps of:

a. providing a plurality of wire-stringer elements of predetermined length having a straight one end and another end;

b. providing a straight wire-support element having a one end and another end;

c. axially aligning the wire-stringer elements at the one end about the circumference of the wire-support element at the one end of the wire-support element, leaving the other end of the wire-support element free for the forming step (e);

d. twisting tightly the wire-stringer elements about the one end of the straight wire-support element to form a sequentially wrapped, helical coil of the wire-stringer elements about the one end of the straight wire-support element;

e. forming the other end of the straight wire-support ele-

ment, which is free of the twisted helical coil, into a hook-like supporting means; and

f. forming the other end of the straight wire-stringer elements, while axially aligned with the wire-support element, into securing means adapted to support pot planters and other objects.

4,084,625

WIRE BANDING TOOL AND CABLE SPLICE

Claude E. Brinegar, 18400 SW. Pacific Hwy., Sherwood, Oreg. 97140

Filed Aug. 3, 1976, Ser. No. 711,394
Int. Cl.[2] B21F *9/02*
U.S. Cl. 140—123.5 **7 Claims**



1. In a hose clamp forming tool,

elongated body means entirely of sheet metal of substantially uniform thickness having at least a bottom and two side walls and having a tapered forward end portion with end notches in the two side walls,

a threaded puller lying in and slidable along the body means,

the body means including a tubular portion holding the puller in the body means,

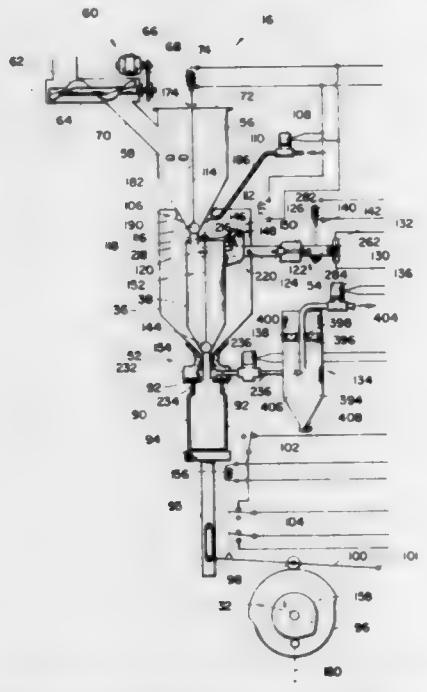
a nut screwed onto the puller and engaging the body means, and wire attaching means carried by the puller.

4,084,626

AUTOMATICALLY OPERATIONAL NET WEIGHT FILLING MACHINE

Alfred T. King, 615 York Ave., Lansdale, Pa. 19446

Filed Nov. 24, 1976, Ser. No. 744,716
Int. Cl.[2] B65B *31/04*; G01G *13/34*
U.S. Cl. 141—7 **21 Claims**



1. An automatically operational net weight filling machine having a plurality of operational stations for weighing and dispensing to containers individually net weight amounts of a loose and flowable dry particulate material, said machine comprising in combination an interconnected vertically and horizontally disposed support frame, a motor to drive said machine, a motor control means, a bulk material delivery means vertically disposed respectively at each of said operational stations said bulk material delivery means adapted to supply each of said operational stations with bulk make-up material during operation, a material staging chamber respectively disposed vertically intermediate of said bulk material delivery means and said support frame at each of said operational stations to receive bulk make-up material delivered from said bulk material delivery means thereto and dispense material therefrom for net weight measurement said material staging chambers being each provided with a bulk material delivery control means connected through a material staging chamber bulk material level control circuit to a material staging chamber discharge valve control means whereby a material staging chamber upper material discharge valve is automatically opened and closed to maintain a constant variable range in level of said bulk make-up material in said material staging chambers and a first electro-magnetic vibration means in the proximity of said upper material discharge valve, a means for reciprocating being a reciprocating container platen at each of said operational stations to position and compressively elevate a container automatically delivered by a container delivery means thereto into a container net weight filling position configuration such that a container is engaged with the base thereof upon said reciprocating container platen and the opening thereof being sealed against a container sealing gasket of a vacuum chuck housing of said operational station, a vacuum means and a second electro-magnetic vibration means in the proximity thereof respectively at each of said operational stations said vacuum means operable to provide evacuation of a container positioned for net weight filling at said operational station and said second vibration means being concurrently operable to vibrate said reciprocating container platen during the net weight material filling of a container configured in the net weight filling position thereon, a net weight measuring chamber respectively at each of said operational stations disposed vertically intermediate of said material staging chamber and said container net weight filling position and adapted to receive material dispensed thereto from said material staging chamber and in turn dispense a net weight amount of material therefrom to said container said net weight measuring chamber being pivotally assembled to a counterweighted balance beam such that when a net weight amount of said material as set by an adjustable net weight measuring means assembled upon said balance beam is received into said net weight measuring chamber an integrated electrical sensing circuit is closed by a means to close said circuit thereby simultaneously and automatically activating a first solenoid means operable to close said upper material discharge valve and activate a second solenoid means operable to elevate the counter-balance end of said balance beam about a pivot point and by means of a mechanical linkage assembly set by a fixed adjustable stop said mechanical linkage assembly pivotally connected to said net weight measuring chamber and a net weight measuring chamber lower material discharge valve centrally located within the radial axis opening of a downwardly disposed cone-shaped terminal end of said net weight measuring chamber to thereby cooperatively open said lower material discharge valve and move said net weight measuring chamber vertically downward sharply to an impact point said impact point being a resilient impact gasket supported by said vacuum chuck housing of said operational station to thereby cause a quick dispensing of the net weight amount of material from said net weight measuring chamber into said container during evacuation and vibration thereof, an integrated control circuit means to activate and control said first and second electro-magnetic vibration means, a plurality of rotating cam means fixedly assembled in a regularly repeating longitudinally spaced relationship upon a main drive shaft rotatably driven by said motor to respectively cycle said reciprocating container platens to withdraw a filled container from

and deliver an empty container to said filling position and deliver said filled container to a discharge conveyor, a main drive shaft electric clutch and brake means to control a container infeed conveyor and the transport movement thereof to create a pause in said movement until said net weight amount of said material is dispensed to said net weight measuring chamber, and a plurality of rotating recycle cams fixedly assembled upon said main drive shaft in a regularly repeating longitudinally spaced relationship thereto respectively for each of said operational stations to rotatably engage and close an operational station integrated control circuit recycle switch and also thereby in turn respectively recycle said operational stations of said automatically operational net weight filling machine for continued automatic container net weight filling operations.

4,084,627

METHOD OF AND APPARATUS FOR DISPENSING TOBACCO PORTIONS

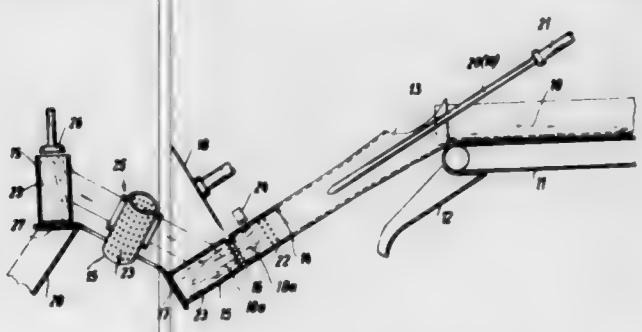
Heinz Focke, and Oskar Balmer, both of Verden, Aller, Germany, assignors to Focke & Pfuhl, Verden, Aller, Germany

Filed May 1, 1974, Ser. No. 465,944

Claims priority, application Germany, May 5, 1973, 2322736

Int. Cl.[2] B65B *3/04*

U.S. Cl. 141—11 **11 Claims**



1. In a process for dispensing individual uniform portions of fibrous tobacco material or the like, including the steps of supplying continuously said material as a fleece or web, forming a strand of uniform density, separating said strand into individual portions in a measuring chamber corresponding to the volume of one portion, the improvement wherein the step of forming said strand of fibrous material of uniform density comprises directing an air flow onto said web in the conveying direction of said web towards said measuring chamber and confining the broken up fibrous material downstream of the point of contact of the air flow with the fibrous material web to cause separated material fibers to back up at uniform density.

4,084,628

CONVEYOR APPARATUS FOR DELIVERING FLUX POWDER TO THE MOLD OF A CONTINUOUS CASTING INSTALLATION

Markus Schmid, Zurich, Switzerland, assignor to Concast AG, Zurich, Switzerland

Filed Nov. 11, 1976, Ser. No. 740,926

Claims priority, application Switzerland, Nov. 27, 1975, 15396/75

Int. Cl.[2] B65B *3/10*

U.S. Cl. 141—284 **12 Claims**

1. A conveyor apparatus for delivering flux powder to the molten bath level of a mold of a continuous casting installation for metals, especially steel, comprising:

a supply container for flux powder;

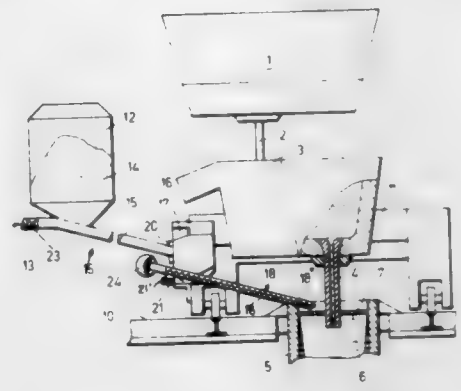
a container for receiving the flux powder from said supply container;

said supply container possessing a larger capacity for flux powder than said receiving container;

said supply container being located externally of the direct servicing region of the mold;

said receiving container being located at the neighborhood of the mold;

pneumatic conveyor means interposed between said supply container and said receiving container for delivering by



means of a pneumatic conveying agent flux powder from the supply container to said receiving container; and

mechanical conveyor means for delivering the flux powder from said receiving container at the neighborhood of the mold to a region above the molten bath level in said mold.

4,084,629

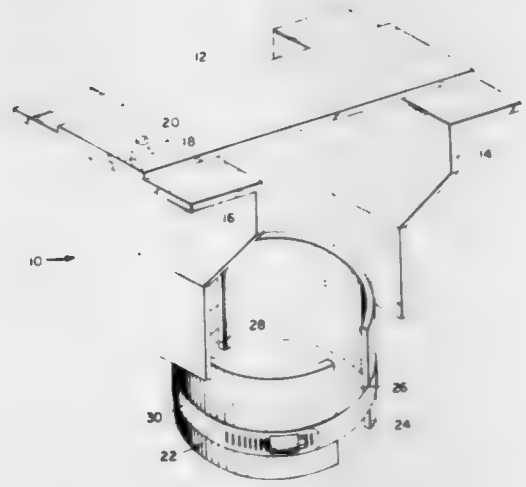
ROUTER CLAMP

George E. Kreusler, 22441 Alpine Way, Palm Springs, Calif. 92262

Filed Oct. 26, 1976, Ser. No. 735,608

Int. Cl.[2] B27C *5/10*

U.S. Cl. 144—134 D **4 Claims**



1. A router clamp for attachment to a router having a housing, the router clamp including in combination a bridge plate member, a pair of inverted L-shaped brackets each bracket having an upper and lower portion, a substantially cylindrical collar and a compression band

said bridge plate member being affixed to each upper portion of the pair of brackets, one of said brackets being adjustably and removably affixed to said bridge plate member by means of a slot, bolt and nut; the slot being disposed in the upper portion of said removably affixed bracket;

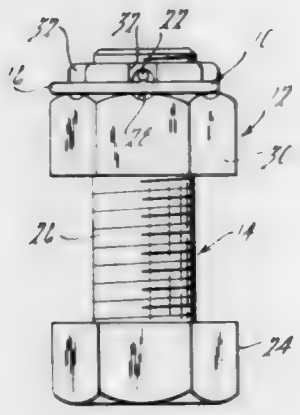
said substantially cylindrical collar comprising two half sections, each half section being affixed to the lower portion of each of the pair of brackets, so as to define two longitudinal collar openings which allow the half sections to be compressible inwardly so as to contact and hold the housing of the router when the router is positioned therein and when the compression band is tightened over the longitudinal openings on the periphery of the collar to assist concentric gripping action of the half sections.

4,084,630

LOCKING RING FOR A CASTELLATED NUT

Frederick M. Lewis, 741 Lincoln Rd., Grosse Pointe, Mich. 48230

Filed Jun. 11, 1976, Ser. No. 695,167
Int. Cl.[2] F16B *39/04*
U.S. Cl. 151—5 1 Claim



1. A fastener assembly including a castellated nut threadably connected to a bolt having a diametrically extending aperture, said nut having a plurality of radially extending notches and an annular peripheral recess formed at one end thereof, said recess being defined by a substantially radially outwardly extending portion, a substantially axially extending portion and an intermediate arcuate connecting portion, and

a locking element for fixedly securing said nut at a preselected threaded position on said bolt, said locking element having a diametrically extending section located within said aperture and having opposite end portions engageable with diametrically opposed notches of said nut,

a circumferentially extending section located within said annular recess and extending greater than 180° and less than 270+ around said nut, one end of said circumferentially extending section being connected to one of said opposite end portions, and the opposite end of said circumferentially extending section being retained within said recess and being located between the periphery of said recess and the other of said end portions, with the terminus of said opposite end of said circumferentially extending section comprising a first radially inwardly extending locking tab portion disposed within one of the notches located on the diametrially opposite side of said nut from the major portion of said circumferentially extending section of said locking element, the terminus end of said diametrically extending portion extending radially outwardly from said axial portion of said recess and located on the axially opposite side of said annular recess and serving to retain said circumferentially extending section from said radially outwardly extending portion of said recess so as to overlie said circumferentially extending section and thereby serve to maintain said circumferentially extending section engaged with said radial portion of said recess, and

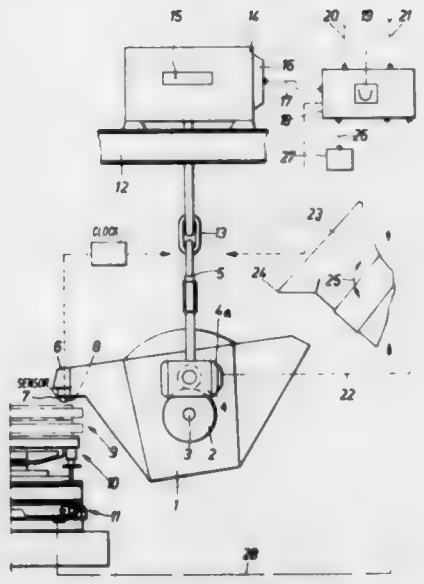
a second radially inwardly extending locking tab portion formed on said circumferentially extending section symmetrically of said first locking tab portion and disposed within one of the other of said notches.

4,084,631

METHOD AND DEVICE FOR CONTROLLING A CASTING MACHINE

Konrad Kunzmann, Rollinghausen, Germany, assignor to Alfelder Machinen-und Modellfabrik Kunkel, Wagner & Co. KG, Alfeld, Leine, Germany

Filed Jun. 26, 1975, Ser. No. 590,634
Claims priority, application Germany, Jun. 27, 1974, 2430835
Int. Cl.[2] B22C *19/04;* B22D *37/00*
U.S. Cl. 164—4 12 Claims



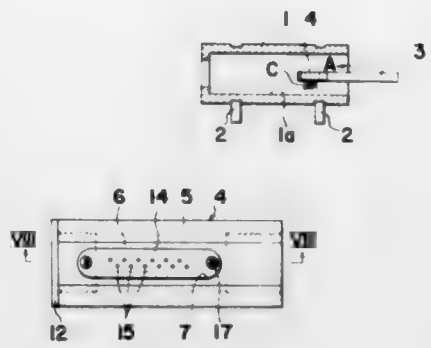
1. Apparatus for controlling the casting of molten metal comprising a pivotable casting ladle for holding said molten metal and having an outlet for pouring said molten metal, control means having a predetermined program for controlling the inclination of said ladle to pour said molten metal, weighing means for continuously determining the weight of metal in said ladle and means responsive to said weighing means for modifying said predetermined program to cause said control means to vary the inclination of said ladle to maintain a constant head of metal above said outlet and including means for determining at least one parameter indicative of the end of a casting cycle and means for arresting the inclination of said ladle to stop the pouring of molten metal.

4,084,632

APPLICATOR NOZZLE FOR USE IN CENTRIFUGAL CASTING

Hiroshi Izaki, Osaka, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Mar. 8, 1976, Ser. No. 664,892
Int. Cl.[2] B22C *3/00;* B22D *13/10*
U.S. Cl. 164—72 4 Claims



1. A method for applying a coating solution onto a molding surface of a metal mold in a centrifugal casting operation wherein the coating solution is applied onto a molding surface of a rotating metal mold for formation of a mold coating on the molding surface through a nozzle, which method comprises linearly moving the nozzle in a direction parallel to the rotating axis of the metal mold, from one end to the other end of

said metal mold which is being rotated, while discharging the coating solution from a plurality of nozzle openings formed in said nozzle for forming the mold coating on the molding surface as the nozzle moves in said linear direction into the metal mold, said nozzle openings being at a predetermined pitch to each other such that the pitch between the nozzle openings is given by the equation:

$$P = (6000/NXY) \text{ (cm)}$$

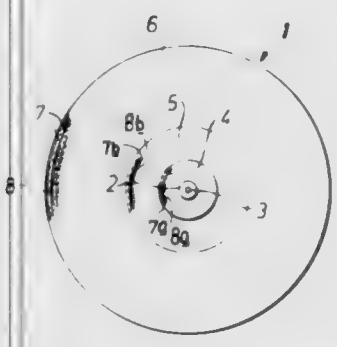
whrein P is the pitch between the nozzle openings, N is the number of revolutions of the metal mold in r.p.m., X is the number of nozzle openings and Y is the moving speed of the lance in sec./m. by which relationship a uniform coating can be applied wthout any spiral patterns on the surface of the metal mold.

4,084,633

ROTOR FOR ROTARY HEAT EXCHANGERS

Ove Magnus Strindehag, Jonkoping, Sweden, assignor to AB Svenska Flaktfabriken, Nacka, Sweden

Filed Nov. 2, 1976, Ser. No. 737,506
Claims priority, application Sweden, Nov. 12, 1975, 7512674
Int. Cl.[2] F28D *19/00*
U.S. Cl. 165—8 **7 Claims**



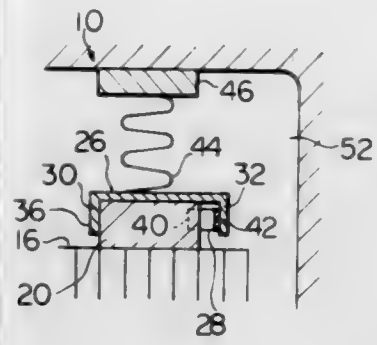
1. A rotor for heat exchangers, substantially for heat exchange between two airstreams, where the rotor is assembled of a plurality of circumferential layers of corrugated foil, characterized in that the foil in the inner layers closest to the rotor center has a higher mechanical strength than the foil in the outer layers close to the rotor periphery, said foil in said inner layers is of greater thickness than the foil in the outer layers.

4,084,634

SEAL ASSEMBLY FOR ROTARY DISC-TYPE MATRIX OF GAS TURBINE ENGINE

Noritoshi Handa, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Sep. 15, 1976, Ser. No. 723,638
Claims priority, application Japan, Sep. 22, 1975, 50-113708
Int. Cl.[2] F28D *19/00*
U.S. Cl. 165—9 **10 Claims**



6. A regenerative heat-exchanger comprising:
a housing;
a rotary disc-type matrix rotatable within a housing with sectors of said matrix being subjected to gas streams of differing pressures;
a support having a groove, said groove having a bottom wall, a first side wall and a second side wall, said bottom wall, said first side wall and said second wall cooperating to define said groove;
a plurality of friction shoes received in said groove and placed one after another;
each of said friction shoes having two longitudinal ends, each contacting with one of the longitudinal ends of adjacent one of said friction shoes;
each of said plurality of friction shoes having a side adapted for sliding against said matrix and an opposite side contacting with said bottom wall of said support;
each of said plurality of friction shoes having a first side surface contacting said first side wall of said groove and a second side surface opposite to said first side surface and spaced from said second side wall of said groove;
bellow means located on said housing and said support to urge said support toward said matrix to maintain sliding contact of said plurality of friction shoes against said matrix; and
a plurality, corresponding in number to said plurality of friction shoes, of spring means, each disposed between said second side wall of said groove and the second side surface of the corresponding one of said plurality of friction shoes, for biasing said plurality of friction shoes toward said first side wall of said groove, respectively, to urge said plurality of friction shoes into contact with said first side wall of said groove.

4,084,635

HEAT RECOVERY AND HEAT DISTRIBUTING APPARATUS

Hugh G. Marshall, Como, Canada, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Aug. 18, 1976, Ser. No. 715,396
Int. Cl.[2] F28D *15/00*
U.S. Cl. 165—107 **12 Claims**



1. Freeze-resistant heat-recovery apparatus comprising:
an aqueous medium;
a first, or gas-to-liquid, waste-heat reclaiming, heat exchanger having an endothermic liquid-conducting portion providing an upper inflow means and a lower outflow means;
a second, or liquid-to-fluid heat-distributing heat exchanger in remote relation with the first heat exchanger having an exothermic liquid-conducting portion provided with an inflow means and an outflow means; and first duct means connecting the inflow means of the first heat exchanger to the outflow means of the second heat exchanger, and second duct means connecting the outflow means of the first heat exchanger to the inflow of the second heat exchanger;
said liquid-conducting portion of said first heat exchanger comprising:
an assembly of vertically-extending horizontally-spaced generally-rectangular sheets arranged in generally parallel planes of which each is indented or embossed substantially over its entire area to provide concavo-

convex non-planate portions in said sheets in assembled closely-spaced relationship for causing any fluid passing therebetween to be subjected to turbulence;

said sheets having lateral side edges at opposite lateral extremities, and top and bottom edges;

said sheets being joined together in horizontally successive pairs of which each successive pair of sheets has its top edges joined and its bottom edges joined to provide a horizontal passageway;

the side edges of adjacent mutually-facing sheets adjacent pairs of top-and-bottom joined sheets being joined at opposite lateral extremities to provide a vertical passageway between each of adjacent pairs of top-and-bottom joined sheets;

closure means at four corners of the assembly connecting with the sheets to close off intercommunication of the vertical passageways with the horizontal passageways;

said inflow means of the first heat exchanger comprising shower means supported over the upper entrances of all of said vertical passageways;

liquid supply means and regulating means therefor limiting the supply of said liquid to said shower means to a rate of avoiding any standing liquid head in said vertical passageways;

header means for enclosing the entrances of said horizontal passageways at one side of said assembly; and

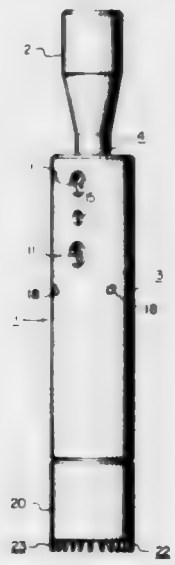
means for supplying air or other gas to said header means.

4,084,636

HYDRAULIC JUNK RETRIEVER

Edward V. Burge, 14800 Memorial, Apt. 241, Houston, Tex. 77079

Filed Aug. 26, 1976, Ser. No. 717,981
Int. Cl.[2] E21B *31/06*
U.S. Cl. 166—65 M **9 Claims**



1. A hydraulic junk retriever for well bore holes including

a tubular mandrel adapted to be secured to the lower end of a tubular drill stem for lowering to the bottom of a well bore and having its bore communicating with the interior of the drill stem,

an elongate cylindrical housing depending from the mandrel and having a tubular portion below its upper end to provide a downwardly opening cylindrical barrel of relatively large internal diameter,

means rotatably connecting the housing to said mandrel,

flow passage means in the upper end portion of said housing communicating with the bore of said mandrel and having at least one port extending from its lower end portion laterally outward through the wall of said housing at a tangent to its axis of rotation, whereby drilling fluid under pressure supplied to the flow passage means is discharged tangentially by its port into the well bore so as to impart rotation to said housing and centrifugal force to the discharged drilling fluid,

elongated upright vane means within the barrel of said housing for creating a vortex therein upon rotation of said housing so as to draw debris from the bottom of the well bore through the downwardly opening lower end of said barrel,

means within said barrel above its lower end for trapping large debris therein, and

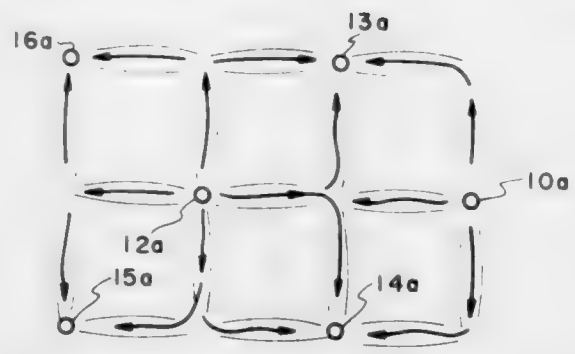
fluid passage means in said upper end portion of said housing above the discharge port therein establishing communication between the upper end of said barrel and said well bore to permit upward reverse circulation of said drilling fluid through said barrel.

4,084,637

METHOD OF PRODUCING VISCOUS MATERIALS FROM SUBTERRANEAN FORMATIONS

John C. Todd, Dallas, Tex., assignor to Petro Canada Exploration Inc.; Canada-Cities Services, Ltd. and Imperial Oil Limited, all of, Canada

Filed Dec. 16, 1976, Ser. No. 751,058
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—245 **9 Claims**



1. A method of producing a viscous material from a subterranean formation which comprises:

(a) drilling and completing a plurality of at least two wells from the surface into said subterranean formation for production of said viscous material therefrom; at least one of said wells being completed as an injection well and at least one of said wells being completed as a production well, said wells being spaced apart and arranged in a predetermined pattern;

(b) drilling and completing a plurality of spaced-apart electrode wells into said subterranean formation, said electrode wells being arranged in at least one line, said line generally defining a path between said production well and said injection well with the distance between each adjacent pair of electrode wells being substantially less than the shortest distance between said injection well and said production well;

(c) applying a voltage across each adjacent pair of said electrode wells to thereby cause an electrical current to pass through said subterranean formation between said adjacent pairs of electrode wells to preheat said subterranean formation and thereby lower the viscosity of said viscous material along said path formed by said line of electrode wells;

(d) thereafter injecting a fluid through said injection well and into said subterranean formation to migrate along said path formed by said line of electrode wells; and

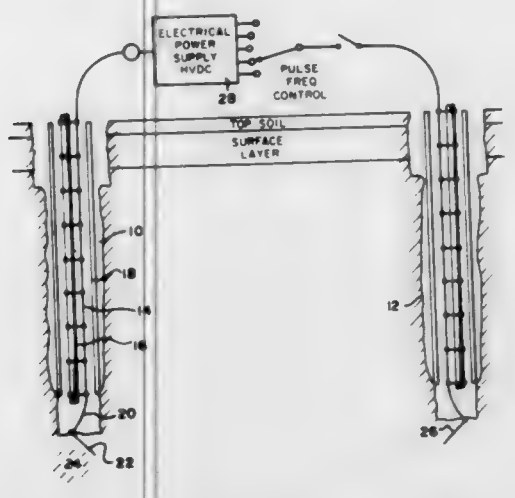
(e) producing said viscous material, having a reduced viscosity from said production well.

4,084,638

METHOD OF PRODUCTION STIMULATION AND ENHANCED RECOVERY OF OIL

Cuthbert R. Whiting, Saddle River, N.J., assignor to Probe, Incorporated, Saddle River, N.J.

Filed Oct. 16, 1975, Ser. No. 623,098
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—248 28 Claims



1. A method of production stimulation and enhanced oil recovery from existing oil wells, comprising the steps of:

(a) disposing an insulated high voltage cable within an injection well and embedding a conductive probe at the end of said cable within an oil-bearing stratum;

(b) disposing an insulating high voltage cable within a recovery well and embedding a probe at the end of said cable within an oil-bearing stratum, said recovery well being between 25 feet and 3,000 feet distance from said injection well;

(c) connecting a high energy charging and discharge circuit, at the surface level, between each of said cables associated with said injection and recovery wells;

(d) applying a voltage, current, frequency and pulse width control circuit to said charging and discharge circuit; and

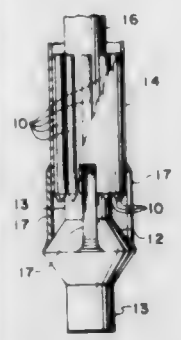
(e) selectively actuating the above circuitry in order to produce sequential high energy electrical impulses originating at the electrode embedded within the injection well, thereby producing electrical, thermal, physical and sonic shock effects sufficient to produce geological fracturing and, thereby, oil flow between said electrodes.

4,084,639

ELECTRODE WELL FOR ELECTRICALLY HEATING A SUBTERRANEAN FORMATION

John C. Todd, Dallas, Tex., assignor to Petro Canada Exploration Inc.; Canada-Cities Services, Ltd. and Imperial Oil Limited, all of, Canada

Filed Dec. 16, 1976, Ser. No. 751,057
Int. Cl.[2] E21B *43/25*
U.S. Cl. 166—248 6 Claims



5. An improved method for passing an electrical current through a subterranean formation comprising the steps of:

(a) drilling a well bore into said formation;

(b) securing a deflector means to the lower end of an outer, elongated, cylindrical casing;

(c) placing a plurality of elongated, rod-like members having upper and lower ends vertically inside said outer, elongated, cylindrical casing;

(d) placing a smaller diameter inner pipe string concentrically within said outer, elongated cylindrical casing whereby said plurality of elongated rod-like members are positioned in the annular space between the interior of said outer elongated cylindrical casing and said inner pipe string, said inner pipe string having an annular ram collar affixed to the outer surfaces of said inner pipe string, said ram collar being sized to allow vertical movement of said inner pipe string within said outer, elongated, cylindrical casing;

(e) positioning said outer, elongated, cylindrical casing, containing said plurality of said elongated rod-like members and said inner pipe string into said well bore adjacent said subterranean formation;

(f) moving said inner pipe string downwardly whereby said annular ram collar engages the upper ends of said elongated, rod-like members to thereby force the lower ends of said elongated, rod-like members downwardly into contact with said deflector means to cause said rod-like members to be forced outwardly into said subterranean formation; and

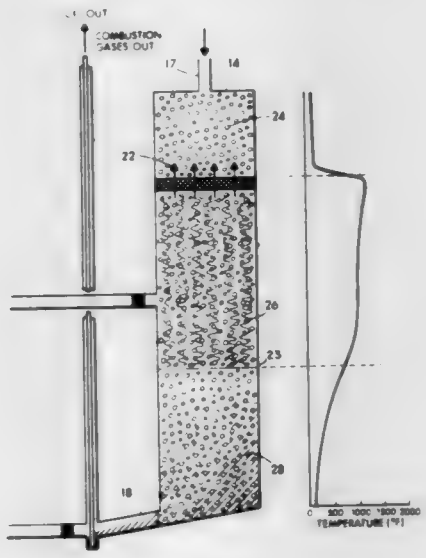
(g) establishing an electrical current through said rod-like members whereby said electrical current passes through said formation.

4,084,640

COMBINED COMBUSTION FOR IN-SITU RETORTING OF OIL SHALES

Victor Dean Allred, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Nov. 4, 1976, Ser. No. 738,928
Int. Cl.[2] E21B *43/24, 43/26*
U.S. Cl. 166—259 8 Claims



1. A method of recovering shale oil from an underground oil shale formation comprising the steps of:

(a) rubblizing a zone and forming an oxidant injection means and shale oil recovery means in an oil shale formation,

(b) igniting the rubblized zone substantially across the entire zone at an intermediate point between the ends of the zone to create a combustion front in the rubblized zone,

(c) injecting an oxidant containing gas into rubblized zone to move a combustion heat front progressively toward the oxidant injection means while driving a heat front and educed hydrocarbon behind the combustion front, established substantially across the entire rubblized zone, toward a recovery means,

(d) continuing to inject the oxident containing gas through the rubblized zone after the combustion front reaches the

injection means so that the combustion front reverses itself and progressivly moves back toward the recovery means driving the educed hydrocarbons and the heat front progressively toward the recovery means, and

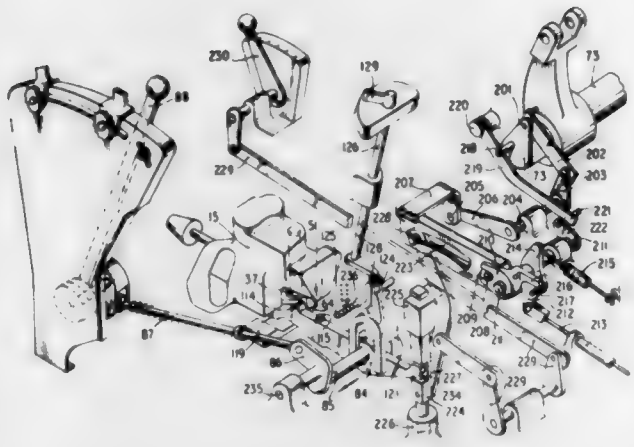
(e) removing the educed hydrocarbons from the recovery means.

4,084,641

CONTROL FOR A TRACTOR POWER LIFT MECHANISM

Herbert Edward Ashfield, and Harry Horsfall, both of Huddersfield, England, assignors to David Brown Tractors Limited, Huddersfield, England

Filed Feb. 9, 1976, Ser. No. 656,196
Int. Cl.[2] A01B *63/112*
U.S. Cl. 172—9 **11 Claims**



1. Control means for a tractor power lift mechanism comprising a movably mounted first member, height control means for automatically moving said first member in response to variations in the height relative to the tractor of an implement hitched to said tractor, a movably mounted second member, draft control means for automatically moving said second member in response to variations in the draft force exerted by the tractor on the implement, means including a movably mounted first balance lever interconnecting said first and second members, a first manually operable lever, a control linkage connected between said first balance lever and said first manually operable lever and comprising means for varying the point of connection of said control linkage to said lever whereby to vary the proportions of height and draft control, control valve means for said power lift mechanism, a second movably mounted balance lever adjustably connected to said first balance lever by said control linkage and also operatively interconnected between said control linkage and said valve means for actuating said valve means, and a second manually operable lever operatively connected to actuate said second balance lever to operate said valve means.

4,084,642

TURF PERFORATING MACHINE

Marvin L. Killion, 510 Pontiac Dr., Gretna, Nebr. 68028

Filed Jul. 13, 1976, Ser. No. 705,722
Int. Cl.[2] A01B *45/02*
U.S. Cl. 172—21 **8 Claims**

1. A turf perforating machine comprising:

a wheeled frame;

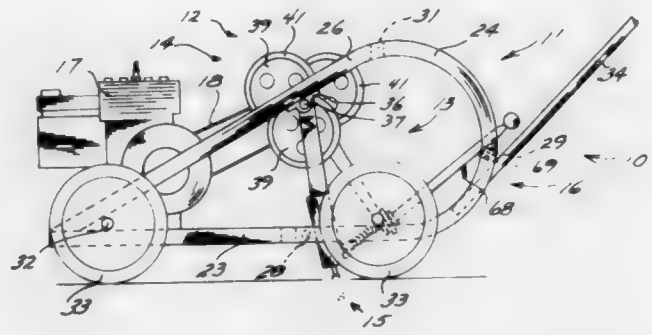
a laterally disposed shaft rotatably mounted on said frame;

power means mounted on said frame and operably connected to said shaft;

a guide device pivotally connected to said shaft and depending therefrom;

an eccentric unit secured to said shaft;

a reciprocating unit slidably disposed in said guide device and having one end connected to said eccentric unit and having the other end depending from said guide unit; and



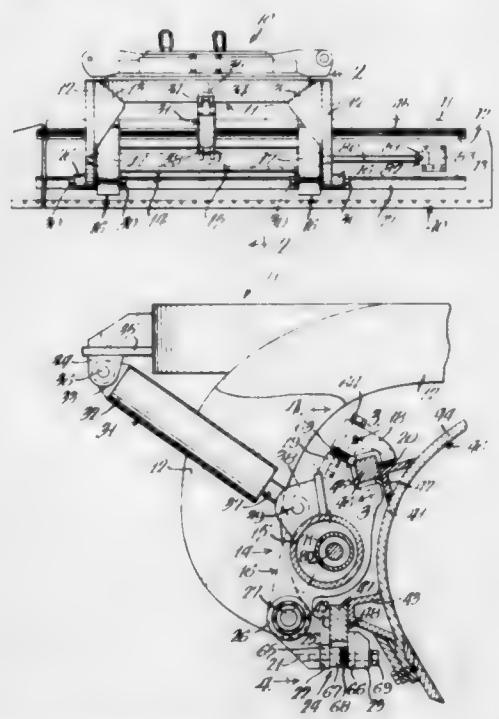
a tool unit secured to and depending from said reciprocating unit.

4,084,643

MOTOR GRADER WITH BLADE SUPPORT STRUCTURE

Gene Baptist Easterling, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 26, 1976, Ser. No. 745,507
Int. Cl.[2] E02F *3/76*
U.S. Cl. 172—795 **25 Claims**



1. In a motor grader which has a circle with a pair of integral, depending, parallel blade support arms at its rearward portion, an improved support means for mounting a grader blade assembly on said arms for endwise movement, said improved support means comprising, in combination:

a bearing housing structure comprising a pair of generally upright bearing housings and a transverse structural member which has one of said bearing housings integrally secured thereto at each of its ends, said entire bearing housing structure being slightly shorter than the space between the support arms and being devoid of any portions positioned laterally outwardly of said arms, and said bearing housings having open upper jaws and open lower jaws extending entirely across them, said bearing housing structure further being devoid of any portions integrally attached thereto which extend laterally outwardly of and also around said arms;

aligned transverse pivot means in the lower ends of said support arms which engage the bearing housings below said structural member to support said housing structure between said support arms and predominantly forward of the arms;

facing bearing means surrounding said pivot means between

said arms and said bearing housings so the bearing housing structure reinforces the arms against lateral deflection;

and substantially parallel upper and lower rails on the rear of the blade assembly which extend through said open jaws and are slidable therein, said jaws and rails having slidably interengaging surfaces to retain the rails in the jaws.

18. In a motor grader which has a circle with a pair of integral, depending, parallel blade support arms at its rearward portion, an improved support means for mounting a grader blade assembly on said arms for endwise movement, said improved support means comprising, in combination:

a pair of generally upright bearing housings each of which has a forwardly open upper jaw extending entirely across it with lower and upper bearing surfaces, and an upwardly open lower jaw extending across it with parallel front and rear internal bearing surfaces;

aligned transverse pivot means in the lower ends of said support arms which impale complementary holes in said bearing housings behind said lower jaws to pivotally support said bearing housings predominantly forward of the arms;

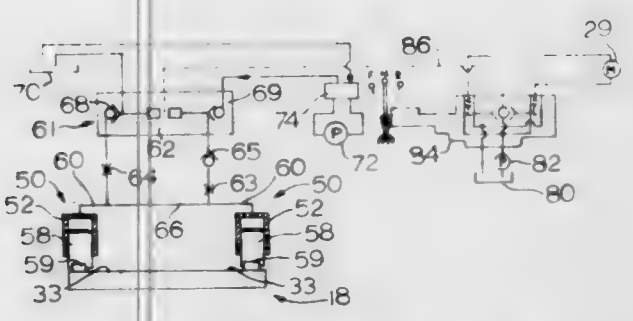
and substantially parallel upper and lower rails on the rear of the blade assembly which extend through said open jaws and are slidable therein, said upper rails having surfaces slidably engaging the bearing surfaces in the upper jaws to support the blade assembly on said bearing housings, and said lower rails making a close sliding fit between said front and rear internal bearing surfaces and being otherwise free of contact with the bearing housings at all times, whereby the blade assembly is supported solely by the upper jaws and is only restrained against fore-and-aft movement by the lower jaws.

4,084,644

MOTOR GRADER OR THE LIKE WITH HYDRAULIC CONTROL SYSTEM FOR CIRCLE GEAR

Carroll R. Cole, Decatur; Joseph E. Dezelan, Western Springs, and Gene B. Easterling, Decatur, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 17, 1976, Ser. No. 724,204
Int. Cl.[2] E02F *3/76*
U.S. Cl. 172—796 **10 Claims**



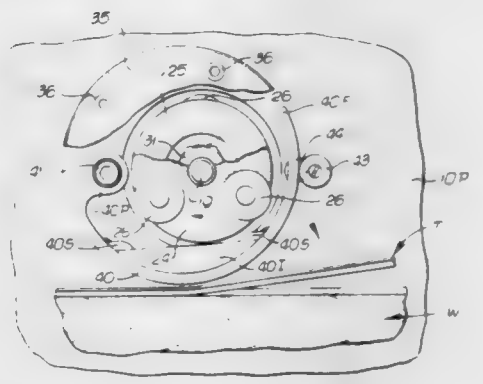
1. In a motor grader or the like including a main frame supported on wheels, a drawbar frame, a working implement carried by a circle gear and a power source; said drawbar frame being adjustably mounted on said main frame, said circle gear comprising an annular body having parallel upper and lower planar surfaces and inner and outer peripheral surfaces, and said working implement being carried by said circle gear adjacent said lower surface thereof; said drawbar frame including guide shoes slidably engaging said lower surface of said circle gear and supporting said circle gear with said upper surface of said circle gear adjacent said drawbar frame for rotation of said circle gear about the axis thereof, and said power source including drive means operably connected to said circle gear for selective rotation of said circle gear and said working implement carried thereby; the improvement comprising hydraulic ram means mounted on said drawbar frame including single acting piston means in continuous engagement with said upper surface of said circle gear and a hydraulic control system powered by pump means driven by said power source and supplied by a fluid reservoir, said hydraulic control system comprising means to apply a given hydraulic pressure to said hydraulic ram means to force said piston means against said upper surface of said circle gear when said circle gear is being rotated by said drive means and means within said hydraulic control system and spaced from said pump means to trap hydraulic fluid within said hydraulic ram means to continue to apply hydraulic pressure to said hydraulic ram means to cause said piston means to rigidly oppose movement of said lower surface of said circle gear away from said engagement with said guide shoes when said circle gear is not being rotated by said drive means.

4,084,645

APPARATUS FOR SECURING T-EDGING AND SIMILAR EDGING BANDS

Saverio Salamone, Sun City, Ariz., assignor to Evans Rotork, Inc., Glendale, Ariz.

Filed Dec. 9, 1976, Ser. No. 748,824
Int. Cl.[2] B23Q *5/027*
U.S. Cl. 173—13 **17 Claims**



1. A hammer comprising

a substantially semicircular flapper element pivotable about a point adjacent one end thereof and swingable about the pivot point upon receiving an impacting force at a preselected location thereof to thereby swingably produce a hammering action on a workpiece, the flapper element having a partial cylindrical configuration and is arranged in a vertical orientation, said flapper element including a long-wearing impact area defined on the inside cylindrical surface thereof at a preselected location for receiving the impacts from said impacting means, and

means for continuously producing an intermittent impacting force on the flapper element at said preselected location upon the flapper element being moved into engagement therewith and only during the time intervals the flapper element is maintained in engagement with said means at said preselected location,

said impacting means comprising three hammer impacting elements arranged in a triangular relationship for successively impacting the hammer at the impact area.

4,084,646

FLUID ACTUATED IMPACT TOOL

Ewald Heinz Kurt, Phillipsburg, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 19, 1976, Ser. No. 659,425
Int. Cl.[2] H01B *17/54*
U.S. Cl. 173—17 **30 Claims**

1. A percussive drill apparatus of the valveless type adapted for downhole drilling comprising:

a casing;

a backhead disposed at one end of said casing adapted to connect the drill apparatus to a drill string and a source of pressure fluid;

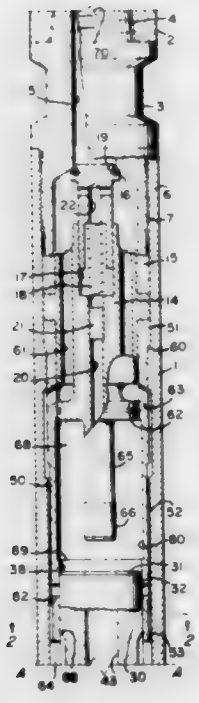
a distributor disposed within said casing towards said one end of said casing;

a percussive member disposed at the other end of said casing to form a chamber having one end disposed towards said distributor and a second end disposed towards said percussive member between said distributor and said percussive member within said casing;

a cylinder sleeve disposed in said chamber toward said one end of said chamber;

a first pressure fluid passage formed between said casing and said cylinder sleeve to connect the pressure fluid source to said chamber;

a piston disposed in said chamber to reciprocate axially therein and impart a blow on said percussive member; said piston is in sliding contact with said cylinder sleeve adjacent said one end of said chamber and in sliding contact with said casing adjacent said second end of said chamber;



a means for continuously applying pressure fluid to a selected portion of said one side of said piston to thereby provide a continued driving force on said piston towards said second end of the chamber;

a means for alternately supplying and exhausting pressure fluid to a selected portion of one side of said piston disposed towards said one end of said chamber and to a selected portion of the other side of said piston disposed towards said second end of said chamber to thereby reciprocate said piston; and

said means for alternately supplying and exhausting pressure fluid to said one side of said piston includes a second pressure fluid passage extending from said first pressure fluid passage along the interior of said sleeve and the exterior of said piston.

4,084,647

PNEUMATIC PERCUSSION HAMMER

William Lister, 36 Rabaul St., Moorooka, Queensland, Australia

Filed Jun. 30, 1976, Ser. No. 701,181

Claims priority, application Australia, Jul. 1, 1976, PC2183

Int. Cl.[2] B25D *17/14;* E21C *7/02*

U.S. Cl. 173—73 **2 Claims**

1. A pneumatic percussion hammer for rock drilling including:

a tubular housing,

a top sub connected to the top of the housing, adapted to be connected to, and to receive air under pressure from, a drill rod,

a cylindrical air feed tube extending from the top sub coaxially into the housing, said tube being formed with holes adjacent the bottom thereof, said tube apart from said holes serving no valving function;

a bit having a shank mounted for limited slidable movement in the lower end of the housing,

an anvil on the bit shank,

a bit air passage through the anvil, shank and bit,

a sliding seal tube extending axially into the housing from the bit air passage,

a piston reciprocally slidable in the housing and adapted to strike the anvil on its down-stroke,

a top pressure chamber in the housing about and above the top of the piston,

a bottom chamber in the housing about and below the piston,

a central pressure chamber in the housing about an intermediate part of the piston,

an upper cylindrical, axial passage in the piston, said passage being slidably engaged with the air feed tube,



a lower axial passage in the piston adapted, when the piston is on its down-stroke, to engage slidably with the sliding seal tube,

pressure ports extending through the walls of said piston and communicating with said upper and lower axial passages, said ports being adapted to direct air under pressure from the upper axial passage of the piston to the top pressure chamber when the piston is in raised position, and to the bottom pressure chamber when the piston is in lowered position, and

exhaust ports in the piston adapted to conduct air under pressure between the central chamber and the lower axial passage of the piston, and to conduct air, when the piston is lowered, from the central chamber to the top pressure chamber.

4,084,648

PROCESS FOR THE HIGH-PRESSURE GROUTING WITHIN THE EARTH AND APPARATUS ADAPTED FOR CARRYING OUT SAME

Teruo Yahiro, Tokyo, and Hiroshi Yoshida, Tokorozawa, both of Japan, assignors to Kajima Corporation and Chemical Grout Company, Limited, both of Tokyo, Japan

Continuation-in-part of Ser. No. 666,280, Mar. 12, 1976, Pat. No. 4,047,580, which is a continuation of Ser. No. 523,647, Nov. 13, 1974, abandoned. This application Feb. 11, 1977, Ser. No. 768,251

Claims priority, application Japan, Feb. 12, 1976, 51-13296

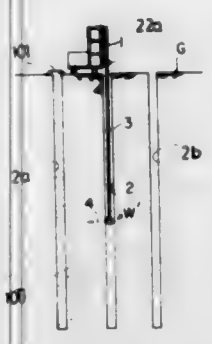
Int. Cl.[2] E21B *7/18, 33/138;* E02D *3/12*

U.S. Cl. 175—67 **7 Claims**

1. Process for the formation of an underground cemented earth mass, comprising the steps of injecting a combined and concentric liquid-and-gas jet laterally from a gradually elevating first point within the earth for fluidically penetrating there-

into and cutting thereof, and grouting continuously from a second point with a cement milk separately from said jet and at a lower level than the latter for solidifying a mixture of the cut and crushed earth with the said liquid gradually from below, said second point being elevated gradually and concurrently with said first point.

6. Apparatus for the formation of an underground cemented structure wherein a concentric triple-walled pipe rod proper is fitted at its upper end with a swivel and supply assembly adapted for receiving separately compressed air, pressure liquid and pressurized cement milk and for being vertically



movably and rotatably suspended, and at its lower end with a working head comprising a laterally directing and concentrically arranged double jet nozzle, having a core nozzle element and an outer ring nozzle element, said core nozzle element being adapted for injecting a liquid core jet containing no earth-solidifying agent and at a high velocity at least equal to a half the sonic one and the outer ring nozzle element being adapted for injecting a ring gas jet enveloping said liquid core jet, and said working head is provided with cement milk discharge means positioned at a lower level than the said double jet nozzle.

4,084,649

ROCK BIT

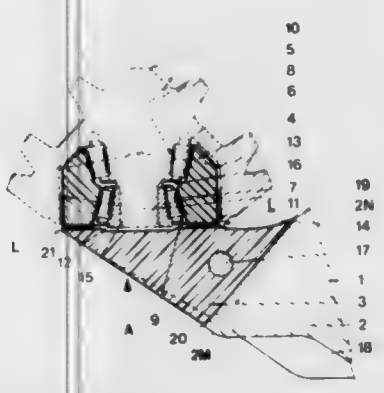
Hans Bertil van Nederveen, Bosch en Duin, Netherlands, assignor to SKF Industrial Trading & Development Company B.V., Jutphaas, Netherlands

Filed Jun. 7, 1976, Ser. No. 693,508

Claims priority, application Netherlands, Jun. 20, 1975, 7507355

Int. Cl.[2] E21B *9/08*

U.S. Cl. 175—366 **14 Claims**



1. In a rock bit for drilling holes in the earth's crust, wherein rotatable cutting elements are journalled in supports, the supports being adapted to be coupled to rock bit driving means; the improvement wherein said supports are comprised of a base portion having a recess and a removable portion removably held by said base portion, said cutting elements being journalled in said removable portion, said removable portion having the shape of a solid prism and being removably fitted to said base portion in said recess with all of the edges of the prism lying in planes generally defined by the outer surfaces of said base portion outside of said recess.

4,084,650

SPRING BALANCE

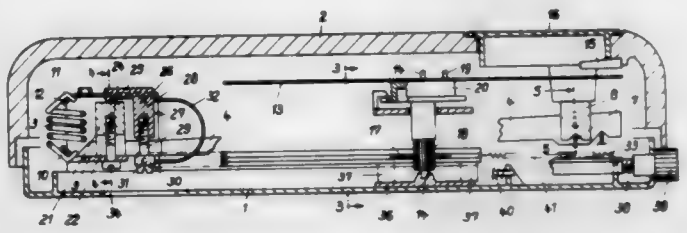
Paul Terraillon, Monnetier-Mornex, France, assignor to Terraillon, Annemasse, France

Filed Jun. 10, 1976, Ser. No. 694,682

Claims priority, application Switzerland, Sep. 10, 1975, 11733/75

Int. Cl.[2] G01G *23/14*

U.S. Cl. 177—174 **8 Claims**



1. A weighing scale of the type disclosed comprising a support frame, a weighing platform movably mounted with respect to said support frame, and a weighing mechanism interconnected between said frame and said platform, said weighing mechanism including:

a. an indicating means for indicating the weight of an object placed upon said platform,

b. a pinion mounted for rotation on said frame,

c. an elongated rack in mesh with said pinion,

d. said indicating means being connected to said pinion for indicating the weight of an object upon actuation of said rack and rotation of said pinion,

e. a weigh spring interconnected between said platform and said frame for spring movement in response to an object place upon said platform,

f. a fulcrum,

g. a lever interconnected between said weigh spring and said rack and pivoted on said fulcrum,

h. one end of said lever also being pivoted to said rack,

i. said lever being arranged substantially perpendicular to the direction of travel of the rack when said rack is in its zero position,

j. means for adjusting the indicating means to zero when the rack is in its zero position and the platform is not loaded,

k. the length of said lever between said fulcrum and the pivot point of said lever on said rack being adjustable in length for affecting calibration of the weighing mechanism under a known predetermined load, and

l. adjustment of the length of said lever to calibrate the mechanism as aforesaid being without any substantial effect upon the zero adjustment of said indicating means.

4,084,651

LIQUID-ACTUATED WEIGHING APPARATUS

Jean Henri Lagneau, 30, route du Vallon Sainte-Gemme-Moronval, 28105 Vernouillet, France

Filed Sep. 27, 1976, Ser. No. 727,219

Claims priority, application France, Oct. 3, 1975, 75 30305

Int. Cl.[2] G01G *1/30, 1/26, 5/04*

U.S. Cl. 177—192 **10 Claims**

1. A weighing apparatus comprising:

a closed compressible chamber of variable volume;

a reservoir having a lower end;

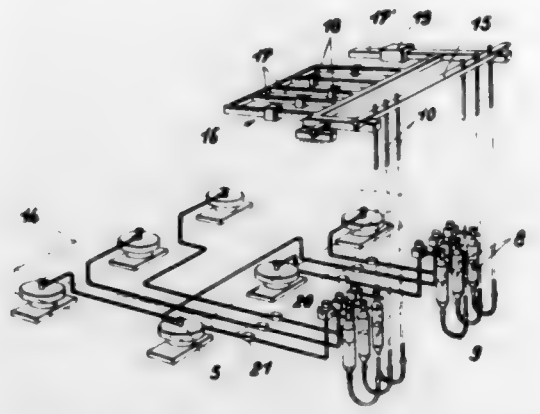
a conduit interconnecting said chamber and said reservoir;

a first liquid filling said conduit and said chamber.

an upright tube having an upper end open to the atmosphere and a lower end;

a flexible conduit connecting said lower ends together;

a second liquid filling said flexible conduit, at least part of said reservoir, and at least part of said upright tube; and



means for weighing the mass of said second liquid displaced in said tube on compression of said closed chamber.

4,084,652

WEIGHING APPARATUS

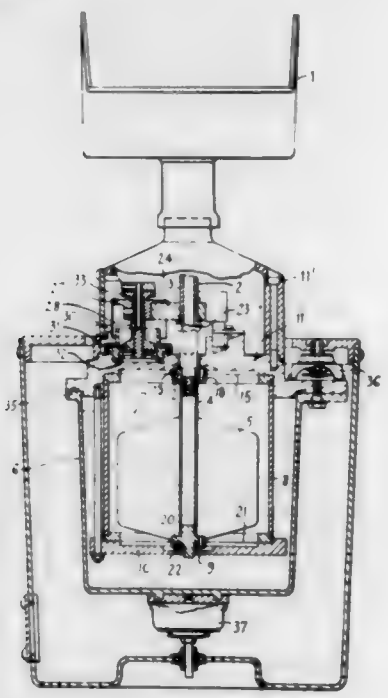
Charles Edward Arthur Sharp-Dent, and John Owen Hounsell, both of Uxbridge, England, assignors to Wright Machinery Company Limited, Uxbridge, England

Filed May 3, 1976, Ser. No. 682,460

Claims priority, application United Kingdom, May 2, 1975, 18582/75

Int. Cl.[2] G01G *5/02*

U.S. Cl. 177—207 **2 Claims**



1. Weighing apparatus comprising:

a. a frame;

b. a receptacle for receiving material to be weighed;

c. a stem secured to the receptacle;

d. suspension means secured to the stem so that the stem can move substantially vertically with respect to the frame under an applied load; the suspension means comprising two spider members each consisting of a body having a circular rim portion and a plurality of resilient spokes extending generally inwardly to a hub, the hubs of the spider members being secured to the stem at positions spaced axially along the stem, and the rim portions being secured to the frame such that the stem can move resiliently in the vertical direction but that lateral and torsional movement thereof are substantially prevented;

e. measuring means mounted on the frame and operative to give an electrical output signal varying in accordance with vertical movement of the stem;

f. a chamber defining a space for housing a liquid medium, and a float located within the chamber, the stem being connected to said float, said float being submerged throughout its normal range of movement so as to give fixed buoyancy irrespective of vertical movement;

g. said chamber comprising a main float chamber, an inner chamber disposed coaxially within the main float chamber, an opening defined in the wall of the inner chamber through which the liquid medium can pass from the main float chamber to the interior of the inner chamber; and

h. a plurality of vibration damping devices which interconnect the main float chamber to an outer casing.

4,084,653

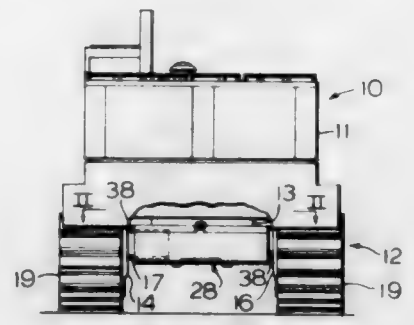
PROTECTIVE GUARD ARRANGEMENT FOR TRACK DRIVE MOTORS

Charles G. Boen, Montgomery, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 19, 1977, Ser. No. 788,873

Int. Cl.[2] B62D *55/00*

U.S. Cl. 180—9.48 **4 Claims**



1. In a crawler type vehicle of the type movable along a longitudinal axis and having a car body, a pair of roller frames connected to the opposed sides of the car body, and a pair of drive motors each being connected to a respective roller frame and each having proximal and distal end portions, each of said roller frames being movable between a first position at which the roller frame and associated drive motor are at a minimum distance from the longitudinal axis and a second position at which the roller frame and associated drive motor are at a maximum distance from the longitudinal axis, the improvement comprising:

a first guard assembly connected to said car body and being of a construction sufficient for substantially encompassing said drive motors at the first position of the roller frames and for encompassing at least the distal end portions of the drive motors at the second position of the roller frames; and

a pair of second guard assemblies each mounted on a respective roller frame and movable therewith during movement of the roller frame between the first and second positions, each of said second guard assemblies being of a construction sufficient for encompassing the proximal end portion of the associated drive motor and for telescopically extending into the first guard assembly at the first position of the roller frame.

4,084,654

PARTIALLY FLUID LACKED VEHICLE DRIVE TRAIN

Harold M. Dudek, Bellevue, Wash., assignor to Astro Development Corporation, Seattle, Wash.

Filed Sep. 30, 1976, Ser. No. 728,307

Int. Cl.[2] B60K *17/16*

U.S. Cl. 180—44 R **10 Claims**

1. A partially fluid locked gear drive train for a transfer case or differential or the like comprising:

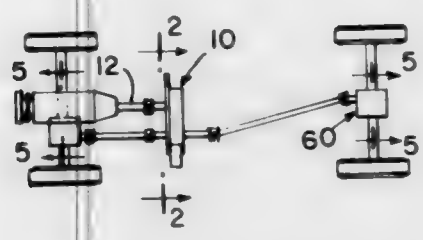
an outer fluid tight housing,

an inner housing,

a planetary gear train within said inner housing, said gear train including a sun gear, a plurality of planet gears and an internal ring gear, all said gears lying in a common plane,

plate means positioned on opposite sides of said gears in

close abutting relation thereto and closely surrounding the peripheries of the gears, said plate means including coaxially aligned fluid inlet and outlet ports, the location of said ports being also aligned with teeth of said gears but spaced around the periphery of the gears a distance from a from



a point of mesh between two meshing gears whereby fluid is carried by the gear to a point of mesh for partial fluid lock and is also passed through the gear teeth for cooling, and

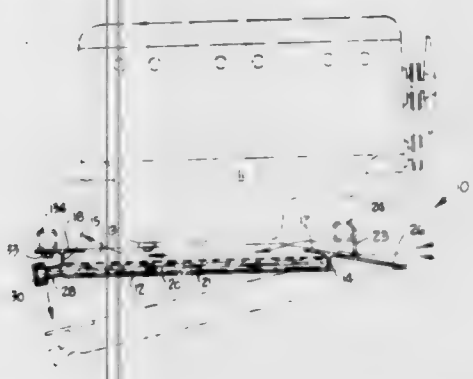
means for delivering fluid into said inner housing and maintaining the inner housing in a generally filled condition.

4,084,655

MOTOR VEHICLES

Emil Savron, 468 Morphett Road, Warradale, Australia (5046)

Filed Aug. 10, 1976, Ser. No. 713,100
Claims priority, application Australia, Aug. 15, 1975, 2802/75
Int. Cl.[2] B62D *25/20*
U.S. Cl. 180—69.1 **3 Claims**



1. Apparatus for collecting and retaining liquid exudant such as oil as dripped from an internal combustion engine of a vehicle, the arrangement being characterized in that there is a tray, including a floor and upturned sides and a rear portion, adapted to be supported by being secured to the vehicle in a position below the engine, the position of the tray relative to the motor vehicle being such as to encourage air flow between the engine sump and the tray during forward movement of the motor vehicle, the tray being adapted to retain the liquid exudant by reason of the upturned sides, a porous pad within the tray extending over the floor of the tray, means retaining said pad in such position within the tray, hinge means secured to a front portion of the tray to secure the tray to a vehicle below the engine to mount the tray pivotally for movement between a horizontal drip catching position and a downwardly extending draining position, an outlet means at a rear portion of the tray for draining liquid collecting in the tray, and removable means to secure the rear portion of the tray to a vehicle to position the tray substantially horizontally.

4,084,656

MOTORCYCLE STAND WITH SAFETY SWITCH

Masaki Itoh, Akashi, and Yorio Yamasaki, Kakogawa, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Apr. 21, 1977, Ser. No. 789,679
Claims priority, application Japan, May 1, 1976, 51-50508
Int. Cl.[2] B60K *28/00*
U.S. Cl. 180—103 R **14 Claims**



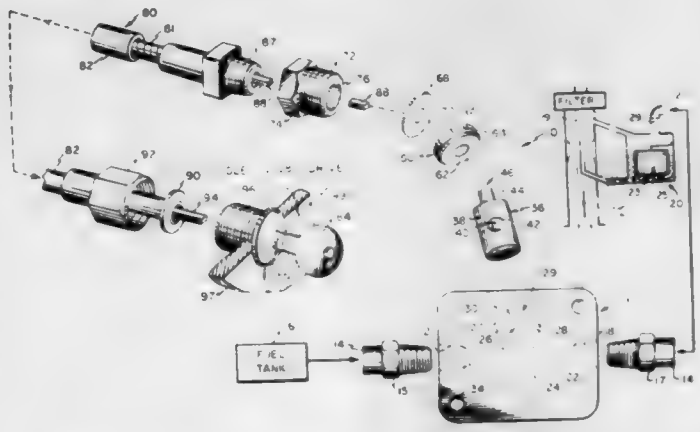
1. A device for preventing the starting of a two-wheeled motorcycle having a source of potential, an engine ignition circuit, an engine starting circuit and a stand, for motorcycles of the type comprising a stand assembly including a stand adapted to be brought to a forwardly inclined operative position for supporting the motorcycle when the latter is stationary, to automatically move to a neutral position when the motorcycle is brought to an upright position and to be moved to an inoperative position by the driver when the motorcycle runs, said device comprising, in combination, a stand switch connected in series between said ignition circuit and said source of potential; and means included in said stand assembly and operable to effect closure of said stand switch, when said stand is in either its operative position or its inoperative position, and to effect opening of said stand switch when said stand is in its neutral position.

4,084,657

METHOD AND APPARATUS FOR PREVENTING THEFT OF IDLING VEHICLES

W. L. Bradley, 64 Ford St., Ansonia, Conn. 06401; Bennie W. Frye, 70 Evelyn St., Stratford, Conn. 06497, and Joseph W. Raines, 686 Platt St., Bridgeport, Conn. 06606

Continuation-in-part of Ser. No. 166,067, Jul. 26, 1971, abandoned. This application Feb. 28, 1974, Ser. No. 446,772
Int. Cl.[2] B60R *25/04*
U.S. Cl. 180—114 **9 Claims**



1. Apparatus for preventing the theft of a vehicle having an engine utilizing first and second fuel components, said engine incorporating a fuel tank for storing the first fuel component and a carburetor for mixing the first and second fuel components, said carburetor having a fuel chamber for storing a small quantity of said first fuel; comprising:

A. a valve interposed between the fuel tank and the fuel chamber of the carburetor having:
(a) a first position permitting full flow of said first fuel component to said chamber; and
(b) a second position permitting restricted flow of said first fuel component to said chamber; and

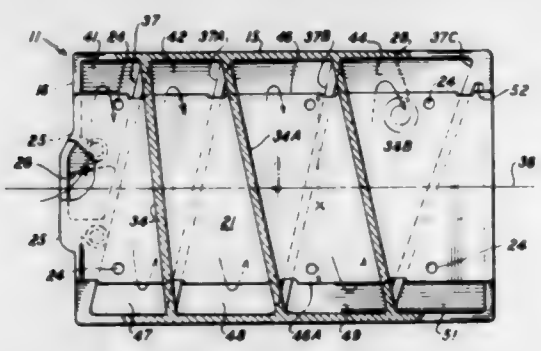
B. a lock communicating with the valve for controlling the movement of the valve between its first and second positions; whereby the engine is fully operable when the valve is placed in its first, full flow position, and is restricted to continuous idling and short time duration full loading when the valve is placed in its second, restricted flow position.

4,084,658

TUNABLE EXPANSION CHAMBER FOR INTERNAL COMBUSTION ENGINES

Milo E. Murphy, Long Beach, Calif., assignor to Custom-Bilt, Seal Beach, Calif.

Filed Nov. 5, 1976, Ser. No. 739,196
Int. Cl.[2] F01N *1/00*
U.S. Cl. 181—241 **13 Claims**



1. An expansion chamber for attachment to an internal combustion engine having an exhaust port from a cylinder with a piston and a fuel intake port, the combination comprising an outer casing, an inner central divider plate having a longitudinal axis, a first plurality of longitudinal spaced diverters extending between plate and casing on one side of the plate, a second plurality of diverters extending between plate and casing on the other side of the plate, the diverters of one plurality sloping with respect to the longitudinal axis oppositely to the diverters of the other plurality, said plate being narrower than the interior of said casing such that an exchange opening is defined between pairs of diverters between casing and plate edge, an exhaust input port at one end of said casing connecting to the volume between adjacent diverters and said plate, and an exhaust outlet port in said casing connecting to the volume between adjacent diverters and said plate at a casing end remote from said input port, said diverters, casing and plate defining a continuous passage from input port to outlet port.

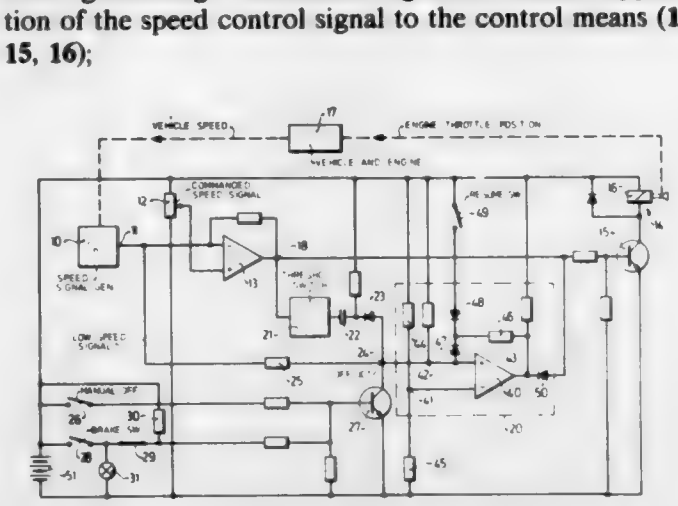
4,084,659

AUTOMOTIVE VEHICLE SPEED CONTROL SYSTEM

Karl-Ludwig Abend, Schwieberdingen; Bernhard Mattes, Sachsenheim, and Hans Scheyhing, Leonberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 10, 1976, Ser. No. 722,210
Claims priority, application Germany, Oct. 4, 1975, 2544454
Int. Cl.[2] B60K *31/00*
U.S. Cl. 180—105 E **8 Claims**

1. Vehicle speed control system comprising means (13) to generate a speed command signal;
control means (14, 15, 16) to control the engine of the vehicle in accordance with a speed control output signal;
a disconnect signal memory and control circuit (20) connected to control application of the speed control signal to the control means (114, 15, 16) and including an electronic amplifier (40) having a self-holding feedback connection (46, 47),
an OFF junction (24) connected to the disconnect memory and control circuit (20) to set the circuit to a disconnect mode generating a disconnect signal and inhibit application of the speed control signal to the control means (14, 15, 16);



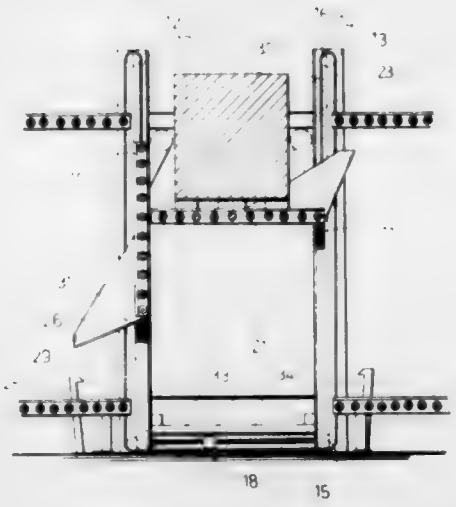
and a "resume" signal generating switch (49) connected to the self holding feedback connection (46, 47) of the amplifier (40) to disable application of the feedback signal from the output (43) of the amplifier to its input (42) and reset the amplifier to permit transfer of the speed control signal to the control means (14, 15, 16).

4,084,660

LIFTING DEVICE FOR MOVING GOODS BETWEEN DIFFERENT LEVELS

Leif Per Roland Anderson, Bogatan 39 A, S- 412 72 Goteborg, Sweden

Filed Feb. 4, 1977, Ser. No. 765,644
Int. Cl.[2] B66B *11/04*
U.S. Cl. 187—26 **1 Claim**



1. Lifting device for the transfer of goods from a first level to a second level, comprising driving means, a frame having two guides, two platforms movable along said guides, pivoting means for supporting each platform on a respective guide and permitting each platform to be pivoted between a first position extending from its respective guide wherein it can carry goods and a second position adjacent to its respective guide, said guides being located relative to each other such that said platforms have substantially the same path of movement when being moved along said guides, power transmission means between said driving means and said platforms having for each platform an elongated flexible traction element, one end of which is attached to said frame and the other end to the respective platform, said traction element extending in a loop over a pulley, said pulley being operably connected to said driving means and actuated thereby to perform a reciprocating movement, the respective ends of the two traction elements attached

to the respective platforms extending in opposite directions along the guides, whereby the platforms are moved in a synchronous displacing movement in opposite directions relative to each other in the path of movement along their respective guides when pulleys are displaced by means of the driving means, and means for pivoting said platforms between said positions whereby one of said platforms will be pivoted to said second position when the other platform is in the first position and moving in the opposite direction to provide free passage in the path of movement for said other platform, said pivoting means comprising a catching means provided to catch a part of said one platform at a distance from the pivoting axis of said one platform to impart a turning movement thereto when said axis is moved along the respective guide together with said one platform.

4,084,661

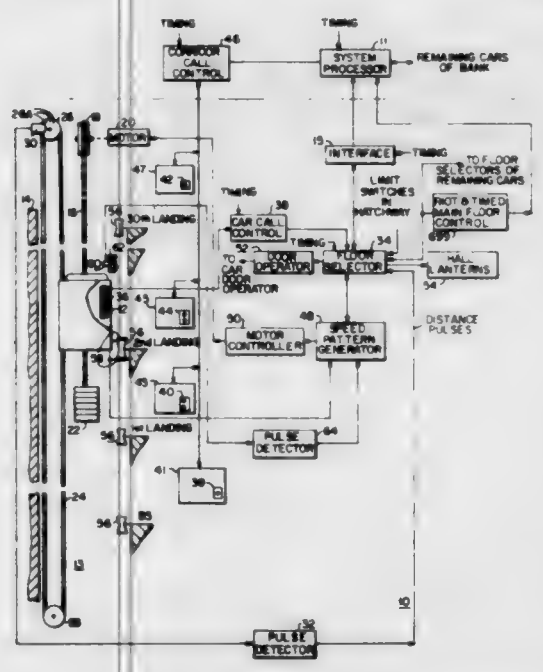
ELEVATOR SYSTEM

Wing C. Quan, Waldwick, N.J.; David M. Edison, Murrysville, Pa.; George T. Hummert, Oakmont, Pa., and Milton Sackin, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 7, 1974, Ser. No. 467,700

Int. Cl.[2] B66B *1/20*

U.S. Cl. 187—29 R **20 Claims**



1. In an elevator system, a method of providing predetermined lobby functions at a selectable floor of a building, comprising the steps of:

providing a plurality of elevator cars,

providing status signals responsive to said elevator cars,

providing means for registering requests for elevator service,

providing a system processor including a memory responsive to the status signals and requests for elevator service for providing signals for controlling movement of the elevator cars,

providing software instructions for the memory which select a floor of the building as a special floor,

detecting the desirability of switching the selected special floor to a different floor,

and changing the specified special floor in the software instructions to a different floor responsive to the detecting step.

4,084,662

CONTROL APPARATUS FOR AN ELEVATOR SYSTEM

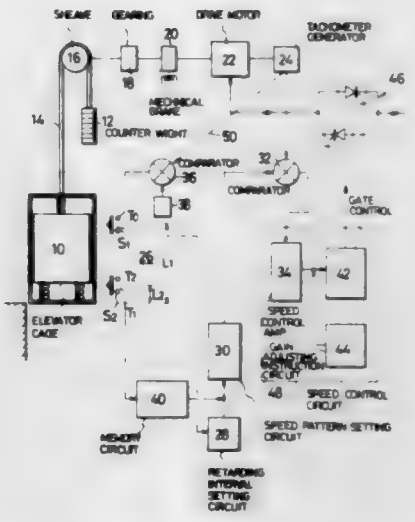
Minoru Tezuka, Yokohama, and Yastami Kito, Tokyo, both of Japan, assignors to Nippon Otis Elevator Company and Kabushiki Kaisha Meidensha, both of Tokyo, Japan

Filed Mar. 30, 1976, Ser. No. 671,815

Claims priority, application Japan, Sep. 1, 1975, 50-120473; Sep. 1, 1975, 50-120474

Int. Cl.[2] B66B *1/30*

U.S. Cl. 187—29 R **4 Claims**



1. A control apparatus for an elevator system in which rotational speed of a drive motor for driving said elevator system is controlled by supplying a deviation signal obtained by comparing a speed signal of said drive motor including an induction motor with a driving pattern setting signal, said control apparatus comprising: a retardation time interval setting circuit for setting a retardation time interval for retarding the speed of said drive motor, a speed pattern setting circuit beginning operation depending on a signal from said retardation time interval setting circuit and for setting a retarding pattern of said elevator, a speed pattern correcting circuit storing a deviation signal obtained by comparing a signal corresponding to an output signal of said speed pattern setting circuit with a reference speed setting signal of a reference speed setting circuit and applying said deviation signal to said speed pattern setting circuit for correcting said speed pattern, a comparator circuit for generating a deviation signal between said output signal of said speed pattern setting circuit and the signal proportional to said rotational speed of the drive motor, and a speed control circuit for amplifying and controlling said deviation signal and for supplying said amplified and controlled deviation signal to said drive motor as a control signal, said speed control circuit comprising a control amplifier circuit for controlling and amplifying said deviation signal of said comparator circuit, a gate control circuit for controlling a voltage to be applied to said drive motor in response to an output signal of said comparator circuit, and a gain adjusting instruction circuit for supplying a bias to said control amplifier circuit in changing said drive motor from a powering state to a retarding state thereof.

4,084,663

AUTOMATIC BRAKE FOR WHEELED CARRIAGES

Frederick Haley, 819 Stevens St., Lowell, Mass. 01851

Filed Aug. 30, 1976, Ser. No. 718,539

Int. Cl.[2] B62B *5/04*; B60T *1/06*

U.S. Cl. 188—31 **10 Claims**

9. In combination

a manually propelled vehicle having front and rear wheels with spaced, radial spokes and a push bar handle at the upper rear of said vehicle,

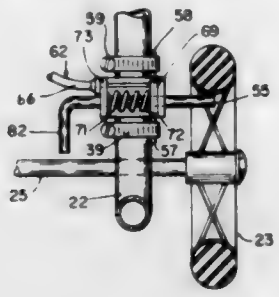
an automatic locking device attachable on said vehicle without structural change thereof and comprising:

an elongated bracket having a brake rod longitudinally

slidable therein, with a brake locking portion extending outwardly therefrom;

means for detachably clamping said bracket on said vehicle with the locking portion of said rod in the space between adjacent spokes of one of said front wheels,

set screw slide means on said rod, and a coil spring encircling said rod, within said bracket, for normally spring



biasing said locking portion outwardly under predetermined, adjustable compression;

finger grip means, including a slidable member connected by a flexible cable to said set screw slide means for retracting said wheel locking portion from the space between said spokes and

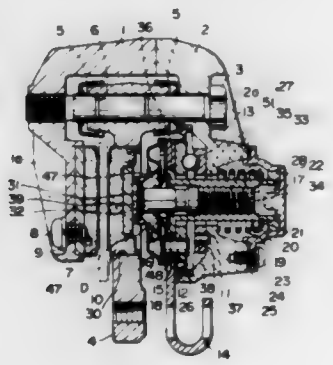
means associated with said finger grip means for detachably clamping the same on said push bar handle.

4,084,664

DISC BRAKE

Tetsuo Haraikawa, Funabashi, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Feb. 15, 1977, Ser. No. 768,905
Claims priority, application Japan, Feb. 20, 1976, 51-17797
Int. Cl.[2] F16D *65/56*
U.S. Cl. 188—71.9 **5 Claims**



1. In a disc brake:

a rotatable disc to be braked;

fixed support means;

friction pad means having a friction side for engaging a portion of one side of said disc when the brake is operated and an opposite side to which a substantially linear force may be applied for operating the brake,

said pad means being shiftably carried by said support means for substantially linear movement thereof between a normal disposition in which said friction side is in adjacent facing relationship to said portion of said disc and a braking disposition in which said friction side is in forceful braking engagement with said portion of said disc;

housing means carried by said support means and including a leg portion spaced from said opposite side of said pad means in a direction away from said disc,

said leg portion including wall structure defining an opening therethrough disposed in alignment with said pad means and said portion of said disc;

tubular nut means having an axis, an internally threaded axial body portion extending through said opening, an out-turned flange portion adjacent one extremity of said body portion disposed between said pad means and marginal parts of said leg portion around the extremity of said opening proximate said pad means, ratchet teeth means on the side of said flange portion facing said pad means, and an external surface adjacent the other extremity of said body portion remote from said pad means;

operating lever means pivotally mounted on said nut means for rotational movement about said axis of the latter;

means for mounting said nut means on said leg portion for rotation of said nut means about said axis thereof and for substantially linear movement of said nut means along said axis toward and away from said pad means,

said mounting means including spring means operably intercoupled with said leg portion and said nut means for yieldably biasing the latter in a direction away from said pad means, and guide means for maintaining said axis of said nut means substantially centered with respect to said opening;

motion conversion means, including ramp means carried by said lever means and disposed between said flange portion of said nut means and said marginal parts of said leg portion for shifting said lever means and thereby said nut means substantially linearly along said axis toward said pad means when said lever means is turned in one rotational direction thereof;

push rod means adjustably carried by said nut means and having an externally threaded portion adjacent one extremity thereof threadably received in said body portion, and a stretch, including a portion of polygonal transverse cross-section, extending from said threaded portion along said axis toward and into proximity with said opposite side of said pad means for engagement of the latter by the other extremity of said rod means to apply a substantially linear force to said pad means for shifting the latter into its said braking disposition when said nut means is shifted toward said pad means; and

means for automatically adjusting for any substantial wear of said pad means by rotating said rod means relative to said nut means to shift said other extremity of said rod means into engagement with said opposite side of said pad means to move the latter into its said normal disposition relative to said portion of said disc,

said adjusting means including friction means engaging said surface of said body portion to yieldably resist rotation of said nut means, and at least one tongue carried by said lever means and in engagement with said polygonal portion of said rod means for rotating said rod means in response to movement of said lever means in one rotational direction thereof until said rod means has moved said pad means into initial forceful engagement with said portion of said disc.

4,084,665

DISC BRAKE AND MOUNTING MEANS THEREFOR

Richard Thomas Burnett, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Oct. 22, 1976, Ser. No. 734,908
Int. Cl.[2] F16D *65/02*
U.S. Cl. 188—73.3 **9 Claims**

1. A disc brake comprising:

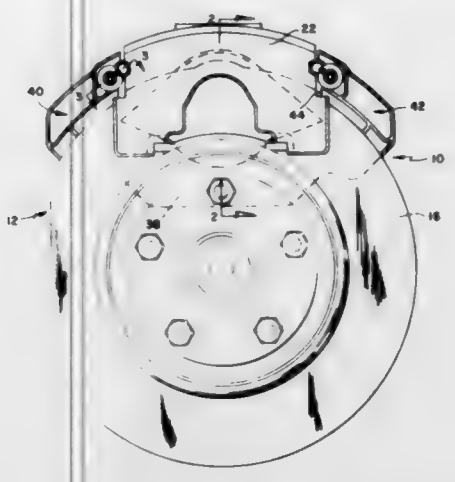
a rotor rotating with an axle assembly and having friction faces on opposite sides thereof;

a caliper cooperating with a pair of friction elements to urge the pair of friction elements into engagement with the friction faces on said rotor to retard the rotation of said rotor;

a torque member secured to a nonrotating portion of the axle assembly, said caliper and said torque member having substantially matching slots; and

a pair of pins disposed within said matching slots between said torque member and said caliper, each of said pair of pins having a recess within said matching slots for receiv-

ing an elastomeric ring, which ring resiliently engages said torque member slot and said caliper slot to dispose each of



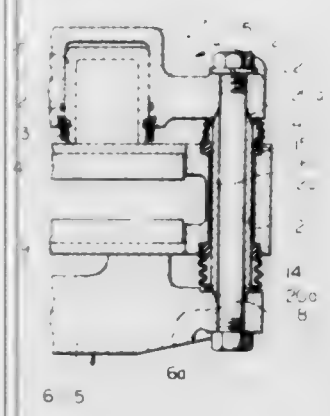
said pair of pins in spaced relation to said torque member and said caliper in a brake-release position.

4,084,666

DISC BRAKE CALIPER MOUNTING

Yasuo Karasudani, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Feb. 7, 1977, Ser. No. 766,506
Claims priority, application Japan, Feb. 12, 1976, 51-15358
Int. Cl.[2] F16D *65/02*
U.S. Cl. 188—73.3 **2 Claims**



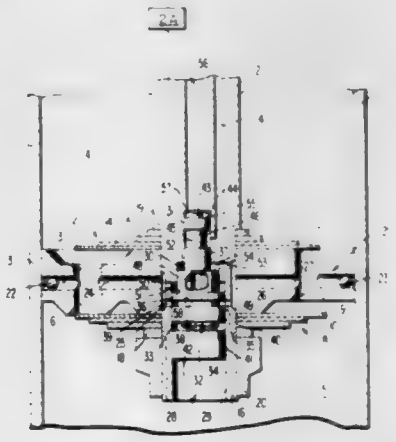
1. A disc brake comprising a rotatable disc, a non-rotatable member having a portion straddling a portion of the outer periphery of the rotatable disc, a pair of brake pads disposed on the opposite sides of the disc and slidably supported in said non-rotatable member for movement toward and away from the disc, a caliper having two caliper parts on opposite sides of said disc and said non-rotatable member, said non-rotatable member having a pair of guide bores therethrough, a pair of bolts spaced circumferentially of said disc and connected between said caliper parts through said guide bores for securing said caliper parts to each other, a sleeve surrounding the shank portion of each of the bolts and extending between the caliper parts through said guide bores, said caliper parts having bolt receiving holes therein having portions facing said non-rotatable part with a diverging enlarged shape, the opposite ends of each of said sleeves having a shape complementary to the diverging enlarged shape and being tightly seated in the diverging enlarged shape portions of said bolt receiving holes with part of said complementary shaped portions outside of said diverging enlarged shape portions of said bolt receiving holes, said part of said complementary shaped portions being ungrooved, and a resilient ring interposed between each sleeve and the corresponding guide bore at each end of said sleeve, each resilient ring having a dust cover portion integral therewith and extending along a portion of the sleeve exposed between the guide bore and the adjacent caliper part, the free end of said dust cover engaging with said complementary shaped portion of said sleeve which is outside said diverging enlarged shape portion of said bolt receiving hole for holding the free end of said dust cover portion in engagement with said sleeve adjacent the caliper part and preventing said free end from moving back toward said resilient ring.

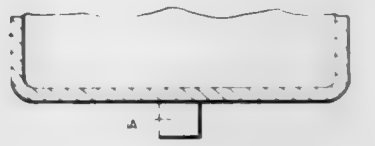
4,084,667

VIBRATION DAMPER FOR VEHICLE SPRING SYSTEMS

Klaus Kurrat, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Continuation of Ser. No. 473,170, May 24, 1974, abandoned.
This application Nov. 23, 1976, Ser. No. 744,453
Claims priority, application Germany, May 26, 1973, 2326983
Int. Cl.[2] F16F *9/34*
U.S. Cl. 188—275 **12 Claims**





1. A vibration damper comprising:

cylinder means,

piston means movably disposed in said cylinder means with a first fluid working space at one side of said piston means and a second fluid working space at the other side of said piston means,

first damping valve means for permitting passage of fluid medium from said first space to said second space in response to a predetermined increase of pressure in said first space upon movement of said piston means in a direction toward said first space,

second damping valve means for permitting passage of fluid medium from said second space to said first space in response to a predetermined increase of pressure in said first space upon movement of said piston means in a direction toward said second space,

bypass connection means for accommodating passage of fluid medium between said first and second spaces in bypassing relationship to said first and second damping valve means,

and bypass valve means for continuously and automatically controlling the flow cross-section of said bypass connection means in dependence on at least one influencing magnitude during both directions of flow of said fluid medium between said first and second space, such that during an increase in said influencing magnitude the flow cross-section of said bypass connection means is reduced and the temporal quantity of said fluid medium directly passing through said first and second damping valve means without throttling is simultaneously increased, each of said first and second damping valve means and said bypass valve means operating independently relative to one another,

wherein one of said cylinder means and piston means includes means for attaching itself to a vehicle superstruc-

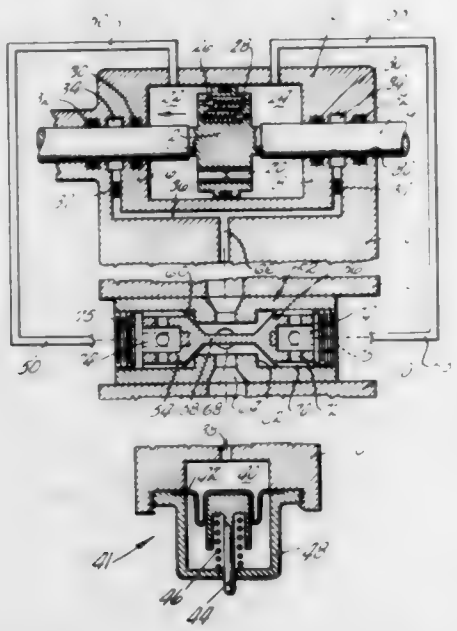
ture and the other of said cylinder means and piston means includes means for attaching itself to a vehicle wheel, and wherein said bypass valve means includes a movable adjusting stepped piston having three stepped piston sections of different diameters, said stepped piston being slidably mounted in an axial bore of said piston means, and wherein a closure member closes one end of said axial bore.

4,084,668

REDUNDANT DAMPER SEALS

Robert Charles Rybicki, Trumbull, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 5, 1975, Ser. No. 584,238
Int. Cl.[2] F16F *9/20*
U.S. Cl. 188—312 **1 Claim**



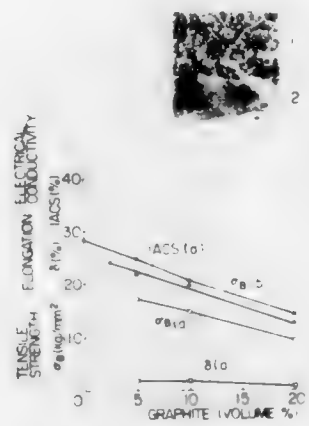
1. A hydraulic damper of the type used in a high centrifugal field for controlling the lead-lag movements of a helicopter blade including a damper casing having a cylinder therein and a piston reciprocable in said cylinder forming with the latter a damper chamber on each side of the piston, a piston rod extended through the end walls of said cylinder, and means for at least doubling the service life of existing dampers of this type including a set of spaced high pressure seals in each of said end walls surrounding said piston rod and capable of resisting the high fluid pressure and fluid impact forces encountered in these dampers, each set including a first seal which acts to resist the high fluid forces of the damper during the first phase of the damper's service life and a second seal which acts to resist these forces during the last phase of the damper's service life, the space between the seals of each set forming a cavity for collecting any fluid which leaks past said first seal, means including a closed fluid reservoir for storing fluid leaked past said first seal, means for maintaining a low pressure fluid in said cavities during the first phase of the damper's service life including cored passages in said casing connecting said reservoir to each cavity, a fluid flow restriction in each of said passages, a shuttle valve having an inlet, and means for operating said shuttle valve by the pumping action of said damper for alternately supplying low pressure fluid from said reservoir to said damper chamber on the retreating side of said piston, said shuttle valve having its inlet connected to said reservoir and also to said cored passages on the side of said restrictions remote from said cavities.

4,084,669

COMPOSITE COLLECTOR

Masateru Suwa, and Katsuhiro Komuro, both of Hatachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 24, 1976, Ser. No. 717,374
Claims priority, application Japan, Aug. 25, 1975, 50-102164
Int. Cl.[2] B60L *5/08;* **H01R** *39/56, 41/00*
U.S. Cl. 191—45 R **21 Claims**



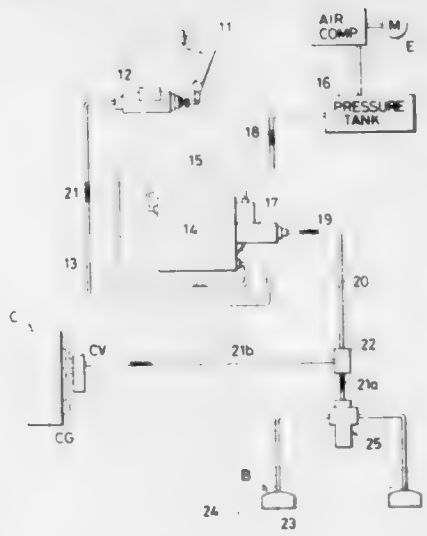
1. A composite collector for collecting and passing an electric current in sliding contact, which is constructed of an integral cast body of metal and comprises on one side providing an electric current-passing sliding surface a layer containing from 5 to 50% by weight of particles of a solid lubricant having a particle size of up to 2.5 mm, dispersed in a matrix of said metal, and a layer composed solely of the metal and free of the solid lubricant on the side of the surface opposite to said sliding surface.

4,084,670

INCHING CONTROL SYSTEM FOR INDUSTRIAL VEHICLES

Seishi Morishita, Osaka, Japan, assignor to Toyo Umpanki Co., Ltd., Osaka, Japan

Filed Dec. 13, 1976, Ser. No. 750,341
Claims priority, application Japan, Dec. 15, 1975, 50-149886
Int. Cl.[2] B60K *41/24;* **F16D** *67/02*
U.S. Cl. 192—13 R **1 Claim**



1. In an inching control system for an industrial vehicle including a brake pedal, a master cylinder for generating a first hydraulic fluid pressure in proportion to the depression force of the brake pedal, air pressure powered booster means for generating a second hydraulic fluid pressure higher than and in proportional response to the first hydraulic fluid pressure, a vehicle braking system, and a vehicle clutch, the improvement comprising:

(a) a branch valve,

(b) a line coupling the second hydraulic fluid pressure to the input of the branch valve,

(c) a line coupling a first output of the branch valve to the braking system,

(d) a hydraulic threshold pressure responsive control valve for controlling the engagement and disengagement of the clutch, and

(e) a line coupling a second output of the branch valve to the control valve,

(f) the threshold pressure of the control valve being higher than the pressure at which the braking system is actuated to generate a frictional braking force, whereby a limited brake pedal depression force is effective to actuate the braking system while the clutch remains engaged, and an increased brake pedal depression force, sufficient to generate a second hydraulic fluid pressure higher than the threshold pressure, is effective to disengage the clutch while increasing and maintaining the braking force.

4,084,671

DEVICE FOR WEAR WARNING IN A SERVO OPERATED DISC CLUTCH

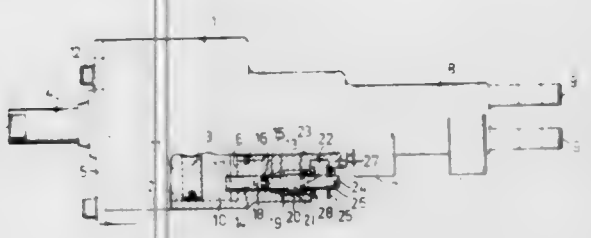
Runo Roy Oskar Ternehall, Skarhamn, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Sep. 14, 1976, Ser. No. 723,301

Claims priority, application Sweden, Sep. 18, 1975, 7510448

Int. Cl.² F16D *66/02*; G08B *7/04*

U.S. Cl. 192—30 W **5 Claims**





1. A compressed air operated servo mechanism for a disc clutch, especially for motor vehicles, comprising a servo piston (3) movable in a cylinder (2), the piston rod (4) of which is connected to the clutch and is disposed to disengage the same when compressed air is supplied to the cylinder working chamber (10) between the piston (3) and the bottom (6) of the cylinder (2); a valve (13,14), which controls a connection (17,20) between the working chamber (10) of the cylinder (2) and atmosphere and which in the normal operating state of the servo mechanism keeps the connection closed; means (13) connected with the valve for sensing the position of the piston and disposed so that when the piston (3), as a result of a worn clutch disc, assumes a position close to the bottom (6) of the cylinder it transfers the valve to its open position whereby air from the working chamber (10) flows through the connection (17,20) and gives an acoustic signal as well as a pressure signal in the clutch pedal so as to warn the driver.

4,084,672

AUTOMATIC CONTROL OF FREE WHEELING

Jack Avins, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

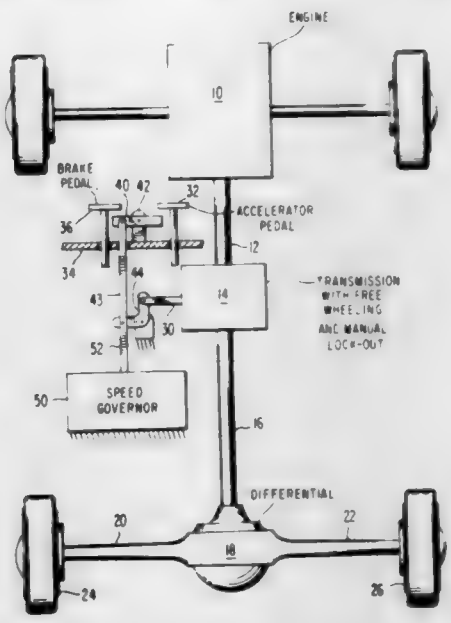
Filed Dec. 24, 1975, Ser. No. 644,157

Int. Cl.² B60K *29/00*

U.S. Cl. 192—.055 **1 Claim**

1. In a motor vehicle having a brake pedal and an accelerator pedal, and having a power transmission means including a free wheeling unit and control means connected to said unit to cause direct drive or free wheeling operation, the combination of:

means responsive to depression of the brake pedal to actuate said control means to provide direct drive operation, and



means responsive to depression of the accelerator pedal to actuate said control means to provide free wheeling operation.

4,084,673

ROTARY POWER TRANSMISSION DEVICES

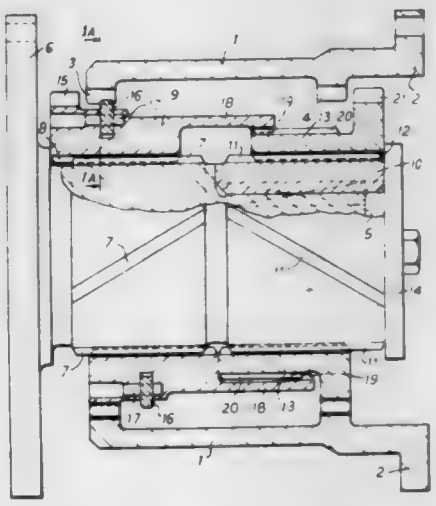
Herbert Arthur Clements, Weybridge, England, assignor to S.S.S. Patents Limited, London, England

Filed Nov. 29, 1976, Ser. No. 745,901

Claims priority, application United Kingdom, Dec. 1, 1975, 49281/75

Int. Cl.² F16D *23/10*

U.S. Cl. 192—67 A **4 Claims**



1. A synchronous self-shifting toothed clutch of the type comprising first and second rotary clutch parts, co-acting clutch teeth, intermediate means constrained for movement relative to said second rotary clutch part, and clutch actuating means operative upon passage of said first and second rotary clutch parts through synchronism in one direction of relative rotation to shift said intermediate means relative to said second rotary clutch part in the requisite direction to intitiate interengagement of the co-acting clutch teeth, with the improvements comprising first and second rings of clutch teeth carried by said first rotary clutch part, first intermediate means constrained for movement relative to said second rotary clutch part, a third ring of clutch teeth carried by said first intermediate means, a second intermediate means constrained for movement relative to said second rotary clutch part, a fourth ring of clutch teeth carried by said second intermediate means, said

clutch actuating means operative upon passage of said first and second rotary clutch parts through synchronism in one direction of relative rotation to shift said first intermediate means in the requisite direction to initiate interengagement of said first and third rings of clutch teeth whereby to establish a first power path between said first and second rotary clutch parts and conjointly to shift said second intermediate means in the requisite direction to intitiate interengagement of said second and fourth rings of clutch teeth whereby to establish a second power path between said first and second rotary clutch parts, said first and second power paths each including helical driving surfaces and said first and second intermediate means, in the engaged condition of the clutch, reacting on one another such that the load is shared between said first and second power paths.

4,084,674

DIAPHRAGM CLUTCH ASSEMBLY

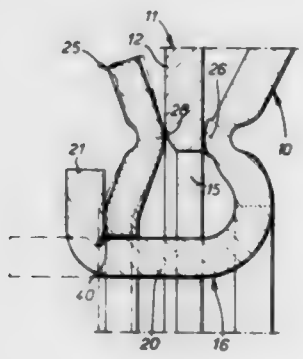
Gerard de Gennes, Senlis, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Mar. 29, 1976, Ser. No. 671,551

Claims priority, application France, Mar. 27, 1975, 75 09588; Feb. 27, 1976, 76 05485

Int. Cl.[2] F16D *13/44*

U.S. Cl. 192—89 B **16 Claims**



1. An assembly for a diaphragm clutch, comprising a generally annular cover element adapted for connection to a reaction plate and being capable of being fixed for rotation with a pressure plate, a generally annular diaphragm having a peripheral portion forming an elastic washer of the Belleville washer type adapted to act on said pressure plate, and a central portion divided into radial fingers for operation by a clutch release bearing, connecting means pivotally fastening said diaphragm to said cover element which connecting means pass through passages formed in said diaphragm between the radial fingers thereof in the zone in which these fingers are connected to the peripheral portion of the diaphragm and a supporting washer interposed between said connecting means and said diaphragm, the connecting means bearing on the supporting washer on a circumference of a diameter which is smaller than that of the circumference on which said supporting washer bears on said peripheral portion of the diaphragm, and said connecting means comprising at least one flat and relatively thin connecting claw which extends at one end from the cover and which has a generally axial portion passing through one of the passages in the diaphragm and a radially folded wing portion at the opposite end thereof retaining the supporting washer in contact with the peripheral portion of said diaphragm, the axial portion of said at least one connecting claw forming with its wing portion a corner zone in which the supporting washer is pivotally mounted at its inner periphery, the axial edge of this inner periphery being situated at the greater distance from the diaphragm being in contact with said corner zone of the connecting claw, the entire supporting washer being disposed radially beyond the diameter on which the axial portion of said at least one claw is located.

4,084,675

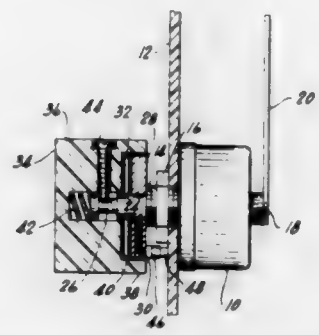
POTENTIOMETER HAVING IMPROVED OPERATING MEANS

Lee H. Smith, and Norman J. Alexandrowicz, both of Waukegan, Ill., assignors to Dynapar Corporation, Gurnee, Ill.

Filed Aug. 24, 1976, Ser. No. 717,285

Int. Cl.[2] F16D *11/00*; G05G *1/12, 5/04*

U.S. Cl. 192—95 **7 Claims**



1. In a potentiometer having a shaft, an improved operating means comprising:

a disc mounted on said shaft for rotation therewith, said disc having a first surface lying generally normal to the shaft and containing engagement means, said shaft containing a circumferential groove located intermediate said first surface and the end of said shaft; and

a knob embracing the end of the shaft having a set screw insertable in said groove for slidably retaining said knob on the shaft while permitting rotation thereof with respect to said shaft, said knob having a second surface containing engagement means lying generally normal to the shaft and facing said first surface, said knob containing means for biasing said surfaces apart, said knob being slidable along the shaft for bringing said first and second surfaces into engagement for causing rotation of said knob to rotate the shaft.

4,084,676

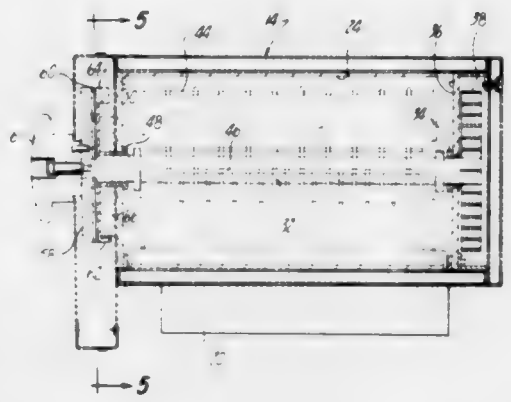
TOKEN OPERATED ICE DISPENSER

Jerry J. Motyka, Detroit, and Donald J. Lewis, Troy, both of Mich., assignors to Lamar Tobias, Sturgis, Mich.

Filed Jun. 21, 1976, Ser. No. 697,778

Int. Cl.[2] G07F *13/00*

U.S. Cl. 194—87 **9 Claims**



1. A dispenser for delivering metered quantities of ice and like materials from a storage chamber comprising: a housing adapted to be mounted on a storage chamber, a magazine member mounted within the housing so as to project into the storage chamber and having a first opening position to permit access therein for material in said chamber and a second opening circumferentially spaced from the first opening to permit material in the magazine member to pass therethrough, closure means rotatably mounted relative to the magazine, bias means drivingly connected to said closure means urging the closure means to a position closing the second opening to prevent the material from passing through the second opening, and selec-

tively operable means for rotating the closure means against the force of the bias means to open the second opening to permit material collected within the magazine to pass therethrough; and clearing means including a clearing member adapted to be rotated with said closure means to force material in said magazine through said second opening upon rotation of said closure means, said clearing member comprising a basket disposed on the shaft for rotation therewith and wherein said clearing means further includes a second clearing member nonrotatably mounted within the magazine adjacent the second opening for clearing ice from the basket.

4,084,677

COIN VALIDATOR MODIFICATION

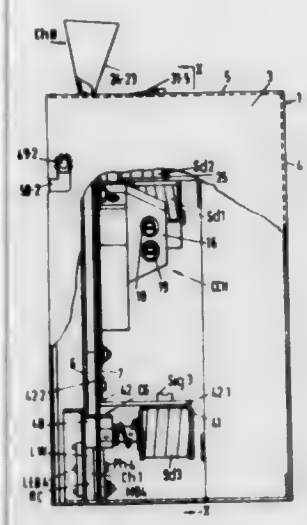
Brian Christopher Searle, Staines, England, and Glenn Richard Ritter, West Allenhurst, N.J., assignors to Cubic Tiltman Langley Limited, Redhill, England

Filed Jun. 9, 1976, Ser. No. 694,459

Claims priority, application United Kingdom, Apr. 8, 1976, 14358/76

Int. Cl.[2] G07F *3/02*

U.S. Cl. 194—100 A **8 Claims**



1. An electronic coin validator comprising:

a coin chute to guide the coin through the validator;

(a) a coin-denomination detector to sense a coin passing along said chute and provide a signal indicative of the denomination of the coin;

(b) a first stop member located substantially immediately upstream of the detector and normally positioned to block said chute while being movable to permit the stop member to be withdrawn therefrom;

(c) a first solenoid for operation of said stop member to withdraw it from and return it to said chute;

(d) a coin sensor located adjacent said stop member to sense the arrival of a coin thereat and provide a signal indicating the fact; and

(e) an electronic validator circuit comprising means for responding to said sensor signal to provide a signal to operate said solenoid, after a delay sufficient to allow the coin to come to rest on the stop member, to withdraw said stop member from said chute and permit the coin to move past said detector, and then to return the stop member to the chute, and means to respond to said detector signal to determine therefrom whether the coin giving rise to the signal is one of a selected denomination;

said coin denomination detector comprising a transformer the primary winding of which is arranged at one side of said chute and the secondary winding of which is arranged at the opposite side of said chute, so that a coin in passing along the chute passes between the primary and secondary windings of the transformer to produce a signal in the secondary winding dependent on the size and composition of the coin;

said circuit comprising an oscillator to drive the primary winding of the transformer, and a demodulator to demodulate the oscillations in the secondary winding of the transformer to produce, in the no signal condition of the transformer, a steady voltage and, in the signal condition of said transformer, a voltage signal of an amplitude related to the steady voltage dependent on the size and composition of the coin;

said means for responding to said coin sensor signal comprising a timing network to produce a first operating signal and, on termination of said first operating signal, a second operating signal to effect operation of said first solenoid, and a third operating signal; and

said means for responding to said detector signal comprising:

a comparator stage;

a capacitor one terminal of which is connected to a reference potential conductor of the circuit;

an analogue switch connected at a line input thereof to the output of said demodulator, at an operating input thereof to said timing network to receive said third operating signal from the timing network to open the switch and, at a line output thereof, to the other terminal of the capacitor;

an amplifier the input of which is connected to said other terminal of the capacitor and the output of which is connected to said comparator stage to provide a first steady reference voltage thereat to bias the comparator stage at the level of the signal amplitude corresponding to a particular coin denomination even when said capacitor is isolated from said demodulator on opening of said analogue switch;

a voltage follower stage receiving as an input, the output of said demodulator, and connected at its output to said comparator stage so that in the no signal condition of said transformer, the voltage follower stage provides a second steady reference voltage at the comparator stage to maintain together with said first steady reference voltage, a no signal condition at the output of the comparator stage, and so that in the signal condition of said transformer, the voltage follower stage feeds said voltage signal to the comparator stage to cause the latter, when the voltage signal amplitude is at least equal to said bias level, to produce a discrete output signal of a width substantially equal to the width of the peak of the voltage signal that would be produced by a coin of the particular denomination;

a peak generator connected to said demodulator to receive the output thereof and producing a control signal at the peak of said voltage signal; and

an output logic connected at respective inputs to the output of said comparator stage and the output of said signal generator and producing an output signal signifying validation of a coin only when there is a coincidence in time of said control signal and said discrete signal from the comparator stage;

said amplifier comprising a field-effect transistor as the amplifier input stage with the gate of the transistor connected to said other terminal of said capacitor; and a voltage follower as the output stage of the amplifier.

4,084,678

PRINTER NEEDLE GUIDE MEANS FOR MOSAIC PRINTERS

Richard Reier, Taufkirchen, and Peter Kuelzer, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 598,926, Jul. 25, 1975, Pat. No. 4,046,303. This application May 17, 1976, Ser. No. 687,292

Claims priority, application Germany, Jul. 31, 1974, 2436970

Int. Cl.[2] B41J *3/12*

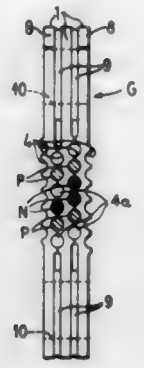
U.S. Cl. 197—1 R **13 Claims**

1. A guide device for the printer needles used in the printer heads of mosaic printers to guide the needles adjacent to the printing area of the associated printer, and comprising:

at least a pair of relatively thin stamped sheet metal guide

member plates having opposite substantially flat end portions and an intermediate area between the end portions defined by opposite plate edges which extend from side to side between said end portions, the guide member plates being assembled together in face-to-face relation with said end portions aligned and secured together;

and each of said intermediate areas of the guide member plates having an array of corrugations which extend between said edges and undulate to opposite sides of the original face planes of the plates;



said corrugations comprising at least on the face-to-face faces of said areas grooves providing guideways for the printer needles;

said grooves being substantially accurately stamped or embossed in the corrugations and free from any cutting shaping so that the groove surfaces are inherently smooth and free from roughness.

4,084,679

TAPE PRINTER

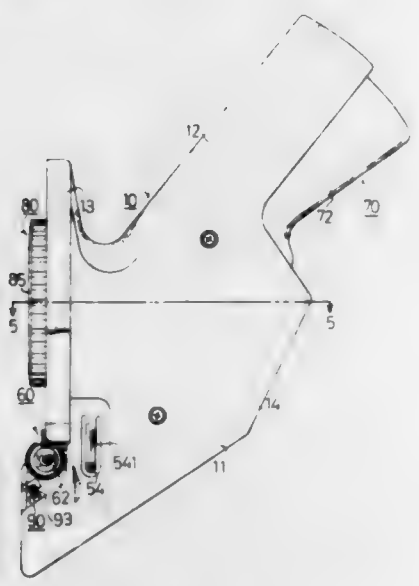
Mituo Fujita, Sakatomachi, Japan, assignor to Kabushiki Kaisha Shinsei Industries, Tokyo, Japan

Filed Aug. 18, 1976, Ser. No. 715,638

Claims priority, application Japan, Aug. 18, 1975, 50-100010; Feb. 5, 1976, 51-11484[U]; May 1, 1976, 51-50353; May 21, 1976, 51-57962

Int. Cl.[2] B41J *1/30*

U.S. Cl. 197—6.7 **16 Claims**



1. A tape printer comprising

a. a tape storing section which stores a roll of tape,

b. a tape extending part which extends a tape leading part pulled out from said tape storing section,

c. a guide means provided on said tape extending part to prevent said tape leading part from moving in a widthwise direction,

d. a type wheel provided with a plurality of types on its periphery in a circumferential direction,

e. a type wheel holding part which holds said type wheel to be rotatable in the circumferential direction so that one of types on said type wheel opposes to the paper tape of said tape leading part on said tape extending part and a type opposing to said paper tape can be selected,

f. a tape impression means which relatively impresses a selected type of said type wheel and the paper tape of said tape leading part opposing to said selected type,

g. an ink applying means which applies an ink for printing to a surface of type of said type wheel opposing at least to said tape leading part in precedence of operation of said tape impression means,

h. a tape feeding means which operates except during operation of said tape impression means and feeds the tape as much as specified at each time of operation, and

i. an operating means which operates said ink applying means, said tape feeding means and said tape impression means at each time of operation.

4,084,680

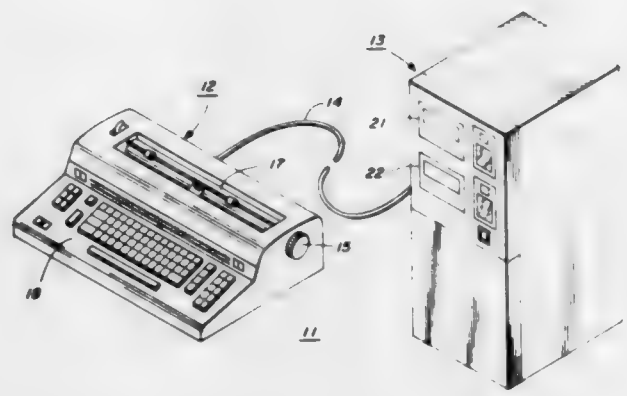
ENHANCED UNDERSCORING METHODS AND MEANS FOR AUTOMATIC TYPEWRITER AND THE LIKE EMPLOYING HAMMER-TYPE IMPACT PRINTING MECHANISM

David R. Deetz, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 622,564, Oct. 15, 1975, abandoned. This application Jul. 5, 1977, Ser. No. 813,060

Int. Cl.[2] B41J *5/42, 29/26*

U.S. Cl. 197—19 **12 Claims**



1. In a printer having a platen for supporting a copy carrier, a printing mechanism for serially printing successive characters on said copy carrier and drive means for moving said printing mechanism transversely of said platen, the improvement comprising a controller including

escapement control means for selectively actuating said drive means on a per character basis to incrementally advance said printing mechanism into position to print said characters, said control means normally causing at least a predetermined per character linear advance of said printing mechanism to ensure that successive characters are printed in spaced apart relationship,

means for entering an underscore command into said controller, and

means responsive to said underscore command for signaling said escapement control means to limit the per character advance of said printing mechanism, while successive underscore characters are being printed, to a distance less than a predetermined underscore character width and less than said predetermined per character advance,

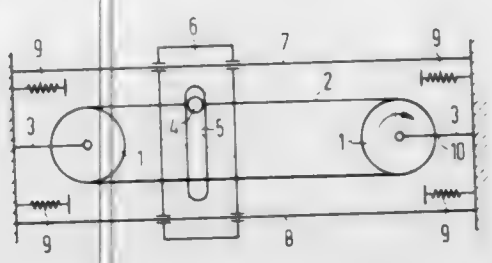
whereby said printing mechanism is positioned in response to said underscore command to print successive underscore characters in overlapping relationship.

4,084,681

DRIVE SYSTEM FOR WRITING CARRIAGES IN PRINTING SYSTEMS

Joachim Heinzl, and Güenter Rosenstock, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 9, 1977, Ser. No. 775,980
Claims priority, application Germany, Mar. 15, 1976, 2610771
Int. Cl.[2] B41J *19/20;* F16H *19/06*
U.S. Cl. 197—82 14 Claims



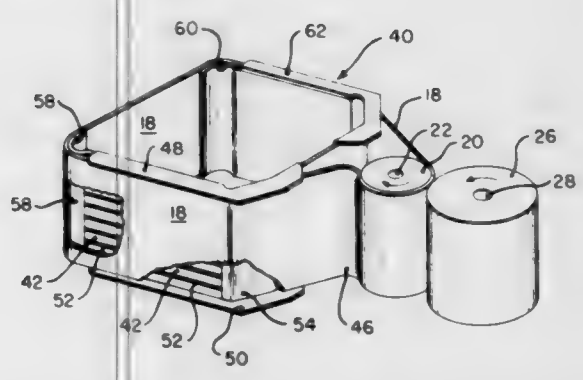
1. A drive system for writing carriages of automatic writing systems comprising a linearly moveable writing carriage, a drive means for said writing carriage, a carriage connection to said drive means, said writing carriage moved back and forth along a line of movement by said drive means acting through said carriage connection, said connection moving around roller means adjacent ends of the line of movement of the writing carriage, the drive means including a driven belt passing around the roller means, the writing carriage undergoing movement in opposite directions along the line of movement with the writing carriage decelerating to zero velocity at the end of the line and then accelerating in the opposite direction and wherein a mechanical energy storing means is provided which receives the kinetic energy of the moving writing carriage during deceleration and returns said kinetic energy upon acceleration in the opposite direction.

4,084,682

INKED RIBBON GUIDE MEMBER WITH TRACKING SURFACES THEREON

Brian M. Fairey, Waterloo, and Paulus E. Plasschaert, Listowel, both of Canada, assignors to NCR Canada Ltd. - NCR Canada Ltee, Mississauga, Canada

Filed Dec. 22, 1976, Ser. No. 753,045
Int. Cl.[2] B41J *33/10*
U.S. Cl. 197—168 3 Claims



1. Tracking apparatus for a moving endless ribbon comprising

drive means,

driven means adjacent said drive means and cooperating therewith, said driven means including means for inking said ribbon and providing wetting thereof, and

guide means for directing said inked ribbon in a path distal from said drive means and said driven means, said guide means having a smooth surface portion adjacent said drive means and a ribbed guide surface downstream of said smooth surface portion,

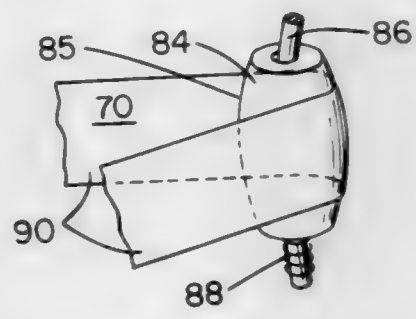
said endless ribbon having a slack portion adjacent said drive means and initially engageable with said smooth surface portion of said guide means and tending to adhere thereto by reason of the wet condition of said ribbon and therefrom engageable with said ribbed guide surface of said guide means in limited contact elongated manner in the direction of movement of said ribbon to enable said endless ribbon to track along said guide means.

4,084,683

RIBBON TRACKING SYSTEM

James R. Moss, Lum, Mich., assignor to Computer Peripherals, Inc., Rochester, Mich.

Filed Mar. 17, 1977, Ser. No. 778,767
Int. Cl.[2] B41J *35/04*
U.S. Cl. 197—170 9 Claims



1. A tracking system for maintaining a ribbon, movable in a direction along a line of printing, in a desired attitude comprising a

roller engaging said ribbon and having a bore therethrough,

a

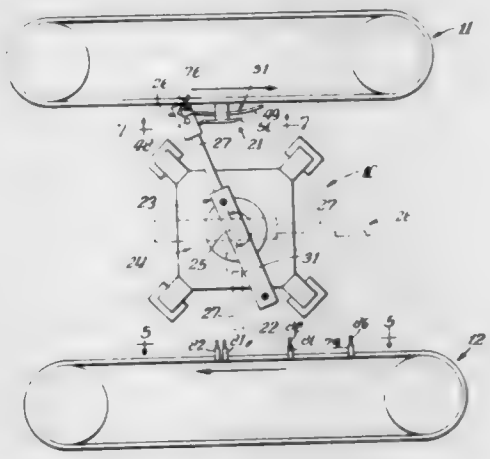
shaft journaling said roller, said shaft being of a diameter smaller than the diameter of said bore and having a curvature extending therealong, said roller having an axial dimension greater than the width of said ribbon and said ribbon and said roller being axially movable in one direction along said shaft in response to unbalanced forces on said ribbon, and axially movable in the other direction to the desired attitude, and means balancing the gravity effect on said roller.

4,084,684

CONVEYOR TRANSFER METHOD AND APPARATUS

Frank R. Skinner, II, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 24, 1975, Ser. No. 625,522
Int. Cl.[2] B65G *47/00*
U.S. Cl. 198—467 33 Claims



1. A method of transferring an article carried by a first conveyor to a second conveyor, comprising the steps of:

sensing the presence of an article to be transferred at a pickup position;

pursuing the sensed article with a transfer element; sensing when said article is in a position to be picked up by said transfer element;

picking up the article from the first conveyor with the transfer element; and,

moving the transfer element to bring the picked up article to a dropoff position whereat the article is transferred from the transfer element to the second conveyor.

4,084,685

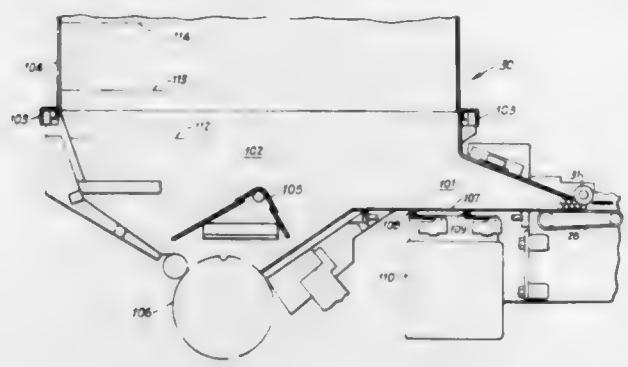
METHOD AND APPARATUS FOR MANIPULATING ROD-LIKE ARTICLES

Frank Hollenton, 3408 Northview Pl., Richmond, Va. 23225, and John L. Ingalls, 9415 Fernleigh Dr., Richmond, Va. 23235

Division of Ser. No. 301,377, Oct. 27, 1972, Pat. No. 3,858,708. This application Jun. 6, 1974, Ser. No. 476,826

Int. Cl.[2] B65G *19/00, 43/08*

U.S. Cl. 198—461 **14 Claims**



1. An apparatus for transporting rod-like articles longitudinally parallel to their axes comprising:

means for moving a continuous stream of rods in a row end to end, a separator means for advancing each rod ahead of those immediately behind it in the stream, said separator means including a set of rollers, the periphery of which rollers engage and advance the rods of the stream, means for turning the set of rollers at a greater peripheral speed than the axial speed of the remaining rods of the stream to thereby advance the leading rod away from the following rods of the stream which have not yet reached the said set of rollers,

at least one roller of the set being a floating roller, the axis of which is movable towards and away from the center line of the stream, and resilient means for resiliently urging said floating roller against the rods in the stream,

and a means for concurrently mounting and driving said floating roller, comprising a first shaft having a fixed axis and a first drive element mounted thereon and coaxial therewith for rotation about said axis, a drive means drivingly engaged with said first driving element to turn the same, a further shaft parallel to the said shaft, a link arm connected to the first shaft for pivotal movement about the axis thereof, said further shaft freely mounted on the link arm for rotation therein and for pivotal movement therewith about the axis of the first shaft, said floating roller being fixedly mounted on the further shaft for rotation therewith and for pivotal movement therewith, and a further drive element fixedly mounted on the further shaft, both of said first and further drive elements being circular members mounted with their circumferential peripheries physically engaging each other for driving of the further drive element directly from the first drive element, whereby the floating roller is driveable from the driving element on the first shaft through the driving element on the further shaft.

9. An apparatus for stacking rod articles side by side comprising:

a container having side walls essentially parallel to each other and spaced apart a distance substantially equal to the length of the rods to be stacked, such that the rods can be stacked with their axes extending across the container perpendicular to the said side walls, said container further including opposed end walls for closing the ends thereof and including an essentially stationary bottom extending generally from one end wall thereof to the opposite end wall thereof,

and an infeed means for feeding the rods into the container at essentially the junction of one end wall and the said bottom of the container with the rods having their axes perpendicular to said side walls and hence parallel to the axes of the rods as they are stacked in the container,said infeed means comprising opposing movable friction surfaces forming a throat and engaging opposite sides of each rod, means for moving both of said friction surfaces for moving the engaged rod into the container with a force sufficient to move rods ahead of it in the container upwardly to a level above that of the said throat, and to prevent movement of the rods already in the container back out of the infeed means,

the lower one of said movable friction surfaces comprising a conveyor means for carrying the rods horizontally to and into the infeed means and the upper one of said movable friction surfaces comprising a rotatable gripper roller spaced slightly above the conveyor to form therewith said throat.

4,084,686

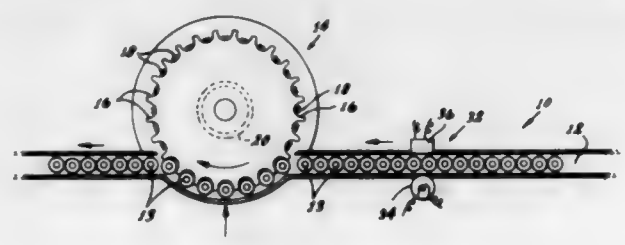
STARWHEEL CONTROL IN A SYSTEM FOR CONVEYING CONTAINERS

Fredrick L. Calhoun, Rolling Hills, Calif., assignor to Industrial Dynamics Company, Ltd., Torrance, Calif.

Filed Nov. 1, 1976, Ser. No. 737,063

Int. Cl.[2] B65G *43/08, 29/00*

U.S. Cl. 198—468 **20 Claims**



1. In combination for conveying containers,

conveyor means for guiding movement of the containers in a particular direction,

a rotatable starwheel for receiving in sequence the containers moving in a particular direction,

means disposed on the starwheel for transferring the containers in sequence from the conveyor means to the rotatable starwheel, and

means operatively coupled to the starwheel for imposing a constant torque on the starwheel in a direction and with a magnitude to overcome the running friction of the starwheel and to provide the starwheel with freewheeling properties regardless of the force imposed upon the starwheel by the containers being transferred to the starwheel.

4,084,687

CONVEYOR HAVING RESILIENT CONVEYING SURFACE

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleand, La.

Filed Jul. 2, 1976, Ser. No. 702,035

Int. Cl.[2] B65G *17/06*

U.S. Cl. 198—844 **5 Claims**

1. A conveyor comprising:

a plurality of resilient conveyor sections providing a substantially continuous, flat conveying surface and each including:

a rectangular block of elastomeric material;

first and second elongated, rigid, fastening members of a length substantially coextensive with the length of said

block and each bonded to a respective opposite side of said block;

the upper surface of said fastening members being substantially coplanar with the upper surface of said block to define said conveying surface;

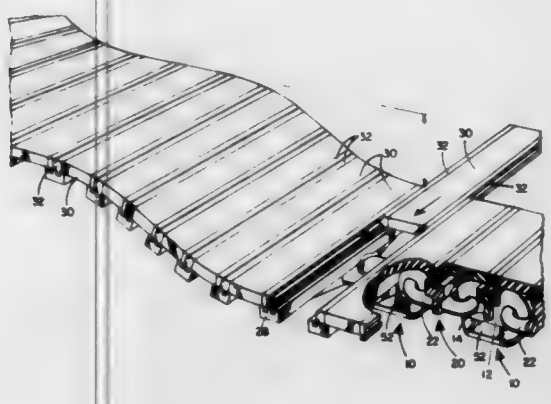
a plurality of first and second modules each having:

a central linking portion terminating in first and second linking ends;

first and second arms integrally formed with said central linking portion and outwardly extending therefrom in respective opposite directions along a transverse axis;

fastening means extending along substantially the entire length of said arms;

the linking ends of each of said first modules being movably coupled to respective linking ends of adjacent ones of said second modules;



said first and second modules thus coupled being angularly movable relative to one another about each coupled linking end in planes parallel and orthogonal to said conveying sections;

the first fastening member of each conveying section being releasably engageable with the fastening means of said first module, and the second fastening member of said conveying section being releasably engageable with the fastening means of an adjacent linked second module, the fastening members of each conveying section being in butting relation with confronting, fastening members of adjacent conveying sections and including fastening means for releasable engagement with the confronting butting fastening members of adjacent conveying sections; and

said conveying sections when coupled to said modules extending across the linking ends thereof and providing a substantially flat continuous, resilient conveying surface.

4,084,688

BOTTLE CARRIER

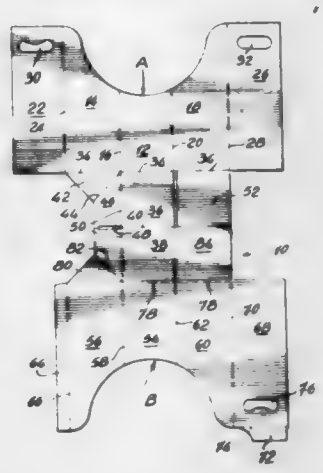
Robert G. Hughes, Rexdale, Canada, assignor to Continental Can Company of Canada Ltd., Toronto, Canada

Filed Nov. 1, 1976, Ser. No. 737,400

Int. Cl.[2] B65D *85/40*

U.S. Cl. 206—188 **7 Claims**

1. A carrier made from a one-piece blank including, when erected, a pair of cells with each cell including an end wall, a pair of opposed side walls and a dividing wall opposed to said end wall and including handle means therein; each dividing wall being adjacent and coextensive with a respective dividing wall of the other cell, the bottom walls formed by a continuous panel extending from the respective end walls of each cell and a rectangular flap connected to the bottom edge of at least one



side wall in each cell to substantially overlay the bottom wall portion of the cell thereby reinforcing said bottom wall.

4,084,689

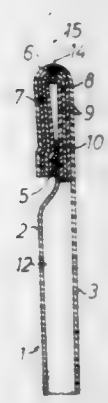
PACKAGING ARTICLE

Ichiki Yamagata, Yao, Japan, assignor to Oji-Yuka Synthetic Paper Sales Co., Ltd., Japan

Filed Nov. 12, 1976, Ser. No. 741,515

Int. Cl.[2] B65D *85/18, 33/02, 33/14, 33/20*

U.S. Cl. 206—280 **4 Claims**



1. A packaging article formed from a thermoplastic sheet film and comprising a front bag panel and a back bag panel thermally fused together along their peripheral edges and defining a bag opening along one edge thereof, one of said front bag panel or said back bag panel being extended to form a flap on one side of said bag opening, said packaging article being characterized in that said flap has a reinforcing body affixed thereto said reinforcing body comprising paper or synthetic paper having a thermoplastic layer applied thereto, said reinforcing body being thermally fused to said flap by the thermal fusion of said thermoplastic resin layer simultaneously with thermal fusion between said front and back bag panels, and adhesive means provided on the edge of said flap said adhesive means extending throughout the width of said bag opening and said adhesive means having a sufficient width to seal the entire edge of said bag opening when it is turned in along with said flap to close said bag opening.

4,084,690

VIDEO DISC PACKAGE HAVING A CENTER POST

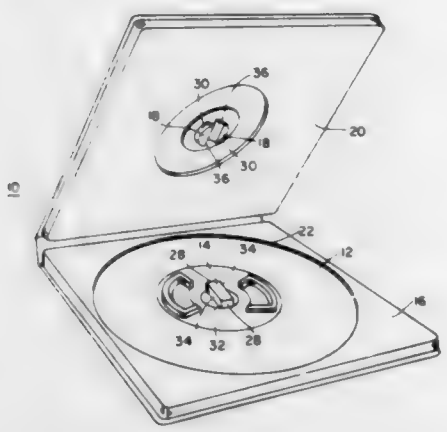
Carl Frederick Pulse, Greenwood, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 26, 1977, Ser. No. 790,861

Claims priority, application United Kingdom, Aug. 9, 1976, 33098/76

Int. Cl.[2] B65D *85/30*

U.S. Cl. 206—310 **5 Claims**



1. A package comprising:
(A) a first member;
(B) a second member;
said first member and said second member defining a cavity for enclosing a centrally apertured disc record when said members are juxtaposed; and
(C) a split center post including:
(a) a first portion attached to said first member; said first portion having arcuate peripheral surfaces dimensioned for engagement with diametrically opposite portions of the wall defining said central aperture of said disc record when said disc record is enclosed in said cavity; and
(b) a second portion attached to said second member; said second portion also having arcuate peripheral surfaces dimensioned for engagement with diametrically opposite portions of said wall defining said central aperture of said disc record when said disc record is enclosed in said cavity;
the construction of said first portion and said second portion being such that said first and second portions interlock and nest within said central aperture of said disc record when said disc record is enclosed within said cavity.

4,084,691

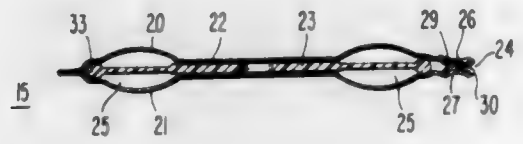
VIDEO DISC PACKAGE

Marvin Allan Leedom, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 6, 1976, Ser. No. 747,730

Int. Cl.[2] B65D *85/30*

U.S. Cl. 206—313 **13 Claims**



1. A package for a disc record comprising:
a pair of juxtaposed panels defining a cavity for enclosing said disc record;
said panels being joined together along less than their entire peripheral edges; the unjoined peripheral edges of said panels defining an opening in communication with said cavity to permit the insertion and removal of said disc record into and from said cavity; and
a pair of wiping pads; each one of said wiping pads being secured to the respective one of said panels in the region thereof interposed between said record enclosing cavity and said opening in such manner that said wiping pads lie entirely outside said record enclosing cavity, whereby a record enclosed in said cavity does not contact said wiping pads; said wiping pads defining a passage which is constricted relative to said record enclosing cavity.

10. A package for storing a set of two disc records comprising:
a pair of panels;
a partition interposed between said panels;
each of said panels defining in cooperation with said partition a respective cavity for enclosing a disc record;
said package having a pair of openings; each of said openings being defined by an edge of said partition and an edge of a respective one of said panels; and each of said openings being in communication with a respective one of said cavities to permit the insertion and removal of a disc record from the respective cavity;
each of said panels having a portion which forms in cooperation with an adjacent portion of said partition a passage interposed between a respective one of said openings and a respective one of said cavities; and
a plurality of wiping pads; a wiping pad being secured to each one of said passage forming portions of said partition and said panels in such manner that said wiping pads lie entirely outside said record enclosing cavities, whereby records enclosed in said cavities do not contact the respective ones of said wiping pads; each one of said wiping pads forming a passage in conjunction with an adjacent wiping pad which is constricted relative to a respective one of said record enclosing cavities.

4,084,692

DISPENSER FOR SURGICAL THREADS

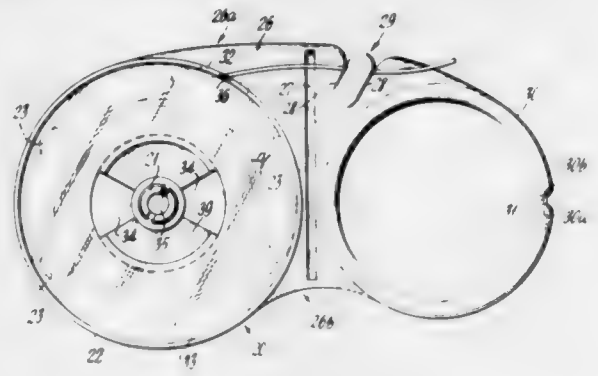
Joseph Bilweis, Noisy-le-Roi, France, assignor to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 605,791, Aug. 18, 1975 abandoned. This application Feb. 18, 1976, Ser. No. 659,075

Claims priority, application France, Sep. 3, 1974, 74 29955

Int. Cl.[2] A61L *17/02*

U.S. Cl. 206—403 **8 Claims**



1. A surgical thread dispenser comprising:
a. a flat, cylindrical reel comprising a hub having an axial opening therein and flanges on each side of said hub which in cooperation with each other and said hub form an annular groove adapted to carry a length of surgical thread wound thereon in a plurality of turns;
b. a reel case comprising a circular backing plate at one side of the reel having a centrally located spindle extending outward from said backing plate for supporting the hub of said reel, the outside diameter of said spindle being sized to receive the axial opening in said hub to allow the reel to rotate freely on said spindle, the backing plate having an annular peripheral rim extending radially beyond the outer periphery of said reel and axial beyond the outer flange of said reel, said rim having an opening therein for dispensing the surgical thread from the reel through the rim;

c. a finger ring sized to accept the middle finger of an adult human hand, and oriented in the same plane as said backing plate; and

d. a membrane extending between said finger ring and said backing plate and having a line of weakness extending transversely across the width of the membrane intermediate said finger ring and said backing plate,

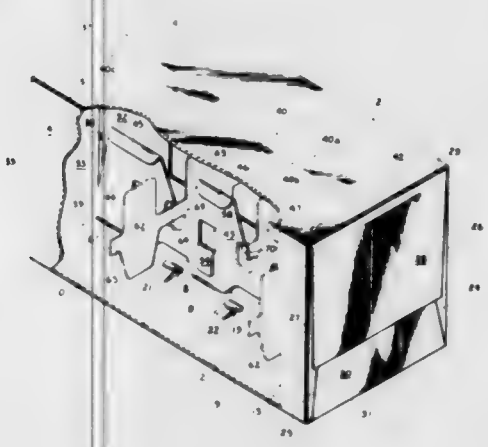
said finger ring being spaced from said backing plate a distance that when the finger ring is placed over a middle finger of a hand and the membrane is bent along said line of weakness to provide an angle between the plane of the finger ring and the plane of the backing plate, the dispenser is positioned in the palm of the hand and the suture is available for withdrawing from the reel through the opening in the rim of the case.

4,084,693

ARTICLE CARRIER

Will Lester Culpepper, Tucker, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed May 4, 1976, Ser. No. 683,192
Int. Cl.[2] B65D *5/48*
U.S. Cl. 206—427 **9 Claims**



1. A wraparound type carrier for a group of articles disposed in side by side relationship and forming a rectilinear arrangement of at least two rows of articles, said carrier comprising generally parallel top and bottom walls interconnected by spaced side walls to form a tubular structure, one of said parallel walls being of composite construction and including a pair of lap panels foldably joined respectively to corresponding edges of said side walls, a medial keel panel foldably joined to one of said lap panels along the edge thereof remote from the associated one of said side walls, at least one retaining notch formed in said medial keel panel, an insert disposed transverse to said medial keel panel and adapted to form an interlocked relation with said retaining notch, a portion of said medial keel panel being cutaway from the upper edge thereof to a point below said retaining notch to allow entry of said insert into said interlocked relation, and the end edges of said insert being disposed respectively adjacent said side walls.

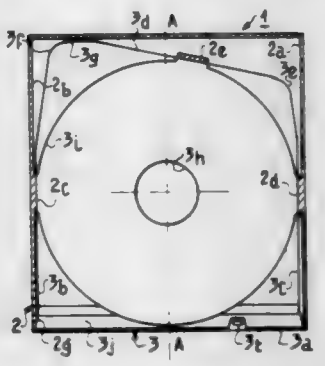
4,084,694

CONTAINER FOR VIDEO DISCS

Lucien Lainez; Bernard Fichot, and Jean-Paul Bijon, all of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Sep. 7, 1976, Ser. No. 720,657
Claims priority, application France, Sep. 11, 1975, 75 27928
Int. Cl.[2] B65D *85/30*
U.S. Cl. 206—444 **8 Claims**

1. A container for retaining, protecting and for allowing the handling without manual contact of a flexible video-disc having a circular central opening for its transfer and its driving in rotation, said container including a substantially rectangular protecting envelope jacket having one of its edges open and three others closed and a substantially flat, quadrilateral, tray-shaped supporting plate slideably displaceable within said envelope for carrying said video-disc; said supporting plate including, at its rear, engaging means for allowing its mechanical handling to and from the envelope, at its front, means for facilitating its insertion and positioning inside said envelope, a central opening greater than that of said disc for allowing the transfer thereof and, on one of its sides, a plurality of arcuate, normally orientated projections, concentric with said central opening for providing a circular hollow seating closely surrounding the circumference of the disc when centered, said envelope including a stop projecting from and integral with at least one of its inner walls, and means for centering the disc on



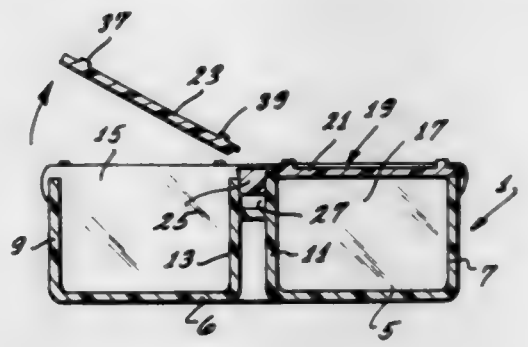
said plate, wherein the improvement comprises that the width of said supporting plate and the distance between at least a portion of the inner walls of the parallel lateral closed edges of the envelope are made to be substantially equal to the diameter of the disc and that the stop projecting inside said envelope is positioned to come into contact with the circumference of the disc and the front of the supporting plate when it is entirely inserted inside the envelope, whereby the inside of lateral edges and the stop of the envelope cooperate to position said disc with its central opening concentrical with that of said support whatever the orientation of the container.

4,084,695

PLASTIC PILLBOX

Frank Halbich, 11923 Salem Dr., Granada Hills, Calif. 91344

Filed Sep. 9, 1976, Ser. No. 721,786
Int. Cl.[2] B65D *83/04*
U.S. Cl. 206—532 **6 Claims**



1. A pillbox comprising:

a box having side walls, end walls, and a bottom;

at least one longitudinal member attached between said end walls and with said bottom and comprising a partition;

a plurality of lateral partitions extending between said at least one longitudinal member and said side walls of said box where said plurality of lateral partitions project above said at least one longitudinal member and said side walls, forming compartment in said box;

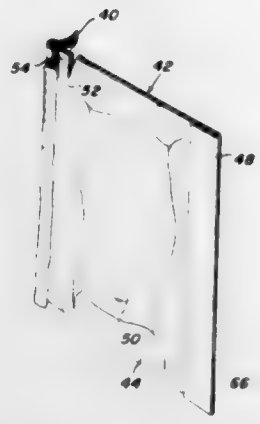
cover means having slots to interfit with said projections of said lateral partitions to comprise a closure for said box, said cover means defining at least one frangible tab covering one of said compartments.

4,084,696

BIND-IN INSERT

Robert E. Katz, 17 Camelot Dr., Livingston, N.J. 07039

Filed Mar. 24, 1976, Ser. No. 669,878
Int. Cl.[2] B65D *27/34*
U.S. Cl. 206—629 4 Claims



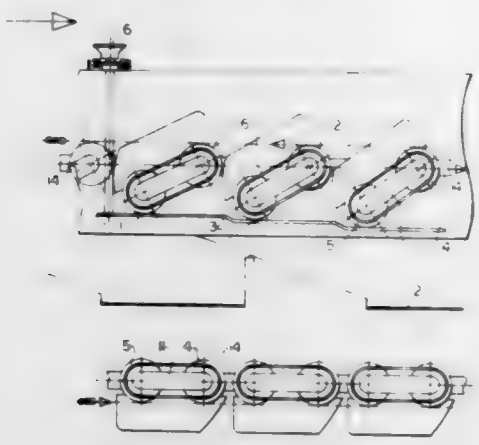
1. A bind-in magazine assembly, comprising:
a. a magazine having a plurality of pages,
b. a unitary bind-in insert formed from a single paper sheet including an envelope and a bind-in strip, the latter being bound between the pages of the magazine,
c. the envelope being closed and containing a sample,
d. the bind-in strip disposed along an edge of the envelope, and being impermeable,
e. a line of separation disposed between the bind-in strip and the envelope along which the envelope can be severed from the bind-in strip to simultaneously move it from the magazine and open it to permit removal of the sample.

4,084,697

SIZER FOR FRUIT AND OTHER AGRICULTURAL PRODUCTS

D. Juan Antonio Sanchez de Leon Rodriquez-Roda, Valencia, Spain, assignor to Food Machinery Espanola, S.A., Valencia, Spain

Filed Jun. 30, 1976, Ser. No. 701,135
Claims priority, application Spain, Jun. 26, 1975, 213.486
Int. Cl.[2] B07B *13/04*
U.S. Cl. 209—106 1 Claim



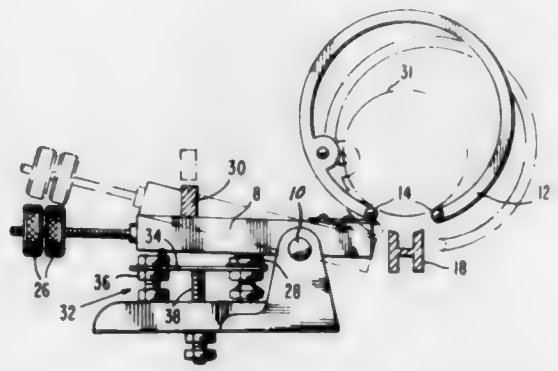
1. A sizer for fruit and other agricultural products, comprising
a plurality of spaced apart calibrating units forming a sizing chain, each of said units comprising a pair of cylinders constituting an upper roller and a lower roller and a support connecting said rollers, said support having a head coinciding with the axis of said upper roller,
a guide,
drive chain means moveably disposed on said guide and connected to said upper rollers for driving said sizing chain, said upper rollers being operatively suspended from said guide and said drive chain means,
a flexible track constituting a supporting surface for said lower rollers, the latter moveably disposed in contacting support on said flexible track,
support means for supporting and controlling the height of said flexible track, said support means including screw-in spindle means for vertically displacing said support means, whereby the different heights of the latter determine different inclination orientations of said calibration units and different sizings of the fruit,
an endless belt operatively disposed about said upper roller and said lower roller of each of said calibrating units, thereby joining said pair of cylinders in joint turning movement, the speed of rotation of said rollers being dependent of the fruit to be sized,
a pulley wheel disposed in a portion of the path of movement of said rollers,
motor means for turning said pulley wheel, the latter frictionally turning said rollers in said path in momentary tangential contact therewith, the speed of rotation of the rollers thereby further being dependent on the motor means,
chain means disposed simultaneously about all of at least one of said rollers of each of said calibrating units for transmitting turning movement to all of said at least one of said rollers, said endless belts transmitting the turning movement to the remaining of said rollers.

4,084,698

EGG WEIGHING DEVICE

Floyd S. Niederer, Titusville, N.J., assignor to Otto Niederer Sons, Inc., Pennington, N.J.

Filed Jul. 13, 1976, Ser. No. 704,854
Int. Cl.[2] A01K *43/08*
U.S. Cl. 209—121 5 Claims



1. In egg grading equipment embodying a plurality of weighing devices, said weighing device each embodying a balance beam having egg supporting means thereon, means for depositing an egg on said egg supporting means, and means for holding said eggs supporting means in a predetermined position for receiving an egg, the combination of activating means for initiating movement of said balance beam and egg supporting means toward an egg discharging position after the deposit of an egg on said egg supporting means, said activating means including a stop means of a fixed, predetermined size engageable with the undersurface of said balance beam to limit downward movement thereof, said activating means further including a spring biasing means secured to said stop means to bias said stop means upwardly against the undersurface of said balance beam.

4,084,699

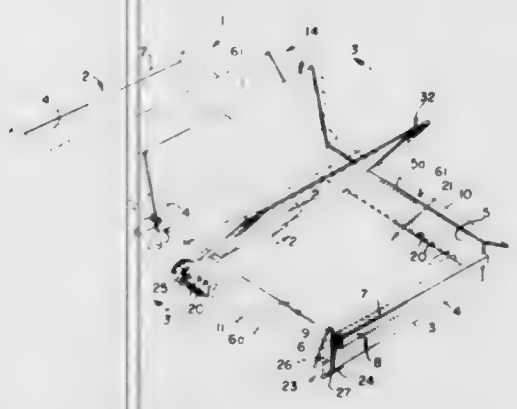
FILE UNIT

Earl H. Koepke, Youngstown, Ohio, assignor to GF Business Equipment, Inc., Youngstown, Ohio

Filed Jan. 24, 1977, Ser. No. 762,058
Int. Cl.[2] B65D *57/00;* B42F *17/12*
U.S. Cl. 211—11 12 Claims

1. A file unit including, a shelf member having a floor and

first and second side walls, and side walls each provided with a plurality of distinct opposed divider mounting means adjacent said floor, a divider including lateral edges and a lower edge extending therebetween, pivot means extending along the entire length of said lower edge and having lateral projections disposed beyond said divider lateral edges and engageable within a selected pair of said opposed mounting means to pivotally attach said divider to said shelf member, each said mounting means having a vertical and lateral extent providing pivotal displacement of said inserted projection, a locally com-



pressible resilient pad overlying said floor and substantially co-extensive therewith, said pad having a top planar surface normally disposed in a vertical plane at least partially obstructing said vertical extent of all said mounting means and thus blocking insertion of said divider projections into said mounting means whereby, said pad top surface is locally compressed by and only beneath said pivot means and its projections when said divider is attached to said shelf member and thereafter constantly engages and biases said pivot means to form a pressure seal therewith extending beneath the entire extent of said divider.

4,084,700

DISPLAY RACK

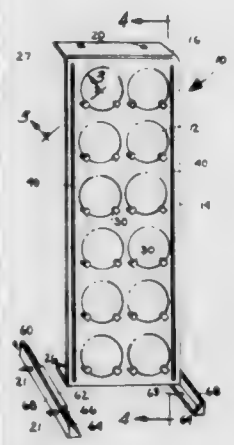
Richard S. Dunchock, Farmington Hills, Mich., assignor to Optarac Corporation, Hollywood, Fla.

Filed Feb. 6, 1976, Ser. No. 655,747

The portion of the term of this patent subsequent to Dec. 9, 1992, has been disclaimed.

Int. Cl.[2] **A47F** *7/02, 7/14*

U.S. Cl. 211—41 **6 Claims**



1. A display rack comprising:

a flat body panel fabricated from a plastic material, said body panel having means associated with the upper edge of said body panel for mounting said body panel to a vertical wall and maintaining said body panel in a substantially vertical plane;

means associated with the lower edge of said body panel for supporting said body panel in an inclined plane when said last mentioned means is positioned on a horizontal surface;

a planer member releasably carried on the front face of said body panel;

a framing member of a generally U-shaped configuration integral with the front face of said body panel, said framing member having a base portion disposed along said panel lower edge with the opposite ends of said base portion terminating at locations inwardly spaced from the side edges of said body panel, said framing member having a pair of upright leg portions, the upper ends of said leg portions terminating at said upper edge of said panel to define an opening thereinbetween, said leg portions being inwardly spaced from and in close proximity to the side edges of said panel, said base and leg portions providing a lateral abutment for said planer member to prevent movement of said planer member across the face of said body panel and not restraining said planer member from outward movement, each of said framing member leg portions further comprising a plurality of integrally formed and vertically spaced support tabs, each tab being of an L-shaped configuration and having one arm projecting towards the other leg portion to define an abutment means for maintaining said planer member against the front face of said body panel, said support tab one arm being spaced from said body panel surface a sufficient distance to provide a snug fit for said planer member when the same is inserted through the opening defined at the upper edge of said body panel and behind said support tabs to securely and releasably attach said planer member to said display rack, said body panel having an aperture formed therein behind each of said tabs, said aperture having a shape which is complementary to its associated projecting arm.

4. A display rack comprising:

a flat body panel fabricated from a plastic material, said body panel having means associated with the upper edge of said body panel for mounting said body panel to a vertical wall and maintaining said body panel in a substantially vertical plane;

means associated with the lower edge of said body panel for supporting said body panel in an inclined plane when said last mentioned means is positioned on a horizontal surface;

a plurality of support means on the face of said body panel for supporting eyeglass lens, each support means comprising two support tabs disposed in an arcuately spaced relationship with respect to each other, each tab having an L-shaped configuration with one leg extending outwardly from said body panel and integral therewith and a second leg extending laterally from said first leg toward the other of said support tabs, the distance between said panel and the inside surface of said second leg being such as to snugly receive and releasably support said eyeglass lens.

4,084,701

TRASH CAN SECURING DEVICE

Thomas L. White, DeSoto, Mo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed May 12, 1977, Ser. No. 796,227

Int. Cl.[2] **A47G** *29/00;* **B65F** *1/00*

U.S. Cl. 211—81 **3 Claims**

1. A trash can securing device for releasably securing a pair of trash cans against marauding animals, and the like, said trash can securing device comprising

a platform secured in a substantially horizontal plane;

hinge means;

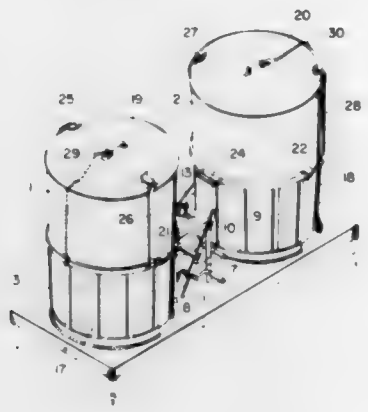
a first pair of substantially semicylindrical frame basket retainers, hingedly affixed by said hinge means to the platform in spaced relation and opening in opposite directions;

a linking device mounted on the platform between the first pair of basket retainers and pivotally coupled to each of said basket retainers at distances above the platform for rotating said basket retainers about their hinge means under the control of a user;

latch means mounted on the platform between the first pair

of basket retainers for releasably securing the basket retainers in positions of inclination relative to the platform;

a second pair of substantially semicylindrical frame basket retainers affixed to the platform in a manner whereby said first basket retainers and said second basket retainers are paired to form a pair of substantially cylindrical trash can retainers, each pair of trash can retainers having a basket



retainer of the first pair and a basket retainer of the second pair; and

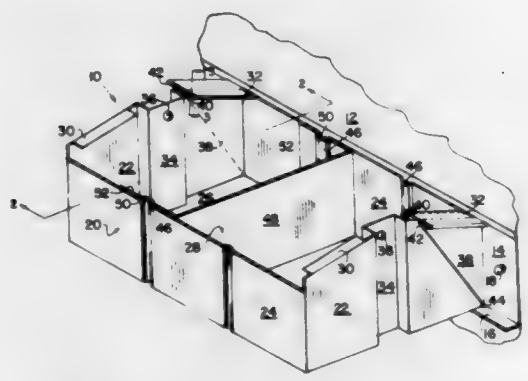
spring means coupling the basket retainer of the first pair to the basket retainer of the second pair in each pair of trash can retainers in a manner whereby when the latch means are released the first pair of basket retainers are forced into substantially horizontal positions corresponding with the cooperating second pair of basket retainers.

4,084,702

PORTABLE STORAGE APPARATUS

Elio Lucchitta, 106A Main St., Hillsburgh, Ontario, Canada

Filed Apr. 11, 1977, Ser. No. 786,469
Int. Cl.[2] A47F *5/08*
U.S. Cl. 211—88 **4 Claims**



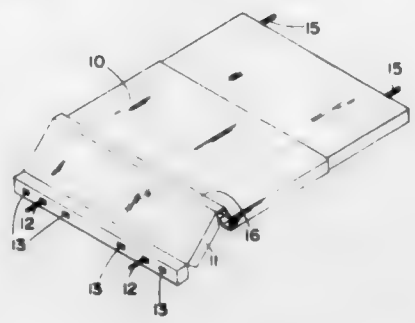
1. A portable storage apparatus comprising an elongated sheet, means to secure said sheet to a vertical supporting surface, a plurality of plates, each of said plurality of plates fixedly secured to and extending substantially normally outwardly from said sheet in spaced apart parallel relationship, each of said plurality of plates having a track fixedly secured to a marginal edge thereof, a container, said container having an open mouth portion, said container having at least a pair of elongated rails fixedly secured thereto adjacent said open mouth portion thereof, wherein said rails are removably slideably engaged within said track of an adjacent pair of plates disposing said open mouth portion in an uppermost position.

4,084,703

REFRIGERATION SHELF

George J. Hossalla, Shoreview, and Norman R. Stein, St. Louis Park, both of Minn., assignors to Stein Industries, Inc., Minneapolis, Minn.

Filed Jan. 6, 1977, Ser. No. 757,455
Int. Cl.[2] A47B *96/02*; A47F *5/00*
U.S. Cl. 211—153 **1 Claim**



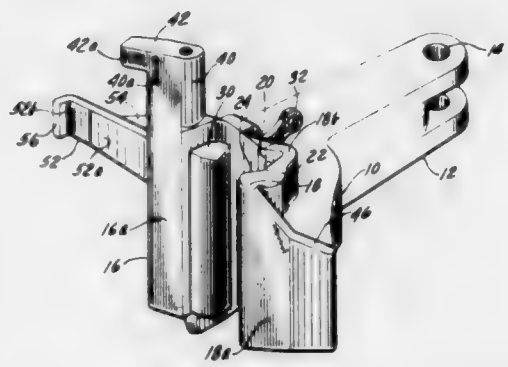
1. An adjustable display shelf for use in a variety of refrigeration units comprising: a first foraminous section, said first section having at least two surfaces for supporting goods thereon; one of said surfaces adaptable for mounting in a horizontal position with the other surface located at an angle to the horizontal to thereby allow for produce to be stacked thereon; a ridge located on said first section, said ridge operable for holding goods in a highly visible position on said horizontal section, said ridge separating said horizontal surface from said surface located at an angle to the horizontal; said first section having members formed to receive a second section; said members located at the edges of said first section and intermediate of the edges of said first section and said second section; a second foraminous section, said second section having a goods supporting surface, said second section further having members formed for sliding engagement with said first section so that said first section and said second section are positionable with respect to one another to thereby allow the adjustable shelf to be used in a variety of refrigeration units; said first section having means located at one end for engaging one side of a refrigeration unit, said second section having means located at one end for engaging the opposite side of a refrigeration unit.

4,084,704

CAR COUPLER

William J. Metzger, Willowick, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 18, 1976, Ser. No. 733,434
Int. Cl.[2] B61G *3/00*
U.S. Cl. 213—100 W **8 Claims**



1. A car coupler of the rigid jawed-type having a head comprising a buffing jaw and a pulling jaw, said jaws being spaced apart transversely of said head and disposed on opposite sides of the longitudinal centerline of the coupler, said jaws being adapted to interengage with the jaws of an opposing similar coupler, said buffing jaw having a diagonal buffing face on its forward side and a side face extending rearwardly from the forward edge of said buffing face, and coupler gathering

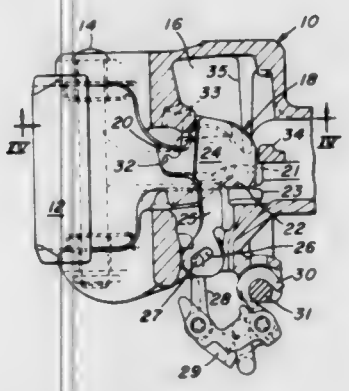
means on said head, said means comprising ledge means spaced above the top of said head and extending diagonally forwardly of the coupler, said ledge means overhanging said side face and having a forward face disposed in the same plane as said buffing face, said forward face being adapted for engagement with said buffing face on an opposing similar coupler to cause laterally displaced couplers to move laterally toward longitudinal alignment as the couplers come together for coupling.

4,084,705

LOCK FOR A RAILWAY VEHICLE COUPLER

Frank W. Oshinsky, McKeesport, and Thomas R. Brown, Sr., Pittsburgh, both of Pa., assignors to McConway & Torley Corporation, Pittsburgh, Pa.

Filed Jul. 18, 1977, Ser. No. 816,621
Int. Cl.[2] B61G *3/00*
U.S. Cl. 213—127 **12 Claims**



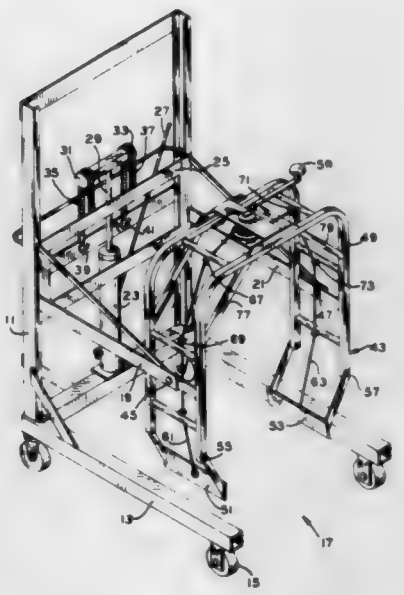
1. In a coupler for a railway vehicle including a head having a lock-receiving chamber, a knuckle and a knuckle thrower supported by said head for movement between open and locked positions, said knuckle thrower being movable with said knuckle toward their locked positions, said head having a guard arm on the side thereof opposite said knuckle, a lock including a leg portion depending from an upper lock body portion which is movable within said lock-receiving chamber between thrown, lock-set and locked positions, a lock ledge on the rear bottom part of said upper lock body portion engaging said knuckle thrower while said knuckle is in a locked position, said lock being movable upwardly in said chamber to said lock-set and thrown positions relative to said knuckle thrower and dropped by gravity toward its locked position when said knuckle is swung to its locked position, a lock-lift assembly including a toggle for moving said lock toward its lock-set position and movable with said lock toward its locked position, a vertically-extending guide rib in said chamber on the knuckle side of said head, said upper lock body portion having on one side thereof at its upper end a laterally-extending lug defining a guide surface adapted to engage said rib to guide the lock and limit rearward tilting thereof during downward movement of the lock toward the locked position, lug means in said head on the guard-arm side thereof extending laterally into said chamber to a point directly rearward of said upper lock body portion when the lock is in said locked position, the rear part of said upper lock body portion being solid with a continuous face surface profile substantially across the width thereof between said lock ledge and the top surface of said lock, the solid rear part of the upper lock body portion being disposed to always overhang said leg portion of the lock during locking of the knuckle to urge and maintain said laterally-extending lug engaged for sliding contact with said rib during dropping of the lock from said unlocked position.

4,084,706

HOISTING DOLLY

Arvin E. Russell, Indianapolis, Ind., assignor to Clifford E. Badgley and C. Brent Badgley, both of Indianapolis, Ind.

Filed Apr. 12, 1976, Ser. No. 676,395
Int. Cl.[2] B65G *65/38*
U.S. Cl. 214—1 D **4 Claims**



1. A carrier for lifting and moving cumbersome objects comprising:

a hand propellable cart including a base consisting of a generally horizontally disposed rectangular frame open at one end to allow the carrier to straddle an object to be lifted and rollably supported on wheels for movement in generally horizontal directions;

a pair of generally horizontally extending arms supported on the base by means providing movement relative thereto in a generally vertical direction;

an open ended object clamp for selectively gripping objects to be transported, the object clamp when gripping the object extending less than completely around the object and including a rigid U-shaped portion, a pair of jaws each pivotably attached to a respective side of the U-shaped portion, and means for moving the jaws toward one another to grip the object said means including cable for each jaw which is attached to the jaw near the free end thereof and hand actuable crank means disposed on the rigid U-shaped portion for tensioning each of the cables to move the free ends of the jaws toward each other, the jaws pivoting about respective free ends of the U-shaped portion whereby an object may be gripped between the jaws and the rigid U-shaped portion;

pivot means connecting the object clamp to the arms near the free ends thereof to allow the object clamp to be rotated freely about a generally horizontal axis whereby the open end of the object clamp may be directed downwardly to engage an object from above and directed horizontally to engage an object from the side.

4,084,707

ROUND BALE LOADING AND UNROLLING MACHINE

Douglas McFarland, Davis City, Iowa 50065

Filed Jul. 26, 1976, Ser. No. 708,987
Int. Cl.[2] B65H *17/00*; B66F *9/18*
U.S. Cl. 214—1 HA **12 Claims**

1. A vehicle-mounted round-bale handling and unrolling machine comprising,

a vehicle having a longitudinal axis parallel to the line of travel of said vehicle,

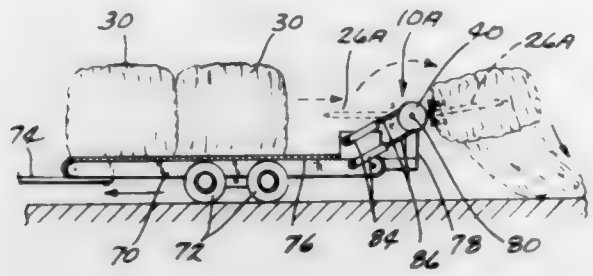
a substantially horizontally extending nonrotatable spindle parallel to said vehicle longitudinal axis and adapted to penetrate a bale of hay along its longitudinal axis as said vehicle is moved towards a bale,

hay-engaging means positioned radially outwardly of said spindle for engagement with said hay radially outwardly of its axial center for rotation about said spindle and its longitudinal axis, and

power means connected to said hay-engaging means for rotating said hay-engaging means and a bale of hay on said spindle for dispensing said hay by unrolling it.

10. A round bale vehicle having an unrolling machine comprising,

a vehicle having a bale conveyor on its support bed, and



a round bale unrolling machine positioned on said vehicle over said bed and conveyor and having a bale spindle pivotable between a first position extending rearwardly of said vehicle to a second position extending forwardly thereof over said conveyor in parallel relationship whereby operation of said conveyor towards said spindle moves a hay bale into engagement with said spindle and operation away from said spindle moves a hay bale off of said spindle.

4,084,708

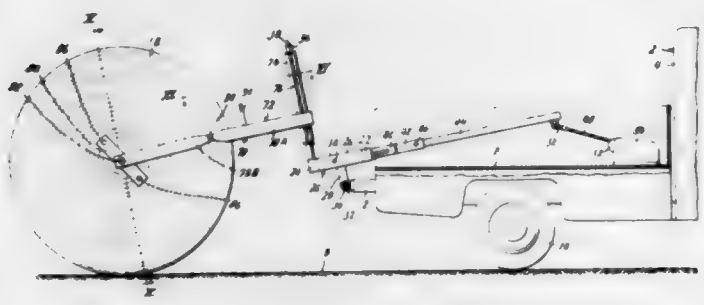
BALE LIFTER AND CARRIER ATTACHMENT

Harold R. Goodvin, Rte. #3, Maryville, Mo. 64468

Filed Oct. 4, 1976, Ser. No. 729,600

Int. Cl.[2] B65G *67/02*

U.S. Cl. 214—1 HA **3 Claims**



1. A lifting and carrying device for bales of hay or the like resting on the ground, said device being attachable to any self-propelled vehicle, and comprising:

a. a frame;

b. means operable to mount said frame on said vehicle for pivotal movement on a horizontal axis transverse to the line of travel of said vehicle,

c. a pair of prongs fixed on said frame and projecting therefrom in parallel relation, the vertical planes of said prongs being parallel to said line of vehicle travel and transversely spaced apart relative thereto,

d. operating means carried by said vehicle and operable to pivot said frame relative to said vehicle from a position in which said prongs are horizontal and may be inserted into said bale by propelling said vehicle, to a position in which said prongs are inclined upwardly toward their free ends, whereby said bale is lifted above the ground and is urged onto said prongs by gravity, said operating means being operable to move said prongs to a generally vertical, upwardly projecting position, and,

e. a bale unrolling device operable to unroll cylindrical bales of hay, and comprising a pair of generally horizontal arms disposed in transversely spaced apart relation, means for mounting one end of each of said arms on each of said prongs so as to be horizontally pivotal on said prong and to extend generally at right angles to said prong, a head member carried at the opposite end of each of said arms for rotation on a horizontal axis transverse to said arm and generally coaxial with a cylindrical bale, and including secondary prongs insertable into said bale in generally parallel relation to its axis, and releasable means connecting said arms exteriorly of said bale and operable to prevent separation of said arms by pivotal movement of said arms relative to said prongs, whereby to secure said secondary prongs in engagement with said bale.

4,084,709

DEVICE FOR LIFTING-LOWERING AND ROTATING OPERATIONS

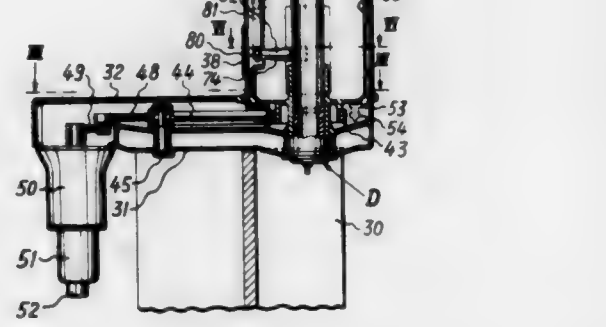
Erwin Bührer, Vogelingasschen 40 8200, Schaffhausen, Switzerland

Continuation-in-part of Ser. No. 598,351, Jul. 23, 1975, abandoned. This application Sep. 20, 1976, Ser. No. 725,115

Claims priority, application Switzerland, Jul. 31, 1974, 10531/74

Int. Cl.[2] B66C *1/62*

U.S. Cl. 214—1 BB **17 Claims**

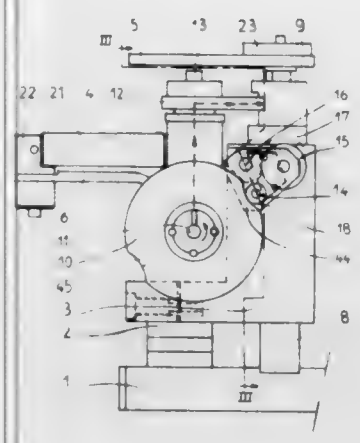


1. A device for moving items to and from different positions in a production operation, such as in a molding operation, comprising an upwardly extending member, a first support mounted on and extending transversely of said member with said first support extending outwardly from at least one side of said member, first means mounted on said first support for releasably engaging items to be moved, second means operatively associated with said member for moving said member upwardly and downwardly and for affording controlled deceleration of said member at the end of the upward and downward movement, and third means operatively associated with said member for rotating said member about a vertical axis and for controlling the acceleration and stopping of the rotational movement of said member, said first means comprising clamps arranged to be moved between released and clamped positions, each of said clamps including a mounting consisting of a part having therein a pair of vertically arranged bolts positioned in horizontally spaced relation, each said bolt being horizontally displaceable within a given limit, each said bolt having an axially extending recess therein, and a rod-like member inwardly tapered toward one end which is engageable within the recess in said bolt for securing said bolt in a predetermined horizontal position.

4,084,710
APPARATUS FOR PRODUCING HORIZONTAL AND VERTICAL RECIPROCATION MOVEMENT OF A TRANSFER ARM

Jacques Yver, Grenoble, France, assignor to Metallurgie Francaise des Poudres-Metafram, Paris, France

Filed Jan. 17, 1977, Ser. No. 759,742
Int. Cl.[2] B65G *47/90*
U.S. Cl. 214—1 BB 6 Claims



1. A device for causing a horizontal to-and-fro motion and a vertical lowering and raising motion after each of the horizontal forward and return motions of a transfer arm connected by one end to the device and comprising at the other end of the transfer arm a device for gripping small or medium parts, the device comprising:

a fixed frame;

a member for driving the transfer arm and to be connected rigidly to the transfer arm;

means mounting said driving member in said frame for horizontal and vertical motion;

two perpendicular shafts;

means mounting said shafts for rotation in the frame;

a flat horizontal cam fixed to one of said shafts;

a flat vertical cam fixed to the other of said shafts;

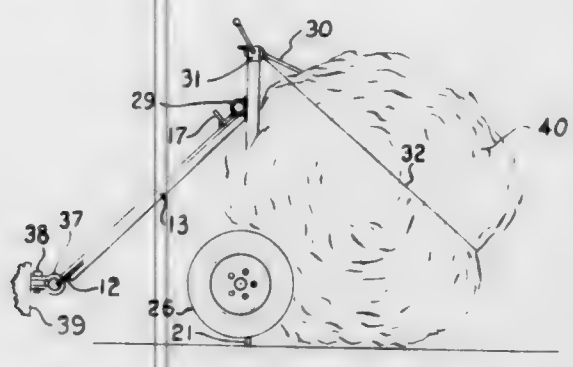
means for driving said shafts in rotation; said cams being coupled to the said driving member such that said horizontal cam constitutes means for causing horizontal motion of said driving member and said vertical cam constitutes means for causing vertical motion of said driving member; and

return means for returning said driving member against the action of said cams in the horizontal plane and the vertical direction respectively.

4,084,711
ROUND HAY BALE LOADING AND UNLOADING CARRIER

T. Wayne Armstrong, Rte. 1, Branch, Ark. 72928

Filed Jul. 5, 1977, Ser. No. 812,924
Int. Cl.[2] B60P *1/04*
U.S. Cl. 214—1 HH 10 Claims



1. A round bale loading and transporting carrier comprising a forward triangular framework having a pair of legs diverging rearwardly from a forwardly disposed junction and a transversely extending shaft rigidly joined to the rearward ends of said pair of legs and defining the third leg of said triangular framework;

a rectangular framework having first and second longitudinal side members and transverse forward and rearward end members;

coaxially opposed bearings secured to said first and second side members respectively near the forward end member, said shaft being rotatively received in said bearings for hingedly connecting said frameworks;

a transversely extending axle rigidly secured near said rearward end member to said longitudinal side members and projecting outwardly therefrom, a wheel rotatively mounted on each of the axle projections and brake means for selectively locking said wheels to said axle;

said rectangular framework sloping downwardly from the forward end member to the rearward end member and having a width of the order of one-half the spacing of said wheels;

a transversely extending stop member rigidly secured to said triangular framework in the downward path of movement of the forward end portion of said rectangular framework;

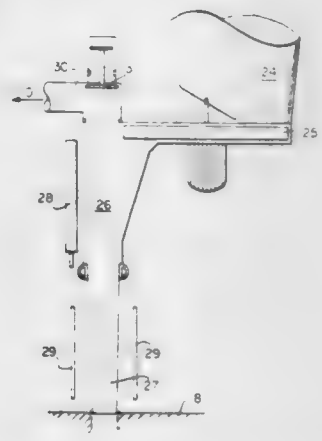
said rectangular framework moving from the sloping position to an upright position concurrently with a rearward movement of the forward end of said triangular framework when said wheels are locked to said axle; and

winch means mounted on the upper end of said first side member, a flexible cable wound in said winch means and extending therefrom to a terminal hook, and means located at the upper end of said second side member for receiving said hook in connected relationship therewith.

4,084,712
CHARGING TRUCK FOR FEEDING COAL INTO HORIZONTAL-CHAMBER COKE-OVENS

Horst Fach, Essen, Germany, assignor to Didier Engineering GmbH, Essen, Germany

Division of Ser. No. 593,045, Jul. 3, 1975, Pat. No. 4,018,655.
This application Jun. 28, 1976, Ser. No. 700,304
Int. Cl.[2] C10B *31/04*
U.S. Cl. 214—35 R 4 Claims



1. A charging truck for feeding coal into horizontal-chamber coke-ovens of the type including a plurality of filling openings arranged side by side in each oven chamber and a riser positioned adjacent one of said filling openings, said charging truck comprising:

a plurality of filling units, one for each of said filling openings, each said filling unit comprising:

a feeder hopper having a lower end;

a charging connection located at a position laterally offset from said feeder hopper, said charging connection having a lower end adapted to extend to a respective filling opening and an upper end, said charging connection being permanently open and free of obstruction from said upper end to said lower end thereof;

selectively operable conveying means positioned for se-

lectively conveying coal from said lower end of said feeder hopper to said upper end of said charging connection such that the thus conveyed coal falls by gravity through said charging connection and into the respective filling opening, the passage of coal from said lower end of said feeder hopper to said upper end of said charging connection being blocked when said conveying means is not operated;

a branch pipe connected to and communicating with the interior of said charging connection at said upper end thereof at a position above said conveying means; and

selectively operable shutoff valve means positioned in said branch pipe for selectively opening and closing communication between said interior of said charging connection and said branch pipe; and

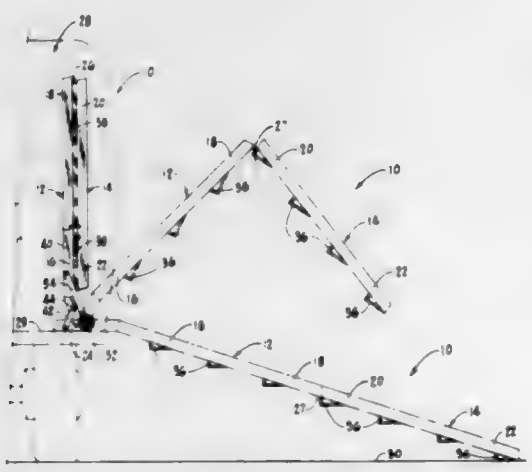
a manifold directly connected to said branch pipes of each of said filling units, said manifold being entirely closed and free of connection or communication with any elements other than said branch pipes.

4,084,713

VEHICLE WHEELCHAIR RAMP

Donald L. Rohrs; Harold A. Downing, and Donald L. Collins, all of Hutchinson, Kans., assignors to Collins Industries, Inc., Hutchinson, Kans.

Filed May 3, 1976, Ser. No. 682,387
Int. Cl.[2] B60P *1/00*
U.S. Cl. 214—85 **4 Claims**



1. A vehicle wheelchair ramp for loading and unloading an occupant confined to a wheelchair, the ramp comprising:

a first ramp member having a first end portion and a second end portion, the first end portion hingeably mounted to a ramp base mounted on the floor of the vehicle;

a second ramp member having a first end portion and a second end portion, the first end portion of said second ramp member hingeably mounted to the second end portion of said first ramp member, the second end portion of said second ramp member contacting the ground surface, curb, or the like, when the ramp is unfolded from the vehicle, said first ramp member and said second ramp member folded together and retracted into the vehicle and positioned parallel and adjacent to each other in a vertical position inside the vehicle, said second ramp member including handles mounted on the sides thereof to aid in unfolding the ramp from the vehicle; said first and second ramp members including the following:

"U" shaped guide channels positioned along the length thereof and adjacent the side for guiding the wheels of the wheelchair therein; and

built-in steps positioned along the length thereof and between said guide channels for use by a wheelchair attendant during the loading and unloading of the occupant in the wheelchair, said steps including a series of apertures pierced therein for providing non-slip steps; and

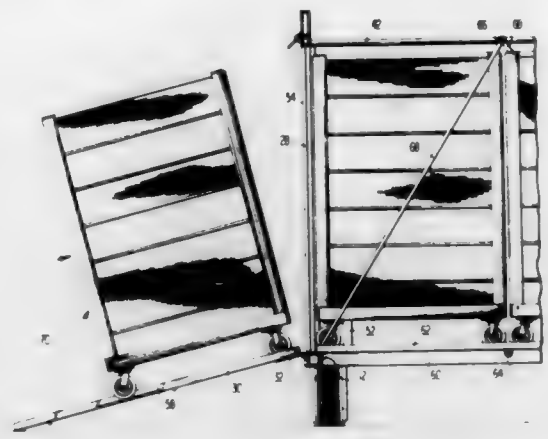
a coil spring attached to said ramp base and a pivot arm, said pivot arm slidably attached to a pivot pin mounted to the side of the first end portion of said first ramp member, said coil spring biasing said pivot arm upwardly for pivoting the ramp into a retracted position in the vehicle.

4,084,714

POULTRY-HANDLING SYSTEM

Melvin L. Williams, 28301 Highway S., Cloverdale, Calif. 95425

Filed Oct. 8, 1976, Ser. No. 730,981
Int. Cl.[2] B60P *1/00*
U.S. Cl. 214—515 **4 Claims**



1. A poultry-handling system, which comprises:

wheeled means comprising a plurality of compartments for containing poultry;

means for transporting a plurality of said wheeled means comprising a fifth wheel trailer having a pair of upper and lower longitudinal frame members, and moveable ramp means for loading and unloading said wheeled means disposed along both longitudinal sides of said trailer and extending between said upper and lower longitudinal frame members;

said moveable ramp means comprising a plurality of elongated U-shaped guide members hingedly mounted to said lower longitudinal frame members;

said trailer further including a plurality of channel rails transversely positioned across the bed thereof at spaced locations corresponding to the positions of said guide members for receiving said wheeled means after loading via said guide members; and

means for latching said plurality of guide members in a substantially vertical position comprising an actuating shaft rotatingly coupled to and extending along each of said upper frame members of said trailer, a plurality of retainer bars connected to said shaft at spaced locations therealong which correspond at least to the position of alternate guide members, and a handle at one end of each of said shafts for rotating same and thereby simultaneously rotating said bars into or out of engagement with at least said alternate guide members.

4,084,715

LIFT TRUCK WITH MEANS TO PIVOT MAST AND THE FORK CARRIAGE THEREON

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 23, 1976, Ser. No. 660,743
Int. Cl.[2] B65G *47/00;* B66B *9/20*
U.S. Cl. 214—660 **1 Claim**

1. A fork carriage attitude adjusting arrangement for a lift truck having a longitudinally extending frame, comprising;

a mounting tower secured to and extending upwardly from the forward end of the frame;

lever means pivotally attached to the mounting tower;

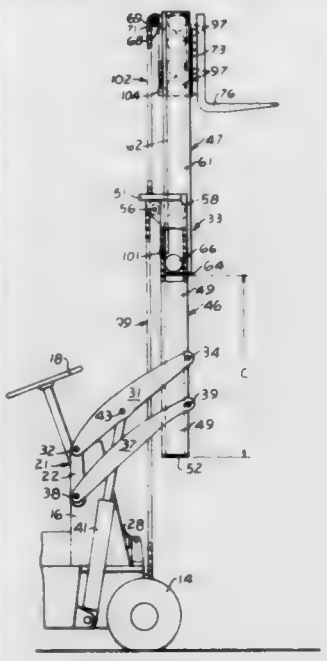
a hydraulic tilt motor operatively connected to the lever means for adjusting the angularity of the lever means relative to the mounting tower;

a pair of vertically spaced parallel arms having forward and

rearwardly disposed ends with the rearward ends pivotally connected to the lever means;

a hydraulic motor mounted to the frame and pivotally connected to one of the arms for pivoting the arms between a lowered and a raised position; and

a mast assembly pivotally connected to the forward ends of the parallel arms in a manner sufficient to maintain the mast assembly at a predetermined attitude relative to the lever means, said mast assembly including at least one upright, a fork carriage, a plurality of rollers rollably associated with the upright, and roller mounting means for rotatably attaching the rollers to the fork carriage to



permit guided vertical movement of the fork carriage relative to the upright and which is selectively adjustable for adjusting the angularity of the fork carriage relative to the uprights; and

wherein said roller mounting means includes a pair of bogie mountings disposed at opposite sides of the fork carriage with each bogie mounting having two of the rollers rotatably mounted thereto and means forming a bore intermediate the rollers, and a pair of eccentric pins selectively adjustably rotatably connected to the fork carriage at opposite sides thereof with each eccentric pin having an annular axially offset portion extending into the bore of the respective bogie mounting.

4,084,716

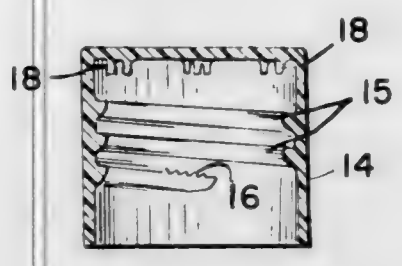
SAFETY CLOSURE FOR CONTAINERS

Clayton Bogert, 118 Lowell Rd., Glen Rock, N.J. 07452

Continuation of Ser. No. 516,231, Nov. 29, 1974, Pat. No. 3,979,001, which is a continuation-in-part of Ser. No. 311,119, Dec. 1, 1972, abandoned. This application Sep. 7, 1976, Ser. No. 720,868

Int. Cl.[2] **B65D** *55/02, 85/56;* **A61J** *1/00*

U.S. Cl. 215—217 **10 Claims**



6. A safety closure for containers comprising a neck portion provided with continuous threads and axially extending serrations formed in the threads,

a cap provided with continuous threads cooperatively engaging the threads on the neck portion and maintaining the cap in radially fixed relation in covering position on the neck portion and axially extending serrations formed in the threads on the cap cooperatively engaging the serrations formed in the threads on said neck portion; and

axially resilient members interposed between the underside of the top of the cap and the top of the neck portion.

4,084,717

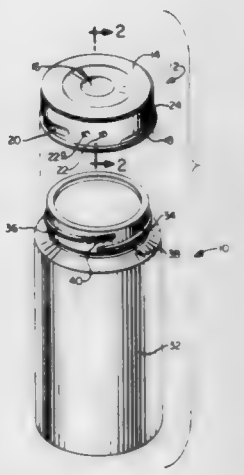
CONTAINER AND CLOSURE

Roderick V. King, Girard, Pa., assignor to VCA Corporation, Baton Rouge, La.

Filed Jun. 29, 1977, Ser. No. 811,325

Int. Cl.[2] **B65D** *55/02, 85/56*

U.S. Cl. 215—217 **14 Claims**



1. A container and closure, wherein said container comprises:

a body portion;

a cylindrical neck portion; and

a plurality of helical container threads equiangularly spaced about the outside circumference of said neck, said container threads having a ratchet portion at their start ends;

and wherein said closure comprises:

a top wall;

an annular sidewall, downwardly depending from said top wall;

a plurality of helical closure threads equiangularly spaced about the inside circumference of said side-wall for cooperating with said container threads to achieve tight fitment of said closure on said container, said closure threads being of the same number as said container threads;

at least one inwardly projecting ratchet tooth separate from each closure thread and adjacent the terminal end of each closure thread for engagement with the ratchet portion of said container thread to prevent removal of said closure from said container while said engagement is maintained; and

flex means for permitting axial movement of said closure to achieve disengagement of said ratchet tooth from said ratchet portion.

4,084,718

COMPRESSION SEAL FOR ELASTOMERIC SEPTUM

Brent Earl Wadsworth, Concord, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 28, 1977, Ser. No. 772,611

Int. Cl.[2] **B65D** *41/20*

U.S. Cl. 215—247 **4 Claims**

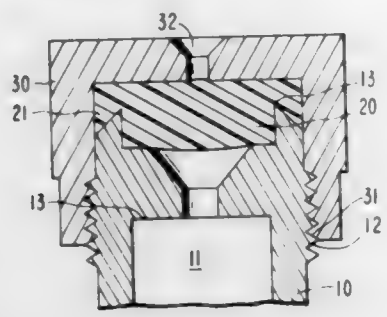
1. In combination, a sealing fixture, an elastomeric septum, and a cap member;

said sealing fixture being of generally cylindrical configuration and having an axial bore therethrough, a first end of said sealing fixture being configured to receive a fluid transfer device within said bore, and a second end of said sealing fixture being configured to receive an open end of a hollow structure within said bore, whereby a quantity of

fluid can be transferred between said fluid transfer device and said hollow structure via said bore,

an outer wall portion of said sealing fixture adjacent said first end of said sealing fixture being tapered inwardly to form a junction with an inner wall portion of said sealing fixture, said inner wall portion adjacent said first end of said sealing fixture being substantially parallel to the axis of said cylindrical sealing fixture, said junction being sharp enough to cut into said septum when said septum is pressed against said junction,

a nontapered outer wall portion of said sealing fixture being threaded, said threaded outer wall portion being intermediate said tapered outer wall portion and said second end of said sealing fixture;



said septum being of generally cylindrical configuration and being disposed coaxially with respect to said sealing fixture in contact with said junction, the perimeter of said septum extending beyond said junction so that a rim portion of said septum lies outside said junction;

said cap member being configured to cover said septum by being threadably received over said threaded outer wall portion of said sealing fixture, whereby said junction cuts into said septum and said rim portion of said septum is compressed between said cap member and said tapered outer wall portion of said sealing fixture when said cap member is screwed down onto said sealing fixture,

said cap member having an aperture through which said fluid transfer device can be inserted into said bore of said sealing fixture by puncturing said septum.

4,084,719

SECURITY CLOSURES

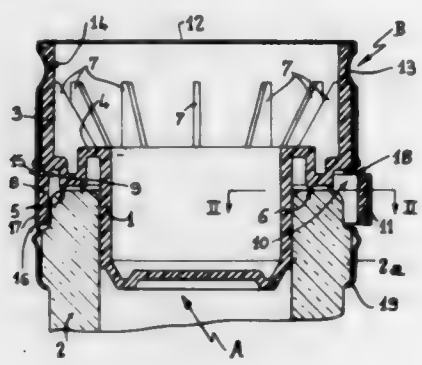
Henri Coursaut-Durand, Mercurey, Givry, France (71640)

Filed Mar. 3, 1977, Ser. No. 774,169

Claims priority, application France, Mar. 16, 1976, 76 08573; Sep. 23, 1976, 76 29177

Int. Cl.[2] B65D *41/58*

U.S. Cl. 215—256 **8 Claims**



1. A security closure for a container having a neck with an outer surface and having an opening through the neck, comprising a capsule and a stopper within said capsule, said stopper being made of plastic material and shaped to close the opening in the neck, and the stopper including a cylindrical head portion overlying the outer surface of the neck of the container and including a depending integrally formed tearstrip having opposed longitudinal edges extending circumferentially around said outer surface of the container neck, the tearstrip joining the head portion along a line of reduced material thickness, and the tearstrip having one end portion which is free and manually grippable; and said capsule covering said stopper and gripping said container neck, the capsule having an opening of circumferential width greater than its height, said end portion of said tearstrip projecting through the opening outwardly of said capsule, and the capsule having two circumferential lines of weakness which are aligned with said longitudinal edges of said tearstrip.

4,084,720

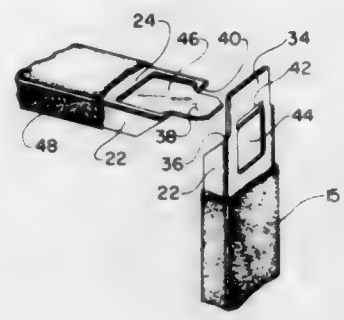
BOX CONSTRUCTION

Benjamin L. Thurston, Lincoln, R.I., assignor to Frost Packaging Company, Pawtucket, R.I.

Filed Jan. 24, 1977, Ser. No. 762,463

Int. Cl.[2] B65D *7/34*; E04C *2/38*

U.S. Cl. 220—76 **10 Claims**



9. A rim stock construction adapted to form the rim portion of a multi-corner box section comprising an elongated generally thin material strip having a central panel and a pair of generally opposed parallely disposed flanges extending from opposite longitudinal edges of said central panel along the entire extent thereof, said panel terminating in first and second end portions, said first and second end portions respectively having a first tab and a second tab outwardly extending therefrom, said first tab including a transversely disposed slot of an extent at least equal to that of said second tab, and said terminal panel end portions including first and second longitudinally extending depressions, respectively, at least equal in extent to that of said second and first tabs respectively, said depressions adapted to be longitudinally contiguously disposed to one another when said second tab is received within said slot and both of said tabs inwardly bent about their respective terminal ends and substantially entirely received within said depressions respectively underlying said tabs.

4,084,721

CONTAINER WITH ATTACHED CLOSURE

Walter Merton Perry, deceased, late of Darien, Conn. (by Elisabeth D. Perry, executrix), assignor to The Continental Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 712,839, Aug. 9, 1976, and Ser. No. 717,993, Aug. 26, 1976, and a continuation-in-part of Ser. No. 515,444, Oct. 17, 1974, Pat. No. 3,977,578, which is a continuation-in-part of Ser. No. 231,124, Mar. 2, 1972, Pat. No. 3,843,011, and Ser. No. 514,069, Oct. 11, 1974, Pat. No. 3,952,912, and a continuation-in-part of Ser. No. 231,124, Mar. 2, 1972, Pat. No. 3,843,011. This application Nov. 22, 1976, Ser. No. 744,162

Int. Cl.[2] B65D *41/32*

U.S. Cl. 220—269 **24 Claims**

1. An improved easy open container having a top with easy opening means therein, and said easy opening means comprising,

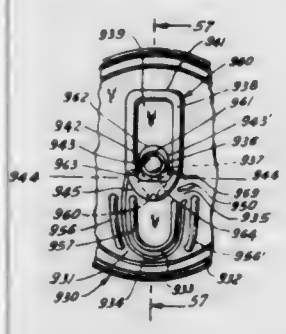
an openable segment of generally rounded corner shape in said container top and with said segment defined by a weakening score line which extends most of the way around the periphery of said segment, but with said score line interrupted at a point to leave an unscored section of

said periphery, and said unscored section providing an integral hingeable attachment means to anchor said segment to said container top after opening of said segment,

said openable segment having an outer end extending toward the peripheral border of said container top, and an inner end extending toward the inner region of said top, and said unscored section of said score line positioned along one side of said segment,

a leverage lift tab for manual opening of said openable segment, and having rivet securement means positioned along its length to permanently secure it to said container top, and with flexible upwardly hingeable connection means between the main body of said lift tab and said rivet, and with said rivet securement means positioned on said top just outward of said openable segment and close to said score line and in the region of said inner end of said segment, and said lift tab having a longer outer lift end extending beyond said segment and closely overlying said top and mainly outward of said segment, and having a shorter inner downward pressure exerting end means extending over only a part of said segment and said part located in its inner end region, and

said inner downward pressure exerting end means of said lift



tab having a plurality of pressure contact means including a first pressure contact means positioned near the portion of said score line which is in the region of said rivet securement means, and a second pressure contact means positioned over said segment at a point spaced away from said portion of score line, and with said second pressure contact means spaced further vertically above the contact surface of said segment than said first pressure contact means, and whereby when said outer lift end of said lift tab is partially raised to start opening said openable segment, said inner pressure exerting end means tilts downward and said first pressure contact means makes initial pressure contact and exerts high downward pressure against said segment near said portion of said score line and initiates rupture along said score line, and whereby further raising of said lift tab end tilts said inner pressure exerting end means down further causing said second pressure contact means to exert high downward pressure against said segment and thereby to extend rupture along said score line, and whereby said segment is bent down into said container where it remains anchored to said top by said hingeable unscored section, and whereby an opening is formed in said container top suitable for outflow of the contents of said container.

4,084,722

CHILD RESISTANT SAFETY CLOSURE

John J. Rosynek, Dolton, and Anilkumar U. Patel, Summit, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

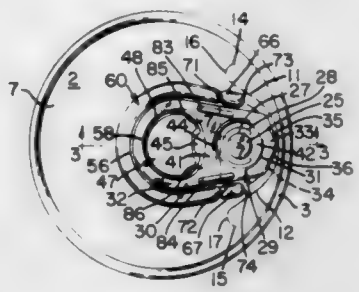
Filed May 9, 1977, Ser. No. 794,882
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—270 **18 Claims**

1. a child resistant safety closure for a can or similar container having an end panel with a score therein defining a tear flap adapted to be torn from the end panel to form a pour opening;

a tab having an attachment portion, a lifting portion and a nose portion for pressing on the tear flap and fracturing the score;

said attachment portion comprising a lug cut therethrough and having one end connected to the tab providing a hinge therefor, accommodating tilting of the tab by said lift portion to force said nose portion panelwardly to fracture said score;

said cut being interrupted to provide a fracturable tie-strap between the lug and the lift portion of the tab, for resisting lifting of the tab, means for attaching the lug to the panel;



shield means on the end panel obstructing grasping of the tab; and

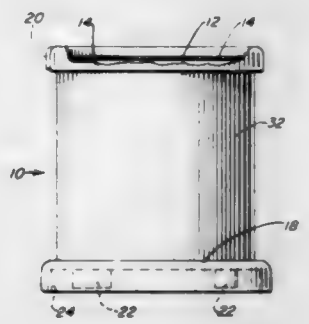
means between the end panel and the tab adapted for prying the lift portion of the tab upwardly from said end panel and attendant fracturing of the tie-strap to disassociate the lift portion from said shield means in accessible position for further lifting and tearing of said tear portion at said score.

4,084,723

CONTAINER WITH BUILT-IN OPENING SYSTEM

Richard P. Parker, 5550 N. 61st Ave., Glendale, Ariz. 85301

Filed May 31, 1977, Ser. No. 801,997
Int. Cl.[2] B65D *41/02*
U.S. Cl. 220—277 **17 Claims**



1. An improved container and container opener comprising in combination,

an enclosed body formed by a body sidewall and being bounded by a top end wall and a bottom end wall formed therewith,

said top end wall of said container having at least one punctum formed therein,

said bottom end wall having puncturing means positionally mounted thereon and extending downwardly therefrom and in vertical alignment with said punctum in said top end wall,

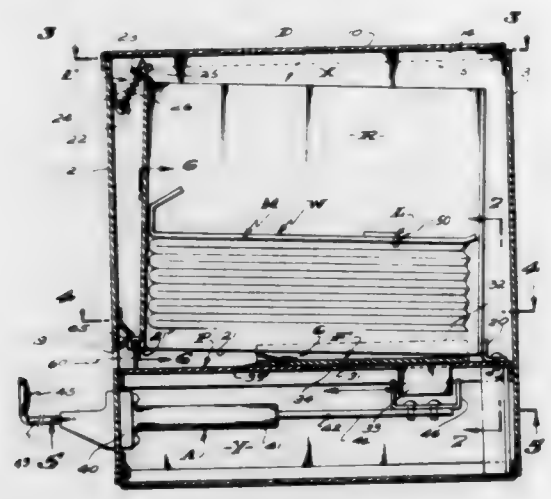
whereby said puncturing means of one container may be positioned against the punctum of another similar container such that upon the application of manual pressure forcing the containers against each other, the said punctum will be punctured by said puncturing means to permit access to the contents of the punctured container.

4,084,724

MAP VENDING MACHINE

Clarence E. Christophersen, San Clemente, and Currie Armstrong, Los Angeles, both of Calif., assignors to Rockwell Enterprises, Inc., Carson, Calif.

Filed Sep. 22, 1976, Ser. No. 721,689
Int. Cl.[2] B65H 7/04
U.S. Cl. 221—20 12 Claims



1. A vending machine to retain a stacked supply of flat, horizontal, rectangular multi-paneled folded paper road maps and operable to dispense maps from the stacked supply, one at a time, said machine comprising an elongate vertical box-like housing with top, bottom, front, rear and side walls, a flat, horizontal plate with top and bottom surfaces in the housing in spaced relationship above the bottom wall, a discharge opening in the front wall adjacent the top surface of the plate, an elongate vertical chute corresponding generally in cross-section with the plane configuration of a related folded paper map and slidably receiving a vertical stack of maps, said chute having front and side walls defining lower front and side edges on the chute, means mounting the chute on the plate with its bottom edges in spaced relationship above the top surface, said front edge and top surface defining a map discharge gap in substantial alignment with the discharge opening, an elongate U-shape slide with a flat, horizontal base slidably supported on said top surface and extending transverse the chute and vertical side flanges at the exterior of and slidably engaging the side walls of the chute, said base transportingly supporting a portion of the lowermost map of said stack of maps, gripping means on the base establishing driving engagement with the lowermost map upon forward shifting of the slide relative to the chute, and operating means including a manually operable coin-released actuator with a forwardly and rearwardly shiftable bar carried by and extending through the front panel below the plate, an elongate forwardly and rearwardly extending slot in the plate below the slide, a vertical drive post on the slide depending freely through the slot and below the plate and a drive coupling between the bar and the post.

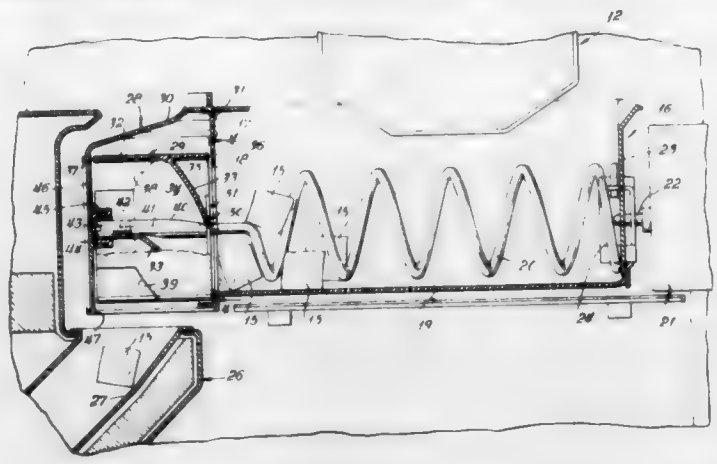
4,084,725

ICE PIECE DISPENSER

William J. Buchser, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 26, 1976, Ser. No. 718,145
Int. Cl.[2] F25C 5/18
U.S. Cl. 221—75 15 Claims

1. In an ice piece dispensing apparatus having means for providing a plurality of ice pieces to a transfer position, and a delivery member having a through passage for conducting ice pieces away from said transfer position to a delivery position, the improvement comprising metering means at said transfer position for providing a metered, sequentially independent delivery of said ice pieces one at a time to said passage at a rate substantially less than the maximum delivery capacity of said passage, said metering means being defined by a disc element having a plurality of outwardly extending projections restricting free movement of the ice from the transfer position into said passage.

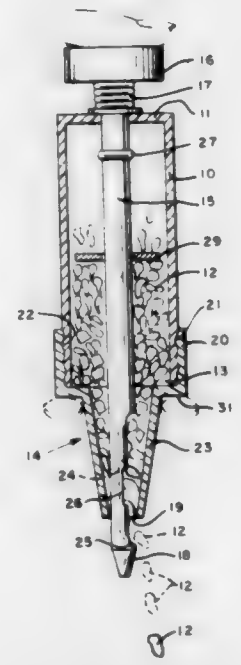


4,084,726

SEED DISPENSER

William A. Nicol, 65 Newtown Ave., Stratford, Conn. 06497

Filed Mar. 18, 1977, Ser. No. 778,866
Int. Cl.[2] B65G 65/62
U.S. Cl. 221—266 4 Claims



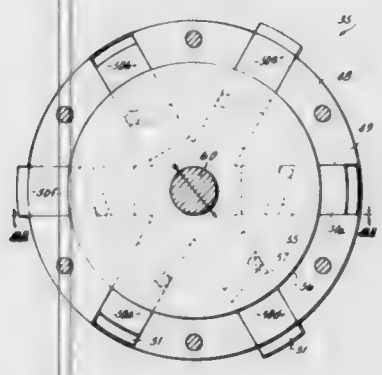
1. A finger-held and operated seed dispenser comprising a tubular transparent container having one end open and the other closed to receive and retain a supply of seeds to be planted; a spout having a collar removably mounted on the open end of the container to give access to the container for reception of seeds, said spout being tapered to permit the passage therethrough, one at a time, of seeds of approximately the same diameter; a seed dispensing rod positioned centrally in said container carried by and extending through the closed end of the container and having on its exposed end a finger operable button; and spring means between the button and the closed end of the container to yieldingly hold the rod in normal inactive position, the other end of said dispensing rod having a diameter approximately equal that of the outlet of the spout to prevent, in idle position of the dispensing rod, seeds from passing through and out of said outlet, said rod having a longitudinal channel positioned in said spout to receive and guide seeds moving by gravity toward the end of the spout, the end of the channel sloping outwardly to permit seeds in the channel to escape one at a time from the spout and drop into a furrow when the dispensing rod is manually moved downwardly through the spout by finger force applied to said button.

4,084,727

APPARATUS FOR DISPENSING RINGS AND FOR APPLYING PISTON RINGS TO PISTONS

Norbert C. Albers, Cincinnati, Ohio, assignor to Designeers Midwest, Division Maswill Industries Incorporated, Cincinnati, Ohio

Division of Ser. No. 636,057, Nov. 28, 1975, Pat. No. 4,047,276.
This application Jul. 5, 1977, Ser. No. 813,085
Int. Cl.[2] B65G *59/06*
U.S. Cl. 221—298 3 Claims



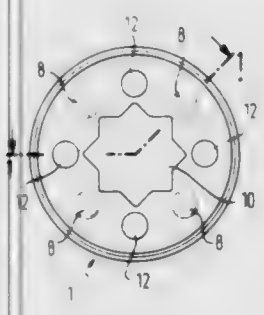
1. Apparatus for applying rings to pistons comprising:
a tube to receive a stack of rings,
a plate in the lower end of said tube,
a plurality of radial pawl slots in the upper surface of said plate,
a plurality of upper and lower pawls slidably mounted in said slots,
a cam disc rotatably mounted in said tube above said pawls,
slot and pin means interconnecting said disc and pawls to cause said pawls to project beyond said tube and retract upon oscillation of said disc, said upper pawls retracting when said lower pawls project and vice versa.

4,084,728

CHILD-PROOF CLOSURE DEVICE FOR CONTAINERS

Otto Stahl, Finnentrop, and Johannes Hins, Sundern, both of Germany, assignors to Georg Menshen & Co. KG., Finnentrop, Germany

Filed Oct. 22, 1976, Ser. No. 734,810
Claims priority, application Germany, Oct. 29, 1975, 7534301[U]
Int. Cl.[2] B67D *5/32*
U.S. Cl. 222—153 14 Claims



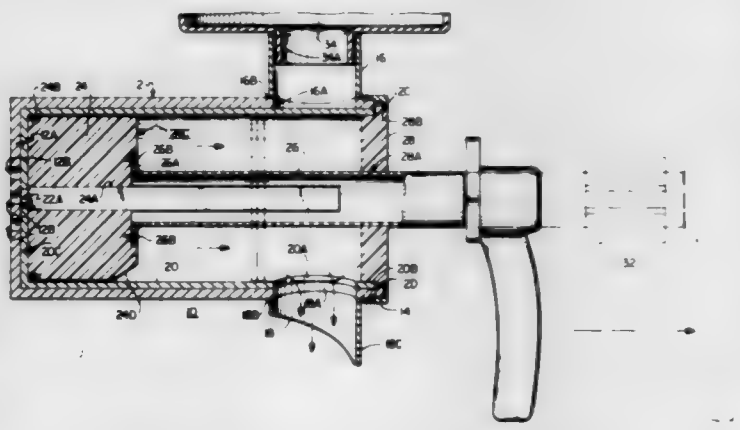
1. A child proof closure device for a container, the closure device comprising
an inner cap member adapted to be secured to the container neck and having at least one dispensing aperture therein,
an outer cap member having at least one dispensing aperture therein,
means permitting relative rotation of said inner and outer cap members between first and second angular positions, said apertures in said first angular position co-operating to permit dispensing of container contents therethrough, and said aperatures in said second angular position being angularly spaced to prevent such dispensing of container contents, and
latching formations on said inner and outer cap members, said latching formations being adapted, when in latching condition, to co-operate to prevent relative rotation of said inner and outer cap members into said first angular positions without the application of external pressure to deform said inner cap member to place said latching formations in unlatching condition.

4,084,729

DISPENSING VALVE

Richard R. Epple, Glen Burnie, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Aug. 28, 1975, Ser. No. 608,637
Int. Cl.[2] G01F *11/06*
U.S. Cl. 222—307 11 Claims



1. Valve means for dispensing metered quantities of liquid and semi-solid materials from a reservoir, comprising:
a cylindrical valve housing having diametrically opposed intake and discharge ports formed in the walls thereof adjacent one end thereof and being substantially closed at the other end thereof;
a cylindrical valve sleeve conformally telescoped with said housing and rotatable therein and having a transfer port defined in the wall thereof adjacent one end thereof for selective registry with said intake and discharge ports by rotation of said sleeve;
said sleeve having its other end closed to define a metering chamber and said one end of said housing and said sleeve being closed by a common cover plate having a bearing port defined therein;
guide means internally disposed in said sleeve and affixed thereto;
a piston mounted in said sleeve for reciprocation therein and engaging said guide means to prevent relative rotation of said piston and said sleeve;
a piston rod extending from said piston through said bearing port of said cover plate; and
an actuating handle in the outboard end of said piston rod;
said actuating handle and said piston rod being rotatable and reciprocable to rotate said piston and said sleeve by the interaction of said piston and said guide means between first and second extreme positions, to index said transfer port with said intake port and said discharge port, respectively and to reciprocate said piston between third and fourth extreme positions in said sleeve to ingest and discharge material, respectively, into and from said metering chamber in said sleeve through said intake and discharge ports;
said fourth extreme position juxtaposing said piston with said cover plate; and
said piston being cut back along a portion thereof to provide a cam surface extending from said cover plate to a position overlying said indexed transfer and discharge ports in said fourth extreme position to constrain complete discharge

of materials from said metering chamber by movement of said piston.

4,084,730

MEASURING AND PIPETTING DEVICE

Rainer-Burkhard Franke, Heddesheim; Adolf Hirschmann, Heilbronn, and Klaus Kaser, Weinsberg, all of Germany, assignors to Labora Mannheim GmbH fur Labortechnik, Mannheim, Germany

Filed Sep. 15, 1976, Ser. No. 723,515
Claims priority, application Germany, Sep. 18, 1975, 2541642
Int. Cl.[2] G01F *11/06*
U.S. Cl. 222—309 **8 Claims**



1. A measuring and pipetting device comprising an elongated tubular housing, a control member at one end of said housing movable angularly about the central longitudinal axis of the housing and parallel thereto in an intake stroke and a working stroke, attaching means carried on the other end of said housing for releasably clamping a filling device into register with the housing bore, a piston member having a stem extending from said other housing end and into the attached filling device, an elongated member carrying a transverse abutment within said housing and attached to said control member, said elongated member being movable parallel to and angularly about the central longitudinal axis of said housing as said control member is correspondingly moved, further attaching means carried by said elongated member for holding said piston stem within the housing, a sleeve fixed within said housing and having a series of longitudinally spaced abutments each spaced angularly from the other about the sleeve wall, said longitudinally spaced abutments each being adapted to selectively engage said transverse abutment on the elongated member depending upon the angular position of said control member, said further attaching means including clamping elements for retaining said piston stem and a guide ring acting thereon to hold the clamping elements in piston stem retaining position, cooperating elements on said attaching means and on said fixed sleeve for removing the clamping force of said guide ring when said control member is pulled outwardly parallel to the housing axis a predetermined distance, and said fixed sleeve having a longitudinal slot extending beyond the abutment most remote from the piston member, said slot accommodating said transverse abutments and defining said predetermined withdrawal distance necessary to remove said clamping force.

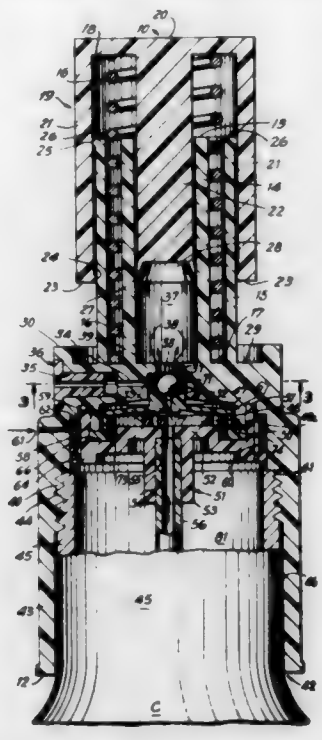
4,084,731

FLUID DISPENSING PUMP ASSEMBLY

John E. Ayres, 540 Fairview Ave., Westwood, N.J. 07675

Filed Jan. 23, 1976, Ser. No. 651,973
Int. Cl.[2] B05B *9/043*; F04B *21/02*
U.S. Cl. 222—380 **1 Claim**

1. A fluid dispensing pump, or the like, comprising, in combination: a housing portion formed with an outlet port, said housing portion further containing a fluid chamber therein which communicates with said outlet port; conduit means communicating with said fluid chamber for conducting fluid from a reservoir to the fluid chamber; diaphragm means formed with an opening therethrough for controlling the flow of fluid through said outlet port, said opening being operatively disposed in a fluid path between said conduit means and said fluid chamber, said diaphragm means including a first valve portion integral therewith, said first valve portion initially obstructing said outlet port and being operably movable only in a substantially snap-like action between obstructing and non-obstructing positions; second valve means cooperative with and movable relative to said opening for controlling the flow of fluid therethrough; and actuating means for compressing the contents of said fluid chamber; said diaphragm means



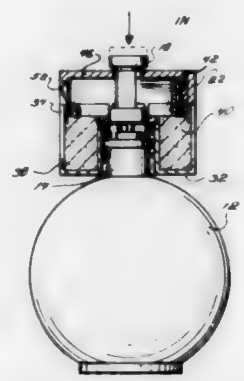
comprising an upper rigid portion integral with said first valve portion, a lower rigid portion, and a relatively flexible portion connecting said upper and lower rigid portions and permitting said upper rigid portion to move in an over-center-type snap-like action with respect to said lower rigid portion and being responsive to the pressure within said fluid chamber and permitting the fluid to be discharged through said outlet port only upon said pressure reaching a minimum predetermined magnitude whereby substantially full atomization of the fluid dispensed is repeatedly realized.

4,084,732

DIRECT AND INDIRECT FRAGRANCE DISPENSING DEVICE

Harry S. Dearling, 25 E. 83rd St., New York, N.Y. 10028

Continuation-in-part of Ser. No. 537,923, Jan. 2, 1975, abandoned. This application Sep. 27, 1976, Ser. No. 727,754
Int. Cl.[2] A61L *9/04*
U.S. Cl. 222—402.17 **11 Claims**



1. A fragrance dispensing device for direct or indirect dissemination of a fragrance comprising:

a cover assembly including a cover member adapted to be positioned over the discharge outlet means of a fragrance container,

said cover assembly including a housing adapted to hold a carrier member to receive said fragrance whereby said fragrance may be dissipated over a period of time,

means in said cover member to provide an access passage from within said cover member to the exterior of said cover member,

actuation means including a fragrance spray outlet port therein within said cover assembly and cooperable with said discharge outlet means to discharge a spray of said fragrance from said outlet port, and

said actuation means and cover assembly being movable relative to each other between a first position wherein said outlet port is oriented in register with said access passage in said cover assembly to discharge said fragrance directly to the exterior of said cover member as a spray and a second position wherein said outlet port is oriented to discharge said fragrance onto said carrier member within said cover assembly to disseminate said fragrance indirectly.

4,084,733

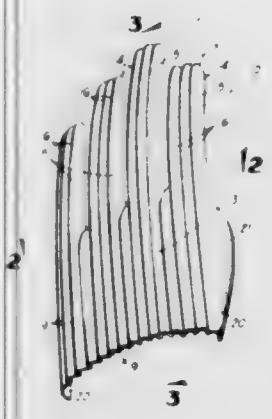
GLOVE FORM

Frank Perlmutter, 1508 Beachcliff Dr., NE., Atlanta, Ga. 30329

Filed Mar. 30, 1977, Ser. No. 782,616

Int. Cl.[2] A41D *1/00*

U.S. Cl. 223—78 **8 Claims**



1. A glove form for drying and shaping gloves comprising a unitary formed thin sheet material form body having a substantial degree of resiliency at least in the transverse direction, said form body simulating the shape of a natural hand and including spaced finger extensions of generally U-shaped cross section and side walls rearwardly of the finger extensions, one side of the form body being open whereby the entire form body possesses a cavity, and the form body having a multiplicity of corrugations formed longitudinally therein and extending from the wrist end of the form body to the forward ends of said finger extensions.

4,084,734

COMBINED SHOULDER AND BELT HOLSTER

John E. Bianchi, and Richard D. E. Nichols, both of Fallbrook, Calif., assignors to Bianchi Leather Products, Inc., Temecula, Calif.

Filed Aug. 29, 1975, Ser. No. 608,874

Int. Cl.[2] F41C *33/02*

U.S. Cl. 224—2 B **6 Claims**

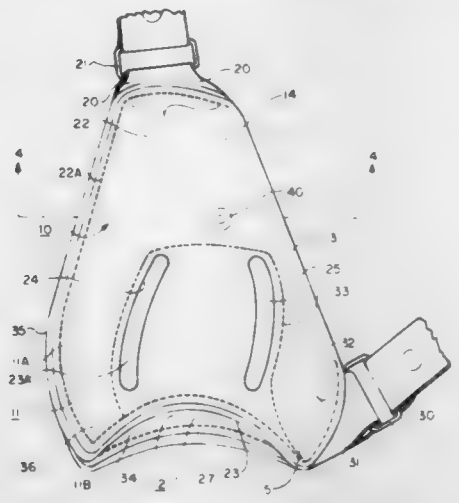
1. A holster for handguns comprising a body of leather or leather like material formed to define a weapon holding pocket between two sides thereof;

said body including edges which define an opening extending substantially the full length of one side thereof and generally paralleling the barrel of a handgun held therein;

said body defining an end opening for said weapon holding pocket for access to the grip of a handgun;

said body extending to substantially enclose the hammer of the weapon in the pocket between edge regions of said body;

spring means biasing said body sides together along the barrel of said weapon and including portions extending into the region of the hammer of a handgun in said holster embracing the hammer of such handgun and biasing in-



ward said body portions for substantially enclosing said hammer, whereby said handgun is more positively retained in said holster and the hammer is protected.

4,084,735

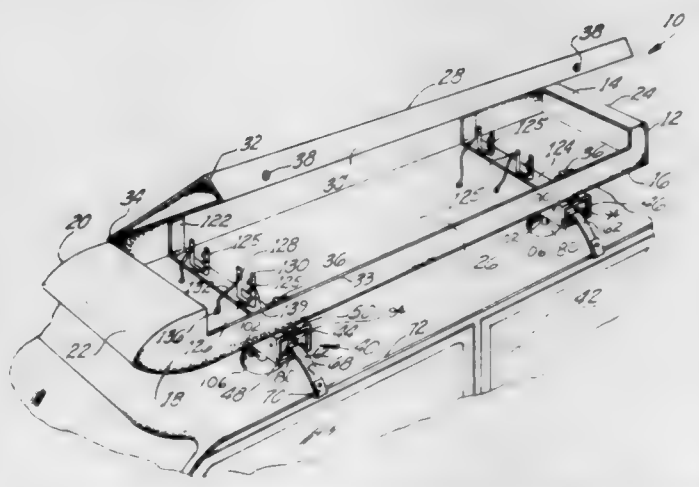
SKI CASE AND RACK

Nick Kappas, 5486 Madison St., Gary, Ind. 46408

Filed Jun. 28, 1972, Ser. No. 267,136

Int. Cl.[2] B60R *9/12*

U.S. Cl. 224—42.1 E **8 Claims**



1. A luggage carrier and rack especially useful for carrying skis comprising a rigid enclosure including top, bottom and side surfaces and having an opening therethrough thereby providing access to the interior of said enclosure, a cover hingedly secured to said enclosure and closing said opening, a plurality of rigid and elongated members, both of said members having a hollow interior and an upwardly facing surface with a slot therein extending between said interior and member surface, said slot also being elongated and extending the entire length of said members, said members also having open ends, a plurality of slide elements having an enlarged head portion and a narrower neck portion fixedly secured to said enclosure bottom in spaced-apart rows, said enlarged portions of each row of said elements being positioned in the interior of a different one of said members, said neck portions being positioned in said slots, a plurality of doors each hingedly secured to respective ends of said members closing said ends, means for locking said doors in a closed position and engaging the head portion of said slide elements hereby preventing the removal of said enclosure from said members without unlocking said doors, means at the opposite ends of said members for securing said members to an upwardly facing surface of a vehicle, said member securing means including a plurality of flexible straps, means for coupling said straps to the respective ends of said

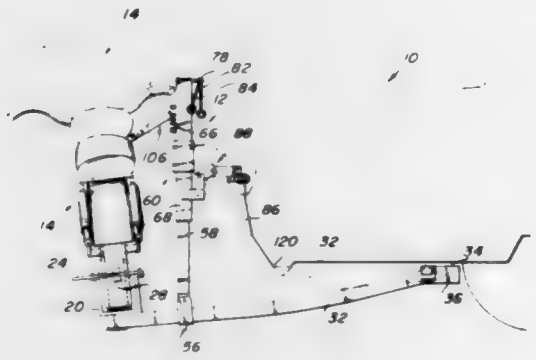
members, said coupling means further including means for adjusting the extension of said straps with respect to said members, a hook element secured to the distal end of each said strap and adapted to engage a portion of said vehicle, said extension adjusting means including a first female threaded member fixedly secured adjacent the distal end of each of said members and a male threaded member threadingly engaged therewith coupled to the proximal end of each of said straps, said locking means including a latch pin secured adjacent the end of each of said members and a latch mechanism mounted on each of said doors and including a latch plate movable between a first position lockingly engaged with said latch pin and a second position disengaged therefrom, said latch plate abuttingly engaging a respective one of said slide members when in said lockingly engaged position, said male and female elements being disposed within the interior of said hollow members whereby said elements are inaccessible when said doors are locked.

4,084,736

VEHICLE MOUNTED MOTORCYCLE RACK

Jacob M. Jacobs, Jr., 721 Parham St., Rocky Mount, N.C. 27801

Filed Jan. 22, 1976, Ser. No. 651,268
Int. Cl.[2] B60R *9/10*
U.S. Cl. 224—42.03 B **12 Claims**



1. A rack for carrying a motocycle on a vehicle having a bumper, comprising:

(a) motorcycle support means having a track on which a motorcycle is supported in an upright position

(b) elongated pivotal support means extending under the vehicle and below the bumper between the vehicle and the motorcycle support means for providing pivotal support for the motorcycle support means

(c) lifting means including a housing enclosing an elongated reciprocably movable lifting member for raising the motorcycle support means and holding it in position

(d) the housing disposed immediately behind and adjacent the bumper

(e) the lower end of the elongated reciprocable lifting member connected to the elongated support means

(f) readily positionable and removable bumper grasping means pivotally connected to the housing of the lifting means and having an element which readily grasps and can be positioned on the vehicle bumper to provide support for the lifting means, and

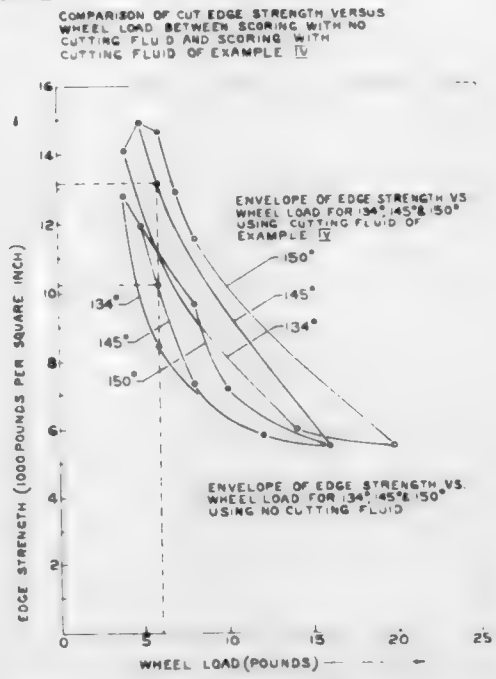
(g) motorcycle retaining means attached to the housing of the lifting means for engaging and holding the motorcycle in fixed rigid position on the motorcycle support means.

4,084,737

OILLESS FLUID FOR SCORING GLASS

Harold R. Gorman, Oakmont; John R. Dahlberg, Jeannette, and James L. Oravitz, Jr., Cheswick, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 16, 1976, Ser. No. 714,880
Int. Cl.[2] C03B *33/02*
U.S. Cl. 225—2 **8 Claims**



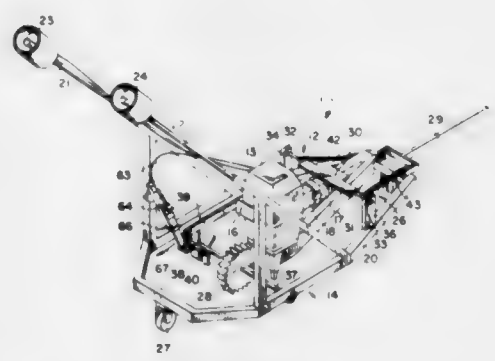
1. In a method for cutting glass comprising the steps of effecting a score on the surface of the glass with a scoring tool and propagating said score through the glass, the improvement which comprises scoring the glass in the presence of an essentially oil-free cutting fluid consisting essentially of from about 2 to 100 percent by volume of at least one highly volatile halogenated hydrocarbon and up to about 98 percent by volume of a highly volatile solvent selected from the group consisting of naphthenic, paraffinic, and aromatic solvents and mixtures thereof, said cutting fluid being present at the interface of the glass surface and the cutting tool to impart increased edge strength to the cut glass edge.

4,084,738

CARRIER FOR AUTOMATIC NAILER

Fredric H. Schneider, 4521 Merrill Ave., Oakland, Calif. 94619

Filed Nov. 29, 1976, Ser. No. 745,570
Int. Cl.[2] B27F *7/02*
U.S. Cl. 227—7 **24 Claims**



1. A carrier for an automatic hand nailer gun of the type in the construction of buildings comprising a carriage having means to hold a hand nailer gun on said carriage with its nail discharge port facing and closely adjacent a construction surface it is desired receive nails at a plurality of locations; a frame having means supporting said carriage for movement along said construction surface between said locations, said frame having a pair of handles projecting therefrom with a hand grip on each to be grasped by a workman moving said frame and carriage along said construction surface; means to trigger discharge at said plurality of locations of a hand nailer gun held

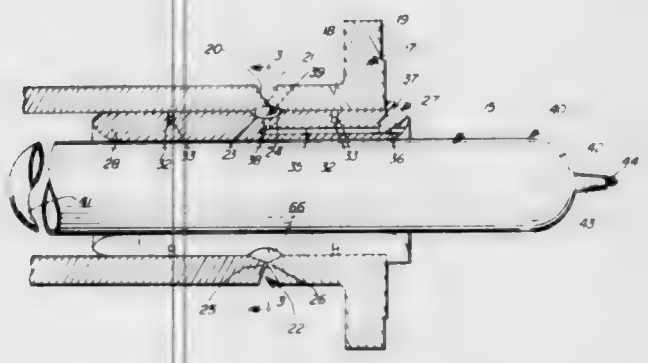
on said carriage; and wheel means on said frame engageable with said construction surface to support the weight of said carrier for movement therealong, said wheel means being substantially in alignment with said nail discharge port and the direction of travel of said carrier over said construction surface whereby said carrier is tiltable about said wheel means in a direction transverse to said direction of travel while said nail discharge port is maintained closely adjacent said construction surface to permit toenailing with said gun.

4,084,739

APPARATUS AND METHOD FOR ALIGNING AND WELDING TUBULAR METAL COMPONENTS TOGETHER

Lawrence D. Koltz, Colgate, and Herbert E. Pritzlaff, Brookfield, both of Wis., assignors to Wisconsin Centrifugal, Inc., Waukesha, Wis.

Filed Feb. 28, 1977, Ser. No. 772,913
Int. Cl.[2] B23K *13/02*; B23P *19/00*
U.S. Cl. 228—168 **22 Claims**



1. An apparatus for concentrically and radially aligning tubular metal components together in coaxial and radial alignment prior to welding them together, in which the said tubular metal components have internal peripheral wall surfaces providing a central internal bore in the said tubular metal components, and the said tubular metal components having outer peripheral wall surfaces and contiguous inner end wall portions each provided with an annular groove and with the said annular grooves coacting to provide an annular groove and weld area between the said contiguous inner end wall portions on the outer peripheral wall surfaces of the said tubular metal components, the said apparatus comprising:

(a) a segmented generally cylindrical tubular mandrel unit comprised of

(1) a plurality of component radial segmental members coacting in assembled relationship to provide

a. a radially expansible generally cylindrical segmented tubular mandrel unit adapted to be inserted into the said internal bore in the said tubular metal components and the said radial segmental members coacting in assembled relationship to provide

1. a central internal tubular passage in the said radially expansible generally cylindrical tubular segmented tubular mandrel unit;

(b) retaining means for retaining the said radial segmental members in assembled relationship;

(c) an inflatable and expandable tubular elastic member including

(1) an inflatable expandable tubular elastic body member adapted to be inserted into the said central internal tubular passage in the generally cylindrical segemented tubular mandrel unit and past the said annular groove and weld area between the said contiguous inner end wall portions of the said tubular metal components and having

(2) a closed inner end wall portion; and

(3) an outer end wall portion provided with

(d) valve means for introducing a gas under pressure into the said tubular elastic body member to inflate it and expand it radially outwardly against the said radial segmental members and thereby expand the said segmented generally cylindrical tubular mandrel unit radially outwardly against the internal peripheral wall surfaces of the said tubular metal components so as to concentrically and radially align the said contiguous inner end wall portions of the said tubular metal components prior to the operation of welding them together;

(e) one of the said radial segmental members having formed therein and extending axially therein

(1) a gas-conducting passage having

a. a gas inlet which opens exteriorly of the said one radial segmental member at one end thereof; and the said gas-conducting passage having

(2) a gas outlet which extends radially through the said one of the said radial segmental members onto the said outer peripheral wall surface of the said radially expansible segmental tubular mandrel unit and the said gas outlet being adapted to be positioned radially inwardly of and in communication with the said annular groove and weld area in the said tubular metal components for discharging an inert gas into the said annular groove and weld area between the said contiguous inner end wall portions of the said tubular metal components prior to and during the operation of preliminarily or tack-welding the said tubular metal components together.

6. A method of coaxially and radially aligning the two tubular metal components and welding contiguous inner end wall portions thereof together in coaxially and radially aligned relationship, which comprises the steps of:

(a) forming an annular groove on the outer peripheral wall surface of an inner end wall portion of each of the said tubular metal components;

(b) assembling the said tubular metal components into assembled relationship with the said inner end wall portions thereof and the said annular grooves in contiguous relationship to provide an annular circumferentually extending groove and weld area on the outer peripheral wall surfaces of the said inner end wall portions of the assembled tubular metal components;

(c) inserting into the interior of the said assembled tubular metal components and axially past the said annular groove and weld area therein a segmented radially expansible generally cylindrical tubular mandrel unit having therein an inflatable expandable tubular elastic member;

(d) directing a first gas under pressure into the said inflatable expandable tubular elastic member with the assembled radially expansible mandrel unit therein to expand the said segmented radially expansible generally cylindrical mandrel unit radially outwardly into engagement with the inner peripheral wall surfaces of the said tubular metal components and thereby radially expand the said tubular metal components radially outwardly into and retain them in coaxial and radial alignment;

(e) directing a second and inert gas through the body of the said segmental radially expansible generally cylindrical mandrel unit into the said annular circumferentially extending groove and weld area independently of and out of communication with the said first gas prior to and during the preliminary welding operating;

(f) partially welding the said inner end wall portions of the said two tubular metal components together as a preliminary welding operation;

(g) withdrawing the assembled radially expansible segmented mandrel unit and the sid inflatable expandable elastic tubular member from the thus partially welded tubular metal components; and

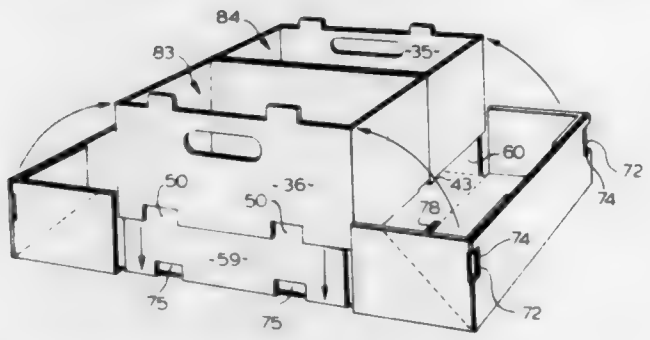
(h) completing the welding of the two tubular metal components together by filling the said annular groove and weld area with weld metal.

4,084,740

TWO-PIECE SHIPPING CONTAINERS

Achim R. Lorenz, Atlanta, Ga., assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed Feb. 2, 1976, Ser. No. 654,066
Claims priority, application Canada, Nov. 14, 1975, 239712
Int. Cl.[2] B65D *13/04, 5/32*
U.S. Cl. 229—23 R 18 Claims



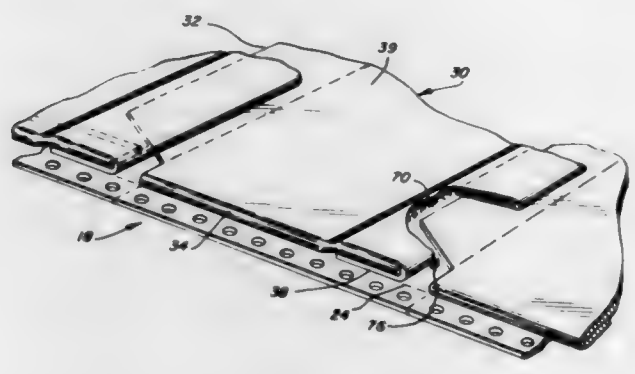
1. A container, comprising:
an inner component including a plurality of panels interconnected to define an open-ended sleeve member of rectangular configuration,
and an outer component which includes a rectangular bottom panel, two end panels articulably connected at opposite edges of said bottom panel and receivable within said respective sleeves, and side portions articulably connected at the other two edges of said bottom panel, each side portion being foldable between a closed position in which it covers at least partly the upper open end of said sleeve member and retains the sleeve member against said bottom panel, and an open position in which it uncovers the upper open end of said sleeve member.

4,084,741

CONTINUOUS FORM MULTIPLE PLY ENVELOPE ASSEMBLY

Edward W. Heimann, Woodridge, Ill., assignor to Wallace Business Forms, Inc., Hillside, Ill.

Filed Jul. 29, 1977, Ser. No. 820,101
Int. Cl.[2] B65D *27/10*
U.S. Cl. 229—69 16 Claims



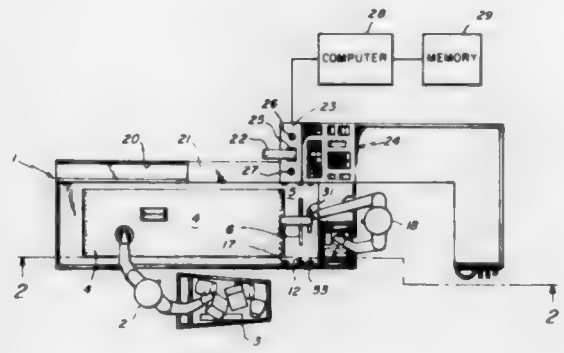
1. A continuous envelope assembly consisting of a plurality of individual envelopes each interconnected and wherein each individual envelope comprises:
a top ply having a central area, an integral bottom flap folded across said central area along a transverse fold line so that said bottom flap overlays a portion of said central area, and an integral top flap forming a tongue adapted for sealing said envelope;
a back ply having adhesive means along the side edges and in a line extending transversely across said back ply for securing said top ply to said back ply along the sides of said back ply and across the edge of said folded bottom flap; and
a pocket formed by the portion of said back ply below said transverse line of adhesive and said folded bottom flap for receiving the top flap of an adjacent envelope.

4,084,742

PRICE MARKING SYSTEM FOR AUTOMATED CHECK-OUT OF MERCHANDIZE

Richard H. Silverman, 347 N. Ave., Weston, Mass. 02193

Filed Aug. 2, 1976, Ser. No. 711,091
Int. Cl.[2] G06K *15/02;* B41F *17/00*
U.S. Cl. 235—419 3 Claims



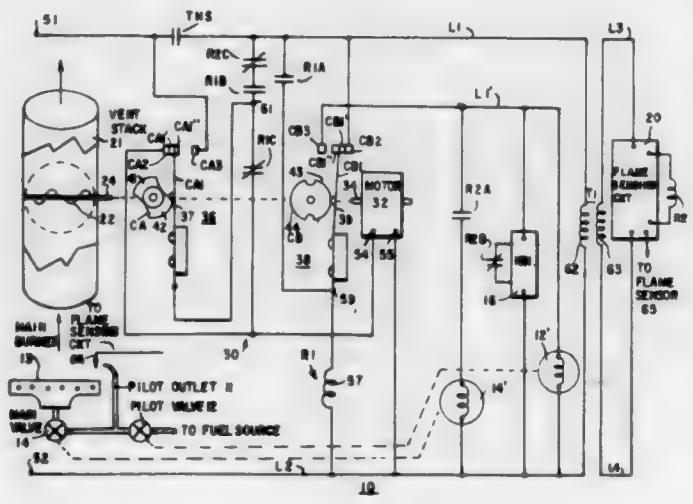
1. In an automated check-out system of the type wherein individual items of merchandize are marked with a machine readable code identifying the item and wherein the check-out station includes
1. a scanner for reading the machine readable code and deriving signals therefrom, and
2. apparatus responsive to the signals from the scanner for correlating the code read by the scanner with the price of the item and for emitting signals designating the price,
the improvement wherein
the apparatus at the check-out station includes a printing mechanism responsive to the signals designating the price, the printing mechanism being arranged to place the price in human readable form on the individual item.

4,084,743

INTERLOCK ARRANGEMENT FOR A STACK DAMPER CONTROL

Russell Byron Matthews, and Thomas Edward Hayes, both of Goshen, Ind., assignors to Johnson Controls, Inc., Milwaukee, Wis.

Filed Sep. 27, 1976, Ser. No. 726,951
Int. Cl.[2] F23N *0/00;* G05D *23/00*
U.S. Cl. 236—1 G 15 Claims



1. In a heating system including a furnace having a fuel fired burner apparatus, fuel supply means operable when energized to supply fuel to said burner apparatus for combustion to provide heat, a vent stack for conducting combustion products away from said burner apparatus, and stack damper means including a drive motor, and a stack damper plate pivotally mounted within said vent stack, said damper plate being normally maintained at a first position to close said vent stack and being rotatable to a second position to open said vent stack, said drive motor being operatively coupled to said damper

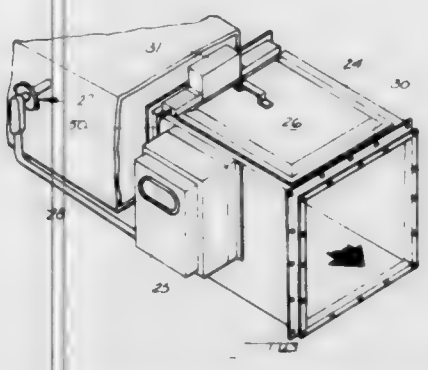
plate for driving said damper plate between said first and second positions, a control arrangement comprising activate means responsive to a request for heat to effect the energization of said drive motor over an energizing path to permit said damper plate to be driven from said first position towards said second position, switching means, limit switch means having first contacts connected in an energizing path for said switching means and second contacts connected in an energizing path for said fuel supply means, said limit switch means being coupled to said stack damper means for operation thereby to close said first contacts providing an energizing path for said switching means and to open said second contacts, interrupting the energizing path for said fuel supply means when said damper plate is at first position, to permit said switching means to be energized by said activate means when said first contacts are closed, said activate means causing said switching means to operate to close third contacts which are connected in said energizing path for said fuel supply means, said stack damper means operating said limit switch means in response to said drive motor driving said damper to said second position to open said first contacts to interrupt said energizing path for said switching means and to close said second contacts to complete said energizing path for said fuel supply means for energizing said fuel supply means, said activate means being operable when the heating demand has been met to deenergize said fuel supply means and said switching means and to effect the reenergization of said drive motor to permit said damper plate to be driven from said second position to said first position.

4,084,744

FIRE DAMPER

Charles Edwin Wilson, Jr., 2473 Cecilia Dr., Villa Hills, Ky. 41016, assignor to Charles Edwin Wilson, Jr., Cincinnati, Ohio

Filed May 5, 1976, Ser. No. 683,494
Int. Cl.[2] F24F *7/00;* **F23L** *17/02*
U.S. Cl. 236—49 **5 Claims**



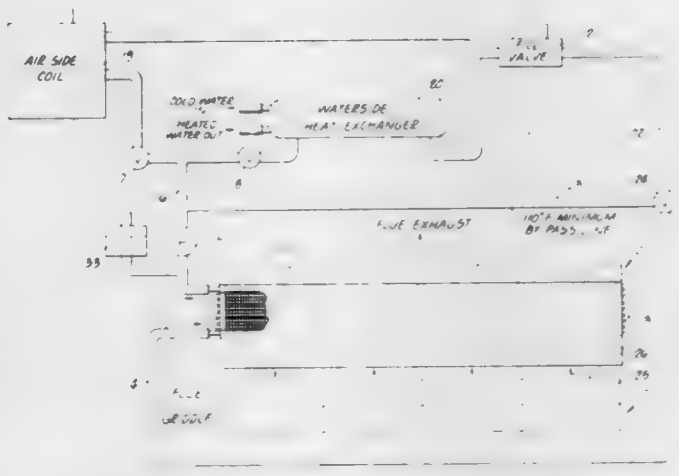
1. A fire damper comprising a housing having a first side open to receive gases from a first area, a second side normally open to permit said gases to flow to a second area, and a third side normally closed; a door pivotally connected to said housing in a first position so as normally to effect the closing of said third side while said first and said second sides are open, said door being swingable by gravity to a second position in which said normally open second side is closed by said door and in which said normally closed third side is open so as to permit said gases to flow from said housing through said third side only; releasable latch means to normally maintain said door in said first position; and heat sensitive means to actuate said releasable latch means in response to temperature changes in said first area whereby to permit said door to swing from said first position to said second position, said heat sensitive means including pneumatic means to actuate said latch means, and a heat sensor in the region of said first area, said heat sensor being electrically connected to said pneumatic means, whereby said releasable latch means are actuated in response to a temperature increase in said first area.

4,084,745

WASTE HEAT UTILIZATION SYSTEM

Robert J. Jones, 2772 Salmon Dr., Los Alamitos, Calif. 90720

Filed Jul. 27, 1976, Ser. No. 709,024
Int. Cl.[2] F24D *3/08*
U.S. Cl. 237—8 R **6 Claims**



1. A system for utilizing heat from the flue gases of gas-fired cooking equipment to heat incoming air to a room and tap water, comprising:

a hood located above and spaced from said cooking equipment;

means carrying a liquid medium therethrough located within said hood such that the flue gases from the cooking equipment pass thereover and transfer heat contained therein to the medium;

a first heat exchanger for transferring heat to a supply of air for a room;

a second heat exchanger for transferring heat to tap water;

a set of conduits interconnecting the liquid medium carrying means and the first and second heat exchangers for circulating the medium in a closed path; and

first temperature responsive valving means interrelated with the conduits for passing the medium through the first heat exchanger and blocking passage through the second heat exchanger when the room temperature is below a predetermined value, and for passing the medium through the second heat exchanger and blocking passage through the first heat exchanger when the temperature is above the predetermined value; and

a further conduit interconnected with said set of conduits and selectively actuatable by a second temperature responsive valving means for proportionately recirculating the medium through the liquid medium carrying means and through the first and second heat exchangers when the medium temperature is within a range at which condensation will occur on the medium carrying means.

4,084,746

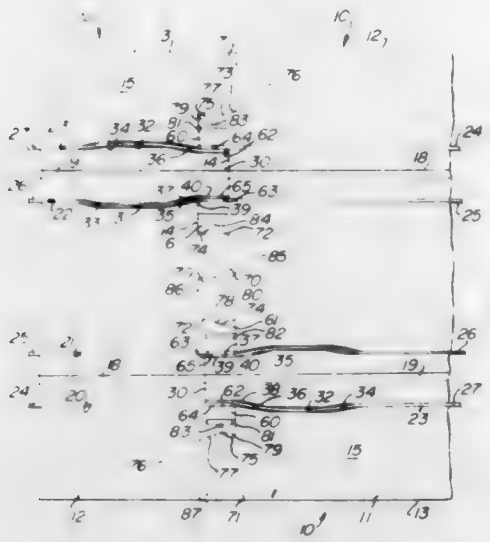
MODEL TRACK SECTION

Richard C. M. Cheng, 1007 Crestmont Ave., Mantua, N.J. 08051

Filed Aug. 25, 1976, Ser. No. 717,581
Int. Cl.[2] A63H *19/30*
U.S. Cl. 238—10 F **5 Claims**

1. A track section for model vehicles comprising an elongate body, vehicle support means extending longitudinally on said body, a formation on each end of said body having one side facing generally laterally and provided with a generally laterally facing concavity, resilient means on said one side of each of said formations extending obliquely therefrom toward said body across the concavity of said formation and being deflectable laterally toward the concavity of the associated formation, interengagement means on each end of said body configured to cooperate with said formation for removable interengagement in end-to-end relation with a like track section with said resilient means deflected laterally toward the adjacent concavity,

said resilient means comprising an obliquely disposed conductive metal strip portion, said interengagement means and formations being configured to guide a like track section longitudinally into and out of said end-to-end relation at an angle with respect to said metal strip portions for laterally deflecting the latter toward said concavities, and an additional conductive metal strip portion extending inwardly from said oblique metal



strip portion longitudinally along said body and having its opposite end portion exposed laterally for bearing engagement with an oblique metal strip portion of a like track section, said obliquely disposed metal strip portion and said additional conductive metal strip portion being an integral length of resiliently deflectable strip material substantially straight in its undeflected condition.

4,084,747

GERM KILLING COMPOSITION AND METHOD

Howard Alliger, 10 Ponderosa Dr., Melville, N.Y. 11746

Filed Mar. 26, 1976, Ser. No. 670,674

Int. Cl.[2] B05B *17/04*

U.S. Cl. 239—4 **13 Claims**

1. Process for the production of a composition having germicidal properties comprising contacting sodium chlorite with a substantially water soluble acid material selected from the group consisting of organic acids and mixtures thereof with inorganic acid, said acid material comprising at least about 15% by weight of lactic acid, and wherein said contacting is carried out in aqueous media and in the presence of sufficient of said acid to lower the PH of said aqueous media to less than about 7.

4,084,748

SPRAY SENSING SYSTEM

Jack William Anderson, Rte. 1, East Berlin, Pa. 17316, and Glenn Hughes, Dillsburg, Pa., assignors to Jack W. Anderson

Filed Jan. 4, 1977, Ser. No. 756,732

Int. Cl.[2] B05B *17/00*

U.S. Cl. 239—74 **11 Claims**

1. A sensing system for indicating the cessation of flow of an electrically conductive fluid of the like issuing from a discharge passage means, comprising:

an electrically conductive probe having a sensing portion positioned near said passage means in the path of the fluid spray issuing therefrom,

probe mounting means for supporting said probe, said probe mounting means and said probe being electrically isolated from said passage means,

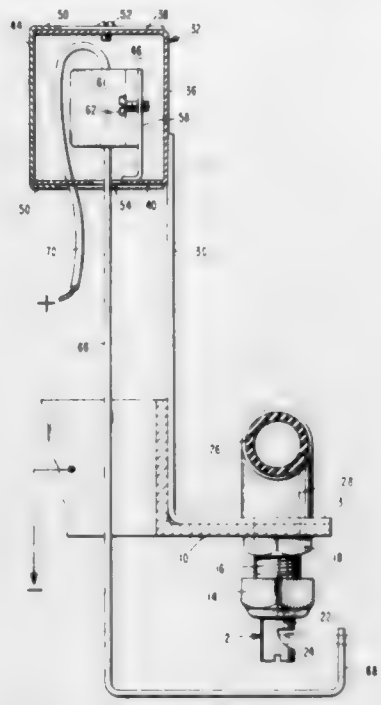
enclosure means enclosing said probe mounting means sufficiently to preclude contact of said probe mounting means by fluid issuing from said passage means, said probe means extending outwardly of said enclosure means,

electrically conductive means in electrical communication with fluid in said passage means,

signal means for indicating the cessation of fluid issuing from said passage means,

electrical power supply means,

electrical switching means connectable to said probe, said electrically conductive means, said signal means and said power means, said switching means being responsive to the making and breaking of electrical communication



between said probe and said electrical conductive means caused respectively by the flow and cessation of flow of fluid from said passage means into contact with said probe sensing portion to operate said signal means between a normal condition when fluid is issuing from said passage means and an alarm condition when fluid has substantially ceased to issue from said passage means.

4,084,749

FLOW REDUCING DEVICES PARTICULARLY USEFUL AS DRIP EMITTERS FOR DRIP IRRIGATION

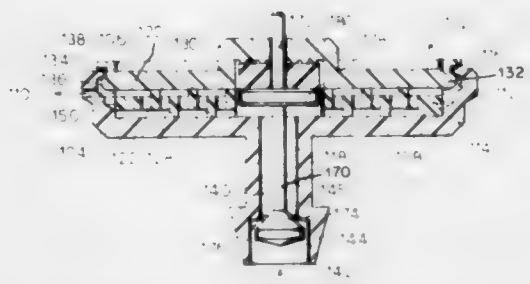
Mordeki Drori, 89 Zahal Street, Kiron, Israel

Filed Aug. 18, 1976, Ser. No. 715,545

Claims priority, application Israel, Apr. 11, 1976, 49388; May 20, 1976, 49616

Int. Cl.[2] A01G *25/16;* **B05B** *1/30*

U.S. Cl. 239—271 **7 Claims**



1. A flow-reducing device particularly useful as a drip emitter for drip irrigation, comprising: a housing including a disc-shaped end wall and a peripheral annular wall formed with an annular recess on its inner face to define an inner annular shoulder adjacent to said end wall, and an outer annular shoulder, said housing further including an inlet opening formed centrally through said end wall, and an outlet opening formed through the annular recess of the peripheral wall; a disc-shaped closure cap formed with an annular recess on its outer face to define an inner annular shoulder and an outer annular shoulder; and a disc-shaped flow-retarding member disposed within the housing and having an inlet opening aligned with the central inlet opening of the housing, an outlet opening aligned with the

annular recess in the housing peripheral wall, and a circuitous fluid flow pathway between its inlet and outlet openings for retarding the flow of the fluid therethrough; said closure cap being snap-fitted into the main housing section with the inner annular shoulder of the cap underlying the outer annular shoulder of the main housing section, and with the inner face of the cap applying a compressive force against the flow-retarding member to hold same in position with its outlet opening aligned with said annular recess in the housing peripheral wall, whereby said recess serves as an outlet path for the flow of the fluid to the housing outlet opening.

4,084,750

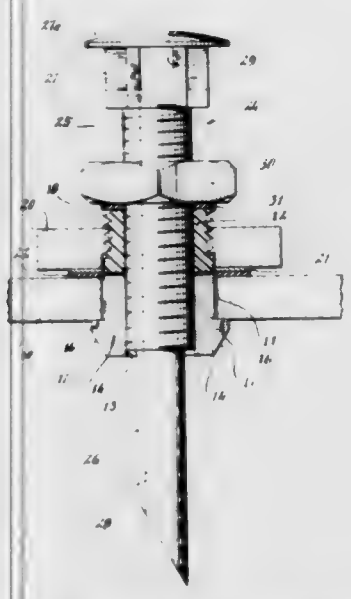
NOZZLE ASSEMBLY FOR FILTERS

Richard H. G. Fett, Poughkeepsie, N.Y., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Filed Oct. 23, 1974, Ser. No. 517,235

Int. Cl.[2] B01D *35/02*

U.S. Cl. 239—600 **7 Claims**



1. In combination with a plate having a hole for receiving a nozzle assembly, a nozzle holder extending through said hole and having a deformable end portion at one side of the plate, said end portion being adapted for passage through the hole to said one side of the plate, a nozzle extending through said holder and engaging said end portion internally to maintain the same in expanded condition for preventing withdrawal thereof through said hole, said nozzle having a central flow passage with an inlet at said one side of the plate and an outlet at the other side of the plate, the nozzle having a threaded connection with the holder to permit lengthwise adjustment of the nozzle in the holder, whereby the spacing of said passage outlet from the plate can be adjusted, clamping means coacting with the holder at said other side of the plate and including a nut threaded on the holder and tightened against said other side of the plate for clamping said expanded end portion against said one side of the plate, and means sealing said plate hole around the outside of the nozzle holder so that flow through said hole is confined to said nozzle passage.

4,084,751

SELF-PROPELLED MATERIAL STORAGE AND FEEDING VEHICLE

Alex J. Galis, Morgantown, W. Va., assignor to North American Galis Company, Morgantown, W. Va.

Filed Aug. 5, 1976, Ser. No. 712,087

Int. Cl.[2] B02C *13/286*

U.S. Cl. 241—25 **13 Claims**

1. A self-propelled material storage and feeding vehicle comprising,

a base member having ground traction means for propelling said base member,

an elongated frame connected to said base member,

vertical sidewalls secured to opposed sides of said frame and

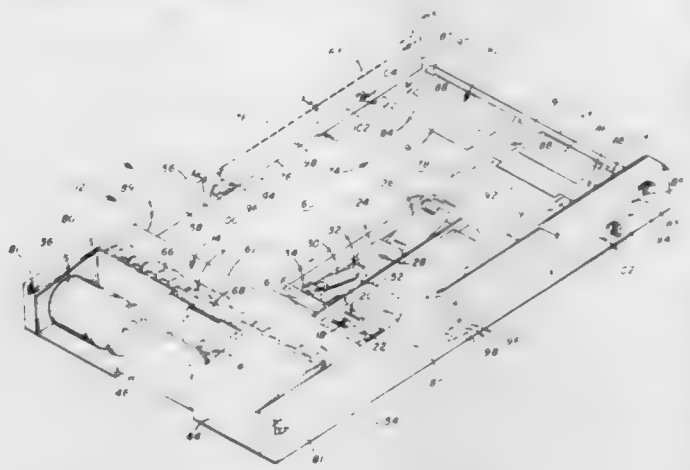
a bottom plate interconnecting said sidewalls to define a fixed storage hopper,

said storage hopper having an open receiving end portion and a discharging end portion,

a material breaker unit supported by said elongated frame forwardly of said storage hopper discharging end portion in overlying relation with said opening,

scroll means positioned laterally of said breaker unit for feeding loose material thereto,

a movable hopper positioned within said storage hopper for reciprocal longitudinal movement relative thereto,



a tailgate secured to the end of said movable hopper and operable to move between an open position for loading loose material into said fixed storage hopper and a closed position for discharging the loose material from said storage hopper, and

fluid actuated means connected at one end to said frame and at the other end to said movable hopper for reciprocating said movable hopper within said storage hopper to feed the loose material from said receiving end portion into said breaker unit.

4,084,752

GAP ADJUSTING SYSTEM FOR CRUSHER AND METHOD

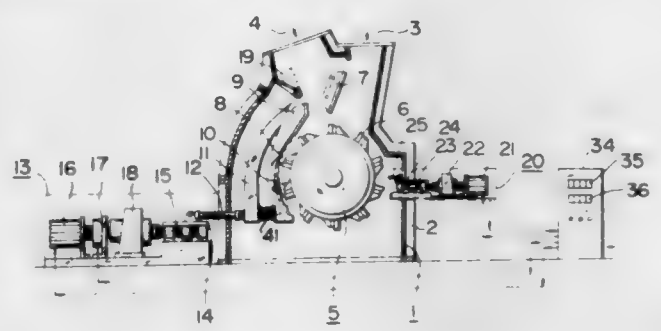
Tatsuo Hagiwara, Funabashi; Fumihiro Nomiyama, Chiba, and Shigenori Nagaoka, Funabashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Nov. 15, 1976, Ser. No. 741,952

Claims priority, application Japan, Dec. 11, 1975, 50-147800; May 17, 1976, 51-55264

Int. Cl.[2] B02C *13/26*

U.S. Cl. 241—30 **9 Claims**



2. A system for adjusting a gap between rotary striking blades or hammers and an operating plate in a crusher comprising;

a sensing means capable of coming in contact with said rotating striking blades or hammers during service;

a means for shifting said sensing means towards said striking blades or hammers, said shifting means including a slider on which is disposed said sensing means, a ball screw threaded with said slider, and a first motor for turning said ball screw;

a converting means for converting the extent of shift of said

shifting means into an extent of displacement of said operating plate, said converting means including a computer capable of calculating the difference between the extent of shift of said shifting means and an extent of displacement of said operating plate; and,

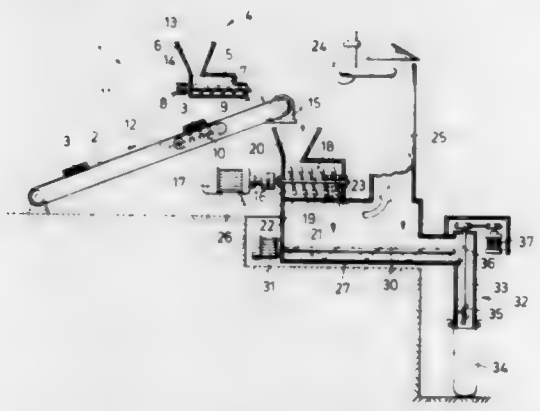
a means for moving said operating plate including a connecting rod connected at one end of said operating plate, a slider supporting the other end of said connecting rod, a ball screw threaded with said slider, and a second motor for turning said last mentioned ball screw, said first and second motors respectively being electrically connected to said computing means.

4,084,753

APPARATUS FOR THE PREPARATION OF INSULATING MATERIAL

Ernst Josef Fruh, Sasbach, Baden, Germany, assignor to Iminex GmbH, Zug, Switzerland

Filed Oct. 14, 1976, Ser. No. 732,200
Claims priority, application Germany, Oct. 15, 1975, 2646130
Int. Cl.[2] B02C *23/10*
U.S. Cl. 241—34 **8 Claims**



1. Apparatus particularly adapted for forming an admixture of dry materials comprising conveyor means for conveying a first dry material between input and discharge points along a path of travel established by said conveyor means, means for detecting the amount of the first dry material being conveyed by said conveying means, means responsive to said detecting means for feeding a second dry material to said conveying means in proportion to the amount of the first dry material detected by said detecting means, and comminuting means at said discharge point for receiving said first and second material for comminuting the same into homogeneous admixture, said comminuting means including a chamber, a rotatable comminating member in said chamber for comminuting the first and second materials and moving the same between inlet and outlet ends of said chamber, an outlet opening in said outlet end for discharging therethrough the homogeneous admixture, a filter downstream of said outlet opening, and suction means downstream of said filter for drawing air from said chamber through said outlet, to augment the movement of the first and second materials from said inlet end toward said outlet end.

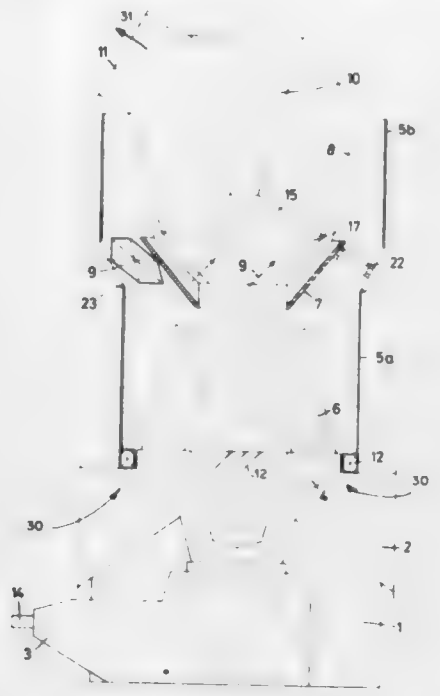
4,084,754

COMBINED VANE-ROTOR SEPARATOR

Horst Brundiek, Neuss, Germany, assignor to Loesche Hartzerkleinerungs-und Zementmaschinen GmbH & Co. KG, Germany

Filed Jul. 27, 1976, Ser. No. 708,935
Int. Cl.[2] B02C *23/12*
U.S. Cl. 241—52 **3 Claims**

1. In a comminuting apparatus comprising: a roll mill including a grinding pan and a blade ring having blades surrounding the grinding pan; and a combined vane rotor separator mounted on top of the roll mill, the separator including a rotor which has upstanding impellor baffle blades arranged at the periphery thereof, a housing surrounding the rotor to which a feed mixture is supplied in a gas flow from the roll mill and from which the gas and fines leave through a draw-off duct, and a cone located below the rotor and attached to the housing; the improvement wherein the separator further comprises



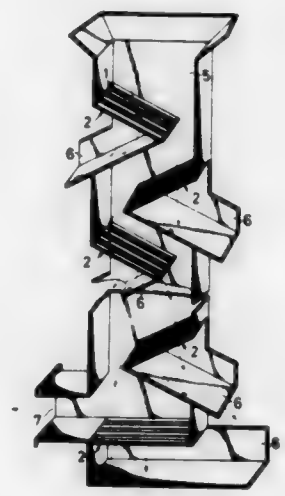
a series of guide vanes arranged in a ring, the series of guide vanes located between the housing of the separator and the cone and adapted to operate as a flow guide device.

4,084,755

METHOD AND APPARATUS FOR BREAKING UP AND SEPARATING WASTE GLASS TO OBTAIN CULLET

Junzo Shimoiizaka, 1-1-14-803 Komegabukuro, Sendai, Japan; Akira Konosu, Sendai, Japan; Yuzo Hayashi, Sendai, Japan; Kaneji Morita, Nishinomiya, Japan; Akio Sugie, Nishinomiya, Japan, and Kunio Ishioka, Kobe, Japan, assignors to Junzo Shimoiizaka and Yawamura Glass Kabushiki Kaisha, both of Japan

Filed Sep. 20, 1976, Ser. No. 724,532
Claims priority, application Japan, Sep. 22, 1975, 50-115396
Int. Cl.[2] B02C *19/00*
U.S. Cl. 241—95 **1 Claim**



1. An apparatus for breaking up and separating waste glass to obtain cullet comprising grizzlies inclined and arranged in a multi-stage fashion within a passage for dropping the waste glass so as to provide between them falling heights sufficient to break the waste glass, each of the grizzlies being made up of parallel bars arranged at a spacing smaller than the minimum width of projection of the three-dimensional extraneous matter to be removed, each lower grizzly being so positioned as to receive an oversize portion of the waste glass falling by being

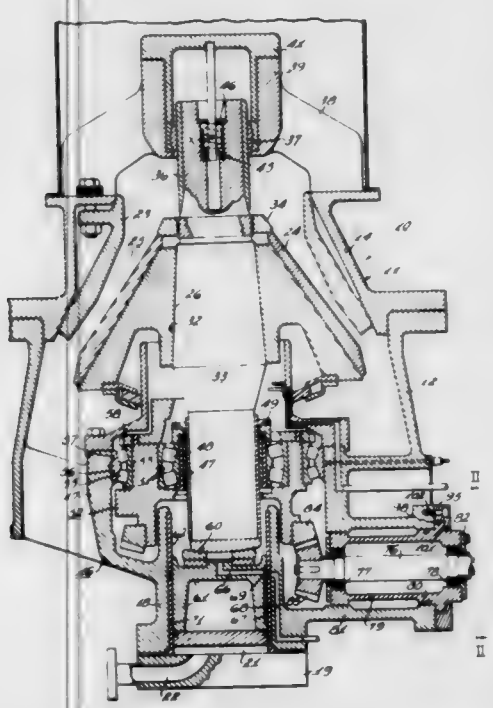
guided by the higher grizzly positioned immediately thereabove without passing through the higher grizzly, an outlet for an oversize portion remaining on the lowermost grizzly being independent of an outlet for an undersize portion passing through each grizzly.

4,084,756

GEAR AND PINION BACKLASH ADJUSTMENT FOR THE DRIVE OF A GYRATORY CRUSHER

Major Coxhill, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jun. 8, 1976, Ser. No. 693,784
Int. Cl.[2] B02C *2/04*
U.S. Cl. 241—213 **2 Claims**



1. In a gyratory crusher having a frame, a crusher head supported for movement on a shaft and a drive connected to rotate the shaft:

a bevel gear connected to effect rotation of the shaft;

a horizontal bore in the crusher frame communicating from the exterior into the interior thereof;

a pinion drive shaft having a horizontal axis supported in said bore for rotation about its own axis and for bodily rotation about the axis of said bore;

a pinion gear mounted on said pinion drive shaft for rotation with said pinion drive shaft and for bodily movement with said pinion drive shaft about the axis of the bore, said pinion gear being meshed with said bevel gear and disposed with its axis transverse to the axis of the bevel gear and in a vertical plane that passes through the axes of both of said gears;

a pair of bearings in which said pinion drive shaft is rotatably supported;

a bearing carrier for supporting said bearings in said bore, the axis of said bearing carrier and said bearings and said pinion drive shaft being concentric;

said bearing carrier being provided with a radially outwardly extending flange that abuts the surface of the frame around said bore;

a clamp ring secured to the frame in position to engage and clamp said radial flange of said bearing carrier to the frame;

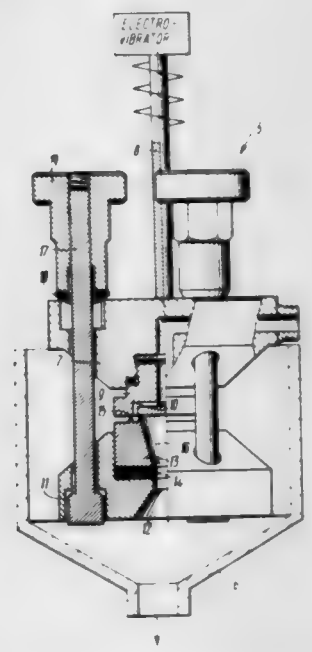
a pair of jackscrews threadedly engaged in said clamp ring and extending therethrough and into engagement with said bearing carrier on opposite sides thereof, said jackscrews when actuated operating to effect rotation of said bearing carrier about the axis of said bore in a selected direction to thereby move said pinion gear vertically with respect to said bevel gear for establishing a predetermined amount of backlash between said gears, said jackscrews acting together being further operable to lock said bearing carrier in an adjusted position.

4,084,757

APPARATUS FOR CONTINUOUS DISINTEGRATION OF CELLS OF MICROORGANISMS

Vladimir Jurievich Rakitin, Verkhny Mikhailovsky pereulok, 7, korpus 2, kv. 113; Igor Konstantinovich Fedorov, Bolotnikovskaya ulitsa, 40, korpus 3, kv. 75; Alfred Nikitovich Grigorian, Snaiperskaya ulitsa, 7, kv. 91, all of Moscow; Vitaly Viktorovich Lalov, Sovetskaya ulitsa, 22/49, kv. 12, Moskovskaya oblast, Podolsk, and Nina Vasilievna Prokofieva, Botanicheskaya ulitsa, 19, kv. 68, Moscow, all of U.S.S.R.

Filed Aug. 5, 1976, Ser. No. 711,951
Int. Cl.[2] B02C *19/00*
U.S. Cl. 241—301 **8 Claims**



1. In an apparatus for disintegrating microorganism cells in a gas-saturated suspension, a disintegrating unit comprising a valve means having a pair of valve components one of which is a valve seat and the other of which is a valve member having at least one elongated projection terminating in an edge which engages said valve seat when the unit is not operating, spring-loading means operatively connected with at least one of said components for urging the latter toward each other to maintain said edge of said projection in engagement with said valve seat when the unit is not operating, adjusting means operatively connected with said valve means for adjusting the force with which said spring-loading means urges said components toward each other, said components cooperating with each other for defining between themselves a chamber part of which is defined by said projection and a surface of said valve seat which is adjacent said projection, said valve means being formed with a passage communicating with said chamber for feeding said gas-saturated suspension thereto a predetermined pressure sufficient to displace said valve member away from said valve seat in opposition to said spring-loading means to an extent which will define during operation of the disintegration unit between said projection and valve seat a narrow slit through which the suspension flows from said chamber to be suddenly reduced to atmospheric pressure.

4,084,758

MACHINE HAVING AN IMPROVED TAKE-UP REEL FOR WINDING HOLLOW FILAMENTS

Harry W. Cromie, Pittsburgh, Pa., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 13, 1976, Ser. No. 658,142
Int. Cl.[2] B65H *54/56, 49/30*
U.S. Cl. 242—18 G **5 Claims**

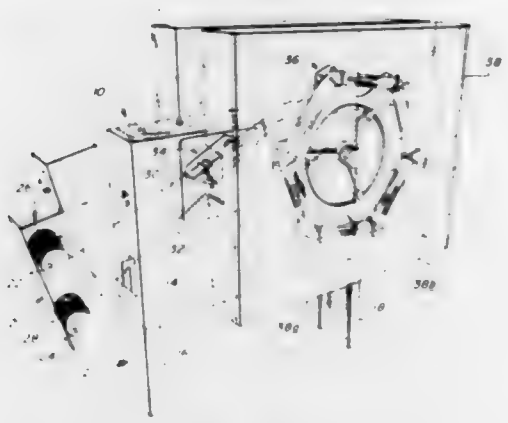
1. A machine for preparing a continuous, hollow, and semi-

permeable filament for use in a hollow fiber dialyzer, which dialyzer includes a plurality of substantially-equal-length opennended fibers formed from said filament, said machine including:

(a) a body;

at least one supply spool of said filament, said spool being rotatably mounted on said body;

(b) a take-up reel having at least two radially spaced support means about which said filament is wound, said reel being rotatably mounted on said body; and



(c) drive means for rotating said take-up reel; wherein the improvement comprises said take-up reel, including:

(d) a hub member having locking means drivingly associated with said drive means;

(e) winding plate means for carrying said filament support means being adapted for releasable securement in driving relation to said hub member; and

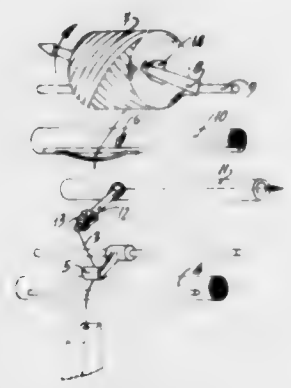
(f) said support means cooperating with said winding plate means for supporting said bundles in a substantially exposed disposition to facilitate cutting of said bundles upon completion of winding on said take-up reel.

4,084,759

METHOD AND A DEVICE FOR WINDING UP A YARN RESERVE

Mario Piro, Genoa, Italy, assignor to Nuova San Giorgio S.p.A., Genoa-Sestri, Italy

Filed May 17, 1976, Ser. No. 687,232
Int. Cl.[2] B65H *54/02*
U.S. Cl. 242—18 PW **12 Claims**



1. A method of winding up a yarn reserve from an open-end spinning unit on a winding tube for a bobbin, wherein the winding tube includes a yarn adherence zone at one end of the tube and wherein the tube is rotatably driven, and wherein during the step of bobbin doffing yarn which is continuously produced by the spinning unit is drawn by suction into an orifice, the method comprising the steps of: continuously applying a suction force to the yarn exiting from the spinning unit to draw the yarn into the orifice, providing a yarn guide positioning element with a yarn guide carried thereby, disposing the yarn guide positioning element with the yarn guide in alignment with the orifice and with the yarn guide in the path of the yarn being drawn into the orifice by the suction force so that the yarn being drawn by the suction force applied thereto is drawn into engagement with the yarn guide before it is drawn into the orifice, removing the yarn guide positioning element from alignment with respect to the orifice while the yarn is being continuously drawn from the spinning unit into the orifice and while the yarn is being drawn into engagement with the yarn guide, positioning the yarn guide positioning element so that the yarn guide orients the yarn engaged thereby above the yarn adherence zone of the tube and in a predetermined orientation with respect to a yarn guide device associated with the tube, breaking the yarn which is engaged by the yarn guide and allowing a portion of the yarn to engage the yarn adherence zone of the tube while an end portion of the yarn disposed axially outward of an end of the tube engages the yarn guide device, and forming yarn reserve turns before winding the yarn about the bobbin.

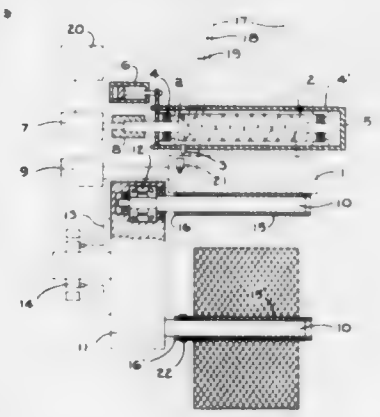
4. In apparatus for winding a yarn reserve from an open-end spinning unit on a winding tube for a bobbin, wherein the tube is rotatably driven and includes a yarn adherence zone at one end thereof and wherein during the doffing of the bobbin the yarn continuously produced by the spinning unit is drawn by suction into an orifice, the improvement comprising a yarn guide positioning element having a yarn guide carried thereby, means for removably positioning the yarn guide positioning element with respect to said orifice with the yarn guide in alignment with the orifice and with the yarn guide disposed in the path of yarn being drawn into the orifice by the suction so that yarn being drawn by suction into the orifice is engaged by the yarn guide, suction means for continually drawing yarn into engagement with the yarn guide while the yarn guide is in alignment with the orifice, said yarn guide defining means for engaging and guiding yarn which is being drawn into the orifice when the yarn guide is aligned with the orifice and when the yarn guide is removed from alignment with said orifice for guiding yarn above the yarn adherence zone of the tube while the yarn is being drawn by suction into the orifice, a guide device associated with said bobbin, said guide device disposed for engagement with a portion of the yarn being guided by said yarn guide when said yarn guide is disposed above the yarn adherence zone of the tube, means for breaking the yarn engaging the yarn guide while the yarn is disposed above the yarn adherence zone of the tube to allow a portion of the yarn to engage the adherence zone of the tube and to allow an end portion of the yarn extending axially outward of the tube to engage said guide device, and means forming yarn reserve turns before winding the yarn bobbin.

4,084,760

TRANSFERRING YARN IN AN AUTOMATIC WINDER

Tatsuya Nakano, Ichinomiya; Kazuyoshi Yasuda, Nagoya, and Takeshi Miwa, Obu, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1976, Ser. No. 723,905
Claims priority, application Japan, Sep. 25, 1975, 50-114919
Int. Cl.[2] B65H *67/04, 54/34*
U.S. Cl. 242—18 A **2 Claims**



1. A method for transferring a yarn in an automatic winder

of surface driven turret type in which upon transferring a yarn, formation of a transfer bunch and formation of a transfer tail can be achieved without disengaging the yarn from a traverse yarn guide, said method comprising the steps of:

reversely rotating a traverse cam roll at a low speed to bring a traverse guide to a stop at a predetermined position; then

shifting said traverse guide jointly with said traverse cam roll to make said yarn contact with a yarn gripping device provided at an end of an empty bobbin or an empty bobbin holder;

winding said yarn around an empty bobbin on said empty bobbin holder after having cut the yarn extending to a previously fully wound adjacent bobbin by means of a cutter associated with said yarn gripping device;

restoring said traverse cam roll to its normal position by reversely performing said shifting, forming a bunch winding at a predetermined position on said empty bobbin;

forming a transfer tail by rotating said traverse cam roll in a normal direction opposite to that of said reversely rotating, but still at a low speed, after said bunch winding has been formed, to displace said traverse guide at a low speed from said predetermined position to a normal traverse movement region; and

switching the speed of said traverse cam roll to a higher speed and pressing said empty bobbin against a drive roll to carry out surface drive type of winding when said traverse guide has come to said normal traverse movement region.

2. In a turret type automatic winder for winding yarn on bobbins on a succession of bobbin holders to fill each bobbin and transfer to winding on the respective next bobbin, the winder having:

a turret;

means mounting the turret for indexing;

a plurality of bobbin holders projecting from the turret;

a drive roll mounted beside the turret for rotation in driving relation with the respective one of said bobbin holders nearest the drive roll;

a traverse yarn guide for guiding a feed of yarn onto a bobbin on the bobbin holder being rotated by the drive roll;

means associated with each bobbin holder for gripping the yarn at the initiation of winding onto the bobbin thereon;

a traverse cam roll for traversing the traverse yarn guide;

means for rotating the traverse cam roll to traverse the traverse yarn guide;

a cutter associated with the yarn gripping device for cutting the yarn extending between a bobbin which has become fully wound and a next-to-be-wound empty bobbin, once the yarn has been gripped by yarn gripping means associated with the bobbin holder that is holding said next-to-be-wound empty bobbin;

the provision of means for forming a transfer bunch and a transfer tail when transferring from winding yarn on a bobbin which as become fully wound, to a next-to-be-wound empty bobbin on one of said bobbin holders, comprising:

means for reversely rotating the traverse cam roll at low speed to bring the traverse guide to a stop at a predetermined position;

means for shifting the traverse guide jointly with the traverse cam roll in one direction along the longitudinal axes thereof to make the yarn contact said yarn gripping device, and for then shifting the traverse cam roll longitudinally back to a normal position to form a bunch winding at a predetermined position on the empty bobbin;

means for rotating the traverse cam roll in a normal direction at low speed, after the bunch winding has been formed, to displace the traverse guide at a low speed from said predetermined position, to a normal traverse movement region;

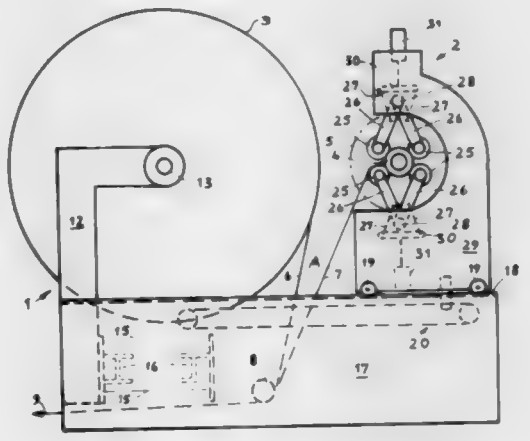
and means for switching the speed of rotation of the traverse cam roll to a higher speed and for then pressing the drive roll against the empty bobbin to carry out surface drive winding when the traverse guide has come to said normal traverse movement region.

4,084,761

ROLL SUPPORT ASSEMBLY

Gustav Kuckhermann, Fautenbacher Strasse 24, Achern, Germany

Filed Jun. 16, 1976, Ser. No. 696,829
Claims priority, application Germany, Jun. 16, 1975, 2526962
Int. Cl.[2] B65H *19/12, 17/12*
U.S. Cl. 242—58.6 **8 Claims**



1. A roll support assembly for supporting webs wound in separate supply rolls and the ends of which are to be joined to produce a continuous web, comprising: a main support comprising two support arms and two mandrels, one of the mandrels mounted on each of the support arms, the mandrels adapted to support the axial ends of each newly loaded supply roll; an auxiliary support to which each supply roll may be transferred when partly expired to enable a further supply roll to be loaded on the main support, the auxiliary support comprising at least one group of rollers adapted to engage the peripheral surface of the supply roll and means for mounting the rollers in such a manner as to be movable by mutually equal amounts towards and away from a base frame connecting the main and the auxiliary supports; the axis of the supply roll and means on the auxiliary support to provide relative movement of the main and auxiliary supports on the base frame such that a partly expired roll may be simultaneously supported by both supports.

4,084,762

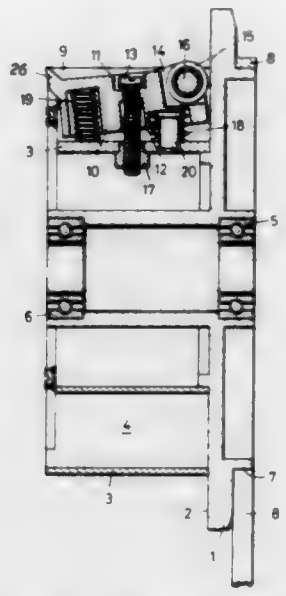
ARRANGEMENT FOR THE AUTOMATICALLY RELEASABLE AFFIXATION OF REELS ON ROTATABLE HUBS

Arno Repp, Darmstadt, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 18, 1977, Ser. No. 778,888
Claims priority, application Germany, Mar. 20, 1976, 2612019
Int. Cl.[2] B65H *17/02*
U.S. Cl. 242—68.3 **11 Claims**

1. Arrangement for the releasable mounting of a reel on a rotatable hub, comprising a take-up means having an external diameter corresponding to the borehole diameter of the reel, a plurality of gripping lever means resiliently mounted within said take-up means at predetermined distances between each other, said gripping lever means extending parallel to the axis of rotation of said take-up means, a pair of spring means each being arranged adjacent the opposite extremities of said gripping lever means and being biased radially in outward direction, and means supporting said gripping lever means approximately at the center portion thereof in a rotatable manner, whereby during mounting of the reel, an end of the gripping lever means facing away from said hub is travelled over and

when pushing the reel further on over said gripping means, a second end thereof is travelled over and the first end travelled



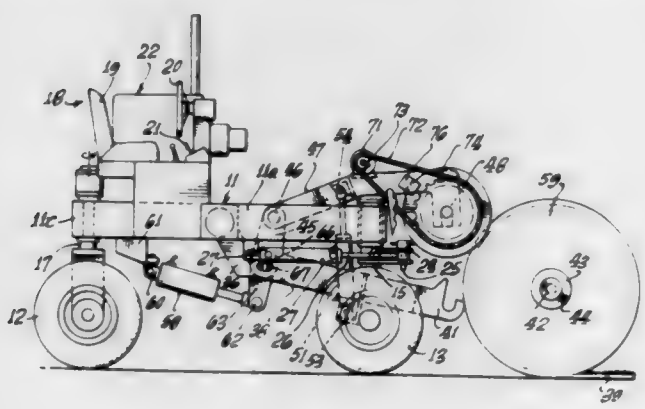
over is forced radially upward in locking engagement with the reel.

4,084,763

MACHINE FOR HANDLING ARTIFICIAL TURF OR THE LIKE

Frank J. Zamboni, Paramount, Calif., assignor to Frank J. Zamboni & Co., Paramount, Calif.

Filed Apr. 5, 1976, Ser. No. 673,449
Int. Cl.[2] B65H *17/46*
U.S. Cl. 242—86.52 **15 Claims**



1. Apparatus for handling a strip of artificial turf or the like comprising

a wheeled carrier,

means for driving said carrier over the ground,

spaced support members on said carrier for supporting the opposite ends of a mandrel on which a roll of said strip is to be wound or unwound,

means for raising or lowering said support members relative to said carrier whereby to raise or lower said roll,

a roller carried by said carrier for frictionally engaging the periphery of said roll, and

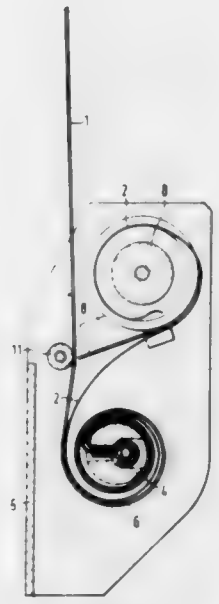
drive means on said carrier for rotating said roller whereby to wind said strip.

4,084,764

DEVICE FOR WINDING UP A BELT OR WEB

Heinrich Mögerlein, and Werner Moser, both of Augsburg, Germany, assignors to Fa. J. N. Eberle & Cie. GmbH, Augsburg, Germany

Filed Apr. 20, 1977, Ser. No. 789,260
Claims priority, application Germany, Apr. 28, 1976, 2618714; May 19, 1976, 2622176; Aug. 9, 1976, 2635771; Aug. 9, 1976, 2635770
Int. Cl.[2] A65B *35/00;* B65H *75/48*
U.S. Cl. 242—107 **26 Claims**



1. A safety-belt dispenser comprising:

a holder;

a roller journaled in said holder;

a belt anchored to said roller and partly wound therearound, said belt being unwindable from said roller along a predetermined path during a pull-out stroke;

a driving spring mounted on said holder and coupled with said roller for exerting thereupon a restoring force tending to rewind said belt during a retraction stroke;

a resilient ribbon at least partly interleaved with said belt about said roller in a rewound state of said belt, said ribbon being inherently stressed for superimposing a biasing force upon said restoring force during certain phases of said strokes to subject said belt to a rewinding force of relatively high value during an initial part and of a relatively low value during a terminal part of a pull-out stroke;

retaining means disposed alongside said path for storing said ribbon in coiled form apart from said belt upon separation of said ribbon and said belt during said pull-out stroke; and

guide means for directing said ribbon from said roller to said retaining means.

4,084,765

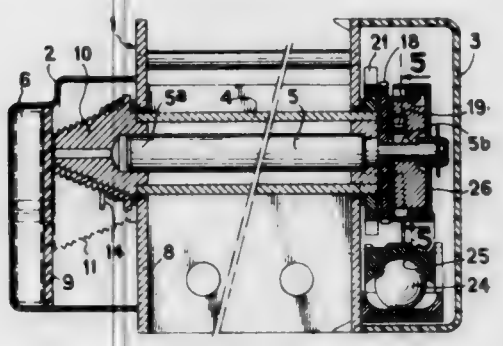
WINDING DEVICE, IN PARTICULAR FOR A VEHICLE SAFETY BELT

Michel Bonnaud, Montbeliard, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Boulogne-Billancourt, both of France

Filed Dec. 23, 1975, Ser. No. 643,770
Claims priority, application France, Dec. 24, 1974, 74 42706
Int. Cl.[2] B65H *75/48;* A62B *35/02*
U.S. Cl. 242—107.4 B **2 Claims**

1. In a device for winding a safety belt, in particular for an automobile vehicle, comprising a fixed housing, a drum which is mounted in the housing to rotate about an axis and to which drum one end of the belt is fixed, at least one elastically yieldable return means for biasing said drum in a belt retraction direction, a shaft mounted to rotate about an axis parallel to the axis of the drum, the return means being disposed between the housing and the shaft, a first pulley integral with the drum, a second pulley integral with the shaft, each pulley having a

diameter increasing from one end of the pulley to the other end of the pulley and defining a helical groove, the two pulleys being oriented in opposite directions, and a transmission cable fixed at each of its ends to each one of the pulleys, the elastically yieldable return means being drivingly connected to said shaft; the improvement comprising in combination a means for blocking the drum against rotation, a rotatable cylindrical



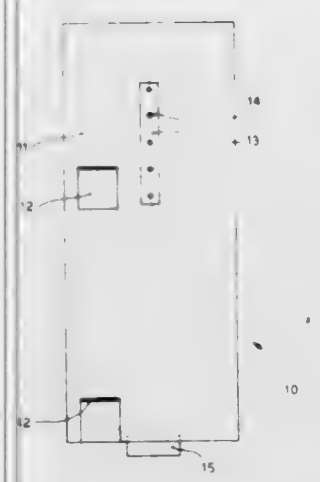
pulley having an axis parallel to the axis of the drum and around which cylindrical pulley the cable passes in its path between the two pulleys, an input shaft integral with said cylindrical pulley and means responsive to acceleration of said input shaft beyond a threshold value of acceleration for actuating said blocking means whereby said input shaft acceleration is directly proportional to the linear acceleration of the belt.

4,084,766

DEVICE TO DISRUPT THE BALLOON OF YARN

Claudio Speranzin, Pordenone, Italy, assignor to Officine Savio, S.p.A., Pordenone, Italy

Filed May 11, 1976, Ser. No. 685,179
Claims priority, application Italy, May 20, 1975, 83378 A/75
Int. Cl.[2] B65H *49/00*; D01H *13/04*
U.S. Cl. 242—129.62 **4 Claims**



1. A device to disrupt the balloon, which is suitable for coupling to cops being unwound in a winding machine, comprising in reciprocal coordination and cooperation a cylindrical section positioned eccentrically to the axis of the cop and extending at least the whole height of said cop, a thread guide, and means mounted on said cylindrical section for adjustably supporting the guide above the cop.

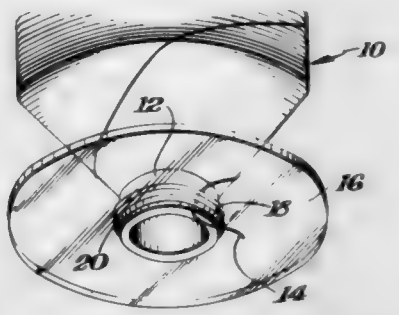
4,084,767

TEXTILE BOBBIN WITH YARN END FASTENING MEANS

Alan Caywood Witt, Chattanooga, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1977, Ser. No. 783,731
Int. Cl.[2] B65H *55/00, 75/28*
U.S. Cl. 242—164 **3 Claims**

1. In combination, a tubular textile bobbin having yarn wound thereon with an unwound end of yarn extending to one end of the bobbin, and a rigid disc having a flat surface substantially normal to the axis of the tubular bobbin extending substantially beyond the peripheral surface of said bobbin said disc having a central opening through which said one end of the bobbin and said unwound end of yarn extends, said opening



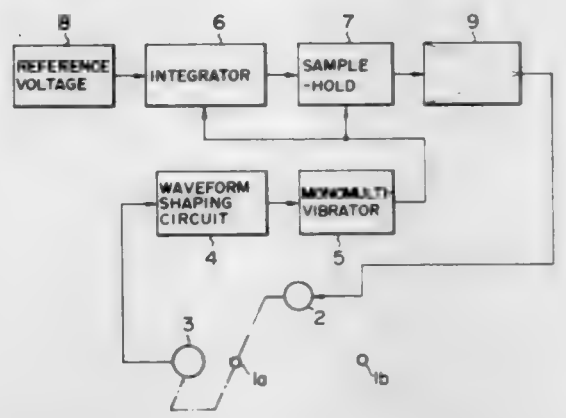
having a diameter relative to the diameter of said one end of the bobbin to enable the disc to slidably engage said one end of the bobbin and said unwound end of yarn extending to said one end of the bobbin to frictionally hold said unwound end of yarn in a fixed position between said disc and said one end.

4,084,768

TAPE TENSION IMPARTING APPARATUS

Kiyoshi Hayashi, Nagoya, Japan, assignor to Shin-Shirasuna Electric Corporation, Nagoya, Japan

Filed Feb. 7, 1977, Ser. No. 766,544
Claims priority, application Japan, Feb. 20, 1976, 51-17727
Int. Cl.[2] G11B *15/54, 15/30*
U.S. Cl. 242—186 **1 Claim**



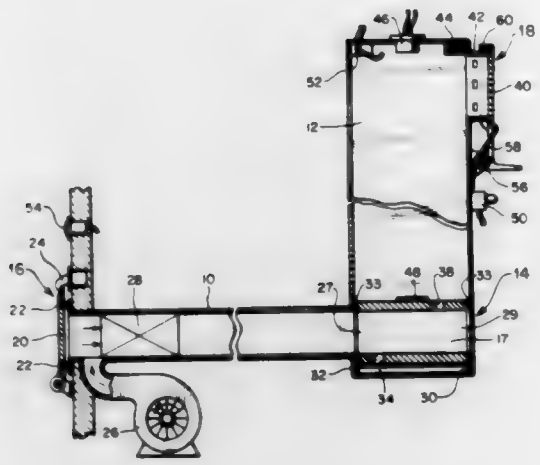
1. An apparatus for imparting a predetermined tension to a tape transported at a predetermined velocity from one to the other of reels mounted on a pair of reel spindles at least one of which is rotated by a motor to have a rotational torque imparted thereto, said apparatus comprising detector means associated with said reel spindle for providing a signal having a frequency proportional to the number of revolutions of said reel spindle, a multivibrator circuit adapted to provide, in response to said signal from said detector means, an impulse having a frequency corresponding to the period of said signal, an integration circuit adapted to be reset by said impulse, a sample-hold circuit adapted to be sampled by said impulse and having the output thereof connected to said motor, and a reference voltage source connected to said integration circuit, wherein a saw-tooth wave having a period equal to that of said signal available from said detector means is produced at the output side of said integration circuit, said integration circuit being reset by the impluse derived from said multi-vibrator circuit, said saw-tooth wave being applied to said sample-hold circuit so that a signal corresponding to the peak value of said saw-tooth wave is provided at the output side of said sample-hold circuit, the last-mentioned signal being one corresponding to the reciprocal of said number of revolutions which corresponds to the period of revolution of said reel spindle, and the signal provided at the output side of said sample-hold circuit is applied to said motor, whereby a predetermined tension is imparted to the tape.

4,084,769

PNEUMATIC DELIVERY SYSTEM

Tommy N. Tyler, 1110 Par Rd., Broomfield, Colo. 80020, assignor to Powers Regulator Company, Denver, Colo.

Filed Dec. 10, 1976, Ser. No. 749,376
Int. Cl.[2] B65G *51/30*
U.S. Cl. 243—3 **14 Claims**



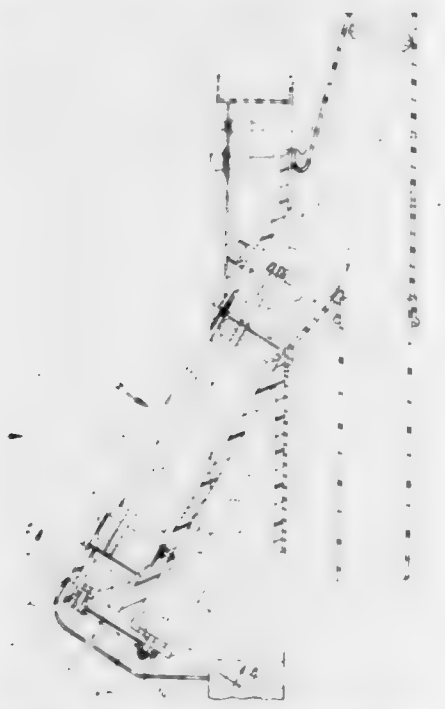
1. A pneumatic delivery system comprising:
a first conduit;
a second conduit communicating with said first conduit;
means for creating a pressure differential in said conduits;
a capsule disposed within said second conduit for movement between said first conduit and a receiving station, said capsule including chamber means for receiving a delivery container at said first conduit, first port means for cooperating with the delivery container to cause said pressure differential to act on said capsule when the delivery container is received therein from said first conduit for causing said pressure differential to act on the delivery container at the receiving station for discharging the delivery container out of said capsule, and second port means for allowing upstream pressure to pass to the atmosphere when the delivery container is not disposed within said capsule.

4,084,770

PNEUMATIC TUBE CONVEYOR DISPATCHER

Bruno D. Warmann, 15362 Fairlane Dr., Livonia, Mich. 48154

Filed Mar. 7, 1977, Ser. No. 775,257
Int. Cl.[2] B65G *51/28*
U.S. Cl. 243—25 **6 Claims**



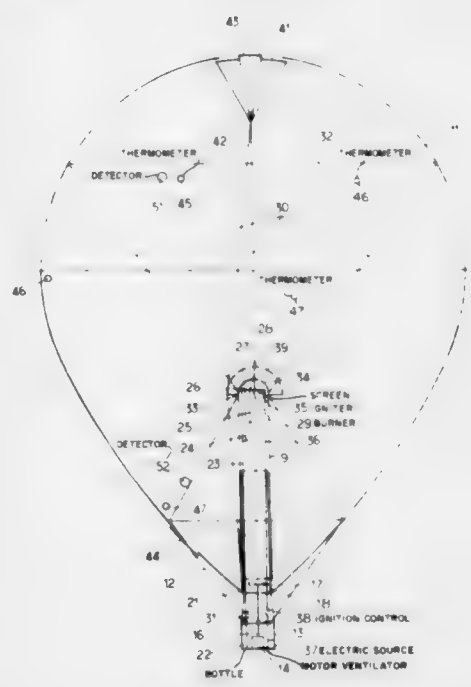
1. A pneumatic tube conveyor dispatcher for converting a free dispatch system to a controlled dispatch system and wherein the free dispatch system has an inlet opening through which a carrier may be inserted for passage into the delivery tube of the pneumatic system, said pneumatic tube conveyor dispatcher comprising:
a housing having a non-movable storage chamber for the receipt of said carrier, said housing having means for mounting said housing to said inlet opening such that said storage chamber communicates with said inlet opening and said storage chamber is not movable with respect to said inlet opening;
a door carried by said housing to permit access to said storage chamber to deposit said carrier therein;
sensing means associates with said storage chamber for sensing the presence of a carrier therein;
drive means responsive upon actuation for acting on said carrier to eject said carrier from said storage chamber through said inlet opening and into said tube; and
actuating means operable in response to said sensing means for actuating said drive means.

4,084,771

HOT AIR AEROSTAT

Robert Armand Creuzet, Marmande, France

Filed Mar. 25, 1976, Ser. No. 670,563
Claims priority, application France, Mar. 27, 1975, 75 09709; Mar. 17, 1976, 76 07714
Int. Cl.[2] B64B *1/62*
U.S. Cl. 244—31 **8 Claims**

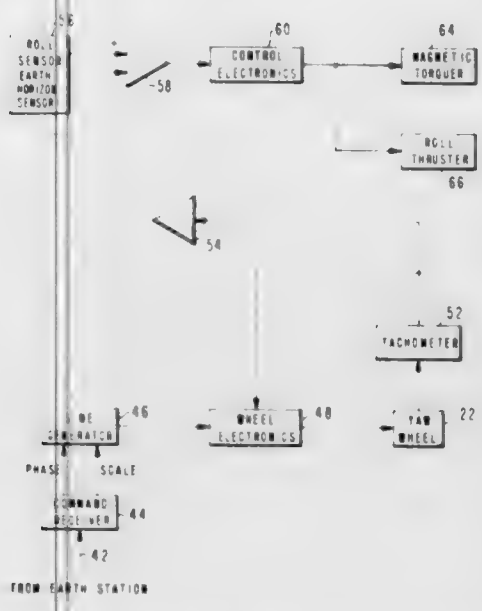


1. A hot air aerostat comprising: an envelope, a closable valve member disposed in said envelope, said envelope and valve member defining a substantially closed volume of air when said valve member is in its closed state; a nacelle attached to said envelope; a burner having an operational state disposed inside said volume of air to heat the air contained in said envelope, said burner being disposed at a relatively large distance from said envelope when in said operational state; a fuel tank disposed in said nacelle, said fuel tank being connected to said burner; ignition means disposed in the vicinity of said burner; a fan to blow air from the external atmosphere into said envelope through said valve member, said valve member comprising a rigid member defining an aperture in said envelope and a flexible sleeve member having an end projecting into said aperture, said flexible sleeve member having extended and collapsed state, said sleeve member closing said aperture when in said collapsed state, and being extendible into said volume of air under activation of said fan.

4,084,772
ROLL/YAW BODY STEERING FOR MOMENTUM BIASED SPACECRAFT

Ludwig Muhlfelder, Livingston, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 28, 1976, Ser. No. 653,014
Int. Cl.[2] B64G *1/10*
U.S. Cl. 244—165 7 Claims



1. A control system for an orbiting pitch momentum biased satellite, said satellite having a pitch, roll, and yaw axis, and wherein the momentum of said satellite is defined by a momentum vector,

said satellite being adapted to be placed in an orbit defining a plane that is inclined relative to a plane containing a geo-synchronous orbit,

said inclination inherently causing roll and yaw pointing errors with respect to said geo-synchronous orbit, comprising:

a. a transverse wheel mounted parallel to said yaw axis and adapted for bi-directional rotation and varying speed,

b. means for rotating said wheel in accordance with a predetermined rate schedule which varies sinusoidally over the orbit at the orbital frequency of the satellite whereby the attitude of said satellite is offset in response to the effect of said rotating wheel by the direction of the pitch axis being changed with respect to said momentum vector, the direction of said pitch axis with respect to the inclined orbit normal varying sinusoidally at the orbital frequency to null said roll pointing error due to said orbit inclination, the momentum vector being maintained perpendicular to the plane of the geo-synchronous orbit to null said yaw pointing error due to said orbit inclination,

c. means responsive to said transverse wheel when rotating for generating a signal indicative of the speed and direction of said wheel,

d. attitude sensing means for generating an attitude error signal indicative of an error in desired roll attitutde relative to said inclined orbit,

e. means responsive to said roll attitude error signal to orient said satellite by altering the inertial direction of said momentum vector,

f. said orientation means including means reponsive to said wheel speed and direction signal for modifying said attitude error signal to be non-responsive to said offset in attitude generated by said transverse wheel, said attitude offset being in addition to said roll attitude errors,

said attitude offset due to said rotating transverse wheel having a predetermined relation to said inclination,

whereby the yaw pointing errors due to said inclination are substantially reduced to zero by said momentum vector being repositioned to be perpendicular to the plane of said geo-synchronous orbit, and

whereby the roll pointing errors due to said inclination are reduced substantially to zero by the rotation action of said transverse wheel.

7. A method for controlling the pointing of an orbiting pitch momentum biased satellite, said satellite having a pitch, roll, and yaw axis, and wherein the momentum of said satellite is defined by a momentum vector,

said satellite being adapted to be placed in an orbit defining a plane that is inclined relative to a plane containing a geo-synchronous orbit,

said inclination inherently causing roll and yaw pointing errors with respect to said geo-synchronous orbit, comprising:

a. rotating a transverse wheel mounted parallel to said yaw axis and adapted for bi-directional rotation and varying rate in accordance with a predetermined sinusoidal schedule over the orbit at the orbital frequency of the satellite, whereby the attitude of the satellite is offset in response to the effect of said rotating wheel by the direction of the pitch axis being changed with respect to said momentum vector, the direction of said pitch axis with respect to the inclined orbit normal varying sinusoidally at the orbital frequency to null said roll pointing error due to said orbit inclination, the momentum vector being maintained perpendicular to the plane of the geo-synchronous orbit to null said yaw pointing error due to said orbit inclination,

b. generating a signal indicative of the speed and direction of said wheel,

c. detecting an error in desired roll attitude relative to the inclined orbit,

d. generating a signal indicative of said error in roll attitude,

e. orienting said satellite in response to said roll attitude error signal by altering the inertial direction of said momentum vector,

f. modifying said attitude error signal to be non-responsive to said offset in attitude generated by said transverse wheel, said roll attitude offset being in addition to said roll attitude errors,

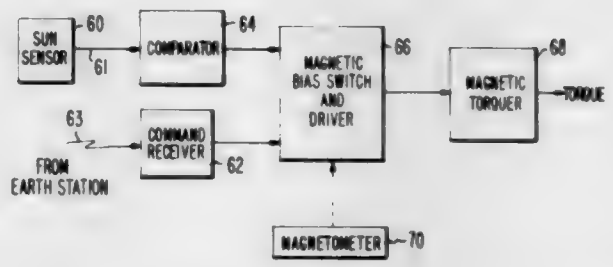
said attitude offset due to said rotating transverse wheel having a predetermined relation to said inclination,

whereby the yaw pointing errors due to sain inclination are substantially reduced to zero by said momentum vector being repositioned to be perpendicular to the plane of said geo-synchronous orbit, and whereby said roll pointing errors due to said inclination are reduced substantially to zero by the rotation action of said transverse wheel.

4,084,773
MAGNETIC CONTROL OF SPACECRAFT ROLL DISTURBANCE TORQUES

George Edwin Schmidt, Jr., Delran, and Ludwig Muhlfelder, Livingston, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 613,094, Sep. 15, 1975, abandoned. This application Dec. 17, 1976, Ser. No. 751,866
Int. Cl.[2] G06F *15/50;* B64G *1/10*
U.S. Cl. 244—166 15 Claims



1. A method for torquing a momentum biased spacecraft to compensate for predicted roll disturbance torques caused substantially by solar radiation pressure on the spacecraft to minimize the yaw rotational deviation of the pitch axis from a desired attitude parallel to the orbit normal, said pitch axis

being collinear with the momentum vector of said spacecraft, comprising the steps of:

a. sensing without sensing yaw errors, the declination of the sun by sensor means mounted on said spacecraft for generating in response to solar energy a signal representing the declination of the sun,

b. generating in response to said sensor output signal a logic output signal by logic means coupled to said sensor means, said logic signal representing a desired magnetic dipole strength,

c. generating in response to said logic output signal a signal for energizing magnetic torquing means by energizing means coupled to said logic means,

d. magnetic torquing said spacecraft by energizing said torquing means to produce a magnetic dipole substantially parallel to the yaw axis of said spacecraft such that the magnetic field therefrom reacts with the magnetic field of the earth to produce a magnetic torque substantially of equal magnitude and opposite direction to said predicted roll disturbance torques to thereby minimize the deviation of said pitch axis.

7. A torquing system for a momentum bias spacecraft to compensate for predicted roll disturbance torques and thereby minimize the yaw rotational deviation of the pitch axis from a desired attitude parallel to the orbit normal, said spacecraft being of the dual-spin type having a momentum wheel, said pitch axis being collinear with the momentum vector of said spacecraft, comprising:

a. magnetic torquing means oriented in said spacecraft to produce when energized a magnetic dipole substantially parallel to the yaw axis of said satellite,

b. sensor means mounted on said spacecraft for generating in response to solar energy a signal representing the declination of the sun,

c. logic means coupled to said sensor means for generating in response to said sensor output signal a logic output signal, said logic signal representing a desired magnetic dipole strength; and

d. energizing means coupled to said logic means for generating in response to said logic output signal signals for energizing said magnetic torquing means such that the magnetic field therefrom reacts with the magnetic field of the earth to produce a magnetic torque substantially of equal magnitude and opposite direction to said roll disturbance torques to thereby minimize the deviation of said pitch axis,

said torquing means comprising first, second, and third air core coils, said first coil being energized to develop either of two magnetic field strengths, said second and third coils being energized to develop a magnetic field equal in strength to the maximum magnetic field developed by said first coil.

4,084,774

REDUNDANT OFF-AXIS SENSOR ASSEMBLIES

David Kimberley, Fleet, England, assignor to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

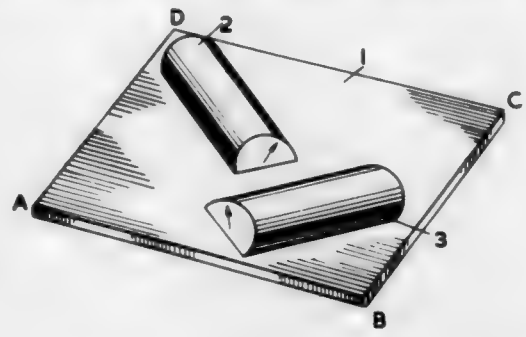
Filed Jul. 12, 1976, Ser. No. 704,262

Claims priority, application United Kingdom, Jul. 15, 1975, 29617/75

Int. Cl.[2] G05D *1/00*

U.S. Cl. 244—194 **4 Claims**

1. An assembly of single-component motion sensors installed in an aircraft and comprising four groups of two sensors, said four groups consisting of a first group of two sensors having their measuring axes parallel and in the direction (α,β,γ), a second group of two sensors having their measuring axes parallel and in the direction $(-\alpha,\beta,\gamma)$, a third group of two sensors having their measuring axes parallel and in the direction $(-\alpha,-\beta,\gamma)$, and a fourth group of two sensors having their measurement axes parallel and in the direction $(\alpha,-\beta,\gamma)$, said directions being expressed relative to three orthogonal axes parallel to the pitch, roll and yaw axes respectively of the aircraft, and α,β, and γ being three nonzero numbers the sum of whose squares is equal to unity, the sensors being arranged 40 pairs, different pairs being installed in different locations in the aircraft, no pair having two sensors in the same group, and



resolving means connected to receive outputs from the sensors for deriving therefrom components of motion relative to said three orthogonal axes, said resolving means being operative to detect, locate and allow for sensor failures up to two in number.

4,084,775

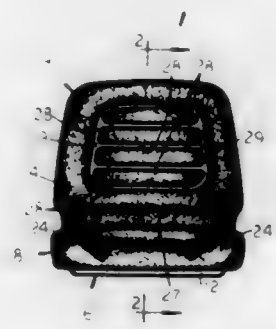
VEHICLE SEAT

Charles W. Pelly, Calabasas, Calif., assignor to Sears Manufacturing Company, Davenport, Iowa

Filed Sep. 17, 1976, Ser. No. 724,164

Int. Cl.[2] A47C *7/02*

U.S. Cl. 297—453 **3 Claims**



1. A vehicle seat comprising:

a base shell member having forward and upright portions;

foam means; and

cover means having a seat portion and a back portion, said cover means being attached to said base shell member, said foam means being disposed between said base shell member and said cover means, said back portion being disposed over said upright portion, said seat portion being disposed over said forward portion, said seat portion having formed thereon drainage means, said back portion having formed thereon cross-ventilation means, said drainage means including a primary transverse channel, a plurality of secondary transverse channels, a pair of longitudinal connecting channels, and a pair of drainage grooves, said longitudinal connecting channels being disposed adjacent said seat portion's longitudinal edges and joining said secondary transverse channels to said primary transverse channel, said primary transverse channel at each end thereof communicating with one of said drainage grooves, said secondary transverse channels sloping downwardly toward said longitudinal connecting channels, said longitudinal connecting channels sloping downwardly toward said primary transverse channel, said primary transverse channel sloping downwardly toward said drainage grooves, each drainage groove sloping downwardly and away from said primary transverse channel and through one of said seat portion's longitudinal

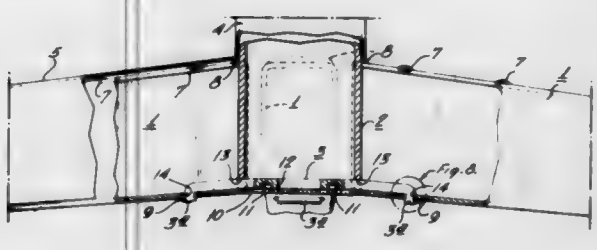
edges, whereby water is carried over the seat portion's longitudinal edges and off of said cover means.

4,084,776

FURNITURE BASE AND METHOD OF MAKING THE SAME

Donald W. Cook, Telford, Pa., assignor to Cook Specialty Company, Green Lane, Pa.

Filed Jan. 21, 1976, Ser. No. 651,320
Int. Cl.[2] F16M *11/20*
U.S. Cl. 248—188.7 **13 Claims**



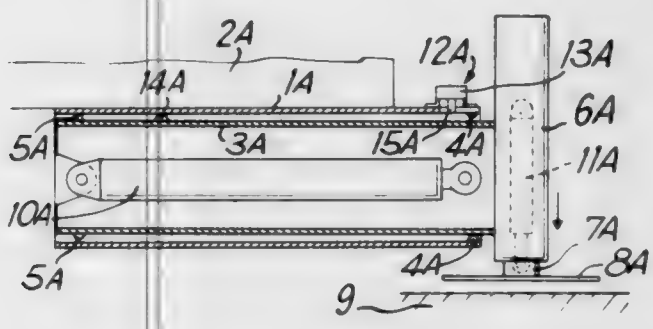
1. A base for furniture and the like comprising; a hollow central vertical column, a plurality of elongated metal leg elements for supporting said column, said leg elements extending generally radially outwardly from said column and having spaced apart walls of relatively thin cross-section, a load-distributing spider mounted on said vertical column near the bottom thereof and having a center portion and arms radiating outwardly from the center portion and from the column, said center portion fitting within said hollow central vertical column and being welded to said column, means interconnecting said leg elements to said arms, and said arms welded to said leg elements at points adjacent the ends of the arms.

4,084,777

STABILIZING APPARATUS INCORPORATING TELESCOPIC STRUCTURES

Bernard Léon Lambert, Montceau les Mines, France, assignor to Societe Anonyme Potain Poclain Materiel (P.P.M.), France

Filed Jan. 19, 1977, Ser. No. 760,655
Claims priority, application France, Jan. 27, 1976, 76 02146
Int. Cl.[2] B60S *9/12, 9/00*
U.S. Cl. 248—287 **2 Claims**



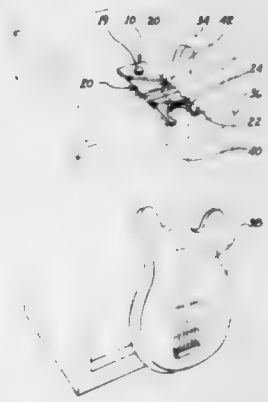
1. In a telescopic structure
an inner telescopic part,
an outer telescopic part receiving telescopically the inner telescopic part,
an arm capable of accommodating a thrust in a predetermined direction different from the direction of the telescopic action and connected to one of the two telescopic parts and being mounted on said inner telescopic part,
a position-detector including
a casing and
a movable member, the casing being secured to one of the telescopic parts,
a projection secured to the other of the telescopic parts, the projection being disposed to operate the movable member,
the movable member being effectively actuable only in a single predetermined relative position of the two telescopic parts and in which a thrust is exerted on the said arm in the said direction and the projection is disposed opposite to the movable member and is moved towards the movable member by a displacement in a direction substantially the same as the thrust direction, the inner part carrying the thrust arm being subject to the action of the said thrust.

4,084,778

BRACKET FOR SUPPORTING STRINGED MUSICAL INSTRUMENTS

Richard Lee Dominguez, 3835 W. Eva Ave., Phoenix, Ariz. 85021

Filed Oct. 20, 1976, Ser. No. 734,342
Int. Cl.[2] A47F *5/00*
U.S. Cl. 248—314 **4 Claims**



1. A bracket to be secured to a cabinet for hanging musical instruments therefrom comprising a rigid member having a first substantially flat coplanar section, a second section integral with said first section and extending angularly upwardly from said first section, and a third substantially flat coplanar section integral with and extending from said second section and in parallel, elevated relationship to said first section, said first, second, and third sections being in mutual alignment, said first section including a centrally located aperature for receiving attachment means to pivotally attach said bracket to the top of said cabinet, said third section comprising opposing coplanar curved jaw members having a smooth, relatively soft surface, said jaw members defining an orifice between said jaw members, said orifice comprising a neck portion and a main portion, said neck portion providing a constricted exterior entrance to said main portion.

4,084,779

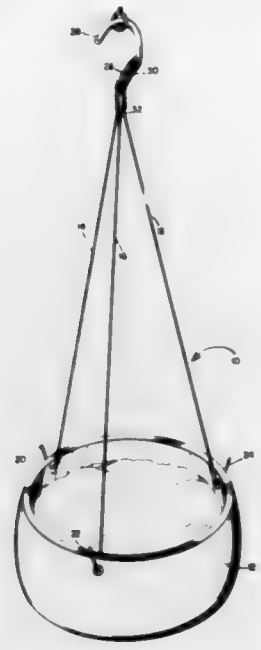
POT HANGER

Hubert J. Moineau, Bolton, Mass., assignor to Automatic Specialties, Inc., Marlboro, Mass.

Filed Dec. 31, 1975, Ser. No. 645,808
Int. Cl.[2] F16M *13/00*; A47G *7/00*
U.S. Cl. 248—318 **11 Claims**

1. An improved hanger for planters, which hanger comprises in combination:
(a) a supporting wire element having a hook-like shape at the one end, a straight-line shank portion at the other end and an angular portion therebetween;
(b) a plurality of stringer wire elements, each having a one end and another end, the other end of each of the wire elements free and adapted to secure and support an object, such as a planter, therefrom; and
(c) a helical coil formed of the plurality of the stringer wire elements at the one end and wrapped tightly about the one end of the supporting wire element and about at least a

portion of the straight shank section and angular portion of the supporting element, the helical coil securing the



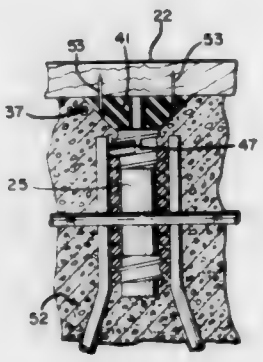
plurality of stringer wire elements to the supporting element.

4,084,780

CAVITY FORMING PLUG FOR COIL INSERT IN CONCRETE PRODUCT

Richard C. Mess, Washington Township, Montgomery County, Ohio, assignor to The Dayton Sure-Grip & Shore Company, Miamisburg, Ohio

Filed Jan. 21, 1977, Ser. No. 761,262
Int. Cl.[2] B28B *7/30*
U.S. Cl. 249—59 **12 Claims**



1. A plug assembly for temporary use with a concrete product insert including a coil defining an interior threaded surface, which insert is to be held in position adjacent a mold wall by said plug assembly during the pouring of a concrete product, comprising:

(a) a plug including

a hollow cylindrical, elastomeric body defining a cavity and an opening thereto at one end of said body, said body closed at the other end thereof, and said body having an outer surface proportioned and threaded for firm matching engagement with said threaded coil interior surface upon predetermined radial compression and axial expansion from the substantially unstressed condition of said elastomeric body, and

a stem in said cavity attached to said body internally at said closed end thereof and extending out of said cavity through said opening a distance sufficient to provide for use of said stem as a handle for applying a pulling force internally of said plug to said closed end thereof, and

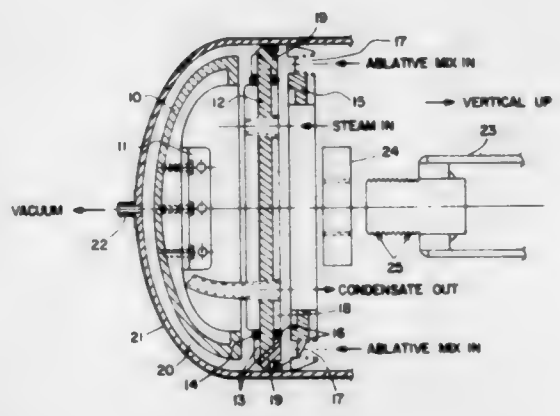
(b) support means having a first portion inserted into said cavity through said opening and a second portion for attachment to a mold wall such that said support means may be removed from said cavity as said mold wall is removed from said concrete product and said plug may be thereafter removed from said coil by applying a pulling force to said stem.

4,084,781

FABRICATION OF ABLATOR LINERS IN COMBUSTORS

Harold Thompson Couch, Columbia; Leonard Selwyn Cohen, West Hartford, and Lawrence Joseph Coulter, South Windsor, all of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 712,128, Aug. 5, 1976, Pat. No. 4,031,605.
This application Mar. 28, 1977, Ser. No. 782,102
Int. Cl.[2] B29C *1/00*
U.S. Cl. 249—83 **3 Claims**



1. A mold fixture adapted to be assembled inside a combustion chamber, said combustion chamber having a cylindrical shape, a domed end, and an end containing a nozzle, comprising:

a domed surface conforming to said domed end and a nozzle-conforming surface conforming to said end containing a nozzle, said domed surface being assembled inside said combustion chamber from at least two parts;

a rear wall attached to said domed surface so as to form a cavity therebetween, said rear wall containing openings to allow steam into and out of said cavity;

a surface conforming to said combustion chamber end containing a nozzle, said surface being assembled inside said nozzle from at least two parts; said surface further defining an enclosure into which steam is delivered through said nozzle; and

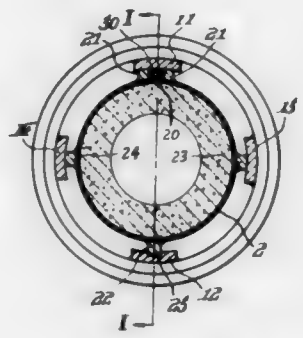
means for positioning said nozzle-conforming surface and said domed surface in a fixed position inside said combustion chamber.

4,084,782

SPLIT MOULD FOR MAKING TAPERED CONCRETE POLES

Senri Okada, Tokyo, Japan, assignor to Nippon Concrete Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1976, Ser. No. 754,741
Int. Cl.[2] B28B *21/82*
U.S. Cl. 249—135 **4 Claims**



1. A mould structure for use in making tapered concrete

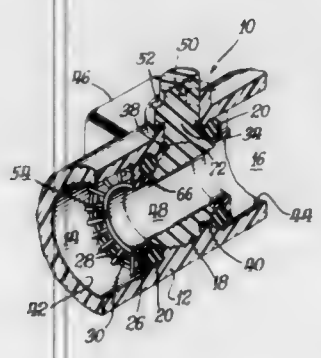
poles, comprising: a tapered outer frame essentially consisting of a plurality of longitudinal guide members (11–14) radially arranged about a common axis and each inclined to the axis at an angle corresponding to the taper of concrete poles to be formed, the mould structure having a longitudinally extending mould axis, a plurality of annular connecting members (10) axially spaced from each other and each secured to said guide members in their respective angular positions spaced apart from each other, and at least one annular drive wheel (3) secured to said guide members in encircling relation thereto; and a frustoconical tubular casing (2) of resilient steel sheet material formed with the same taper as that of said outer frame so as to be inserted in said outer frame substantially coaxially therewith and having a gap (20) formed in the wall of said tubular casing along a longitudinal line on its periphery and extending the entire length thereof, said tubular casing (2) having a pair of longitudinally extending stiffening members (21—21) secured to the outer peripheral surface thereof on the opposite sides of said gap (20) and a number of additional longitudinally extending stiffening members (22–24) secured to said outer peripheral surface in spaced relation to each other and to said pair of stiffening members (21—21), all of said stiffening members (21–24) being placed in contact with the respective guide members (11–14) of said outer frame for sliding movement therealong so that said gap (20) is opened and closed as said tubular casing (2) is moved axially in opposite directions relative to said outer frame.

4,084,783

MOLDING TOOL FOR MAKING VALVE

Thomas J. Wrasman, 12500 Ridge Rd., Louisville, Ky. 40223

Division of Ser. No. 635,256, Nov. 25, 1975, Pat. No. 4,038,358.
This application Feb. 16, 1977, Ser. No. 768,964
Int. Cl.[2] B29C *1/06*
U.S. Cl. 249—175 **3 Claims**



1. A tool for use in molding a plastic valve housing about a preformed valve component having a flow bore therethrough said tool comprising:

a shank portion for defining a bore in said housing;

an insert portion for insertion into said flow passageway of said preformed component; and

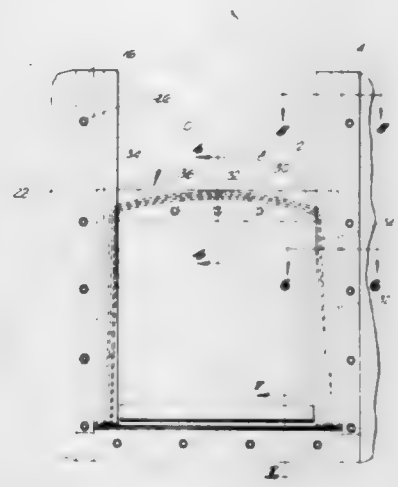
a plurality of spaced retaining fingers spaced about said insert portion for securing a seal against said preformed valve component during molding of the housing thereabout, said insert portion serving to align said valve component and to restrict liquid plastic from entering and clogging the bore during molding, and the spaces between said fingers and between said fingers and said insert portion being filled with plastic during molding to define a retainer portion which holds the seal tightly against the preformed valve component after the tool is withdrawn.

4,084,784

SLIDE GATE SEALING CLOSURE

Camille A. Labelle, Greenfield Park, Canada, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Jan. 27, 1977, Ser. No. 762,979
Claims priority, application Canada, Feb. 16, 1976, 245778
Int. Cl.[2] F16K *51/00*
U.S. Cl. 251—147 **9 Claims**



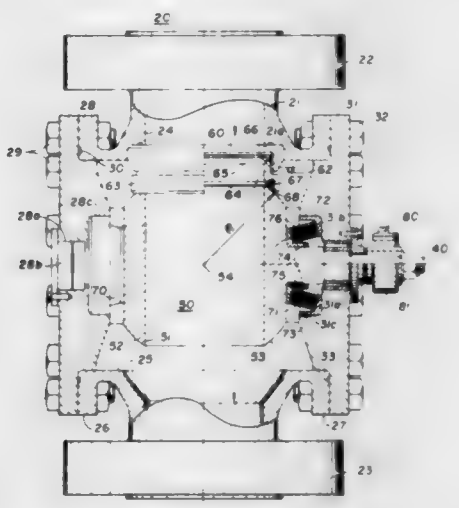
1. In a gate assembly of the type having a frame with a sill and an opening for the passage of a fluid, and a gate slide mounted on said frame for movement toward and away from said sill, between open and closed positions, the improvement, in combination therewith, comprising a first flange projecting from said frame on both sides of said opening, a resilient sealing member fixed to said first flange, and a second flange substantially identical to said first flange projecting from the back side of said gate slide, said first and second flanges being so positioned that, when said gate slide is in the closed position against said sill, said first and second flanges overlap and said resilient sealing member is compressed so as to produce a water tight seal, whereby sealing is accomplished by a compression of said resilient sealing member between said first and second flanges when said gate slide is substantially closed, thus virtually eliminating frictional wear of said resilient sealing member.

4,084,785

BALL VALVE WITH LINEAR ELASTOMERIC SEAL MOUNTING

John T. Herbert, Arlington; Paul E. Sullivan, Euless, both of Tex., and Stanley P. Vitt, Jr., Redlands, Calif., assignors to Murdock Machine & Engineering Company of Texas, Irving, Tex.

Filed Aug. 9, 1976, Ser. No. 712,515
Int. Cl.[2] F16K *41/00, 3/22*
U.S. Cl. 251—172 **14 Claims**



1. In a ball valve where a housing with input and output ports containing a ported gate having spherical surfaces

mounted for rotation about an axis perpendicular to the axis of one of said ports, the combination comprising:

(a) a retainer ring fixedly mounted coaxially of said input port,

(b) a rigid ring with a sealing face ring contoured to mate with said spherical surface of said gate, said rigid ring and sealing ring being responsive to internal valve pressure to increase the contact force between said sealing ring and said ported gate, and

(c) an elastomeric element bonded between the outer surface of said rigid ring and an inner surface of said retainer ring, said elastomeric element permitting the movement of said sealing ring relative to said ported gate in response to internal pressure in the valve.

4,084,786

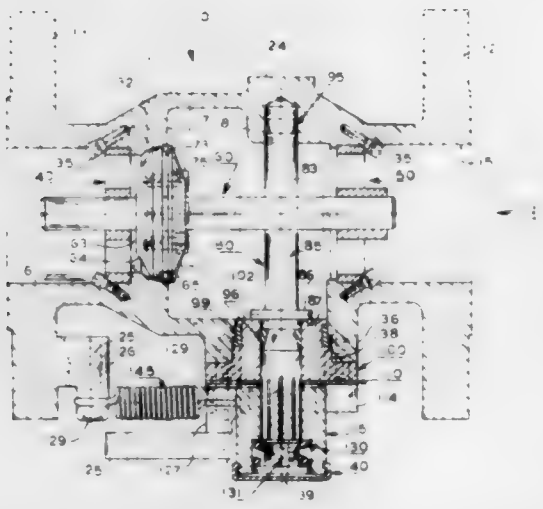
VALVES

Tom Walters, 2102 Mason Blvd., Point Pleasant, W. Va. 25550

Filed Jan. 28, 1977, Ser. No. 763,496

Int. Cl.[2] F16K *31/44*

U.S. Cl. 251—250 **34 Claims**



1. A valve assembly for controlling the flow of liquids and gases comprising an ellipsoidal configuration valve member receiving seat within a valve body shell radially positioned relative to the axis of the valve body, a guided and axially movable valve and stem assembly that has members to provide a seat mating ellipsoidal configuration at valve seating surfaces whereupon straight axial movement is provided for said valve and stem assembly at ellipsoidal valve seating wherein seal material is confined between flange parts of said valve members at a seating area in a manner providing positioning and protection of said seal material, with the valve stem's cylindrical section extending downstream from the valve seating area where it is axially slidably received and guided within a boss supported by the valve body and with said stem's square section having rack type teeth on one face extending upstream to be axially slidably received and guided within a boss supported by the valve body, a drive gear shaft assembly with lubricating seals at alignment and support member junctures with a valve body receiving boss bore and an opposed bore in a retaining flange that positions said shaft parallel to a radial plane providing an arrangement for the aligned engagement of a gear on said shaft with the rack teeth on said valve stem operatable for seating and unseating at the valving operation by the partial rotations of an outer lever provided with a splined hub in engagement upon said drive gear shaft whereupon said hub has lateral outward movement within the limits of a compression spring being compressed to solid height where said spring is contained at its outer end by a flanged shoulder bolt engaged to the outer end of said drive gear shaft applying a reacting force inwardly back through said hub and a quadrant plate to said retaining flange with said drive gear shaft provided with a shoulder that abuts the inner face of said retaining flange substantially limiting said shaft's outward lateral movement as the reacting force of said spring substantially maintains said gear shaft to its inner limits while permitting said outward lateral movement of said hub for the engagement and disengagement of splines on said hub with positioning grooves in said quadrant plate whereby operating lever and valve positioning is substantially maintained as desired with each positioning groove in said quadrant plate while said operating lever is provided with a leverage advantage that upon the applied rotation of said lever said spring compressingly deforms as splines of said hub become disengaged from the grooves of said quadrant plate as said hub is forced laterally outward permitting quick opening and closing valving actions.

4,084,787

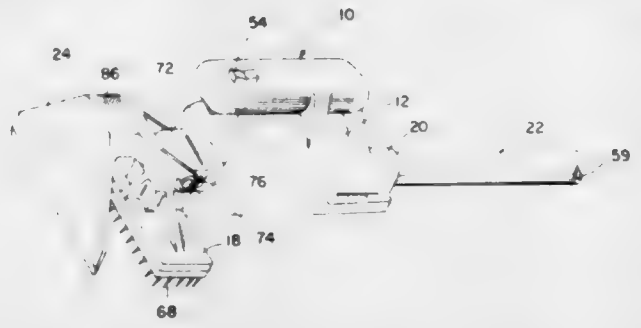
CARPET INSTALLATION TOOL

Adam V. Kowalczyk, 98 Mill Creek Rd., Holland, Pa. 18966

Filed Jun. 14, 1976, Ser. No. 695,362

Int. Cl.[2] A47G *27/04*

U.S. Cl. 254—57 **17 Claims**



1. In a carpet installation tool of the type including a carpet gripper head, the combination of

a frame;

means to move the carpet gripper head relatively to the frame for carpet stretching purposes, said means to move being power actuated,

said means to move comprising elongated means responsive to the power actuation to move the the gripper head forwardly or rearwardly relative to the frame,

said means to move comprising hydraulic circuit means to urge the carpet gripper head forwardly or rearwardly by using hydraulic pressure,

the hydraulic circuit means comprising a pump supplying hydraulic pressure to a cylinder and a piston movable within the cylinder in response to hydraulic pressure,

the piston being connected to a piston rod, the said piston rod extending outwardly of the cylinder and being affixed to move the carpet gripper head,

said means to move further including means to prevent rotation of the gripper head relative to the frame

said means to prevent rotation comprising at least a portion of the piston rod being non-circular in cross sectional configuration.

4,084,788

CLUTCH CONTROL DEVICE FOR CABLE TRACTION APPARATUS

André Desplats, Boulogne-Billancourt, and Michel Cavalieri, Neuilly sur Marne, both of France, assignors to Tractel S.A., Bagnolet, France

Filed Apr. 26, 1977, Ser. No. 791,103

Claims priority, application France, Apr. 29, 1976, 76 12740

Int. Cl.[2] B66F *3/00*

U.S. Cl. 254—76 **7 Claims**

1. In a traction apparatus of the kind comprising:

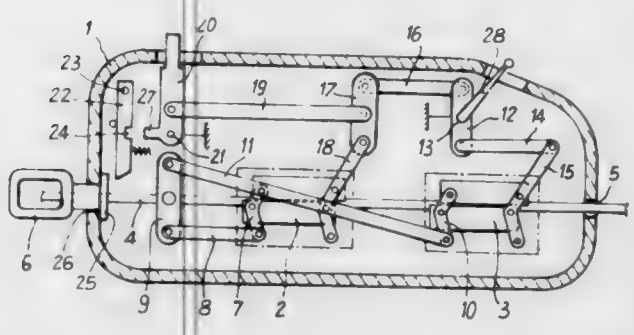
(a) a casing

(b) a pair of movable tandem clamps in said casing adapted to perform a reciprocating movement, said clamps having control links

(c) a release control device having a pair of rocking levers, a first rocking lever of said pair being adapted to perform a rotary motion, the second rocking lever of said pair

being adapted to perform a translatory motion, the improvement which comprises a clutch control device having:

(i) clutch engaging means associated with said first rocking lever and adapted to assume an operative position modifying the movement of said first rocking lever



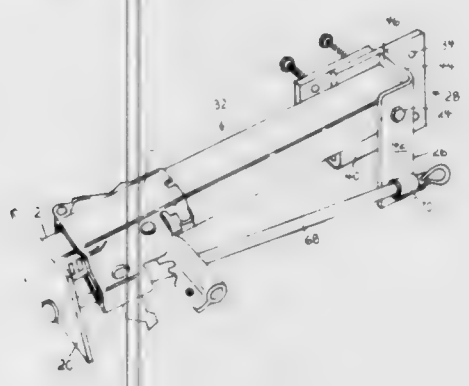
(ii) clutch control means associated with said second rocking lever, said clutch control means when actuated simultaneously with the setting of said clutch engaging means in its operative position causing rotation of said second rocking lever and actuation in unclamping direction of said control links of the pair of clamps.

4,084,789

STABILIZING JACK

Melvin A. Francis, Knoxville, Tenn., assignor to Industrial Drives, Inc., Knoxville, Tenn.

Filed May 31, 1977, Ser. No. 801,608
Int. Cl.[2] B66F *1/06*
U.S. Cl. 254—86 R **3 Claims**



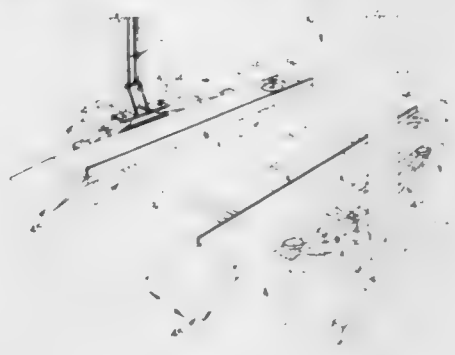
1. In a jack for a ground vehicle including a lever operated jacking mechanism substantially encompassing an elongated rack means, a tubular member affixed at one of its ends to said jacking mechanism and telescopically receiving one end of said rack means therein, ground engaging means pivotally secured to the opposite end of said rack means, bracket means including a channel portion receiving therein said end of said tubular member opposite said jacking mechanism, pivot means securing said tubular member to said channel portion, the improvement comprising means for securing said jack in a generally horizontal storage position comprising an elongated rigid rod, means disposed on said jack at a location spaced apart from said bracket means and defining a first opening for receiving one end of said securing rod and nonpivotal means associated with said bracket means and defining a second opening in proximity with said pivot means for receiving the opposite end of said securing rod, said second opening being spaced from said first opening and of a generally tubular geometry with the longitudinal axis thereof being fixedly oriented substantially horizontally when said jack is in its storage position.

4,084,790

MULTI-PURPOSE VEHICLE SERVICE HOIST

Frank Molnar, 47 Gladys St., Clarence Gardens, South Australia, Australia

Filed Feb. 22, 1977, Ser. No. 770,383
Claims priority, application Australia, Apr. 2, 1976 PC 5471
Int. Cl.[2] B66F *7/10*
U.S. Cl. 254—90 **8 Claims**



1. In a vehicle service hoist of the type having a pair of vertical transversely spaced columns attached to a shallow base member, a lifting carriage on each column guided for vertical movement with respect thereto, a pair of retractable and adjustable lifting arms attached to each carriage, vehicle support means on each arm, lifting means connected to both carriages, and safety means operable to prevent downward movement of the carriages should failure of the lifting means occur, the improvement comprising:

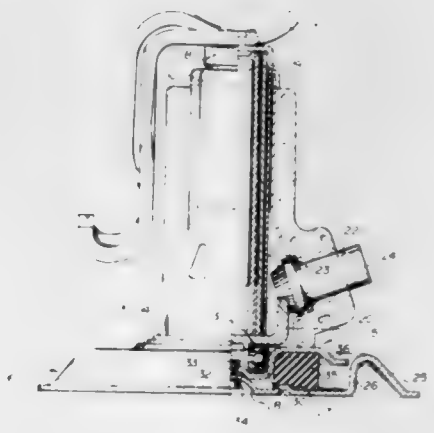
a pair of transversely extending guides positioned one fore and the other aft of the columns, releasable engagement means joining the ends of the guides to corresponding ends of the arms and constructed and arranged so that elevating the arms will effect corresponding elevation of the guides, and a pair of longitudinally extending tracks transversely spaced from each other supported by the guides.

4,084,791

RESILIENTLY FOUR-WAY TILTABLE VEHICLE JACK BASE

Oatway Margueratt, Orillia, Canada, assignor to Seeburn Metal Products Limited, Beaverton, Canada

Filed Jun. 23, 1977, Ser. No. 809,202
Int. Cl.[2] B66F *13/00*
U.S. Cl. 254—101 **5 Claims**



1. A resiliently tiltable load supporting base for vehicle jacks, comprising:

(a) a rectangular metallic base member having a substantially flat bottom with an upwardly extending convex dome formed at the center thereof, said base member having a peripheral stiffening rim including a vertically upwardly extending peripheral wall merging into an outwardly and downwardly flared skirt;

(b) a rectangular metallic load receiving plate having a

substantially flat top with downturned peripheral edges positioned in close proximity to and freely tiltable within said base member vertical peripheral wall and having a socket extending downwardly in a central region of said top, said socket being adapted to receive a vehicle jack and having a bottom wall with a concave depression on the bottom face thereof, said concave depression resting on said base member dome,

(c) a retainer pin member connecting said dome and said concave recess for swinging movement therebetween and

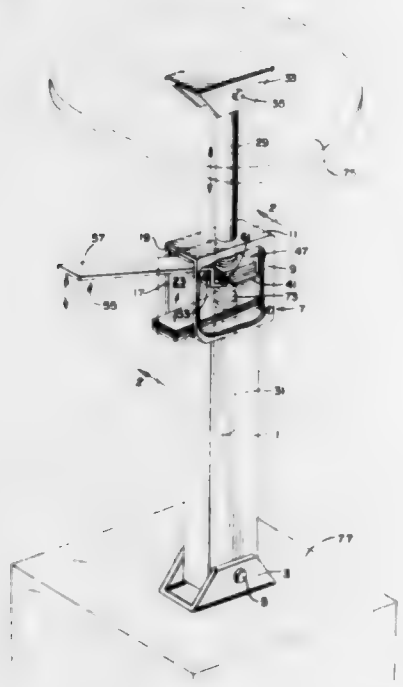
(d) elastomeric slab means mounted between said base member and load receiving plate at least beneath the four corners of the flat top portion of said load receiving plate between said socket and said downturned peripheral edges, whereby the load receiving plate is resiliently tiltable with respect to the base member.

4,084,792

CARGO HOLDER JACK

Raul Baron, 15281 SW. 308 St., Leisure City, Fla. 33030, and Oscar Baron, 2611 SW. 36 Ave., Miami, Fla. 33133

Filed Feb. 15, 1977, Ser. No. 768,680
Int. Cl.[2] B66F *1/00*
U.S. Cl. 254—106 **4 Claims**



1. A cargo holder jack including a base, an operating rod extending into said base and being reciprocable therein, means for driving said operating rod outwardly from said base, and further means for releasably locking said operating rod in any reciprocated position, said operating rod extending through said means and said further means, a generally enclosed structure having an open end mounted on said base and said means and said further means being operatively mounted thereon, said enclosed structure is composed of two parts, one being received within the other, and the operating rod extends therethrough and a member is fixed to the upper wall of the part of the structure which is received within the other part thereof and said member extends therefrom into said structure, said operating rod extending through said member and said member forming an upper and lower compartment in said structure.

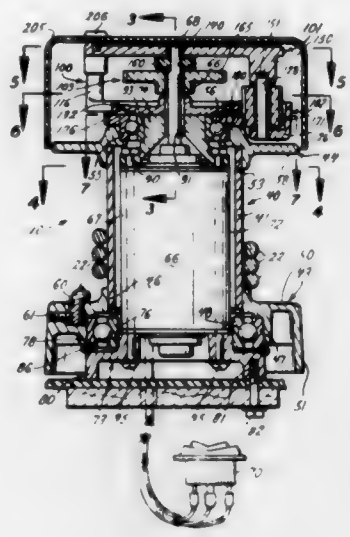
4,084,793

WINCH WITH AUTOMATIC CLUTCH ASSEMBLY

William P. Gardiner, White Bear Lake, Minn., assignor to Byrd Industries, Inc., Memphis, Tenn.

Filed May 19, 1976, Ser. No. 688,015
Int. Cl.[2] B66D *1/00*
U.S. Cl. 254—187.8 **20 Claims**

1. A winch and clutch assembly comprising a spool about which a line is to be wound and unwound, a motor having a housing and a drive shaft, a frame associated with the housing, an annular driven member associated with said spool such that rotation of said driven member imparts rotation to said spool, drive means connecting said motor shaft to said annular driven member to drive said annular driven member, said drive means including an annular driving member, said driven member and said driving member having concentric, adjacent surfaces, at least one first recess in said concentric surface of said driving member and at least one second recess in said concentric surface of said driven member, an annular bearing, a pivot member associated with said bearing the pivot member movably attached to the frame during operation and the entire pivot member operably movable to urge said bearing into said first and second recesses to drivingly engage said driving member to said driven member in response to the relative movement between said driving member and said driven member in a first direction, and to urge said bearing out of such engagement in response to relative movement between said driven member and said driving member in a direction opposite the first direction.



4,084,794

HOIST OR WINCH MECHANISM ADAPTED FOR MULTIPLE VARIABLE RIGGING

Bernard E. Wallace, Exton, Pa., assignor to B. E. Wallace Products Corporation, Malvern, Pa.

Filed Jul. 9, 1976, Ser. No. 703,830
Int. Cl.[2] B66D *3/08*
U.S. Cl. 254—189 **1 Claim**



1. In winch-hoist apparatus, a generally box-shaped winch frame having a top cross member, for securement to fixed structure, and a pair of arms extending from said cross member

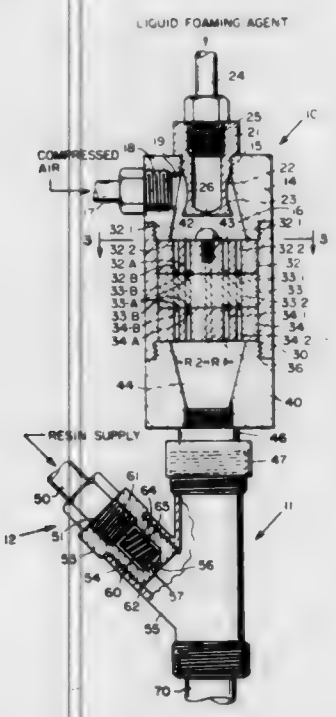
in spaced, general, parallelism toward a load, a drum mounted for rotation between said arms in an intermediate region of the length thereof, a cable having one portion secured to said drum, a spaced portion secured to said winch frame, and a looped, intermediate portion, means for rotating said drum to provide for reeling and unreeling of said cable from said drum, and load-carrying means carried in the cable loop and providing for use of the apparatus, selectively, under either a doubled rigging condition, or a rigging condition which is a multiple of such doubled rigging, said load-carrying means comprising: a first generally U-shaped pulley block assembly having hook means carried by the U, and at least first and second pulleys rotatably mounted between the arms of the U, which arms terminate in spaced, generally parallel, portions extending toward said winch frame; a second pulley block assembly, movably disposed in the cable rigging intermediate said winch frame and said first assembly, and carrying at least one pulley, said cable passing from said drum over the first pulley of said first assembly, then over said one pulley of said second assembly, then over the second pulley of said first assembly, and thence toward and into securement to said winch frame, said second assembly carrying securement means comprising pairs of spaced arms, one of said pairs facing said first assembly and the other of said pairs facing the spaced arms of said winch frame, said one pair of arms being shaped to interleave with the arm portions of said first assembly when double rigging is desired, said other pair being shaped to interleave with said winch frame arms when multiple rigging is desired; and means for selectively and releasably maintaining said one pair interleaved with the arm portions of said first pulley assembly, and means comprising pin means for selectively and releasably maintaining said other pair interleaved with the arms of said winch frame; and said apparatus further including adjustable means for guiding the cable with respect to said drum, during reeling and unreeling of the cable, said pin means including a portion which cooperates in providing adjustably pivotal securement of said guide means to said winch frame, under both the double and the multiple rigging conditions, the said guide means being Pivotally mounted on said pin means and located between the frame and said second assembly.

4,084,795

APPARATUS FOR MANUFACTURING FOAMED PLASTICS

Daniel J. Vaughn, 73 Wildbriar Rd., Rochester, N.Y. 14623

Filed Sep. 22, 1975, Ser. No. 615,768
Int. Cl.[2] B01F *3/04*
U.S. Cl. 366—177 **8 Claims**



1. Apparatus for producing a cellular, foamed plastic from a mixture of synthetic resin and a liquid foaming agent, comprising

means defining a pair of spaced chambers,

a plurality of perforated plates extending transversely across one of said chambers intermediate the ends thereof,

means for supplying a liquid foaming agent to one end of said one chamber for passage through said plates to the opposite end of said one chamber, and to be converted during passage through said plates into a foam having a predetermined bubble structure,

means connecting said chambers to convey foamed liquid from said one to the other of said chambers,

means for feeding a synthetic resin to said other chamber for mixture therein with the foamed liquid from said one chamber, and

means for dispensing the mixture of resin and foamed liquid from said other chamber,

each of said plates having therethrough a plurality of spaced, parallel openings that are angularly offset from the openings in the adjacent plate, and

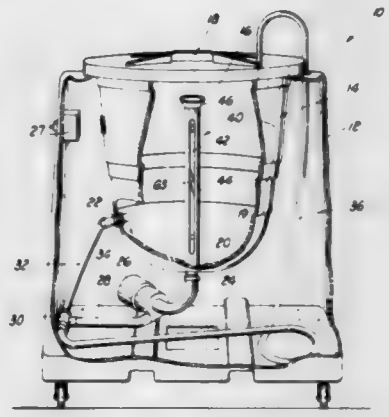
the confronting surfaces of said plates having therein grooves, which connect the openings in each plate with the offset openings in the adjacent plate, whereby the interconnected, offset openings in said plates define a plurality of spaced conduits through which the liquid foaming agent passes from said one end of said one chamber to the opposite end thereof.

4,084,796

LIQUID MIXING DEVICE

Vivian D. Krehbiel, Wichita, Kans., assignor to Kreonite Inc., Wichita, Kans.

Filed Nov. 22, 1976, Ser. No. 744,181
Int. Cl.[2] B01F *5/12*
U.S. Cl. 366—137 **4 Claims**



1. A liquid mixing device, the device comprising:

a frame;

a liquid tank mounted on said frame for receiving different types of liquids to be mixed therein;

a circulating and mixing pump mounted on the frame, said pump connected to an intake port and a discharge port in said tank, said pump receiving unmixed liquids through said intake port, mixing said liquids therein and circulating the mixed liquids through the discharge port;

a vertical inner tube mounted on the top of said intake port, said inner tube having apertures in the lower portion thereof for receiving a liquid therethrough from the lower portion of said tank, said inner tube further including an elongated spiral slot therethrough and disposed around the circumference of said inner tube and along the length thereof a radially extending flange at the lower portion of said inner tube between the apertures and the slot; and

a vertical outer tube disposed around said inner tube and resting on said flange, said outer tube having an elongated slot parallel to the length of said outer tube and therethrough, by indexing the elongated slot of said outer tube with the elongated spiral slot of said inner tube an elongated aperture is formed through said tubes which can be

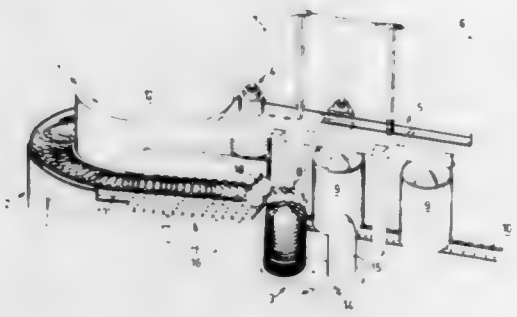
adjusted along the depth of the liquids in said tank for receiving an unmixed liquid at a particular depth therethrough and thereby mix the liquid from said particular depth and the liquid received through the apertures in said inner tube.

4,084,797

DEVICE INTENDED FOR CONTROLLED COOLING OR WIRE, ESPECIALLY STEEL WIRE

Walter Johann Karlberger, Smedjebacken, Sweden, assignor to Morgardshammar Aktiebolag, Smedjebacken, Sweden

Filed Feb. 28, 1977, Ser. No. 772,959
Claims priority, application Sweden, Mar. 15, 1976, 7603274
Int. Cl.[2] C21D *9/56*
U.S. Cl. 266—106 **7 Claims**



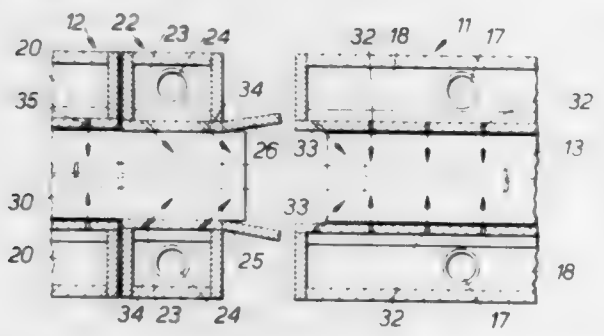
1. Device intended for controlled cooling of wire, especially steel wire, characterized in that said device, in combination, comprises a movable conveyor (1) to which wire (6) is continuously supplied in open ring windings (8) for movement of the same in mutually displaced positions, means (2) surrounding the conveyor for control of the temperature ratios of the wire and a collection device (3) for the cooled ring windings, said conveyor (1) essentially having the shape of an inclined plane (11) which rotates about its center.

4,084,798

COOLING SYSTEMS FOR METAL ARTICLES

Ronald F. Dewsnap; Andrew D. Higgins, and David E. Beard, all of Sheffield, England, assignors to British Steel Corporation, London, England

Filed Sep. 8, 1975, Ser. No. 611,081
Claims priority, application United Kingdom, Sep. 10, 1974, 39446/74
Int. Cl.[2] C21D *1/62*
U.S. Cl. 266—131 **9 Claims**



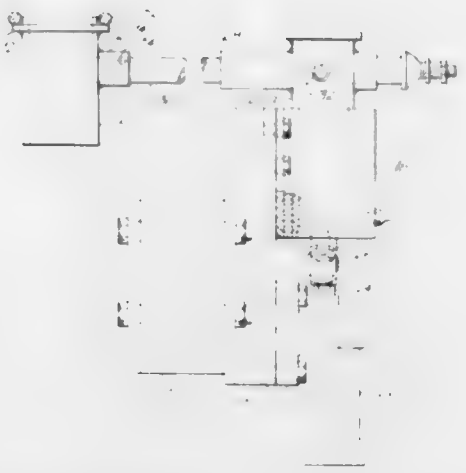
1. A cooling system for cooling hotrolled rod, billet or bar, said cooling system including a substantially horizontal trough open at its ends to permit entry and exit of the bar, a first set of inlets positioned along at least one side of the trough to direct water under pressure into the trough, said first set of inlets being in the form of vertical slots which direct a flow of water perpendicular to the direction of movement of the bar, and a second set of inlets situated adjacent at least one end of the trough, said second set of inlets being in the form of vertical slots and positioned so as to direct fluid into the trough so that in use they act to retain water in the trough and to control the flow of water from the trough.

4,084,799

SHROUDING APPARATUS

Michael D. Coward, Georgetown; William J. Dobinski, Myrtle Beach, and Rocose M. Hinson, Jr., Pawleys Island, all of S.C., assignors to Georgetown Steel Corporation, Georgetown, S.C.

Filed Aug. 30, 1976, Ser. No. 718,705
Int. Cl.[2] B22D *11/10, 35/04*
U.S. Cl. 266—207 **13 Claims**



1. A shrouding apparatus for protecting the liquid stream issuing from the bottom of a tundish comprising:

(a) a shroud tube having a vertically oriented longitudinal axis;

(b) means connected to said shroud tube for aligning the axis of said shroud tube with said liquid stream, said means comprising;

(1) a base,

(2) a pivot means housing connected to said base,

(3) pivot means housed in said pivot means housing,

(4) a shroud tube support arm sleeve carried by said pivot means,

(5) a shroud tube support arm longitudinally movable in said shroud tube support arm sleeve, and

(6) retaining means carried by said sleeve and engageable with said support arm for maintaining said support arm in proper orientation;

(c) means connected to said shroud tube for raising and lowering said tube into and out of contact with said tundish;

(d) sealing means between said shroud tube and said tundish capable of creating a substantially gas tight seal; and

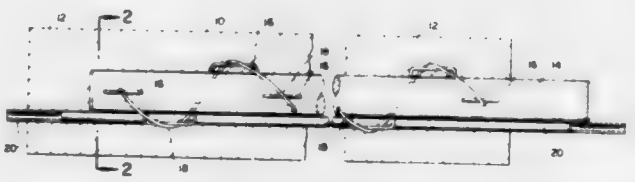
(e) means communicating with said shroud tube for introducing gas to the interior of said shroud tube.

4,084,800

THERMALLY STABLE INJECTOR LANCE

Douglas Earl Butts, Brook Park, and Walter Neil Rossborough, Rocky River, both of Ohio, assignors to Rossborough Supply Company, Cleveland, Ohio

Filed Feb. 17, 1976, Ser. No. 658,272
Int. Cl.[2] C21C *7/00*
U.S. Cl. 266—225 **10 Claims**



1. A lance for injecting particulate material into molten metal which comprises:

an elongated thermal insulating member having spaced apart first and second ends and at least one wall therebetween defining the member;

a reinforcing rod axially disposed in the insulating member,

said rod having a plurality of outwardly extending protrusions in contact with said insulating member;

a length of wire wound around the reinforcing rod in a spaced apart relationship and affixed to at least one of said protrusions with said wire being in contact with the insulating member;

and a hollow injection tube having spaced apart first and second ends axially disposed in the insulating member.

4,084,801

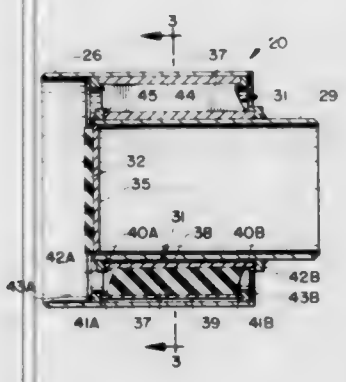
SHOCK ENERGY ABSORBING MULTI-SEGMENT LOAD CELL

Don B. Landers, and Robert K. Brock, both of Arlington, Tex., assignors to Oil States Rubber Company, Arlington, Tex.

Filed Nov. 28, 1975, Ser. No. 636,159

Int. Cl.[2] F16F *7/12;* **B63B** *59/02;* **E02B** *3/22*

U.S. Cl. 267—140 **16 Claims**



1. In an energy absorbing load cell: first and second relatively movable telescoping members; with said first telescoping member being larger than, and enclosing, a substantial portion of said second telescoping member; said second telescoping member being of smaller size through the longitudinal portion thereof telescoped within said first telescoping member with spacing between said first and second telescoping members; said structural means being comprised exclusively of shear load travel distortable load absorbing segments having a block of elastomeric flexible material with first and second spaced surfaces thereof bonded respectively to an individually associated pair of first and second plates of relatively rigid material and with respective ones of each said associated pair of plates being individually rigidly affixed to each of said first and second telescoping members; and said structural means including at least a first plurality of longitudinally extending shear load travel distortable load-absorbing segments symmetrically positioned with mutually parallel longitudinal axes in the spacing between said first and second telescoping members and extending substantially over the longitudinal extent of said spacing.

4,084,802

PICTURE FRAME VISE

Harold Lee Cannon, 314 W. University Dr., Chapel Hill, N.C. 27514

Filed Jul. 7, 1977, Ser. No. 813,630

Int. Cl.[2] B25B *1/20*

U.S. Cl. 269—41 **1 Claim**

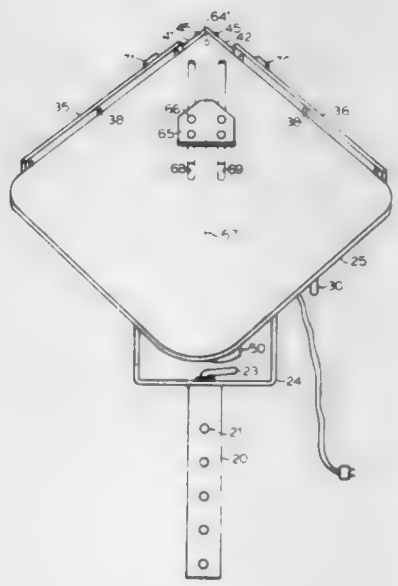
1. A mitered corner joining clamp device for simultaneously applying pressure to a pair of mitered picture frame members, comprising:

(a) a vise worktable having secured thereto at a selected joining point corner backing means provided adjustable upstanding wall surfaces positioned at a predetermined included angle therebetween, said vise worktable further including an elongated slot configuration oriented parallel to a line bisecting said angle;

(b) an adjustable wedge member slidably positioned on the outer side of said vise worktable for travel along said slot configuration and having leading edge surfaces for applying a corner pressure against a pair of mitered picture frame members interposed against said surfaces, said wedge member including adjustable pointed means on the leading edge surfaces thereof adapted to engage said picture frame members;

(c) reversible drive means mounted on the underside of said vise worktable and including a reversible electric drive motor, a screw member driven thereby and a screw block traveling thereon secured through said slot configuration to said wedge member;

(d) respective forward and reverse control means mounted on said vise worktable for energizing said drive motor selectively in forward and reverse modes of operation thereby enabling said screw block to cause said wedge member to be selectively driven toward said surfaces for clamping said pair of mitered picture frame members or away from said surfaces to release said pair of mitered picture frame members after being joined, said control means including a pair of finger tip electric control buttons and circuit means associated therewith, one of said finger tip control buttons being mounted on one side of said vise worktable proximate said joining point corner at which said pair of mitered picture frame members are



intended to be joined and the other switch member being mounted at an opposite position of said vise worktable with both of said switch members being accessible for finger tip button control;

(e) additional switch means mounted on the underside of said vise worktable and arranged to be engaged by said screw block during rearward travel thereof to deenergize said drive motor and thereby limit the rearward motion of said gear block member and cushioned coupling means coupling said screw member to said drive member adapting said wedge to provide a cushioned clamping effect; and

(f) post and bracket support means secured to the underside of said vise worktable, said post and bracket support means including a bracket pivotably secured to said underside and mounting first clamp means for adjustably positioning said vise worktable around a horizontal axis beneath said vise worktable and perpendicular to the line bisecting said angle, said post and bracket support means further including a vertical post pivotally mounting said bracket and mounting second clamp means for adjustably positioning said vise worktable about a vertical axis extending through said post means and perpendicular to said horizontal axis.

4,084,803

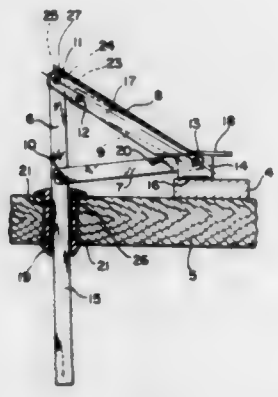
CLAMP AND CLAMPING ARRANGEMENT FOR HOLDING A WORKPIECE

Gerald Beekenkamp, Etobicoke, Canada, assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 12, 1976, Ser. No. 713,644

Int. Cl.[2] B23Q *3/02*

U.S. Cl. 269—91 **20 Claims**



1. A clamp for holding a workpiece to a work surface having an aperture formed therein comprising:

a main support arm having an end portion adapted for insertion into the aperture in the work surface;

a clamping arm having an end pivotally connected to said main support arm above said end portion;

a first lever arm pivotally connected to said main support arm;

a second lever arm having one end pivotally connected to said first lever arm and having another end pivotally connected to said clamping arm at a pivot location on said clamping arm spaced from said end of said clamping arm whereat said clamping arm is pivotally connected to said main support arm;

means for applying a force to the pivot mutually connecting said first and second lever arms to cause said lever arms to transmit respective forces to said main support arm and said clamping arm causing, in turn, said main support arm and said clamping arm to rotate with respect to each other so that said main support arm tightly engages the wall defining the aperture in the work surface and so that said clamping arm tightly engages the workpiece; and,

clamping means mounted on said clamping arm at said pivot location for engaging a workpiece placed on the work surface whereby the forces transmitted along said second lever and said clamping arm act directly at said clamping means when the workpiece is tightly engaged by the clamp.

4,084,804

METHOD AND APPARATUS FOR PRODUCING WEB UNITS

James B. Fulk, P.O. Box 947, Los Gatos, Calif. 95030, assignor to James B. Fulk, Los Gatos, Calif.

Filed Nov. 8, 1976, Ser. No. 740,034

Int. Cl.[2] B65H *45/00*

U.S. Cl. 270—52.5 **4 Claims**

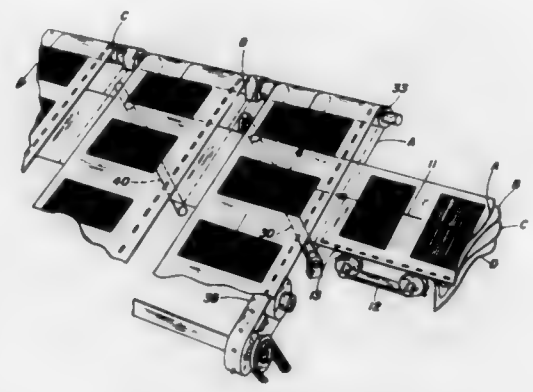
1. A method of producing a plurality of processed paper web units of business forms in a continuous operation from a plurality of supply rolls of unprocessed paper webs comprising,

advancing the webs from the respective supply rolls along a generally horizontal processing path wherein said webs are simultaneously and continuously processed,

performing a first processing step simultaneously on all of said webs while they are in superposed relation and are moving continuously along said path,

separating the processed webs while they are continuously moving and imparting a first change at spaced points in the direction of movement of the respective webs which is substantially at a right angle to the direction of travel during the first processing step, whereby the webs are then moving in side-by-side spaced relationship in substantially a common plane but at substantially a right angle to said path,

performing a zig-zag folding operation on said webs while they are continuously moving in said side-by-side spaced



relationship whereby stacks of zig-zag folded webs in side-by-side relation on a common front are produced by said folding operation, and

said common front extending along a line which is generally parallel to said horizontal processing path for easy takeaway of said stacks.

4,084,805

SHEET HANDLING DEVICE PARTICULARLY USEFUL AS LEDGER FEEDER AND STACKER FOR ACCOUNTING MACHINES

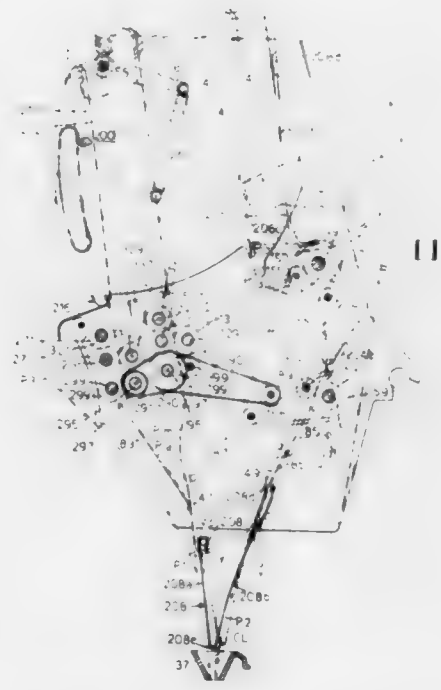
Adam Simpson, Uddington, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 18, 1976, Ser. No. 732,841

Claims priority, application United Kingdom, Nov. 6, 1975, 45988/75

Int. Cl.[2] B65H *1/28, 29/60, 29/44*

U.S. Cl. 271—4 **11 Claims**



3. A sheet handling device for handling sheets to be processed by a data processing machine, comprising: a right and left side frame member: a main hopper compartment disposed between said frame members for receiving sheets to be processed; a main stacker compartment disposed between said frame members for receiving sheets after their processing; sheet feeding means for feeding the sheets from the main hopper compartment through a first path leading to the data processing machine; sheet stacking means for moving the

sheets, after their processing by the data processing machine, through a second path leading from the data processing machine to the stacker compartment; a stacker ram pivotally mounted to said frame members in the main stacker compartment; and ram drive means for moving the stacker ram away from the stack of sheets in the main stacker compartment during the operation of the stacking means, and against said stack to compact same during the operation of the sheet feeding means.

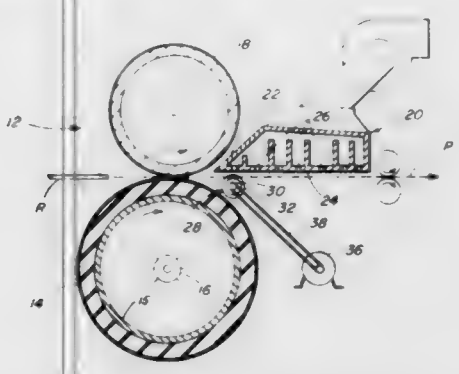
10. A sheet handling device for handling sheets to be processed by a data processing machine, comprising: a right and left side frame member; a main hopper compartment disposed between said frame members for receiving sheets to be processed; a main stacker compartment disposed between said frame members for receiving sheets after their processing; sheet feeding means for feeding sheets from the main hopper compartment through a first path leading to the data processing machine; sheet stacking means for moving the sheets after their processing by the data processing machine, through a second path leading from the data processing machine to the stacker compartment; said second path including a hold station disposed between said frame members for temporarily holding processed sheets being fed from the data processing machine; a substantially V-shaped pivotably mounted hold station deflector in said second path said deflector being pivotably actuated by a sheet moving into the hold station wherein said sheet engages one surface of said V-shaped deflector causing said deflector to pivot into a blocking position to prevent another sheet leaving the data processing machine from passing into said second path; and control means for selectively controlling said sheet stacking means to terminate the operation thereof when the process card has reached the hold station.

4,084,806

SHEET HANDLING APPARATUS

Stephen James Wenthe, Rochester, and David Arlen Caswell, Holley, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 10, 1976, Ser. No. 740,526
Int. Cl.[2] B65H *29/20*
U.S. Cl. 271—80 **3 Claims**



1. In a sheet handling apparatus having means for transporting sheets at a given velocity along a sheet travel path, guide means for moving sheets diverging from said travel path back into said travel path, said guide means comprising:

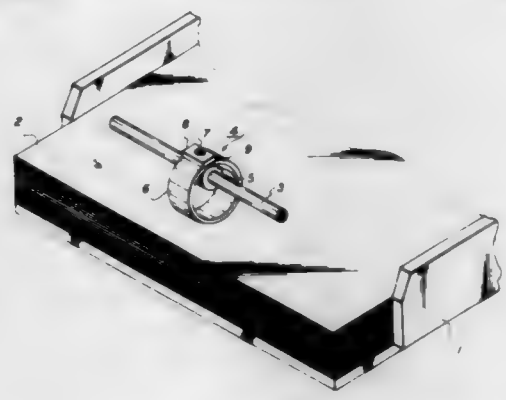
shaft means located adjacent to said travel path, a helical spring defining a first helix and mounted in a second helix about said shaft means so as to engage any sheet diverging from said travel path, said second helix of said spring being open-wound such that the outer segments of the convolutions forming said first helix are parallel to the rotational axis of said shaft means and lie in a plane including said axis, and means for rotating said shaft means in a direction and at an angular speed such that the periphery of the convolutions forming said first helix at the point closest to said travel path move in the same direction as the transported sheets and at a tangential velocity greater than said given sheet velocity, whereby any sheet engaged by the spring is moved back into said travel path.

4,084,807

PAPER FEEDING ROLLER

Yasuhiko Terajima, and Osamu Matsumoto, both of Ebina, Japan, assignors to Rank Xerox, Ltd., London, England

Filed May 7, 1976, Ser. No. 684,203
Claims priority, application Japan, Sep. 12, 1975, 50-124930[U]
Int. Cl.[2] B65H *3/06*
U.S. Cl. 271—119 **1 Claim**



1. An apparatus for feeding substrates comprising in combination:

a rotatable shaft;

an elliptical interrupted, resilient member connected to said shaft so that it rotates with said shaft; and

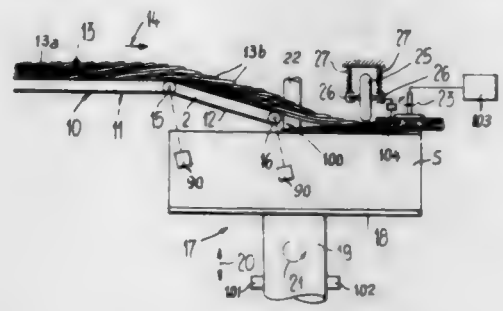
wherein said elliptical interrupted resilient member is mounted eccentrically to said shaft so that as the shaft rotates said annular resilient member flattens on said substrates to feed said substrates.

4,084,808

METHOD AND APPARATUS FOR STACKING PRINTED PRODUCTS CONTINUOUSLY ARRIVING IN A SUBSTANTIALLY FISH SCALE OVERLAPPING ARRANGEMENT

Walter Reist, Hinwil, and Werner Honegger, Ruti, both of Switzerland, assignors to Ferag AG, Hinwil, Switzerland

Filed May 16, 1975, Ser. No. 578,357
Claims priority, application Switzerland, May 28, 1974, 7234/74
Int. Cl.[2] B65H *31/04*
U.S. Cl. 271—213 **22 Claims**



1. A method of stacking printed products continuously arriving in a fish scale product stream, comprising the steps of infeeding a fish scale stream of printed products for movement along a predetermined path of travel, deflecting each incoming printed product of the fish scale product stream in its plane, and winding the incoming printed products in their plane the fish scale product stream into a spiral-shaped stack to form a plurality of successive windings of printed products, each winding having printed products partially overlapping one another, the printed products of one winding bearing against the printed products of the next subjacent winding to thereby transform said fish scale product stream into a spiral-shaped stack of printed products.

2. The method as defined in claim 1, including the step of deflecting the incoming printed products about a station momentary center which is located at the end region of a lateral edge of the fish scale product stream.

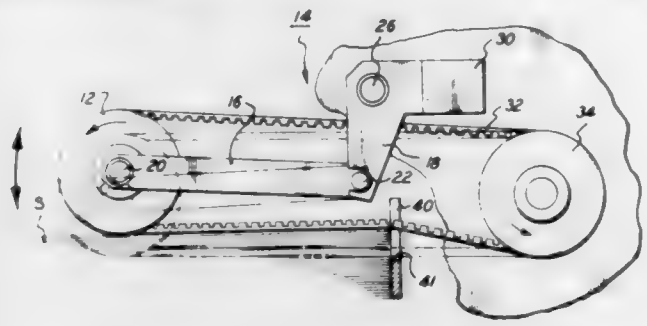
3. The method as defined in claim 1, including the step of deflecting the incoming printed products about a stationary momentary center which is located at the region of the leading edge of a not yet deflected printed product which has arrived a position for deflection.

4,084,809

SHEET STACKING APPARATUS

John H. Looney, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 11, 1975, Ser. No. 767,705
Int. Cl.[2] B65H *31/36, 29/18*
U.S. Cl. 271—220 **2 Claims**



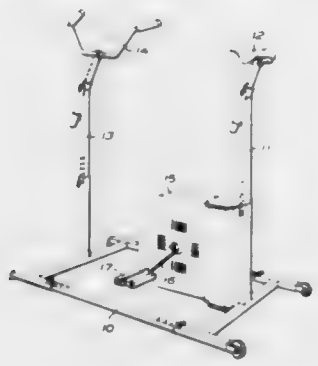
1. Sheet stacking apparatus comprising:
a frame,
stop means positioned on said frame in a sheet path to register the leading edge of incoming sheets received in a stack,
a roller member positioned to rest on the top of the stack of the incoming sheets,
said roller member being supported to float on the top of the stack and constrained to move in a generally vertical direction,
said roller member being supported by a first link member connected to the axis thereof, said first link member being pivotally supported on an axis parallel to the axis of said roller member by a second link member, said second link member being pivotally supported by said frame,
a belt member encircling said roller member and extending in a predetermined path thru a passage defined in said stop means,
said belt member having a predetermined tension thereon sufficient to exert a force at the leading edges of the topmost sheets in the stack to effect registration of the sheets without buckling thereof, said second link member including a counter weight portion for controlling the tension on said belt member, and
means for moving said belt member at a predetermined rate greater than the speed of the incoming sheets so as not to inhibit entry of the sheets into the stack.

4,084,810

ENERGY ABSORBING UNIT FOR PHYSICAL EXERCISING DEVICES

Lars Östen Forsman, Lindogatan 1, S-253 72 Helsingborg, Sweden

Filed Jul. 26, 1974, Ser. No. 491,975
Claims priority, application Sweden, Aug. 2, 1973, 7310639
Int. Cl.[2] A63B *69/16, 21/24*
U.S. Cl. 272—73 **9 Claims**



1. An energy absorbing unit for physical exercising devices comprising a frame; a member movably journalled therein comprising a rotor of a ferromagnetic material and having a circular circumference, and an input shaft and an epicyclic gearing arranged inside the rotor circumference operatively connecting the input shaft to the rotor, and having planet wheels, and at least an annular portion of the rotor being made of an electrically insulating material; which member is adapted to be driven by the training person; and said rotor being the rotor of an asynchronous AC motor having a wire-wound stator in operative relationship to said rotor which is connectable to an AC supply for generating when energized an electromagnetic motive force on the rotor to tend to drive it in the direction opposing movement of the shaft by the training person and thereby act as a braking force on the shaft independent of the movement thereof, the stator comprising a laminated metal sheet core which extends over part of the circular circumference of the rotor, partially surrounds the rotor, and has pole members facing the rotor; and wire winding provided on said pole members.

4,084,811

HITTING DEVICE FOR MARTIAL ARTS

Han Cha Kyo, 7551 N. Bell, Chicago, Ill. 60645

Continuation-in-part of Ser. No. 552,442, Feb. 24, 1975, which is a continuation of Ser. No. 520,976, Nov. 5, 1974, abandoned.
This application Jun. 7, 1976, Ser. No. 693,630
Int. Cl.[2] A63B *69/00*
U.S. Cl. 272—76 **18 Claims**



1. A hitting device particularly adapted for practicing martial arts, such as karate, including a central bellows portion which is contractible in response to an axially directed force, a hitting portion disposed at one end of said bellows portion and having a surface to receive a blow exerting such an axially directed force, a mounting portion disposed at an opposite end of said bellows portion by which said hitting device may be mounted on a desired support, and vent means associated with said hitting device and adjustable for venting air in a controlled manner from an interior of said hitting device during contraction of said bellows portion, said vent means including a plurality of openings formed in said hitting device to communicate said interior of said hitting device with the atmosphere, and closure means for use in association with said openings to control the rate at which air from said interior of said hitting device is vented through said openings to said atmosphere to thereby determine the contractibility of said bellows portion in respose to said axial force.

4,084,812

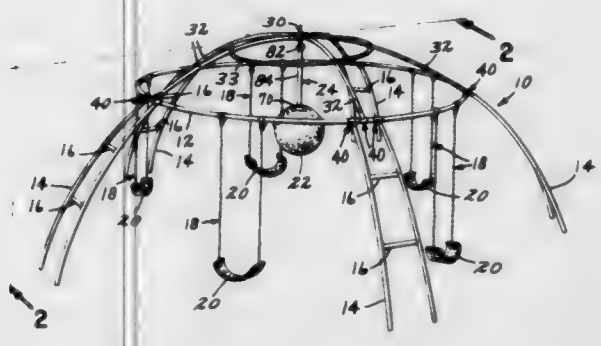
PLAYGROUND SWING APPARATUS

Kendrick B. Melrose, Edina; Gerald E. Kimmel, Minnetonka, and William F. McCombs, Edina, all of Minn., assignors to Game Time, Inc., Litchfield, Mich.

Filed Oct. 31, 1975, Ser. No. 627,755
Int. Cl.[2] A63G *9/00*
U.S. Cl. 272—85 **16 Claims**

1. Recreational apparatus comprising:
(a) a closed ring tubular member;

(b) support means including a plurality of spaced apart legs for supporting said closed ring tubular member generally horizontally above a ground surface;
(c) a plurality of seats spaced apart from one another and suspended from said tubular member by means of first elongated tension members;
(d) target support means extending across said closed ring tubular member;
(e) a spherical target object; and



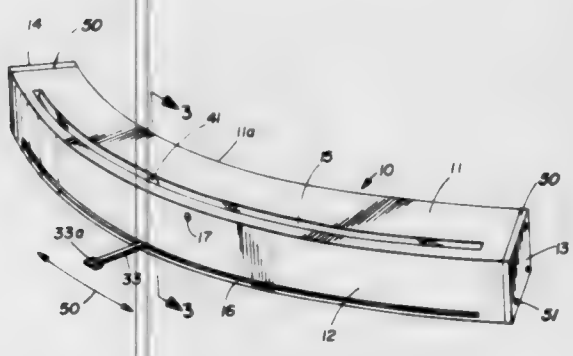
(f) a second elongated tension member connected between said object and said target support means and pendulously suspending said object from said target support means; and
(g) the dimensions of said tension members, target object, and target support means being so related that players swinging to and fro on said seats may contact said target object with their feet.

4,084,813

TOE BOARD AND MEASURING MEANS

Robert S. Washnock, 395 Brown St., Akron, Ohio 44308, and Delbert R. Madzay, 357 W. Turkeyfoot Lk. Rd., Akron, Ohio 44319

Filed Sep. 16, 1976, Ser. No. 724,024
Int. Cl.[2] A63B *65/04*
U.S. Cl. 272—106 **4 Claims**



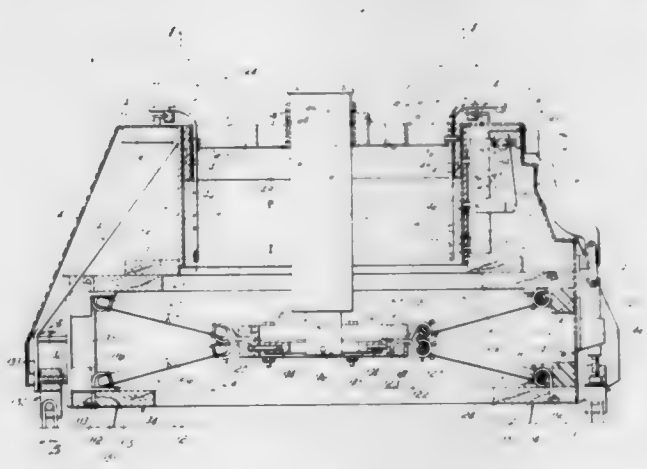
1. An athletic toe board assembly comprising
(A) an elongate restraining board of generally rectangular cross sectional configuration and arcuate planar configuration having
(1) a top surface;
(2) a convex front surface; and
(3) an elongate arcuate internal track extending at least partially along its longitudinal axis;
(B) said top surface having a first arcuate elongate access opening therein
(1) extending along the longitudinal axis thereof and
(2) communicating with said track;
(C) said front surface having a first elongate access opening therein
(1) extending along the longitudinal axis thereof and
(2) communicating with said track; and
(D) a spool-like tape measure
(1) disposed within said track for movement therealong,
(2) said spool-like tape measure including a spool and a measuring tape wound around said spool
(3) said spool being accessible from said top surface of said board through said elongate access opening thereof and
(4) one end of said tape being extendable through said elongate access opening of said front surface;
(E) elongate operating handle means received in said first access opening in said top surface one end of which is connected to said spool-like tape measure and the other end of which extends through said first access opening in said top surface and is provided with grasping means disposed only on said top surface
(1) whereby said tape measure may be moved along said track.

4,084,814

GYMNASTIC POLE AND MOUNT THEREFOR

Robert Boggild, Graham Home Place Rd., S. Pittsburg, Tenn. 37380

Filed Oct. 12, 1976, Ser. No. 731,579
Int. Cl.[2] A63B *9/00*
U.S. Cl. 272—110 **15 Claims**



1. In a gymnastic amusement device, a mount for receiving a fiber glass pole comprising,
a frame for supporting a fiber glass pole,
a pole socket means having an upwardly projecting free end and disposed centrally within said frame,
resilient means positioned at the free end portion of the socket means and adapted for supporting the socket means,
means supporting the upper end of said socket means, said supporting means being vertically adjustable with respect to said socket means, said supporting means comprising,
pole regidity adjustable ring means encircling the socket means, said ring means having external threads with at least one stud mounted on said frame projecting into said threads so that rotation of said ring means with respect to said studs effects the raising and lowering of said ring means,
and means connecting said ring means to said socket means.

4,084,815

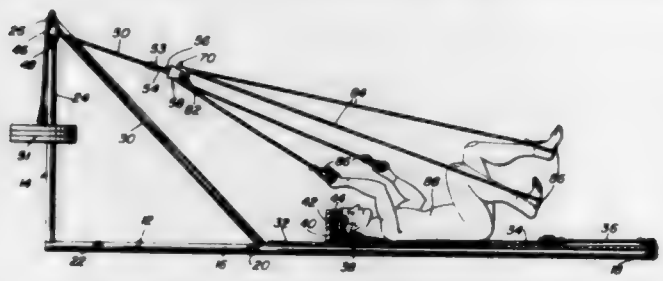
CONTINUOUS TENSION EXERCISER

Matt W. Flannery, 310 Berry Ave., Westwood, Ashland, Ky. 40010

Filed Jul. 14, 1976, Ser. No. 705,132
Int. Cl.[2] A63B *21/06*
U.S. Cl. 272—119 **23 Claims**

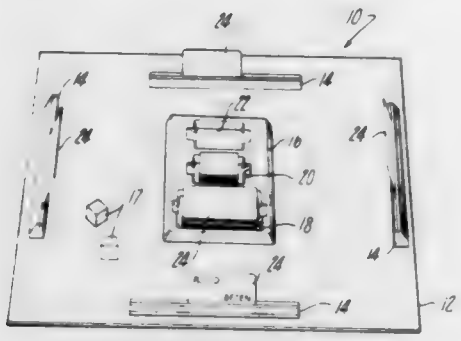
22. In combination with an elevated support structure, first pulley means supported from said support structure, first elongated flexible tension member means guidingly engaged over said pulley means for lengthwise back and forth shifting relative to said pulley means and including a depending first end portion from which a gravity weight is suspended, said weight being of constant predetermined selected value, second pulley

means anchored relative to the second end of said first tension member means, second elongated flexible tension member means guidingly engaged over said second pulley means, and body limb engageable portions carried by the opposite ends of said second elongated tension member means, said limb en-



gageable portions adapted to be engaged by arm and/or leg limbs with forces exerted by the limbs engaged therewith in opposition to the contant predetermined selected gravity weight value of said weight means suspended from said first end portion of said first tension member means.

4,084,816
WORD GAME
Deborah L. Shafer, 2110 E. Lincoln, Royal Oak, Mich. 48067
Filed Jun. 21, 1976, Ser. No. 697,725
Int. Cl.[2] A63B *3/00*
U.S. Cl. 273—1 R **6 Claims**



1. A game having a plurality of game pieces for use in evolving word combinations, said game comprising:

a game board;

a plurality of game piece racks strategically located about said game board to permit a participant to sit adjacent one of said racks and to position game pieces on said one rack in such a manner that written indicia on said game pieces is viewable by said participant, while said written indicia is concealed from the remaining participants and said remaining participants are adjacent the other of said plurality of racks;

a card tray carried by said game board in a location which is central to said game piece rack so as to provide a space between said racks and said tray for the positioning of selected game pieces thereon, said tray having first, second, and third laterally spaced recesses, said first recess being sized so as to be larger than said second and third recesses, said second and third recesses being substantially the same size, said third recess being adapted to store discarded game pieces;

a plurality of first game pieces, each being a word card of a size complementary to the size of said first recess and having a series of words thereon wherein each series of words has one vowel combination and different letters of the alphabet, said first card being stored in said first recess of said tray and being adapted to be selected therefrom and stored in said racks;

a plurality of second game pieces, each of said second game pieces being of a size complementary to the size of said second recess and having a letter of the alphabet thereon, said second game pieces being stored in said second recess of said tray and selected numbers of said second game pieces being positionable on said racks;

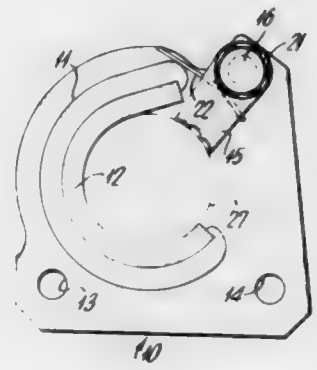
a plurality of third game pieces, each of said third game pieces being a card of a size complementary to said second recess and having in duplication certain of the words on said first game pieces, said third game pieces being stored in said second recess and a selected number thereof being adapted to be stored in said racks;

a plurality of fourth game pieces, each being a word card of a size complementary to the size of said second recess and having in duplication certain of the vowel combinations on said first game pieces, said fourth game pieces being stored in said second recess, a selected number of said fourth game pieces being stored in said racks;

a plurality of fifth game pieces, each being a word card of a size complementary to the size of said second recess and having instructions thereon causing the drawing participant to forfeit a turn, said fifth game pieces being stored in said second recess and adapted to be positioned in said space between said tray and said racks; and

a plurality of dice for determining whether a participant will retain one of the aforementioned game pieces during the course of play.

4,084,817
CUSHION BLOCKS
Thomas M. Camilleri, 277 Ave. W, Brooklyn, N.Y. 11226
Filed Apr. 26, 1976, Ser. No. 680,182
Int. Cl.[2] A63D *5/00*
U.S. Cl. 273—53 **19 Claims**

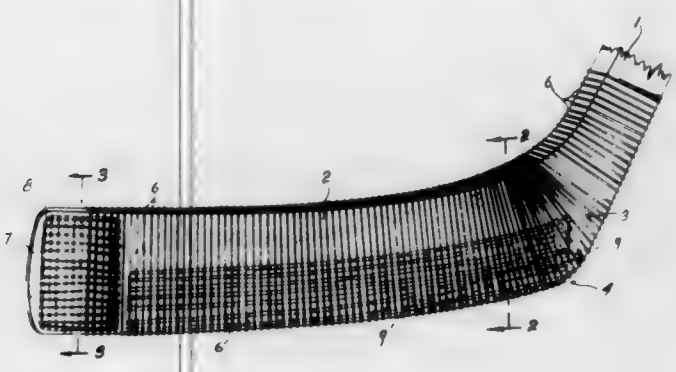


12. In an automatic pinsetter or pinspotter having a bowling ball backstop supported by a cylinder, each end of the cylinder being supported in a U-shaped block, the improvement which comprises providing each U-shaped block with a layer of cushioning material on the inner surface thereof to provide a bearing surface for the cylinder and with a locking member to lock the cylinder therein.

4,084,818
HOCKEY STICK WITH REINFORCEMENT FILAMENT WINDING
Marcel Goupil, 948 Chasse Street, and Marc Ruel, 265 Lemire Boulevard, both of Drummondville, Quebec, Canada
Filed Jan. 14, 1977, Ser. No. 759,312
Int. Cl.[2] A63B *59/14*
U.S. Cl. 273—67 A **4 Claims**

1. A hockey stick having a handle and a blade connected to the handle at an angle by means of a junction area, part of the handle, the junction area and at least part of the blade being covered by a spiral winding of a high tensional strength continuous yarn wound in a single layer without intersection of the yarn, the tension applied to the winding amounting to between 20% and 50% of the total tensional strength of the yarn, each coil of the yarn being inclined not more than 12° relative to the respective longitudinal axes of the handle and of the blade, the

orientation of the coils covering the junction area progressively changing from the orientation of the coils covering part



of the handle to the orientation of the coils covering at least part of the blade.

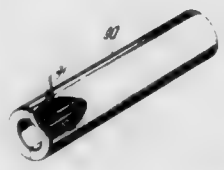
4,084,819

GOLF CLUB SHAFT FOR IRONS

Richard L. Van Auken, Somerville, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Nov. 2, 1976, Ser. No. 738,277
Int. Cl.[2] A63B *53/10*
U.S. Cl. 273—80 R **6 Claims**





1. In a golf shaft having a tubular metallic core and a graphite fiber reinforced sheath on the surface thereof, said tubular metallic core having a tip section, body section and butt section, the improvement comprising: a graphite fiber reinforced tubular resin body inserted in and adhesively bonded to the interior surface of the tip section of said tubular metal core, said tubular resin body having unidirectional continuous graphite fibers embedded therein, said graphite fibers being oriented at a predetermined angle with respect to the longitudinal axis of the tubular metal core.

4,084,820

JET LAUNCH TOY

Knute E. Olson, Jr., 190 Plain St., Brockton, Mass. 02402

Continuation-in-part of Ser. No. 586,956, Jun. 6, 1975, abandoned. This application Mar. 8, 1976, Ser. No. 664,485
Int. Cl.[2] A63B *65/12*
U.S. Cl. 273—96 R **1 Claim**

1. A jet launching toy comprising in combination,

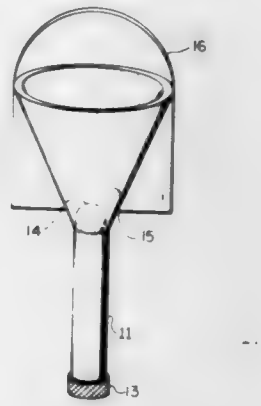
a hollow jet launching tube having a ball shaped missile receiving end and a hand striking end to receive compressed air,

a tight ball shaped missile for inserting in one end of said tube whereby a user can strike the hand striking end with his cupped hand to launch said missile,

a rubber end ring at said hand striking end to protect the users hand,

a funnel shaped end at said missile launching end to catch returned missiles,

an end board attached to said funnel for batting back missiles,



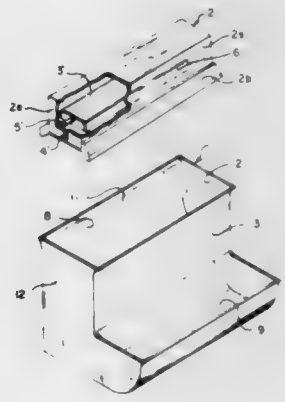
a forward leaning board to divert launched missiles, and collumnating jet ring at said launching end.

4,084,821

MAGNETIC COLLECTION DEVICE FOR BINGO CHIPS AND SIMILAR GAME PARTS

Sam S. Vidnovic, 2803 Lafayette St., McKeesport, Pa. 15132

Continuation-in-part of Ser. No. 674,485, Apr. 7, 1976, Pat. No. 4,046,383. This application Jun. 15, 1977, Ser. No. 806,752
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—148 R **2 Claims**



1. An apparatus for collecting game playing markers comprising:

(a) a plurality of markers of material which is attracted by a magnetic force;

(b) a magnet;

(c) a hollow non-magnetic housing adapted to receive said magnet,

(1) said housing having sufficient interior dimension to allow said magnet to be moved a significant distance away from the interior surface of the bottom of said housing; and

(2) said magnet being normally disposed against said interior surface of the bottom of said housing whereby said markers are attracted to and held against the exterior surface of the bottom of said housing;

(d) means for moving said magnet within said housing away from the interior surface of the bottom of said housing whereby said markers are released; and

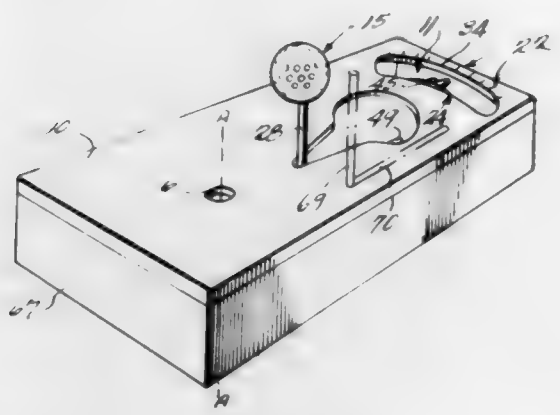
(e) a container of non-magnetic material having L-shaped sides, an open top, a front wall, open trough, and contoured base and back member, said container being adapted to engage and activate said magnet moving means when said housing is inserted in said open top to move said magnet away from the interior surface of the bottom of said housing to release the markers into said container.

4,084,822

GOLF PRACTICE DEVICE

John H. Keeton, P.O. Box 278, Taylor Blvd., Campbellsville, Ky. 42718

Filed Oct. 14, 1976, Ser. No. 732,374
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—185 D **15 Claims**



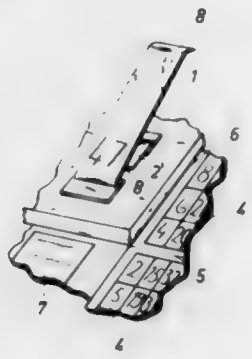
1. A golf practice device comprising
(a) a plate having a first opening formed therein,
(b) indicia cooperating with said opening and readable through said first opening,
(c) a practice golf ball rotatable with respect to said plate and adapted to be struck by a club,
(d) first means for indicating the push or pull of the practice ball when struck by a club.
(e) second means for indicating the distance of travel of the practice ball when struck by a club,
(f) third means for indicating the hook or slice of the practice ball when struck by a club, and
(g) means for mounting said first, second, and third indicating means so that all said means cooperate with said plate opening so that the distance, hook or slice, and push or pull of the practice ball may be determined merely by observing the plate opening and indicia cooperating therewith.

4,084,823

BINGO GAME

Lars Roger Häggedal, Värvadersgatan 21, Göteborg, Sweden (S-417 31)

Filed Sep. 28, 1976, Ser. No. 727,425
Claims priority, application Sweden, Oct. 1, 1975, 7510986
Int. Cl.[2] A63F *3/06*
U.S. Cl. 273—269 **5 Claims**



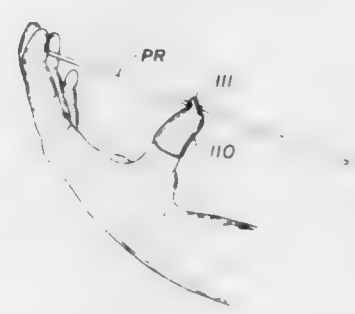
1. An improved game for playing the game of chance known as "bingo", comprising an individual playing-card section for each one of a number of players, said section having a plurality of numbers, grouped in rows and marked off by the players as the respective numbers are drawn, until according to the rules, one of the players has the particular combination, i.e. "bingo", the improvement comprising a draw section for each player in addition to said playing-card section, said draw section being provided with a plurality of flexible, encased and rolled-up tapes, a free end on each tape serving as a pulling tab for pulling said tape out, a concealed number provided on each one of said tapes, whereby said number may be read for subsequent marking-off on said playing-card section only after the greater length of said tape has been pulled out, and passage slots in said draw section, each tape extending through its associated slot, said slots being provided with means to allow easy pulling-out of said tape but to prevent re-insertion of said tape to conceal the number already drawn.

4,084,824

DEVICE TO ASSIST IN HOLDING A PLAYING RECORD TO CLEAN THE SAME AND THE METHOD OF USING THE SAME

Christopher G. Kalivas, 104 Pine Neck Ave., East Patchogue, N.Y. 11772

Filed Aug. 4, 1976, Ser. No. 711,653
Int. Cl.[2] G11B *3/58;* **B65G** *7/12*
U.S. Cl. 274—1 R **1 Claim**



1. A method of cleaning a playing record utilizing a playing record retainer which retainer comprises means constituted for securing the same to the end of the thumb, said means including means extending from an end thereof for insertion into the center hole of a playing record for retaining the record by pressure exerted by the hand of the holder between said retaining means and the remaining digits of the hand juxtaposed to said retaining means at the circumferential edge of the record, said method comprising the steps of placing the retainer on the thumb of one hand, inserting the insertion and retaining means into the center hole of a playing record and grasping the record by placing the remaining digits of the hand around the circumferential edge of the record, and exerting pressure between the remaining digits and the insertion means, then cleaning the record.

4,084,825

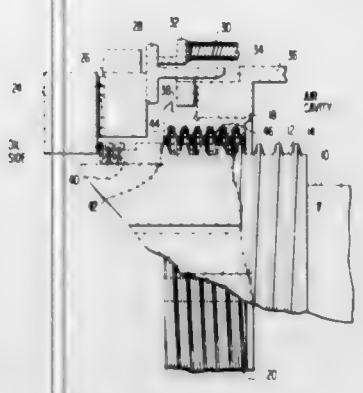
COUNTER PUMPING DEBRIS EXCLUDER AND SEPARATOR

Lawrence P. Ludwig, Fairview Park, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 31, 1976, Ser. No. 672,222
Int. Cl.[2] F16J *15/40*
U.S. Cl. 277—25 **3 Claims**

1. In apparatus for preventing entry of debris into an engine along a rotating shaft;
a sealing comprising a non-rotating member biased into engagement with a seat rotating with said shaft;
a housing having a bore for receiving said shaft;
a first series of teeth on said rotating shaft defining a first helical-shaped grooved pattern, said first helical-shaped pattern having a pumping direction toward said seal so that rotation of said shaft pumps the pressurizing gas toward said seal while inducing a swirl motion whereby entrained debris is centrifuged outward; and
a second series of teeth in said bore spaced outward from said rotating shaft defining a second helical-shaped grooved pattern, the space between said rotating shaft and said housing defining a chamber for said seal pressurizing gas with said first and said second series of teeth forming

opposed walls of said chamber which provides the sole passage for circulation of said seal pressurizing gas to and from said seal, said second grooved pattern having a



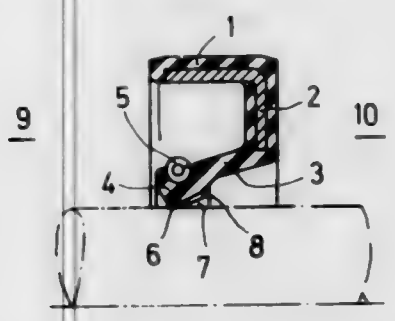
pumping direction opposite to that of said first helical-shaped grooved pattern whereby the centrifuged debris is pumped away from said seal.

4,084,826

SHAFT SEAL RING

Paul Vossieck, and Hans Deuring, both of Burscheid, Germany, assignors to GOETZEWERKE Friedrich Goetze AG, Burscheid, Germany

Filed Dec. 17, 1976, Ser. No. 751,894
Claims priority, application Germany, Dec. 18, 1975, 2556992
Int. Cl.[2] B61F *15/22*
U.S. Cl. 277—134 **7 Claims**



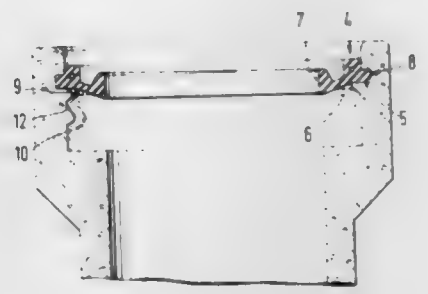
1. In a shaft seal ring having a resilient sealing lip provided with a contact face oriented at an inclined angle with respect to the seal ring axis; the contact face including a sealing edge for circumferentially engaging the surface of a shaft on which the shaft seal ring is mounted; the sealing edge determining a liquid side and an air side for the shaft seal ring; the contact face being provided with a plurality of circumferentially disposed ribs oriented at alternatingly opposite inclination with respect to the sealing edge; any adjoining, oppositely inclined two ribs constituting first and second ribs that meet at a point of intersection on the sealing edge and form first rib pairs; said first rib pairs being disposed at the air side; the improvement comprising a second rib pair provided in the area bounded by each said first rib pair; each second rib pair being formed by a third rib and fourth rib terminating on the first and second rib, respectively, of the associated first rib pair at a distance from their said point of intersection; said third rib having a reverse direction of inclination with respect to the first rib on which it terminates and said fourth rib having a reverse direction of inclination with respect to the second rib on which it terminates; the area bounded by said sealing edge and located externally of the areas bounded by each said first rib pair being rib-free and thereby reduce the total contact area of the ribs of said seal in the area bounded by the sealing edge.

4,084,827

JOINT FOR PIPES

Franz-Josef Wolf, Sprudelallee 19, D6483 Bad Soden Salmunster, Germany

Filed Jun. 28, 1976, Ser. No. 700,627
Claims priority, application Germany, Jul. 12, 1975, 2531318
Int. Cl.[2] F16J *15/02*
U.S. Cl. 277—168 **5 Claims**



1. A joint for pipes, particularly for pipes made of mineral materials and having high tolerances and subject to out-of-roundness, comprising:

(a) an outer sleeve for supporting a gasket ring and for receiving an inserted pipe, said sleeve having:

(i) an annular slot for receiving a portion of a gasket ring,

(ii) an inwardly projecting ring axially inwardly of said slot, and

(iii) an annular chamber axially inwardly of said ring, said annular chamber being defined by a first slope which is outward and downward in the direction of insertion of a pipe and a second slope which is inward and downward in said direction and is adjacent to said first slope,

(b) a gasket comprising:

(i) a guard ring inserted into said slot,

(ii) a radial cross piece extending radially inwardly from said guard ring prior to insertion of a pipe and engaging said ring of said sleeve after insertion of a pipe, and

(iii) a flange ring connected to said guard ring by said cross piece and being radially inwardly of said guard ring prior to insertion of a pipe and filling said annular chamber after insertion of a pipe, said flange ring comprising a packing washer that points in the direction of a pipe prior to insertion and in the direction of insertion after insertion of a pipe, and

(c) an inserted pipe,

(i) said inserted pipe upon insertion into said gasket ring causing said radial cross piece to engage said ring of said sleeve, and compressing said flange ring in said annular chamber of said sleeve.

4,084,828

BELL-AND-SPIGOT CONCRETE PIPE JOINT WITH PLASTIC LINER RING

David P. Jones, Indianapolis, Ind., assignor to Construction Products Corporation, Indianapolis, Ind.

Filed Jul. 26, 1976, Ser. No. 708,591
Int. Cl.[2] F16L *21/02*
U.S. Cl. 277—207 A **22 Claims**

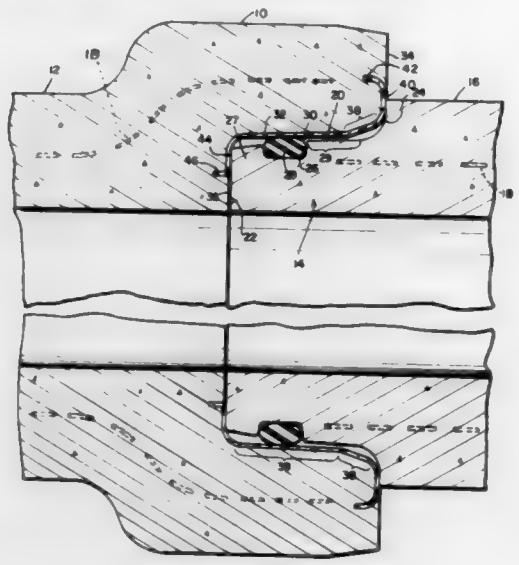
1. A concrete pipe, comprising

a tubular wall having a bell end and a spigot end, the bell end having a circumferentially continuous joint face presented radially inward and extending axially of the pipe, and the spigot end having a circumferentially continuous joint face presented radially outward and extending axially of the pipe,

said joint faces being complementary so as to form a joint between adjoining pipes in a string of such pipes with the spigot end of one received in the bell end of another and sealed with a gasket therebetween,

a liner ring of plastics material lining one of said radially-presented joint faces, said ring having a face-lining portion lying against the gasket-engaging surface thereof, a flange

portion extending radially from said face-lining portion and along a radial face of the pipe, and an edge portion extending axially from the flange portion,



the concrete of the pipe being molded against one face of the face-lining portion and the flange portion and about the edge portion so that such edge portion extends into and is buried in the molded concrete.

4,084,829

FORCE-TRANSMITTING ARRANGEMENT FOR HAMMER DRILLS

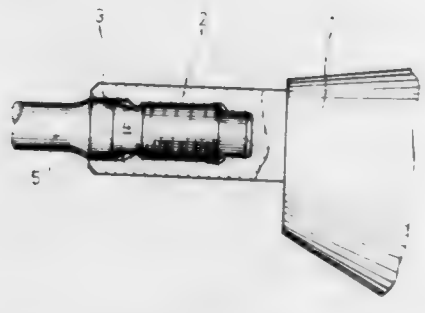
Jörg Fälchle, Bempflinge, and Reinhard Hahner, Kemnat, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 21, 1976, Ser. No. 725,191

Claims priority, application Germany, Oct. 2, 1975, 7531174[U]

Int. Cl.[2] B23B *31/04*; F16B *7/00*

U.S. Cl. 279—99 **9 Claims**



1. An arrangement for transmitting forces between a chuck and a tool element, comprising a threaded connection including an internal thread in the chuck and an external thread on the tool element which have a predetermined mean effective thread diameter and compatible substantially trapezoidal profiles with crests at crest diameters, roots at root diameters, heights each amounting to one-half the difference between the respective crest and root diameters, and respective flanks extending between said crests and said roots of said threads, the respective flank of each of said threads having a respective flat flank surface portion engaging the flat flank surface portion of the associated flank of the other thread when the tool element is mounted in the chuck, said flat flank surface portions of said threads being offset in the radially outward direction with respect to said mean effective thread diameter.

4,084,830

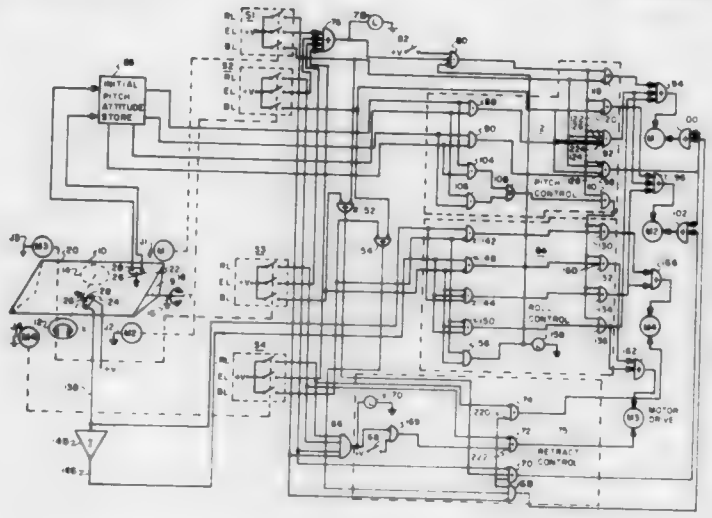
LEVELLING AND STABILIZATION SYSTEM FOR A VEHICLE

James A. Daniel, Jr., 1506 Montdale Rd., Huntsville, Ala. 35801, and John T. Hubbard, Jr., 1706 Rosalie Ridge Dr., Huntsville, Ala. 35811

Filed Apr. 4, 1977, Ser. No. 783,973

Int. Cl.[2] B60G *17/04*

U.S. Cl. 280—6.1 **6 Claims**



1. A levelling and stabilization system for a vehicle comprising:

a plurality of lifting jacks attached to the lower side on each side, fore and aft of the axles of said vehicle, and comprising right and left, front and rear, jacks, each of which includes a ground contacting member, and further comprises:

operating means responsive to an "extend" signal for lowering a said ground contacting member, and responsive to a "retract" signal for raising a said ground contacting member, whereby a said jack may be caused to raise or lower a corner region of the vehicle responsive to a signal, and

ground sensing means responsive to said ground contacting member coming into contact with the ground for providing a "ground contact" signal;

level sensing means comprising:

longitudinal level sensing means responsive to the downward tilt of the front end of said vehicle for providing a "front low" signal, and responsive to the downward tilt of the rear end of said vehicle for providing a "rear low" signal, and

transverse level sensing means responsive to the downward tilt of the left side of said vehicle for providing a "left low" signal, and responsive to the downward tilt of the right side of said vehicle for providing a "right low" signal; and

control means comprising:

first means responsive to an initiation signal and in circuit with and responsive to the presence, and alternately, the absence of a said ground contact signal from front jacks for providing an "extend" signal to each of the front jacks so long as there is an absence of a ground contact signal, and terminating said "extend" signal to a particular one of said front jacks upon the receipt of a ground contact signal from that jack,

second means responsive to a "front low" signal for providing said front jacks an "extend" signal, and alternately responsive to a "rear low" signal for providing a "retract" signal to said front jacks, whereby a vehicle is levelled longitudinally,

third means responsive to a "left low" signal, and alternately, a "right low" signal, and responsive to the absence of a "ground contact" signal from a jack on the low side for providing an "extend" signal to that jack until a ground contact signal is received from it,

fourth means responsive to a "left low" signal, and alter-

nately, a "right low" signal for providing an "extend" signal to the jacks on the side of the vehicle which is low, whereby said vehicle is levelled laterally, and

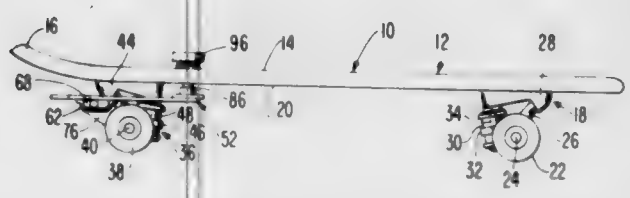
fifth means responsive to the absence of a ground contact signal from any said jack for providing an "extend" signal to that jack until a ground contact signal is provided by it, whereby said vehicle is stabilized.

4,084,831

SKATEBOARD WITH CONTROL UNIT

Ayola Ngwa Akonteh, and Y. C. Richard Kwor, both c/o P.O. Box 6628, Stanford, Calif. 94305

Filed Aug. 9, 1976, Ser. No. 713,068
Int. Cl.[2] A63C *17/14*
U.S. Cl. 280—11.2 **13 Claims**



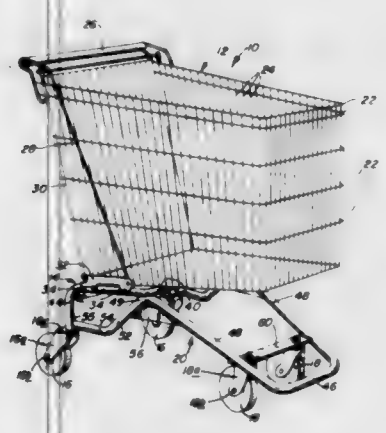
1. A skateboard comprising: a board having an upper surface, a lower surface, and a pair of spaced wheel and axle assemblies mounted on said lower surface to permit the board to move over a support surface, one of the assemblies having a pair of wheels; an elongated frame having a pair of opposed sides; means pivotably mounting the frame adjacent to one end thereof for pivotally mounting the frame on said one assembly to permit said sides of the frame to move into and out of engagement with respective wheels of said one assembly for applying a braking force thereto as said board moves over said support surface; a shiftable actuator accessible to the foot on the upper surface of the board; means coupling the actuator to said frame near the opposite end thereof, said coupling means permitting the frame to pivot about a pair of relatively angularly disposed axes, said actuator being shiftable for moving said frame in one direction and said sides into engagement with said wheels; and means for biasing the frame in the opposite direction.

4,084,832

SHOPPING CART WITH ANTI-PILFERAGE CHARACTER

Clarence Ward Upshaw, Tuttle, Okla., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Aug. 5, 1976, Ser. No. 711,856
Int. Cl.[2] B62B *11/00*
U.S. Cl. 280—33.99 S **2 Claims**



1. In an underframe for a wheeled, nestable, shopping cart that includes a goods-carrying basket supported on a generally planar basket support means that is operatively connected to but spaced above a pair of rear wheels and a pair of front casters, wherein said underframe includes a first U-shaped tubular member whose bight and adjacent portion of the legs of the U are shaped and arranged to provide the generally planar basket support means and with the portions of the legs of said first U-shaped member that are distal from the U's bight being formed to extend downwardly from said basket support means and terminating in laterally spaced upright legs positioned generally above the pair of rear wheels and to which said wheels connect; the improvement comprising, in combination:

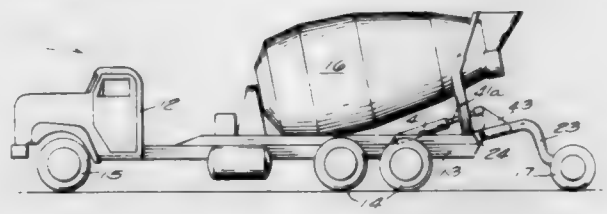
a second U-shaped member with elongated, shaped legs constructed and arranged for directly supporting and rigidifying the upper planar basket support means of said first U-member and for providing lateral and longitudinal rigidification of the lower termini of said upright legs to which the pair of rear wheels connect, said second U-shaped member being shaped, arranged and disposed so that the bight of said second U-member is spaced forwardly of and below the basket support means, the legs of said second U-shaped member extending rearwardly and diverging outwardly from the ends of the second U-member's bight, and being arranged to incline upwardly and rearwardly from said bight to a point at which said legs directly engage and secure to the upper basket support means of the first U-member adjacent a forward portion thereof, said legs then inclining downwardly and rearwardly and being secured at their termini to the downwardly extending leg portions of the first U-shaped member adjacent the lower termini of the legs of the first U-shaped member to provide both lateral and longitudinal rigidification of the downwardly extending distal leg portions of said first U-shaped member.

4,084,833

CASTERED LOAD TRANSFER AXLE STABILIZER

William J. Mohrbacker, Milwaukee, and Earl C. Thayer, Cedarburg, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Nov. 18, 1976, Ser. No. 742,823
Int. Cl.[2] B62D *61/12*
U.S. Cl. 280—81 A **7 Claims**

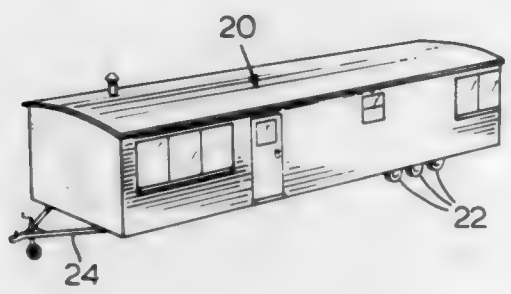


1. An auxiliary load-transfer device for connection to the rear of a truck frame comprising an axle, a castered wheel at each end of said axle and having a steering knuckle, arms pivotally connecting the axle to the truck frame, a first expansible fluid pressure operated means interposed between the truck frame and said axle and operable to provide the selected support of the rear of the truck by said wheels, a supply of fluid under pressure connected to said means and having a manually operable pressure control, a friction brake which is carried by said axle and is connected to said steering knuckles and includes a second expansible fluid pressure operated means, and fluid pressure lines connecting said first and second expansible fluid pressure operated means whereby the amount of load transferred as determined by the manual adjustment of said fluid pressure control determines also the amount of caster damping of the wheels to improve the directional stability of the truck.

4,084,834
MOBILE HOME FRAME

Willi Becker, 1315 Lake Bonavista Drive South East, Calgary, Alberta, Canada

Filed Oct. 4, 1976, Ser. No. 729,057
Claims priority, application Canada, Aug. 12, 1976, 258963
Int. Cl.[2] B62D *21/00*
U.S. Cl. 280—106 T 7 Claims

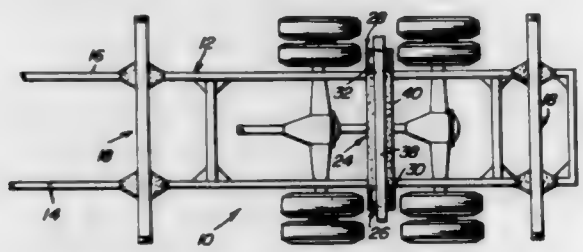


1. An underframe for use in transportable accommodation of the type known as a mobile home, the underframe comprising:
- a pair of longitudinally extending side girders positioned in parallel and spaced from one another by almost the width of the mobile home;
- a plurality of transverse elements having ends rigidly attached to the side girders and spaced from one another, each of the transverse elements having an upper extremity below those of the side girders;
- at least one shallow longitudinal member positioned between the side girders; and
- a plurality of thin plate-like elements attached to the transverse elements and to the longitudinal member to support the longitudinal member in position spaced above the transverse elements, the plate-like elements being positioned to extend longitudinally of the respective transverse elements to which they are attached.

4,084,835
FRAME SAVER FOR LOGGING TRUCKS

Clark V. Spencer, and Benjamin G. Rondeau, both of 6761 Monument Dr., Grants Pass, Oreg. 97526

Filed Jun. 24, 1976, Ser. No. 699,228
Int. Cl.[2] B62D *33/00*
U.S. Cl. 280—148 7 Claims

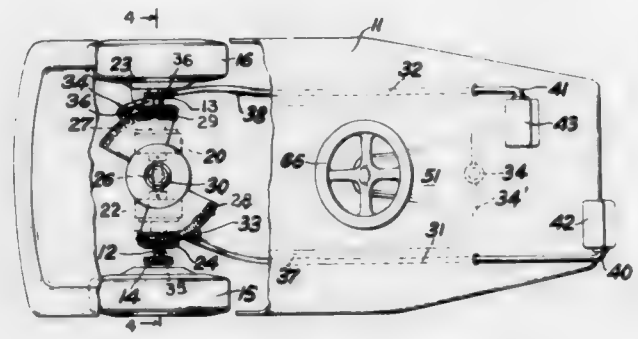


2. In a log-hauling truck including a frame, a plurality of spaced bunks arranged on the frame for supporting logs, and a wheel assembly supporting the frame from a point between the bunks, the improvement comprising false bunk means disposed over the wheel assembly for applying a positive force opposing the weight of logs being supported by the bunks and relieving flexing of the frame; and bracket means for mounting the false bunk means on the frame directly over the wheel assembly, the false bunk means including, in combination:
- (a) a pair of fluid-actuated cylinders mounted on the bracket means and each including a piston rod extending above the frame; and
- (b) a longitudinally extending false bunk mounted on the piston rods and arranged extending transverse of the frame, parallel to the bunks, for assuming part of the weight of the logs on the bunk and relieving flexing of the frame.

4,084,836
PEDAL CAR

Raymond J. Lohr, 5043 Sterrettania Rd., Erie, Pa. 16506

Filed Nov. 16, 1976, Ser. No. 742,185
Int. Cl.[2] B62M *1/04*
U.S. Cl. 280—254 12 Claims

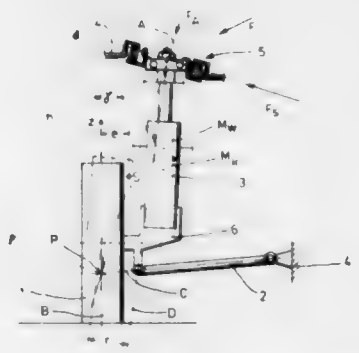


1. A pedal car having a body, said body having a seat,
a rear axle,
a bearing means rotatably supporting said rear axle on said car,
ground-engaging wheels on said axle, at least one said ground engaging wheel being fixed to said axle to rotate therewith,
a bearing plate having a boss thereon fixed to said body
a ring gear having downwardly-disposed teeth and a central opening rotatably receiving said boss,
pinions rotatably received on said axle and engaging said teeth on said ring gear,
a first one-way clutch having a first part and a second part,
and a second one-way clutch having a first part and a second part,
said first parts of said one-way clutches being fixed to said pinions,
said second parts of said one-way clutches being fixed to said axle,
two spaced forwardly-extending rods connected to said ring gear at opposite sides thereof whereby said ring gear is rotated in first direction when said first pedal rod is pushed forward rotating said axle in a first direction through said first one-way clutch, and said ring gear is rotated in a second direction when said second pedal rod is pushed in a forward direction rotating said axle in a second direction through said second one-way clutch.

4,084,837
WHEEL SUSPENSION FOR MOTOR VEHICLES

Peter James Milner, Rugby, England, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Jul. 3, 1975, Ser. No. 593,178
Claims priority, application Germany, Jul. 12, 1974, 2433583
Int. Cl.[2] B62D *17/00*
U.S. Cl. 280—668 5 Claims



1. In a suspension for a steerable wheel of a motor vehicle having a chassis, wherein the suspension includes a wheel

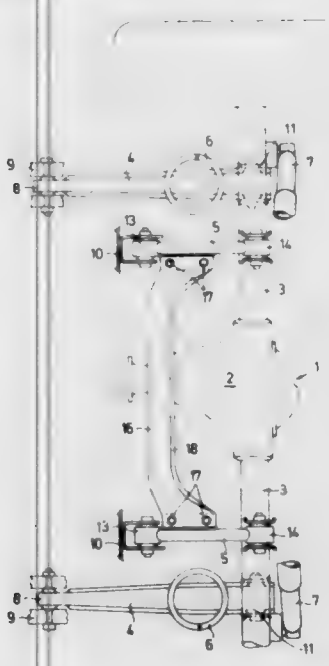
guiding shock absorber having a lower end and an upper end; a wheel carrier rigidly attached to the lower end of the shock absorber; a control arm coupling the wheel carrier to the chassis; and an upper support including a rubber spring unit resiliently connecting the upper end of the shock absorber to the chassis, the improvement wherein said rubber spring unit is constituted by a rubber ring formed of a rubber wall having a thickness less than its height; said wall having upwardly and downwardly oriented end faces; said chassis being in engagement with said rubber ring exclusively at said upwardly oriented end face and said shock absorber being in engagement with said rubber ring exclusively at said downwardly oriented end face for exposing said rubber ring at least approximately exclusively to compression effected by the force generated by the load on the wheel and to be exposed exclusively to shear by lateral forces; said rubber ring yielding more to said lateral forces than to the compression forces generated by the load on the wheel for effecting a low rigidity of the camber angle.

4,084,838

MOTOR VEHICLE REAR AXLE SUSPENSION

Rolf vor der Bruck, Cologne-Porz, and Walter Voll, Odenthal-Voiswinkel, both of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed May 24, 1976, Ser. No. 689,439
Int. Cl.[2] B60G *11/18*
U.S. Cl. 280—715 **11 Claims**



1. A motor vehicle suspension including a wheel support member constructed to rotatably support a road wheel, a vehicle frame and suspension means interconnecting said wheel support member and said frame;

said suspension means comprising a pair of suspension arms pivotally connected to said frame and to said wheel support member;

a coupling element extending between said pair of suspension arms and having its ends non-rotatably secured to said arms;

said coupling element being spaced apart from said frame and from said wheel support member;

said coupling element being rigid with respect to deflection in a horizontal plane;

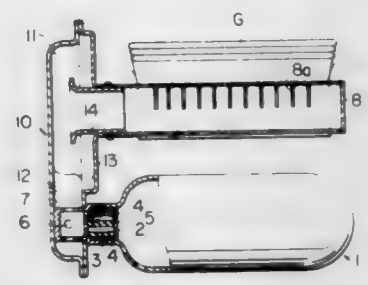
said coupling element being constructed to resiliently resist torsional deflection.

4,084,839

GAS BAG PROTECTION APPARATUS FOR VEHICLES

Shigeru Takagi, Okazaki, and Yoshiyuki Hattori, Nishio, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 12, 1976, Ser. No. 704,557
Claims priority, application Japan, Jul. 14, 1975, 50-86563
Int. Cl.[2] B60R *21/08*
U.S. Cl. 280—736 **16 Claims**



1. A gas bag protection apparatus comprising:

i. A gas bag having a normally deflated condition, said gas bag being inflated operatively upon an emergency;

ii. a diffuser communicated with said gas bag, for feeding high pressure gas into said gas bag;

iii. a gas supply source located in juxtaposed relationship with said diffuser for supplying high pressure gas into said gas bag through said diffuser, for inflating said gas bag;

iv. a residue separating chamber of substantially cylindrical configuration having a slightly conical wall for separating, from the high pressure gas, such residues as produced when the high pressure gas is released and as carried by said high pressure gas, under the influence of the centrifugal forces induced in the gas flow containing said residues;

v. a straight discharge passage connected between said gas supply source and said residue separating chamber for guiding said high pressure gas flow discharged from said gas supply source into said residue separating chamber in the direction tangential to said residue separating chamber, thereby to cause said high pressure gas flow to circulate along the inner periphery of the slightly conical wall of said residue separating chamber; and

vi. a conduit having an inlet end projecting into said residue separating chamber substantially at the center portion of the latter and serving to guide said high pressure gas flow toward said diffuser.

4,084,840

VEHICLE SENSITIVE RETRACTOR

Ernest Dorchester Buff, Bernardsville, and Jonathan Plaut, Summit, both of N.J., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Feb. 23, 1976, Ser. No. 660,593
Int. Cl.[2] A62B *35/02;* B60R *21/10*
U.S. Cl. 280—744 **14 Claims**

1. A safety belt retractor, comprising:

a. support means;

b. reel means rotatably mounted on said support means;

c. belt means attached to said reel means for protraction and retraction with respect thereto;

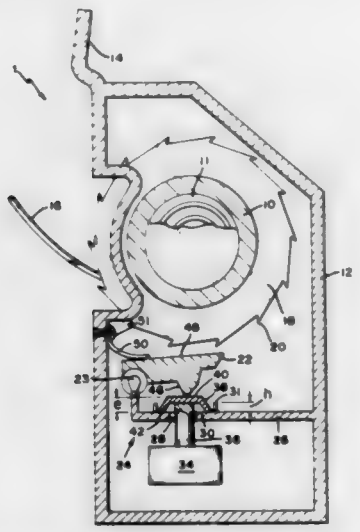
d. biasing means for urging said reel means in a retracting direction;

e. ratchet means mounted in connection to said reel means for rotation therewith;

f. pawl means mounted on said support means for engaging said ratchet means to stop rotation of said reel means and thereby prevent further protraction of said belt means; and

g. actuating means responsive to acceleration of said vehicle and including (1) mounting means comprising a substan-

tially horizontal arm having an aperture therein, (2) pendulum means comprising a pendulum weight on the lower end of a shaft connected at its upper end to a cap having its upper surface contacting said pawl means and its lower surface supported on its outer edge by said arm and (3) stop means positioned on said arm about said outer edge



for preventing horizontal displacement of said cap, said pendulum means being freely suspended from said mounting means and being displaceable by inertia from a normally substantially vertical position, such displacement operating to move said pawl means into engagement with said ratchet means.

4,084,841

AUTOMATIC SEAT BELT APPLYING DEVICE

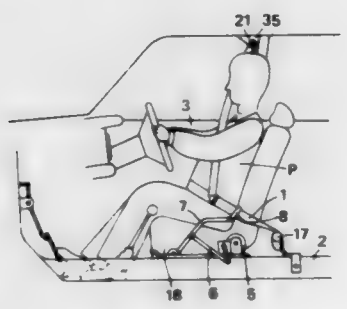
Toshiaki Hayashi, Kasugai; Hiroshi Sugiura; Toshio Ozaki, both of Toyota; Eiji Sugimoto, Toyota, and Yukio Banno, Toyohashi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 7, 1972, Ser. No. 224,079

Claims priority, application Japan, Feb. 11, 1971, 46/5842[U]; Apr. 1, 1971, 46/23729[U]; Apr. 1, 1971, 46/19887; Apr. 1, 1971, 46/19888; Apr. 1, 1971, 46/19889

Int. Cl.² B60R *21/10*

U.S. Cl. 280—745 **7 Claims**



1. An automatic seat belt applying device for a vehicle comprising: seat belt means adapted to confine an occupant of a seat to a back rest thereof; a spring-loaded retractor secured to a lower inboard portion of a vehicle body; at least one supporter mounted on the outer marginal portion of a door which is hingedly supported at its inner marginal portion by said vehicle body; said seat belt means being connected at one end thereof to said retractor to be wound thereon by the resilience of said spring and rotatably at another end thereof to said supporter; and guide means connected to a portion of said vehicle body inboard of and separated from the door for loosely supporting an intermediate portion of said seat belt means, said guide means being adapted to move away and toward said seat in response to opening and closing of said door.

4,084,842

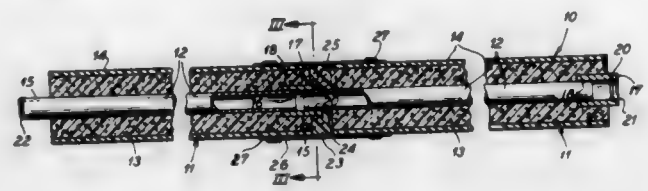
CONDUIT SYSTEM WITH EXPANSION COUPLING

Lawrence Stonitsch, 2564 Crystal Dr., Joliet, Ill. 40435, and Richard W. Stonitsch, Rte. 1, Mound Rd., Joliet, Ill. 60436

Filed Jul. 12, 1976, Ser. No. 704,332

Int. Cl.² F16L *11/12*

U.S. Cl. 285—47 **17 Claims**



1. A conduit system comprising a plurality of insulated conduit units joined end-to-end in sealed and insulated expansible and contractible relation, each unit having an internal length of pipe, an external tubular jacket, and a mass of insulation between the pipe and jacket, each pipe having a male end projecting beyond the jacket and insulation and a female opposite end, said female end having a coupling tube telescoped thereover and projecting axially therefrom, a bond integrating the telescoped end of the coupling tube with the pipe in fixed sealed relation, said coupling tube projecting beyond the jacket and insulation and having an internal groove adjacent the projected end thereof, an elastometric O-ring in said groove, the male end of one unit snugly slidably fitted in the coupling tube on the female end of an adjacent unit and sealed therewith by said O-ring, a flexible insulation ring squeezed between and in contact with the insulation of adjacent units receiving the male end of one unit therethrough and embracing and contacting the projecting end of the coupling tube, a jacket sleeve embracing the insulation ring and the ends of the jackets of adjacent units, said male end of said internal length of pipe of each unit being shiftable in said insulation ring and mass of insulation to accommodate expansion and contraction without shifting said external jacket and said mass of insulation, said insulation ring positioning the termal end of said male end of the pipe in said coupling tube axially between the O-ring and the terminus of the adjacent pipe in the coupling tube, and means sealingly joining the jacket sleeve with the jackets whereby the male ends of the units are slidably sealed with the female ends of adjacent units to accommodate expansion and contraction of the conduit system and the mated conduit ends are insulated by the insulation ring with the insulation ring being sealed by the jacket sleeve.

4,084,843

QUICK-ACTING HOSE OR PIPE COUPLING

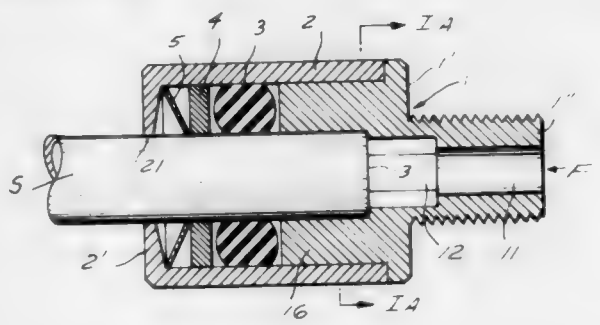
Willy Gassert, Hauptgasse 59, Solothurn, Switzerland (CH-4500)

Filed Apr. 30, 1976, Ser. No. 682,034

Claims priority, application Switzerland, May 2, 1975, 5711/75; Aug. 1, 1975, 10165/75

Int. Cl.² F16L *33/16*

U.S. Cl. 285—105 **12 Claims**



1. A quick-acting coupling for connecting a source of pressure fluid to a tube, comprising:

a housing having a shell centered on an axis of an associated nipple, a first end wall transverse to said axis with an inlet for axial admission of said pressure fluid and a second end wall transverse to said axis with an opening for the axial insertion of an extremity of said tube;

at least one dished annular spring in peripheral contact with said shell, said spring having a pair of faces assuming in its unstressed state a frustoconical shape convex toward said inlet, said spring being disposed in said housing coaxially with said shell adjacent said second end wall and having a central aperture in line with said opening for penetration by the inserted tube extremity;

centering means for said tube extremity in said housing including an annular thrust member axially slidable in said shell and coaxially juxtaposed with said spring between the latter and said first end wall, said centering means forming a socket of the same diameter as said opening and aligned therewith for receiving the end of the inserted tube extremity, said central aperture having a diameter slightly exceeding that of said socket and of said opening in said unstressed state whereby said tube extremity can be freely inserted and withdrawn without contacting said spring, said thrust member being axially shiftable by the pressure of fluid from said source for deforming said spring into gripping engagement with said tube extremity; and

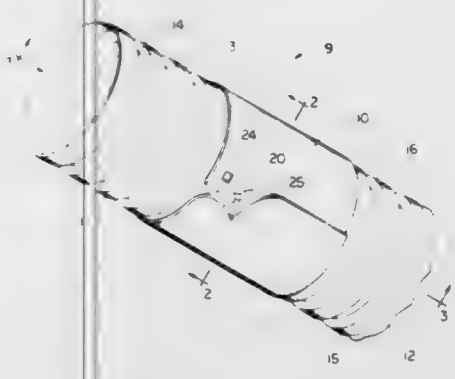
indexing means in said housing for releasably arresting said thrust member in an advanced position in which said spring is held deformed.

4,084,844

DEVICE FOR CONNECTING CORRUGATED DRAINAGE TILES AND THE LIKE

Larry David Abner, R.R. 1, Norman, Ind. 47264

Filed Dec. 27, 1976, Ser. No. 755,152
Int. Cl.[2] F16L *21/06*
U.S. Cl. 285—373 **3 Claims**



1. A device for coaxially connecting drainage tiles and the like having external, circumferential channels which comprise:

a sleeve member having a first end a second end, said sleeve member including a plurality of spaced apart tabs extending from a first side of said sleeve member and adapted to be received within the circumferential channels in coaxial, corrugated drainage tiles; and

means for securing the first end of said sleeve member adjacent to the second end of said sleeve member to secure said sleeve member about the corrugated drainage tiles with the tabs received within the circumferential channels of the corrugated drainage tiles, said means is for securing together the first and second ends in overlapping relation, said means including a first tab adjacent the first end of said sleeve member, the first tab extending from a first side of said sleeve member and being adapted to be received within a circumferential channel in a corrugated drainage tile, the first tab having an interior chamber including an opening at the second side of said sleeve member, said means further including a second tab adjacent the second end of said sleeve, the second tab extending from the first side of said sleeve member and adapted to be received within the interior chamber of the first tab.

4,084,845

SECURITY LOCK FOR EMERGENCY DOOR LATCH MECHANISM

Robert L. Eckert, 11231 Foster Rd., Los Alamitos, Calif. 90720

Filed Jun. 14, 1976, Ser. No. 695,792
Int. Cl.[2] E05C *15/02*
U.S. Cl. 292—92 **9 Claims**



1. A security lock for door latches and the like having a crash bar extending transversely across the inner face of a door and mounted at its opposite ends by each of a pair of parallel bar arms that are pivotally carried by pin means on side bracket means secured to said door and that are mechanically linked to move the bolt of said latch between closed and open positions which comprises:

a bracket arm with means for its pivotal mounting to said side bracket means;

cover bar means mounted on the free end of said bracket arm and extending therefrom to overlie a distal portion of said crash bar; and

locking means mounted on said bracket arm for fixedly restraining said bracket arm in a raised position against pivotal movement while permitting said crash bar to move between latch closed and latch open positions.

4,084,846

UNIVERSAL SUPPORT ASSEMBLY FOR DRAG REDUCING EQUIPMENT

Nathaniel C. Wiley, Jr., Weston, and William L. Jensen, Jr., Beacon Falls, both of Conn., assignors to Rudkin-Wiley Corporation, Stratford, Conn.

Filed Aug. 20, 1976, Ser. No. 716,127
Int. Cl.[2] B62D *35/00*
U.S. Cl. 296—1 S **19 Claims**



1. Apparatus for supporting and securely mounting drag reducing equipment to a land transport vehicle comprising:

A. a telescoping, interlocking, elongated support member, adjustably securable and firmly lockable in a plurality of various lengths;

B. a first bracket pivotally secured to a forward portion of the elongated support member and positioned for bolting directly to the roof of the land transport vehicle;

C. a second bracket

a. pivotally secured to a rear portion of the elongated support member, and

b. adjustable in a plurality of lengths for securement to the land vehicle at the optimum location regardless of the vehicle configuration;

D. a drag reducer support bracket pivotally secured to the elongated support member and adjustably securable in a plurality of positions along the elongated support member; and

E. a drag reducer supporting strut pivotally secured to the drag reducer and adjustably securable to the elongated support member in a plurality of various positions along the length of the strut and along the length of the elongated support member

whereby the drag reducing equipment can be securely supported and mounted in any desired orientation to any land vehicle regardless of the vehicle's configuration.

4,084,847

SEAM IN A BODY OUTER PANEL OF A VEHICLE

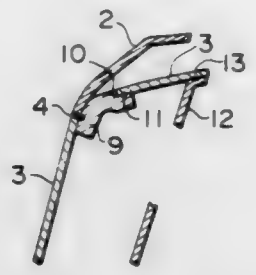
Masatsune Kondo; Yoshiaki Sawami, and Yukio Tamura, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 29, 1976, Ser. No. 709,723

Claims priority, application Japan, Aug. 6, 1975, 59-95561

Int. Cl.[2] B62D *27/00*

U.S. Cl. 296—28 R **6 Claims**



1. A seam structure for a body outer panel of an automobile, comprising:

a roof panel having a downward directed edge;

a rear quarter panel having an inwardly curved upper end portion having a slit opening and an upper extension located above said slit opening for connection with a third member;

said slit opening defining an upward directed edge to abut said downward directed edge of said roof panel; and

a backing member attached to the rear surfaces of said two panel plates along said abutted edges and having a substantially higher rigidity than said panel plates, wherein said two panel plates and said backing member are welded together along said abutted edges.

4,084,848

SLIDING ROOF ASSEMBLY

Douglas James Cunningham, Steep Marsh, near Petersfield, England, assignor to Britax (Wingard) Limited, Chichester, England

Filed Dec. 22, 1976, Ser. No. 753,117

Claims priority, application United Kingdom, Jan. 14, 1976, 01407/76

Int. Cl.[2] B60J *7/02*

U.S. Cl. 296—137 E **9 Claims**

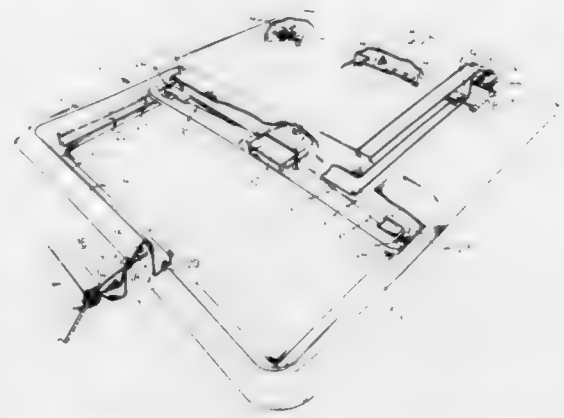
1. A sliding roof assembly for insertion in an opening in a vehicle roof, comprising:

a support structure, said structure being a single piece pressing in the shape of a rectangular frame, said frame having an opening defined by a pair of opposed side members and front and rear cross members;

a rear half of said frame opening being closed off by a first panel, said first panel being integral with said side members and said rear members;

said frame being peripherally bounded by a flange which is integral with and projects outwardly from said members and said front and rear members;

said flange including an upstanding edge which is defined by a first wall which projects downwardly into the frame opening and a second wall which slopes downwardly to a free edge on each side of said frame, each of said free



edges also being defined by an inwardly projecting lip which is provided to rest on the upper surface of the vehicle roof when the support structure is fitted thereto, said inwardly projecting lip being a straight member and having holes for receiving concealed rivets;

a second panel secured to the support structure in overlapping but spaced relationship with the first panel to define a recess therebetween; and,

a closure panel slidably mounted within the support structure and movable between a closed position, in which it closes the frame opening in the front half of said frame, and an open position in which it lies in the recess between said first and said second panels.

4,084,849

BABY CHAIR AND BED

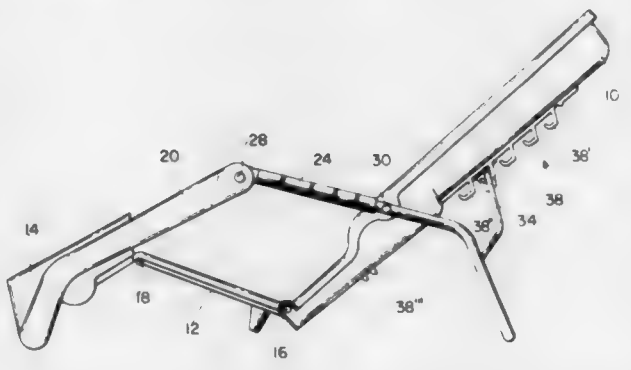
Hajime Ishida, and Mitsuyo Tsumita, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Sep. 24, 1976, Ser. No. 726,231

Claims priority, application Japan, Nov. 15, 1975, 50-155262

Int. Cl.[2] A47C *1/034*

U.S. Cl. 297—22 **6 Claims**



1. A combination chair and bed for children, comprising:

a back,

a seat,

means connecting said back and said seat permitting same to rotate with respect to each other,

a footrest provided with arms on each side thereof,

means connecting said seat and said footrest permitting same to rotate with respect to each other,

a support rod having leg portions spaced apart from each

other terminating in ends and an intermediate connecting portion,

means connecting said ends of said leg portions of said support rod to said arms of said footrest permitting same to rotate with respect to each other,

means connecting said leg portions of said support rod to said back permitting same to rotate with respect to each other,

a locking rod having ends and an intermediate portion,

means connecting said ends of said locking rod to said leg portions of said support rod permitting same to rotate with respect to each other, and

means connecting said intermediate portion of said locking rod to said back at a plurality of positions along said back,

all of said means cooperating so that the components thereof can substantially form a bed in one position thereof, substantially form a chair in another position thereof, and be collapsed for carrying and storage.

4,084,850

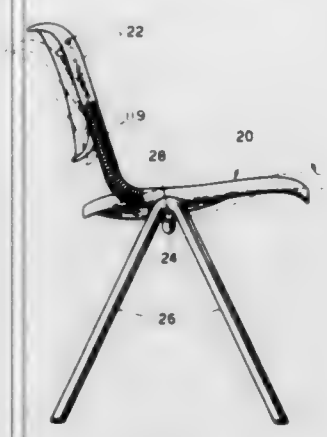
CHAIR

Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 586,794, Jun. 13, 1975, abandoned. This application Sep. 7, 1976, Ser. No. 721,164

Int. Cl.[2] A47C *1/02*

U.S. Cl. 297—317 **36 Claims**



1. A chair comprising a frame that includes at least one back support, a seat-supporting structure, and means rigidly connecting the back support to the seat-supporting structure; a back mounted on the back support, and a seat mounted on the seat-supporting structure, the seat-supporting structure including at least one elongated member that extends lengthwise of the chair under the seat and has an elongated front portion rigidly supported from the rear in cantilevered relation to the remainder of the chair frame, the at least one elongated member having thereon laterally spaced-apart parallel elongated seat supports, the seat supports being of substantially uniform external cross-section throughout their lengths and having axes extending lengthwise of the chair in substantially parallel vertical planes, and the seat having a pair of laterally spaced-apart elongated sleeves, each of which is of substantially uniform internal cross-section along its length, is substantially coextensive with a corresponding seat support, and receives a corresponding one of the seat supports in sliding relation therein, such that the seat is slidable backward and forward on the seat supports, means resiliently urging the seat to its rearward limit position on the seat support, coacting means on the seat and the seat supports for limiting the extent of movement of the seat on the seat supports, and means mounting the back on the back support for tilting movement independently of movement of the seat about a substantially horizontal transverse axis and resiliently urging the back about said axis to a relatively upright position.

4,084,851

DETACHABLE, SELF-DUMPING, SELF-RETRACTING CARGO BIN FOR PICKUP TRUCKS

William W. Duncan, Sr., 4771 E. Live Oak, Lodi, Calif. 95240

Filed Feb. 25, 1977, Ser. No. 772,088

Int. Cl.[2] B60P *1/30*

U.S. Cl. 298—14 **12 Claims**



10. That improvement in a pickup truck having a cargo space rearward of the driver's compartment which improvement comprises:

a self-dumping self-retracting cargo bin having a normally closed closure for the rear end thereof and provided on the opposite ends of the bottom thereof with roller means movably supporting said bin for rolling movement lengthwise of said truck cargo space and along a floor when demounted from said cargo space;

fulcrum means readily mounted at the rear end of said truck cargo space and attachable to and detachable therefrom without need for tools and including roller means engageable with stop means near the midlength of said cargo bin on which said bin can pivot downwardly to dump the contents thereof as said bin rolls partially out of the rear end of said cargo space; and

tension spring means having the upper end thereof fixed to the upper forward end of said bin and the lower end thereof readily detachably connected to said truck forwardly of the forward end of the bin when retracted into the truck cargo space and effective to tilt and retract the bin automatically back to the forward end of said cargo space as an incident of the final phase of dumping the contents thereof.

4,084,852

ROLL-OVER PROTECTION STRUCTURE FOR DUMP TRUCK

John R. Prosek, Glen Ellyn, and James C. Tamburino, Roselle, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jul. 22, 1976, Ser. No. 707,802

Int. Cl.[2] B60P *1/00*

U.S. Cl. 298—22 C **3 Claims**

1. In a truck having a frame, an operator's cab mounted on the frame and a dump body capable of being pivoted between a lowered transport position and a raised dump position, the improvement comprising;

a canopy rigidly secured to the dump body and projecting forwardly over at least a portion of said cab;

a central rib affixed to, and extending a substantial distance along the underside of said body and projecting outward therefrom;

a pair of centering towers rigidly affixed to the frame and defining a pocket therebetween for reception of said rib, said towers and said rib, when positioned in said pocket, serving to maintain the dump body in its normal transport position upon application of a side load to the dump body;

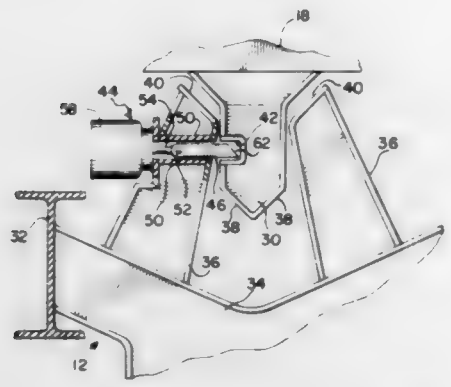
slanted surfaces on said rib and said towers for guiding said

rib into said pocket as the body is pivoted to its lowered position;

a guideway carried by one of said towers;

a latch bolt reciprocable within said guideway;

a recess in said rib capable of registry with said latch bolt;



a latch cylinder having a piston and a rod affixed to said one tower;

a compression spring trapped within said latch cylinder behind said piston; and

means for directing fluid pressure to the latch cylinder to retract said latch bolt from said recess.

4,084,853

HOPPER DEVICE FOR TRACTOR VEHICLES

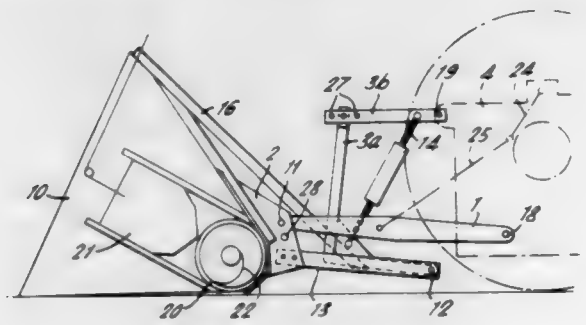
Richard Keenan, Walcott, Bagenalstown, County Carlow, Ireland, assignor to Richard Keenan; Patrick Keenan and John Keenan, Ireland, part interest to each

Filed Feb. 24, 1976, Ser. No. 660,795

Claims priority, application Ireland, Feb. 24, 1975, 381/75

Int. Cl.[2] E02F *5/00*

U.S. Cl. 298—24 **8 Claims**



1. The combination of a tractor vehicle and a hopper mounted on the tractor vehicle, said hopper having a plurality of sides and a bottom and movable from a lower position to a raised position, a pair of lifting links pivoted on a portion of the tractor vehicle below the rear axle thereof the tractor having an upper anchorage point thereon above said axle, a pivot in the region of the bottom of the hopper for the pivotal attachment of each lifting link to the hopper, an arm extending downwardly below the bottom of the hopper in said raised position, a pivot bearing on said arm spaced from the hopper bottom and a connecting link extending downward below said lifting links to provide a pivotal connection between said pivot bearing and said upper anchorage point on the tractor vehicle.

4,084,854

DRAG BIT EXCAVATION

Carl R. Peterson, Boxford, Mass., assignor to Rapidex, Inc., Burlington, Mass.

Filed Nov. 1, 1976, Ser. No. 737,068

Int. Cl.[2] E21C *27/22, 29/24*

U.S. Cl. 299—57 **3 Claims**

1. In a drag bit excavating device having a plurality of cutting elements, each said element comprising

a core extending along an axis,

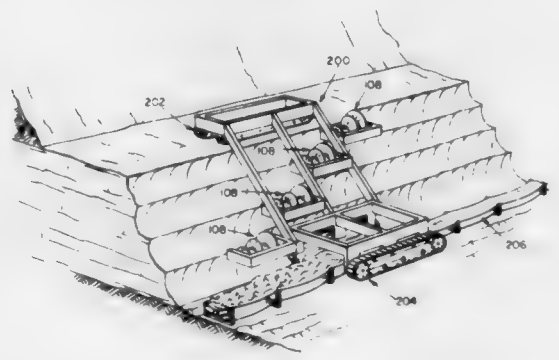
a bit carrier supported on said core,

cutter bits supported by said carrier along a three dimensional spiral having constant pitch and increasing radius along at least a portion of said axis,

said carrier being relieved to provide radially extending spaces between the turns of said spiral,

a frame supporting said core, carrier, and bits for rotation about and advance parallel to said axis, and,

a drive to provide said rotation, whereby said bits slot the



material to be excavated while said material between portions of the resulting slot extends into said spaces to be subsequently broken away,

that improvement comprising support means for supporting said elements in an array sloping along a plane with their respective said axes parallel to each other, said plane sloping in a direction transverse to said axes, said axes being spaced along said plane in said direction of slope, said elements having their drives arranged so that each core, carrier, and bit assembly rotates clockwise when viewed along its axis with said plane sloping upwardly toward the right.

4,084,855

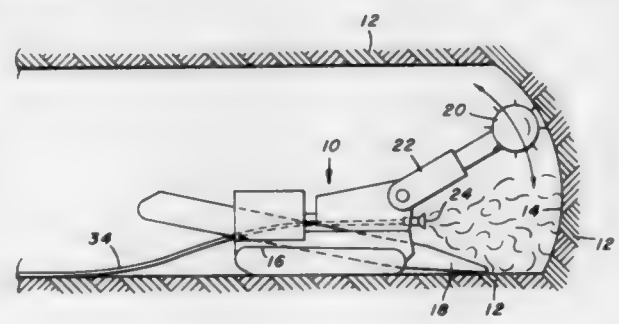
WATER-DRIVEN AIR PUMPING AND DUST-SUPPRESSING APPARATUS

Roscoe C. Miles, Franklin Township, Westmoreland County, Pa.; Joseph Subrick, Gary, W. Va., and Woods G. Talman, Upper St. Clair Township, Allegheny County, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 24, 1975, Ser. No. 644,251

Int. Cl.[2] E21C *7/08*

U.S. Cl. 299—64 **10 Claims**



1. Fluid-driven air-pumping and mixing apparatus for mixing and diluting impurities in the air with a fluid, said apparatus comprising:

a housing including means defining a longitudinal passage therethrough, said passage defining means being configured having an inlet at one end thereof co-axially located relative to said longitudinal passage, through which air and impurities may enter said housing, and an outlet at the other end, for permitting the exit of the mixed and diluted impurity-air-fluid mixture from said housing, said passage defining means proximate said outlet being configured having substantially linearly arranged diverging interior wall segments for defining a mixing chamber; and

a fluid-dispersing air-driving nozzle, said air-driving nozzle being configured to disperse a solid cone of such fluid

outwardly toward said outlet, said nozzle being positioned centrally within said passage co-axially with respect to said passage and being of a size substantially smaller than said passage for permitting the passage of such air and impurities entering through said inlet to pass thereby, said nozzle having an angle of fluid divergence greater than the angle of divergence of said interior wall segments relative to said longitudinal axis, said nozzle being located substantially along the longitudinal axis of said passage such that the outer portion of its divergent fluid cone impinges on said divergent interior wall segments no further backstream than the beginning of the divergence of said interior wall segments, thereby maximizing the air flow through said passage and outwardly through said outlet as well as mixing such impurities in said mixing chamber with the air and with such fluid.

4,084,856

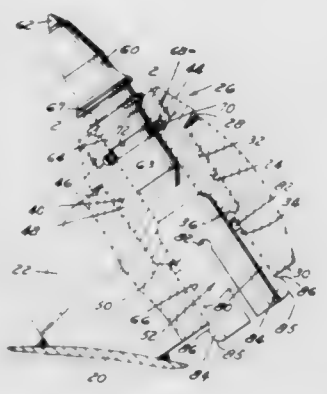
SELF-RETAINING SLEEVE AND BIT

Kenneth C. Emmerich, and Ralston L. Hamlin, both of Lexington, Ky., assignors to Fansteel Inc., North Chicago, Ill.

Division of Ser. No. 656,743, Feb. 9, 1976. This application Sep. 7, 1976, Ser. No. 720,945

Int. Cl.[2] E21C *35/18*

U.S. Cl. 299—86 **2 Claims**



1. A support member for supporting a tool having:

(a) a tool bit with a pointed forward portion and a solid cylindrical rearward shank portion with said portions being co-axial, said support member including a hollow tubular sleeve having an inside diameter adapted closely but freely rotatably to receive the rearward shank portion of the tool bit and having an outside diameter adapted rotatably to be received in a bore in a support block,

(b) said hollow tubular sleeve having at least two circumferentially spaced apart slots extending generally axially therein from the rear end to form at least two finger portions each integral with said sleeve and each being resilient and generally yieldable radially inward adjacent the rear end of the sleeve,

(c) an integral radial projection on the outside of each finger and adjacent the rear end of the sleeve and constructed and arranged for engagement with the support block at the rear end of the bore in the support block to releasably retain the sleeve in assembled relation therewith while permitting the sleeve to rotate freely in the support block,

(d) said sleeve having a rearwardly facing element of abutment means for engagement with the support block and a forwardly facing element of abutment means for engagement with the tool bit, and

(e) means forming a groove in said bore of said sleeve and means forming a groove on the outside of said tool bit rearward shank portion, said grooves being in axial registry when said rearward shank portion of said tool bit is received in said bore of said sleeve with said abutment means engaging each other, said groove in said sleeve being a relatively deep groove in comparison to the groove in said tool bit rearward shank portion, and a resilient ring retained in said sleeve groove having an inner diameter slightly smaller than said tool bit rearward shank portion so as to engage in said groove of said tool bit rearward shank portion to releasably retain said tool bit in assembled relation with said sleeve while permitting relative free rotation of said tool bit and said sleeve.

4,084,857

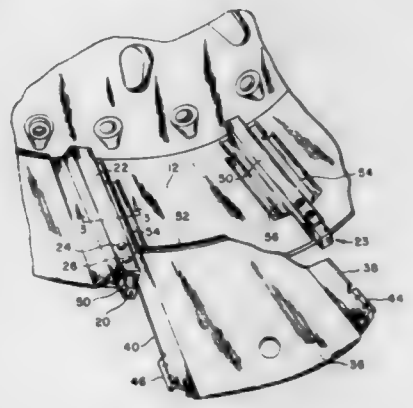
DRIVE KEY HEAT SHIELD AND SUPPORT FOR WHEEL RIM HEAT SHIELD OF MULTIPLE DISC BRAKE

Jaring VanderVeen, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 20, 1976, Ser. No. 752,574

Int. Cl.[2] B60B *19/00*

U.S. Cl. 301—6 A **10 Claims**



1. A wheel and heat shield assembly comprising:

a tire supporting wheel rim defining a brake cavity adapted to receive a brake assembly, said brake assembly having rotatable and non-rotatable frictionally engageable members;

circumferentially spaced elongated drive key means carried by said wheel rim said drive key means extending radially inwardly from said wheel rim into engagement with said rotatable members;

a plurality of rim heat shield members each being independently and removably secured in position between said drive key means to define a substantially continuous annular wall having radially spaced-apart relationship to said wheel rim; and

each of said drive key means including a boss member carried by said wheel rim, a cap key member removably secured to said boss member so that said cap key member engages said rotatable members, and a key boss cap heat shield member disposed between said cap key member and said boss member, with said key boss cap heat shield member extending over said boss and interconnecting adjacent said rim heat shield members, said interconnection adapted to maintain said independent removability of said rim heat shield members from said assembly.

4,084,858

UNCOUPLING VALVE WITH OVERRIDE FEATURE

Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Mar. 30, 1977, Ser. No. 783,037

Int. Cl.[2] B60T *7/12*

U.S. Cl. 303—18 **7 Claims**

1. In combination with a rail car brake system having a supervisory pneumatically pressurized pipe for controlling braking operations, an improved coupler valve circuit for interconnecting supervisory pipes in adjacent rail cars, said valve circuit comprising:

a valve body adapted to be attached to said supervisory pipe;

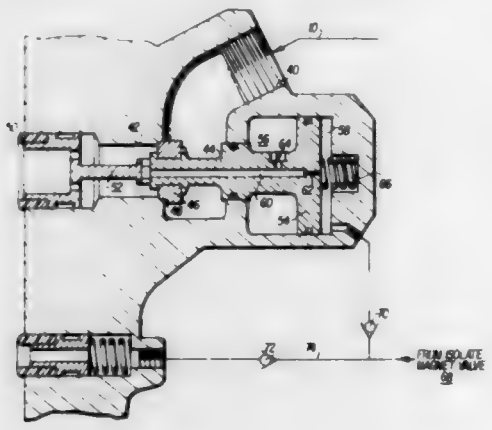
a bore in said valve body communicating with said supervisory pipe, said bore having a valve seat therein;

a valve carrier mounted for translation in said bore, said carrier having a valve element adapted to contact said valve seat to prevent flow of fluid from said supervisory pipe through said bore;

extension means attached to said valve carrier for contacting a like extension means in an adjacent car and for holding said valve element away from said valve seat when two cars are coupled;

piston means attached to said valve carrier for translation therewith in said bore, said bore defining a first chamber on one side of said piston and a second chamber on the other side of said piston;

means for pressurizing both said first and second chambers to the pressure in said supervisory pipe when said valve element is out of contact with said valve seat;



means for permitting one of said first and second chambers to depressurize more rapidly then the other to momentarily hold said valve element out of contact with said valve seat, whereby said supervisory pipe depressurizes when two adjacent cars are accidentally uncoupled; and

means for selectively pressurizing the other of said first and second chambers to force said valve element into contact with said valve seat, whereby said supervisory pipe remains pressurized when two adjacent cars are intentionally uncoupled.

4,084,859

TOWED VEHICLE BRAKE

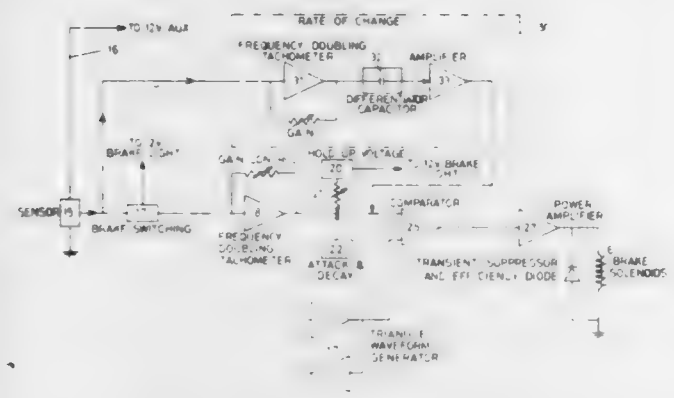
Jeffrey Lawrence Bull; Tanya Ellen Murphy, and Laurence Ernest Gibson, all of Adelaide, Australia, assignors to Ian R. Murphy, Valley View, Australia, by said Tanya Ellen Murphy

Filed Mar. 21, 1977, Ser. No. 779,497

Claims priority, application Australia, Mar. 25, 1976, PC5352/76

Int. Cl.[2] B60T *8/02*

U.S. Cl. 303—106 **3 Claims**



1. A braking system for towed vehicles in which the towed vehicle has electrically energised brakes which comprises,

(a) electrical slave means including a solenoid on the brakes of the towed vehicle to apply the said brakes proportionally to current applied to said solenoid,

(b) a speed sensing device mounted on at least one wheel of the said towed vehicle, said speed sensing device comprising an electrical sensor to produce pulses in proportion to the speed of rotation of said wheel,

(c) a "rate of change" circuit connected between the said speed sensing device and the said slave means on the brakes arranged to measure the frequency of the pulses of the speed sensing device and to increase braking force in proportion to a rate of decrease in the number of pulses as determined by the speed sensing device, said electrical means comprising a frequency doubler tachometer receiving said pulses, a wave form generator, a comparator receiving pulses from the said frequency doubler and the said wave form generator, and a power amplifier receiving the signal from the said comparator and applying pulsed direct current to the said solenoid in proportion to the frequency of the pulses generated in the said sensor, and

(d) a switch in the said electrical connecting means between the sensor and the brake solenoid to initiate braking when said switch is energised by the brake light circuit of the vehicle.

4,084,860

APPARATUS FOR MOUNTING AN OPEN END SPINNING TURBINE

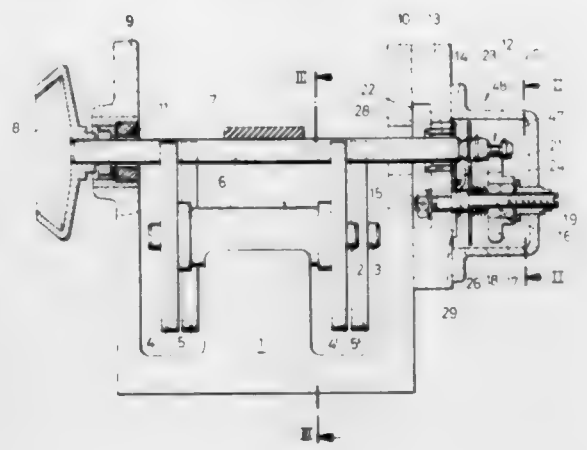
Gisbert Kohler, Offingen, Hanns-Wilfried Munkel, Stuttgart; Hubert Pohl, Waiblingen; Walter Sommer, Leonberg, and Gunther Wendel, Stuttgart, all of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed May 26, 1976, Ser. No. 689,962

Claims priority, application Germany, May 31, 1975, 2524231

Int. Cl.[2] F16C *3/00, 35/00*

U.S. Cl. 308—15 **26 Claims**



1. Apparatus for mounting an open end spinning turbine located at the front end of a drive shaft and having means for rotating said drive shaft, comprising a bearing block having a pair of spaced walls transversed by said drive shaft and roller means located between said walls forming a V groove support for said drive shaft, the rear end of said shaft extending outwardly of the rear wall of said bearing block and having an annular T-slot formed therein, a bushing mounted in said wall for journalling said shaft and a guide member extending within said T-slot to thereby fix the axial position of said shaft within said supporting roller means.

4,084,861

THRUST BEARING DAMPING MEANS

Paul B. Greenberg, Manchester, Conn., and Stephen D. Patterson, North Palm Beach, Fla., assignors to United Technologies Corporation, Hartford, Conn.

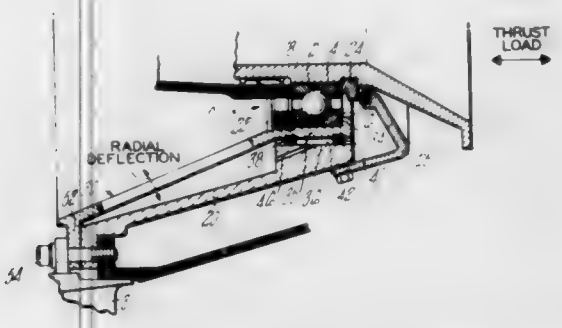
Filed Nov. 11, 1976, Ser. No. 740,891

Int. Cl.[2] F16C *27/00*

U.S. Cl. 308—26 **6 Claims**

1. For a thrust bearing rotatably supporting a shaft having a rotor developing thrust, support means having an annular portion concentric to and spaced from said thrust bearing, a radially flexible support means mounted between said thrust bearing and said support means normally supporting said

thrust bearing, said radially flexible support means having a concentrically disposed annular portion defining between its outer diameter and the inner diameter of the annular portion of said support means a cavity for supporting an oil film for



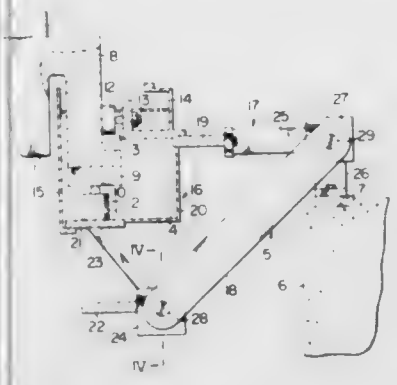
damping out vibration manifested by said shaft being transmitted thereto through said radially flexible support means and means securing said radially flexible support means and said support means so that thrust loads are transmitted to said securing means through said radially flexible support means.

4,084,862

THRUST SUPPORT SYSTEM FOR VERTICAL SHAFT ROTARY MACHINE

Isao Ishida, Takahagi; Hiroshi Sato, and Sho Kusumoto, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 20, 1976, Ser. No. 716,223
Claims priority, application Japan, Sep. 11, 1975, 50-110376
Int. Cl.[2] F16C *3/00*
U.S. Cl. 308—139 **7 Claims**



1. A thrust support system for a vertical shaft rotary machine, comprising a bearing oil tank adapted to be disposed around the vertical shaft of said vertical shaft rotary machine; a stand provided around said bearing oil tank; and means for supporting said oil bearing tank on said stand; said supporting means including: a lower ring member connected to the bottom portion of said bearing oil tank; legs mounted on said stand; a plurality of connecting members extending obliquely upwardly of said ring member and connecting said ring member to said legs; and a member for preventing said leg of the stand from moving in the diametral direction.

4,084,863

BEARING AND BEARING LINER HAVING A COMPLIANT LAYER

Alfred J. Capelli, Palos Verdes Peninsula, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

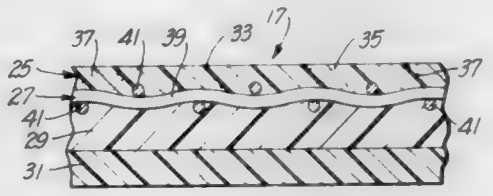
Filed Jan. 25, 1974, Ser. No. 436,670
Int. Cl.[2] C10M *5/00*; B32B *3/00*
U.S. Cl. 308—238 **21 Claims**

1. A bearing liner for attachment to a substrate having at least one projection thereon, said bearing liner comprising:

a wear resistant layer including a porous backing member and a binder and particles of a lubricating material dispersed in the binder, said wear resistant layer having a wear surface;

said wear resistant layer being relatively thin and being provided with properties to be deformable under load whereby application of said wear resistant layer directly to said substrate would cause the projection to cause a protrusion on the wear surface; and

a compliant layer disposed between the wear resistant layer and the substrate, said compliant layer being relatively thin and being provided with resiliently deformable prop-



erties to provide for resilient compression of the compliant layer at the position of the projection whereby the tendency of the projection to cause the protrusion is minimized;

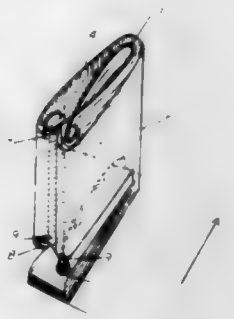
the thickness of the compliant layer being at least as great as the height of the projection on the substrate but less than twice the height of the projection on the substrate.

4,084,864

SCISSOR STYLE PAPER CLIP AND AUTOMATIC DISPENSER FOR SAME

Nelson S. Kibler, 246 Avondale Dr., Sterling, Va. 22170

Filed Jul. 13, 1976, Ser. No. 704,951
Int. Cl.[2] A47F *1/08*; B65D *83/08*
U.S. Cl. 312—42 **1 Claim**



1. In combination, a device for dispensing paper clips and a paper clip, said device comprising guide means, a base, a vertical tubular housing, a notch in said base, a lip, and a space between said housing and said base, said lip being disposed at a lower end of said housing and above said space, said notch being disposed in said base and below said space, said paper clip comprising a length of resilient wire having a bend portion at the midpoint whereby two shanks are formed, said shanks crossing each other at substantially two-thirds of their length, said shanks being bent at their free ends to form pads, whereby when said paper clips are stacked in said device, said guide mates with a gap between said pads and the lowermost paper clip in said space of said device is supported by said pads which engage said lip and said notch, and whereby when a sheet of paper or similar material is placed in said space, said lowermost paper clip engages said sheet and is removed with said sheet when said sheet is withdrawn from said space.

4,084,865

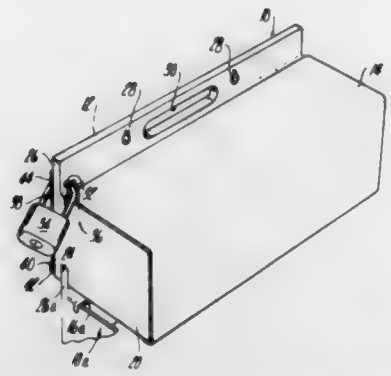
UTILITY CONTAINER

James E. Joyce, 878 Darien Cir., Rochester, Mich. 48063

Filed Oct. 26, 1976, Ser. No. 735,845
Int. Cl.[2] B65D *43/12*, *1/24*
U.S. Cl. 312—111 **30 Claims**

1. A multipurpose, internally alterable, utility storage container comprising: a container body having laterally opposed

side panels and at least one body panel, said body panel being disposed perpendicularly to and integral with said side panels, thereby retaining said side panels in a spaced substantially parallel relationship; a cover, movably disposed over the open portion of said container body, to open and close the container body; and an insert receiving system comprising a plurality of



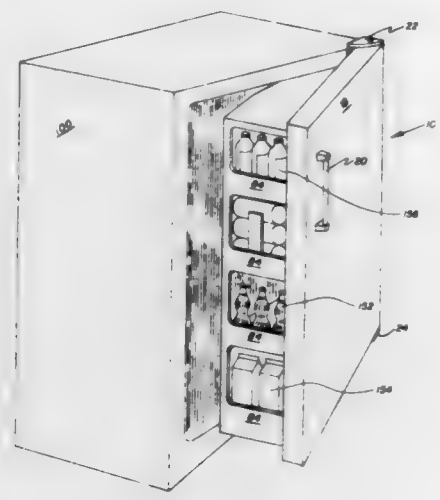
spaced slots and apertures integral with said side panels and interior of said body for receiving removable inserts for horizontal and vertical compartmentalization within the body, said inserts having integral bosses, tabs and ribs which matingly cooperate with said slots and apertures, whereby the interior of said body may be reconfigured by insertion and removal of drawers and inserts.

4,084,866

DOOR STRUCTURE

Kikuo Hayashi, 21452 DeQuindre, Warren, Mich. 48091

Filed Nov. 3, 1976, Ser. No. 738,587
Int. Cl.[2] A47B *77/08*
U.S. Cl. 312—138 R **16 Claims**



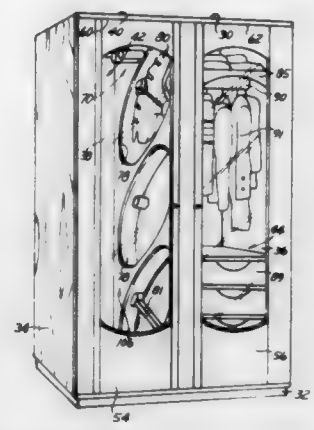
1. A door comprising a door member having an interior surface and opposite edge surfaces, hinge means mounted on one of said edge surfaces, a plurality of spaced-apart rear opening shelves extending inwardly of said interior surface, said rear-opening shelves having access openings in said interior surface, and a plurality of spaced-apart edge opening shelves extending inwardly of said other edge surface, said edge-opening shelves having access openings in said other edge surface, whereby access is provided to said edge opening shelves when said door is partially open.

4,084,867

STORAGE CABINET FOR SKI EQUIPMENT

Bernard J. Putt, Star Rte. Box 169, Howard, Colo. 81233, and Roger E. Hughet, 5635 Putnam, West Bloomfield, Mich. 48033

Filed Jan. 14, 1976, Ser. No. 648,905
Int. Cl.[2] A47B *53/00;* **A47F** *7/00*
U.S. Cl. 312—198 **1 Claim**



1. A storage cabinet for storing a plurality of wet ski boots which comprises:

a walled compartment;

a drain mounted proximate the base of said compartment;

a molded panel mounted on at least one of the walls of said compartment, said panel having a plurality of oval-shaped receptacles formed therein of substantially the same size; said receptacles having their longitudinal axes substantially parallel and trans-horizontal, said receptacles further vertically spaced one from the other and vertically aligned, each of said receptacles further having means for securing a ski boot pair in mounted relationship therein; a boot carrier for holding each of said boot pairs in sole to sole relationship in its respective receptacle, each boot carrier including a stand element at one end and a handle element at the other end, said securing means in said receptacles comprising a pair of opposed securing resilient clips one engageable with a stand element and the other engagable with a handle element of the associated boot carrier, the lowermost of said receptacle adapted to receive water drainage seriatim from those above it and to pass such water to said drain.

4,084,868

MOVING DISPLAY RACK

J. Frank Lummus, 1232 Grove Park La., Columbia, S.C. 29210

Filed Feb. 25, 1977, Ser. No. 771,893
Int. Cl.[2] A47F *3/08;* **A47B** *49/00*
U.S. Cl. 312—268 **1 Claim**

1. A moving display rack, comprising

a cabinet having a top, a bottom, a side extending between the top and bottom and a display window in the side;

a plurality of pairs of sprocket wheels rotatably mounted in the cabinet with the wheels of each pair spaced from each other in substantially parallel relation and approximately half the pairs of sprocket wheels being mounted in the area of the top of the cabinet and the remaining pairs of sprocket wheels being mounted in the area of the bottom of the cabinet;

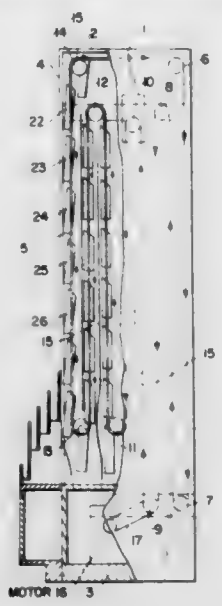
a pair of endless carrier chains each mounted on a corresponding one of the sprocket wheels of each pair of sprocket wheels and extending between the sprocket wheels in meandering fashion;

motive means coupled to a selected pair of the sprocket wheels for rotating the sprocket wheels and moving the carrier chains through the cabinet and past the window of the cabinet in a predetermined direction;

a plurality of bars affixed to the pair of carrier chains and

extending therebetween substantially perpendicularly thereto in equidistantly spaced relation;

a plurality of trays for supporting items to be displayed, each of the trays being removably rotatably mounted on a corresponding one of the bars, each of the trays having a box-like configuration with an open front facing the window, a spring-biased retainer device for retaining an item in the tray and guide means for maintaining the tray upright in its journey through the cabinet; and



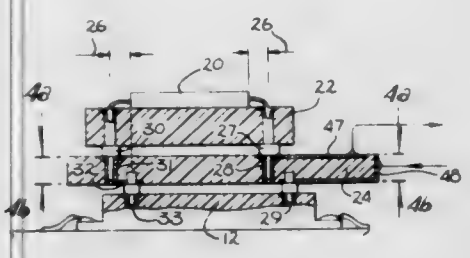
a plurality of pairs of guide strips of magnetizable material in the cabinet in the area of the window, each of the trays having eight corners and the guide means of each tray comprising a pair of magnetic guide wheels rotatably mounted on the bottom front corners for rotating on the guide strips and a plurality of cushion wheels each rotatably mounted on a corresponding one of the remaining corners.

4,084,869

INTERCONNECTOR FOR INTEGRATED CIRCUIT PACKAGE

Yao T. Yen, Cupertino, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 10, 1976, Ser. No. 740,390
Int. Cl.[2] H05K *1/12*
U.S. Cl. 339—17 CF **2 Claims**



1. A connector apparatus for providing coupling between a dual in-line integrated circuit package, a circuit connector adaptable for receiving said package, and a cable, comprising:

a cable having first and second leads;

a printed circuit board;

a first connector means on said board having a plurality of openings on the upper surface of said board for receiving said integrated circuit package, said first connector means having first and second contacts;

a second connector means including a plurality of pins extending from the lower surface of said board for engaging said circuit connector, said pins coupled to first and second contacts of said second connector means;

a first plurality of lines on said board for providing electrical paths between said first contacts of said first connector means and said first contacts of said second connector means;

a second plurality of lines on said board for providing electrical paths between said second contacts of said first connector means and said first leads of said cable;

a third plurality of lines on said board for providing electrical paths between said second contacts of said second connector means and said second leads of said cable;

said first, second and third plurality of lines being arranged in parallel relation to one another, at least some of said first, second and third plurality of lines being disposed on the underside of said board, the remaining lines being disposed on the upper side of said board,

said first and second connector means and said first, second and third plurality of lines on said board for maintaining said integrated circuit package in close proximity to said circuit connector when said apparatus is disposed between said package and circuit connector;

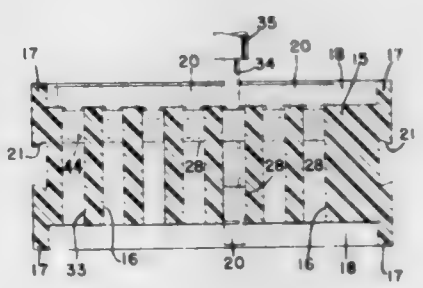
whereby signals are directly coupled between said circuit connector and said integrated circuit package and whereby other signals are intercepted from the circuit connector and replaced with signals from said cable.

4,084,870

MINIATURE MATRIX PROGRAMMING BOARD

Gregory L. Laserson, Scarsdale, and Miklos Madarasz, Harrison, both of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.

Filed Mar. 14, 1974, Ser. No. 451,213
Int. Cl.[2] H01R *13/12*
U.S. Cl. 339—18 P **8 Claims**



1. A matrix connector for selectively connecting a cross bar in a first series of parallel bars with a similar cross bar in a second series of parallel bars comprising:

(a) an insulator block for supporting both series of parallel bars, formed with a plurality of spaced cylindrical holes connecting two plane surfaces and arranged in two orthogonal lines;

(b) a first series of elongated conductive bars in parallel array, each bar in the first series including a strip of conductive material formed with alternate ridges and grooves along its longitudinal axis and including a plurality of depending cylindrical sockets having resilient clamping walls, said sockets positioned in one end of the cylindrical holes in the insulator block;

(c) a second series of elongated conductive bars also in parallel array but perpendicular to the first series, each bar in the second series including a strip of conductive material formed with alternate grooves and ridges along its longitudinal axis and including a plurality of depending cylindrical sockets having resilient clamping walls, said sockets positioned in the other end of the cylindrical holes in the insulator block;

(d) a first cover plate secured to one side of the insulator block for covering one series of cross bars, said cover plate formed with a plurality of holes positioned in align-

ment with the holes in the insulator block for the insertion of connecting pins;

(e) a second cover plate secured to the other side of the insulator block for covering the second series of cross bars, said cover plate having a plurality of connecting pins removably connected thereto for making contact with a socket in each cross bar and for connection to an external circuit; and,

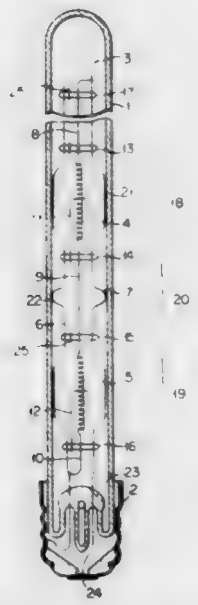
(f) a plurality of conducting connecting pins for insertion through the holes in the first cover plate to make contact with a socket in the first series of bars and a socket in the second series of bars.

4,084,871

METHOD FOR MANUFACTURE OF LAMP BULBS

Michiya Mashimo, and Hidehiro Shinada, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 15, 1976, Ser. No. 750,629
Claims priority, application Japan, Dec. 18, 1975, 50-150975
Int. Cl.[2] H01J *9/02*
U.S. Cl. 316—19 **9 Claims**



1. A method for manufacture of lamp bulbs comprising:

(a) steps providing a filament-supporting assembly, including:

(i) a first step of providing a wire assembly wherein more than three wires are extended in a straight line in parallel with each other, spaced apart from each other by a suitable distance and supported by a plurality of isolators which are made of an electrically insulating material and are spaced apart from each other by a suitable distance,

(ii) a second step of providing a plurality of lead wire pieces each extended into a predetermined space defined by the adjacent isolators and spaced apart from each other by a predetermined distance, each lead wire pieces being provided by cutting off a predetermined length of at least one of said wires except for at least two of the outermost ones in said predetermined space, and

(iii) a third step of electrically connecting said lead wire pieces to the outermost wires, whereby a filament-supporting assembly is provided, and

(b) a step of supporting a plurality of filaments each between at least two of said plurality of lead wire pieces on said filament-supporting assembly; and

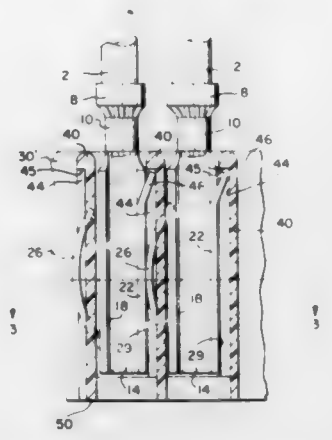
(c) a step of placing said filament-supporting assembly with said plurality of filaments supported thereon into a glass envelope and thereafter evacuating said glass envelope and sealing it.

4,084,872

ELECTRICAL COMMONING MEANS

James Pritulsky, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 18, 1977, Ser. No. 770,160
Int. Cl.[2] H01R *31/08*
U.S. Cl. 339—19 **3 Claims**



1. An electrical commoning means connecting a plurality of wires to each other at an electrical junction, said commoning means comprising:

a housing block of insulating material, said housing block being generally prismatic and having a terminal-receiving face, a plurality of side-by-side terminal-receiving cells extending inwardly from said face, adjacent cells in said housing block being separated from each other by spaced-apart parallel barrier walls, each of said barrier walls having an opening therein which extends from said face,

each of said wires having a contact terminal thereon, each of said terminals having a crimp portion and a flag-like contact portion which has a U-shaped cross section comprising a web and spaced-apart parallel sidewalls extending from said web, said web comprising an axial extension of said crimp portion, a first one of said sidewalls having a contact spring struck therefrom and extending laterally from the plane of said first sidewall, a retention ear extending from the second one of said sidewalls, said retention ear comprising a tab member which extends towards said wire and divergently from the plane of said second sidewall, said cells being dimensioned to receive said contact portions of said terminals with said sidewalls disposed against the opposed surfaces of adjacent barrier walls and with said contact springs extending through said openings,

polarizing means effective between said terminals and said cells effective to ensure insertion of said contact portions into said cells in a preferred orientation whereby said contact springs of all of said terminals engage said second sidewalls of adjacent terminals, and

each of said cells having a shoulder therein adjacent to said terminal-receiving face for cooperation with said ear of an inserted terminal for retaining said terminal in said cell whereby,

an electrical junction among a plurality of wires is formed by inserting said contact portions of said terminals on said wires into adjacent cells in said housing block.

4,084,873

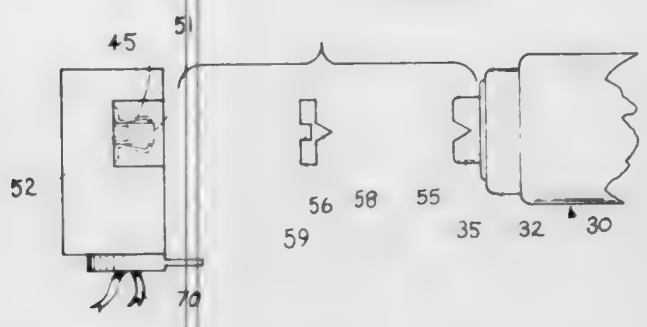
LAMP AND HOLDER COMBINATION WITH ADAPTER

Anton J. Grate, 3211 Burr Oaks Rd., Joliet, Ill. 60435

Filed Sep. 14, 1976, Ser. No. 723,096
Int. Cl.[2] H01R *33/08*
U.S. Cl. 339—52 R **4 Claims**

1. An improved fluorescent lamp, holder and adapter combination comprising an elongated, tubular lamp body, a generally flat base secured to each end of said body, each of said bases carrying a plug extending outwardly therefrom and including a pair of spaced electrical conductors, a lamp holder carrying a pair of spaced sockets each adapted to receive one of said plugs, one of said sockets including an irregularly shaped

socket recess, one of said lamp plugs having a groove therein extending parallel to the longitudinal axis of said lamp body and having a width less than the circumference of said plug, an adapter element interposed between said one of said lamp plugs and said one of said sockets, said adapter element being generally shaped as an oblong cylinder and carrying a tongue



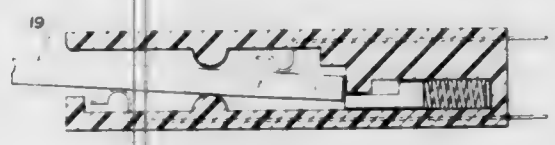
on one end extending within the outer boundaries of the cylinder and sized and shaped to lockingly nest within said groove in said plug and having its opposite end shaped complementary to said irregularly shaped socket recess for locking, mating engagement therewith, and means for providing electrical current to said lamp holder sockets and to said electrical conductors when the lamp is in place within the holder.

4,084,874

LOW INSERTION FORCE CONNECTOR

Thomas Georgopulos, Roselle, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jun. 27, 1977, Ser. No. 810,227
Int. Cl.[2] H05K *1/07*
U.S. Cl. 339—75 MP **7 Claims**



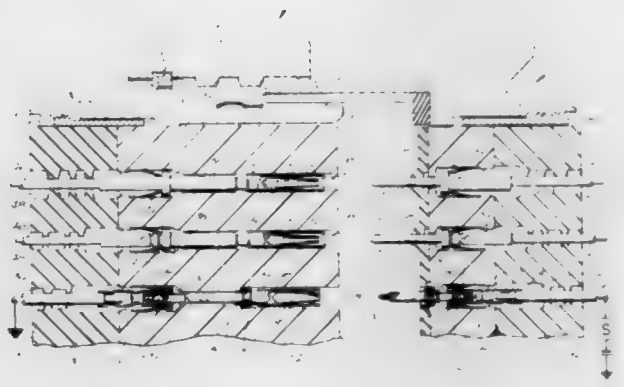
1. An electrical connector assembly for connecting to a printed circuit board and the like, having a plurality of spaced contacts carried by and adjacent one edge comprising: a body member having a circuit board receiving channel extending longitudinally along said body member for receiving said one edge of said printed circuit board having said spaced contacts, said circuit board receiving channel defined by a first and second interior wall and an interior bottom surface, a pair of opposing fulcrums intermediate the bottom and the opening edge, one on each said first and second interior walls, and leaving a space therebetween for the passage of a circuit board, a first series of conductive strips positioned along said first interior wall of said circuit board receiving channel between one of said pair of fulcrums and said interior bottom of said circuit board receiving channel, a second series of conductive strips positioned along said second interior wall of said circuit board receiving channel between the other of said pair of fulcrums and the opening edge of said circuit board receiving channel, a circuit board positioning groove in the interior bottom surface of said circuit board receiving channel for cooperating with said pair of fulcrums for positioning said circuit board when said circuit board is rotated in an arc about one of said fulcrums into increased contact against said first and second series of conductive strips and means to retain said circuit board in such position of increased contact.

4,084,875

ELECTRICAL CONNECTOR

Stephen K. Yamamoto, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 10, 1975, Ser. No. 540,252
Int. Cl.[2] H01R *13/52*
U.S. Cl. 339—94 M **4 Claims**



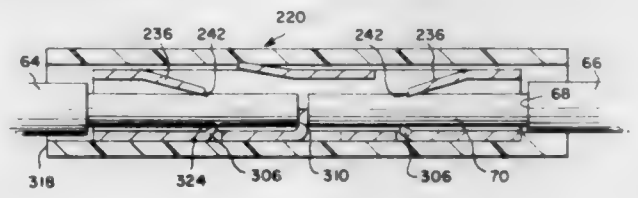
1. An electrical connector comprising:
an insulator having a bore therein;
a contact fixedly mounted in said bore, said contact having a forward contacting portion of a rear contacting portion;
a mating contact element is said bore behind said contact being in releasable electrical engagement with said rear contacting portion of said contact, said mating contact element incorporating means adapted for connection to a conductor passing outwardly through the rear of said bore;
said rear contacting portion of said contact being formed as a socket contact;
said mating contact element comprising a pin contact slidable into said socket contact;
a sleeve fixed to and surrounding said pin contact providing an annular space therebetween receiving said socket contact;
said sleeve having a rearwardly facing shoulder thereon; and
means releasably retaining said mating contact element in said bore, said retaining means comprising a radially inwardly forwardly extending resilient finger means in said bore engaging said shoulder.

4,084,876

ELECTRICAL CONNECTOR

Leon Joel Dinger, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 622,548, Oct. 15, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 781,809
Int. Cl.[2] N01R *7/28*
U.S. Cl. 339—95 D **1 Claim**



1. An electrical connector for electrically splicing two conductors together, comprising:
a. an elongated housing of insulating material having a passageway therethru; and
b. a coplanar strip of conductive material formed into an elongated, tube-like spring member with a flat top wall, an arcuate bottom wall and a passage therethru with a conductor-receiving opening at each end, a finger near each opening extending obliquely into the passage from the top wall with the free end pointing generally toward the opposite opening, said spring member further including a

tine near each opening extending obliquely into the passage from the lower wall with the free end pointing generally towards the opposite opening, said spring member being positioned in the housing passageway and adapted to

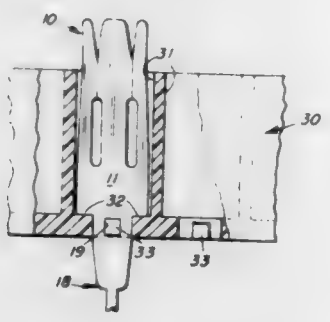
electrically connect two conductors which may be inserted into the openings and to retain said conductors against withdrawal by said fingers and tines gripping the conductors.

4,084,877

ELECTRICAL CONNECTORS AND TERMINAL CONNECTING BLOCK

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon-Dynamic Mfg. Company, Watertown, Conn.

Continuation of Ser. No. 868,417, Oct. 22, 1969, abandoned.
This application Jun. 14, 1972, Ser. No. 262,495
Int. Cl.[2] H01R *9/08*
U.S. Cl. 339—97 P **2 Claims**



1. An electrical connector in the form of an integral spring metal piece comprising

(a) a flat base portion; and

(b) three contact fingers projecting from said base portion and lying at least substantially in the plane thereof, said three fingers including a symmetrical central finger and two outer fingers disposed each on a different side of said central finger,

(1) said central finger having a stem portion, a contact body portion and a tip portion, said stem portion commencing at said base portion and projecting therefrom and said contact body portion commencing at said stem portion and projecting outwardly to said tip portion,

(2) said stem portion of said central finger being narrower than said contact body portion of said central finger,

(3) each of said outer fingers having a stem portion, a contact body portion, and a tip portion, with said stem portions and contact body portions of said outer fingers being disposed respectively beside and being of substantially the same length as said stem and contact body portions of said central finger,

(4) the side edges of said contact body portion of said central finger extending in substantial edge-to-edge contact with the adjacent side edge of each of the contact body portions of said outer fingers when the integral spring metal piece is in its normal undistorted condition,

(5) the side edges of said stem portions of said central finger being spaced apart from the adjacent side edge of each of the stem portions of said outer fingers, whereby said adjacent side edges cooperate to define elongated spaces between said stem portions,

(c) means integral with said base portion for securing said connector into a terminal block, said means comprising a shoulder portion containing an opening therein, said shoulder portion commencing at said base portion opposite said contact fingers and projecting therefrom and being narrower than said base portion,

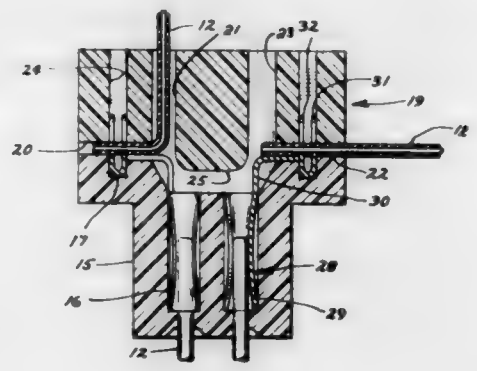
whereby insertion of an electrical conductor between the contact body portion of one of said outer fingers and the contact body portion of said central finger causes said one outer finger and said central finger to be resiliently distorted away from each other, such distortion of said central finger then being opposed by the other of said outer fingers by reason of interengagement between the contact body portions of said central finger and said other outer finger.

4,084,878

CONNECTOR

Chander Mohan Wahi, Waseca, Minn., assignor to E. F. Johnson Company, Waseca, Minn.

Filed Mar. 20, 1974, Ser. No. 452,689
The portion of the term of this patent subsequent to May 18, 1994, has been disclaimed.
Int. Cl.[2] H01R *13/38*
U.S. Cl. 339—99 R **2 Claims**



1. A solderless connector comprising in combination;

a base member having a top surface and including a plurality of contact receiving apertures disposed normal to said top surface;

contact means disposed in at least one of said apertures in said base, said contact means including a pair of upwardly extending legs adapted to conductively engage an electrical conductor, the legs on said contact means having inner opposed portions in parallelism prior to engagement with a conductor;

a cover member having a bottom surface and a like plurality of apertures and adapted to be removably disposed on said base with respective apertures in registration, the apertures in said cover being tapered so that the ends adjacent the bottom surface are larger than the ends remote from said bottom surface whereby assembly of said cover on said base causes the inner portions of the contact means to assume and retain a non-parallel disposition so that a conductor held therebetween is subjected to an increasing contact pressure as said cover is disposed on said base, and the cover member includes channel portions extending from the outer surfaces thereof to said apertures in which the channels extend between two non-parallel outer faces of the cover member.

4,084,879

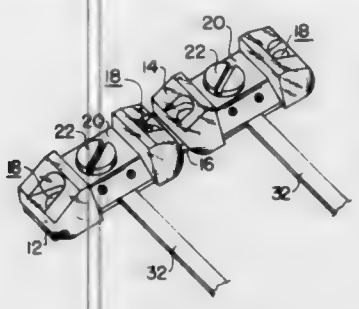
FOIL TERMINAL BLOCK

Mark Norman Lepow, Santa Ana, Calif., assignor to American Security Equipment Company, Carson, Calif.

Filed Mar. 23, 1977, Ser. No. 780,477
Int. Cl.[2] H01R *9/18*
U.S. Cl. 339—198 GA **4 Claims**

1. A terminal block assembly for establishing electrical connections to an electrically conductive foil strip mounted on a pane of glass, said foil strip having an end with a hole therein, said assembly comprising: a base formed of molded plastic material and defining a pair of adjacent terminal blocks with a parting line therebetween to permit the blocks to be separated from one another, said base further defining a ramp for each of the terminal blocks sloping upwardly from the forward edge of the base, and said base defining a channel at the top of the ramp of each of the terminal blocks to receive the end of the foil strip; an electrically conductive bent-over clamping plate for

each of said terminal blocks separated from the base, so that the end of the foil strip may extend up the ramp and across the base under the clamp; and a screw for each of said terminal blocks



extending through the clamping plate and through the hole in the end of the foil strip into said base to mount the clamping plate on the base and extending over the corresponding ramp in clamping relationship with the end of the foil strip.

4,084,880

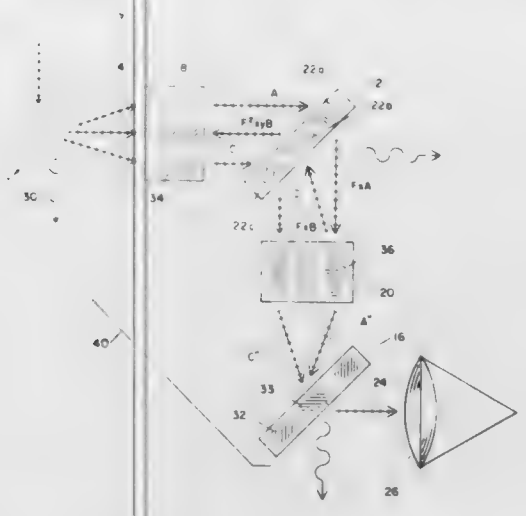
COHERENT OPTICAL COMPUTER FOR POLYNOMIAL EVALUATION

Richard G. Clow, 624 Black Canyon Stage, Phoenix, Ariz. 85020

Continuation-in-part of Ser. No. 543,173, Jan. 22, 1975, abandoned, which is a continuation of Ser. No. 398,332, Sep. 18, 1973, abandoned, which is a continuation of Ser. No. 117,784, Feb. 22, 1971, abandoned, which is a continuation of Ser. No. 720,262, Apr. 10, 1968, abandoned. This application Apr. 23, 1976, Ser. No. 679,552

Int. Cl.[2] G03H *1/26;* G02F *3/00;* G06G *9/00*

U.S. Cl. 350—3.72 **9 Claims**



1. A coherent optical computer comprising:

an input means having spatial variations in its optical properties, said spatial variations being of such physical dimensions as to cause incident optical beams to be substantially diffracted by the input means and in which input data are represented by the efficiencies of the action of the input means in causing diffraction of incident optical beams,

a mirror means for diffractively redirecting an optical beam diffracted by the input means so as to be diffracted again by the input means, and

a coefficient means which combines optical beams diffracted by the input means so that the combined beam has an amplitude proportional to a prescribed nonlinear polynomial function of the input data.

4,084,881

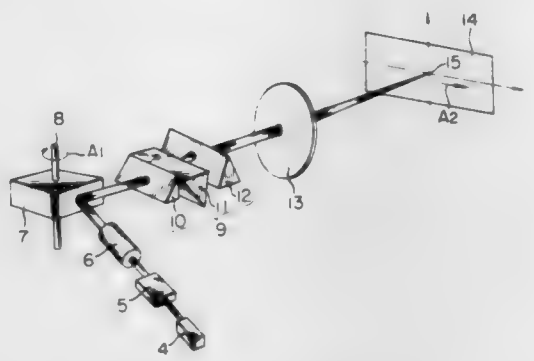
LIGHT BEAM SCANNING DEVICE

Yoichi Hirabayashi, Machida; Setsuo Minami, Yokohama, and Takeshi Goshima, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1976, Ser. No. 732,408

Int. Cl.[2] G02B *27/17*

U.S. Cl. 350—6.8 **3 Claims**



1. A light beam scanning device comprising:

a source of light;

a deflecting mirror for causing a light beam from said source to be deflected about an axis toward which said light beam is directed;

a prism anamorphic afocal optical system for the correction of tilt disposed in the path of the deflected beam from said deflecting mirror, said prism anamorphic afocal optical system comprising a plurality of prisms so that different displacements of the deflected beam at each angle of deflection and in a direction perpendicular to the direction of deflection caused by the first of said prisms are corrected by the second and subsequent prisms, as viewed from the incidence side; and

a condensing optical system disposed between said prism anamorphic afocal system and a surface to be scanned, to thereby cause the deflected beam from said prism anamorphic afocal optical system to be condensed on said surface to be scanned.

4,084,882

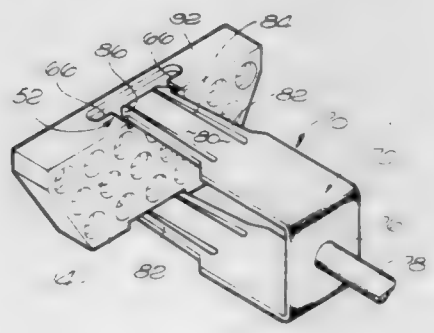
CONNECTOR MEMBER

Vaughan Clarence Hogan, Sun Valley, and Eleanor Anderson Landgreen, Temple City, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 30, 1976, Ser. No. 718,906

Int. Cl.[2] G02B *5/14;* H01R *13/46*

U.S. Cl. 350—96.20 **8 Claims**



1. A connector member comprising:

a shell containing a rear fixed support member and a front support member slidably removable from the forward end of said shell;

each said support member having a forward face and a rear face;

a plurality of conductive elements mounted in said rear support member extending at least to said forward face

thereof but terminating behind said forward face of said front support member;

said shell having an inner surface;

said front support member having a forwardly facing shoulder thereon adjacent to said shell inner surface and behind said forward end of said shell;

said shell having at least one resilient retention finger extending inwardly and rearwardly from said inner surface thereof engaging said shoulder to limit forward movement of said front support member in said shell;

means defining a clearance space between said shell inner surface and said front support member extending from said shoulder to said forward face of said front support member; and

a rearwardly facing shoulder on the side of said clearance space.

4,084,883

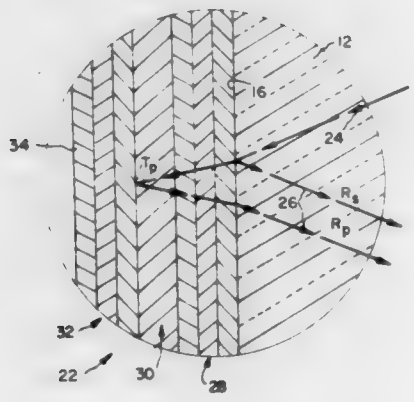
REFLECTIVE POLARIZATION RETARDER AND LASER APPARATUS UTILIZING SAME

Jay Morgan Eastman, and Stanley J. Refermat, both of Rochester, N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,384

Int. Cl.[2] G02B *5/30;* H01S *3/05*

U.S. Cl. 350—152 **9 Claims**



1. For use in laser apparatus having a body of laser material having faces on opposite sides thereof, and through one of said faces linearly polarized laser light is received and then transmitted after being reflected at the other of said faces, a transmissive-reflective polarization rotator disposed on said other face providing rotation of the plane of polarization of the reflected light such that the incident and reflected light are polarized in orthogonal directions, said polarization rotator comprising

polarizer means disposed upon said face for reflecting one of the *p* and *s* polarization components of said linearly polarized incident light and transmitting the other of said *p* and *s* polarization components thereof,

a reflector means for reflecting said other of said *p* and *s* components of said linearly polarized light, and

phase adjusting means sandwiched between said polarizing means and said reflecting means for adjusting the phase of said *p* and *s* components within said body such that said reflected light is polarized in a direction substantially orthogonal to the incident light.

4,084,884

LIQUID CRYSTAL DEVICES

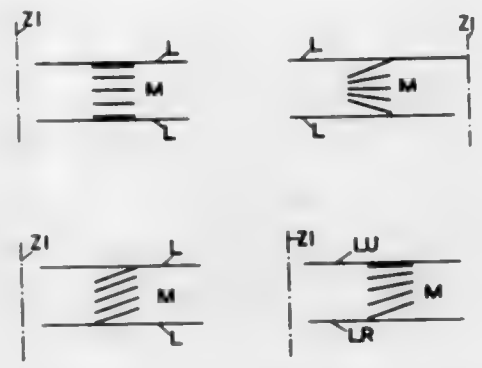
Edward Peter Raynes, Worcester, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 551,551, Feb. 21, 1975, abandoned, and a continuation-in-part of Ser. No. 552,346, Feb. 24, 1975, abandoned. This application Feb. 14, 1977, Ser. No. 768,371

Claims priority, application United Kingdom, Feb. 21, 1974, 8042/74; Mar. 1, 1974, 9489/74

Int. Cl.[2] G02F *1/13*

U.S. Cl. 350—334 **20 Claims**



6. An optical display device comprising parallel walls defining a cell, a nematic liquid crystal material disposed between the cell walls, said liquid crystal material including at least some cholesteric type liquid crystal which confers to a uniform direction of twist upon the liquid crystal material between the cell wells, said cell walls having flat internal surfaces in contact with the liquid crystal material, and each said surface having a surface treatment such that substantially all the liquid crystal molecules in contact with the surface lie at the same angle to said surface, said angle being different for the two surfaces, and means for selectively applying an electrical potential difference between said internal surfaces of the cell walls such as to establish an electric field in the liquid crystal material such as substantially to align the liquid crystal molecules with said electric field.

4,084,885

MICROSCOPE OBJECTIVE

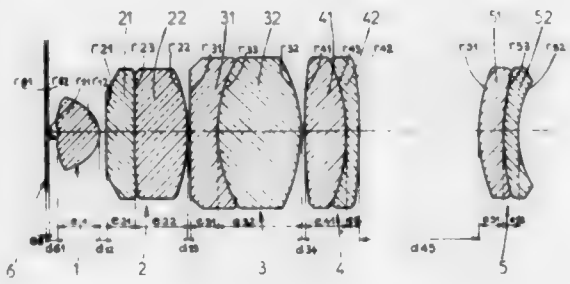
Pierre Coussot, Paris, France, assignor to Societe d'Optique, Precision Electronique et Mecanique - SOPELEM, Paris, France

Continuation-in-part of Ser. No. 527,155, Nov. 25, 1974, abandoned. This application Apr. 26, 1976, Ser. No. 680,279

Claims priority, application France, Nov. 27, 1973, 73 42190; Oct. 28, 1974, 74 35933

Int. Cl.[2] G02B *21/02, 11/30*

U.S. Cl. 350—175 ML **2 Claims**



1. An objective for a microscope of focal length f and provided with a lens to form an image in the focal lens of the ocular comprising a lens of positive power located at the front-end of the objective, close to the object, having the form of a meniscus the concave face of which is directed toward the object, a lens of negative power situated at the rear extremity of the objective having a convex surface directed toward the

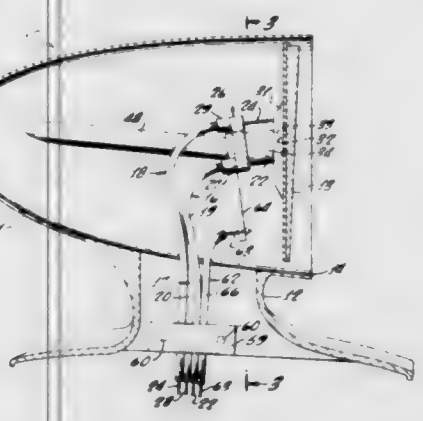
object, three intermediate doublets of positive power formed each of a convergent lens cemented to a divergent lens, the mensicus lens (1) at the front having a focal length between 1.5f and 2.5f the lens of negative power (5) being a doublet formed of a convergent lens (51) cemented to a divergent lens (52) for which the indices are very similar and for which the partial dispersions are quite different, the focal length of said doublet being between −8f and −15f, the first doublet (41–42) situated close to the lens of negative power being formed of glasses of very different indices, having a focal length between 14f and 18f, and is located at a distance of substantially 1.9f from the lens of negative power, the second doublet (31–32) located immediately in front of the first doublet being formed of glasses of very different indices and having almost identical partial dispersions, having a focal length between 6f and 8f, and located at a distance of substantially 0.04f from the first doublet, the third doublet (21–22) situated between the second doublet and the mensicus lens situated at the front end being formed of glass of high indices, having a focal length between 3f and 4f and located at a distance of substantially 0.04f from the second doublet and at a distance between 0 and 0.2f from the meniscus lens.

4,084,886

DAY/NIGHT OUTSIDE MIRROR FOR VEHICLES

Steven Wayne Grosch, 4931 Carthage, and Michael John Stack, 1730 Santee River, both of Placentia, Calif. 92670

Filed Apr. 21, 1976, Ser. No. 678,871
Int. Cl.² G02B *17/00*
U.S. Cl. 350—281 **11 Claims**



1. A day/night mirror assembly for the exterior of a vehicle comprising

a prismoidal mirror,

a body adapted for attachment to the exterior of a vehicle,

a support rotatably supporting said mirror, means rotatably connecting said support to said body,

and means for adjusting the position of said mirror relative to said body, said adjusting means including,

at least one outer cable element engaging said support and resiliently biasing the same in one direction,

and means for moving said support in the opposite direction in opposition to said resilient biasing.

4,084,887

ALL-REFLECTIVE OPTICAL TARGET ILLUMINATION SYSTEM WITH HIGH NUMERICAL APERTURE

Robert D. Sigler, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed May 7, 1976, Ser. No. 684,094
Int. Cl.² G02B *5/10*
U.S. Cl. 350—294 **7 Claims**

1. In an optical system for providing illumination of a target region at high numerical aperture from a pair of collimated beams of electromagnetic energy co-axially confluent on a system axis, and comprising a pair of opposed first ellipsoidal reflectors disposed to define a target cavity about said target region and having respective openings on said system axis, the improvement comprising means providing spherical reflective surfaces respectively disposed and directed outwardly of said target cavity having first openings on said system axis, and means providing conic section reflective surfaces disposed and directed oppositely of respective spherical reflective surfaces and having second openings on said system axis, collimated



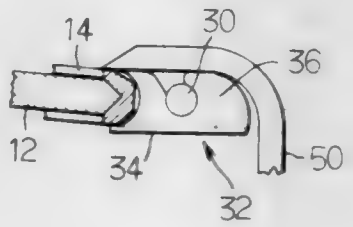
beams traveling on said axis being incident upon respective ones of said spherical reflective surfaces through said second openings, reflected onto said conic section reflective surfaces and then focused into said target cavity through said first openings.

4,084,888

PROTECTIVE COVER FOR SPECTACLE JOINT

Yoji Miyamoto, 12-24 Nishi-Yamamoto-Cho, 4-Chome, Yao-shi, Osaka, Japan

Filed Sep. 2, 1976, Ser. No. 719,746
Int. Cl.² G02C *1/08*
U.S. Cl. 351—97 **8 Claims**



1. A protective cover for a spectacle frame of the type having a split rim and first and second opposed connection lugs on respective ends of said split rim and a fastening means having a head end and a tail end for extending into and through said first and second lugs to hold said lugs together at a lug joint between said lugs to thereby hold said rim together around a lens, said fastener having the tail end thereof extending out of one of said lugs, said cover comprising:

a member having a generally U-shaped cross section so as to have a back section and first and second legs thereof, said U-shaped member being sized to fit over said lugs so that one of said legs covers a side of one lug and the other of said legs covers a side of the other lug while the back section extends across both of said lugs and said lug joint;

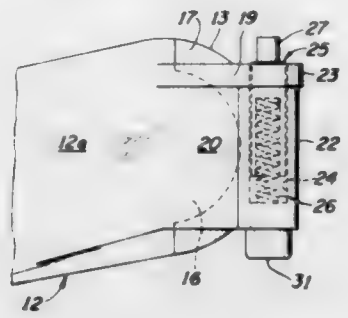
means defining a hole in said first leg for location around the tail end of said fastener; and

an opening between an edge of said first leg and said means defining said hole so that said first leg is slidable over said tail end of said fastener while the other of said legs covers the head end of said fastener.

4,084,889
EYEGLASS FRAME

Alfred Vischer, Jr., deceased, late of Golden, Colo. (by Peter Vischer, executor), assignor to Vischer Optics, Inc., Golden, Colo.

Filed Jul. 28, 1976, Ser. No. 709,497
Int. Cl.[2] G02C *5/14, 5/22, 5/16;* E05D *9/00*
U.S. Cl. 351—121 **8 Claims**



1. An opthalmic mounting, comprising
a lens frame having a rearwardly facing shoulder at one side edge thereof,
a temple member having a forwardly facing outer end surface complimentary to said shoulder and abutting said shoulder when said temple member is in an open position,
a forwardly extending hinge portion integral with said temple member,
said hinge portion having a partial cylindrical surface at the distal end thereof,
said lens frame having a rearwardly opening socket adjacent to said shoulder,
said socket having a wall portion which is partially cylindrical and complimentary to said cylindrical surface on said temple member,
a pair of aligned holes in said frame coaxial with the axis of generation of said cylindrical wall portions of said socket,
a first pivot member extending from one end of said cylindrical surface into one of said holes, and
an axially movable second pivot means extending into the other of said holes and into an axial hole in said cylindrical surface for removably mounting said temple member to said frame,
said movable pivot means being spring biases into locking relationship between said temple member and said frame.

4,084,890
CONTACT LENS

Henry J. Baron, 52 S. Oakland Ave., Sharon, Pa. 16146

Continuation of Ser. No. 278,067, Aug. 4, 1972, abandoned, which is a continuation of Ser. No. 888,293, Dec. 29, 1969, Pat. No. 3,698,802, which is a continuation-in-part of Ser. No. 687,240, Dec. 1, 1967, abandoned, and a continuation-in-part of Ser. No. 736,124, Jun. 11, 1968, abandoned, and a continuation-in-part of Ser. No. 736,149, Jun. 11, 1968, abandoned. This application May 7, 1975, Ser. No. 575,139
The portion of the term of this patent subsequent to Oct. 17, 1989, has been disclaimed.
Int. Cl.[2] G02C *7/04*
U.S. Cl. 351—160 **6 Claims**

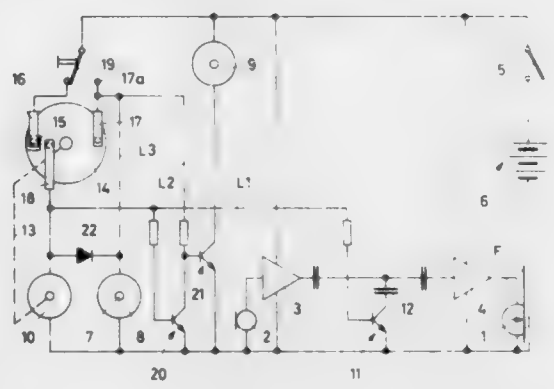


1. A contact lens adapted to be positioned adjacent the cornea while at the same time maintaining good visual acuity, said lens being formed from a transparent, soft, flexible, hydrophilic, cross-linked polymeric material and having an outer surface and a concave inner surface that conforms generally to that surface of the cornea adjacent to which it is located, said lens having a centrally located optical zone and a peripheral portion extending outwardly from said optical zone and terminating in a relatively thin edge of the lens, the juncture of said optical zone and said peripheral portion being defined by a visually apparent change in the shape of said outer surface of said optical zone at said juncture, said peripheral portion having a region intermediate said edge and said juncture, said region being thicker than at said edge or said juncture.

4,084,891
SOUND MOTION-PICTURE CAMERA

Hans-Friedrich Kiefer, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 9, 1976, Ser. No. 694,194
Claims priority, application Germany, Jul. 5, 1975, 2530134
Int. Cl.[2] G03B *31/00*
U.S. Cl. 352—22 **9 Claims**



1. In a sound motion-picture camera, in combination, current source means for supplying operating voltage; drive means for effecting transport of sound motion-picture film through the camera along a predetermined path; recording means operative for recording audio information onto the sound track of the motion-picture film, the recording means including circuit means forming a transmission path for audio-information signals, connecting means connecting the current source means to the circuit means for applying to the latter operating voltage enabling the circuit means for transmission of audio-information signals through the transmission path, and controllable attenuating means connected in the transmission path and operative when activated for preventing recording of sound despite the enablement of the circuit means for transmission by attenuating the transmission of audio-information signals through the transmission path; and control means automatically operative for activating the attenuating means for a predetermined time interval both when the drive means is being started up at the start of the filming of a scene and also when the drive means is being stopped at the end of the filming of a scene.

4,084,892
FILM ADVANCEMENT CONTROL FOR MOTION PICTURE PROJECTOR

John P. Bagby, Lake Forest; Erwin E. Figge, Des Plaines, and Raymond W. H. Kim, Skokie, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 18, 1977, Ser. No. 769,987
Int. Cl.[2] G03B *31/02, 21/48*
U.S. Cl. 352—29 **16 Claims**

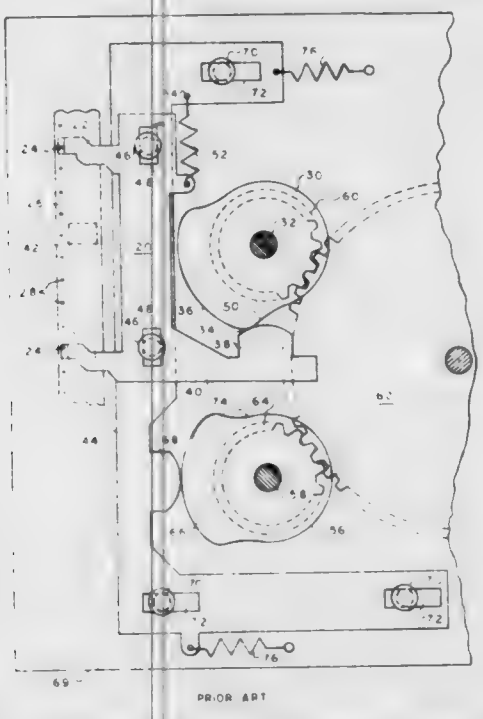
1. In a film projector having a shuttle tooth moveable into and out of engagement with perforations in the film and adapted to be reciprocated in the direction of film feed for

intermittently advancing the engaged film along a path between a light source and a projection aperture, a control for varying the speed of film advancement, comprising;

a rotary shutter assembly having at least one shutter blade for interrupting the light from the light source;

a rotary cam having a number of cam lobes equal to the number of shutter blades, said cam lobes being mechanically coupled to the shuttle tooth for reciprocating the shuttle tooth in the direction of film feed once for each revolution of a cam lobe,

the rotation of each of said cam lobes being synchronized to the rotation of the corresponding shutter blade such that the shuttle tooth is positioned for engagement with the perforations associated with the next successive film frame



PRIOR ART

to be projected whenever a shutter blade interrupts the light source;

means responsive to the interruption of the light by each shutter blade for generating a train of electrical pulses equal in number to 1/Nth the number of light source interruptions, where N is an integer;

means responsive to each pulse for advancing the shuttle tooth into engagement with the perforations in the film upon receipt of each pulse in the train of pulses,

whereby the shuttle tooth is reciprocated in the direction of film feed once for each revolution of a cam lobe but the film perforations are engaged by the shuttle tooth only on every Nth shuttle tooth reciprocation so that the rate of film advance can be selectably varied by varying the value of N.

4,084,893

EXPOSURE CONTROL FOR MOTION PICTURE CAMERAS

Robert Flandorfer, Frankfurt am Main, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

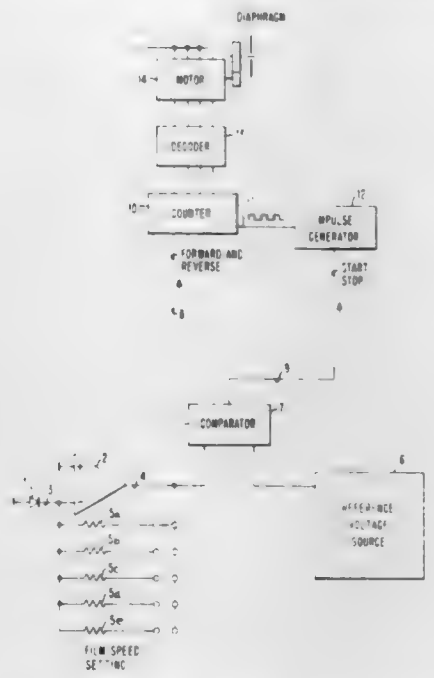
Filed Apr. 22, 1976, Ser. No. 679,238

Claims priority, application Germany, Apr. 26, 1975, 2518675

Int. Cl.[2] G03B *7/08*

U.S. Cl. 352—141 **4 Claims**

1. An electronic exposure control circuit for motion picture cameras, comprising a photosensitive element, an amplifier connected thereto, a stepping motor for step-wise setting the diaphragm of said camera, a reference voltage source, a voltage comparator having a pair of input terminals, one of said terminals being connected to the output of said amplifier, and the other of said inputs receiving said reference voltage, said comparator having logic outputs responsive of the polarity and of the magnitude of the voltage difference at the inputs, respectively, further comprising a bi-directional counter having an input for setting the counter into the forward or reverse mode of counting, which input is coupled to the output of the comparator which is responsive to the polarity, a clock generator, the output of which is coupled to the input of said counter and a start-stop input of the clock generator being coupled to that



logic output of the comparator which is responsive to the magnitude, and a decoder interposed between the outputs of said counter and the stepping motor.

4,084,894

ARRAY OF OPTICAL PROJECTION DEVICES

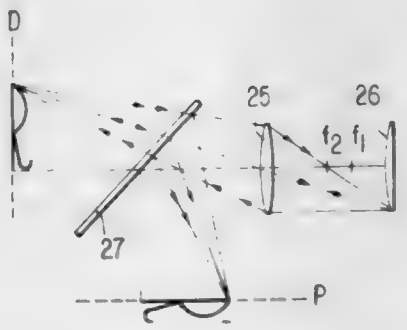
Masaki Yoshino, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1974, Ser. No. 446,796

Claims priority, application Japan, Mar. 24, 1973, 48-33097

Int. Cl.[2] G03B *21/26*; G02B *27/00, 17/00*

U.S. Cl. 353—34 **3 Claims**



1. An array of optical image projection devices where each image projection device projects a portion of an object image onto a surface to form the entire object image on the surface without overlapping of the image portions where each image projection device consists of

a double convex lens for projecting its corresponding portion of the object image;

a reflecting focusing means for reflectively focusing the image portion projected by said lens back through said lens; and

further reflecting means for projecting the image portion projected back through said lens onto said surface so that all of the image portions may be merged into a single image on the surface, said further reflecting means comprises a semi-transparent reflector angularly disposed with respect to the optical axis of said double convex lens between said double convex lens and said object image so that the light rays pass from said object through said semi-transparent reflector and double convex lens to said refractive reflecting means where an inverted, actual image of said object is formed, said light rays being re-

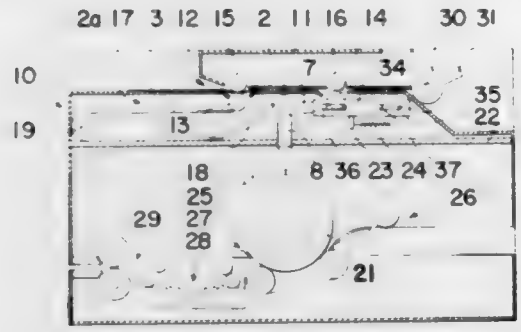
flected back through said lens and again reflected from said semi-transparent reflector onto said surface where a regular, actual image of said object is formed.

4,084,895

PROJECTION DEVICE FOR A PHOTOCOPYING MACHINE

Masaya Ogawa, Osaka, and Hiroshi Murasaki, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Nov. 10, 1976, Ser. No. 740,722
Claims priority, application Japan, Nov. 28, 1975, 50-143231
Int. Cl.[2] G03B *27/00*
U.S. Cl. 355—1 **10 Claims**



1. In a photocopying machine which permits reproduction both of thick original documents and of thin original documents, wherein a thin original document is transported past an exposure station by a transport means during the photocopying process, and a thick original document is supported on a transparent carrier means and carried along a line parallel to the plane of the exposure station during the photocopying process, the thick original document being separated from the exposure station by a distance equal to the thickness of the carrier means, a projection device comprising:

an exposure station;

a transport means including a pair of roll means provided at both sides of said exposure station for transporting the thin original document, and a guide means provided to form a passage for transporting the thin original documents facing said exposure station and roll means, said guide means being arranged to move away from said exposure station during the photocopying process of a thick original document;

a transport carrier means to be carried by said pair of roll means during the photocopying process of a thick original document for supporting the thick original document;

an illumination means actuable to illuminate the original document portions brought to or in line with said exposure station;

a focussing means provided to direct the image-wise light from said original document portions illuminated by said illumination means onto the outer surface of the photosensitive means of the photocopying machine which is able to form a latent image of the original documents upon being struck by the image-wise light coming from the original document portions;

a transparent block having a thickness T obtained by the following formula

$$T = \frac{n2}{n1(n2 - 1)} \cdot t$$

wherein t is the thickness of said transparent carrier means, and $n1$ and $n2$ are the refractive indexes of said transparent carrier means and transparent block, respectively, said transparent block being movable to an interposed position between said focussing means and said exposure station during the photocopying process of a thick original document in order to compensate for the deviation of the image-wise light caused by said transparent carrier means; and

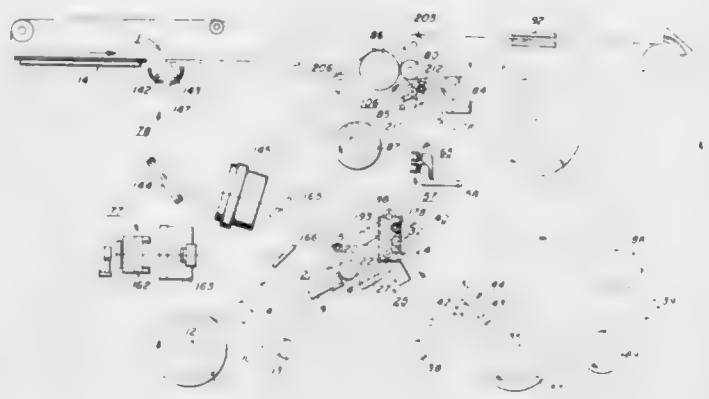
an operating means actuable to bring said transparent block into the interposed position in connection with the operation of switching the photocopying process from the thin original document to the thick original document.

4,084,896

PHOTOELECTROPHORETIC WEB IMAGING APPARATUS

Peter J. Warter, Jr., Penfield; Gino F. Squassoni, Pittsford; Vsevolod Tulagin, Rochester; Roger G. Teumer, Fairport, and Raymond K. Egnaczak, E. Williamson, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 24, 1975, Ser. No. 571,336
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—3 P **12 Claims**



1. A photoelectrophoretic imaging apparatus comprising, in sequential combination,

a transparent injecting web electrode;

a blocking electrode;

means for supporting and advancing the injecting web electrode and blocking web electrode along predetermined paths into registration at or before a common imaging station and apart thereafter;

ink coating means arranged for applying a film of photoelectrophoretic ink to at least part of the inside face of the injecting web electrode before registration with the blocking web electrode;

precharging means for effecting dark deposition of pigment or dye ink components preapplied to the injecting web electrode before registration with the blocking web electrode;

an imaging station and curved backup support for the blocking web electrode while in register with the ink coated injecting web electrode;

means for image-wise exposing at least the injecting web electrode and deposited ink while in register with the blocking electrode at the imaging station;

means for simultaneously establishing and maintaining an electric field across the registered webs and applied ink at the imaging station during exposure;

means for guiding, supporting and advancing an image transfer web into temporary registration with the injecting web at a combined image transfer and fixing zone, the advancing injecting web having at least one photoelectrophoretic image thereon;

an image transfer roller in guiding contact with the transfer web in the combined image transfer and fixing zone;

a pressure roller arranged in general opposition to the image transfer roller and equipped with heating means, said pressure roller being movably biased against the non-image-bearing side of the injecting web in the combined transfer and fixing zone;

whereby image transfer and fixing steps are simultaneously effected against the transfer web while in register with the injecting web.

4,084,897

HALF-LENS/MIRROR COPIER PROVIDING ORIGINAL-TO-COPY IMAGE REDUCTION

Carl Allan Queener, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,808
Int. Cl.[2] G03G *15/28*
U.S. Cl. 355—8 7 Claims



4. A continuously variable reduction imaging system for an electrophotographic copier machine, wherein a document to be copied is typically of rectangular shape, comprising:

a transparent platen for supporting said document;

a constant speed movable photoconductor;

motive means for moving said photoconductor;

a source of illumination;

a document scanning system comprised of a scanning carriage for directing illumination from said source through said platen to said document;

means for moving said scanning carriage;

an optics system for directing illumination reflected from said document to produce an image on said photoconductor, said optics system including in sequential order from said document to said photoconductor, a scanning mirror and motive means to move said mirror, and a half-lens/-mirror; and

means for positioning said optic system to initialize said optics system for a desired reduction ratio, wherein said mirror and said half-lens/mirror are adjusted in a continuously variable manner;

whereby the reduction ratio of said imaging system is settable in a continuously variable manner;

said means for positioning said optics system being constructed and arranged

(1) to effect movement of said half-lens/mirror along the axis of the reflected image of said document, in a direction toward said photoconductor, in accordance with the formula $f(1-R)/\cos\theta$, where f is the focal length of said half-lens/mirror, R is the desired reduction ratio, and the angle θ is one-half of the off-axis angle of said half-lens/-mirror; and

(2) to effect movement of said scanning mirror along the axis of the light reflected from said document, in a direction away from said document, in accordance with the formula:

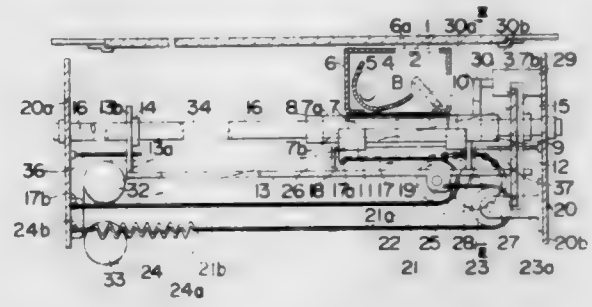
$$f/2\cos\theta(1/R-R).$$

4,084,898

PHOTOCOPYING APPARATUS MIRROR DRIVE MEANS

Takaji Kurita, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 17, 1974, Ser. No. 461,786
Claims priority, application Japan, Apr. 24, 1973, 48-48881[U]
Int. Cl.[2] G03G *15/28, 15/32*
U.S. Cl. 355—8 7 Claims



1. A photocopying apparatus comprising:

a horizontally movable optical assembly slidably supported by a support means;

a projecting lever member fixedly attached to said support means;

an endless drive means having a pin member attached thereto;

said endless drive means being rotated by a plurality of wheel means;

said pin member, upon initiation of drive of said endless drive means, being located at a position on one of said wheel means where the horizontal component of velocity thereof is substantially zero;

said pin member contacting said lever member to move said optical assembly;

said pin member and said lever member being positioned such that the initial contact therebetween is at a position at which the horizontal component of velocity of said pin member is substantially zero; and

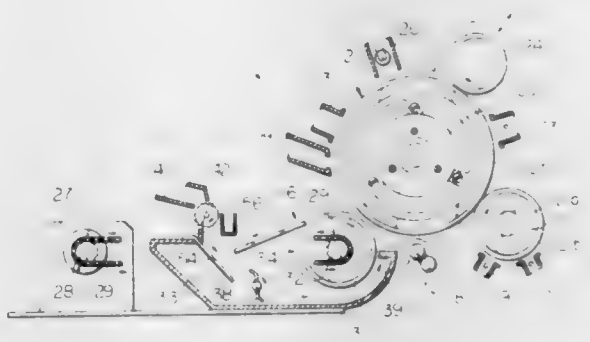
means for releasing the contact of said pin member with said lever member and to allow return of said optical assembly to a starting position.

4,084,899

ELECTROSTATIC COPYING MACHINE

Tsutomu Ishida; Masaaki Nomura, and Wasaburo Ohta, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 12, 1977, Ser. No. 786,830
Claims priority, application Japan, Apr. 14, 1976, 51-42084
Int. Cl.[2] G03G *15/22*
U.S. Cl. 355—14 4 Claims



1. An electrostatic copying machine comprising:

a rotary photoconductive drum;

exposure means for forming an electrostatic image on the drum;

developing means for applying a toner substance to the drum to develop the electrostatic image and form toner images;

transfer means for transferring the toner images to respective copy sheets;

drum drive means for rotating the drum at a first speed for exposure and development of said electrostatic image to form a first toner image and at a second speed which is higher than the first speed for development of said electrostatic image to form subsequent toner images; and,

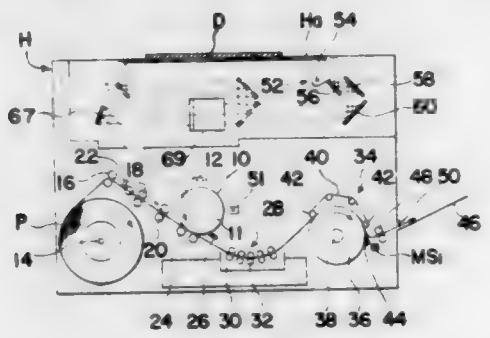
development control means for controlling the developing means to apply the toner substance to the drum in an amount corresponding to the drum rotational speed.

4,084,900

JAM DETECTING DEVICE IN THE ELECTROPHOTOGRAPHIC COPYING MACHINE

Sadao Yamaoka, and Kenichi Arai, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

Filed Dec. 6, 1976, Ser. No. 747,686
Claims priority, application Japan, Dec. 12, 1975, 50-148926
Int. Cl.[2] G03G *15/00*; B65H *7/04*
U.S. Cl. 355—14 **12 Claims**



1. In an electrophotographic copying machine for forming a pattern of an original to be copied on sheets of copying material of various sizes moved along a path having various processing stations therealong, a jam detecting device for detecting a copy material jam occurring between a first position and a second position along said path, said second position being adjacent the vicinity of the position along said path at which the copying material is discharged from the machine, and said first position being spaced along said path ahead of said second position with at least processing stations for image formation on the copying material and for fixing the image on the copying material being between said first and second positions, said jam detecting device comprising:

(a) a timer means for setting a period of a predetermined length which is long enough for the copying material to travel along the path between said first and second positions;

(b) a starting means connected to said timer means for starting said timer means at the time of the passing of the trailing edge of the copying material over said first position along said path;

(c) a material detecting means at said second position and connected to said timer means for detecting the passing of the trailing edge of said copying material past the second position along said path; and

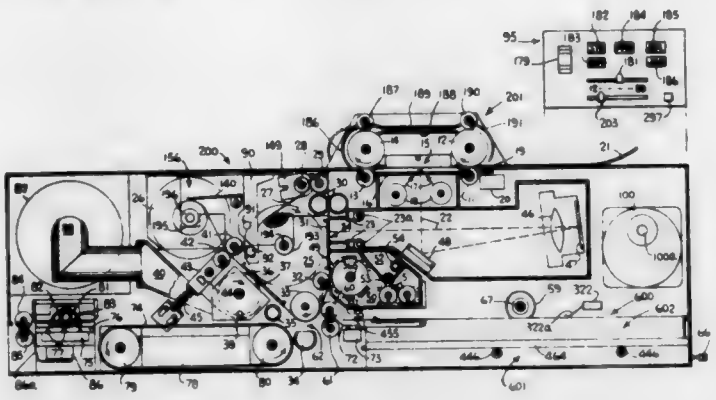
(d) means connected to said timer means for producing a signal in the event that said material detecting means does not detect the trailing edge of the copying material within said predetermined length of time, which signal is indicative of a copy material jam occurring along said path.

4,084,901

COPYING MACHINE

Torulf F. Aasen, Hollywood, Fla.; Jules Nisenson, Southbury, and Charles E. Pegg, Danbury, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 25, 1976, Ser. No. 670,253
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—16 **31 Claims**



1. In a copying machine having a base section wherein a photoreceptor web of indefinite length is utilized for the production of copies from an original document, the improvement comprising:

A. a photoreceptor module for insertion into a stationary position in said base section, said module including a supply reel and a take-up reel, each rotatably mounted on said module, said photoreceptor web normally being wound on said supply reel and moved to said take-up reel during successive copying operations of the copying machine, and

B. means formed in said base section

(i) for removably receiving said module therein through a top portion of said base section whereby said module may be easily removed from said base section and another module substituted therefor, and

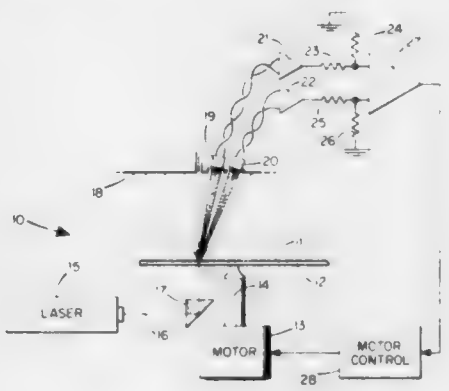
(ii) for holding said module in a stationary position in said base section.

4,084,902

METHOD AND APPARATUS FOR PRODUCING A SUSPENSION OF BIOLOGICAL CELLS ON A SUBSTRATE

James Edmond Green, P.O. Box 734, Fayetteville, Tenn. 37334

Filed Jul. 26, 1976, Ser. No. 708,878
Int. Cl.[2] G01N *1/10*
U.S. Cl. 356—38 **36 Claims**



1. A method for producing a desired cell density in a suspension of biological cells on a substrate, said method comprising the steps of:

(1) forming by electro-magnetic energy incident upon said cell suspension a cell modified pattern of electro-magnetic energy with respect to the axis of the incident electro-magnetic energy;

(2) detecting electro-magnetic energy levels at at least one off-axis location in said cell modified electro-magnetic energized pattern; and

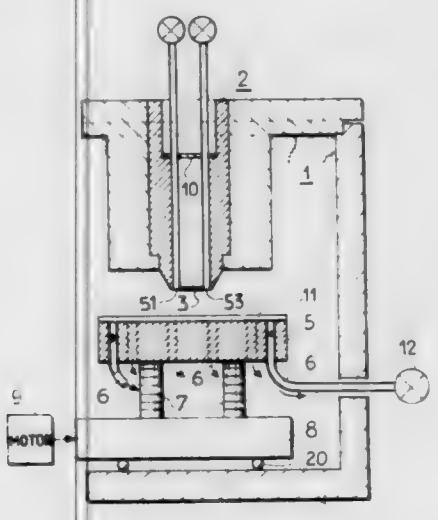
(3) reducing the cell density of said suspension of biological cells until a predetermined energy level is detected at said at least one off-axis location, said detected energy level being referenced to a preselected, constant energy level which is independent of the cell density of the suspension.

4,084,903

HIGH-PRECISION MASK PHOTOREPEATER

Georges Pircher, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 26, 1976, Ser. No. 735,890
Claims priority, application France, Oct. 31, 1975, 75 33464
Int. Cl.[2] G03B *27/42*
U.S. Cl. 355—53 **5 Claims**



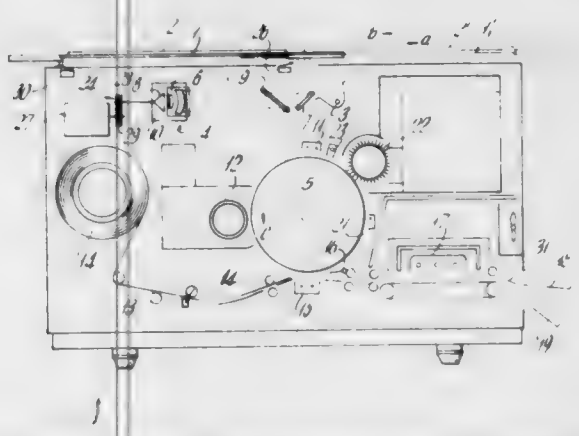
1. A mask photorepeater apparatus comprising a light source for radiating a light beam, and upon said light beam trajectory, a mask, an optical system, a table having means for carrying a sample holder, said system being adapted for forming of said mask, upon said sample, an image with a magnification factor substantially lower than 1, motor means for displacing said table, and computer means, for controlling said motor means according a predetermined program, said carrying means comprising at least three piezoelectric bars having respective electric control inputs, pneumatic sensors tied to said optical system, for sensing the distance between said sample and the front of said optical means, and for delivering control signals to said inputs of said bars.

4,084,904

OPTICAL COPYING APPARATUS

Hiroshi Ikeda, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 15, 1976, Ser. No. 705,744
Claims priority, application Japan, Aug. 1, 1975, 50-94496
Int. Cl.[2] G03B *27/70*; G03G *15/28*
U.S. Cl. 355—66 **9 Claims**



1. In an optical copying apparatus having an original carrying support or an original-image scanning mirror for scanning successively the surface of an original by reciprocation, a projecting optical system including an objective lens, and a photosensitive member movable in a given direction on which an original image is focused through said optical system, wherein said optical system comprises:

(a) a single objective lens;

(b) a single roof reflecting member positioned in the rear of said objective lens and having adjoining reflecting surfaces making a right angle therebetween and turnable through an angle of 90° in response to the advancing and returning travels of said support or said scanning mirror; and

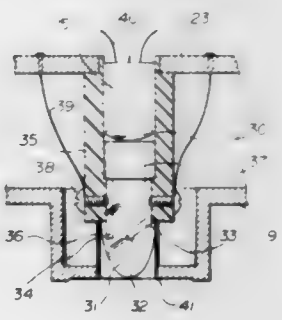
(c) a single semireflector member positioned in the optical path in the front of said objective lens and oriented to direct projecting beams from said original onto said lens and to direct projecting beams from said lens onto said photosensitive member.

4,084,905

APPARATUS FOR DETECTING AND MEASURING FLUORESCENCE EMISSION

Ulrich Schreiber, Burnaby, and William Vidaver, W. Vancouver, both of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Mar. 11, 1976, Ser. No. 666,170
Int. Cl.[2] G01J *3/30, 3/48*
U.S. Cl. 356—85 **1 Claim**



1. Apparatus for measuring light induced changes of chorophyll fluorescence yield i.e. the Kautsky effect in living plant samples comprising:

(a) a fluorometer probe comprising:

(1) a housing having a transparent window,

(2) a light emitting diode mounted in an epoxy dome lens positioned inside the housing adjacent the said window for illuminating the plant sample through the window,

(3) a phototransistor operating in the photovoltaic mode for detecting and measuring fluorescence emission received through the window from the plant sample on illumination mounted inside the housing in piggy-back relation to the said light emitting diode such that fluorescence emission from the plant sample passing through the window is collected and guided by the epoxy lens to the phototransistor,

(4) an optical filter mounted between the window and the phototransistor,

(5) a preamplifier adjacent and connected to the phototransistor,

(b) timing and control means connected to the probe via an extended electrical lead cable comprising:

(1) a timing circuit connected to the light emitting diode for controlling its on-off times,

(2) an amplifier and electrical filter connected to the preamplifier,

(c) output recording means connected to the said amplifier.

4,084,906

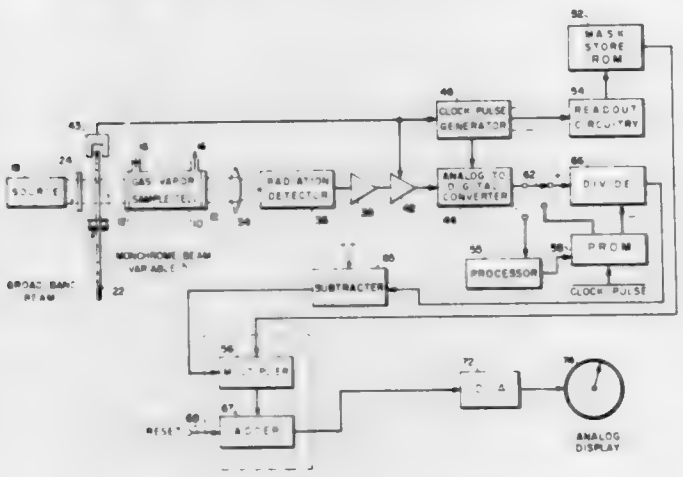
MULTIGAS DIGITAL CORRELATION SPECTROMETER

Robert J. Bibbero, Merion Station, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 547,706, Feb. 6, 1975, abandoned. This application Sep. 20, 1976, Ser. No. 724,957

Int. Cl.[2] G01J *3/42, 3/48*

U.S. Cl. 356—96 **1 Claim**



1. A spectrometer for monitoring a gaseous mixture in order to detect a component gas of interest in said mixture, comprising in combination:

a source of monochromatic radiation disposed to irradiate said mixture;

means for periodically sweeping said source through a predetermined spectrum of frequencies;

means disposed to receive the radiation emerging from said mixture and produce an electrical analogue signal which is a function of the intensity of the radiation received;

means synchronized with said periodically sweeping means for converting said electrical analogue signal to an output signal comprising series of binary numerical electrical signals representative of said analogue electrical signal to a plurality of discrete predetermined wavelengths;

means for storing a plurality of binary numbers whose values are a function of a spectrum of a component gas of interest at said discrete, predetermined wavelengths; and

means for correlating the binary output signal of said converting means with the binary numbers in said storage means including means to divide the output of said converting means by a series of binary numbers whose values are a function of the values of the output of the converter means at said predetermined wavelengths for a predetermined absorption by a gas mixture and means for subtracting the output of said divider means from one, means for multiplying the output of said subtracter means with the numbers stored in said storage means, and means for summing the output of said multiplier means.

4,084,907

METHOD AND APPARATUS FOR DETERMINING THE WAVE NUMBER OF OPTICAL SPECTRUM RADIATION

Jacques Andre Pinard, Buc, and Patrick Pierre Paul Juncar, Evry, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

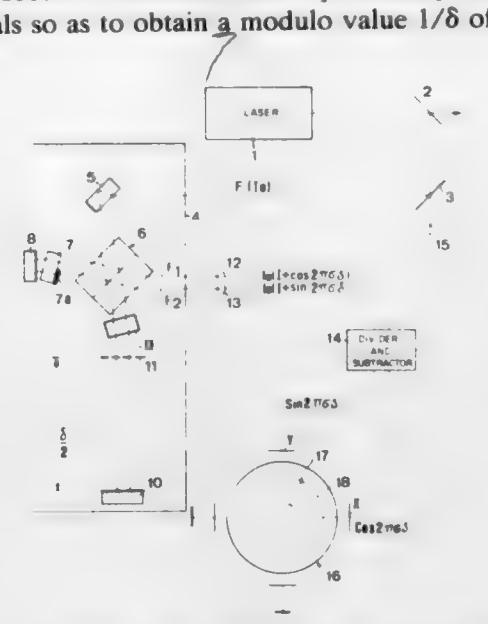
Filed Nov. 7, 1975, Ser. No. 630,028

Claims priority, application France, Nov. 14, 1974, 74 37583

Int. Cl.[2] G01B *9/02*

U.S. Cl. 356—106 S **14 Claims**

1. A method of determining the wave number of optical spectrum radiation of a beam provided by a source of radiation to be monitored including directing two parts of said beam to two double-wave interferometers, comprising the steps of assigning optical path length differences δ of said interferometers a difference value of $\lambda/4$ which corresponds to a phase difference of $\pi/2$, converting two output optical signals emerging from said interferometers into electrical sinusoidal signals in quadrature as a function of the wave number $\sigma = 1/\lambda$ of said source of radiation and δ, processing the two sinusoidal signals so as to obtain a modulo value $1/\delta$ of the wave



number, and repeating the aforesaid steps for different values of δ in order to come progressively closer to eliminating uncertainty in the value of the wave number.

4,084,908

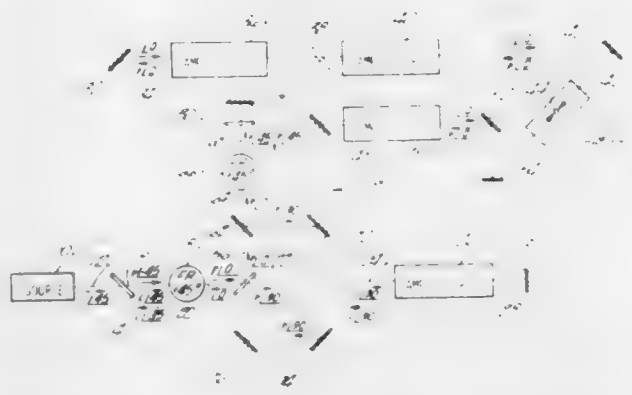
REPETITIVE OUTPUT LASER SYSTEM AND METHOD USING TARGET REFLECTIVITY

Roy R. Johnson, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Nov. 10, 1975, Ser. No. 630,616

Int. Cl.[2] G02F *1/09;* **G01B** *1/00;* **H01S** *3/00*

U.S. Cl. 350—151 **12 Claims**



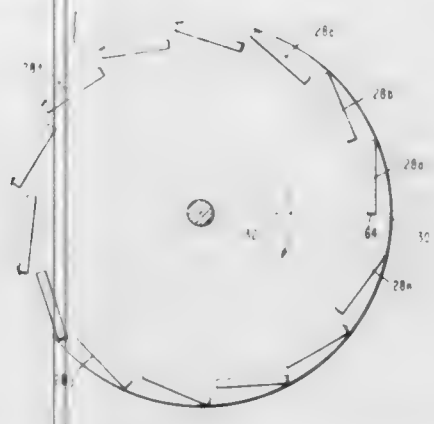
1. In the method of providing successive target illumination pulses in a pulsed laser system in which a significant portion of the laser energy incident upon a target is reflected thereby back into said system, and in which said reflected energy is diverted from said system by rotating the angle of polarization of said energy and then diverting said reflected energy at said rotated angle of polarization out of said system, the improvement comprising the steps of rotating said angle of polarization of said diverted energy to be equal to that of said incident energy at a selected point in said system, attenuating said diverted energy to be equal to the energy of said incident energy at said selected point in said system, and redirecting said rotated and attenuated energy to said selected point in said system, whereby successive target illumination pulses are directed onto a target as a result of target reflectivity.

4,084,909

DRUM MONOCHROMATOR

Einar Skau Mathisen, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 19, 1976, Ser. No. 706,982
Int. Cl.[2] G01J *3/48*
U.S. Cl. 356—188 6 Claims



1. In a monochromator, a combination comprising:

a light source;

a series of flat narrow band interference filters, each filter designed for transmitting light at a different nominal wavelength with the whole series of flat narrow band interference filters arranged in a circle in order of decreasing nominal wavelength adjacent the light source for relative rotational movement of the filters and light source so that the light source transmits light radially of the circle, each of said flat filters having one side which is perpendicular to a radius of the circle at one edge of the filter and not perpendicular to a radius of the circle at the opposite edge of the filter so that during said relative rotation movement the light transmitted through each of the filters varies in a range extending substantially from the nominal wavelength when the light is being transmitted through the filter at said one end to some value lower than the nominal wavelength as light is being transmitted through the filters at said other edge;

Light receptor means mounted on the opposite sides of said filters from said light source means for receiving light transmitted through said filters; and,

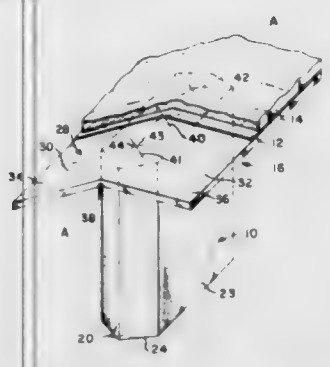
Means for effecting relative rotation between said filters and said light source means and said receptor means so that light passes through the filters in order of nominal wavelength whereby the nominal wavelength of light passing through each filter changes as the light directed thereon changes its position on the filter and the nominal wavelength of transmission changes substantially continuously across the spectrum covered by the series of narrow band interference filters as the light passes from filter to filter in the series.

4,084,910

DISPOSABLE SELF-CONTAINED LIQUID APPLICATOR

John LaRosa, New Milford, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Jul. 13, 1976, Ser. No. 704,776
Int. Cl.[2] B43K *5/14*
U.S. Cl. 401—133 15 Claims



1. A disposable self-contained liquid applicator comprising:

a container for liquids;

a rupturable membrane for sealing said container;

absorbent applicator means overlying said membrane for receiving liquid from said container when said membrane is ruptured; and

means underlying said membrane for producing a rupturing surface and for penetrating said membrane upon actuation by a force applied to the outside of the applicator said latter means being formed of a single piece of material and including a member having two planar sections intersecting to define a bending line and at least one serrated slit formed in said member along said bending line under said membrane, and wherein said slit has teeth-like edges in the plane of at least one of said planar sections for forming the rupturing surface and penetrating said membrane, said edges being moved outwardly against said membrane upon actuation of said means for producing a rupturing surface and for penetrating said membrane, wherein said planar sections have outer flange portions extending away from said container, said flange portions being manually moved downwardly and inwardly toward said container for producing said teeth-like edges from the sections of said member and for moving said edges outwardly against said membrane.

4,084,911

FLEXIBLE PAPER FASTENER

David A. DeWitt, Tewksbury, Mass., assignor to Ames Safety Envelope Company, Somerville, Mass.

Continuation-in-part of Ser. No. 675,743, Apr. 12, 1976, abandoned. This application Jan. 26, 1977, Ser. No. 762,653
Int. Cl.[2] B42F *13/04, 13/10*
U.S. Cl. 402—15 2 Claims



1. A fastener for securing perforated sheets of paper to a base such as a file folder comprising an elongated flexible thermoplastic tubular member having opposite end portions arranged to extend through spaced apart perforations in said sheets and a flattened intermediate portion for attachment to said base, a stiff generally U-shaped bridge member having its ends spaced apart by a distance approximately equal to the length of said flattened intermediate portion of the tubular member and arranged to engage releasably with opposite ends of said tubular member to maintain them spaced apart, and a stiff keeper having a pair of friction locks spaced apart by a distance approximately equal to the spacing between said ends of said bridge member, said locks being arranged to engage releasably opposite portions of said flexible tubular member,

wherein the improvement comprises a flexible resilient laminated plastic sheet having a length at least 20% longer than the length of said flattened intermediate portion of said tubular member, and having an upper facing layer thereof heat sealed to said flattened intermediate portion throughout its length, and having on its opposite face extending throughout its area a layer of pressure sensitive adhesive for adhering said sheet to said base, and a temporary protective cover sheet at the bottom exposed surface of said pressure sensitive adhesive layer, said tubular member and the upper facing layer of said laminated sheet both being vinyl resin and having softening temperatures within 5° C of each other, and said laminated sheet having an intermediate polyester reinforcing layer between said upper facing layer and said pressure sensitive adhesive layer, said intermediate polyester reinforcing layer having

a softening temperature of at least 150° and more than 40° C above the softening temperature of said upper facing layer.

4,084,912

METHOD AND ASSEMBLY FOR SEALING GAPS BETWEEN ADJACENT ROADWAY SLABS

Lawrence F. Pyle, Des Plaines, and John F. Brady, Wood Dale, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed Jul. 19, 1976, Ser. No. 706,691
Int. Cl.[2] E01C *11/02*
U.S. Cl. 404—74 **6 Claims**

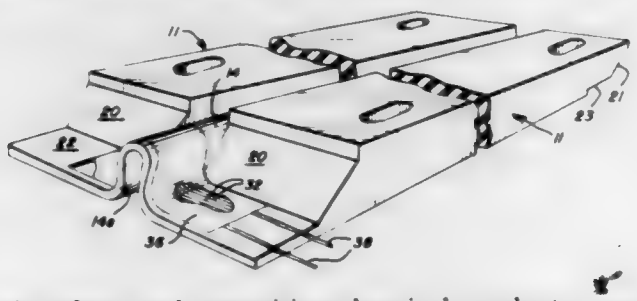
1. A roadway joint sealing assembly for providing a sealed joint between a pair of elongate adjacent roadway slabs which are spaced from each other to define a gap therebetween, comprising:

a first elongated gap sealing member spanning said gap and anchored to said slabs and having a first elastomeric confronting end surface;

a second elongated gap sealing member spanning said gap and anchored to said slabs and having a second elastomeric confronting end surface having a configuration generally complementing the shape of said first confronting end surface for mating and abutting confrontation therewith;

heat activatable bonding agent comprising an envelope of vulcanizable rubber-like material spanning said gap and disposed between said first and second confronting surfaces; and

expansive heating means secured to one of said confronting



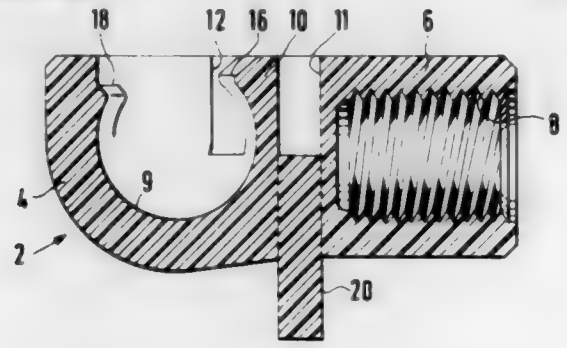
end surfaces and comprising electrical conductor means within said envelope positioned to remain in situ, spanning said gap and cooperating with and disposed adjacent at least one of said confronting surfaces for heating said heat activatable bonding agent to sealingly bond said confronting surfaces to each other, leads coupled to said electrical conductor means and extending outwardly of said envelope and outwardly of said gap sealing members for energizing said conductor means, thereby to provide in situ, when said conductor means is energized a vulcanized sealed joint at said respective end surfaces across at least a portion of said gap.

4,084,913

JOINT SOCKET FOR AN ANGLE JOINT

Bernd Schenk, Hamburg, Germany, assignor to ITW-ATECO G.m.b.H., Norderstedt, Germany

Filed Mar. 8, 1976, Ser. No. 664,735
Claims priority, application Germany, Mar. 20, 1975, 2512253
Int. Cl.[2] F16C *11/10*
U.S. Cl. 403—141 **8 Claims**



1. A joint socket for an angle joint, especially a ball and socket joint, comprising a bearing basket having a bearing seat for accommodating a pivot and provided with at least one resilient interlocking element to retain the pivot in the bearing seat, said interlocking element comprising a deflectable tongue (**10**;**10***a*) forming a portion of the bearing basket (**4**), said tongue (**10**;**10***a*) including a projection (**16**) forming an undercut which serves as the interlocking element to retain the pivot in the bearing seat, said tongue (**10**;**10***a*) at the rear wall thereof opposite from the bearing seat (**9**) is separated from the remaining part of the bearing basket (**4**) by an open ended slot (**11**;**11***a*) extending the entire depth of the bearing basket and said tongue is further separated at the two side walls thereof by two lateral slots (**12**;**14**;**12***a*;**14***a*), said tongue (**10**;**10***a*) being capable of resilient deflection into said slot (**11**;**11***a*), and at least one displacement member (**20**;**20***a*) capable of being inserted into the slot (**11**;**11***a*) to prevent the resilient deflection of the tongue after the pivot has been mounted in the seat (**9**).

4,084,914

SELF-ERECTING HIGHWAY GUIDE POST

William D. Humphrey, 909 Riverview Ave., and Allen Becker, 101 Hillcrest Dr., both of Selah, Wash. 98942

Filed Jan. 28, 1977, Ser. No. 763,239
Int. Cl.[2] E01F *9/00*
U.S. Cl. 404—10 **15 Claims**



1. A self-erecting highway guidepost comprising: a channel of a flexible, impact resistant plastic material having an elongated substantially flat center portion, one surface of which forms a face of the post; a pair of elongated, substantially flat side portions each flanking opposite sides of the center portion at an obtuse angle to the center portion; a pair of curved corner portions each joining a respective side portion to the center portion so that the side portions give rigidity to the channel maintaining the channel in a substantially linear configuration when it is undisturbed, which corner portions uncurve to permit the channel to nondestructively bend when it is struck on the face side, and which corner portions recurve to erect the post again.

4,084,915

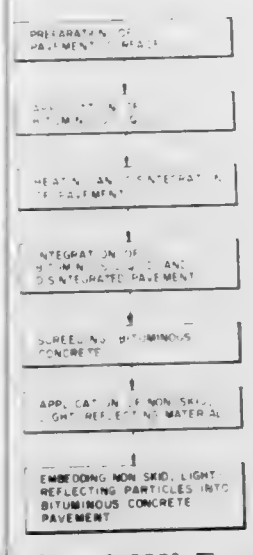
METHOD FOR RECONDITIONING AND RESURFACING PAVEMENT

Nathan Wiseblood, 2000 Presidential Way, West Palm Beach, Fla. 33401

Filed Oct. 4, 1976, Ser. No. 729,027
Int. Cl.[2] E01C *7/06*
U.S. Cl. 404—77 **9 Claims**

1. A method for reconditioning and resurfacing worn bituminous concrete pavement wherein said method consists of: (a) heating and disintegrating the upper portion of said worn bituminous concrete pavement and integrating a bituminous liquid into the disintegrated bituminous concrete pavement, said heating being conducted so that said upper portion is

heated to between about 180° F and about 250° F and said integration of said bituminous liquid being accomplished at least in part during the disintegration of said pavement, (b) screeding the mixture of said bituminous liquid and said disintegrated bituminous concrete pavement so as to restore the original surface grade, (c) applying onto said upper surface of said bituminous concrete pavement a quantity of non-skid, light-reflecting, multi-colored and irregularly-shaped aggregates of an inorganic vitreous pozzolanic material recovered as a residue in the high temperature burning of household waste and garbage, and (d) embedding said non-skid, light-reflecting aggregates into said upper surface of said bituminous concrete pavement so as to form a smooth surface with the aggregates fixed at the top of the pavement, said bituminous liquid being composed of at least one of the following: a combination of oils and asphalt emulsions at a temperature of between 50° F and a combination of oils and cut-back asphalts at a temperature of



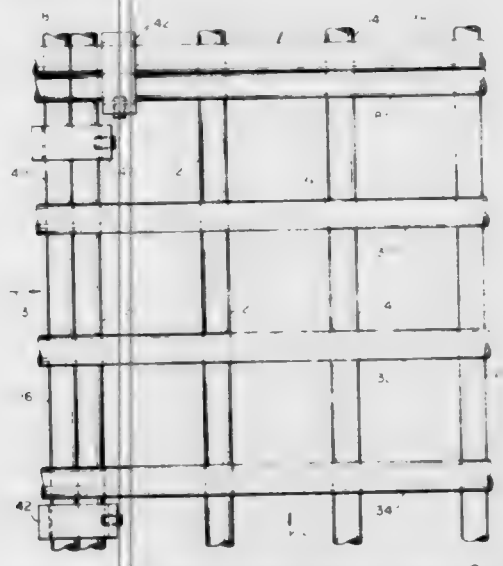
between about 100° F and 200° F, said inorganic vitreous pozzolanic material consisting of about 35 to 55% by weight of a colored, vitreous, light-reflecting substance and about 45 to 65% by weight of a pozzolanic substance, said pavement being disintegrated to a depth of between about 0.5 and about 2.5 inches and said aggregates having a maximum size of about 0.5 inch.

4,084,916

STEEL MESH SYSTEM AND BRACKETS

Charles Senn, 12633 Wilfred Ave., Detroit, Mich. 48213

Filed Dec. 22, 1976, Ser. No. 753,217
Int. Cl.² E01C *11/16*
U.S. Cl. 404—134 **3 Claims**



1. A heavy steel mesh reinforcing system for airport runways or the like comprising at least two steel mesh sections each including a plurality of spaced apart parallel steel bars in each of two mutually perpendicular directions welded together at their intersections and including peripheral bars positioned side by side with one peripheral rod in each mesh section extending parallel to one peripheral rod in the other mesh section and in linear side by side contact therewith, the parallel rods in each of the mesh sections being axially aligned with corresponding rods in another mesh section, and rigid bracket means securing said peripheral rods in side by side contact together, which bracket means comprises a U-shaped member having a substantially straight flat connecting portion and two leg portions extending substantially perpendicularly from the ends of the connecting portion in the same direction defining a recess for receiving the peripheral rods in side by side contact therein, one of said leg portions having a surface forming an inner surface of the recess which is inclined toward the outer end of the connecting portion of the bracket means from the free end of the one leg portion whereby the one leg portion is narrower at the connection thereof with the connecting portion than it is at the free end thereof, the other surfaces of the leg portions of the bracket extending perpendicularly to the connecting portion thereof and a set screw extending perpendicularly through the other leg portion of the bracket having a center line parallel to the connecting portion and outwardly of the other leg portion of the connecting bracket toward the free end thereof from the center line of the peripheral rods in side by side contact whereby the peripheral rods in side by side contact are secured together by the bracket means within the recess formed by the bracket means.

4,084,917

TURNING TOOL, ESPECIALLY FOR COPYING TURNING

Bernard Stumpp, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed Nov. 10, 1976, Ser. No. 740,757
Int. Cl.² B26D *1/00*
U.S. Cl. 407—114 **5 Claims**



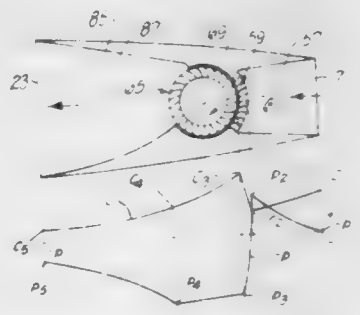
1. A turning plate, especially of hard metal for turning processes and particularly for copier turning, comprising a workpiece-engaging side having a pair of spaced-apart colinear relatively long main cutting edges defining a recess between them, and respective relatively short auxiliary cutting edges adjoining said main cutting edges and having a different angle of attack therefrom upon the workpiece, said short edges constituting flanks of said recess, said main cutting edges are at least several times as long as said auxiliary cutting edges.

4,084,918

WIND MOTOR ROTOR HAVING SUBSTANTIALLY CONSTANT PRESSURE AND RELATIVE VELOCITY FOR AIRFLOW THERETHROUGH

Vladimir H. Pavlecka, Newport Beach, Calif., assignor to Turbomachines, Inc., Irvine, Calif.

Filed Aug. 6, 1974, Ser. No. 495,255
Int. Cl.² F01D *1/14*; F03D *3/04*
U.S. Cl. 415—1 **19 Claims**



1. A method of generating power from wind comprising: providing a turbine in an ambient airstream with the turbine

having a rotor with a plurality of blades and a stator with a plurality of blades upstream of the rotor;

expanding a portion of the ambient airstream by passing some of the ambient airstream through the stator to provide an incoming airstream of less pressure and greater absolute velocity than the ambient airstream;

passing the incoming airstream through the rotor to drive the rotor and to provide an exiting airstream;

conducting the exiting airstream through a duct to increase the pressure and decrease the absolute velocity of the exiting airstream;

discharging the exiting airstream from the duct; and

said step of passing being carried out without substantially changing the pressure and relative velocity of the airstream in the rotor.

4,084,919

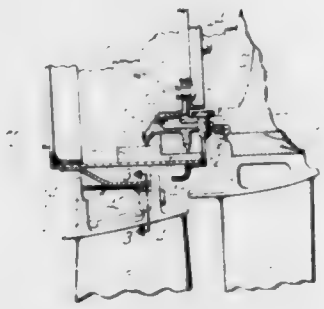
MEANS OF ATTACHING A SEAL TO A DISK

Edwin Morris, Jr., Lake Park, and David F. Toler, Riviera Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 29, 1976, Ser. No. 701,004

Int. Cl.[2] F01D *5/20*

U.S. Cl. 415—136 **2 Claims**



1. In combination, a sealing device for use between a rotating disk having blades and the inner ends of vanes, comprising a disk mounted for rotation, said disk having blades mounted thereon, vanes mounted adjacent to said blades, a ring connected to the inner ends of said vanes, a first annular seal means fixed to the interior of said ring, an annular flange extending axially from said disk having a free end and an inner surface and outer surface, a second annular sealing member fixed to said flange, said second annular sealing member being U-shaped in cross-section with an inner and outer arm, said inner arm having an end, said outer arm having an end, the end of said inner arm contacts the inner surface of the flange and the end of the said outer arm contacts the outer surface of the flange, said flange and U-shaped sealing member having a plurality of aligned openings around the circumference thereof, a plurality of pins having enlarged heads, each pin having an enlarged head is located extending through each of the aligned openings with its head located inside of said flange for retaining said second annular sealing member to said flange, an inwardly radially extending flange fixed to the end of said inner arm, a pin retaining ring fixed to said inwardly radially extending flange for keeping said pins in place, said outer arm of said second annular sealing member having a knife edge seal for cooperating with said first annular seal means.

4,084,920

ARRANGEMENT FOR MAINTAINING OPTIMUM MINIMUM OPERATING CLEARANCE BETWEEN ROTOR AND STATOR COMPONENTS OF FLUID-FLOW MACHINES AND METHOD OF OPERATING THE SAME

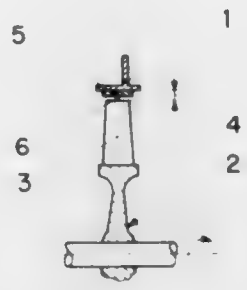
Josef Zboril, Fislisbach, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Division of Ser. No. 483,076, Jun. 25, 1974, abandoned. This application Jun. 28, 1976, Ser. No. 700,450

Claims priority, application Switzerland, Jun. 29, 1973, 9487/73

Int. Cl.[2] F01D *11/08*

U.S. Cl. 415—174 **7 Claims**



1. In a machine comprising a rotor component and a stator component having oppositely situated surfaces, at least one abradable element provided at one of the surfaces of one of said components and confronting the oppositely situated surface of the other component to define an operating clearance therebetween by abrading particles from the abradable element, the abradable element consists of cast iron and constitutes a growth element compensating for its own abrasion or wear in order to maintain said operating clearance at a size promoting efficient operation of the machine, and said growth element growing under the operational conditions of the machine to thereby compensate for any abrasion or wear to which said growth element is subjected to during operation of the machine.

4,084,921

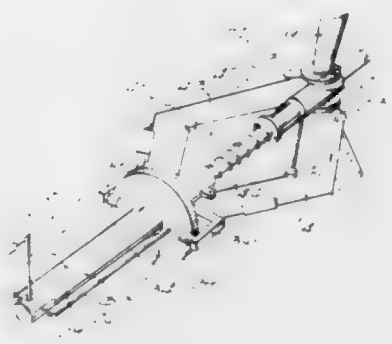
WINDMILL WITH CYCLICALLY FEATHERING BLADES

Gerald R. Norz, P.O. Box 187, Fish Creek, Wis. 54212

Filed Apr. 5, 1977, Ser. No. 784,896

Int. Cl.[2] F03D *7/04*

U.S. Cl. 416—17 **6 Claims**



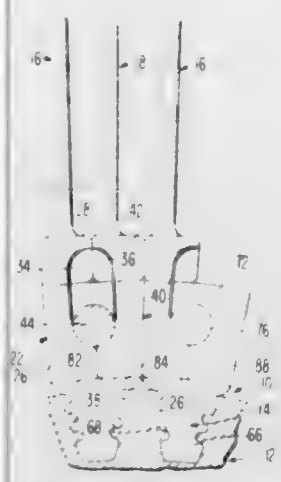
1. A wind energy collector having a rotor turning on a horizontal axis, said rotor having at least one blade pivotly mounted thereon and being adjustable in pitch throughout 360° rotation of said rotor, detector means to sense a deviation between the wind direction and the axis of rotation of said rotor, control means to translate the amount of deviation to the blade and cyclically and differentially to vary the pitch of the blade so that the blade has a flatter pitch when the angle between blade and wind direction is acute and a greater pitch when the angle between blade and wind direction is obtuse, whereby to cause the axis of the rotor to turn into alignment with the wind direction, the differential pitch being zero when the axis of the rotor is in alignment with the wind direction.

4,084,922

TURBINE ROTOR WITH PIN MOUNTED CERAMIC TURBINE BLADES

Robert G. Glenn, Huntingdon Valley, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 27, 1976, Ser. No. 754,722
Int. Cl.[2] F01D *5/32*
U.S. Cl. 416—220 R **10 Claims**



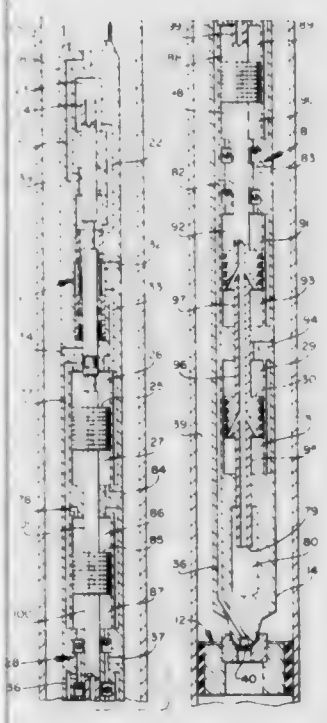
1. In a gas turbine rotor: a rotor disk having an outer periphery; a plurality of blade attachment pieces coupled to the outer periphery of the rotor disk and extending outwardly therefrom, each attachment piece including a root and a pair of axially spaced, radially extending end walls coupled with the root; and a pair of ceramic rotor blades for each attachment piece, respectively, each blade having a base and a blade portion extending outwardly from the base, the bases of the pair of blades of each attachment piece being disposed between the end walls of the attachment piece, each base being provided with an open recess, the open recesses of the bases mating with each other to form a closed recess; and pin means carried by the end walls of each attachment piece, respectively, and extending through the closed recess for coupling the blades to the attachment pieces.

4,084,923

DOUBLE-ACTING, DOWNHOLE PUMP ASSEMBLY

George K. Roeder, P.O. Box 4335, Odessa, Tex. 79760

Continuation-in-part of Ser. No. 632,550, Nov. 7, 1975. This application Jul. 6, 1976, Ser. No. 702,695
Int. Cl.[2] F04B *17/00, 35/00, 21/04*
U.S. Cl. 417—393 **8 Claims**



1. A downhole, hydraulically actuated pump assembly for producing a well comprising an elongated pump housing having an upper and a lower end; a plurality of spaced piston cylinders formed within said housing in axial alignment with one another;

a piston reciprocatingly received within each of said piston cylinders, each said piston dividing its corresponding piston cylinder into upper and lower piston chambers;

means forming a control valve assembly within the upper marginal end of said pump housing, means forming a production inlet passageway at the lower end of said pump housing; means forming a power fluid inlet passageway at the upper end of said pump assembly, an upper fluid chamber located between said power fluid inlet and said valve assembly, means forming a rod balance cavity between said production inlet passageway and the lowermost piston chamber;

a hollow control rod reciprocatingly received within and extending from said upper fluid chamber, through said control valve assembly, and to the uppermost of said pistons; a hollow connecting rod interconnecting each of said pistons, a hollow balance tube extending from the lowermost of said pistons and into said rod balance cavity;

the uppermost chambers of two adjacent uppermost piston cylinders and the lowermost chambers of two adjacent lowermost piston cylinders being engine chambers, there being four piston chambers located between said uppermost and lowermost engine chambers, said four piston chambers being production chambers;

means, including a check valve, forming a produced fluid outlet for each of said production chambers; means, including a check valve, forming a flow path from said production inlet into each of said production chambers;

means forming a power fluid flow path from said power fluid inlet to said control valve assembly;

means forming a first flow passageway which extends from said valve assembly, to said upper fluid chamber, through said control rod, through said connecting rod and the pistons connected thereto, and through the lowermost of said lower pistons into said lowermost piston chambers;

means forming a second flow passageway which extends directly from said valve assembly into said uppermost engine chambers;

and means forming a spent power fluid flow path from said valve assembly by which spent power fluid can be exhausted from said upper and said lower engine chambers through said first and second flow passageways; and,

means by which reciprocal movement of said hollow control rod causes said control valve assembly to alternately connect said first and second flow passageways to said power fluid inlet passageway and said spent power fluid flow path.

4,084,924

PUMP-MOTOR ASSEMBLAGE FOR CIRCULATING A COOLANT

Alexander Ivanoff, 20 Brookside Dr., and Victor Ivanoff, 30 Brookside Dr., both of Greenwich, Conn. 06830

Filed Feb. 25, 1977, Ser. No. 772,066
Int. Cl.[2] F04B *17/00, 35/04*
U.S. Cl. 417—424 **10 Claims**

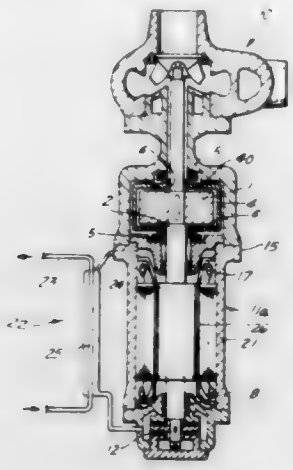
1. A motor-pump assemblage for circulating a coolant through an installation requiring heat transfer, said motor-pump assemblage comprising:

a pump and an electric zero-leakage motor having an extended drive shaft operatively coupled to said pump;

a flywheel mounted on said shaft intermediate the pump and the motor rotationally locked to the shaft;

a freewheeling shroud encompassing said flywheel spaced apart therefrom and rotatable about said shaft and said flywheel, said shroud including passage means providing

ingress and egress of liquid into and out of the space between the shroud and the flywheel; and



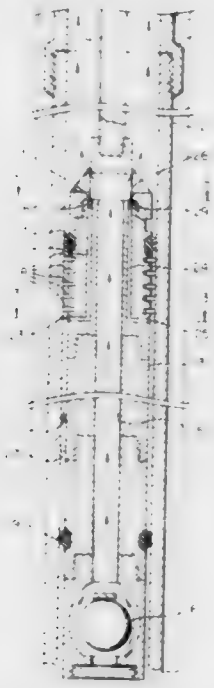
a casing enclosing said motor, flywheel and shroud, said casing being filled with liquid.

4,084,925

OIL WELL PUMP WITH SELF-CONTAINED LUBRICATION

Ruben Jasper Stroud, 11988 N. Ventura Ave., Ojai, Calif. 93023, and Robert Clayton Simonson, 1132 Poli Ave., Ventura, Calif. 93001

Filed Aug. 10, 1976, Ser. No. 713,115
Int. Cl.[2] F04B *21/04*; F01B *31/00*
U.S. Cl. 417—554 **2 Claims**



1. An oil well pump for connection in the lower end of a tubing string including a rod for actuating said pump, comprising, in combination:

a. a tubular barrel;

b. a plunger in said barrel connected to said rod for reciprocating movement and having an inner bore;

c. a check valve incorporated in said inner bore of said plunger;

d. upper and lower spaced seal means on the exterior of said plunger radially extending from the outer wall of said plunger to engage the inside wall surface of said barrel and define therebetween an annular sealed reservoir;

e. a first passage in the wall of said plunger extending between a first exterior port outside said seal means to an inlet port communicating with said annular sealed reservoir;

f. a second passage in the wall of said plunger extending between an outlet port communicating with said annular sealed reservoir and a second exterior port outside said seal means;

g. a lubricating fluid completely filling said annular sealed reservoir; and

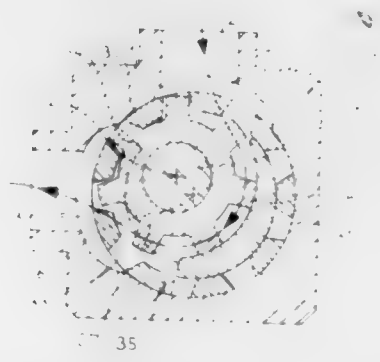
h. plug means sealingly closing said first and second ports after said lubricating fluid has been introduced into said reservoir through said first passage and air therein driven out through said second passage, whereby reciprocating movement of said plunger in said barrel is lubricated by said fluid in said reservoir.

4,084,926

ROTARY GEAR PUMP

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed Feb. 15, 1977, Ser. No. 768,733
Claims priority, application Denmark, Feb. 25, 1976, 793/76
Int. Cl.[2] F04C *15/04*
U.S. Cl. 418—19 **3 Claims**



1. A rotary gear pump comprising two excentrically arranged gear wheels of different sizes, of which the greater gear wheel is rotatably mounted in the generally cylindrical housing of the pump and the smaller gear wheel is mounted upon a shaft which is arranged excentrically in the housing of the pump in such a way that the teeth of the two gear wheels, in the working condition of the pump, are mutually engaged along an area of the inner circumference of the housing of the pump between the outlet of the pump and the inlet of the pump, and are arranged with an interspace between the top circles of the teeth along another part of the circumferences of the wheels, a blocking member being arranged in the interspace with one surface of the blocking member sealing against teeth of the smaller gear wheel and with another surface of the blocking member sealing against teeth of the greater gear wheel, wherein the shaft and the blocking member are mounted rotatably in the housing about the axis of the greater gear wheel together with an element of the housing wherein a duct is provided which, as seen in the circumferential direction of the housing, extends along an angle which is greater than the angle between the inlet of the pump and the outlet of the pump, said duct, moreover, being offset in the circumferential direction with respect to the area along which the greater and the smaller gear wheels engage.

4,084,927

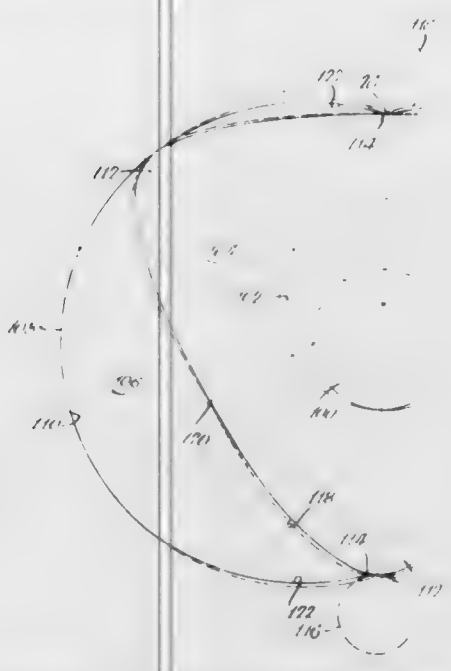
MODIFIED HYPOTROCHOIDAL ROTARY MECHANISM

John K. Amdall, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 7, 1976, Ser. No. 730,493
Int. Cl.[2] F01C *1/02, 21/08, 21/10*; F02B *55/14*
U.S. Cl. 418—61 A **7 Claims**

1. In a hypotrochoidal rotary mechanism including a multinosed rotor having a generally hypotrochoidal peripheral surface, a shaft having an eccentric journalling the rotor, and a housing defining a chamber receiving the rotor and journalling the shaft and having an internal, lobed surface having an enve-

lope determined by the locus of a nose on the peripheral surface of the rotor for a predetermined relative rotation ratio of the rotor, the shaft and the housing, the improvement wherein the said internal surface is nonparallel to and located inwardly



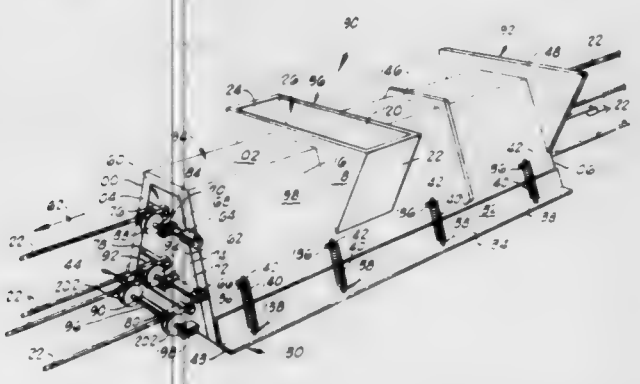
of said envelope immediately adjacent and to either side of the lobe(s) to provide a gentle, continuous curve at the lobe(s) and wherein said peripheral surface is relieved in areas between each nose sufficiently to prevent interference between said surfaces upon rotation of said rotor within said chamber.

4,084,928

SLIP FORM HAVING REINFORCEMENT ACCOMMODATING MEANS

Adolph R. Petersik, Oklahoma City, Okla., assignor to CMI Corporation, Oklahoma City, Okla.

Filed Nov. 3, 1976, Ser. No. 738,349
Int. Cl.[2] B28B *13/04, 23/06*
U.S. Cl. 425—64 **4 Claims**



1. In an apparatus for forming a continuous barrier on a surface, the barrier formed of concrete material or the like in which at least one continuous reinforcing rod is disposed to extend through the length of the barrier and in which reinforcement cages are disposed at predetermined intervals along the barrier, an improved concrete forming assembly comprising:

a concrete forming member having a forward end, an upper portion and a rearward end, the concrete forming member having a form cavity extending therethrough to intersect the rearward end and the forward end, the formed barrier being extruded from the rearward end of the concrete forming member when the concrete forming member is moved along the surface;

a concrete passing member supported on the upper portion of the concrete forming member and having a concrete delivery opening therethrough having a fluid communication with the form cavity, the concrete passing member disposed between the forward end and the rearward end of the concrete forming member; and

a forward end closing assembly attached to the concrete forming member at the forward end thereof and comprising:

a door member pivotally attached to the forward end having a closed position wherein the door member is positioned transverse to, and in partial blocking relationship to, the form cavity, the door member having a rod clearance channel, and the door member having an open position wherein the door member is positioned clear of the form cavity, the clearance channel permitting the door member to clearingly pass the reinforcing rod; and

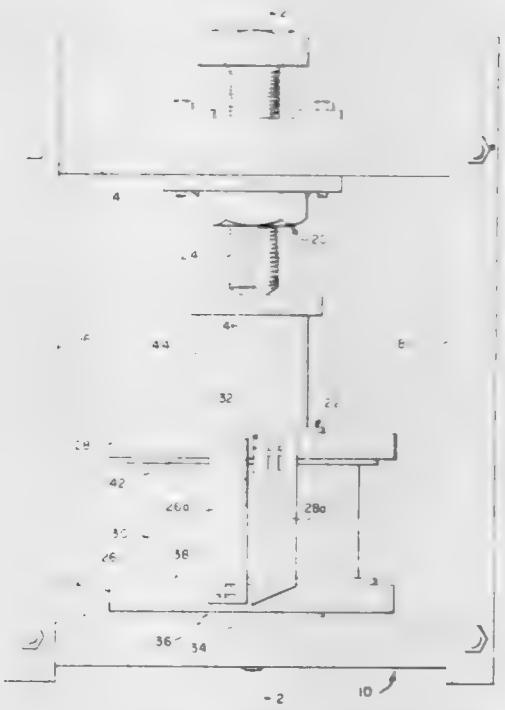
rod positioning means supported by the door member for positioning and guiding the reinforcing rod through the rod clearance channel when the door member is in the closed position.

4,084,929

APPARATUS FOR PRODUCING PACKING RINGS FOR FLUID SYSTEMS AND THE LIKE

John James McGarry, Sr., 1019 Clearview Dr., Middletown, Pa. 17057, and Samuel Edward Jules, 1039 Pennsylvania Ave., R.D. #5, Harrisburg, Pa. 17111

Division of Ser. No. 650,798, Jan. 20, 1976. This application Feb. 25, 1977, Ser. No. 772,102
Int. Cl.[2] B29C *3/00*
U.S. Cl. 425—169 **6 Claims**



1. An apparatus for forming annular members, such as packing rings, of substantially any material and with substantially any dimensions with the number of parts in use remaining constant, said apparatus comprising:

a base plate;

a header plate;

an axial pin member extending through and substantially normal to said plates;

a plurality of concentic cylindrical members selectively arranged in three groups between said plates to define a core, a housing coaxial with said core and defining an annular cavity therebetween, and an annular ram of dimensions substantially equal to said cavity; and

means to apply compressive forces to drive said plates towards each other and against said cylindrical members whereby fiberous packing material deposited in said cavity is compressed into annular form.

4,084,930

APPARATUS FOR THE PRODUCTION OF A YARN HAVING A POTENTIAL CRIMP

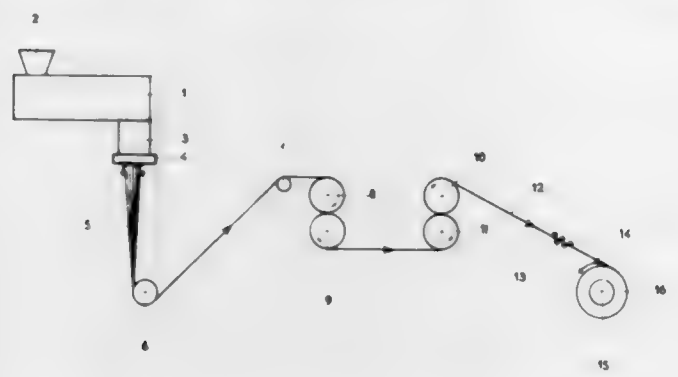
Jean-Louis Neveu, Lozanne, France, and Sylvio Melancon, 7235 Chateaubriand, Montreal, Quebec, Canada, assignors to Sylvio Melancon, Quebec, Canada and Agence Nationale de Valorisation de la Recherche, Neuilly (Seine), France

Filed Oct. 26, 1976, Ser. No. 735,747

Claims priority, application France, Oct. 30, 1975, 75 34012

Int. Cl.[2] B29F *3/02*

U.S. Cl. 425—198 **9 Claims**



1. Apparatus for the production of a yarn having a potential crimp, said apparatus comprising, in combination:

(a) means for feeding polymer under pressure comprising an extruder or a metering pump (**1**);

(b) a block (**23**) connected to the outlet of said feeding means, said block having a central passage (**24–25**) therethrough for the passage of polymer from said feeding means to a spinning head, a frusto-conical upstream portion (**25**) of said central passage converging in a downstream direction;

(c) heat exchange means (**27**) on said block (**23**) for imparting to the polymer, as it passes through passage (**24**) a temperature differential between the polymer at the center of the passage and the polymer at the walls of the passage;

(d) a spinning head (**32**) mounted downstream from block **23** and including:

a single passage (**34**) for transferring polymer issued from the block (**23**) to a spinneret (**37**) the longitudinal axis of the said passge (**34**) being concentric with the longitudinal axis of the central passage (**24**) of block (**23**), and

spinneret (**37**) formed with at least one row of holes therein,

(e) and means (**15–16**) for receiving the yarn extruded through the spinneret (**37**).

4,084,931

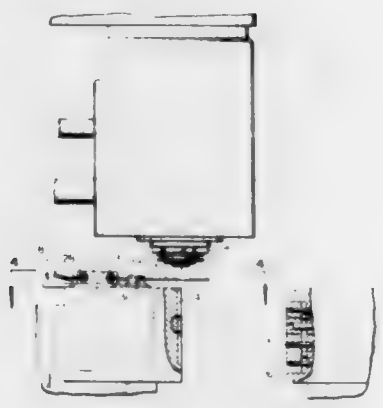
PLASTIC MOLDING APPARATUS

Bly A. Corning, 1902 Hampden Rd., Flint, Mich. 48503

Filed Aug. 30, 1976, Ser. No. 718,787

Int. Cl.[2] B29F *1/05*

U.S. Cl. 425—218 **6 Claims**



1. Injection plastic molding apparatus comprising

a pair of dies, said dies forming therebetween an aperture,

means moving said dies toward and away from one another horizontally relative to one another between a closed molding position and an opened position,

a nozzle,

means moving said nozzle vertically toward and away from said aperture such that said nozzle is engageable with said dies for injecting plastic into the cavities thereof when the dies are in closed position and movable away from said dies so that when the dies are opened and the parts are ejected from the molds, a fine drool of plastic may occur between the nozzle and the part,

a hot wire,

means rigidly mounting said wire on one of said dies, said wire extending from one of said dies to substantially surround said aperture so that when the dies are moved relative to one another to an open position, the hot wire will engage any drool of plastic,

and means operable to energize the wire at a temperature sufficient to melt and sever the drool when the means for moving said dies is actuated to open said dies permitting the part to fall under the action of gravity.

4,084,932

ISOSTATIC MOLD APPARATUS

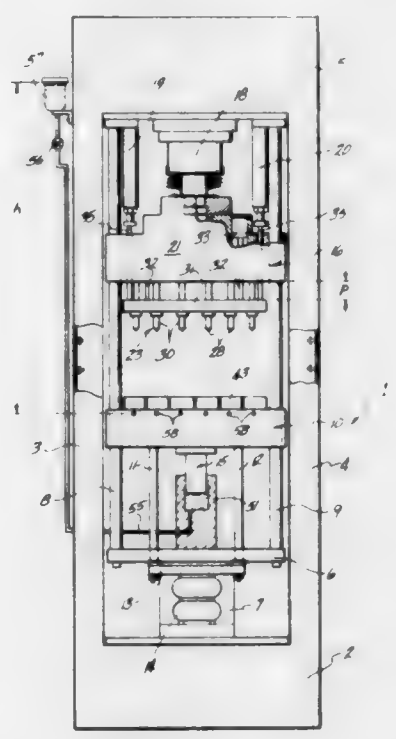
Kenneth John Morris, Cheveley Park Estate, and Jan Salovsky, Sunderland, both of England, assignors to Olin Energy Systems, Ltd., Sunderland, England

Filed May 13, 1977, Ser. No. 796,571

Claims priority, application United Kingdom, May 20, 1976, 20934/76

Int. Cl.[2] B30B *5/02, 11/00*

U.S. Cl. 425—405 H **6 Claims**



1. An isostatic pressure molding apparatus comprising:

a. a fixed frame

b. a first bolster assembly slidably mounted on said frame, said first bolster assembly housing at least one mold to which fluid pressure is applied to compact powder disposed therein into a coherant body;

c. a piston mounted on said first bolster assembly and movable therewith, said piston having a passage through which pressure fluid flows to said mold;

d. a pressure fluid reservoir mounted on said frame, said piston extending into said reservoir so that movement of said first bolster assembly in a first direction results in said piston being moved further into said reservoir to cause the fluid therein to flow through said piston passage to said mold; and

e. spring means mounted on said frame separate from said

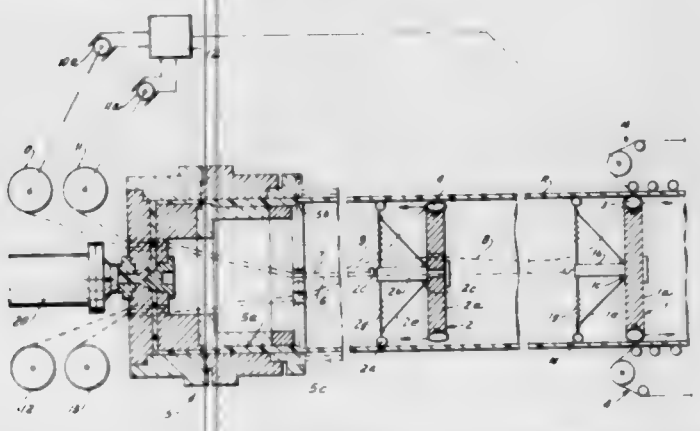
pressure fluid reservoir, means connecting said spring means with said first bolster assembly, said spring means being separable to return said first bolster assembly in a direction opposite to said first direction upon completion of a pressing operation.

4,084,933

APPARATUS FOR THE SEALING OF THE INTERIOR OF SYNTHETIC-RESIN TUBES DURING EXTRUSION

Paul Reitemeyer, and Hans Reifenhauser, both of Troisdorf-Bergheim, Germany, assignors to Reifenhauser KG, Troisdorf, Germany

Filed Dec. 3, 1976, Ser. No. 747,185
Claims priority, application Germany, Dec. 4, 1975, 2554551
Int. Cl.[2] B29D *23/04*
U.S. Cl. 425—467 **6 Claims**



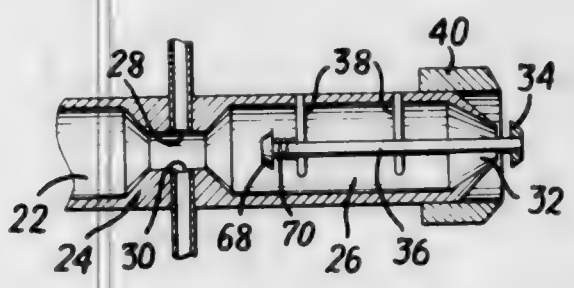
1. An apparatus for the sealing of a synthetic-resin tube continuously produced at a head, said apparatus comprising a pair of axially spaced plugs receivable in such tube; respective tractive elements connected to said plugs for effecting an alternating retraction and advance of said plugs along with such tube; and means including respective conduits connected to each of said plugs for activating same to engage said plugs alternately with the inner wall of such tube.

4,084,934

COMBUSTION APPARATUS

Toshiharu Kumazawa, Fujisawa, Japan, assignor to Mitsubishi Precision Co., Ltd., Japan

Filed May 30, 1975, Ser. No. 582,174
Claims priority, application Japan, Jun. 4, 1974, 49-62516; Feb. 5, 1972, 47-14376
Int. Cl.[2] F23D *7/00, 11/38*
U.S. Cl. 431—189 **5 Claims**



1. A device for producing a dispersion stream of an emulsive mixture of a liquid fuel, water and a high pressure gas introduced into the device, comprising:

an axially extending first nozzle element having an inlet for axially introducing therein a high pressure gas, a convergent section disposed at a downstream side of the inlet for accelerating said introduced high pressure gas, a divergent section disposed downstream from said convergent section for causing an expansion of said accelerated high pressure gas, a constant diameter section conjoining said convergent and divergent portions for flowing said high pressure gas therethrough, and at least two separate ports opening into said constant diameter section for concurrently but separately introducing said liquid fuel and water, respectively, under pressure into a flow of said high pressure gas through said constant diameter section in a direction perpendicular to a central axis of said first nozzle element, wherein said flow of said high perssure gas is subjected to a hydrodynamic pressure reduction by which said introduced liquid fuel, water and high pressure gas are caused to undergo a first stage mixing and atomizing;

an axially extending tube element for causing a second stage mixing and atomizing of said liquid fuel, water and high pressure gas, said tube element having an upstream and thereof connected to a downstream end of said divergent section of said first nozzle element, a pair of internal radial studs which are axially spaced apart from one another, and an axial rod mounted centrally within said tube element on said studs and extending toward and beyond a downstream end of said tube element, said radial studs enhancing said second stage mixing and atomizing of said liquid fuel, water and said high pressure gas by inducing turbulence in the flow of fuel, water and high pressure gas through said tube element and by collison of the flow against said studs;

a second nozzle element connected to said downstream end of said tube element and having a convergent outlet for accelerating and converging the mixed and atomized stream of said liquid fuel, water and high pressure gas delivered from said tube element, prior to continuous spouting of said mixed and atomized stream from said second nozzle, and

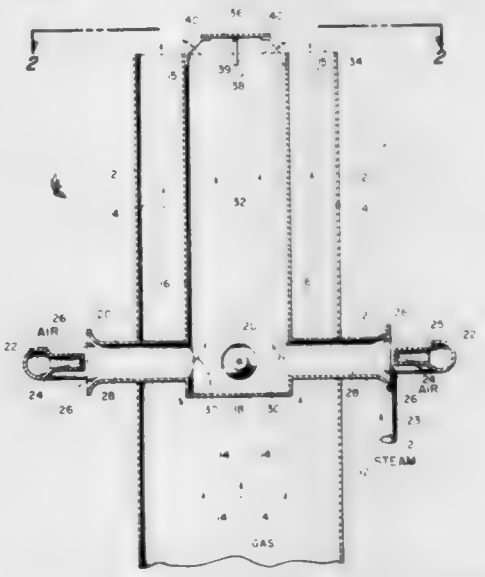
a hollow cylindrical impact disperser held at a downstream side of said convergent outlet of said second nozzle element by said axial rod extending from said tube element, said impact disperser being disposed spaced axially at a distance from said convergent end of said second nozzle element for causing said accelerated and converged stream from said second nozzle element to impinge against said impact disperser thereby causing a third stage mixing and atomizing of said stream of said liquid fuel, water and high pressure gas, said impact disperser comprising means for reflecting and for dispersing said impinging stream into an adjacent combustion space at a wide angle, said distance between said impact disperser and said convergent outlet of said second nozzle element being selected so that said stream reflected by said impact disperser is subjected to a fourth stage mixing and atomizing to form said dispersion stream of said emulsive mixture by collision thereof with a part of said stream which is continuously spouted from said second nozzle.

4,084,935

SMOKE SUPPRESSANT MIXER FOR FLARED GASES

Robert D. Reed, and Robert E. Schwartz, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Mar. 15, 1976, Ser. No. 666,958
Int. Cl.[2] F23D *13/20*
U.S. Cl. 431—202 **10 Claims**



1. In an apparatus for smoke-suppression of flare-burned smoke-prone fuels, including:

a. a flare stack conduit for vertical flow of smoke-prone fuel

gases to be burned above the outlet tip thereof; and a supply of smoke suppressant; the improvement comprising:

b. inner conduit means inside of said flare stack, for confining the total flow of said fuel gas to the annular space between said inner conduit means and said stack as a rising cylindrical wall of gas, said inner conduit having a closed upstream end and an open downstream end;

c. said inner conduit adapted to flow the major part of said smoke suppressant upwardly in said inner conduit means and through said open end for juncture with said fuel gases; and including

means at the outlet end of said inner conduit means to divert said smoke suppressant outwardly and upwardly toward and into the inner surface of said cylindrical wall of gas, for intimate mixing therewith.

4,084,936

REDUCING CORROSION IN REACTORS USED FOR THE SYNTHESIS OF CHROMIUM DIOXIDE

Manfred Ohlinger, Frankenthal; Gerhard Wagner, Ludwigshafen; Gerhard Honecker, Ludwigshafen; Heinz Stritzinger, Ludwigshafen, and Heinz Spaehn, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 6, 1976, Ser. No. 702,980
Claims priority, application Germany, Aug. 16, 1975, 2536535
Int. Cl.[2] C23F *11/18*
U.S. Cl. 21—2.7 R 3 Claims

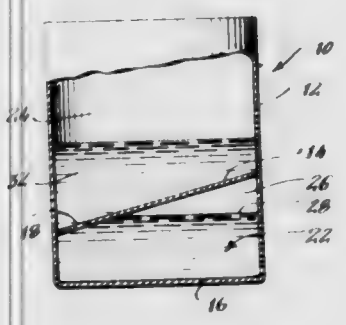
1. A method fo reducing corrosion on the inner walls and fittings of a reactor of iron or iron alloys used for the synthesis of chromium dioxide by hydrothermal conversion of chromium(VI) oxide with chromium oxides of lower oxidation states, wherein lead or bismuth in metallic form or in the form of their oxides, hydroxides and/or salts are added at those points of the reactor at which an aqueous phase occurs during the conversion, which aqueous phase does not contact the chromium oxides to be converted.

4,084,937

RECEPTACLE FOR COLLECTING URINE SAMPLES

Janet Beach, Box 904, Camden, Me. 04843

Filed Nov. 26, 1976, Ser. No. 745,090
Int. Cl.[2] B01L *3/00;* E03D *13/00;* G01N *1/18*
U.S. Cl. 23—259 3 Claims



1. A receptacle useful for collecting urine samples for liquids comprising a wall, a true bottom which joins and is substantially perpendicular to said wall, and a false bottom which joins said wall and has an aperture therethrough at least a portion of the perimeter of said aperture, wherein comprises a portion at least of the edge of said false bottom, and wherein said false bottom is sloped with respect to the true floor of said receptacle and said aperture is located in the region of said false bottom closest to said true floor.

4,084,938

PROCESS FOR TREATING SOLID CARBONACEOUS FOSSIL FUELS AND THE PRODUCTS THUS PREPARED

John Wesley Willard, Sr., Rapid City, S. Dak., assignor to Caw Industries, Inc., Rapid City, S. Dak.

Continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Jul. 7, 1975, Ser. No. 593,712
Int. Cl.[2] C10L *9/10;* C10B *57/00*
U.S. Cl. 44—1 R 28 Claims

1. A process for treating solid fossil fuels with an aqueous medium comprising

intimately contacting solid fossil fuel in particulate form selected from the group consisting of coal, lignite, peat and admixtures thereof with an aqueous medium containing a catalytically effective amount of a catalyst,

the solid fossil fuel having active sites therein which react with at least one component of the aqueous medium under liquid phase conditions in the presence of the catalyst,

the particles of the solid fossil fuel being intimately contacted with the aqueous medium under liquid phase conditions until active sites thereof react with at least one component of the aqueous medium,

the catalyst being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0;

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles and surfactant to form said catalyst micelles.

2. The treated solid fossil fuel prepared by the process of Claim 1.

3. The process of claim 1 wherein the solid fossil fuel is coal.

4,084,939

AUDIBLY BURNING GELLED ALCOHOL

Barney J. Zmoda, Bridgewater, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 22, 1976, Ser. No. 753,241
Int. Cl.[2] C10L *7/04*
U.S. Cl. 44—7 C 13 Claims

1. A stable, audibly burning, alcohol gel composition comprising a major proportion of at least one aliphatic monohydroxy alcohol, a gelling agent, and a minor proportion of rigid, organic capsules containing a volatile solvent.

4,084,940

EMULSIONS OF ENHANCED IGNITIBILITY

Kenneth J. Lissant, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Dec. 23, 1974, Ser. No. 535,559
Int. Cl.[2] C10L *1/32*
U.S. Cl. 44—51 11 Claims

1. A high internal phase ratio fuel in water emulsion, said emulsion containing sufficient volatile combustible materials in the exterior phase to render the emulsion more ignitible.

4,084,941

NON-POLLUTING WATERPROOF CLOTH FINISH FOR ABRASIVE CLOTH

William H. Cox, and Norvell E. Wisdom, Jr., both of Watervliet, N.Y., assignors to Norton Company, Worcester, Mass.

Filed Mar. 31, 1976, Ser. No. 672,431
Int. Cl.[2] B24D *11/02*
U.S. Cl. 51—295 3 Claims

1. A woven cellulosic fabric cloth backing having a weight of 4 to 9.5 oz/yd^2 for the manufacture of a coated abrasive sheet by the application to its front face of a mixture of abrasive and phenolic resin, having a cured phenol-formaldehyde backsize containing from 0 to 35% of an acrylic film forming polymer having a glass transition temperature between 10° and 40° C, said backsize lying on the cloth surface and penetrating only partially into the interstices of the yarns and being present in the amount of 3 to 10 pounds of dry coating per ream, the portion of the cloth not adhered to said backsize, being coated

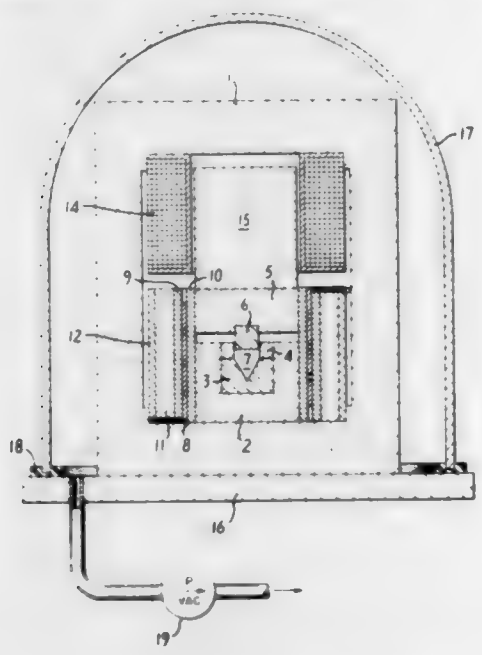
with an acrylic film forming polymer having a glass transition temperature of between 20° and 50° C, said last named polymer being present in the amount of from 0.5 to 4 pounds per ream, and a front size overlying said last named polymer consisting of 30 to 70% by weight of phenolic resin, and from 30 to 70% by weight of a film forming polymer having a glass transition temperature between 20° and 50° C, said front size being present in the amount of from 1 to 4 pounds per ream, dry weight.

4,084,942

ULTRASHARP DIAMOND EDGES AND POINTS AND METHOD OF MAKING

Humberto Fernandez-Moran Villalobos, 59 Dartmouth Rd., Williams Bay, Wis. 53191

Filed Aug. 27, 1975, Ser. No. 608,260
Int. Cl.[2] B24D *3/04, 3/08*
U.S. Cl. 51—307 **28 Claims**



1. A method of making ultrasharp diamond edges and points which comprises preparing ultrafine diamond powder having a particle size of 10 to 100 angstroms, classifying said ultrafine diamond powder to separate out any diamond particles having a particle size larger than 100 angstroms, placing a measured quantity of said powder of which all particles have a particle size less than 100 angstroms in a diamond mold having therein a mold cavity defining an ultrasharp uniform edge or point having a radius of 10 to 100 angstroms, orienting diamond particles in regular array conforming to said edge or point defining cavity of said mold, placing said mold with said diamond powder therein in a gas-tight envelope, evacuating the space within said envelope to achieve an ultrahigh vacuum to thoroughly degas said ultrafine diamond powder and mold, and concurrently applying to said ultrafine diamond powder in said mold a pressure of the order of 50 kb to 90 kb and a temperature of 2000° to 2500° K while maintaining said mold and powder in an ultrahigh vacuum or atmosphere of noble gas to avoid oxidation of said diamond powder, to thereby bond the particles of said diamond powder together to form an ultrahard sintered body having an ultrasharp edge or point as defined by said mold.

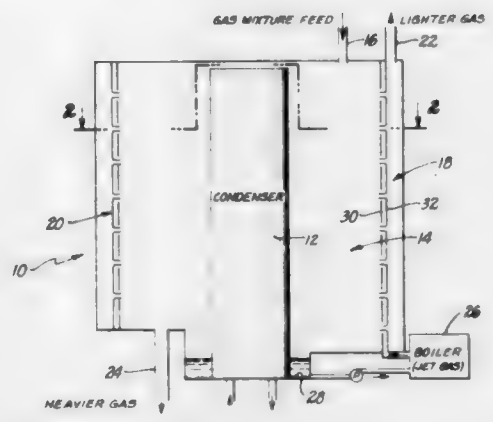
23. A polycrystalline diamond cutting implement having an ultrasharp edge or point, said implement comprising a multiplicity of diamond particles molecularly bonded together with the cohesion of natural diamond, all of said diamond particles being of a size less than 100 angstroms and being uniformly oriented to present like faces to said edge or point to define a continuous uniform edge or point having a radius of from 10 to 100 angstroms.

4,084,943

JET MEMBRANE GAS SEPARATOR AND METHOD

Bernard B. Hamel, Philadelphia, Pa.; Eric P. Muntz, Pasadena, and Paul B. Scott, Topanga, both of Calif., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation-in-part of Ser. No. 461,846, Apr. 18, 1974, abandoned. This application Nov. 11, 1976, Ser. No. 740,864
Int. Cl.[2] B01D *57/00*
U.S. Cl. 55—17 **23 Claims**



1. In an apparatus for separating a lighter gas from a heavier gas in a gas mixture, the combination of:

a. a first chamber for the gas mixture;

b. a second chamber for a mixture enriched in the lighter gas;

c. a wall structure separating said chambers and comprising means providing jet orifices communicating with said first chamber and means providing extraction openings adjacent and aligned with said jet orifices and interconnecting said chambers, said extraction openings having inlet ends communicating with said first chamber and outlet ends communicating with said second chamber, said jet orifices and said inlet ends of said extraction openings facing in the same direction;

d. means for delivering a jet gas to said jet orifices for discharge therethrough into said first chamber;

e. means for delivering the gas mixture to said first chamber; and

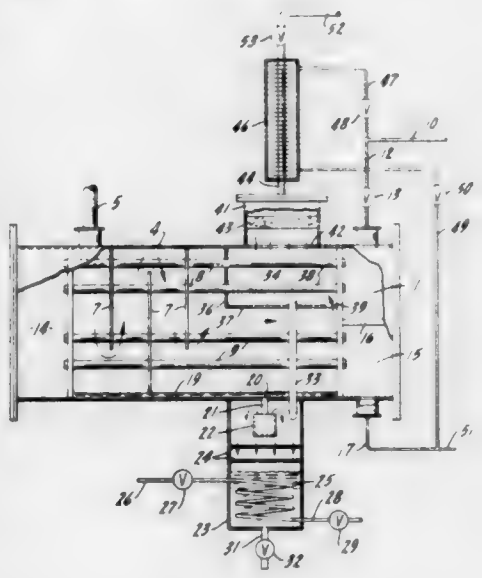
f. means for discharging the lighter gas from said second chamber.

4,084,944

PURE DISTILLATE RECOVERY SYSTEM

Anthony Nicholas Chirico, Short Hills, N.J., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed Sep. 20, 1976, Ser. No. 724,812
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—27 **9 Claims**



1. A method for disposing of the radioactive waste gas of a gas-water vapor mixture, comprising:

(a) cooling said mixture so as to condense said water vapor;
(b) passing any uncondensed water vapor and said radioactive gas to a chamber where said mixture is cooled to a lower temperature;
(c) flowing condensed water vapors downwardly to and through a sealed boiler; heating said condensed water vapors in said sealed boiler so as to drive off radioactive gas dissolved in said condensed water vapors and also to produce additional water vapors which flow upwardly countercurrent to said condensed water vapors and thereby strip radioactive gas from said condensed water vapors; passing said radioactive gas and additional water vapors directly from said sealed boiler to said chamber without recombining with said mixture;
(d) filtering liquid droplets from the radioactive gas and any uncondensed water vapors exiting from said chamber;
(e) chilling the filtered radioactive gas; and
(f) recovering the condensed water vapors and the chilled radioactive gas at different locations.

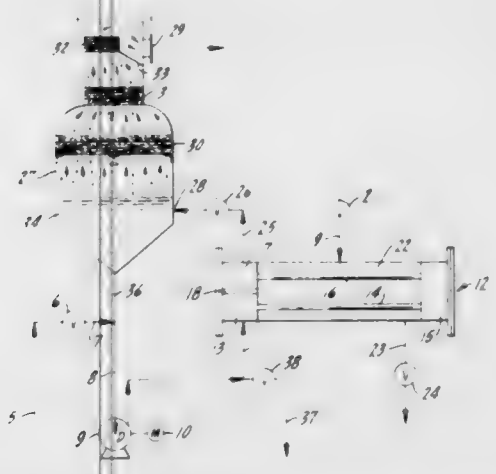
2. Apparatus for separating the gas from the liquid vapor of a gas-liquid vapor mixture, comprising:
(a) means for cooling said mixture so as to condense said liquid vapor comprising a condensation tank containing a plurality of heat transfer pipes through which a heat transfer fluid flows;
(b) a low temperature chamber in said cooling means for further cooling of any uncondensed liquid vapor and said gas, said low temperature chamber comprising means in said tank enclosing the portions of said heat transfer pipes first entered by said heat transfer fluid;
(c) means for collecting condensed liquid vapor and passing same into a boiler; means in said boiler for heating said condensed liquid vapor so as to drive off any gas dissolved therein; conduit means for passing said gas directly from said boiler to said low temperature chamber;
(d) means for filtering liquid droplets from the gas exiting from said low temperature chamber; and
(e) means for chilling the filtered gas.

4,084,945

ENTRAINMENT SEPARATOR APPARATUS

Anthony N. Chirico, Short Hills, N.J., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed Aug. 2, 1976, Ser. No. 710,945
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—38 **2 Claims**



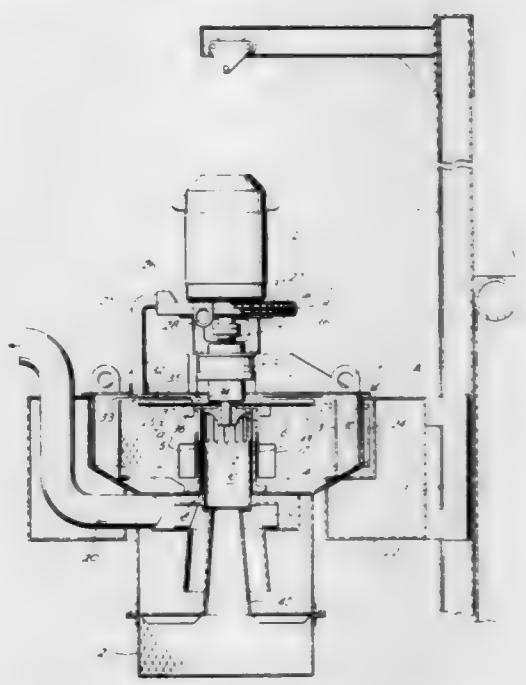
1. A method of disposing of a variable volume flow of aqueous radioactive waste, comprising: heating the waste until the water component vaporizes; passing the vapors and any entrained radioactive water droplets at a varying range of velocities serially through a plurality of water droplet separators having decreasing cross-sectional areas in the direction of vapor flow; the velocity at which said vapors and entrained radioactive water droplets pass through said water droplet separators varying with said variable volume of flow; one of said water droplet separators having a relatively small cross-sectional area being most effective in removing radioactive water droplets when the vapor velocity is at the low end of said range, and another of said water droplet separators having a relatively large cross-sectional area being most effective in removing radioactive water droplets when the vapor velocity is at the high end of said range; removing decontaminated vapors; returning the radioactive water droplets to the waste being heated; and removing concentrated radioactive waste water for disposal.

4,084,946

DRILLING MUD DEGASSER

Harry L. Burgess, c/o Burgess & Associates, Inc., P.O. Box 8534, Houston, Tex. 77009

Filed May 31, 1977, Ser. No. 801,540
Int. Cl.[2] B01D *19/00, 45/00*
U.S. Cl. 55—184 **3 Claims**



1. Degassing apparatus for drilling muds comprising a casing forming a degassing chamber having outer and top walls and a gas discharge opening in said top wall, suction means communicating with said opening, a hollow body extending into said chamber and having an inlet for gas containing mud and peripheral outlet means, power means including a shaft connected to said body for rotating said body to cause centrifugal discharge of mud into the outer portion of said casing, an annular baffle underlying said top wall and said outlet opening, an annular disc rigid with said shaft and extending along said baffle, said top wall, baffle and disc being serially arranged and spaced apart and cooperating to form a labyrinthine path for fluid drawn into said outlet opening, and vanes on said disc for repelling materials suspended in said labyrinthine path.

4,084,947

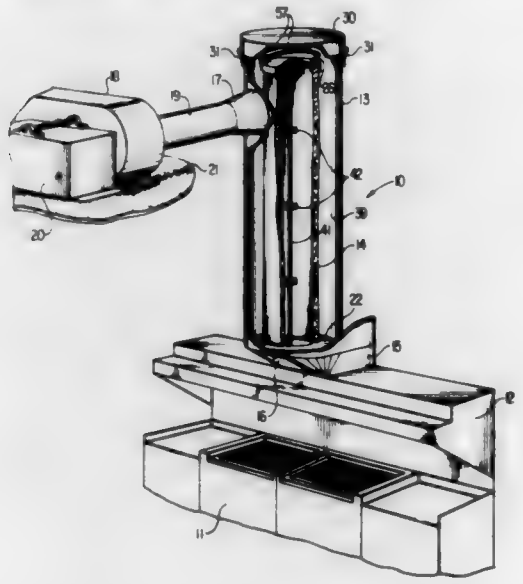
FILTER APPARATUS FOR FAST FOOD KITCHENS EXHAUST

Frank P. Ear, 4326 Flint Hill, San Antonio, Tex. 78230

Filed Jul. 12, 1976, Ser. No. 704,741
Int. Cl.[2] B01D *46/04*
U.S. Cl. 55—242 **6 Claims**

1. Pollution control apparatus for removing substantially all visible emissions from the ventilation systems of kitchens having a cooking area comprising a hood positioned above the cooking area of a kitchen, a ventilation duct means connected to the hood and having an outlet opening to the atmosphere outside of the kitchen for conveying gases collected by the hood to the atmosphere outside of the kitchen, an aersol particle coalescing filter enclosed within the ventilation duct means and a blower means connected with the outlet of the ventilation duct means for drawing gases from the hood through the

duct means and the aerosol particle coalescing filter and for discharging the gases into the atmosphere outside of the kitchen after the aerosol particles have been coalesced and removed from the gas stream by the coalescing filter, said coalescing filter being an elongated vertically oriented cylindrical filter comprising an annular bed of unbonded glass fibers, said glass fibers having diameters between about 5 microns and 30 microns and said fiber bed being compressed to a bulk density of between about 5 and 20 lbs. per cubic foot, said ventilation duct including a vertically oriented filter housing in which said filter is coaxially mounted, an annular bottom plate closing the bottom of said filter housing having said filter supported thereon, sealing means interposed between said filter and said bottom plate to seal said filter relative to said bottom plate, said bottom plate having a central opening therein communicating with the inside of said cylindrical filter,



a closure covering the end of said filter opposite said bottom plate, an annular space between said filter and said filter housing, the gases from said hood being caused to flow upwardly through the opening in said bottom plate into said cylindrical filter, from whence they pass radially outwardly through the filter into said annular space, the aerosol particles being coalesced by said cylindrical filter and removed from the gas stream, the coalesced liquid aerosol particles flowing by gravity to the bottom of said filter housing within said annular space, said hood being elongated horizontally and mounted horizontally above the cooking area of the kitchen and having an open bottom to receive smoke and gases therethrough, and a top which has an aperture therein and is otherwise closed, said filter housing being disposed vertically adjacent and above said aperture in the top of said hood, and extending upwardly through the roof of said kitchen.

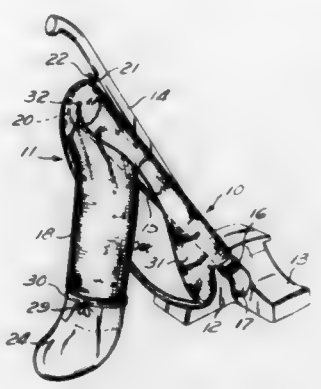
4,084,948

VACUUM CLEANER FILTER BAG ASSEMBLY

Charles H. MacFarland, Rocky River, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Dec. 15, 1976, Ser. No. 750,608
Int. Cl.[2] B01D *46/02*
U.S. Cl. 55—366 **4 Claims**

1. A filter bag assembly for a vacuum cleaner, comprising an elongated, relatively rigid, hollow tube, a coupling member at one end of said tube adapted to be connected to the exhaust outlet of a vacuum cleaner, a porous filter bag having open ends with one end fixed to the end of said tube, a flexible, nonporous bag having an open mouth communicating with the other end of said filter bag to close the filter bag, a porous envelope having an inlet and encasing said hollow tube, said porous bag, and said nonporous bag, said envelope holding said nonporous bag in a collapsed condition at said other end of said porous bag and provided with an access opening and being



openable to expose at least said nonporous bag for removal of said nonporous bag together with dirt collected therein.

4,084,949

SURGICAL FACE MASK FILTERING MEDIUM

Walter F. Biggins, Longmeadow, Mass., assignor to The Dexter Corporation, Windsor Locks, Conn.

Filed Nov. 6, 1975, Ser. No. 629,501
Int. Cl.[2] B01D *39/14*
U.S. Cl. 55—524 **9 Claims**

1. A porous bacteria filter medium in flexible fibrous sheet form consisting essentially of thermostable micron-diameter filtering fibers and containing from about 5 to about 30 percent by weight of a hot water insoluble heat sealable thermoplastic polymeric binder in fibrous form having a microfibrillar structure made up of microfibrils similar to wood pulp, said binder fibers being randomly dispersed throughout the sheet and fused to the thermostable fibers at the cross-over points of the thermostable fibers to eliminate its fibrous structure and coat said thermostable fibers to provide an effective fiber diameter only slightly greater than the diameter of said thermostable fibers, said filter medium having a bacteria filtration efficiency of at least about 96 percent and sufficient porosity to permit breathability within comfortable limits, the binder fibers prior to fusion exhibiting an average length of about 1–4 mm, a surface area of at least 1 square meter per gram and being comprised of a high molecular weight, low melt index thermoplastic polymeric material.

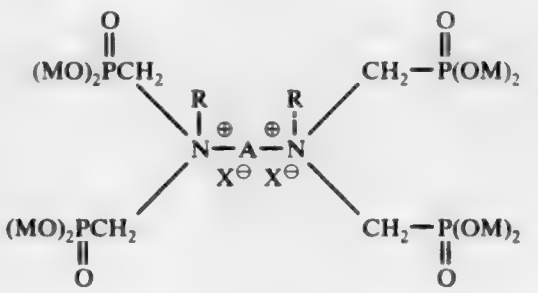
4,084,950

USE OF POLYQUATERNARY AMMONIUM METHYLENE PHOSPHONATES AS MICROBIOCIDES

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 237,883, Mar. 24, 1972, Pat. No. 3,792,084. This application Nov. 12, 1973, Ser. No. 414,946
Int. Cl.[2] A01N *9/36*
U.S. Cl. 71—67 **9 Claims**

1. The process of controlling microbiological growth in an aqueous system which comprises adding to said system a microbiologically effective amount of a polyquaternary compound having the general formula



where R is alkyl, aryl, alkenyl, alkaryl, aralkyl or cycloalkyl; A is alkylene having 2 to 10 carbon atoms, aralkylene having 8 to 10 carbon atoms, dialkylene ether wherein each alkylene group

has 1 to 10 carbon atoms, alkenylene or alkinylene; M is hydrogen, ammonium, an alkali metal or an alkaline earth metal; and X is Br, I, or Cl.

4,084,951

SILICON COMPOUNDS CONTAINING NUCLEOFUGAL PHOSPHATE GROUP AND METHOD OF REGULATING PLANT GROWTH THEREWITH

Maurice James Gregory, Kuala Lumpur, Malaysia, assignor to Ciba-Geigy AG, Switzerland

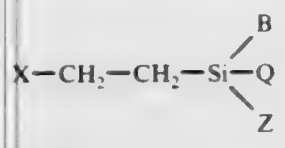
Division of Ser. No. 249,553, May 2, 1972, Pat. No. 3,898,257. This application May 12, 1975, Ser. No. 576,291

Claims priority, application United Kingdom, May 3, 1971, 12798/71

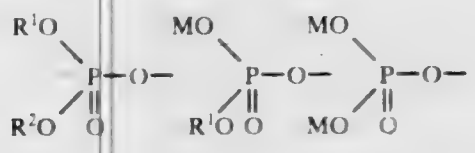
Int. Cl.[2] A01N *9/36;* **C07F** *7/02, 7/04*

U.S. Cl. 71—86 **12 Claims**

1. A compound having the formula:



wherein X is selected from



where M is hydrogen or ammonium; R^1 and R^2 are the same or different and each is an open chain or cyclic hydrocarbon group containing from 1 to 18 carbon atoms;

and B, Q and Z are the same or different and each is selected from the group consisting of:

(i) chlorine or bromine,

(ii) alkyl having from 1 to 18 carbon atoms,

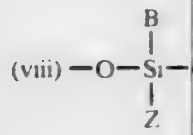
(iii) alkoxy having from 1 to 18 carbon atoms,

(iv) phenyl or tolyl,

(v) hydroxyl,

(vi) thiol or alkylthio,

(vii) dialkylamino,



(viii) —O—Si—CH_2—CH_2—X, where X is as

defined above, and B and Z are as defined in any one of groups (i) to (vii), (ix) and (x) hereof,

(ix) —CH_2—CH_2—X, where X is as defined above,

(x) hydroxy-substituted or halogen-substituted alkyl or alkoxy,

said compound being capable of decomposing in water to provide ehtylene.

11. A method of regulating plant growth, which method comprises applying to a plant a compound as claimed in claim **1** in an amount of from 0.1 pounds to 20 pounds of active ingredient per acre.

4,084,952

USE OF ALKYL(AMINOCARBONYL)PHOSPHONATE SALTS IN RICE CULTURE FOR THE CONTROL OF PROBLEM HERBACEOUS PLANT GROWTH

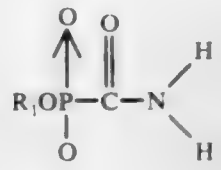
James K. Reynolds, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 25, 1976, Ser. No. 699,934

Int. Cl.[2] A01N *9/36*

U.S. Cl. 71—86 **3 Claims**

1. A method for the control of arrowhead or nutsedge weeds in rice fields which comprises applying to the foliage of the weeds while they are growing, but after rice harvest, an effective amount of a compound of the formula



wherein

R_1 is alkyl of 1 through 4 carbon atoms, or alkenyl of 3–4 carbon atoms;

M is hydrogen, ammonium or an alkali metal.

4,084,953

N-HYDROXY-N-PHOSPHONOMETHYLGLYCINES AND THE HERBICIDAL USE THEREOF

John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 9, 1977, Ser. No. 776,061

Int. Cl.[2] A01N *9/36;* **C07F** *9/38*

U.S. Cl. 71—86 **6 Claims**

1. N-hydroxy-N-phosphonomethylglycine and the herbicidally acceptable salts thereof.

5. A herbicidal method which comprises applying to plants a herbicidally effective amount of a compound of claim **1**.

4,084,954

BIOCIDALLY-ACTIVE 1,3-BENZODITHIOLE-2-ONE COMPOUNDS

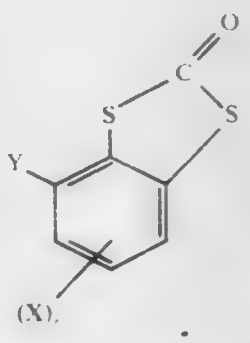
Khalid Rasheed, Weslaco, and James D. Warkentin, McAllen, both of Tex., assignors to The Ansul Company, Marinette, Wis.

Filed Sep. 30, 1975, Ser. No. 618,255

Int. Cl.[2] C07D *339/06;* **A01N** *9/12*

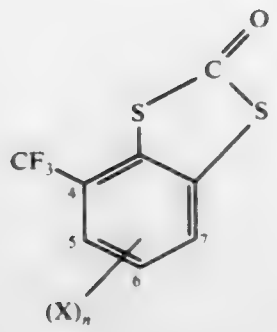
U.S. Cl. 71—90 **85 Claims**

1. A compound selected from the group consisting of those of the formula:



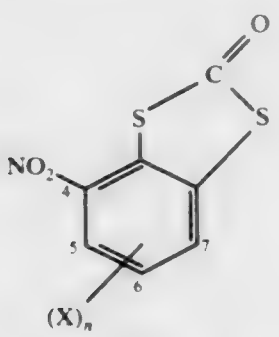
wherein Y is selected from nitro, trifluoromethyl and alkylsulfonyl; X is selected from alkyl and alkenyl of up to 6 carbon atoms, nitro, trichloromethyl, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, trifluoromethylsulfoxyl, trifluoromethylsulfonyl, methoxymethyl, cyano, carboxy, carbamyl, halogen (F, Cl, Br, I), hydroxy, acetylamino, amino, N-phenylamino, N,N-diallylamino, alkoxy, dimethylaminodithiocarbamyl, carboalkoxy, alkylthio, mono- and dialkylamino, N-alkylcarbamyl, N,N-dialkylcarbamyl, alkylsulfoxy, alkylsulfonyl, said alkyl groups containing from 1 to 4 carbon atoms; *n* is an integer from 0 to 3; and salts thereof.

32. A method of treating weeds associated with growing plants to beneficially enhance the growth and/or yieldpotential of said growing plants which comprises applying a herbicidally active amount of a compound of the formula:



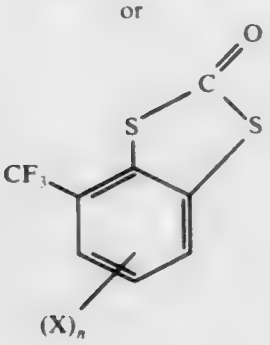
wherein *n* is 2 and X is NO_2 in the 6 position and is N,N-diallylamino or dilowerakylamino in the 7 position, at a rate of from 0.5 lbs. a.i./acre to 8.0 lbs. a.i./acre.

36. A method of treating soil fungi associated with growing plants to beneficially enhance the growth and/or yieldpotential of said growing plants which comprises applying a soil fungicidally active amount of a compound of the formulae:

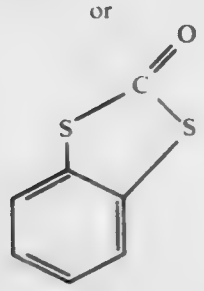


F

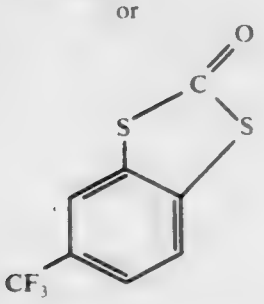
or



or



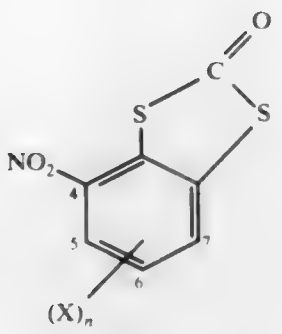
or



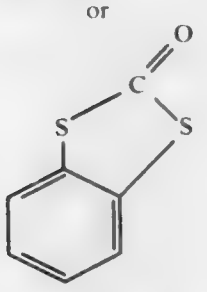
G

wherein for compounds of formula F, *n* is 0–2, and when *n* is 1, X is 6-CF_3 or 6-fluoro and when *n* is 2, X is 6-CF_3 and 7-halogen or 7-dimethylaminodithiocarbamyl; and wherein for compounds of formula G, *n* is 2 and X is 6-NO_2 and 7-mono- or 7-diloweralkylamino, 7-loweralkylthio, at a rate of from 0.25 to 40.0 lbs. a.i./acre.

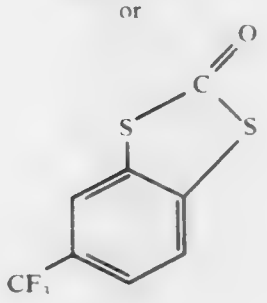
50. A method of treating foliar fungi associated with growing plants to beneficially enhance the growth and/or yield-potential of said growing plants which comprises applying a foliar fungicidally active amount of a compound of the formulae:



or

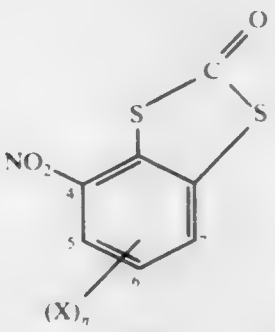


or



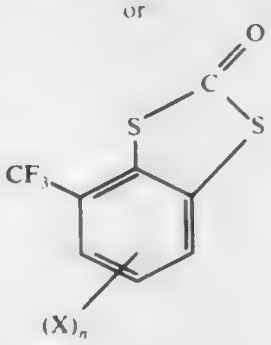
wherein *n* is 1 and X is 6-CF_3, 6-NO_2 or 6-CN at a rate of about 200 parts per million in a suitable solvent.

56. A method of treating acarines associated with growing plants to beneficially enhance the growth and/or yield-potential of said growing plants which comprises applying an acaricidally active amount of a compound of the formulae:



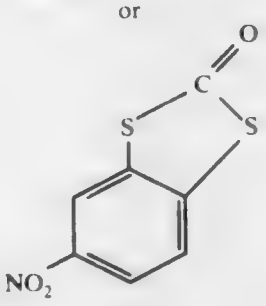
H

or



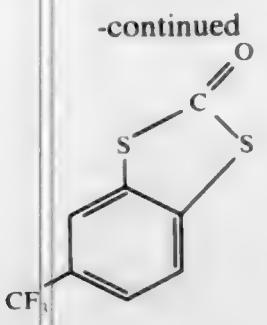
I

or



or

-continued



wherein for compounds of formula H, *n* is 0–2 and when *n* is 1, X is 6-CF_3, 6-NO_2, 6-loweralkyl or 6-fluoro and when *n* is 2, X is 6-CF_3 and 7-halogen; wherein for compounds of formula I, *n* is 2 and X is 6-NO_2 and 7-mono or 7-diloweralkylamino, 7-diallylamino or 7-loweralkylthio, at a rate of from 30 to 1000 parts per million in a suitable solvent.

4,084,955

ORGANIC COMPOUNDS AND PROCESS

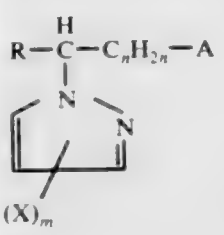
Gabriel Kornis; Eldon G. Nidy; Henry J. Vostral, all of Kalamazoo, Mich., and Arnolds Steinhards, deceased, late of Kalamazoo, Mich. by John J. Killinger, assignors to the Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 316,902, Dec. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 12,871, Feb. 19, 1970, abandoned. This application Apr. 28, 1976, Ser. No. 681,239

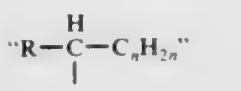
Int. Cl.[2] **A01N** *9/22*; **C07D** *231/14*

U.S. Cl. 71—92 **36 Claims**

1. New 1-(substituted-hydrocarbyl)-di- and trihalopyrazoles of the formula:



wherein "*n*" is an integer 0, 1, 2, or 3; "X" is a bromine on chlorine atom; "*m*" is the integer 2 or 3, the bromine or chlorine atoms being selected independently; "R" is hydrogen, alkyl of from 1 to 10 carbon atoms, inclusive, or alkenyl of from 2 to 10 carbon atoms, inclusive, the sum of the carbon atoms in the group



being not more than 11; and "A" is the carboxyl group and alkali metal, alkaline earth metal, ammonium and amine salts thereof, a hydroxymethyl lower-alkanoate group in which the lower-alkyl moiety is of from 1 to 8 carbon atoms, inclusive, a carboxylic lower-alkyl ester group wherein "lower-alkyl" is of from 1 to 8 carbon atoms, inclusive.

4,084,956

BARBAN FORMULATION

William C. Doyle, Jr., Leawood, and Marion F. Botts, Merriam, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 697,585, Jun. 18, 1976, abandoned. This application Jul. 28, 1977, Ser. No. 819,807

Int. Cl.[2] **A01N** *9/20*

U.S. Cl. 71—111 **3 Claims**

1. A selectively herbicidal composition which comprises, by weight,

(a) 20 to 30 percent barban, as the sole herbicidal agent,

(b) 5 to 25 percent of a waxy solid condensation product of C_{12} to C_{18} fatty alcohols with 10 to 40 units of ethylene oxide

(c) at least 0.5 parts per part of component (b) of an emulsifier, selected for ability to emulsify barban, and

(d) the balance a solvent comprising a major proportion of alkylbenzenes or alkylnaphthalenes along with a minor proportion of other hydrocarbons within or above kerosene boiling range.

4,084,957

PROCESS FOR PRODUCING SHAPED BODIES

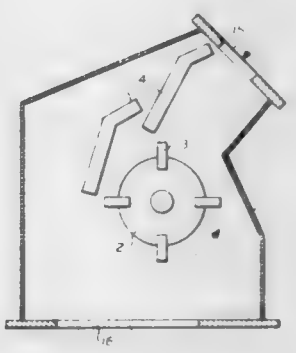
Heinz-Hubert Ernst, Frankfurt am Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sep. 23, 1975, Ser. No. 615,965

Claims priority, application Germany, Sep. 24, 1974, 2445511

Int. Cl.[2] **C22B** *1/24*

U.S. Cl. 75—3 **3 Claims**



1. A process for producing shaped bodies from mixed iron oxide dusts, at least one of which is in moist or mud form and at least one of which has thixotropic properties, which comprises beating such dusts in the presence of a total amount of moisture corresponding to the desired final moisture content, in an impact mill or beater mill thereby to form a flowable particulate mass, and forming the mass into shaped bodies.

4,084,958

METHOD OF REDUCING FINELY GRAINED MATERIAL CONTAINING IRON OXIDES IN A FLUID BED

Per Harald Collin, Falun, and Bjorn Widell, Vesteras, both of Sweden, assignors to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden

Continuation of Ser. No. 578,422, May 19, 1975, abandoned. This application Jun. 29, 1977, Ser. No. 810,977

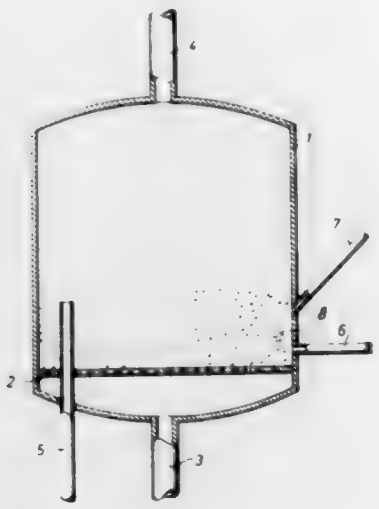
Claims priority, application Sweden, May 20, 1974, 7406695

Int. Cl.[2] **C21B** *13/02*

U.S. Cl. 75—36 **4 Claims**

1. A method of preventing sticking or agglomeration between solid particles of iron oxide, partially reduced iron oxide, and carbonaceous material during reduction in a fluidized bed of these particles in a fine-grained form comprising the steps of: introducing at one or more supply points in a fluidized bed zone a fine-grained carbonaceous material containing at least 15% volatiles; introducing oxygen in said fluidized bed; maintaining a combustion in said bed by reacting part of said carbonaceous material with oxygen; the temperature in the bed being substantially higher than the temperature required for driving off said volatiles in said carbonaceous material, whereby the high temperature causes volatiles to be rapidly driven off within limited zones around said supply points; directing the stream of said fine-grained particles containing

iron oxides to substantially coincide with said limited zones thereby causing to a substantial extent said fine-graned particles of the iron oxide containing material to adhere to particles of carbonaceous material.

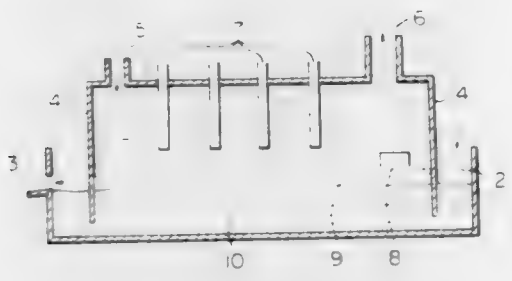


4,084,959

METHOD FOR CONTINUOUS REFINING OF A MOLTEN IRON BASE METAL

Satomi Yamamoto; Masataka Yoshii; Teruo Matsuo, and Teruo Yokoozi, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 15, 1976, Ser. No. 750,722
Int. Cl.[2] C21C *3/04, 7/02*
U.S. Cl. 75—53 **23 Claims**



1. A method for continuously refining a molten iron base metal, wherein the combination of dephosphorization and desulfurization occurs in a single stage, which method comprises continuously introducing the metal to be thus refined into a refining vessel which is substantially closed to the atmosphere outside said vessel and simultaneously therewith introducing a flux containing at least 50% of an alkali metal carbonate-containing salt into said vessel to refine said metal under oxidizing conditions; discharging substantially all of the by-product, generated during the refining step, from said vessel; recovering the refined metal; recovering an alkali metal, in the form of an alkali metal carbonate-containing salt, from said by-product; and recycling the recovered alkali metal carbonate-containing salt for use as a flux in the refining step.

4,084,960

METHODS OF DESULPHURIZING IRON AND STEEL AND GASES, SUCH AS STACK GASES AND THE LIKE

D. Alan R. Kay, Hamilton, Canada, and William G. Wilson, Pittsburgh, Pa., assignors to Molycorp, Inc., White Plains, N.Y.

Filed Jul. 15, 1976, Ser. No. 705,525
Int. Cl.[2] C21C *7/02*
U.S. Cl. 75—58 **10 Claims**

1. A method of desulphurizing molten iron, steel, stack gases containing sulfur as an impurity comprising the steps of:

a. reacting rare earth oxide in the presence of one of a separate deoxidizing agent and a deoxidizing atmosphere with sulphur to be removed to form one of the group consisting of rare earth sulphides and rare earth oxysulphides and mixtures thereof, and

b. removing said oxysulphides and sulphides.

4,084,961

TREATMENT OF METAL BEARING MINERAL MATERIAL

Frank Caldon, Thompson Falls, Mont., assignor to Sunshine Mining Company, Kellogg, Id.

Filed Sep. 10, 1976, Ser. No. 722,194
Int. Cl.[2] C22B *15/08, 11/04*
U.S. Cl. 75—101 R **20 Claims**

1. Process for recovering acid leachable metal values from metal bearing mineral material which comprises pressure leaching such metal bearing mineral material with an aqueous liquid containing about 50–260 g/l of sulfuric acid and about 0.5–5 g/l of nitric acid under oxygen pressure, to dissolve such acid leachable metal values from said mineral material into said aqueous liquid.

4,084,962

AFTER-TREATING ALLOY FOR MAKING NODULAR IRON

Michael Robinson, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Division of Ser. No. 471,684, May 20, 1974, Pat. No. 3,955,973.
This application Mar. 30, 1976, Ser. No. 672,048
Int. Cl.[2] C22C *33/08*
U.S. Cl. 75—130 A **4 Claims**

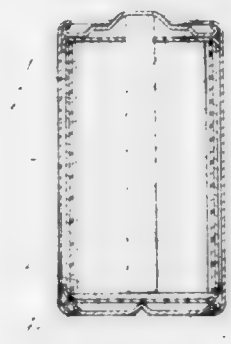
1. An after-treating alloy for adding to molten nodular iron prior to casting which provides a reduction in the amount of graphite-spheroidizing agent used to obtain a desired nodularity which consists essentially of a base alloy compatible with said nodular iron and selected from the group consisting of ferrosilicon and nickel alloys and from 0.8 to 1.8 weight percent magnesium.

4,084,963

ALUMINUM BASE ALLOYS CONTAINING ZINC, MAGNESIUM, IRON AND CADMIUM, TIN OR LEAD

William H. Anthony, Guilford; Andrew J. Brock, and Damian V. Gullotti, both of Cheshire, all of Conn., assignors to Swiss Aluminium Limited, Chippis, Switzerland

Filed Jul. 21, 1976, Ser. No. 707,186
Int. Cl.[2] C22C *21/00*
U.S. Cl. 75—138 **8 Claims**



1. An aluminum base alloy which is resistant to corrosion, said alloy consisting essentially of up to 2.0% by weight zinc, up to 5.0% by weight magnesium, up to 0.1% by weight iron, up to 0.1% by weight silicon, and a mixture of cadmium, tin and lead, in amounts ranging from 0.05 to 0.3% by weight for each of cadmium and tin and from 0.01 to 0.2% by weight for lead, balance aluminum.

4,084,964

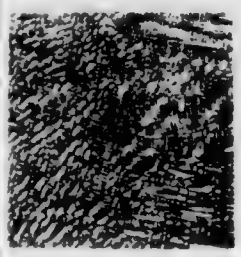
HIGH HFC-CONTAINING ALLOYS

Nicholas J. Grant, Winchester, Mass., and Ramon K. Robinson, Richland, Wash., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 371,318, Jun. 18, 1973, abandoned, which is a continuation of Ser. No. 664,207, Mar. 5, 1976. This application Mar. 5, 1976, Ser. No. 664,208

Int. Cl.[2] C22C *19/08*

U.S. Cl. 75—171 4 Claims



1. A cobalt-based alloy having a uniform dispersion of extremely fine and stable microconstituent phases, that consists essentially of 10–30 weight % chromium, 4–12 weight % tungsten and/or molybdenum, hafnium carbide of particle size less than 3 microns and in the range 2 to 15% by volume, and the rest a ductile, tough, oxidation-resistant cobalt matrix and incidental impurities, all the Hf and the C in the alloy being in the form of HfC.

4,084,965

COLUMBIUM POWDER AND METHOD OF MAKING THE SAME

Stanley S. Fry, North Chicago, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Jan. 5, 1977, Ser. No. 756,764

The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.

Int. Cl.[2] C22C *1/04;* H01G *9/05*

U.S. Cl. 75—230 18 Claims

1. A columbium powder containing an added phosphorus-containing material in an amount equivalent to from about 5 to about 600 parts per million of elemental phosphorus.

9. A columbium anode prepared by pressing columbium powder into the shape of an anode, adding to said pressed columbium powder a phosphorus-containing material in an amount equivalent to from about 5 to about 600 parts per million of elemental phosphorus, and thereafter sintering said pressed columbium powder.

4,084,966

IMAGING SYSTEM USING AGGLOMERABLE MIGRATION MARKING MATERIAL

Werner E. L. Haas, Webster; James E. Adams, Ontario, and Bela Mechlowitz, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 755,163, Aug. 26, 1968, abandoned. This application Oct. 26, 1970, Ser. No. 84,018

Int. Cl.[2] G03G *21/00;* G03C *5/04*

U.S. Cl. 96—1 PS 24 Claims

1. An imaging method comprising:

providing an imaging member comprising a layer of softenable material containing agglomerable migration marking material, and

imagewise exposing said member to an image pattern of electromagnetic radiation of sufficient energy to cause the agglomerable migration marking material in the exposed areas to imagewise migrate at least in depth in the softenable layer and simultaneously agglomerate, whereby the effective cross-sectional area of the marking material in the imagewise exposed area is reduced.

4,084,967

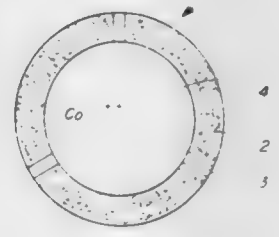
PHOTOGRAPHIC ELEMENTS CONTAINING VESICLES OF RHODOPSIN AND LIPIDS

David Frank O'Brien, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 9, 1977, Ser. No. 767,015

Int. Cl.[2] G03C *5/24, 5/54, 1/52, 1/00*

U.S. Cl. 96—29 R 44 Claims



1. A photographic element comprising a support having thereon a layer comprising a hydrophilic binder containing numerous vesicles, said vesicles comprising a matrix of lipid membranes containing rhodopsin and, within said vesicles encompassed by said membranes, a member of the group consisting of

(a) metal cations and

(b) materials selected from the group consisting of chelatometric materials for said metal cations, colorimetric reagents for said metal cations, materials which are caused to react by the presence of said metal cations to form a gas or a visible reaction product, and materials which form elemental metal through redox reactions with said metal cations and located outside of the vesicles either in the same layer or in a contiguous layer, a member of the group consisting of

(a) metal cations and

(b) materials selected from the group consisting of chelatometric materials for said metal cations, colorimetric reagents for said metal cations, materials which are caused to react by the presence of said metal cations to form a gas or a visible reaction product, and materials which form elemental metal through redox reactions with said metal cations

wherein if the vesicles contain (a) the areas outside the vesicles contain (b) and if the vesicles contain (b) the area outside the vesicles contain a) with the proviso that (b) is not present both in the area inside the vesicles and the area outside the vesicles and that the difference in metal cation concentration inside the vesicles and outside the vesicles is at least about 10^2.

4,084,968

METHOD OF MANUFACTURING ELECTRICALLY CONDUCTIVE METAL LAYERS ON SUBSTRATES

Casper Johannes Gerardus Ferdinand Janssen; Lambertus Postma, and Gerardus Johannes Meinardus Lippits, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 507,679, Sep. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 453,838, Mar. 22, 1974, abandoned. This application Nov. 3, 1975, Ser. No. 628,100

Claims priority, application Denmark, Mar. 30, 1973, 4429/73

Int. Cl.[2] G03C *5/24, 5/00*

U.S. Cl. 96—48 PD 4 Claims

1. In a method of photochemically metal-plating desired portions of a synthetic resin substrate containing, at least in a surface layer, homogeneously finely dispersed particles of a photo-sensitive semiconductive metal oxide, the light reaction product of which is capable of depositing metals at least as high as copper in the E.M.F. series of metals from a solution of the respective metal salt, by exposing desired portions of said substrate to light and contacting said substrate with said solution of the metal salt thereby causing a metal nuclei image to be

formed at the exposed areas of the substrate and then intensifying said metal nuclei image by treatment of the substrate with an electroless plating bath, the improvement wherein as a pretreatment the metal oxide containing substrate before exposure is first contacted with a dipolar aprotic solvent capable of slightly swelling said substrate for a time such that a slight swelling of the substrate is caused and a swollen layer is formed and then with a chemical roughening agent comprising a solution of an inorganic oxidizing acid for a time sufficient to oxidize about half the depth of the swollen layer.

4,084,969

COLOR PHOTOGRAPHIC PROCESS

Koichi Nakamura, and Isao Shimamura, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 13, 1976, Ser. No. 750,342
Claims priority, application Japan, Dec. 12, 1975, 50-148004
Int. Cl.[2] G03C *5/32, 1/06*
U.S. Cl. 96—60 R **21 Claims**

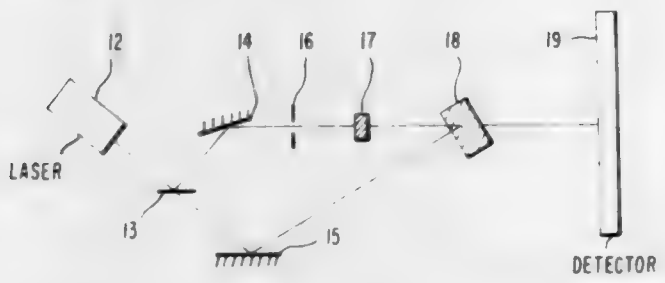
1. In a color photographic process wherein an imagewise exposed color photographic material having at least one silver halide photographic emulsion layer is processed by development in the presence of a primary aromatic amine color developing agent to form dye images, the improvement which comprises using silver iodobromide containing at least about 2 mole percent silver iodide as the silver halide in at least one silver halide photographic emulsion layer and performing the processing of the color photographic material at a temperature of 60° to 80° C for causing an oxidation reduction reaction of a cobalt (III) complex present in the color photographic material or in a processing solution with the primary aromatic amine color developing agent.

4,084,970

ORGANIC VOLUME PHASE HOLOGRAPHIC RECORDING MEDIA USING SUCROSE BENZOATE

Allen Bloom, East Windsor; Daniel Louis Ross, Princeton; Robert Alfred Bartolini, Trenton, all of N.J., and Ling Kong Hung, New York, N.Y., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 498,771, Aug. 19, 1974, abandoned.
This application Feb. 27, 1976, Ser. No. 661,813
Int. Cl.[2] G03C *1/00, 5/04;* **G02B** *3/00*
U.S. Cl. 96—88 **9 Claims**



1. A holographic recording medium comprising a host material containing a photosensitive organic compound, said host material consisting essentially of sucrose benzoate wherein said sucrose benzoate is a hard, glassy, transparent solid at room temperature, said organic compound being present in an amount sufficient to cause a change in the index of refraction in the medium when illuminated by a spatially modulated coherent light beam having a wavelength corresponding to some absorption band of the photosensitive compound.

4,084,971

PROTECTIVE COATINGS FOR FERROUS METALS

Thomas Ginsberg, Piscataway, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 2, 1976, Ser. No. 710,737
Int. Cl.[2] C09D *5/10*
U.S. Cl. 106—1.17 **8 Claims**

1. In a composition for protecting ferrous metals from corrosion comprising a partially hydrolyzed organic silicate and particulate zinc, the improvement which comprises adding a curing amount of a fatty acid amidoamine formed by the interaction of about one mole of at least one ethylenically unsaturated fatty acid having 10 to about 24 carbon atoms and about one mole of an alkylene polyamine containing two primary amine groups and at least one secondary amine group wherein the alkylene group contains about 2 to about 5 carbon atoms.

4,084,972

GLASS-CERAMICS WITH METALLIC IRON SURFACES

Ronald L. Andrus, Elmira, and Richard F. Reade, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,585
Int. Cl.[2] C03C *3/22;* **C03B** *32/00*
U.S. Cl. 106—39.7 **6 Claims**



1. A method for making a glass-ceramic article composed of a body portion and an integral surface layer demonstrating electrically conductive properties, said body portion consisting essentially of crystals dispersed within a glassy matrix, said crystals being present in amounts in excess of 50% by volume and being selected from the group consisting of beta-spodumene solid solution and nepheline, and said surface layer consisting essentially of alpha-iron crystals dispersed within a glassy matrix and being present in amounts in excess of 50% by volume, consisting of the steps of:

(a) melting a batch for a glass having an overall composition selected from the group:

(A) a glass consisting essentially, in weight percent on the oxide basis of about 3–6% Li_2O, 1–5% FeO, 15–25% Al_2O_3, 50–75% SiO_2, and 2–7% RO_2, wherein RO_2 consists of 2–6% TiO_2 and 0–3% ZrO_2; and

(B) a glass approximating the stoichiometry of nepheline consisting essentially, in weight percent on the oxide basis, of about 10–20% Na_2O, 1–5% FeO, 30–37% Al_2O_3, 36–42% SiO_2, 0–10% K_2O, and 2–7% RO_2, wherein RO_2 consists of 2–6% TiO_2 and 0–3% ZrO_2;

(b) simultaneously cooling the melt to a temperature at least within the transformation range thereof and forming a glass article therefrom;

(c) exposing said glass article in an oxidizing atmosphere to a temperature of at least about 1000°, but not in excess of

about 1300° C., for a period of time sufficient to cause the growth of crystals selected from the group consisting of beta-spodumene solid solution and nepheline in situ in the body portion of said article and the growth of hematite crystals in situ in an integral surface layer on said article thereby producing a glass-ceramic article; and thereafter

(d) subjecting said glass-ceramic article to an essentially dry, gaseous reducing atmosphere at a temperature between about 500°–800° C. for a period of time sufficient to reduce the hematite crystals in said surface layer to alpha-iron crystals to product an electrically conductive surface layer.

6. Glass ceramic article made in accordance with the method of claim 1.

4,084,973

GLASS ARTICLES WITH HEMATITE AND/OR MAGNETITE AND/OR METALLIC IRON SURFACES

Ronald L. Andrus, Elmira, and Richard F. Reade, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,584

Int. Cl.[2] C03C *3/22*; C03B *32/00*

U.S. Cl. 106—39.7 **19 Claims**

1. A method for making a glass article composed of a body portion essentially free from crystallization with an integral surface layer containing hematite crystals dispersed within a glassy matrix, said surface layer being highly crystalline exhibiting a mirror-like appearance, a metallic luster appearance, or a dull earthen appearance, consisting of the steps of:

(a) melting a batch for a glass consisting essentially, in weight percent on the oxide basis, of about 1–15% R_2O, wherein R_2O consists of 0–10% Li_2O and 0–15% Na_2O and/or K_2O, 0.3–13% FeO, 15–35% Al_2O_3, 55–80% SiO_2, and 0–5% TiO_2 and/or ZrO_2;

(b) simultaneously cooling the melt to at least below the transformation range and forming a glass article therefrom;

(c) exposing said glass article in an oxidizing atmosphere to a temperature between about 675°–950° C. for a period of time sufficient to cause the growth of hematite crystals in situ in an integral surface layer on said glass article; and then

(d) cooling said article to room temperature.

5. A surface crystallized glass article made in accordance with method claim 1.

4,084,974

METHOD OF MAKING LIGHT-ABSORBING GLASS-CERAMIC ARTICLES

George H. Beall, Big Flats, and Hermann L. Rittler, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 22, 1977, Ser. No. 817,925

Int. Cl.[2] C03B *32/00*; C03C *3/22*

U.S. Cl. 106—39.7 **4 Claims**

1. A method for producing a light-absorbing glass-ceramic article exhibiting blue-to-black coloration wherein beta-quartz and/or beta-spodumene constitutes the principal crystal phase which comprises the steps of:

(a) compounding a batch for a lithium aluminosilicate glass which is thermally crystallizable to beta-quartz or beta-spodumene, said batch including a source of TiO_2 as a nucleating agent and a glass reducing agent in an amount at least sufficient to reduce at least some of the Ti^{+4} species present in the batch to Ti^{+3} species at batch melting temperatures, wherein the glass reducing agent is a carbonaceous reducing agent selected from the group consisting of carbon, sugar and starch;

(b) melting the batch to form a glass melt containing Ti^{+3} species and forming a glass article from the melt; and

(c) heat-treating the glass article to obtain crystallization in situ thereof to a light-absorbing glass-ceramic article exhibiting blue-to-black coloration and comprising beta-quartz and/or beta-spodumene as the principal crystal phase and Ti^{+3} species as a colorant.

4,084,975

VOLATILIZABLE FRIT COMPOSITION FORMING OXIDATION-INHIBITING VAPORS

William D. Faust, Aurora, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 565,452, Apr. 7, 1975, abandoned. This application Aug. 2, 1976, Ser. No. 710,732

Int. Cl.[2] C03C *5/02*

U.S. Cl. 106—48 **25 Claims**

1. A frit composition adapted to be applied to a metal substrate containing iron and fired to form a ceramic coat, said frit composition comprising (a) in major amount a primary devitrifiable frit composition adapted to fuse at a firing temperature and upon cooling form devitrified particles, and (b) in minor amount a secondary frit composition containing a volatilizable metal oxide adapted to form at a firing temperature a substantially amorphous glass and precipitate crystals of said volatilizable metal oxide partially to volatilize said precipitated crystals at said firing temperature, thereby to provide protective vapors effective to inhibit oxidation of said substrate, and upon cooling to form an amorphous bond adhering said devitrified particles of the primary frit composition one to another, said volatilizable metal oxide being selected from the oxides of antimony, tin, vanadium, molybdenum, lead, arsenic, and mixtures thereof, the combination of said devitrifiable primary and amorphous secondary frit compositions providing a balanced, controlled release of the metallizable metal oxide at the time of firing to extend the protection afforded by the volatilizable metal oxide over a period of time.

4,084,976

LEAD-FREE GLAZE FOR ALUMINA BODIES

Jonathan W. Hinton, Southfield, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Jul. 20, 1977, Ser. No. 817,194

Int. Cl.[2] C03C *3/08, 5/02*

U.S. Cl. 106—48 **6 Claims**

1. A lead-free ceramic glaze useful for application to high alumina substrates consisting essentially of from 50 to 54 percent by weight SiO_2, from 5 to 8 percent by weight Al_2O_3, from 6 to 12 percent by weight B_2O_3, from 4 to 6 percent by weight CaO, from 2 to 8 percent by weight MgO, from 2 to 15 percent percent by weight BaO, from 5 to 8 percent by weight SrO, from 1 to 2 percent by weight ZnO, and from 4 to 6 percent by weight of a mixture of Na_2O, K_2O and Li_2O.

4,084,977

GLASS AND REFRACTORY FIBRE MATERIALS AND METHOD FOR MAKING SAME

Clive M. Freedman, Littleborough, England, assignor to TBA Industrial Products Limited, Manchester, England

Continuation-in-part of Ser. No. 423,772, Dec. 11, 1973, abandoned. This application Oct. 1, 1974, Ser. No. 511,480

Claims priority, application United Kingdom, Dec. 12, 1972, 57297/72

Int. Cl.[2] C03C *25/00*

U.S. Cl. 106—50 **8 Claims**

1. A glass fibre product consisting of less than 80% by weight SiO_2, from 20 to 25% by weight TiO_2 and not more than about 0.1% by weight of alkali metal oxide.

4,084,978

GLASS FOR EYE GLASS LENS

Hiroji Sagara, Akikawa, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Dec. 10, 1976, Ser. No. 749,565
Claims priority, application Japan, Dec. 10, 1975, 50-147098
Int. Cl.[2] C03C *3/08*
U.S. Cl. 106—54 **2 Claims**

1. A glass for an eye glass lens comprising, in weight percent, 36 to 50% SiO_2 + Al_2O_3 + B_2O_3, but with 20 to 50% SiO_2, 0 to 13% Al_2O_3, and 0 to 20% B_2O_3; 5 to 35% CaO + MgO, but with 5 to 35% CaO and 0 to 20% MgO; 1 to 20% Li_2O + Na_2O + K_2O, but with 0 to 15% Li_2O and 0 to 15% Na_2O + K_2O; 16 to 34% ZrO_2 + TiO_2 + Nb_2O_5, but with 0 to 11% ZrO_2, 0 to 3% TiO_2, and 8 to 30% Nb_2O_5; 0 to 15% BaO + SrO + ZnO; and 0 to 15% La_2O_3 + Ta_2O_5 + WO_3.

4,084,979

MAGNESIA CERAMIC FOR INSULATION OF HIGH-FREQUENCY ELECTRICITY

Shiro Sano; Hiroshi Hayashi, both of Nagoya, and Hiroyoshi Takagi, Kasugai, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Dec. 13, 1976, Ser. No. 749,822
Claims priority, application Japan, Dec. 25, 1975, 50-156172
Int. Cl.[2] C04B *35/04*
U.S. Cl. 106—58 **2 Claims**

1. A magnesia ceramic for high-frequency electric insulation, consisting essentially of magnesia as the principal component, 2.0 to 20% by weight of a calcium-magnesium-phosphate of the composition $xCaO.yMgO.P_2O_5$, wherein, x and y each have a value falling within the range of from 0.5 to 2.5; and 0.25 to 5.0% by weight of at least one member selected from the group consisting of the oxides of aluminum, silicon, beryllium and tungsten.

4,084,980

PROCESS FOR PREPARING A FOAMED BODY

Hideo Motoki, Ibaragi, Japan, assignor to Shikoku Kaken Kogyo Kabushiki Kaisha, Japan

Filed Aug. 18, 1976, Ser. No. 715,502
Claims priority, application Japan, Dec. 26, 1975, 50-157139; Dec. 27, 1975, 50-158197; Dec. 27, 1975, 50-158198; Dec. 27, 1975, 50-158199
Int. Cl.[2] C04B *7/00, 21/02*
U.S. Cl. 106—75 **14 Claims**

1. A process for preparing a foamed body comprising steps of (1) mixing the following four components:

a. an aqueous solution having a pH of up to 2.0 and containing at least one member selected from the group consisting of acids and water-soluble acidic phosphates,

b. at least one member selected from the group consisting of cement materials and anhydrous alkali metal silicates,

c. a metal blowing agent, and

d. a foaming stabilizer

in the proportion of about 10 to about 400 parts by weight of the component (a), 100 parts by weight of component (b) calculated as a metal oxide M_2O or $M'O$ wherein M is alkali metal and M′ is alkaline earth metal, about 0.5 to about 30 parts by weight of the component (c) and about 3 to about 50 parts by weight of the component (d), to obtain a pasty mixture, (2) shaping the resulting pasty mixture to a desired shaped mass and (3) leaving the shaped mass to stand to effect foaming, the acids having an electric dissociation constant (pKa) of up to 4.0 at 25° C, the foaming stabilizer being at least one member selected from the group consisting of activated carbon, zeolite, silica gel, carbon black, talc and mica.

4,084,981

QUICK HARDENING CEMENT-ASPHALT COMPOSITION

Yoshiro Higuchi, Higashikurume; Yutaka Harada, Murashino; Toshio Sato, Tokyo; Koji Nakagawa, Asahi; Iwazo Kawaguchi, Tokyo, and Yasushi Kasahara, Sagamihara, all of Japan, assignors to Japanese National Railways; Denki Kagaku Kogyo Kabushiki Kaisha and Toa Doro Kogyo Co., Ltd., all of Tokyo, Japan

Filed Oct. 4, 1974, Ser. No. 512,393
Claims priority, application Japan, Oct. 4, 1973, 48-110958
Int. Cl.[2] C04B *7/356*
U.S. Cl. 106—96 **15 Claims**

1. A quick hardening cement-asphalt composition used as a grout for a ballast-filled track structure having the following properties:

(1) a compressive strength of about 4 kg/cm[2] within about 60 to 90 minutes after execution,

(2) a consistency of about 5 to 10 seconds with a J funnel (the PC grout test method by the Civil Engineering Society of Japan),

(3) the consistency of (2) above must be maintained for at least 20 minutes after mixing, and

(4) the compressive strength of (1) above must be maintained at temperatures ranging from about 5° C to 35° C, said cement-asphalt composition consisting essentially of

(a) 100 parts by weight of a cement composition prepared by adding to portland cement about 20 to 35% by weight of a mixture of a calcium aluminate-series mineral selected from the group consisting of amorphous $3CaO.Al_2O_3$, amorphous $CaO.Al_2O_3$, amorphous $12CaO.7Al_2O_3$, amorphous $11CaO.7Al_2O_3$, CAF_2 and amorphous $3CaO.3Al_2O_3.CaF_2$ and calcium sulfate in a weight ratio of about 1:0.3 to 1:3; about 0.05 to 10% by weight of an inorganic salt selected from the group consisting of $ZnCl_2$, $AlCl_3$, $CaCl_2$, $MgCl_2FeCl_2$, $NiCl_2$, $CoCl_2$, $MgBr_2$, $[ZnI_2]$ $NaSO_4$, K_2SO_4, $NaNO_2$, $NaNO_3$, KNO_3, KNO_2, $Ca(NO_2)_2$, $Ca(NO_3)_2$, $MgSO_4$, $FeSO_4$, $Al_2(SO_4)_3$, CaB_4O_7, Na_2CO_3, K_2CO_3, $NaHCO_3$, and $KHCO_3$, and about 0.05% to 3% by weight of at least one of an organic carboxylic acid selected from the group consisting of malonic acid, glutaric acid, 1,2,3-propanetricarboxylic acid nitrilotriacetic acid and ethylenediamine tetraacetic acid, an organic hydroxycarboxylic acid selected from the group consisting of malic acid, gluconic acid, citric acid, tartaric acid, salicylic acid, oxymalonic acid and latic acid and a salt thereof, and

(b) about 30 to 400 parts by weight of an asphalt emulsion containing 50 to 65% by weight asphalt, about 0.2 to 8% by weight of a polyoxyethylene alkyl phenyl ether, polyoxyethylene alkyl ether, polyoxyethylene alkyl ester, sorbitan alkyl ester, polyoxyethylene sorbitan alkyl ester or sucrose fatty acid ester nonionic emulsifier and about 0.05 to 2% by weight a multivalent metal chloride, calculated as the multivalent metal ion.

4,084,982

FILLED INORGANIC RESIN CEMENTS AND COMPOSITIONS AND PROCESS FOR FORMING THEM

William L. Prior, Newark, Ohio, and Richard S. Lindstrom, Reading, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Dec. 3, 1976, Ser. No. 747,219
Int. Cl.[2] C04B *9/02, 9/04*
U.S. Cl. 106—105 **37 Claims**

1. A filled inorganic resin cement, comprising in combination

(a) a magnesium oxide cement which is the reaction product of active MgO and an aqueous, soluble phosphate-containing slurry of a magnesium salt selected from the group consisting of $MgCl_2.6H_2O$ and $MgSO_4.7H_2O$, the concentration of said magnesium salt in said slurry prior to reac-

tion with said MgO being between about 60% and 80% by weight, the molar ratio of $MgCl_2.6H_2O$ to MgO ranging between about 1 to 3 and about 1 to 9 and of $MgSO_4.7H_2O$ to MgO ranging between about 1 to 3 and about 1 to 14, said reaction product being further characterized in that essentially all of the water of said slurry and the water of hydration of said magnesium salt are consumed in the reaction and are contained in said reaction product; and

(b) a multidirectional, microfiber filler blended into said slurry subsequent to the addition of said MgO thereto and distributed throughout said cement, said filler being present in an amount ranging from about 2% to about 40% by weight of said magnesium oxide cement.

4,084,983

DYED LUSTROUS PIGMENTS

Horst Bernhard, and Kürt Marquard, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Jun. 19, 1975, Ser. No. 588,504

Claims priority, application Germany, Jun. 21, 1974, 2429762

Int. Cl.[2] C04B *31/38, 31/00;* B05D *7/00*

U.S. Cl. 106—289 **21 Claims**

1. In a colored lustrous pigment composition comprising translucent micaceous flakes coated with a dyestuff, the improvement wherein said dyestuff is an aluminum lake fixed onto the surface of the micaceous pigment by a smooth and uniform intermediate coating of aluminum hydroxide, the aluminum of said aluminum hydroxide being a chemically bound portion of said aluminum lake, the pigment composition being substantially devoid of agglomerated flakes and being substantially color fast.

4,084,984

TEMPERATURE-STABLE INORGANIC YELLOW PIGMENTS

Franz Hund, Krefeld-Bockum; Wilhelm Holznagel; Henning Erfürth, both of Krefeld; Friedrich Kindervater, Leverkusen, and Willi Hennings, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 14, 1974, Ser. No. 497,366

Claims priority, application Germany, Aug. 30, 1973, 2343704

Int. Cl.[2] C09C *1/36*

U.S. Cl. 106—300 **6 Claims**

1. A temperature-stable inorganic yellow pigment of the composition $Fe_2TiO_5 . x\ TiO_2$, where x is from about 0.5 to about 10, with a particle diameter of less than about 1 micron.

4,084,985

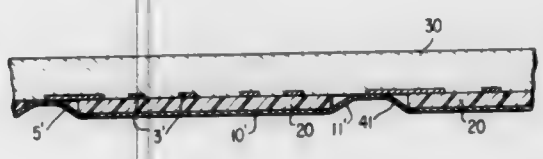
METHOD FOR PRODUCING SOLAR ENERGY PANELS BY AUTOMATION

John C. Evans, Jr., North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 25, 1977, Ser. No. 790,637

Int. Cl.[2] H01L *31/04, 31/18*

U.S. Cl. 136—89 P **21 Claims**



1. A method of fabricating an integral solar cell panel containing a multiplicity of solar cells, which comprises:

forming an etched pattern of a multiplicity of solar cell collector grid systems with accompanying interconnection and bus bar tabs into a transparent, environmentally stable protective sheet;

depositing a layer of conductive metal into the etched regions of said protective sheet followed by a layer of a transparent conductive mixed metal oxide or metal oxide;

forming a pattern of conductive areas with accompanying interconnection and bus bar tabs corresponding to the collector grid systems and interconnection and bus bar tabs of said protective sheet on a substrate as a backelectrode for said solar cell panel; and

bonding a multiplicity of solar cells between said protective sheet and said backelectrode substrate such that the position of said cells in the fabricated panel correspond to the positions of said collector grid systems on said protective sheet and the conductive areas on said backelectrode substrate.

15. An integral solar cell panel containing a multiplicity of solar cells, which comprises:

a protective sheet having collector grid systems, interconnection and bus bar tabs etched into one surface thereof wherein the etched regions contain a first thin film of conductive metal and a superposed layer of transparent, conductive mixed metal oxide or metal oxide;

a backelectrode substrate having conductive areas corresponding to said collector grid systems and interconnection and bus bar tabs of said protective sheet; and

a multiplicity of solar cells sandwiched between and in conductive adhesive contact with said protective sheet and backelectrode substrate such that said cells are positioned between the mutually opposing collector grid system of said protective sheet and the conductive areas of said backelectrode substrate and such that mutually opposing interconnection and bus bar tabs on said protective sheet and backelectrode substrate are in firm contact in order to form a complete electrical network of said cells in said panel.

4,084,986

METHOD OF MANUFACTURING A SEMI-INSULATING SILICON LAYER

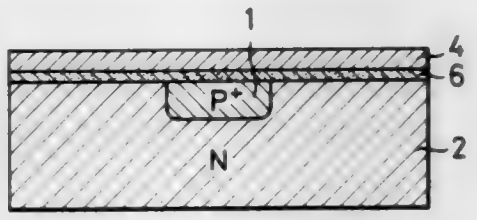
Teruaki Aoki, Tokyo; Takeshi Matsushita, Sagamihara; Tadayoshi Mifune, Yokohama, and Hisao Hayashi, Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 19, 1976, Ser. No. 678,061

Claims priority, application Japan, Apr. 21, 1975, 50-48378

Int. Cl.[2] H01L *21/26*

U.S. Cl. 148—1.5 **18 Claims**



1. A method of manufacturing a semiconductor device which includes implanting one of a group consisting of oxygen and nitrogen in a silicon layer, the implantation being continued until said layer has been converted into a semi-insulating layer having a resistivity of 10^7 to 10^{11} ohm-cm.

4,084,987

METHOD FOR MANUFACTURING ELECTRICAL SOLID STATE DEVICES UTILIZING SHADOW MASKING AND ION-IMPLANTATION

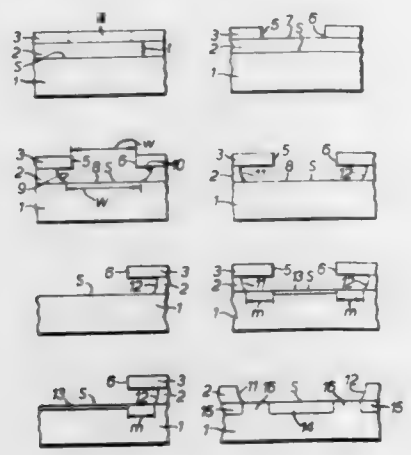
Geoffrey Allan Godber, Long Buckby, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

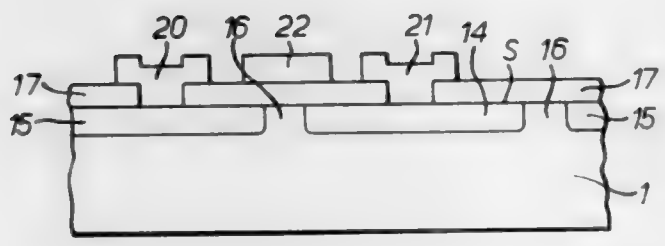
Filed Sep. 27, 1976, Ser. No. 726,796

Claims priority, application United Kingdom, Sep. 27, 1975, 39669/75

Int. Cl.[2] H01L *21/265, 21/31*

U.S. Cl. 148—1.5 **3 Claims**





1. A method of manufacturing an electrical solid state device having a stratum presenting a surface at which the stratum is to be subjected to an implantation treatment, which method comprises the steps of:

(i) forming a film on the said surface, the material of the film being doped with ions of a substance to be diffused in the stratum;

(ii) covering the film with a layer of a photo-resist;

(iii) photographically exposing a trace of at least one channel on the layer, and removing the exposed resist from the trace to leave at least one channel having walls constituted by defined edges of photo-resist and a floor of film material;

(iv) forming a trough in the film material by introducing an etchant into each channel whereby an etching action is started on the film material at the floor of the said channel, which action continues through the film thickness until such time as said surface is exposed over a width equal to the width between said defined edges, an incidental action taking place during this time at the walls of the trough which incidental action is deliberately continued after the expiration of said time for a period during which the trough walls are caused to recede and to assume a profile dependent partly on the period duration and partly on the film thickness, the recession of a wall forming at the floor of the trough a margin at which said surface is uncovered and which is overhung by photo-resist;

(v) bombarding said surface, from a source above the said surface and the photo-resist, with ions of a substance to be implanted in the stratum, whereby the uncovered nonoverhung stratum undergoes implantation by the bombarding ions; and

(vi) heating the stratum and the surviving film material whereby, firstly ions of the dopant substance are transferred from the film material to the stratum and are implanted therein, and secondly ions, implanted either by bombardment or by transfer, are caused to diffuse into the stratum except at said margin where no implanted ions will be present, thereby forming in the stratum a number of individual diffusions of the same type, any two of which are separated from each other by a boundary wall of stratum material whose width of is the width of a margin.

4,084,988

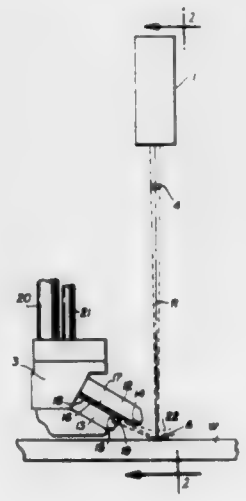
METHOD AND APPARATUS FOR MAKING INSTANTANEOUS SCARFING CUTS

Stephen August Engel, Shenorock, and Ronald Elmer Fuhrhop, Suffern, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 684,833, May 10, 1976, Pat. No. 4,038,108. This application Apr. 25, 1977, Ser. No. 789,720

Int. Cl.[2] B23K *7/06, 7/08*

U.S. Cl. 148—9.5 **10 Claims**



1. A method for making an instantaneous scarfing cut on the surface of a metal workpiece, comprising the steps of:

(a) causing relative motion between the workpiece and a stream of scarfing oxygen gas, and simultaneously therewith

(1) impinging at least one laser beam on the work surface so as to produce a heated path of desired length across said surface, relative to its direction of motion, said heated path being produced by the laser beam heating a series of points on said surface to their oxygen ignition temperature, and

(2) impinging a stream of scarfing oxygen onto said heated path, thereby causing an instantaneous scarfing cut to begin along said path, and

(b) continuing the flow of scarfing oxygen until the desired length of cut has been produced.

4,084,989

METHOD FOR PRODUCING A STABILIZED ELECTRICAL SUPERCONDUCTOR

Gundolf Meyer, Birmenstorf, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Feb. 13, 1976, Ser. No. 658,024

Claims priority, application Switzerland, Mar. 12, 1975, 3103/75

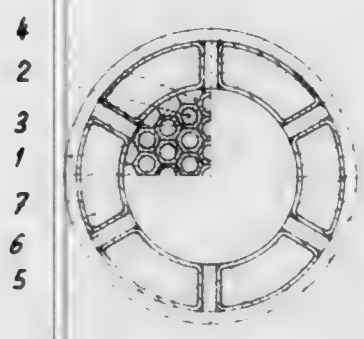
Int. Cl.[2] H01L *39/14*

U.S. Cl. 148—11.5 R **4 Claims**

1. The method for producing a stabilized superconductor containing a plurality of thin filaments of superconductive material which comprises the steps of:

mechanically working a composite parent slug to achieve intimate metallic connection between the individual abutting constituents of the slug to form a relatively thin composite conductor structure, the middle region of the cross-section of said conductor structure including a plurality of

mutually spaced filaments consisting of a first superconductor-forming material surrounded by a second material which permits radially inward diffusion of a third material therethrough into said first material to convert the latter into stabilized superconductor filaments, the radially outer region of said conductor structure including a plurality of mutually spaced conductors of a fourth material having a good electrical conductivity characteristic and each of which is covered by a layer of a fifth material forming a barrier against penetration of said diffusible third material, a sixth material which permits radially inward diffusion of



said third material disposed between the diffusion barriers formed on at least some of said conductors of good electrical conductivity characteristic, and outer material which also permits radially inward diffusion of said third material and which surrounds said conductors having a good electrical conductivity characteristic;

applying a layer of said third material to said outer material; and

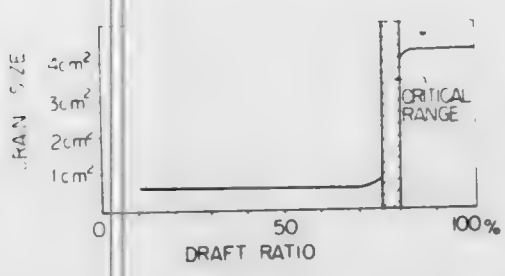
effecting by heat treatment diffusion of said third material radially inward through said outer material and said sixth and second materials into said first filamentary material to convert the latter into superconductors.

4,084,990

PROCESS FOR FABRICATION OF DECORATIVE PANEL

Kisuke Watanabe, Tokyo, and Tsuneji Takasugi, Iruma, both of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Dec. 20, 1976, Ser. No. 752,600
Claims priority, application Japan, Dec. 26, 1975, 50-157167
Int. Cl.[2] C22F *1/02, 1/08, 1/14*
U.S. Cl. 148—11.5 R **11 Claims**



1. A method of forming a coarse, enlarged crystalline pattern on a metal sheet which comprises the steps of: (a) rolling the metal sheet at a draft ratio in excess of a critical draft ratio peculier to the metal sheet; and (b) annealing the metal sheet in an anti-oxidizing atmosphere at a first predetermined temperature in excess of a recrystallization temperature to allow coarse, enlarged crystals to form.

4,084,991

ENAMELED COLD ROLLED SHEET

Kazuo Matsudo; Takayoshi Shimomura, and Teruo Kurokawa, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 583,879, Jun. 5, 1975, abandoned. This application Oct. 12, 1976, Ser. No. 731,840
Claims priority, application Japan, Jul. 10, 1974, 49-78190
Int. Cl.[2] C22C *38/04*
U.S. Cl. 148—31.5 **7 Claims**

1. An enameled cold rolled steel sheet, comprising:

(i) a ferrous enameling sheet and characterized by substantially constant manganese content of up to 0.50 weight percent to a depth of about 5 μ from the surface thereof, said sheet being produced by cold rolling a steel sheet having a manganese content of up to 0.50 weight percent to cold reduction ratio of more than 30 percent, and

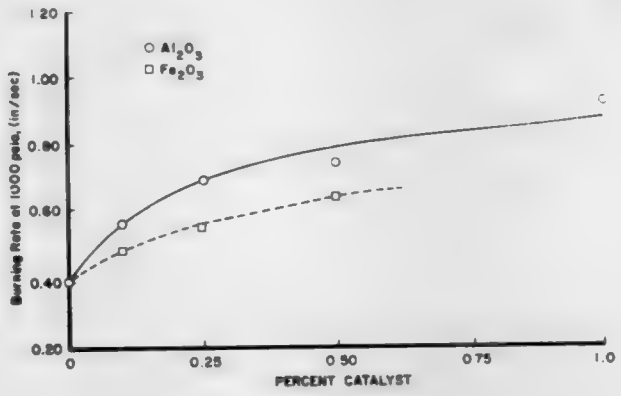
(ii) an enamel coating on the surface of said ferrous enameling sheet, said enamel coating having been applied immediately after cold rolling without an intermediate anneal.

4,084,992

SOLID PROPELLANT WITH ALUMINA BURNING RATE CATALYST

James O. Hightower; James W. Hamner, and Richard L. Matthews, all of Huntsville, Ala., assignors to Thiokol Corporation, Newtown, Pa.

Filed Apr. 22, 1976, Ser. No. 679,101
Int. Cl.[2] C06B *45/08*
U.S. Cl. 149—17 **4 Claims**



1. A solid propellant composition which comprises as essential ingredients a binder component, a perchlorate oxidizer component, and from 0.5% to 2% of finely divided aluminum oxide, said aluminum oxide having a total surface area of from 40 to 160 square meters.

4,084,993

STABLE BLASTING SLURRY

Melvin A. Cook, 2026 Beneficial Life Tower, The ZCMI Center, 36 S. State St., Salt Lake City, Utah 84111

Continuation-in-part of Ser. No. 705,593, Jul. 15, 1976, abandoned. This application Sep. 24, 1976, Ser. No. 726,300
Int. Cl.[2] C06B *36/10*
U.S. Cl. 149—39 **44 Claims**

1. A stable blasting slurry having prolonged stability resulting from the process comprising mixing followed by rapid cooling of a hot (40° to 70° C), guar-gum thickened (by up to 0.5% guar gum) oxidizer liquid with a hot (also 40° to 70° C) fuel liquid fortified with up to 10% dispersing or emulsifying agent and said fuel liquid being either a fuel sensitizer in itself or containing a dissolved or suspended fuel sensitizer dispersed in a liquid carrier, or both, the resulting mixture being gelled by means of a cross-linking agent for guar gum in an amount up to 20% of guar gum thickener content, the stable blasting slurry being density controlled by means of pre-determined quantity of foaming or gassing agent or a low-density porous solid, with the proviso that the aforesaid fuel liquids are limited

to those having melting points at least 10° C higher than ambient temperatures.

4,084,994

AQUEOUS HYDROCARBON OIL-SOLUBLE LIGNOSULPHONATE EXPLOSIVE COMPOSITION

Tore Bernt Nielsen, and Oddvar Alm, both of Drammen, Norway, assignors to Dyno Industrier A.S., Oslo, Norway

Continuation-in-part of Ser. No. 624,284, Oct. 20, 1975, abandoned. This application Dec. 30, 1976, Ser. No. 755,555
Claims priority, application Norway, Mar. 14, 1975, 750887
Int. Cl.[2] C06B *33/02*
U.S. Cl. 149—44 **7 Claims**

1. In an aqueous explosive composition which comprises at least one inorganic oxygen-supplying salt, at least one fuel and at least one thickener, the improvement according to which the composition has a water content of from 5 to 15% by weight, a content of not less than 3% by weight hydrocarbon oil and from 0.5 to 5.0% by weight of a water soluble lignosulphonate, said composition being free from self-explosive matter, nitroderivatives, nitric acid esters and chlorinated hydrocarbons.

4,084,995

PREPARATION OF A CAP SENSITIVE PARTICULATE EXPLOSIVE COMPOSITION COMPRISING CALCIUM NITRATE

Eirik Samuelsen, Lierbyen, and Oddvar Alm, Drammen, both of Norway, assignors to Dyno Industrier A.S., Oslo, Norway

Filed Sep. 20, 1976, Ser. No. 725,127
Claims priority, application Norway, Sep. 19, 1975, 753212; Jun. 14, 1976, 762043; Aug. 16, 1976, 762824
Int. Cl.[2] C06B *31/42*
U.S. Cl. 149—56 **15 Claims**

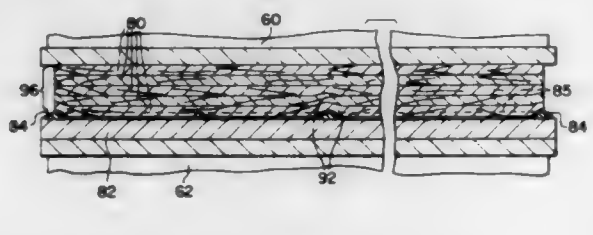
1. In the preparation of a particulate explosive composition comprising as oxygen releasing components ammonium nitrate and calcium nitrate in a molar ratio within the limits of 50 to 1 and 4 to 1, having a water content in molar ratio to calcium nitrate within the limits of 4 to 1 and 1 to 1, and comprising at least one oxygen consuming component which is substantially insoluble in water and completely or partly liquid at temperatures above 35° C, the improvement according to which ammonium nitrate and calcium nitrate with the said water content are heated to temperatures between 35° C and 80° C, whereafter the nitrate mixture is cooled under sustained mechanical agitation to below 35° C to produce a free-flowing particulate matter, during which heat treatment the oxygen consuming component(s) is (are) added, prior to or during the final cooling period.

4,084,996

METHOD OF MAKING A GROOVED, FIBER-CLAD PLYWOOD PANEL

Robert G. Wheeler, Corvallis, Oreg., assignor to Wood Processes, Oregon Ltd., Corvallis, Oreg.

Continuation-in-part of Ser. No. 488,274, Jul. 15, 1974, abandoned. This application Apr. 9, 1976, Ser. No. 675,552
Int. Cl.[2] B27D *1/08*; B32B *31/20*
U.S. Cl. 156—257 **13 Claims**



2. The method of making a plywood panel having a grooved, fiber-clad surface including the steps:

rough machining a metal caul plate so as to produce a rough, jagged, textured surface on the upper side of said plate,

forming a plurality of parallel ridges comprising weld beads on said upper surface of said caul plate about one-eighth inch high with converging, rough-surfaced opposite said walls adjacent said upper side of said plate,

vacuum-forming a spongy, cellulosic, fibrous, pulp web from a slurry of cellulosic fibrous pulp and including a thermo-setting resinous material,

juxtapositioning said web and a plywood assembly,

assembling said caul plate and said web and the plywood assembly with said ridged surface of the caul plate next adjacent said web,

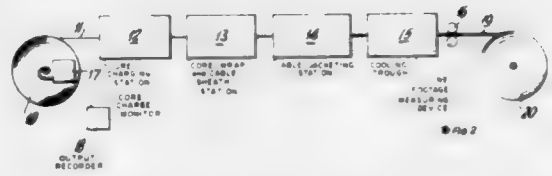
and compressing said caul plate in a hot press under sufficient heat and pressure against said web and plywood assembly to cause steam to be formed due to the moisture from said web for softening the layer of plywood assembly next adjacent said web whereby said ridges and the jagged textured surface of said caul plate will emboss a complementary surface pattern on the outer surface of said web, with said ridges becoming releasably embedded in said plywood assembly, and will securely bond said web and the plywood assembly together.

4,084,997

APPARATUS FOR MONITORING CORE CHARGING OF WATERPROOF COMMUNICATION CABLE

Merle C. Biskeborn, Chatham, N.J., assignor to Phelps Dodge Industries, Inc., New York, N.Y.

Filed Aug. 6, 1976, Ser. No. 712,155
Int. Cl.[2] B05B *1/00*
U.S. Cl. 156—356 **5 Claims**



1. Apparatus for continously monitoring the charging with filling compound of a cable core of predetermined total length and comprising a plurality of twisted pairs, the apparatus comprising:

means for continously charging with filling compound successive incremental lengths of cable core passing said charging means;

means connected to one end of a first of the plurality of twisted pairs for continously sensing, as the successive incremental lengths of the core are charged, the mutual capacitance of that first twisted pair; and

means associated with the sensing means for continously comparing the sensed mutual capacitance of the first twisted pair with a value representing the mutual capacitance of a twisted pair in the core of a cable of the same total length which has been completely charged with filling compound over a distance equal to the sum of the incremental lengths of cable that have passed the charging means.

4,084,998

DEVICE FOR GRIPPING, PRESSING AND DEPOSITING TIRE CORES

Werner Eichholz, and Gerd Krebs, both of Hamburg, Germany, assignors to Phoenix Gummiwerke AG, Hamburg, Germany

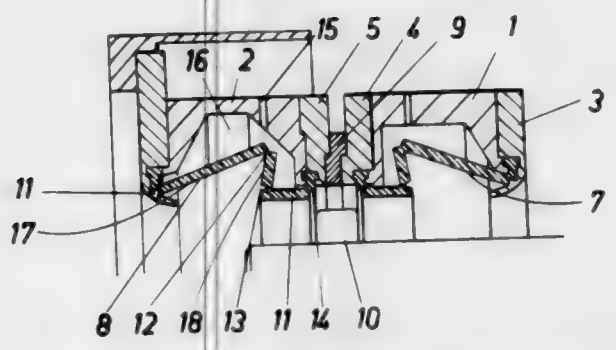
Filed Apr. 14, 1976, Ser. No. 676,987
Claims priority, application Germany, Jun. 5, 1975, 2525038
Int. Cl.[2] B29H *17/22*
U.S. Cl. 156—403 **10 Claims**

1. A device for gripping, pressing and depositing tire cores upon a raw tire blank, comprising:

an axially shiftable supporting cylinder including two rings located side-by-side, each of which has a single inner

annular trough parallel to the trough located in the adjacent ring; and

two separate rings, each of which airtightly covers one of said troughs and includes a plurality of spaced, annularly-extending grooves formed therein which define annular zones separated by articulated joints and which permit pivotal movement of said annular zones in a toggle-like manner with respect to each other, said grooves formed in



one ring being reversely arranged relative to the grooves formed in the other ring to provide a mirror-like symmetry between said rings, and each of said rings having an inner axially adjacent annular zone which, under the influence of fluid pressure, is inwardly swingable toward the inner annular zone of the other ring to provide a tong-like movement facilitating the gripping of a bead core between the two adjacent inner annular zones of said two rings.

4,084,999

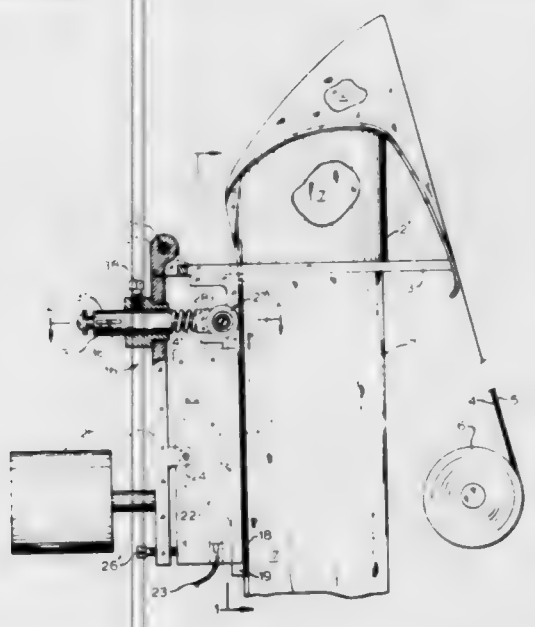
APPARATUS FOR FORMING CONTAINERS WITH FIN-TYPE SEAMS

George I. Rucker, Dublin, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Continuation of Ser. No. 327,476, Jan. 29, 1973, abandoned. This application Jan. 16, 1975, Ser. No. 541,664

Int. Cl.² B29D *23/10;* **B32B** *1/08*

U.S. Cl. 156—466 **5 Claims**



1. In apparatus for forming a continuous tube of bag forming sheet material having a heat sealable inner face of heat sealable material and an outer face free of said heat sealable material and which is continuously moved in an axial direction and while thus moved the heat sealable inner faces along the opposite edges of the sheet are heat sealed into a fin-type seam wherein one edge portion of the sheet is folded back over the body of the tube along a fold line and the opposite edge portion of the sheet overlaps the folded edge portion, and wherein a heat sealing die is provided to heat seal said edge portions together the improvement comprising an elongated, rigidly mounted back-up plate having a smooth back-up surface and an elongated free edge disposed in said axial direction, means for continuously moving and folding said one edge portion of said sheet over said back-up plate with the outer face of said one edge portion engaging said smooth back-up surface of said back-up plate while simultaneously lapping the opposite edge portion of the sheet over said folded edge portion and with said fold line adjacent to the elongated free edge of said back-up plate whereby said back-up plate is located between said folded edge portion and the outside face of the body of the tube, means for pressing said heat sealing die against said overlapped portion while maintaining the outer face of the folded edge portion in sliding engagement with said smooth back-up surface of said back-up plate with the folded edge portion inner face out of engagement with said back-up plate so no scuffing occurs therebetween while the seam is continuously being moved to thus heat seal the seam, a tracking wheel positioned upstream from said heat sealing die in engagement with the outside face of the overlapped edge portion of said seam before the seam is heat sealed to press the seam against the back-up plate and which is mounted for rotation about an axis transverse to the tube axis at a predetermined angular position to apply a pulling force on said seam in a direction toward the edge of the seam and thus oppose drifting of the seam in a direction toward said fold line, and means for maintaining the tracking wheel in such engagement.

4,085,000

METHOD OF RECOVERING TALL-OIL SOAP FROM KRAFT BLACK LIQUOR

Joseph V. Otrhalek, Dearborn; Gilbert Stephen Gomes, Southgate, and Gunther Hans Elfers, Grosse Ile, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 13, 1977, Ser. No. 759,070

Int. Cl.² D21C *11/00*

U.S. Cl. 162—16 **8 Claims**

1. A method of recovering tall-oil soap from a black liquor from a sulfate kraft pulping step, produced in the pulping of wood from a coniferous tree, said method comprising mixing with said liquor about 10 to 500 parts by weight, per one million parts by weight of said liquor, of a terpolymer consisting essentially of units which are:

(a) about 60 to about 88 parts by weight from an alpha-beta-unsaturated acid containing 3 to 4 carbon atoms,

(b) about 6 to about 28 parts by weight from an alkylate of an alpha-beta-unsaturated acid containing 3 to 4 carbon atoms, the alkyl portion of said alkylate containing from 1 to 18 carbon atoms, and

(c) about 4.5 to about 20 parts by weight from allyl alcohol and thereafter recovering the said tall-oil soap from said liquor.

4,085,001

FIBER REINFORCED CEMENTITIOUS SUBSTRATE

Tadashi Fukuwatari, Tokyo; Kiyotaka Mishima, Kawasaki; Hiroshi Ichimura, Ichikawa, and Hideaki Kurihara, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jun. 30, 1976, Ser. No. 701,220

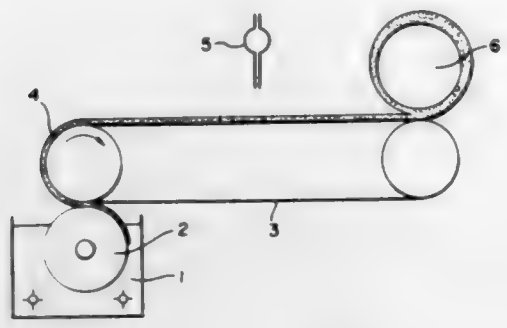
Claims priority, application Japan, Jul. 11, 1975, 50-84416; Jul. 18, 1975, 50-87218

Int. Cl.² D21F *11/02, 11/06;* **B28B** *1/26*

U.S. Cl. 162—145 **12 Claims**

1. A process for preparing a glass fiber-reinforced cement sheet which comprises dewatering a cement-containing slurry on a wire to form a wet film and winding said wet film on a making roll; the improvement which comprises utilizing in the process an aqueous, cement-containing slurry having a solid content of from 2–30 wt% and wherein the solid component of said slurry comprises 1 to 10 wt% glass fibers, and at least one

member selected from the group consisting of 1 to 10 wt% asbestos and 0.03 to 5 wt% of a specific fiber wherein said



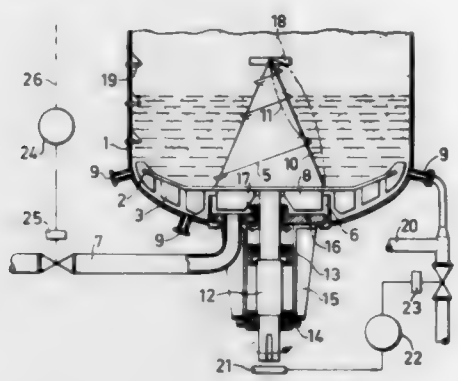
specific fiber is selected from the group consisting of cotton, flax, hemp, wools and silk with the remainder cement material.

4,085,002

BLEACHING TOWER FOR GAS PHASE BLEACHING

Bengt Edvard Pettersson, Sundsvall, Sweden, assignor to Sunds Aktiebolag, Sundsvall, Sweden

Filed Dec. 20, 1973, Ser. No. 426,437
Claims priority, application Sweden, Jan. 5, 1973, 7300147
Int. Cl.[2] D21C *9/10, 7/08, 7/12*
U.S. Cl. 162—238 **11 Claims**



1. In a bleaching tower for gas-phase bleaching preferably oxygen bleaching at high consistency of finely disintegrated gas-pervious fibrous material such as cellulose pulp, said bleaching tower being substantially vertical and providing in the upper portion thereof a gas zone with an inlet for the fibrous material above a space for a column of fibrous material of high consistency, 18–40%, suitably 25–35%, said column space overlying a dilution space in the lower portion of the tower with supply conduits for dilution liquid and a discharge outlet for treated fibrous material, there being a mixing space between said column and said dilution space, the improvement which comprises inlets (**9**) for the dilution liquid being located in the wall of the tower close to the bottom thereof.

a hub body (**4**) located centrally at the bottom of the tower on a shaft (**12**);

a driving means for rotation of said shaft, said hub body having an upwardly narrowing cross-section and a base diameter which is at least a fourth of the diameter of the tower at the level of the hub body, said hub body extending upwards at least somewhat into the mixing space and being provided with screw-shaped means (**5**) for guiding the material downwards, means for stirring and conveying the material to a discharge outlet (**7**) located in the bottom of the tower, and means for causing an additional torque to the torque required for rotating the hub body;

a transmitter (**21**) connected to the driving means for the hub body shaft, said transmitter controlling the supply of dilution liquid to said dilution space in relation to the torque by means of a valve means (**23**) in order to keep the height of the dilution space constaht; and

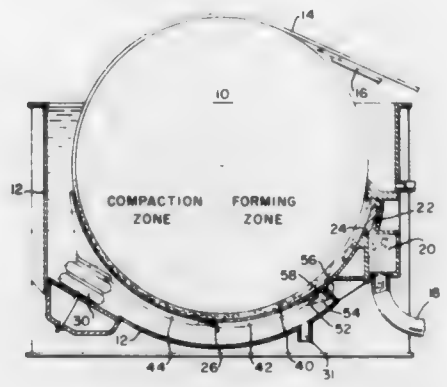
means arranged to maintain the height of a column of fibrous material in said tower.

4,085,003

PRESSURE PULP WASHER WITH PIVOTED BAFFLE

Oscar Luthi, Nashua, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 18, 1977, Ser. No. 779,146
Int. Cl.[2] D21F *1/04, 1/60*
U.S. Cl. 162—259 **3 Claims**



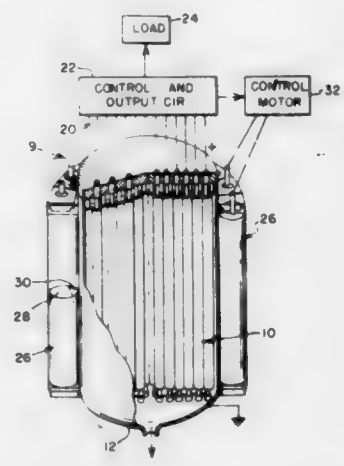
1. In a pressure pulp washer with a vat, a rotatable cylinder in the vat, a pulp inlet for feeding pulp slurry into the vat, means for maintaining a pressure inside the rotatable cylinder less than the pressure outside said cylinder to begin forming a pulp mat on the rotatable cylinder thereby providing a forming zone, and means for removing the pulp mat from the rotatable cylinder, the improvement comprising: a longitudinal baffle spaced from the rotatable cylinder, the baffle having a first pivot pivotally connecting the baffle to the vat at a point in the forming zone, said baffle also having a second pivot downstream from the first pivot and actuating means for applying an actuating force aginst the radial outside surface of the baffle, at a predetermined circumferential point downstream from the second pivot thereby providing a compaction zone downstream from the second pivot, said actuating means being positioned so that the baffle will automatically adjust in response to changes in thickness of the mat to provide the correct convergence angle.

4,085,004

CONTROL FOR NUCLEAR THERMIONIC POWER SOURCE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Craig D. Sawyer, Los Gatos, Calif.

Continuation-in-part of Ser. No. 294,738, Oct. 3, 1972, abandoned. This application Nov. 21, 1975, Ser. No. 634,214
Int. Cl.[2] G21C *7/00*
U.S. Cl. 176—22 **6 Claims**



1. A thermionic nuclear reactor power source comprising:

a reactor vessel;

a plurality of spaced apart thermionic nuclear fuel elements in said vessel, each element including emitter means and

collector means spaced apart from said emitter means and nuclear fuel means, said nuclear fuel means generating neutrons to heat said emitter means at a controllable neutron flux in said vessel;

means electrically coupled to said emitter and collector means of said elements for supplying current therefrom to a load;

control means for controlling the neutron flux in said vessel;

first means for measuring the neutron flux in said vessel;

second means for measuring the current generated by at least some of said emitter and collector means; and

controlling means coupled to said first and second measuring means and responsive to a predetermined function of said measured current and said measured neutron flux for controlling said control means to control the neutron flux in said vessel so as to maintain said emitter means at a relatively constant temperature.

4,085,005

METHOD OF PREPARATION OF INSOLUBLE BIOLOGICALLY ACTIVE COMPOUNDS

Miroslav Bleha; Eva Votavová, and Zdeněk Plichta, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

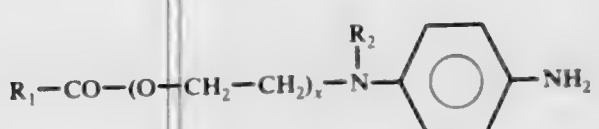
Filed Mar. 24, 1976, Ser. No. 669,866

Claims priority, application Czechoslovakia, Mar. 27, 1975, 2132/75

Int. Cl.² C07G *7/02*

U.S. Cl. 195—68 **8 Claims**

1. A method of insolubilizing a soluble biologically active compound, which comprises providing an alkaline aqueous medium containing (1) a polymeric material having p-phenylenediamine reactive sites according to the general formula:



wherein R_1 is a polymer residue, R_2 is a lower alkyl group, and x is 1 to 4, and (2) a soluble biologically active compound having a primary amino group; and oxidatively coupling the amino group of said soluble biologically active compound to the polymeric material by means of oxidizing said reactive sites with an agent that does not affect the biological activity of the biologically active compound and which is selected from the group consisting of alkali metal arsenates, ferricyanides, quinone, oxygen together with cupric ions, a cupric ammonium complex and hydroquinone.

4,085,006

AUTOMATIC CELL ANALYZER METHOD

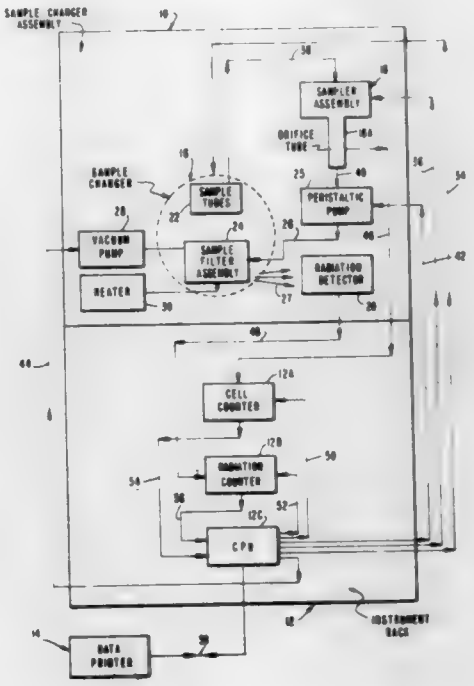
Leo R. Mindick, Flushing, N.Y.; Avraham Bruck; Dan Inbar, both of Haifa, Israel, and Leopold G. Koss, New York, N.Y., assignors to Isomedics, Incorporated, Great Neck, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,518

Int. Cl.² C12K *1/00, 9/00*

U.S. Cl. 195—103.7 **3 Claims**

1. A method for analyzing cells for determination of cell character, comprising the steps of selecting a sample of cells, placing the cells in a fixative solution to form a suspension, ultrasonicating the cells under conditions to achieve dispersion of cells without disrupting cell membrane integrity, incorporating in the suspension a radioactive biochemical which attaches to at least a portion of the cells, counting a pre-determined number of cells withdrawn from the radioactive suspension, depositing said counted cells at a draining location, transporting said counted and drained cells to a drying location and to a radioactive detection location, performing a radioactive count on said cells at said radioactive detection location and comparing said radioactive count in normalized form with a



pre-determined setting to evaluate said sample to determine the character of said cells.

4,085,007

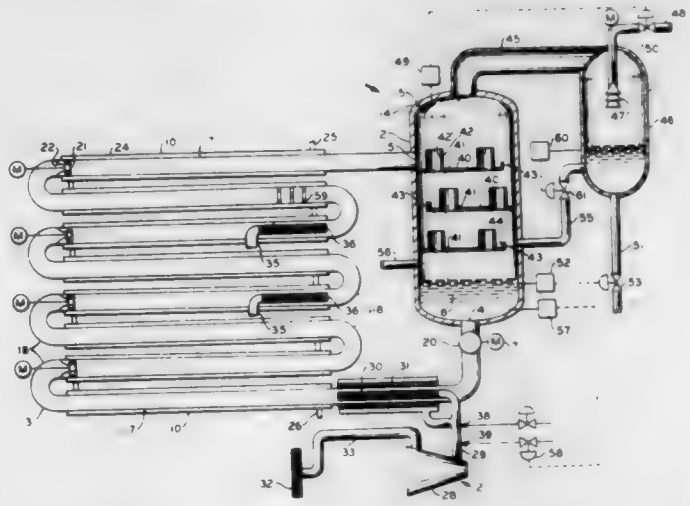
METHOD AND APPARATUS FOR CONDUCTING FERMENTATION

Harold M. Hawkins, deceased, late of Bartlesville, Okla. (by Marjorie Wood Hawkins, executrix), assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 545,547, Jan. 30, 1975, Pat. No. 3,985,622. This application Apr. 15, 1976, Ser. No. 677,209

Int. Cl.² C12B *1/14*

U.S. Cl. 195—109 **8 Claims**



1. A method for effecting microbial growth by a fermentation process comprising:

(a) introducing fermentation medium into a reaction zone defined by a tubular member consisting of a plurality of generally horizontally disposed tubular portions connected in flow communication by at least one interconnecting member and each said tubular portion forming a substantially horizontal flow path portion of a flow path where a major portion of the reaction zone is disposed generally horizontally;

(b) flowing said medium through said reaction zone from an inlet to an outlet during which a majority of the fermentation is conducted;

(c) injecting an oxygen-containing gas into said medium when same is in said reaction zone;

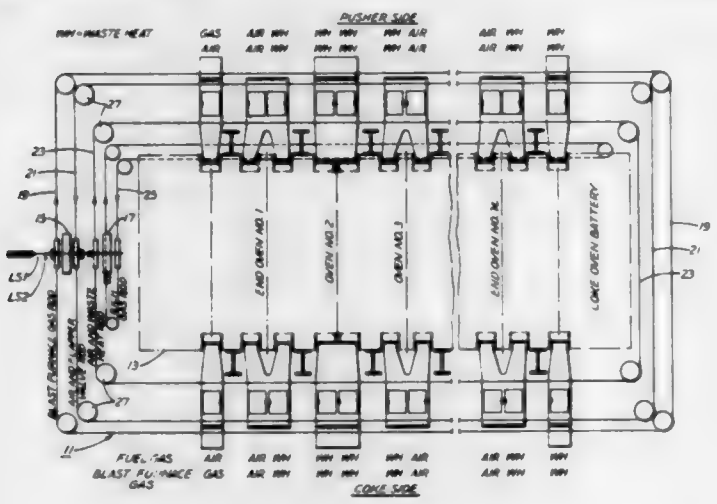
(d) discharging said medium from said outlet into a separation zone at a position above said inlet;
(e) separating a gas phase from a liquid phase of said medium when the medium is in said separation zone, the medium flowing in a direction through the separation zone from the outlet of the reaction zone to the inlet of the reaction zone;
(f) collecting the thus separated liquid phase in a lower portion of the separation zone;
(g) collecting the thus separated gas phase in an upper portion of said separation zone and removing at least a portion of the thus collected gas phase; and
(h) removing product, produced by fermentation and contained in the medium, from said separation zone, said tubular member having a volume greater than that of the separation zone.

4,085,008

REVERSING METHOD AND APPARATUS FOR THE AUTOMATIC HEATING CHANGE-OVER OF A COKE OVEN BATTERY

Raymond Carl Kinzler, Carnegie, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sep. 15, 1976, Ser. No. 723,461
Int. Cl.[2] C10B *1/06, 5/12, 21/16*
U.S. Cl. 202—151 **10 Claims**



1. In combination,a coke oven battery and an apparatus for reversing the heating cycle of the coke oven battery, said apparatus comprising:
(a) a first reversing machine including a rotatable fuel gas cam and a rotatable air and waste heat cam;
(b) means for actuating said first reversing machine and rotating said cams;
(c) a second reversing machine including a rotatable blast furnace gas cam and a rotatable air and flapper cam;
(d) clutch means, forming a part of said second reversing machine, for selectively engaging and disengaging either said blast furnace gas cam or said air and flapper cam of said second reversing machine with said fuel gas cam and said air and waste heat cam of said first reversing machine;
(e) means for moving said clutch means into and out of selective engagement with either said blast furnace cam or said air and flapper cam;
(f) means for locking in a fixed position one of either of said blast furnace gas cam or said air and flapper cam as the other of these cams is driven by said clutch means engaged with said one cam and said rotating cams of said first reversing machine;
(g) a fuel gas rod coacting with said fuel gas cam;
(h) an air and waste heat rod coacting with said air and waste heat cam;
(i) a blast furnace gas rod coacting with said blast furnace gas cam;
(j) an air and flapper rod coacting with said air and flapper cam;
(k) a plurality of gas or air and waste heat reversing boxes, fixed to said coke oven battery, each including (1) a first shaft journaled to said box, (2) a second shaft journaled to said box, (3) a first lid pivotally secured to said second shaft, (4) a third shaft journaled to said box, (5) a second lid pivotally secured to said third shaft; (6) means interconnecting said second and said third shafts for the simultaneous rotation of said second and third shafts, (7) means integrating rotation of said first shaft with rotation of said second and third shafts, (8) a first lever fixed to said first shaft and connected to said air and flapper rod whereby linear movement of said air and flapper rod causes said first lever to pivot said first shaft which causes said second shaft and said third shaft to pivot simultaneously, said integrating means being so arranged that at one time during said heating cycle said lids are closed and said lids remain closed until said air and flapper rod is moved under the influence of said second reversing machine, (9) a pair of waste heat valves, (10) a pair of valve shafts pivotally mounting said waste heat valves to each said air and waste heat reversing box, (11) a second lever pivotally coacting with said pair of valve shafts and connected to said air and waste heat rod, whereby linear movement of said air and waste heat rod causes said second lever to pivot said valve shafts simultaneously to open said waste heat valves, said movement of said air and waste heat rod being coordinated by said clutch means of said second reversing machine with said movement of said air and flapper rod such that said waste heat valves are opened as said lids are closed and said waste heat valves are closed as said lids are opened when said coke oven is operating on rich fuel gas, and (12) means coacting with said lids to regulate air flow into said gas or air and waste heat reversing box;
(l) a plurality of blast furnace gas reversing boxes each flow coordinated to said gas or air and waste heat reversing box, each containing (1) a pair of shut-off valves, (2) an arm mounted to pivot each said shut-off valve, (3) a toggle linkage comprising a pair of links pivotally connected together to each one of said arms and respectively to a pair of shafts, journaled on said gas reversing box for rotation, (4) means on one shaft coacting with the other shaft for simultaneously rotating both shafts, (5) a lever pivotally fixed to one of said shafts and connected to said blast furnace gas rod whereby linear movement of said blast furnace gas rod causes said lever to pivot said pair of shafts to open and close said shut-off valves, said movement of said blast furnace gas rod being coordinated by said clutch means of said second reversing machine with said movement of said air and waste heat rod such that said lids on said air and waste heat reversing boxes are opened as said shut-off valves are opened and said lids on said air and waste heat reversing boxes are closed as said shut-off valves are closed when said coke oven is operating on blast furnace gas or a mixture of blast furnace and rich fuel gases, (6) a pair of internal valves coordinated to open and close with said shut-off valves, and (7) means for operating said internal valves cooperating with said pair of shafts;
(m) a plurality of air and waste heat reversing boxes, each fixed to said coke oven battery at a point between two of said plurality of said gas or air and waste heat boxes with corresponding said flow coordinated blast furnace gas reversing boxes such that said air and waste heat reversing boxes alternate with said gas or air and waste heat boxes with corresponding said flow coordinated blast furnace gas reversing boxes, each said air and waste heat reversing box including (1) a first lid, (2) a first shaft pivotally mounting said first lid to said air and waste heat reversing box, (3) a second lid, (4) a second shaft pivotally mounting said second lid to said air and waste heat reversing box, (5) connecting means between said first shaft and said second shaft which pivots said first lid open as said second lid is closed and pivots said first lid closed as said second lid opens, (6) a lever pivotally fixed to either said first shaft or said second shaft and connected to said air and waste heat

rod whereby linear movement of said air and waste heat rod causes said lever to pivot said first shaft and said second shaft simultaneously such that either said first lid closes and said second lid opens or said first lid opens and said second lid closes, (7) a first pair of waste heat valves operably connected to said first shaft such that when said first lid is opened said first pair of waste heat valves is closed, and when said first lid is closed said first pair of waste heat valves is opened, (8) a second pair of waste heat valves operably connected to said second shaft such that when said second lid is opened said second pair of waste heat valves is closed and when said second lid is closed said second pair of waste heat valves is opened, (9) means coacting with said first lid and said second lid to regulate air flow into said air and waste heat reversing box, (10) a third shaft rotatably mounted to said air and waste heat reversing box, (11) a first flapper air adjusting valve pivotally mounted within said air and waste heat reversing box positioned adjacent to said first lid, (12) means interconnecting said third shaft and said first flapper by which said first flapper can be pivoted when said third shaft is rotated, (13) a fourth shaft rotatably mounted to said air and waste heat reversing box, (14) a second flapper air adjusting valve pivotally mounted within said air and waste heat reversing box positioned adjacent to said second lid, (15) means interconnecting said fourth shaft and said second flapper by which said second flapper can be pivoted when said fourth shaft is rotated, (16) a lever pivotally engaged with said third shaft and connected to said air and flapper valve rod such that linear movement of said air and flapper valve rod causes said first flapper to pivot, (17) a lever pivotally engaged with said fourth shaft and connected to said air and flapper valve rod such that linear movement of said air and flapper valve rod causes said first flapper to pivot, said levers engageably arranged with said third shaft and said fourth shaft such that said third shaft and said fourth shaft rotate simultaneously causing said first flapper to pivot from vertical to horizontal at the same time that said second flapper is caused to pivot from horizontal to vertical and causing said first flapper to pivot from horizontal to vertical at the same time that said second flapper is caused to pivot from vertical to horizontal, said horizontal positions of said flappers coordinated by said reversing machines to correspond to said open positions of said lids when said coke oven is being operated on rich fuel gas and said vertical positions of said flappers corresponding to said open position of said lids when said coke oven is being operated on blast furnace gas, said positions of said flappers being coordinated by said clutch means of said second reversing machine.

4,085,009

METHODS FOR DETERMINATION OF ENZYME REACTIONS

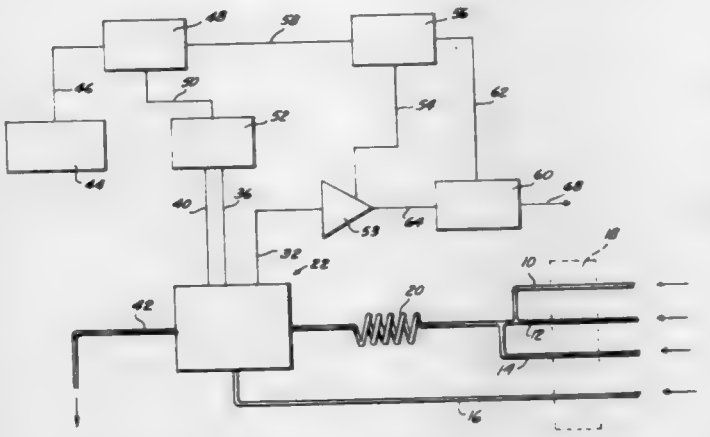
Salvatore J. Pace, Yorktown Heights, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jul. 28, 1976, Ser. No. 709,470

Int. Cl.² G01N *27/46*

U.S. Cl. 204—1 T **11 Claims**

1. A method for determining the activity of an enzyme in a liquid sample treated with a coenzyme and a substrate for a reaction involving a change in the coenzyme from a first form to a second form, utilizing a three-electrode potentiostat including an auxiliary electrode, comprising the steps of: electrosensitively contacting said treated sample simultaneously with the electrodes of said potentiostat, applying a voltage to said auxiliary electrode to support said reaction, modulating said voltage to change said coenzyme alternately between said first



and second forms, and measuring at least one of said forms during said reaction.

4,085,010

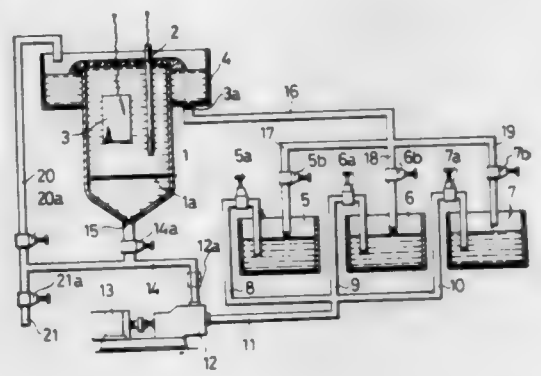
PROCESS FOR POWDER-DISPERSED COMPOSITE PLATING

Shigeru Ishimori, Hamanagun, and Shinichi Honda, Hamamatsu, both of Japan, assignors to Suzuki Motor Company Limited, Japan

Continuation of Ser. No. 435,488, Jan. 22, 1974, abandoned. This application Jan. 2, 1976, Ser. No. 646,364

Int. Cl.² C25D *3/00, 5/00, 15/00, 15/02*

U.S. Cl. 204—16 **175 Claims**



1. A process for high speed plating of an object with a composite plating of a plating metal and a pulverulent material comprising the steps of providing a composite plating solution containing pulverulent material, applying a current density to said object of at least about 15 A/dm², and causing a portion of said composite plating solution including substantially all said pulverulent material in said portion to flow in an upward direction at a velocity which is at least about 4.2 cm/sec past the portion of said object which is to be plated.

4,085,011

PROCESS FOR THE PRODUCTION OF A THIN-FILM CIRCUIT

Wilfried Juergens; Manfred Roschy, both of Munich, and Alois Schauer, Gruenwald, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 15, 1976, Ser. No. 732,987

Claims priority, application Germany, Oct. 17, 1975, 2546675

Int. Cl.² C25D *5/50;* C23C *15/00*

U.S. Cl. 204—37 R **3 Claims**

1. A process for producing a thin-film circuit which includes temperature-compensated RC elements which have an AlTa alloy layer of approximately 3–17 at% tantalum in aluminum, comprising the steps of:

sputtering the AlTa alloy onto a non-conductive substrate in an operative reactive gas taken from the group consisting

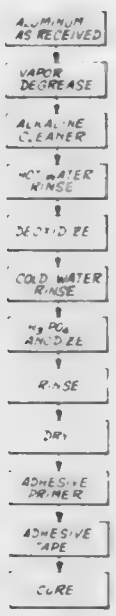
of O_2, CO_2 and N_2 and mixtures thereof, the TC_R value being set by the tantalum component of the alloy layer;
anodizing the layer to provide the dielectric of the capacitor; and
annealing the element to adjust the TC_C value which is approximately equal and opposite to the TC_R value of the Alta layer.

4,085,012

METHOD FOR PROVIDING ENVIRONMENTALLY STABLE ALUMINUM SURFACES FOR ADHESIVE BONDING AND PRODUCT PRODUCED

J. Arthur Marceau, Seattle; Ralph H. Firminhac, and Yukimori Moji, both of Bainbridge Island, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 440,387, Feb. 7, 1974, abandoned. This application Feb. 26, 1976, Ser. No. 661,717
Int. Cl.[2] C25D *11/08, 11/18*
U.S. Cl. 204—38 A **29 Claims**



28. A process for preparing an adhesively bonded aluminum structure from aluminum adherends comprising the steps of:
cleaning the surface of said adherends;
deoxidizing the surface of said adherends;
forming a porous aluminum oxide surface on said adherends by anodization of said adherends in an aqueous acidic solution, the acidic component thereof consisting essentially of phosphoric acid, the anodizing potential beihg from about 3 to about 25 volts, the phosphoric acid concentration being about 3 to about 20% by weight, the temperature of said solution being in the range of 75° ± 10° F.;
rinsing said adherends to remove said solution;
applying an epoxy resin primer to said porous aluminum oxide surface;
curing said primer;
applying an adhesive to at least one of said adherends; and
bonding said adherends together to form said adhesively bonded aluminum structure.

4,085,013

CHROMIUM PLATING PROCESS EMPLOYING MANGANESE DIOXIDE COATED ANODES

Ralph F. Hoeckelman, Irwin Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 291,857, Sep. 25, 1972, abandoned. This application May 31, 1977, Ser. No. 801,486
Int. Cl.[2] C25D *3/04*
U.S. Cl. 204—51 **4 Claims**

1. In the plating of a metal article with a chromium containing coating, comprising:
immersing said article in an aqueous, acidic electrolyte containing chromic acid at a concentration of 10 to 500 g/l, and
applying an electric current from an electromotive source connected to said article and to an anode element, said current being sufficient to reduce a desired amount of said chromium ions at the surface of said article to effect the plating thereof,
the improvement which comprises, employing as said anode element an electrically conductive base material, the active surface of which is substantially covered with an overlying coating of conductive MnO_2.

4,085,014

ELIMINATION OF IMPURITIES FROM SEA WATER CELL FEED TO PREVENT ANODE DEPOSITS

John E. Bennett, Painesville, and Joseph E. Elliott, Madison, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Apr. 21, 1977, Ser. No. 789,669
Int. Cl.[2] C25B *1/26*
U.S. Cl. 204—95 **4 Claims**

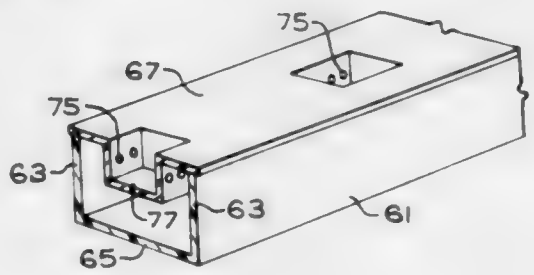
1. A method for eliminating the formation of manganese impurity caused anode deposits upon the electrolysis of aqueous saline solutions contaminated with manganese, which method comprises contacting said impure aqueous saline solution feed with sufficient sodium hypochlorite solution recycled from the electrolytic cell for a time sufficient to precipitate the manganese present to reduce the dissolved manganese content therein to a level less than about 10 parts per billion by weight manganese and feeding said saline solution now purified with respect to manganese impurities to said electrolytic cell and electrolyzing said saline solution between at least one anode and at least one cathode in said electrolytic cell.

4,085,015

ELECTROLYSIS CELL LIQUOR EMISSION CONTROL PROCESS

Hugh Cunningham, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 713,451, Aug. 11, 1976, Pat. No. 4,045,324. This application Apr. 19, 1977, Ser. No. 788,876
Int. Cl.[2] C25B *1/20, 1/26*
U.S. Cl. 204—98 **2 Claims**



1. In a method of electrolyzing alkali metal chloride brine in a bipolar electrolyzer containing a plurality of individual electrolytic cells electrically and mechanically in series, each of said cells being divided into an anolyte chamber and a catholyte chamber, which method comprises feeding alkali metal chloride brine to said cells, passing an electrical current through the individual electrolytic cells of said electrolyzer, recovering chlorine gas from said anolyte chamber, recovering catholyte cell liquor from the catholyte chambers of said cells through individual catholyte liquor recovery means, and collecting said catholyte liquor in a catholyte liquor trough extending alongside said bipolar electrolyzer below said individual catholyte liquor recovery means, the improvement comprising:
providing a top having recesses therein on said cell liquor trough, said recesses having first and second apertures, said first apertures being above said second apertures therein, each of said apertures draining electrolyte to the

interior of said trough, each of said recesses corresponding to one of said individual catholyte liquor recovery means;

discharging catholyte liquor into said recesses whereby to maintain catholyte liquor in said recesses above said first and second apertures during the flow of catholyte liquor from said catholyte liquor recovery means, and to maintain the electrolyte level below said first apertures during the interruption of catholyte liquor flow from said catholyte liquor recovery means.

4,085,016

METHOD AND APPARATUS FOR THE OXIDATION OF ORGANIC MATERIAL PRESENT IN CONCENTRATED SULFURIC ACID

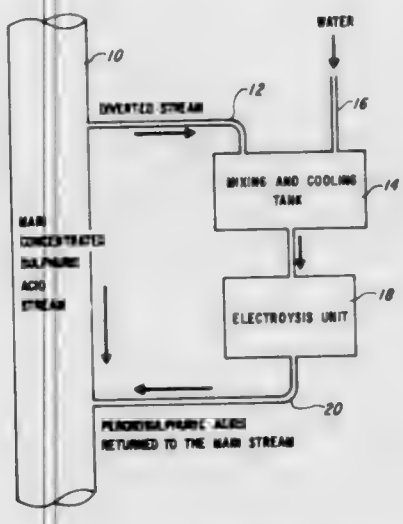
Mohammad Barakat Ilahi Janjua, Pincourt; Pierre L. Claessens, St. Eustache, and Raouf O. Loutfy, Pierrefonds, all of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Filed Oct. 14, 1976, Ser. No. 732,437

Claims priority, application Canada, Jul. 20, 1976, 257399

Int. Cl.[2] C25B *1/22, 9/00*

U.S. Cl. 204—104 **13 Claims**



1. A method for the on-site generation of peroxosulfuric acids for the oxidation of organic materials in concentrated sulfuric acid comprising the steps of:

(a) diverting a portion of main concentrated sulfuric acid stream;

(b) diluting the diverted stream with water to about 40–70% sulfuric acid concentration;

(c) passing the diluted stream at a temperature between 5° and 20° C through an electrolysis apparatus operated at a current density between 50 and 200 ASD to oxidize some of the sulfuric acid to form a predetermined quantity of peroxosulfuric acids; and

(d) returning the diverted stream with said predetermined quantity of peroxosulfuric acids to the main stream to oxidize the organic materials and decolorize the main stream of sulfuric acid.

4,085,017

RECOVERY OF COPPER AND NICKEL FROM ALLOYS

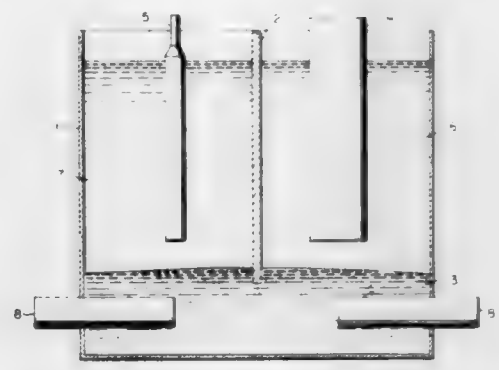
Thomas A. Henrie, Silver Spring, Md.; Roald E. Lindstrom, Reno, and Kenneth P. V. Lei, Sparks, both of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sep. 6, 1977, Ser. No. 830,517

Int. Cl.[2] C25C *1/24, 1/08, 1/12*

U.S. Cl. 204—123 **2 Claims**

1. A process for recovery of copper and nickel from alloys comprising providing an electrolytic cell consisting essentially of (1) an anode section containing an aqueous electrolyte solution and an anode consisting essentially of an alloy of copper and nickel, (2) a separate cathode section, and (3) an intermediate electrode consisting essentially of a liquid copper-mercury alloy at a temperature of about 85° to 100° C between said anode section and said cathode section, and operating said cell



for a time sufficient to effect substantial dissolution of the copper-nickel alloy anode and deposition of metallic copper at the cathode.

4,085,018

PHOTOCURABLE RESIN COMPOSITIONS

Nagao Ariga, Ichihara; Junji Nanbu, and Hiroshi Oikawa, both of Chiba, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Feb. 2, 1977, Ser. No. 764,997

Claims priority, application Japan, Feb. 10, 1976, 51-12843

Int. Cl.[2] C08L *63/00;* **C08F** *8/00*

U.S. Cl. 204—159.15 **7 Claims**

1. A photocurable resin composition comprising

(I) an unsaturated polyester resin obtained by reacting (B) an epoxy compound containing at least about 2 epoxy groups per molecule obtained by reacting methylidene diphenol with β-methylepichlorohydrin or epichlorohydrin, with (C) an unsaturated monobasic acid in the presence or absence of (A) a dicarboxylic acid containing at least 4 methylene groups interposed between the two carboxyl groups, or a carboxyl-terminated oligopolyester obtained by esterifying a saturated or unsaturated dibasic acid with a polyhydric alcohol,

(II) a polymerizable vinyl monomer capable of addition polymerization with the unsaturated polyester resin (I), and

(III) a photopolymerization initiator having an action of promoting radical polymerization by the irradiation of light.

4,085,019

ACTINICALLY-INDUCED POLYERMIZATION

George Edward Green, Stapleford, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

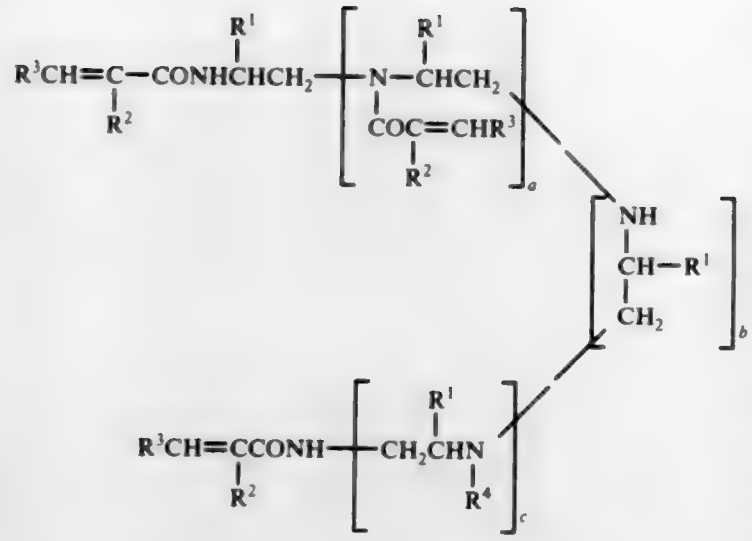
Filed Jun. 19, 1975, Ser. No. 588,532

Claims priority, application United Kingdom, Jul. 5, 1974, 29802/74

Int. Cl.[2] H01L *13/00;* **C08F** *8/00, 2/46*

U.S. Cl. 204—159.23 **18 Claims**

1. A method of polymerising an amide of the general formula



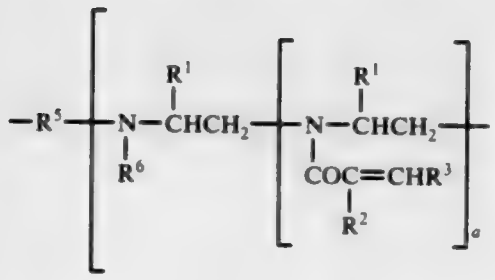
where

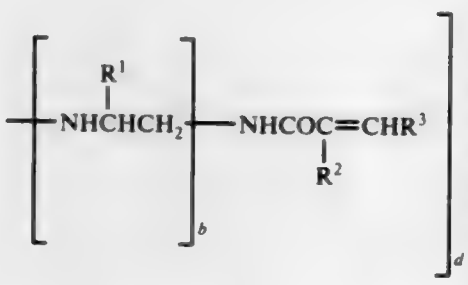
each R^1 denotes a hydrogen atom or a methyl group,

each R^1 denotes a hydrogen, chlorine, or bromine atom, a cyano group, or an alkyl group of 1 to 4 carbon atoms,

each R^3 represents an aliphatic, cycloaliphatic, araliphatic, or heterocyclic group of 2 to 12 carbon atoms and containing ethylenic unsaturation in conjugation with the indicated double bond,

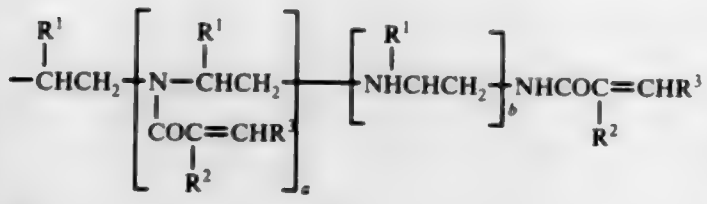
R^4 represents a group of formula





R^5 represents a grouping of valency $(1 + d)$, containing up to 50 carbon atoms, linked through a carbon atom or carbon atoms thereof to the indicated nitrogen atom or atoms,

R^6 represents a hydrogen atom or a chain of formula



d is an integer of 1 to 3, and

each a, b, and c is zero or a positive integer such that the molecular weight of the said amide is from 500 to 250,000, which comprises subjecting the amide to actinic radiation.

4,085,020

ELECTRODEPOSITION OF AQUEOUS DISPERSIONS OF COPOLYMERS OF POLYETHYLENICALLY UNSATURATED EPOXY-AMINE ADDUCTS

Kazys Sekmakas, Chicago, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Division of Ser. No. 576,714, May 12, 1975. This application Apr. 21, 1977, Ser. No. 789,653

Int. Cl.[2] C25D *13/06*

U.S. Cl. 204—181 C **8 Claims**

1. A method of electrodepositing a physically tough, corrosion resistant coating on the cathode of a unidirectional electrical system from an aqueous bath having a pH of 5.0–7.5 comprising passing a unidirectional electrical current through an aqueous electrocoat bath comprising a water dispersion having a resin solids content of from 2–20% by weight, said resin solids including a nongelled, amine-functional polymer dispersed in water with the aid of a solubilizing acid and curing agent therefor, said amine-functional polymer being a copolymer of:

(A) an ethylenically unsaturated hydroxy functional amine adduct free of epoxy groups and containing from about 1.4 to about 2.0 ethylenically unsaturated amine groups per molecule, formed from a polyepoxide having a 1,2-epoxy equivalency of from about 1.4 to about 2.0 and at least a stoichiometric amount of an ethylenically unsaturated primary monoamine; and

(B) copolymerizable monoethylenically unsaturated monomers, a portion of which is amine-functional; and said water dispersion further including an aminoplast or phenol-formaldehyde curing agent for said amine-functional polymer.

4,085,021

ELECTROPHORETIC PORCELAIN ENAMELING PROCESS

William Ewald van der Vliet, Capelle an der Ijssel, Netherlands, assignor to Ferro Corporation, Cleveland, Ohio

Filed Jan. 27, 1977, Ser. No. 763,020

Claims priority, application Netherlands, Feb. 2, 1976, 7601007

Int. Cl.[2] C25D *13/02, 13/10*

U.S. Cl. 204—181 N **5 Claims**

1. In a process for the simultaneous electrophoretic deposition of at least two classes of particles normally having dissimilar zeta potentials respectively, and consequently different deposition velocities, the improvement of adjusting and stabilizing said velocities, respectively, of the said two classes of particles, by the addition to the electrophoretic bath of at least one positive ion, in a concentration ranging from 10 to 95% of the concentration necessary, vis-a-vis the total ionized particles present, to stabilize the zeta potential of the particles to be deposited electrophoretically, back to zero.

4,085,022

METHOD AND APPARATUS FOR CONTROLLING THE REMOVAL, BY MEANS OF ION ETCHING, OF A THIN LAYER FROM A SUBSTRATE

Reiner Wechsung, Cologne, and Jürgen Kirschner, Aachen, both of Germany, assignors to Leybold-Heraeus GmbH & Co. Kommandit-Gesellschaft, Cologne, Germany

Filed Jan. 28, 1977, Ser. No. 763,689

Claims priority, application Germany, Jan. 31, 1976, 2603675

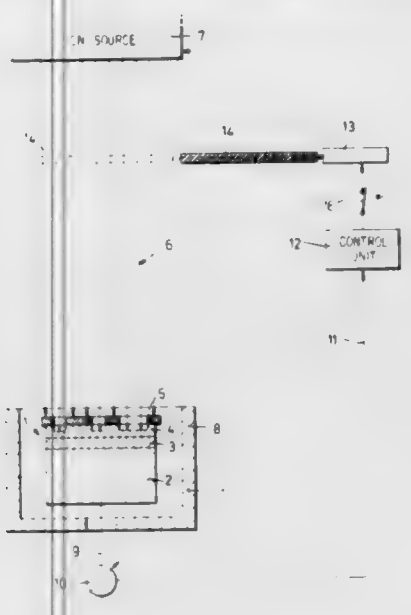
Int. Cl.[2] C23C *15/00*

U.S. Cl. 204—192 E **8 Claims**

1. A method of removing a thin surface layer, or regions of the thin layer as determined by masks, from a substrate of a sample, which substrate has a chemical composition different from that of said layer, by an ion etching process including: mounting the sample to be etched in an electrically insulated manner; bombarding the surface of the layer to be removed with an ion beam of substantially uniform current density

generated in an ion source; and controlling the removal of the layer or regions thereof by measuring the sample current, which is composed of the ion current and further surface specific components, during the ion etching process to derive an electrical signal which changes after the removal of said layer from the substrate, and interrupting the ion bombardment of the sample surface by the ions from the ion source upon a change in the measured sample current.

3. Apparatus for removing a thin surface layer, or regions of the thin layer as determined by masks, from a substrate of a sample, which substrate has a chemical composition different from that of said layer, by an ion etching process comprising in



combination: means for mounting said sample in an electrically insulated manner; an ion source means for generating a beam of ions of substantially uniform current density and for bombarding the surface of said layer of said sample to be removed with said ion beam; a current measuring means comnnected to said sample for measuring the sample current, which is composed of the ion current and further surface specific components, during the ion etching process; and means connected to said current measuring means and responsive to the measured current for interrupting the bombardment of the surface of the sample by said ion beam produced by said ion source upon a change in the measured current, which change indicates the removal of said layer.

4,085,023

APPARATUS FOR DETECTING ELEMENTS

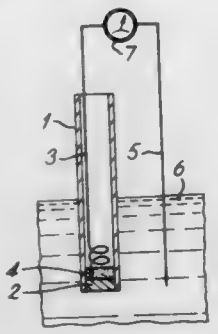
Derek John Fray, Haslingfield, England, assignor to National Research Development Corporation, London, England

Filed Jul. 1, 1975, Ser. No. 592,200

Claims priority, application United Kingdom, Jul. 3, 1974, 29490/74

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 S **14 Claims**



1. An apparatus for use in the detection or determination of an element in a substance containing said element, comprising:

a voltmeter;

a substance-contactable electrode connected to one side of the voltmeter;

a reference electrode connected to the other side of the voltmeter;

a solid powdered reference material with which the reference electrode is in contact;

a tube containing the reference material, the tube being of a refractory material,

a solid electrolyte pellet containing in and sealing one end of the tube, the pellet being exposed for contact with the sample substance, the pellet comprising a β-alumina containing the element to be determined or detected;

the reference material being a compound of said element to be determined or detected which compound is solid at 750° C. and is selected from the group consisting of two-phase β-alumina, a mixture of α-alumina and β-alumina, a tungstate, a molybdate and a vanadate, the tube being dippable into the substance containing said element to be detected or determined.

4,085,024

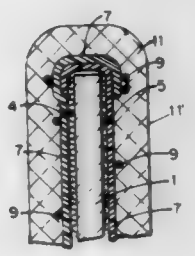
GALVANIC CELL ASSEMBLY FOR DETECTING OXYGEN AND METHOD OF MAKING SAID CELL

Thomas E. Lawson, Denver, Colo., assignor to Lexington Instrument Corporation, Waltham, Mass.

Filed Aug. 26, 1976, Ser. No. 717,771

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 R **24 Claims**



1. An electrode assembly for detecting and measuring small amounts of oxygen absorbed by the assembly comprising,

a. a central anode formed of at least one material selected from the group consisting of cadmium, arsenic, bismuth, antimony, lead and ferrous hydrate, said anode providing an anode surface,

b. a sheet of porous, nonconductive electrolyte retentive material wrapped around the anode in intimate contact therewith,

c. a porous cathode formed of at least one material selected from the group consisting of carbon, gold and platinum, folded over the electrolyte retentive material in intimate contact at the interface therewith,

d. an anode conductor at the center of the anode material in intimate contact with said anode material,

e. a conductive lead extending from the anode conductor and providing an anode terminal,

f. a cathode conductor between the cathode and the porous, nonconductive, electrolyte retentive material extending throughout said interface in intimate contact with the cathode material and

g. a conductive lead extending from the cathode conductor and providing a cathode terminal.

11. A method of making an electrode assembly for measuring small amounts of oxygen absorbed by the assembly comprising the steps:

a. providing a metal anode plate;

b. attaching a metal anode screen bearing an anode material selected from the group consisting of cadmium, arsenic, bismuth, antimony, lead and ferrous hydrate to each side of the anode plate;

c. wrapping a sheet of porous, non-conductive electrolyte retentive material around the metal screen;

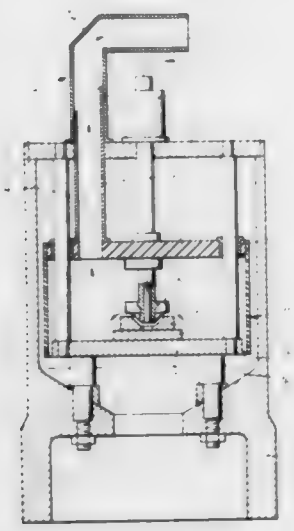
d. wrapping a metal wire around the sheet of electrolyte retentive material;
e. wrapping a sheet of cathode material selected from the group consisting of carbon, gold and platinum, around the sheet of electrolyte retentive material;
f. immersing the assembly in an electrolyte solution; and
g. enclosing said assembly in a sealed envelope.

4,085,025

APPARATUS FOR ELECTROCHEMICAL MACHINING OF WORKPIECES

Zinovy Abramovich Lekarev, ulitsa Trinklera, 20, kv. 71; Pavel Semenovich Razdymakha, ulitsa Bljukhera, 26, kv. 121; Vladimir Nikolaevich Davydov, ulitsa Gvardeitsev Shironintsev, 11, kv. 13; Vladillen Antonovich Shaforostov, ulitsa Bairona, 138a, kv. 28; Leonid Pavlovich Kolosov, ulitsa Somovskaya, 37/39, kv. 24; Vladimir Isaakovich Suslin, ulitsa Frunze, 17, kv. 46; Boris Anatolievich Makeev, ulitsa Novgorodskaya, 6, kv. 29; Alexandr Ivanovich Dubovik, ulitsa Gvardeitsev Shironintsev, 63a, kv. 22; Anatoly Alexeevich Kolesnichenko, ulitsa Oktyabrskoi Revoljutsii, 36, kv. 11; Alexandr Ivanovich Etnaer, ulitsa Derevyanko, 24, kv. 2, and Vitaly Alexandrovich Pilipenki, ulitsa Vorobieva, 15/19, kv. 2, all of Kharkov, U.S.S.R.

Filed Aug. 11, 1977, Ser. No. 823,861
Int. Cl.[2] B23P *1/04, 1/12*
U.S. Cl. 204—224 M **4 Claims**



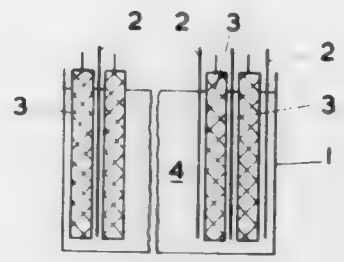
1. An apparatus for electrochemical machining of workpieces, comprising:
at least one work table;
a device to accommodate a workpiece to be machined, securable on a respective work table;
an electrode tool for performing machining of the workpiece;
a movable crossbeam having said electrode tool secured thereon;
a drive to effect reciprocation of said movable crossbeam, to bring said electrode tool toward and away from the workpiece;
a stationary crossbeam having said drive mounted thereon;
a ventilation conduit;
an exhaust device for withdrawing vapors and fumes produced in the process of electrochemical machining of workpieces from the working zone;
an exhaust pipe of said exhaust device, mounted on said movable crossbeam and telescopingly connected with said ventilation conduit for motion therein;
abutment means accommodated in said ventilation conduit, to provide for closing off said ventilation conduit, when said electrode tool is retracted from the workpiece;
an electrolyte splashing-preventing device, including a protective casing, and protective casing being mounted on said movable crossbeam and connected with said exhaust pipe.

4,085,026

ANODE ASSEMBLY FOR ELECTRODEPOSITION CELL

Phillip Charles Halford, Walsall, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Jun. 9, 1976, Ser. No. 694,324
Claims priority, application United Kingdom, Jun. 13, 1975, 25383/75
Int. Cl.[2] C25C *7/04;* **C25B** *13/08*
U.S. Cl. 204—242 **10 Claims**



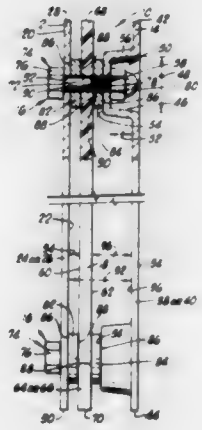
1. An electrodeposition cell including a container for holding an electrolyte, at least one anode and at least one cathode, the or each anode having on at least part of its exterior surface a layer of an open, non-woven fibrous mat of resilient, fibrous electrically insulating members randomly bonded to one another to protect the or each anode from contact with an adjacent cathode or with an electrically conducting solid member in contact with an adjacent cathode.

4,085,027

HYBRID BIPOLAR ELECTRODE

Kenneth A. Poush, Lake Jackson, Tex., and James E. Reynolds, Golden, Colo., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Jan. 29, 1975, Ser. No. 545,016
Int. Cl.[2] C25B *9/00, 11/00, 13/00, 1/34*
U.S. Cl. 204—268 **14 Claims**



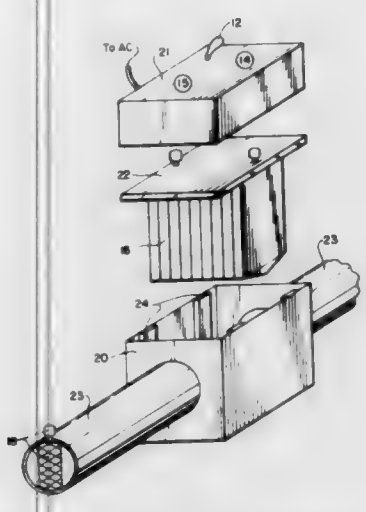
1. A hybrid bipolar electrode, for use in an electrolytic cell wherein the bipolar electrode is at least partially immersed in an electrolyte, said bipolar electrode comprising:
an anodic member having a first face and a second face;
a cathodic member having a first face and a second face;
means for supporting the anodic member and the cathodic member in a spaced apart relationship with the second face of the anodic member being spaced a distance from the second face of the cathodic member;
means engaging portions of the anodic member and the cathodic member for substantially sealing electrolyte from a substantial portion of the space between the anodic and the cathodic members; and
means having a portion constructed of an electrically conductive material and portions contacting the anodic member and the cathodic member, said means electrically connecting the anodic member and the cathodic member in series.

4,085,028

ELECTROLYTIC CHLORINATION DEVICE

John McCallum, Worthington, Ohio, assignor to Electro-Chlor Corporation, Worthington, Ohio

Filed Nov. 21, 1974, Ser. No. 525,882
Int. Cl.[2] C02B *1/82*
U.S. Cl. 204—269 10 Claims



1. Apparatus for electrolyzing a dilute aqueous brine solution flowing therethrough comprising:

a. a full-wave bridge rectifier adapted to be electrically connected directly to a source of alternating current;

b. an electrode assembly connected across said rectifier comprising a negative electrode, a positive electrode, and one or more bipolar electrodes;

c. a cell enclosure adapted to receive and support said electrode assembly and further adapted to the flow of said dilute aqueous brine solution therethrough; and

d. grounding means surrounding said electrode assembly; the number, n, of bipolar electrodes, the height, h, of the electrodes, and their spacing, gap, being determined by the equations:

I. $n \times \text{gap} \times h = k \times \text{gallons/minute}$;

II. av. dc. volts $= 2.1 \times n + n \times \text{gap} \times R \times CD$;

where:

n = number of bipolar electrodes + 1;

gap = distance in inches between opposing faces of adjacent electrodes;

h = the height in inches of the electrode surfaces exposed to contact with said brine solution;

gallons/minute = total flow through said apparatus and through said electrode assembly in gallons per minute of said aqueous brine solution;

av. d.c volts = root mean square voltage $\times$ 0.0637/0.707;

R = resistivity of said aqueous brine solution in ohm-inches;

CD = average maximum current density in amperes per square inch; and

k = about 0.038 to about 0.077.

4,085,029

METHOD FOR SEPARATING LIQUID AND SOLID PRODUCTS OF LIQUEFACTION OF COAL OR LIKE CARBONACEOUS MATERIALS

John M. Malek, P.O. Box 71, Lomita, Calif. 90717

Filed Jan. 12, 1976, Ser. No. 648,108
Int. Cl.[2] C10G *1/04*
U.S. Cl. 208—8 10 Claims

1. In a process for converting coal into coal derived hydrocarbons by subjecting subdivided coal in the presence of a coal derived solvent and hydrogen to the effects of elevated pressure and temperature in a converter, in which process gasiform products are separated from slurryform products, the improvement for increasing the efficiency of separation of coal derived solids contained in said slurryform, comprising treating at least a part of the said slurryform in the presence of bubbling steam with an alkaline compound selected from the group consisting of alkali and alkaline earth metal hydroxides, ammonium hydroxide, and alkali metal carbonates, and subjecting the treated slurryform product to gravity settling and forming, in a gravity settler, a solids rich fraction as a lower layer, a predominantly aqueous fraction as an intermediate liquid layer, a hydrocarbon liquid rich portion as an upper layer, and a froth fraction with entrained solid fines aqueous droplets gas bubbles suspended in an oil medium as a top layer, and withdrawing at least a part of the solids rich layer from the gravity settler.

4,085,030

PYROLYSIS OF CARBONACEOUS MATERIALS WITH SOLVENT QUENCH RECOVERY

Norman W. Green, Upland, Calif.; Kandaswamy Duraiswamy, Sterling, Va.; Robert E. Lumpkin, Claremont, Calif.; Everett W. Knell, Los Alamitos, Calif.; Zia I. Mirza, La Verne, Calif., and Bruce L. Winter, Claremont, Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed Jun. 25, 1976, Ser. No. 700,008
Int. Cl.[2] C10G *1/02;* C10B *49/08*
U.S. Cl. 208—8 78 Claims

1. A continuous process for recovery of values contained in solid carbonaceous materials which comprises the steps of:

a. providing a feed stream containing a particulate solid carbonaceous material, a substantial portion of the particulate solid carbonaceous material being of a particle size less than about 1000 microns in diameter;

b. subjecting the particulate solid carbonaceous material particles to flash pyrolysis by continuously:

(i) transporting the particulate solid carbonaceous material containing feed stream contained in a carrier gas which is substantially nondeleteriously reactive with respect to products of pyrolysis of the particulate solid carbonaceous material to a solids feed inlet of a substantially vertically oriented, descending flow pyrolysis reactor having a substantially vertically oriented pyrolysis zone operated at a pyrolysis temperature above about 600° F;

(ii) feeding a particulate source of heat at a temperature above the pyrolysis zone temperature to a substantially vertically oriented chamber surrounding the upper portion of the pyrolysis reactor, the chamber having an inner peripheral wall forming an overflow weir to a vertically oriented mixing section of the vertically oriented descending flow pyrolysis reactor, the particulate heat source in said chamber being maintained in a fluidized state by the flow therewith of an aerating gas substantially nondeleteriously reactive with respect to products of pyrolysis of the particulate solid carbonaceous material;

(iii) discharging the particulate source of heat over said weir and downwardly into said mixing section at a rate sufficient to maintain said pyrolysis zone at the pyrolysis temperature;

(iv) injecting the particulate solid carbonaceous material feed stream and carrier gas from the solids feed inlet into the mixing section to form a resultant turbulent mixture of the particulate source of heat, the particulate solid carbonaceous material particles and carrier gas;

(v) passing the resultant turbulent mixture downwardly from said mixing section to the pyrolysis zone of said pyrolysis reactor to pyrolyze the solid carbonaceous material particles and yield a pyrolysis product stream containing as particulate solids, the particulate source of heat and a carbon containing solid residue of pyrolysis of the particulate solid carbonaceous material, and a vapor mixture of carrier gas and pyrolytic vapors comprising volatilized hydrocarbons including tars;

c. passing the pyrolysis product stream from said pyrolysis reactor to a separation zone to separate at least the bulk of the particulate solids from the vapor mixture;

d. forming the particulate source of heat by:

(i) transporting the separated particulate solids from the separation zone to an oxidation stage with a transport gas containing free oxygen with resultant carbon monoxide formation from reaction of oxygen in the transport gas with carbon in the particulate solids; and

(ii) combining the transported particulate solids, carbon monoxide and transport gas in the oxidation stage with a source of free oxygen in an amount at least equal to 50 mole percent of the carbon monoxide entering the oxidation stage, the total free oxygen in the transport gas and combined in the oxidation stage being sufficient to raise the solids to a temperature above the pyrolysis temperature and thus form a particulate source of heat;

e. passing the particulate source of heat and gases present in the oxidation stage from the oxidation stage to a cyclone separation zone comprising at least two cyclone separation stages in series to separate the bulk of the particulate source of heat from the gases in the first cyclone separation stage to form the feed to the substantially vertically oriented chamber and to separate a fines fraction of the particulate source of heat from the gases in the remaining cyclone separation stages; and

f. recovering tar and low boiling hydrocarbon values from the vapor mixture by the steps of:

(i) contacting the vapor mixture with a quench liquid consisting essentially of hydrocarbons, said quench liquid having a temperature sufficiently low to form a tar-containing condensate and a vapor residue from the vapor mixture, the condensate and quench liquid forming a combined liquid stream;

(ii) mixing a viscosity-lowering liquid comprising hydrocarbons with the combined liquid stream, thereby forming a mixed liquid, said viscosity-lowering liquid having a viscosity lower than the viscosity of said mixed liquid, and said mixed liquid having a viscosity lower than the viscosity of said combined liquid stream;

(iii) cooling a first portion of said mixed liquid to form said quench liquid for contacting the vapor mixture;

(iv) separating a second portion of said mixed liquid into at least a viscosity-lowering liquid for mixing with said combined liquid stream and a tar fraction having a higher volume average boiling point than the volume average boiling point of said viscosity-lowering liquid; and

(v) recovering said tar fraction.

4,085,031

COAL LIQUEFACTION WITH SUBSEQUENT BOTTOMS PYROLYSIS

George P. Walchuk, Queens, N.Y., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Aug. 11, 1976, Ser. No. 713,478
Int. Cl.[2] C10G *1/06*
U.S. Cl. 208—8 **11 Claims**

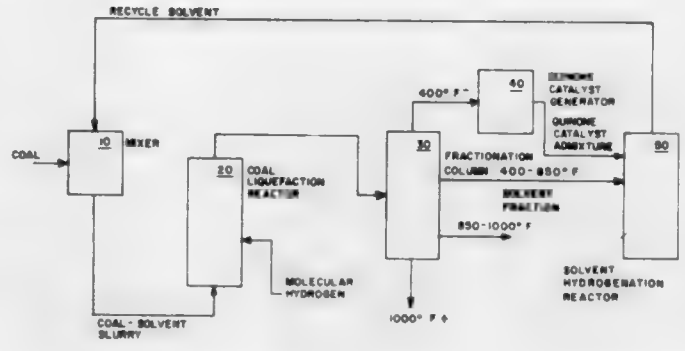
1. In a process for the production of liquid hydrocarbons from coal or similar liquefiable carbonaceous solids wherein said solids are reacted with hydrogen under liquefaction conditions in a first liquefaction zone, a high boiling liquefaction bottoms stream composed primarily of constituents nominally boiling in excess of about 1000° F. is separated from the first liquefaction zone effluent, at least part of said liquefaction bottoms stream is pyrolyzed in a pyrolysis zone, and gases, liquids nominally boiling below about 1000° F., a high boiling pyrolysis bottoms stream boiling in excess of about 1000° F., and coke are recovered from the pyrolysis zone, the improvement which comprises reacting at least a portion of said pyrolysis zone, the improvement which comprises reacting at least a portion of said pyrolysis bottoms stream with hydrogen in the presence of a solvent under liquefaction conditions in a second liquefaction zone external of said first liquefaction zone.

4,085,032

HYDROGEN DONOR SOLVENT COAL LIQUEFACTION PROCESS

Thomas Aczel, and Karl W. Plumlee, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 686,813, May 17, 1976, Pat. No. 4,049,536, and a continuation-in-part of Ser. No. 686,814, May 17, 1976, Pat. No. 4,049,537, and a continuation-in-part of Ser. No. 686,827, May 17, 1976, Pat. No. 4,051,012, and a continuation-in-part of Ser. No. 686,828, May 17, 1976. This application Dec. 29, 1976, Ser. No. 755,174
Int. Cl.[2] C10G *1/06*
U.S. Cl. 208—10 **7 Claims**



1. In a process for liquefying a particulate coal feed to produce useful petroleum-like liquid products by the steps of

contacting, in a liquefaction zone, said coal feed with a hydrogen donor solvent and a quinone catalyst at temperature and pressure sufficient by hydroconvert and liquefy the coal,

separating the product from the liquefaction zone into fractions inclusive of a 400° F.— liquid fraction and a liquid solvent fraction which contains at least 30 weight percent hydrogen donor compounds,

hydrogenating said liquid solvent fraction in a hydrogenation zone, and

recycling the hydrogenated liquid solvent mixture to said coal liquefaction zone,

the improvement comprising

passing said 400° F.— liquid fraction into an oil-water separation zone, and stratifying said 400° F.— liquid fraction into a C_1–400° F. liquid hydrocarbon phase and an aqueous slurry phase which contains quinone catalyst,

separating said aqueous slurry phase from said C_1–400° F. hydrocarbon phase, passing said aqueous slurry phase into a vacuum distillation zone and removing water from said slurry to concentrate the quinone catalyst within said phase, and then

recycling said quinone catalyst containing aqueous slurry phase to said solvent hydrogenation zone or to said coal liquefaction zone, or both, to catalyze either or both of these reactions.

4,085,033

HYDROGEN DONOR SOLVENT COAL LIQUEFACTION PROCESS

Karl W. Plumlee, Baytown, Tex., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 686,813, May 17, 1976, Pat. No. 4,049,536, and a continuation-in-part of Ser. No. 686,814, May 17, 1976, Pat. No. 4,049,537, and a continuation-in-part of Ser. No. 686,827, May 17, 1976, Pat. No. 4,051,012, and a continuation-in-part of Ser. No. 686,828, May 17, 1976. This application Dec. 29, 1976, Ser. No. 755,175
Int. Cl.[2] C10G *1/06*
U.S. Cl. 208—10 **10 Claims**

1. In a process for liquefying a particulate coal feed to produce useful petroleum-like liquid products by the steps of

(a) contacting, in a liquefaction zone, said coal feed with a

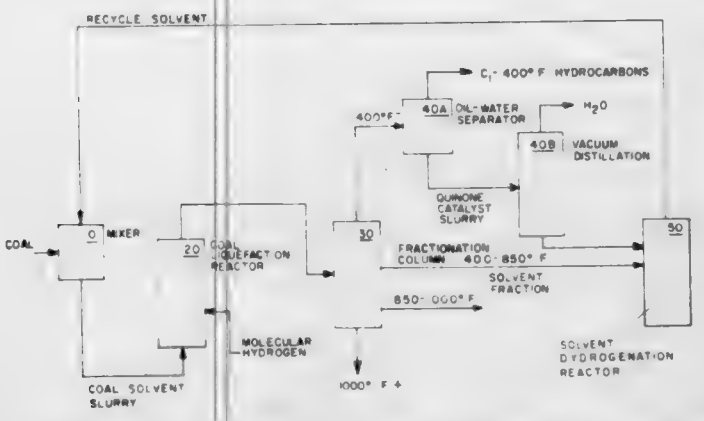
hydrogen donor solvent at temperature and pressure sufficient to hydroconvert and liquefy the coal,

(b) separating the product from the liquefaction zone into fractions inclusive of a C_1 — 700° F. liquid hydrocarbon fraction and a liquid solvent fraction which contains at least 30 weight percent hydrogen donor compounds,

(c) hydrogenating said liquid solvent fraction in a hydrogenation zone, and

(d) recycling the hydrogenated liquid solvent mixture to said coal liquefaction zone,

the improvement comprising



contacting the C_1—700° F. liquid hydrocarbon fractions with an aqueous alkaline medium to form a hydrocarbon phase and an aqueous extract phase which contains an admixture of indigenous phenolic compounds,

neutralizing said aqueous extract phase with acid,

contacting said neutralized aqueous phase with hydrogen peroxide to introduce hydroxyl groups into the nuclei of the phenolic compounds to convert said phenolic compounds into hydroquinones which can function in a coal liquefaction zone as a quinone catalyst, and then

recycling said hydroquinones, with said hydrogenated liquid solvent mixture, to said coal liquefaction zone to catalyze the coal liquefaction reaction.

4,085,034

METHOD FOR THE THERMAL CRACKING OF HEAVY HYDROCARBON

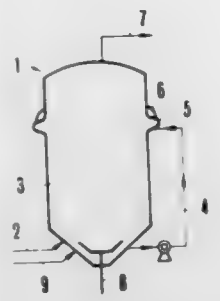
Tomizo Endo; Yutaka Sumida; Toru Kawahara; Masaichi Ohtake; Shoichi Motokawa; Keiji Nagayama; Masatomo Shigeta; Hiroshi Hozuma; Masaharu Tomizawa, and Hideo Kikuchi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, both of Japan

Filed Oct. 14, 1976, Ser. No. 732,301

Claims priority, application Japan, Oct. 14, 1975, 50-122855; Oct. 14, 1975, 50-122857

Int. Cl.² C10G *9/16, 9/18*

U.S. Cl. 208—48 R **3 Claims**



1. In a process for the thermal cracking of a heavy hydrocarbon in a cylindrical reactor by direct contact with a heating medium, the improvement comprising the steps of:

(a) removing a portion of the reactor contents from a lower section of the reactor; and

(b) injecting said portion into an annular recess provided around the circumference of the upper interior of the reactor in a direction tangential to the inner cylindrical wall of the reactor from a plurality of points on the wall, thereby filling the annular recess by centrifugal force and forming a liquid curtain over the cylindrical wall surface of the reactor below the injection point.

4,085,035

HYDROGENATION PROCESS USING NOBLE METAL CATALYSTS PROMOTED BY LIQUID FLUORINE CONTAINING ACIDS

Jos Wristers, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 577,351, May 14, 1975, Pat. No. 4,025,459. This application Dec. 7, 1976, Ser. No. 748,209

Int. Cl.² C07C *5/10;* C10G *23/04*

U.S. Cl. 208—143 **30 Claims**

1. A process for the hydrogenation of aromatic compounds in an unsaturated hydrocarbon fraction comprising them which comprises contacting said unsaturated hydrocarbon fraction with a catalyst selected from the group consisting of the elemental, oxide and sulfide forms of platinum and iridium and the elemental and oxide forms of palladium promoted with a liquid acid system, said liquid acid system being selected from the group consisting of liquid Bronsted acids containing fluorine and fluorine containing Friedel-Crafts catalyst in liquid Bronsted acids containing fluorine, said contacing being conducted in the presence of said liquid acid system in a pressurized hydrogen atmosphere at a temperature sufficient to facilitate the reaction.

4,085,036

PROCESS OF HYDRODESULFURIZATION AND SEPARATE SOLVENT EXTRACTION OF DISTILLATE AND DEASPHALTED RESIDUAL LUBRICATING OIL FRACTIONS

Harry C. Murphy, Jr., Apollo, and Harry C. Stauffer, Cheswick, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 1, 1976, Ser. No. 737,491

Int. Cl.² C10G *23/00, 34/00*

U.S. Cl. 208—212 **5 Claims**

1. A process which comprises (a) contacting a crude oil having a crude lubricating oil fraction containing at least 1.5 weight percent sulfur with hydrogen and with a hydrogenation catalyst to obtain a hydrodesulfurized product wherein at least 60 percent by weight of the sulfur contained in said crude lubricating oil fraction has been separated therefrom, (b) fractionating the hydrodesulfurized product of step (a) to obtain a residual lubricating oil fraction 90 percent of which boils above 950° F. and at least one distillate lubricating oil fraction 90 percent of which boils above 650° F. (c) deasphalting said residual lubrication oil fraction, (d) separately extracting said at least one distillate lubricating oil fraction and said deasphalted residual lubricating oil fraction with a solvent selected from the group of phenol, furfural or sulfur dioxide and mixtures thereof to reduce the aromatic content of said at least one distillate fraction and said deasphalted residual lubricating oil fraction, said extracting being performed in a counter current tower, wherein the solvent is introduced into the top section of the tower and the oil fraction from step (c) is introduced at the middle or bottom section of the tower under conventional temperatures and pressures, and (e) separating the solvent from the extracted lubricating oil products.

4,085,037

PROCESS FOR SEPARATION OF NON-MAGNETIC PARTICLES WITH FERROMAGNETIC MEDIA

Jean Marie Quets, and Henri Hatwell, both of White Plains, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

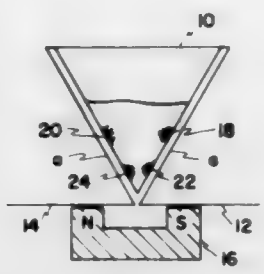
Filed Dec. 29, 1975, Ser. No. 644,806

Int. Cl.² B03B *5/30*

U.S. Cl. 209—1 **6 Claims**

1. Process for separating solid particles from admixture

which comprises providing a homogeneous ferrohydrodynamic medium containing a colloidal suspension of superparamagnetic particles therein, said medium being in the molten state and also containing a mixture of at least two non-colloidal non-magnetic particles of differing densities both of which are greater than the actual density of the medium, imposing a



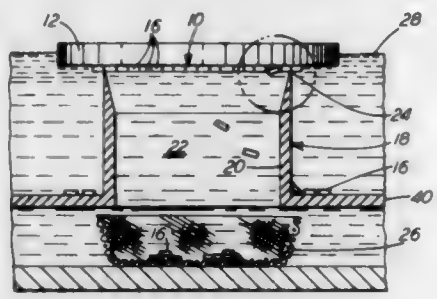
non-uniform magnetic field upon said particles and said ferrohydrodynamic medium whereby the said particles are moved within said medium and segregated into different zones thereof in accodance with the respective densities of the particles, solidifying the liquid medium constituting at least one of said zones to immobilize the particles as segregated therein and to prevent the introduction thereinto of extraneous particles.

4,085,038

METHODS OF AND APPARATUS FOR SORTING PARTS OF A SEPARATED ARTICLE

Werner F. Esseluhn, Wyomissing, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 15, 1976, Ser. No. 750,943
Int. Cl.[2] B07C *7/00*
U.S. Cl. 209—71 **24 Claims**



1. A method of sorting parts of an article which has been mounted onto a carrier and separated into a plurality of individual parts which are retained on the carrier comprising:

positioning the separated article and the carrier adjacent to a passageway so that the parts of a first portion of the separated article lie over the passageway while the parts of a second portion of the separated article lie outside of the passageway; and

subjecting the separated article to a force for demounting the parts of the first portion of the separated article from the carrier to permit such parts to enter into the passageway.

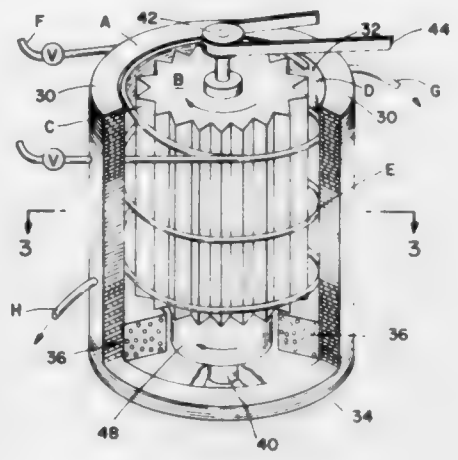
4,085,039

MAGNETIC SEPARATOR WITH HELICAL CLASSIFYING PATH

James W. Allen, 8 Dover Ct., Orinda, Calif. 94563

Filed May 24, 1976, Ser. No. 689,216
Int. Cl.[2] B03C *1/24*
U.S. Cl. 209—220 **12 Claims**

1. A magnetic separator for continuously classifying mixed tailings and magnetic or paramagnetic concentrate comprising: a conduit defining a helical classifying path having an upper concentrate output, a lower tailings output, and an input for mixed concentrate and tailings therebetween; means for defining a high permeability magnetic field path on either side of said helical classifying path of said conduit including a stator on one side of said helical classifying path and a rotor on the other side of said helical classifying path with said conduit occupying a gap in said high permeability magnetic field path between said stator and rotor; means for generating a magnetic field communicated through said stator and rotor; a plurality



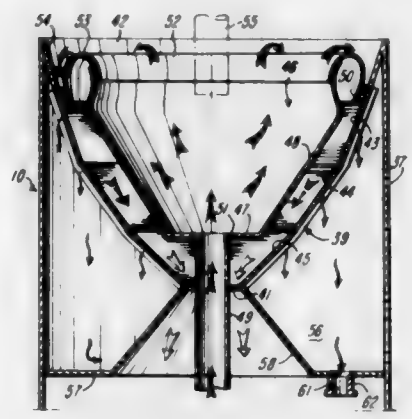
of serrations on said rotor at said gap to produce areas of decreased magnetic reluctance across said gap and in said conduit; and, means for rotating said rotor to wind said concentrate at least from said input to said upper output of said helical classifying path.

4,085,040

FRONT FEED STATIC SCREEN

John J. Egan, Dayton, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio

Filed Oct. 4, 1976, Ser. No. 729,253
Int. Cl.[2] B01K *29/42*
U.S. Cl. 209—244 **10 Claims**

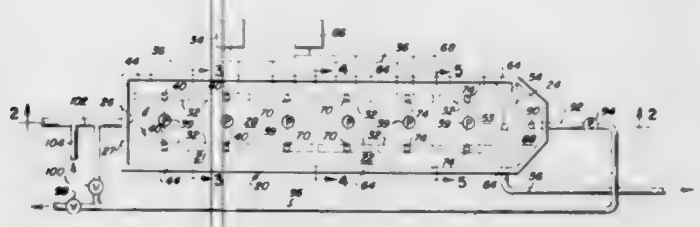


1. Apparatus for separating and/or classifying components of a mixture of liquids and solids forming a slurry including screen structure presenting a descending flow surface adapted to induce separation of liquid from solids as a slurry is moved thereacross, means defining a head box positioned forwardly of and in a facing relatively nesting relation to the flow surface of said screen structure, said head box being arranged to receive a slurry and to discharge said slurry therefrom by overflow, said head box including a weir-like overflow lip positioned in adjacent facing relation to the upper end of said descending flow surface and arranged to form therewith means defining a limiting passage for confining the discharging slurry to said descending flow surface and to firmly control the slurry in a manner to insure that it assumes a relatively uniform sheet-like form as it moves down said flow surface.

4,085,041
BIOLOGICAL OXIDATION AND FLOTATION APPARATUS AND METHOD

Donald Griswold Fullerton, Denver; Gilbert Mowder Kyrias, Littleton, and Richard Baxter Weber, Denver, all of Colo., assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 535,133, Dec. 20, 1974, abandoned. This application Apr. 19, 1976, Ser. No. 678,162
Int. Cl.[2] C02C *1/08*
U.S. Cl. 210—7 **81 Claims**



1. In the treatment of aqueous waste material by the activated sludge process, said aqueous material containing solid particles suspended therein, the steps of biological oxidation of said waste material and removal therefrom of suspended solids by flotation which comprise:

introducing said aqueous waste material and return activated sludge into a treatment and flotation chamber, said chamber having (a) a quiescent zone in the upper portion thereof extending horizontally through at least the downstream part of said chamber, and extending vertically downward at least about three inches below the level to which the chamber is filled with mixed liquor comprised of said aqueous waste material and return activated sludge, for accumulation and concentration of floated solids, and (b) a recirculation zone below said upper quiescent zone for continuous recirculation of the contents of said recirculation zone;

introducing a quantity of oxygen-containing gas bubbles into the lower portions of said mixed liquor in the treatment and flotation chamber, the bubbles introduced into the portion of said chamber over which said upper quiescent zone lies being produced directly from gas in the free state and being introduced through the gas diffusing surface of a gas diffusing means at a pressure substantially the same as the hydrostatic pressure of the liquid at the point of introduction of said bubbles into said liquid, a substantial portion of said latter bubbles being large enough to avoid total dissolution in said liquid in any region adjacent said point of introduction into said body of liquid, substantially all of said latter bubbles being no more than about 500 microns in diameter at said point of introduction, and said latter bubbles being introduced at a volumetric gas flow rate in the range from about 0.05 to about 120 cubic feet per minute for each square foot of active area of said gas diffusing surface in such quantity that (a) the initial velocity of liquid movement accompanying the introduction of said bubbles into the mixed liquor is low enough to permit said quiescent zone to be maintained in the upper portion of said chamber, (b) the oxygen provided by said bubbles that is absorbed by the mixed liquor produces biological oxidation of waste matter in said material, and (c) some of said bubbles, comprised in part of carbon dioxide resulting from said biological oxidation, attach themselves to some of said solid particles to form a float of intermixed solid sludge and gas bubbles, said float having a lower density than the aqueous medium in which said solid particles are suspended;

continuously recirculating throughout any upstream part of said chamber that is free of said quiescent zone the mixed liquor that is located in said upstream part of said chamber;

continuously recirculating throughout said recirculation zone in at least the downstream part of said chamber the mixed liquor that is located in said recirculation zone;

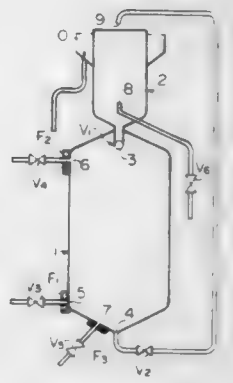
withdrawing at least a portion of said floated sludge from the top of said treatment and flotation chamber; and

withdrawing mixed liquor from the bottom portion of said treatment and flotation chamber to deliver it to the next stage in said activated sludge process.

4,085,042
SOLID-FLUID CONTACTING PROCESS

Teruyuki Misumi; Toshio Miyaji, and Masao Kasai, all of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 607,693, Aug. 25, 1975, abandoned, which is a continuation of Ser. No. 447,633, Mar. 4, 1974, abandoned. This application Jun. 17, 1976, Ser. No. 697,117
Claims priority, application Japan, Mar. 3, 1973, 48-25519
Int. Cl.[2] B01D *15/06*
U.S. Cl. 210—33 **5 Claims**



1. In a solid fluid contacting process which comprises passing a fluid to be treated in one direction through a treatment zone which is initially substantially filled with active solid particles and regenerating the solid particles upon depletion of activity thereof by passing a regenerating fluid throughout said treatment zone in a direction opposite to the direction of flow of the fluid to be treated, the improvement which comprises removing from 5% to 50% by weight of the solid particles based on their total weight during the passage of the fluid to be treated through an outlet which is positioned upstream of the direction of flow of the fluid to be treated, transporting said removed solid particles to a backwash zone which is separate from the treatment zone, backwashing said removed solid particles and recycling the backwashed solid particles to the treatment zone to substantially fill said treatment zone with said solid particles prior to a subsequent treatment step.

4,085,043
CARBON CONTACT COLUMN

Norbert H. Ellis, Warminster, Pa., assignor to Met-Pro Systems, Inc., Lansdale, Pa.

Continuation of Ser. No. 569,534, Apr. 18, 1975, abandoned. This application Nov. 12, 1976, Ser. No. 741,486
Int. Cl.[2] C02C *5/02*
U.S. Cl. 210—40 **10 Claims**

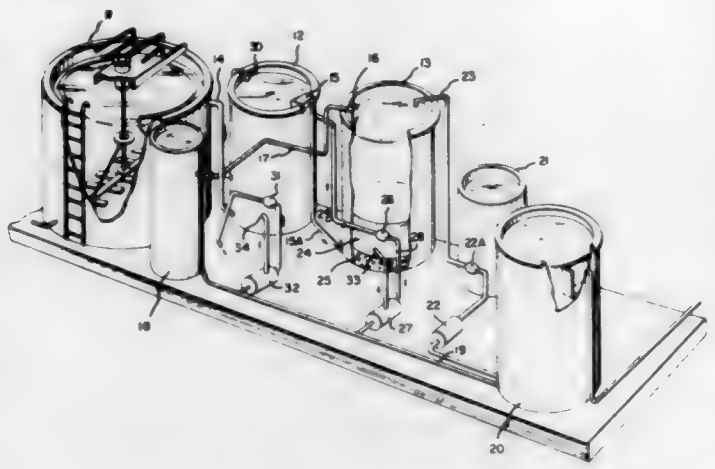
5. Apparatus for removing organic compounds from a stream of waste water comprising:

a plurality of tanks having substantially flat bottoms enclosing carbon contact columns mounted on a common base,

means for supplying said waste water stream to the bottom end of a first tank, means for removing treated water from the top end of each tank and supplying it to the bottom end of a succeeding tank,

means for supplying a source of carbon to the top end of the last succeeding tank,

means for removing carbon from each tank and means for supplying it to the top end of a preceding tank, and



a source of fluidizing water connected to an inlet in each tank adjacent to the means for removing carbon but not extending within said tanks.

4,085,044

TREATMENT OF LIME-SULFIDE TANNERY UNHAIRING WASTE

Michael Komanowsky, Philadelphia, and Howard I. Sinnamon, Jenkintown, both of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 27, 1977, Ser. No. 801,274
Int. Cl.[2] C02B *1/20*
U.S. Cl. 210—45 **2 Claims**

1. In a process for treating lime-sulfide unhairing waste from salt-cured hides wherein undissolved lime is flocculated out of the waste, the supernatant liquid acidified to a pH below 4.0 to liberate H_2S, and the liberated H_2S absorbed in a caustic medium, the improvement which comprises flashing off the H_2S from the supernatant acidified liquid at a temperature of about from 100° to 150° F and under a vacuum of about from 10 to 29.9 inches of mercury and recovering a protein-rich solid from the flashed waste.

4,085,045

LOW MOLECULAR WEIGHT HYDROLYZED POLYACRYLAMIDE USED AS A SCALE INHIBITOR IN WATER SYSTEMS

Dae Suk Song, Wyckoff, N.J.; Richard Joseph Duffy, Greenwich, Conn.; Charles Richard Witschonke, Noroton, Conn.; Arthur Maurice Schiller, Stamford, Conn., and Mark Allan Higgins, Guilford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 586,765, Jun. 13, 1975, Pat. No. 4,001,161.
This application Dec. 14, 1976, Ser. No. 750,488
Int. Cl.[2] C02B *5/06*
U.S. Cl. 210—58 **2 Claims**

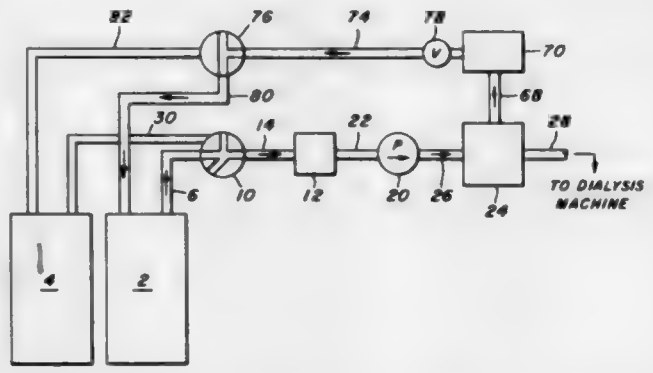
1. A process for inhibiting scale formation in a water system containing scale-forming salts comprising adding to said system from about 1 to about 100 parts per million of a hydrolyzed polyacrylamide having a molecular weight of 500–5000 and which is prepared by the process which comprises (1) charging to a reaction zone, equipped with a reflux condenser and containing water heated to reflux as the polymerization medium, simultaneously and continuously without external heating, separate streams of acrylamide, ammonium persulfate and a mercaptoalkanoic acid, the amounts by weight of ammonium persulfate and mercaptoalkanoic acid so charged being from about 0.05 to about 2 parts and from about 5 to about 20 parts, respectively, per 100 parts of acrylamide charged and the charging rates of the separate streams being controlled so that the introduction of all three streams starts and finishes substantially together and the heat of polymerization is sufficient to maintain reflux in the reaction zone without exceeding the capacity of the condenser to remove the heat of reaction, (2) applying heat to the reaction zone to maintain the refluxing towards the end of the addition of the three streams and (3) charging a sufficient amount of aqueous sodium hydroxide to hydrolyze from about 60% to about 90% of the amide groups of the polymer to carboxylate groups and provide a water solution of the hydrolyzed polymer product.

4,085,046

RENAL DIALYSIS CONCENTRATE DELIVERY SYSTEM

Thomas J. Saporito, Jr., 6060 Forest Hills Blvd., West Palm Beach, Fla. 33406

Filed Aug. 16, 1976, Ser. No. 714,601
Int. Cl.[2] B01D *31/00*
U.S. Cl. 210—90 **30 Claims**



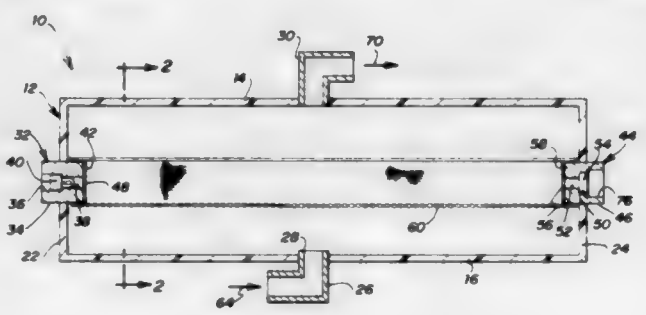
1. A renal dialysis concentrate delivery system comprising:
at least two renal dialysis concentrate reservoirs,
first supply valve means,
supply conduit means having first, second and third supply conduit means,
said first supply conduit means connecting a first said concentrate reservoir to said first supply valve means,
said second supply conduit means connecting a second said concentrate reservoir to said first supply valve means,
said third supply conduit means for transporting said concentrate from said first supply valve means to at least one renal dialysis machine,
said first supply valve means being a multiple position valve having a first position permitting flow of concentrate from said first concentrate reservoir through said first supply valve means, and a second position permitting flow from said second concentrate reservoir through said first supply valve means,
a concentrate pump in said third supply conduit means, and
return conduit means disposed downstream from said pump and connecting said third conduit means
with said concentrate reservoirs.

4,085,047

BLOOD LEAK DETECTOR

Lester E. Thompson, 10850 Kingsley Rd., Apt. 228, Dallas, Tex. 75238

Filed Sep. 16, 1976, Ser. No. 723,924
Int. Cl.[2] B01D *19/00*; G01J *3/50*
U.S. Cl. 210—96 M **6 Claims**



1. A blood leak detector comprising:

a housing including a top wall, a bottom wall, opposed side walls and opposed end walls;

means for preventing ambient visible light from entering the interior of said housing;

inlet means projecting into the interior of said housing through said bottom wall for directing fluid containing blood and gas bubbles into said housing;

oulet means contained within said top wall of said housing for directing fluid including blood and gas bubbles contained therein out of said housing through said top wall at a position located directly above the position of entry of said fluid into said housing through said inlet means;

means for generating a beam of light mounted in one of said end walls of said housing;

means for detecting said beam of light mounted in the other one of said end walls of said housing;

said light beam generating means and said light beam detecting means comprising axially aligned cylindrical plugs of substantially equal diameter mounted and contained within said opposed end walls of said housing;

screen means mounted within said housing extending between said axially aligned cylindrical plugs, dimensioned and oriented for mating with said cylindrical plugs to form a cylindrical configuration;

said screen means having spaced apart edges defining a slot therebetween mounted at the top of said cylindrical configuration to permit the escape of gas bubbles from the interior of said cylindrical configuration defined by said screen means extending between said cylindrical plugs; and

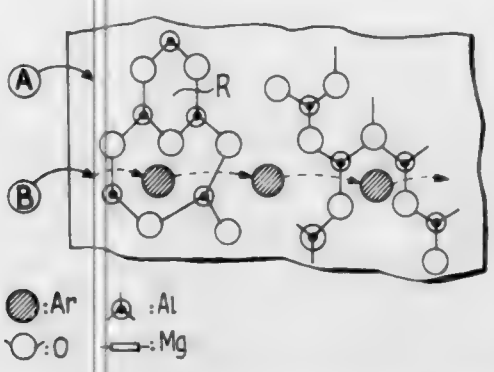
said screen means being positioned directly in the path of said fluid flowing from said inlet to said outlet, such that portions of said fluid pass through said screen means and through said beam of light while said gas bubbles contained within said portions of said fluid passing through said beam of light are separated from said fluid passing through said screen means and are prevented from entering said beam of light by flowing around the perimeter of said screen means without being removed from that portion of said fluid not passing through said beam of light.

4,085,048

DEVICE FOR SEPARATING FLUIDS AND A METHOD OF MANUFACTURING IT

Michel Croset, and Gonzalo Velasco, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 453,156, Mar. 20, 1974, abandoned.
This application Jun. 15, 1976, Ser. No. 696,427
Claims priority, application France, Mar. 23, 1973, 73.10562
Int. Cl.[2] B01D *53/22, 13/00*
U.S. Cl. 210—321 R **11 Claims**



1. A device for separating predetermined fluid species mixtures by diffusion through a plurality of thin non-porous layers disposed on porous walls, said non-porous layers fulfilling all the following conditions:

a. they are physically and chemically inert towards the substances to be separated;

b. they have an amorphous structure;

c. they have a cellular structure with cells on the same scale as the distances between atoms, the structure being homogeneous and isotropic inside the layers;

d. they enable the species to be separated to move from one cell to another by successive jumps, the jumps obeying the laws of diffusion or migration without any chemical bonds occurring between the moving substances and the interatomic network of the layer; and

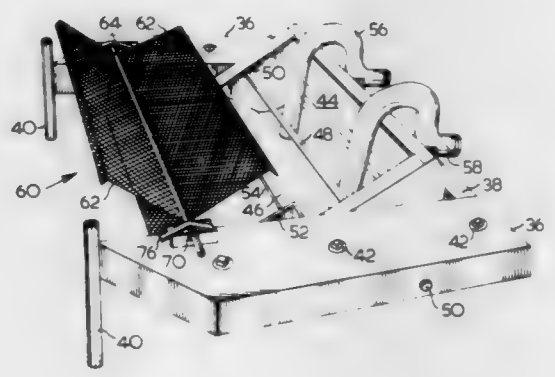
e. they owe their cellular structure to the incorporation of elementary or complex particles in the layer.

4,085,049

SKIMMING APPARATUS

Norman John Reid Hartwick, and Donald Charles Clayton Lathe, both of Box 1994, Drayton Valley, Ontario, Canada

Filed May 4, 1976, Ser. No. 683,145
Claims priority, application Canada, Apr. 2, 1976, 245038
Int. Cl.[2] B01D *17/00*
U.S. Cl. 210—242 S **7 Claims**



1. A device for removing oil and like products from the surface of water comprising a spaced pair of float members; an elongated, open-sided reservoir having a weir edge extending substantially parallel with the reservoir longitudinal axis; and mounting means coupled to the longitudinal ends of said reservoir at a point between the reservoir longitudinal axis and the weir edge and rotatably mounting said reservoir on said float members to allow the depth of fluid within said reservoir to control the degree of rotation of said reservoir relative to said float members, whereby the rate of removal of skimmed fluid from the reservoir controls the depth of skim.

4,085,050

CONTINUOUS FILTER WITH CONTINUOUS CAKE REMOVAL

Enzo Gervasi, Viale Stazione, 13, Cervignano Del Friuli (Udine), Italy

Filed Jun. 21, 1976, Ser. No. 698,027
Claims priority, application Italy, Jul. 2, 1975, 46880 A/75
Int. Cl.[2] B01D *35/16*
U.S. Cl. 210—332 **7 Claims**

1. Filter unit comprising in combination:

an outer cylindrical casing,

at least one perforate inner cylindrical casing encircled by and spaced inwardly from said outer casing,

filter means carried on the inner surface of said inner casing,

a shaft positioned axially of said inner casing and mounted to rotate therewithin,

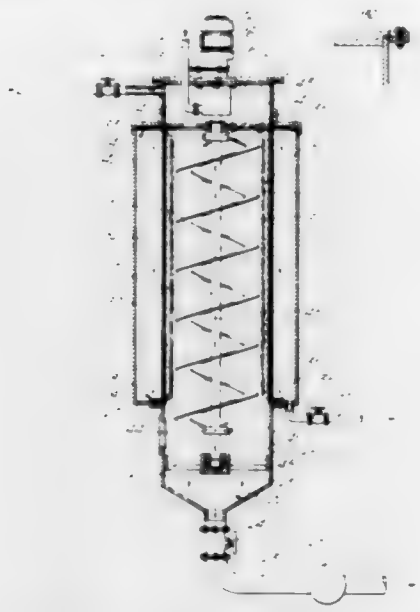
helical scraper means projecting radially from said shaft and attached thereto by means permitting adjustment of the distance between said scraper means and filter means, said scraper means terminating just short of said filter means,

inlet means for introducing a fluid to be filtered between said shaft and inner casing,

first outlet means for withdrawing filtered liquid from between said casings, and

second outlet means for withdrawing from within said inner

casing material which has been scraped from said filter by said scraper.



4. Filter unit as claimed in claim 1 comprising a plurality of inner casings within a single outer casing.

4,085,051

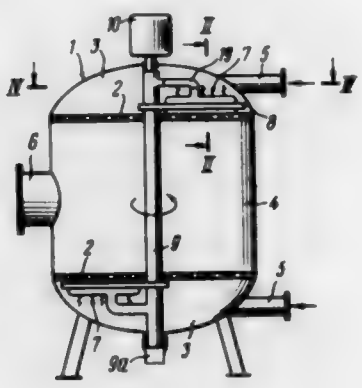
SELF-CLEANING FILTER FOR CLEANING LIQUIDS FROM SUSPENDED MATTER

Igor Viktorovich Kaminsky, ulitsa Lenina, 51, kv. 12; Vladimir Vladimirovich Shestakov, ulitsa Lesichanskaya, 41, kv. 30; Genrikh Fedorovich Severov, ulitsa Pervomaiskaya, 29, kv. 41; Aron Iosifovich Zaitsev, ulitsa Donetskaya, 58, kv. 40; Alexandr Fedorovich Litvinenko, ulitsa Sverdlova, 8, kv. 39, all of Severodonetsk Voroshilovgradskoi oblasti; Viktor Vasilievich Melnikov, ulitsa Dokuchaeva, 11, kv. 28; Boris Semenovich Zats, ulitsa Karpinskogo, 22, kv. 17, both of Penza; Mark Usherovich Miropolsky, ulitsa 3 Tverskaya-Yamskaya, 50, kv. 11, and David Lvovich Maizlik, Ljusinovskaya ulitsa, 72, kv. 89, both of Moscow, all of U.S.S.R.

Filed Feb. 26, 1976, Ser. No. 661,515

Int. Cl.[2] B01D *35/16*

U.S. Cl. 210—333 R **1 Claim**



1. A self-cleaning filter for cleaning liquids from suspended matter comprising: a container; at least two filtering partitions installed in said container; sections for contaminated liquid arranged parallel to each other and formed in said container by said filtering partitions; at least one section for cleaned liquid also formed in said contaminated liquid sections; pipe connections for delivering contaminated liquid into said sections and discharging the cleaned liquid; devices for backwashing the filtering partitions, each device being installed in one of said contaminated-liquid sections with a provision for moving over said filtering partition, each device having a mating plate pressed flexibly against said partition and having a hollow body communicating with the atmosphere and open at the side facing said filtering partition; said body having a circular recess at the opening side along the entire perimeter, the bottom wall of said recess having through holes; said mating plate being installed in said recess with means for upward movements therein so that there is a clearance between its face and the bottom wall of the recess, said clearance forming a chamber communicating with said contaminated-liquid section through the holes in the bottom wall of the recess; said device having a spring-biased duct pressed against the filtering partition by pressure of liquid admitted through ports and chamber in said hollow body, said duct being vertically movable relative to said filtering partition, said mating plate being movable directly over said filtering partition, said mating plate being comprised of elastic material, said filtering partitions comprising two perforated metal discs with filtering material therebetween, liquid being filtered through both filtering partitions simultaneously, said filtering partitions being cleaned with backflow of liquid only in areas covered by said ducts, cleaning occuring simultaneously with filtering over the remainder of the surface of said filtering partitions, the entire filtering surface area being washed successively when said ducts are moved, flexible hose means for removing suspended mechanical particles arrested by said filtering partitions, said flexible hose means connecting the interior spaces of said ducts to a hollow shaft.

4,085,052

FABRIC TREATMENT COMPOSITIONS

Alan Pearce Murphy; Paul Seiden, both of Cincinnati; Francis Louvaine Diehl, Wyoming, and Charles Bruce McCarty, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 543,606, Jan. 23, 1975, which is a continuation-in-part of Ser. No. 461,311, Apr. 16, 1974, abandoned. This application Oct. 8, 1976, Ser. No. 730,910

Int. Cl.[2] D06M *13/20*

U.S. Cl. 252—8.6 **18 Claims**

1. An article of manufacture adapted for providing fabric softening within an automatic clothes dryer, said article comprising:

(a) a fabric softening amount of softening composition containing a fatty alkyl sorbitan ester softener component selected from the group consisting of C_{10} to C_{26} fatty esters of sorbitan which contain free —OH groups and ethoxylates of said esters wherein one or more of the —OH groups in said esters contain from one to about six oxyethylene moieties, said composition having a melting point above about 38° C and being flowable at dryer operating temperatures; and

(b) a dispensing means which provides for release of said softening composition within an automatic laundry dryer at dryer operating temperatures, said dispensing means being selected from the group consisting of:

(1) a flexible absorbent substrate in a sheet configuration wherein the softening composition is affixed to the substrate to provide a weight ratio of softening composition to dry substrate ranging from about 10:1 to 1:1;

(2) A suction cup for attachment to the interior of the door of a dryer, said suction cup having a cylindrical body including a rib, and said cylindrical body having force-fitted thereon a cardboard tube coated with the fabric softening composition;

(3) A device which is attachable to a dryer drum, comprising an elongated container having an opening for filling said container with the fabric softener, a removable closure for said opening, and a plurality of spaced U-shaped clip means for attaching said container to said drum, said clip means embracing said container, said container having a surface, said container having a series of fluid discharge apertures extending through said surface, and a porous felt like nonmetallic covering secured to said container and overlying said apertures serving as a wick;

(4) A device comprising a body of synthetic plastic foamed material having a hollow center for containing

a core of the fabric softening composition, and a plurality of openings in said body, communicating with said hollow center, the core of the fabric softening composition extending integrally into said openings;

(5) A device held to the interior wall of a dryer drum in form-retaining relationship therewith, said device comprising a base having the fabric softening composition disposed on the exterior surface thereof, wherein on contact with tumbling fabrics in the dryer, the softening composition is removed from the base and deposited onto the fabrics, the said base comprising a flexible material and having a pressure-sensitive adhesive on the opposite surface thereof to effect said form-retaining relationship;

(6) A hollow sponge releasably enclosing enough softening composition to impart fabric softness during several cycles of clothes, and

(7) A bag made from a material selected from the group consisting of cloth and paper, said bag releasably enclosing said softening composition and being sealed with said sorbitan ester component of said softening composition.

4,085,053

METAL DITHIOPHOSPHATE PROCESS AND/COMPOSITION

Gunter Caspari, Wheaton, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 23, 1977, Ser. No. 799,673
Int. Cl.[2] C10M *1/48, 3/42, 5/24, 7/46*
U.S. Cl. 252—32.7 E **40 Claims**

1. A lubricating oil composition comprising a major proportion of a lubricating oil and an effective amount of an oil soluble antiwear additive, said additive comprising a zinc, barium, cadmium, magnesium or nickel dithiophosphate, said dithiophosphate made by neutralization of dithiophosphoric acid with zinc, barium, cadmium, magnesium or nickel base in the presence of an acidic promoter followed by reacting a substantial portion of excess acidic promoter with a weak base.

15. A process for the manufacture of zinc, barium, cadmium, magnesium or nickel dithiophosphate comprising reacting phosphorus pentasulfide with one or more alcohols to form a dithiophosphoric acid; neutralizing said dithiophosphoric acid with zinc, barium, cadmium, magnesium or nickel base in the presence of an acidic promoter; and reacting a substantial portion of the excess acidic promoter with a weak base.

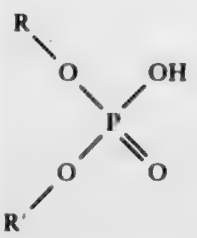
4,085,054

UTILIZATION OF ORTHOPHOSPHORIC ESTERS FOR THE PRODUCTION OF AQUEOUS FLUIDS FOR WORKING METALS

Giancarlo Bussi, Strada del Friuli, 85, and Pierpaolo Baradel, Via Navali, 32, both of Trieste, Italy

Division of Ser. No. 516,029, Oct. 18, 1974, Pat. No. 3,983,098. This application Jul. 2, 1976, Ser. No. 702,126
Claims priority, application Italy, Oct. 18, 1973, 30279/73
Int. Cl.[2] C10M *3/04*
U.S. Cl. 252—49.3 **10 Claims**

1. An aqueous composition for the working of metals, said composition comprising in solution in water between 20 and 70% of at least one alkali metal, ammonium or amine salt of an orthophosphoric ester of the formula:



in which R selected from the group consisting of chlorinated hydrocarbon groups and chlorinated COOH-containing hydrocarbon groups, said chlorinated hydrocarbon groups having a C_{10} to C_{20} carbon chain and at least two atoms of chlorine, and R′ is selected from the group consisting of hydrogen, chlorinated hydrocarbon groups and chlorinated COOH-containing hydrocarbon groups said chlorinated hydrocarbon groups having a C_{10} to C_{20} carbon chain and at least two atoms of chlorine and wherein R and R′ may be the same or different.

4,085,055

GRAFTED COPOLYMERS AND THEIR USE AS ADDITIVES FOR LUBRICATING OILS

Jean-Pierre Durand, Chatou; Patrick Gateau, Trappes; François Dawans, Bougival, and Bernard Chauvel, Ermont, all of France, assignors to Institut Francais du Petrole and Rhone Poulenc Industries, both of Rueil-Malmaison, France

Filed Dec. 3, 1975, Ser. No. 637,393
Claims priority, application France, Dec. 3, 1974, 74 39511
Int. Cl.[2] C10M *1/32*
U.S. Cl. 252—50 **11 Claims**

1. A graft copolymer of:

a. a substrate consisting essentially of a hydrogenated polymer or copolymer selected from the group consisting of (a) homopolymers of conjugated dienes having from 4 to 6 carbon atoms, (b) copolymers of at least two conjugated dienes having from 4 to 6 carbon atoms, (c) and copolymers of conjugated dienes having from 4 to 6 carbon atoms with styrene, said hydrogenated polymer or copolymer having after hydrogenation a residual olefinic unsaturation of from 0 to 5% of the units contained therein, a weight average molecular weight from 30,000 to 100,000 and a distribution of the molecular weights defined by a ratio M_w/M_n lower than 2, and

b. graft polymerized chains of at least one vinyl compound selected from the group consisting of N-vinylpyrrolidone, N-vinylimidazole and vinylpyridine.

9. A lubricating composition comprising a major proportion of lubricating oil and a proportion of at least one graft copolymer according to claim **1**, which is sufficient to improve both the viscosity index and the dispersing power of said lubricating oil.

4,085,056

INHIBITOR COMPOSITION CONTAINING AN OLIGOMER OIL

Thomas Anthony Schenach, Huntington Beach, Calif., assignor to Bray Oil Co. Inc., Los Angeles, Calif.

Filed Mar. 22, 1977, Ser. No. 780,029
Int. Cl.[2] C10M *1/30, 1/16;* C07C *3/18*
U.S. Cl. 252—59 **6 Claims**

1. A composition of matter, prepared by the following process:

(a) reacting a hydrogenated linear alpha-olefin oligomer oil with an alkyllithium compound having the formula $C_nH_{2n+1}Li$, wherein "*n*" is an integer between 1 and 20, at a temperature of from 60° F to about 230° F, the ratio of alkyllithium compound to oligomer oil being about 0.02 to about 0.7 moles per mole of oligomer;

(b) adding to the mixture of step (a) an alkyl iodide having the formula $C_mH_{2m+1}I$, wherein "*m*" is an integer of from 1 to 10, at a temperature of from about 60° F to about 140° F, the ratio of alkyl iodide to alkyllithium being about 1 to 1.25 moles of alkyl iodide per mole of alkyllithium;

(c) cautiously hydrolyzing the mixture by the addition of water, and distilling to remove therefrom solvent and low-boiling byproducts, thereby obtaining said composition of matter, which is characterized by having viscosity properties similar to and improved thermal stability relative to the hydrogenated linear alpha-olefin starting material, and furthermore having the ability to inhibit the thermal decomposition of hydrogenated linear alpha-olefin oligomer oils when added in minor amounts thereto.

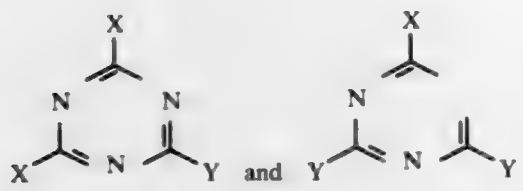
4,085,057

TONER FOR ELECTROSTATIC PRINTING OF SHEET LIKE MATERIALS CONTAINING TRIAZINE ANTISTATIC AGENT

Yougoro Masuda, Takatsuki, and Shigeru Kawase, Nara, both of Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed Feb. 19, 1976, Ser. No. 659,561
Claims priority, application Japan, Feb. 21, 1975, 50-22235
Int. Cl.[2] G03G *9/08*
U.S. Cl. 252—62.1 P **6 Claims**

1. A toner for the electrostatic printing of a sheet-like material, which comprises a toner consisting essentially of at least one resin and at least one coloring matter, and a triazine derivative applied to the surface of or incorporated in said toner said triazine derivative being selected from those of the formulae:

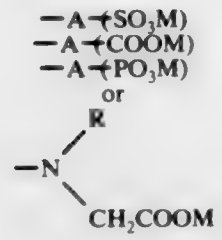


and

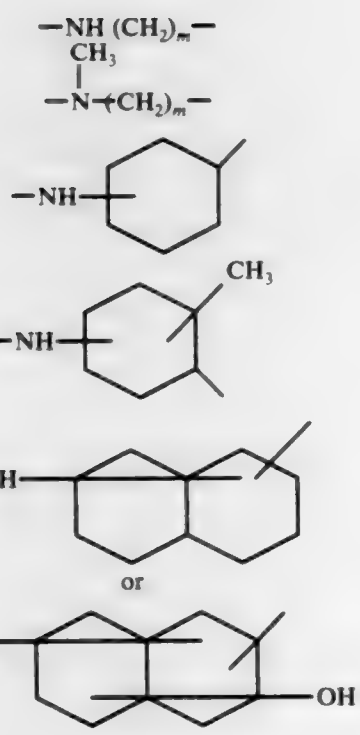
wherein

X is a halogen; and

Y is a radical of the formula:



wherein A is



R is hydrogen or alkyl having 1 to 18 carbon atoms;
M is hydrogen or an alkali metal atom;
m is an integer of 1 to 5.

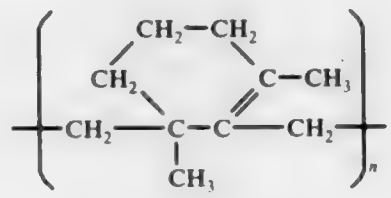
4,085,058

ELECTROPHOTOGRAPHIC LIQUID DEVELOPER CONTAINING A GRAFT COPOLYMER OF A CYCLIZED RUBBER

Syozo Adachi, and Masato Tamori, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 455,875, Mar. 28, 1974, abandoned. This application May 20, 1976, Ser. No. 688,263
Claims priority, application Japan, Apr. 4, 1973, 48-37869
Int. Cl.[2] G03G *9/12*
U.S. Cl. 252—62.1 L **3 Claims**

1. A liquid developer for use in preparing a printing plate for an offset duplicator which comprises a dispersion of image-forming materials comprising finely divided colorant particles selected from a group consisting of dyes and pigments in a liquid carrier having an electrical resistivity of not less than 10^8 ohm-cm and a dielectric constant of not more than 3.0, said liquid carrier being at least one hydrocarbon selected from the group consisting of n-paraffinic hydrocarbons, iso-paraffinic hydrocarbons and their mixtures, characterized in that said image-forming material further comprises a graft copolymer of a cyclized rubber prepared from natural rubber onto which an ester of at least one acid selected from acrylic acid and methacrylic acid is grafted, said cyclized rubber having the recurring unit expressed by the structural formula



wherein

n is an integer such that said cyclized rubber has an average molecular weight of about 9,000 or greater and wherein said cyclized rubber has an average degree of cyclization in the range from about 20 to 80%, said ester being at least one compound selected from the group consisting of butyl acrylate, butyl methacrylate, 2-ethylhexyl acrylate, 2-ethylhexyl methacrylate, lauryl methacrylate, stearyl methacrylate, diethylaminoethyl acrylate and glycidyl methacrylate; and the amount of said graft copolymer being such that the ratio by weight of said graft copolymer to the colorant particles is within the range of 5/3 to 3/5, and the amounts of said ester and said cyclized rubber in the graft copolymer being 20 to 40% by weight and 60 to 80% by weight, respectively, based on the weight of the graft copolymer.

4,085,059

FOAM TYPE COATING REMOVER

Oliver Dale Smith, San Juan Capistrano, and Gerald M. Goldberg, Chatsworth, both of Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 466,516, May 2, 1974, abandoned. This application Mar. 4, 1976, Ser. No. 663,704
Int. Cl.[2] C11D *3/28, 7/32*
U.S. Cl. 252—118 **4 Claims**

1. A substantially non-flammable, non-toxic, biodegradable liquid coating remover adapted when admixed with an inert gas to form a relatively stable foam, said liquid coating remover consisting essentially on a 100 total weight percent basis of:

(A) from about 5 to 35 weight percent of N-methyl-2-pyrrolidone,

(B) from about 30 to 85 weight percent water, and

(C) water soluble, organic surfactant material, said surfactant material comprising on said 100 total weight percent remover basis from about 5 to 15 weight percent of C_6 to C_{18} fatty acid materials selected from the group of acids consisting of lauric, myristic, palmitic, stearic, and mix-

tures thereof, from about 3 to 10 weight percent of C_2 to C_4 alkylol amines selected from the group consisting of mono-, di-, and tri-alkylol amines, and mixtures thereof, and from about 5 to 15 weight percent of C_3 to C_{18} polyhydric alcohols selected from the group consisting of glycerol, glycol, pentaerythritol, 1,2,3,4,5,6-hexanehexol, and mixtures thereof.

4,085,060

SEQUESTERING COMPOSITIONS

Neiko I. Vassileff, 9 Field End La., Eastchester, N.Y. 10709

Filed Sep. 23, 1975, Ser. No. 615,989
Int. Cl.[2] C02B *1/00, 5/00*
U.S. Cl. 252—180 **24 Claims**

1. A metal sequestering composition capable of forming a stable aqueous solution and comprising a physical mixture of (a) from 5 to 95% by weight of at least one of a first water soluble polymer selected from the group consisting of polyacrylic acid and acrylic acid-maleic anhydride copolymer and (b) as the balance of said mixture, a second weight water soluble polymer which is polyethyleneimine.

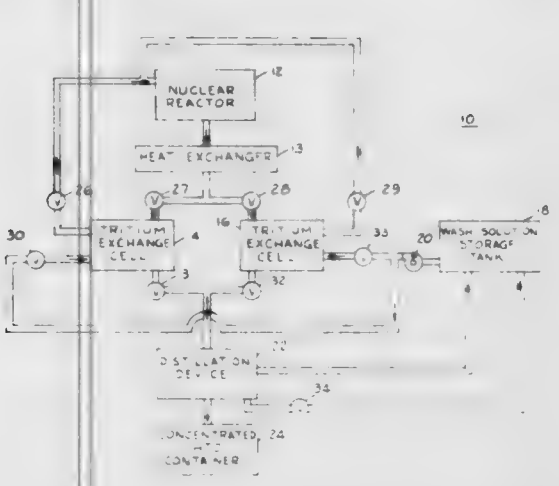
19. A metal sequestering composition capable of forming a stable aqueous solution and comprising a physical mixture of (a) from 5 to 95% by weight of a first water soluble polymer which is polyacrylic acid and (b) as the balance of said mixture, a second water soluble polymer which is polyethyleneoxide.

4,085,061

TRITIATED WATER TREATMENT PROCESS

Charles J. O'Brien, Citrus Heights, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Continuation of Ser. No. 521,755, Nov. 7, 1974, abandoned. This application Jul. 26, 1976, Ser. No. 708,793
Int. Cl.[2] G21F *9/12;* **B01D** *59/00*
U.S. Cl. 252—301.1 W **9 Claims**



1. A method for removing tritium from water comprising the steps of:

bringing the water into contact with a water insoluble hydrophilic material that is more basic than the water and contains labile hydrogen atoms to provide an isotope exchange of tritium from the water to said water insoluble material;

bringing said water insoluble hydrophilic material into contact with a liquid that contains labile hydrogen atoms and is more basic than said water insoluble material to provide an isotope exchange of tritium from said water insoluble material to said liquid, said more basic property of said liquid causing a tritium concentration to form in said liquid that is greater than the tritium concentration in the water; and

separating the tritium from said liquid.

6. A system for removing tritium from water comprising:

means for bringing the water into contact with a water insoluble hydrophilic material that is more basic than the water and contains labile hydrogen atoms to provide an isotope exchange of tritium from said water to said water insoluble material;

means for bringing said water insoluble hydrophilic material into contact with a liquid that contains labile hydrogen atoms and is more basic than said water insoluble material to provide an isotope exchange of tritium from said water insoluble material to said liquid, said more basic property of said liquid causing a tritium concentration to form in said liquid that is greater than the tritium concentration in the water; and

means for separating the tritium from said liquid.

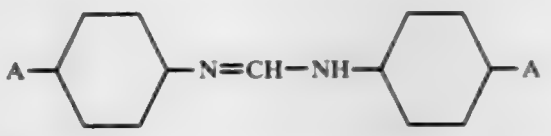
4,085,062

N,N'-BIS-AROMATICFORMAMIDINES USEFUL AS SUNSCREENING AGENTS

Joseph A. Virgilio, Wayne, and Milton Manowitz, Fair Lawn, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Nov. 24, 1976, Ser. No. 744,856
Int. Cl.[2] F21V *9/06*
U.S. Cl. 252—300 **28 Claims**

1. An ultraviolet absorbing composition comprising an effective ultraviolet absorbing amount of a compound of the formula



wherein:

A represents —COOR, —COOH, —CONR'R, —NR'COR, —C≡N or a phenyl group

wherein:

the R is an alkyl radical of from one to eight carbons and R' and R'' group may be the same or different and are chosen from the group consisting of hydrogen and lower alkyl radicals of from one to four carbons;

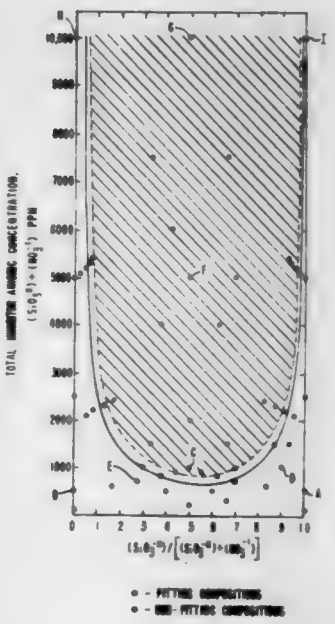
and at least one organic material subject to degradation by ultraviolet light.

4,085,063

NON-CHROMATE PITTING AND GENERAL CORROSION INHIBITORS FOR ALUMINUM PRODUCTS AND METHOD

Chia-tsun Liu, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 730,060, Oct. 6, 1976, abandoned. This application Mar. 3, 1977, Ser. No. 773,876
Int. Cl.[2] C23F *11/08;* **C09K** *3/00*
U.S. Cl. 252—387 **11 Claims**



1. An effective pitting and general corrosion inhibitor for a water-cooled system which includes aluminum water-cooled

members which have water-bearing channels formed therein, said inhibitor consisting essentially of an aqueous solution of water-soluble metasilicate and water-soluble nitrate, with a total anionic concentration of metasilicate ions plus nitrate ions being from about 750 ppm to about 10,000 ppm taken with respect to the water, with the concentration of said metasilicate ions and said nitrate ions being such that the total anionic concentration of said metasilicate ions versus the ionic ratio of

$$\frac{(SiO_3^{-2})}{(SiO_3^{-2}) + (NO_3^{-1})}$$

falls within the cross-hatched area in the graph as shown in the sole FIGURE of the drawing.

4,085,064

PURPLE $TiCl_3$ BY DIRECT LOW TEMPERATURE REDUCTION

Harry J. Wristers, Baytown, Tex., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Dec. 12, 1975, Ser. No. 640,094

Int. Cl.[2] B01J *31/02*

U.S. Cl. 252—429 B **8 Claims**

1. In the process of preparing an olefin polymerization catalyst which comprises reducing $TiCl_4$ with AlR_nX_{3-n} where R is C_1 to C_{18}, n is 0 to 3, and X is F, Cl, Br or I and subjecting the resulting $TiCl_3$ catalyst to a Lewis base/$TiCl_4$ treatment to convert it to a purple crystallographic form to improve the efficiency and stereospecificity thereof, the improvement which comprises:

utilizing AlR_nX_{3-n}, where n = 1 to 1.95 and R is ethyl, in said reduction of $TiCl_4$, in greater than stoichiometric amounts where the molar ratio of AlR_nX_{3-n} to $TiCl_4$ is such that the ratio of n:$TiCl_4$ is between 1.0–4.5 at a temperature of from −30 ° C to about 30° C to produce a purple $TiCl_3$ catalyst prior to treatment with Lewis base/-$TiCl_4$, and utilizing in said Lewis base/$TiCl_4$ treatment, $TiCl_4$ in a concentration of about 5 to about 15 volume percent.

4,085,065

PROCESS FOR THE PREPARATION OF UNSATURATED ACIDS FROM UNSATURATED ALDEHYDES

James F. White, Akron; Wilfrid G. Shaw, Lyndhurst, and Michael D. Applequist, Mayfield Heights, all of Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Oct. 19, 1976, Ser. No. 733,735

Int. Cl.[2] B01J *27/14;* **C07C** *51/24*

U.S. Cl. 252—437 **19 Claims**

1. The catalyst composition described by the formula

$$X_aY_bMo_{12}P_cAs_dO_x$$

wherein

X is at least one element selected from the group consisting of U, Ti, Nb, Re, Zn, and Ga;

Y is at least one element selected from the group consisting of Cu, a rare earth element, Ag, Ta, In, Th, Cd, Tl, NH_4, Cl, Ni, Al and Ge;

and wherein

a is 0.001 to 10;

b is 0 to 10;

c is 0.1 to 5;

d is 0.01 to 5;

x is the number of oxygens required to satisfy the valence states of the other elements present.

4,085,066

CATALYST COMPOSITION AND METHOD OF PREPARATION

Michael Gulla, Sherborn, Mass., assignor to Shipley Company Inc., Newton, Mass.

Division of Ser. No. 618,033, Sep. 30, 1975, Pat. No. 4,020,009. This application Nov. 12, 1976, Ser. No. 741,378

Int. Cl.[2] B01J *27/08, 27/10*

U.S. Cl. 252—434 **38 Claims**

1. A process for the formation of an essentially dry composition which, upon admixture with an aqueous hydrohalide acid solution having a pH less than 1, forms a stable colloidal catalyst solution for catalyzing a substrate prior to deposition of an electroless metal, said process comprising mixing powders of a catalytic metal halide with a stannous halide, said powders having been dampened with a hydrohalide acid, the molar ratio of the stannous content of the stannous halide to the catalytic metal content of the catalytic metal halide being at least 2:1, and permitting said mixture to stand until a color change occurs.

4,085,067

HYDROCARBON ISOMERIZATION CATALYST

Ernest L. Pollitzer, Skokie, and John C. Hayes, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 633,889, Nov. 20, 1975, Pat. No. 4,013,738, which is a continuation-in-part of Ser. No. 522,209, Nov. 8, 1974, Pat. No. 3,960,710. This application Nov. 1, 1976, Ser. No. 737,468

The portion of the term of this patent subsequent to Feb. 22, 1974, has been disclaimed.

Int. Cl.[2] B01J *27/10*

U.S. Cl. 252—442 **11 Claims**

1. A catalyst comprising a halided porous carrier material containing, on an elemental basis, 0.01 to 2 wt. % platinum group metal, 0.1 to 5 wt. % cobalt, 0.01 to 5 wt. % tin and 0.1 to 10 wt. % halogen, and about 1 to about 100 wt. % of a Friedel-Crafts metal halide calculated on a Friedel-Crafts metal halide free basis, wherein the platinum group metal, cobalt and tin are uniformly dispersed through the porous carrier material, wherein substantially all of the platinum group metal and cobalt are present in the elemental metallic state and substantially all of the tin is present in an oxidation state above that of the elemental metal.

4,085,068

HYDRODENITROGENATION AND HYDROCRACKING CATALYST

James P. Gallagher, Park Forest, and John Mooi, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 306,150, Nov. 13, 1972, abandoned, which is a division of Ser. No. 218,486, Jan. 17, 1972, Pat. No. 3,726,790, which is a continuation-in-part of Ser. No. 38,576, May 18, 1970, abandoned. This application Apr. 26, 1976, Ser. No. 680,319

Int. Cl.[2] B01J *29/06, 29/00, 29/10*

U.S. Cl. 252—455 R **12 Claims**

1. A composition of matter comprising a major amount of a catalytically-active support derived by the calcination of a material comprising from about 30 to about 70% by weight of silica and from about 30 to about 70% by weight of alumina, based on the total silica and alumina in said support, said silica and alumina being supplied by a mixture consisting essentially of from 40 to about 90% by weight of amorphous silica-alumina and from about 10 to about 60% by weight of alumina derived from hydrous alumina selected from the group consist-

ing of boehmite and mixtures of boehmite and amorphous hydrous alumina and minor catalytically effective amounts of both nickel and at least one metal selected from the group consisting of Group VIb metals and mixtures thereof.

4,085,069

HYDROTHERMALLY STABLE CATALYSTS CONTAINING AMMONIUM FAUJASITE ZEOLITES

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 718,167, Sep. 9, 1976. This application Aug. 27, 1976, Ser. No. 718,166

The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.

Int. Cl.[2] B01J *29/06*

U.S. Cl. 252—455 Z **18 Claims**

1. A method of producing a cracking catalyst of ammonium zeolites of the faujasite type which comprises mixing a zeolite of the faujasite type whose exchange position is substantially entirely occupied by Na cations with a solution of an ammonium salt, the quantity of the zeolite, and the concentration of the ammonium cations, being in quantity sufficient to establish a ratio of the equivalents of NH_4 cation in the solution, per equivalent of Na cation in the zeolite in the mixture in excess of about 5, heating the solution to a temperature above about 300° and less than about 450° F. for a period of time to reduce the sodium content of the zeolite, expressed as Na_2O, in the range of from about 2.5% to about 0.5% by weight of the exchanged zeolite, on a volatile free basis, and washing the zeolite substantially free of anions of the salt in solution, mixing said zeolite with a matrix in water to form a slurry and spray drying the slurry.

4,085,070

PROCESS FOR THE PREPARATION OF AN OLEFIN-POLYMERIZATION CATALYST

Alfred Columberg, Geneva, Switzerland, assignor to Battelle Memorial Institute, Geneva, Switzerland

Filed Jun. 18, 1976, Ser. No. 697,679

Claims priority, application Switzerland, Jun. 20, 1975, 008050/75; Feb. 27, 1976, 002415/76; Feb. 27, 1976, 002416/76

Int. Cl.[2] C08F *4/58, 4/52*

U.S. Cl. 252—429 R **10 Claims**

1. A process for preparing an olefin-polymerization catalyst which comprises reacting at least one acetate of an element of Group Ia, IIa or IIIa of the Periodic Table with at least one acyl group from an aliphatic carboxylic acid or an aliphatic carboxylic anhydride, heating the reaction mixture thus obtaining to a temperature of 70° to 100° C for a period of 10 to 30 hours, and eliminating excess acyl compound to produce a solid residue finely dispersable or soluble in an inert, anhydrous nonpolar organic solvent.

5. A process for preparing an olefin-polymerization catalyst which comprises reacting at least one acetylacetonate of an element from Group IIa or Group IIIa of the Periodic Table with at least one acyl group of an aliphatic carboxylic acid or an aliphatic carboxylic anhydride, heating the reaction mixture thus obtained to a temperature of 70° to 100° C for a period of 10 to 30 hours, and eliminating excess acyl compound to form a solid residue finely dispersable or soluble in an inert anhydrous nonpolar organic solvent.

7. A process for producing an olefin-polymerization catalyst comprising reacting at least one halogenide of an element of Group IVa or VI a of the Periodic Table with at least one acyl group from an aliphatic carboxylic acid or an aliphatic carboxylic anhydride, heating the reaction mixture thus obtained to a temperature of 70° to 100° C for a period of 10 to 30 hours, and eliminating excess acyl compound to produce a solid residue finely dispersable or soluble in an inert, anhydrous nonpolar organic solvent.

9. A process for preparing an olefin-polymerization catalyst which comprises reacting at least one oxyhalogenide of an element from Group Va of the Periodic Table with at least one acyl group from an aliphatic carboxylic acid or an aliphatic carboxylic anhydride, heating the reaction mixture thus obtained to a temperature of 70° to 100° C for a period of 10 to 30 hours, and eliminating excess acyl compound to produce a solid residue finely dispersable or soluble in an inert, anhydrous nonpolar organic solvent.

4,085,071

ION EXCHANGE POLYMER FILM, CONSISTING OF FLUORINATED POLYMER WITH N-MONOSUBSTITUTED SULFONAMIDO GROUPS METHOD AND APPARATUS FOR ELECTROLYSIS OF ALKALI OR ALKALINE EARTH METAL HALIDE

Paul Raphael Resnick, Wilmington, Del., and Walther Gustav Grot, Chadds Ford, Pa., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 406,361, Oct. 15, 1973, abandoned. This application Oct. 20, 1975, Ser. No. 623,920

Int. Cl.[2] C09D *3/78*

U.S. Cl. 260—22 R **19 Claims**

1. A film comprising a fluorine-containing polymer containing pendant side chains with sulfonyl groups attached to a carbon atom having at least one fluorine atom connected thereto, at least 40% of the sulfonyl groups in a first layer of said film in a thickness of at least 200 angstroms present as ion exchange sites as N-monosubstituted sulfonamido groups or salt thereof formed through reaction of $—SO_2X$ groups, where X is fluorine or chlorine, with a primary amine, and a second layer of said film having at least a majority of the sulfonyl groups present as ion exchange sites as $—(SO_2NH)_mQ$ or $—(SO_3)_nMe$ wherein Q is selected from the group consisting of H, NH_4, cation of an alkali metal, cation of an alkaline earth metal and combinations thereof, *m* is the valence of Q, Me is a cation and *n* the valence of the cation, and the amine is a diamine of the formula $NH_2(CH_2)_pNH_2$ with *p* an integer from 2 to 10, methyl amine, ethyl amine, butylamine, 2-methoxyethylamine or cyclohexylamine.

4,085,072

PROCESS FOR PREPARING OXIDATIVELY STABLE POLYURETHANE FOAM

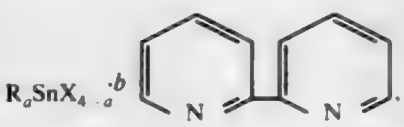
Robert V. Russo, Brooklyn, N.Y., assignor to M&T Chemicals Inc., Stamford, Conn.

Filed Dec. 18, 1975, Ser. No. 641,963

Int. Cl.[2] C08G *18/24*

U.S. Cl. 260—2.5 AC **1 Claim**

1. A method for preparing an improved flexible cellular polyurethane by reacting a polyol containing at least two active hydrogen atoms per molecule, as determined by the Zerewitinoff method, with a polyfunctional isocyanate, the reaction being conducted in the presence of a blowing agent and an effective amount of a latent gel catalyst of a formula selected from the group consisting of







selected from the group consisting of alkyl containing from 1 to 20 carbon atoms, cycloalkyl and phenyl, X is selected from

the group consisting of chlorine, bromine, iodine, cyanate and thiocyanate and a and b are each 1 or 2.

4,085,073

STYRENE POLYMER FOAM AND THE PREPARATION THEREOF

Kyung W. Suh, and Graydon Wayne Killingbeck, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 628,618, Nov. 4, 1975, abandoned. This application Nov. 2, 1976, Ser. No. 737,887

Int. Cl.[2] C08J *9/14*

U.S. Cl. 260—2.5 E **12 Claims**

1. An alkenyl aromtic thermoplastic synthetic resinous elongate foam body having a machine direction and a transverse direction, the body defining a plurality of closed noninterconnecting gas containing cells therein, the cells having an average cell size of from about 1.2 to 3 millimeters, the foam body being a generally uniform cellular structure and being without discontinuities, being without substantial variation in average cell size when cell size is measured by averaging cell diameter across the minimum cross-sectional dimension of the body, the elongate body having a cross-sectional area of at least 18 square inches and having a minimum cross-sectional dimension of at least one inch, the foam body having a water vapor permeability not greater than 1.8 perm inches, a density of from about 1.4 to about 5 pounds per cubic foot the body being a continuous hardened thermoplastic gel with the further limitation that the cells contain a blowing agent having as a major component thereof at least 70 weight percent of a member selected from the group consisting of chlorofluoromethane, bromochlorodifluoromethane, and mixtures thereof.

4,085,074

PRE-MIXED CATALYZED VINYL ACETATE POLYMER ADHESIVE COMPOSITION

Ming Cho Woo, Willingboro, N.J., assignor to National Casein of New Jersey, Riverton, N.J.

Filed Mar. 29, 1976, Ser. No. 671,269

Int. Cl.[2] C08L *1/28*

U.S. Cl. 260—17 R **19 Claims**

1. A pre-mixed catalyzed adhesive composition comprised of (a) an aqueous cross-linkable vinyl acetate resin emulsion including polymerized vinyl acetate, in which the polymerized vinyl acetate is made from a monomer mixture of 80–97% vinyl acetate and 3–20% of a mixture of an alkyl ester of an acid selected from the class consisting of acrylic acid and methacrylic acid and an N-alkylol derivative of an amide of an alpha, beta-unsaturated carboxylic acid in an aqueous medium containing about 3–6% by weight of a hydrocolloid selected from the class consisting of polyvinyl alcohol, hydroxyethylcellulose and carboxymethylcellulose, by weight of the monomer mixture, (b) an acidic metal salt cross-linking catalyst selected from the class consisting of aluminum chloride, aluminum nitrate, chromic chloride and chromic nitrate in an amount of about 0.0032 to 0.025 gram equivalents per 100 grams of the resin emulsion, and (c) a cross-linking inhibitor selected from the class consisting of ammonia, alkyl amines and alkylol amines wherein the mole ratio of the cross-linking inhibitor to catalyst ranges from a minimum of about 0.1 to 0.2 to a maximum of about 0.7 to 1.7.

4,085,075

CARBOHYDRATE THERMOSET RESINS

John P. Gibbons, Western Springs, and Mutong T. Chiang, Palos Heights, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

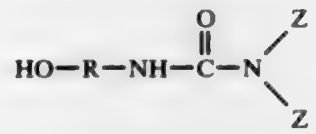
Continuation of Ser. No. 707,599, Jul. 22, 1976, abandoned. This application Jun. 29, 1977, Ser. No. 811,396

Int. Cl.[2] C08L *3/02*

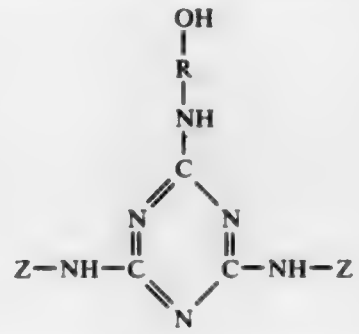
U.S. Cl. 260—17.2 **7 Claims**

1. A solid molding composition comprising:

(1) a phenol-formaldehyde novolak resin;
(2) a starch; and
(3) an aminoplast compatible with the starch selected from the group consisting of urea derivatives of the formula:



and melamine derivatives of the formula:



wherein R is a C_1 to C_3 alkylidene group and Z is hydrogen or C_1 to C_3 alkylol.

4,085,076

CARBOHYDRATE-BASED CONDENSATION RESIN

John P. Gibbons, Western Springs, and Lawrence Wondolowski, Downers Grove, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

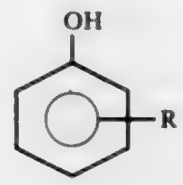
Continuation-in-part of Ser. No. 707,600, Jul. 22, 1976, Pat. No. 4,048,127. This application Jun. 21, 1977, Ser. No. 808,580

Int. Cl.[2] C08L *3/02*

U.S. Cl. 260—17.2 **12 Claims**

1. A process for producing a carbohydrate-phenolic resol resin which comprises the steps of:

a. reacting in the presence of an acid catalyst the following ingredients:
   1. an aldose saccharide
   2. a phenolic compound having the formula



   wherein R is selected from the group consisting of C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halogen, hydroxy and hydrogen, and
   3. urea to form a liquid resin wherein the water produced in condensation is less than about 5 moles per mole of aldose; and
b. reacting said liquid resin with a lower aliphatic aldehyde in the presence of a basic catalyst to form said resol resin.

4,085,077

METHOD FOR STABILIZING VINYL CHLORIDE POLYMERS

Robert Dally Dworkin, Old Bridge, and Adam Joseph Ejk, Piscataway, both of N.J., assignors to M&T Chemicals Inc., Stamford, Conn.

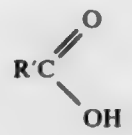
Filed Feb. 23, 1976, Ser. No. 660,478

Int. Cl.[2] C08K *5/57*

U.S. Cl. 260—23 XA **14 Claims**

1. A method for improving the resistance to heat induced discoloration, decomposition and odor imparted to vinyl chloride polymer and acrylonitrile-butadiene-styrene terpolymers by a diorganotin compound selected from the group consisting

of reaction products of mono- or dicarboxylic acids containing from 4 to 20 carbon atoms or anhydrides of said acids with a diorganotin oxide containing from 2 to 24 carbon atoms, wherein the number of moles of diorganotin oxide reacted is from 1.0 to 2.0 times the number of equivalents of acid or anhydride, the method consisting essentially of combining said diorganotin compound with an unreacted mono- or dicarboxylic acid containing from 8 to 20 carbon atoms or an anhydride of said acid, wherein said unreacted acid or anhydride constitutes from 1 to 90% of the combined weight of the acid or anhydride and the reaction product, the carboxylic acid that is reacted with the diorganotin oxide exhibits the formula



or HOOCR"COOH wherein R' represents alkyl, cycloalkyl, aryl, alkaryl or aralkyl and contains from 1 to 12 carbon atoms and wherein the hydrocarbon portion of said unreacted acid or anhydride contains from 8 to 20 carbon atoms in a cyclic, linear or branched configuration and no substituents which are reactive with said diorganotin oxide.

4,085,078

LOW VISCOSITY ASPHALT-RUBBER PAVING MATERIAL

Charles H. McDonald, 3130 W. Pierce St., Phoenix, Ariz. 85009

Filed Dec. 27, 1976, Ser. No. 754,446

Int. Cl.[2] C08L *95/00*

U.S. Cl. 260—28.5 AS **12 Claims**

1. In a method for surfacing and repairing broken pavement with an elastomeric paving material, said material comprised of reaction product formed by endothermically reacting a mixture of a paving grade asphalt and a non-oil resistant rubber, the improvement comprising the step of admixing at least one diluent selected from the group consisting of petroleum fractions distilled from crude oil at a temperature of from about 174° to about 325° C. with said asphalt and said rubber prior to forming said reaction product, said diluent being admixed in an amount of from about 1 to about 15 percent by weight of said asphalt-rubber mixture, whereby the viscosity of said reaction product is reduced to at least about one half as compared to the viscosity of said reaction product having said diluent admixed after the formation thereof.

4,085,079

FORMALDEHYDE SOLUTIONS STABILIZED WITH INTERPOLYMERS OF VINYL ACETATE, VINYL ACETAL AND VINYL ALCOHOL

Richard C. Kmetz, Longmeadow, and Leland P. Miner, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 2, 1977, Ser. No. 764,784

Int. Cl.[2] C07C *47/04*

U.S. Cl. 260—29.6 B **9 Claims**

1. A process of stabilizing an aqueous formaldehyde solution comprising dissolving an interpolymer of vinyl acetate, vinyl alcohol and vinyl acetal in an organic solvent and admixing the solution of the interpolymer with the formaldehyde solution to form a stabilized formaldehyde solution containing at least 1 p.p.m. of the interpolymer by weight, wherein the interpolymer comprises from about 25 to about 65 parts by weight of vinyl acetate units, from 3 to about 15 parts by weight of vinyl alcohol units and from about 20 to about 72 parts by weight of vinyl acetal units and wherein the interpolymer is the alcoholysis and acetalization product of a polyvinyl acetate of weight average molecular weight in the range of about 2000 to about 60000.

4,085,080

NYLON COMPOSITION CONTAINING NON-POLAR ESTER PLASTICIZER

Donald Lee Elbert, Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 536,670, Dec. 26, 1974, Pat. No. 4,006,115. This application Nov. 19, 1976, Ser. No. 743,270

Int. Cl.[2] C08J *3/18*

U.S. Cl. 260—31.2 N **11 Claims**

1. A composition of matter comprising a nylon resin, an additive insoluble in the nylon resin selected from the group consisting of fillers and flame retardant synergists, and from .1 to 10 percent by weight of an ester selected from the group consisting of adipates and sebacates of a C_4 to C_{12} alkyl or cycloalkyl alcohol or a phenol and fatty acid esters of pentaerythritol.

4,085,081

"SMOKE-SUPPRESSANT POLYHALOCARBON POLYMER COMPOSITIONS CONTAINING AS PLASTICIZER AN UNSATURATED DERIVATIVE OF AN ESTER POLYOL"

John S. Heckles, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Feb. 4, 1977, Ser. No. 765,638

Int. Cl.[2] C08K *5/10*

U.S. Cl. 260—31.4 R **9 Claims**

1. A smoke-suppressant polyhalocarbon composition comprising a polyhalocarbon resin and from 1 to 80 parts by weight based on 100 parts of polyhalocarbon resin of an organic ester of the formula:

$$RC(CH_2O)_3(CH_2CH{=}CH_2)_{3-x}(C(O)CH_3)_{3-y}$$

where R is C_1 to C_8 alkyl, C_6 to C_{12} cycloalkyl, or C_1 to C_8 alkoxy-substituted C_1 to C_8 alkyl, and x and y are 1 or 2 with the proviso that $x \neq y$.

4,085,082

POLYMERS OF VINYL ACETATE PLASTICIZED WITH LOW MOLECULAR WEIGHT POLYESTERS

Frank Lamb, Oldham; Malcolm Combey, Mellor, and Hugh Melvin Cooper, Cheadle, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 406,175, Oct. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 192,625, Oct. 26, 1971, abandoned. This application Aug. 7, 1975, Ser. No. 602,889

Claims priority, application United Kingdom, Oct. 27, 1970, 50906/70

The portion of the term of this patent subsequent to Feb. 28, 1995, has been disclaimed.

Int. Cl.[2] C08K *5/11*; C08L *31/04*

U.S. Cl. 260—31.6 **5 Claims**

1. A composition comprising a vinyl acetate polymer or copolymer of between 55% and 100% of vinyl acetate with one or more ethylenically unsaturated non-halogenated comonomers and from 10 to 100% by weight based on the weight of the polymer of a polyester having a molecular weight of from 350 to 1500 derived from the reaction of glutaric acid or anhydride or a mixture of aliphatic dibasic acids of anhydrides selected from succinic, glutaric or adipic acid or anhydride with ethylene glycol and an aliphatic alcohol containing from 3 to 6 carbon atoms; wherein the alcohol and glycol components are reacted with the dibasic acids or anhydrides in the theoretical amounts needed to effect the reaction with the proviso that the glycol may be reacted with the dibasic acids or anhydrides in amounts ranging from 0–10 mol% below the theoretical amount necessary to effect the reaction to up to 20% in excess of the theoretical amount necessary to effect the reaction to up to 20% in excess of the theoretical amount and the alcohol may be reacted with the dibasic acids or anhy-

drides in amounts ranging from 0 to 50 mol% below the theoretical amount to up to 20 mol% in excess of the theoretical amount needed to produce the final product.

4,085,083

PLASTICIZED POLYMERS OF VINYL ACETATE

Frank Lamb, Oldham; Malcolm Combey, Mellor, and Hugh Melvin Cooper, Cheadle, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 406,175, Oct. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 192,625, Oct. 26, 1971, abandoned. This application Aug. 7, 1975, Ser. No. 602,887

Claims priority, application United Kingdom, Oct. 27, 1970, 50906/70

Int. Cl.[2] **C08K** *5/11*

U.S. Cl. 260—31.6 **7 Claims**

1. A composition comprising a vinyl acetate homopolymer or copolymer, made up of at least 55% of a vinyl acetate monomer and the remainder being one or more ethylenically unsaturated non-halogenated comonomers, and from 10 to 100% by weight based on the weight of the polymer of a polyester having a molecular weight from 350 to 1500 derived from the reaction of an acid or anhydride selected from succinic, glutaric or adipic acid or anhydride, or any mixture thereof, a polyethylene glycol having a molecular weight of from 175 to 225 and an aliphatic alcohol containing from 3 to 6 carbon atoms, said glycol and alcohol being reacted with the acid or anhydride in the theoretical amounts necessary to effect the reaction with the proviso that the glycol may be reacted with the acid or anhydride in amounts ranging from 0–10 mol % below the theoretical amount necessary to effect the reaction to up to 20% in excess of the theoretical amount and the alcohol may be reacted with the acid or anhydride in amounts ranging from 0 to 50 mol % below the theoretical amount to up to 20 mol % in excess of the theoretical amount needed to produce the final product.

4,085,084

SILICONE RESINS HAVING GOOD THERMAL STABILITY

Duane F. Merrill, Ballston Spa, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Aug. 26, 1976, Ser. No. 717,973

Int. Cl.[2] **C08K** *5/01*

U.S. Cl. 260—33.6 SB **18 Claims**

1. A process for preparing a difunctional silicone resin having good thermal stability comprising

a. hydrolyzing a diorganodihalosilane in a heterogeneous hydrolysis mixture having:
   1. from about 1.7 parts to about 10 parts by weight of water, per part of silane,
   2. from about 0.2 to about 5 parts by weight of acetone per part of silane
   3. from about 0.3 to about 5 parts by weight of water-immiscible organic solvent per part of silane, and
   4. from 0 to about 1 mole aliphatic monohydric alcohol having from 1 to 8 carbon atoms per mole of halogen attached to the silicone atom of said silane, wherein said hydrolysis must take place within 10 minutes and

b. separating the water layer from the organic solvent layer which contains the resin wherein said organo groups of said diorganodihalosilane are methyl and phenyl and the halo is chlorine and in said organo groups the methyl concentration varies from 40 to 60 mole percent.

10. A silicone resin mixture with thermal stability up to 700° F comprising mixing a first silicone resin which is the silicone resin produced by the process of claim **1** with a second silicone resin produced by (a) hydrolyzing an organohalosilane in an heterogeneous hydrolysis mixture composed of:

1. from about 1.7 parts to about 10 parts by weight of water per part of halosilane,
2. from about 0.2 to about 5 parts by weight of acetone per part of halosilane,
3. from about 0.3 to about 5 parts by weight of a water-immiscible organic solvent, per part of halosilane, and
4. from 0 to about 1 mole of an aliphatic monohydric alcohol having from 1 to 8 carbon atoms, per mole of halogen attached to the silicone atom of said halosilane, and (b) separating the second silicone resin organic solvent layer from the acid/water layer where said organohalosilane consists of methyltrichlorosilane and phenyltrichlorosilane where the concentration of the methyltrichlorosilane in the total trichlorosilane varies from 20 to 80 mole percent and further consists of dimethylchlorosilane and diphenylchlorosilane where the concentration of dimethylchlorosilanes varies from 20 to 80 mole percent in the total dichlorosilanes.

12. The silicone resin mixture of claim **10** wherein said process for said second silicone resin further comprises heating the second silicone resin organic solvent layer to 120°–140° C to remove solvent adding diatomaceous earth to said second silicone resin and organic solvent and heating to a temperature in the range of 190°–240° C to remove solvent and water and to body said silicone resin until it has a silanol content of 2 to 4% by weight and finally neutralizing said second silicone resin until it has an acid content that does not exceed 10 ppm.

13. The silicone resin mixture of claim **12** wherein said silicone resin mixture is at 50–90% by weight solids content in an organic solvent selected from the class consisting of xylene, toluene, benzene, cyclohexane, heptane and octane.

4,085,085

CURABLE COATING COMPOSITIONS

Shozo Tsuchiya, Kawasaki; Hideo Hayashi, Yokohama; Kazuyoshi Iida, and Kiyoshi Goto, both of Tokyo, all of Japan, assignors to Nippon Oil Company, Limited, Japan

Filed Dec. 28, 1976, Ser. No. 754,983

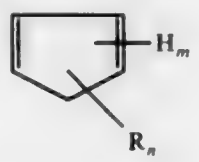
Claims priority, application Japan, Jan. 1, 1976, 51-329

Int. Cl.[2] **C08L** *61/14, 9/00, 29/06*

U.S. Cl. 260—38 **11 Claims**

1. A curable coating composition comprising a resin obtained by reacting the following ingredients (A), (B) and (C)

(A) at least one member selected from the group consisting of (1) five-membered cyclic compounds having unsaturated conjugated double bonds, represented by the following general formula



wherein R is an organic residue having 1 – 3 carbon atoms, and *m* and *n* are each an integer with the proviso that the sum thereof is 6 and (2) Diels-Alder's products of the five-membered cyclic compounds (1)

(B) at least one compound containing both a polymerizable double bond and a hydroxyl group in the molecule, and

(C) at least one resol type phenolic resin, to produce a hydroxyl group-containing resin, and then reacting the thus-produced hydroxyl group-containing resin with a member selected from the group consisting of acrylic and methacrylic acids.

4,085,086

PROCESS FOR PREPARING FLAME RETARDANT THERMOPLASTIC POLYESTERS

Shioji Mizuno, Osaka; Ryoichi Ishikawa, Izumi-ohtsu, and Mitsumasa Miyazaki, Sakai, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Aug. 26, 1975, Ser. No. 607,890
Int. Cl.[2] C08G *63/76;* C08K *3/40*
U.S. Cl. 260—40 TN 12 Claims

1. A process for preparing a flame retardant thermoplastic polyester molding resin which comprises reacting in the presence of a reinforcing agent a low molecular weight polyester having terminal hydroxyl groups with a polyfunctional isocyanate, said low molecular weight polyester being one synthesized using as its acid component a compound selected from the group consisting of terephthalic acid and its lower alkyl esters of 1–4 carbon atoms and as its alcohol component 1,4-butanediol and a compound selected from the group consisting of an alkylene oxide adduct of 2–4 carbon atoms of tetrabromobisphenol A and an alkylene oxide adduct of 2–4 carbon atoms of tetrachlorobisphenol A.

4,085,087

METHOD OF REDUCING STATIC ELECTRICITY IN PLASTIC COMPOSITIONS AND ANTISTATIC COMPOSITIONS

Günter Kratel, Durach-Bechen; Johann Bauer; Engelbert Pichler, both of Burghausen, and Hans-Peter Kalmuk, Kempten, all of Germany, assignors to Wacker Chemie GmbH, Munich, Germany

Filed Sep. 5, 1975, Ser. No. 610,535
Claims priority, application Germany, Sep. 9, 1974, 2443075
Int. Cl.[2] C08K *3/22*
U.S. Cl. 260—42.49 24 Claims

1. In the method of reducing the electrostatic charge acquired by a plastic composition comprising the step of incorporating an antistatically-effective amount of an antistatic agent in said plastic composition, the improvement consisting essentially of using an antistatically-effective amount of a mixed oxide of phosphorus and one or more metals selected from the group consisting of silicon, aluminum, titanium and iron, said mixed oxide having been prepared by flame hydrolysis and having a BET surface area of from 15 to 400 m^2/gm, as said antistatic agent.

4,085,088

FIRE-RETARDING THERMOPLASTIC RESIN COMPOSITION

Shigeo Miyata, Takamatsu; Toru Hirose, Ohkawa, and Noriko Iizima, Takamatsu, all of Japan, assignors to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1976, Ser. No. 753,087
Claims priority, application Japan, Jan. 23, 1976, 51-5903
Int. Cl.[2] C08K *3/22*
U.S. Cl. 260—45.7 R 8 Claims

1. A fire-retarding thermoplastic resin composition comprising

A. a thermoplastic resin, and

B. a fire-retarding amount of a hydrotalcite having a specific surface area, determined by the BET method, of not more than 30 m^2/g, the hydrotalcite being uncoated, or coated with an aqueous solution of an anionic surface active agent in a concentration of not more than 20 millimoles/liter in a thickness larger than a monolayer but up to a triple layer.

4,085,089

BENZOTRIAZOLE ULTRAVIOLET STABILIZING COMPOUNDS AND THEIR USE IN ORGANIC COMPOSITIONS

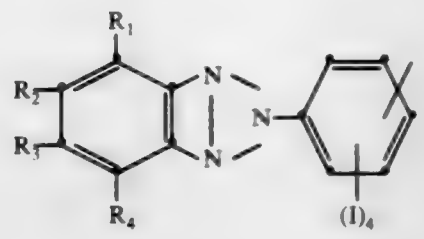
Gether Irick, Jr.; Charles A. Kelly, and James C. Martin, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 16, 1976, Ser. No. 715,013
Int. Cl.[2] C08K *5/34*
U.S. Cl. 260—45.8 NT 52 Claims

1. An organic composition susceptible to ultraviolet light degradation stabilized against such degradation with a stabilizing amount of at least one bichromophoric compound having the formula:

A—B—C

wherein A is a group having the structure

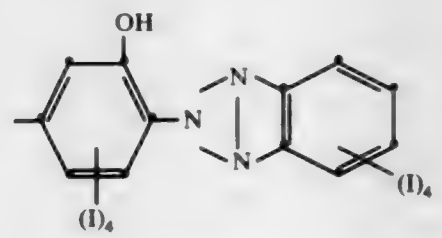


wherein

R_1, R_2, R_3 and R_4 are hydrogen, chloro, bromo, lower alkyl, substituted lower alkyl, cyclohexyl, substituted cycloalkyl, phenyl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, substituted amino, carboalkoxy and the substituents R_1 and R_2, R_2 and R_3, and R_3 and R_4, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;

I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the heterocyclic ring and the carbon atom attached to the B group connecting the heterocyclic aromatic A group with the aromatic C group, wherein B is a linking group connecting A and C and is oxy, carbonyloxy, oxycarbonylalkyleneoxy, alkyleneoxycarbonyloxy, oxyalkylenecarbonyloxy, oxycarbonyloxy, alkyleneoxy, oxyalkylene, alkyleneoxyalkyleneoxy, oxyalkylenearylenealkyleneoxy, thio, thioalkyleneoxy, sulfinyldioxy, oxy(alkoxy)phosphinooxy, carbonylamino, N-alkylcarbonylamino, N-arylcarbonylamino, aminocarbonylalkyleneoxy, N-alkylaminocarbonylalkyleneoxy, N-arylaminocarbonylalkyleneoxy, aminocarbonylamino, N-alkylaminocarbonylamino, N-alkylamino, N-arylamino, N-alkylaminoalkyleneoxy, N-arylaminoalkyleneoxy, oxyalkyleneoxy, oxyaryleneoxy; and

wherein C is a group having the formula



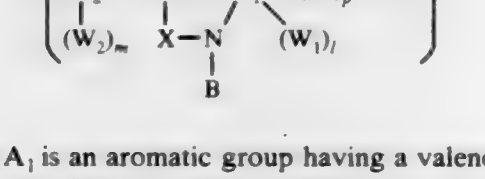
where I is the same substituent as listed above and is present in all positions of the benzenoid rings except the carbon atom attached to the B group connecting the A and C moieties, and said I substituents can all be one of the substituents listed above or different listed substituents.

4,085,090
AROMATIC POLYMERS CONTAINING A NITROGEN-CONTAINING RING GROUP, AND PROCESS FOR PREPARATION THEREOF

Shigeyoshi Hara, Hino; Masao Senoo, Ehime; Koh Mori, and Yutaka Taketani, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

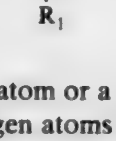
Filed May 29, 1975, Ser. No. 581,933
Claims priority, application Japan, May 31, 1974, 49-60964
Int. Cl.[2] C08G *71/04, 73/18, 73/06*
U.S. Cl. 260—49 **25 Claims**

1. A nitrogen-containing aromatic polymer comprising at least 30 mol%, based on the entire recurring units, of at least one recurring unit of the following formula

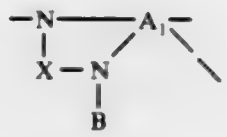


(I)

wherein A_1 is an aromatic group having a valence of (3 + l), and the two nitrogen atoms, Z and W_1 are all bonded to the nuclear carbon atoms of the aromatic group A_1; A_2 is an organic group having a valence of (2 + *m*); Z is $-SO_2-$ or —CO—; *p* is O or 1, and when *p* is O, $-A_1-$ is directly bonded to Y; Y is —O— or

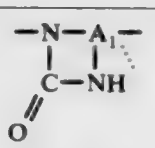


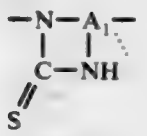
in which R_1 is a hydrogen atom or a monovalent hydrocarbon residue, and the two nitrogen atoms bonded to A_1 are bonded to the nuclear carbon atoms at the ortho-position of the aromatic group A_1; B is a hydrogen atom or a bond with X in which case N-X forms a double bond; said atomic grouping (a)

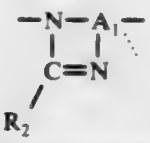


(a)

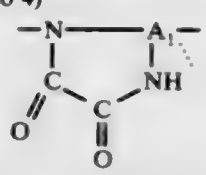
wherein the dotted line represents the presence or absence of a bond forms a 5- or 5-membered ring through one or two carbon atoms selected from the group consisting of:

(a-1)  (benzimidazolone ring)

(a-2)  (benzimidazolthione ring)

(a-3)  (benzimidazole ring)

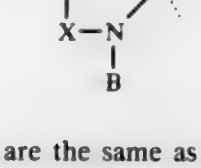
(R_2 is a hydrogen atom or an organic group having a valence of 1 to 4)

(a-4)  (quinoxalidinedione ring);

l and *m* are identical of different and each represent an integer of 0 to 3; when *p* is O, Y is



and one of W_1 groups is bonded to the nuclear carbon atom at the ortho-position of the aromatic group A_1 together with Y, the W_1, Y and A_1 can form a 5-membered or 6-membered ring same as



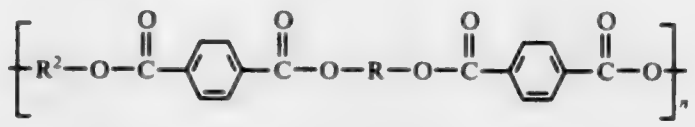
in which all symbols are the same as defined above and the dotted line represents the presence or absence of a bond; and when W_1 does not form the 5- or 6-membered ring, W_1 and W_2 are identical or different and represent at least one group selected from a primary amino group and mono- or di-substituted nitrogen-containing group derived from the primary amino group.

4,085,091
THERMALLY STABLE, RIGID POLYESTERS FROM THERMALLY STABLE, RIGID DIBASIC ACIDS AND AROMATIC DIHYDROXY COMPOUNDS

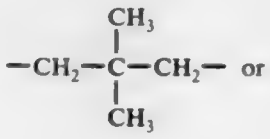
August Henry Frazer, Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1976, Ser. No. 751,086
Int. Cl.[2] C08G *63/12*
U.S. Cl. 260—75 R **9 Claims**

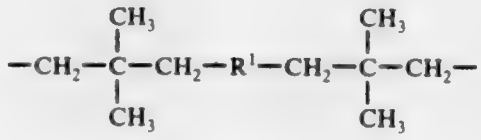
1. Thermally stable, rigid, ordered polyesters of the formula



where R is



or



where

R^1 is an arylene selected from the group consisting of 1,4-phenylenes, 4,4′-biphenylenes and 2,6-naphthylenes, said arylene being unsubstituted or substituted with halo, lower alkyl or phenyl,

R^2 is an arylene selected from the group consisting of 1,4-phenylenes, 4,4′-biphenylenes and 2,6-naphthalenes, said arylene being unsubstituted or substituted with halo, lower alkyl or phenyl, and

n is at least 10.

4,085,092

TRANSPARENT, OPTICALLY CLEAR POLY(LACTONE-URETHANE) INTERLAYERS FOR LAMINATED SAFETY GLASS

Wen-Hsuan Chang, Gibsonia, and Vernon G. Ammons, Glenshaw, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 474,645, May 30, 1974, Published Application No. B 474,645, abandoned. This application Sep. 30, 1976, Ser. No. 728,372

Int. Cl.[2] C08G *18/64, 18/65, 18/75;* **B32B** *27/40*

U.S. Cl. 260—77.5 AN **17 Claims**

1. A non-blooming energy-absorbing polyurethane interlayer comprising the polymerizate of:

(A) an organic polyisocyanate,

(B) a polylactone polyol having a hydroxyl number within the range of 62 to 140 inclusive formed from polymerizing an unsubstituted lactone having 6 to 8 carbon atoms with an organic polyhydroxyl-containing compound selected from the class consisting of:

(1) aliphatic diols free of alkyl substitution and oxyalkylated products of these diols,

(2) a hydroxyl-terminated polyester having a hydroxyl number below 600 formed from an organic polycarboxylic acid containing from 3 to 10 carbon atoms and aliphatic diols free of alkyl substitution and oxyalkylated products of these diols,

(C) a compound containing at least two active hydrogens per molecule reactive with the isocyanate group having a molecular weight less than 250 selected from the class consisting of aliphatic diols free of alkyl substitution, aliphatic triols and mixtures thereof; the equivalent ratio of (A)/(B)/(C) being within the following range: 1.35–4.4/1.000/0.5–3.

17. The polyurethane interlayer of claim **1** which has a mean penetration velocity at 0° F., 70° F. and 120° F. (−18° C., 21° C. and 49° C.) of at least 20 miles per hour (32.180 km/hr) when an approximately 0.030–0.040 inch (0.0762×10^{-2} to 0.1016×10^{-2} m) thick sample of the polyurethane interlayer is laminated to a $\frac{1}{8}$ inch (0.3175×10^{-2} m) thick 12 inch by 12 inch (30.48×10^{-2} m by 30.48×10^{-2} m) float glass sheet to form a bilayer laminate and the laminate held rigid and impacted on the polyurethane side with a 5-pound (22.675×10^{-1} kg) freely falling steel ball.

4,085,093

SULFILIMINES AS PREMATURE VULCANIZATION INHIBITORS

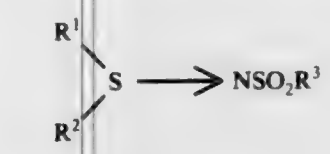
Roger J. Hopper, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 23, 1976, Ser. No. 707,970

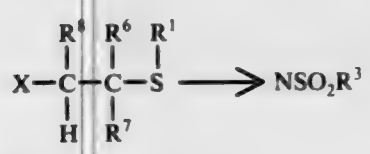
Int. Cl.[2] C07C *143/72, 143/84;* **C08F** *28/00*

U.S. Cl. 260—79.5 P **7 Claims**

1. A composition comprising a sulfur vulcanizable rubber containing in a retarding amount at least one retarder conforming to one of the following structural formulae:

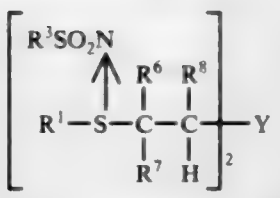


(I)



(II)

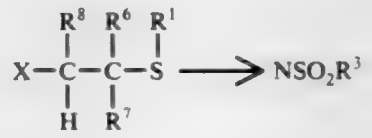
-continued



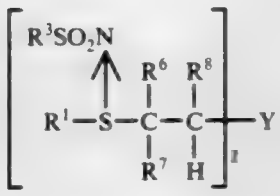
(III)

wherein R^1 and R^3 are selected from the group consisting of primary alkyl radicals (1–20 carbon atoms), secondary alkyl radicals (3–20 carbon atoms), tertiary alkyl radicals (4–20 carbon atoms), cycloalkyl radicals (5–20 carbon atoms), aralkyl radicals (7–20 carbon atoms), and aryl radicals (6–20 carbon atoms), said aralkyl and aryl radicals being optionally substituted on the ring by one or two alkyl (1–4 carbon atoms), alkoxy (1–4 carbon atoms), halo or nitro groups, wherein R^2 is selected from the group consisting of primary alkyl radicals (2–20 carbon atoms), secondary alkyl radicals (3–20 carbon atoms), tertiary alkyl radicals (4–20 carbon atoms) and cycloalkyl radicals (5–20 carbon atoms), wherein R^5 is selected from the group consisting of primary alkyl radicals (2–20 carbon atoms), secondary alkyl radicals (3–20 carbon atoms), and cycloalkyl radicals (5–20 carbon atoms), wherein R^6, R^7, and R^8 are selected from the group consisting of hydrogen and primary alkyl radicals (1–4 carbon atoms), wherein X is selected from the group consisting of —CN, $—CO_2R^3$, $—CO_2NH_2$, $—CO_2NHR^3$, —CO $N(R^1)_,$—$C(O)R^3$ and SO_2R^3, and wherein Y is selected from the group consisting of —C(O)— and $—SO_2—$ radicals, with the proviso that in (II) and (III) when R^1 is a tertiary alkyl radical, R^7 is hydrogen.

7. A compound conforming to one of the following structural formulae:



(II)



(III)

wherein R^1 and R^3 are selected from the group consisting of primary alkyl radicals (1–20 carbon atoms), secondary alkyl radicals (3–20 carbon atoms), tertiary alkyl radicals (4–20 carbon atoms), cycloalkyl radicals (5–20 carbon atoms), aralkyl radicals (7–20 carbon atoms), and aryl radicals (6–20 carbon atoms), said aralkyl and aryl radicals being optionally substituted on the ring by one or two alkyl (1–4 carbon atoms), alkoxy (1–4 carbon atoms), halo or nitro groups wherein R^6, R^7 and R^8 are selected from the group consisting of hydrogen and primary alkyl radicals (1–4 carbon atoms), wherein X is selected from the group consisting of —CN, $—CO_2R^3$, $—CO_2NH_2$, $—CO_2NHR^3$, $—CO_2N(R^1)_2$, $—C(O)R^3$ and SO_2R^3, and wherein Y is selected from the group consisting of —C(O)— and $—SO_2—$ radicals with the proviso that when R^1 is a tertiary alkyl radical, R^7 is hydrogen.

4,085,094

INHIBITING PREMATURE VULCANIZATION OF RUBBERS

John P. Lawrence, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

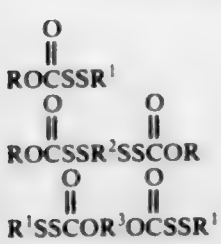
Filed Oct. 1, 1976, Ser. No. 728,693

Int. Cl.[2] C08F *19/20*

U.S. Cl. 260—79.5 B **5 Claims**

1. A composition comprising a vulcanizable diene polymer

containing a sulfenylthiocarbonate selected from the group of retarders having the following structural formulae



(I)

(II)

(III)

wherein R is selected from the group consisting of alkyl radicals having 1 to 20 carbon atoms, cycloalkyl radicals having 5 to 7 carbon atoms, aralkyl radicals having 7 to 11 carbon atoms and aryl radicals having 6 to 10 carbon atoms, the aryl radicals being unsubstituted or substituted with 1 or 2 radicals selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms and the chloro radical; wherein R^1 is a radical described for R with the proviso that when R^1 is an alkyl group it is either primary or secondary; R^2 is selected from the group consisting of alkylene radicals conforming to the following structural formula:

$$-(C_mH_{2m})-(R^4)_X-(C_nH_{2n})-$$

wherein X is 0 or 1, wherein R^4 is selected from the group consisting of —O—, —S— and phenylene, wherein when R^4 is phenylene or X is O, *m* and *n* are positive whole numbers from 1 to 5 and when R^4 is —O— or —S—, *m* and *n* are positive whole numbers from 2 to 5, and arylene radicals having 6 to 12 carbon atoms, and R^3 is an alkylene radical conforming to the following structural formula:

$$-(C_xH_{2x})-(R^5)_Y-(C_yH_{2y})-$$

wherein Y is 0 or 1, wherein R^5 is selected from the group consisting of —O—, —S— and phenylene and wherein *x* and *y* are positive whole numbers from 2 to 4.

4,085,095

CLOTTABLE FIBRINOGEN FREE FACTOR VIII PRODUCT AND PROCESS

Rodger L. Bick, 29 Mast St., Marina Peninsula, Los Angeles, Calif. 90291, and Lajos F. Fekete, 3350 Nevada Ave., Costa Mesa, Calif. 92626, assignors to Rodger L. Bick; Lajos F. Fekete, both of Bakersfield and William L. Wilson, Santa Monica, all of, Calif.

Division of Ser. No. 651,614, Jan. 22, 1976, Pat. No. 4,027,013.
This application Dec. 15, 1976, Ser. No. 750,849
Int. Cl.[2] A23J *1/06;* **A61K** *35/14*
U.S. Cl. 260—112 B **1 Claim**

1. Process comprising:

admixing a clottable fibrinogen lean Factor VIII concentrate containing less than approximately 0.2 milligrams of clottable fibrinogen per unit of Factor VIII with from about 0.5 to 3 units per 1000 milligrams of clottable fibrinogen of a thrombin mimetic reagent that does not significantly impair the potency of said Factor VIII, and allowing the clottable fibrinogen to form a clot in the resultant admixture; and

separating said clot from said resultant admixture and recovering a clottable fibrinogen free Factor VIII concentrate.

4,085,096

HEXAPEPTIDES AND METHODS FOR THEIR PRODUCTION

Francis John Tinney, and Ernest D. Nicolaides, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed Sep. 15, 1976, Ser. No. 723,370
Int. Cl.[2] C07C *103/52;* **A61K** *37/00*
U.S. Cl. 260—112.5 LH **8 Claims**

1. A compound having the name N^{α}-t-butoxycarbonyl-L-tryptophyl-N^{im}-benzyl-L-histidyl-O-benzyl-L-tyrosyl-O-benzyl-L-seryl-L-prolyl-D-alanine methyl ester.

4,085,097

PROCESS FOR THE MANUFACTURE OF CHROMIUM COMPLEXES FROM METALLIZABLE AZO OR AZO METHINE DYES

Fabio Beffa, Riehen; Arthur Bühler, Rheinfelden, both of Switzerland; Peter Donath, Grenzach, Germany; Hans Ulrich Schutz, Basel, Switzerland, and Gerhard Back, Lorrach, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 427,276, Dec. 20, 1973, abandoned.
This application Jan. 7, 1976, Ser. No. 647,268
Claims priority, application Switzerland, Dec. 22, 1972, 18724/72; Nov. 30, 1973, 16848/73
Int. Cl.[2] C09B *45/06, 45/34, 45/48, 55/00*
U.S. Cl. 260—145 A **4 Claims**

1. In a process of preparing a 1:1- or 1:2-chromium complex of a chromatable o-hydroxy-o'-(hydroxy or carboxy) azomethine or o-hydroxy-o'-(hydroxy, methoxy, amino or carboxy) azo dye by reacting said dye with a chroming agent with the liberation of water and the formation of inorganic salts, the improvement comprising carrying out the chroming reaction in the presence of a water insoluble or sparingly soluble organic solvent capable of forming an azeotrope with water, having a boiling point between 80° and 180° C and selected from the group consisting of alcohols with 4 to 6 carbon atoms and aliphatic ketones of up to 8 carbon atoms, removing water from the reaction mixture by azeotropically distilling said reaction mixture, and separating precipitated inorganic salts from the azeotropically distilled reaction mixture to obtain a substantially salt-free organic solution of said complex.

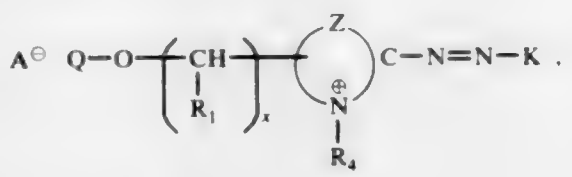
4,085,098

AZO DYES CONTAINING A HETEROCYCLIC RING HAVING A QUATERNIZED NITROGEN ATOM AND AT LEAST ONE OPTIONALLY SUBSTITUTED PHENOXYALKYL OR NAPHTHYLOXYALKYL SUBSTITUENT

Beat Henzi, Neuallschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

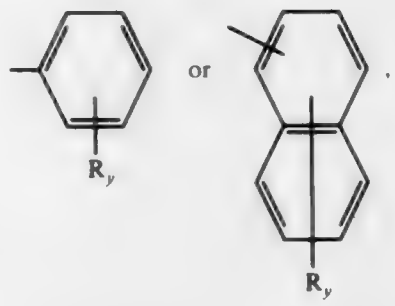
Filed Jul. 30, 1973, Ser. No. 383,877
Claims priority, application Switzerland, Jul. 31, 1972, 11354/72; Dec. 7, 1972, 17824/72; Feb. 5, 1973, 1618/73
Int. Cl.[2] C09B *29/08, 29/36;* **D06P** *3/24, 3/52*
U.S. Cl. 260—157 **20 Claims**

1. A compound of the formula



or a mixture thereof, wherein

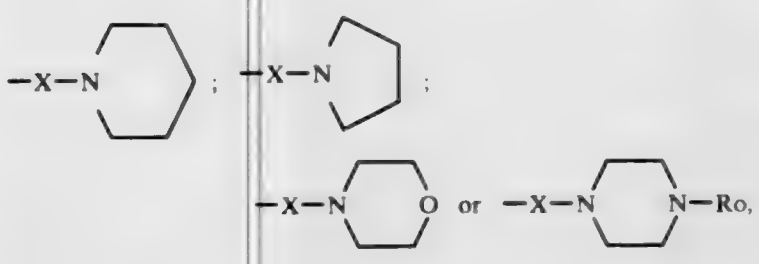
Q is



wherein

each R is independently hydroxy; halo; alkyl; alkyl substituted by halo, hydroxy, cyano, phenyl or phenoxy;

alkoxy; alkoxy substituted by halo, hydroxy, cyano, phenyl or phenoxy; trifluoromethyl; cycloalkyl of 5 or 6 carbon atoms; substituted cycloalkyl of 5 or 6 carbon atoms each substituent of which is independently alkyl; cyano; nitro; phenoxy; naphthyloxy; phenylazo; —CORo; —CO—ORo; —CO—NH—Ro; —NH—CO—Ro; —CO—N(Ro)$_2$; —O—CO—Ro; —O—CO—NH—Ro; —O—CO—N(Ro)$_2$; —SO$_2$—Ro; —SO$_2$—NH—Ro; —SO$_2$—N(Ro)$_2$; —O—SO$_2$—NH—Ro; —O—SO$_2$—N(Ro)$_2$;



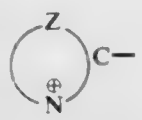
wherein

each Ro is independently alkyl or phenyl, and

each X is independently —CO— or —SO$_2$—, and

y is 0, 1, 2, 3, 4 or 5,

each R_1 is independently hydrogen; alkyl; alkyl substituted by halo, alkoxy or phenoxy; phenyl or cycloalkyl of 5 or 6 carbon atoms,



is thiazolium, isothiazolium, thiadiazolium, triazolium, imidazolium, indazolium, oxazolium, pyridinium, pyrimidinium, pyridazinium, pyrazinium, benzothiazolium, oxadiazolium, quinoxalinium, cinnolinium, quinolinium, phthalazinium, pyrazolium, benzoxazolium or benzimidazolium, or a substituted derivative thereof, wherein each substituent is independently alkyl; alkyl substituted by phenyl, phenoxy, hydroxy, carbamoyl, cycloalkyl of 5 or 6 carbon atoms, cyano or halo; alkoxy; alkoxy substituted by phenyl, phenoxy, hydroxy, carbamoyl, cycloalkyl of 5 or 6 carbon atoms, cyano or halo; alkenyl of 2 to 4 carbon atoms; alkenyl of 2 to 4 carbon atoms substituted by hydroxy, halo, cyano, phenyl or carbamoyl; cycloalkyl of 5 to 7 carbon atoms; substituted cycloalkyl of 5 to 7 carbon atoms each substituent of which is independently alkyl, alkoxy or halo; phenyl; substituted phenyl each substituent of which is independently cyano, nitro, alkyl, alkoxy or halo; phenoxy; substituted phenoxy each substituent of which is independently cyano, nitro, alkyl, alkoxy or halo; —CO—Ro; —CO—ORo; —CO—NH—Ro; —CO—N(Ro)$_2$; —NH—CO—Ro; —SO$_2$Ro; —SO$_2$—NH—Ro; —SO$_2$—N(Ro)$_2$; —NH—SO$_2$—Ro or phenylazo, wherein each Ro is independently alkyl or phenyl,

R_4 is alkyl of 1 to 8 carbon atoms; alkyl of 1 to 8 carbon atoms substituted by halo, hydroxy, phenyl, cycloalkyl of 5 or 6 carbon atoms, alkoxy or carbamoyl; alkenyl of 2 to 8 carbon atoms; alkenyl of 2 to 8 carbon atoms substituted by halo, hydroxy, phenyl, cycloalkyl of 5 or 6 carbon atoms, alkoxy or carbamoyl; alkoxy; alkoxy substituted by halo, hydroxy, phenyl, cycloalkyl of 5 or 6 carbon atoms, alkoxy or carbomoyl; cycloalkyl of 5 or 6 carbon atoms or substituted cycloalkyl of 5 or 6 carbon atoms each substituent of which is independently alkyl, alkoxy, halo or hydroxy,

K is a coupling component radical free of water-solubilizing groups,

x is 1, 2 or 3, and

A$\ominus$ is an anion,

wherein

each alkyl, alkoxy, alkyl moiety of each group and alkoxy moiety of each group independently has 1 to 4 carbon atoms unless otherwise indicated, and

each halo is independently chloro, bromo or iodo.

4,085,099

WATER-INSOLUBLE NITROPHENYLAZOPHENYL COMPOUNDS CONTAINING A TERMINAL —N—(CH$_2$)$_n$—O—CO— OR —CO—O—CH$_2$—CH$_2$—C$_3$F$_5$ GROUP

Jean Marie Louis Leroy, Saint Etienne du Rouvray, and Jacques Pierre Edmond Pechmeze, Paris, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

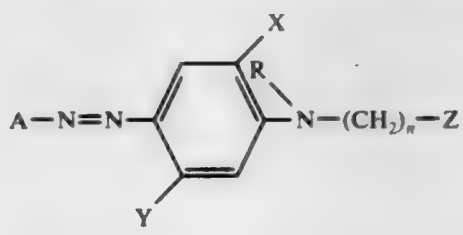
Filed Apr. 3, 1974, Ser. No. 457,681

Claims priority, application France, Apr. 13, 1973, 73.13393

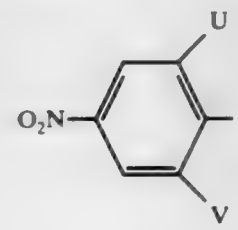
Int. Cl.^{2} C09B *29/00, 29/08, 29/26, 31/04*

U.S. Cl. 260—207 **4 Claims**

1. A dyestuff represented by the structural formula:



in which A is 4-chlorophenyl, 4-cyanophenyl, 2,4-dicyanophenyl, 4-methylsulphonylphenyl, 4-carbomethoxyphenyl, 4-carbethoxyphenyl, 2,4-dichlorophenyl, 4-chloro-2-trifluoromethylphenyl, 2-cyano-4-chlorophenyl, 4-chloro-2-carbomethoxyphenyl, 4-cyano-2,6-dichlorophenyl or:



wherein

U and V are the same or different and each represents hydrogen, chlorine, bromine, nitro, cyano, carbalkoxy containing 2 to 5 carbon atoms or alkylsulphonyl containing 1 to 4 carbon atoms,

X is hydrogen, methyl, methoxy or ethoxy,

Y is hydrogen, chlorine, methyl, methoxy, formylamino, acetylamino, 4,4,5,5,5-pentafluoro-valerylamino, benzoylamino, phenylacetylamino or cinnamoylamino,

Z is —O—CO—CH$_2$CH$_2$C$_2$F$_5$, —CO—O—CH$_2$CH$_2$C$_2$F$_5$ or, provided that Y is —NH—CO—CH$_2$CH$_2$C$_2$F$_5$, hydrogen, hydroxy, cyano, carbalkoxy containing 2 to 5 carbon atoms, acetyloxy, propionyloxy, butyryloxy or valeryloxy,

n is 1,2, or 3, and either

R is alkyl containing 1 to 4 carbon atoms, said alkyl being unsubstituted or substituted by one hydroxy, cyano, carbalkoxy containing 2 to 5 carbon atoms, acetyloxy, propionyloxy, butyryloxy or valeryloxy,

or R is —(CH$_2$)$_n$—Z', Z' being —O—CO—CH$_2$CH$_2$C$_2$F$_5$ or —CO—O—CH$_2$CH$_2$C$_2$F$_5$.

4,085,100

INTERMEDIATE FOR DEPHTHALOYLATION OF AZETIDINONE COMPOUNDS

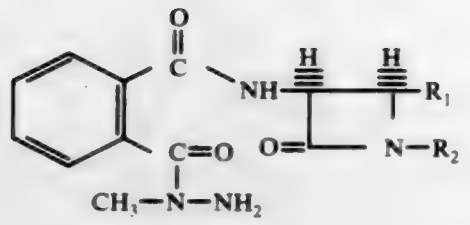
William D. Kingsbury, King of Prussia, Pa., assignor to Smith-Kline Corporation, Philadelphia, Pa.

Filed Nov. 1, 1976, Ser. No. 737,297

Int. Cl.^{2} A61K *31/395;* **C07D** *205/06*

U.S. Cl. 260—239 A **5 Claims**

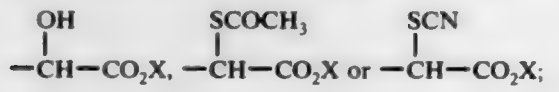
1. The compound of the formula:



in which:

R_1 is —COOY or $—CH_2OZ$;

R_2 is 2,4-dimethoxybenzyl, hydrogen, benzhydryl, trityl,



Y is lower alkyl of 1–6 carbons, benzyl, phenyl or 2,2,2-trichloroethyl;

Z is lower alkyl of 1–6 carbons, alkanoyl of 2–6 carbons, mesyl, tosyl or benzyl; and

X is benzhydryl, 2,2,2-trichloroethyl or p-nitrophenyl.

4,085,101

1,3-DIARYL-2-PYRAZOLINE DERIVATIVES

Alec Victor Mercer, Leeds; Peter Stuart Littlewood, Ilkley; Ivan Joseph Bolton, Bingley, all of England, and Fritz Fleck, Bottmingen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

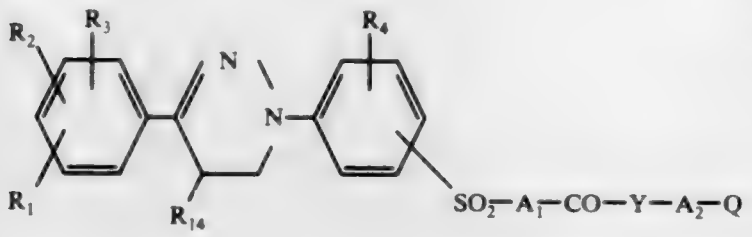
Continuation of Ser. No. 487,844, Jul. 11, 1974, abandoned. This application May 5, 1976, Ser. No. 683,409

Claims priority, application United Kingdom, Jul. 18, 1973, 34111/73

Int. Cl.² C07D *231/42, 231/06, 235/00, 233/00*

U.S. Cl. 260—239.9 **13 Claims**

1. A compound of the formula i,



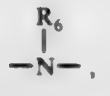
wherein R_1, R_2, R_3 and R_4, independently, are hydrogen, chloro, fluoro, C_{1-4}alkyl or C_{1-4}alkoxy,

R_{14} is C_{1-4}alkyl,

A_1 is unsubstituted C_{1-3}alkylene,

A_2 is unsubstituted C_{1-3}alkylene or phenylene,

Y is —O— or



in which R_6 is hydrogen or C_{1-2}alkyl, and

Q is $—NR_{18}R_{19}$, where R_{18} and R_{19}, independently, are C_{1-4}alkyl, or the quaternary ammonium or acid addition salts thereof.

4,085,102

2-AMINO-8-ARYLIDENO-3,4,5,6,7,8-HEXAHYDRO-4-ARLYPYRIDO[4,3-d]PYRIMIDINES

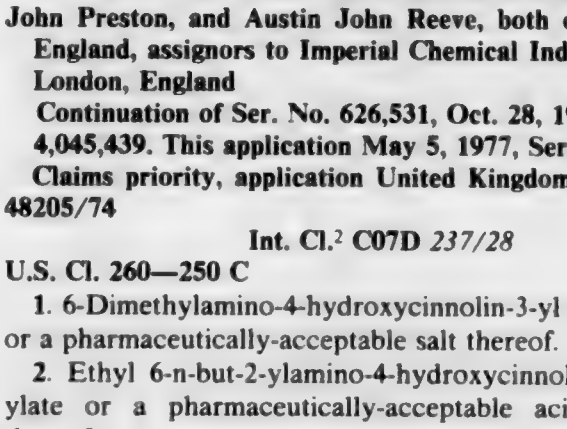
John Krapcho, Somerset, and Chester Frank Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 526,754, Nov. 25, 1974, abandoned. This application Jul. 22, 1977, Ser. No. 817,954

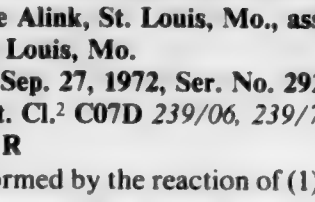
Int. Cl.² C07D *471/04;* A61K *31/505*

U.S. Cl. 542—450 **7 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbons,



wherein *n* is 1, 2, or 3, and alkanoyl of 2 to 5 carbons; R^1 and R^2 are independently selected from the group consisting of hydrogen and straight or branched chain alkyl of 1 to 4 carbons provided that wherein R^1 and R^2 are both alkyl, the alkyl chains are straight of 1 to 4 carbons; R^3 is selected from the group consisting of

pyridyl, and thienyl; and X and X^1 are independently selected from the group consisting of hydrogen, halogen, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, and trifluoromethyl; and the pharmaceutically acceptable acid addition salts thereof.

4,085,103

6-SUBSTITUTED-4-HYDROXYCINNOLIN-3-yl-CARBOXYLIC ACIDS AND ESTERS THEREOF

John Preston, and Austin John Reeve, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 626,531, Oct. 28, 1975, Pat. No. 4,045,439. This application May 5, 1977, Ser. No. 794,114

Claims priority, application United Kingdom, Nov. 7, 1974, 48205/74

Int. Cl.² C07D *237/28*

U.S. Cl. 260—250 C **2 Claims**

1. 6-Dimethylamino-4-hydroxycinnolin-3-yl carboxylic acid or a pharmaceutically-acceptable salt thereof.

2. Ethyl 6-n-but-2-ylamino-4-hydroxycinnolin-3-yl carboxylate or a pharmaceutically-acceptable acid-addition salt thereof.

4,085,104

XANTHATES OF 2,3,4,5-TETRAHYDROPYRIMIDINE

Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Sep. 27, 1972, Ser. No. 292,494

Int. Cl.² C07D *239/06, 239/74*

U.S. Cl. 260—251 R **2 Claims**

1. A Xanthate formed by the reaction of (1) a 2,3,4,5-tetrahydropyrimidine prepared by reacting a carbonyl compound from the group consisting of aldehydes and ketones with ammonia in the presence of carbon disulfide as a catalyst with (2) carbon disulfide.

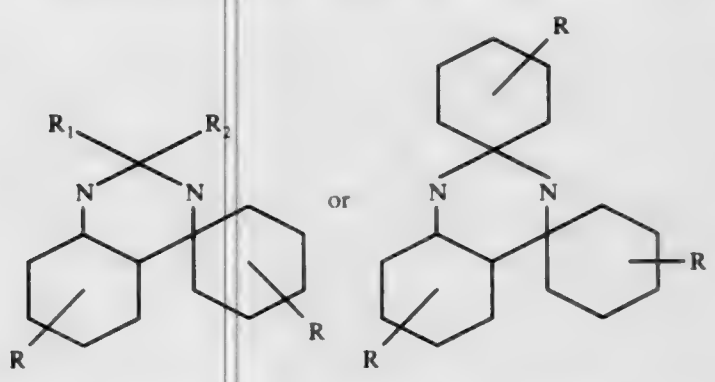
4,085,105

HEXAHYDROPYRIMIDINES

Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Oct. 15, 1973, Ser. No. 406,544
Int. Cl.[2] C07D *239/74*
U.S. Cl. 260—251 A 7 Claims

1. Hexahydropyrimidine having the formula



where each R is hydrogen, alkyl, aryl, cycloalkyl, alkaryl or aralkyl.

4,085,106

BICYCLIC AND TRICYCLIC TRISAMINOMETHANES

Thomas Joseph Atkins, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 7, 1976, Ser. No. 647,643
Int. Cl.[2] C07D *487/14*
U.S. Cl. 260—256.4 F 4 Claims

1. Tricyclic trisaminomethanes of the formula



in which

R^1 and R^2, alike or different, are alkylene of 2 to 6 carbons with at least 2 carbons in the backbone, and

R^8 is alkylene of 3 to 6 carbons with 3 carbons in the backbone.

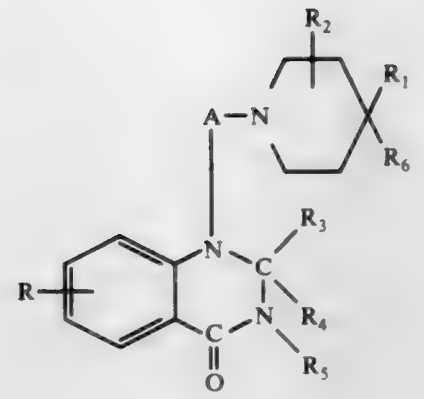
4,085,107

1-HETEROCYCLIC ALKYL-1,2,3,4-TETRAHYDROQUINAZOLINONES

Bola Vithal Shetty, Rockville, Md., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 452,587, Mar. 19, 1974, abandoned, which is a continuation of Ser. No. 108,659, Jan. 21, 1971, abandoned, which is a division of Ser. No. 691,955, Dec. 20, 1967, Pat. No. 3,635,976. This application Aug. 23, 1976, Ser. No. 716,856
Int. Cl.[2] C07D *239/88*
U.S. Cl. 260—256.4 Q 5 Claims

1. A member of the group consisting of (a) a compound of the formula:



wherein

R is H, lower alkyl, hydroxy, lower alkoxy, halogen, amino, nitro, —NHCHO or —$NHCOCH_3$;

A is $(CH_2)_n$, where n is 1–5, or branched chain alkylene of 3–5 carbons;

R_1 is phenyl;

R_2 is H or lower alkyl;

R_3 and R_4 are separately selected from H, lower alkyl, phenyl, phenyl substituted in the ring with OH, NH_2, OCH_3, Cl or —$NHCOCH_3$, phenyl lower alkyl-, and phenyl lower alkyl- substituted in the ring with OH, NH_2, OCH_3 or Cl; or R_3 and R_4 join together with the 2-position carbon atom to which they are attached to form a methylene ring having 3–10 carbons;

R_5 is H, lower alkyl, phenyl, phenyl lower alkyl-, or phenyl substituted in the ring with OH, NH_2, OCH_3, Cl or —$NHCOCH_3$;

R_6 is propionazy;

and (b) a pharmacologically acceptable acid addition salt thereof.

4,085,108

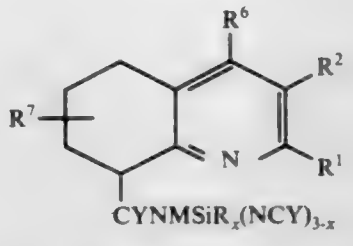
SILICON DERIVATIVES OF TETRAHYDROQUINOLINES

Adrian Charles Ward Curran, North Humberside, and Robin Gerald Shepherd, Maidenhead, both of England, assignors to John Wyeth & Brother Ltd., Taplow, England

Continuation-in-part of Ser. No. 526,565, Nov. 25, 1974, Pat. No. 4,000,142. This application Sep. 8, 1976, Ser. No. 721,263
Claims priority, application United Kingdom, Dec. 17, 1973, 58307/73; Feb. 4, 1974, 4956/74; Mar. 27, 1974, 13514/74; Jul. 12, 1974, 30934/74
Int. Cl.[2] C07D *215/12*
U.S. Cl. 260—283 SC 3 Claims

1. A compound of formula III

(III)



wherein R^1, R^2 and R^6 are independently hydrogen, trifluoromethyl, alkyl of 1 to 6 carbon atoms, phenyl alkyl of 7 to 12 carbon atoms or phenyl, or R^1 and R^2 taken together represent an R^7 substituted alkylene chain, said alkylene chain consisting of 3 to 5 carbon atoms, inclusive; R^7 is hydrogen, alkyl of 1 to 6 carbon atoms, gem-di-n-alkyl in which each alkyl group has 1 to 6 carbon atoms, phenyl alkyl of 7 to 12 carbon atoms or phenyl; with the proviso that when R^1 and R^2 or R^2 and R^6 are both alkyl, they are normal or secondary alkyl; Y is oxygen or sulphur, M is sodium, potassium, lithium, MgCl, MgBr or MgI; each group R is independently alkyl of 1 to 6 carbon atoms, phenyl or phenyl alkyl of 7 to 12 carbon atoms, x is an integer from 0 to 3 inclusive.

4,085,109

PYRIDINE SULFUR FLAVORING AGENTS

Max Winter, Petit-Lancy (Geneva); Fritz Gautschi, Commugny (Vaud); Ivon Flament, and Max Stoll, both of Petit-Lancy (Geneva), all of Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 482,819, Jun. 24, 1974, Pat. No. 4,038,435, which is a division of Ser. No. 243,866, Apr. 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sep. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, Apr. 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, Apr. 30, 1965, abandoned. This application Sep. 22, 1975, Ser. No. 615,748

Int. Cl.[2] C07D *213/32*

U.S. Cl. 260—294.8 E **3 Claims**

1. Pyridine sulfur compounds selected from the group consisting of (pyridyl-2)-thiol acetate and 2-(pyridyl-2)-ethyl furfuryl sulfide.

4,085,110

1,2,3,5,6,7-HEXAHYDRODICYCLOPENTA[b,e]PYRIDINE DERIVATIVES

Adrian Charles Ward Curran, South Cave; Roger Crossley, Reading, and David George Hill, Cookham, all of England, assignors to John Wyeth & Brother, Ltd., Taplow, England

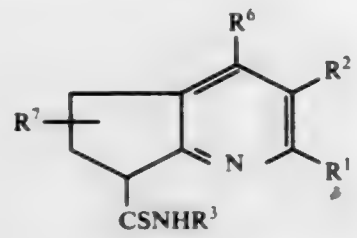
Division of Ser. No. 624,080, Oct. 20, 1975, Pat. No. 4,031,102, which is a continuation-in-part of Ser. No. 600,257, Jul. 30, 1975, which is a continuation-in-part of Ser. No. 460,265, Apr. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 403,289, Oct. 3, 1973, abandoned. This application Dec. 6, 1976, Ser. No. 747,837

Claims priority, application United Kingdom, Oct. 21, 1972, 48595/72; Oct. 15, 1973, 7424/73; Jul. 21, 1973, 34866/73; Aug. 16, 1973, 38701/73; Oct. 17, 1973, 48595/73

Int. Cl.[2] C07D *221/06*

U.S. Cl. 260—294.8 B **3 Claims**

1. A compound of formula I



or an acid addition salt thereof with a pharmaceutically acceptable acid, wherein R^6 is selected from hydrogen and alkyl containing from 1 to 6 carbon atoms, R^3 is hydrogen or alkyl of 1 to 6 carbon atoms, R^1 and R^2 taken together represent a polymethylene chain of 3 carbon atoms, R^7 represents hydrogen or 1 or 2 groups selected from alkyl of 1 to 6 carbon atoms (which may be substituted by alkoxy of 1 to 6 carbon atoms or trifluoromethyl), phenylalkyl wherein the alkyl group has 1 to 6 carbon atoms or phenyl and the phenyl or the phenyl portion of the phenylalkyl group of R^7 may be substituted by alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, halogen, nitro or trifluoromethyl with the provisio that when two akyl R^7 groups are present on the same carbon atom then they are both n-alkyl groups and when two R^7 alkyl groups are present on adjacent carbon atoms they are selected from normal and secondary alkyl groups.

4,085,111

1H-TETRAZOLE DERIVATIVES

Takanori Oe, Nakatsu, and Mineo Tsuruda, Shiidamachi, both of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed May 20, 1975, Ser. No. 579,173

Claims priority, application Japan, May 28, 1974, 49-60632

Int. Cl.[2] C07D *401/14*; A61K *31/535, 31/495, 31/435*

U.S. Cl. 260—296 H **2 Claims**

1. The compound 7-(5-1H-tetrazolyl-5-oxo-5H[1]benzopyrano[2,3-*b*]pyridine and the pharmaceutically acceptable salt thereof.

4,085,112

2-FORMYL-3-ALKYL-BENZOTHIAZOLIUM HALIDE OXIME

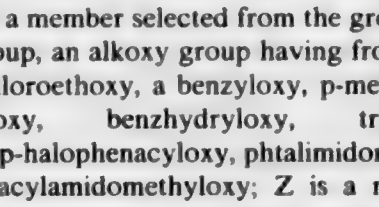
Robert H. Poirier, Columbus, Ohio, and Edward J. Poziomek, Edgewood, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 11, 1962, Ser. No. 223,310

Int. Cl.[2] C07D *275/04*

U.S. Cl. 260—304 C **4 Claims**

1. A compound having the formula:



where R is an alkyl group of 1–4 carbons and X is selected from the group consisting of chlorine, bromine, and iodine.

4,085,113

PROCESS FOR THE PREPARATION OF AZETIDINONE-THIAZOLINE PRECURSORS FOR CEPHALOSPORIN SYNTHESIS

Maurizio Foglio; Ugo Scarponi, both of Milan, and Federico Arcamone, Nerviano (Milan), all of Italy, assignors to Societa' Farmaceutici Italia S.p.A., Milan, Italy

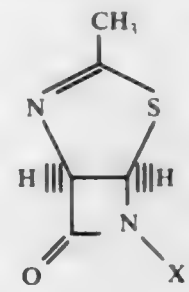
Filed Jul. 23, 1975, Ser. No. 598,260

Claims priority, application United Kingdom, Oct. 3, 1974, 42859/74

Int. Cl.[2] C07D *513/04*

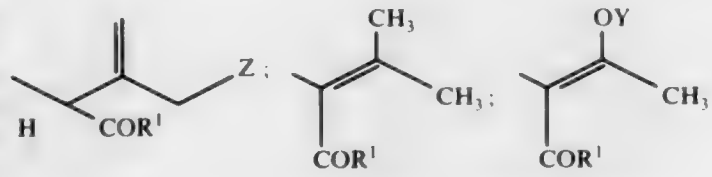
U.S. Cl. 260—306.7 C **1 Claim**

1. A process for the preparation of azetidinonethiazoline precursors for cephalosporin synthesis of the formula:

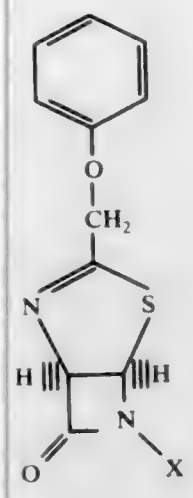


(II)

wherein X is a member selected from the group consisting of a hydrogen atom and of a group of the structure:



in which R^1 is a member selected from the group consisting of a hydroxy group, an alkoxy group having from 1 to 4 carbon atoms, a trichloroethoxy, a benzyloxy, p-methoxybenxyloxy, p-nitrobenzyloxy, benzhydryloxy, triphenylmethoxy, phenacyloxy, p-halophenacyloxy, phtalimidomethoxy, acyloxymethyloxy, acylamidomethyloxy; Z is a member selected from the group consisting of hydrogen, an -O-alkyl, or -O-CO-alkyl group in which the alkyl component contains from 1 to 4 carbon atoms, and Y is a member selected from the group consisting of a hydrogen atom and an alkyl group having from 1 to 4 carbon atoms, which comprises the steps of reducing a compound of formula:



wherein X is defined above by means of zinc dust in the presence of aqueous acetic acid at a temperature and for a time sufficient to convert the phenoxymethyl group to a methyl group while retaining the 2,3 double bond of the thiazoline ring, recovering the product so obtained and purifying it.

4,085,114

1,2-BENZOISOXAZOLE DERIVATIVES AND THE PRODUCTION THEREOF

Ikuo Adachi; Motohiko Ueda, both of Suita, and Sadatoshi Kimoto, Kusatsu, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

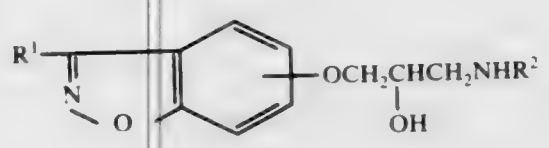
Filed Aug. 9, 1976, Ser. No. 713,044

Claims priority, application United Kingdom, Sep. 9, 1975, 37132/75

Int. Cl.[2] C07D *261/20*

U.S. Cl. 260—307 DA **7 Claims**

1. A compound of the formula:



wherein

R^1 is methyl;

R^2 is isopropyl, tert-butyl, 3,4-dimethoxyphenethyl, or phenoxyethyl;

and the pharmaceutically acceptable acid-addition salts thereof.

4,085,115

CARBOXAMIDO TETRAZOLES

Joachim Augstein; Hugh Cairns, and Norman Harold Rogers, all of Loughborough, England, assignors to Fisons Limited, England

Continuation of Ser. No. 421,282, Dec. 3, 1973, abandoned. This application Apr. 6, 1976, Ser. No. 674,732

Claims priority, application United Kingdom, Dec. 5, 1972, 55997/72; Aug. 13, 1973, 39046/73

Int. Cl.[2] C07D *257/04;* **A61K** *31/41;* **C07D** *493/04*

U.S. Cl. 260—308 D **3 Claims**

1. The compound 4,10-dioxo-5-methoxy-4H,10H-benzo(1,2-b:3,4-b')dipyran-2,8-di[N-(tetrazol-5-yl)]carboxamide and pharmaceutically acceptable salts thereof.

4,085,116

NOVEL CHROMONE DERIVATIVES

Akira Nohara, Kyoto; Toshihiro Ishiguro, Osaka, and Yasushi Sanno, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Mar. 24, 1976, Ser. No. 669,973

Claims priority, application United Kingdom, Apr. 11, 1975, 15061/75

Int. Cl.[2] A61K *31/41;* **C07D** *257/04*

U.S. Cl. 260—308 D **5 Claims**

1. The compound 6-(1-hydroxyethyl)-3-(1H-tetrazol-5-yl)-chromone.

4,085,117

6,7-DISUBSTITUTED-5-(ACYL)BENZOFURAN-2-CARBOXYLIC ACIDS

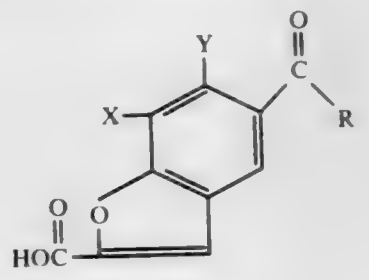
Edward J. Cragoe, Jr., Lansdale; Otto W. Woltersdorf, Jr., Chalfont, and William F. Hoffman, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 18, 1976, Ser. No. 733,840

Int. Cl.[2] C07D *333/24;* **A01N** *9/00*

U.S. Cl. 260—332.2 A **9 Claims**

1. A compound having the formula:



wherein

X is halo, methyl or hydrogen;

Y is halo or methyl and

R is thienyl or a substituted thienyl wherein the substituent is halo or methyl, and

the non-toxic pharmaceutically acceptable salt derivative thereof.

4,085,118

5-(5-HALOGENATEDPHENYL-2-FURANYL)DIHYDRO-2(3H)-FURANONES

Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

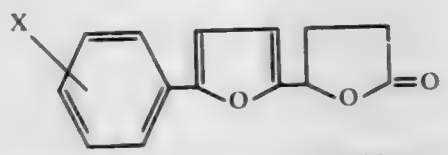
Filed Dec. 17, 1976, Ser. No. 751,279

The portion of the term of this patent subsequent to Jun. 21, 1994, has been disclaimed.

Int. Cl.[2] C07D *307/58*

U.S. Cl. 260—343.6 **6 Claims**

1. A compound of the formula:



wherein X represents 4-bromo, 3,4-dichloro; 4-fluoro; 2-chloro, or 3-chloro.

4,085,119

4-SUBSTITUTED AMINO DERIVATIVES OF OLEANDOMYCIN

Robert F. Myers, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 4, 1977, Ser. No. 765,488

Int. Cl.[2] A61K *31/35;* **C07D** *407/14*

U.S. Cl. 260—343 **7 Claims**

1. An epimeric compound having the formula

4,085,109

PYRIDINE SULFUR FLAVORING AGENTS

Max Winter, Petit-Lancy (Geneva); Fritz Gautschi, Commugny (Vaud); Ivon Flament, and Max Stoll, both of Petit-Lancy (Geneva), all of Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 482,819, Jun. 24, 1974, Pat. No. 4,038,435, which is a division of Ser. No. 243,866, Apr. 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sep. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, Apr. 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, Apr. 30, 1965, abandoned. This application Sep. 22, 1975, Ser. No. 615,748

Int. Cl.[2] C07D *213/32*

U.S. Cl. 260—294.8 E **3 Claims**

1. Pyridine sulfur compounds selected from the group consisting of (pyridyl-2)-thiol acetate and 2-(pyridyl-2)-ethyl furfuryl sulfide.

4,085,110

1,2,3,5,6,7-HEXAHYDRODICYCLOPENTA[b,e]PYRIDINE DERIVATIVES

Adrian Charles Ward Curran, South Cave; Roger Crossley, Reading, and David George Hill, Cookham, all of England, assignors to John Wyeth & Brother, Ltd., Taplow, England

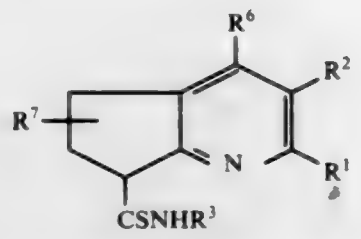
Division of Ser. No. 624,080, Oct. 20, 1975, Pat. No. 4,031,102, which is a continuation-in-part of Ser. No. 600,257, Jul. 30, 1975, which is a continuation-in-part of Ser. No. 460,265, Apr. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 403,289, Oct. 3, 1973, abandoned. This application Dec. 6, 1976, Ser. No. 747,837

Claims priority, application United Kingdom, Oct. 21, 1972, 48595/72; Oct. 15, 1973, 7424/73; Jul. 21, 1973, 34866/73; Aug. 16, 1973, 38701/73; Oct. 17, 1973, 48595/73

Int. Cl.[2] C07D *221/06*

U.S. Cl. 260—294.8 B **3 Claims**

1. A compound of formula I



or an acid addition salt thereof with a pharmaceutically acceptable acid, wherein R^6 is selected from hydrogen and alkyl containing from 1 to 6 carbon atoms, R^3 is hydrogen or alkyl of 1 to 6 carbon atoms, R^1 and R^2 taken together represent a polymethylene chain of 3 carbon atoms, R^7 represents hydrogen or 1 or 2 groups selected from alkyl of 1 to 6 carbon atoms (which may be substituted by alkoxy of 1 to 6 carbon atoms or trifluoromethyl), phenylalkyl wherein the alkyl group has 1 to 6 carbon atoms or phenyl and the phenyl or the phenyl portion of the phenylalkyl group of R^7 may be substituted by alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, halogen, nitro or trifluoromethyl with the provisio that when two akyl R^7 groups are present on the same carbon atom then they are both n-alkyl groups and when two R^7 alkyl groups are present on adjacent carbon atoms they are selected from normal and secondary alkyl groups.

4,085,111

1H-TETRAZOLE DERIVATIVES

Takanori Oe, Nakatsu, and Mineo Tsuruda, Shiidamachi, both of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed May 20, 1975, Ser. No. 579,173

Claims priority, application Japan, May 28, 1974, 49-60632

Int. Cl.[2] C07D *401/14*; A61K *31/535, 31/495, 31/435*

U.S. Cl. 260—296 H **2 Claims**

1. The compound 7-(5-1H-tetrazolyl-5-oxo-5H[1]benzopyrano[2,3-*b*]pyridine and the pharmaceutically acceptable salt thereof.

4,085,112

2-FORMYL-3-ALKYL-BENZOTHIAZOLIUM HALIDE OXIME

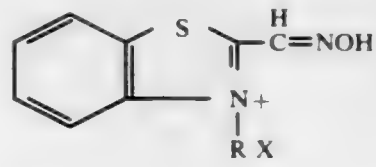
Robert H. Poirier, Columbus, Ohio, and Edward J. Poziomek, Edgewood, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 11, 1962, Ser. No. 223,310

Int. Cl.[2] C07D *275/04*

U.S. Cl. 260—304 C **4 Claims**

1. A compound having the formula:



where R is an alkyl group of 1–4 carbons and X is selected from the group consisting of chlorine, bromine, and iodine.

4,085,113

PROCESS FOR THE PREPARATION OF AZETIDINONE-THIAZOLINE PRECURSORS FOR CEPHALOSPORIN SYNTHESIS

Maurizio Foglio; Ugo Scarponi, both of Milan, and Federico Arcamone, Nerviano (Milan), all of Italy, assignors to Societa' Farmaceutici Italia S.p.A., Milan, Italy

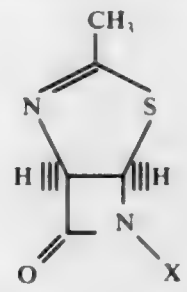
Filed Jul. 23, 1975, Ser. No. 598,260

Claims priority, application United Kingdom, Oct. 3, 1974, 42859/74

Int. Cl.[2] C07D *513/04*

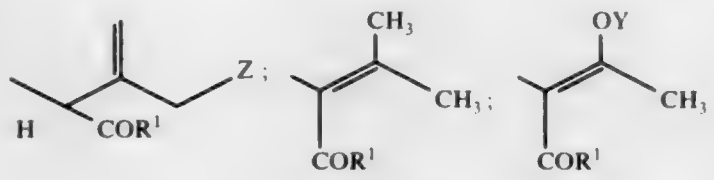
U.S. Cl. 260—306.7 C **1 Claim**

1. A process for the preparation of azetidinonethiazoline precursors for cephalosporin synthesis of the formula:

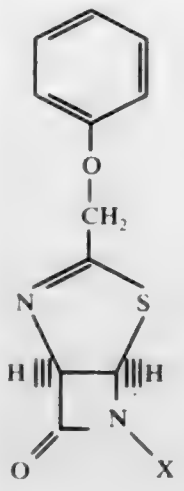


(II)

wherein X is a member selected from the group consisting of a hydrogen atom and of a group of the structure:



in which R^1 is a member selected from the group consisting of a hydroxy group, an alkoxy group having from 1 to 4 carbon atoms, a trichloroethoxy, a benzyloxy, p-methoxybenxyloxy, p-nitrobenzyloxy, benzhydryloxy, triphenylmethoxy, phenacyloxy, p-halophenacyloxy, phtalimidomethoxy, acyloxymethyloxy, acylamidomethyloxy; Z is a member selected from the group consisting of hydrogen, an -O-alkyl, or -O-CO-alkyl group in which the alkyl component contains from 1 to 4 carbon atoms, and Y is a member selected from the group consisting of a hydrogen atom and an alkyl group having from 1 to 4 carbon atoms, which comprises the steps of reducing a compound of formula:



wherein X is defined above by means of zinc dust in the presence of aqueous acetic acid at a temperature and for a time sufficient to convert the phenoxymethyl group to a methyl group while retaining the 2,3 double bond of the thiazoline ring, recovering the product so obtained and purifying it.

4,085,114

1,2-BENZOISOXAZOLE DERIVATIVES AND THE PRODUCTION THEREOF

Ikuo Adachi; Motohiko Ueda, both of Suita, and Sadatoshi Kimoto, Kusatsu, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

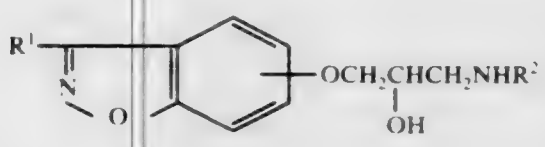
Filed Aug. 9, 1976, Ser. No. 713,044

Claims priority, application United Kingdom, Sep. 9, 1975, 37132/75

Int. Cl.[2] C07D *261/20*

U.S. Cl. 260—307 DA **7 Claims**

1. A compound of the formula:



wherein

R^1 is methyl;

R^2 is isopropyl, tert-butyl, 3,4-dimethoxyphenethyl, or phenoxyethyl;

and the pharmaceutically acceptable acid-addition salts thereof.

4,085,115

CARBOXAMIDO TETRAZOLES

Joachim Augstein; Hugh Cairns, and Norman Harold Rogers, all of Loughborough, England, assignors to Fisons Limited, England

Continuation of Ser. No. 421,282, Dec. 3, 1973, abandoned. This application Apr. 6, 1976, Ser. No. 674,732

Claims priority, application United Kingdom, Dec. 5, 1972, 55997/72; Aug. 13, 1973, 39046/73

Int. Cl.[2] C07D *257/04*; A61K *31/41*; C07D *493/04*

U.S. Cl. 260—308 D **3 Claims**

1. The compound 4,10-dioxo-5-methoxy-4H,10H-benzo(1,2-b:3,4-b')dipyran-2,8-di[N-(tetrazol-5-yl)]carboxamide and pharmaceutically acceptable salts thereof.

4,085,116

NOVEL CHROMONE DERIVATIVES

Akira Nohara, Kyoto; Toshihiro Ishiguro, Osaka, and Yasushi Sanno, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Mar. 24, 1976, Ser. No. 669,973

Claims priority, application United Kingdom, Apr. 11, 1975, 15061/75

Int. Cl.[2] A61K *31/41*; C07D *257/04*

U.S. Cl. 260—308 D **5 Claims**

1. The compound 6-(1-hydroxyethyl)-3-(1H-tetrazol-5-yl)-chromone.

4,085,117

6,7-DISUBSTITUTED-5-(ACYL)BENZOFURAN-2-CARBOXYLIC ACIDS

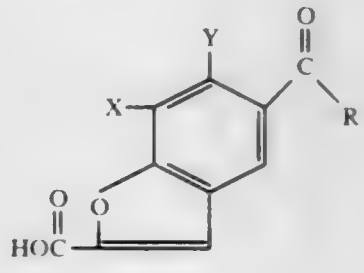
Edward J. Cragoe, Jr., Lansdale; Otto W. Woltersdorf, Jr., Chalfont, and William F. Hoffman, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 18, 1976, Ser. No. 733,840

Int. Cl.[2] C07D *333/24*; A01N *9/00*

U.S. Cl. 260—332.2 A **9 Claims**

1. A compound having the formula:



wherein

X is halo, methyl or hydrogen;

Y is halo or methyl and

R is thienyl or a substituted thienyl wherein the substituent is halo or methyl, and

the non-toxic pharmaceutically acceptable salt derivative thereof.

4,085,118

5-(5-HALOGENATEDPHENYL-2-FURANYL)DIHYDRO-2(3H)-FURANONES

Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

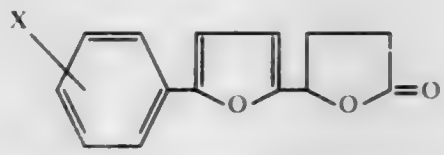
Filed Dec. 17, 1976, Ser. No. 751,279

The portion of the term of this patent subsequent to Jun. 21, 1994, has been disclaimed.

Int. Cl.[2] C07D *307/58*

U.S. Cl. 260—343.6 **6 Claims**

1. A compound of the formula:



wherein X represents 4-bromo, 3,4-dichloro; 4-fluoro; 2-chloro, or 3-chloro.

4,085,119

4-SUBSTITUTED AMINO DERIVATIVES OF OLEANDOMYCIN

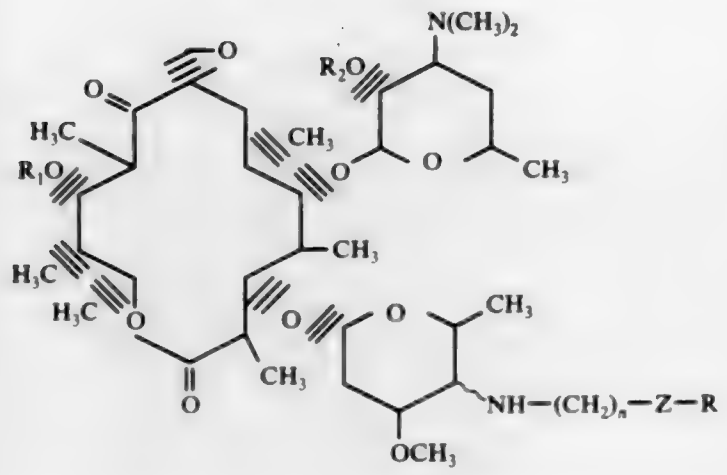
Robert F. Myers, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 4, 1977, Ser. No. 765,488

Int. Cl.[2] A61K *31/35*; C07D *407/14*

U.S. Cl. 260—343 **7 Claims**

1. An epimeric compound having the formula



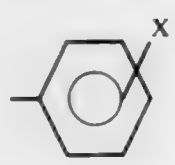
and the pharmaceutically acceptable salts thereof wherein

each of R_1 and R_2 is selected from the group consisting of hydrogen, alkanoyl having from two to three carbon atoms and is selected from the group consisting of acetyl and propionyl;

n is an integer from 1 to 4;

Z is selected from the group consisting of O, S, SO, SO_2, >CO, CHOH and NH; provided that when Z is O, S, SO, SO_2 or NH, *n* is an integer from 2 to 4 and when Z is CO or CHOH, *n* is an integer from 1 to 4;

and R is



wherein X is selected from the group consisting of hydrogen, chloro, bromo, fluoro, alkyl having from one to four carbon atoms, alkoxy having from one to four carbon atoms, trifluoromethyl, $N(CH_3)_2$, cyano, thioalkyl having from one to four carbon atoms and sulfonylalkyl having from one to four carbon atoms.

4,085,120

3(1'-HYDROXY-2'-HYDROXYETHYL)-4-HYDROXY-6-SILYLOXYHEXANOIC ACID 4αLACTONE DERIVATIVES

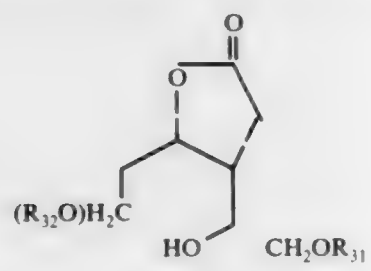
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 676,893, Apr. 14, 1976, Pat. No. 4,048,194. This application May 12, 1977, Ser. No. 796,088

Int. Cl.[2] C07D *307/32*

U.S. Cl. 260—343.6 **2 Claims**

1. A thromboxane intermediate of the formula



wherein R_{32} is Si $(G_1)_3$, wherein G_1 is alkyl of one to 4 carbon atoms, aralkyl of 7 to 12 carbon atoms, phenyl, or phenyl substituted with one or 2 fluoro, chloro or alkyl of one to 4 carbon atoms, with the proviso that the various G_1's are the same or different;

wherein R_{31} is a hydroxy-hydrogen replacing group selected from the group consisting of R_9, R_{10}, and R_{34};

wherein R_9 is an acyl protecting group selected from the group consisting of

a. benzoyl;

b. benzoyl substituted with one to 5 alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 12 carbon atoms, inclusive, or nitro, with the proviso that not more than 2 substituents are other than alkyl, and that the total number of carbon atoms in the substituents does not exceed 10 carbon atoms, with the further proviso that the substituents are the same or different.

c. benzoyl substituted with alkoxycarbonyl of 2 to 5 carbon atoms, inclusive;

d. naphthoyl;

e. naphthoyl substituted with one to 9, inclusive, alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 10 carbon atoms, inclusive, or nitro, with the proviso that not more than 2 substituents on either of the fused aromatic rings are other than alkyl and that the total number of carbon atoms in the substituents on either of the fused aromatic rings does not exceed 10 carbon atoms, with the further proviso that the various substituents are the same or different; and

f. alkanoyl of 2 to 12 carbon atoms, inclusive;

wherein R_{10} is a blocking group selected from the group consisting of

a. tetrahydropyranyl;

b. tetrahydrofuranyl; and

c. a group of the formula
$-C(OR_{11})(R_{12})-CH(R_{13})(R_{14})$,

wherein R_{11} is alkyl of one to 18 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl or phenyl substituted with one to 3 alkyl of one to 4 carbon atoms, inclusive, wherein R_{12} and R_{13} are alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, or when R_{12} and R_{13} are taken together $-(CH_2)_a-$ or $-(CH_2)_b-O-(CH_2)_c$, wherein *a* is 3, 4, or 5, or *b* is one, 2, or 3, and *c* is one, 2, or 3, with the proviso that *b* plus *c* is 2, 3, or 4, with the further proviso that R_{12} and R_{13} may be the same or different, and wherein R_{14} is hydrogen or phenyl; wherein R_{34} is an arylmethyl hydroxy-hydrogen replacing group selected from the group consisting of

a. benzyl,

b. benzyl substituted by one to five alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive, with the further proviso that the various substituents are the same or different,

c. benzhydryl,

d. benzhydryl substituted by one to ten alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive,

e. trityl, and

f. trityl substituted by one to 15 alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive.

4,085,121

PREPARATION OF MALEIC ANHYDRIDE FROM FOUR-CARBON HYDROCARBONS USING TI, P, O, CONTAINING CATALYST

Ernest C. Milberger, Solon; Noel J. Bremer, Kent, and Eunice K. T. Wong, Cleveland, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 4, 1977, Ser. No. 784,190

Int. Cl.[2] C07D *307/60*

U.S. Cl. 260—346.75 **9 Claims**

1. In the process for the production of maleic anhydride by the oxidation of n-butane, n-butenes, 1,3-butadiene or mixture thereof with molecular oxygen in the vapor phase at a reaction temperature of 250° C to 600° C in the presence of a catalyst, the improvement comprising using a vanadium-free catalyst consisting essentially of the oxides of titanium and phosphorus.

4,085,122

PRODUCTION OF MALEIC ANHYDRIDE USING A MIXED-OXIDE OXIDATION CATALYST CONTAINING VANADIUM AND PENTAVALENT PHOSPHORUS

Giancarlo Stefani, Bergamo, Italy, and Pietro Fontana, Schaffhausen, Switzerland, assignors to Lonza, Ltd., Basel, Switzerland

Division of Ser. No. 648,025, Jan. 12, 1976. This application Aug. 3, 1976, Ser. No. 711,213

Claims priority, application Switzerland, Jan. 10, 1975, 266/75

Int. Cl.[2] **C07D** *307/60*

U.S. Cl. 260—346.75 **14 Claims**

1. The process which comprises producing maleic anhydride from C_4-hydrocarbons in the gaseous phase, using a mixed-oxide oxidation catalyst obtained by the process set out hereinafter as an oxidation catalyst, said mixed-oxide oxidation catalyst having, based on the vanadium and pentavalent phosphorus, an atomic ratio of phosphorus to vanadium between 1.05 to 1 and 1.10 to 1, and said mixed-oxide oxidation catalyst having been produced by the process which includes (a) reacting a salt of tetravalent vanadium, dissolved in a non-oxidizing acid aqueous solution, with orthophosphoric acid, a soluble vanadium salt complex forming, (b) isolating complex (b), (c) drying complex (b), (d) putting or forming dried complex (b) into the desired form and (e) subjecting the formed, dried complex to a heat treatment of at least 300° C, said mixed oxide catalyst resulting, the improvement in said catalyst production process which comprises the steps of concentrating aqueous reaction mixture (a) and isolating complex (b) by precipitating said complex by adding water to said concentrated aqueous reaction mixture (a).

4,085,123

1,3-DIAZIDO-2-NITRAZAPROPANE

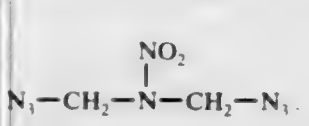
Joseph E. Flanagan, Woodland Hills, and Milton B. Frankel, Tarzana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 21, 1976, Ser. No. 734,495

Int. Cl.[2] **C07C** *117/00*

U.S. Cl. 260—349 **2 Claims**

1. An energetic plasticizer having the composition



4,085,124

OXIDATIVE COUPLING OF ALKYLPHENOLS, ALKOXYPHENOLS AND 1-NAPHTHOLS CATALYZED BY METAL COMPLEXES OF AMINO COMPOUNDS

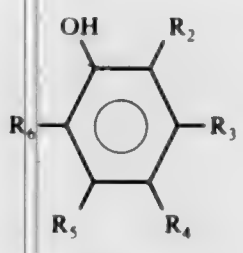
Thomas F. Rutledge, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Nov. 24, 1975, Ser. No. 634,644

Int. Cl.[2] **C07C** *37/00, 45/16, 49/62, 49/72*

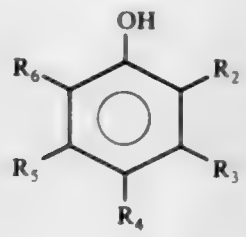
U.S. Cl. 260—396 N **17 Claims**

1. A method of preparing a carbon-carbon coupled condensation product of an "alkylphenol", an "alkoxyphenol" or a "1-naphthol" having one of the following formulas I-V:



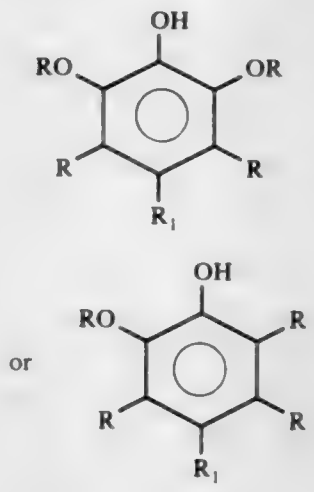
I.

wherein R_2 and R_6 are alkyl groups, R_3 and R_5 are hydrogen or alkyl groups and R_4 is hydrogen or methyl, provided that R_3 and R_5 are not simultaneously tertiary alkyl, said alkyl groups having 1–12 carbon atoms,



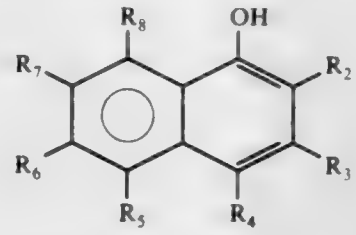
II.

wherein R_2 and R_4 are alkyl groups, R_3 and R_5 are hydrogen or alkyl groups and R_6 is hydrogen, provided that at least one of R_2 and R_4 is a tertiary alkyl group, said alkyl groups having 1–12 carbon atoms,



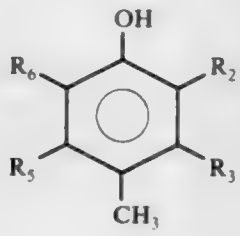
III.

wherein each R is an alkyl group having 1–12 carbon atoms or alkoxy group having 1–6 carbon atoms and R_1 is hydrogen or methyl, provided that both substituents adjacent to R_1 are not simultaneously tertiary alkyl or tertiary alkoxy,



IV.

wherein R_2, R_3 and R_4 are hydrogen, alkyl groups containing from 1 to 5 carbon atoms or alkoxy groups containing 1–6 carbon atoms provided that at least one of R_2 and R_4 is hydrogen and R_5, R_6, R_7 and R_8 are hydrogen, alkyl groups having 1–5 carbon atoms or alkoxy groups having 1–6 carbon atoms, provided that tertiary alkyl or tertiary alkoxy groups are not attached to adjacent carbon atoms of the naphthalene molecule, or



V.

wherein R_3 is hydrogen, an alkyl group having 1–12 carbon atoms or an alkoxy group having 1–6 carbon atoms, R_5 is a primary or secondary alkyl group having 1–5 carbon atoms and R_2 and R_6 are alkyl groups having 1–12 carbon atoms or alkoxy groups having 1–6 carbon atoms, by an oxidative coupling reaction said method comprising contacting an aqueous mixture of the phenol or naphthol with oxygen or oxygen containing gas in the presence of a catalyst system consisting essentially of a cupric, manganous, cobaltous, or ferric metal complex of an amine selected from the class consisting of:

an "aliphatic hydroxy amine",
a heterocyclic hydroxy amine, and
an "aliphatic diamine"
and a sufficient amount of an alkaline material selected from the group consisting of alkali metal hydroxides, alkali metal carbonates and alkali metal bicarbonates to maintain the pH in a range of about 5–10 during the oxidative coupling reaction.

4,085,125

9-THIA-, 9-OXOTHIA-, AND 9-DIOXOTHIA-11,12-SECO-PROSTAGLANDINS AND PROCESSES

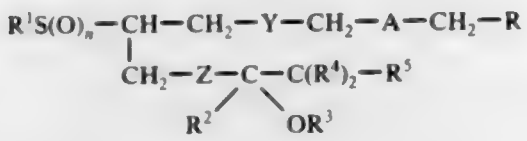
Edward J. Cragoe, Jr.; John B. Bicking, and Robert L. Smith, all of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 669,006, Mar. 22, 1976, Pat. No. 4,018,802, which is a continuation-in-part of Ser. No. 566,566, Apr. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 483,178, Jun. 25, 1974, abandoned. This application Nov. 22, 1976, Ser. No. 743,824

Int. Cl.[2] C07C *147/14;* C11D *1/28*

U.S. Cl. 260—402 **15 Claims**

1. The compound of the formula



wherein
R is carboxy, a carboxy salt, or a carboxy ester;
A is methylene;
Y is selected from the group consisting of ethylene, vinylene, and ethynylene;
R^1 is selected from the group consisting of methyl, ethyl, 2-hydroxyethyl, 2-(loweralkoxy)ethyl, and vinyl;
n is 0, 1, or 2;
Z is selected from the group consisting of ethylene, vinylene, and ethynylene;
R^2 is hydrogen or methyl;
R^3 is hydrogen;
R^4 is hydrogen or methyl;
R^5 is OR^{5a} wherein R^{5a} is phenyl in which the phenyl ring can be substituted with one or two substituents selected from the group consisting of halogen, methyl, methoxy, or trifluoromethyl.

4,085,126

FATTY ALKANOLAMIDE DETERGENT COMPOSITIONS

Robert B. McConnell, and Douglas W. Keuer, both of Janesville, Wis., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 17, 1976, Ser. No. 724,033

Int. Cl.[2] C09F *5/00*

U.S. Cl. 260—404 **6 Claims**

1. A fatty alkanolamide composition prepared by reacting substantially equimolar amounts of a C_{12}–C_{16} saturated fatty acid and an alkylene oxide selected from the group consisting of ethylene oxide and 1,2-propylene oxide and thereupon transesterifying a mole of the resultant alkylene glycol ester with about a mole of diethanolamine or monoethanolamine.

4,085,127

METHOD FOR PRODUCING ALDEHYDE ACIDS BY SELECTIVE OZONIZATION OF CYCLO-OLEFINS

Francesco Siclari, Barlassina, and Pietro Paolo Rossi, Garlasco, both of Italy, assignors to SNIA Viscosa Societa' Nazionale Industria Application Viscosa S.p.A., Milan, Italy

Filed Jul. 10, 1974, Ser. No. 486,992

Claims priority, application Italy, Jul. 11, 1973, 26479A/73

Int. Cl.[2] C11C *1/00*

U.S. Cl. 260—413 **22 Claims**

1. A method for the production of aldehyde acids and their unsaturated derivatives from cycloolefins, comprising
subjecting a solution containing a cyclo-olefin in a concentration of from about 10 to 40% by weight, and having more than one unsaturation, to a selective ozonization step in the presence of a solvent mixture of at least one non-polar solvent and at least one polar solvent, whereby the mono-ozonide of the said cyclo-olefin is obtained, and
subjecting said mono-ozonide to at least one transposition step, to obtain an omegaformyl-alkenoic acid,
said mono-ozonide, as soon as it forms, reacting with said polar solvent to produce a heavy phase which is insoluble in said solution, and which separates therefrom during said ozonization step, whereby not more than one olefinic unsaturation is removed by said ozonization step, and
said solvent mixture further including an organic acid anhydride, with the weight ratio of said anhydride to the polar solvent being set at between 1:2 and 2:1.

20. A method according to claim 1, characterized in that the said cyclo-olefin consists of an unsaturated cyclo-olefin selected from the group consisting of 1,5,9-cyclodecatriene (in all of its forms or a mixture of the stereoisomeric forms) of 1,5-cyclo-octadiene and 1,5-cyclodecadiene, and the omega-formyl-alkenoic acid is selected from the group consisting of 11-formyl-4,8-undecadienoic acid, 7-formyl-4-heptenoic acid and 9-formyl-4-nonenoic acid and 9-formyl-6-nonenoic acid.

4,085,128

CYCLIC PHOSPHAMIDE DERIVATIVES

Akira Takamizawa, and Tsuyoshi Iwata, both of Ibaraki, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

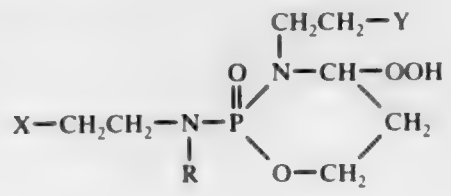
Continuation-in-part of Ser. No. 629,128, Nov. 5, 1975, abandoned. This application Nov. 2, 1976, Ser. No. 737,983

Claims priority, application Japan, Nov. 20, 1974, 49-133257

Int. Cl.[2] C07C *143/68;* A61K *31/255*

U.S. Cl. 260—456 A **2 Claims**

1. A compound of the general formula:



wherein X represents a halogen atom, Y represents a lower alkanesulfonyloxy of 1–5 carbon atoms, and R represents a lower alkyl of 1–5 carbon atoms.

4,085,129

PROCESS FOR THE PREPARATION OF CHLOROFORMIC ACID ARYL ESTERS AND CYCLIC CARBONATES

Günther Semler, Kelkheim, Taunus, and Georg Schaeffer, Hofheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 543,340, Jan. 23, 1975, abandoned, which is a continuation of Ser. No. 265,557, Jun. 23, 1972, abandoned. This application Sep. 28, 1976, Ser. No. 727,332

Claims priority, application Germany, Jun. 25, 1971, 2131555; Mar. 20, 1972, 2213408

Int. Cl.[2] C07C *68/02*

U.S. Cl. 260—463 11 Claims

1. A process for preparation of chloroformic acid aryl esters in high yields comprising the steps of: forming a liquid phase reaction mixture in a reaction zone, said reaction mixture comprising a phenol or naphthol and from 0.5 to about 20 mol percent of said phenol or naphthol of an N,N-dialkyl acid amide; introducing phosgene into said liquid phase reaction mixture in said reaction zone and reacting said phosgene and said phenol or naphthol at a temperature of 30° to 180° C and at a pressure of from atmospheric pressure to six atmospheres; continuously venting gases from said reaction zone during the course of said reaction, said vented gases including unreacted phosgene and by-product hydrogen chloride, and thereby maintaining a molar ratio of phosgene to phenol or naphthol, in said liquid phase reaction mixture, in the range of from 0.01 to 0.95, until 80% of said phenol or naphthol has been converted; and thereafter removing the liquid phase reaction mixture from the said reaction zone and recovering the chloroformic acid aryl esters therein.

4,085,130

AMMONIALYTIC CLEAVAGE OF LACTAMS TO ω-AMINONITRILES

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

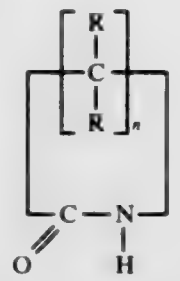
Continuation-in-part of Ser. No. 856,807, Sep. 10, 1969, abandoned. This application Jan. 9, 1974, Ser. No. 431,857

Int. Cl.[2] C07C *120/08*

U.S. Cl. 260—465.2 16 Claims

1. A method for the production of ω-aminonitriles which comprises contacting at least one lactam with a catalyst comprising Type A molecular sieves, Type X molecular sieves, or mordenites, in the presence of at least one mole of ammonia per mole of lactam converted and under reaction conditions including temperatures and pressures sufficient to effect ammonialytic cleavage of said lactam to said ω-aminonitrile, wherein said reaction temperatures in the range of about 250° to 750° C.,

wherein said lactam is represented by



wherein R is hydrogen, alkyl, cycloalkyl, aryl, or combination thereof, having up to about 8 carbon atoms per R group and a maximum of about 10 carbon atoms in all R groups,

wherein *n* is an integer of 3 to 19 when said catalyst comprises said Type A molecular sieve or said mordenite,

and wherein *n* is an integer of 3 to 9 when said catalyst comprises said Type X molecular sieves.

4,085,131

SURFACE TREATMENT

Martin B. Pearlman, 78-05 141st Street, New York, N.Y. 11367

Division of Ser. No. 428,701, Dec. 27, 1973, Pat. No. 3,968,313, and a continuation-in-part of Ser. No. 141,929, May 10, 1971, Pat. No. 3,796,608, which is a continuation-in-part of Ser. No. 630,187, Apr. 12, 1967, Pat. No. 3,578,508. This application Jul. 1, 1976, Ser. No. 701,628

Int. Cl.[2] B01J *23/72, 23/74, 23/86*

U.S. Cl. 252—470 9 Claims

1. Process for the production of products carrying surface deposits of catalytic heavy metal oxides which comprises leaching fine granular or powdered heavy metal oxide ore with aqueous medium to form an aqueous dispersion, applying said dispersion to a solid inorganic support and drying and heating to form said catalytic surface deposit on said support, said ore comprising chromite ore, magnetite, molybdenite, yellow ochre or copper ore.

4,085,132

PROCESS FOR THE PRODUCTION OF HYDROXYALKYLPHENYL DERIVATIVES

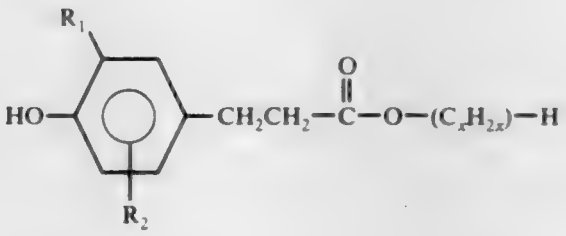
Kyong P. Park, Cranston, and Anthony F. Vellturo, North Kingstown, both of R.I., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 505,303, Sep. 12, 1975, abandoned, which is a continuation of Ser. No. 318,810, Dec. 27, 1972, abandoned. This application Jun. 24, 1975, Ser. No. 589,984

Int. Cl.[2] C07C *69/54, 69/76*

U.S. Cl. 560—75 4 Claims

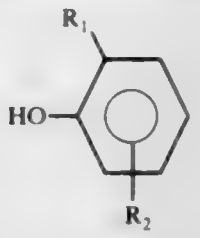
1. In the process for the production of a compound having the formula



wherein

R_1 and R_2 independently of each other represent an alkyl group having from 1 to 6 carbon atoms and

x has a value from 6 to 30, inclusively, which comprises reacting methyl acrylate with a phenol of the formula



and thereafter with a monohydric alcohol of the formula

$$HO—(C_xH_{2x})—H \qquad \text{Ia.}$$

in the presence of an alkaline catalyst, the improvement which consists essentially of

a. gradually adding methyl acrylate to the reaction mixture which comprises said phenol, monohydric alcohol and a catalyst, without isolating the intermediate.

4,085,133

PREPARATION OF MONOPEROXYPHTHALIC ACID

Robert G. Briody, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1976, Ser. No. 744,561
Int. Cl.[2] C07C *179/10*
U.S. Cl. 260—502 R 4 Claims

1. A process for preparing thermally stable, solid monoperoxyphthalic acid comprising reacting, in a liquid halogenated hydrocarbon reaction medium, phthalic anhydride with an aqueous hydrogen peroxide solution having a hydrogen peroxide content of at least 65 percent by weight at a molar ratio of hydrogen peroxide to phthalic anhydride of at least 1.2 to 1, said liquid halogenated hydrocarbon being a solvent for the phthalic anhydride and a non-solvent for the monoperoxyphthalic acid, precipitating monoperoxyphthalic acid and recovering a solid monoperoxyphthalic acid having a decomposition rate of less than 3.0 weight percent per day at 60° C., said reaction being conducted with agitation at a temperature of between 35° C. and 70° C., in the absence of a basic catalyst and in the absence of the addition of acids or bases after completion of the reaction.

4,085,134

AMINO-PHOSPHONIC-SULFONIC ACIDS

Derek Redmore, Ballwin, and Frederick T. Welge, Affton, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 15, 1974, Ser. No. 442,778
Int. Cl.[2] C07F *9/38*
U.S. Cl. 260—502.5 10 Claims

1. A compound which is an amine containing the following nitrogen-bonded groups:

$$-(CH_2)_3SO_3M$$

$$-\underset{\displaystyle R'}{\overset{\displaystyle R}{\overset{|}{C}}}-P(OM)_2 \quad (\text{with } O \text{ double-bonded to } P)$$

where R and R′ are hydrogen or an alkyl or aryl group and M is hydrogen or a salt moiety, the nitrogen to which the groups are bonded being amino nitrogen of the amine, the salt moiety being an alkali metal, an alkaline earth metal, ammonium or ammonium form of an amine, the compound in acid form having the

$$-(CH_2)_3SO_3H \quad \text{and} \quad -\underset{\displaystyle R'}{\overset{\displaystyle R}{\overset{|}{C}}}-P(OH)_2 \quad (\text{with } O \text{ double-bonded to } P)$$

as the sole acidic groups, the compound with hydrogen in place of said groups being an amine in which said nitrogen is amino nitrogen.

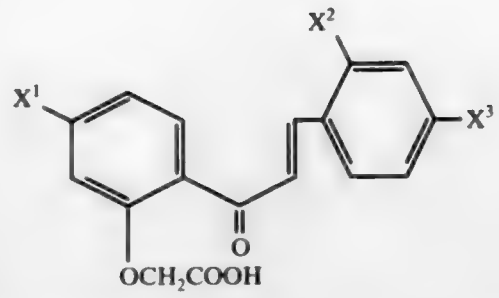
4,085,135

2-(CARBOXYMETHOXY)-CHALCONES

Kazuaki Kyogoku, Tokyo; Katsuo Hatayama, Omiya; Sadakazu Yokomori, Ageo; Jiro Sawada, and Ichiro Tanaka, both of Tokyo, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1977, Ser. No. 767,974
Claims priority, application Japan, Feb. 13, 1976, 51-14578
Int. Cl.[2] C07C *65/22*
U.S. Cl. 260—520 C 7 Claims

1. A compound of the formula



wherein one or two of X^1, X^2 and X^3 are 3-methyl-2-butenyloxy, and the other or others of X^1, X^2 and X^3 are hydrogen.

4,085,136

OPTICALLY-ACTIVE 1-ARYLOXY-2-PROPANOL INTERMEDIATES OF (S)-ABSOLUTE CONFIGURATION

Howard Tucker, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 520,845, Nov. 4, 1974, abandoned. This application Jun. 9, 1976, Ser. No. 694,323
Claims priority, application United Kingdom, Nov. 9, 1973, 52077/73
Int. Cl.[2] C07C *103/26*
U.S. Cl. 260—559 D 6 Claims

1. An optically-active compound having the (S)-absolute configuration and having the formula:-

$$R^1OCH_2.CHOH.CH_2OY$$

wherein R^1 is phenyl which bears a substituent selected from the group consisting of:

$$R^2R^3N\text{-}CO\text{-}A\text{-}$$

and

$$R^2R^3N\text{-}CO\text{-}A^1\text{-}O\text{-}$$

wherein A is a direct link, or alkylene of 1 to 6 carbon atoms, or alkenylene of 2 to 6 carbon atoms; wherein A^1 is alkylene of 1 to 6 carbon atoms; wherein R^2 is hydrogen or alkyl of up to 6 carbon atoms; and wherein R^3 is hydrogen or alkenyl, cycloalkyl, hydroxyalkyl or alkoxyalkyl each of up to 6 carbon atoms, or alkyl, aryl, aralkyl or aralkenyl each of up to 10 carbon atoms; and wherein Y is α-arylalkyl, or, tertiary-alkyl or.

4,085,137

POLY(PERFLUOROALKYLENE OXIDE) DERIVATIVES

Ronald A. Mitsch, Little Canada, and Joseph La Mar Zollinger, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 373,200, Jun. 25, 1973, which is a continuation-in-part of Ser. No. 805,885, Mar. 10, 1969, abandoned, and Ser. No. 70,540, Sep. 8, 1970, Pat. No. 3,810,874, which is a continuation-in-part of Ser. No. 805,885,. This application Aug. 28, 1975, Ser. No. 608,717
Int. Cl.[2] C07C *103/147*
U.S. Cl. 260—561 HL 4 Claims

1. Linear hydroxy-terminated poly(perfluoroalkylene oxide) compounds having a number average molecular weight of 500 to 10,000 and the general formula

$$R—FC_2O—(CF_2CF_2O)_m(CF_2O)_nCF_2—R'$$

where R and R′ are $—C(O)N(R'')CH_2CH_2OH$ where R″ is hydrogen, lower alkyl of 1 to 8 carbon atoms, or ethylol, where *m* and *n* designate randomly distributed perfluoroethyleneoxy and perfluoromethyleneoxy backbone subunits, respectively, the ratio *m/n* being 0.2/1 to 5/1, said compounds having a glass transition temperature lower than −78° C and polymerizable to polyurethanes having recurrent backbone

units of the formula $—CF_2O—(CF_2CF_2O)_m(CF_2O)_n—CF_2—$ which impart to the polyurethanes a glass transition temperature lower than −78° C.

4,085,138

PROCESS FOR OPTICAL RESOLUTION OF CRUDE TRANS-1,2-CYCLOHEXANEDIAMINE

Thomas A. Whitney, Roselle, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Aug. 3, 1976, Ser. No. 711,138
Int. Cl.[2] C07C *87/38, 87/40*
U.S. Cl. 260—563 R **19 Claims**

1. A process for the optical resolution of racemic trans-cyclohexanediamine from a crude feedstream mixture of amines containing said racemic trans-cyclohexanediamine, said process comprising the steps of preparing a substantially aqueous solution containing a quantity of the crude amine feedstream, d- or l-tartaric acid, depending upon which optical isomer is desired, a second acid selected from the group consisting of C_1 to C_7 monocarboxylic acids, C_3 to C_8 α, Ω difunctional carboxylic acids, HCl and mixtures thereof, and sufficient substantially aqueous medium to insure dissolution of the tartrate salts, heating the resulting mixture to a temperature sufficient to achieve dissolution of all components, seeding the hot mixture with a crystal of optically pure (+)—DACH•l-tartrate or (−)—DACH•d-tartrate, depending upon which optically active species is desired, cooling the mixture to room temperature, and separating the crystals which come out of solution.

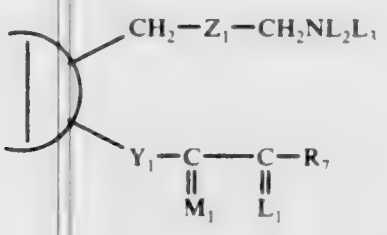
4,085,139

2-DECARBOXY-2-AMINO-METHYL-PGE AND PGD ANALOGS

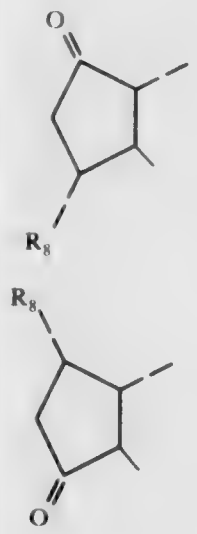
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 645,276, Dec. 29, 1975, abandoned. This application Aug. 30, 1976, Ser. No. 719,053
Int. Cl.[2] C07C *87/24*; A61K *31/13, 31/135*
U.S. Cl. 260—563 R **706 Claims**

1. A prostaglandin analog of the formula

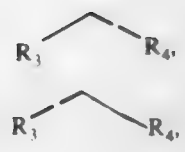


wherein D is

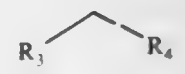


or

wherein R_8 is hydrogen or hydroxy;
wherein L_1 is



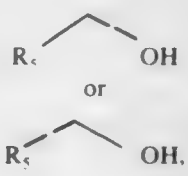
or a mixture of



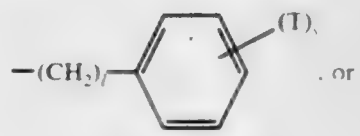
and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the provisio that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;
wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive;
wherein M_1 is



wherein R_5 is hydrogen or methyl;
wherein R_7 is
(1) $—(CH_2)_m—CH_3$,
(2) cis—CH=CH—CH_2CH_3,

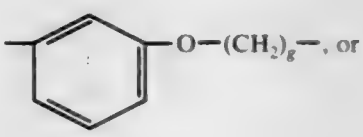


(3)



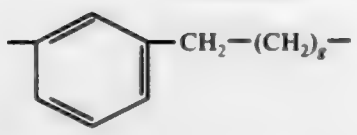
(4)

wherein l is zero to three, inclusive, wherein m is one to 5, inclusive, s is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, or alkoxy of one to 3 carbon atoms, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;
wherein Y_1 is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) $—CH_2CH_2—$, or
(4) —C≡C—; and
wherein Z_1 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) $—(CH_2)_3—(CH_2)_g—CH_2—$,
(5) $—(CH_2)_3—(CH_2)_g—CF_2—$,
(6) $—CH_2—O—CH_2—(CH_2)_g—CH_2—$,
(7) $—(CH_2)_2—O—(CH_2)_g—CH_2—$,
(8) $—(CH_2)_3—O—(CH_2)_g—$,



(9)

-continued



(10)

wherein *g* is zero, one, two, or three.

4,085,140

CARBODIIMIDES

Arthur Ibbotson, Manchester, England, assignor to Imperial Chemical Industries Limited, United Kingdom

Filed Aug. 23, 1977, Ser. No. 827,097

Claims priority, application United Kingdom, Sep. 22, 1976, 39266/76

Int. Cl.[2] C07C *119/055*

U.S. Cl. 260—566 R **6 Claims**

1. In a process for the conversion of isocyanate groups to carbodiimide groups which comprises contacting a compound containing isocyanate groups with a cyclic phosphorus compound which catalyses said conversion the improvement which comprises carrying out said conversion in the presence of a nitrogeneous base selected from 1,4-diazobicyclo-[2,2,2]-octane, N,N-dimethylcyclohexylamine, triethylamine, pyrrolizidine and tetramethylguanidine.

4,085,141

PROCESS FOR THE PREPARATION OF ANILINES META-SUBSTITUTED BY CHLORINE

Karlfried Wedemeyer, Cologne; Wolfgang Kiel, Schildgen, and Werner Evertz, Monheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

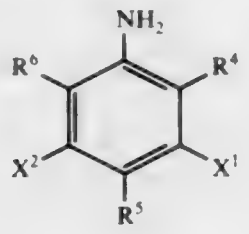
Filed Jan. 9, 1976, Ser. No. 647,967

Claims priority, application Germany, Jan. 27, 1975, 2503187

Int. Cl.[2] C07C *87/50, 87/52, 93/14*

U.S. Cl. 260—570 R **30 Claims**

1. A process for the preparation of a chlorine meta-substituted aniline of the formula



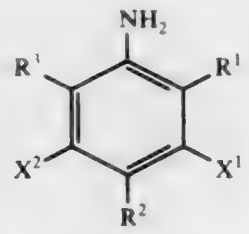
(II)

wherein

X^1 and X^2 are identical or different and represent chlorine, hydrogen or an optionally substituted alkyl, aryl, aralkyl, alkoxy or aralkoxy radical, at least one of said radicals X^1 or X^2 being chlorine;

R^4, R^5 and R^6 each independently being hydrogen or an optionally substituted alkyl, aryl, aralkyl, alkoxy or aryloxy radical

which comprises contacting a chloroaniline of the formula



(I)

wherein

X^1 and X^2 have the previously assigned significance;

R^1, R^2 and R^3 are each independently chlorine, hydrogen or an optionally substituted alkyl, aryl, aralkyl, alkoxy or aryloxy, at least one of said R^1, R^2 or R^3 members being chlorine, with hydrogen in a solution in an acid medium in the presence of a noble metal.

4,085,142

2-ARYL-6-ARYLIDENE-1-(SUBSTITUTED AMINOALKOXY)-1-CYCLOHEXENES

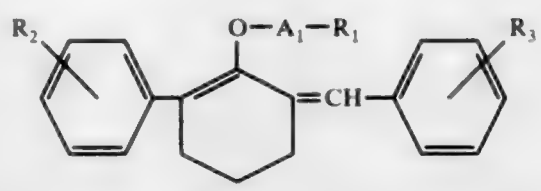
Chester F. Turk, Kendall Park, and John Krapcho, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 25, 1977, Ser. No. 771,867

Int. Cl.[2] C07C *93/06*

U.S. Cl. 260—570.5 CA **9 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein

R_1 is alkylamino or dialkylamino;

R_2 and R_3 are the same or different and are hydrogen, chloro, fluoro, alkyl, alkoxy or trifluoromethyl; and

A_1 is alkylene having 2 to 5 carbon atoms; wherein the terms alkyl and alkoxy refer to groups having 1 to 8 carbon atoms.

4,085,143

MANUFACTURE OF α,β-UNSATURATED ACIDS AND ANHYDRIDES

Jerry D. Holmes, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 5, 1975, Ser. No. 583,937

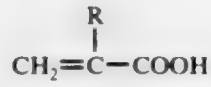
Int. Cl.[2] C07C *51/00, 51/54*

U.S. Cl. 260—515 R **15 Claims**

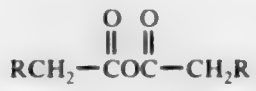
1. A process for producing an α,β-unsaturated acid anhydride of the type



and an α,β-unsaturated acid of the type



which comprises the steps of reacting an anhydride having the formula



wherein R can be hydrogen or an alkyl, aralkyl, or aryl hydrocarbon moiety of from 1 to 10 carbon atoms with formaldehyde or a formaldehyde yielding material in the vapor phase at a temperature of from about 190° C. to about 400° C. in the presence of an oxide of a metal selected from the group consisting of Ag, U, Zn, Ti, Zr, Th, Ta, Nb, Mo, W, and Sn, supported on an inert support.

4,085,144
N,N'-BRIDGED-BIS(2-ALKYL-2-HYDROXYETHYLAMINE) DIOXIDES

Guy D. Diana, Stephentown, and Royal A. Cutler, Sand Lake, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 582,646, Jun. 2, 1975, Pat. No. 4,022,833, which is a division of Ser. No. 332,267, Feb. 14, 1973, Pat. No. 3,928,427, which is a continuation-in-part of Ser. No. 123,097, Mar. 10, 1971, abandoned. This application Nov. 8, 1976, Ser. No. 739,447

Int. Cl.[2] C07C *91/12, 91/14;* A61K *31/13*

U.S. Cl. 260—584 R 9 Claims

1. N,N'-(X)-bis[N-(R')-2-(R)-2-(ZO)-ethylamine] N,N'-dioxide wherein:

R is alkyl of three to fifteen carbon atoms;

R' is a tertiary alkyl of one to four carbon atoms;

X is alkylene of two to twelve carbon atoms with bonds to the nitrogen atoms at different carbon atoms;

the sum of the number of carbon atoms of R and X is at least nine; and

Z is hydrogen.

4,085,145
PROCESS FOR MANUFACTURING CARBONYL COMPOUNDS BY OXIDATION WITH MOLECULAR OXYGEN OF OLEFINIC COMPOUNDS IN LIQUID PHASE IN THE PRESENCE OF SOLUBLE BIMETALLIC CATALYSTS

Hubert Mimoun, Rueil Malmaison; Do Thao, Le Pecq, and Irénee Seree de Rochi, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed May 13, 1976, Ser. No. 686,245

Claims priority, application France, May 13, 1975, 75 15110

Int. Cl.[2] C07C *45/10*

U.S. Cl. 260—592 10 Claims

1. In a liquid phase process for producing carbonyl compounds by oxidation with molecular oxygen of olefins of the formula $CH_2 = CH - R_2$ containing 3-16 carbon atoms per molecule wherein R_2 is an alkyl, aryl, alkylaryl or aralkyl, which process is performed in the presence of a catalytic system comprising both at least one compound (A) of the formula $M_1 X_n L_m$, and at least one compound (B) of the formula $M_2 Z_p L'_q$, X is an anionic group being a halogen, a carboxylate, a sulfate, a nitrate, a perchlorate, a thiocyanate, a tetrafluoroborate, an acetylacetonate or a cyclopentadienyl, Z is an anionic group being a halogen, a carboxylate, a sulfate, a nitrate, a perchlorate or a tetrafluoroborate, *n*, *m* and *p* are integers selected from 1, 2 and 3, M_2 is a metal being iron, cobalt, nickel or copper, *q* is zero or an integer from 1 to 6, inclusive, L is a coordinate being H_2O, a mono-olefin, a poly-olefin, a phosphine, dimethylsulfoxide or acetylacetonate, and L' is a coordinate being H_2O, dimethylformamide, hexamethylphosphoramide or dimethylsulfoxide,

wherein the improvement comprises conducting the said process under maintained anhydrous conditions in an anhydrous organic solvent selected from the group consisting of methanol, ethanol, n-propanol, isopropanol, 2-butanol, 3,3-dimethyl-2-butanol, 2-octanol, cyclohexanol, methyl phenyl carbinol, ethylene glycol, 1,2-propane diol, glycerol and glycol monomethyl ether, and wherein M_1 is rhodium.

4,085,146
PROCESS FOR PREPARING O-HYDROXYARYLALDEHYDES

Geoffrey Ernest Beswick, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

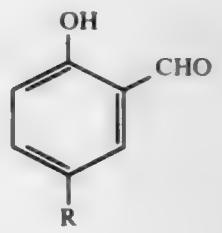
Filed Nov. 23, 1976, Ser. No. 744,279

Claims priority, application United Kingdom, Dec. 15, 1975, 51286/75

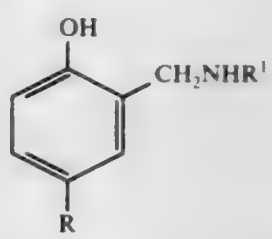
Int. Cl.[2] C07C *45/16*

U.S. Cl. 260—600 R 10 Claims

1. A process for the manufacture of an o-hydroxyarylaldehyde of the formula:



wherein R is an alkyl group of from 7 to 12 carbon atoms which comprises the steps of (1) oxidizing a 2-arylaminomethyl phenol of the formula:



wherein $—NHR^1$ is the residue of an aromatic amine selected from aniline, p-toluidine, o-anisidine and p-chloroaniline with ferric sulphate or ammonium persulphate under acid conditions in aqueous medium at 40° to 100° C. to the corresponding 2-hydroxybenzylidenearylamine and (2) hydrolyzing said amine to the o-hydroxyarylaldehyde by heating with aqueous acid.

4,085,147
PREPARATION OF META-ARYLOXY-BENZALDEHYDES

Herbert P. Rosinger; Derek A. Wood, both of Sittingbourne, England, and Roger A. Sheldon, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 26, 1977, Ser. No. 762,541

Claims priority, application United Kingdom, Feb. 5, 1976, 4577/76; Jul. 2, 1976, 27675/76

Int. Cl.[2] C07C *45/00*

U.S. Cl. 260—600 R 12 Claims

1. A process for preparing meta-phenoxybenzaldehyde. which comprises bringing together

(a) hexamethylenetetramine and

(b) a mixture of a meta-phenoxybenzyl halide and a meta-phenoxybenzal halide, wherein the halogen is bromine or chlorine, and treating the resulting product with an aqueous solution of acetic acid, said solution having a pH in the range of 5 to 6, at a temperature in the range of 80° C to 120° C.

4,085,148
PREPARATION OF HALOGENATED ALDEHYDES

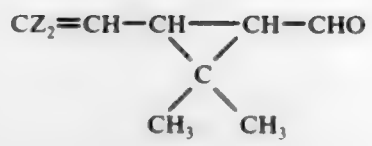
Peter John Vernon Cleare, Ascot, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 1, 1976, Ser. No. 737,274

Int. Cl.[2] C07C *47/24*

U.S. Cl. 260—601 H 3 Claims

1. A compound of formula:



wherein each Z represents chlorine or bromine.

4,085,149

α-ALKYL-P-PHENOXY BENZYL ALCOHOLS

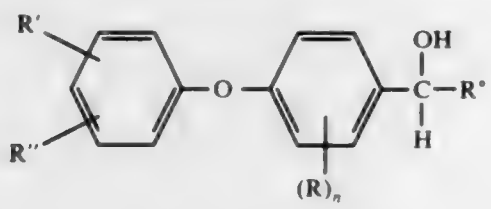
Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 510,477, Sep. 30, 1974, Pat. No. 3,962,459, which is a continuation-in-part of Ser. No. 394,181, Sep. 4, 1973, abandoned. This application Feb. 27, 1976, Ser. No. 662,125

Int. Cl.[2] C07C *43/20*

U.S. Cl. 260—613 R **7 Claims**

1. A compound of the formula:



wherein:

R° is branched alkyl of 3 to 5 carbon atoms,

R is hydrogen, alkyl of 1 to 4 carbon atoms or halo of atomic weight of from 18 to 36,

n is 1 or 2,

R′ is hydrogen, alkyl of 1 to 4 carbon atoms, halo of atomic weight of from 18 to 36 or alkoxy of 1 to 4 carbon atoms, and

R″ is hydrogen, alkyl of 1 to 4 carbon atoms, halo of atomic weight of from 18 to 36 or alkoxy of 1 to 4 carbon atoms, provided that when R, R′ and R″ each signifies hydrogen, then R° signifies other than $-C(CH_3)_3$.

4,085,150

PROCESS FOR THE ORTHO ALKYLATION OF PHENOLS IN THE PRESENCE OF A COPPER-ZINC-ALUMINUM MIXED OXIDE CATALYST

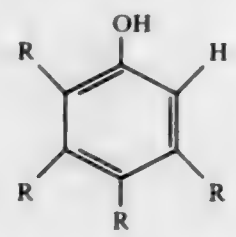
William Edward Smith, Schenectady, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Apr. 13, 1976, Ser. No. 676,502

Int. Cl.[2] C07C *39/06*

U.S. Cl. 260—621 R **3 Claims**

1. A process for the selective ortho-alkylation of a phenolic compound of the general formula:



wherein each R is a monovalent substituent selected from the group consisting of hydrogen, alkyl of 1 to 12 carbon atoms, aryl of 6 to 12 carbon atoms and alkaryl of 7 to 12 carbon atoms, the process comprising reacting at a temperature of from 185° C to about 350° C in the presence of a copper-zinc-aluminum mixed oxide catalyst said phenolic compound with an alkanol of 1 to about 12 carbon atoms.

4,085,151

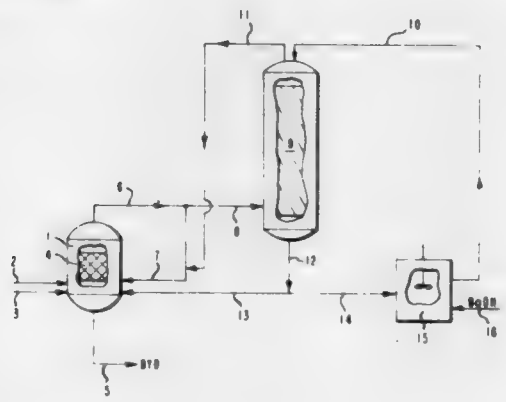
BUTYNEDIOL PRODUCTION

Dennis Joseph Zak, Houston, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 29, 1977, Ser. No. 811,283

Int. Cl.[2] C07C *29/00*

U.S. Cl. 260—635 Y **3 Claims**



1. In the process for the production of butynediol by reacting acetylene and formaldehyde in a reactor in the presence of a particulate copper acetylide catalyst in an agitated aqueous medium at 60° to 120° C and at a pH of 5.0 to 8.0, where the gaseous overhead from the reactor is recycled to the reactor, the improvement comprising feeding at least part of the gaseous overhead into a countercurrent absorption tower wherein it is contacted with an aqueous solution of sodium carbonate or a mixture of sodium carbonate and sodium bicarbonate to remove the carbon dioxide produced in the reactor, the gas stream then being recycled to the reactor, and the liquid bottoms from the absorption tower containing sodium carbonate and sodium bicarbonate being split into two parts, one part being fed into the reactor in an amount sufficient to maintain the pH of 5.0 to 8.0 and the remainder being contacted with sufficient sodium hydroxide to convert the sodium bicarbonate created by absorption of the carbon dioxide into sodium carbonate, and recycling the converted stream to the absorption tower.

4,085,152

PRODUCTION OF HEXANITROSTILBENE

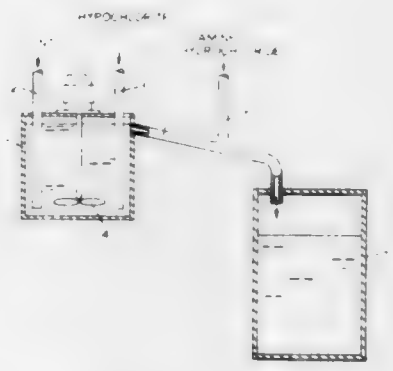
David Anthony Salter, Sawbridgeworth; Norman Frederick Scilly, Bishop's Stortford, and Keith Ellis Watson, Thorverton, near Exeter, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 18, 1977, Ser. No. 760,328

Claims priority, application United Kingdom, Jan. 22, 1976, 2501/76

Int. Cl.[2] C07C *79/10, 76/02*

U.S. Cl. 260—645 **20 Claims**



1. In a process for the production of 2,2′,4,4′,6,6′ - hexanitrostilbene by reaction of a solution of 2,4,6 - trinitrotoluene with an alkali metal or alkaline earth metal hypochlorite to

precipitate the product and separation thereof from the solvent, the improvement comprising adding a nitrogenous base to the reaction mixture after commencement of said reaction of 2,4,6 - trinitrotoluene with the hypochlorite.

4,085,153

BROMINATION OF UNREACTIVE OLEFINS WITH BROMINE CHLORIDE

John A. Schneider, and Jack F. Mills, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 819,537, Apr. 24, 1969, abandoned. This application May 2, 1974, Ser. No. 466,097

Int. Cl.[2] C07C *25/00*

U.S. Cl. 260—649 R **8 Claims**

1. A process for brominating the carbon atom pair connected by a double bond in an olefin in which each carbon of said carbon atom pair carries at least one substituent selected from the group consisting of fluorine, chlorine, bromine, iodine and phenyl, comprising reacting by contacting the olefin with bromine chloride in a two-phase, aqueous-organic reaction medium containing an inorganic bromide salt, selected from the group consisting of alkali metal bromide, alkaline earth metal bromide and ammonium bromide, dissolved in the aqueous phase, the organic reaction medium being selected from the group consisting of said olefin and a mixture of such olefin with an inert hydrophobic organic solvent.

4,085,154

HYDROCARBON DEHYDROGENATION USING A NONACIDIC CATALYST OF A PLATINUM GROUP METAL, RHENIUM, COBALT, TIN, AND AN ALKALI OR ALKALINE EARTH METAL ON A POROUS CARRIER

George J. Antos, Arlington Heights; John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 681,007, May 18, 1976, Pat. No. 4,013,735, which is a continuation-in-part of Ser. No. 564,386, Apr. 2, 1975, Pat. No. 3,960,711. This application Feb. 22, 1977, Ser. No. 771,127

Int. Cl.[2] C07C *5/18*

U.S. Cl. 260—668 D **17 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at dehydrogenation conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.01 to about 2 wt. % rhenium, about 0.05 to about 5 wt. % cobalt, and about 0.01 to about 5 wt. % tin; wherein the platinum group metal, rhenium, catalytically available cobalt and tin are uniformly dispersed throughout the porous carrier material; wherein the average crystallite size of the tin and catalytically available cobalt is less than 100 Angstroms in maximum dimension; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the tin is present in an oxidation state above that of the elemental metal; and wherein substantially all of the rhenium and catalytically available cobalt are present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrogenation conditions or in a mixture of these states.

4,085,155

PREPARATION OF ALKYL SUBSTITUTED 1,3-DIMETHYLBENZENES

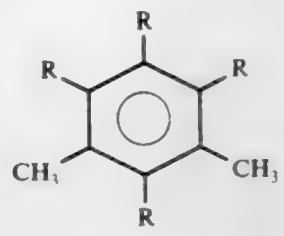
Thomas E. Goodwin, College Station, Tex., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 738,931, Nov. 4, 1976, abandoned. This application May 2, 1977, Ser. No. 793,110

Int. Cl.[2] C07C *1/20*

U.S. Cl. 260—668 R **10 Claims**

1. A process for preparing alkyl substituted benzenes, containing at least 5 alkyl groups, said alkyl substituted benzenes being represented by the formula



wherein R is hydrogen or a C_1–C_{15} alkyl group, with at least three of the R substituents being alkyl groups, by a process which comprises reacting acetone and 1-alkanol, containing 1 to 15 carbon atoms, in the presence of an effective amount of a catalyst, selected from the group consisting of titanium dioxide, synthetic silica-alumina, and alumina at a temperature in the range of about 200° to about 550° C. and a pressure in the range of about 0 to about 2,000 psig, said process being characterized further in that:

a. the amount of alkanol to acetone, on a molar basis, is in the range of about 0.3:1 to about 15:1,

b. the liquid hourly space velocity (volume), of liquid to catalyst, is in the range of about 0.1 to about 1,000.

4,085,156

CONVERSION OF HYDROCARBONS

Vincent J. Frilette, Yardley, and Mae K. Rubin, Bala Cynwyd, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 697,610, Jan. 15, 1968, Pat. No. 3,597,493, which is a continuation of Ser. No. 494,228, Oct. 8, 1965, abandoned, which is a continuation of Ser. No. 142,778, Oct. 4, 1961, abandoned. This application Jul. 23, 1971, Ser. No. 165,702

Int. Cl.[2] C07C *3/52*

U.S. Cl. 260—671 R **16 Claims**

1. In a method wherein a charge stock comprising paraffins and an alkylatable aromatic hydrocarbon are subjected to cracking conditions carried out at temperatures between about 500° and 1000° F., the improvement of carrying out said cracking in the presence of a crystalline aluminosilicate catalyst having a silica to alumina ratio of at least 10.

4,085,157

NEW CATALYSTS FOR HYDROCARBON CONVERSION TO AROMATICS

Bernard Juguin, Rueil-Malmaison; Jean Cosyns, Nanterre; Jean-François LePage, Rueil-Malmaison, and Jean Miquel, Paris, all of France, assignors to Societe Francaise des Produits pour Catalyse, Rueil-Malmaison, France

Division of Ser. No. 620,410, Oct. 7, 1975, Pat. No. 4,043,944. This application Feb. 22, 1977, Ser. No. 770,712

Claims priority, application France, Oct. 11, 1974, 74 34392

Int. Cl.[2] C07C *3/03;* C10G *35/06;* B01J *27/06, 23/48*

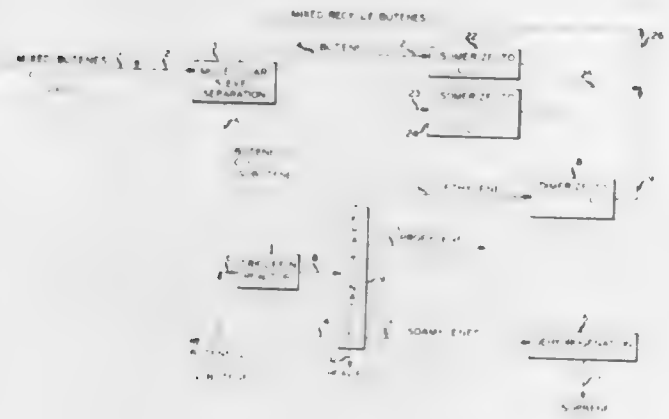
U.S. Cl. 260—673 **11 Claims**

1. In a process for the production of aromatic hydrocarbon by cyclization, dehydrogenation or dehydrocyclization of an appropriate starting compound over a catalyst, the improvement which comprises employing as said catalyst, a catalyst consisting essentially of (a) a carrier and, expressed in proportion by weight with respect to the carrier, (b) 0.005 to 2% of platinum, (c) 0.005 to 1% of a metal selected from the group consisting of iridium, rhodium and ruthenium, (d) 0.05 to 0.8% of cobalt, (e) 0.005 to 1% of at least one metal selected from the group consisting of copper, manganese, silver and gold, and (f) 0.1 to 10% of at least one halogen.

4,085,158
ISOAMYLENES FROM BUTENES

Rolland E. Dixon, and P. Douglas Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 11, 1976, Ser. No. 666,102
Int. Cl.[2] C07C *11/12*
U.S. Cl. 260—680 E 22 Claims



1. A method of preparation of isoamylenes from a mixed butenes feed stream comprising butene-1, butenes-2, and isobutene, wherein said process comprises the steps:

(a) contacting said mixed butenes stream with molecular sieve separation means whereby said butene-1 is substantially adsorbed and said butenes-2 and isobutene pass therethrough as a raffinate,

(b) disproportionating said raffinate of isobutene and butenes-2 which can futher contain propylene in an effective disproportionation mole ratio of butenes-2 and isobutene, thereby forming a stream comprising isoamylenes, unconverted butenes-2, isobutene, propylene, and which can contain ethylene, wherein said mole ratio is about 1:1 isobutene: butenes-2 plus propylene where employed

(c) separating said stream comprising isoamylenes into streams comprising propylene, butenes-2 and isobutene, said isoamylenes, and optionally an ethylene stream when said isoamylene stream further contains said ethylene,

(d) recycling said separated butenes-2 and isobutenes to said disproportionating step,

(e) desorbing said adsorbed butene-1, thereby producing a desorbed butene-1 stream,

(f) isomerizing said desorbed butene-1 stream at least in part to at least one of further butenes-2, or isobutene, or both, so as to provide an effective mole ratio of butenes-2: isobutene for said step (b) in combination with butenes-2 and isobutene from said mixed feed,

(g) recycling said further butenes-2, isobutene, or both, and any unconverted butene-1, to said molecular sieve separation step,

(h) dimerizing as necessary at least a proportion of said ethylene when present to produce a dimerized steam of additional butenes and cycling said additional butenes to said step (a), wherein said ethylene dimerization assists in maintaining a proper butenes-2: isobutene disproportionation mole ratio for said step (b) thereby providing a method of preparation of isoamylenes from a mixed butenes feed stream providing for internal adjustments in order to provide for a balanced mole ratio for said disproportionation step (b).

4,085,159
PROCESS FOR THE PREPARATION OF POWDERED THERMOSETTING COMPOSITIONS BASED ON BRANCHED-CHAIN CARBOXYL GROUP-CONTAINING POLYESTERS AND EPOXY COMPOUNDS

Arthur Marsiat, Brussels, Belgium, assignor to U C B, Societe Anonyme, Saint-Gilles-les-Brussels, Belgium

Filed Apr. 28, 1976, Ser. No. 681,342
Claims priority, application United Kingdom, Apr. 29, 1975, 17740/75
Int. Cl.[2] C08L *63/00*
U.S. Cl. 260—835 18 Claims

1. A process for the preparation of a powdered thermosetting coating composition suitable for application as paint or varnish or electricity-conducting articles by electrostatic powder spray or fluidized bed coating processes, which comprises

in a first stage, preparing a branched-chain hydroxyl group-containing polyester having a hydroxyl number between 50 and 100 by reacting (1) at least one aromatic dicarboxylic acid, (2) at least one aromatic tricarboxylic acid or pyromellitic acid and (3) an excess of at least one organic dihydric compound, the ratio of carboxyl equivalents of the tricarboxylic acid or pyromellitic acid to carboxyl equivalents of the dicarboxylic acid being from 5:95 to 35:65;

in a second stage, esterifying said branched-chain hydroxyl group-containing polyester with an aromatic or hydroaromatic dicarboxylic acid to produce a branched-chain carboxyl group-containing polyester having a molecular weight of from 1,000 to 3,000 and an acid number between 50 and 100, which acid number is substantially equal to the hydroxyl number of said hydroxyl group-containing polyester;

in a third stage, homogeneously mixing said branched-chain carboxyl group-containing polyester with a solid epoxy compound containing at least two epoxy groups, the ratio of said epoxy compound to said carboxyl group-containing polyester being such that there are 0.7 to 1.3 equivalents of epoxy groups per equivalent of carboxyl groups in said carboxyl group-containing polyester; and

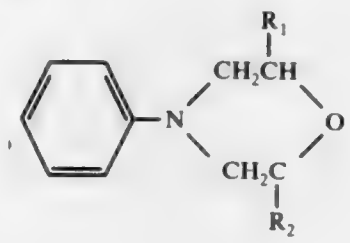
converting the resulting homogeneous mixture into a powder.

4,085,160
PRE-ACCELERATED RESIN COMPOSITION

Thomas F. Anderson, and Arlington L. Hartless, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 574,155, May 2, 1975, abandoned. This application Oct. 14, 1976, Ser. No. 731,980
Int. Cl.[2] C08L *63/02, 63/04*
U.S. Cl. 260—837 R 6 Claims

1. A polymerizable resin composition containing a polymerization accelerator and having a relatively constant gel time over extended periods of storage which comprises (1) a terminally unsaturated vinyl ester resin prepared by reacting an unsaturated monocarboxylic acid with a polyepoxide in about equivalent amounts (2) about 20 to about 60 weight percent of at least one unsaturated copolymerizable monomer and (3) about 0.10 to 1.2 weight percent based on the weight of said resin plus any copolymerizable monomers of an accelerator having the formula



where R_1 and R_2 independently are H or a 1 to 4 carbon alkyl group.

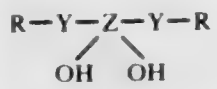
4,085,161

ELECTRODEPOSITION OF AQUEOUS DISPERSIONS OF COPOLYMERS OF POLYETHYLENICALLY UNSATURATED EPOXY ADDUCTS INCLUDING BLOCKED ISOCYANATE MONOMER

Kazys Sekmakas, Chicago, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Nov. 1, 1976, Ser. No. 737,729
Int. Cl.² C08L *63/00*
U.S. Cl. 260—837 R **12 Claims**

1. Nongelled, amine-functional copolymers dispersible in water with the aid of a solubilizing acid constituted by a copolymer of (A) 5% - 75% of an ethylenically unsaturated hydroxy-functional adduct of a diepoxide having the formula



in which R is a copolymerizable ethylenically unsaturated organic radical, Y is the residue of a substituent selected from hydroxy and primary amine, and Z has the structure of a diepoxide having an average molecular weight of at least about 350 and in which the epoxy groups are replaced by the OH groups shown in the formula; (B) copolymerizable monoethylenically unsaturated monomers including 2% - 30% of tertiary amine-functional monomer; and (C) 2% - 50% of a blocked monoethylenically unsaturated derivative of a polyisocyanate in which all of the isocyanate groups are blocked except for one which carries the single unsaturated group, said proportions being based on the weight of the copolymer.

4,085,162

POLYOLEFIN WITH PHOSPHORYLATED NOVOLAC AND TRIALLYL CYANURATE

Burton Thornley MacKenzie, Jr., Monroe, and Edward Vincent Wilkus, Trumbull, both of Conn., assignors to General Electric Company, New York, N.Y.

Division of Ser. No. 516,468, Oct. 21, 1974, Pat. No. 3,930,104. This application Dec. 8, 1975, Ser. No. 638,620
Int. Cl.² C08G *8/36*; C08L *23/16, 61/14*
U.S. Cl. 260—848 **14 Claims**

1. A flame-resistant polyolefin compound comprising the combination of phosphorylated novolak phenol-formaldehyde and triallyl cyanurate, said phosphorylated novolak phenol-formaldehyde being the reaction product of phenol-formaldehyde condensation novolak resin and triphenylphosphate.

4,085,163

MULTICOMPONENT POLYAMIDE-BLOCK COPOLYMER-POLYMER BLENDS

William P. Gergen, and Sol Davison, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 693,462, Jun. 7, 1976, Pat. No. 4,041,103. This application Apr. 22, 1977, Ser. No. 790,125
Int. Cl.² C08L *75/00*
U.S. Cl. 260—857 D **31 Claims**

1. A composition comprising the admixture obtained by initimately mixing about 4 to about 40 parts by weight of a block copolymer, about 5 to about 48 parts by weight of at least one dissimilar engineering thermoplastic, and a polyamide in a weight ratio of polyamide to dissimilar engineering thermoplastic of greater than 1:1, so as to form a polyblend wherein at least two of the polymers have at least partial continuous interlocked networks with each other and wherein:

(a) said block copolymer comprises at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B, said block copolymer having an 8 to 55 percent by weight monoalkenyl arene polymer block content, each polymer block A having an average molecular weight of between about 5,000 and about 125,000, and each polymer block B having an average molecular weight of between about 10,000 and about 300,000;

(b) said polyamide has a molecular weight in excess of about 10,000; and

(c) said dissimilar engineering thermoplastic resin is capable of forming a continuous structure and is selected from the group consisting of polyolefins, thermoplastic polyesters, poly(aryl ethers), poly(aryl sulfones), polycarbonates, acetal resins, thermoplastic polyurethanes, halogenated thermoplastics, and nitrile barrier resins.

4,085,164

THERMOSETTING COMPOSITIONS BASED ON A BIS-IMIDE AND A POLYURETHANE

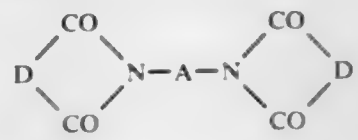
Max Gruffaz, La Mulatiere, and Jean Louis Locatelli, Vienne, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Oct. 17, 1975, Ser. No. 623,425
Claims priority, application France, Oct. 21, 1974, 74 35311
Int. Cl.² C08G *18/83*; C08L *75/06*
U.S. Cl. 260—858 **11 Claims**

1. A curable composition which consisting essentially of

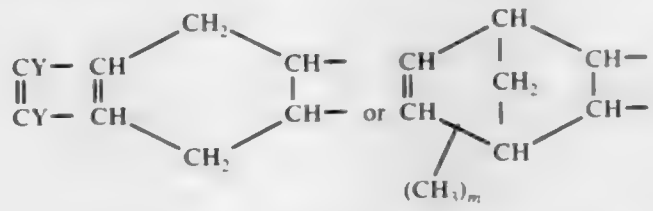
A. an imide-group-containing compound chosen from the group consisting of:

a. a bis-imide of the formula:



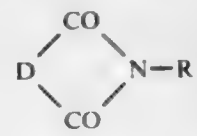
(I)

in which D represents a radical chosen from the group consisting of the radicals of the formula:



in which Y represents H, CH_3 or Cl, m is 0 or 1, and A represents a divalent organic radical containing 2 to 30 carbon atoms, and

b. a mixture comprising a bis-imide of formula (I) and a mono-imide of the formula:



(II)

in which D is as defined above and R represents a hydrogen atom or a monovalent organic radical containing from 1 to 20 carbon atoms; and

B. a polyurethane elastomer, in amounts such that the weight ratio

$$\frac{\text{polyurethane}}{\text{compound with imide groups}}$$

is from 1/5 to 4/1, and optionally

C. an aromatic compound which possesses 2 to 4 benzene rings, is not sublimable at atmospheric pressure at up to 250° C. and has a boiling point of at least 250° C.

4,085,165

POLYURETHANE COMPOSITION

Fumio Odaka, Kawagoe; Yoshihiko Fujii, Higashi Murayama, and Yutaka Iseda, Tachikawa, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1974, Ser. No. 536,906

Claims priority, application Japan, Dec. 29, 1973, 48-3631

Int. Cl.[2] C08G *18/04*; C08L *75/06, 75/08*

U.S. Cl. 260—859 R **17 Claims**

1. A polyurethane composition produced by mixing

(a) 100 parts by weight of prepolymer selected from the group consisting of polyether, polyester, and polyunsaturated hydrocarbon, the prepolymer having terminal isocyanate groups and having number average molecular weight in the range of from 800 to 20,000,

(b) 5 - 30 parts by weight of a radical polymerizable vinyl compound or a mixture thereof, and

(c) 0.05 - 1.0 part by weight of a radical initiator selected from the group consisting of 1,1'-bis-t-butyl peroxy-3,3,5-trimethylcyclohexane, benzoyl peroxide, t-butyl peroxybenzoate, t-butyl peroxy-2-ethylhexanoate, lauroyl peroxide, azo-bis-isobutyronitrile, decanoyl peroxide, propionyl peroxide, succinic acid peroxide, acetyl peroxide, t-butyl peroxyisobutyrate, t-butyl peroxymaleic acid, t-butyl peroxylaurate, cyclohexanone peroxide, t-butyl peroxyisopropyl carbonate, 2,5-dimethyl-2,5-di(2-ethylhexylperoxy) hexane, t-butyl peroxyacetate and mixtures thereof;

adding (d) a curative selected from the group consisting of polyamine and polyol; and

curing the resulting mixture by heating at 70° - 140° C to produce an elastomeric polyurethane, the equivalent ratio of the active hydrogen of (d) to the isocyanate groups of (a) being in the range of from 0.8 to 1.2.

4,085,166

IMPACT RESISTANT ACRYLIC POLYMER COMPOSITION

Roland Ralph DiLeone, Rowayton, and Albert George Robustelli, Darien, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 18, 1977, Ser. No. 798,200

Int. Cl.[2] C08L *51/00, 53/00*

U.S. Cl. 260—876 R **8 Claims**

1. A molding composition characterized by exhibiting excellent toughness, thermal stability, flow and stress craze resistance comprising

(A) from about 70% to about 95% of a resinous terpolymer comprising from about 65 to 75 parts of methylmethacrylate, from about 18 to 24 parts of styrene and from about 2 to 12 parts of ethylacrylate and

(B) from about 5% to about 30% of polybutadiene grafted with from about 17 to 22 parts of methylmethacrylate, from about 4 to 7 parts of styrene and 0 to 3 parts of ethylacrylate, the ratio of polybutadiene to monomer in (B) ranging from about 1:1 to about 4:1, respectively

---

4,085,167

CARBOXYLIC POLYMERIC THICKENERS

Sheldon N. Lewis, Willow Grove, and John J. Miller, Warminster, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 6, 1972, Ser. No. 312,433

Int. Cl.[2] C08F *214/14, 220/40, 265/04, 265/06*

U.S. Cl. 260—885 **8 Claims**

1. A solid polymer of a polymerizable mixture consisting essentially of: A. at least about 30% by weight, of the polymer, of a monoethylenically α,β-unsaturated carboxylic acid selected from acrylic acid, methacrylic acid, ethacrylic acid, α-chloroacrylic acid, crotonic acid, itaconic acid, maleic acid, fumaric acid, citraconic acid, mesaconic acid and mixtures of same, and B. an oligomer having a number average molecular weight of from about 400 to about 10,000 wherein the oligomer is an unhydrolyzed or partially-hydrolyzed oligomer of allyl methacrylate or a (C_3-C_7)allyloxyalkyl methacrylate; wherein the average chain length of the oligomer is about 6 to about 50 mers, and wherein at least about 85% of the molecules of the oligomer have chain lengths of about $\sqrt{2n}$ to about $2n$ mers, wherein n represents the average chain length of the oligomer; and wherein the oligomer comprises about 0.1% to about 10% by weight of the mixture.

4,085,168

CHEMICALLY JOINED, PHASE SEPARATED SELF-CURED HYDROPHILIC THERMOPLASTIC GRAFT COPOLYMERS AND THEIR PREPARATION

Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 432,788, Jan. 11, 1974, which is a continuation-in-part of Ser. No. 117,733, Feb. 21, 1971, abandoned, Ser. No. 244,205, Apr. 14, 1972, Pat. No. 3,832,423, and Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116. This application May 7, 1975, Ser. No. 575,286

Int. Cl.[2] C08L *31/04, 29/04*

U.S. Cl. 260—886 **12 Claims**

1. A chemically joined, phase separated self-cured hydrophilic thermoplastic graft copolymer of:

1. at least one copolymerizable normally hydrophobic macromolecular monomer having a substantially uniform molecular weight distribution, and

2. at least one hydrophilic (water-soluble) copolymerizable comonomer or compound rendered hydrophilic forming the polymeric backbone of said copolymer, said copolymerizable normally hydrophobic macromolecular monomer forming linear polymeric sidechains of said graft copolymer, wherein:

a. the polymeric backbone of the graft copolymer is comprised of polymerized units of said copolymerizable comonomers, wherein the copolymerizable comonomers are selected from the group consisting of hydroxyalkyl and hydroxyalkoxyalkyl esters of acrylic and methacrylic acids, N-hydroxyalkyl and N,N-bis-hydroxyalkyl amides of acrylic and methacrylic acids, vinyl esters of monocarboxylic acids which are rendered hydrophilic by hydrolysis of said vinyl esters subsequent to copolymerization, N-vinyl pyrrolidone, N-vinyl piperidone, N-acrylylpyrrolidone, N-acrylylpiperidine, N-acrylylmorpholine, quaternary ammonium salts of ethylenically unsaturated compounds, and mixtures thereof;

b. the linear polymeric sidechains of the graft copolymer consist essentially of a polymerized hydrophobic macromolecular monomer, said hydrophobic macromolecular monomer comprising a linear polymer or copolymer having a molecular weight of at least about 2,000 and having a substantially uniform molecular weight distribution, such that its ratio of $\bar{M}w/\bar{M}n$ is not substantially above about 1.1, said macromolecular monomer being further characterized as having no more than one copolymerizable moiety per linear polymer or copolymer chain, said copolymerization occurring between the copolymerizable end group of said hydrophobic macromolecular monomer and said copolymerizable hydrophilic comonomer; and

c. the linear polymeric sidechains of the graft copolymer which are copolymerized into the copolymeric backbone are separated by at least about 20 uninterrupted recurring monomeric units of said hydrophilic polymeric backbone, the distribution of the sidechains along the backbone and the copolymerization being controlled by the reactivity ratio of the copolymerizable end groups on said hydrophobic macromolecular monomer and said copolymerizable hydrophilic comonomer.

4,085,169
PROCESS FOR PREPARING STYRENIC POLYMER PARTICLES

Fumio Saito, Tsurunosato Ohtsu; Fumito Yamai, Kusatsu; Yositugu Beppu, Shiga, and Shinpei Nakayama, Kusatsu, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka and Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, both of Japan

Continuation of Ser. No. 381,460, Jul. 23, 1973, abandoned. This application Sep. 29, 1975, Ser. No. 617,624

Int. Cl.[2] C08F *257/02*

U.S. Cl. 260—886 **6 Claims**

1. A process for reducing the amount of powdery polymer particles which pass through a 32 mesh sieve to thereby obtain styrenic polymer particles having a uniform particle size of 0.6 to 3 mm by preparing styrenic polymer particles by the suspension polymerization of a system comprising styrenic monomer droplets and styrenic polymer particles using the styrenic monomer and styrenic polymer particles as raw materials, which comprises suspending styrene homopolymer particles or copolymer particles of styrene monomer and up to 50% by weight of a different copolymerizable ester monomer comprising an alkyl alcohol having from 1 to 12 carbon atoms and being selected from the group consisting of acrylic esters, methacrylic esters, maleic esters and fumaric esters, having particle sizes of 0.4 to 1.8 mm in water containing a suspending agent selected from the group consisting of a water-soluble high molecular weight material and a slightly soluble inorganic material and adding to the suspension styrene monomer with up to 50% by weight of a different copolymerizable monomer selected from the group consisting of methylacrylate, ethylacrylate, butylacrylate, methylmethacrylate, ethylmethacrylate, dimethylmaleate, diethylmaleate, acrylonitrile, α-methylstyrene, divinylbenzene and mixtures thereof, a suspension polymerization catalyst, and a polymerization retarder which is soluble in the styrene monomer and which has a molecular weight of at least 200, said retarder being selected from the group consisting of 3,5-di-tertiary butyl-4-hydroxytoluene, 1,1-bis(4-hydroxy-phenyl) cyclohexane, 4,4'-butylidene-bis(3-methyl-6-tertiary butyl phenol), 1,3,5-trimethyl-2,4,6-tris-3,5-di-tertiary-butyl-4-hydroxybenzylbenzene, 2,2'-methylenebis (6-tertiary-butyl-4-methylphenol, dilaurylthiodipropionate, 4,4'-thiobis (3-methyl-6-tertiary-butylphenol), N,N'-di-β-naphthyl-p-phenylenediamine, and N-phenyl-N-isopropyl-p-phenylenediamine in an amount of 1/100 to 1/25 mol per mol of said suspension polymerization catalyst to conduct the polymerization of said styrenic monomer while absorbed in said polymer particles, whereby the size of said polymer particles is increased, said polymerization retarder retarding the polymerization of said styrenic monomer droplets until said styrenic monomer is absorbed by said polymer particles, the amount of said polymer and said monomer used as raw material being 5 to 60 weight % and 95 to 40 weight %, respectively, of the polymer particles produced, to thereby obtain sytrenic polymer particles having a uniform particle size of 0.6 to 3 mm.

4,085,170
METHOD AND APPARATUS FOR INCREASING CONTACT AREA IN A MULTI-PHASE SYSTEM

David Preston Simpson, and James Lawton, both of Chester, England, assignors to The Electricity Council, England

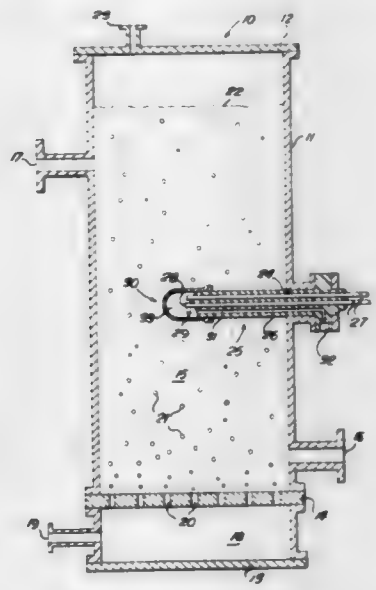
Filed Apr. 9, 1976, Ser. No. 675,415

Claims priority, application United Kingdom, Apr. 17, 1975, 15897/75

Int. Cl.[2] B01F *3/04*

U.S. Cl. 261—1 **11 Claims**

1. A method of increasing contact area of bubbles of a gaseous phase of a multi-phase system dispersed in a liquid phase of the system, comprising the steps of introducing the gaseous phase into said liquid phase and bubbling said gaseous phase dispersed in said liquid phase, providing a volume of liquid and separating said volume of liquid from said liquid phase by an acoustically transmissive membrane, subjecting said liquid phase containing said bubbles of said gaseous phase to a shock



wave for breaking up said bubbles by effecting in said separate liquid at least one electrical spark discharge.

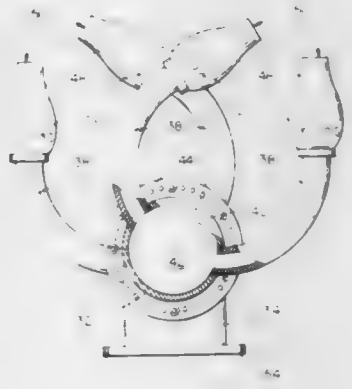
4,085,171
SPRAY COOLING SYSTEM

Donald B. Baker, Foxboro, and William E. Sparko, Westwood, both of Mass., assignors to Bird Machine Company, Inc., South Walpole, Mass.

Continuation-in-part of Ser. No. 643,337, Dec. 22, 1975, abandoned. This application May 17, 1977, Ser. No. 797,699

Int. Cl.[2] B01F *3/04*; B05B *1/04*

U.S. Cl. 261—36 R **19 Claims**



1. In a system for cooling large quantities of heated water which includes piping connected to a plurality of spray forming means for discharging water therefrom as spaced sprays, pumping means for pumping heated water from a source thereof through said piping to said spray forming means, a receiver for collecting the sprayed water and an outlet for cooled water from said receiver;

the improvement wherein each said spray forming means consists of a plurality of associated nozzles connected to said piping, each associated nozzle having the capacity to discharge water therefrom at a flow rate of at least 500 gallons per minute in a coherent stream having a cross-sectional area of at least 2 square inches and a minimum cross-sectional dimension of one inch, and each associated nozzle arranged so that the stream ejected therefrom simultaneously impinges upon the stream ejected by each other nozzle associated therewith in a common zone beyond said nozzles before the stream has substantially dissociated with a force which breaks the streams into a spray of drops having a resultant arched trajectory proceeding away from said associated nozzles at an angle between vertical and horizontal and terminating in said receiver.

4,085,172

HIGH STRENGTH HALIDES

Barry G. Koepke, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 445,394, Feb. 25, 1974, abandoned. This application Oct. 3, 1975, Ser. No. 619,264

Int. Cl.[2] B29D *11/00*

U.S. Cl. 264—1 **3 Claims**



1. A method of forming a fine-grained polygonized alkali halide body consisting substantially of potassium chloride, the method comprising:

hot working an alkali halide body consisting substantially of potassium chloride to form a fine-grained polygonized body having a grain size less than 100 microns; and

annealing the fine-grained polygonized body at a temperature of at least about 300° C for a time sufficient to remove a driving force of room temperature grain growth in the fine-grained polygonized body.

4,085,173

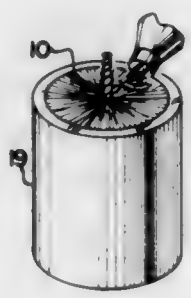
MANUFACTURE OF SOLID PROPELLANT

George F. Lomax, Jr., McGregor, and Arthur A. Coleman, Waco, both of Tex., assignors to Hercules Incorporated, Wilmington, Del.

Filed Oct. 5, 1964, Ser. No. 402,067

Int. Cl.[2] C06B *21/00*

U.S. Cl. 264—3 R **4 Claims**



1. A method manufacturing solid propellant grains comprising:

providing an elongated center core,

disposing metal filaments radially extending therefrom,

inserting said core and filaments in a porous cylinder having a diameter less than that of said core and filaments, whereby said filaments protrude through said cylinder,

bonding said protruding ends of said filaments to said porous cylinder,

casting a solid propellant matrix between said porous cylinder and said core

and curing said propellant matrix.

4,085,174

PROCESS FOR SPINNING MODIFIED SYNTHETIC FIBERS

Tatsuo Ishikawa; Keiji Yamashita; Norio Okubo; Masahira Sakashita; Arimichi Okamoto, and Tetsuhiro Kusunose, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 494,255, Aug. 2, 1974, abandoned. This application Dec. 18, 1975, Ser. No. 642,027

Claims priority, application Japan, Dec. 24, 1970, 45-116657; Dec. 24, 1970, 45-116658

Int. Cl.[2] B29H *7/20*

U.S. Cl. 264—49 **5 Claims**



1. A method of making an indefinite length synthetic fiber having extreme irregular undulations on its outer surface which vary in cross-section along the entire length of the fiber comprising the steps of:

(a) extruding a first material through a first set of passageways in a spinneret into a distributing space, wherein the first material is selected from the group consisting of polyamide, polyester, polyolefine, polyvinylchloride and polyacrylonitrile,

(b) extruding a second material through a second set of passageways in said spinneret into said distributing space, wherein the second material is different from said first material and is selected from the group consisting of polyamide, polyester, polyolefine, polyvinylchloride and polyacrylonitrile,

(c) placing said second material concentrically about said first material in said distributing space as said first material exits said first set of passageways,

(d) forming extreme, irregular undulations at the interface between the first and second material, by passing the combined first and second material through a turbulence zone, said undulations varying in cross-section along the entire axial length of the material,

(e) extruding the combined first and second material through an orifice, and

(f) removing said second material from said first material, leaving said first material in fiber form having extreme, irregular undulations along its entire outer suface.

4,085,175

PROCESS FOR PRODUCING A BALANCED NONWOVEN FIBROUS NETWORK BY RADIAL EXTRUSION AND FIBRILLATION

Herbert W. Keuchel, Tallmadge, Ohio assignor to PNC Corporation, Wycoff, N.J.

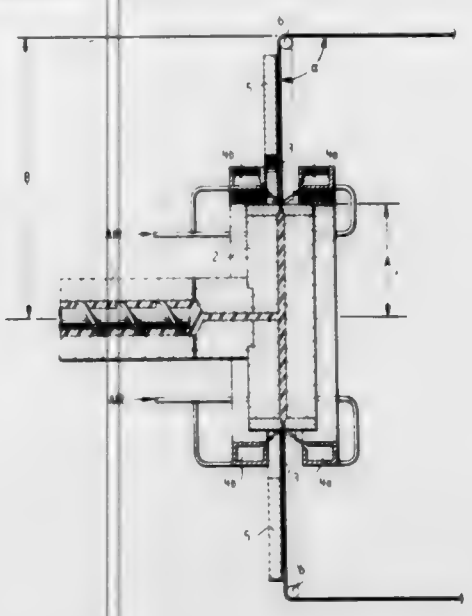
Continuation of Ser. No. 500,108, Aug. 23, 1974, abandoned. This application Sep. 15, 1975, Ser. No. 613,093

Int. Cl.[2] B29D *7/02, 7/24, 27/00*

U.S. Cl. 264—51 **4 Claims**

1. A process for producing a nonwoven fibrous network comprising extruding a mixture of a molten thermoplastic polymer and a foaming agent radially under compression through a circular die having a die gap substantially transverse to the axis of the die head, applying radial stress to said molten thermoplastic polymer to attenuate said molten thermoplastic polymer to form a molten fibrous cellular extrudate, maintaining radial stress over the entire molten fibrous extrudate to

further attenuate said fibrous extrudate, quenching said extrudate to a temperature below its melting or flow temperature and



further radially stretching said extrudate to provide a balanced nonwoven fibrous network.

4,085,176

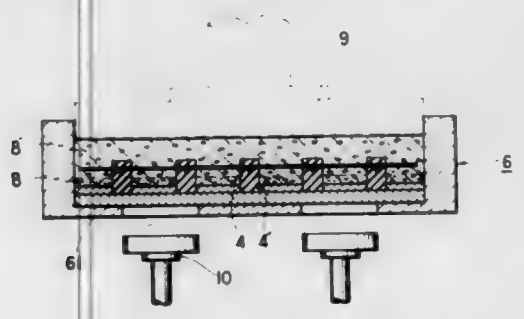
METHOD OF MANUFACTURING NON-SLIP PAVEMENT BLOCKS

Fukuzo Nakayama, Hyogo, Japan, assignor to Japan Non-Slip Pavement Co., Inc., Japan

Division of Ser. No. 281,767, Aug. 18, 1972, Pat. No. 3,832,078. This application Mar. 4, 1974, Ser. No. 448,032

Int. Cl.[2] B28B *1/16, 3/00*

U.S. Cl. 264—82 **4 Claims**



1. A method for producing non-slip pavement blocks, comprising:

(a) providing a plate of predetermined thickness containing a plurality of perforations therein;

(b) placing the perforated plate on a base plate of a mold comprised of side frame elements forming an enclosure with one end thereof covered by said base plate;

(c) inserting projection elements in the perforations and against the base plate such that said elements extend above the surface of said perforated plate, said projection elements being disposed on a wire net in a pattern corresponding to the perforations in the plate;

(d) introducing a mixture capable of solidificaton through the open end of said mold frame over, around and covering the exposed portions of the projections and the perforated plate;

(e) compressing the ingredients in the mold against the base plate, and allowing solidification;

(f) removing from the mold frame the compacted solidified ingredients as a unit along with the base plate;

(g) removing the base plate and stripping the perforated plate from the solidified ingredients by peeling it away.

4,085,177

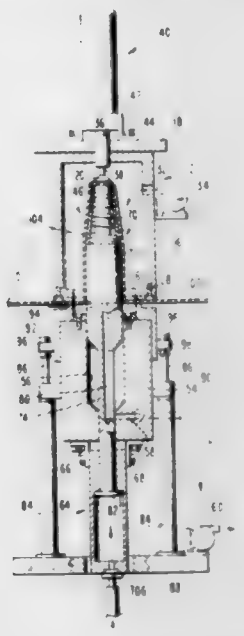
PROCESS FOR THERMOFORMING A HOLLOW PLASTIC ARTICLE USING AN EXTENDIBLE POROUS MALE MOLD ASSEMBLY

Donald G. Sauer, Harwington, Conn., assignor to National Can Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 469,404, May 13, 1974. This application Jun. 3, 1975, Ser. No. 583,427

Int. Cl.[2] B29C *17/03, 17/04*

U.S. Cl. 264—89 **3 Claims**



1. In a process for thermoforming a hollow plastic article of uniform thickness over a male mold passed through a plane of a heated sheet of thermoplastic retained between a pressure box assembly including a chamber and a male mold assembly including said male mold and wherein said article is vacuum formed about said male mold, the improvement comprising:

moving said male mold assembly towards said pressure box assembly and continuing such movement whereby said male mold is passed through said plane of said heated sheet of thermoplastic material and into said chamber of said pressure box assembly, said male mold formed in part of a porous metal and having a contoured surface corresponding to said article, said male mold being extendible from said male mold assembly;

placing said male mold in fluid communication with the suction side of a pump means and controlling the pressure within said chamber whereby said thermoplastic material is caused to be drawn about said male mold; and

causing said male mold to move further into said chamber of said pressure box assembly by extendible relative movement of said male mold with respect to said male mold assembly while maintaining said male mold in fluid communication with said suction side of said pump and said controlling of the pressure within said chamber, said extendible relative movement being effected to a point beyond further relative movement between said pressure box assembly and said male mold assembly.

4,085,178

METHOD FOR PRODUCING INJECTION MOLDED AND CENTRALLY APERTURED DISC RECORDS

Michael Lee McNeely, Indianapolis, Ind., and Herbert Rees, Willowdale, Canada, assignors to RCA Corporation, New York, N.Y.

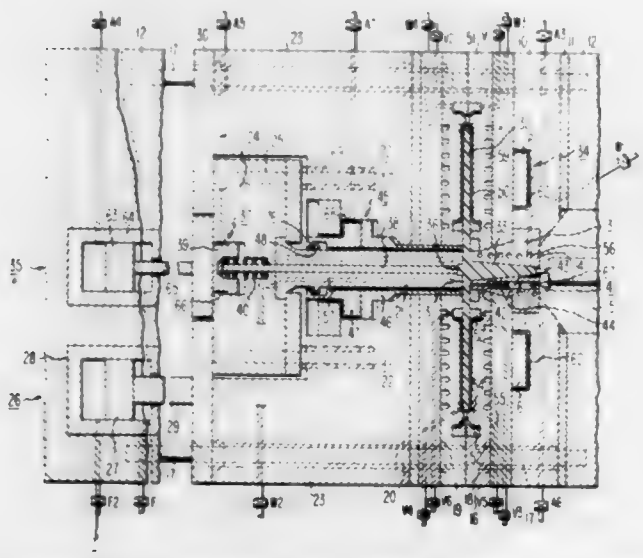
Division of Ser. No. 642,162, Dec. 18, 1975, Pat. No. 3,989,436. This application Jun. 9, 1976, Ser. No. 694,440

Int. Cl.[2] B29D *17/00*

U.S. Cl. 264—106 **2 Claims**

1. A method for forming a disc record having an annular recorded region surrounding a centering aperture therein; said method comprising the steps of:

(A) injecting heated material into an annular cavity defined by a pair of mold halves through a sprue passage located at the center of said annular cavity and defined by a sprue bushing and an end portion of a punch; and said annular cavity and said sprue passage forming, respectively, said centrally apertured record and a sprue;
(B) locking said punch in place while said annular cavity is displaced relative to said sprue passage so that said sprue is severed from said record along the peripheral surface of said punch end portion;
(C) separating said mold halves to open said annular cavity while said sprue is resting on said punch end portion and while said record is held by said punch end peripheral surface;
(D) actuating a sprue ejector member to eject said sprue from said punch end portion; and
(E) actuating a record ejector member to eject said record from said punch peripheral surface.



2. A method for forming a disc record having an annular recorded region surrounding a centering aperture therein; said method comprising the steps of:
(A) injecting heated material into an annular cavity defined by a pair of mold halves through a sprue passage located at the center of said annular cavity and defined by a sprue bushing and an end portion of a punch; and said annular cavity and said sprue passage forming, respectively, said centrally apertured record and a sprue;
(B) locking said punch in place while said annular cavity is displaced relative to said sprue passage so that said sprue is severed from said record along the peripheral surface of said punch end portion;
(C) separating said mold halves to open said annular cavity while said sprue is resting in said sprue bushing and while said record is held by said punch end peripheral surface;
(D) actuating a sprue ejector member to eject said sprue from said sprue bushing; and
(E) actuating a record ejector member to eject said record from said punch peripheral surface.

4,085,179

PROCESS FOR PREPARING DRY MIX BRAKE LINING

Mial T. Hillhouse, Canton, and Richard L. Ramsey, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 515,960, Oct. 18, 1974, abandoned. This application Apr. 7, 1976, Ser. No. 674,359
Int. Cl.[2] B29C *3/00*
U.S. Cl. 264—122 **2 Claims**

1. In a dry mix process for forming an organic brake lining, comprising:
(A) blending a mixture of dry finely divided phenolic resin particles with dry particulate brake lining friction materials and
(B) molding and curing the resulting blend at a temperature in the range of about 275° to about 325° F. and at a pressure of about 250 to about 50,000 psi to bond the resin and friction particles into a unitary brake lining, the improvement comprising, prior to step (A), forming a rubber coating on said phenolic resin particles by
(1) forming a slurry of said phenolic resin particles having a particle size of less than about 325 Tyler mesh with water containing sufficient sulfuric acid and alum to have a pH in the range of about 4 to about 6 at the end of the following step (2),
(2) mixing said aqueous resin slurry with an aqueous styrene/butadiene rubber latex to coagulate said rubber latex onto said resin particles to form finely divided rubber coated resin particles,
(3) adding styrene/butadiene resin to further coat said coagulated rubber coated phenolic resin particles and to prevent surface tack thereon, and
(4) drying said finely divided coated phenolic resin particles for use in said step (A).

4,085,180

METHOD FOR RIGID ENCLOSURES AND MOLDED ITEMS

Donald G. Stoffey, P.O. Box 1610, Salinas, Calif. 93901

Continuation-in-part of Ser. No. 323,421, Jan. 19, 1973, Pat. No. 3,955,566, which is a continuation-in-part of Ser. No. 318,201, Jan. 8, 1973, abandoned, which is a continuation-in-part of Ser. No. 224,220, Feb. 7, 1972, abandoned. This application Dec. 16, 1975, Ser. No. 641,227
Int. Cl.[2] B29G *5/00*
U.S. Cl. 264—128 **19 Claims**

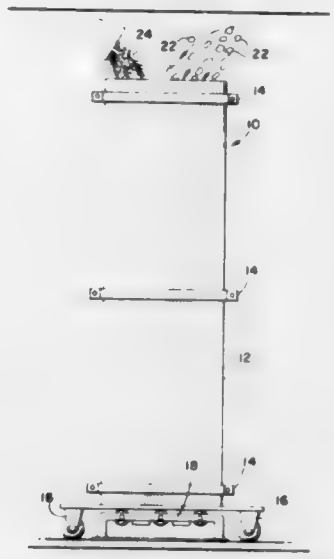
1. A method for preparing molded articles comprising the steps:
a. Filling the mold of the article to be molded with a free-radical catalyst impregnated and dried solid substrate;
b. adding to said solid substrate in said mold an activated thermosetting vinyl resin activated with a tertiary aromatic amine;
c. allowing said solid substrate to harden in said mold.

4,085,181

PROCESS FOR PREPARING SLABS OF BUILDING MATERIALS

Edward A. Cosentino, 2100 S. Ocean La., Apt. No. 1707, Fort Lauderdale, Fla. 33316

Continuation of Ser. No. 145,725, May 21, 1971, abandoned. This application Nov. 14, 1974, Ser. No. 523,702
Int. Cl.[2] B29D *3/00, 7/18, 23/08*
U.S. Cl. 264—158 **7 Claims**



1. A process for preparing a slab of conglomerate building material, said process comprising the steps of (a) providing an elogated mold; (b) forming a premolded resin liner on at least one surface of said elongated mold with a lining material; (c) filling said mold adjacent said liner with pieces of solid mate-

rial to form an aggregate of individual pieces with interstices therebetween; (d) filling said interstices with bonding material which chemically bonds to the liner and also bonds to the filling material; (e) causing said bonding material to cure and harden to form a lined composite consisting of matrix of hardened bonding material which is sufficiently elongated to permit a plurality of slabs to be cut transversely from said matrix, said matrix having embedded therein peices of solid material, at least one surface of said matrix being lined with and chemically bonded to said liner so that said liner forms an elongated outer surface of said matrix which is not removed from said matrix or otherwise altered when said matrix is cut transversely to the elongated surface of the liner to produce a slab of building material; (f) removing the resulting lined composite from said mold; (g) cutting said elongated matrix and said liner transversely to said elongated surface to form a slab of building material having at least one outer edge surface which is not chipped or otherwise scarred, which has precise dimensions and which edge surface comprised a portion of the outer surface of the liner before the slab was cut; and (h) repeating said cutting step at least once to produce a plurality of said slabs from a single elongated matrix.

4,085,182

PROCESS FOR PRODUCING ELECTRICALLY CONDUCTIVE SYNTHETIC FIBERS

Sumio Kato, Mihara, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Oct. 8, 1975, Ser. No. 620,851
Claims priority, application Japan, Oct. 9, 1974, 49-115602
Int. Cl.[2] B29F *3/10;* D01D *5/12*
U.S. Cl. 264—171 **8 Claims**

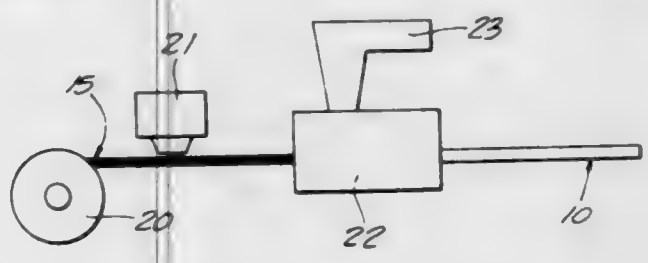
1. A process for producing sheath-core type electrically conductive synthetic composite filaments, which comprises simultaneously melt-extruding from a spinneret, in a sheath-core filament configuration, an electrically conductive core composition of polycapramide containing an electrically conductive carbon black dispersed therein, and a non-conductive sheath composition of polycapramide and taking up the extruded sheath-core type synthetic filaments at a take-up speed of at least 2,500 meters per minute, with the proviso that said process is carried out without a separate drawing step.

4,085,183

METHOD OF MAKING A STRAIN MEMBER FOR USE IN AN ELECTROMECHANICAL CABLE

Norman P. Roe, Idyllwild, Calif., assignor to Consolidated Products Corporation, Idyllwild, Calif.

Division of Ser. No. 574,611, May 5, 1975, Pat. No. 3,973,385. This application May 3, 1976, Ser. No. 682,856
Int. Cl.[2] B29F *3/10;* H01B *7/18*
U.S. Cl. 264—174 **2 Claims**



1. The method of making a strain member for use in an electromechanical cable, comprising the steps of:

selecting a plurality of elongated flexible yarns having high tensile strength and placing them in non-adhering side-by-side relationship to form a bundle having a generally circular cross-sectional configuration;

extruding a generally cylindrical jacket of deformable non-adhering plastic material around said bundle of yarns, and

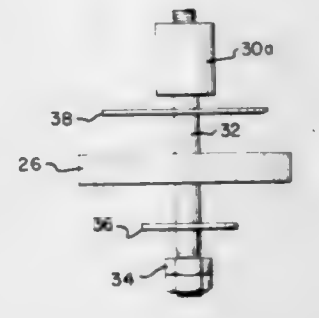
passing the jacket with bundle of yarns contained therein through a forming die so as to reform the composite strain member to a generally rectangular cross-sectional configuration.

4,085,184

METHOD FOR PRODUCING PACKING RINGS FOR FLUID SYSTEMS AND THE LIKE

Samuel Edward Jules, 1039 Pennsylvania Ave., RD #5, Harrisburg, Pa. 17111, and John James McGarry, Sr., 1019 Clearview Dr., Middletown, Pa. 17057

Filed Jan. 20, 1976, Ser. No. 650,798
Int. Cl.[2] B29C *1/02*
U.S. Cl. 264—219 **6 Claims**



1. A method for molding annular members, such as packing rings, from a wide range of materials and in a wide number of sizes with the same mold parts being used for all sizes, said method comprising the steps of:

forming a continuous array of a plurality of closely intermating concentric cylindrical members;

dividing said plurality of concentric cylindrical members into any one of a wide range of three different sized intermating groups defining a core and an annular housing equal in size to the inner and outer diameters respectively of the annular member to be formed and an annular ram formed by the remaining intermediate cylindrical members;

mounting the core forming members on an axial pin in a base plate;

placing said annular housing forming members on said base plate spaced said core to define an annular cavity therebetween;

placing packing ring material into said annular cavity;

placing said annular ram forming members into said cavity;

placing a header plate on said pin and against said ram forming members; and

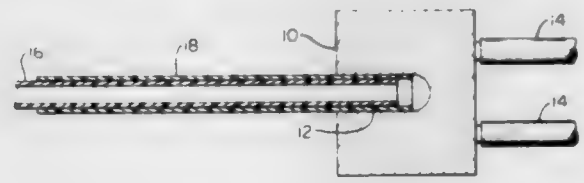
applying compressive force to drive said plates together whereby said packing material in said annular cavity is compressed into an annular packing ring.

4,085,185

METHOD OF SEALING CONCENTRIC TUBE ENDS TO MAKE SEALED DUAL-WALL TUBE

Edwin L. Adair, 5985 S. Crocker St., Littleton, Colo. 80120

Division of Ser. No. 564,775, Apr. 3, 1975, abandoned. This application Jul. 23, 1976, Ser. No. 708,064
Int. Cl.[2] B29C *11/00, 27/00;* B29F *1/00*
U.S. Cl. 264—248 **15 Claims**



1. A method for sealing together the ends of at least two different diameter tubes made of thermoplastic materials heat-sealable together to form a multiple-walled tube which comprises:

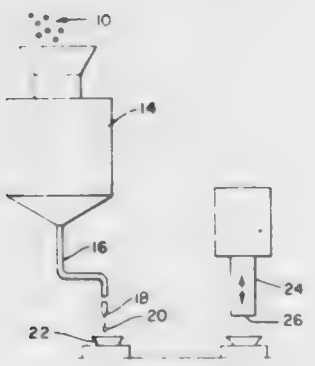
(a) arranging the tubes concentrically with the ends to be sealed near each other, the end of one tube being positioned to extend beyond the end of the other tube;
(b) positioning a rod having good heat conductivity and a higher melting point than the plastic of the tubes inside the inner tube with its one end spaced slightly axially inwardly of the end of said other tube to form an assembly of ends of said inner and outer tubes and rod;
(c) placing said ends in a mold cavity having a surface conforming substantially to a desired outer surface of the sealed tube ends; and
(d) heating said tube ends to a temperature sufficient to at least soften the plastic of the extended tube and seal the tube ends together, and shaping said plastic against the heat-conducting metal rod which facilitates conduction of heat through the sealing area and forms a dam to hold the maximum amount of melted plastic in the sealing area to make a strong joint and a multiple-walled tube is formed in which the ends of the tubes are sealed together.

4,085,186

PROCESS FOR PRODUCING FLOW-IN CLOSURE SEALING GASKETS FROM HOT MELT COMPOSITIONS

William C. Rainer, Barrington, R.I., assignor to CPL Corporation, E. Providence, R.I.

Filed Dec. 5, 1975, Ser. No. 637,851
Int. Cl.² B29C *13/02*
U.S. Cl. 264—268 **7 Claims**



1. Process for producing a gasket in a closure to thereby render the closure capable of sealing a container, said process being characterized by the steps of:
(a) providing a vinyl chloride free, elastomeric hot melt composition having a viscosity index less than about 40 meter-grams torque at 175° C and being capable of retaining a given shape when cooled;
(b) heating the composition to cause it to flow;
(c) depositing a metered amount of the flowable, heated composition from a nozzle into a closure shell;
(d) shaping the composition in the closure shell to form a gasket; and
(e) cooling the shaped gasket.

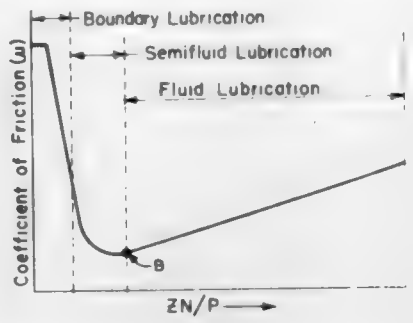
4,085,187

PROCESS FOR COMPRESSION ROLLING OF POLYMERIC FILMS

Richard H. Jenks, Saquoit, N.Y., and Egbert M. Kipp, Devon, Pa., assignors to Revere Copper and Brass, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 562,651, Mar. 27, 1975, abandoned. This application May 10, 1976, Ser. No. 684,970
Int. Cl.² B29C *15/00*
U.S. Cl. 264—280 **8 Claims**

1. A process for compression rolling of thermoplastic sheet material comprising:
(a) passing the material between cylindrical rollers under semi-boundary or boundary lubrication conditions to effect a reduction in the original thickness of the material of between about 5 and 95 percent in a single pass;
(b) maintaining the circumferential speed of the rollers in step (a) essentially equal to the linear speed of the thermoplastic sheet material passing between said rollers; and



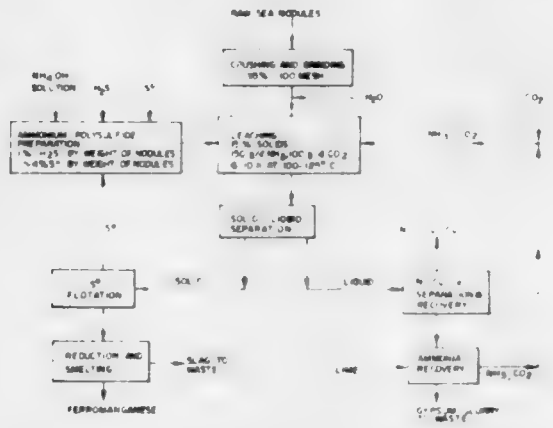
(c) maintaining the film rewind tension in the vicinity of the elastic limit of the material exiting from the rollers.

4,085,188

REDUCTION LEACHING OF RAW SEA NODULES WITH SULFIDES

Kohur Nagaraja Subramanian, Mississauga, and Gerald Vernon Glaum, Oakville, both of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 8, 1976, Ser. No. 664,752
Claims priority, application Canada, Mar. 24, 1975, 222914; Mar. 4, 1976, 247157
Int. Cl.² C01G *3/14, 51/12, 53/12*
U.S. Cl. 423—32 **11 Claims**

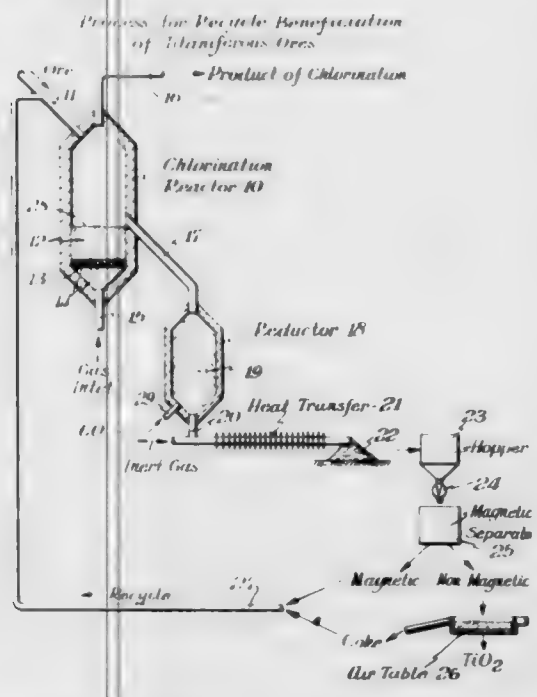


1. A process for extracting nickel, cobalt, copper and molybdenum values from raw sea nodules containing a major amount of manganese and iron, manganese being present in tetravalent state and a lesser amount of at least one of the nonferrous metals nickel, cobalt, copper and molybdenum comprising leaching said raw nodules in an aqueous ammoniacal medium at a pH of not less than about 8 in the presence of a reducing agent for tetravalent manganese selected from the group consisting of H_2S, $(NH_4)_2S$, ammonium polysulfide, and combinations thereof and in the presence of a manganous carbonate precipitant selected from the group consisting of CO_2, $(NH_4)_2CO_3$, and an alkali metal carbonate, at a temperature in the range of about 50° C to about 125° C and pressure of atmospheric to about 100 psig, to convert tetravalent manganese to the divalent state, extract nickel, cobalt, copper and molybdenum values into the leach solution and to separate manganese and iron values into the leach residue, said leaching reaction condition being maintained for a period of time sufficient to maximize said extraction of nickel, cobalt, copper and molybdenum values into solution and separation of manganese and iron values into the leach residue.

4,085,189
PROCESS FOR RECYCLE BENEFICIATION OF TITANIFEROUS ORES

Wendell E. Dunn, Jr., Star Route 68D, Spearfish Canyon, S. Dak. 57733

Continuation-in-part of Ser. No. 4,563, Jan. 21, 1970, abandoned, and Ser. No. 267,519, Jun. 29, 1972, abandoned. This application May 21, 1976, Ser. No. 688,719
Int. Cl.[2] C01G *23/04, 49/10*
U.S. Cl. 423—74 4 Claims



1. A continuous process for producing a novel titanium dioxide composition containing 95 to 98 percent, by weight, of titanium dioxide and not more than 1.5 percent, by weight, of iron oxide calculated as Fe_2O_3 from a titanium ore containing trace metals as oxides wherein said process minimizes the loss of titanium values by repressing the amount of titanium tetrachloride produced, comprising:

(a) continuously reacting, at elevated temperatures with a member selected from the group consisting of chlorine, chlorine mixed with a diluent gas, a mixture of chlorine and carbon monoxide and a mixture of chlorine, carbon monoxide and a diluent gas said diluent gas being selected from the group consisting of air, oxygen, carbon dioxide, nitrogen and mixtures thereof a bed of a particulate titaniferous ore in a reactor, under reducing and fluidizing conditions, to form a partially beneficiated bed of ore containing at least 5 percent, by weight, or iron oxide, calculated as Fe_2O_3, and vaporizing and withdrawing from the reactor ferrous chloride, ferric chloride, diluent gas, traces of carbon monoxide, carbon dioxide, vaporized metal chlorides, titanium tetrachloride and unreacted chlorine;

(b) continuously withdrawing a portion of the partially beneficiated bed;

(c) continuously cooling the withdrawn portion of the partially chlorinated bed under non-oxidizing or reducing conditions;

(d) continuously separating the product of step (c) into a first magnetic fraction having an iron oxide content greater than 1.5 percent, by weight, and a titanium dioxide content of less than 95 to 98 percent, by weight, and a second nonmagnetic fraction having 95 to 98 percent, by weight, of titanium dioxide and less than 1.5 percent, by weight, of iron oxide, calculated as Fe_2O_3;

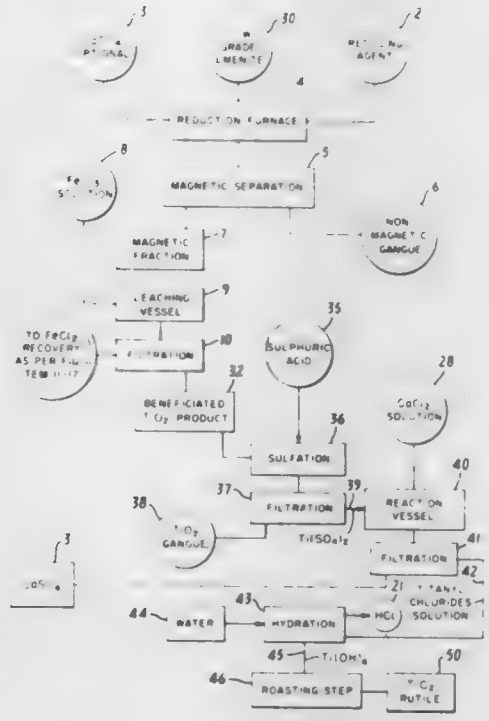
(e) continuously returning the first partially beneficiated ore mixture to the reactor mixed with sufficient fresh titaniferous ore whereby a constant bed depth is maintained and said bed contains at least 5 percent, by weight, of iron oxides, calculated as Fe_2O_3, thereby repressing the loss of titanium values by the formation of titanium tetrachloride; and

(f) continuously repeating steps (a) through (e).

4,085,190
PRODUCTION OF RUTILE FROM ILMENITE

Chyn Duog Shiah, 189 Nassau Ave., Manhasset, L. I., N.Y. 11030

Filed Apr. 29, 1975, Ser. No. 572,938
Int. Cl.[2] C01G *23/04*
U.S. Cl. 423—80 1 Claim



1. The method for the production of titanium dioxide in rutile form from ilmenite which comprises the steps of:

a. mixing ilmenite ore with calcium sulfate in a proportion of 1:10 to 10:1;

b. heating said mixture with hydrogen at temperatures in the range 1500° to 1800° F for up to 1 hour to reduce the iron in the ilmenite ore to metallic iron and the calcium sulfate to calcium sulfide;

c. magnetically separating the reduced mixture to form a magnetic fraction containing the iron and the TiO_2 content of the ores, and a non-magnetic fraction comprising the calcium sulfide and non-TiO_2 gangue, and segregating the non-magnetic fraction;

d. leaching said magnetic fraction with a ferric chloride solution thus dissolving said metallic iron and filtering the leached fraction leaving the TiO_2-components as a residue;

e. dissolving the TiO_2 residue in concentrated sulfuric acid to form a titanyl sulfate solution thereof;

f. adding at least one mole equivalent of calcium chloride solution to said titanyl sulfate solution to form a solution of titanyl chloride and a precipitate of insoluble calcium sulfate;

g. separating said insoluble calcium sulfate precipitate from said titanyl chloride solution;

h. hydrolyzing said titanyl chloride solution by the addition of water and heat, thus precipitating titanium oxide hydrate and liberating gaseous hydrochloric acid;

i. calcining said titanium oxide hydrate to form TiO_2 in rutile form;

j. recycling the liberated hydrochloric acid from (h) to react with the calcium sulfide of the non-magnetic fraction obtained at (c) to form the calcium chloride used in step (f);

k. recycling the calcium sulfate precipitate, separated at (h), to mix with fresh ilmenite at (a);

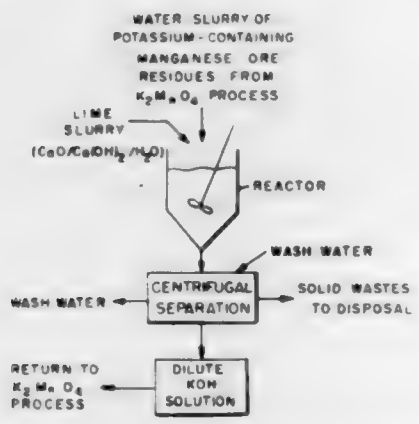
l. oxidizing the leached iron-containing solution with an oxygen-containing gas to precipitate iron oxide (Fe_2O_3) from said solution and regenerating ferric chloride solution for use in step (d).

4,085,191

PROCESS FOR RECOVERY OF POTASSIUM FROM MANGANATE PLANT WASTES

Peter G. Mein, and Horst R. Adolf, both of Peru, Ill., assignors to Carus Corporation, LaSalle, Ill.

Filed Apr. 26, 1977, Ser. No. 791,005
Int. Cl.[2] C01D *1/04*
U.S. Cl. 423—208 **7 Claims**



1. The process of recovering potassium from potassium-containing residue solids resulting from conversion of manganese ore to K_2MnO_4 by reacting the ore with KOH and O_2, comprising:

(a) reacting an aqueous slurry of said residue solids with dissolved $Ca(OH)_2$ in the presence of undissolved $Ca(OH)_2$, from 2 to5 mols of total Ca being used per mol of K in said solids, any Na present in said solids being counted as K in determining the mols of Ca to be used;

(b) continuing said reaction until at least 50% of the K in said residue solids has been solubilized as KOH while limiting the concentration of said KOH to less than 50 grams KOH per liter of water; and

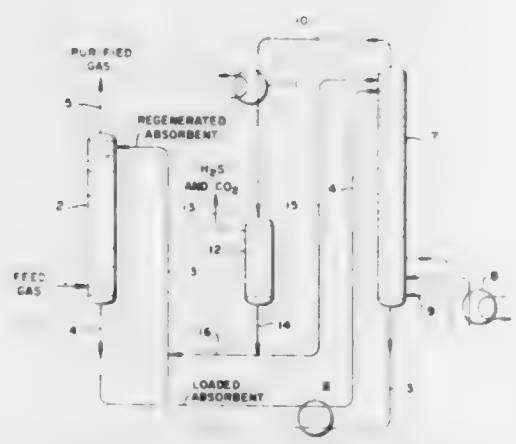
(c) separating the resulting KOH solution from the reacted solids.

4,085,192

SELECTIVE REMOVAL OF HYDROGEN SULFIDE FROM GASEOUS MIXTURES

Robert W. Van Scoy, Missouri City, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 11, 1973, Ser. No. 359,564
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—226 **14 Claims**



1. A process for selectively removing hydrogen sulfide from a gaseous mixture containing hydrogen sulfide and carbon dioxide which comprises:

(a) contacting said gaseous mixture with a hydrogen sulfide-selective aqueous alkanolamine absorbent solution in an absorption column having from 3 to 20 contacting trays, said trays having an average dry tray pressure drop of from about 1.5 to about 5 inches per tray, thereby obtaining a treated gas containing less than 10% of the hydrogen sulfide present in the gaseous feed but more than 50% of the carbon dioxide present in said feed, and a hydrogen sulfide and carbon dioxide enriched-absorbent solution,

(b) passing said hydrogen sulfide and carbon dioxide-enriched absorbent solution to a regenerating zone and stripping said absorbent solution to a hydrogen sulfide content which corresponds to an equilibrium loading for a H_2S-content having less than 50% of the hydrogen sulfide content of the treated gas, and

(c) returning said regenerated absorbent liquid into contact with the hydrogen sulfide and carbon dioxide containing gaseous mixture.

4,085,193

CATALYTIC PROCESS FOR REDUCING NITROGEN OXIDES TO NITROGEN

Fumito Nakajima, Hitachi; Masato Takeuchi, Katsuta; Shimpei Matsuda, Hitachi; Shigeo Uno, Hitachi; Toshikatsu Mori, Hitachi; Yoshihisa Watanabe, and Makoto Imanari, both of Ibaragi, all of Japan, assignors to Mitsubishi Petrochemical Co. Ltd.; Hitachi, Ltd. and Babcock-Hitachi Kabushiki Kaisha, all of Tokyo, Japan

Filed Dec. 10, 1974, Ser. No. 531,304
Claims priority, application Japan, Dec. 12, 1973, 48-137685
Int. Cl.[2] B01J *8/00*; C01B *21/00*
U.S. Cl. 423—239 **9 Claims**

1. A process for reducing nitrogen oxides to nitrogen, which comprises adding ammonia, as substantially the sole reducing agent, to a gaseous mixture containing nitrogen oxides and molecular oxygen, and contacting the resulting gaseous mixture containing nitrogen oxides, molecular oxygen and ammonia, as substantially the sole reducing agent, at a temperature of 150° to 550° C. and at a space velocity of 1,000 to 100,000/hour with a catalyst composition consisting essentially of an intimate mixture of the following components in the following atomic ratios: (A) one atom of titanium (Ti) as component A, (B) 0.01 to 1 atom of at least one metal selected from the following groups B-1 and B-2 wherein group B-1 consists of iron (Fe) and vanadium (V) and group B-2 consists of molybdenum (Mo), tungsten (W), nickel (Ni), cobalt (Co), copper (Cu), chromium (Cr), and uranium (U), with the proviso that when vanadium (V) is selected from group B-1, at least one of molybdenum (Mo) and tungsten (W) from group B-2 is also present in the catalyst composition, and optionally (C) tin (Sn) as component C, and (D) at least one metal as component D selected from the group consisting of silver (Ag), beryllium (Be), magnesium (Mg), zinc (Zn), boron (B), aluminum (Al), yttrium (Y), rare earth elements, silicon (Si), niobium (Nb), antimony (Sb), bismuth (Bi), and manganese (n), wherein when said catalyst composition includes optional component C, it is present in an atomic ratio of component A to component C of 1:003 – 0.2 and said optional component D being present at an atomic ratio of component A to component D of 1:0 – 0.15, said elements of component A, B-2, C and D being contained in said catalyst in the form of oxides, and the iron and vanadium of component B-1 being contained in said catalyst in the form of oxides and-/or sulfates.

4,085,194

WASTE FLUE GAS DESULFURIZING METHOD

Kouji Otani; Toshio Sawa; Osamu Kuroda; Fumito Nakajima, all of Hitachi, Japan, and Tokuji Iijima, deceased, late of Hitachi, Japan (by Yoshie Iijima, administratrix), assignors to Hitachi, Ltd., Japan

Filed Apr. 27, 1973, Ser. No. 355,272
Claims priority, application Japan, May 8, 1972, 47-45209/72
Int. Cl.[2] C01B *17/00*
U.S. Cl. 423—242 **20 Claims**

1. A method of desulfurizing waste flue gases, comprising contacting waste flue gas containing sulfurous acid gas directly with sea-water containing metal ions and HCO_3^- thereby absorbing the sulfurous acid gas in the sea-water and concurrently forming metal sulfites in the sea-water by the reaction

between sulfite ions formed during said absorption and metal ions present in the sea-water, contacting the metal sulfite containing sea-water with an oxygen containing gas to effect decarbonation of said sea-water which is then in the acidic region thereby to restore the pH value of the sea-water to the neutral region, said contacting of the sea-water with the oxygen containing gas also serving to convert the sulfites into sulfates, and said sea-water being in an amount such that the quantity of the sulfurous acid gas absorbed in the sea-water is substantially less than the total alkaline equivalent of said sea-water.

4,085,195

SORBENT PREPARATION AND PROCESS USING SAME

Neville L. Cull, Baker; Lloyd A. Pine, Baton Rouge, both of La., and Dale D. Maness, Austin, Tex., assignors to Exxon Research & Engineering Co., Linden, N.J.

Division of Ser. No. 291,908, Sep. 25, 1972, Pat. No. 3,985,682. This application Jun. 5, 1974, Ser. No. 476,669

Int. Cl.[2] B01J *8/00;* C01B *17/00*

U.S. Cl. 423—244 **7 Claims**

1. In a process for removing sulfur dioxide from a gaseous mixture containing the same wherein said gaseous mixture is contacted with a sorbent under desulfurizing conditions, said sorbent comprising a porous, solid inorganic hydrophilic carrier and an active material for the selective removal of SO_2, the improvement wherein said active material is deposited predominantly in an outer zone adjacent to the external surface of said carrier and wherein said sorbent is prepared by:

a. immersing the porous solid inorganic hydrophilic carrier material in a polar organic presoak liquid such that said presoak liquid substantially completely fills the pores of the carrier material, said presoak liquid being capable of (1) wetting said carrier material and (2) displacement by the impregnating solution used in (b) at a rate slow enough to permit control of the depth of impregnation; and

b. separating the carrier material from the presoak liquid and, without substantial removal of presoak liquid from the pores of said carrier material, immersing the separated carrier material in an impregating solution containing a compound which is decomposable into the desired active material for a time sufficient to permit the impregnating solution to displace a portion of the presoak liquid and thereby penetrate the carrier material to a controlled depth, the depth of penetration being controlled by the time during which said separated carrier material is immersed in said impregnating solution at any given set of impregnating conditions.

4,085,196

PROCESS FOR PRODUCING SYNTHETIC DIAMONDS

Vladimir Ivanovich Farafontov, Dibuny, ulitsa Kljucheva, 69, kv. 4, Leningrad; Yaroslav Alexeevich Kalashnikov, Starokonjushenny pereulok, 39, kv. 5, Moscow; Jury Nikolaevich Novikov, ulitsa Petra Romanova, 15, kv. 19, Moscow; Mark Efimovich Volpin, ultisa Vavilova, 48, kv. 412, Moscow; Leonid Fedorovich Vereschagin, Kutuzovsky prospekt, 2/1, kv. 231, Moscow, and Vladislav Sergeevich Lysanov, prospekt Vavilova, 8, korpus 1, kv. 422, Leningrad, all of U.S.S.R.

Filed Feb. 28, 1977, Ser. No. 772,474

Claims priority, application U.S.S.R., Mar. 1, 1976, 2323002(I)

Int. Cl.[2] C01B *31/06*

U.S. Cl. 423—446 **11 Claims**

1. A process for producing synthetic diamonds which comprises subjecting a charge consisting of graphite or a carbonaceous material capable of being graphitized and a catalyst consisting of at least one laminar compound of at least one transition metal with graphite in which said metal in said laminar compound is interposed between the carbon layers of the graphite and chemically bonded therewith to a pressure and temperature and for a time sufficient to convert the non-chemically bonded graphite of said charge to diamond, said laminar compound remaining stable at said pressure and temperature, whereby rapid conversion is effected.

4,085,197

CARBON BLACK PROCESS

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 464,953, Apr. 29, 1974, Pat. No. 3,986,836, which is a continuation-in-part of Ser. No. 285,115, Aug. 31, 1972, abandoned. This application Jun. 24, 1976, Ser. No. 699,732

Int. Cl.[2] C01B *31/02;* C09C *1/48*

U.S. Cl. 423—450 **6 Claims**

1. A process for the production of carbon black by the pyrolytic decomposition of a hydrocarbon feedstock in an essentially tubularly shaped carbon black reactor having an upstream and a downstream end, said process comprising:

a. axially introducing said hydrocarbon feedstock into said carbon black reactor,

b. introducing hot combustion gases at a first velocity into said reactor and moving the gases in a circular movement around the longitudinal axis of said reactor such as to form a first vortex of hot combustion gases around said axially introduced feedstock,

c. introducing a gas at a second velocity into said reactor at a location between the location of creation of said first vortex and said upstream end of the reactor and moving the gas in a circular movement around the longitudinal axis of said reactor such as to create a second vortex of gases having the same directional sense as said first vortex,

aa. said second velocity being, however, considerably higher than said first velocity, and

bb. the external diameter of said first vortex being, however, larger than the external diameter of said second vortex,

d. pyrolytically decomposing said hydrocarbon feedstock in the hot combustion gases to form a carbon black containing-smoke, and

e. withdrawing said carbon black containing-smoke from said reactor.

4,085,198

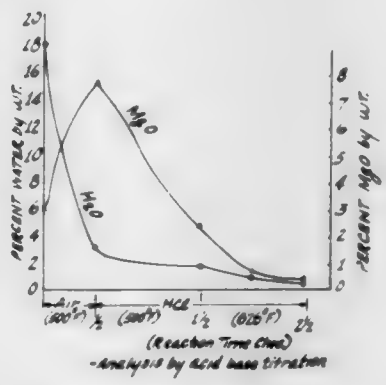
HYDROCHLORINATION OF SPRAY DRIED MAGNESIUM CHLORIDE

Modesto Erneta, Princeton Junction, N.J., assignor to N L Industries, Inc., New York, N.Y.

Filed Dec. 17, 1975, Ser. No. 641,428

Int. Cl.[2] C01F *5/34*

U.S. Cl. 423—498 **1 Claim**



1. Process for treating spray dried magnesium chloride solids having a bulk density in the range of from about 11 to about 18 pounds per cubic foot and containing about 12 to 18 weight percent water and from about 3 to 5 weight percent magnesium oxide comprising, heating said solids in the presence of a dry gas selected from the group consisting of air and combustion gases in the range from about 500° to 800° F for a period of about one half hour, subsequently hydrochlorinating such heated solids with preheated dry hydrogen chloride gas heated

to a temperature in the range of from about 550° to 700° F, thereby to produce a substantially anhydrous magnesium chloride feed material having a magnesium oxide content of no more than about 0.6 weight percent.

4,085,199

METHOD FOR REMOVING HYDROGEN SULFIDE FROM SULFUR-BEARING INDUSTRIAL GASES WITH CLAUS-TYPE REACTORS

Alan H. Singleton, Baden; Otto A. Homberg, Easton, and Charles W. Sheldrake, Bethlehem, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jun. 8, 1976, Ser. No. 694,001
Int. Cl.[2] C01B *17/00*
U.S. Cl. 423—574 R **15 Claims**

1. In a method of desulfurizing a hydrogen sulfide and hydrogen containing fuel gas without exhausting any sulfur containing tail gas including:

(a) contacting a hydrogen sulfide and hydrogen containing feed fuel gas with an absorbing solution to absorb substantially all hydrogen sulfide from said feed fuel gas and generate a substantially desulfurized fuel gas,

(b) desorbing said hydrogen sulfide from said absorbing solution and passing said desorbed hydrogen sulfide to a Claus reaction zone together with an approximately stoichiometric amount of sulfur dioxide based upon the amount of hydrogen sulfide which is to be reacted with sulfur dioxide in said reaction zone to form elemental sulfur and water leaving a tail gas with sulfur components,

the improvement comprising:

(c) conducting a portion of a fuel gas of step (a) to a catalytic hydrogenation zone in a quantity sufficient to provide at least an amount of hydrogen to stoichiometrically react with any sulfur dioxide, carbonyl sulfide, carbon disulfide and elemental sulfur vapors contained in the tail gas from step (b),

(d) conducting the tail gas from the reaction of sulfur dioxide with hydrogen sulfide in step (b) to the catalytic hydrogenation zone of step (c) and reacting sulfur dioxide, carbonyl sulfide, carbon disulfide and elemental sulfur vapors in said tail gas with the hydrogen in said fuel gas to form hydrogen sulfide plus additional amounts where appropriate of methane and water and form a hydrogenated tail gas, and

(e) recycling said hydrogenated tail gas with no substantial sulfur content in a form other than hydrogen sulfide to contact said absorbing solution of step (a) simultaneously with said hydrogen sulfide and hydrogen containing feed fuel gas.

4,085,200

THERMOCHEMICAL PROCESS FOR PRODUCING METHANE AND OXYGEN

Rudolf Schulten, Richterich, and Friedrich Behr, Gross Denkte, both of Germany, assignors to Rheinische Braunkohlenwerke AG., Cologne, Germany

Filed Feb. 15, 1977, Ser. No. 768,701
Claims priority, application Germany, Feb. 20, 1976, 2606886
Int. Cl.[2] C01B *13/02;* **C07C** *9/04*
U.S. Cl. 423—579 **16 Claims**

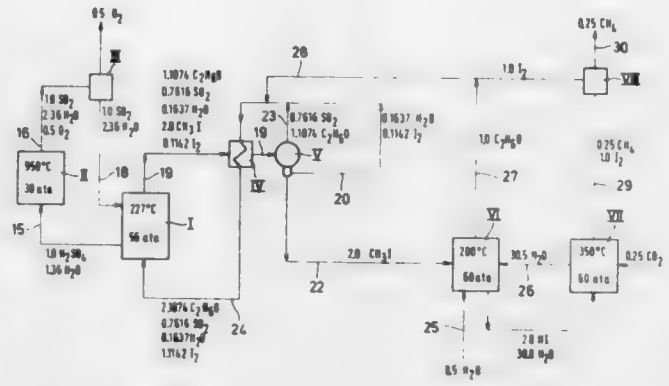
1. A recirculatory process for producing methane and oxygen which comprises:

a. reacting iodine and an oxide in a lower valency stage with a reactant selected from the group consisting of methanol, dimethylether and a mixture of methanol and dimethylether at an elevated temperature to form the corresponding oxide having a higher valency stage and methyl iodide;

b. hydrolysing the so formed methyl iodide to form hydrogen iodide and re-form the dimethylether and/or methanol;

c. reacting the so formed hydrogen iodide with carbon dioxide to form methane and re-form iodine and water;

d. decomposing the oxide in a higher valence stage into the corresponding oxide in a lower valence stage and releasing oxygen,



and in which the oxygen released in (d) and the methane formed in (c) are removed from the system whilst the remaining components are re-utilised in reactions (a) to (d).

4,085,201

PROCESS FOR MANUFACTURING ALUMINUM OXIDE

Kenneth F. Griffiths, 21 N. Chatsworth Ave., Larchmont, N.Y. 10538

Continuation of Ser. No. 441,129, Feb. 11, 1974, abandoned. This application Jun. 28, 1976, Ser. No. 700,116
Int. Cl.[2] C01F *7/32*
U.S. Cl. 423—625 **8 Claims**

1. A method of producing aluminum oxide powder of substantially uniform particle size from aluminum sulfate comprising

1. first thermally treating said aluminum sulfate at a temperature in the range from about 800° to about 1150° C.

2. maintaining said temperature for a time sufficient to decompose all of said aluminum sulfate and to form a mass of aluminum oxide having a uniform temperature throughout, and

3. thereafter subjecting said uniformly heated mass of aluminum oxide to additional heat to raise its temperature uniformly at approximately the same rate as the heat source to a curing temperature in the range from about 1175° to about 1250° C. for an additional period of time sufficient to cure said aluminum oxide and to increase the average particle size of aluminum oxide.

4,085,202

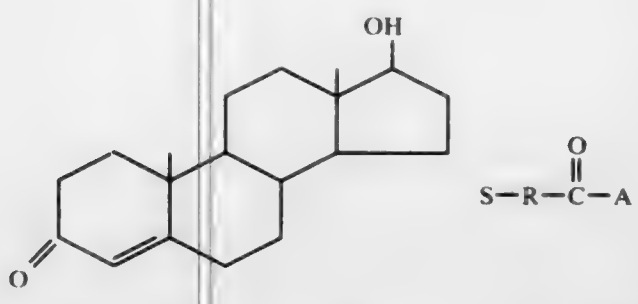
TESTOSTERONE DERIVATIVES

Pemmaraju Narasimha Rao, San Antonio, Tex., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Division of Ser. No. 615,812, Sep. 22, 1975, Pat. No. 4,031,117. This application Sep. 29, 1976, Ser. No. 727,409
Int. Cl.[2] G01N *33/16;* **A61K** *39/00*
U.S. Cl. 424—1 **19 Claims**

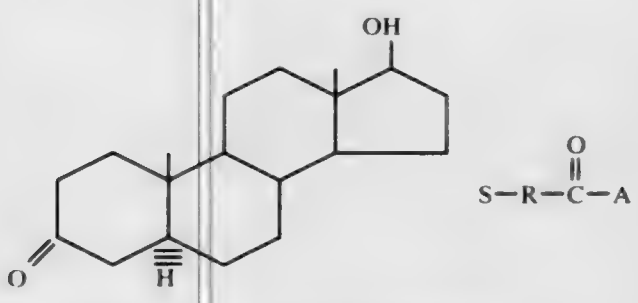
1. An immunogen comprising:

an immunological carrier having conjugated thereto by a chemical coupling agent a compound selected from the group consisting of compounds represented by the formula:



(a)

wherein R is an alkyl group of from 1 to 6 carbon atoms A is selected from the group consisting of —OH, —OM wherein M is an alkali metal barium, calcium, or strontium, and OY wherein Y is an alkyl group of from 1 to 6 carbon atoms; and



(b)

wherein R and A are as defined above.

4,085,203

PROCESS FOR PREPARING VACCINE

Ronald Charles Telling, Woking; Roy John Passingham, Fleet; Brian Lewis Kitchener, and David George Hopkinson, both of Farnborough, all of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 354,195, Apr. 25, 1973, abandoned. This application Mar. 25, 1976, Ser. No. 670,448

Claims priority, application United Kingdom, Apr. 26, 1972, 19387/72

Int. Cl.[2] **A61K** *39/12;* **C12K** *9/00*

U.S. Cl. 424—89 **6 Claims**

1. A process for preparing a vaccine which comprises:

(a) preparing a carrier bed from a slurry of particulate material;

(b) applying a liquid suspension of eucaryotic cells to the bed;

(c) allowing the cells trapped within the internal cavities or spaces of the bed to grow;

(d) circulating nutrient medium through the bed, whereby nutrients are delivered to the cells trapped within the internal cavities and metabolic and degradation products are removed in the liquid leaving the bed;

(e) infecting the cells trapped within the internal cavities with a microorganism to which the cells are susceptible;

(f) propagating the microorganism within the cells by circulating through the bed a medium suitable for growth of the microorganism;

(g) collecting the medium leaving the bed containing the microorganisms which are released following disruption of the cells, whilst retaining cell debris within the bed;

(h) inactivating the microorganism with an inactivating agent; and

(i) adding the inactivated microorganism to a pharmaceutically acceptable carrier therefor.

4,085,204

PROCESS FOR OBTAINING INSULIN LIKE ACTIVE SUBSTANCES

Adolf Wacker; Dörthe Wacker, both of Neu-Isenburg; Klaus Pöhler, Wiesbaden, all of Germany, and Hellmut Mittenzwei, Pixisstrasse 10, 8000 Munich 80, Germany, assignors to Helmut Mittenzwei, Munich, Germany

Filed Dec. 9, 1976, Ser. No. 748,956

Claims priority, application Germany, Dec. 24, 1975, 2558537

Int. Cl.[2] **A61K** *35/14, 35/16, 37/02*

U.S. Cl. 424—101 **8 Claims**

1. A process for obtaining insulin-like active substances from blood or a blood component of a warm-blooded animal, which comprises the steps of pretreating the blood or blood component by diluting the blood or blood component with from about half to about four volumes of a hydrophilic diluent, adjusting the pH of the resulting solution to a value of from 2 to 4 or of from 8 to 10, incubating the pre-treated blood at a temperature of from about 15 to about 40° C for a period of at least four hours, cooling the incubated blood to a temperature of less than 10° C, dialysing the treated blood after neutralization against a membrane adapted to pass molecules having a molecular weight of less than 6000, and recovering from dialysate organic peptide substances having a molecular weight of from about 1000 to about 5000, and an insulin-like activity of from about 14 to about 40 μU/mg solid.

4,085,205

CONTROL OF SEX RATIO IN MAMMALIAN OFFSPRING

Richard John Taylor Hancock, Bristol, England, assignor to The University Court of the University of Edinburgh, Edinburgh, Scotland

Filed Jan. 24, 1977, Ser. No. 761,945

Claims priority, application United Kingdom, Jan. 27, 1976, 3039/76

Int. Cl.[2] **A61K** *35/52;* **C12K** *9/00;* **A61K** *39/00*

U.S. Cl. 424—105 **5 Claims**

1. In the artificial insemination of female mammals, a method of controlling the sex ratio of the mammalian offspring to increase the proportion of females, which comprises the steps of obtaining serum from an animal which previously has been immunized with bird sperm to cause the formation in the serum of antibodies to bird sperm, mixing semen collected from a male mammal with said antibodies to bird sperm in said serum, and artificially inseminating a corresponding female mammal with said mixture.

3. In the artificial insemination of female mammals, a method of controlling the sex ratio of the mammalian offspring to increase the proportion of males, which comprises the steps of obtaining serum from an animal which previously has not been immunized with sperm, mixing semen collected from a male mammal with said serum and artificially inseminating a corresponding female mammal with said mixture.

4,085,206

COMPOSITION FOR TREATMENT OF INFECTIOUS DISEASES IN ANIMALS

Josef Rokos; Zdeněk Kubat; Pavel Prochazka; Vladislav Zalabák, all of Prague, Czechoslovakia; Josef Babička, deceased, late of Prague, Czechoslovakia (by Marie Babičkova, legal representative; Eva Zemanova, heir; Luboš Babička, heir); Jirí Janeček, Prague, Czechoslovakia; Miroslav Nohynek, Prague, Czechoslovakia, and Petr Mison, Prague, Czechoslovakia assignors to Ceskoslovenska akademia ved, Prague Czechoslovakia

Continuation-in-part of Ser. No. 474,247, May 29, 1974, abandoned. This application Feb. 20, 1976, Ser. No. 659,740

Claims priority, application Czechoslovakia, May 31, 1973, 3944/73

Int. Cl.[2] **A61K** *33/24*

U.S. Cl. 424—131 **3 Claims**

1. A method for treating trichophytosis of cattle, orf in sheep

and goats or cow pox which comprises topically applying to said animal in need of said treatment a composition comprising from 10^{-5} M to $2.1.10^{-1}$M $CoCl_2$ with a pharmaceutical carrier, the composition being employed in an amount sufficient to cure the trichophytosis of cattle, orf or cow pox.

4,085,207

AMINO ACID PARENTERAL SOLUTION CONTAINING REDUCING SUGAR

Mitsuo Aoki; Kazuhiko Watanabe; Shunichi Murase, all of Maruto, and Isao Hiraoka, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Japan

Filed Mar. 24, 1976, Ser. No. 670,070
Claims priority, application Japan, Apr. 1, 1975, 50-40072
Int. Cl.[2] A61K *31/70, 31/40*
U.S. Cl. 424—180 **4 Claims**

1. A heat sterilized amino acid parenteral solution containing from about 0.06 to about 0.4 W/V% of a mixture of (i) at least one N-acyl-L-tryptophan and at least one N-acyl-L-proline, and (ii) from about 3 to about 25 W/V% of at least one reducing sugar, said N-acyl-L-tryptophan being at least one species selected from the group consisting of N-acetyl-L-tryptophan, N-lactyl-L-tryptophan, N-phenylacetyl-L-tryptophan, N-phenoxyacetyl-L-tryptophan, N-carbobenzoxy-L-tryptophan, N-oleyl-L-tryptophan, N-maleyl-L-tryptophan, N-benzoyl-L-tryptophan, N-glycyl-L-tryptophan and N-leucyl-L-tryptophan, said N-acyl-L-proline being at least one species selected from the group consisting of N-acetyl-L-proline, N-lactyl-L-proline, N-phenylacetyl-L-proline, N-phenoxyacetyl-L-proline, N-benzoyl-L-proline, N-carbobenzoxy-L-proline, N-valyl-L-proline, N-maleyl-L-proline, N-oleyl-L-proline, N-glycyl-L-proline and N-leucyl-L-proline, said reducing sugar being at least one species selected from the group consisting of glucose, fructose, maltose and lactose.

4,085,208

PROCESS FOR PREPARING 4,6-DI-O-(AMINOGLYCOSYL)-1,3-DIAMINOCYCLITOLS AND NOVEL 1-EPIMERS AND 1-N-ALKYL DERIVATIVES PRODUCED THEREBY; METHODS FOR THE USE OF THE 1-EPIMER DERIVATIVES AS ANTIBACTERIAL AGENTS AND COMPOSITIONS USEFUL THEREFOR

Alan K. Mallams, West Orange, N.J., and David Huw Davies, Macclesfield, England, assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 21, 1976, Ser. No. 697,805
Int. Cl.[2] A61K *31/71;* **C07H** *15/22*
U.S. Cl. 424—180 **30 Claims**

29. The method of eliciting an antibacterial response in a warm-blooded animal having a susceptible bacterial infection which comprises administering to said animal a non-toxic anti-bacterially effective amount of a 1-epi-N-X-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol selected from the group consisting of 1-epi-N-X-gentamicin A, 1-epi-N-X-gentamicin B, 1-epi-N-X-gentamicin B_1, 1-epi-N-X-gentamicin C_1, 1-epi-N-X-gentamicin C_{1a}, 1-epi-N-X-gentamicin C_2, 1-epi-N-X-gentamicin C_{2a}, 1-epi-N-X-gentamicin C_{2b}, 1-epi-N-X-gentamicin X_2, 1-epi-N-X-kanamycin A, 1-epi-N-X-kanamycin B, 1-epi-N-X-3',4'-dideoxykanamycin B, 1-epi-N-X-sisomicin, 1-epi-N-X-verdamicin, 1-epi-N-X-tobramycin, 1-epi-N-X-Antibiotic G-52, 1-epi-N-X-Antibiotic G-418, 1-epi-N-X-Antibiotic 66-40B, 1-epi-N-X-Antibiotic 66-40D, 1-epi-N-X-Antibiotic JI-20A, 1-epi-N-X-Antibiotic JI-20B,

the 5-epi, 5-epi-azido-5-deoxy, 5-epi-amino-5-deoxy analogs of the foregoing; 1-epi-N-X-Antibiotic Mu-1, 1-epi-N-X-Antibiotic Mu-2, 1-epi-N-X-Antibiotic Mu-4, 1-epi-N-X-Antibiotic Mu-5;

and the pharmaceutically acceptable acid addition salts thereof,

wherein X is a substituent selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, cycloalkylalkyl, aralkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, aminohydroxyalkyl, alkylaminohydroxyalkyl and dialkylaminohydroxyalkyl, said X substituent having less than 9 carbon atoms with the proviso that,

said aminohydroxyalkyl, alkylaminohydroxyalkyl and dialkylaminohydroxyalkyl substituents must have the amino and hydroxyl groups on different carbon atoms, and that neither substituent be on the carbon atom alpha to the 1-amino function.

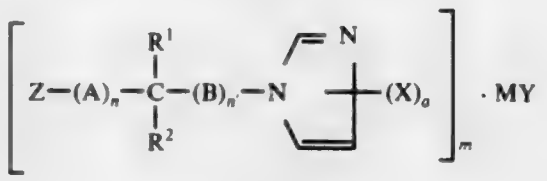
4,085,209

PREPARATION AND SAFENING EFFECT OF 1-SUBSTITUTED IMIDAZOLE METAL SALT COMPLEXES

George Allen Miller, Glenside, and Harold Edwin Carley, Chalfont, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 5, 1975, Ser. No. 547,290
Int. Cl.[2] C07F *3/06, 3/00, 1/00;* **A01N** *9/22*
U.S. Cl. 424—245 **10 Claims**

1. A metal salt complex of the formula



wherein Z is phenyl substituted with up to two substituents selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, trihalomethyl, methyl, ethyl, methoxy and ethoxy; naphthyl furanyl; benzofuranyl; thienyl or halothienyl;

R^1 is hydrogen;

R^2 is independently selected from the group consisting of hydrogen, (C_1–C_8) alkoxy, (C_2–C_8) alkenoxy, (C_2–C_8) alkynoxy (C_1–C_8) alkylthio, halo, hydroxy, acetoxy, benzoyloxy, (C_1–C_4) alkylamino, (C_6–C_{10}) phenylhydrazino; or

R^1 and R^2 are taken together with the attached carbon to form a carbonyl, (C_1–C_2) ketal, (C_1–C_2) thioketal, hydroxyimino, (C_1–C_4) alkylimino or (C_6–C_{10}) phenylhydrazono;

A and B are divalent (C_1–C_4) alkylene groups;

X is methyl or halogen;

a is an integer from 0 to 3;

n is an integer from 0 to 1;

n' is an integer from 0 to 1;

M is a metal selected from the group consisting of calcium, magnesium, manganese, copper, nickel, zinc, iron, cobalt, tin, cadmium, mercury, chromium, lead and barium;

Y is an anion counterion selected from the group consisting of chloride, bromide, iodide, sulfate, bisulfate, phosphate, nitrate, perchlorate, carbonate, bicarbonate, hydrosulfide, hydroxide, acetate, oxalate, malate, citrate and ethylene-bis-dithiocarbamate; and

m is an integer from 1 to 4.

6. A method for controlling phytopathogenic fungi which comprises applying a fungicidally effective amount of a metal salt complex according to claim **1** to a plant, to plant seeds or to the plant habitat.

9. A fungicidal composition which comprises an agronomically acceptable carrier and, as the active ingredient, a fungicidally effective amount of a complex of claim **1**.

4,085,210

NOVEL MORPHOLINE DERIVATIVES AND THE TREATMENT OF MENTAL DEPRESSION

Junki Katsube, Toyonaka; Atsuyuki Kojima, Nishinomiya; Makoto Sunagawa, Toyonaka; Yoshinori Takashima, Nishinomiya; Yoshito Kameno, Minoo, and Hisao Yamamoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

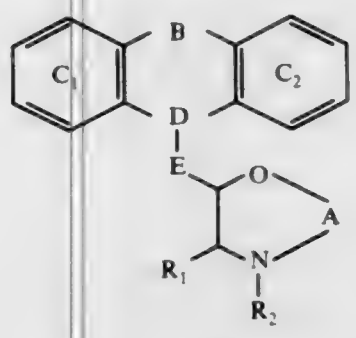
Filed Jan. 6, 1976, Ser. No. 646,908

Claims priority, application Japan, Jan. 6, 1975, 50-4540; Jun. 4, 1975, 50-67767

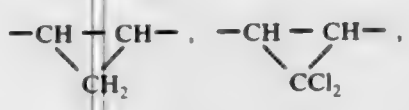
Int. Cl.[2] C07D *409/06;* A61K *31/535;* C07D *265/30, 405/06*

U.S. Cl. 424—248.4 10 Claims

1. A compound of the formula:



wherein R_1 is hydrogen or C_1–C_4 alkyl, R_2 is hydrogen, C_1–C_4 alkyl, C_3–C_5 alkenyl, C_3–C_5 alkynyl, aryl(C_1–C_4)alkyl, (C_3–C_6)-cycloalkyl(C_1–C_4)alkyl, polyhalo(C_2–C_4)alkyl or hydroxy(C_2–C_4)alkyl, A is straight or branched C_2–C_4 alkylene, B is $-CH_2-C_2-$, $-CH=CH-$,



$-CH_2-O-$, $-CH_2-S-$, $-S-$ or $-O-$, $>D-E-$ is $>C=CH-$ and C_1 and C_2 are each 1,2-phenylene optionally substituted with one or more substituents selected from the group consisting of halogen, C_1–C_4 alkyl and C_1–C_4 alkoxy, or a non-toxic salt thereof.

8. 5-(4-Methylmorpholin-2-yl)methylidene-5H-dibenzo[a,d]-cycloheptene, or a non-toxic salt thereof.

4,085,211

PYRAZINECARBOXAMIDES AND PROCESSES FOR PREPARING SAME

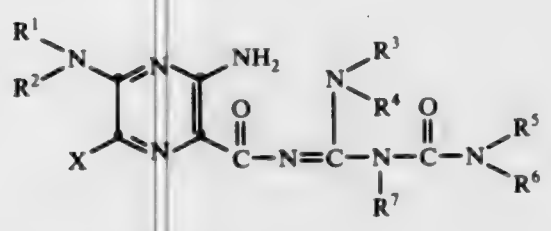
Edward J. Cragoe, Jr., Lansdale; Otto W. Woltersdorf, Jr., Chalfont, and Charles N. Habecker, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 640,803, Dec. 15, 1975, abandoned. This application Sep. 13, 1976, Ser. No. 722,442

Int. Cl.[2] A61K *31/495;* C07D *295/18*

U.S. Cl. 424—250 20 Claims

1. A compound of the formula:



wherein

R^1 is hydrogen, lower alkyl having from 1 to 5 carbon atoms cycloalkyl having from 3 to 6 carbon atoms, lower alkenyl having from 2 to 3 carbon atoms;

R^2 is hydrogen, lower alkyl having 1 to 5 carbon atoms;

R^1 and R^2 are joined to form with the nitrogen atom to which they are attached a pyrrolidine or piperazine ring;

R^3 is hydrogen, lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms;

R^4 is hydrogen, lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms;

R^5 is hydrogen, lower alkyl having 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms; phenyl or substituted phenyl wherein the substituent is lower alkyl or halo; benzyl or phenethyl; trifluoroethyl, lower alkylamino, diloweralkylamino, allyl, propargyl, pyridyl, furfuryl, methoxy or hydroxy ethyl; ethoxy carbonyl methyl or carboxy methyl;

R^6 is hydrogen, lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 10 nuclear carbon atoms;

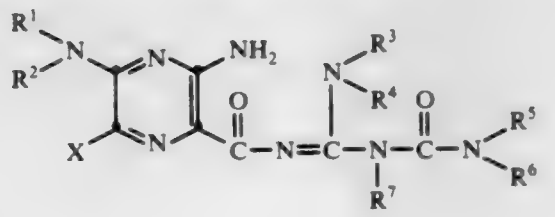
R^5 and R^6 are joined to form a piperazine or morpholine ring with the nitrogen atom to which they are attached;

R^7 is hydrogen, lower alkyl having 1 to 5 carbon atoms;

R^3 and R^7 are joined to form an alkylene bridge of 2 carbon atoms;

X is halogen; and the pharmaceutically acceptable non-toxic acid addition salts thereof.

13. A method of treating edema and/or hypertension which comprises administering to a patient a pharmacologically acceptable does of a compound of the formula:



wherein

R^1 is hydrogen, lower alkyl having from 1 to 5 carbon atoms cycloalkyl having from 3 to 6 carbon atoms, lower alkenyl having from 2 to 3 carbon atoms;

R^2 is hydrogen, lower alkyl having 1 to 5 carbon atoms;

R^1 and R^2 are joined to form with the nitrogen atom to which they are attached a pyrrolidine or piperazine ring;

R^3 is hydrogen, lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms;

R^4 is hydrogen, lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms;

R^5 is hydrogen, lower alkyl having 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms; phenyl or substituted phenyl wherein the substituent is lower alkyl or halo; benzyl or phenethyl; trifluoroethyl, lower alkylamino, diloweralkylamino, allyl, propargyl, pyridyl, furfuryl, methoxy or hydroxy ethyl; ethoxy carbonyl methyl or carboxy methyl;

R^6 is hydrogen, lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 10 nuclear carbon atoms;

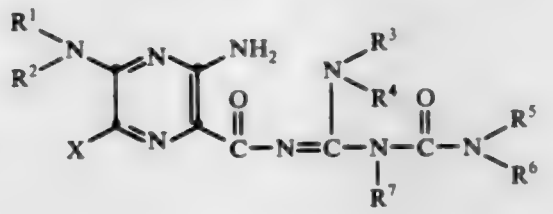
R^5 and R^6 are joined to form a piperazine or morpholine ring with the nitrogen atom to which they are attached;

R^7 is hydrogen, lower alkyl having 1 to 5 carbon atoms;

R^3 and R^7 are joined to form an alkylene bridge of 2 carbon atoms;

X is halogen; and the pharmaceutically acceptable non-toxic acid addition salts thereof.

17. A pharmaceutical composition consisting essentially of an active ingredient of a compound of the formula:



wherein

R^1 is hydrogen, lower alkyl having from 1 to 5 carbon atoms cycloalkyl having from 3 to 6 carbon atoms, lower alkenyl having from 2 to 3 carbon atoms;

R^2 is hydrogen, lower alkyl having 1 to 5 carbon atoms;
R^1 and R^2 are joined to form with the nitrogen atom to which they are attached a pyrrolidine or piperazine ring;
R^3 is hydrogen, lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms;
R^4 is hydrogen, lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms;
R^5 is hydrogen, lower alkyl having 1 to 5 carbon atoms; cycloalkyl having from 3 to 6 nuclear carbon atoms; phenyl or substituted phenyl wherein the substituent is lower alkyl or halo; benzyl or phenethyl; trifluoroethyl, lower alkylamino, diloweralkylamino, allyl, propargyl, pyridyl, furfuryl, methoxy or hydroxy ethyl; ethoxy carbonyl methyl or carboxy methyl;
R^6 is hydrogen, lower alkyl having from 1 to 5 carbon atoms; cycloalkyl having from 3 to 10 nuclear carbon atoms;
R^5 and R^6 are joined to form a piperazine or morpholine ring with the nitrogen atom to which they are attached;
R^7 is hydrogen, lower alkyl having 1 to 5 carbon atoms;
R^3 and R^7 are joined to form an alkylene bridge of 2 carbon atoms;
X is halogen; and the pharmaceutically acceptable non-toxic acid addition salts thereof.

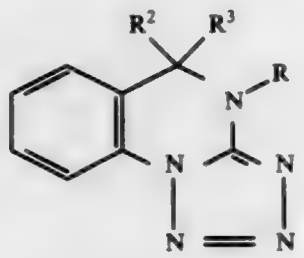
4,085,212

PESTICIDAL DIHYDROTETRAZOLO [1,5-a] QUINAZOLINE COMPOUND AND PROCESSES AND COMPOSITIONS FOR USING THE SAME

Raymond Alexander Burrell, Camberley, and John Michael Cos, Workingham, both of England, assignors to Imperial Chemical Industries Limited, London, England

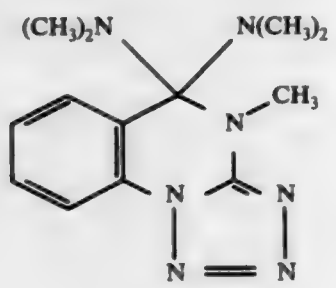
Filed Aug. 6, 1976, Ser. No. 712,375
Claims priority, application United Kingdom, Aug. 14, 1975, 33931/75
Int. Cl.[2] A01N *9/22;* C07D *487/04*
U.S. Cl. 424—251 **6 Claims**

1. A dihydrotetrazolo[1,5-a]quinazoline compound which in free base form has the formula:



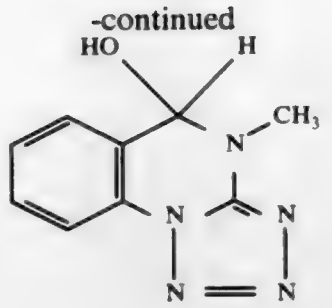
wherein R^3 is hydrogen, hydroxy or dialkylamino of from 1 to 4 carbon atoms; R^2 is dialkylamino of from 1 to 4 carbon atoms when R^3 is dialkylamino and R^2 is hydrogen when R^3 is hydrogen or hydroxy; and R is a lower alkyl of from 1 to 4 carbon atoms.

5. A pesticidal composition comprising as active ingredient, an effective amount of a quinazoline compound having in free base form the structural formula:

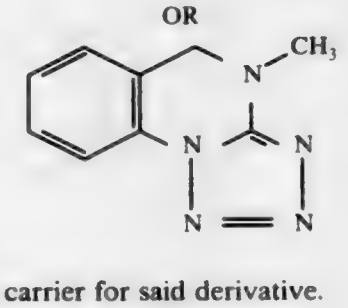


OR

-continued



OR



together with a carrier for said derivative.

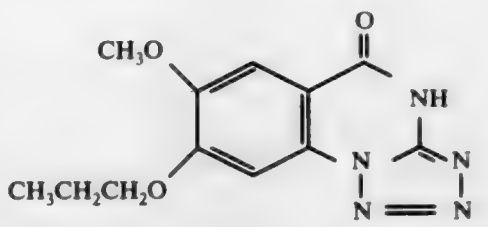
4,085,213

TETRAZOLO[A]QUINAZOL-5-ONES ANTIALLERGY AND ANTIULCER AGENTS

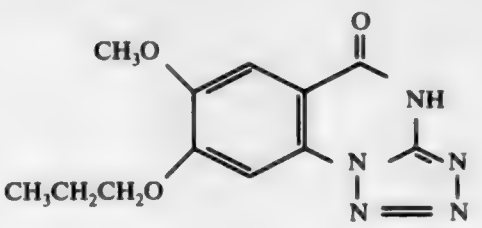
Jasjit S. Bindra, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 653,250, Jan. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 594,765, Jul. 10, 1975, abandoned. This application Dec. 23, 1976, Ser. No. 753,856
Int. Cl.[2] A61K *31/305;* C07D *487/04*
U.S. Cl. 424—251 **3 Claims**

1. A compound of the formula:



2. A method of inhibiting the release of mediators of anaphylaxis in a mammalian subject which comprises administering orally, intranasally, parenterally or by inhalation to the subject an anaphylaxis mediator release inhibiting amount of a compound having the formula:



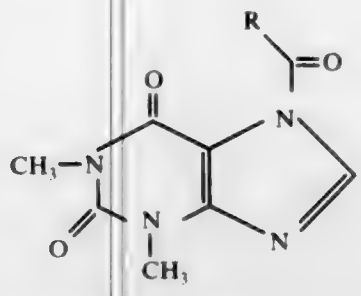
4,085,214

STABLE PRO-DRUG FORMS OF THEOPHYLLINE

Takeru Higuchi; Nicolae S. Bodor, and Yu-Neng Kuo, all of Lawrence, Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

Filed Oct. 18, 1976, Ser. No. 732,979
Int. Cl.[2] A61K *31/52;* C07D *473/08*
U.S. Cl. 424—253 **8 Claims**

1. A pro-theophylline compound of the formula:



(I)

wherein R represents a straight or branched phenylalkenyl group having 2–8 carbon atoms in the alkenyl portion.

5. A method for inducing a non-toxic, sustained therapeutically effective release of theophylline in the bloodstream of a warm-blooded animal which comprises:

orally administering thereto, a pharmaceutically effective amount of the compound of claim **1**.

4,085,215

CERTAIN 5,6,7,8-TETRAHYDROQUINOLINE-8-THIOCARBOXAMIDES

Adrian Charles Ward Curran, South Cave; Roger Crossley, Reading, and David George Hill, Cookham, all of England, assignors to John Wyeth & Brother Ltd., Taplow, England

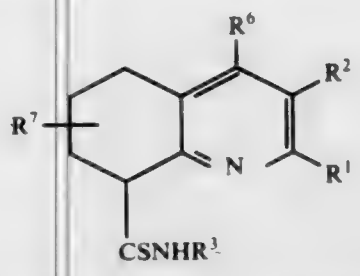
Continuation-in-part of Ser. No. 460,265, Apr. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 403,289, Oct. 3, 1973, abandoned. This application Jul. 30, 1975, Ser. No. 600,257

Claims priority, application United Kingdom, Feb. 4, 1974, 4950/74; Mar. 27, 1974, 13513/74; Mar. 27, 1974, 13515/74; Oct. 21, 1972, 48595/72; Oct. 15, 1973, 7424/73; Jul. 21, 1973, 34866/73; Aug. 16, 1973, 38701/73; Oct. 17, 1972, 48595/72

Int. Cl.[2] **C07D** *215/48;* **A61K** *31/47, 31/44*

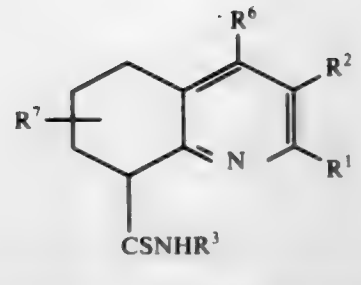
U.S. Cl. 424—258 **18 Claims**

1. A compound of the formula



or a acid addition salt thereof with a pharmaceutically acceptable acid, wherein R^1, R^2 and R^6 are the same or different and are selected from hydrogen, trifluoromethyl, alkyl having from 1 to 6 carbon atoms, phenylalkyl wherein the alkyl group has 1 to 6 carbon atoms, or phenyl groups or R^1 and R^2 taken together represent a polymethylene chain of 3 to 5 carbon atoms, R^7 represents hydrogen or from 1 to 3 groups selected from alkyl of 1 to 6 carbon atoms (which may be substituted by alkoxy of 1 to 5 carbon atoms or trifluoromethyl), phenylalkyl wherein the alkyl group has 1 to 6 carbon atoms and phenyl groups, R^3 is hydrogen or alkyl of 1 to 6 carbon atoms, and any of the phenyl or the phenyl portion of any phenylalkyl groups R^1, R^2, R^6 and R^7 may be substituted by alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, halogen, nitro or trifluoromethyl with the provisos that (1) when R^1 and R^2 or R^2 and R^6 are both alkyl they are selected from normal and secondary alkyl groups and (2) when two alkyl R^7 groups are present on the same carbon atom then they are both n-alkyl groups and when two R^7 alkyl groups are present on adjacent carbon atoms they are selected from normal and secondary alkyl groups.

17. A method of treating ulcers in an afflicted host which method comprises administering to said host a compound of the formula



or a acid addition salt thereof with a pharmaceutically acceptable acid, wherein R^1, R^2 and R^6 are the same or different and are selected from hydrogen, trifluoromethyl, alkyl having from 1 to 6 carbon atoms, phenylalkyl wherein the alkyl group has 1 to 6 carbon atoms, or phenyl groups, or R^1 and R^2 taken together represent a polymethylene chain of 3 to 5 carbon atoms, R^7 represents hydrogen or from 1 to 3 groups selected from alkyl of 1 to 6 carbon atoms (which may be substituted by alkoxy of 1 to 5 carbon atoms or trifluoromethyl), phenylalkyl wherein the alkyl group has 1 to 6 carbon atoms and phenyl groups, R^3 is hydrogen or alkyl of 1 to 6 carbon atoms, and any of the phenyl or the phenyl portion of any phenylalkyl groups R^1, R^2, R^6 and R^7 may be substituted by alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, halogen, nitro or trifluoromethyl with the provisos that (1) when R^1 and R^2 or R^2 and R^6 are both alkyl they are selected from normal and secondary alkyl groups and (2) when two alkyl R^7 groups are present on the same carbon atom then they are both n-alkyl groups and when two R^7 alkyl groups are present on adjacent carbon atoms they are selected from normal and secondary alkyl groups.

4,085,216

2-(4-PHENYL-4-CYANO-N-BUTYL)-1,2,3,4-TETRAHYDRO-5(H)-PYRIDO-[4,3,b]-INDOLES AND SALTS THEREOF

Adolf Langbein, Ingelheim am Rhein; Karl-Heinz Weber, Gau-Algesheim; Adolf Bauer, Rosenheim; Karin Böke, Ingelheim am Rhein; Erich Lehr, Waldalgesheim, and Franz Josef Kuhn, Bingen, Rhein, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

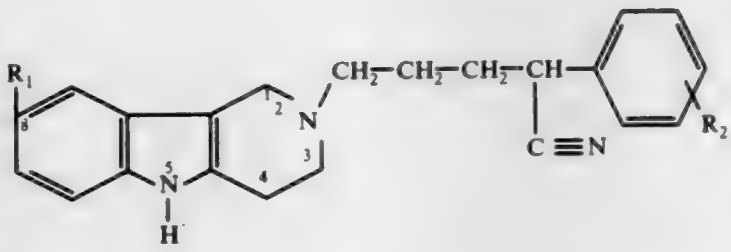
Filed May 9, 1977, Ser. No. 794,937

Claims priority, application Germany, May 15, 1976, 2621729

Int. Cl.[2] **A61K** *31/44;* **C07D** *471/14*

U.S. Cl. 424—263 **6 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, halogen or methyl, and

R_2 is hydrogen, halogen, methyl or methoxy, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

5. A neuroleptic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective neuroleptic amount of a compound of claim **1**.

4,085,217
PROCESS AND COSMETIC COMPOSITIONS FOR THE TREATMENT OF SKIN AND SCALP

Gregoire Kalopissis, Paris, France, assignor to L'Oreal, Paris, France

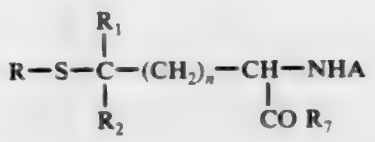
Division of Ser. No. 501,615, Aug. 29, 1974, Pat. No. 3,976,781, which is a division of Ser. No. 203,046, Nov. 29, 1971, Pat. No. 3,849,576, which is a continuation-in-part of Ser. No. 736,960, Jun. 14, 1968, abandoned, which is a continuation-in-part of Ser. No. 427,976, Jan. 25, 1965, abandoned, and Ser. No. 602,480, Dec. 19, 1966, abandoned, Ser. No. 794,363, Jan. 27, 1969, abandoned, Ser. No. 801,840, Feb. 24, 1969, abandoned, Ser. No. 817,193, Apr. 17, 1969, abandoned, Ser. No. 858,161, Sep. 15, 1969, Pat. No. 3,671,643, Ser. No. 12,122, Feb. 17, 1970, abandoned, and Ser. No. 36,405, May 11, 1970, abandoned. This application Aug. 12, 1976, Ser. No. 714,000

Claims priority, application France, Jan. 29, 1964, 64.961897; Luxembourg, Dec. 22, 1965, 50125; France, Jun. 21, 1967, 67.111396; Jul. 28, 1967, 67.116160; Luxembourg, Jan. 29, 1968, 55371; Feb. 23, 1968, 55553; Apr. 19, 1969, 55935; Belgium, Jun. 3, 1969, 74877; Luxembourg, Feb. 19, 1969, 58042; May 12, 1969, 58634; Apr. 23, 1971, 63056; Apr. 23, 1971, 63057

Int. Cl.[2] A61K *31/455*

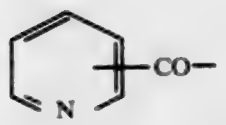
U.S. Cl. 424—266 12 Claims

1. A cosmetic composition for topical application to a human's scalp and skin characterized by an excessive secretion of sebum to improve the condition thereof by reducing said excessive secretion of sebum comprising a non-toxic cosmetic carrier suitable for topical application to the scalp or skin and a non-toxic active component present in amounts effective to reduce excessive secretion of sebum, said active component being selected from the group consisting of a compound having the formula:

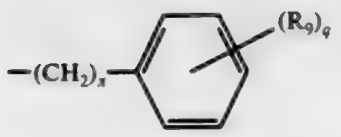


wherein n is 0 or 1 and when n is 0 R_1 and R_2 are selected from the group consisting of hydrogen and CH_3, and when n is 1, R_1 and R_2 are hydrogen; R_7 is selected from the group consisting of hydroxy and alkoxy containing 1–5 carbon atoms,

A is



and R is selected from the group consisting of $-C(C_6H_5)_3$, $-CH(C_6H_5)_2$, $-CH(C_6H_4p-OCH_3)_2$, $-C(CH_3)_2$ (C_6H_4 p—OCH_3), $-(CH_2)_z$-R_8 wherein z is 0 or 1 and R_8 is selected from the group consisting of naphthyl-1 and naphthyl-2 and



wherein x is 0–2 and wherein when q is 1, 2 or 3, R_9 is selected from the group consisting of hydrogen, halogen, alkoxy having 1–5 carbon atoms and linear or branched chain alkyl having 1–4 carbon atoms, and when q is 1, R_9 is selected from the group consisting of acetamide, amino, phenoxy, cyclohexyl, trifluoromethyl, phenyl, dialkylamino wherein each alkyl moiety has 1–5 carbon atoms.

4,085,218
ELEVATING MOOD IN GERIATRIC PATIENTS

Kurt Anton Fisher-Cornelssen, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

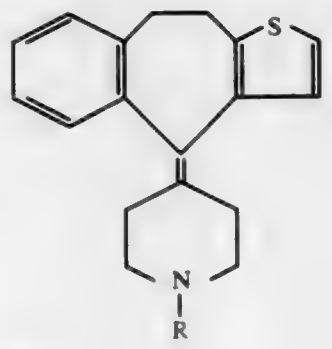
Filed Oct. 21, 1976, Ser. No. 734,696

Claims priority, application United Kingdom, Oct. 30, 1975, 44878/75

Int. Cl.[2] A61K *31/445*

U.S. Cl. 424—267 11 Claims

1. A method of elevating mood in geriatric patients, which comprises administering to a geriatric patient in need of said treatment a mood elevating effective quantity of a compound of the formula:



wherein R is lower alkyl,

or a pharmaceutically acceptable acid addition salt form thereof.

4,085,219
1-OXO-2,2-DISUBSTITUTED-5-INDANYLOXY(OR THIO)ALKANOIC ACIDS

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

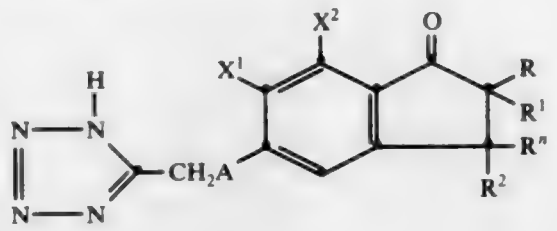
Division of Ser. No. 399,571, Sep. 21, 1973, Pat. No. 3,984,465. This application Jul. 13, 1976, Ser. No. 704,851

Claims priority, application Canada, Oct. 13, 1972, 153921; Aug. 28, 1973, 178824

Int. Cl.[2] A61K *31/45*; C07D *257/04*

U.S. Cl. 424—269 11 Claims

1. A compound of the formula



wherein

A is oxygen or sulfur;

R is lower alkyl or cycloalkyl having from 3 to 6 carbon atoms;

R^1 is lower alkyl, lower alkenyl, halo lower alkenyl, lower alkynyl, phenyl lower alkyl, phenyl lower alkenyl, hydroxy lower alkyl, lower alkoxy lower alkyl, oxo lower alkyl or hydroxy cycloalkyl, cycloalkyl alkyl containing 4 to 7 carbon atoms;

R and R^1 may be joined together with the carbon atom to which they are attached to form cycloalkyl or hydroxy cycloalkyl;

R^2 is hydrogen, halo, lower alkyl, phenyl or substituted phenyl wherein the substituent is lower alkyl or halo;

R^n is hydrogen or methyl;

X^1 is hydrogen, methyl or halo; and

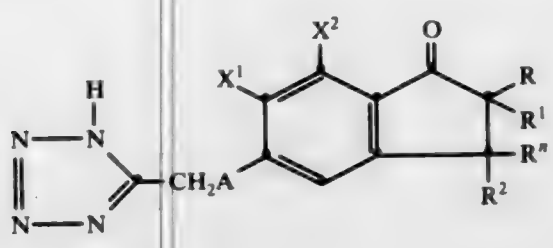
X^2 is methyl or halo; or

X^1 and X^2 may be joined to form a hydrocarbylene chain containing 3 to 4 carbon atoms; and

Y is alkylene or haloalkylene containing a maximum of 4

carbon atoms, and the non-toxic pharmacologically acceptable salts thereof.

7. A pharmaceutical composition useful in the treatment of edema and hypertension which also maintains uric acid at pretreatment levels or causes a decrease in uric acid levels which comprises 10 mg. to 500 mg. of a compound of the formula:



wherein

A is oxygen or sulfur;

R is lower alkyl or cycloalkyl having from 3 to 6 carbon atoms;

R^1 is lower alkyl, lower alkenyl, halo lower alkenyl, lower alkynyl, phenyl lower alkyl, phenyl lower alkenyl, hydroxy cycloalkyl or hydroxy lower alkyl, lower alkoxy lower alkyl, oxo lower alkyl or cycloalkyl lower alkyl; or

R and R^1 may be joined to form a cycloalkyl or hydroxy cycloalkyl;

R^2 is hydrogen, halo, phenyl or substituted phenyl wherein the substituent is lower alkyl or halo or lower alkyl;

R'' is methyl or hydrogen;

X^1 is hydrogen, methyl or halo; and

X^2 is methyl or halo; or

X^1 and X^2 may be joined to form a hydrocarbylene chain containing 3 to 4 carbon atoms and

Y is alkylene or haloalkylene containing a maximum of 4 carbon atoms, and the non-toxic, pharmacologically acceptable salts and a pharmaceutically acceptable carrier thereof.

4,085,220

2-ALKENYL-N-[(TRICHLOROMETHYL)THIO]SUCCINIMIDES

Wilhelm Sandermann, Donaustauf; Heinz Eggensperger, Hamburg, and Karl-Heinz Diehl, Norderstedt, all of Germany, assignors to Sterling Drug Inc., New York, N.Y.

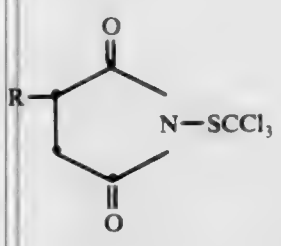
Filed Mar. 30, 1977, Ser. No. 782,750

Claims priority, application Germany, Apr. 7, 1976, 2614935

Int. Cl.[2] C07D *207/40;* A61K *31/40*

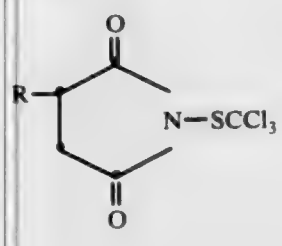
U.S. Cl. 424—274 **9 Claims**

1. A 2-R-N-[(trichloromethyl)thio]succinimide having the formula



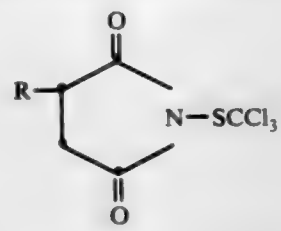
where R is alkenyl having from 8 to 12 carbon atoms.

4. A fungicidal composition comprising as active fungicidal ingredient at least one 2-R-N-[(trichloromethyl)thio]succinimide having the formula



where R is alkenyl having from 8 to 12 carbon atoms, and a carrier therefor.

7. A method for preventing or retarding the deleterious effects associated with fungus contamination on a material susceptible to fungus contamination which comprises treating the material with a fungicidally effective amount of at least one 2-R-N-[(trichloromethyl)thio]succinimide of the formula



where R is alkenyl having from 8 to 12 carbon atoms.

4,085,221

ETHANOLAMINE DERIVATIVES

Leslie Harold Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 26, 1976, Ser. No. 745,164

Claims priority, application United Kingdom, Dec. 5, 1975, 50037/75

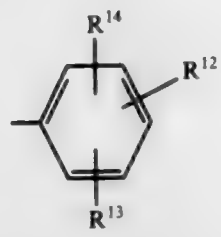
Int. Cl.[2] A61K *31/38;* C07D *307/81*

U.S. Cl. 424—275 **11 Claims**

1. An ethanolamine derivative selected from the group consisting of a compound of the formula:

$$R—CHOH.CH_2NH—A—NH—X—Y—R^1$$

wherein A is alkylene of from 2 to 12 carbon atoms; wherein X is carbonyl (—CO—) or sulphonyl ($—SO_2—$); wherein Y is a direct link, or alkylene or alkyleneoxy each of up to 6 carbon atoms, or imino (—NH—), or alkylimino, iminoalkylene, iminoalkyleneoxy or iminoalkylenecarbonyloxy each of up to 6 carbon atoms, or (except when R^1 is hydrogen) is oxygen; and wherein R is benzothienyl, benzodioxanyl, or benzofuryl which is unsubstituted or which contains one or more substituents selected from halogen and alkyl of up to 6 carbon atoms, and R^1 is hydrogen, or alkyl, alkenyl, halogenoalkyl or cycloalkyl each of up to 6 carbon atoms, or benzothienyl, benzodioxanyl, or benzofuryl as defined above for R, or is aryl of the formula:



wherein R^{12} and R^{13}, which may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro or cyano, or alkyl, hydroxyalkyl, cycloalkyl, alkenyl, alkynyl, alkoxy, alkylthio, cycloalkoxy, alkenyloxy, alkynyloxy or alkanoyl each of up to 6 carbon atoms, or aryl, aryloxy or dialkylamino each of up to 12 carbon atoms; or wherein R^{12} and R^{13} together form trimethylene, tetramethylene, 1-oxotetramethylene, propenylene, but-2-enylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl, 5-oxo-5,6,7,8-tetrahydronaphthyl, indenyl, 5,8-dihydronaphthyl or naphthyl, wherein R^{14} is hydrogen or amidic of the formula:

$$R^{15}R^{16}N—CO—Q—$$

$$R^{15}R^{16}N—CO—NH—Q—$$

$$R^{15}R^{16}N—CO—Q^1—O—$$

or

$$R^{16}—X—NR^{15}—Q—$$

wherein Q is a direct link or alkylene or alkenylene each of up to 6 carbon atoms; wherein Q^1 is alkylene of up to 6 carbon atoms; wherein R^{15} is hydrogen or alkyl of up to 6 carbon atoms; wherein R^{16} is hydrogen, alkenyl, cycloalkyl, hydroxyalkyl, or alkoxyalkyl each of up to 6 carbon atoms, or alkyl, aryl, aralkyl or aralkenyl each of up to 10 carbon atoms; and a non-toxic pharmaceutically-acceptable acid-addition salt thereof.

9. A pharmaceutical composition useful for the treatment of prophylaxis of heart diseases and hypertension in a warm blooded animal comprising as active ingredient an effective amount of at least one ethanolamine derivative or an acid-addition salt thereof, claimed in claim **1**, in association with a pharmaceutically-acceptable diluent or carrier therefor.

4,085,222

PHARMACEUTICAL COMPOSITIONS CONTAINING 1,3-DIOXANES

Deryck Rhodes, and Roger Frank Newton, both of London, England, assignors to Allen & Hanburys Limited, London, England

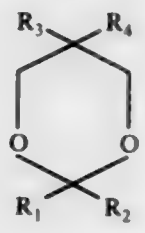
Filed Nov. 12, 1974, Ser. No. 523,238

Claims priority, application United Kingdom, Nov. 21, 1973, 53924/73

Int. Cl.[2] **A61K** *31/335*

U.S. Cl. 424—278 **26 Claims**

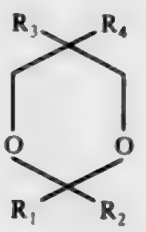
1. Compounds of the formula



(I)

in which R_1 represents cycloalkyl, aralkyl, or substituted phenyl, in which the substituents on the phenyl group are one or more of the following groups, halogen, hydroxy, alkoxy (C_1–C_4), alkyl (C_1–C_4), nitro, or dialkylamino; R_2 represents a hydrogen atom, or R_1 and R_2 together with the adjacent carbon atom represent a cycloalkyl group with 3 to 7 carbon atoms inclusive; R_3 represents a group R_5CO—, or $R_5CH(OH)$— in which R_5 is methyl or ethyl; R_4 is an alkyl group (C_1–C_6) or a phenyl group; and in which where R_4 is alkyl, R_3 and R_4 may be linked together to produce a 5-, 6- or 7-membered hydrocarbyl spirocyclic system with the adjacent carbon atom of the dioxan ring; and where the compounds contain hydroxyl groups, esters with alkanoic acids of such compounds; and where the compounds contain basic centres, non-toxic pharmaceutically acceptable salts with organic or inorganic salts.

15. A pharmaceutical composition comprising as active ingredient one or more compounds of the formula:



I(a)

in which R_1 represents a straight or branched (C_1–C_6) alkyl group, a cycloalkyl group, an aralkyl (C_1–C_4) group, or phenyl group, which phenyl group may optionally be substituted by one or more of the following groups, halogen, hydroxy, alkoxy (C_1–C_4), alkyl (C_1–C_4), nitro or dialkylamino; R_2 represents a hydrogen atom, or R_1 and R_2 together with the adjacent carbon atom represent a cycloalkyl group with 3 to 7 carbon atoms inclusive; R_3 represents a group $HOCH_2$—, R_5CO— or $R_5CH(OH)$—, where R_5 is methyl or ethyl; R_4 is an alkyl group (C_1–C_6) or a phenyl group; and in which where R_4 is alkyl, R_3 and R_4 may be linked together to produce a 5-, 6- or 7-membered hydrocarbyl spirocyclic system with the adjacent carbon atom of the dioxan ring; and where the compounds contain hydroxyl groups, esters with alkanoic acids of such compounds; and where the compounds contain basic centres, non-toxic pharmaceutically acceptable salts with organic or inorganic acids; in a pain relieving effective amount in association with a pharmaceutical carrier or diluent.

26. A method of relieving pain which comprises administering a pain-relieving effective amount to a patient suffering from pain a compound as defined in claim **15**.

4,085,223

HALOGENATED DERIVATIVES OF 1,3-DIOXOLANE HAVING MUCOLYTIC ACTIVITY

Massimo Carissimi; Franco Ravenna, and Giorgio Cantarelli, all of Milan, Italy, assignors to Maggioni & C. S.p.A., Milan, Italy

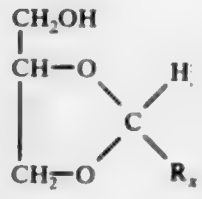
Filed Mar. 24, 1976, Ser. No. 670,174

Claims priority, application Italy, Apr. 2, 1975, 21929 A/75

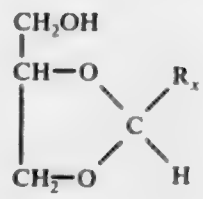
Int. Cl.[2] **A61K** *31/335;* **C07D** *317/10*

U.S. Cl. 424—278 **10 Claims**

1. A substance comprising a mixture of the cis- and trans-isomers of 4-hydroxymethyl-2-monohaloalkyl-1,3-dioxolane having the formulae



cis



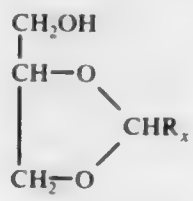
trans

wherein R_x is selected from monobromoalkyl, alkyl having 1–4 carbon atoms and iodomethyl.

5. A therapeutic composition useful as an expectorant and fluidizer of tracheobronchial mucus comprising an expectorant or fluidizing effective amount of the compound of claim **1**.

6. A method for increasing the secretion of laryngobronchial fluid while reducing the viscosity of such fluid comprising administering to a mammal having such condition an expectorant or fluidizing effective amount of a substance according to claim **1**.

8. A process for preparing the compounds of claim **1** in which halo designates iodo comprising heating a compound of the formula



in which R_x is monobromoalkyl, alkyl having 1 to 4 carbon atoms in the presence of a solvent and of an alkali metal iodide.

4,085,224

METHOD OF INCREASING FEED UTILIZATION

David H. Berg, Greenfield; Robert L. Hamill, New Ross, and Marvin M. Hoehn, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 569,740, Apr. 21, 1975, which is a continuation-in-part of Ser. No. 477,954, Jun. 10, 1974, abandoned. This application Sep. 2, 1976, Ser. No. 719,742

Int. Cl.[2] **A61K** *31/35*

U.S. Cl. 424—283 **2 Claims**

1. A method of increasing feed-utilization efficiency in a

ruminant animal which comprises orally administering to said animal in need of increasing the feed-utilization efficiency an effective propionate-increasing amount of salinomycin or a physiologically-acceptable salt of salinomycin.

4,085,225

OXIME ETHERS HAVING ANTI-DEPRESSIVE ACTIVITY

Hendricus Bernardus Antonius Welle, Utrecht, and Volkert Claassen, Weesp, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1976, Ser. No. 668,461

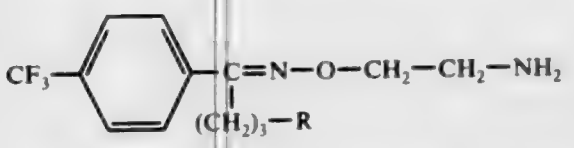
Claims priority, application Netherlands, Mar. 20, 1975, 7503310

Int. Cl.[2] **A61K** *31/15, 31/275;* **C07C** *121/78, 131/00*

U.S. Cl. 424—304 **8 Claims**

1. Oxime ether compounds of the formula

(I)



and salts thereof with pharmaceutically acceptable acids, in which formula R is a cyano group, a cyanomethyl group, a methoxymethyl group or an ethoxymethyl group.

7. An antidepressive composition comprising a compound of claim 1 in an antidepressively effective amount and a pharmaceutically acceptable carrier therefore.

4,085,226

INSECTICIDAL N-(SUBSTITUTED PHENYL)-N'-BENZOYL UREAS

Wilhelm Sirrenberg, Sprockhoevel; Erich Klauke, Odenthal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

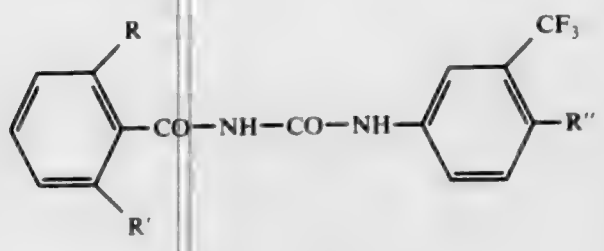
Filed Jun. 24, 1976, Ser. No. 699,396

Claims priority, application Germany, Jul. 12, 1975, 2531279

Int. Cl.[2] **C07C** *127/22;* **A01N** *9/20*

U.S. Cl. 424—322 **11 Claims**

1. An N-phenyl-N'-benzoyl-urea of the formula



in which

R is chlorine or fluorine,

R' is chlorine, fluorine or hydrogen, and

R'' is fluorine, chlorine and bromine.

10. A method of combating the insect *Plutella Maculipennis* which comprises applying to said insect or its habitat an insecticidally effective amount of a compound according to claim 1.

4,085,227

LONG-LASTING FLAVORED CHEWING GUM

Donald A. M. Mackay, Pleasantville; Frank Witzel, Spring Valley, both of N.Y.; Basant K. Dwivedi, Hopatcong, and Daniel Schoenholz, Basking Ridge, both of N.J., assignors to Life Savers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 577,589, May 15, 1975, and Ser. No. 577,590, May 15, 1975. This application May 4, 1976, Ser. No. 683,107

Int. Cl.[2] **A23G** *3/30*

U.S. Cl. 426—3 **32 Claims**

1. A flavored chewing gum having a prolonged sweet taste comprising gum base; and from about 0.02 to about 1.0% by weight of a particulate artificial sweetener having an average particle size below about 150 microns dispersed in said gum base, said sweetener being the free acid form of saccharin.

4,085,228

PREPARATION OF PIZZA CHEESE

George W. Reinbold, Wheat Ridge, and Malireddy S. Reddy, Thornton, both of Colo., assignors to Leprino Cheese Co., Denver, Colo.

Filed Aug. 18, 1976, Ser. No. 715,577

Int. Cl.[2] **A23C** *19/02*

U.S. Cl. 426—36 **16 Claims**

1. The process of manufacturing low-moisture Mozzarella cheese, including the steps of inoculating a batch of pasteurized cow's milk with a starter culture comprising from 1 to 3% based on the weight of the milk batch of *S. thermophilus* together with Lactobacillus selected from *L. bulgaricus, L. helveticus,* or both *L. bulgaricus* and *L. helveticus,* making cheese curd from the thus-inoculated milk including cooking the curd at 100° to 125° F., mixing and stretching the curd in water at a temperature above 130° F. to impart a stringy texture to the cheese, molding the mixed curd into bodies, and salting the molded bodies, wherein the improvement comprises: also inoculating said milk batch before making the cheese curd with from 0.5 to 3.0% based on the weight of the milk batch of an additional viable culture selected from cultures of *Pediococcus cerevisiae, Lactobacillus plantarum, Streptococcus faecalis, Streptococcus durans,* and *Lactobacillus casei,* and at the conclusion of said process holding the salted cheese bodies at a non-freezing temperature below 55° F. for 5 to 30 days while reducing the residual lactose sugar content of the cheese, said holding being continued until said cheese bodies have an average lactose sugar content below 0.3%.

4,085,229

PROCESS FOR THE TREATMENT OF CAKES AND SEEDS OF VEGETABLE ORIGIN

Thadée Joseph Staron, Noisy le Roi (Yvelines), France, assignor to Institut National de la Recherche Agronomique, Paris, France

Filed May 6, 1976, Ser. No. 684,031

Claims priority, application France, May 12, 1975, 75 14676

Int. Cl.[2] **C12D** *13/06;* **A23L** *1/20*

U.S. Cl. 426—46 **21 Claims**

1. A process for the treatment of cakes and seeds of vegetable origin involving the action of a microorganism, comprising the steps of:

(a) subjecting said cakes or seeds, to the action of at least one microorganism selected from the yeasts and fungi capable of hydrolyzing the polysaccharides and toxic impurities without peptonizing the proteins under maceration conditions to effect digestion,

(b) separating the insoluble products from the reaction medium,

(c) solubilizing the proteins contained in said insoluble products by means of an alkali in the presence of a reducing agent,

(d) acidifying the protein solution obtained in step (c) to a pH of about 4.5 to 5.5 to coagulate the proteins at their isoelectric point.

4,085,230

PROCESS FOR PRODUCING A ROASTED PEANUT PRODUCT

William M. Green, P.O. Box 807, Robersonville, N.C. 27871

Filed Mar. 6, 1974, Ser. No. 448,666

Int. Cl.[2] **A23L** *1/36*

U.S. Cl. 426—262 **7 Claims**

1. The process of preparing a roasted peanut product comprising: removing the shells and skins from raw peanuts; pre-

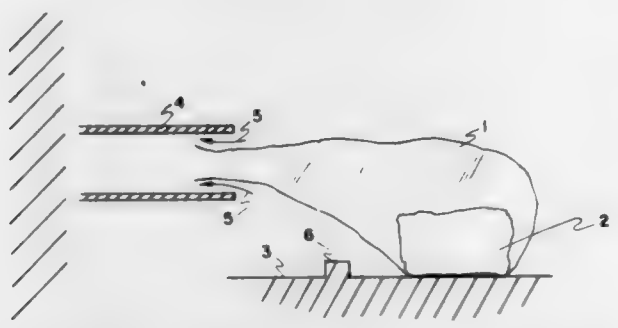
cooking said peanuts over a period of from about 4 to 12 minutes in a water solution which contains from between about 0.02 to 1.0 percent by weight of a reducing sugar and wherein said water solution is maintained at a temperature in the range of from about 190° to 212° F. throughout said precooking operation; removing said peanuts from said hot precooking cooking solution and eliminating excess water from the exterior of such peanuts; roasting said peanuts in a bath of hot edible oil for a period of 3 to 8 minutes at a temperature ranging from 320° to 380° Fahrenheit; removing said roasted peanuts from said oil bath and draining excess oil therefrom; cooling said peanuts to approximate ambient temperature; coating said peanuts with a liquid edible oil or fat ranging from 1 to 3 percent by weight of the peanuts; salting said peanuts to impart a favorable flavor thereto; and packaging said peanuts whereby a superior roasted peanut product is produced.

4,085,231

CONTAINER EVACUATION PROCESS

Joseph F. R. Weston, Peabody, Mass., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Oct. 8, 1976, Ser. No. 731,065
Int. Cl.[2] B65B *31/04*
U.S. Cl. 426—410 **10 Claims**



1. A process for removing a gaseous fluid from a flexible container, said container having an article therein and being comprised of a body portion and a neck portion communicating with and defining a single opening in said container, said process comprising the steps of:

(a) placing the opening of said container within a nozzle, so as to leave a space between the neck of the said container and said nozzle, while substantially maintaining the portion of said container surrounding said article on the exterior of said nozzle; and

(b) forcing fluid on the exterior of said container to flow from the exterior of said nozzle through said space and into said nozzle at a velocity sufficient to cause said gaseous fluid within said container to be withdrawn from said container through said opening and into said nozzle.

4,085,232

NEOHESPERIDINE DIHYDROCHALCONE SWEETENING COMPOSITIONS

Marvin E. Eisenstadt, Neponsit, N.Y., assignor to Cumberland Packing Corporation, Brooklyn, N.Y.

Filed Dec. 17, 1976, Ser. No. 751,269
Int. Cl.[2] A23L *1/236*
U.S. Cl. 426—548 **5 Claims**

1. A sweetening composition consisting essentially of (a) a dihydrochalcone derivative selected from the group consisting of neohesperidine dihydrochalcone, naringin dihydrochalone and salts thereof in an amount of about 0.25–4% by weight, (b) a vanilla flavor in an amount of about 0.25–3% by weight (c) cream of tartar in an amount of about 0.5–4% by weight, and (d) a sugar in an amount of about 89–99% by weight.

4,085,233

FOOD PRODUCT MADE FROM MUSHROOM STUMPS AND METHOD FOR MANUFACTURING THE SAME

Alan S. Turover, San Jose, Calif., assignor to Castle & Cooke, Inc., San Jose, Calif.

Filed Feb. 1, 1977, Ser. No. 764,703
Int. Cl.[2] A23L *1/00, 1/22*
U.S. Cl. 426—615 **11 Claims**

1. A process for making a useful food product from mushroom stumps comprising,

removing loose dirt from the dry stumps,

washing the cleaned stumps with water under pressure to remove further dirt,

breaking down the stumps to small particle size to form a puree,

separating the remaining dirt from the puree,

pasteurizing the puree, and

concentrating the pasteurized puree.

4,085,234

PROCESS FOR MANUFACTURING FAST COOKING RICE

Hidemoto Kamada, Tokyo; Chiaki Miura, and Etsuo Kano, both of Kawasaki, all of Japan, assignors to Calpis Shokuhin Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1976, Ser. No. 704,579
Claims priority, application Japan, Jul. 16, 1975, 50-86157
Int. Cl.[2] A23L *1/182*
U.S. Cl. 426—618 **8 Claims**

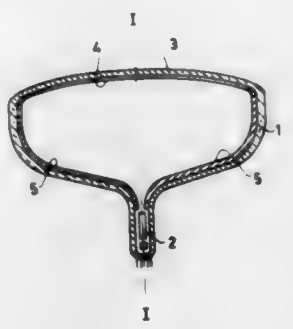
1. A process for the manufacture of fast cooking rice, consisting essentially of puffing raw rice into a puffed rice having a volume of 6 to 16 times as large, contacting said puffed rice with a solution of at least one thickener susceptible to gelling by metallic ions, in a concentration of about 0.2 to about 3.0% by weight sufficiently to penetrate to the inside center of the puffed rice, then contacting said rice with a solution of said metallic ions to thereby gell said thickener and subsequently drying the treated puffed rice whereby it is reduced in volume.

4,085,235

METHOD OF MANUFACTURING A CATHODE-RAY TUBE

Johannes Maria Azalina Antonius Compen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 10, 1976, Ser. No. 740,256
Claims priority, application Netherlands, Nov. 19, 1975, 7513490
Int. Cl.[2] H01J *29/88*
U.S. Cl. 427—64 **9 Claims**



1. A method of forming an electrically conductive layer on an internal wall portion of a cathode-ray tube envelope, said method comprising the steps of:

applying to said wall portion a coating of an aqueous suspension comprising an electrically conducting material, a binder from the group consisting of alkali metal silicate and nitrocellulose, and one or a mixture of more than one alkali carbonate from the group consisting of sodium carbonate and potassium carbonate, the total quantity of alkali carbonate being between approximately 3% and

30% by weight of the total weight of suspended and dissolved solids in said suspension;

drying said suspension on said wall portion; and

firing said envelope.

4,085,236

PROCESS FOR PRODUCING ELECTROSTATIC RECORDING MATERIAL

Yoshiyuki Ishibashi; Eijiro Tagami, both of Yokkaichi; Taiji Higaki, Nishinomiya, and Takao Matsushita, Kobe, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd. and Kanzaki Paper Manufacturing Co., Ltd., both of, Japan

Filed Jul. 16, 1976, Ser. No. 705,820

Claims priority, application Japan, Jul. 28, 1975, 50-91073

Int. Cl.[2] B05D *5/12;* **G03G** *5/00*

U.S. Cl. 427—121 **25 Claims**

1. A process for producing an electrostatic recording material which comprises kneading a hydrophobic pigment having a critical surface tension of 50 dynes/cm or less with an aqueous dispersion of a copolymer consisting of (I) 10 to 50% by weight of methacrylic acid, (II) 5 to 50% by weight of an alkenyl aromatic compound and (III) 30 to 85% by weight of at least one member selected from the group consisting of conjugated diolefins, alkyl acrylates, and alkyl methacrylates; having a glass transition temperature (Tg) of 40° C or less; and having an intrinsic viscosity [η] of 0.1 to 1.0 dl/g as measured in tetrahydrofuran at 25° C, in a weight ratio of the copolymer to the pigment of 100/20 to 100/200, in the presence of an alkaline material in such a proportion that the viscosity of the aqueous dispersion of the copolymer becomes at least 350 cps, adjusting the viscosity of the aqueous dispersion containing the copolymer and the hydrophobic pigment to 10 to 5,000 cps, coating the resulting coating composition on the surface of an electroconductive base sheet and drying the same.

4,085,237

METHOD AND APPARATUS FOR MANUFACTURING PRESSURE SENSITIVE COPYING SHEET

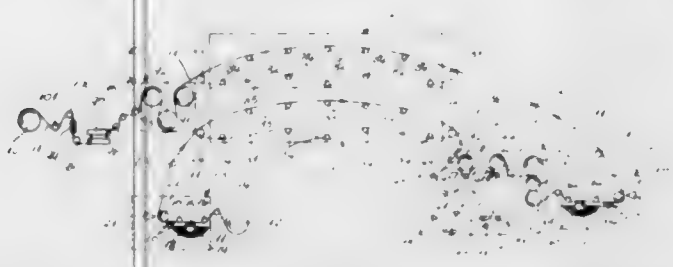
Takajiro Kawakami; Minesilo Mizuno; Akira Okushi, and Michio Yasuda, all of Amagasaki, Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1975, Ser. No. 613,508

Claims priority, application Japan, Sep. 17, 1974, 49-107317; Sep. 20, 1974, 49-108981

Int. Cl.[2] B41M *5/22;* **B05C** *9/04, 9/14*

U.S. Cl. 427—150 **6 Claims**



1. In a method for manufacturing a pressure sensitive copying sheet having an acceptor coating on one side and a color former coating on the opposite side, the steps, in the sequence set forth, of coating an acceptor composition on one side of a continuously fed paper sheet, drying the paper sheet coated with said acceptor composition, cylinder ironing said paper sheet to remove wrinkles, calendering the dried sheet with a calender comprising at least one pair of rolls, one of said pair of rolls being a metal roll and the other being an elastic roll having a Shore hardness within the range of 65 to 90, coating a color former composition on the other side of said paper sheet, drying the paper sheet coated with said color former composition.

4,085,238

PROCESS AND APPARATUS FOR APPLYING PLASTIC FILAMENTS TO SHEETS FOR MULTIPLE PANE WINDOWS

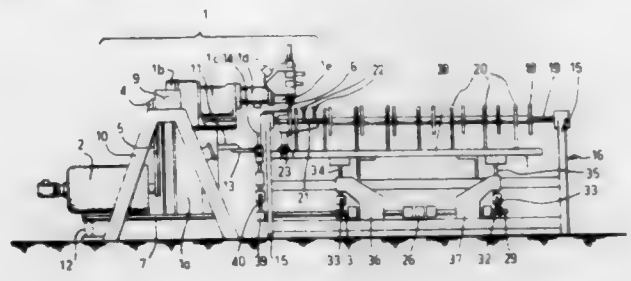
Pierre Chenel, Enghien Les Bains, and Joel Vachet, Baudrieres, both of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Dec. 11, 1975, Ser. No. 639,788

Claims priority, application France, Dec. 11, 1974, 74 40825

Int. Cl.[2] C03C *27/00;* **B25J** *3/00*

U.S. Cl. 427—207 A **12 Claims**



1. A process for applying an intermediate filament of plastic material along the edges and at the corners of a transparent or translucent sheet used in producing a multiple pane window, said process comprising:

a. moving a face surface of the sheet on a conveyor past an extrusion nozzle while depositing a substantially continuous plastic filament on the face surface of the sheet adjacent a first edge thereof;

b. interrupting the relative movement of the sheet and the deposit of said plastic filament when a corner of the sheet is reached;

c. moving the extrusion nozzle and the sheet away from the conveyor and moving the extrusion nozzle relative the face of the sheet at the corner to detach a short distance of said plastic filament without breaking continuity of the plastic filament and thereafter;

d. turning the sheet in the plane of the face thereof relative the extrusion nozzle;

e. returning the extrusion nozzle and sheet to depositing position; and

f. moving the face surface of the sheet past the extrusion nozzle while depositing said plastic filament along a second edge of the sheet.

3. An apparatus for applying an intermediate filament of plastic material along the edges and at the corners of a transparent or translucent sheet used in producing a multiple pane window, said apparatus comprising in combination:

a. an extrusion device having means for extruding a substantially continuous plastic filament on the face surface of the sheet adjacent a first edge thereof;

b. a conveyor for moving the sheet past the extrusion nozzle while depositing said plastic filament on the face surface of the sheet adjacent a first edge thereof;

c. means for interrupting the relative movement of the sheet and the deposit of said plastic filament when a corner of the sheet is reached;

d. means moving the extrusion nozzle and means moving the sheet away from the conveyor, said means for moving the extrusion nozzle separating the extrusion nozzle relative to the face of the sheet at the corner to effect detachment of a short distance of said plastic filament without breaking continuity of the plastic filament;

e. means for turning the sheet in the plane of the face thereof relative the extrusion nozzle about an axis adjacent the corner of the sheet; and

f. means for returning the extrusion nozzle and sheet to said conveyor for moving the sheet past the extrusion nozzle while depositing said plastic filament along a second edge of the sheet.

4,085,239

PROCESS FOR MANUFACTURING A DIFFERENTIALLY EXPANDED RESINOUS CELLULAR SHEET

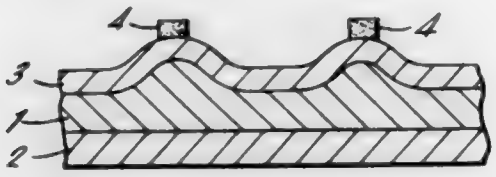
Rodney John Briston, Blackburn; Rodger George Canning, Chorley, and John Parker Tomlinson, Darwen, all of England, assignors to Reed International Limited, London, England

Filed Mar. 9, 1977, Ser. No. 775,883

Claims priority, application United Kingdom, Mar. 10, 1976, 9557/76

Int. Cl.[2] B05D *3/02, 5/02*

U.S. Cl. 427—208 11 Claims



1. A process for the manufacture of a differentially expanded resinous cellular sheet, comprising applying an organic solvent to the surface of an expandable sheet composed of a thermoplastic resinous composition having a blowing agent incorporated therein, said solvent having an affinity for said resinous composition; allowing the solvent-treated sheet to at least partially dry; applying a composition containing a metallic powder and a kicker for the blowing agent to portions of the solvent-treated surface, adhesion of the metallic powder composition to said sheet being enhanced by the solvent treatment; and then uniformly heating the treated sheet for a time and at a temperature at which the blowing agent decomposes in the presence of the kicker but below that at which it decomposes in the absence of the kicker so that those portions of the sheet which received an application of metallic powder and kicker containing composition expand to a greater extent than those portions which did not receive an application of metallic powder and kicker containing composition to produce said differentially expanded sheet.

4,085,240

PROCESS FOR IMPROVING THE ADHESION OF COATINGS OF VULCANIZED EPDM ARTICLES

Helmut Scharf, Schermbeck, Germany, assignor to Chemische Werke Huels, A.G., Marl, Germany

Filed Aug. 24, 1976, Ser. No. 717,461

Claims priority, application Germany, Aug. 28, 1975, 2538218

Int. Cl.[2] B05D *1/36, 7/02*

U.S. Cl. 427—302 8 Claims

1. A process which comprises the steps of applying to the surface of an article formed from a vulcanizate of a 30–89.5% by weight ethylene — 69.5–10% by weight α-olefin - 0.5–10% by weight unconjugated diene terpolymer elastomer and at least 30 parts by weight of carbon black filler per 100 parts by weight of elastomer, a compound having a functional group reactive with isocyanates, said compound being of the general formula RX wherein R is linear or branched alkyl, alkenyl, alkylaryl, alkenylaryl, alkylcycloalkyl, alkenylcycloalkyl, alkylcycloalkenyl or alkenylcycloalkenyl of 4–20 carbon atoms in the primary chain and up to 20 carbon atoms in the side chains, and X is $-NH_2$, $-NHR'$, $-CONH_2$, $-NHCONH_2$, $-NHCOOR'$, $-OH$, $-SH$, $-SO_3H$, $-OCOCH_2COOR'$, $-COOCH_2CHOHCH_2OH$, $-COOCH_2CH_2OH$ or $-COOH$ wherein R′ is methyl or ethyl, thereby rendering the surface more adhesible to isocyanate-cross-linked polyester coatings, and then applying an isocyanate cross-linked polyester coating to the thus-treated article.

4,085,241

INORGANIC-ORGANIC SEPARATORS FOR ALKALINE BATTERIES

Dean W. Sheibley, Sandusky, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 7, 1976, Ser. No. 720,521

Int. Cl.[2] H01M *3/02*

U.S. Cl. 427—385 B 17 Claims

1. A method of making a flexible, porous, separator for an alkaline EMF cell comprising the steps of:

dissolving in a solvent a thermoplastic rubber of the type made up of chains of 3-blocks wherein the middle block is an elastomer and each end block is thermoplastic;

mixing a first filler material inert to said alkaline electrolyte and a second-pore forming filler material reactive with said alkaline electrolyte;

combining the filler materials and the dissolved thermoplastic rubber to form a slurry;

coating said slurry on a flexible non-metallic substrate; and drying said coating.

4,085,242

METHOD OF COATING WITH LIQUID AMINOPLAST POLYFUNCTIONAL RESIN COMPOSITIONS

Frank J. Hahn, Wilbraham, and James O. Santer, East Longmeadow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 572,037, Apr. 28, 1975, Pat. No. 4,031,057. This application Apr. 11, 1977, Ser. No. 786,173

Int. Cl.[2] B05D *3/02;* B32B *27/42*

U.S. Cl. 427—385 R 5 Claims

1. A process for coating an article which comprises blending a N,N′-bis(alkoxymethyl) uron and a polyfunctional resin in the weight ratio in the range of 30 to 70 to 70 to 30 to form a homogeneous solution, applying a film of the solution to a surface of the article, and baking the article at a temperature sufficient to thermoset the solution, wherein the alkyl radicals of the alkoxy groups of the uron are selected from the group consisting of C_1 to C_6 alkyl radicals, and wherein the polyfunctional resin contains sufficient alcoholic hydroxyl and carboxyl groups to provide a functionality greater than 2 and has a number average molecular weight in the range of 300 to 5000, and wherein the solution viscosity at 25° C. is less than 1000 centipoises.

4,085,243

METHOD OF TREATING A FABRIC PRIOR TO IRONING WITH AN ANIONIC FABRIC CONDITIONING COMPOSITION

Annie Sue Giordano, Piscataway, N.J.; Richard Lerda Burke, San Diego, Calif., and Harold Eugene Wixon, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 311,720, Dec. 7, 1972, Pat. No. 3,965,014. This application Oct. 3, 1974, Ser. No. 511,897

Int. Cl.[2] D06M *13/20*

U.S. Cl. 427—387 3 Claims

1. A method of softening fabrics and imparting soil release characteristics thereto as an aid to ironing, comprising treating said fabric prior to said ironing with a composition comprising a dimethypolysiloxane polymer, water, and about 0.5 to 10% by weight of an anionic surfactant having a derivable pH of about 7–9 selected from the group consisting of alkyl benzene sulfonates wherein the alkyl group contains from about 10 to about 20 carbon atoms, alkyl toluene sulfonates wherein the alkyl group contains from about 10 to about 20 carbon atoms, ethoxylated alcohol sulfates produced from an aliphatic alcohol having from about 10 to about 20 carbon atoms ethoxylated with from about 1 to about 6 moles of ethylene oxide, soaps of fatty acids having from about 10 to about 20 carbon

atoms, paraffin sulfonates having from about 10 to about 20 carbon atoms, N-(2-hydroxyalkyl)-amino acids having from 10 to 20 carbon atoms in the alkyl chain, and mixtures thereof, said composition drying on said fabrics.

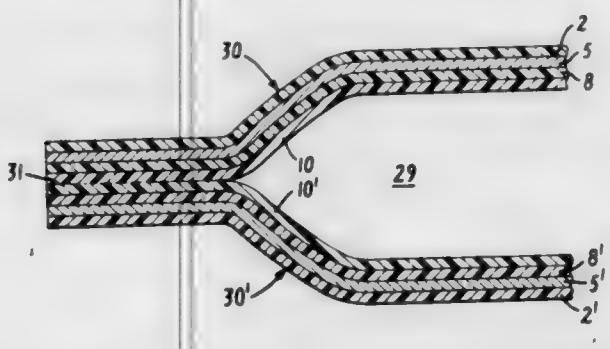
3. An aerosol fabric softening and soil release product comprising the composition as defined in claim 1 and an effective amount of an aerosol propellant.

4,085,244

BALANCED ORIENTATED FLEXIBLE PACKAGING COMPOSITE

Nathan Stillman, Walnut Creek, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed Feb. 10, 1976, Ser. No. 656,863
Int. Cl.[2] B32B *3/02*
U.S. Cl. 428—192 **10 Claims**



1. A composite, flexible packaging film comprising essentially a first layer of balanced biaxially-oriented polyamide, providing substantially flex-crack resistance, affixed to one side of a second layer of flexible metal foil and a third layer of balanced biaxially-oriented polypropylene, also providing substantially flex-crack resistance, affixed to the opposite side of said foil and to a fourth layer of heat-sealable polyolefin.

4,085,245

TRANSPARENCIES FOR COLOR XEROGRAPHIC COPIES

Michael G. De Vito, Macedon, and Francis J. Wieloch, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 15, 1976, Ser. No. 677,341
Int. Cl.[2] B32B *5/16, 5/30, 27/06*
U.S. Cl. 428—215 **13 Claims**

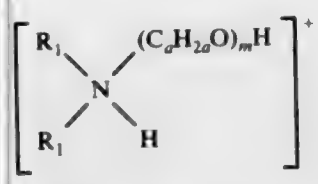
1. A transparency for use in electrostatographic copying which comprises:

a) a base layer of a transparent, heat stabilized polyester sheet,

b) a second layer adherent to the surface of said polyester sheet of a mixture of an acrylic polymer and a copolymer of vinyl acetate and vinyl chloride said layer having uniformly dispersed therein:

i. particulate silica having a mean particle size of from about 2 to 70 millimicrons in its longest dimension and being present in an amount of from about 0.25 to about 1.5 weight percent of said second layer, and

ii. an anti-static agent of a salt formed from an anion of a carboxylic acid having 1 to 37 carbon atoms or a dimeric fatty acid having 12 to 36 carbon atoms and a cation characterized by the formula:



wherein R_1 is a saturated straight chained or branched chain aliphatic hydrocarbon radical of 3 to 24 carbon atoms, a is 2 or 3 and m is a number from 2 to 40.

4,085,246

SIMULATED GRANITE AND ITS PREPARATION

Kenneth Rene Buser; Milton John Roedel, both of Wilmington, and Eustathios Vassiliou, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 18, 1975, Ser. No. 588,008
Int. Cl.[2] C08K *3/00, 5/00*
U.S. Cl. 428—220 **39 Claims**

1. A simulated granite article comprising:

A. about 35 to 95% by volume (based on total granite volume) of a matrix comprising:

(1) at least 34% by volume (based on total granite volume) of polymer having a refractive index (n_D) according to ASTM-(D542)27 between 1.4 and 1.65, and

(2) about 1 to 50% by volume (based on total granite volume) of filler having a maximum particle size less than about 100 microns in the longest dimension and an amorphous or mean crystalline axial refractive index (n_D) between 1.4 and 1.65; in such a ratio of (1) to (2) that the optical density to visible light (4000–8000 Angstroms) of a 0.01 inch thick film of the matrix is less than 1.5;

B. about 0.1 to 50% by volume (based on total granite volume) of randomly distributed opaque particles having a minimum particle size greater than 200 microns in shortest dimension and an optical density to visible light (4000–8000 Angstroms) greater than 2.0; and

C. about 0.1 to 50% by volume (based on total granite volume) of randomly distributed translucent particles, transparent particles or both having a minimum particle size greater than 200 microns in shortest dimension, and an optical density to visible light (4000–8000 Angstroms) less than 2.0; in such a ratio of (A) to (B) to (C) that the optical density to visible light (4000–8000 Angstroms) of a 0.05-inch thick wafer of the article is less than 3.0.

4,085,247

FIRE-PROTECTING EPOXY RESIN REINFORCED WITH GLASS FIBER

Leo M. Godfried, Badhoevedorp, Netherlands, assignor to Fokker-VFW B. V., Schiphol-Oost, Netherlands

Division of Ser. No. 488,007, Jul. 12, 1974, Pat. No. 3,981,832, which is a division of Ser. No. 220,431, Jan. 24, 1972, Pat. No. 3,839,239. This application Jul. 2, 1976, Ser. No. 702,203
Int. Cl.[2] B27K *3/00*
U.S. Cl. 428—290 **6 Claims**

1. A fire-protecting sandwich panel, comprising a core of foam material and skin sheets of glass fiber mats impregnated with a fire-protecting epoxy resin,

said fire-protecting epoxy resin essentially comprising a cured product of an epoxy resin made from a polyfunctional halohydrin and a polyhydric phenol and cured with a curing agent selected from the group consisting of polyamines, and carboxylic anhydrides, said cured epoxy resin having a source of carbon, a source of phosphoric acid and a source of non-inflammable gases incorporated therein throughout its mass,

said source of carbon having a high temperature of decomposition and containing many radicals capable of entering into an esterfying reaction with phosphoric acid, said carbon source being polyvalent alcohol,

said source of phosphoric acid being a phosphate compound having a selected decomposition temperature lower than that of said source of carbon to generate phosphoric acid whereby said esterfying reaction may take place at said selected temperature and being selected from the group consisting of ammonium orthophosphate, melamine phosphate, polyphosphoryl phosphate, and water-insoluble ammonium polyphosphate with a phosphate content of about 90% and said source of non-inflammable gases being a compound which does not take part in the curing of the epoxy resin but remains in free state therein and provides non-inflammable gases at temperatures above

said selected temperature and said source of non-inflammable gases being selected from the group consisting of dicyanodiamide, urea, melamine, guanidine and a combination thereof with chlorinated paraffin.

4,085,248

METHOD TO APPLY A PROTECTIVE LAYER TO THE SURFACE OF OPTICAL REFLECTORS, AND SO-MADE REFLECTORS, PARTICULARLY AUTOMOTIVE VEHICLE HEAD LAMPS

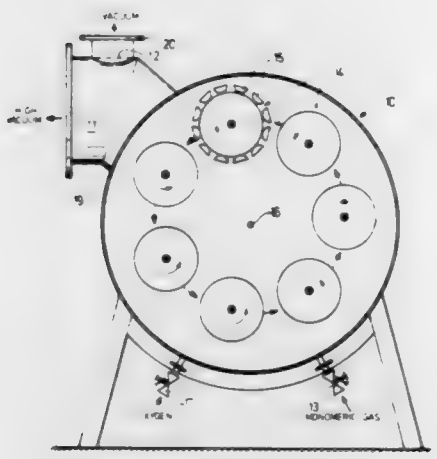
Ernst Zehender, Ottenbronn; Bernhard Blaich, Stuttgart; Helmut Stein, Ditzingen, and Karl Kerner, Gerlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 20, 1976, Ser. No. 716,107

Claims priority, application Germany, Aug. 22, 1975, 2537416; Jun. 5, 1976, 2625448

Int. Cl.[2] B05D *3/06*

U.S. Cl. 428—336 **52 Claims**



1. Method to apply a protective layer to the surface of optical reflectors in an evacuated vacuum vessel (**10**) comprising the steps of

locating an electron emissive wire (**16**) in said vessel,

locating a mass of reflecting metal in said vessel,

locating reflector substrates (**15**) in said vessel,

heating said mass of reflecting metal to the evaporation temperature of said reflecting metal to vaporize said metal and deposit a thin reflective layer of said metal on said reflector substrates, then

exposing the metal coated reflector substrates to an organic monomeric gas,

generating electrons by heating said electron emissive wire (**16**) to a temperature sufficiently high to emit electrons and biassing said wire (**16**) to a negative voltage with respect to said reflector substrates (**15**) thereby polymerizing the gas at the surface of the substrate to form a protective hydrophobic polymer layer from said monomer by polymerization from the gas phase by exposure to

electrons generated by thermal emission from said heated electron emissive wire.

4,085,249

SEMICONDUCTIVE COMPOSITION HAVING CONTROLLED STRIPPABILITY

Seiho Taniguchi; Yoichi Kawasaki, and Shin' Ichi Sugawara, all of Yokohama, Japan, assignors to Nippon Unicar Company Limited, Tokyo, Japan

Filed Dec. 15, 1975, Ser. No. 640,796

Claims priority, application Japan, Dec. 20, 1974, 49-145603

Int. Cl.[2] H01B *3/44*

U.S. Cl. 428—383 **10 Claims**

1. A semiconductive composition comprising chlorinated ethylene-vinyl acetate copolymer,

said copolymer containing about 3 to 40 weight percent of chlorine and having a vinyl acetate content of about 15 to 50 percent by weight,

and sufficient amounts of electrically conductive carbon black as to render said composition semi-conductive.

4,085,250

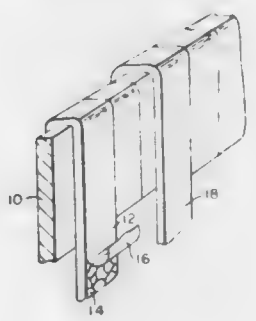
RESIN RICH EPOXIDE-MICA FLEXIBLE HIGH VOLTAGE INSULATION

James D. B. Smith, Turtle Creek, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 591,244, Jun. 27, 1975, Pat. No. 3,998,983. This application Aug. 24, 1976, Ser. No. 717,078

Int. Cl.[2] H01B *3/40, 3/04*

U.S. Cl. 428—418 **9 Claims**



1. A flexible, void-free, high voltage capability, mica insulation sheet material, consisting essentially of mica and a contacting polymerizable, flexible, dry resinous composition consisting of a homogenous mixture of an epoxide resin and an amount of organo-titanate compound effective to cure the epoxide at temperatures of at least about 140° C; wherein the epoxide resin contains from about 95 to 99 weight percent solids and the organo-titanate compound is selected from the compounds having the structural formula $Ti(OR)_4$, wherein each R group is independently selected from the group consisting of alkyl groups having 1 to 10 carbon atoms, aryl group, Cl, Br or NO_2 substituted aryl groups, alkaryl groups with the alkyl constituent having from about 1–10 carbon atoms, Cl, Br or NO_2 substituted alkaryl groups with the alkyl constituent having from about 1–10 carbons, alkaryl groups with the alkyl constituent having from about 1–10 carbon atoms, cyclopentane groups, cyclopentene groups, cyclopentadiene groups, cyclohexane groups, cyclohexene groups and cyclohexadiene groups and wherein the organo-titanate contacts mica causing the organo-titanate to act as a latent catalyst, said resinous composition being capable of fusion upon heating to form a cured, inflexible material.

2. The sheet material of claim **1** wherein the mica insulation sheet is, supported by a backing selected from the groups consisting of paper, cotton fabric, linen fabric asbestos paper, glass cloth, glass fibers, mica paper, nylon fabric, polyethylene fabric and polyethylene terephthalate fabric.

8. The sheet material of claim **2** wrapped around an electrical conductor selected from the group consisting of copper and aluminum and cured at a temperature of at least about 140° C.

4,085,251

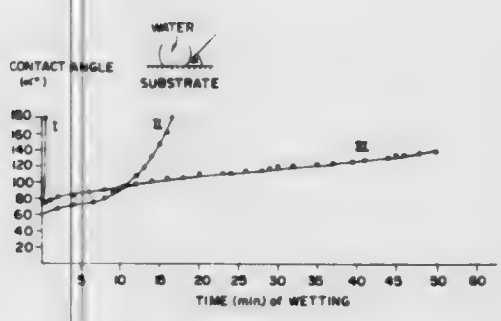
HIGH RETENTION WOOD PRESERVATIVE COMPOSITION

Jaromir R. Rak, Ottawa, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 417,404, Nov. 19, 1973, abandoned. This application Feb. 12, 1976, Ser. No. 657,398

Int. Cl.[2] B05D *3/02, 1/18;* B32B *9/04, 23/08*

U.S. Cl. 428—485 16 Claims



1. A method of increasing and prolonging the immobilization of preservative in wood on treating wood with deeply penetrating wood preservative solutions said penetrated preservative tending to migrate and become depleted on prolonged service, comprising:

a. incorporating in the wood preservative solution in a deeply penetrating organic solvent (i) a hydrophobic agent selected from the group consisting of fatty acids and their esters, fatty alcohols and paraffin waxes in amounts of from about 0.5% up to about 5% weight/volume based on the solution, said fatty acids and alcohols having at least 10 carbon atoms in the molecule; and (ii) an amorphous vinylic-type polymer in amounts of at least about 0.2% w/v up to about 1% w/v based on the solution, said polymer being soluble in the solution; and

b. penetrating the wood with the modified preservative solution said modified solution having deep penetrability substantially equivalent to that of the initial solution and evaporating the solvent to leave a clean wood surface.

4,085,252

COMPOSITE WIRE WITH A BASE OF CERIUM AND OTHER RARE EARTHS

Pierre Karinthi, Jouy-en-Josas; Michel Dauvergne, Osny, and Benoit Hirschauer, Pontoise, all of France, assignors to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Apr. 16, 1976, Ser. No. 677,545

Claims priority, application France, Apr. 18, 1975, 75 12060

Int. Cl.[2] B23P *3/00;* C21C *7/00;* B21F *19/00*

U.S. Cl. 428—576 8 Claims



1. A composite wire having a core formed of at least one rare earth element, said core being enclosed inside a metallic casing and having a diameter *d* between 1.4 and 8.5 mm. tightly enclosed by said metallic casing, said casing having a thickness *e* between 0.1 and 1 mm., wherein *e* is greater than 0.04 *d* and less than 0.2 *d*.

4,085,253

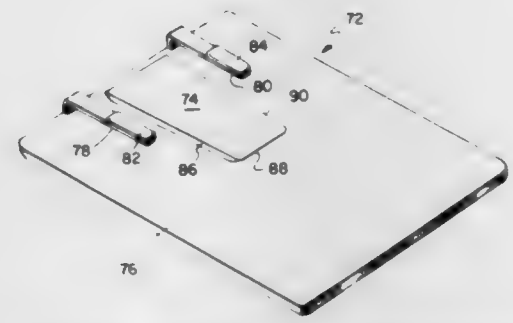
BATTERY ASSEMBLY

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 581,113, May 27, 1975, Pat. No. 4,041,514. This application Jan. 21, 1977, Ser. No. 761,063

Int. Cl.[2] H01M *2/10*

U.S. Cl. 429—1 4 Claims



1. A battery assembly adapted to be releasably attached to a camera of the type having means in an exterior surface thereof for receiving at least a portion of the battery assembly and a pair of electrical contacts for engagement with a pair of terminals on the battery assembly, said battery assembly comprising:

a generally thin flat battery including a pair of battery terminals; and

means extending from said battery for slidably attaching said battery to the camera such that said battery lies substantially flush with the exterior surface of the camera, said extending means being located intermediate said pair of battery terminals and having a tapered configuration which is adapted to be received by the means in the exterior surface of the camera only when a predetermined spatial orientation exists therebetween thereby insuring that said pair of battery terminals are operatively engaged with the electrical contacts when the battery is attached to the camera.

4,085,254

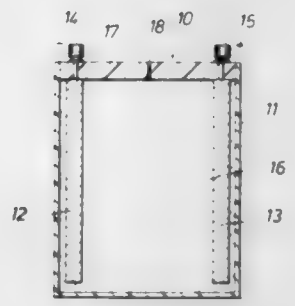
BIOLOGICAL APPARATUS FOR GENERATING ELECTRICAL POWER AND PROCESS FOR PRODUCING BACTERIA ELECTROLYTE

Lyle D. Atkins, Houston, Tex., assignor to Biolec Corporation, Houston, Tex.

Continuation of Ser. No. 415,324, Nov. 13, 1973, abandoned. This application Oct. 28, 1975, Ser. No. 625,866

Int. Cl.[2] H01M *8/16*

U.S. Cl. 429—2 14 Claims



1. A long-lived, self-contained, bacteria-energized source of electric power, including

a first electrode formed of at least one element of relatively high electromotive force,

a second electrode spaced from said first electrode and formed of a different element of relatively low electromotive force,

an electrolyte comprising an aqueous brine solution containing coexistent quantities of aerobic and anerobic bacteria

derived from marine organisms, produced by the following process steps:

processing a mixture composed of fish stomachs, livers and salt water at 25 psi and 240° F. for one hour,

cooling said processed mixture to ambient temperature and subjecting said mixture to a pressure equivalent to 19 inches of mercury,

extracting from said processed mixture the resultant aqueous brine solution containing coexistent aerobic and anerobic bacteria, and

subjecting said aqueous brine solutio to a temperature of −20° F. for a period of 72 hours,

a bacteria nutrient and filler composed of finely divided cellulose material for sustaining said bacteria and absorbing and carrying all of said aqueous brine solution for insuring that no free liquid remains, said bacteria nutient and filler interposed between and in contact with said electrodes, and

evaporation inhibiting means intermixed with said bacterial nutrient and filler and aqueous brine solution and compatible with said bacteria for inhibiting evaporation of said aqueous brine solution.

4,085,255

WATER SEPARATION CELL FOR REMOVING THE REACTION WATER FROM THE ELECTROLYTE OF FUEL CELLS AND FUEL CELL BATTERIES

Burghard Grave, Erlangen; Heinrich Gutbier, Rottenbach, and Michael Deinzer, Nuremberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 22, 1977, Ser. No. 770,631
Claims priority, application Germany, Mar. 12, 1976, 2610427
Int. Cl.[2] H01M *8/08*
U.S. Cl. 429—26 **9 Claims**



1. In combination with a fuel cell or a fuel cell battery, an improved water separation cell for removing the reaction water from the electrolyte of the fuel cell or fuel cell battery comprising:

a. a vertically extending liquid chamber bounded on at least one side by a porous diaphragm;

b. a gas chamber vertically disposed adjacent said liquid chamber of essentially the same height as said liquid chamber bounded by said diaphragm on one side and by a condensation surface adapted for cooling; and

c. means disposed essentially horizontally dividing said liquid chamber into two chambers of different size which are arranged one on top of the other, the upper chamber being larger than the lower chamber and serving as an electrolyte chamber and the lower smaller chamber acting to take up condensate which passes from said gas chamber through the porous diaphragm into said lower small chamber due to the pressure of a gas present in said gas chamber.

4,085,256

HIGH TEMPERATURE ORGANIC ELECTROLYTE CELLS

Arabinda N. Dey, Needham, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 254,998, May 19, 1972, abandoned. This application Aug. 2, 1976, Ser. No. 710,753
Int. Cl.[2] H01M *4/48, 4/02*
U.S. Cl. 429—48 **4 Claims**

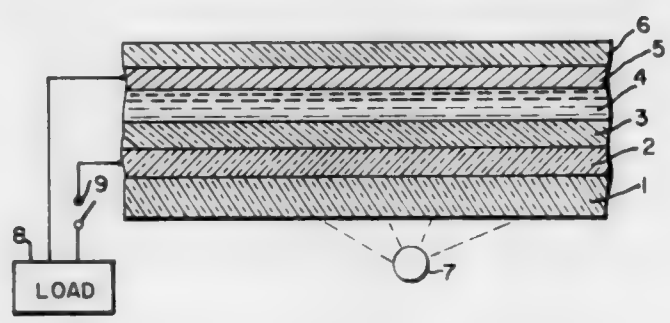
1. A high energy density electrochemical cell having negligible self-discharge characteristics at high temperatures, consisting essentially of (a) a solid cathodic electrode containing active depolarizer material selected from the group consisting of metal oxides, chromates, vanadates, permanganates, molybdates, periodates, and halides, (b) a sulfur dioxide free organic electrolyte comprising an organic solvent having dissolved therein an electrolyte salt, and (c) an anode on which is formed a heat stable coating which is insoluble in the organic electrolyte under open circuit conditions but which is irreversibly dissipated upon cell discharge, said insoluble film having been formed as a reaction product only prior to initial discharge of said cell with an inhibitor gas selected from the group consisting of CO_2, SO_2, O_2, NH_3, and N_2 saturated with respect to water vapor, whereby self discharge of said cell is inhibited until said initial cell discharge.

4,085,257

RADIANT ENERGY CONVERTER HAVING STORAGE

Horst Witzke, Princeton, N.J., assignor to Optel Corporation, South Brunswick Township, N.J.

Filed May 30, 1975, Ser. No. 582,344
Int. Cl.[2] H01M *6/30, 6/36*
U.S. Cl. 429—111 **1 Claim**



1. A method of operating an energy conversion and storage device which comprises at least a pair of electrodes, at least one of which is transparent, a compensator layer in contact with one of said electrodes, a transparent layer of charge storage material comprising a refractory metal oxide positioned between the other of said electrodes and said compensator layer, said other electrode being transparent, and means attached to said electrodes for connecting said device to a load to be driven by the voltage developed in said device, the device being characterized by creation of electrons upon irradiation by radiant energy, said created electrons being stored in the charge storage layer, said method comprising the steps of:

1. exposing the device to activating radiation to create electrical charge within said device;
2. storing said charge within said device, and
3. discharging at least a portion of said stored charge through a load.

4,085,258

COMBINATION TYPE STANDARD CELL WITH LOW TEMPERATURE COEFFICIENTS

Kazumi Shimazaki, Mitaka, and Hiroyuki Hirayama, Musashino, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 19, 1976, Ser. No. 743,358
Claims priority, application Japan, Nov. 22, 1975, 50-139763
Int. Cl.[2] H01M *6/28*
U.S. Cl. 429—125 **11 Claims**

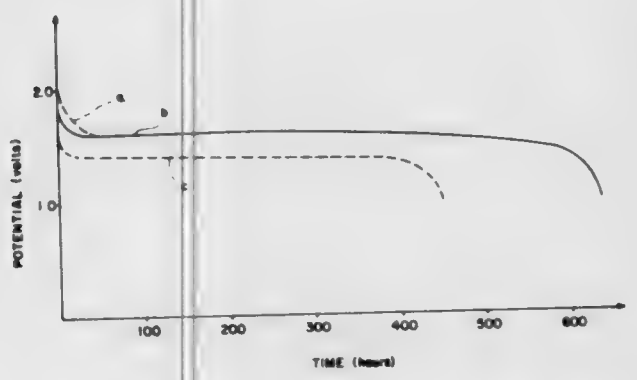
1. A combination-type standard cell comprising three standard cells wherein at least two different types of standard cells selected from the group consisting of Cd standard cells, Cd-Pb standard cells, Cd-Sn standard cells and Sn-Pd-Cd standard cells are combined in serial connection, with two of the three cells in one direction of polarity and the remaining cell in the opposite direction of polarity, so that the overall electromotive force generated is about 1 V and the temperature coefficients of said standard cells offset one another to yield a low overall temperature coefficient.

4,085,259

LIGHT METAL GALVANIC ELEMENT

Helmüt Lauck, Glashutten, Germany, assignor to Varta Batterie Aktiengesellschaft, Germany

Filed Mar. 23, 1976, Ser. No. 669,680
Claims priority, application Germany, Apr. 16, 1975, 2516704
Int. Cl.[2] H01M *4/48*
U.S. Cl. 429—194 **9 Claims**



1. A primary galvanic cell having a negative electrode of light metal, a non-aqueous fluid electrolyte, and a positive electrode and characterized in that:

the positive electrode has a mass having an electro-chemically reducible component consisting mainly of Bi_2O_3, and including additives of about 5 to 30% Sb_2O_3, or about 0.5 to 5% finely divided metallic bismuth, and about 2 to 7% graphite, and about 0.3 to 0.5% polytetrafluorethylene, all by weight, the remainder being substantially all Bi_2O_3, and in that the electrolyte comprises a solution of a conductive salt in a mixture composed primarily of polypropylene carbonate and 1,2 dimethoxyethane.

4,085,260

POWDER COATING COMPOSITIONS WITH HYDROXY CONTAINING ACRYLIC COPOLYMERS-I AND CARBOXYLIC ACID OR ANHYDRIDE CROSSLINKING AGENT

Santokh S. Labana, Dearborn Heights, and Yun Feng Chang, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 526,547, Nov. 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 407,128, Oct. 17, 1973, abandoned, which is a continuation of Ser. No. 172,223, Aug. 16, 1971, abandoned. This application May 10, 1977, Ser. No. 795,587
Int. Cl.[2] C08F *265/04*; C08G *63/12*
U.S. Cl. 526—16 **10 Claims**

1. A powder coating composition which, exclusive of pigments and other nonreactive components, comprises a coreactable mixture of: (A) a copolymer of (i) about 5 to about 20 weight percent of a hydroxy functional monoethylenically unsaturated monomer selected from the group consisting of hydroxyl bearing aliphatic alcohol esters of acrylic or methacrylic acid and (ii) a remainder of monofunctional alpha-beta olefinically unsaturated monomers selected from the group consisting essentially of

(i) acrylates,

(ii) mixtures of acrylates and monovinyl hydrocarbons, and

(iii) mixtures of acrylates, monovinyl hydrocarbons, and modifying monomers selected from the group consisting of vinyl chloride, acrylonitrile, methacrylonitrile and vinyl acetate, said monovinyl hydrocarbons, when included in said copolymer, comprising less than 50 weight percent thereof and said modifying monomers, when included in said copolymer, comprising up to about 35 weight percent thereof,

said copolymer having a glass transition temperature in the range of about 40° to about 90° C and a molecular weight ($\bar{M}_n$) in the range of 2,000 to 10,000; and (B) a crosslinking agent selected from the group consisting of organic carboxylic acids and organic carboxylic acid anhydrides in the amount of between about 0.8 and about 1.1 crosslinkable functional groups for each hydroxy group in the copolymer.

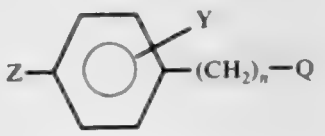
4,085,261

ORGANIC REAGENTS AND PROCESS OF PREPARING SAME

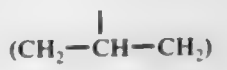
Avraham Patchornik, Ness-Ziona; Abraham Warshawsky, Rehovot; Matityahu Fridkin, Cholon, and Rami Kalir, Rehovot, all of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Jan. 29, 1975, Ser. No. 545,220
Claims priority, application Israel, Feb. 8, 1974, 44168
Int. Cl.[2] C08F *212/00, 232/00*; C08C *19/00*; B01D *11/00*
U.S. Cl. 526—19 **5 Claims**

1. A process for preparing a chelating agent useful in organic synthesis and for removing metals, of the formula



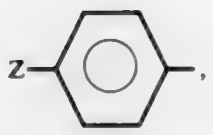
wherein Z is the



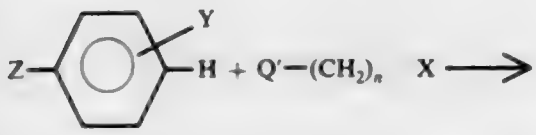
recurring part of a polymeric backbone of a polymer selected from the group consisting of polystyrene a copolymer comprising polystyrene and divinylbenzene, butadiene; and other copolymers comprising styrene; Q is 3-nitro-4-hydroxy-phenyl or an 8 hydroxyquinoline group; *n* is an integer; and Y is H or a non-interferring substituent; and corresponding compounds with a naphthyl group instead of the

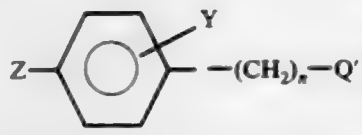


which process comprises chemically binding an activated chemical moiety to a group



wherein Z is as defined above, according to the reaction scheme





wherein Q' is Q as defined above or a functional group which can be converted after such chemical binding to Q, reacting the thus obtained intermediate with aluminum chloride so as to effect a Fries rearrangement and converting the thus obtained intermediate to the corresponding oxime by reaction with hydroxylamine.

4,085,262

PROCESS FOR PRODUCING A HIGH POLYMERIC SUBSTANCE HAVING ISOCYANATE GROUP

Toshio Honda, Akigawa; Itsuo Tanuma, Tokorozawa; Shoji Tanaka, Higashi-Yamato; Koichi Iwami, Kunitachi; Yukio Fukuura, Kodaira; Shoson Shibata, Tokyo, and Yoshikatsu Suzuki, Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Company Limited, Kyobashi, Japan

Filed Nov. 1, 1976, Ser. No. 737,825

Claims priority, application Japan, Oct. 31, 1975, 50-130525

Int. Cl.[2] C08F *8/42, 8/30*

U.S. Cl. 526—46 **14 Claims**

1. A process for producing a high polymeric substance having isocyanate group which comprises:

1. adding potassium or sodium cyanate, and an alkyl hypohalite to a liquid high polymeric substance containing carbon to carbon unsaturated double bond or a solution of said high polymeric substance; and
2. subsequently adding an organic carboxylic acid to the resulting mixture, and reacting the resulting mixture; wherein the amount of said cyanate, said alkyl hypohalite and said organic carboxylic acid, based on one mole of the double bond of said high polymeric substance is 0.05 to 0.5 mole, 0.1 to 0.6 mole and 0.4 to 1.2 mole, respectively.

4,085,263

PROCESS FOR ISOMERIZATION OF LOWER POLYMERS OF BUTADIENE

Yutaka Otsuki; Hirosuke Imai, both of Yokohama; Atsushi Kaiya, Kawasaki, and Hideo Horji, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

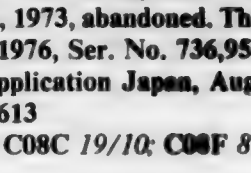
Continuation of Ser. No. 391,204, Aug. 24, 1973, abandoned. This application May 15, 1975, Ser. No. 577,930

Claims priority, application Japan, Aug. 25, 1972, 47-85076; Sep. 28, 1972, 47-96613

Int. Cl.[2] C08F *8/42, 8/32*

U.S. Cl. 526—47 **13 Claims**

1. A process for obtaining an isomer having conjugated double bonds of (A) a lower polymer of butadiene or (B) a lower copolymer of butadiene with at least one monomer selected from the group consisting of a conjugated diolefin other than butadiene and a vinyl-substituted aromatic compound, each of (A) and (B) being liquid or semi-solid at room temperature, having a molecular weight of from 300 to 10,000 and having non-conjugated double bonds therein, which comprises contacting a charge consisting essentially of said lower polymer (A) or copolymer (B) at from 0° to 200° C. in the presence of a catalyst comprising (1) an organic alkali metal compound and (2) a diamine compound represented by the formula



wherein *n* is an integer of 2 or 3, and each of R_1, R_2, R_3, R_4, R_5 and R_6 represents a hydrogen atom or an organic compound residual group having from 1 to 20 carbon atoms and any two members of R_1, R_2, R_3 and R_4 may be bonded together to form a cyclic structure,

thereby forming a reaction product containing said isomer, and recovering from said reaction product a product consisting essentially of said isomer.

4,085,264

PROCESS FOR PREPARING COPOLYMERS OF ACRYLIC ACID OR METHACRYLIC ACID AND ACRYLIC AND METHACRYLIC ACID ESTERS

Karl Seib, Weinheim; Wolfgang Schwarz, Ludwigshafen, and Hermann Gausepohl, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 4, 1977, Ser. No. 784,569

Claims priority, application Germany, May 15, 1976, 2621722

Int. Cl.[2] C08C *19/00, 19/22;* C08F *20/04, 220/04*

U.S. Cl. 526—47 **7 Claims**

1. In a process for the manufacture of copolymers by copolymerizing acrylic acid or methacrylic acid with esters of acrylic acid and of methacrylic acid in the presence of initiators which form free radicals, the improvement which comprises copolymerizing — based on total weight of the monomers —

(a) from 45 to 80% of methyl methacrylate,

(b) from 10 to 30% of one or more alkyl acrylates where alkyl is of 3 to 12 carbon atoms and

(c) from 10 to 25% of acrylic acid and/or methacrylic acid at temperatures of from 140° to 300° C, pressures of from 2 to 50 bars and with a monomer residence time sufficient to provide copolymers having molecular weights of from 500 to 4000.

4,085,265

PROCESS FOR ISOMERIZATION OF LOWER POLYMERS OF BUTADIENE

Yutaka Otsuki; Hirosuke Imai, both of Yokohama; Atsushi Kaiya, Kawasaki, and Hideo Horii, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Division of Ser. No. 577,930, May 15, 1976, Continuation of Ser. No. 391,204, Aug. 24, 1973, abandoned. This application Oct. 29, 1976, Ser. No. 736,950

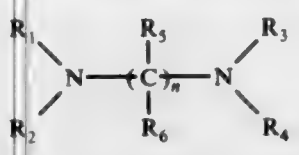
Claims priority, application Japan, Aug. 25, 1972, 47-85076; Sep. 28, 1972, 47-96613

Int. Cl.[2] C08C *19/10;* C08F *8/32, 8/48*

U.S. Cl. 526—49 **6 Claims**

1. A process for obtaining an isomer having conjugated double bonds of (A) a lower polymer of butadiene or (B) a lower copolymer of butadiene, which comprises performing a lower polymerization of butadiene or a lower copolymerization of butadiene with a monomer selected from the group consisting of a conjugated diolefin other than butadiene and a vinyl-substituted aromatic compound with a catalyst selected from the group consisting of an organic alkali metal compound and an alkali metal dispersion the alkali metal thereof forming said organic alkali metal compound, the alkali metal of the catalyst being lithium, sodium or potassium, to form reaction

mixture (i) containing (A) or (B), each of (A) and (B) having non-conjugated bonds therein, adding to said reaction mixture (i) a diamine compound having the formula



wherein n is an integer of 2 or 3, and each of R_1, R_2, R_3, R_4, R_5 and R_6 represents a hydrogen atom or an organic compound residual group having from 1 to 20 carbon atoms, and any two of R_1, R_2, R_3 and R_4 may be bonded together to form a cyclic structure, in the presence or absence of butadiene and any other monomer, and reacting the resulting reaction mixture (ii) at a temperature of from 0° to 200° C., thereby forming a reaction mixture (iii) containing said isomer, and recovering from said reaction mixture (iii) a product consisting essentially of said isomer.

4,085,266

PROCESS FOR THE HIGH PRESSURE PRODUCTION OF POLYETHYLENE

Setsuo Nakai; Shinichiro Kita; Fumihiko Hiki, and Masayuki Shimizu, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 13, 1977, Ser. No. 805,908
Claims priority, application Japan, Jun. 29, 1976, 51-77300
Int. Cl.² C08F *2/02, 4/32, 110/02*
U.S. Cl. 526—65 **6 Claims**

1. In a process for polymerizing ethylene in a two-zone autoclave reactor comprising a top reaction zone and a bottom reaction zone which process comprises polymerizing ethylene in said top reaction zone at 130° to 200° C and at a reaction pressure of 1,000 to 1,800 kg/cm² using an initiator, sending the resulting reaction mixture from the top reaction zone to the bottom reaction zone, and further promoting the polymerization at 220° to 280° C using an initiator which is same as or different from the initiator in the top reaction zone, the improvement which comprises feeding 75% or more of the ethylene to the top reaction zone of the two-zone reactor, said two-zone reactor being constructed so that the volume ratio of top reaction zone to bottom reaction zone is 1.5 to 6 and being provided with two or more feed inlets for each of the ethylene and the initiator in the top reaction zone in the direction extending through the two reaction zones.

4,085,267

PROCESS FOR THE SUSPENSION POLYMERIZATION OF VINYL CHLORIDE WITH LOW POLYMER BUILDUP

Marion George Morningstar, and Robert Lewis Bowles, both of Avon Lake, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 23, 1976, Ser. No. 660,063
Int. Cl.² C08F *2/20, 2/00, 14/06*
U.S. Cl. 526—74 **16 Claims**

1. A process for preparing vinyl chloride polymer products with substantially no polymer buildup in the reactor which comprises contacting in an aqueous medium in a reactor a mixture comprising (a) vinyl chloride monomer or a mixture thereof with up to about 80% by weight of one or more vinylidene monomers having at least one terminal $CH_2{=}C<$ grouping; (b) a dispersant for the monomer(s); (c) from about 0.0005 weight part to about 0.02 weight part, based on 100 weight parts of monomer(s) of a water-soluble inhibitor in an aqueous caustic solution, said inhibitor being selected from borohydrides having the formula



wherein X is an alkali metal and wherein each of R, R′ and R″ may be hydrogen, phenyl, an alkyl group containing from 1 to 10 carbon atoms, or an alkoxy radical containing from 1 to 10 carbon atoms; and alkali metal nitrites, alkaline earth nitrites, or ammonium nitrite; (d) an oil-soluble, spirit-soluble nigrosine; (e) from about 0.001% by weight to about 1.0% by weight based on the weight of the monomer(s) of an oil-soluble, substantially water-insoluble free radical producing catalyst selected from dialkylperoxydicarbonates wherein the alkyl groups are straight chained or branched and contain from 4 to 14 carbon atoms, adjusting and maintaining the pH of said mixture greater than 7.0, and reacting said mixture at a temperature in the range of about 0° C. to about 100° C. and maintaining the pressure in the range of about 1 to 15 atmospheres throughout the reaction.

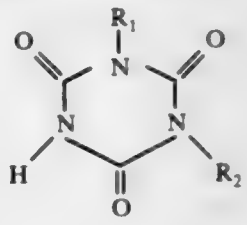
4,085,268

DISUBSTITUTED S-TRIAZINES

William J. Kauffman, Manheim, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Aug. 4, 1976, Ser. No. 711,472
Int. Cl.² C07D *251/34*
U.S. Cl. 544—221 **3 Claims**

1. A method of preparing disubstituted s-triazines comprising forming a reaction mixture of an allophanoyl chloride of the formula $R_1NHCON(R_2)COCl$ and an alkali, alkali earth metal or silver cyanate and reacting the said allophanoyl chloride with said cyanate in the presence of a dipolar aprotic solvent at a temperature sufficient to effect the formation essentially of an s-triazine corresponding to the formula



wherein R_1 and R_2 are the same or different and represent a member selected from the group of linear or branched alkyl having from 1 to 18 carbon atoms, linear or branched alkenyl having from 1 to 8 carbon atoms, cycloalkyl having from 5 to 8 carbon atoms in the ring system, phenyl alkyl having from 1 to 4 carbon atoms in the alkyl group, naphthyl alkyl having from 1 to 4 carbon atoms in the alkyl group, C_6 to C_{14} and carbocyclic aryl with the proviso that R_1 and R_2 are not the same when aromatic.

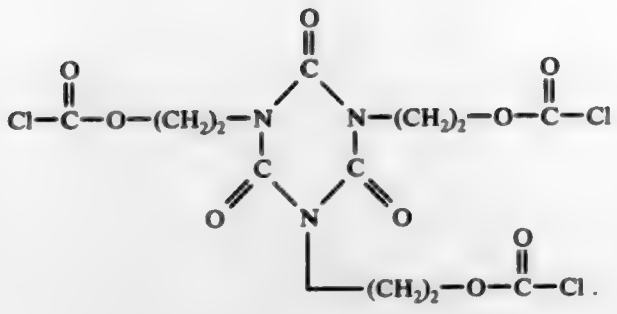
4,085,269

1,3,5 TRIS-(2-CHLOROFORMYL-OXYETHYL)-ISOCYANURATE

Guenther Daumiller, Heidelberg; Karl Merkel, Ludwigshafen; Franz Neumayr, Weisenheim, and Kurt Schneider, Bad Durkheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jun. 27, 1977, Ser. No. 810,274
Claims priority, application Germany, Jul. 27, 1976, 2633685
Int. Cl.² C07D *251/34*
U.S. Cl. 544—221 **1 Claim**

1. Tris-(2-chloroformyl-oxyethyl)-isocyanurate of the formula



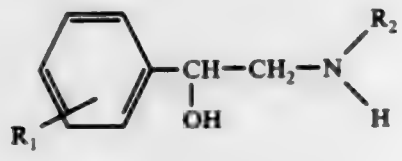
4,085,270

SYMPATHICOMIMETIC ACYLOXY-PHENYLETHANOLAMINE

Dietrich Henschler, Wurzburg; Josef Wagner, Munich, and Hans Hampel, Neukeferloh, all of Germany, assignors to Chemisch-Pharmazeutische Fabrik Adolf Klinge & Co., Munich, Germany

Filed Oct. 13, 1972, Ser. No. 297,416
Claims priority, application Germany, Oct. 19, 1971, 2152058
Int. Cl.[2] C07C *93/20*
U.S. Cl. 560—105 **7 Claims**

1. Mono-acyloxy-phenylethanolamines having the general formula:



wherein

R_1 is pivaloyloxy or phenylacetyloxy in the 3' or 4' position, and

R_2 is methyl or ethyl.

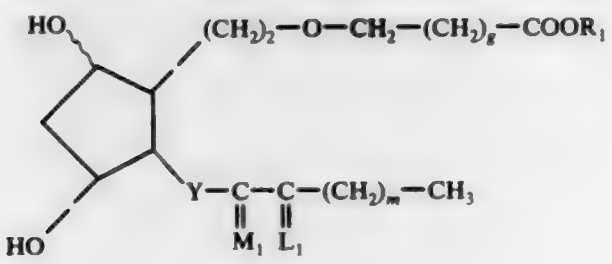
4,085,271

5-OXA-CIS-13-PGF$_1$ COMPOUNDS

Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909.
This application Mar. 3, 1977, Ser. No. 774,082
Int. Cl.[2] C07C *177/00*
U.S. Cl. 560—121 **25 Claims**

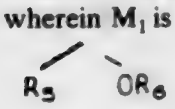
1. A compound of the formula



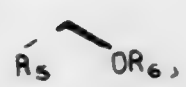
wherein g is 2, 3, or 4;

wherein Y is cis-CH=CH-;

wherein M_1 is



or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is





or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein m is one to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two or three chloro or alkyl of 1 to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

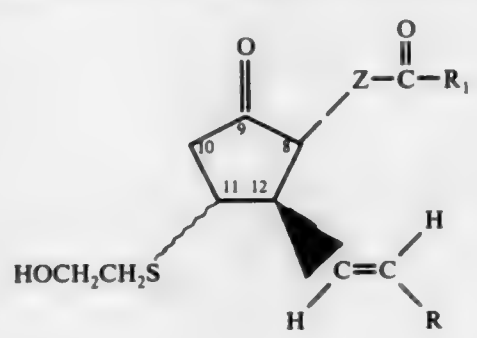
4,085,272

11-(2-HYDROXYETHYLTHIO)PROSTENOIC ACID E$_2$ SERIES DERIVATIVES

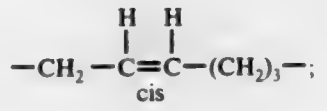
Martin Joseph Weiss, Oradell, N.J., and Gerald Joseph Siuta, Yonkers, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 30, 1977, Ser. No. 782,853
Int. Cl.[2] C07C *177/00*
U.S. Cl. 560—121 **23 Claims**

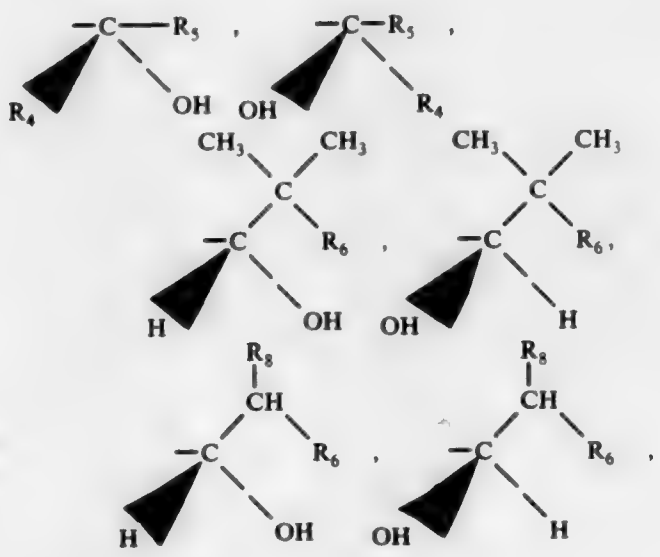
1. An optically active compound of the formula:



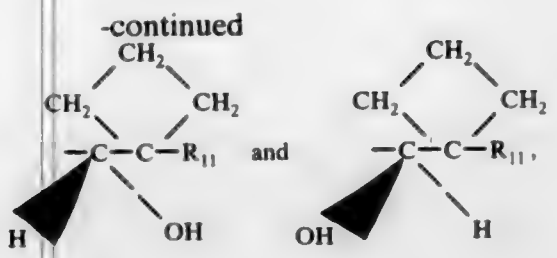
wherein Z is



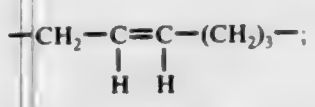
R_1 is selected from the group consisting of hydroxy and C_1-C_6 alkoxy; and R is a moiety selected from the group consisting of



-continued



wherein R_4 is selected from the group consisting of hydrogen and methyl, R_5 is selected from the group consisting of C_4–C_7 alkyl and 2-cis(C_4–C_6)alkenyl, R_6 is selected from the group consisting of C_3–C_5 alkyl, R_8 is selected from the group consisting of C_1–C_2 alkyl, and R_{11} is selected from the group consisting of C_3–C_7 alkyl; with the proviso that when R_5 is 2-cis(C_4–C_6)-alkenyl, then R_4 must be hydrogen and Z must be



the racemic mixture thereof; the mirror image thereof; and when R_1 is hydroxy, the pharmaceutically acceptable salts thereof.

4,085,273

PREPARATION OF CHRYSANTHEMIC ACID COMPOUNDS

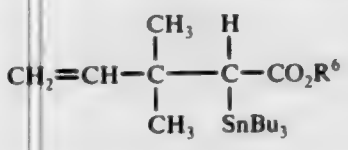
Donald John Peterson, Cincinnati, and Medford Dwight Robbins, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 586,456, Jun. 12, 1975, Pat. No. 3,998,889, which is a division of Ser. No. 390,156, Aug. 23, 1973, Pat. No. 3,959,324, which is a continuation-in-part of Ser. No. 247,641, Apr. 26, 1972, abandoned. This application Jun. 24, 1976, Ser. No. 699,413

Int. Cl.² C07C *67/30*

U.S. Cl. 560—124 **1 Claim**

1. A process for preparing chrysanthemic acid esters comprising: (1) admixing an organotin compound of the formula



wherein R^6 is lower alkyl, with an electrophile source of the formula

$CH_3C(O)BF_4$

(2) admixing the product from step (1) with a methylmetallic compound selected from the group consisting of methyl Grignard reagents, methylzinc halides, dimethylmagnesium, and methyl alkali metal compounds; and (3) dehydrating the product from step (2) using iodine catalysis.

4,085,274

PROCESS FOR PREPARING 4-OXOPENTADECANEDIOIC ACID

Katuhiko Takahashi; Kyozo Arimoto; Yoshiyuki Arai; Tsuyoshi Morinaga, and Yuji Nakazawa, all of Ohimachi, Japan, assignors to Daicel Ltd., Sakai, Japan

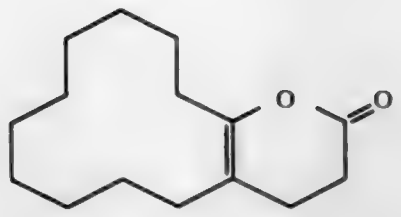
Filed May 26, 1976, Ser. No. 690,360

Claims priority, application Japan, May 30, 1975, 50-65014

Int. Cl.² C07C *51/34, 67/00*

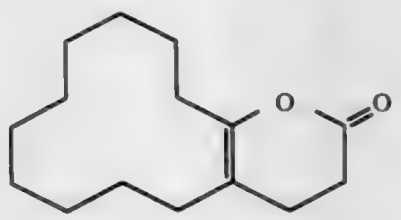
U.S. Cl. 560—176 **2 Claims**

1. A process for preparing 4-oxopentadecanedioic acid which comprises: oxidizing, with ozone, at a temperature of from −80° C to room temperature, a compound having the formula:



said compound being dissolved in an inert organic solvent, to transform said compound to the corresponding ozonide; then adding to the reaction mixture containing said ozonide a basic aqueous solution of a base selected from the group consisting of sodium hydroxide, potassium hydroxide, organic amines, alkali carbonates, ammonia and ammonium hydroxide and a water-soluble organic compound selected from the group consisting of methanol, ethanol and acetone, at from −30° to 0° C, then heating the mixture at reflux to decompose said ozonide and then hydrolyzing to obtain 4-oxopentadecanedioic acid.

2. A process for preparing diester of 4-oxopentadecanedioic acid which comprises: oxidizing, with ozone, at a temperature of from −80° C to room temperature, a compound having the formula:



said compound being dissolved in an inert organic solvent, to transform said compound to the corresponding ozonide; then adding to the reaction mixture containing said ozanide an alcohol selected from the group consisting of methanol, ethanol, isopropyl alcohol and butanol, said alcohol containing a catalytic amount of a strong acid selected from the group consisting of p-toluene sulfonic acid and sulfuric acid, and refluxing the mixture to transform said ozonide to the corresponding diester of 4-oxopentadecanedioic acid.

4,085,275

PRODUCTION OF DI-UNSATURATED CARBOXYLIC ACIDS

James W. Gambell, St. Louis, and H. Burnham Tinker, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 30, 1975, Ser. No. 644,984

Int. Cl.² C07C *67/30*

U.S. Cl. 560—130 **21 Claims**

1. A process for the production of five carbon chain length or greater alkadienoic acids and esters thereof and alkadienonitriles which comprises contacting reactant compounds having a carboxylic acid or nitrile function of 5 to 10 carbon atoms from the group consisting of alkenoic acids and esters thereof, in which the ester group is stable under the dehydrogenation reaction conditions used in the process, alkenonitriles, hydroxylalkanoic acids and esters thereof, in which the ester group is stable as aforesaid, hydroxynitriles and lactones of hydroxyalkanoic acids with a solid contact catalyst comprising a carbonaceous layer, produced by contacting a solid with organic compounds at high temperatures, effective for the dehydrogenation of methyl hexenoates to methyl hexadienoates at elevated temperatures of about 350° C to 600° C and space velocities in the range of 50 to 5,000 hr^{-1} and diluent to reactant compound volume ratios in the range of 0:1 to about 50:1 or higher.

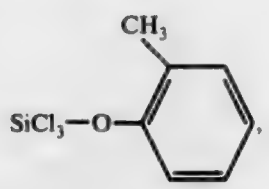
4,085,276
PROCESS FOR PREPARING HIGHLY STEREOREGULAR POLYMERS OR COPOLYMERS OF α-OLEFINS CONTAINING AT LEAST THREE CARBON ATOMS, AND CATALYSTS USED THEREFOR

Akinori Toyota, Iwakuni; Kiyoshi Odawara, Waki, and Norio Kashiwa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Feb. 10, 1976, Ser. No. 656,980
Claims priority, application Japan, Feb. 14, 1975, 50-17934
The portion of the term of this patent subsequent to Feb. 28, 1993, has been disclaimed.
Int. Cl.[2] C08F *4/02, 10/06*
U.S. Cl. 526—122 21 Claims

1. In a process for polymerizing or copolymerizing an α-olefin containing at least 3 carbon atoms or copolymerizing said α-olefin with not more than 10 mole% of ethylene at a temperature of 20° to 200° C. and at a pressure of 1 to 50 kg/cm^2 in the presence of a catalyst composed of (a) a transition metal catalyst component derived from a solid carrier, an electron donor and a titanium compound and (b) an organometallic compound of a metal of Groups I to III of the Periodic Table, the component (b) being in such amount that the ratio of said metal of Groups I to III/Ti (as metal atom ratio) of the component (a) is 1/1 to 2000/1; the improvement wherein said transition metal component is obtained by reacting the following components (1) and (2):

1. a magnesium-containing reaction product of:
   i. a magnesium halide;
   ii. an active hydrogen-containing alcohol selected from the group consisting of C_1 – C_8 aliphatic alcohols, benzyl alcohol, phenethyl alcohol, cumyl alcohol, triphenyl carbinol, o-cresol, m-cresol, 2,6-dimethylphenol and β-naphthol;
   iii. an organic acid ester selected from the group consisting of an ester formed between C_1 – C_8 saturated or unsaturated aliphatic carboxylic acid which may be substituted by a halogen atom and an alcohol selected from the group consisting of C_1 – C_8 saturated or unsaturated aliphatic primary alcohols, C_3 – C_8 saturated or unsaturated alicyclic alcohols and C_1 – C_4 saturated or unsaturated aliphatic primary alcohols substituted by C_6 – C_{10} aromatic groups or halogen atoms; an ester formed between a C_7 – C_{12} aromatic monocarboxylic acid and an alcohol selected from the group consisting of C_1 – C_8 saturated or unsaturated aliphatic primary alcohols, C_3 – C_8 saturated or unsaturated alicyclic alcohols and C_1 – C_4 saturated or unsaturated aliphatic primary alcohols substituted by C_6 – C_{10} aromatic groups or halogen atoms, methyl cyclopentanecarboxylate, methyl hexahydrobenzoate, ethyl hexahydrobenzoate, methyl hexahydrotoluate and ethyl hexahydrotoluate; and
   iv. a silicon or tin compound containing at least one halogen atom or hydrocarbon group directly bonded to silicon or tin and selected from the group consisting of $SiCl_3H$, $Sn(C_2H_5)_4$, $SiCl_3(OC_2H_5)$,



silicon tetrahalides, tin tetrahalides, tetraalkyl silicons, silicon alkyl halides, silicon alkyl hydrides, tin alkyl halides and tin hydride halides;

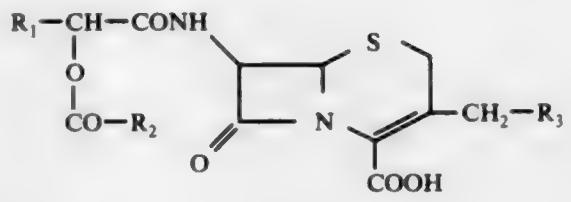
2. a titanium compound of the formula $Ti(OR^1)_nX_{4-n}$ where X is a halogen atom, R^1 is a C_1 – C_4 alkyl group, and n is a number of 0 to 4, the molar ratio of (i)/(ii)/(iii)/(iv)/(2) being 1/(20–0.1)/(20–0.005)/(at least 0.1)/(at least 0.1).

4,085,277
7(2-PHENYL OR THIENYL-2-ISONICOTINOYLOXYACETAMIDO)-3-(1-METHYL-1-H TETRAZOL-5-YL)THIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACID

Hirokichi Harada, Nishinomiya, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 545,342, Jan. 30, 1975, Pat. No. 4,001,225, which is a continuation-in-part of Ser. No. 476,037, Jun. 3, 1974, Pat. No. 4,000,133. This application Nov. 15, 1976, Ser. No. 742,014
Int. Cl.[2] C07D *501/22, 501/36*
U.S. Cl. 544—27 6 Claims

1. A compound of the formula:



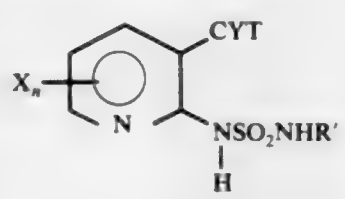
wherein
R_1 is phenyl or thienyl,
R_2 is pyridyl, and
R_3 is hydrogen or alkylthio,
and a pharmaceutically acceptable salt thereof.

4,085,278
SUBSTITUTED AMINOSULFONYLAMINO PYRIDINE THIOCARBOXYLIC ACIDS AND DERIVATIVES THEREOF

Lennon H. McKendry, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

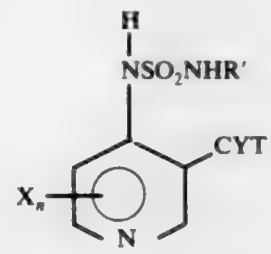
Division of Ser. No. 676,591, Apr. 13, 1976, Pat. No. 4,014,888, which is a continuation-in-part of Ser. No. 572,024, Apr. 28, 1975, abandoned, which is a division of Ser. No. 412,944, Nov. 5, 1973, Pat. No. 3,920,641. This application Dec. 6, 1976, Ser. No. 747,671
Int. Cl.[2] C07D *295/10, 401/12, 213/56*
U.S. Cl. 544—111 2 Claims

1. A compound of the formulae:



III

and



IV

wherein:
each X independently represents loweralkyl, of 1 to 6 carbon atoms, haloloweralkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, SR^5, OR^5, aryl wherein aryl is phenyl, halophenyl or tolyl, $—NR^3R^4$, halo or nitro;
n represents an integer of 0 to 3, inclusive;
Y represents sulfur;
T represents a member selected from the group consisting of hydroxy or alkoxy of 1 to 3 carbon atoms;
R′ represents pyrrolidinoethyl, piperidinoethyl or morpholinoethyl;

each of R^3 and R^4 independently represent hydrogen or loweralkyl of 1 to 6 carbon atoms;
R^5 represents loweralkyl of 1 to 6 carbon atoms.

4,085,279

SUBSTITUTED (AMINOSULFONYLAMINO) PYRIDINE CARBOXYLIC ACIDS AND DERIVATIVES THEREOF

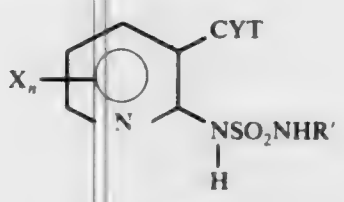
Lennon H. McKendry, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 676,591, Apr. 13, 1976, Pat. No. 4,014,888, which is a continuation-in-part of Ser. No. 572,024, Apr. 28, 1975, abandoned, which is a division of Ser. No. 412,944, Nov. 5, 1973, Pat. No. 3,920,641. This application Dec. 3, 1976, Ser. No. 747,267

Int. Cl.[2] C07D *295/10, 401/12, 213/55*

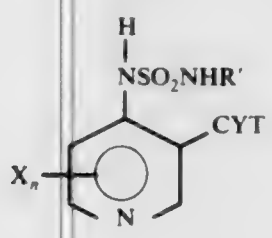
U.S. Cl. 544—111 **2 Claims**

1. A compound of the formulae:



III

and



IV

wherein:
each X independently represents loweralkyl, of 1 to 6 carbon atoms, haloloweralkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, SR^5, OR^5, aryl wherein aryl is phenyl, halophenyl or tolyl, $—NR^3R^4$, halo or nitro;
n represents an integer of 0 to 3, inclusive;
Y represents oxygen;
T represents a member selected from the group consisting of hydroxy or alkoxy of 1 to 3 carbon atoms;
R′ represents pyrrolidinoethyl, piperidinoethyl or morpholinoethyl;
each of R^3 and R^4 independently represent hydrogen or loweralkyl of 1 to 6 carbon atoms;
R^5 represents loweralkyl of 1 to 6 carbon atoms.

4,085,280

7-AMINOALKYL-3,7-DIARYL-3,3a,4,5,6,7-HEXAHYDRO-2H-INDAZOLES

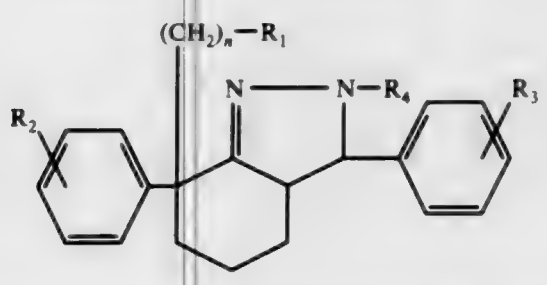
John Krapcho, Somerset, and Chester F. Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 7, 1977, Ser. No. 785,396

Int. Cl.[2] C07D *231/56, 401/06, 413/06*

U.S. Cl. 544—140 **11 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein
R_1 is alkylamino, dialkylamino, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl or 4-alkyl-1-piperazinyl;
R_2 and R_3 are the same or different and are hydrogen, chloro, fluoro, alkyl, alkoxy or trifluoromethyl;
R_4 is hydrogen, alkyl, 2,2,2-trifluoroethyl, 2-hydroxyethyl, arylalkyl, or alkanoyl;
n is 1, 2 or 3; and
wherein the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms, the term "aryl" refers to phenyl or phenyl substituted with a chloro, fluoro, alkyl, alkoxy or trifluoromethyl group, and the term "alkanoyl" refers to groups having 2 to 9 carbon atoms.

4,085,281

HEXAMETHYLENETETRAMINE PHENOXYLALKYL SALTS

James K. Pierce, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 23, 1976, Ser. No. 753,754

Int. Cl.[2] C07D *295/02*

U.S. Cl. 544—185 **5 Claims**

1. A compound selected from the group consisting of 3,5,7-triaza-1-azoniatricyclo(3.3.1.$1^{3,7}$)-decane:1-(2-(2,4-dichlorophenoxy)ethyl)-, bromide; 3,5,7-triaza-1-azoniatricyclo(3.3.1.$1^{3,7}$)decane:1-(2-(4-chloro-2-methylphenoxy)ethyl)-, bromide; 3,5,7-triaza-1-azoniatricyclo(3.3.1.$1^{3,7}$)decane:1-(2-(2-chloro-4-fluorophenoxy)ethyl)-, bromide; and 3,5,7-triaza-1-azoniatricyclo(3.3.1.$1^{3,7}$)decane:1(2-(2,4,5-trichlorophenoxy)ethyl)-, bromide.

4,085,282

PROCESS FOR PREPARING SUBSTITUTED TRIAZINES

John Arthur Jones, Belpre, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 24, 1976, Ser. No. 744,669

Int. Cl.[2] C07D *251/70*

U.S. Cl. 544—197 **11 Claims**

1. A process for preparing tris-(polyhalophenylamino)triazines comprising reacting a polyhaloaniline with a cyanuric halide under superatmospheric pressure.

4,085,283

PHOSPHONATE-ISOCYANURATES

Marinus J. A. M. Den Otter, Munstergeleen; Albert A. Van Geenen, and Anne Te Nijenhuis, both of Brunssum, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

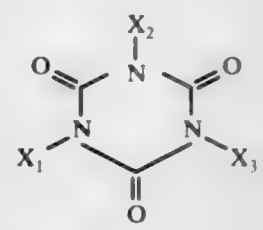
Filed Apr. 19, 1976, Ser. No. 678,438

Claims priority, application Netherlands, Apr. 19, 1975, 7504684

Int. Cl.[2] C07D *251/34*

U.S. Cl. 544—214 **7 Claims**

1. A compound of the formula



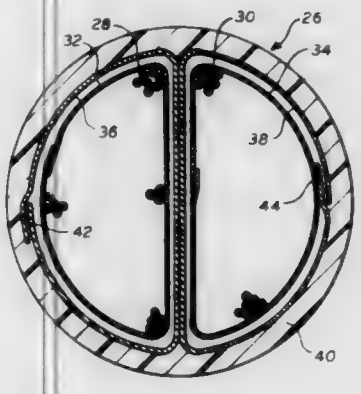
in which each of X_1, X_2 and X_3 is hydrogen, halogen, alkyl of up to 6 carbon atoms, —Y—P (O) (OR) (OR′) or —Y—OH
wherein Y is alkylene or alkyl- or halogen-substituted alkylene of 1 to 6 carbon atoms; or polyoxyalkylene wherein each oxyalkylene unit contains 1 to 3 carbon atoms and wherein said polyoxyalkylene contains 2 to 4 of said units; wherein each of R and R′ is phenyl, or (cyclo)alkyl of 1 to 6 carbon atoms, or such phenyl, alkyl or cycloalkyl containing one or more halogen substituents; and in which at least one of said X_1, X_2 or X_3 is —Y—P (O) (OR) (OR′).

ELECTRICAL

4,085,284
D-SHIELD TELEPHONE CABLES

Jerzy A. Olszewski, Edison, and Ludwig Jachimowicz, Elizabeth, both of N.J., assignors to General Cable Corporation, Boonton, N.J.

Filed Aug. 10, 1976, Ser. No. 713,228
Int. Cl.[2] H01B *11/06*
U.S. Cl. 174—36 17 Claims



1. A communication cable which has two cable cores, each of which transmits messages in a different direction and each of which includes a plurality of insulated conductors bound together in a unit by a core wrap, metal shielding around each of the individual cores with a portion of the shielding extending between the cores to shield them from each other, characterized by the metal shielding including a shield around each core unit spaced from all of the conductors of the core unit by the core wrap being interposed between inside surface of the metal shield and the conductors of the corresponding core unit, each of the metal shields surrounding its own individual core unit and having an area that confronts and contacts with a part of the metal shield of the other core unit and that is bonded thereto.

4,085,285
METHOD OF MANUFACTURING PRINTED CIRCUIT BOARDS

Gerardus Johannes Meinardus Lippits; Petrus Johannes Janssen; Henricus Antonius Debruijn, and Johannes van Ruler, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

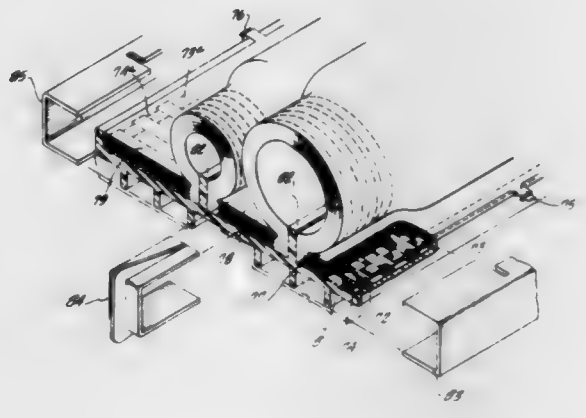
Continuation of Ser. No. 527,045, Nov. 25, 1974, abandoned. This application Aug. 6, 1976, Ser. No. 712,162
Claims priority, application Netherlands, Nov. 29, 1973, 7316313
Int. Cl.[2] H05K *3/18*
U.S. Cl. 174—68.5 6 Claims

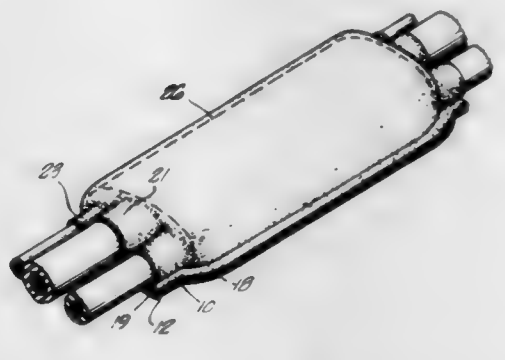
1. A method of forming completely metallized holes in printed circuit boards, said method comprising providing the desired holes in a substrate, contacting the walls of said substrate with an aqueous dispersion of TiO_2 particles, the charge sign of said TiO_2 particles in the dispersion being opposite to that at the walls of said holes while in contact with said dispersion, rinsing away any excess of said dispersion from the walls of said holes, subjecting the thus treated walls to a thermal treatment at a temperature of more than 50° C but less than the softening temperature or decomposition temperature of the material of said walls, the resultant walls being coated with a layer of TiO_2 particles one grain thick, treating the resultant TiO_2 coated walls of said holes with a solution of a metal salt capable of being reduced to metal nuclei by TiO_2 particles when exposed to actinic light, exposing the walls of said holes to actinic light thereby causing the walls of said holes to be coated with a metal nuclei layer and then subjecting said metal nuclei layer to the action of a solution of a metal compound capable of being chemically deposited on said metal nuclei layer in its metallic state to thereby increase the amount of metal on the walls of said holes.

4,085,286
HEAT-RECOVERABLE SEALING ARTICLE WITH SELF-CONTAINED HEATING MEANS AND METHOD OF SEALING A SPLICE THEREWITH

David August Horsma, Palo Alto, and Stephen Hunter Diaz, Los Altos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 509,837, Sep. 27, 1974, abandoned. This application Aug. 4, 1975, Ser. No. 601,344
Int. Cl.[2] H02G *15/18, 1/14;* B29C *27/24;* H05B *3/10*
U.S. Cl. 174—92 41 Claims





1. A heat recoverable article having self-contained heating means comprising a conductive polymeric composition, said polymeric composition being capable of conducting sufficient current there through at a given voltage and exhibiting sufficient resistance to give a heat output capable of causing the heat unstable material to recover to its original form, said conductive polymeric composition being so configured that its length and width are substantially greater than its thickness and said conductive polymeric composition being adapted for connection to a power source such that the current will flow through its thickness, said article being further characterized as comprising a polymeric material which has been dimensionally changed from an original heat stable form to a heat unstable form capable of moving in the direction of its original form upon the application of sufficient heat and being so configured that it can be positioned around a splice to be sealed.

6. A heat recoverable tubular article for sealing joints having self-contained and self-regulating heating means comprising a conductive polymeric heating composition exhibiting a positive temperature coefficient of resistance and having sufficient heating capacity when connected to an electrical power source, to cause at least a heat recoverable portion of the tubular article to recover around and seal a joint therebeneath.

9. A heat recoverable closure member having self-contained and self-regulating heating means and being adapted to heat recover around and seal a splice comprising a conductive polymeric heating composition, said composition exhibiting a positive temperature coefficient of resistance and having sufficient heating capacity when connected to an electrical power source to cause a heat recoverable portion of the closure member to heat recover, said closure member having first and second edges adapted to be brought together to form a tubular member and means for engaging said edges, said means maintaining said edges together during heat recovery.

20. A heat recoverable closure article having self-contained and self-regulating heating means and being adapted to be heat recovered around a joint comprising

(a) a first layer of conductive polymeric material exhibiting a positive temperature coefficient of resistance,

(b) at least one additional layer of conductive polymeric material adjacent a surface of said first layer exhibiting substantially constant resistance upon change in temperature to give a substantially constant wattage output at a given voltage,

(c) electrodes positioned adjacent opposite surfaces of said first layer such that an applied current will flow through the thickness of said first layer; and at least one of said layers being heat recoverable, said layers being adapted so that the recovery of said heat recoverable layer upon the application of heat results in recovery of the other of said layers.

29. A process of heat sealing a joint between members without external heating means comprising the steps of:

positioning around said joint to be sealed a heat-recoverable article having self-contained and self-regulating heating means comprising

(a) a first layer of conductive polymeric material exhibiting a positive temperature coefficient of resistance,

(b) a second layer of polymeric material adjacent a surface of said first layer having dispersed therein a conductive filler, said layers exhibiting substantially constant resistance upon change in temperature to give a substantially constant wattage output at a given voltage,

(c) electrodes positioned adjacent opposite surfaces of said first layer such that an applied current will flow through the thickness of said first layer,

(d) a third layer of electrically insulating material,

(e) an inner layer of heat activatable material, said material being activated at the operating temperature of the heating article to bond to the members to be sealed, at least one of said layers being heat recoverable at the operating temperature of the article; and

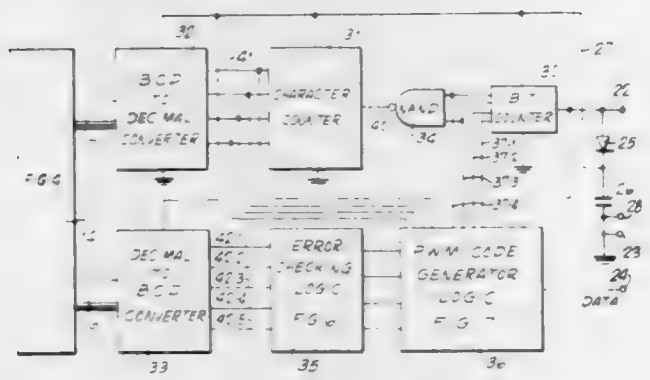
applying sufficient current to the electrodes to cause recovery of the heat recoverable materials and activation of the adhesive.

4,085,287

DATA TRANSMITTING APPARATUS

Donald J. Kullmann, Tallassee; Daniel A. Seltzer, Montgomery, and Raymond L. Kirby, Tallassee, all of Ala., assignors to Neptune Water Meter Company, Tallassee, Ala.

Filed Dec. 19, 1975, Ser. No. 642,574
Int. Cl.[2] H04L *17/00*
U.S. Cl. 178—66 R **30 Claims**



1. Apparatus for transmitting data, comprising:

(a) a source of cyclically repeated clock pulses;

(b) means connected to said source for transmitting data serially in characters, each character comprising a plurality of signal bits, each signal bit comprising an initial fraction and a data-carrying fraction, the duration of each of said fractions being an integral number of clock pulse cycles, said transmitting means including:

(1) coding means for shifting the potentials of the data-carrying fractions of successive bits to a first potential to indicate a binary "0" and to a second potential to indicate a binary "1", in accordance with data to be transmitted; and

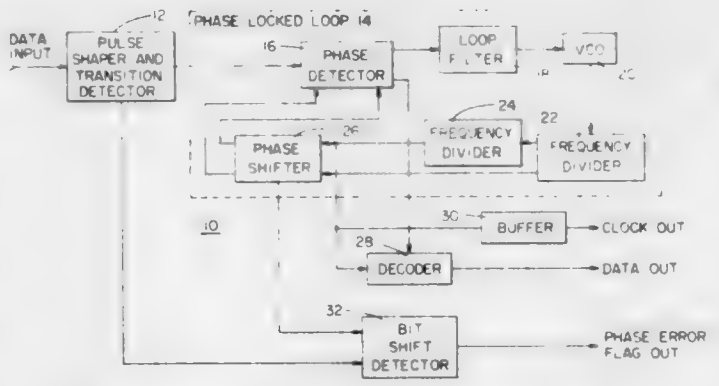
(2) initial bit marking means for shifting the potential of the initial fraction of the first bit in each character from one of said first and second potentials to the other for a period shorter than said initial fraction.

4,085,288

PHASE LOCKED LOOP DECODER

Lakshminarasimhan Viswanathan, Audubon, Pa., assignor to Computer Peripherals, Inc., Rochester, Mich.

Continuation of Ser. No. 572,424, Apr. 28, 1975, abandoned.
This application Oct. 22, 1976, Ser. No. 734,844
Int. Cl.[2] H03B *3/04*
U.S. Cl. 178—69.1 **16 Claims**



1. Phase locked loop decoder for decoding data signals having a given frequency and representative of digitally encoded data bits, each bit being encoded within a bit cell, comprising:

clock means for generating a data clocking signal for each bit cell;

phase error detection means for generating a digital pulsed phase error signal having a leading edge synchronized with the occurrence of each transition of said data signal within each bit cell and having a pulse width representative of the difference in time of occurrence of said data signal with respect to said cell clocking signal, and having an output;

clock synchronizing means responsive to said phase error signal for maintaining substantially continuous synchronization between said data signals and said clocking signal by advancing or retarding subsequent clocking signals; and

data decoder means synchronized by said clocking signal for decoding said output of said phase error detection means at said given frequency.

4,085,289

LOUDSPEAKER SYSTEM

Jeffrey B. Schmideler, 2978 No. 54th St., Milwaukee, Wis. 53210

Filed Oct. 18, 1976, Ser. No. 733,330
Int. Cl.[2] H04R *1/28, 1/34*
U.S. Cl. 179—1 VE **4 Claims**

1. In the passenger compartment of a vehicle having a floor, a front seat, a firewall, and a dashboard extending rearwardly from the firewall and forming a dash cavity and having an exposed lower corner, the combination comprising:

(a) an elongated flexible plastic generally bucket-shaped speaker enclosure having front and rear end portions,

(b) said enclosure being disposed in tight confinement between said seat and the said exposed lower corner of said dashboard and with the said front end portion of said enclosure sealingly engaging said lower corner,

(c) and a speaker disposed in said enclosure and co-axial

therewith and with said speaker facing forwardly to radiate sound from said contained enclosure past the said



portion of sealing engagement and beneath said dashboard.

4,085,290

TELEPHONE CONFERENCE AMPLIFIER

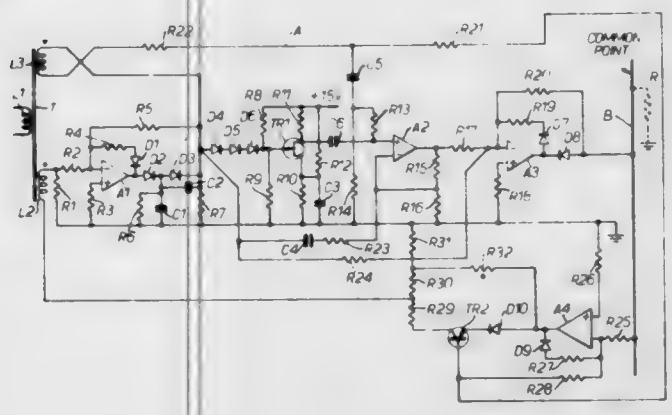
Ralph Archibald Jones, London, England, and Allan Mathieson Drew, Glasgow, Scotland, assignors to Post Office, London, England

Filed Nov. 8, 1976, Ser. No. 739,975

Claims priority, application United Kingdom, Nov. 17, 1975, 47251/75

Int. Cl.[2] H04M *3/56*; H01L *23/56*

U.S. Cl. 179—1. CN **13 Claims**



1. A telephone conference amplifier circuit having a plurality of channels each for a respective participant, each channel including means for producing an envelope signal from an input signal, means for combining the envelope signal with the input signal to produce a unidirectional polarity signal, first individual unilaterally conducting means connected for applying the unidirectional polarity signal to a point common to all of the channels, second individual unilaterally conducting means connected to derive the unidirectional polarity signal from the common point, means for producing a symmetrically polarised output signal from the unidirectional polarity signal derived by the second unilaterally conducting means and means responsive to the unidirectional polarity signal derived by the second unilaterally conducting means and inhibited by a signal related to the unidirectional polarity signal in the signal path to the common point to apply a voltage to the means for producing an envelope signal to reduce its sensitivity, whereby the circuit imposes a higher threshold, dependent on said voltage, to be overcome by a participant wishing to talk in a channel other than an active channel previously carrying signals from a participant talking, wherein the combining means includes an automatic level control means for limiting the range of variation of amplitude of a speech waveform derived from the input signal before it is combined with the envelope signal to produce the unidirectional polarity signal which is applied to the common point, the automatic level control means not being effective on the envelope signal.

4,085,291

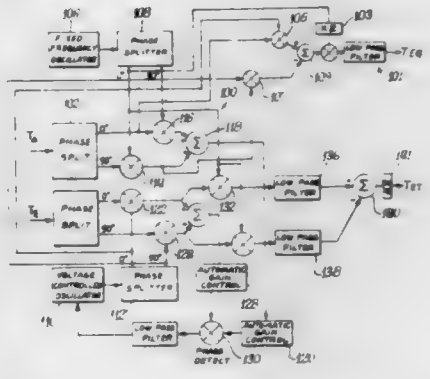
SYNTHETIC SUPPLEMENTARY CHANNEL MATRIX DECODING SYSTEMS

Duane H. Cooper, 918 W. Daniel St., Champaign, Ill. 61820

Continuation-in-part of Ser. No. 468,238, May 9, 1974, Pat. No. 3,985,978, Ser. No. 578,078, May 16, 1975, Pat. No. 3,970,788, which is a continuation-in-part of Ser. No. 288,873, Sep. 13, 1972, Pat. No. 3,906,156, and Ser. No. 187,065, Oct. 6, 1971, Pat. No. 3,856,992. This application Jun. 30, 1976, Ser. No. 701,228

Int. Cl.[2] H04R *5/00*

U.S. Cl. 179—1 GQ **14 Claims**



1. In a method for decoding at least two original matrixed transmission channels having multidirectional source signals encoded therein with predetermined amplitude and phase relations indicative of source directions and adapted to be decoded for formation of more than two loudspeaker presentation signals, the improvement comprising

generating at least one synthetic supplementary channel from said original transmission channels having predetermined amplitude and phase relations differently indicative of source directions relative to the amplitude and phase relations of the multidirectional source signals encoded in said original transmission channels, by steps comprising detecting source signal image direction from the signals of said original transmission channels and providing said source signals matrixed in each such synthetic supplementary channel with amplitude and phase relations for such detected source signal image direction differently indicative of source directions from the amplitude and phase relations of said original matrixed channels, and

decoding said original transmission channels and said synthetic supplementary channels to provide multidirectional presentation signals having enhanced image location.

4,085,292

COMBINATION ALARM AND AUTOMATIC TELEPHONE ANSWERING SYSTEM

David Louis Leslar, and John Cyril Kirk, both of Mississauga, Canada, assignors to Alarmco Inc., Scarborough, Canada

Filed Nov. 1, 1976, Ser. No. 737,449

Int. Cl.[2] H04M *11/04*

U.S. Cl. 179—2 A **4 Claims**

1. A combination alarm and automatic telephone answering apparatus adapted for monitoring at least one potential alarm condition at a remote location and adapted for connection to a telephone line, comprising:

(a) at least one alarm sensor connected to said apparatus for sensing the existence of a predetermined alarm condition;

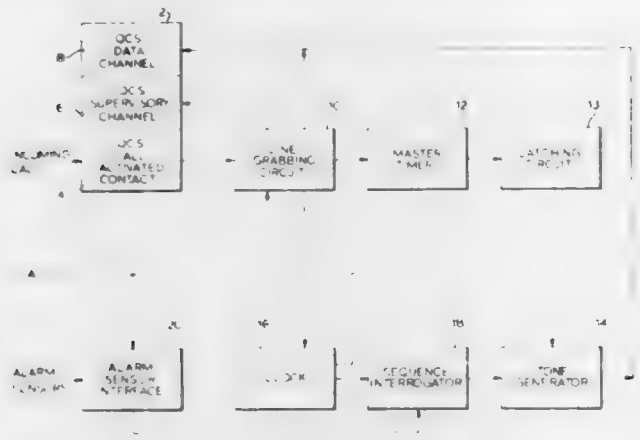
(b) controllable means responsive to an incoming call on said telephone line for engaging said line;

(c) control means coupled to said line engaging means for selectively interconnecting said line engaging means with said line so that when said control means is in a first condition said line is engaged in response to an incoming call on said telephone line, and when said control means is in a second condition said line is engaged in response to an incoming call on said telephone line only when said alarm sensor is in an alarm condition;

(d) means coupled to said line engaging means and adapted to maintain said line engaging means in engagement with said line for a predetermined interval when said control means is in said first condition;

(e) means connected to said alarm sensor for checking the condition thereof; and

(f) means connected to said alarm sensor checking means for



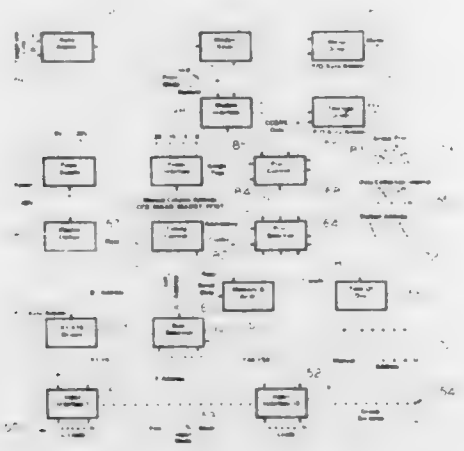
generating an alarm signal during said predetermined interval, which signal is indicative of the condition of such alarm sensor, said generating means being connected to said telephone line during said predetermined interval whereby said alarm signal is fed along said telephone line to the place where said call was initiated, to thereby provide an indication at said place of the existence of said alarm condition.

4,085,293

TRAFFIC USAGE RECORDER

Ernest C. Karras, Oak Brook, Ill., assignor to Tekno Industries, Inc., Bensenville, Ill.

Filed Jun. 28, 1976, Ser. No. 700,021
Int. Cl.² H04M *3/36*
U.S. Cl. 179—8 A **18 Claims**



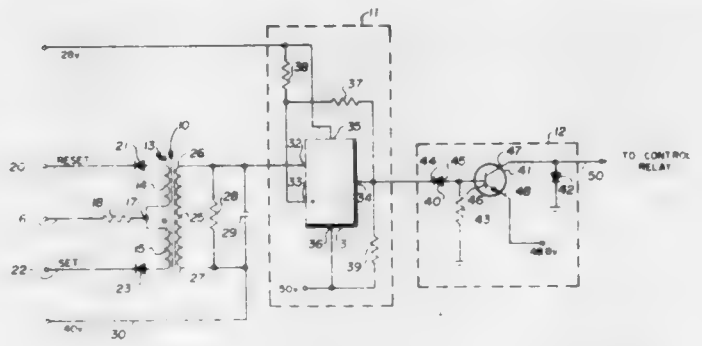
1. A traffic usage recorder for observing traffic through a plurality of telecommunication circuits, each having at least one individually-associated wire, said recorder comprising a plurality of input terminal means, each of said terminal means providing an access point which may be connected to the wires asociated with said circuits to thereby connect said circuits to said recorder, said circuits marking the wires individually associated therewith by a distinctive potential according to the usage of the circuit, means for repeatedly scanning each of said input terminal means to detect a presence or absence of said distinctive potential upon said wires and therefore the usage of the associated circuit prevailing at the time of the scan, means for combining said data on individually-associated wires into grouped data concerning groups of mutually-related wires, and means responsive to data derived from each of said terminals for indicating C.C.S. units, peg count, and responsive to said grouped data for indicating maximum simultaneous switch usage, and a cumulative time during which said maximum usage occurs.

4,085,294

CONTROL POINT DRIVER CIRCUIT

Robert M. Thomas, Maitland, and John A. Gauthier, Brockville, both of Canada, assignors to GTE Automatic Electric (Canada) Ltd., Brockville, Canada

Filed Aug. 2, 1976, Ser. No. 711,019
Int. Cl.² H04M *3/00*
U.S. Cl. 179—16 AA **6 Claims**



1. A control point driver circuit for use in a telephone exchange for energizing and de-energizing a control element in response to set or reset input pulses respectively, said control point driver circuit comprising:

a transformer comprising a centertapped primary winding, a common input at said centertap, a reset input for receiving the reset input pulses between said reset input and said common input, and a set input for receiving the set input pulses between said set input and said common input, said transformer also including a secondary winding;

control voltage means coupled to said secondary winding for providing at said secondary winding a fixed control voltage in the absence of a set or reset input pulse and for providing at said secondary winding in combination with induced transformer voltages a first augmented control voltage in the presence of a reset input pulse and a second augmented control voltage in the presence of a set input pulse; and

bistable means including a voltage comparator having first and second input terminals and an output terminal for comparing the voltage level at said first input terminal and the voltage level at said second input terminal, said voltage comparator assuming a set state thereby generating a set output signal at said output terminal when said voltage levels at said first and second input terminal have a first predetermined relationship and assuming a reset state thereby generating a reset output signal at said output terminal when said voltage levels at said first and second input terminals have a second predetermined relationship, said first input terminal coupled to said secondary winding, said bistable means further including first circuit means connected between said second input terminal and said output terminal for supplying a first reference voltage at said second terminal when said set output signal is present and for supplying a second reference voltage at said second terminal when said reset output signal is present,

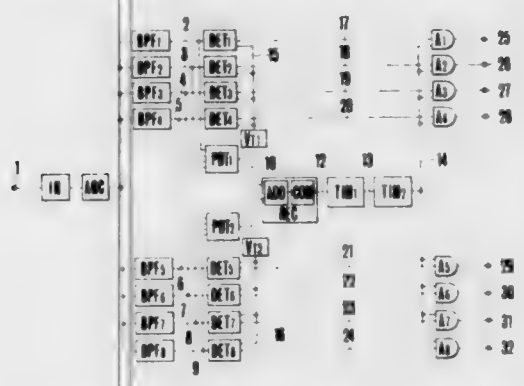
second circuit means connecting said output terminal to said control element.

4,085,295

MULTI-FREQUENCY SIGNAL RECEIVERS

Tadahiro Goto, Tachikawa, and Munemasa Soma, Tokyo, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1976, Ser. No. 727,346
Claims priority, application Japan, Oct. 1, 1975, 50-117635
Int. Cl.[2] H04M *1/50*
U.S. Cl. 179—84 VF 3 Claims



1. A multi-frequency signal receiver comprising an automatic gain control circuit for adjusting the level of said multi-frequency signal such that the level difference between high and low frequency signal components of said multi-frequency signal on the input side of the automatic gain control circuit is made equal to that on the output side when the level of said multi-frequency signal is constant, a plurality of bandpass filters for separating the output from said automatic gain control circuit into respective frequency signals, said bandpass filters being grouped into two groups, two detectors respectively detecting the output from said two groups of said bandpass filters for producing output voltages respectively proportional to the output from said two groups, a recognition circuit for producing an output when the level of the sum of outputs from said two detectors exceeds a predetermined level, and a plurality of gate circuits respectively responsive to the output from said recognition circuit for passing the outputs from said plurality of bandpass filters.

4,085,296

MODULATED SOUND READING SYSTEM

Pat Keegan, Van Nuys, Calif., assignor to International Audio Visual, Inc., Van Nuys, Calif.

Filed Dec. 19, 1975, Ser. No. 642,308
Int. Cl.[2] G11B *7/00*
U.S. Cl. 179—100.3 R 9 Claims



1. A sound reading system for transducing the optical sound track from sound-on-film motion picture film, comprising:

monochromatic light emitting diode means for excitation of said sound track;

means for modulating the light output from said light emitting diode means at a fixed carrier frequency that is higher than the highest audio frequency to be read from said sound track;

photodetector means responsive to the monochromatic light from said excited sound track for producing an electrical carrier output signal which is amplitude modulated in conformance with the optical transmission characteristic of said sound track; and

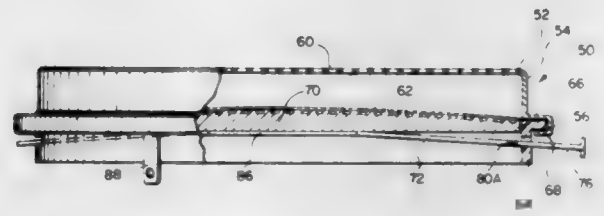
means for demodulating the amplitude-modulated carrier signal output from said photoselector means to provide an audio output signal.

4,085,297

SPRING FORCE BIASING MEANS FOR ELECTROACOUSTICAL TRANSDUCER COMPONENTS

Richard Paglia, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 13, 1977, Ser. No. 806,056
Int. Cl.[2] H04R *19/00*
U.S. Cl. 179—111 R 22 Claims



1. An improved electroacoustical transducer assembly of the type including,

a housing,

said housing defining a sidewall portion,

a vibratile, electrically conductive layer,

means for maintaining a portion of an annular region of said layer in a fixed position with respect to said housing,

an electrically nonconductive layer adjacent said electrically conductive layer,

a substantially inflexible plate-like member having an electrically conductive surface,

wherein the improvement comprises:

an elongated resilient member having at least two end portions,

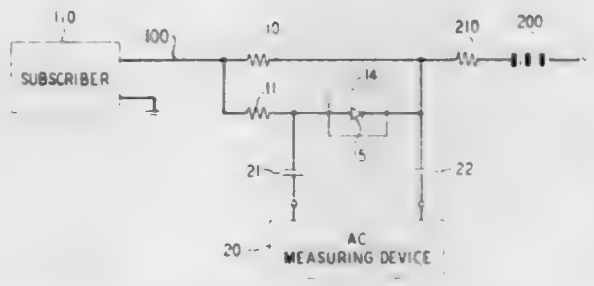
said end portions of said elongated resilient member cooperatively engaging said housing sidewall portion such that an intermediate portion of said elongated resilient member presses on said plate-like member causing said plate-like member to press on said electrically nonconductive layer thereby forcing said nonconductive layer into tensioning engagement with said electrically conductive layer.

4,085,298

MEASUREMENT OF CURRENT THROUGH A LINE SUBJECT TO SPURIOUS HIGH POTENTIALS

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 28, 1976, Ser. No. 700,312
Int. Cl.[2] H04B *3/46;* H04M *3/00*
U.S. Cl. 179—175.3 R 8 Claims



1. A direct current measuring circuit comprising:

a signal sensitive element;

means for coupling a portion of said direct current to said signal sensitive element; and

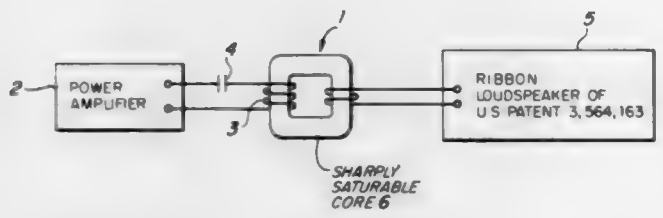
means, coupled through solely capacitive means to said signal sensitive element for measuring a preselected parameter of said signal sensitive element.

4,085,299

PEAK AMPLITUDE PROTECTION SYSTEM FOR RIBBON LOUDSPEAKERS

Gilbert L. Hobrough, P.O. Box 35369, Vancouver, British Columbia, Canada

Filed Jun. 24, 1977, Ser. No. 809,534
Int. Cl.[2] H04R *3/00*
U.S. Cl. 179—184 **10 Claims**



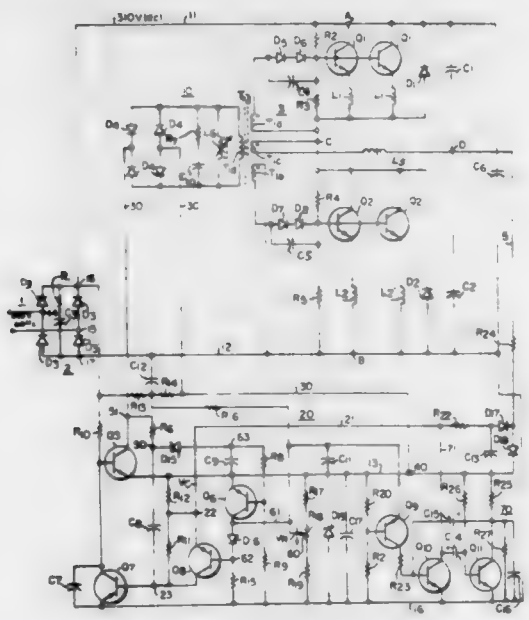
1. In combination:
a. a ribbon loudspeaker having an input circuit;
b. a power amplifier having an output circuit;
c. a transformer having an input circuit coupled to the output circuit of said power amplifier and an output circuit coupled to the input circuit of said ribbon loudspeaker and a magnetic core which saturates at a value of the time integral of the voltage applied to said input circuit of said transformer low enough to prevent extraordinary large amplitude fluctuations of the ribbon of said ribbon loudspeaker; and
d. a current limiting device for preventing said loudspeaker from drawing substantial power from said power amplifier due to saturation of said magnetic core.

4,085,300

FREQUENCY CONTROLLED INDUCTION COOKING APPARATUS

Raymond W. MacKenzie, Pittsburgh; Peter Wood, Murrysville; Theodore M. Heinrich, Murrysville, and Robert M. Oates, Murrysville, all of Pa., assignors to White-Westinghouse Corporation, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 532,550, Dec. 13, 1974, abandoned. This application May 3, 1976, Ser. No. 682,489
Int. Cl.[2] H05B *5/04*
U.S. Cl. 219—10.49 R **4 Claims**



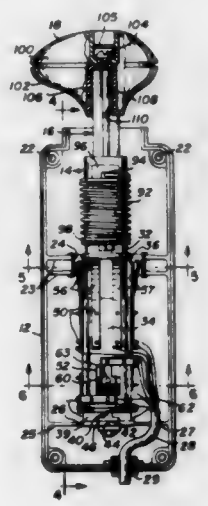
1. In an apparatus for heating a cooking utensil by magnetic induction and operative with a direct current power supply, the combination of:
induction coil means adapted to be inductively coupled to a cooking utensil;
series resonant circuit means having a natural frequency of resonance in the ultrasonic range and including said induction coil means;
switching means connected to said direct current power supply for converting direct current power into alternating current power at ultrasonic frequency and for energizing said series resonant circuit means;
means operative with said series resonant circuit means and said direct current power supply for providing a first signal indicative of voltage excursions of said series resonant circuit means beyond the voltage level of said direct current power supply;
means for integrating said voltage excursions to provide an average value of said first signal;
means for varying the frequency of operation of said switching means from at least approximately one-half of said natural frequency of resonance to said natural frequency of resonance in response to said first signal to control the power output of said apparatus when said induction coil means is inductively coupled to a cooking utensil; and
control means for providing a manual control signal, said frequency varying means being responsive to both said first signal and said manual control signal, said frequency varying means including means for clamping said switching means, time delay means for establishing a clamp time interval, with said time delay means being responsive to both said first signal and said manual control signal for establishing a time constant in relation to said first and manual control signals, said frequency varying means further including means responsive to said time delay means and operative with said clamping means for changing the frequency of operation of said switching means in relation to said clamp time interval.

4,085,301

HAND-HELD CONTROLLER DEVICE

Ronald A. Smith, Los Gatos, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sep. 16, 1976, Ser. No. 724,044
Int. Cl.[2] H01H *25/00*
U.S. Cl. 200—4 **7 Claims**



1. A controller device comprising:
an outer housing having an opening therein;
an elongated generally cylindrical member having a bore extending longitudinally therein from one end thereof and having pivot means pivotally securing the other end thereof to said housing, said member being disposed within said housing with said one end disposed proximate said opening;
first resilient means for normally biasing said cylindrical

member into a rest position but permitting said one end to be moved laterally relative to the longitudinal axis of said cylindrical member;

first switching means disposed around said cylindrical member so as to be actuated by said lateral movement of said one end and including at least four lateral contact members carried by said cylindrical member, and fixed contact means carried by said housing, whereby said lateral movement of said one end of said cylindrical member in any direction causes at least one of said lateral contact members to engage said fixed contact means;

plunger means including an elongated rod having a first end disposed within said bore and a second end extending out of said housing through said opening;

second resilient means for normally biasing said plunger means into a predetermined position relative to said cylindrical member but permitting said plunger means to be both rotated about its longitudinal axis and translated therealong;

second switching means affixed to said cylindrical member and actuated by translational axial movement of said plunger means; and

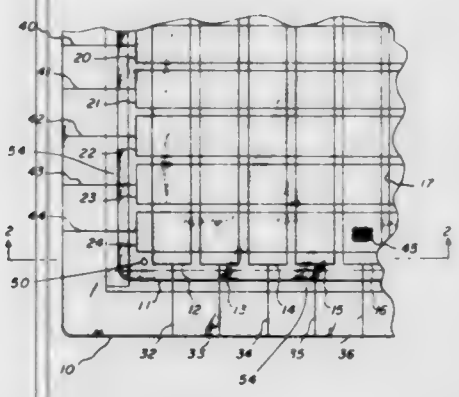
third switching means affixed to said cylindrical member and actuated by rotational motion of said plunger means, whereby lateral, translational or rotational forces applied to said second end of said plunger means cause said first, second and third switching means to develop corresponding signals.

4,085,302

MEMBRANE-TYPE TOUCH PANEL

George Edward Zenk, Richfield; Robert Joseph Johnson, Inver Grove Heights, and Charles Newell Miller, Richfield, all of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 22, 1976, Ser. No. 743,992
Int. Cl.[2] H01H *13/52*
U.S. Cl. 200—5 A **11 Claims**



1. A switch matrix to be carried on the face of a rigid insulator substrate having a predetermined radius of curvature, and comprising:

a. a plurality of spaced apart conductive first strips firmly adhering to the face of the substrate;

b. a resilient insulating membrane having an undistorted curved contour substantially alike the predetermined contour of the substrate, and attached about its periphery to the face of the substrate in a position matching the membrane contour to the substrate contour and supported apart from the first strips thereon in a predetermined area of the membrane by the natural resilience of the curved contour; and

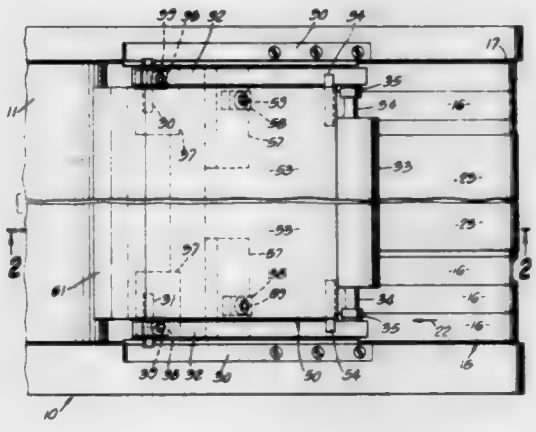
c. a plurality of flexible, spaced apart conductive second strips firmly adhering to the resilient membrane surface facing the substrate, each of said second strips located in the area spaced apart from the first strips and thinner than the spacing therefrom, and each of said second strips crossing at least two first strips.

4,085,303

SAFETY DOUBLE PROTECTION DEVICE FOR MACHINES HAVING PLURAL CIRCUIT BREAKER ASSEMBLIES ASSOCIATED WITH DOFFER ROLLER AND HAND GUARD

Robert Alfred McIntyre, Bell, Calif., and Kenneth Harlan Wolverton, Arlington, Tex., assignors to Ametek, Inc., New York, N.Y.

Filed Mar. 8, 1976, Ser. No. 664,690
Int. Cl.[2] H01H *3/16*
U.S. Cl. 200—61.41 **3 Claims**



1. A double protection device for use on a machine into which material is hand fed to shut off the machine when any part of an operator's hand passes into the entrance of that machine, the device comprising:

a frame having a material moving belt mounted thereon;

a doffer roll pivotally mounted on said frame to engage material being hand fed into the machine and press that material against said belt, said doffer roll and said belt defining the entrance to the machine;

a first machine shutdown mechanism for shutting off the machine, said first shutdown mechanism including a first safety switch mounted on said frame and operatively connected to said doffer roll to be actuated by pivotal movement of said doffer roll away from said belt beyond a predetermined distance, said predetermined distance corresponding to the movement undergone by said doffer roll away from said belt if an operator's fingers are caught between said doffer roll and said belt, said doffer roll thereby exerting pressure against the material being fed into the machine and actuating said first safety switch;

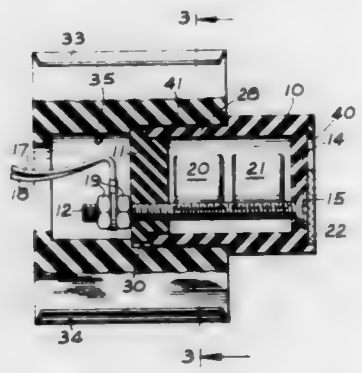
a second machine shutdown mechanism for shutting off the machine, said second shutdown mechanism mounted on said frame and including a safety guard cover pivotally mounted on said frame and located immediately behind said doffer roll in the direction of movement of said belt and to be thereby located closely adjacent said entrance and having a lower portion located just above said belt and a second safety switch mounted on said frame and operatively connected to said guard cover to be actuated by pivotal movement of said guard cover, said guard cover pivotal movement being caused by contact thereof with an operator's fingers, said second safety mechanism being in series with said first safety mechanism to back up said first safety mechanism and shut off the machine in the event said first safety mechanism fails to do so thereby providing a double protection system which is located at the entrance to the machine.

4,085,304

VIBRATION SWITCH HAVING THREADED TERMINALS AND PLURAL ROLLER CONTACTS

William Sandford Hasler, Blackburn, England, assignor to Shorrock Developments Limited, Blackburn, England

Filed Aug. 13, 1976, Ser. No. 714,107
Int. Cl.[2] H01H *35/00*
U.S. Cl. 200—61.45 R **4 Claims**



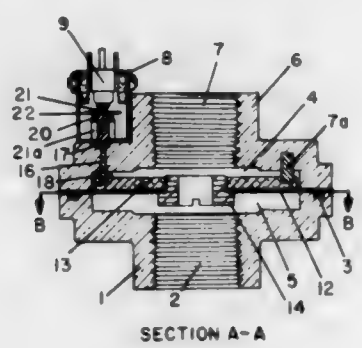
1. A vibration switch comprising, a housing, a side-by-side pair of substantially parallel, horizontally-disposed, elongate, electrically-conductive terminals supported within the housing, the terminals being of a configuration such as to present, upwardly, a plurality of discrete spaced-apart points and supporting from below a pair of loose, cylindrical, aligned, electrically-conductive bodies which partly occupy a space within the housing above the terminals, the terminals being spaced-apart by a distance such that the bodies cannot drop through and being respectively spaced away from the nearest adjacent part of the housing by a distance such that the bodies, if shaken out of contact with the terminals, cannot fall below the terminals but will fall back to be supported by the terminals.

4,085,305

LIQUID FLOW SWITCH

Henry G. Dietz, 80 Salisbury Ave., Garden City, N.Y. 11530

Filed Dec. 6, 1976, Ser. No. 748,126
Int. Cl.[2] H01H *35/34*
U.S. Cl. 200—83 A **5 Claims**



SECTION A-A

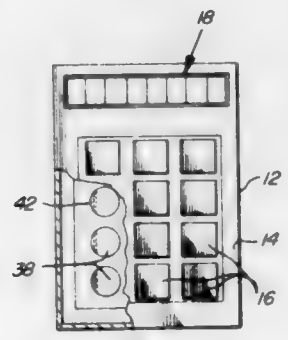
1. A liquid flow switch comprising two housings, defining a fluid tight space there between, a flexible pressure responsive diaphragm comprising a flexible material, a diaphragm plate, wherein said diaphragm and said diaphragm plate are secured together by means of a threaded plug, said threaded plug having an opening providing communication between two compartments, whereby the size of said opening functions to determine a differential pressure for a specific flow rate obtained through said opening, said flexible pressure responsive diaphragm separates the space into two said compartments, a rigid member of one said compartment having an edge surface in said space opposed to an edge surface of second compartment and in close proximity therewith, the edge surfaces jointly defining a clamp to hold said pressure responsive diaphragm, a pin extending from said housing provides means for pivoting said pressure diaphragm plate about said pin, an electrical contact mounted on said housing exteriorly of said space, an actuator for actuating said contact to an operative position comprising a flexible flat spring mounted exteriorly of said housing for flexing to a position to close said contact, an axially displacable pin in communication with the interior of said housing, and extending outwardly thereof for bearing against said flexible flat spring to deflect in a direction for closing said contact, an activating element mounted on said diaphragm for movement therewith to contact and engage said pin to actuate it in response to a pressure differential in said compartments flexing the diaphragm in a direction for actuating said liquid flow switch, and connectors for applying the fluid to two said compartments to develop said differential pressure whereby said differential pressure is a function of size of opening in said threaded plug for a specific flow rate.

4,085,306

KEYBOARD SWITCH ASSEMBLIES

Bill D. Dunlap, Longmont, Colo., assignor to KB-Denver, Inc., Frederick, Colo.

Filed Jun. 9, 1977, Ser. No. 804,945
Int. Cl.[2] H01H *1/06, 13/52*
U.S. Cl. 200—275 **7 Claims**



1. In a keyboard assembly which includes an insulative substrate upon which is carried a plurality of conductive paths, respective portions of which are selectively bridged upon depression of a conductive resilient contact element, the improvement comprising:

said contact element being in the shape of a dome and having a marginal portion formed downwardly away from its apex to constitute a single foot with said foot occupying only a limited minor extent of the margin of said element, and

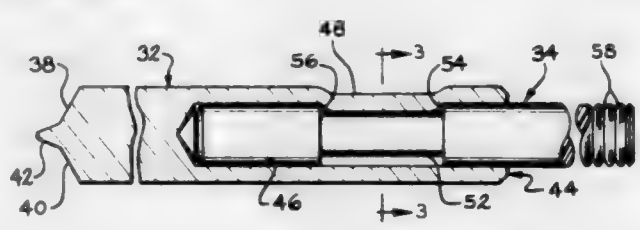
said dome-shaped element being disposed adjacent to said substrate with said foot being in electrical and physical contact with one of said portions of one of said paths, a central area of said dome-shaped element being in registry over at least one other of said portions in at least one other of said paths to enable connection between said central area and at least one other portion of said paths upon depression of said central area.

4,085,307

WELDABLE INSULATION FASTENER AND APPARATUS FOR WELDING

John C. Jenkins, Lorain, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 2, 1976, Ser. No. 663,056
Int. Cl.[2] B23K *9/20*
U.S. Cl. 219—98 **9 Claims**



1. In combination, a cryogenic container having an aluminum wall, an elongate fastener for holding a layer of insulating

material adjacent an outer surface of said aluminum wall, said fastener comprising an end-weldable stud of aluminum having a weldable tip at one end thereof and having means at the opposite end for affixing an elongate member thereto, an elongate member of low-conducting material having one end affixed to said affixing means of said stud and extending co-axially away from said stud, said elongate member being made of a multiplicity of longitudinally-extending, parallel glass fibers encased in a resinous material, the end of said elongate member opposite said stud having means to receive a clip to aid in holding the layer of insulating material adjacent the surface of said aluminum wall, and a clip on said elongate member and held by said clip-receiving means for contacting an outer surface of the layer of insulating material to hold it against the surface of the aluminum wall.

4,085,308

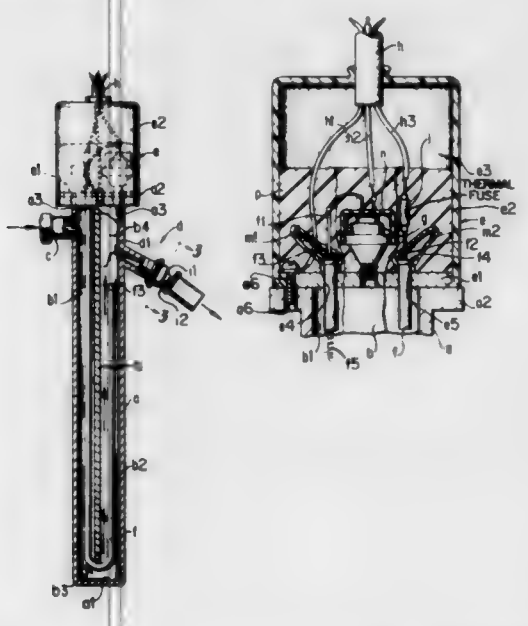
ELECTRIC WATER HEATER FOR SHOWERS

Rex Veech Youngquist, 7800 SW. 67th St., Miami, Fla. 33143

Filed Nov. 26, 1976, Ser. No. 745,199

Int. Cl.[2] H05B *1/02, 3/82;* **F24H** *1/10*

U.S. Cl. 219—309 **10 Claims**



1. An improved automatic electric in-line water heater of the type having

(a) a hollow vertical casing closed at its bottom and open at its top,

(b) a vertical partition dividing said casing into first and second longitudinally extending compartments communicating with each other at their lower ends, and essentially separated by said partition at their upper ends,

(c) a water inlet delivering into the upper portion of one of said first and second compartment,

(d) a relatively restricted water outlet delivering from the upper part of the other of said first and second compartments,

(e) said heater having a top closure assembly for said casing comprising a base portion covering said open casing top and a removable cover portion defining with said base portion a receptacle,

(f) an electrical heating means having a rigid tubular housing with an electrical heating element therein and terminal portions at its ends, said heating means being mounted in said base portion with its ends in said receptacle,

(g) pressure-actuated switch means in said receptacle having a pressure chamber therein communicating with said casing through said base portion, and

(h) three conductor current supply means secured to said assembly with one of its conductors grounded and two of its conductors connected to said heating element and switch means in series connection,

and including the improvement that

(i) said rigid tubular housing is mounted in said base portion through first and second apertures therein both overlying said first compartment at one side of said partition,

(j) said rigid tubular housing extends downwardly in said first compartment from its mounting in said first aperture to a position proximate to the closed bottom of said vertical casing, thence into and upwardly in said second compartment to a bend at a height therein lower than the height of said liquid outlet from said casing, thence from said bend downwardly in said second compartment to a position proximate to the closed bottom of said vertical casing, and thence into and upwardly in said first compartment to its mounting in said second aperture, and

(k) said electrical heating element is confined to those portions of said rigid tubular housing located below the level of said water inlet,

whereby in use said water is effectively heated without excessive heating of said base portion or of any portion of said heating means.

4,085,309

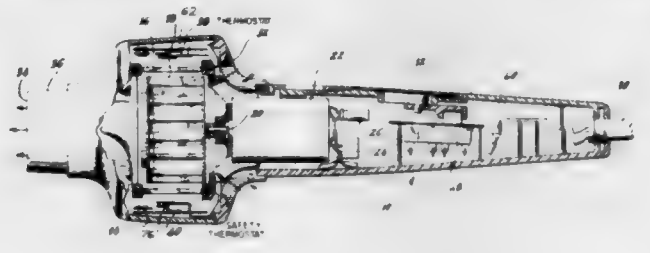
CONTROL CIRCUIT ARRANGEMENT FOR A PORTABLE ELECTRICALLY HEATED HAIR TREATMENT APPLIANCE

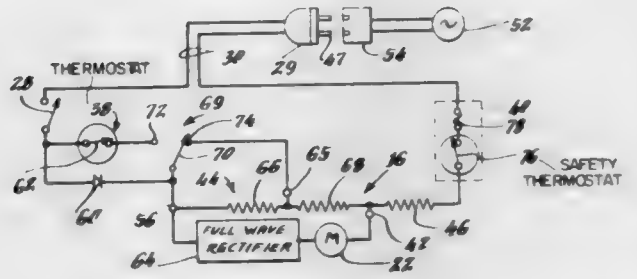
Siegfried Godel, Norwalk; Albert Adam Pudims, Stratford, and Richard Wergzyn, Bridgeport, all of Conn., assignors to Sperry Rand Corporation, Bridgeport, Conn.

Filed Jun. 4, 1975, Ser. No. 583,617

Int. Cl.[2] H05B *1/02;* **A45D** *20/08;* **F24H** *3/04*

U.S. Cl. 219—364 **5 Claims**





1. An improved heater control for an electrical appliance comprising,

a. an appliance casing having an air inlet and an air outlet,

b. means positioned in said casing for establishing an airstream from said inlet through said casing to said outlet,

c. an electrical resistance heater positioned within the casing in said airstream,

d. means including a switch means for applying an alternating potential to energize said heater to heat the airstream to an operating temperature T_1,

e. means within the airstream for sensing the heat of the airstream and electrically connected in series circuit with said switch means, said sensing means being operable to automatically open said series circuit to interrupt said alternating potential energization of the heater when said operating temperature exceeds a safe limit temperature T_2 which is greater than temperature T_1, and

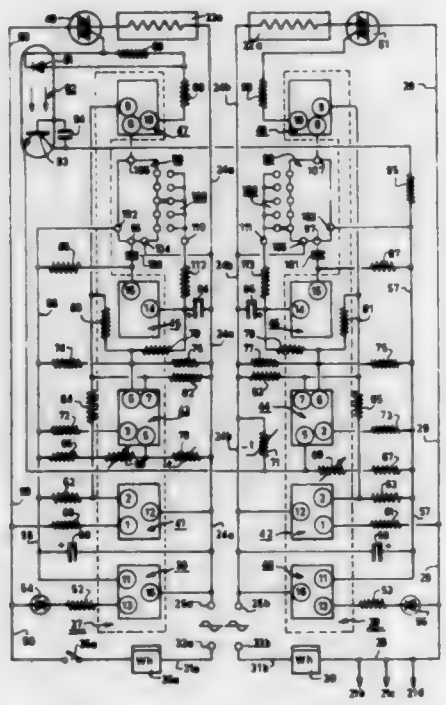
f. half-wave rectifier means electrically connected across said sensing means for applying half-cycles of the applied alternating potential to the heater during said open circuit condition of the series circuit.

4,085,310

CONTROL DEVICE FOR ELECTRIC HEATING SYSTEMS OF THE BI-JUNCTION TYPE FOR AN APARTMENT BUILDING

Jean-Pierre Réné Coulmance, Osny, and Jean-Claude Gérard Six, Sevres, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1976, Ser. No. 670,364
Claims priority, application France, Mar. 26, 1975, 75 09447
Int. Cl.[2] H05B *1/02*
U.S. Cl. 219—502 **5 Claims**



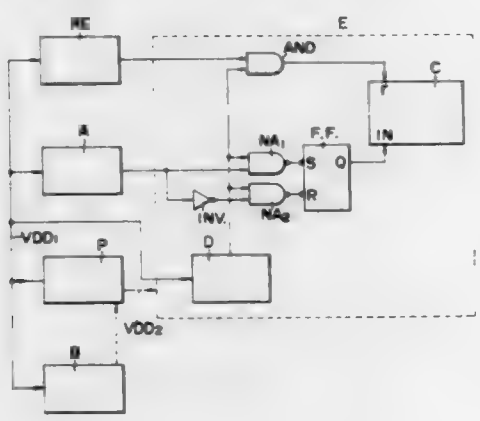
1. A control device for electric heating systems of the "bi-junction" type for use in an apartment building in which each apartment is equipped with convectors which comprise first and second heating resistors which are energized from an individual circuit and a collective circuit respectively, said control device comprising a first and a second modulating electronic thermostat respectively connected to first and second electronic switches individually connected in series with the first and second heating resistors respectively, and means coupling the output of the first thermostat to an input of the second thermostat by means of an opto-electronic device.

4,085,311

MEMORY DEVICE WITH ERROR PREVENTION OF DATA DURING POWER FAILURE

Kyoichi Ohsako, Tokyo, and Katusuke Yamashita, Matsudo, both of Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1976, Ser. No. 659,710
Claims priority, application Japan, Feb. 27, 1975, 50-24300
Int. Cl.[2] G06M *3/12*; G07D *9/00*
U.S. Cl. 235—92 FP **4 Claims**



1. Memory device comprising input circuit means adapted to provide input signal pulses, at least one IC counter having an input section and a reset section, bi-stable set and reset type switching means having an output section connected with the input section of the IC counter, said bi-stable switching means having a set and a reset terminal, power source voltage sensing means for providing a low output signal when power source voltage is below a predetermined value, and a high output signal when power source voltage is above a predetermined level, first gate means having one input connected with the sensing means and another input connected with said input circuit means and having an output connected with one of the set and reset terminals of the switching means, second gate means having one input connected with the sensing means and another input connected with said input circuit means through inverting means, said second gate means having an output connected with the other of the set and reset terminals of the switching means, one of said first and said second gate means being adapted to pass a switching signal to the associated one of the set and reset terminals of the switching means when an input signal is received from the input circuit and when the output signal is not applied thereto from the power source voltage sensing means, the other of said gate means being adapted to pass a switching signal to the other of the set and reset terminals when an input signal is not produced in the input circuit means and when the output signal is not applied thereto from the power source voltage sensing means, whereby both of said gate means are closed when the output signal is applied to the gate means from the sensing means due to a decrease in the power source voltage, auxiliary power supply means connected to the IC counter, the switching means and the gate means for maintaining a supply of electrical power thereto when there is a decrease in the power source voltage.

4,085,312

INPUT DATA-COLLATING DEVICE

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1976, Ser. No. 692,438
Claims priority, application Japan, Jun. 4, 1975, 50-66406
Int. Cl.[2] G06F *11/08*
U.S. Cl. 235—306 **4 Claims**

1. A data-collating device for a bill data input apparatus having input key means for delivering a plurality of bill data and electronic memory means for receiving and serially storing the bill data from the input key means, said data-collating device comprising:

designation means for designating at least one specified part of each bill data stored in said memory means so as to deliver the same again from said input key means;

collation means coupled to said memory means for collating the specified part of each bill data delivered again from said input key means with the corresponding part of the bill data stored in said memory means;

input means coupled to said collation means and to said memory means for preventing the specified part of the bill data delivered again from said input key means from being stored into said memory means when said collation means detects coincidence and for permitting the specified part of the bill data delivered again from said input key means to be stored into said memory means in place of the corresponding part of the bill data stored in said memory means when said collation means detects noncoincidence;

detection means for detecting the completion of the collation of all the bill data; and

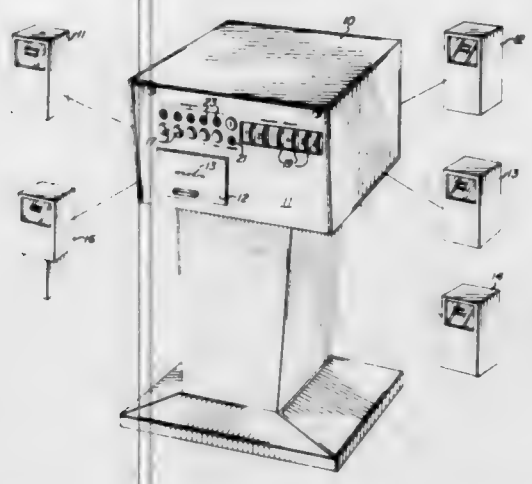
means coupled to said detection means for writing into said memory means a signal indicating the completion of collation in response to a signal from said detection means.

4,085,313

AUTOMATIC PRODUCT-DISPENSING SYSTEM

Bradford O. Van Ness, Paradise Valley, Ariz., assignor to Engineered Systems, Inc., Tempe, Ariz.

Filed Oct. 6, 1976, Ser. No. 729,992
Int. Cl.[2] G06K *17/00, 15/00*
U.S. Cl. 235—419 8 Claims



1. A document controlled automatic dispensing system for controlling the dispensing of products from a plurality of dispensers, including in combination:

document reading means for reading data from a document inserted therein to control the dispensing system;

means for selecting a particular one of said plurality of dispensers from which products are to be dispensed in response to insertion of a document in said reading means;

validity check means coupled with said reading means for verifying the validity of documents inserted therein and further coupled with said dispensers for enabling said dispensers for the dispensing of products therefrom in response to a predetermined output from said validity check means indicative of a valid document;

first storing means uniquely associated with each of said plurality of dispensers and enabled by said selecting means for temporarily storing identifying data from a document inserted in said document reading means;

second storing means uniquely associated with each of said plurality of dispensers for temporarily storing data representative of the quantity of product dispensed therefrom;

switch means for each dispenser operated upon termination of the dispensing of product therefrom;

transaction recording means; and

data transfer means coupled with said first and second data storing means and with said switch means and responsive to operation of said switch means for transferring said temporarily stored data from said first and second data storing means to said transaction recording means.

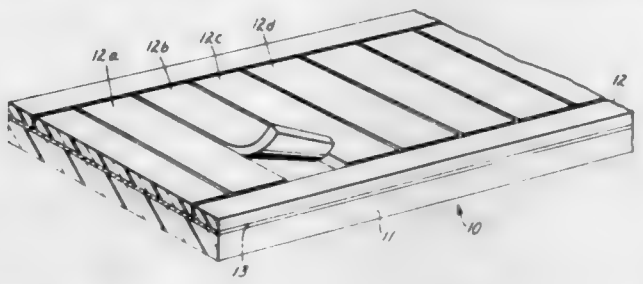
4,085,314

ENCODABLE RETROREFLECTIVE SHEETING

Thomas E. Schultz, Roseville, and Peter W. Schuchardt, May Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1976, Ser. No. 656,600
Int. Cl.[2] G06K *19/06*
U.S. Cl. 235—487 1 Claim

1. Elongate sheet material wound onto a storage roll and useful to form a coded retroreflective mark, said sheet material comprising a retroreflective base sheet having a planar front face and an opaque flexible polymeric cover film removable adhered over said planar front face by a layer of pressure-sensitive adhesive, said film being cut along a plurality of lines in a pattern that forms a plurality of contiguous parallel sections that are aligned along the longitudinal axis of the sheet material, comprise sections having an identical size and shape, and are individually removable to expose the portion of the retroreflective base sheet underneath the section, the sections being arranged in a predetermined pattern such that removal of one



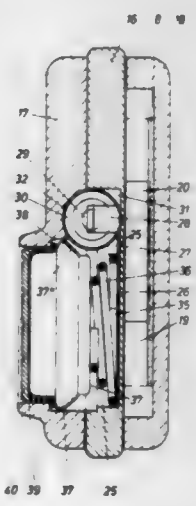
or more different sections provides different codes that may be read and distinguished by photoscanning equipment.

4,085,315

LIGHT CONNECTABLE WITH A KEY

Heinz Wolter, Stadtwaldgurtel 4, 5000 Cologne 41, Germany, and Brigitte Wolter, Cologne, Germany, assignors to Heinz Wolter, Cologne, Germany

Filed Feb. 12, 1976, Ser. No. 657,397
Claims priority, application Germany, Jun. 26, 1975, 2528498
Int. Cl.[2] F21V *33/00*
U.S. Cl. 362—116 5 Claims



1. A light and key combination adapted to be connected in a housing together, and receiving an incandescent bulb and battery, comprising

a key having a handle with a surface formed with surface projections and a single hole therein and a key shank joined to said handle,

a housing adapted to receive the battery and the bulb therein, said housing includes,

a base plate and a clamping plate coordinated thereto, the latter defining an outer peripheral thickened edge substantially of the same peripheral size but larger than that of said handle of said key,

at least two pins integral with and extending on opposite sides of said base plate, said thickened edge of said clamping plate is formed with openings in which said pins of said base plate are aligned and inserted in a coordinated condition of said base plate and said clamping plate,

said thickened edge of said clamping plate abutting said base plate in said coordinated condition, said thickened edge defining a recess larger in surface area than that of said handle of said key and defining a slot transferring into and communicating with said recess for passage of said key shank through said slot, said slot formed wider than said key shank,

said clamping plate defining a first planar clamping cheek surface in said recess enlarged in surface area relative to said handle of said key,

said base plate including a second planar clamping cheek surface spaced parallel and opposite to said first planar

clamping cheek surface, said key handle being disposed in said recess between said first and second planar clamping cheek surfaces,

said housing further includes a housing cover formed with second openings, said base plate being positioned between said clamping plate and said housing cover, said pins on said base plate extending into said second openings in said housing cover, whereby said housing cover is coordinated to said base plate,

a double-sided sticking self-sealing adhesive layer means disposed in said recess adhered to said first planar clamping cheek surface for releasably adhering said handle of said key thereto,

releasable clamping means for releaseably clampingly pressing together said base plate and said clamping plate and said housing cover, as well as said first clamping cheek surface with said adhesive layer means thereon against said handle of said key, said handle with said surface projections being pressed into said adhesive layer means thereby clamping said key pressingly against said self-sealing adhesive layer means, whereby said key is non-rotatably secured in said housing,

said base plate is formed with an enlarged bore,

said clamping means comprises a single screw having a threaded shank extending through said single hole of said handle of said key and through said enlarged bore of said base plate,

said housing cover is formed with a collar complementarily projecting into said enlarged bore of said base plate terminating therein spaced from said handle of said key and being formed with a threaded opening in said collar, said threaded shank of said screw threadedly engages in said threaded opening,

said base plate and said housing cover are formed with recess means for cooperatively receiving the bulb and the battery therein, and

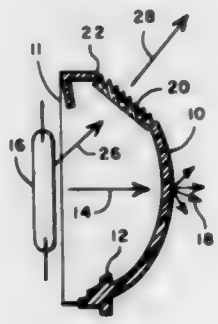
said housing cover and said clamping plate have substantially the same thickness and outer peripheral shape, and said base plate extends therebetween in a direction opposite than that of said key shank and is formed with a slot therein, said recess of said clamping plate having a thickness smaller than the combined thickness of said handle of said key and the thickness of said self-sealing adhesive layer means.

4,085,316

PHOTOGRAPHIC FLASH DEVICE

Peter T. Quinn, Littleton, Colo., assignor to Rollei of America, Inc., Littleton, Colo.

Filed Dec. 17, 1975, Ser. No. 641,478
Int. Cl.[2] G03B *15/02*
U.S. Cl. 362—16 **9 Claims**



1. Apparatus for use with photographic flash equipment including a source of light associated with a camera, for providing a bounce flash from a nearby surface to photograph a subject comprising:

a light diffusing dome shaped member including means for removably attaching the member to the photographic flash equipment between the source of light and a subject to be photographed for providing a first part of the light emitted from the source of light to pass through said member in a first general direction to directly illuminate the subject to be photographed, said member having a sole portion which is substantially less light diffusing for directing a second part of the light emitted from the source of light directly through said member in a single second general direction away from the subject to be photographed for reflecting said second part of light from a nearby surface to indirectly illuminate the subject to be photographed, said portion located for a positioning of the camera for causing said second part of the light to bounce solely from a surface above the subject during photographing whereby the subject appears to be illuminated from above and shadows are formed to give a more natural appearance of the subject.

4,085,317

MOTORCYCLE SAFETY LIGHT

Oliver M. Mithoff, 3701 Bissonet Dr., Metairie, La. 70003

Filed Oct. 22, 1976, Ser. No. 734,890
Int. Cl.[2] B62J *5/00*
U.S. Cl. 362—72 **8 Claims**



1. A safety light and associated support for motorcycles, comprising:

a. a pair of adjustable, structural sub-frames rigidly attachable to the rear frame portion of a conventional motorcycle, each of said sub-frames being attachable to the side rear portion of said motorcycle, the attachment of said sub-frames to said motorcycle being connected at least partially to the rear axle and the rear shock absorber of said motorcycle;

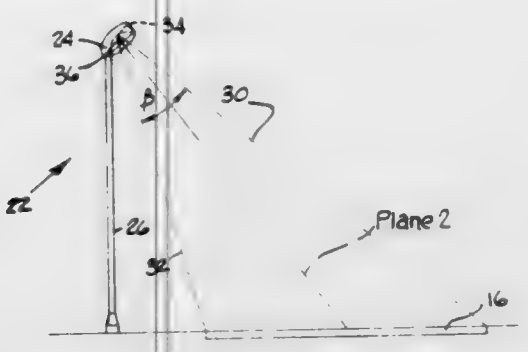
b. a pair of columns, rigidly supported in a substantially verticle position by said sub-frames, each of said columns being associated with and supported by each of said respective sub-frames; and

c. a spherical, lighted globe, rigidly affixable to said pair of columns in an elevated poisition above said frame.

4,085,318
LUMINAIRE AND LUMINAIRE REFLECTOR FOR USE IN AN OFF-THE ROADWAY LIGHTING ARRANGEMENT

Herbert Arnold Odle, Newark, Ohio; Donald Edward Ruehl, Belle Mead, N.J.; Jan Shadwick; Daryl Dean Sullivan, both of Newark, Ohio, and Dale Eugene Welty, Christiansburg, Va., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 462,838, Apr. 22, 1974, abandoned.
This application Apr. 11, 1977, Ser. No. 801,495
Int. Cl.[2] F21S 1/10
U.S. Cl. 362—217 **14 Claims**



1. An arrangement for lighting a straight section of a roadway having spaced-apart parallel curbs, comprising:

(a) a luminaire including

(i) a reflector having first and second side-by-side light-reflective surfaces, each of which is defined by a segment of a paraboloid of revolution, said surfaces having a common focal point located on the intersecting line of two intersecting planes which are normal to one another and respective first and second parabolic axes, said first axis lying on a first one of said planes and extending forwardly of and past said second surface at an acute angle with said second plane and said second axis lying on said first plane and extending past said first surface at an acute angle with said second plane,

(ii) means for supporting said reflector,

(iii) a linear light source positioned to extend substantially along the intersection of said two planes and through said focal point,

(iv) means for supporting said light source, and

(v) means for refracting light directly from said source and light reflected from said reflective surfaces; and

(b) means for supporting said luminaire in a position above and a substantial distance to one side of the curbs of said roadway such that said first plane, if extended, would intersect said roadway in a direction parallel to said curbs.

4,085,319
SPATIAL-MULTIPLEX, SPATIAL-DIVERSITY OPTICAL COMMUNICATION SCHEME

Paul H. Deitz; Gary L. Durfee, both of Bel Air, and Stephen S. Wolff, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 1, 1977, Ser. No. 764,622
Int. Cl.[2] H04B 9/00
U.S. Cl. 250—199 **10 Claims**

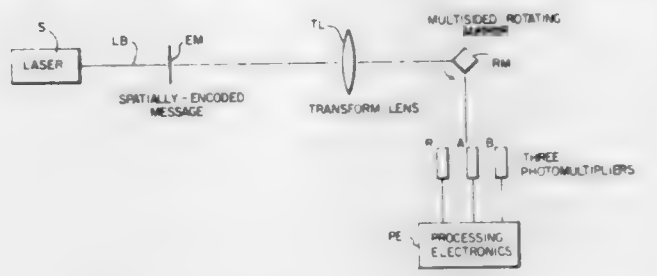
1. An optical communication system for transmitting coded message bits comprising:

a source of coherent radiation for transmitting a beam of light along an optical path;

means for spatially phase modulating said beam of light;

coding means in said optical path for modulating said beam of light to generate a selected spatial amplitude pattern through a cross section of said beam, the code corresponding to said selected spatial amplitude pattern and forming a message bit therein;

means for detecting the amplitude of said pattern in at least two positions separated by a predetermined distance

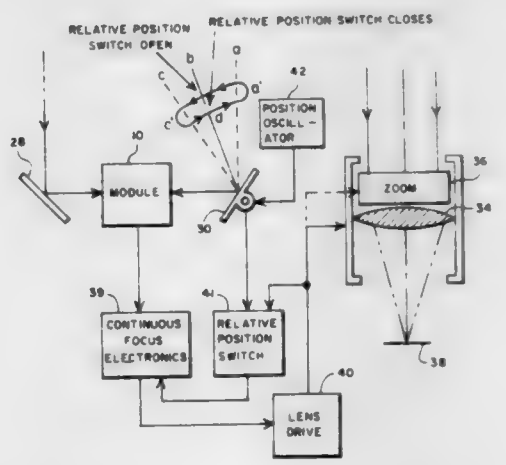


through the cross section of said beam to determine the presence or absence of said message bit.

4,085,320
AUTOMATIC FOCUS SYSTEM WITH LOSS OF CORRELATION INHIBIT

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 7, 1976, Ser. No. 730,483
Int. Cl.[2] G01F 1/20
U.S. Cl. 250—201 **10 Claims**



1. An automatic focusing system comprising:

primary optical means;

spatial correlation range sensing means for producing a time varying correlation signal, the amount of variation of which changes with different illuminations, different contrasts and different scene compositions;

positioning means for adjusting the position of the primary optical means in accordance with the time varying correlation signal; and

inhibit means for inhibiting the positioning means from adjusting the position of the primary optical means when the time varying correlation signal lacks a predetermined amount of variation.

4,085,321
MULTI-PHASE PHOTOACTIVATED SWITCH

Philip O. Sliva, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 8, 1976, Ser. No. 694,124
Int. Cl.[2] H01J 39/12
U.S. Cl. 250—211 R **19 Claims**

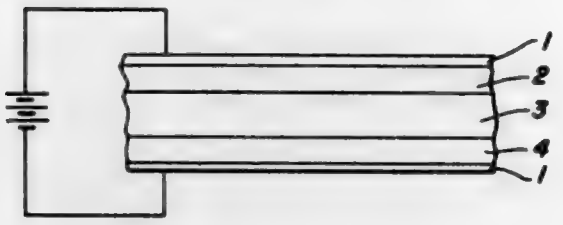
1. A multiphase photoactivated device comprising, in combination, two electrodes at least one of which is substantially light or radiation permeable, the two electrodes being oppositely and externally arranged in a field circuit with respect to

(1) a field or voltage-activated electrical device,

and

(2) a switching element consisting essentially of at least one electron- or hole-transport material and at least one photoconductive material; the ratio in thickness of the transport material to the photoconductive material being about 2:1

to 400:1, said materials being functionally independent and intimately arranged with respect to each other, while the



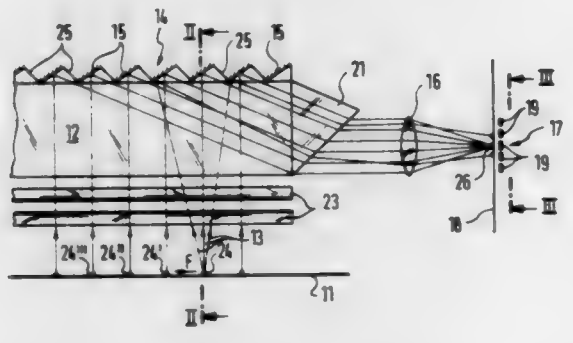
switching element as defined is arranged in series in the field circuit in proximity to a light or radiation-permeable electrode.

4,085,322

OPTICAL APPARATUS

Erwin Sick, Icking, Germany, assignor to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik, Germany

Filed Jul. 15, 1976, Ser. No. 705,656
Claims priority, application Germany, Jul. 21, 1975, 2532603
Int. Cl.[2] G02B *5/14*
U.S. Cl. 250—227 **17 Claims**



1. Apparatus for determining the angle at which light from a light spot linearly scanning a monitored surface is reflected by the surface, the apparatus comprising: a light conducting rod having a substantially rectangular cross-section, extending in the direction of the light spot scanning direction, and positioned so that light from the spot reflected by the surface strikes the rod; a plurality of serially arranged mirrors extending in the scanning direction and having like angular inclination relative to the surface, the mirrors being positioned to receive and reflect light from the spot striking the rod; an optical system including focusing lens means positioned to receive light reflected by the mirrors and imaging such light in a focal plane of the lens means; and light detecting means disposed in said focal plane and surrounding a focal point of the lens means for detecting such imaged light and for determining the position of such imaged light relative to said focal point, whereby an angular divergence of light from the spot reflected by the surface due to surface irregularities results in corresponding offsets of the imaged light relative to said focal point for the detection of such irregularities.

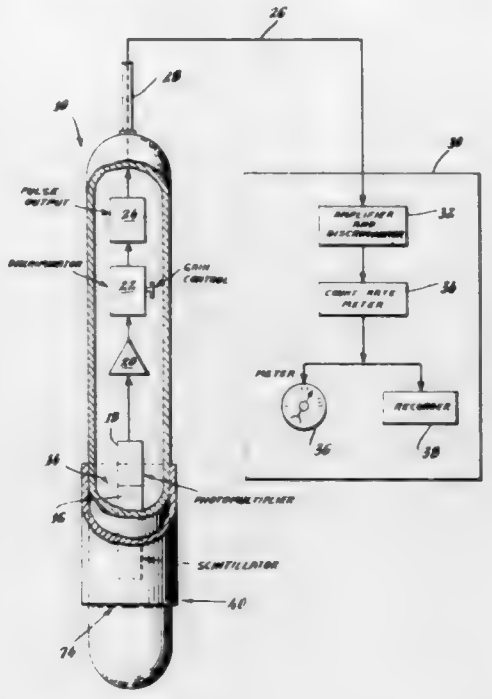
4,085,323

CALIBRATOR FOR RADIOACTIVITY WELL LOGGING TOOLS

Ronald E. Turcotte, West Redding, Conn., and Robert H. Hunt-Grubbe, Devizes, England, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 28, 1976, Ser. No. 736,607
Int. Cl.[2] G01D *18/00*; G21G *4/06*
U.S. Cl. 250—252 **24 Claims**

1. A portable calibrator for radioactivity logging tools having a substantially cylindrical housing adapted to be moved in a borehole and a radiation detector carried by said housing, said calibrator comprising a sleeve arranged to encircle the



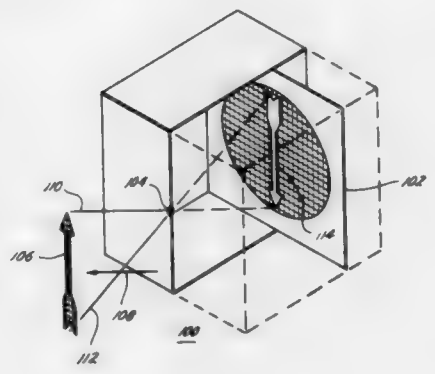
portion of said housing that carries the radiation detector, and a radioactive material distributed inside said sleeve.

4,085,324

IMAGING BY POINT ABSORPTION OF RADIATION

Alfonso Zermeno; Lee M. Marsh, Jr., and James M. Hevezi, all of Houston, Tex., assignors to The University of Texas, Houston, Tex.

Continuation-in-part of Ser. No. 601,233, Aug. 1, 1975, abandoned. This application Jan. 4, 1977, Ser. No. 756,634
Int. Cl.[2] G03B *5/17*
U.S. Cl. 250—320 **8 Claims**



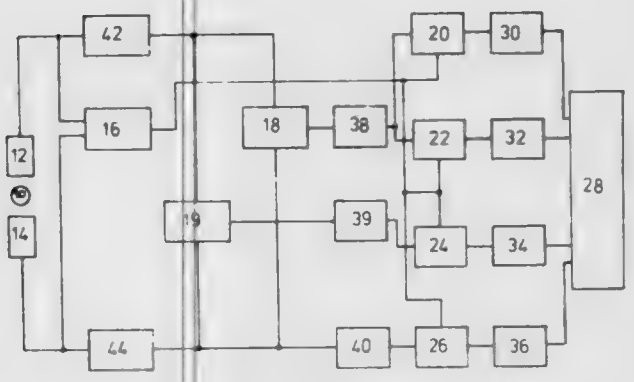
1. Apparatus for producing an image comprising:
a source of radiation,
a receptor responsive to the radiation,
at least one point absorber located between said source and said receptor not attached thereto, said absorber being opaque to said radiation and small enough to provide a focal ratio of at least 100 to 1.

4,085,325

METHOD AND CIRCUIT FOR DETERMINING THE QUENCH CORRECTED COUNTING EFFICIENCY OF LIQUID SCINTILLATION SAMPLES

Khaled Atallah, Horwarthstrasse 17, D-8000 Munich 40; Fritz Berthold, Engelsbranderstrasse 12, D-7540 Neuenburg; Wolfgang Kolbe, Schillerstrasse 25, D-7547 Wildbad; Peter Rauschenbach, Hittostrasse 6, and Helmut Simon, Egilbertstrasse 31, both of D-8050 Freising, all of Germany

Filed May 12, 1976, Ser. No. 685,894
Claims priority, application Germany, May 16, 1975, 251904
Int. Cl.[2] G01T *1/00*
U.S. Cl. 250—328 37 Claims



1. A method of determining the quench corrected counting efficiency ZA of electron emitting samples having an undetermined proportion of chemical and color quenching in a liquid scintillation counter using an external standard, by measuring in two different pulse height ranges 1 and 2 counting rates $^2E_1^e$ and $^2E_2^e$ of the sample together with the Compton spectrum caused by the external standard from coincident and additionally arithmetically combined output signals of at least two measuring transducers directed to the sample from different directions, and establishing therefrom by quotient formation the gross ESCR value $^2E_1^e/^2E_2^e$ from which the counting efficiency ZA is derived with the aid of a standardized ZA vs. ESCR threshold curves, characterized in that,

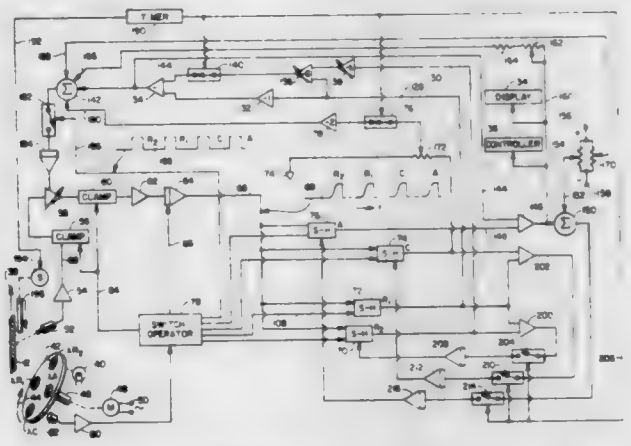
in an allocated pulse height range 3 a counting rate $^2E_3^e$ of the sample is measured together with the Compton spectrum caused by the external standard and in an allocated pulse height range 4 a counting rate $^1E_4^e$ of the sample is measured together with the Compton spectrum caused by the external standard and that therefrom the gross R value $^2E_3^e/^1E_4^e$ is formed, and with the aid of a standardized R-ESCR dependency field between threshold functions of an R-ESCR dependence for pure color quenching and an R-ESCR dependence for pure chemical quenching the point associated with the ESCR value formed as well as with the R value formed is determined, in that with the ESCR value formed in the standardized R-ESCR dependency field the ratio of the R differences between the difference of the R value of one of the threshold functions on the one hand and the difference of the R values of both threshold functions on the other hand is determined, and in that with the ESCR value formed the quench corrected counting efficiency ZA is formed with the aid of a standardized ZA vs. ESCR dependency field between threshold functions for pure color quenching and for pure chemical quenching by interpolation according to the ratio of the R differences determined.

4,085,326

RADIATION REFLECTION METHOD AND APPARATUS PARTICULARLY FOR GAUGING MATERIALS EXHIBITING BROADBAND ABSORPTION OR SCATTERING, OR SIMILAR EFFECTS

Paul Williams, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Oct. 19, 1976, Ser. No. 734,007
Int. Cl.[2] G01T *1/16;* G01J *3/00*
U.S. Cl. 250—339 46 Claims



1. The method of gauging a property of a plastic film or other material having a front side, a back side, and characteristics including a substantial transparency to radiation at a reference wavelength and a degree of transparency depending on the value of the property at an absorption wavelength, so as to provide a useful measurement of the property in the presence or absence of detrimental effects such as those caused by a broadband absorbing or scattering substance in the material or variations in the apparent reflectivity of one or both of the surfaces on the front and back sides, comprising

directing radiations at the reference and absorption wavelengths into the front side of the material,

detecting from the front side at the specular reflection angle the reflected radiation including the reference and absorption wavelengths, and

producing from the detected radiations an instrument response wherein the effects of the reference and absorption wavelengths reflected from the front side have been selectively subdued, whereby the response is indicative of the value of the property primarily as a function of the reference and absorption wavelengths reflected from the back side of the material.

4,085,327

DIRECT CHARGE READOUT ELECTRON RADIOGRAPHY APPARATUS WITH IMPROVED SIGNAL-TO-NOISE RATIO

Robert K. Swank, and Kei-Hsiung Yang, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 14, 1977, Ser. No. 759,427
Int. Cl.[2] G01T *1/22*
U.S. Cl. 250—370 39 Claims

1. An improved direct charge readout electron radiography apparatus of the type having first electrode means receiving differentially-absorbed radiation, means for receiving the radiation passing through said first electrode for converting said radiation to a pattern of charged particles, second electrode means spaced from said first electrode means beyond said converting means for receiving said pattern of charged particles and means for reading the image of charged particles from said second electrode, wherein the improvement comprises said second electrode means including:

a plurality of substantially parallel elongated strips of a transparent and conductive material, each strip having a first end;

lead means spaced from said first end of each of said plurality of strips;

first means overlaying at least said plurality of strips for storing said charge image until receipt of a first radiation stimulus; and



a plurality of second means for electrically connecting only an associated one of said plurality of strips to said lead means, each of said second means separately responsive to receipt of a second radiation stimulus.

4,085,328

X-RAY EXAMINING DEVICE

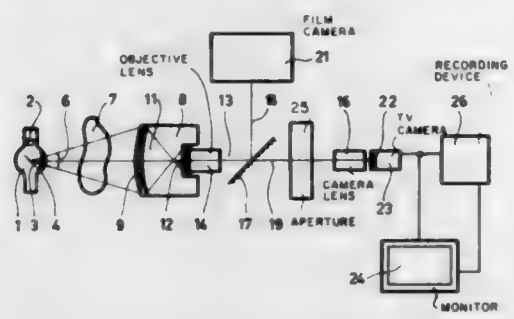
George Leendert Adriaan Monte, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1976, Ser. No. 733,203

Claims priority, application Netherlands, Oct. 20, 1975, 7512256

Int. Cl.[2] G21K *1/04*

U.S. Cl. 250—416 TV **4 Claims**



1. In an X-ray examining device comprising an X-ray source; an X-ray image intensifier tube disposed to receive radiation from said source which functions to produce optical image radiation in response thereto; optical system means, having an optical axis, for conducting said image radiation to recording means and a beam stopping aperture disposed about said optical axis between said intensifier tube and said recording means; the improvement wherein said aperture comprises a plurality of sector-like laminations, symmetrically disposed about said optical axis, each of said laminations being rotatable about separate axes which intersect said optical axis in a direction perpendicular thereto.

4,085,329

HARD X-RAY AND FLUORESCENT X-RAY DETECTION OF ALIGNMENT MARKS FOR PRECISION MASK ALIGNMENT

John H. McCoy, Newbury Park, and Paul A. Sullivan, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 3, 1976, Ser. No. 682,432

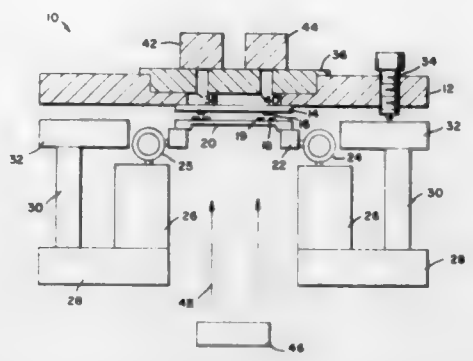
Int. Cl.[2] G01N *21/34*

U.S. Cl. 250—492 A **3 Claims**

1. A process for aligning a reference area on a mask with a reference area on a substrate which includes:

(a) bringing the substrate and mask toward alignment of said reference areas on their respective surfaces,

(b) illuminating said reference area on said substrate to cause it to fluoresce, and



(c) sensing the quantity of fluorescent x-rays from said reference area on said substrate as indicative of the extent to which said reference areas are aligned.

4,085,330

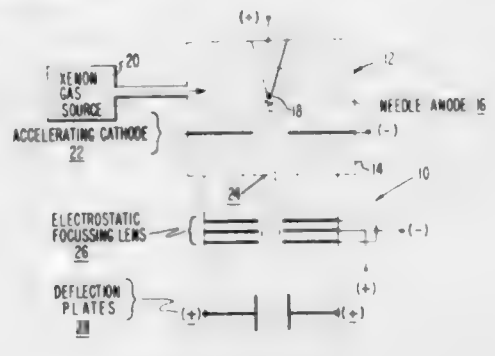
FOCUSED ION BEAM MASK MAKER

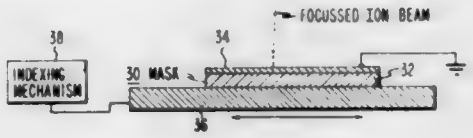
John Edmond Wolfe, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 703,633, Jul. 8, 1976, abandoned. This application May 19, 1977, Ser. No. 798,392

Int. Cl.[2] H01J *37/08*

U.S. Cl. 250—492 A **20 Claims**





1. In a method of making a pattern on a photolithographic mask for semiconductor devices wherein the mask has a metallic coating on a surface of a transparent substrate, the improvement comprising:

using a field ion source to produce a beam of ions;

accelerating the ions; and

directly bombarding the metallic coating on the mask substrate with the accelerated ions to form openings in the coating in a desired pattern.

4,085,331

SOURCES OF NUCLEAR RADIATION

Malcolm Thackray, Sutherland, Australia, assignor to Australian Atomic Energy Commission, Coogee, Australia

Filed Sep. 27, 1976, Ser. No. 727,118

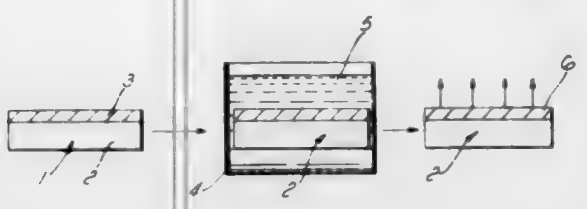
Claims priority, application Australia, Oct. 30, 1975, 3781/75

Int. Cl.[2] G21G *4/04*

U.S. Cl. 250—493 **14 Claims**

1. A method of forming a substantially uniform source of nuclear radiation comprising taking a body having a surface portion extending over an area and including an approximately uniform dispersion over the area of a material characterized by the property of being convertible to become a substantially uniform source of nuclear radiation, and substantially uniformly treating said surface portion with nuclear radiation to

convert a substantially uniformly dispersed proportion of said material and to leave the converted material firmly bound to



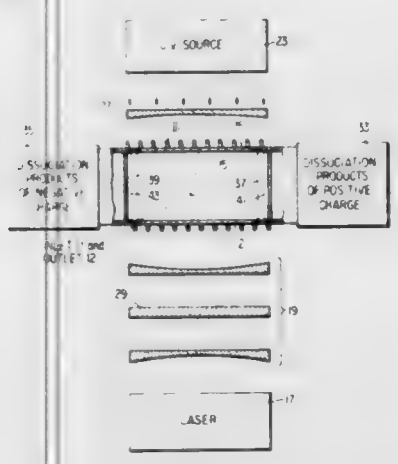
said body, whereby said surface portion becomes a substantially uniform source of nuclear radiation.

4,085,332

APPARATUS FOR EXTRACTION AND SEPARATION OF A PREFERENTIALLY PHOTO-DISSOCIATED MOLECULAR ISOTOPE INTO POSITIVE AND NEGATIVE IONS BY MEANS OF AN ELECTRIC FIELD

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Horst E. Wilhelm, Fort Collins, Colo.

Filed Jun. 3, 1976, Ser. No. 692,413
Int. Cl.[2] B01K *1/00*; B01D *59/00*
U.S. Cl. 250—528 **4 Claims**



2. Apparatus for separating and extracting isotopes of a gaseous mixture containing a first isotope species having a first excitation energy level and a second isotope species having an excitation level different from the first excitation level comprising:

a laser for subjecting the gaseous isotope mixture to a beam tubed to match the energy levels of the first isotope and which has sufficient power density to directly dissociate this molecular isotope by sequential absorbtion of *n* photons into changed dissociation products but not the second molecular isotope;

a magnetic field for confining the charged dissociation products in the mixture;

an electric field means for selectively moving dissociation products of opposite charge in the mixture in opposite directions;

one grid means having a first region characterized by a first potential difference for accelerating the dissociation products of positive charge in the mixture through said first region;

another grid means having a second region characterized by a second potential difference for accelerating the dissociation products of negative charge in the mixture through said second region;

a first collection means for collecting the dissociation products of positive charge; and,

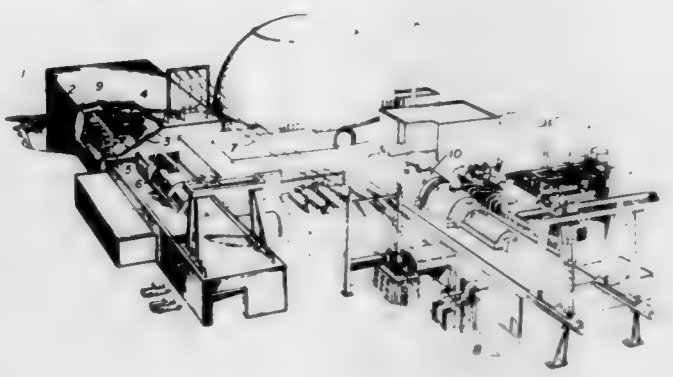
a second collection means for collecting the dissociation products of negative charge.

4,085,333

CONSERVATION OF ELECTRICAL ENERGY

Frederick G. J. Grisé, 87 Main St., Osterville, Mass. 02655, and Walter Lovell, 348 Mountain Rd., Wilbraham, Mass. 01095

Filed Feb. 17, 1976, Ser. No. 658,698
Int. Cl.[2] F02C *7/02*
U.S. Cl. 290—2 **17 Claims**



1. An electricity generating apparatus comprising a generator which can produce surplus electrical energy during off peak hours,

in combination with a heat retaining magma that conducts electricity directly from said generator and being heated thereby,

a series of passages extending through said magma and a source of water selectively entered into said passages, the water thereby being transferred into steam,

and means receiving the steam produced by said magma to generate additional electricity to increase the total supply of electrical energy of the entire apparatus during peak demand periods,

the material of said magma comprises an electricity conducting material throughout the aggregate, said surplus electrical energy being conducted directly to and through the aggregate.

4,085,334

ELECTRONIC SYSTEM FOR PROCESS INSTRUMENTATION AND CONTROL

Katsuhiko Shinohara; Yoshinori Kuramochi; Tetsuo Suehiro, and Ichiro Matsubara, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 8, 1975, Ser. No. 620,759
Claims priority, application Japan, Oct. 9, 1974, 49-115500
Int. Cl.[2] H02M *7/20*
U.S. Cl. 307—11 **39 Claims**



1. In a plurality of electronic instrumentation and control systems each comprising at least one input signal converter for converting process input signals into uniform electrical signals and at least one measuring instrument connected to said converter, an electronic system for process instrumentation and control comprising a DC power source common to said elec-

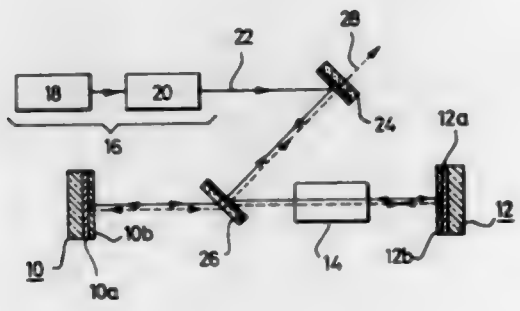
tronic instrumentation and control system, current limiter provided for said instrumentation and control systems and a DC insulating device provided for each of said electronic instrumentation and control systems, said converter and said measuring instrument being impressed with at least a DC positive and a DC negative voltage from said common DC power supply through said current limiter and through said devices.

4,085,335

OPTICAL PARAMETRIC DEVICE

Ernst Guilino, Munich, Germany, assignor to Garching Instrumente-Gesellschaft zur industriellen Nutzung von Forschungsergebnissen mbH, Garching, Germany

Filed Jan. 27, 1977, Ser. No. 763,108
Claims priority, application Germany, Feb. 18, 1976, 2606526
Int. Cl.[2] H02M *5/04*
U.S. Cl. 307—88.3 **10 Claims**



1. Tunable optic parametric device having
a source of primary radiation (16);
an optical resonator including an optically non-linear medium (14) and mirrors (10, 12; 10', 11', 12') located at either side of the medium and in the path of radiation passing through the medium;
coupling means (26) to couple primary radiation of predetermined frequency into the resonator and to extract secondary radiation from the resonator at a frequency which is shifted with respect to the frequency of the primary radiation and arising due to parametric interaction of the primary radiation in the resonator
the coupling means (26, 26') comprising at least one dichroic mirror (26, 26') located in the path of radiation of the optical resonator at an inclination with respect to said path and having the characteristic of being highly reflective for radiation of the wavelength of the primary radiation and being highly transmissive to radiation of the wavelength of the secondary radiation.

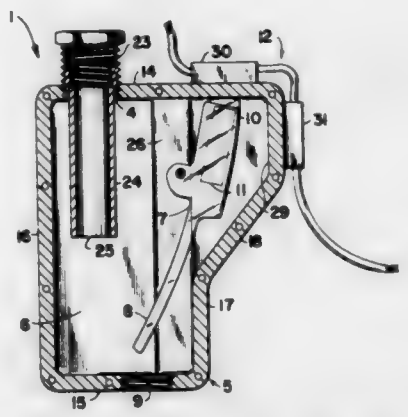
4,085,336

LIQUID FLOW ACTIVATED SWITCH

Charles M. Miles, Independence, Mo., assignor to Paul F. Walters, Kansas City, Mo.

Filed Aug. 9, 1976, Ser. No. 712,929
Int. Cl.[2] H01H *35/40*
U.S. Cl. 307—118 **6 Claims**

1. A liquid flow activated switch comprising:
(a) a housing having walls defining a chamber therein;
(b) means on said housing defining a liquid inlet communicating with the chamber;
(c) means mounted on said housing in spaced relation to said liquid inlet defining a liquid outlet commnicating with the chamber;
(d) a switch member pivotally mounted in the chamber and having a first portion and a second portion; said switch member first portion being positioned adjacent said liquid inlet whereby liquid entering the chamber through said liquid inlet impinges upon the same and pivots said switch member from a first to a second position;
(e) a magnet mounted on said switch member second portion and movable therewith;
(f) an electrical circuit having magnetically operated means on said housing and positioned such that movement of said switch member to the second position effects completion of said electrical circuit; and wherein
(g) said magnetically operated means includes a normally-closed magnetic switch positioned to be opened when said



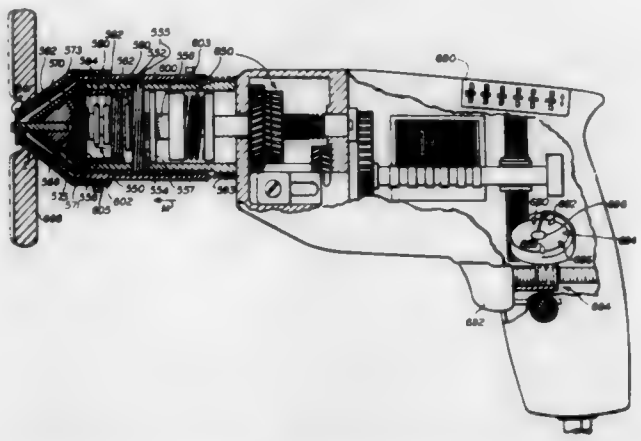
magnet and switch member are in said first position thereby breaking said electrical circuit, and a normally-open magnetic switch positioned to be closed when said magnet and switch member are in said second position thereby completing said electrical circuit; said normally-closed switch and said normally-open switch being interconnected in series for reliable switching of said electrical circuit.

4,085,337

ELECTRIC DRILL MULTI-FUNCTIONAL APPARATUS

Wolfgang W. Moeller, 4 Glen Cove Dr., Glen Head, N.Y. 11545

Filed Oct. 7, 1975, Ser. No. 620,722
Int. Cl.[2] H01H *21/00*
U.S. Cl. 307—115 **7 Claims**



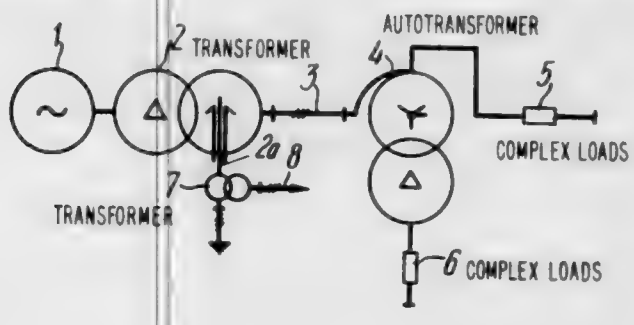
1. In an electric drill multi-functional apparatus having means for effecting different functions, said apparatus having a housing for an electric motor and a power shaft which transmits power for said functions, the improvement for automatically actuating said functions sequentially which comprises an electric circuit including a source of electricity, said circuit having in parallel at least one first switch in series with first electromechanical apparatus corresponding to a first function of said multi-functions and at least a second switch in series with a second electromechanical apparatus corresponding to a second function of said multi-functions, a single switch engaging means for sequentially engaging said first switch and said second switch, and mechanical means for moving said single switch engaging means to actuate said first switch and thereafter to actuate said second switch.

4,085,338

HIGH-VOLTAGE NETWORK FOR AREAS WITH HIGH RATE OF ICING

Georgy Andreevich Genrikh, ulitsa Chekistov 10, kv. 3; Leonid Alexeevich Nikonets, Khasansakya ulitsa 8, kv. 4, and Natalia Georgievna Genrikh, ulitsa Chekistov 10, kv. 3, all of Lvov, U.S.S.R.

Filed Feb. 20, 1976, Ser. No. 659,795
Int. Cl.[2] H02B *1/00*
U.S. Cl. 307—147 36 Claims



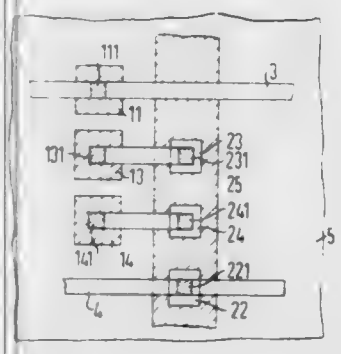
1. A high-voltage network for areas with high rates of icing comprising: load current circuits including a generator, a first transformer, aerial power transmission lines and complex loads; a second transformer for melting of ice coatings with its primary winding being connected in series with a load current circuit and the secondary winding of said second transformer being connected to conductors of one of said aerial power transmission lines.

4,085,339

CIRCUIT ARRANGEMENT IN A COMPLEMENTARY CHL TECHNIQUE

Karl Goser, and Ruediger Mueller, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sep. 29, 1975, Ser. No. 617,965
Claims priority, application Germany, Oct. 23, 1974, 2450408
Int. Cl.[2] H01L *27/12;* H03K *19/08, 19/22*
U.S. Cl. 307—213 8 Claims



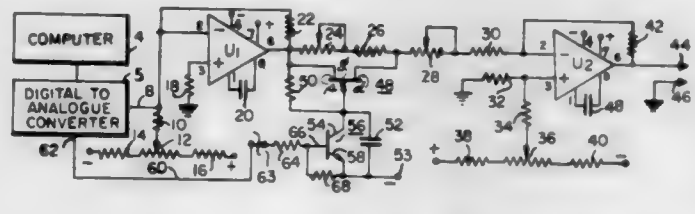
1. A current hogging logic circuit arrangement comprising:
a body of semiconductor material having a first portion of a first conductivity type and a second portion of a second conductivity type;
a first multi-collector bipolar transistor formed in said first portion of said body, said first portion of a first conductivity type forming the base region of said first transistor, a first emitter region of second conductivity type formed in said first portion, a first output collector region of second conductivity type formed in said first portion spaced from said first emitter region, and a first control collector region of second conductivity type formed in said first portion, said first control collector region located between and spaced from said first emitter region and said first output collector region, a second multi-collector bipolar transistor formed in said second portion of said body, said second portion of said second conductivity type forming the base region of said second transistor, a second emitter region of first conductivity type formed in said second portion, a second output collector region of said first conductivity type formed in said second portion spaced from said second emitter region, and a second control collector region of first conductivity type formed in said second portion spaced from said second emitter region, said second control collector region located between and spaced from said second emitter region and said second output collector region;
means for forward-biasing the pn junction between said first portion and said first emitter region; and
means for forward-biasing the pn junction between said second portion and said second emitter region,
said first control collector region being directly connected to said second output collector region, whereby current flow through said first output collector region may be controlled by controlling current flow through said second control collector region.

4,085,340

RANGE SWITCHING TRANSIENT ELIMINATOR CIRCUIT

Emery Salesky, Denville, and Kent W. Luehman, Parsippany, both of N.J., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Apr. 14, 1976, Ser. No. 676,848
Int. Cl.[2] H03K *5/08;* H03G *3/30*
U.S. Cl. 307—237 3 Claims



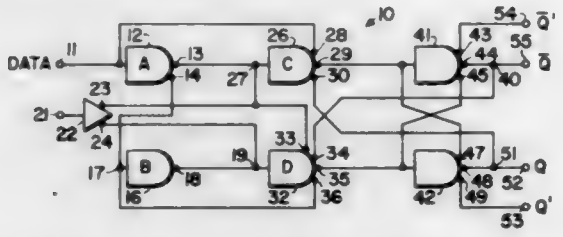
1. An operational amplifier having positive and negative inputs and an output, a resistor connected between said output and said negative input, bias supply means coupled to said positive input, a plurality of resistors connected in series to said negative input, a switch connected in shunt with at least one of said series resistors, said switch being a field effect transistor having source, drain and gate electrodes, means connecting said source-drain path in parallel with at least one said series resistor, a bias resistor connected between one of the source and drain electrodes and said gate electrode, a source of direct current potential, a capacitor connected between said gate electrode and said source of potential, and a transistor, means connecting its collector-emitter path in parallel with said capacitor.

3. Apparatus for producing a direct current reference voltage in response to a voltage control signal that changes slowly between values that are inversely proportional to the amplification to be effected in response to a gain control signal that changes quickly between a value for low gain and a value for high gain comprising,
a direct current amplifier having an input to which said voltage control signals can be connected and an output from which the direct current reference voltage may be derived,
gain control means coupled to said amplifier,
means coupled to said gain control means for causing it to delay the increases in gain of said amplifier in response to change in said gain control signal from a value for low gain to a value for high gain, and
means coupled to said gain control means for causing it to quickly decrease the gain of said amplifier in response to changes in said gain control signal from a value for high gain to a value of low gain,
thereby preventing the amplifier from having high gain when the voltage control signals have a high value.

4,085,341
INTEGRATED INJECTION LOGIC CIRCUIT HAVING REDUCED DELAY

John Robert Reinert, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 20, 1976, Ser. No. 752,484
Int. Cl.[2] H03K *19/08*
U.S. Cl. 307—247 R 7 Claims

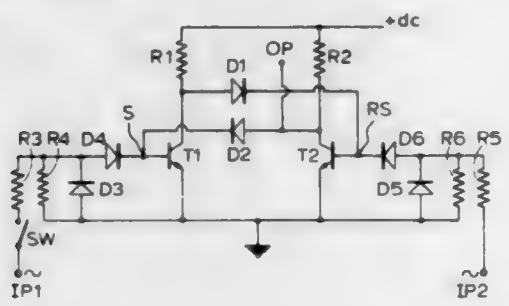


1. A D-type flip-fop being interconnected to provide at least one output having a reduced time delay, comprising: means for steering input data into the flip-flop; means for selectively gating the input data through the flip-flop, the means for selectively gating being coupled to the means for steering; means for receiving a clock pulse, the means for receiving selectively controlling the means for selectively gating; and means for providing an output storage latch, the means for providing having multiple outputs and being coupled to the means for selectively gating so that at least one of the multiple outputs is coupled to an output of the means for selectively gating whereby the at least one of the multiple outputs is a combination output of the means for selectively storing and the means for providing and has a propagation delay time through the flip-flop which is less than at least one of the multiple outputs which is a direct output from the means for providing.

4,085,342
HIGH VOLTAGE A.C. TO LOW VOLTAGE D.C. SWITCHING INTERFACE CIRCUIT

Derek J. Parkyn, Westerham, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1976, Ser. No. 736,854
Claims priority, application United Kingdom, Nov. 3, 1975, 45625/75
Int. Cl.[2] H03K *17/00, 3/286*
U.S. Cl. 307—260 9 Claims

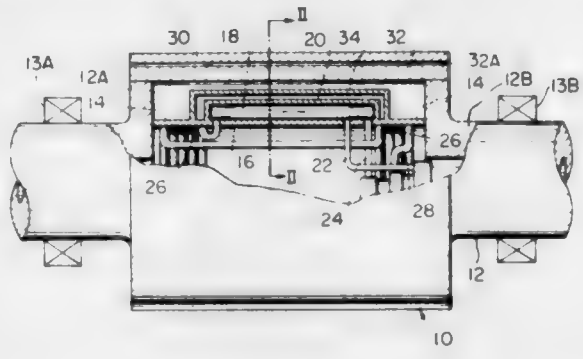


1. A circuit arrangement for producing a low voltage DC output signal at a first or second level dependent on the closed or open condition of a switch comprising, means connecting the switch to a high voltage AC source, a bistable circuit which provides the output signal at the first or second level when it is in a set or reset condition, respectively a first pulse train generating circuit having an input for connection to the a.c. source and a first potential divider, means connecting said switch between said input and one end of said first potential divider, diode elements connected between a tap on the first potential divider and an output of the first pulse generating circuit which is connected to a set input of the bistable circuit, a second pulse generating circuit having a second input for connection to the AC source and a second potential divider with one end of the second potential divider connected to the second input, and further diode elements connected between a tap on the second potential divider and an output of the second pulse generating circuit which is connected to a reset input of the bistable circuit, the two potential dividers having different potential ratios at their respective taps such that when the switch is changed from its open to its closed condition first and second pulse trains are applied respectively to the set and reset inputs of the bistable circuit, the pulses of both pulse trains having the duration of the same alternate half cycles of the a.c. source with the pulses of the first pulse train having steeper edges than the pulses of the second pulse train whereby the bistable circuit is set and remains set, only the second pulse train being generated when the switch is changed from its closed to its open condition whereby the bistable circuit is reset and remains reset.

4,085,343
ROTOR FOR A ROTARY ELECTRICAL MACHINE HAVING A SUPERCONDUCTIVE FIELD WINDING

Kunio Hasegawa; Hidetomo Nishimura, and Kiyoshi Yamaguchi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 2, 1976, Ser. No. 692,197
Claims priority, application Japan, Jun. 13, 1975, 50-70863; Jul. 9, 1975, 50-83424
Int. Cl.[2] H02K *9/00*
U.S. Cl. 310—52 12 Claims



1. A rotor for a rotary electrical machine having a superconductive field winding, comprising a hollow rotor body including a shaft rotatably supported by bearing means, the superconductive field winding being arranged in the hollow portion of said rotor body and formed by a winding of superconductive wire, first means for cooling the field winding to an extremely low temperature, a hollow cylindrical damper disposed to surround the field winding and being made of a good electrical conductor, a cylindrical damper support disposed between said damper and the field winding for supporting said damper, a vacuum space being defined between said damper support and the field winding, said damper support having a plurality of protuberances projecting from the surface of said damper support to contact said damper for restricting heat flow between said damper and said damper support, said protuberances being elongated projections extending in the axial direction of said rotor body, and second means for circulating a cooling medium through interstices defined between said protuberances.

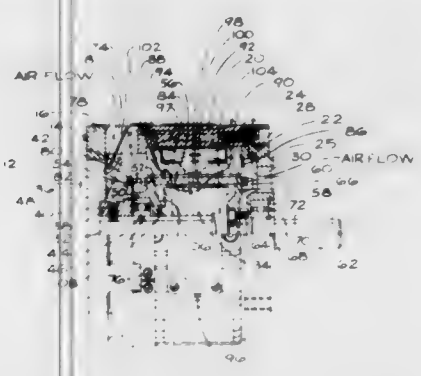
4,085,344
COOLING FOR MAGNETIC PARTICLE DEVICES

Gerald R. Eddens, St. Louis County, Mo., assignor to W. J. Industries, Inc., St. Louis, Mo.

Filed Oct. 6, 1976, Ser. No. 730,137
Int. Cl.[2] H02K *9/00*
U.S. Cl. 310—58 12 Claims

1. A magnetic particle device having relatively movable input and output members, said input and output members respectively having cylindrical surfaces positioned in radially opposed relationship forming an air space therebetween, means forming a chamber in the device that includes the air space between said relatively movable members, magnetic

particles positioned in said chamber, stationary electromagnetic means positioned outwardly of said members and of the air space therebetween, said electromagnetic means being energizable to establish a flux path that includes portions of said input and output members and the air space therebetween, said flux causing some of the magnetic particles to form in bands in the air space between said members whereby said flux path produces magnetic coupling therebetween, means journaling one of said relatively movable members for movement



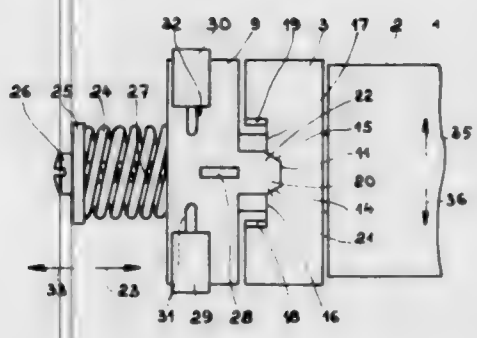
relative to the other, means in said device forming a path for the circulation of air adjacent to one end of said device, said path forming means including a shield member mounted on the stationary electromagnetic means and extending inwardly therefrom, and fan means on one of said relatively movable members adjacent to said one end and inwardly from the deflector member to circulate air through said air circulation path to cool the portions of the device adjacent thereto during operation of the device.

4,085,345

TORQUE-LIMITING STOP DEVICE

Jean Bullat, Bonneville, France, assignor to Etablissements CARPANO & PONS, France

Filed Nov. 10, 1976, Ser. No. 740,715
Claims priority, application France, Nov. 19, 1975, 75 36255
Int. Cl.² H02K *7/12*
U.S. Cl. 310—117 **5 Claims**



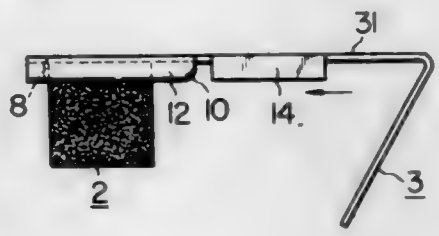
1. In a motor having a casing cooperating with elastic biasing means tending to angularly fix the casing in relation to a fixed support, a torque-limiting stop device actuable by a given rotation of the motor casing to control stopping of the motor when an opposing torque on a driving shaft of the motor exceeds a predetermined value, comprising two cooperating profiles, one in relief the other hollow, one fixed for rotation with the motor casing and the other fixed angularly with the fixed support, one of the cooperating profiles being provided on a mobile element movable by coaction of the cooperating profiles against the action of the biasing means in a direction secant to the direction of relative movement of the two profiles produced by said rotation of the motor casing, at least one of the cooperating profiles having at least one ramp, each hollow profile being extended by at least one bearing surface at least approximately perpendicular to the direction of movement of said mobile element.

4,085,346

BRUSH DEVICE FOR MINIATURE ELECTRIC MOTOR

Yuzuru Yoshida, Yamato, Japan, assignor to Aupac Kabushiki Kaisha, Yamato, Japan

Filed Dec. 9, 1976, Ser. No. 748,829
Claims priority, application Japan, Dec. 23, 1975, 50-174156
Int. Cl.² H02K *13/00*
U.S. Cl. 310—246 **17 Claims**



1. A brush device for miniature electric motor, which comprises in combination:

a. a brush holder made of a leaf spring having:

1. a pair of flaps for holding a commutator brush, which are arranged in parallel each other along the longitudinal direction of a flat surface part of said brush holder, and which are formed by inwardly bending the side edge portions of said flat surface of the brush holder;
2. guide means formed at a corner of each of said pair of flaps to facilitate insertion of said commutator brush; and
3. a fitting part integral with said flat surface part of the brush holder to cause the same to be secured to the main body of said motor; and

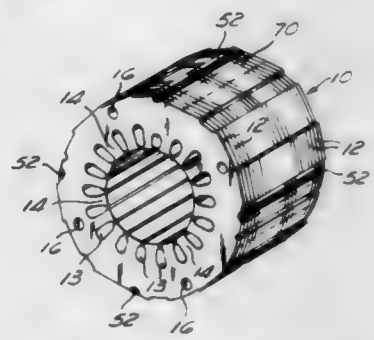
b. a commutator brush having a head part to be inserted between said pair of flaps of leaf spring through engaging means formed therein.

4,085,347

LAMINATED STATOR CORE

Kenneth Walter Lichius, Etowah, Tenn., assignor to White-Westinghouse Corporation, Pittsburgh, Pa.

Filed Jan. 16, 1976, Ser. No. 649,859
Int. Cl.² H02K *1/12*
U.S. Cl. 310—259 **7 Claims**



1. A laminated magnetic core comprising a plurality of magnetic laminations arranged in abutting relation in a stack having opposite end surfaces, a circumferential side surface, and an axial bore adapted to receive a rotor member, said lamination defining interlaminar regions, each lamination having at least two spaced apart pressure points for receiving axially directed compressive forces applied to said end surfaces of said stack, said laminations being secured together in a unitary structure by partial saturation and penetration of said stack with a minute, predetermined amount of adhesive material disposed within a portion of said interlaminar regions, said portion constituting interlaminar bonding regions situated intermediate of and isolated with respect to each other and another portion of said interlaminar regions, said another portion constituting interlaminar regions of axial pressure concentration which surround said pressure points, said interlaminar bonding regions and said interlaminar regions of axial pressure

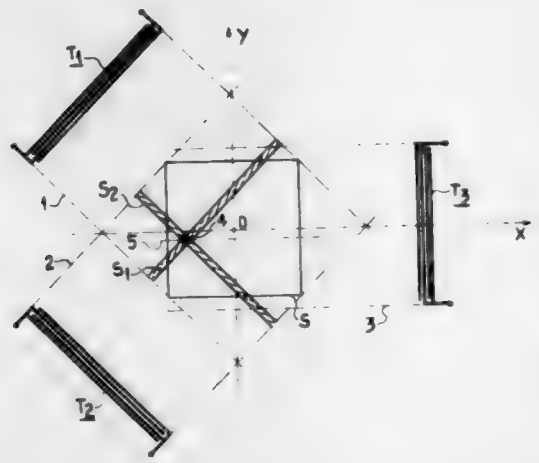
concentration constituting only part of said interlaminar regions, said axial pressure concentration regions and said interlaminar regions other than said interlaminar bonding regions being completely free of said adhesive material, said regions free of adhesive including interlaminar regions between said axial pressure concentration regions and said bore, said adhesive material being applied to preselected side surface areas of said core, said adhesive material entering between adjacent laminations and migrating therein by capillary action, the areas of application being circumferentially intermediate of said pressure concentration regions and extending axially along the length of said core, the amount of adhesive material being limited to the quantity required to sustain capillary migration only within said isolated interlaminar bonding regions, said amount being insufficient to sustain further capillary migration from said isolated interlaminar bonding regions into said interlaminar regions other than said interlaminar bonding regions.

4,085,348

ELECTROACOUSTIC DEVICE FOR READING AN OPTICAL IMAGE IN TWO DIMENSIONS

Bernard Munier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 14, 1976, Ser. No. 750,573
Claims priority, application France, Dec. 19, 1975, 75 39182
Int. Cl.[2] H01L *41/04*
U.S. Cl. 310—313 **10 Claims**



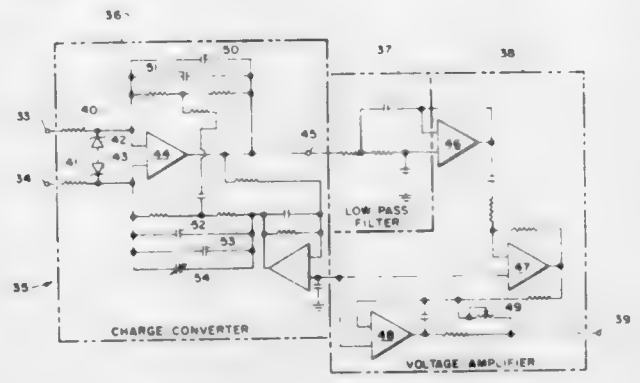
1. An electro-acoustic device for reading an optical image in two dimensions, comprising a first medium which is a piezoelectric medium and a second medium which is a semiconductive and photosensitive medium, coupled with said first medium and where said image is projected along an interaction surface, producing a spatial modulation of conductivity of said first medium, said piezoelectric medium carrying at least three electromechanical transducers, the first of said transducers generating a long elastic wave at the surface of said first medium, the duration of that wave being equal to at least twice the scanning time of the surface by an elastic wave, the second and the third of said transducers generating pulse-form elastic waves in two separate directions at the surface of said first medium, the intersection of said two directions defining an elementary interaction zone, said pulses being emitted with a period at least equal to the scanning time of one line of said interaction surface by said elementary zone, and with variable relative delays for ensuring the line-by-line scanning of said interaction surface by said elementary zone, the wave vectors of the three elastic waves generated by said transducers being such that the electrical fields associated with said three waves interact non-linearly in said second medium to give a resultant signal the wave vector of which is substantially zero, said device further comprising means for extracting said resultant signal.

4,085,349

PIEZO ELECTRIC TRANSDUCER FOR MEASURING INSTANTANEOUS VIBRATION VELOCITY

Johan T. Farstad, Sunbury, Ohio, assignor to IRD Mechanalysis, Inc., Columbus, Ohio

Filed Mar. 12, 1976, Ser. No. 666,355
Int. Cl.[2] H01L *41/04*
U.S. Cl. 310—319 **3 Claims**



1. A transducer for measuring velocity of vibrating bodies including:

an enclosure containing a piezo electric element maintained under compression between two seismic masses, one of said seismic masses being rigidly attached to the body under observation;

a pair of electrical conductors, each leading from said piezo electric element through a series resistor to an output terminal;

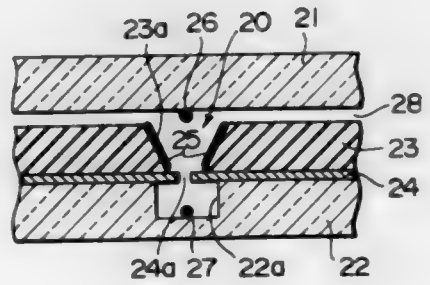
a cable connecting the said output terminals to the input terminals of a different charge converter, said charge converter being adapted to convert an electric charge into an alternating voltage having an amplitude corresponding to the instantaneous velocity of the body under observation.

4,085,350

GASEOUS DISCHARGE LIGHT EMITTING ELEMENT

Akiyasu Kagami, Ninomiya-machi; Takashi Hase, Fujisawa; Minoru Hiraki, Chigasaki; Junro Koike, Tokyo; Ryuya Toyonaga, Tokyo, and Takehiro Kojima, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Oct. 29, 1976, Ser. No. 737,026
Claims priority, application Japan, Oct. 31, 1975, 75-131007
Int. Cl.[2] H01J *61/44*
U.S. Cl. 313—486 **8 Claims**



1. A gaseous discharge light emitting element comprising an air-tight transparent container, a pair of discharge electrodes provided in said container, the discharge gap between said electrodes being in the range of 0.1 to 3.0mm, a gas or gas mixture having discharge radiation spectra within the region of wavelength shorter than 200nm sealed in said container, the pressure of said gas or gas mixture being such that the product of the pressure and said discharge gap is in the range of 30 to 300 Torr.mm, and a phosphor disposed in said container, said phosphor being a europium activated yttrium gadolinium borate phosphor represented by the formula

$$\{[(Y_{1-x}, Gd_x)_{1-z} B_z]_{1-y} Eu_y\}_2 O_3$$

where $0 \leqq x \leqq 1$, $0.001 \leqq y \leqq 0.1$ and $0.25 \leqq z \leqq 0.75$.

4,085,351

GASEOUS DISCHARGE LIGHT EMITTING ELEMENT

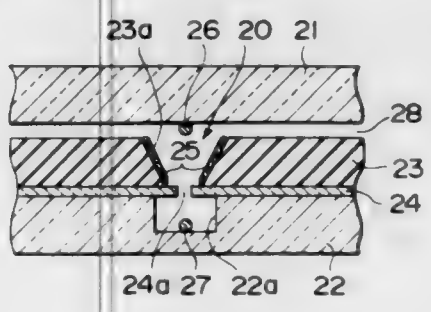
Koichi Takahashi, Odawara; Kinichiro Narita, Chigasaki; Akiyasu Kagami, Ninomiya; Takashi Hase, Fujisawa; Yoshiyuki Mimura, Chigasaki; Yoshinori Tanigami, Odawara; Junro Koike, Machida; Ryuya Toyonaga, Ebina, and Takehiro Kojima, Kawasaki, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka and Nippon Hoso Kyokai, Tokyo, both of, Japan

Filed Jan. 24, 1977, Ser. No. 761,988

Claims priority, application Japan, May 26, 1976, 51-60808

Int. Cl.[2] H01J *61/18, 61/44*

U.S. Cl. 313—486 **9 Claims**



1. A gaseous discharge light emitting element comprising an air-tight at least partially transparent container, a pair of discharge electrodes provided in said container, the discharge gap between said electrodes being in the range of 0.1 to 3.0 mm, a gas or gas mixture having discharge radiation spectra within the region of wavelength shorter than 200nm sealed in said container, the pressure of said gas or gas mixture being such that the product of the pressure and said discharge gap is in the range of 30 to 300 Torr·mm, and a phosphor disposed in said container, said phosphor having a high radiation efficiency under vacuum ultraviolet ray excitation and comprising a manganese activated aluminate phosphor represented by the formula:

$$(M^{II}_{1-x}, Mn_x) O \cdot zAl_2O_3$$

wherein M^{II} is selected from a group consisting of calcium, strontium, barium, magnesium and zinc, and x and z are numbers within the ranges of $10^{-3} \leqq x \leqq 7 \times 10^{-1}$ and $1 \leqq z \leqq 20$, respectively.

4,085,352

DIGITAL WAVEFORM ANALYZER

Richard Dickson Hilton, Rte. 2, Box 381-A, King George, Va. 22485

Filed Oct. 12, 1976, Ser. No. 731,169

Int. Cl.[2] G08B *5/36;* H04N *3/14*

U.S. Cl. 315—169 R **6 Claims**

1. A Digital Waveform Analyzer comprising:

an input signal;

a matrix of light emitting diodes wherein said LEDs are arranged in M columns and N rows;

a vertical circuit which converts said input signal to a one-of-N digital code thereby driving said LED matrix rows and which compares said input signal against a select voltage to produce a synchronize signal;

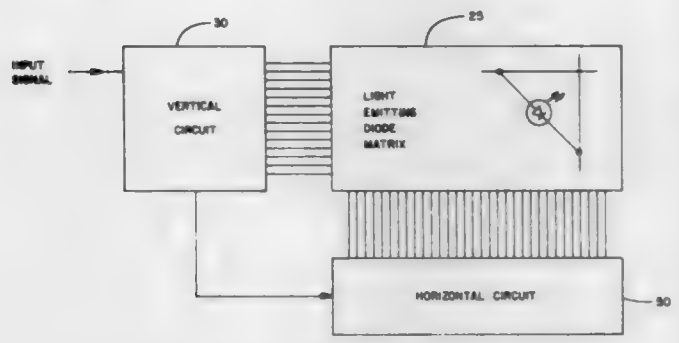
a horizontal circuit comprising:

a column driving circuit outputting one-of-M code for driving said LED matrix columns; and,

a sweep circuit comprised of:

a variable frequency oscillator;

a binary counter driven by said oscillator wherein the most significant bit of said counter is fed to said column driving circuit indicating if any LED column is to be illuminated, and wherein the remaining bits of said counter feed said column driving circuit indicating which, if any, LED column is to be illuminated; and,



a synchronizing signal gate wherein said synchronize signal is gated with the most significant bit of said counter, said gate outputting a signal for clearing said counter and initiating a sweep; and

power means for supplying power to said vertical and horizontal circuits.

4,085,353

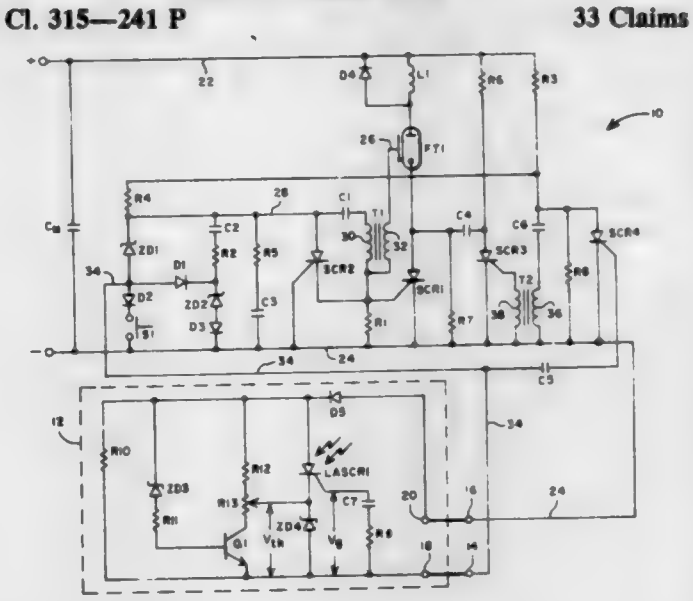
REMOTE SENSOR TRIGGER CIRCUIT

James R. Adams, Jr., and Dennis J. Wilwerding, both of Littleton, Colo., assignors to Rollei of America, Inc., Littleton, Colo.

Filed Mar. 11, 1976, Ser. No. 665,839

Int. Cl.[2] H05B *41/32*

U.S. Cl. 315—241 P **33 Claims**



1. In an electronic flash system including electronic flash apparatus, contact means operable by a user, and light sensing means positioned remotely with respect to the electronic flash apparatus, the invention comprising:

flash producing means;

first and second terminals adapted to be connected to the light sensing means, and having the contact means connected therebetween;

switching means having first and second main current carrying electrodes and a control electrode, the switching means causing actuation of the flash producing means when the switching means switches from a non-conductive to a conductive state;

first potential establishing means connected between the first main current carrying electrode and the first terminal for establishing a potential therebetween;

second potential establishing means connected between the first and second terminals for establishing a potential between the first and second terminals prior to closure of the contact means; and

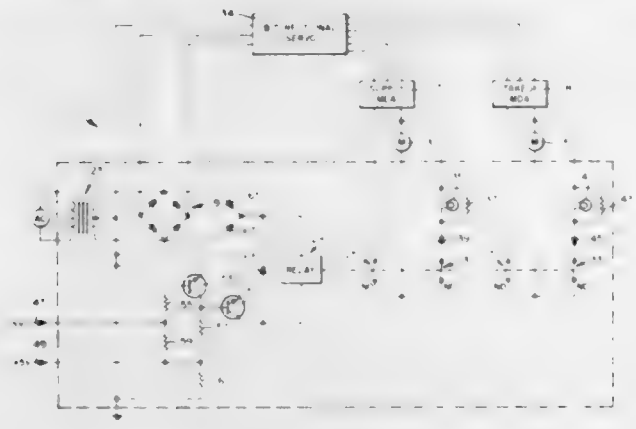
first capacitor means for producing, in response to closure of the contact means, a signal to the control electrode of the switching means to cause the switching means to switch from a non-conductive to a conductive state.

4,085,354

TAPE TRANSPORT DYNAMIC BRAKE

Robert P. Harshberger, Jr., San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed May 3, 1976, Ser. No. 682,377
Int. Cl.[2] H02P *3/14*
U.S. Cl. 318—87 **6 Claims**



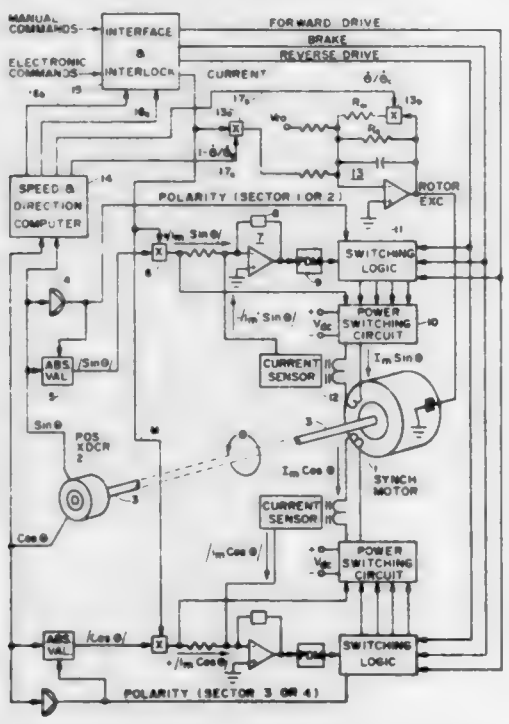
1. A dynamic brake for a motor, comprising:
means including a lamp and constituting a generator load that varies substantially inversely exponentially with generator velocity; and
means operable upon power stoppage to said motor for coupling said motor as a generator to operate said load.

4,085,355

VARIABLE-SPEED REGENERATIVE BRUSHLESS ELECTRIC MOTOR AND CONTROLLER SYSTEM

Richard B. Fradella, 33872 Calle Conejo, San Juan Capistrano, Calif. 92675

Filed Apr. 26, 1976, Ser. No. 680,388
Int. Cl.[2] H02P *3/18*
U.S. Cl. 318—168 **12 Claims**



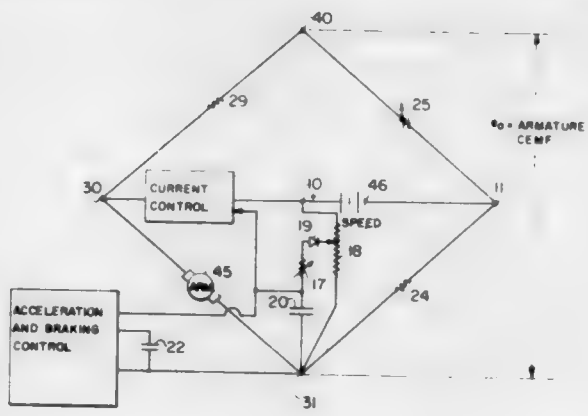
1. A system for providing controlled variable-speed motor and generator action; including in combination
a synchronous polyphase machine comprising a stator with a plurality of windings and a cooperating rotor that dictates the angle of a magnetic field which rotates therewith;
transducer means for providing polyphase rotor position signals, each varying sinusoidally in accordance with rotor position, with respective phases corresponding to the stator windings;
means for deriving from each said rotor position signal analog and binary signals representing the instantaneous absolute value and polarity thereof;
means for providing an amplitude control signal and binary drive and brake commands;
a plurality of single-quadrant multiplier means, each responsive to a corresponding absolute value signal and to said amplitude control signal, for providing synchronized amplitude control signals;
a plurality of servo loop means for controlling current of each stator winding in compliance with the corresponding synchronized amplitude control signal, the corresponding binary polarity signal, and said binary drive and brake commands.

4,085,356

SPEED CONTROL SYSTEM FOR MODEL RAILROADS

Herbert E. Meinema, 2231 Holly Ave., Escondido, Calif. 92027

Filed Dec. 8, 1975, Ser. No. 638,503
Int. Cl.[2] H02P *1/04*
U.S. Cl. 318—331 **2 Claims**



1. A current supply for model railroads having a driving motor connected for receiving current therefrom which comprises a continuous DC speed control circuit controlling the armature current as a function of the counter electromotive force developed by rotation of the driving motor armature thereby to regulate the armature rotational speed, comparison means in which said counter electromotive force is compared to a speed control reference voltage of predetermined magnitude derived by a voltage divider across a DC supply, means controlling the current supplied to the motor armature with the resultant differential voltage, storage capacitor means for retaining a charge proportional to the reference voltage and switching means selectively controlling the charge and discharge of said capacitor means to simulate braking and acceleration.

4,085,357

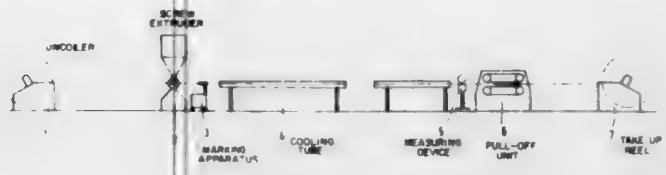
SYNCHRONOUS SWITCHING MEANS FOR OPERATING CABLE MARKING APPARATUS

Chris Ansberg, Vaihingen, and Klaus Maisel, Aurich, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 17, 1976, Ser. No. 658,215
Claims priority, application Germany, Feb. 18, 1975, 2506762
Int. Cl.[2] G05B *11/18*
U.S. Cl. 318—590 **4 Claims**

1. In an apparatus for marking a running length indication on the outer plastic jacket of an electric cable at a location immediately behind a screw extruder which provides the cable core with an outer jacket, cable length measuring means located at a distance from and electrically coupled to said marking apparatus controlled by the running length of said cable including at least two selectively connectable, spaced apart length mea-

suring devices positioned along the cable, each of which is connected to the marking apparatus by switching means in-



cluding circuitry for automatically determining the most favorable switching instant and for performing said preselected switching operation to control said marking apparatus.

4,085,358

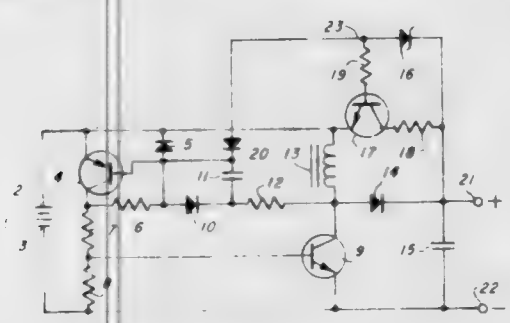
REGULATED DC TO DC POWER SUPPLY WITH AUTOMATIC RECHARGING CAPABILITY

Stanley W. Holcomb, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 29, 1975, Ser. No. 641,786

Int. Cl.[2] H02J *7/00*

U.S. Cl. 320—9 **45 Claims**



1. An electrical circuit comprising: an input, an output, voltage responsive means connected to said input and normally responsive to the application of a first electrical potential thereto to change successively between first and second electrical conditions thereby to develop a second electrical potential at said output, said second electrical potential being a higher potential than said first electrical potential and control means, interconnecting said voltage responsive means and said output, for interrupting said successive change when the potential at said output rises to a first predetermined level and for conducting current from said output to said input when the potential at said output is at a second predetermined level higher than said first predetermined level.

4,085,359

SELF-STARTING AMPLIFIER CIRCUIT

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 12, 1976, Ser. No. 713,821

Claims priority, application United Kingdom, Feb. 3, 1976, 04209/76

Int. Cl.[2] G05F *1/56*

U.S. Cl. 323—22 T **4 Claims**

1. In a circuit comprising first and second terminals for application of an operating potential therebetween; first and second current amplifiers, each amplifier having an input and an output current path and a common node, said first current amplifier input and output current paths connected to said second current amplifier output and input paths respectively forming a positive feedback loop thereby, said first current amplifier common node connected to said first terminal, said second current amplifier common node connected to said second terminal, means for degenerating the open loop gain of said positive feedback loop to unity when the levels of current in said loop exceed equilibrium values and a resistance in series connection with the input current path of said second current amplifier between the output current path of said first current amplifier and said second terminal, wherein said circuit has the undesirable tendency to fail to initiate conduction within said loop upon application of said operating voltage thereto, a starting circuit for overcoming said undesirable tendency, comprising,

a transistor having an emitter electrode connected to the end of said series connection remote from said second terminal, having a collector electrode connected for conditioning the transistor for normal transistor operation, and having a base electrode;

means responsive to said operating voltage being applied for



applying a substantially constant direct potential between said second terminal and the base electrode of said transistor of a value such that said transistor is conductive to supply its emitter current to the input current path of said second current amplifier as a starting current, until conduction levels within said loop reach predetermined values smaller than said equilibrium values, whereupon the potential drop across said resistance increases the potential across said series connection to reverse-bias the base-emitter junction of said transistor and terminate the application of said emitter current.

4,085,360

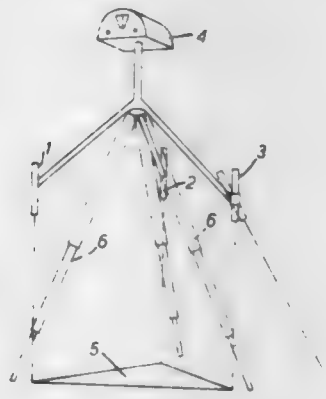
METHOD AND APPARATUS FOR DETERMINING THE PRESENCE OF OR ABSENCE OF AN UNDERGROUND BODY

Mark Ian Howell, 108 Sylvan Way, Sea Mills, England

Filed Jun. 14, 1976, Ser. No. 695,568

Int. Cl.[2] G01V *3/10;* **G01R** *33/02*

U.S. Cl. 324—3 **13 Claims**



1. An instrument for determining the presence or absence of an underground body capable of radiating an electromagnetic field, such as a buried pipe or cable, comprising an array of at least three generally similarly oriented receiver antenna coils, means for mounting such coils so that their extended axes define the corners of a polygonal area on the ground, a receiver including means coupled to said coils for comparing the phases of signals produced in all the coils, and means coupled to said comparing means for giving a warning signal only when any two of the first-mentioned signals are in antiphase

thereby to indicate that at least one pair of said extended axes are straddling an underground body.

4,085,361

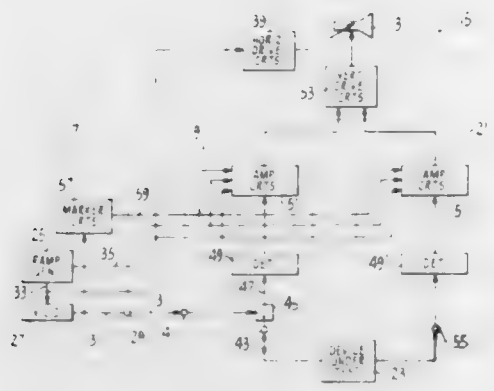
MEASUREMENT OF FREQUENCY RESPONSE WITH IMPROVED SENSITIVITY AND ACCURACY

Robert H. Bathiany, San Jose, and Bernhard Jensen, Mountain View, both of Calif., assignors to Wiltron Company, Mountain View, Calif.

Filed Mar. 10, 1977, Ser. No. 776,233

Int. Cl.[2] G01R *27/00*

U.S. Cl. 324—57 SS **41 Claims**



1. A system for measuring the level of a desired signal over a frequency range of interest that appears in a circuit under test of a given impedance along with undesirable interferring noise within a frequency range exclusive of said signal frequency range, comprising:

an input signal port having first and second sides,

a finite input termination impedance connected between said first and second sides of said input port, whereby voltages corresponding to said desired signal and said undesirable interferring noise are developed across said impedance,

a first reactance element connected to said first side of said port, and a second reactance element connected to said second side of said port, each reactance element characterized by having a lower impedance to said signal frequency range of interest than to said interferring noise, and

means operably connected to said first and second input port sides in series with said reactance elements for indicating the value of said signal of interest across said input impedance, whereby the reactance elements isolate said indicating means from any interferring noise voltage across said input impedance.

4,085,362

CHECK SYNCHRONISM

Robert Evans, Crawley, England, assignor to Stone-Platt Crawley Limited, Crawley, England

Filed Aug. 19, 1976, Ser. No. 715,949

Claims priority, application United Kingdom, May 10, 1976, 19173/76

Int. Cl.[2] G01R *25/00*

U.S. Cl. 324—83 D **6 Claims**

1. Apparatus for checking the synchronism of two alternating voltages comprising,

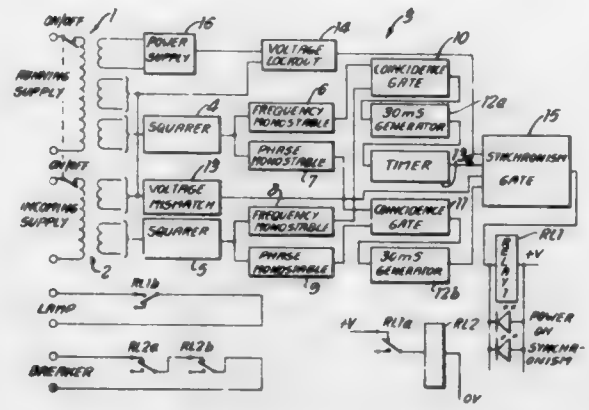
means for generating a first pair of trains of square wave pulses corresponding to the zero crossing points of respectively said two alternating voltages with each pulse having a first width,

means for generating a second pair of trains of square wave pulses also corresponding to the zero crossing points of respectively said two alternating voltages with each pulse having a second width less than that of said first width by a predetermined amount,

first coincidence means for sensing overlap between the pulses of said first pair of trains of pulses,

second coincidence means for sensing overlap between the pulses of said second pair of trains of pulses,

and output means providing an output indication of said two alternating voltages having obtained coincidence of frequency and phase within preselected allowable limits only if said second coincidence means senses coincidence at least a predetermined time after said first coincidence means senses coincidence.



4,085,363

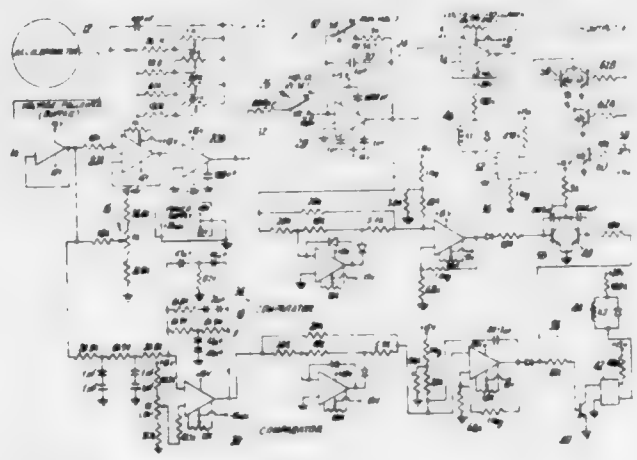
RATE MEASURING SYSTEM

Anthony N. Gravina, Deer Park; Kenneth D. Lev, Commack, and Arthur H. Angst, Northport, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jun. 9, 1976, Ser. No. 694,184

Int. Cl.[2] G21B *3/42*

U.S. Cl. 324—162 **2 Claims**



1. A rate measuring system, comprising:

(a) at least one accelerometer for providing an output voltage proportional to an acceleration input;

(b) amplifying means connected to the output of said accelerometer for amplifying said voltage proportional to acceleration, said amplifying means having an adjustable voltage gain for changing the scale of the output voltage from said accelerometer to provide full scale, multi-range operation over the entire range of acceleration inputs;

(c) an integrator;

(d) first comparator means connected to the output of said accelerometer for producing an output when the voltage from a accelerometer exceeds said predetermined value;

(e) first switch means responsive to the output from said first comparator means for connecting the output of said amplifying means to the input of said integrator when said accelerometer voltage exceeds said predetermined value;

(f) second comparator means connected to the output of said integrator for producing an output when the voltage from said integrator exceeds a predetermined value; and

(g) second switch means connected across said integrator and responsive to the outputs from said first and second comparator means for bypassing said integrator to provide a nominal zero velocity output signal when the inputs

to said first and second comparator means are below predetermined values.

4,085,364

CIRCUIT FOR SETTING TRANSMISSION AND RECEPTION FREQUENCIES

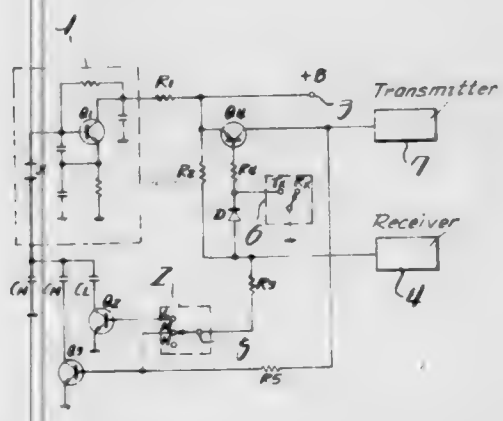
Takao Kakigi, Kawasaki, Japan, assignor to Cybernet Electronic Corporation, Kawasaki, Japan

Filed Aug. 24, 1976, Ser. No. 717,460

Claims priority, application Japan, Aug. 28, 1975, 50-118271[U]; Aug. 28, 1975, 50-118272[U]; Aug. 28, 1975, 50-118273[U]

Int. Cl.[2] H04B *1/40*

U.S. Cl. 325—20 1 Claim



1. A circuit for setting transmission and reception frequencies comprising:

a transistor having an emitter, a collector and a base;

means for connecting the emitter of the transistor to a first polarity terminal of an external power supply;

change-over switch means for connecting and disconnecting the base of the transistor to and from a second polarity terminal of the external power supply to alternately bias the transistor conductive and non-conductive;

a transmitting circuit connected to the collector of the transistor, the transistor providing a path for current between the first polarity terminal of the external power supply and the transmitting circuit when the transistor is conductive;

a receiving circuit;

a diode having one end connected to the base of the transistor and the other end connected to the receiving circuit;

a resistor connected between the emitter of the transistor and the other end of the diode, the resistor providing a path for current between the first polarity terminal of the external power supply and the receiving circuit when the transistor is non-conductive;

an oscillator including a quartz crystal resonator;

means for connecting the oscillator to the first polarity terminal of the external power supply;

a plurality of capacitors connected to the quartz crystal resonator including a first capacitor for setting a center frequency of the oscillator;

means responsive to the biasing of the transistor conductive for delivering current from the first capacitor to the second polarity terminal of the external power supply to set the oscillation frequency of the oscillator at the center frequency; and

means responsive to the biasing of the transistor non-conductive for delivering current from predetermined ones of the plurality of capacitors to the second polarity terminal of the external power supply to shift the frequency of the oscillator in a range about the center frequency.

4,085,365

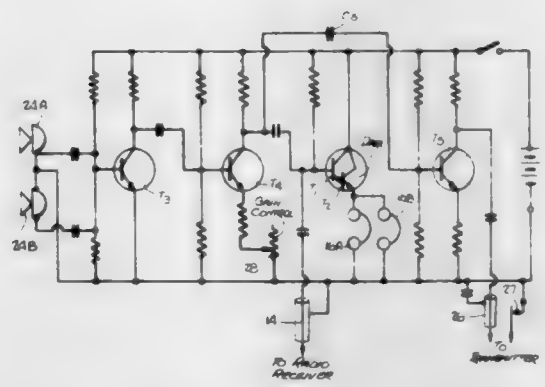
EARPHONE ADAPTER FOR AIRCRAFT RADIOS

Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y., a part interest

Filed Sep. 24, 1975, Ser. No. 616,361

Int. Cl.[2] H04B *1/40*

U.S. Cl. 325—21 5 Claims



1. An adapter making it possible to couple two sets of earphones to the relatively low-impedance output of an aircraft navigation-communication system without adversely affecting the operation of a loudspeaker already coupled to the same low impedance output, so that a wearer of the set can listen without difficulty to the system despite ambient noise that may impair the understandability of intelligence emitted by the loudspeaker, said adaptor comprising:

A. a battery-operated transistorized audio amplifier whose input circuit has an extremely high impedance and whose output circuit has a relatively low impedance, said amplifier having first and second transistors in a Darlington configuration in which the emitter of the first transistor is connected to the base of the second transistor, said amplifier having a high gain and including a volume control;

B. means including a d-c blocking capacitor for connecting the high-impedance input circuit of said amplifier to the low-impedance output circuit of said system to create a gross mismatch in impedance therebetween whereby virtually no load is imposed on the system, the resultant low level input signal fed to said amplifier by reason of said mismatch being compensated for by said high gain;

C. means connecting two sets of earphones to the output circuit of said amplifier; and

D. a buffer amplifier whose input is coupled to two microphones, one serving a first wearer of one set of said earphones and the other a second wearer of the other set of earphones, the output of the buffer amplifier being connected to the input circuit of the transistorized audio amplifier through a high impedance, whereby the adapter also functions as an intercom between said wearers without imposing a significant load on said system.

4,085,366

NOISE REDUCTION DEVICE FOR CITIZEN'S BAND TRANSCEIVERS

Billy Padgett, 606 S. Ohio St., Sedalia, Mo. 65301

Filed Sep. 29, 1976, Ser. No. 727,955

Int. Cl.[2] H04B *1/40*

U.S. Cl. 325—22 8 Claims

1. A noise reduction device in combination with a transceiver and an antenna therefor, said transceiver having a transmission mode and a reception mode and including a lead conductor and a shield conductor, said antenna including an antenna cable having a lead and shield thereof normally connected to said transceiver lead conductor and shield conductor respectively, said noise reduction device comprising:

(a) a solid state means having a first, a second, and a third terminal, each terminal including a lead connected thereto, said first and second terminals normally having a high impedance therebetween and having a low impe-

dance therebetween in response to a suitable bias signal applied to said third terminal;

(b) said solid state means being interposed between said transceiver and said antenna for reducing the signal strength to said transceiver during the reception mode by means of said normal high impedance between said first and second terminals, said first terminal being connected to said antenna cable lead and said second terminal being



connected to said transceiver lead conductor, and said antenna cable shield being connected to said transceiver shield conductor; and

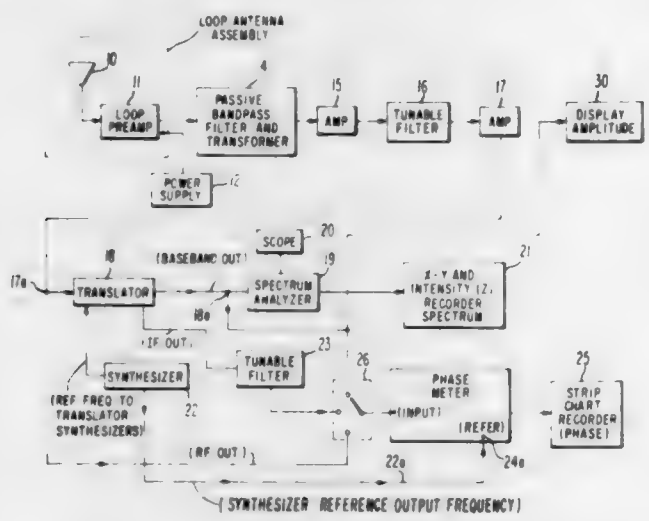
(c) a bias antenna connected to said third terminal and operative upon reception of radio frequency energy emitted by said transceiver during said transmission mode to apply said energy as a suitable bias signal to said third terminal thereby effecting said low impedance between said first and second terminals.

4,085,367

METHOD AND DETECTION OF PHASE AND FREQUENCY MODULATION

John Chamberlin Williams, Moorestown, and William Braxton Sisco, Voorhees, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 10, 1976, Ser. No. 749,413
Int. Cl.[2] H04B *17/00*
U.S. Cl. 325—67 **7 Claims**



1. A method of determining the frequency and modulation of a signal of unknown frequency and digital modulation comprising the steps of:

a. analyzing the frequency components of said digitally modulated signal into frequency component signals;

b. detecting the phase variations of each of said frequency components of said signal by comparing each of said frequency component signals with a reference signal having a frequency that is the same frequency, respectively, of each component signal;

c. displaying phase variations that exist;

d. displaying said frequency components, and

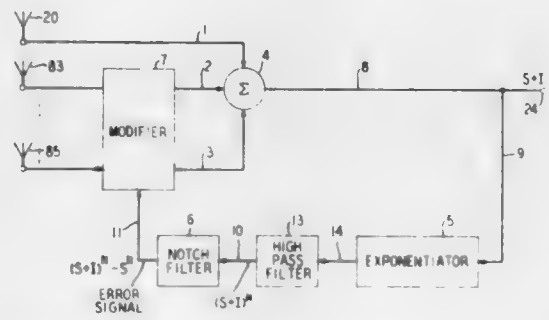
e. examining said frequency components display in conjunction with said phase display to determine the modulation of said unknown frequency signal.

4,085,368

INTERFERENCE CANCELING METHOD AND APPARATUS

Yu Shuan Yeh, Freehold Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 30, 1976, Ser. No. 718,555
Int. Cl.[2] H04B *7/08*
U.S. Cl. 325—304 **11 Claims**



1. An interference reduction apparatus for use with a plurality of waves each having components of signal and interference, said apparatus comprising:

means for summing said waves, producing a sum wave having a sum interference component and a sum signal component;

means for raising said sum wave to a power, producing an exponentiated sum wave having an exponentiated signal component;

means for substantially removing said exponentiated signal component from said exponentiated sum wave, producing a first error signal; and

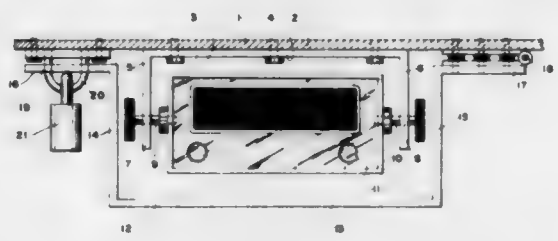
means responsive to said first error signal for modifying at least one of said waves before summing, whereby said first error signal and said sum interference component are reduced.

4,085,369

VEHICLE RADIO MOUNTING DEVICE

Harry W. Burke, Wright, Minn., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 18, 1976, Ser. No. 742,797
Int. Cl.[2] A47B *96/06;* E05B *73/00*
U.S. Cl. 325—312 **2 Claims**



1. A vehicle radio mounting device for mounting a radio in an automotive vehicle having a dashboard with a bottom, said vehicle radio mounting device comprising

a substantially rectangular U-shaped mounting bracket affixed to the bottom of the dashboard of a vehicle, said mounting bracket having a head affixed to the dashboard and a pair of spaced parallel arms extending perpendicularly from the head, said arms having bores formed therethrough;

pin means extending through the bores of the arms of the mounting bracket and swivelly mounting a radio in said mounting bracket;

a substantially rectangular U-shaped securing bracket hav-

ing a head, a pair of spaced parallel arms extending perpendicularly from the head of the securing bracket and a pair of flange parts each extending away from the other from a corresponding one of the arms of the securing bracket at the free edges thereof substantially parallel to the head of the securing bracket;

hinge means hingedly affixing the securing bracket to the bottom of the dashboard at one of the flange parts with the arms of the securing bracket parallel to and closely spaced from the arms of the mounting bracket whereby the pin means are prevented from withdrawal by the arms of the securing bracket; and

locking means for locking the other of the flange parts of the securing bracket to the bottom of the dashboard to prevent unauthorized movement of the securing bracket.

4,085,370

RADIO RECEIVER HAVING CO-CHANNEL INTERFERENCE OPERATED SQUELCH

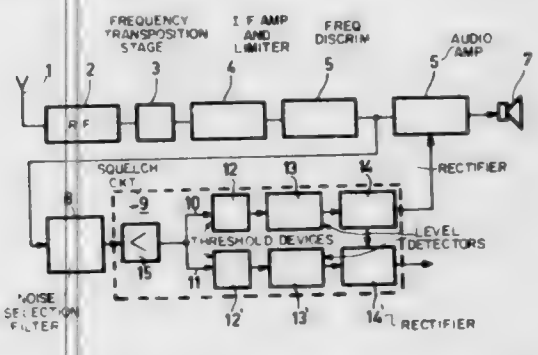
Johannes van der Poel, and Johannes Noordanus, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1976, Ser. No. 727,900

Claims priority, application Netherlands, Feb. 10, 1975, 7511580

Int. Cl.² H04B *1/10*

U.S. Cl. 325—348 **7 Claims**



1. A radio receiver for carrier signals frequency-modulated with signals within a speech frequency band, comprising an input means for receiving said carrier signals, a frequency-transposition stage coupled to said means, a tuned intermediate frequency amplifier and limiting circuit coupled to said transposition stage and having a given passband characteristic, a frequency discriminator coupled to said intermediate frequency amplifier and limiting circuit, a switchable audio amplifier coupled to said discriminator and having a control input means, a noise selection band pass filter coupled to said discriminator having a sharp pass band characteristic with upper and lower frequency limits both of which lie between the upper limit of the speech frequency band and a frequency numerically equal to half the frequency difference between the limits of the pass band characteristic of the intermediate frequency amplifier and limiting circuit, first and second voltage threshold responsive device means coupled to said filter for responding when first and second voltage thresholds respectively are exceeded at the inputs thereof, both of said thresholds lying above the noise which will be inherently applied in operation by the noise filter to the inputs of said first and second threshold responsive device means when the receiver is limiting and co-channel interference is absent, and below the noise which will be inherently applied in operation by the noise filter to the inputs of said first and second threshold responsive device means when the receiver is well out of limiting, the second threshold being higher than the first and the output of the second voltage threshold responsive device being coupled to said control input means of the audio amplifier for blocking transmission through said audio amplifier when the second threshold is exceeded at the input of said second threshold responsive device said first threshold device responsive means having output means for providing an early warning signal of co-channel interference.

4,085,371

AUTOMATICALLY TUNED MEMORY TELEVISION CHANNEL SELECTING APPARATUS

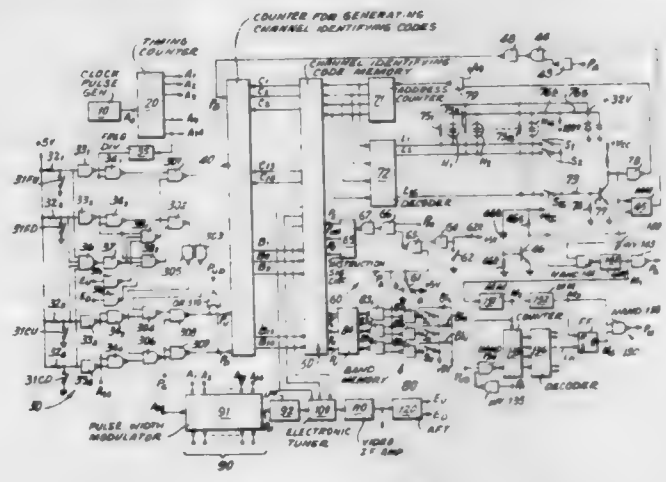
Takao Mogi, Tokyo; Koji Morita, Kodaira, and Hisao Okada, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1976, Ser. No. 716,655

Claims priority, application Japan, Aug. 28, 1975, 50-104445; Aug. 29, 1975, 50-104556

Int. Cl.² H04B *1/06*

U.S. Cl. 325—464 **12 Claims**



1. A channel selecting apparatus for a television receiver having an electronic tuning tuner for changing the receiving frequency in accordance with an analog control signal applied thereto; said channel selecting apparatus comprising memory means having a plurality of addresses for storing respective digital codes each identifying a respective channel, addressing means actuable for selectively activating each of said addresses in the memory means so as to effect read out of the respective channel identifying digital code, digital-to-analog converting means for converting the digital code being read out of said memory means into a respective analog control signal for said tuner, automatic fine tuning means which includes means for detecting deviation of the receiving frequency, as established in response to said analog control signal, from the correct receiving frequency for the channel identified by the digital code then being read out of said memory means, and means responsive to a detected deviation of said established receiving frequency from said correct receiving frequency for modifying the channel identifying digital code being converted by said converting means in the sense for removing said deviation, and means operative, when said deviation exceeds a predetermined amount, to store the resulting modified digital code in said memory means in place of the read out digital code resulting in said deviation.

4,085,372

CHANNEL SELECTING APPARATUS FOR A TELEVISION RECEIVER WITH AN ELECTRONIC TUNER

Takao Mogi, Tokyo, and Hisao Okada, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1976, Ser. No. 716,702

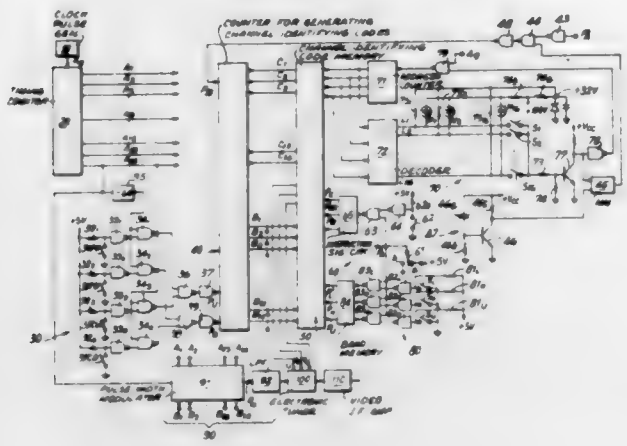
Claims priority, application Japan, Aug. 27, 1975, 50-103668

Int. Cl.² H04B *1/06*

U.S. Cl. 325—464 **9 Claims**

1. A channel selecting apparatus for a television receiver having a tuner with a voltage-controlled, variable reactance device as its tuning element; said channel selecting apparatus comprising memory means having a plurality of addresses for storing respective digital codes identifying respective channels, means for effecting the read out of a selected one of said digital codes from the respective address of said memory

means, digital-to-analog converting means operative to convert the digital code being read out of said memory means to a respective analog voltage for controlling said variable reactance device, said digital-to-analog converting means including pulse-width modulator means operative to produce a chain of pulses at a predetermined repetition rate with the width of each of said pulses being dependent on said selected digital code read out of said memory means, and low-pass filter means



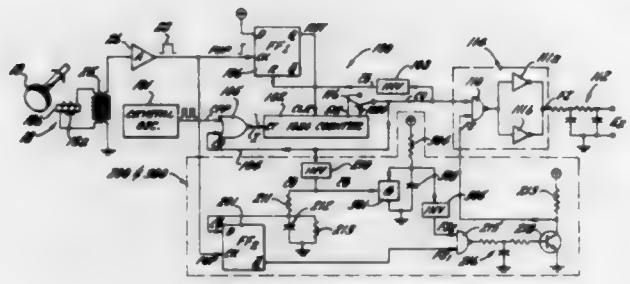
receiving said chain of pulses from said modulator means for providing said analog voltage to control said variable reactance device in dependence on said width of the pulses, and means for producing a circulating digital code with said predetermined repetition rate; and in which said pulse-width modulator means also receives said circulating digital code and determines said pulse width in dependence on the absence of coincidence between said selected digital code read out of said memory means and said circulating digital code.

4,085,373

FREQUENCY-TO-VOLTAGE TRANSDUCER FOR SPEED GOVERNOR SYSTEMS OR THE LIKE

Robert G. McConnell, Fort Collins, Colo., assignor to Woodward Governor Company, Rockford, Ill.

Filed Nov. 3, 1976, Ser. No. 738,354
Int. Cl.[2] H03K *9/06*
U.S. Cl. 328—141 **10 Claims**



1. In a transducer for converting the variable frequency of recurring input signals into a correspondingly varying dc. output, the combination comprising

(a) an oscillator producing rapidly repeating signals at a constant, predetermined frequency substantially greater than the maximum frequency of said input signals,

(b) a digital counter having an output terminal on which appears a counter output voltage at a first or second level when the counter respectively is in or is not or above a predetermined count state, one of said levels being relatively high and the other relatively low,

(c) gate means interposed between said oscillator and the counting input of said counter,

(d) means responsive to said voltage on said counter output terminal for controlling said gate means to be disabled or enabled when the counter is or is not in said predetermined count state,

(e) means responsive to each of said input signals for resetting said counter to a preselected count state lower than said predetermined count state, and

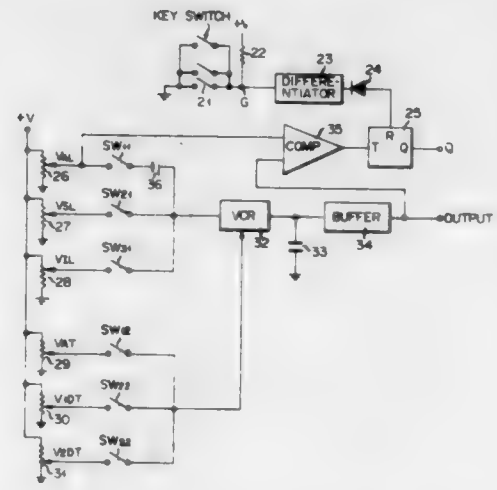
(f) means for filtering said counter output voltage to create a final dc. output which varies as the average of such voltage and inversely in proportion to the frequency of said input signals.

4,085,374

GENERATOR FOR GENERATING CONTROL VOLTAGE WAVEFORM

Yasuo Nagahama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jan. 3, 1977, Ser. No. 756,351
Claims priority, application Japan, Jan. 12, 1976, 51-2593; Mar. 5, 1976, 51-26133[U]
Int. Cl.[2] G10H *5/10;* H03K *17/60*
U.S. Cl. 328—143 **12 Claims**



1. A generator for generating a control voltage waveform whose voltage level varies with time comprising:

a voltage-controlled variable resistor means having a control input, an input and an output, the resistance between the input and output of said variable resistor depending on the voltage level at the control input;

a storage means coupled with the output of said voltage-controlled variable resistor means for forming a time constant circuit with said variable resistor means and providing said control voltage waveform;

first sources of voltage signals;

second sources of time constant determing voltage signals;

first coupling means for sequentially coupling said first sources to the input of said voltage-controlled variable resistor means; and

second coupling means for sequentially coupling said second sources to the control input of said voltage-controlled variable resistor means in synchronism with said first coupling means.

4,085,375

COMBINED ANGULAR DISPLACEMENT MEASURING SYSTEM AND MULTIPLIER

George Galuschak, Hasbrouck Heights, and Saul Leon Malkiel, Englewood, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 18, 1976, Ser. No. 742,764
Int. Cl.[2] G01C *9/06*
U.S. Cl. 328—160 **4 Claims**

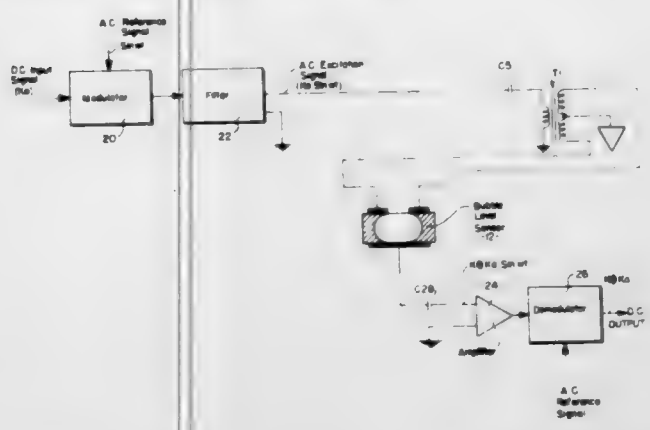
1. A combined angular displacement measuring and multiplier system comprising:

a bubble-type level sensor responsive to an alternating current excitation signal for producing an output having an amplitude proportional to the amplitude of the alternating current excitation signal and to the angular displacement of the sensor from a reference level;

modulator means coupled to said sensor for supplying said alternating current excitation signal thereto;

first input circuit means coupled to said modulator means for supplying an alternating current reference signal thereto;

second input circuit means coupled to said modulator means for supplying a second input signal thereto to be amplitude



modulated on said alternating current reference signal; and

an output circuit coupled to said sensor for deriving an output signal therefrom having an amplitude representative of the product of the angular displacement of the sensor from the reference level and the amplitude of said second input signal.

4,085,376

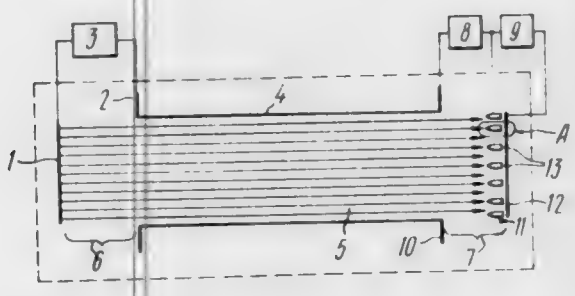
DEVICE FOR ELECTRICAL DECELERATION OF FLOW OF CHARGED PARTICLES

Evgeny Aramovich Abramyan, ulitsa Chaikovskogo, 13, kv. 91, Moscow, and Anatoly Nikolaevich Sharapa, ulitsa Uchenykh, 8, kv. 103, Novosibirsk, both of U.S.S.R.

Filed Sep. 27, 1976, Ser. No. 726,809

Int. Cl.² H05H *1/00*; H01J *1/02*

U.S. Cl. 328—233 **9 Claims**



1. A device for electrical deceleration of a flow of accelerated charged particles comprising: a first electrode positioned across the flow and having a potential equal to the energy of the flow being decelerated; a second electrode positioned behind said first electrode downstream of the flow and having a potential approximately equal to zero, said second electrode being made as a plurality of pointed members with their points directed toward said flow of charged particles; a third electrode for reception of said particles positioned behind said second electrode downstream of said flow and having a small potential of the same sign as that of said first electrode.

4,085,377

MICROWAVE FREQUENCY DISCRIMINATOR COMPRISING A ONE PORT ACTIVE DEVICE

Zygmond Turski, Selden, N.Y., and Arye Rosen, Cherry Hill, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 13, 1976, Ser. No. 722,829

Int. Cl.² H03D *3/26*

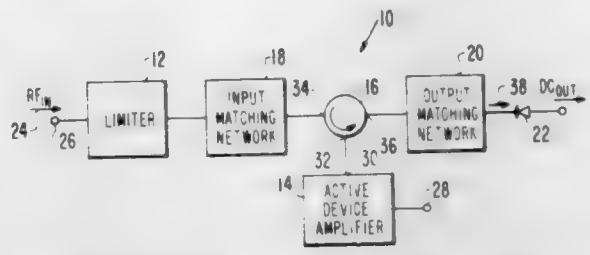
U.S. Cl. 329—116 **8 Claims**

1. A microwave frequency discriminator comprising:

a one port active device amplifier including an active device, said active device being biased an amount for generating an output RF signal within a predetermined frequency bandwidth in response to an input RF signal of substantially constant power level;

means for coupling said input RF signal into said amplifier, and for coupling said ouput RF signal out from said amplifier;

input and output impedance matching means connected to said coupling means, said input and output matching



means being formed to provide selected input and output impedance conditions to said amplifier such that the power of said output RF signal varies substantially linearly with the frequency of said input RF signal throughout said frequency bandwidth; and

detector means responsive to said output RF signal for generating a D.C. signal varying substantially linearly as a function of the frequency of said input RF signal.

4,085,378

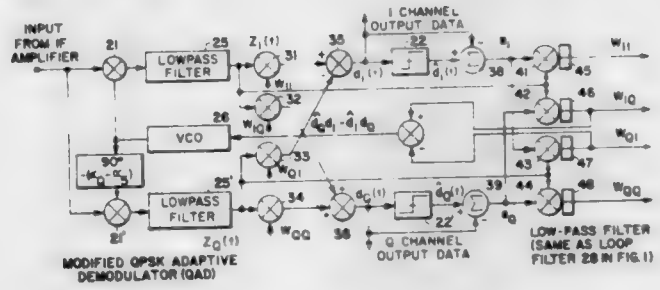
QPSK DEMODULATOR

Carl R. Ryan, Hancock, Minn., and James H. Stilwell, Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 586,108, Jun. 11, 1975, abandoned. This application Nov. 26, 1976, Ser. No. 745,143

Int. Cl.² H03D *3/02*

U.S. Cl. 329—124 **2 Claims**



1. In a QPSK demodulator wherein two modulated incoming quadrature separated signals are received at an input and demodulated into first and second signals, the improvement including:

first, second third and fourth variable amplifying means each having input, output and control terminals;

first and second summing means each having two inputs and an output;

the input terminals of said first and third amplifying means being connected to receive the first signal and the input terminals of said second and fourth amplifying means being connected to receive the second signal;

the inputs of said first summing means being connected to the output terminals of said first and fourth amplifying means, respectively, and the inputs of said second summing means being connected to the output terminals of said second and third amplifying means, respectively;

first and second data error estimating means connected to the output terminals of said first and second summing means, respectively;

first, second, third and fourth correlating means each having two inputs and an output;

one input of said first correlating means being connected to the first data error estimating means and the other input being connected to receive the first signal, one input of said second correlating means being connected to the

second data error estimating means and the other input being connected to receive the second signal, one input of said third correlating means being connected to the second data error estimating means and the other input being connected to receive the first signal, and one input of said fourth correlating means being connected to the first data error estimating means and the other input being connected to receive the second signal;

the output terminals of said first, second, third and fourth correlating means being connected to the control terminals of said first, second, third and fourth amplifying means, respectively; and

output means connected to said first and second data error estimating means providing first and second channel output data, respectively.

4,085,379

AMPLIFIER FOR FLOATING VOLTAGE SOURCE

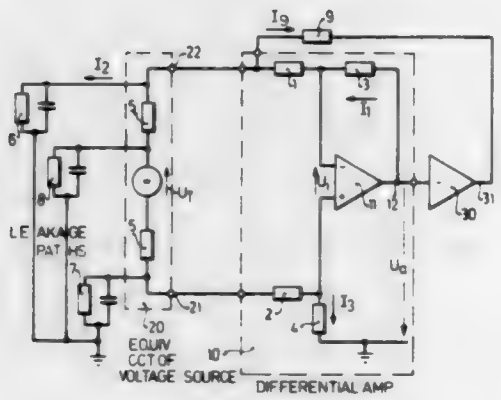
Hans Kubach, Munchigen, and Peter Zieher, Markgroningen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 9, 1977, Ser. No. 776,084

Claims priority, application Germany, Mar. 10, 1976, 2609841

Int. Cl.[2] H03F *3/45, 1/34*

U.S. Cl. 330—69 **7 Claims**



1. Circuit for amplification of the voltage of a voltage source that is electrically floating in relation to a reference potential, comprising, in combination:

a differential amplifier having two inputs and a single output, said inputs being connected through series input resistances to the voltage to be amplified as provided by said voltage source and said output making available an amplification of the voltage of said source as a voltage between the output and said reference potential, and

means for shifting the potential of said source (20) in the direction towards said reference potential exclusively by positive feedback around said differential amplifier that draws a current (I_9) through one of said series input resistances, which current is proportional to said voltage between said differential amplifier output and said reference potential.

4,085,380

BIQUAD RC ACTIVE FILTER

Jerry G. Williford, Tustin, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 26, 1976, Ser. No. 745,031

Int. Cl.[2] H03F *1/36*

U.S. Cl. 330—107 **12 Claims**

1. A biquad RC active filter, comprising:

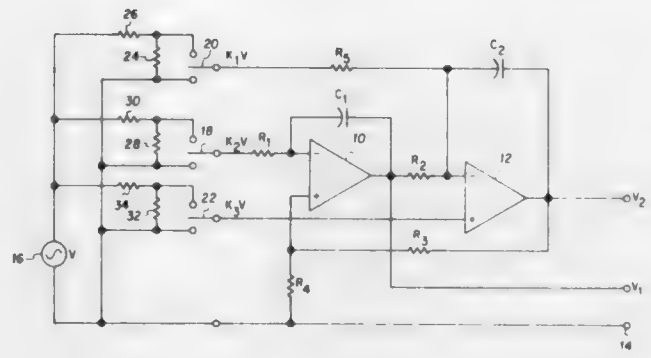
a pair of operational amplifiers, each having an inverting and non-inverting input;

a pair of capacitors, each being connected between the output and inverting input of a different one of said amplifiers;

a first resistor connected to the inverting input of a first one of said amplifiers;

a second resistor interconnecting the output of said first amplifier with the inverting input of the second one of said amplifiers;

feedback circuit means interconnecting the output of said second amplifier with the non-inverting input of said first amplifier;



a common terminal, and

input circuit means for applying a signal referenced to said common terminal to at least one of the inputs of said amplifiers with the exception of the non-inverting input of said first amplifier.

4,085,381

AMPLIFIERS

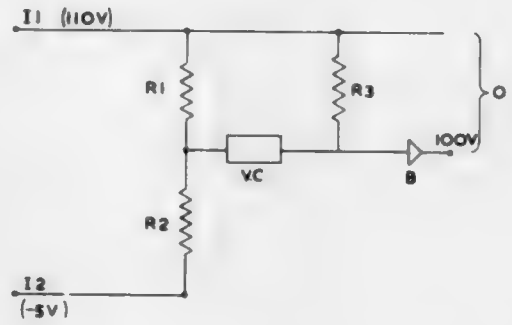
John Didwith Lewis, Braintree, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 19, 1976, Ser. No. 678,427

Claims priority, application United Kingdom, Apr. 18, 1975, 16082/75

Int. Cl.[2] H03F *3/00*

U.S. Cl. 330—147 **2 Claims**

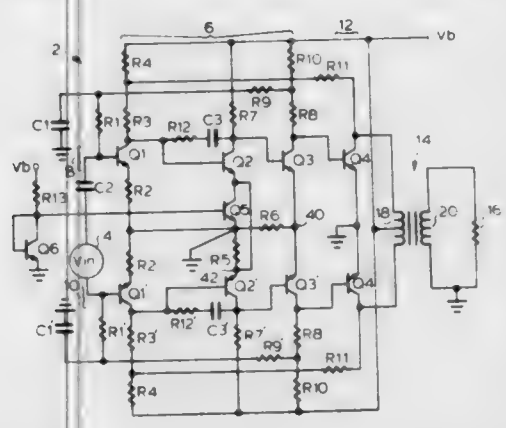


1. An amplifier for amplifying and inverting a low voltage wave form comprising independently fed first and second resistors connected to a common output which feeds a third resistor via a voltage to current converter, the other end of the third resistor being driven from the same point as the first resistor, the ratio of the resistances of the first and second resistors being made equal to the amplification required so that when the low voltage wave form is fed to the second resistor and a wave form approximating to the required output and of slightly higher voltage is fed to the first and third resistors, the voltage at the common output is proportional to the voltage difference between the wave form approximating to the required output and the voltage thereby developed across the third resistor by the voltage current converter is approximately equal to the error.

4,085,382
CLASS B AMPLIFIER

Herbert Douglas Barber, Dundas, and Gary Curtis Salter, Burlington, both of Canada, assignors to Linear Technology Inc., Burlington, Canada

Filed Nov. 22, 1976, Ser. No. 743,883
Int. Cl.² H03F *3/26*
U.S. Cl. 330—262 **6 Claims**



1. An integrated circuit low level low power direct coupled class B amplifier formed on a substrate and having a terminal adapted to be connected to a battery, said amplifier comprising:

(a) two substantially identical amplifying channels,

(b) each amplifying channel having, separately from the other channel:

(i) a preamplifier channel having three preamplifier gain transistors including a first stage preamplifier transistor a second stage preamplifier transistor and a third stage preamplifier transistor, all of said preamplifier transistors being direct coupled,

(ii) an output transistor direct coupled to said third stage preamplifier transistor,

(iii) a DC negative feedback loop connecting the collector of said third stage preamplifier transistor to the base of said first stage preamplifier transistor to regulate the DC currents in said output transistors,

(iv) the collector of said first stage preamplifier transistor being connected to one end of a first resistance, the other end of said first resistance being connected at a junction to one end of a second resistance, the other end of said second resistance being connected to said battery terminal, said first resistance being of substantially higher resistance than said second resistance,

(v) a substantially purely resistive AC negative feedback loop for reducing the dependence of the gain of each channel on the current through said output transistors, said feedback loop comprising a feedback resistor having a body and a pair of resistor terminals, one of said resistor terminals being connected to the collector of said output transistor and the other of said resistor terminals being coupled to said junction, the resistance of said feedback resistor being substantially higher than that of said second resistance,

(vi) the body of said feedback resistor being insulated from said battery terminal so that the voltage at said feedback resistor may swing above the voltage of said battery,

(vii) compensation means, including a capacitor, connected to the base of one of said preamplifier transistors other than said first preamplifier transistor,

(c) the emitters of at least one pair of said preamplifier transistors being coupled together and through resistance means to ground to provide common mode rejection for said preamplifier,

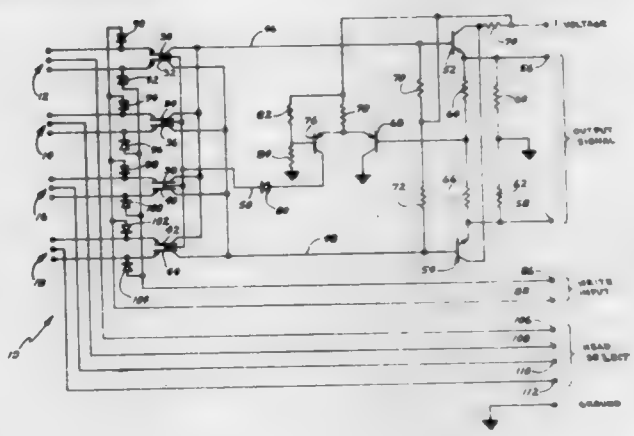
(d) a load for said output transistors, said load having a centre tap and a pair of load end terminals,

(e) said output transistors being of the same polarity and the emitters of said output transistors being coupled together, the collector of one output transistor being connected to one load end terminal and the collector of the other output transistor being connected to the other load end terminal.

4,085,383
MATRIX SELECTION AMPLIFIER CIRCUIT FOR LOW IMPEDANCE HEADS IN A MAGNETIC DISC MEMORY DEVICE

William A. Palm, Minnetonka, and Duane A. Young, Bloomington, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 7, 1976, Ser. No. 730,501
Int. Cl.² H03F *3/45*
U.S. Cl. 330—295 **3 Claims**



1. A matrix amplifier circuit adapted to be associated with a plurality of source devices and for receiving and amplifying the signals from only a selected source device comprising:

a plurality of terminations for source devices, each termination comprising at least a first and second electrical connecting point,

a plurality of common base input transistor amplifiers, each amplifier consisting of at least a first and second transistor having the bases thereof connected together, said amplifiers being connected to said terminations by having the emitter of said first transistor connected to said first connection point and the emitter of said second transistor connected to said second connection point,

a common collector transistor amplifier having the base of one of its input transistors connected in common with all of the collectors of one of the transistors of each of said pairs of common base transistor amplifiers and the base of its other input transistor connected in common with all of the collectors of the other transistor of said pairs of common base transistor amplifiers,

means for selecting an input transistor amplifier associated with a selected source device including means for biasing unselected transistors to a cutoff condition, and

means for providing common mode rejection feedback signals to the bases of said common base input transistor amplifiers, said means being connected with said common collector transistor amplifier and to a common connection with the bases of all transistors in all input transistor amplifiers and further providing a source of base current for all of said common base transistor amplifiers.

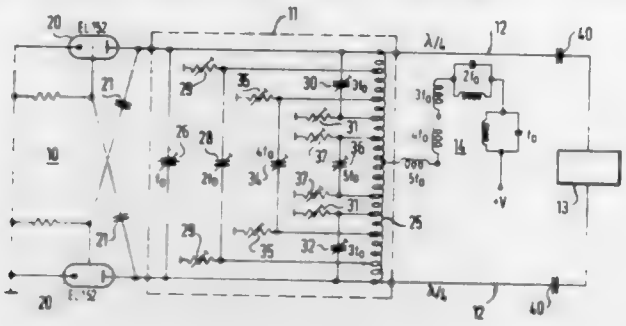
4,085,384
CIRCUIT FOR PRODUCING PULSES BY DIFFERENTIATING OUTPUT OF SAWTOOTH OSCILLATOR

Rudolf G. Zinsser, Idar-Oberstein, Germany, assignor to Reuter Technologie GmbH, Am Rauhen Berge, Germany

Filed Apr. 21, 1977, Ser. No. 789,579
Int. Cl.² H03B *5/10*; H03K *5/01, 6/06*
U.S. Cl. 331—74 **10 Claims**

1. A pulse generator comprising, in combination, an oscillator including a resonance circuit having multiple frequencies and tuned to the fundamental frequency corresponding the the pulse repetition rate and to at least the first and second harmon-

ics of the fundamental frequency to generate, on its output side, a sawtooth wave with a steep leading edge having an inflexion point; and differentiation members coupling said resonance



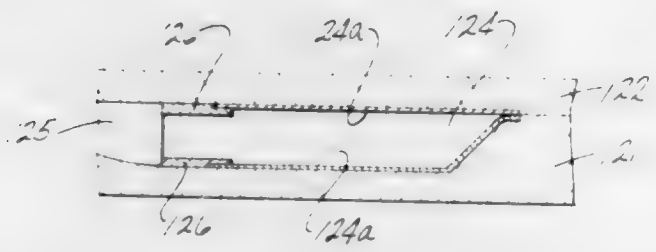
circuit to a load so that, as a result of matched differentiation of the steep leading edge of each sawtooth of the wave, a pulse, having a pulse width corresponding approximately to the pulse time of the leading edge, acts on the load.

4,085,385

GASEOUS LASER DEVICE WITH DAMAGE-RESISTANT CATHODE

Michael E. Fein, Toledo, and Charles W. Salisbury, Rising Sun, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 21, 1975, Ser. No. 560,645
Int. Cl.[2] H01S *3/097*
U.S. Cl. 331—94.5 D **10 Claims**



1. In a gaseous laser device comprising an envelope, a cathode volume having at least one wall, an electrically conductive, relatively large surface area cathode within said cathode volume, a lasing volume, an anode, and means for igniting a gaseous discharge between the anode and the cathode, and wherein the cathode comprises an electrically conductive material supported by at least one cathode wall and wherein the cathode has at least one edge vulnerable to gas discharge deterioration,

the improvement wherein a protective cover plate is juxtaposed over at least a portion of said vulnerable conductive edge of the cathode to substantially prevent gas discharge erosion of said cathode edge, without diminishing the effective cathode area.

4,085,386

INDEPENDENT INITIATION TECHNIQUE OF GLOW DISCHARGE PRODUCTION IN HIGH-PRESSURE GAS LASER CAVITIES

Owen Farish, Bearsden, Glasgow, Scotland, and Richard L. Hundstad, Wilkinsburg, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 365,390, May 30, 1973, abandoned.
This application Mar. 9, 1976, Ser. No. 665,349
Int. Cl.[2] H01S *3/097*
U.S. Cl. 331—94.5 PE **2 Claims**

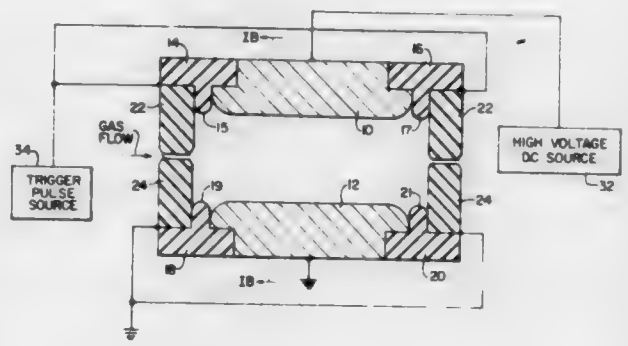
1. A gas laser apparatus comprising:

a resonant optical cavity including optical reflective elements terminating each end of said cavity,

a gas medium at a pressure suitable for lasing action within said resonant optical cavity,

a main electrode assembly means including first and second spaced apart electrode means having surface portions extending in a substantially parallel, opposing relationship, the discharge region of said laser apparatus corresponding to the region between the opposing surface portions of said first and second electrode means, said resonant optical cavity being defined by said optical reflective elements and being essentially coextensive with said discharge region, said first and second spaced apart electrode means being elongated continuous electrodes,

an auxiliary electrode assembly means including dielectric electrode means consisting of a plurality of discrete pairs of oppositely disposed dielectric electrodes extending



between said first and second electrode means and combining with said first and second electrode means to envelope said discharge region,

electrical excitation means connected to said auxiliary electrode assembly means to initiate corona discharge resulting in the injection of free electrons by said auxiliary electrode assembly means into said discharge region, and

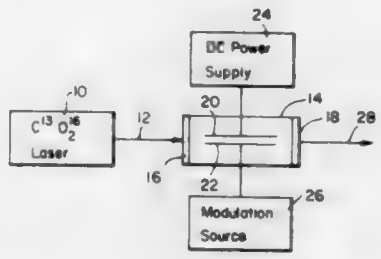
D.C. voltage means connected to said main electrode assembly means to produce a glow discharge in said discharge region in response to said free electrons.

4,085,387

STARK-TUNED LASER MODULATOR

Charles K. Asawa, Pacific Palisades, and Thomas K. Plant, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 18, 1976, Ser. No. 715,461
Int. Cl.[2] H01S *3/10*
U.S. Cl. 331—94.5 M **9 Claims**



1. A laser modulator comprising in combination:

means including a $C^{13}O_2^{16}$ laser medium for generating a laser beam at a frequency corresponding to a transition selected from the group consisting of the R(18) transition and the R(24) transition of the (00°1–10°0) vibrational band of $C^{13}O_2^{16}$;

a Stark cell disposed in the path of said laser beam and containing $N^{14}H_3$ gas, said gas having an absorption resonance in the vicinity of the frequency of said laser beam;

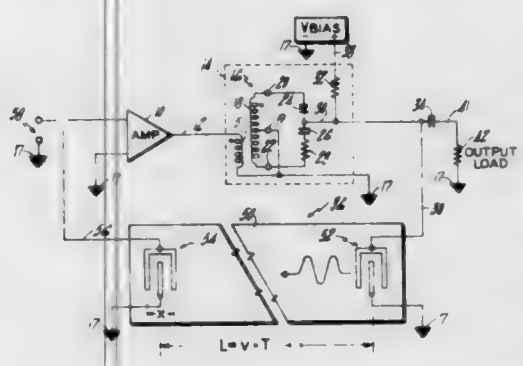
means for generating a dc electric field within said Stark cell of a value to tune said absorption resonance so as to overlap the frequency of said laser beam; and

means for applying a modulating voltage to said Stark cell to vary the instantaneous frequency of said absorption resonance and thereby modulate said laser beam accordingly.

4,085,388
MODE-LOCKED, SURFACE ACOUSTIC WAVE OSCILLATOR

Meyer Gilden, West Hartford; Thomas M. Reeder, Glastonbury, and Anthony J. DeMaria, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 21, 1976, Ser. No. 725,060
Int. Cl.[2] H03B 5/30
U.S. Cl. 331—107 A 11 Claims



1. A mode-locked surface acoustic wave oscillator for providing phase coherent, pulsed RF signals having a determined RF carrier frequency, pulse repetition frequency, and pulse width, comprising:

signal shaping means, having a gate input for receiving gate signals and an RF input for receiving input RF signal pulses of a determined RF carrier frequency, for providing, in response to each input RF signal pulse presented simultaneous with the presence of a gate signal at said gate input, and output RF signal pulse having an increased harmonic frequency content and equal carrier frequency;

surface acoustic wave (SAW) delay line means, connected for response to said signal shaping means, for providing a signal propagation time delay to each of said output RF signal pulses from said signal shaping means, said propagation time delay being substantially equal to the reciprocal of the RF signal pulse repetition frequency; and

amplifier means, connected for response to the output of said SAW delay line means, for providing amplification of each RF signal pulse from said delay line means, said amplifier presenting the amplified RF signal pulses to said RF input of said signal shaping means, said amplifier providing in combination with said signal shaping means and said delay line means, a closed loop regenerative RF signal path having a determined frequency bandwidth and a minimum regenerative RF signal path gain equal to the sum of the regenerative RF signal path losses; and

signal synchronizing means, responsive to the RF signal pulses in said regenerative RF signal path, for providing a gate signal in response to each of said RF signal pulses, said gate signals having a pulse repetition frequency equal to that of the RF signal pulses, said signal synchronizing means presenting each of said gate signals to said gate input of said signal shaping means.

4,085,389
AMPLITUDE MODULATION CIRCUIT

Masahiro Kuroda, and Hiromitsu Yoshimura, both of Tokyo, Japan, assignors to Anritsu Electric Company Limited, Tokyo, Japan

Filed Feb. 2, 1977, Ser. No. 764,791
Claims priority, application Japan, Sep. 29, 1976, 51/117017
Int. Cl.[2] H03C 1/40
U.S. Cl. 332—31 T 7 Claims

1. An amplitude modulation circuit having a D.C. voltage source and comprising:

a modulated stage adapted to receive a carrier wave;

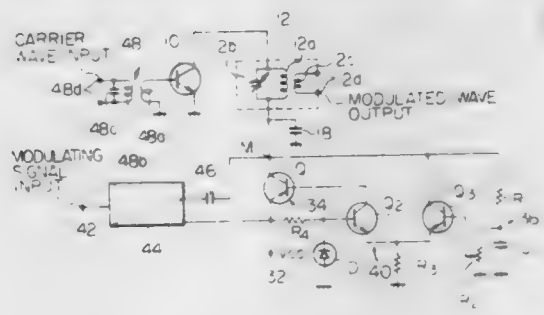
a resonant circuit connected at one end thereof to said modulated stage to provide a modulated carrier wave;

a modulator connected to the other end of said resonant circuit to apply thereto a modulating signal;

a voltage regulator connected between said D.C. voltage source and the other end of said resonant circuit to regulate a D.C. voltage applied to said resonant circuit at a predetermined constant level; and

a coupling capacitor connected between said modulator and the otheer end of said resonant circuit;

said voltage regulator including control means having its input coupled to said D.C. voltage source and its output coupled to the other end of said resonant circuit, an error amplifier to generate a control signal when a potential difference exists between the output of said control means

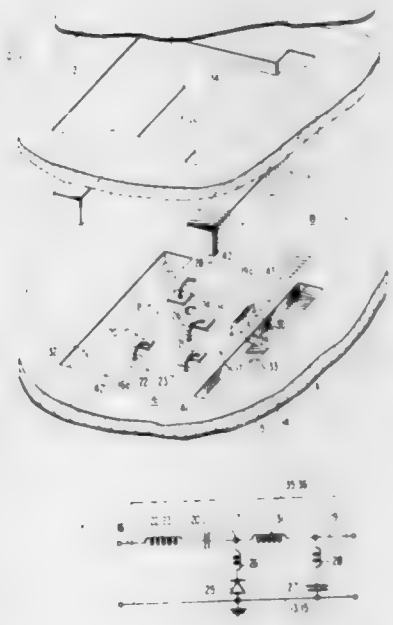


and said predetermined constant level, and a low pass filter connected between the output of said voltage regulator and an input of said error amplifier and having a cut-off frequency selected below a lower limit of a frequency band of the modulating signal, said control means being operative in response to said control signal to zero the potential difference for thereby regulating the D.C. voltage applied to the other end of said resonant circuit to said predetermined constant level when said frequency band is below said cut-off frequency and operative to provide high impedance for the modulating signal when said frequency band exceeds beyond said cut-off frequency of said low pass filter.

4,085,390
SYMMETRICAL STRIPLINE PACKAGE

Arthur Frederick Standing, Rockville, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Continuation-in-part of Ser. No. 661,596, Feb. 26, 1976, abandoned. This application Sep. 9, 1977, Ser. No. 831,826
Int. Cl.[2] H01P 3/08, 5/08
U.S. Cl. 333—33 12 Claims



1. A microwave package which provides symmetrical ground currents when discrete components are used in a stripline circuit, comprising:

a first printed circuit board formed of a first dielectric material and having a continuous first ground plane on one surface and a printed circuit on the opposite surface;

at least one discrete component electrically coupled to said printed circuit;

a second printed circuit board formed of a second dielectric material and having a continuous second ground plane on one surface a portion of said second dielectric material being cut away to expose said second ground plane; and

first and second metal blocks each having one cross-sectional dimension equal to the combined thicknesses of said first and second dielectric materials, said first and second dielectric materials having apertures wherein which expose said first and second ground planes, respectively, on either side of and adjacent the printed circuit where said discrete component is connected, said metal blocks being located within said apertures and contacting said ground planes with the exposed surfaces of said first and second dielectric materials in facing relation to one another, said cut away portion of said second dielectric being entirely disposed between said metal bars to form, in conjunction with said first printed circuit conductor, said first dielectric, said metal bars and said ground planes, a microstrip circuit housed within a screened enclosure.

4,085,391

MICRO-STRIP TO A SLOTTED LINE TRANSDUCER

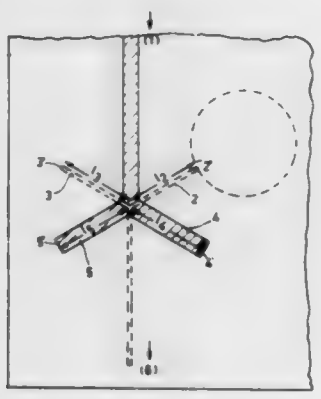
Burkhard Schiek, Halstenbek, Germany, and Frans Christiaan De Ronde, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 7, 1976, Ser. No. 730,163

Claims priority, application Germany, Oct. 18, 1975, 2546836

Int. Cl.[2] H01P *5/08*

U.S. Cl. 333—33 **2 Claims**



1. A planar transducer for microwaves from a micro-strip line to a slotted line, wherein on one side of a dielectric substrate there is a microwave strip line junction in the form of a "Y," one strip line branch being short-circuited, the other strip line branch being open, and that at the other side of the substrate there is a slotted line junction in the form of an oppositely directed "Y," one slotted line branch being open, the other slotted line branch being short-circuited, and wherein the centres of the Y-structures coincide.

4,085,392

REED SWITCH CONSTRUCTION

Laimons Lacis, Bloomfield, and Steven Horvath, Irvington, both of N.J., assignors to Gordos Corporation, Bloomfield, N.J.

Filed Jan. 14, 1976, Ser. No. 648,861

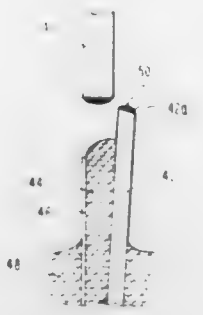
Int. Cl.[2] H01H *1/08*

U.S. Cl. 335—58 **3 Claims**

1. A reed switch employing elongated magnetic elements of conductive, magnetic material,

rigid non-magnetic, non-conductive enclosure through which said magnetic elements extend and by which said magnetic elements are supported in predetermined non-aligned position relative to each other, at least one of which magnetic elements is movable, such that in the presence of a magnetic field said magnetic elements will move to a magnetic reluctance minimizing position in which position said magnetic elements are at least in part aligned but not contacting, the space between the unsupported ends of the magnetic elements when aligned being sufficiently small to cause capillary attraction of conductive liquid into said space,

a conductive liquid within said envelope and a reservoir therefor, and



an elongated member supported in side-by-side relationship with said at least one movable magnetic element in position to draw said conductive liquid from the reservoir into a space between said elongated member and said movable magnetic element and positioned to squeeze said conductive liquid toward the end of said magnetic element which the movable magnetic element is moved into alignment with the other magnetic element such that said conductive liquid will be drawn into the space between the ends of the magnetic elements by capillary attractions in said aligned position.

4,085,393

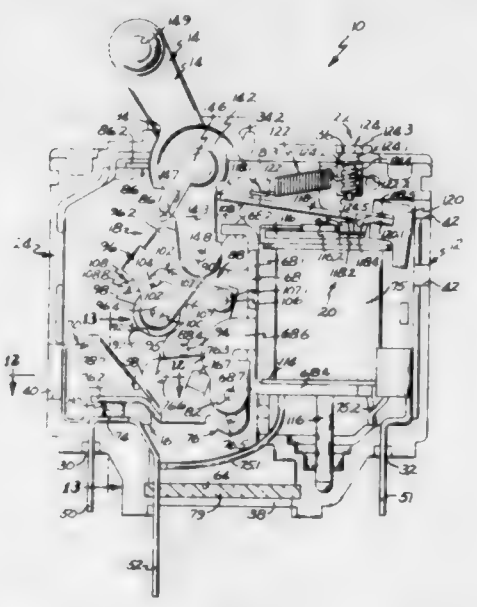
CIRCUIT BREAKER

Aime J. Grenier, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1976, Ser. No. 755,515

Int. Cl.[2] H01H *73/08*

U.S. Cl. 335—202 **17 Claims**



1. A circuit breaker comprising a housing, contact means movable in the housing between an open circuit position and a closed circuit position, means biasing the contact means to said open circuit position, control means operable for normally holding the contact means in said closed circuit position, said control means having a tripping portion to be moved for permitting the contact means to move to said open circuit position in response to said contact biasing means, a magnetic actuator coil, a frame of magnetic material forming a magnet pole face, said frame supporting the coil to be responsive to conditions in the breaker circuit for establishing a magnetically attracting

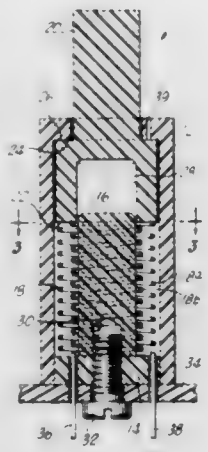
force at said pole face corresponding to conditions in said breaker circuit, first abutment means on said housing engaging the frame to mount the frame with said pole face precisely positioned in the housing, an arm magnetically movable from a rest position spaced from said pole face to an actuating position engaging said pole face on the occurrence of selected conditions in the breaker circuit for moving the tripping portion of the linkage means to permit automatic opening of the breaker circuit on the occurrence of said selected circuit conditions, means biasing the arm to said rest position, and second abutment means on the housing engaging the arm to mount the arm in the housing in a precise position relative to said pole face for pivotal movement between said rest and actuating positions.

4,085,394

CONTACTLESS KEY SWITCH

Lawrence P. Weisenburger, Coeur D'Alene, Id., assignor to Clare-Pendar Co., Post Falls, Id.

Filed Oct. 14, 1976, Ser. No. 732,377
Int. Cl.[2] H01F *21/00*
U.S. Cl. 336—20 **8 Claims**



1. A variable inductance key switch assembly for use with an inductance responsive circuit comprising:

a push button actuating element digitally operable to at least a first undepressed position and a second depressed position;

variable inductor means for resiliently biasing said push button actuating element in said first undepressed position and for providing a first inductance value when said push button actuation element is in said first undepressed position and a second inductance value when said push button actuator is in said second depressed position, said variable inductor means including a compressible coil spring fabricated from a resilient electrically conductive material coupled to said push button actuating element and exerting a resilient biasing force on said push button actuating element for biasing said push button actuating element in said first undepressed position, said push button actuating element being digitally movable to said second depressed position against the resilient biasing force exerted by said coil spring and operative to compress said coil spring to alter the inductance of said coil spring, said coil spring having an inductance value related to the position of said actuating element;

means for supporting said push button actuating element and said coil spring; and

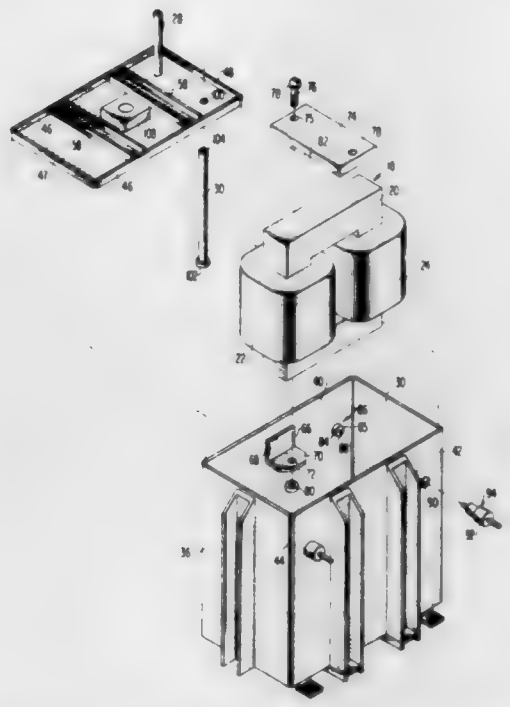
means for providing an electrical connection to said coil spring.

4,085,395

HIGH VOLTAGE TRANSFORMER PACKAGE

Wilfred Jerome Billerbeck, Silver Spring, and Nelson Mortimer Jacobus, Jr., Kensington, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Feb. 3, 1977, Ser. No. 765,329
Int. Cl.[2] H01F *27/02, 27/08*
U.S. Cl. 336—61 **9 Claims**



1. In a high voltage transformer package comprising:

a metal case,

a transformer coil and core assembly fixedly positioned within said case,

a dielectric liquid media within said sealed case with said transformer assembly immersed therein, and

terminals electrically connected to said transformer coils and electrically insulatively and sealably projecting through the walls of said case,

the improvement wherein:

said case comprises thin-wall sheet steel in the form of a closed box having longitudinally opposed end walls, laterally opposed sidewalls, and a bottom wall, said walls having their confronting edges welded together, and a cover welded about its edges to the top edges of said case sidewalls and said end walls,

a plurality of reinforcing members comprising integral angled base and fin portions mechanically fixed by their base portions at positions internally of the case corners to at least some of the exterior walls of said box to resist internal dielectric liquid pressure loading of the thin-wall sheet steel case wall during transformer operation under varying ambient conditions;

and wherein at least some of said reinforcing members are formed of sheet metal which is softer and of higher thermal conductivity than the thin-wall sheet steel forming said case box and cover to facilitate heat dissipation of said transformer package.

4,085,396

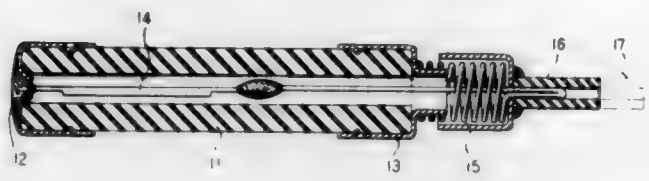
ELECTRIC FUSE

Jacques Armand Augis, Pickerington, Ohio; Ho Sou Chen, Warren, and Harry John Leamy, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 27, 1976, Ser. No. 726,602
Int. Cl.[2] H01H *85/04*
U.S. Cl. 337—290 **6 Claims**

1. An electric fuse comprising an elongated metallic fuse

element which is electrically connected at its extremities to first and second contact means, characterized in that said fuse



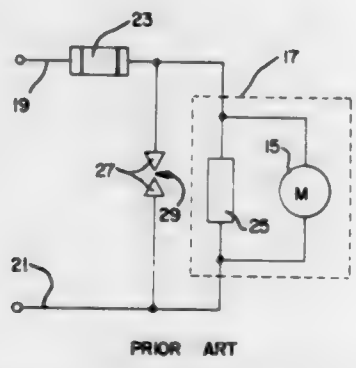
element is in an essentially glassy metallic state.

4,085,397

ELECTRICAL SWITCHING DEVICE FOR THERMAL AND OVERVOLTAGE PROTECTION

Charles Yagher, Jr., Centerville, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 31, 1977, Ser. No. 801,747
Int. Cl.[2] H01H *37/76*
U.S. Cl. 337—407 **8 Claims**



PRIOR ART

1. A normally open, temperature-sensitive, electrical switching device, having first and second current carrying electrical leads, for completing an electrically conductive circuit between the first and second electrical leads when the temperature of the switching device exceeds a predetermined level and for providing an air gap which permits current to flow between first and second current carrying electrical leads when the voltage across said first and second electrical leads is sufficient to cause arcing across said air gap, comprising:

a first electrically conductive electrode means including a case having a first end defining an opening into a central cavity and a second end which is closed, said first electrode means being electrically connected to said first electrical lead,

a second electrically conductive electrode means electrically connected to said second lead,

nonconductive means for mounting said second electrode means such that it extends into said central cavity, said nonconductive means sealing said opening into said cavity,

a heat fusible, electrically conductive pellet positioned in said central cavity in electrical contact with said second electrode means; and

insulator means, positioned between said conductive pellet and said first electrode means, for holding said pellet out of electrical contact with said first electrode means and defining an air gap therebetween of predetermined dimension,

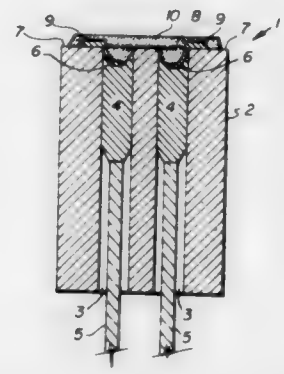
whereby an open electrical circuit will be maintained between said first and second electrical leads until said predetermined temperature level is reached and said fusible pellet melts, forming an electrical connection between said first and second electrode means, or until the voltage across said air gap exceeds the voltage level required for arcing thereacross.

4,085,398

THIN FILM RESISTANCE TEMPERATURE DETECTOR

Robert W. Bertram, Burlington; Graham Norgate, Oakville, and Robert Isles, Mississauga, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Jun. 9, 1977, Ser. No. 805,134
Claims priority, application Canada, Jun. 30, 1976, 256112
Int. Cl.[2] H01C *10/16*
U.S. Cl. 338—25 **12 Claims**



1. A resistor temperature detector comprising:

substrate means of refractory dielectric material having at least two spaced holes through the length of the substrate means;

plug means of electrical conducting alloy fixed in each of the holes in proximity to one end surface of the substrate means, the alloy including a predetermined metal;

a lead wire made of the predetermined metal located within each of the holes from the other end surface of the substrate means and connected to the plug means; and

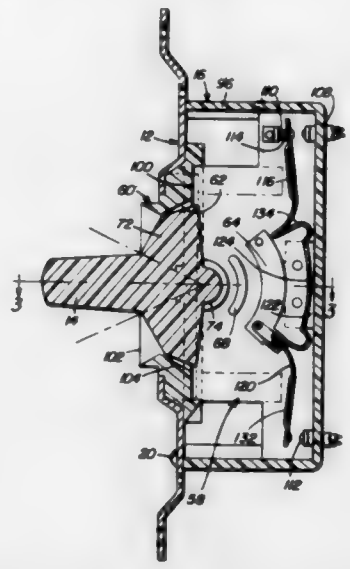
film means of temperature dependent resistor material deposited on the one end surface of the substrate means and connected to the plug means.

4,085,399

ELECTRICAL POWER CONTROL ASSEMBLY

Bill R. Wall, Bulverde, Tex., assignor to Power Controls Corporation, San Antonio, Tex.

Continuation-in-part of Ser. No. 579,255, May 20, 1975, Pat. No. 3,990,033. This application Jan. 8, 1976, Ser. No. 647,640
Int. Cl.[2] H01C *7/10*
U.S. Cl. 338—200 **23 Claims**



1. In an electric power control device having a control circuit which includes a resistive element and a pair of switch contacts for respectively shunting and opening the control circuit, the improvement comprising an electrically non-conductive housing, a circuit board positioned within the housing on which said control circuit is mounted, means mounting the resistive element for exposure on one side of said circuit board along a track path, a common switch operating member

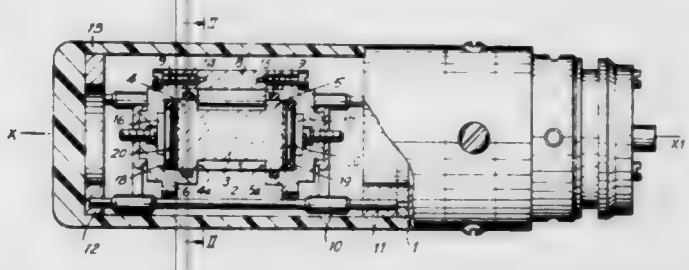
mounted on the circuit board and carrying said pair of switch contacts in spaced relation to each other, a manual controller, means pivotally mounting the manual controller for displacement between limit positions in which the common operating member is engaged to alternately shunt and open the control circuit, and wiper means mounted on the controller for contact with said resistive element along the track path during displacement of the controller between said limit positions to vary the power supplied to a load.

4,085,400

UNDERWATER PIEZOELECTRIC TRANSDUCERS

Philippe Henri Maurice Cluzel, and Michel Georges Quivy, both of Six Fours les Plages, France, assignors to Etat Francais, Paris, France

Filed Apr. 20, 1976, Ser. No. 678,724
Claims priority, application France, Apr. 24, 1975, 75 12745
Int. Cl.[2] H04B *13/00*
U.S. Cl. 340—10 **9 Claims**



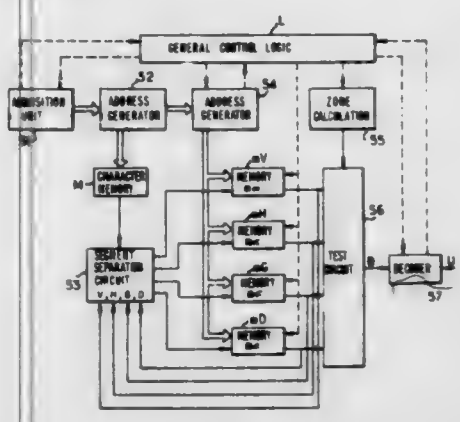
1. A process for emitting or receiving acoustical waves by means of a piezoelectric transducer comprising: a piezoelectric element having an electrical axis, two ends axially opposite and perpendicular to said axis, and an outer and lateral surface parallel to said axis, and two rigid discs each having an inner face and an outer face planar and parallel with each other, the surface of the faces being greater than the cross section of said piezoelectric element by a plane perpendicular to said electrical axis, each of said discs being fastened to one end of said piezoelectric element by the inner face thereof, said process comprising exciting simultaneously said piezoelectric element in both transverse and longitudinal vibratory modes, the active surfaces being only said outer and lateral surface of said piezoelectric element, said inner faces of said disks extending outwardly beyond said lateral surface of said piezoelectric element, and decoupling acoustically said outer faces and said lateral surfaces of the two discs.

4,085,401

CHARACTER RECOGNITION SYSTEM

Alain Chehikian, Grenoble, and Gerard Bouvier, Sassenage, both of France, assignors to Agence Nationale de Valorisation de la Recherche, France

Filed Feb. 10, 1976, Ser. No. 656,905
Claims priority, application France, Feb. 14, 1975, 75 04584
Int. Cl.[2] G06K *9/12*
U.S. Cl. 340—146.3 AE **6 Claims**



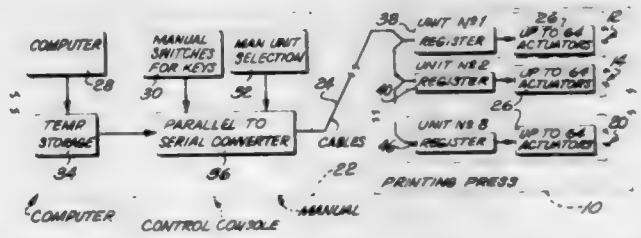
1. Character recognition system for processing binary data defining a character under the form of a block shaped area within which the character is contained in a smaller block shaped area, the block shaped area being divided into a plurality of rows of elemental areas arranged in matrix fashion, each elemental area having an address and corresponding to a binary data which defines a point of the character when the said binary data has a predetermined value, said system comprising: first circuit means for detecting along which of a plurality of directions the character is oriented at each of the respective points thereof; a plurality of memory means for separately storing the binary data which define those points of the character where the character is oriented along the said respective directions; second circuit means for defining the said smaller block shaped area and for defining, by zone addresses within said smaller block shaped area, a number of pluralities of zones of the said smaller block shaped area which equals the number of directions, each of said pluralities of zones covering the whole of the said smaller block shaped area; third circuit means for comparing the addresses of the zones of the respective pluralities to the addresses of the points contained in the respective memory means and for generating a predetermined binary variable for each zone each time addresses of points contained in one of said memory means coincide with the zone address; and fourth circuit means providing an identification of the character signal, as a function of the said predetermined binary variables.

4,085,402

MULTIPLEXING OF ACTUATOR CONTROL SIGNALS

Algirdas J. Krygeris, Richmond Heights, and John M. Manring, Cleveland Heights, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Continuation of Ser. No. 378,832, Jul. 13, 1973, abandoned. This application Jun. 2, 1975, Ser. No. 582,713
Int. Cl.[2] H04Q *9/00*
U.S. Cl. 340—163 **8 Claims**



1. Apparatus having a plurality of actuators, each comprising a movable mechanical part, said actuators being individually operable to vary an operating condition of the apparatus, said apparatus being arranged in a plurality of groups with each group having a plurality of said actuators therein and each of said groups having a respective binary data shift register with the respective shift register having data storage portions each of which correspond to an individual one of the actuators, each data storage portion being settable to selectively indicate movement of the respective actuator or no movement of the actuator, a control station remote from said actuators, a data transmission line for serially transmitting data to said shift registers from said control station and connected to each of said registers, addressing means for cyclically addressing each of said storage registers in sequence, register loading and control means associated with each of said shift registers and each connected to said addressing means and to said data transmission line for loading the associated shift register when addressed by said address means and operable to set said register to indicate no movement of the corresponding actuators in the absence of data on said data transmission line for the shift register, data means at said remote control station for establishing command data for commanding movement of one or more selected actuators within a selected group during each addressing cycle while such command data is established, and transmitting means operating in synchronism with said addressing means to transmit established command data during each addressing cycle when the selected register is addressed.

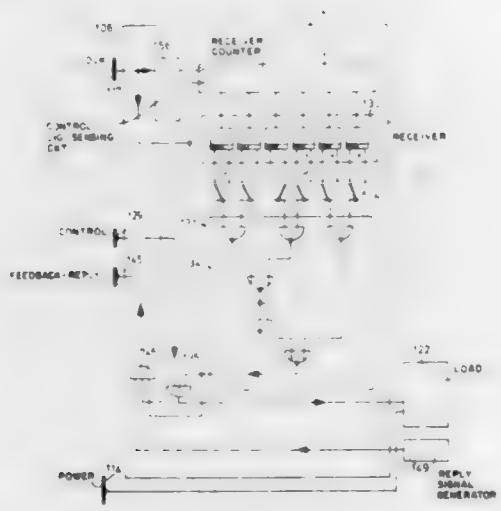
whereby said addressing means and said transmitting means and said loading and control means are operable to refresh or change the data in the selected register during each cycle of said addressing means independently of sensing the position or movement of the actuators, and means connecting each of said actuators of a group to its respective data portion of the corresponding shift register for effecting a fixed increment of movement of the actuator during the cycle time between successive addressing of the shift register by said addressing means when commanded by the data in the respective data storage portion.

4,085,403

COMBINED ON-BOARD REMOTE CONTROL ENERGY SUPPLY DISTRIBUTION AND SIGNALING SYSTEM, PARTICULARLY FOR AUTOMOTIVE VEHICLES

Werner Meier; Walter Hofer, both of Schwabach; Georg Haubner, Berg, and Albert Weckenmann, Oberasbach, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 13, 1976, Ser. No. 648,783
Claims priority, application Germany, Jan. 30, 1975, 2503679
Int. Cl.[2] H04Q *11/04*
U.S. Cl. 340—168 R **26 Claims**



1. Remote control system for selection of at least one of a plurality of selectively switchable loads (122) from a central station (110) comprising

a plurality of selectively operable load control switch means (123) to selectively address selected loads and command occurrence of a switching function;

a bus system (106) connected to said central station (110) having a power bus (114), a clock bus (117), a load switching control bus (129), and a load acknowledge feedback and reply bus (145);

a plurality of load receivers (111) connected to respective loads (122) and to the bus system (106) to effect selectively connection of selected loads to the power bus (106) when connection is selectively commanded by said load switch means, wherein

the central station (110) comprises signal generator means (112, 155) connected to the clock bus (117) of the bus system (106) and providing

(a) a group sequence or cycle of clock pulses collectively forming a selection cycle, and

(b) a control signal separating the selection cycles and having a characteristic different from the clock pulses of the selection cycles;

switching control means (115) connected to and controlled by said switch means (123) selecting and segregating at least one specific pulse within the selection cycle, as determined by the setting of the switch means (123) and applying salt at least one selected specific pulse to the switching control bus (129);

and load acknowledge decoding means (144);

and wherein said receivers (111) each comprise

a receiver counter (130) connected to the clock bus (117) of the bus system (106) and stepping in synchronism with the clock pulses in the selection cycles to progressively count the pulses within a selection cycle;

a decoding circuit (131, 135) connected to the receiver counter (130), the decoding circuit being connected to recognize selected count states or numbers of the receiver counter (130), which selected counter states or numbers are associated with predetermined ones of the receivers and if, and only if, there is coincidence between said selected count of the receiver counter (130) stepping in synchronism with the clock pulses during a selection cycle, and occurrence of a signal on the load switching control bus (129), as applied by said switching control means (123), causing a switching function of the respective switchable load to occur;

electrical reply signal generator means (149) generating a signal to be indicative of response by the respective load to the commanded switching function;

and a reply transmitting logic means (146) connected to the reply bus (145) and to the reply signal generating means (149) providing and applying a switching function acknowledgment signal to said load acknowledge feedback and reply bus (145) synchronously with the occurrence of said at least one respective specific pulse;

and wherein the load acknowledge decoding means (144) of the central station (110) includes coincidence means (121) connected to and controlled by the load acknowledge feedback and reply bus (145) and further connected to and controlled by the switching control means (115) and said load control switch means (123) to be energized by said at least one specific selected pulse from said load switching control means (123) as determined by the setting of the load control switch means (123), said load acknowledge decoding means (144) providing an acknowledgment indication output simultaneously with at least one selected clock pulse of the respective selection cycle;

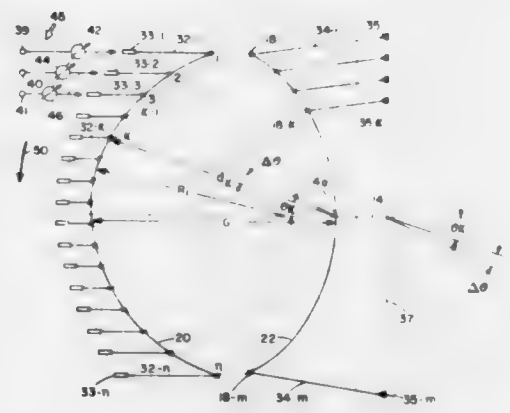
and reply sensing means (148) connected to and controlled by said load acknowledge decoding means (144) and responsive to the acknowledgment indication output to sense that an addressed load has responded by carrying out said commanded switching function.

4,085,404

PHASING OPTIMIZATION AT THE FEED PROBES OF A PARALLEL PLATE LENS ANTENNA

Janice Anne Gallant, Edgewood, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 20, 1976, Ser. No. 752,658
Int. Cl.[2] H01Q *14/06*
U.S. Cl. 343—754 **6 Claims**



1. A radar antenna system having a microwave lens and including a linear array of radiating elements for radiating energy into space comprising a parallel plate wave conducting means having a longitudinal axis and including a plurality of feed probes located along the focal arc of said lens, a plurality of output probes located along the output contour of said wave conducting means and coupled to said radiating elements, a

source of exciting energy for said feed probes and means connecting said source of exciting energy to said feed probes and having an electrical length equal to:

$$A + \frac{2\pi}{\lambda}(d_k - G)$$

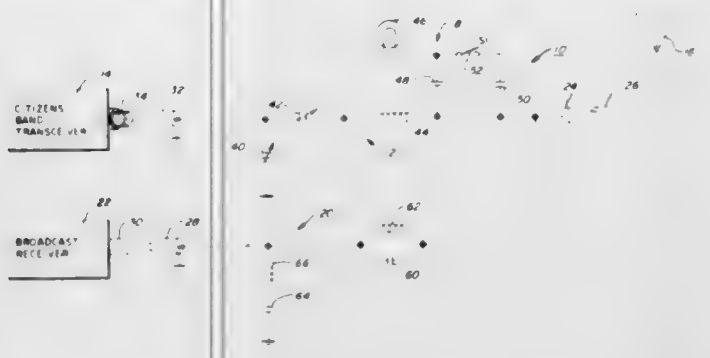
where λ is the wavelength of said exciting energy, G is the linear distance between the intersections of said longitudinal axis with said focal arc and said output contour, d_k is the linear distance between the kth feed probe and the intersection of said longitudinal axis and said output contour, and A is a constant electrical length.

4,085,405

ANTENNA MATCHING NETWORK

Edson L. Barlow, Rochester, Mich., assignor to MHz Enterprises, Inc., Utica, Mich.

Filed Nov. 9, 1976, Ser. No. 740,313
Int. Cl.² H01Q *1/50, 9/00*
U.S. Cl. 343—858 **3 Claims**



1. A matching network for coupling a broadcast receiver and a communications transceiver having a transmitter and a receiver to a common automotive broadcast antenna, comprising:

a tunable matching section including at least a series arm electrically connectable between the communications transceiver and the broadcast antenna;

an indicator light electrically coupled to said series arm, said indicator light being responsive to the flow of power from said transceiver to said antenna and indicating the state of tune of said matching section;

a blocking circuit connectable between said antenna and said broadcast receiver, said blocking circuit being operative to attenuate the flow of signals having frequencies within the operating frequency range of said transmitter while permitting the flow of broadcast signals from said antenna to said broadcast receiver;

a housing surrounding said matching network and means extending from said housing for disconnectably electrically connecting said matching network to said broadcast antenna, said broadcast receiver and to said transceiver, said indicator light being affixed to said housing in a manner rendering it visible from outside of said housing and said matching section being tunable from outside of said housing;

a sensitivity switch electrically coupled to said indicator light, said sensitivity switch being operative from outside of said housing to increase the sensitivity of said indicator light to the flow of power between said transceiver and said antenna to thereby increase the brightness of said indicator light; and

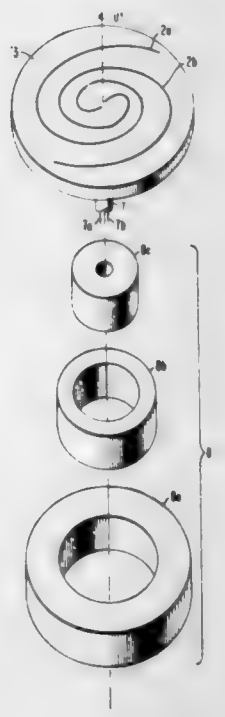
a first capacitor coupling said matching network to said indicator light and a second capacitor coupled to said sensitivity switch, said sensitivity switch being operative to connect said second capacitor in a parallel circuit with said first capacitor to increase the sensitivity of said indicator light.

4,085,406

SPIRAL ANTENNA ABSORBER SYSTEM

John Michael Schmidt, and Wallace Leon Snow, both of Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1976, Ser. No. 734,851
Int. Cl.² H01Q *1/36, 1/42*
U.S. Cl. 343—895 **6 Claims**



5. Unidirectional spiral antenna apparatus comprising:

a pair of printed circuit conductors configured as a spiral antenna circuit,

a circular dielectric substrate having said pair of printed circuit conductors mounted thereon,

electric connector means coupled to said printed circuit conductors,

a cylindrical conductor reflector cavity having an open end juxtaposed to said substrate, and

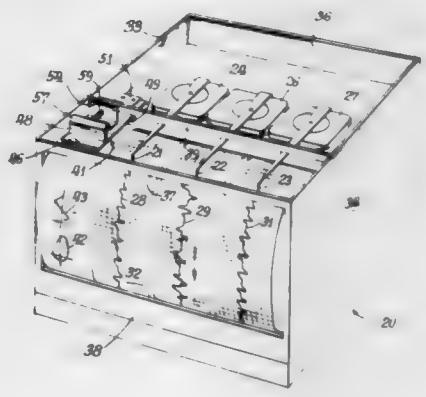
a cylindrical radiation absorber system disposed in said cavity and having a predetermined radial variable radiation absorption density characteristic.

4,085,407

DATA PLOTTER

Robert A. Stratbucker, and John S. Hagood, both of Omaha, Nebr., assignors to Health Technology Laboratories, Inc., Omaha, Nebr.

Filed Apr. 28, 1976, Ser. No. 681,138
Int. Cl.² G01D *9/30;* A61B *5/04*
U.S. Cl. 346—33 ME **13 Claims**



1. In a multi-channel chart recorder receptive of and operable to record first and second timevariant analog scalar components of ventricular QRS complex input vector data signals on

a moving recording medium, a data plotter for printing QRS vector loops comprising:

stationary printing means having a series of selectively actuable printing elements spaced transversely to the longitudinal axis of said medium;

means for mounting said printing means on the recorder in printing contact with said medium;

means for selecting a time sample of said data signals;

means for storing each of said first and second data for said selected sample as a time sequential series of values;

means for converting said first and second analog scalar components into integer data form in correspondence with said elements;

means for arranging said stored first data as a numerically ordered series of values;

sorting means for incrementally varying said ordered first data and for identifying for each value thereof the time-associated values of said stored second data; and

means for actuating said printing elements corresponding to said identified second data as said medium moves in increments corresponding to value variations of said stored first data.

4,085,408

LIQUID JET RECORDING APPARATUS

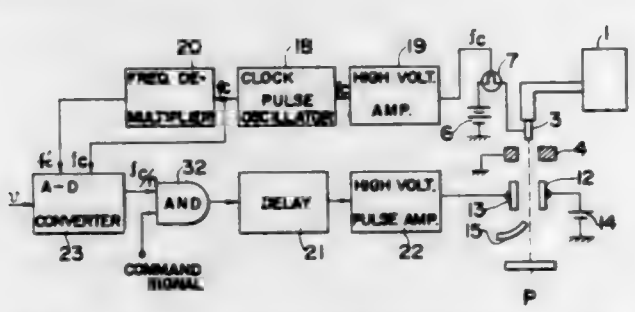
Masayuki Muto, Kawasaki; Norio Tashima, Tokyo; Shozo Kaieda, Yokohama, and Kuniaki Kamimura, Atsugi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 495,540, Aug. 6, 1974, abandoned. This application Feb. 5, 1976, Ser. No. 655,614

Claims priority, application Japan, Sep. 7, 1973, 48-105327; Sep. 10, 1973, 48-102449; Sep. 10, 1973, 48-106389; Sep. 21, 1973, 48-106733; Oct. 30, 1973, 48-122522; Nov. 10, 1973, 48-126421

Int. Cl.² G01D *15/18*

U.S. Cl. 346—75 **15 Claims**



1. In an X-Y plotter of the ink jet type including a recording head including a nozzle and a recording medium relatively movable with respect to each other; means for producing a jet of liquid ink discharged from said nozzle along a path toward said recording medium; a gutter disposed adjacent said path; and deflection means adjacent said path for causing a portion of said jet to deflect from said path and pass to said gutter; the improvement comprising:

said jet producing means comprising a ring electrode spaced from and coaxially arranged with respect to an exit end of said nozzle, and means for applying a pulsating voltage between said nozzle and said ring electrode, thereby producing droplets of ink;

means for detecting the relative velocity of movement between said recording head and said recording medium and for generating an electric signal representative thereof; and

said means for applying a pulsating voltage between said nozzle and said ring electrode including pulse voltage applying means, connected to said velocity detecting means and to said deflection means, for receiving said signal and for generating and applying voltage pulses to said deflection means for thereby deactivating said deflection means to prevent deflection of said ink droplets to said qutter and to allow said ink droplets to pass to said recording medium, said voltage pulses being at a frequency proportional to said relative velocity and at times synchronized with the passage of ink droplets past said deflection means, said frequency being $1/n$ times the frequency of said pulsating voltage applied between said nozzle and said ring electrode, wherein n is an integer, and whereby said deflection means is deactivated at a frequency proportional to said relative velocity and, whereby a uniform ink deposit on said recording medium is achieved.

4,085,409

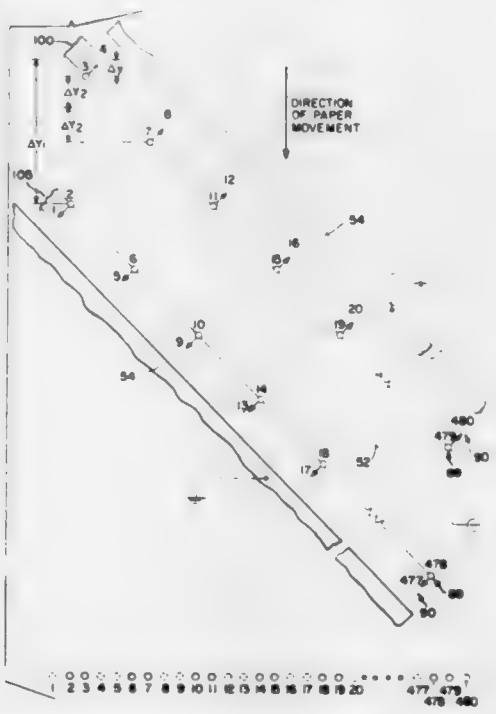
METHOD AND APPARATUS FOR INK JET PRINTING

Suresh C. Paranjpe, Xenia, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 1, 1976, Ser. No. 691,854

Int. Cl.² G01D *15/18*

U.S. Cl. 346—75 **12 Claims**



1. An ink jet printer for printing on a moving web upon which are defined a plurality of print positions across the width of the web, adjacent print positions being laterally displaced from each other by a minimal distance such that printing may be accomplished without interruption across the web, comprising:

means for generating a row of drop streams, said row being in a line which is oblique to the direction of web movement,

means for selectively charging each drop in said drop streams to one of a plurality of charge levels,

a catcher extending parallel to said row, and

means for generating a drop deflecting field substantially perpendicular to said row and of appropriate magnitude that the drops in each of said drop streams may be directed to strike the web at one of a plurality of print positions or may be sufficiently deflected to strike said catcher, each drop stream servicing a plurality of adjacent print positions across the width of the web.

4,085,410

PHOTOFLASH MOUNTING AUTOMATIC LIGHT CONTROL CAMERA

Keisuke Maeda, Osaka, and Akira Yamanaka, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 20, 1976, Ser. No. 688,218

Claims priority, application Japan, May 30, 1975, 50-65931

Int. Cl.² G03B *7/18*

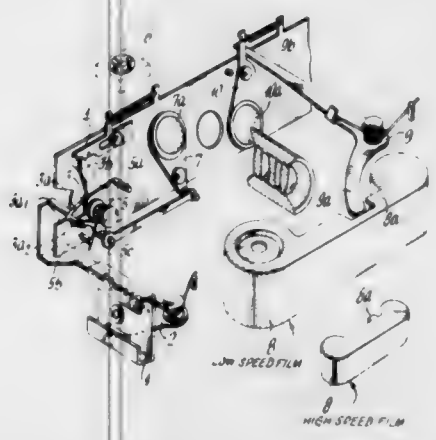
U.S. Cl. 354—21 **11 Claims**

1. A photographic camera having a first mount for releas-

ably accepting a photoflash unit with a predetermined high guide number and a second mount for releasably accepting a photoflash unit with a predetermined low guide number, said camera including an automatic light control which comprises:

a first sensor means being displaceable upon mounting of a photoflash unit with said predetermined high guide number on said first mount; and

a first luminosity attenuating filter operatively connected



with said first sensor means and being displaceable between a non-attenuating position displaced from the optical path of the camera and an attenuating position within said optical path in such a manner that the displacement by said first sensor means of the mounting of a photoflash unit with said predetermined high guide number and the consequent displacement of said first sensor means displaces said luminosity attenuating filter from said non-attenuating position to said attenuating position.

4,085,411

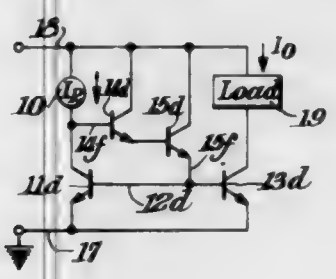
LIGHT DETECTOR SYSTEM WITH PHOTO DIODE AND CURRENT-MIRROR AMPLIFIER

Robert Charles Genesi, Sterling, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 16, 1976, Ser. No. 677,573

Int. Cl.² G03B *7/08*; H01J *39/12*; H01L *29/72*

U.S. Cl. 354—51 **16 Claims**



1. A light detector system comprising a silicon photo-diode and a semiconductor integrated current-mirror circuit to provide amplification of the photo current generated by said photo-diode, said current-mirror amplifier circuit having at least one stage comprising a pair of d.c. power supply terminals, a bipolar output transistor and a bipolar input device having at least one p-n junction, said photo-diode being directly connected between said input device and one of said power supply terminals forming a series circuit wherein said photo-diode and said p-n junction are series connected with opposite polarities between said power supply terminals, the emitter of said output transistor being connected to the other of said power supply terminals, the base-emitter junction of said output transistor being directly connected in parallel with said at least one junction of said input device and in the same polarity, the area of said base-emitter junction of said output transistor being greater than the area of said at least one junction of said input device to provide a current gain in said at least one stage greater than 1.0, a circuit connection being made between the collector of said output transistor and said one terminal of said d.c. power supply to provide a path through which said amplified photo current will flow.

4,085,412

DEVICE FOR RECORDING INFORMATION ON A FILM IN A PHOTOGRAPHIC CAMERA

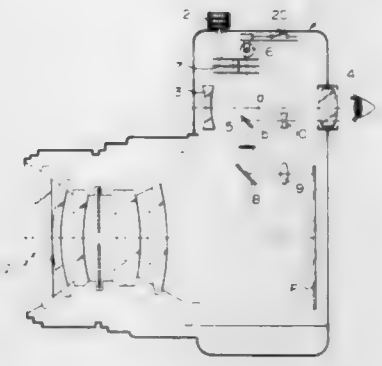
Takeshi Yoshino, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 3, 1976, Ser. No. 654,757

Claims priority, application Japan, Feb. 4, 1975, 50-16683[U]; Feb. 17, 1975, 50-21674[U]; Aug. 20, 1975, 50-100906

Int. Cl.² G03B *17/24*

U.S. Cl. 354—106 **25 Claims**



1. A device for recording information on part of a film loaded in a camera in addition to the image of an object to be photographed on the film comprising:

a light source provided in the camera,

information carrying means located in the camera at a position to receive the light from said light source, said information carrying means carrying thereon information to be recorded on a part of a film loaded in the camera,

a viewfinder system provided in the camera including an eyepiece and an objective,

a half-mirror disposed between said eyepiece and said objective to partly reflect the light from said information carrying means directly toward said eyepiece of the viewfinder to form a first light beam for viewing information and partly transmit therethrough the light from said information carrying means to form a second light beam for recording information,

a mirror located in the optical path of the second light beam to reflect the light from the half-mirror toward a part of a film in the camera,

a focusing optical element provided in the optical path of the second light beam for focusing an image of the information on the film,

a first light intercepting shutter means provided in the camera to prevent the light from said image of the object to be photographed from reaching the film when recording of the object image is not desired; and

a second light intercepting shutter means is provided in the second light beam to prevent the light from the half-mirror from reaching the film when the recording of the information is not desired.

4,085,413

APPARATUS FOR RETARDING CAMERA SHUTTER RELEASE

Tohru Karikawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1976, Ser. No. 749,564

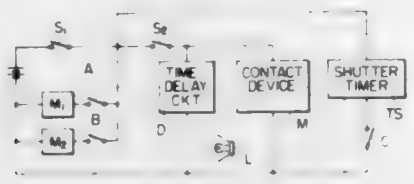
Claims priority, application Japan, Dec. 12, 1975, 50-167949[U]

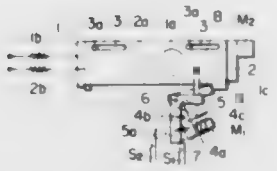
Int. Cl.² G03B *9/64*

U.S. Cl. 354—137 **4 Claims**

1. An apparatus for retarding the release of a camera shutter, comprising:

(a) movable, spring biased shutter means,
(b) a pivotal locking lever for holding the shutter means in a cocked position,
(c) a pivotal release lever,
(d) a spring coupling the locking lever to the release lever,
(e) an electro-magnet for preventing the rotation of the locking lever when energized,





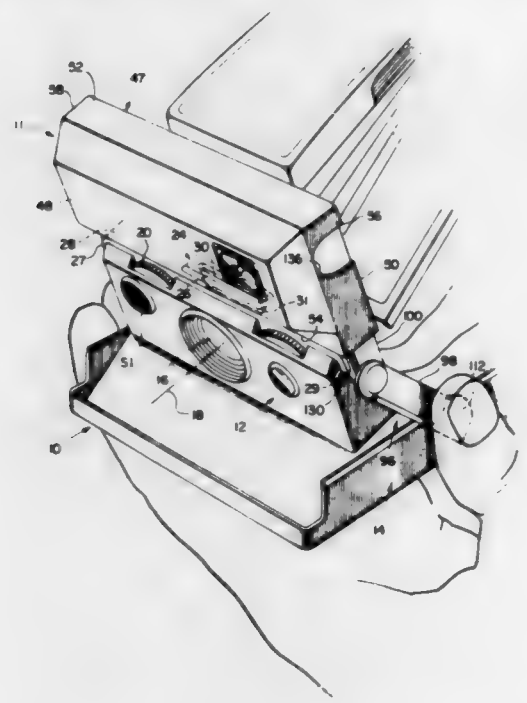
(f) a first switch operable in response to the initial movement of the release lever for energizing the electro-magnet,
(g) a time delay circuit, and
(h) a second switch operable in response to the further movement of the release lever for actuating the time delay circuit, whereby the output from the latter deenergizes the electro-magnet and the spring rotates the locking lever to release the shutter means.

4,085,414

ELECTRONIC FLASH APPARATUS WITH EXTENDABLE ON/OFF SWITCH CONTROL APPARATUS

John P. Burgarella, Sudbury; George Turner, Jr., Newton, and Robert L. Stephansky, Stoughton, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 10, 1976, Ser. No. 749,313
Int. Cl.[2] G03B *15/03, 17/02;* H01H *3/16*
U.S. Cl. 354—145 23 Claims



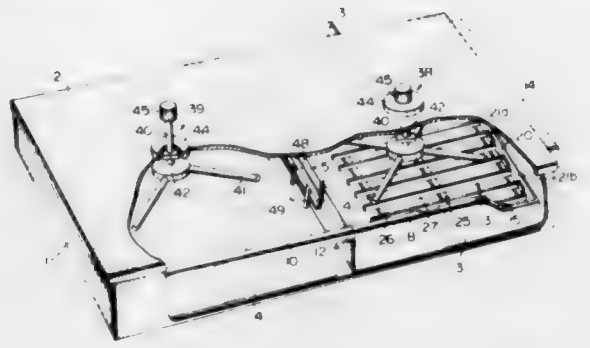
1. An electronic flash unit for use with a camera of the type which may be held by a user in a normally expected manner and which includes means for providing a flash fire trigger signal at an appropriate time during a photographic exposure interval together with connecting apparatus for accommodating the removable fixed connection of said flash unit with respect to the camera, said flash unit comprising:
a housing;
a storage capacitor;
a flash discharge tube;
means responsive to an applied voltage for charging said capacitor;
circuit means responsive to the trigger signal for discharging said capacitor through said discharge tube to produce an illuminating flash of light;
electrical connecting means for facilitating the electrical connection of said circuit means to the trigger signal providing means of the camera;
physical connecting means complementary to the camera connecting apparatus for facilitating the releasable fixed connection of said flash unit housing to the camera;
switch means connectable to a source of voltage for controlling the application of the voltage to said capacitor charging means; and
means selectively extendable from said flash housing and operatively associated with said switch means for controlling said switch means, said control means being extendable, subsequent to the fixed connection of said flash housing to the camera, into interfering relation with at least a portion of the area otherwise expected to be occupied by the user's hand when holding the camera in its normal manner, said control means thereby being extendable into position to be engaged by the user's hand when holding the camera and also being responsive to such engagement by the user's hand as to cause said switch means to apply voltage to said capacitor charging means.

4,085,415

PHOTOGRAPHIC PROCESSING APPARATUS

Masai Ikechi, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed May 6, 1976, Ser. No. 683,645
Int. Cl.[2] G03D *17/00, 13/02*
U.S. Cl. 354—316 7 Claims



1. A photographic processing apparatus comprising:
a casing,
developing means and fixing means in said casing,
carrier means in the form of a movable plate having a latticed framework for carrying a sheet of printing paper from said developing means to said fixing means,
means for moving said carrier means between said developing means and fixing means,
said plate having raised portions thereon for pushing a sheet on said plate forward when said carrier means is moved from said developing means to said fixing means,
guiding means for guiding said carrier means between said developing means and said fixing means, and
stopper means for catching the sheet of printing paper on said carrier means and causing the same to drop into said fixing means when said carrier means is returned from said fixing means back to said developing means.

4,085,416

APERTURE INTERLOCKING DEVICE FOR A SINGLE LENS REFLEX CAMERA OF THE INTERCHANGEABLE VIEWFINDER TYPE

Sunao Ishizaka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 9, 1976, Ser. No. 749,047
Claims priority, application Japan, Dec. 9, 1975, 50-150586
Int. Cl.[2] G03B *13/02*
U.S. Cl. 354—219 6 Claims



1. An aperture interlocking device for a single lens reflex camera wherein a pantograph mechanism has one lever biased in one direction within a viewfinder detachable with respect to the body of the camera is connected to an engaging portion of the aperture ring of the picture-taking lens during the mounting of the viewfinder to the camera body so that the aperture information of the picture-taking lens is transmitted to an exposure control device by displacement of the pantograph mechanism, the improvement comprising:

first guide means (12*a*, 20) for guiding said pantograph mechanism (9, 10, 11, 12, 13, 14);

a first pin (6) on one lever (11) of said pantograph mechanism and rotatable about the optical axis (1) of said picture-taking lens;

an engaging member (5) engageable with the engaging portion (3) of said aperture ring (2) and supported for rotation one said one lever (11) of said pantograph mechanism; and

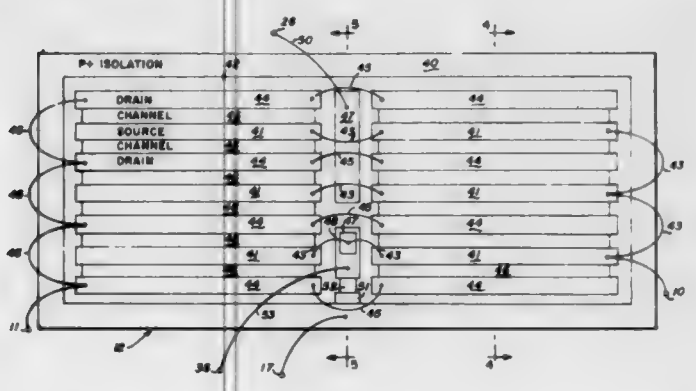
second guide means (7, 5*b*) for guiding said engaging member (5) so that the engaging member is rotated about said optical axis of said picture-taking lens.

4,085,417

JFET SWITCH CIRCUIT AND STRUCTURE

Sam S. Ochi, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 27, 1976, Ser. No. 754,482
Int. Cl.[2] H01L *27/02, 27/10, 27/04, 29/72*
U.S. Cl. 357—43 4 Claims



1. An integrated circuit combination including a switching JFET, a driver JFET, and a bipolar control transistor located in a common isolated tub, said integrated circuit comprising:

a semiconductor substrate of a first conductivity type;

an epitaxial layer of a second conductivity type deposited upon said substrate;

an isolation ring of said first conductivity type diffused completely through said epitaxial layer, thereby to definea said tub region of epitaxial layer isolated by the p-n junction thus created from the remainder of the structure;

a first series of elongated regions of said first conductivity type established in said tub extending from the surface of said epitaxial layer part way through the thickness thereof, and means coupling said first series together to establish the source electrode of said switching JFET;

a second series of elongated regions of said first conductivity type established in said tub extending to substantially the same depth as said first series and arranged to flank in parallel configuration said first series of elongated regions, and means coupling said second series together to establish the drain electrode of said switching JFET;

a third series of elongated regions of said first conductivity type estabished to extend a lesser distance into said epitaxial layer than said first and second series, said third series being arrayed to span the spacing between the parallel array of said source and said drain electrodes and to constitute the channel portion of said switching JFET;

a pair of diffused regions of said first conductivity type in said tub, extending sufficiently into said epitaxial layer to provide bipolar transistor base action, the first of said pair lying completely inside said isolation ring and the second overlapping said isolation ring to provide contact thereto, said pair being spaced apart to have parallel confronting edges of sufficient width to provide the desired channel width of said driver JFET, said pair being spaced apart by a distance to provide the desired channel length of said driver JFET;

a layer of said first conductivity having a depth and doping concentration similar to that of said third series of elongated regions, said layer spanning the separation between said confronting edges of said pair of diffused regions to provide the channel portion of said driver JFET;

an emitter region of said second conductivity type diffused within the confines of said first of said pair of diffused regions;

an ohmic contact heavily doped to provide conductivity of said second type located on said epitaxial material inside said isolation ring; and

means for coupling conductive contacts to said emitter region, said ohmic contact, said first of said pair of diffused regions, and said substrate to provide connections respectively to said bipolar transistor emitter along with the source of said driver JFET, said bipolar transistor collector along with the gate connections to said switching JFET and said driver JFET, and said drain of said driver JFET along with said substrate.

4,085,418

COLOR IMAGE PICK-UP SYSTEM USING STRIP FILTER

Yoshihiro Uno, c/o Matsushito Research Institute, Inc., No. 1006, Oaza Kadoma, Kadoma City, Osaka, Japan

Division of Ser. No. 450,850, Mar. 13, 1974, Pat. No. 3,935,588, Continuation of Ser. No. 245,085, Apr. 18, 1972, abandoned. This application Nov. 22, 1975, Ser. No. 624,930
Claims priority, application Japan, Apr. 20, 1971, 46-25883; Apr. 20, 1971, 46-25884; Apr. 20, 1971, 46-25885
The portion of the term of this patent subsequent to Jan. 27, 1993, has been disclaimed.
Int. Cl.[2] H04N *9/07*
U.S. Cl. 358—44 6 Claims

1. A color television system comprising, in combination:

(a) a color television camera tube including an evacuated envelope having a faceplate at one end, an electron gun at the other end of said envelope, a color filter element disposed on said faceplate and a photoelectrical element

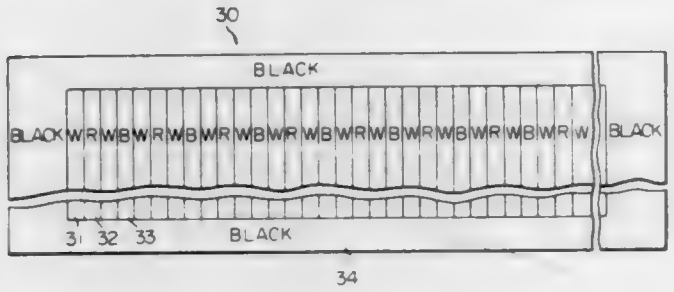
disposed inwardly of said color filter element, means for scanning electrons from said electron gun in a given direction, said color filter element comprising in combination therewith;

a plurality of transparent or white strips extending in a direction normal to said given direction to produce from said photoelectrical element upon scanning of said electrons a luminance signal; and

color strips of first and second colors arranged in alternating succession with said transparent or white strips and in recurrent groups to thereby produce two color signals from said photoelectrical element upon scanning of said electrons thereacross; and

(b) an output impedance connected to said color camera tube; and

(c) signal processing circuit means, including color encoding means, coupled to said output impedance and responsive to an image signal appearing thereacross for developing a composite color video signal therefrom, said signal processing circuit means including a first sampling pulse generating means for producing three sampling pulse trains each having respectively the same phase and frequency as one of said luminance signal and said two color signals, sampling means for sampling the image signal with said three sampling pulse trains so as to separate the luminance and the color signals from the image signal, and matrix and modulating means for converting the separated luminance and color signals into said composite color video signal, said modulating and matrix means comprising said color encoding means, and wherein said sampling pulse generating means includes a differentiator for differentiating the image signal, a cut-off and limiting circuit for cutting off negative portions of the differentiated image signal and for amplifying and limiting the differentiated and cut-off image signal so as to convert the differentiated and cut-off image signal into a reference pulse signal, a first sampling pulse generator for repeatedly producing a first sampling pulse at each of trailing edges of pulses of said reference pulse signal, a second sampling pulse generator for repeatedly producing a second sampling pulse at each of leading edges of alternate pulses of said pulse signal, and a third sampling pulse generator for repeatedly producing a third sampling pulse at each of leading edges of the remaining pulses of said pulse signal alternate with said alternate pulses.



4,085,419

COLOR TELEVISION CAMERA

Takeshi Sekiguchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1976, Ser. No. 747,881

Claims priority, application Japan, Dec. 8, 1975, 50-165526[U]

Int. Cl.² H04N *9/09*

U.S. Cl. 358—55 **10 Claims**

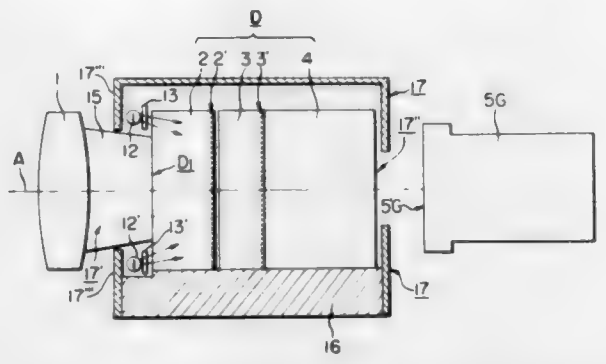
1. A color television camera comprising:

an objective lens system;

a color separating prism system having an entrance surface for an image forming light beam, chamfered portions contiguous to said entrance surface, and a plurality of exit surfaces, said prism system being so disposed that said entrance surface may be optically opposed to said objective lens system;

a plurality of image pick-up tubes, each of which is disposed in an optically opposed relationship to each of said plurality of exit surfaces of said objective lens system; and

means to emit light, said light emitting means being disposed



at a position outside the effective portion of the light beam from said objective lens system so as to be optically opposed to said chamfered portions of said color separating prism system, the light emitted from said light emitting means being projected into said color separating prism system from said chamfered portions, after which it is projected into each of said image pick-up tubes.

4,085,420

LIGHT PIPE IMAGE DISPLAY

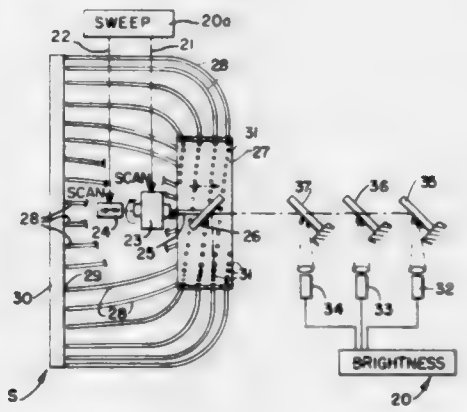
Heiner Stukenbrock, Prussentrift 29, 3000 Hannover, Germany

Filed Oct. 26, 1976, Ser. No. 735,289

Claims priority, application Germany, Oct. 30, 1975, 2548589

Int. Cl.² H04N *9/12, 3/02*

U.S. Cl. 358—56 **5 Claims**



1. Apparatus for displaying on a screen an image taken from an image source supplying light components forming elements of the image, the apparatus comprising:

(a) an image composing screen area;

(b) separate light pipes for said light element components of the image, the light pipes including light entrance ends and light exit ends arranged at said image composing screen area and disposed to discharge light therefrom, the cross-sectional area of said light pipes over the major portions of their lengths including their entrance ends being smaller than the cross-sectional areas of the light pipes in the vicinity of their light exit ends, whereby the image at the screen is enlarged as compared with the image at the source;

(c) a light pipe support operative to support said light entrance ends of said light pipes in a predetermined path;

(d) said image source comprising a focused light beam which is brightness modulated according to light element components of the source image, a scanning mirror which is disposed to deflect the beam toward said light pipe support, and means for simultaneously rotating the mirror and shifting it back and forth with respect to its rotational

axis to scan the beam progressively along said predetermined path and into the entrance ends of the light pipes; and

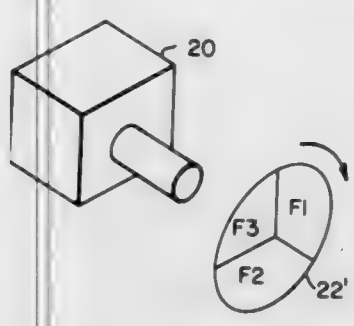
(e) said light pipe support being curved about said rotational axis and supporting said entrance ends facing into the modulated beam as it is scanned along said predetermined path, thereby to compose the elements of said image in said screen area.

4,085,421

UNDERWATER VIEWING SYSTEM

George A. Gilmour, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 7, 1976, Ser. No. 703,157
Int. Cl.[2] H04N *9/02, 9/04*
U.S. Cl. 358—81 8 Claims



1. An underwater viewing system comprising:

A. TV camera means for viewing an underwater scene and developing three color signals indicative thereof;

B. three optical color filters positioned relative to said TV camera means that said color signals are respectively indicative of the color passed by said filters;

C. each said filter being of a type to pass a subrange of colors in the range of colors passed by the water medium between said scene and said TV camera means with two of said filters being other than primary color filters;

D. color TV display means including color phosphors; and

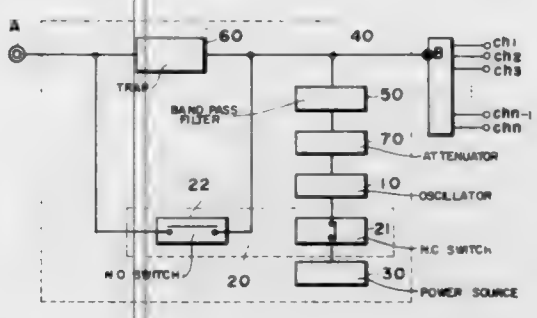
E. means responsive to said color signals for selectively energizing said phosphors.

4,085,422

FEE-CHARGING APPARATUS FOR TELEVISION SETS

Tatuji Niwata, Kawakita; Kazutomo Okubo, Kanazawa; Fumio Nakanishi, Matsuto, and Masanori Yamada, Kanazawa, all of Japan, assignors to Hokuryo Denko Co., Ltd., Japan

Continuation-in-part of Ser. No. 513,631, Oct. 10, 1974, abandoned. This application Jun. 30, 1976, Ser. No. 701,106
Claims priority, application Japan, Oct. 31, 1973, 48-126191; Nov. 27, 1973, 48-137042
Int. Cl.[2] H04N *1/44*
U.S. Cl. 358—118 7 Claims



1. Apparatus for use with a plurality of television receivers, each adapted to receive first television signals from non-fee-charged stations and display images in response thereto on their respective first set of channels, said first signals being received at a common antenna and each receiver having an antenna input terminal, said apparatus comprising:

privately programmed transmitter means for generating second television signals from a fee-charged station having an audio portion and a video carrier signal different from the carrier signals associated with said first set of channels;

coupling circuit means receiving said first and second television signals and for combining said signals and for coupling said combined signals to a common terminal; and

a fee-charging unit for each receiver connected between coupling means and said antenna input terminal of an associated receiver, each unit comprising:

trap circuit means receiving said combined signals from said common terminal for blocking transmission of the carrier signal of said second television signals;

an oscillator circuit for generating a sinusoidal local carrier signal of substantially the same frequency and amplitude as the video carrier signal of said second television signals;

band pass filter circuit means receiving the output of said oscillator circuit for rejecting harmonic signals of said local carrier signal;

switch means selectively actuatable for a predetermined time in circuit with said oscillator for inhibiting said oscillator from generating said local carrier signal when actuated; and for deactivating said trap circuit means when actuated to thereby permit passage of said second television signals; and

a mixer circuit receiving the output signals of said trap circuit and said filter circuit means for coupling said signals to said antenna input terminal of the associated receiver;

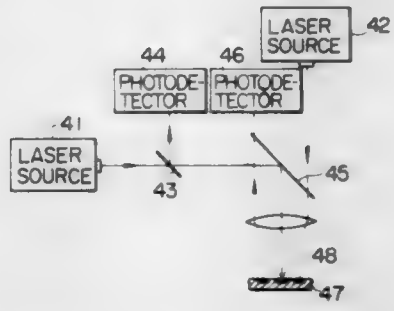
whereby each receiver normally receives said first television signals without interference and normally receives the audio portion and mixed carrier signals of said television signals and said local carrier signal except when said switch means is actuated during which predetermined time, said oscillator circuit is inhibited from generating said local carrier signal.

4,085,423

INFORMATION REPRODUCING APPARATUS WITH PLURAL BEAM READOUT

Yoshito Tsunoda, Mitaka; Takeshi Maeda, Kokubunji, and Yoshitada Oshida, Sayama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 28, 1976, Ser. No. 691,099
Claims priority, application Japan, Jun. 6, 1975, 50-67643
Int. Cl.[2] A04N *5/76*
U.S. Cl. 358—128 14 Claims



1. Information reproducing apparatus comprising:

first light source means for producing a first light beam having a predetermined wavelength,

second light source means for producing a second light beam having a wavelength different from that of said first light beam,

a recording medium having an information track,

an optical system including first means for conducting said first and second light beams to said information recording medium and wavelength selective optical means mounted for movement to follow said track and positioned in the

paths of said first and second light beams for reflecting said first light beam and transmitting said second light beam,

a first detector positioned to receive the first light beam reflected by said information recording medium after being again reflected by said wavelength selective optical means, and

a second detector positioned on the opposite side of said wavelength selective optical means from said information recording medium to receive the second light beam reflected by said information recording medium after being again transmitted through said wavelength selective optical means.

4,085,424

PHASE-COMPARISON LOGIC CIRCUIT FOR DUAL SIGNAL TELEVISION RECEPTION

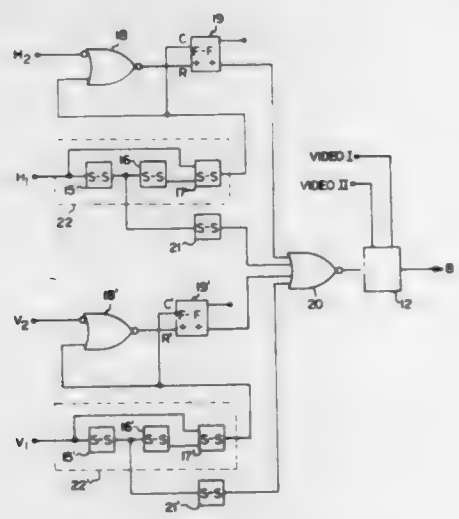
Deanis Cota, VS-Villingen, Germany, assignor to Saba Schwarzwaelder Apparate-Bau-Anstalt August Schwer Soehne GmbH, Villingen-Schwenningen, Germany

Filed Mar. 17, 1977, Ser. No. 778,579

Claims priority, application Germany, Jun. 18, 1976, 2627338; United Kingdom, Oct. 13, 1976, 41658/76

Int. Cl.[2] H04N *5/04*

U.S. Cl. 358—181 **7 Claims**



1. A phase-comparison logic circuit for use in a television receiver to provide a bi-level switching signal one level of which agrees with periods of time during which the video signal corresponds to a quadrant of a first broadcast television program, said quadrant being free from the horizontal and vertical synchronizing pulses of the video signal of a second broadcast program, comprising:

horizontal-sync-frequency-doubling means with input connected to the horizontal sync pulses of said first broadcast program;

horizontal-syn-comparison means with one input connected to the output of said horizontal-sync-frequency-doubling means and with a second input connected to the horizontal sync pulses of said second broadcast program;

horizontal-clock means with clock input connected to the output of said horizontal-sync-frequency-doubling means and with reset input connected to the output of said horizontal-sync-comparison means;

vertical-sync-frequency-doubling means with input connected to the vertical sync pulses of said first broadcast program;

vertical-sync-comparison means with one input connected to the output of said vertical-sync-frequency-doubling means and with a second input connected to the vertical pulses of said second broadcast program;

vertical-clock means with clock input connected to the output of said vertical-sync-frequency-doubling means and with reset input connected to the output of said vertical-sync-comparison means; and

switch signal means with one input connected to the output of said horizontal-clock means and a second input connected to said vertical clock means and having said bi-level switching signal output.

4,085,425

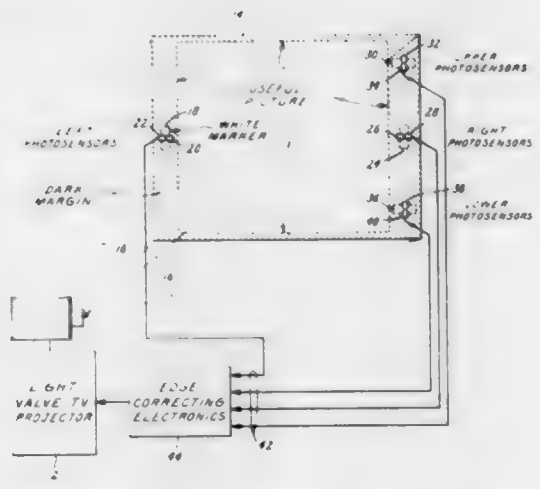
PRECISE CONTROL OF TELEVISION PICTURE SIZE AND POSITION

James S. Hamill, Ormond Beach, Fla., assignor to General Electric Company, Fairfield, Conn.

Filed May 27, 1976, Ser. No. 690,614

Int. Cl.[2] H04N *5/74, 3/22*

U.S. Cl. 358—237 **5 Claims**



1. In a scanned picture presentation device in which the horizontal size of the picture is controllable by horizontal scan size means and the mean horizontal position of the picture is controllable by horizontal scan positioning means, the improvement comprising:

a. means to produce illuminated marker areas outside of the picture indicative of the left and right boundaries of the picture;

b. a plurality of photosensitive transducing means located to receive the illumination from the illuminated marker areas and responsively thereto to produce electrical signals representative of the locations of the illuminated marker areas with respect to the said transducing means;

c. means to combine the signals from transducing means receiving illumination from the marker area indicative of the left boundary of the picture and from transducing means receiving illumination from the marker area indicative of the right boundary of the picture in a first sense to produce a signal indicative of the distance between the said marker areas, and to apply it operatively to cause the horizontal scan size means to reduce the horizontal scan size of the picture responsively to an indication of an increase in the said distance and to increase the horizontal scan size of the picture responsively to an indication of a decrease in the said distance;

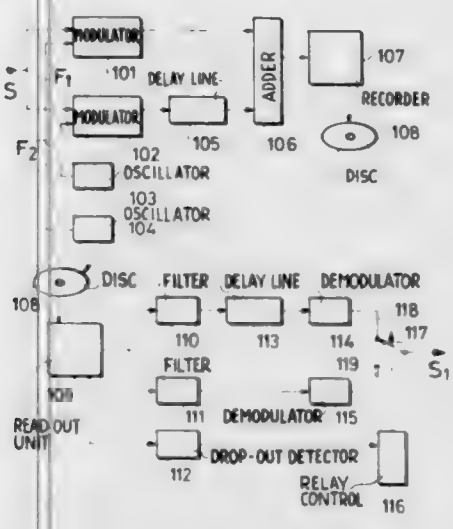
d. means to combine the signals from transducing means receiving illumination from the marker area indicative of the left boundary of the picture and from transducing means receiving illumination from the marker area indicative of the right boundary of the picture in a second sense to produce a signal indicative of the mean horizontal displacement of the said marker areas, and to apply it operatively to the said horizontal scan positioning means to move the picture leftward responsively to a signal indicative of a mean rightward displacement of the said marker areas and to move the picture rightward responsively to a signal indicative of a mean leftward displacement of the said marker areas.

4,085,426

METHOD FOR PROTECTING AGAINST DROP-OUTS IN A SOUND SIGNAL RECORDED ON A VIDEO-DISC

Pierre Aigrain; Georges Broussaud; Jean Paul Peltier, and Erich Spitz, all of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Mar. 1, 1976, Ser. No. 662,688
Claims priority, application France, Mar. 4, 1975, 75 06740
Int. Cl.[2] H04N *5/78*
U.S. Cl. 360—38 4 Claims



1. A method for protecting against drop-outs in a sound signal recorded on a video-disc, which comprises the step of:

simultaneously modulating a first and a second sub-carrier signal with said sound signal for providing a first and a second modulated sub-carrier signal;

delaying said second modulated sub-carrier signal by a delay 'τ' for providing a delayed modulated sub-carrier signal, said delay being longer than the duration of the substantially longest of said drop-outs;

recording said first modulated sub-carrier signal and said delayed second modulated sub-carrier signal onto a video-disc;

reading out said video-disc for simultaneously providing the first and the second modulated sub-carrier signal; said first and second sub-carrier signals being typically subject to simultaneous and random distortion by said drop-outs;

delaying said first modulated sub-carrier signal by said delay 'τ' for providing a delayed read and modulated sub-carrier signal;

simultaneously demodulating said second read sub-carrier signal and said first delayed and read sub-carrier signal for providing first and second read signals; and

monitoring said reading out for detecting said drop-outs and substituting said first read signal for said second read signal when said drop-outs occur.

4,085,427

TRANSDUCER POSITIONING SYSTEM

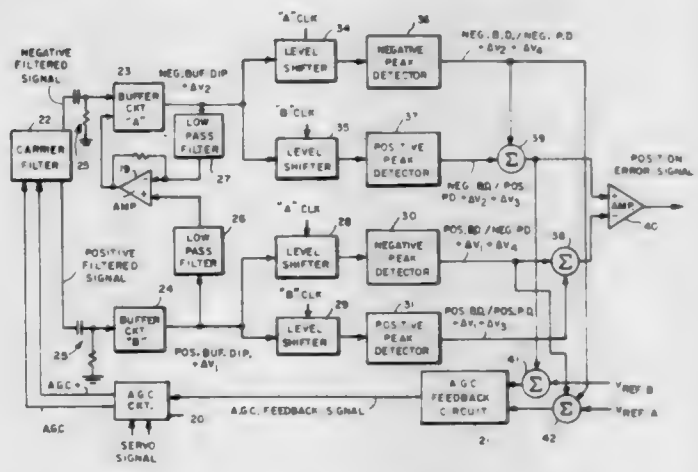
David Dunn, Windham, N.H., assignor to Data General Corporation, Southboro, Mass.

Filed Dec. 13, 1976, Ser. No. 750,287
Int. Cl.[2] G11B *21/10*
U.S. Cl. 360—77 9 Claims

1. In a transducer positioning system wherein a transducer is positioned over a magnetic media by sensing position information, the sensed position information consisting of a first plurality of dipulse groups, each group comprising a first dipulse having a first pulse of a first polarity and a second pulse of a second polarity and a second dipulse having a first pulse of the second polarity and a second pulse of the first polarity, and a second plurality of dipulse groups, each group comprising dipulses which are complementary to the first and second dipulses of said first plurality of dipulse groups, a system for detecting certain peak amplitudes within said first and second plurality of dipulse groups comprising

buffer means responsive to said first and second plurality of dipulse groups for providing first and second buffered signals comprising said first and second plurality of dipulse groups, respectively, and first and second offset error signals present therein, respectively, said buffer means including means for making said first and second offset error signals substantially equal;

first peak detection means responsive to said first buffered signal for detecting the peak amplitudes of said first polarity pulses of each of said first dipulses and for detecting the peak amplitudes of said second polarity pulses of each of said second dipulses to provide first and second peak amplitude signals which include said first offset error signal and third and fourth offset error signals, respectively, arising in said first peak detection means;



second peak detection means responsive to said second buffered signal for detecting the peak amplitudes of the polarity pulses which are complementary to said first polarity pulses and for detecting the peak amplitudes of the polarity pulses which are complementary to said second polarity pulses to provide third and fourth peak amplitude signals which include said second offset error signal and fifth and sixth offset error signals, respectively, arising in said second peak detection means;

the peak detection responses of said first and said second peak detection means being matched to produce substantially equal third and sixth offset error signals and substantially equal fourth and fifth offset error signals;

means for combining said first, second, third and fourth peak amplitude signals for producing an output signal in which said offset error signals are minimized.

4,085,428

APPARATUS FOR RECORDING AND REPRODUCING INFORMATION WITH RESPECT TO A FLEXIBLE RECORDING MEDIUM

Keith Green, Kinross, and Alastair Lawson, Glenrothes, both of Scotland, assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 20, 1976, Ser. No. 704,902
Int. Cl.[2] G11B *5/48, 21/08, 15/60*
U.S. Cl. 360—99 8 Claims

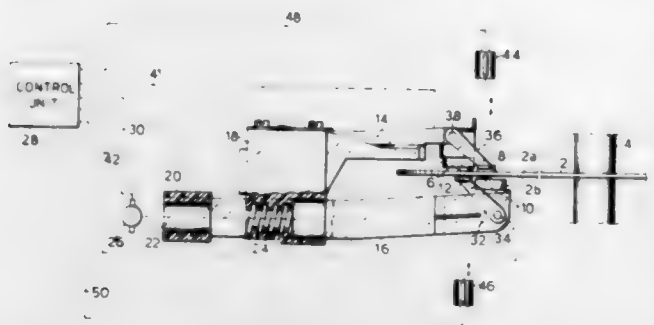
1. Apparatus for recording and reproducing information with respect to opposite surfaces of a flexible recording medium, comprising:

A. first and second aligned cantilever arms spaced from each other for receiving the flexible recording medium therebetween;

B. the first of said aligned cantilever arms including a transducer head and a pressure pad both cooperable with one surface of the flexible recording medium, the second aligned cantilever arm including a transducer head and pressure pad cooperable with the other surface of the flexible recording medium, each transducer head fixedly mounted to the arm and each pressure pad pivotally mounted to the arm, the transducer head of the first arm

being carried at the end of the arm with the pressure pad of the first arm being carried inwardly of the end, the transducer head of the second arm being carried inwardly of the end of the arm and the pressure pad of the second arm being carried at the end of the arm, where the pressure pad of each arm on one side of the disk is aligned with the transducer head of the other arm on the other side of the disk;

C. selection control means for selecting the transducer head to be operative for recording and reproducing information



with respect to its respective surface of the flexible recording medium;

D. said selection control means including actuating means for selectively pivoting each pressure pad to cause said pressure pad to press the opposite surface of the flexible recording medium against the aligned transducer head cooperable with the opposite surface of the flexible recording medium; and

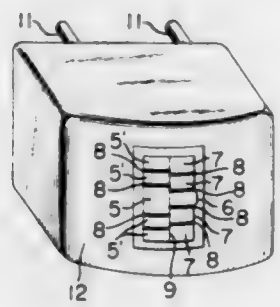
E. mounting means for holding said first and second aligned cantilever arms in operative proximity to the flexible recording medium.

4,085,429

MAGNETIC HEAD HAVING OPTIMUM SPACER THICKNESS DISPOSED BETWEEN DUMMY AND WRITE-IN CORE SEGMENTS

Tachio Hasegawa, Chichibu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama, both of, Japan

Filed Jun. 3, 1976, Ser. No. 692,332
Claims priority, application Japan, Jun. 13, 1975, 50-71677
Int. Cl.² G11B *5/25, 5/22, 5/27*
U.S. Cl. 360—119 **3 Claims**



1. A magnetic head comprising:

a write-in excitation core;

a write-in coil wound around said write-in excitation core;

a read-out excitation core having narrower track width than that of said write-in excitation core for forming a closed magnetic loop circuit with a gap interposed between said read-out excitation core and said write-in excitation core;

a read-out coil wound around said read-out excitation core;

a non-magnetic spacer having thickness 1.5 to 5 times as great as the width of said gap and disposed at at least one end of said read-out excitation core with respect to the width direction of the track of said read-out excitation core; and

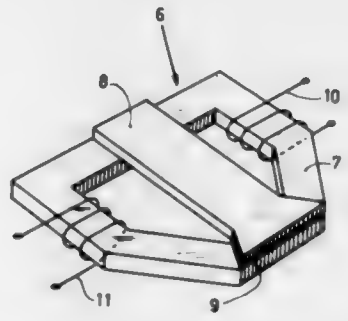
a dummy core disposed adjacent to said read-out excitation core with said non-magnetic spacer interposed therebetween for forming a closed magnetic loop circuit with a dummy gap interposed between said dummy core and said write-in excitation core, the dummy gap having the same width as said first mentioned gap, said dummy core comprising a plurality of divided dummy core segments, and additional non-magnetic spacers each of which has thickness 1.5 to 5 times as great as the width of said first mentioned gap and interposed among respective ones of said dummy core segments.

4,085,430

THIN FILM MAGNETIC HEAD WITH A GAP FORMED BETWEEN A LOOP SHAPED CORE PART AND A BRIDGING CORE PART

Jan T. Gerkema, and Frederik Willem Gorter, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 530,277, Dec. 6, 1974, abandoned. This application Jan. 12, 1976, Ser. No. 648,408
Claims priority, application Netherlands, Jan. 24, 1974, 7400955
Int. Cl.² G11B *5/25, 5/27*
U.S. Cl. 360—119 **9 Claims**



1. A thin-film magnetic head comprising a first loop shaped core part of magnetizable material having an upper surface with an outer edge, a second core part of magnetizable material having a lower surface and an outer edge and extending from one side of the upper surfaces of the first core part across the upper surface of the first core part to an opposite side of the first core part and overlapping an area of the upper surface of said opposite side of said first core part with a lower surface of said second core part, said second core part being magnetically coupled to said first core part at said one side of said first core part and providing an elongated surface parallel with the upper surface of the first core part and having an elongated outer edge on said elongated surface parallel to said outer edge of said first core part, and a layer of non-magnetizable material between the first and second core parts in the overlapping area thereof, the outer edges of said first and said second core parts forming therebetween a gap elongated in a direction perpendicular to the direction in which the second core part extends across the first core part.

4,085,431

LIMITER CIRCUIT

Masahiro Chikatsu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 586,600, Jun. 13, 1975, abandoned. This application Nov. 11, 1976, Ser. No. 741,122
Claims priority, application Japan, Jun. 20, 1974, 49-72183[U]
Int. Cl.² H03G *3/30*
U.S. Cl. 361—56 **9 Claims**

1. A limiter circuit adapted to be connected between a level regulator and a recording equalizer comprising:

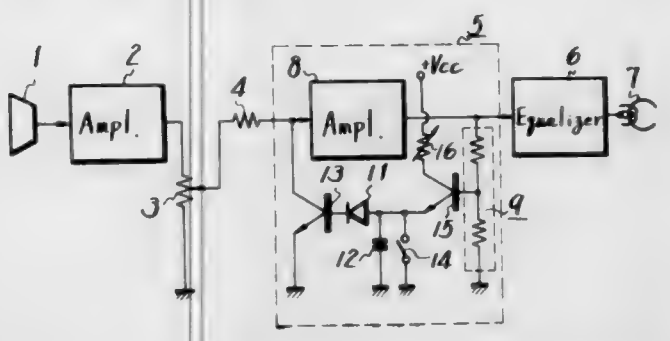
a. a recording amplifier having an input and an output;

b. a signal limiting means operative for limiting a signal applied to the input of said amplifier from the level regulator;

c. signal charging and discharging means comprising a capacitor connected to said signal limiting means for controlling operation of the latter in response to the charging of said signal charging and discharging means;

d. a high impedance voltage divider connected to the output of said recording amplifier to derive a signal therefrom without affecting the output signal of said recording amplifier;

e. an emitter-follower transistor for level detecting the output of said recording amplifier and feeding a signal to said signal charging and discharging means for charging the latter when the signal level detected by said transistor



exceeds a predetermined level, the base electrode of said transistor being connected to said voltage divider and comprising a high impedance input circuit for said emitter-follower transistor, and an emitter electrode thereof being connected to said signal charging and discharging means and comprising a low impedance charging circuit for said means; and

f. a variable resistor connected in series with the emitter-collector circuit of said emitter-follower transistor and said signal charging and discharging means to control the charging time of said signal charging and discharging means.

4,085,432

VOLTAGE LIMITER CIRCUIT

Leroy Wilfred Varettoni, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 9, 1977, Ser. No. 795,141

Claims priority, application United Kingdom, May 21, 1976, 21165/76

Int. Cl.² H02H *3/20*

U.S. Cl. 361—91 4 Claims



1. In a circuit which includes a node, a plurality of current paths connected in parallel between said node and a point of reference potential, at least some of said paths each including at least one semiconductor junction poled in the same sense relative to said node, and in which there is produced at said node a voltage which may, at times, be in the reverse direction relative to said junctions and which, if not limited, may reach a level such as to adversely affect the circuit operation by causing reverse breakdown of one or more of said junctions, the improvement comprising:

one of said paths exhibiting a substantially lower resistance than all of the others to a voltage at said node in said reverse direction which attempts to exceed a given value, said path including one of said semiconductor junctions which will tolerate reverse breakdown without adversely affecting circuit operation, that junction having a substantially lower reverse breakdown voltage than the junctions in said other paths, whereby any tendency of said reverse voltage at said node to increase beyond said given value results in non-destructive current flow in the reverse direction through said junction to thereby limit the voltage at said node;

an inductor connected between said node and said point of reference potential; and

said one junction comprising the base-to-collector electrode junction of a transistor which has also a base-to-emitter electrode junction, said transistor being connected to said node at said emitter electrode.

4,085,433

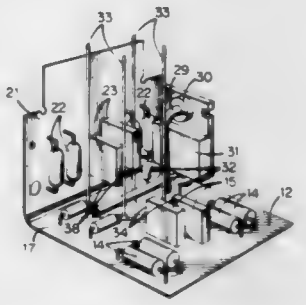
METHOD AND APPARATUS FOR IMPROVING PACKAGING DENSITY OF DISCRETE ELECTRONIC COMPONENTS

Conrad J. Baranowski, 27 Elmore St., Arlington Heights, Mass. 02174

Filed Nov. 22, 1976, Ser. No. 744,136

Int. Cl.² H05K *1/04*

U.S. Cl. 361—396 4 Claims



1. A method for increasing packaging density of discrete electronic components mounted to a flexible printed circuit board, said method comprising the steps of:

laying out the printed circuit pattern and component and terminal locations on said flexible board, on first and second spaced portions thereof and on a central portion by which the spaced portions are separated, to facilitate folding said flexible board along a fold line common to the first portion and the central portion and along another fold line common to the second portion and the central portion and to prevent interference between components when said flexible board is folded along the fold lines with the spaced portions in confronting relationship;

positioning components and terminals at the laid-out locations on the spaced and central portions on one side of said flexible board with the components in orientations generally paralle! with the surface of the board;

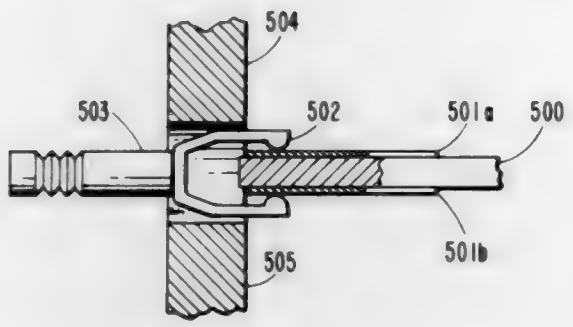
soldering the leads of the components and terminals on the side of the board opposite to the components to secure the components and terminals physically to the board and make electrical interconnections between the printed circuit pattern and the components and terminals; and

folding said flexible board along the fold lines so that said first and second portions of said board are substantially parallel and relatively close together in face-to-face relationship substantially perpendicular to and separated by the width of the central portion, at least some of said components and terminals on said first and second and central portions being in mutual interleaving relationship.

4,085,434
TRAFFIC CONTROL SYSTEM

Carlile R. Stevens, 1000 Ironwood Pl., Alamo, Calif. 94507

Continuation of Ser. No. 302,041, Oct. 30, 1972, abandoned, which is a continuation of Ser. No. 5,068, Jan. 22, 1970. This application Dec. 26, 1974, Ser. No. 536,465
Int. Cl.[2] H02B *1/02*
U.S. Cl. 361—413 9 Claims



1. Apparatus for enabling an operator to selectively program an automatic traffic controller to determine traffic flow on a road, comprising:

a. a panel having a plurality of elongated slots therethrough and traffic control information indicia associated with each slot on a front side of said panel:

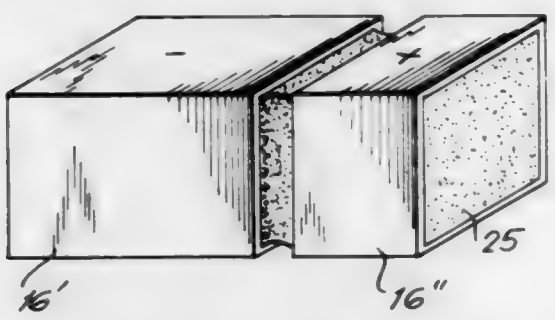
a plurality of printed circuit boards, each board of a given thickness having two conductive strips separated by said board thickness mounted on a respective side of said board and extending to a common edge of said board, each of said boards extending transversely to one of said elongated slots and having said edge in a butting relationship to a rear side of said panel, wherein said board thickness separates said slot into a pair of slot portions so that each slot portion exposes one conductive strip of said two strips, and wherein each circuit board includes circuitry for processing electrical control signals in accordance with said indicia; and

c. a programming pin releasably insertable in any one of said slots from said front side of said panel and including a finger gripping handle, and a U shaped resilient conducting member connected to said handle and being of a size and shape to slide over said two conductive strips separated by said board thickness to interconnect said strips electrically.

4,085,435
TANTALUM CHIP CAPACITOR

John L. Galvagni, Little Genesee, N.Y., assignor to AVX Corporation, Great Neck, N.Y.

Filed Jun. 14, 1976, Ser. No. 695,596
Int. Cl.[2] H01G *9/00*
U.S. Cl. 361—433 2 Claims

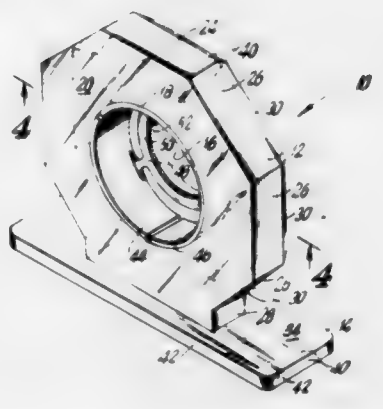


1. A capacitor device comprising, in combination, a solid electrolyte chip capacitor subassembly having an outer cathode end portion, an anode body projecting axially from the cathode end portion, and an anode lead extending axially from said anode body, a tubular metallic case formed by axially spaced sleeve members completely enclosing said cathode end portion and anode body of the subassembly, a first electrical connection between said cathode end portion of said subassembly and one of the sleeve members of said case adjacent one axial end of the subassembly, a second electrical connection completely enclosed by said case between said anode lead and the other sleeve member of said case adjacent the other axial end of the subassembly, a unitary mass of hardened polymeric insulating material encapsulating the subassembly and adhesively bonded internally to said case extending over a central zone between said axial ends, said sleeve members being axially spaced along the anode lead to form a continuous peripheral gap, which is substantially smaller in axial extent than said case and through which the insulating material in the central zone is restrictively exposed, whereby said case on either side of said gap define peripherally continuous terminals for said capacitor subassembly and a protective enclosure for the insulating material.

4,085,436
RING LIGHT CONVERTER FOR ELECTRONIC FLASH UNITS

Allen Weiss, 188-25 H, 71st Crescent, Fresh Meadows, N.Y. 11365

Filed Oct. 14, 1976, Ser. No. 732,220
Int. Cl.[2] G03B *15/02*; F21V *7/04*
U.S. Cl. 362—16 8 Claims



1. An attachment to an electronic flash unit for converting the unit into a photographic ring light for use with a camera, said attachment comprising:

a body member having a flat front wall, a rear wall, a top wall, side walls and a flat bottom wall, said flat bottom wall being disposed in a perpendicular relationship with said flat front wall, said body member including a centrally disposed opening extending therethrough from said front wall to said rear wall to provide a continuous 360° cylindrical inner wall disposed between said front and rear walls to define a torus-like configuration;

a plate member having a flat top surface, a flat bottom surface and side edges disposed between said top and bottom surfaces, said flat top surface of said plate member being connected to said flat bottom wall of said body member;

said body and plate members being fabricated from a transparent material to permit light to pass through and between said members;

reflective means disposed against and covering said rear, top, side and inner walls of said body member and covering unconnected portions of said top surface and side edges of said plate member for directing light through said attachment from said bottom surface of said plate member to said front wall of said body member in a perpendicular path, said bottom surface and front wall being uncovered by said reflective means

said rear wall of said body member including beveled surfaces to provide a trough-like arrangement for distributing the light around said body member and directing the light outwardly from said front wall of said body member completely around said opening to obtain a uniform illumination from said body member;

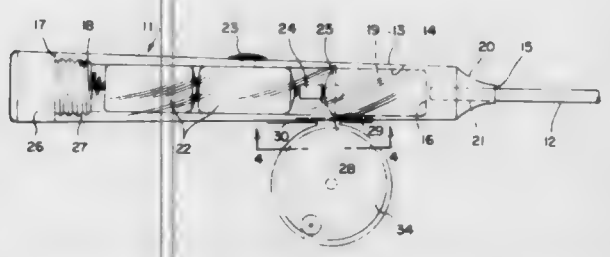
whereby said attachment is adapted for mounting a camera lens in coaxial alignment with said opening and also is adapted for mounting a light-emitting portion of the electronic flash unit against said uncovered bottom surface of said plate member.

4,085,437

LIGHTED FISHING POLE

Theodore Frederick Hrdlicka, and Floyd Stafford, both of 143 S. Windsor Dr., Denver, Colo. 80219

Filed Jul. 19, 1976, Ser. No. 706,833
Int. Cl.[2] F21V *33/00*
U.S. Cl. 362—109 **1 Claim**



1. A combination flashlight and fishing pole intended for use by fishermen and the like to provide selective illumination during evening hours, the device comprising, in combination:

an elongated tubularly shaped rod manufactured of flexible material and having a front end and a back end;

an axially elongated cylindrical handle member of a diameter greater than the rod, the handle member having a cylindrical outer surface, a flat back end surface, and a conically outwardly tapered front end surface of a truncated configuration;

the handle member being manufactured of a durable transparent plastic material permitting illumination to pass freely therethrough;

an axially elongated cylindrical opening disposed in the handle member front end surface along the axis thereof, the opening extending inwardly of the handle member from the truncated portion of the front end surface, the opening being of a diameter to snugly receive the back end portion of the rod therein with the rod being readily detached from the handle member;

an axially elongated cylindrically shaped compartment formed integrally in the handle member rearward of the front end surface and opening out of the back end surface, the compartment having a front end, an open back end, and interior cylindrical wall surfaces;

a series of screw threads formed integrally with the compartment wall surfaces immediately adjacent the compartment back end and extending inwardly of the compartment;

a cylindrically shaped cap member having a cylindrical head portion of the same exterior diameter as the handle member at its back end surface, and a body portion of a reduced diameter extending axially from the head portion and adapted to be received in the compartment, screw threads being formed integrally with the cylindrical outer surface of the body portion to be threadedly received in the threaded portion of the compartment to form a watertight seal therewith upon the cap member being threaded onto the handle member to close the compartment;

a lens member disposed in the compartment perpendicular to the axis thereof and spaced rearwardly of the compartment front end;

a low voltage electrical bulb associated with the lens member and mounted in the compartment in a manner to project light forwardly of the compartment when energized;

an electrical storage type battery mounted in the compartment for selectively energizing the bulb;

an electrical switch mounted in the compartment and having a portion thereof projecting outwardly of the interior wall surface and exteriorly of the handle member for selective movement between an "on" and "off" position for selectively energizing and de-energizing the bulb to control the illumination projected thereby;

an elongated rectangular slot formed in the exterior surface of the handle member and extending longitudinally therealong, the slot having a leading edge and a trailing edge and opposed side edges;

an elongated rectangular groove formed immediately beneath the exterior surface of the handle member having one end contiguous with the leading edge of the slot, the groove extending longitudinally therefrom;

a longitudinally elongated rectangular bracket of a cross-section configuration having a curvature matching the curvature of the handle member, the bracket being of a width approximating the width of the slot, the bracket having a leading edge and a trailing edge, a raised flange formed integrally with the trailing edge, and an axially extending slot formed in the bracket intermediate the leading and trailing edges;

a fixed pin mounted to the handle member adjacent the slot trailing edge and along the axis thereof, the pin projecting outwardly of the handle member to be slidably received in the bracket slot for guiding the sliding movement of the bracket relative to the handle member from an operative position over a portion of the slot to an inoperative position free of the slot and overlying the handle member;

the slot, groove, and bracket cooperating with each other in a manner to readily attach and detach a conventional type fishing reel to the handle member;

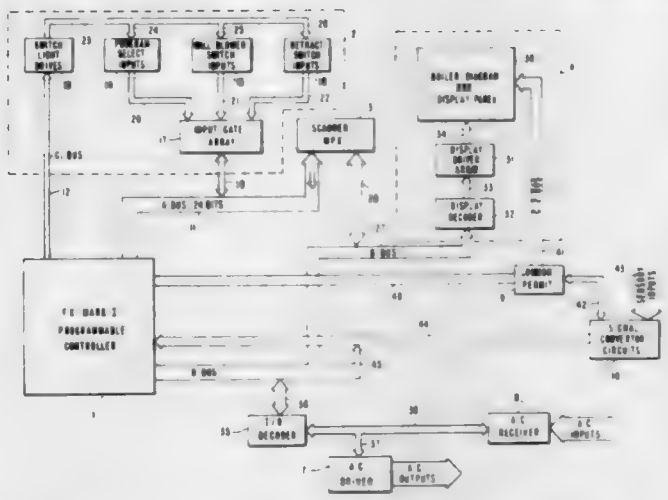
whereby the handle member provides a selectively controlled flashlight illumination means with the detachable pole affixed therein for fishing while performing fishing activities, and with the handle member being usable as a conventional flashlight with the detachable rod removed therefrom.

4,085,438

DIGITAL SOOTBLOWER CONTROL SYSTEMS AND METHODS THEREFOR

Robert Gerald Butler, Erie, Pa., assignor to Copes-Vulcan Inc., Lake City, Pa.

Filed Nov. 11, 1976, Ser. No. 741,136
Int. Cl.[2] G06F *15/46*; F23J *1/00*
U.S. Cl. 364—107 **110 Claims**



1. A digital sootblower control system comprising:

controller means for receiving information inputs representative of sootblowers to be activated and sootblower operational status, said controller means operating according to a fixed program to process information inputs supplied thereto and issue coded start commands, when appropriate, to selected sootblowers within the system;

sootblower control means for decoding start commands issued by said controller means and initiating operation of selected sootblowers in response thereto, said sootblower control means additionally acting to receive information

representative of the operating status of each sootblower within the system;

display means for receiving information representative of the operating status of each sootblower in the system from said sootblower control means as well as sootblower and system operational status information, and for providing a visual display thereof;

multi-conductor bus means interconnecting said controller means, said sootblower control means and said display means in an operational configuration; and

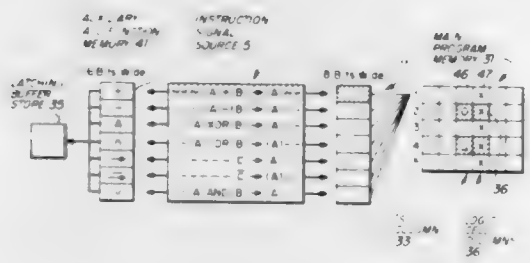
information input means interconnected to said controller means for designating sootblowers to be activated and certain sootblower operational status conditions, said information input means supplying information inputs representative of sootblowers to be activated and said certain sootblower operational status to said controller means.

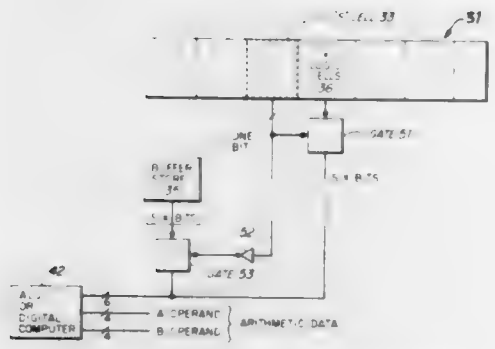
4,085,439

COMPUTER PROGRAMMING SYSTEM HAVING GREATLY REDUCED STORAGE CAPACITY AND HIGH SPEED

William A. Minnick, Cupertino, Calif., assignor to Itek Corporation, Lexington, Va.

Filed Aug. 27, 1976, Ser. No. 718,299
Int. Cl.[2] G06F *9/00*
U.S. Cl. 364—200 **12 Claims**





1. A programming system for programming a computer means comprising:

a. switching means;

b. a main programming memory device for containing groups of data which are readout therefrom and applied to said computer means by said switching means for causing said computer means to execute a selected instruction with respect to arithmetic data processed therein;

c. auxiliary function means for generating logic data unique to a particular instruction being executed;

d. an instruction designation signal source for designating a particular instruction to be applied to said computer means;

e. coupling means coupled between said instruction designation signal source and said auxiliary function means for controlling the generation of said unique logic data by said auxiliary function means in accordance with the designation of a selected instruction by said signal source;

f. data source selection means, associated with logic data cells within said main programming memory, for producing a first signal upon readout when logic data within associated logic data cells is not unique to a particular instruction being executed and for producing a second signal upon readout when logic data within associated logic data cells is unique to a particular instruction being executed; and

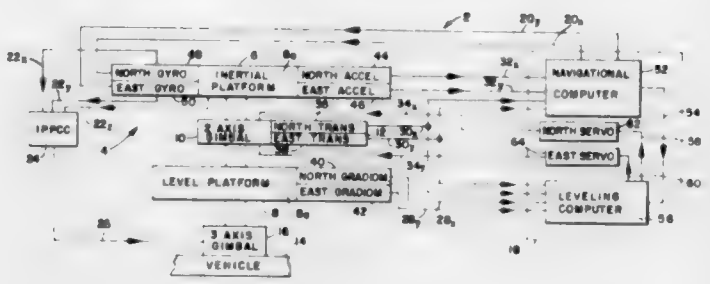
g. switch control means, coupled to said switching means, for causing logic data within said main programming memory to be transmitted by said switching means to said computer means when said data source selection means produces said first signal upon readout, and for causing said logic data generated by said auxiliary function means to be transmitted to said computer means by said switching means rather than data from said main programming memory, when said source selection means produces said second signal upon readout.

4,085,440

INERTIAL NAVIGATION SYSTEM

Eddy Hose, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 5, 1977, Ser. No. 794,195
Int. Cl.[2] G06G *7/78*; B64G *1/20*
U.S. Cl. 364—454 **10 Claims**



1. A navigational system comprising:

a platform assembly comprising an inertial platform unit which includes an inertial platform, a level platform unit which comprises a level platform, said inertial platform and said level platform being connected to a two axis gimbal, said inertial platform being rotatable relative to said level platform, and means connected to said two axis gimbal for sensing said rotation,

a three axis gimbal connected to said platform assembly for referencing said inertial platform in response to first corrected signals and for connecting said assembly to a vehicle,

an inertial platform position control computer for generating said first corrected signals to said three axis gimbal, in response to first output signals generated from a control means to said inertial platform unit and first positioning signals received from said inertial platform unit, for referencing said inertial platform to a datum reference spheroid, and,

a control means for generating said first output signals, and for generating second corrected signals to said two axis gimbal in response to second positioning signals received from said level platform unit, second output signals received from said sensing means, and third output signals received from said inertial platform unit, for aligning said level platform with the true vertical to the geopotential surface of the earth.

4,085,441

MONOLITHIC IMPLEMENTATION OF A FAST FOURIER TRANSFORM

John L. Fagan, Pasadena, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1976, Ser. No. 744,546
Int. Cl.[2] G11C *11/40*; H03K *5/159*
U.S. Cl. 364—827 **16 Claims**

1. Apparatus for realizing a fast Fourier transform of an analog input signal represented by

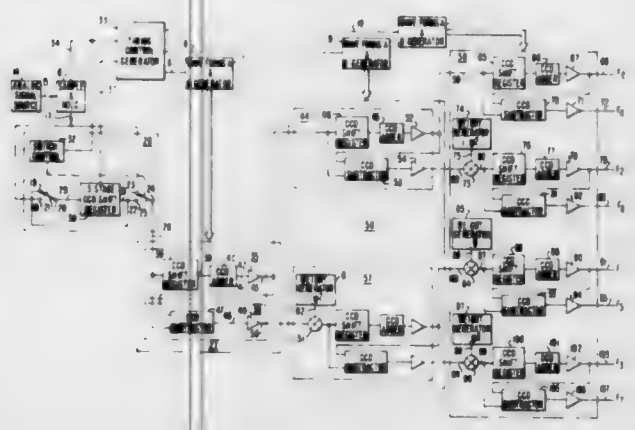
a plurality of time spaced discrete analog data signals each having a single value comprising:

means for reordering said discrete analog data signals to provide a sequence of predetermined pairs of said discrete analog data signals,

a first arithmetic stage including a charge coupled device for arithmetically combining said pairs of said discrete analog data signals to form a first and second discrete analog output signal,

a second arithmetic stage including a charge coupled device for arithmetically combining a pair of successive values of said first discrete analog output signal to form a third and fourth discrete analog output signal, means for weighting said second discrete analog output signal in accordance with predetermined values and a charge coupled device for arithmetically combining a pair of succesive values of said weighted second discrete analog output signal to form a fifth and sixth discrete analog output signal, and

a third arithmetic stage including a charge coupled device for arithmetically combining a pair of successive values of said third discrete analog output signal to form the sev-



enth and eighth discrete analog output signal, means for weighting said fourth discrete analog output signal in accordance with predetermined values and a charge coupled device for arithmetically combining a pair of successive values of said weighted fourth discrete analog output signal to form the ninth and tenth discrete analog output signal,

means for weighting said fifth discrete analog output signal in accordance with predetermined values and a charge coupled device for arithmetically combining a pair of successive values of said weighted fifth discrete analog output signal to form the eleventh and twelfth discrete analog output signal, and

means for weighting said sixth discrete analog output signal in accordance with predetermined values and a charge coupled device for arithmetically combining a pair of successive values of said weighted sixth discrete analog output signal to form the thirteenth and fourteenth discrete analog output signal,

said seventh through fourteenth discrete analog output signals having values indicative of the Fourier coefficients of the fast Fourier transform of said analog input signal.

4,085,442

DATA DISPLAY SYSTEM DESIGNED AS A MICROCONTROLLER

Sigitas Julius Liaukus, Huntington, and Dixson Teh-Chao Jen, Monroe, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Mar. 31, 1975, Ser. No. 563,527

Int. Cl.² G06F *3/14*

U.S. Cl. 364—900 **18 Claims**

1. A data display system comprising:

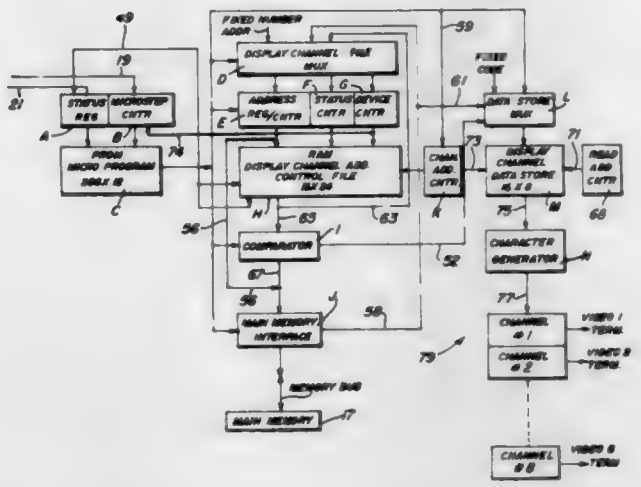
(a) a programmable read-out memory (PROM) for storing a fixed microroutine for governing logic operation of the system;

(b) first control means enabled by the PROM during an initial subroutine (status), for transferring a fixed number address into an address register;

(c) a memory interface means for communicating with a main memory;

(d) means connecting an address register output to the interface means for reading, from a main memory, the contents of the fixed number address, the contents being a character data starting address;

(e) means connecting the output of the interface means to the first control means, for transferring the starting address and an incremented status, through the address register and a status counter, to an address control file means, for storing the starting address and the incremented status therein;



(f) means for transferring the stored incremented status from the file means to a status register;

(g) means connecting the status register to the PROM for the addressing thereof;

(h) the first control means being responsive to the PROM for transferring therethrough, the stored starting address from the address control file to the address register;

(i) second control means responsive to the PROM for transferring character data, from the starting address in the main memory, through the interface means, to display data store means, after the completion of transferral in (h);

(j) means connecting the output of the data store means to character generating means for providing character data information, channel by channel, for a video display.

4,085,443

KEYBOARD OPERATED APPARATUS FOR SIMULTANEOUS CODING AND DISPLAY OF CHEMICAL STRUCTURE AND SIMILAR GRAPHICAL INFORMATION

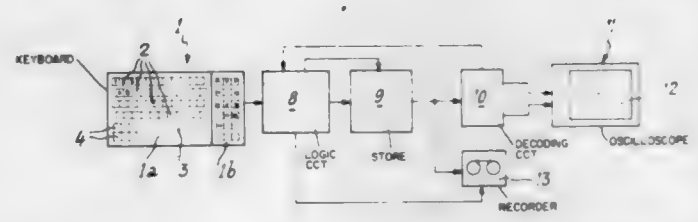
Jacques E. Dubois, and John A. Miller, both of Paris, France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly-sur-Seine, France

Filed Sep. 8, 1975, Ser. No. 611,197

Claims priority, application France, Sep. 16, 1974, 74 31244

Int. Cl.² G06F *3/14, 3/06, 3/02*

U.S. Cl. 364—900 **7 Claims**



1. An apparatus for the simultaneous coding and display of structural chemical formulae and other graphical information composed of nodes or ring positions and links or bonds between these nodes, in which a node is identifiable by at least

one alphanumeric character and a link is identifiable by graphical marking indicative of its nature and its direction, said apparatus comprising:

a keyboard including a first assembly of keys corresponding to different displayable alphanumeric characters, a second assembly of keys corresponding to displayable graphical marking indicative of a link and a third assembly of keys corresponding to different control functions for the apparatus;

a coding circuit for producing, in response to key actuation, signals of distinctive codes representative of the identity of the actuated key including as a part of each node a subcode identifying the one of said assemblies of which an actuated key is a member;

a store connected to said coding circuit for storing the signals produced by said coding circuit whenever they include a subcode identifying either said first or said second assembly of said keyboard, said store having a fixed number of addressable store locations in each of which said signals relating to a different node and to each link issuing therefrom is storable, one of said locations being available for each of a multiplicity of possible node or ring positions;

an oscilloscope having a screen comprising a fixed number of reference points and having an X-input, a Y-input and an intensity control input for displaying in graphical form data corresponding to said signals produced by said coding circuit, the positions of the nodes of said display data on the screen coinciding with locations of said points of the screen and the number of said points of the screen being less than the number of said addressable store locations of said store, whereby the matrix of points on the screen constitutes an image of a part of the matrix of store locations;

store address register means for cyclically addressing any collection of said store locations which can simultaneously correspond to the points on said screen of said oscilloscope and having an output connected to said store;

a scanning circuit connected to said store address register means for sequentially and cyclically varying the content thereof in such a way as to scan continuously the particular collection of store locations corresponding to said points on said screen at the time of scanning;

decoding means connected to said store for successively decoding the signals stored in said scanned store locations, said decoding means comprising an alphanumeric character generator and a graphical link generator connected to said inputs of said oscilloscope for producing a graphical display on the screen of said oscilloscope corresponding to the signals produced by said coding circuit in response to actuation of said keyboard;

shift control means connected to said store address register means and operable from said keyboard through said coding circuit for shifting the whole of the points on the screen relative to a corresponding array of the whole of the addressable store locations of said store, so as to change the collection of said addressable store locations which corresponds to the points on the screen;

means for generating an index cursor visible on said screen by affecting said intensity input of said oscilloscope;

means operable from said keyboard through said coding circuit for selectively positioning said cursor on said screen at a location thereof coinciding with a screen reference point, said cursor positioning means including a cursor address register connected to said coding circuit and having a content representative of the position selected for said cursor by operation of said keyboard, and

an equality detector circuit connected to said store address register means and to said cursor address register for providing a storing authorization signal for selecting, for storage of signals from said coding circuit, the one of said addressable store locations in said store which corresponds to that of the cursor on the screen and for providing a command signal to said cursor generating means.

4,085,444

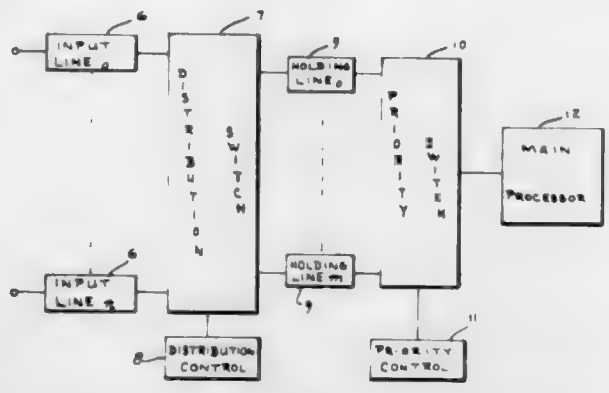
RANDOM ACTION EVENT SWITCHING METHOD AND APPARATUS FOR A MULTIPLE INPUT DATA PROCESSING SYSTEM

Josef F. Schneider, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 21, 1976, Ser. No. 679,253

Int. Cl.[2] G06F *7/00, 3/00;* G11B *13/00*

U.S. Cl. 364—900 **5 Claims**



1. In a data processing system having a main processor, a systems clock, a timing clock, and *n* inputs, *n* being an integer greater than one, the improvement comprising a random action event switching circuit, said random action event switching circuit including

a timing clock having a period longer than the period of said systems clock,

an input line connected to each system input, each said input line including means for detecting, retaining, and synchronizing with said system clock, events received thereon,

m holding lines, *m* being an integer less than *n*, each said holding line having means for retaining the identity of the events accumulated on said input lines during one timing clock period,

a logic circuit for providing access to an available holding line and, at the end of each time clock period for clearing the input lines and switching the events accumulated thereon to said available holding line, and

a priority selector circuit for switching to said main processor for read-out the holding line next in line according to the priority of arrival of its retained events, said priority selection circuit being responsive to availability condition signals from said main processor.

4,085,445

TEXT MERGE WITH COPIES AND ENVELOPES

Margaret Mary Blevins, Lexington, Ky., and Robert Glenn Bluethman, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1976, Ser. No. 693,818

Int. Cl.[2] G06F *3/12, 7/22*

U.S. Cl. 364—900 **8 Claims**

1. A printing system for interleaved, unattended printing of a plurality of personalized letters and envelopes, comprising:

memory means for storing codes corresponding to a single form letter and form envelope, said codes including constant text and control codes;

a plurality of records of codes of variable data, each record of variable data being stored on a storage means and each record including a plurality of fields;

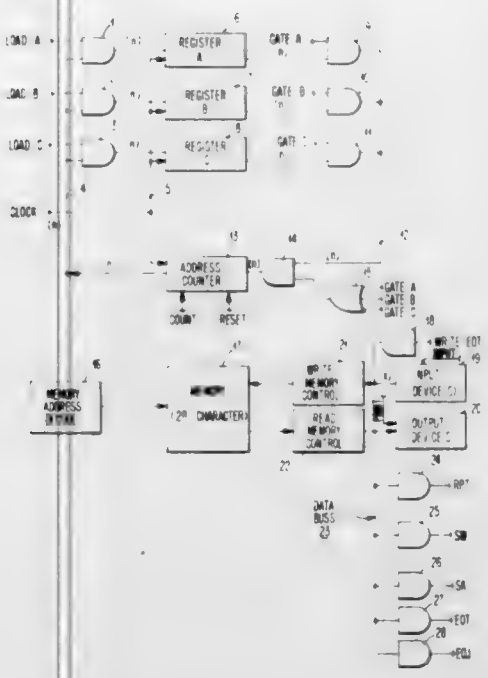
variable data input means for writing blocks of codes of variable data of one of said records into a portion of said memory means;

a printer;

means for repetitively outputting the contents of said memory to said printer to print said personalized letters and envelopes, including;

means responsive to said control codes in said form letter to

merge the variable data contained in a first group of chosen fields of each record into said constant text of said form letter; and



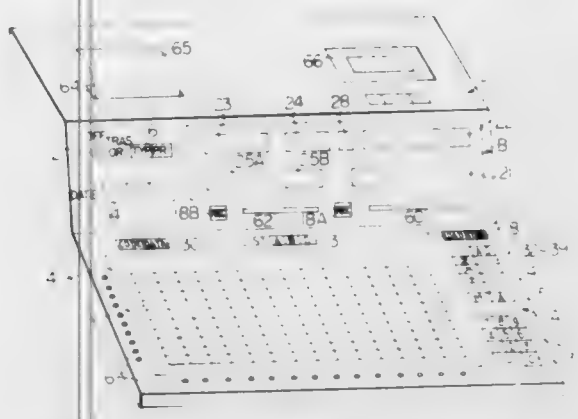
means responsive to said control codes in said form envelope to include the variable data contained in a second group of chosen fields of each record in said form envelope.

4,085,446

DATA STORAGE AND RETRIEVAL SYSTEM

Fumitaka Nagamura, 1-6-14 Tomigaya, Shibuya-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 582,193, May 30, 1975, abandoned. This application Aug. 17, 1976, Ser. No. 715,195
Claims priority, application Japan, Jun. 1, 1974, 49-62142
Int. Cl.[2] G06F *15/40, 7/10, 3/02, 13/06*
U.S. Cl. 364—900 **3 Claims**



1. A data storage and retrieval system comprising:

a mass memory means for storing data at locations having plural digit addresses;

a random access memory means having a plurality of first memory locations for storing in each of said locations a coded word corresponding to one plural digit address of said mass memory means and a plurality of second memory locations each corresponding to one of said plurality of first memory locations for storing data;

a memory control means connected to said mass memory means and said random access memory means for reading the coded word stored in each of said first memory locations of said random access memory means and for storing in each of said second memory locations of said random access memory means the data stored in said mass memory means at the plural digit address which corresponds to said coded word stored in the respective first memory locations, and for storing in said mass memory means the data stored in each of said second memory locations of said random access memory means at the plural digit address of said mass memory means that corresponds to said coded word stored in the respective first memory locations;

a fixed display board having a plurality of display portions, each providing a selective indication by an indicator means;

a plurality of identification means having a plurality of identification portions corresponding to said plurality of display portions of said fixed display board for being mounted upon said fixed display board to identify each of said plurality of display positions;

an item selection means connected to said fixed display board for selecting one of a plurality of items each corresponding to one of said display positions identified by said identification means and for causing said corresponding indicator means to provide an indication of the selection;

a plurality of magnetic card memory means each corresponding to one of said plurality of identification means for storing data corresponding to at least part of a plural digit address of said mass memory means;

a magnetic card reading means for reading the data stored on said magnetic card memory means; and

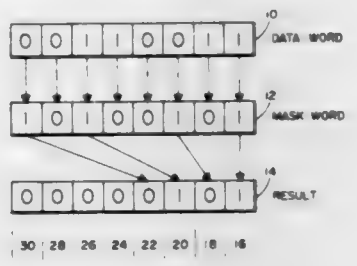
an address decoder means connected to said random access memory means, said item selection means and said magnetic card reading means for combining the data stored on said magnetic card memory means and the item selected by said item selection means to produce said coded word corresponding to a plural digit address of said mass memory means and for recording said coded word in at least one of said first memory locations of said random access memory means.

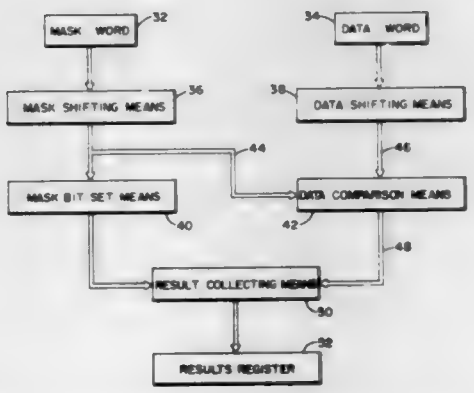
4,085,447

RIGHT JUSTIFIED MASK TRANSFER APPARATUS

Jerry Hudson Pertl, Bloomington, and Glen Roy Kregness, Hopkins, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sep. 7, 1976, Ser. No. 720,930
Int. Cl.[2] G06F *7/02*
U.S. Cl. 364—900 **8 Claims**





1. A digital logical network for implementing a mask transfer function so that a series of noncontiguous bits contained in an n-bit mask word controls a mask operation with an n-bit data word and arranges the result of said mask operation contiguously in a result register, comprising:

a. mask shifting means selectively coupled to receive said mask word and having a mask shift output, said mask shift output adapted to produce signals representing an m-bit

contiguous portion of all of said bits of said mask word and including means for sequentially changing said mask shift output from said portion of bits in said mask word to the next contiguous portion of bits of said mask word;

b. mask bit set means selectively coupled to said mask shift output for determining the number of bits which are of a predetermined binary significance in said mask shift output;

c. data shifting means selectively coupled to said data word and having a data shift output, said data shift output being an m-bit contiguous portion of all of said bits of said data word and including means for sequentially changing said data shift output from said portion of bits in said data word to the next m-bit contiguous portion of bits of said data word;

d. data comparison means, selectively coupled to said data shift output and controlled by said mask shift output for iteratively performing a bit-by-bit comparison between said mask shift output and said data shift output and for shifting the results of said comparison only for bit positions of said predetermined binary significance in said mask shift output to contiguous bit positions; and

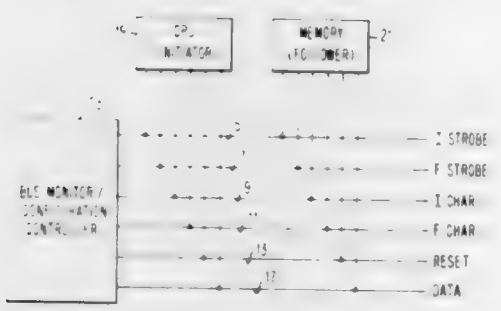
e. result collecting means, selectively coupled to said data comparison means and said result register and responsive to said mask bit set means, for iteratively collecting the successive results of said data comparison means so that successive results are kept in contiguous order throughout successive changes in said mask shifting means and said data shifting means.

4,085,448

DATA COMMUNICATION BUS STRUCTURE

Peter Michael Kogge, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,516
Int. Cl.[2] H04Q *3/58, 1/30;* G06F *1/00*
U.S. Cl. 364—900 **3 Claims**



1. In a digital data communication system having at least one initiator module and at least one follower module connected by an information data bus over which information is transmitted between the initiator module and the follower module, control signal transfer means for transferring control signals between said initiator module and said follower module, comprising, in combination,

an initiator character bus,

a follower character bus,

an initiator strobe bus,

a follower strobe bus,

said character and stobe buses being connected to said initiator and said follower modules,

first signal generating means in said initiator module and connected to said initiator character bus for generating an initiator character signal on said initiator character bus, the initiator character signal comprising control signals to control the subsequent operation of the follower module on information data supplied from said initiator module to said follower module on said information data bus,

second signal generating means in said initiator module for generating an initiator strobe signal on said initiator strobe bus after a predetermined time delay following the beginning of said initiator character signal,

first signal receiving means in said follower module connected to said initiator character bus for receiving the initiator character signals and providing control signals to control the handling of information data received by said follower module from said data information bus,

second signal receiving means in said follower module connected to said initiator strobe bus for receiving the initiator strobe signals,

first gating means connected to said first and said second signal receiving means for rendering said first signal receiving means effective to receive said initiator character signals only when said initiator strobe signals are present on said initiator strobe bus,

third signal generating means in said follower module and connected to said follower character bus for generating a follower character signal on said follower character bus, the follower character signal comprising control signals to control the subsequent operation of the initiator module on information data supplied from said follower module to said initiator module on said information data bus,

fourth signal generating means in said follower module and connected to said follower strobe bus for generating a follower strobe signal on said follower strobe bus after a predetermined time delay following the beginning of said follower character signal,

third signal receiving means in said initiator module connected to said follower character bus for receiving the follower character signals and providing control signals to control the handling of information data received by said initiator module from said data information bus,

fourth signal receiving means in said initiator module connected to said follower strobe bus for receiving the follower strobe signals, and
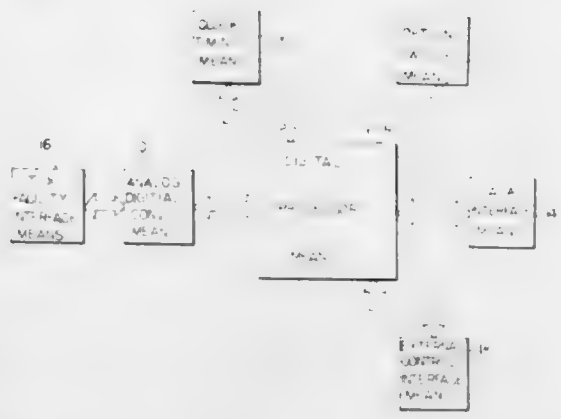
second gating means connected to said third and said fourth signal receiving means for rending said third signal receiving means effective to receive said follower character signals only when said follower strobe signals are present on said follower strobe bus.

4,085,449

DIGITAL MODEM

Dale M. Walsh, Clearwater, and Karl I. Nordling, Largo, both of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Nov. 26, 1976, Ser. No. 744,994
Int. Cl.[2] H04J *3/12;* H04M *1/76*
U.S. Cl. 364—900 **9 Claims**



1. A digital modem for high-speed data transmission between data terminals communicating through amplitude limited signals over analog transmission facilities capable of digitally synthesizing modem function in real time; said digital modem comprising a processor control set, a memory/multiplier set, a signal processor set, and an interface means, said processor control set including a program address generator including circuitry to sequentially generate a predetermined plurality of program addresses, a program memory coupled to said program address generator including circuitry to receive said program addresses and generate a program instruction in response thereto and an instruction register coupled to said

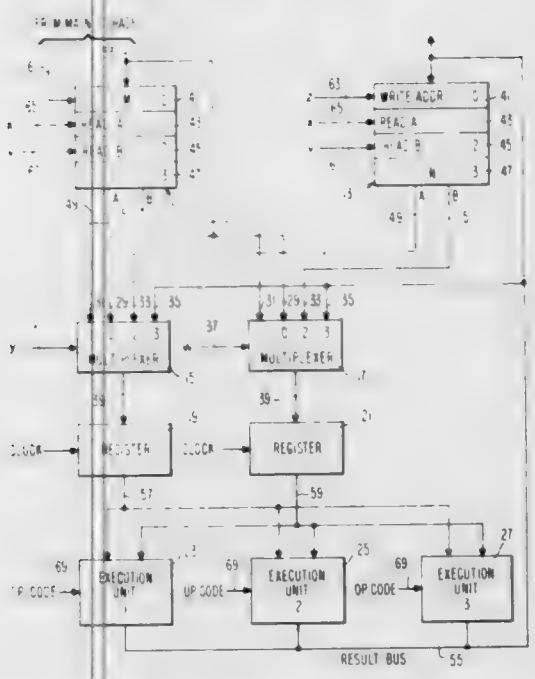
program memory including circuitry to receive said program instruction and generate an instruction signal in response thereto; said signal processor set comprising an arithmetic log unit coupled to said instruction register to receive said instruction signal, said signal processor set including circuitry to selectively respond to said instruction signals to perform one or a plurality of predetermined arithmetic operations and generate a processor set signal in response thereto, said memory/-multiplier set comprising a high speed multiplier and a memory means including a data memory and coefficient memory being coupled between said processor control set and said high speed multiplier to receive said instruction signal, said data memory further coupled to said signal processor set to receive said processor set signals therefrom, said data memory and said coefficient memory each including circuitry to selectively generate data output signals and coefficient output signals in response to said instruction signal from said processor control set, said high speed multiplier including circuitry to receive said data output signals and said coefficient output signals and generate a product signal in response thereto, said interface means being coupled between the analog transmission facilities and said signal processor set and between said signal processor set and data terminal, said interface means including circuitry to receive analog input signals from a remote digital modem over analog transmission facilities and to convert said analog input signals to digital input signals fed to said signal processor set, said interface means further including circuitry to receive said processor set signal and convert said processor set signal to analog output signals for transmission over analog transmission facilities to a remote digital modem, said signal processor set further including circuitry to receive said digital input signals from said interface means and said product signal from memory/multiplier set for performing said arithmetic operations, said interface means further including circuitry to transfer information between interface input and the data terminals in said signal processor set, said signal processor set thus providing modulation, demodulation, filtering and equalization in real time.

4,085,450

PERFORMANCE INVARIENT EXECUTION UNIT FOR NON-COMMUNICATIVE INSTRUCTIONS

Bhalchandra Ramchandra Tulpule, Storrs, Conn., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 29, 1976, Ser. No. 755,360
Int. Cl.[2] G06F *7/38, 9/18*
U.S. Cl. 364—900 **5 Claims**



1. A performance invarient execution apparatus for non-communicative instructions comprising:

a first and a second addressable operand file, each having a first and a second output port;

a first multiplexer inputted by said first output ports of said first and second operand file;

a second multiplexer inputted by said second output ports of said first and said second operand file;

a first and a second working register inputted respectively by said first and said second multiplexer;

a plurality of execution units, each execution unit therein inputted by both said first and said second working register and each execution unit thereof having an operation code input for receiving an operation code specifying an operation to be executed;

a common bus for transferring outputs from said plurality of execution units to said second addressable operand file;

means for addressably writing from said common bus into said second addressable operand file;

first operand means for reading an operand into said first working register, said first operand means addressing in parallel said first and second addressable operand files for reading operands in parallel from said first ports thereof, and addressing said first multiplexer for selecting operand passage therethrough to said first working register; and

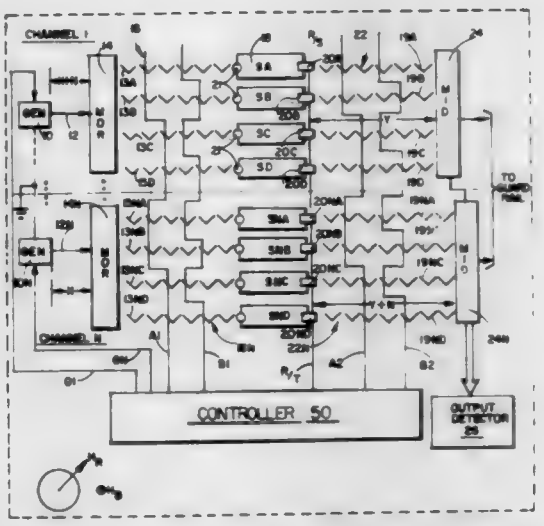
second operand means for reading an operand into said second working register, said second operand means addressing in parallel said first and said second addressable operand files for reading operands in parallel from said second ports thereof, and addressing said second multiplexer for selecting operand passage therethrough to said second working register.

4,085,451

BUBBLE DOMAIN CIRCUIT ORGANIZATION

Thomas T. Chen, and Isoris S. Gergis, both of Yorba Linda, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 14, 1977, Ser. No. 806,420
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—4 **6 Claims**



1. A device for magnetic bubble domains comprising:

a plurality of bubble domain generator means;

a plurality of replicator means for splitting bubble domains from an associated one of said generator means into a plurality of new domains;

propagation paths of different lengths interposed between each of said generator means and the associated replicator means;

storage means for storing said bubble domains;

input decoder means for selectively transferring said bubble domains from said replicator means to said storage register means;

detector means for detecting said domains having portions thereof at different distances from said storage means;

switch means associated with said storage means for selec-

tively transferring said domains between said storage means and said detector means; and

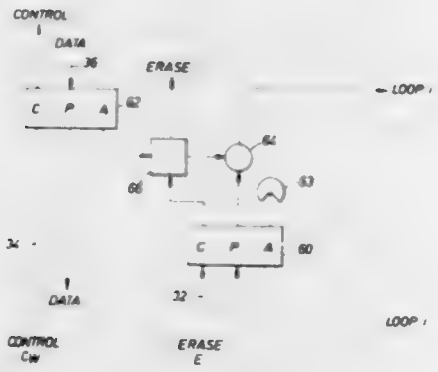
output decoder means for selectively transferring said domains to said detector means.

4,085,452

MAGNETIC DOMAIN MEMORY EMPLOYING ALL-BUBBLE LOGIC ELEMENTS

John Charles Linn, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 13, 1974, Ser. No. 469,493
Int. Cl.² G11C *19/08*
U.S. Cl. 365—5 **12 Claims**



9. A magnetic memory, comprising:

a substrate,

a body of magnetic material capable of supporting magnetic domains secured adjacent one surface of said substrate, said magnetic domains being organized into a register,

means coupled to said body for generating and controllably positioning magnetic domains in said magnetic material in step fashion,

magnetic domain write means connected to said register for writing bubble data into said register from a common input data stream, said write means including

a transient bubble switch having its preferred path connected to said input data stream and its control path input connected to receive a write bubble, and

an exclusive merge element connected to said register into the alternate path output of said switch,

said switch being responsive to the simultaneous presence of a bubble from said input data stream in its preferred path and a write bubble in its control path for directing said data bubble to exit from its alternate path, and

said exclusive merge element being responsive to the reception of said data bubble from the alternate path of said switch to insert a bubble into a bubble void location in said register.

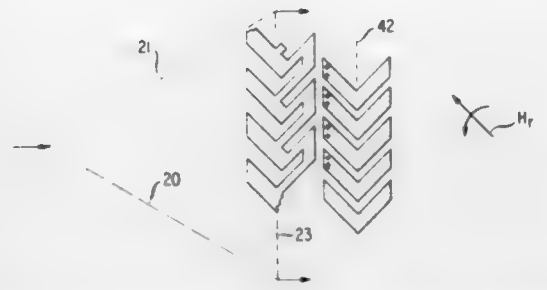
4,085,453

MAGNETORESISTIVE DETECTOR FOR MAGNETIC BUBBLE MEMORY

Andrew Henry Bobeck, Chatham; Peter Istvan Bonyhard, Edison, and Terence John Nelson, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 8, 1976, Ser. No. 739,472
Int. Cl.² G11C *19/08*
U.S. Cl. 365—8 **7 Claims**

1 A magnetic bubble memory including a layer of material in which magnetic bubbles can be moved and means for defining in said layer a path for the movement of bubbles to an expansion detector including a detector stage, said stage including a plurality of magnetic propagate elements aligned along an axis transverse to said path, adjacent pairs of said elements being linked by interlinking magnetic elements to form a series arrangement defining a bubble detector, each of said magnetic propagate elements including first and second contiguous side portions arranged at an angle to one another, each of said second side portions being bifurcated for defining first and second relatively narrow subportions, said second subportion of each one of said second side portions being coupled to the



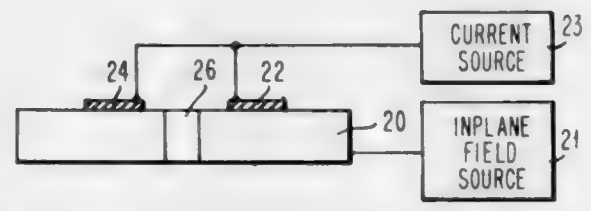
first subportion of the next consecutive one of said elements by one of said interlinking elements.

4,085,454

METHOD AND APPARATUS FOR THE CONTROLLED GENERATION OF WALL ENCODED MAGNETIC BUBBLE DOMAINS

David Malcolm Hannon, Palo Alto, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,378
Int. Cl.² G11C *19/08*
U.S. Cl. 365—30 **8 Claims**



1. An apparatus for coding bubble wall states in a bubble medium comprising

a first conductor positioned on said bubble medium,

a second conductor positioned parallel to said first conductor to form a gap there-between, said gap being of sufficient size to provide a local in-plane field in said gap sufficient for coding bubble wall states and a local vertical field in said gap sufficient to retain a bubble in said gap during the application of current in said first and second conductors, the widthh of said gap being approximately 0.5 to 2 times the bubble diameter,

means for applying an external in-plane field to said bubble medium, and

means for applying current simultaneously in the same direction in said first and second conductors to provide a local in-plane field and a local vertical field in said gap wherein the application of current in said conductors in a first direction codes a bubble with a first wall state and the application of current in said conductors in a direction opposite to said first direction codes a bubble with a second wall state.

4,085,455

ELECTRICAL INFORMATION STORAGE SYSTEM

Koji Okumura, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

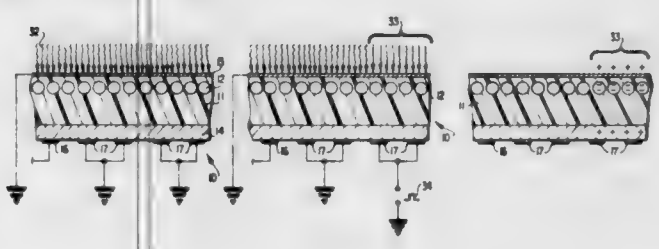
Division of Ser. No. 539,913, Jan. 9, 1975. This application Jul. 2, 1976, Ser. No. 702,329
Int. Cl.² G11C *11/34*
U.S. Cl. 365—112 **5 Claims**

2. A method of addressing electrical information into an electrical information storage member, comprising:

providing an electrical information storage member comprising a solid layer of substantially electrically insulating material containing a layer of particulate electrically photosensitive material, a semiconductor layer contacting one surface of said layer of substantially electrically insulating

material, and a substantially transparent electrode layer of electrically conductive material contacting the opposite surface of said layer of substantially electrically insulating material,

substantially uniformly exposing the entire layer of electrically photosensitive material with activating electromagnetic radiation, and



placing an electrical field across desired areas of said member by impinging an electron beam onto the surface of the semiconductor layer in desired areas, thereby addressing electrical information into said deisred areas of the member.

4,085,456

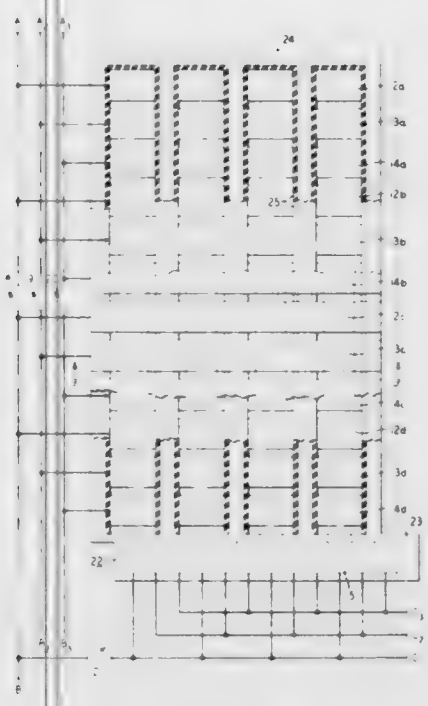
CHARGE TRANSFER IMAGING DEVICES

Michael Francis Tompsett, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 124,735, Mar. 16, 1971, abandoned. This application Aug. 30, 1972, Ser. No. 285,054

Int. Cl.² G11C *11/32, 13/04, 19/28*

U.S. Cl. 365—114 **19 Claims**



7. A charge transfer line imaging device comprising a charge storage medium, an insulating layer covering at least a portion of one surface of said medium, a first row of metal electrodes formed on said insulating layer, and means for projecting an image onto one surface of said medium to form charge carriers therein, characterized in that said device further comprises a conduction path electrically coupling together all electrodes of said first row to form a row of localized integration sites in said medium thereunder for the collection of mobile charge carriers generated in said medium in response to said incident light, a second array of metal electrodes, comprising a second row of electrodes, formed on said insulating layer over an area of the storage medium contiguous to the area under said first row, certain electrodes of said second array aligned in columns with said first row so as to receive in the medium thereunder charge carriers from a corresponding integration site, conduction paths for sequentially biasing the electrodes of said second row to transfer said charge carriers thereunder serially for detection, and means for shielding the surface of the storage medium under said second array from incident light.

4,085,457

MEMORY SYSTEM WITH A SENSE CIRCUIT

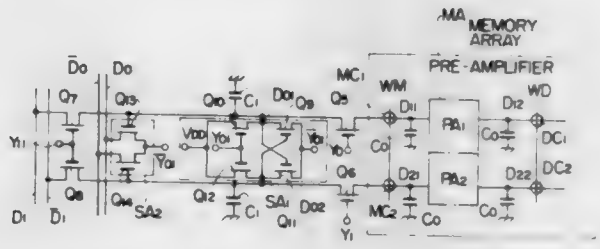
Kiyoo Itoh, Higashi-kurume, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 31, 1976, Ser. No. 672,154

Claims priority, application Japan, Mar. 31, 1975, 50-37985

Int. Cl.² G11C *7/06*

U.S. Cl. 365—205 **13 Claims**



1. A memory system comprising:

first and second data lines, to each of which a plurality of memory cells for storing information are connected;

third and fourth data lines;

first and second switching means for individually connecting said first and second data lines on a selective basis to said third and fourth data lines, respectively, in response to respective first and second address signals respectively applied to said first and second switching means; and

a sense amplifier comprised of a flip-flop circuit having first and second input nodes connected to said third and fourth data lines, respectively.

4,085,458

RANDOM ACCESS MEMORY

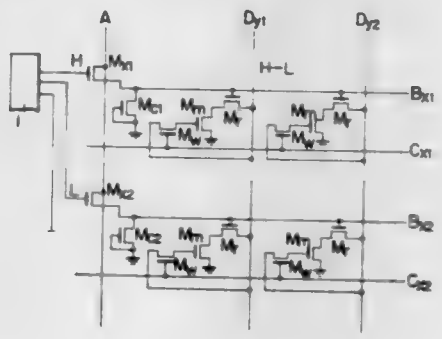
Kunihiko Ikuzaki, Hinodemachi; Tsuneo Ito, Kodaira; Masamichi Ishihara, Tachikawa, and Takashi Sato, Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

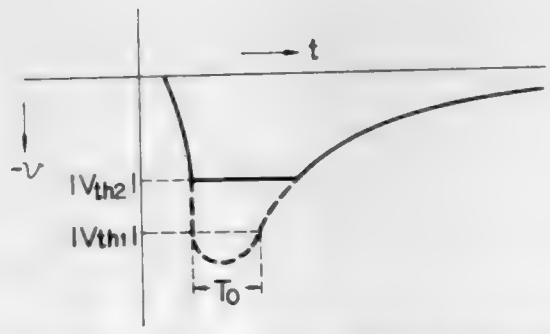
Filed May 26, 1976, Ser. No. 690,303

Claims priority, application Japan, Jun. 4, 1975, 50-66552

Int. Cl.² G11C *7/02*

U.S. Cl. 365—206 **2 Claims**





1. An n-channel random access memory comprising in a p-type semiconductor substrate:

a plurality of memory cells arranged in a matrix form, each of the memory cells including an information storing

MOSFET having a source connected to a reference potential, word lines being associated with respective rows of the matrix, the word line being adapted to receive a positive voltage signal relative to the reference potential;

row selecting MOSFET's connected to the word lines respectively; and

switching means including a plurality of clamping MOSFET's each connected between a respective word line and said reference potential for clamping the word line to a predetermined potential when the word line is not selected, said clamping MOSFET's having a lower threshold voltage than that of the row selecting MOSFET to thereby turn on prior to the row selecting MOSFET in response to a noise signal on the non-selected word line.

4,085,459

MULTIVALUED DATA MEMORY SYSTEM USING A CHARGE COUPLED ELEMENT

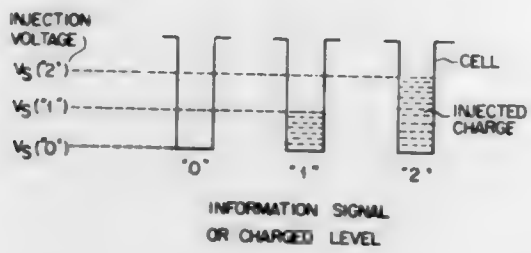
Kanji Hirabayashi, Sagamihara, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

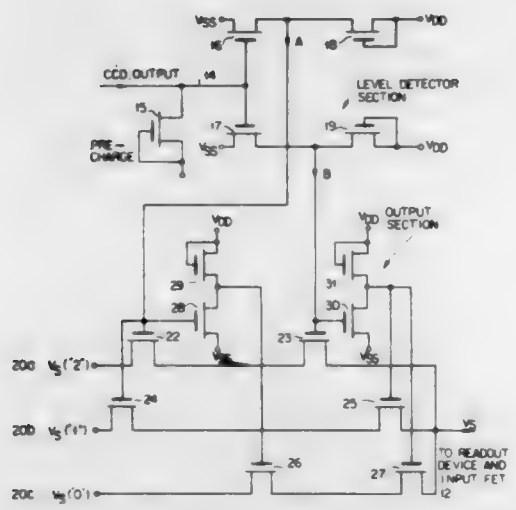
Filed Sep. 10, 1976, Ser. No. 722,100

Claims priority, application Japan, Sep. 13, 1975, 50-111213

Int. Cl.² G11C *7/00, 11/56*

U.S. Cl. 365—222 **4 Claims**





1. A memory system including a charge coupled device for storing in a channel of said charge coupled device an analog multivalued signal having at least three information carrying levels represented by an analog voltage level at the output terminal of said charge coupled device, said system comprising: injection means for injecting the multivalued signal in the form of electric charge into said charge coupled device; and detection means connected to the output terminal of said charge coupled device and adapted to detect the level of said multivalued signal and feed a voltage representing said level back to said injection means, said detection means including a level detection section having threshold detection means connected to the output terminal of said charge coupled device and constructed and arranged to simultaneously compare the voltage signal on said output terminal against at least two fixed voltage threshold levels and to generate a combination of binary outputs representing the multivalued signal level read out from the output terminal of said charge coupled device, and an output section for generating upon receipt of said combination of binary outputs an multivalued output having a voltage level corresponding to said combination of outputs.

4,085,460

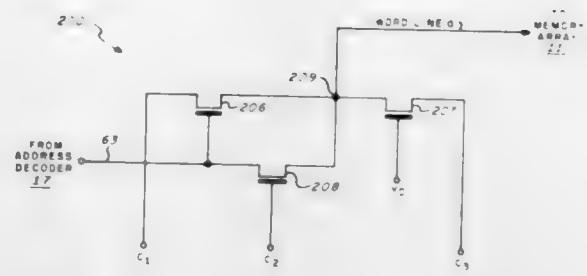
DECODER BUFFER CIRCUIT FOR MNOS MEMORY

Robert J. Lodi, Tewksbury, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 5, 1976, Ser. No. 673,559

Int. Cl.² G11C *7/00*

U.S. Cl. 365—230 **4 Claims**



1. In a digital memory having an array of variable threshold transistor memory cells formed on a substrate, each said cell having gate electrode means, said cells being arranged in a plurality of word rows with the gate electrode means of each of said rows being coupled to one of a plurality of word lines respectively; address decoder means responsive to address signals and having a plurality of outputs for selectively energizing said outputs in accordance with said address signals; control circuitry responsive to memory control inputs for selectively providing buffer operating voltages in accordance with said memory control inputs and a plurality of decoder buffers responsive to said buffer operating voltages and coupling said plurality of address decoder outputs to said plurality of word lines respectively; each said decoder buffer comprising:

first and second transistors each having source, drain and gate electrodes, said transistors being serially connected with respect to each other forming a junction therebetween, said junction being coupled to the associated one of said word lines, and

a third transistor having source, drain and gate electrodes and coupled between said junction and said gate electrode of said first transistor, said gate electrode of said first transistor being coupled to the associated one of said address decoder outputs, said electrodes of said first and second transistors opposite said junction and said gate electrode of said third transistor being coupled to receive said buffer operating voltages for controlling said buffers in the various modes of said memory.

4,085,461

SCREW-TYPE PLASTICS EXTRUDER

Charles E. Maillefer, Renens, Switzerland, assignor to Maillefer S.A., Switzerland

Filed Jun. 4, 1976, Ser. No. 692,751

Claims priority, application Switzerland, Jun. 30, 1975, 8486/75

Int. Cl.² B29F *3/02*

U.S. Cl. 366—90 **11 Claims**



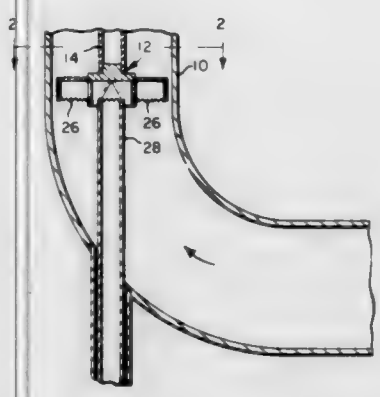
1. In an extruder for plastic materials, of the type wherein a

screw having a hub housed within a cylinder is rotatingly driven about its longitudinal axis at a predetermined speed and is divided along its length into at least three successive zones including a feed zone, a plasticizing zone and a homogenization zone, and wherein said plasticizing zone is provided with a helical thread of constant pitch integral with said hub and arranged for conveying said plastic material between said cylinder and said hub towards said homogenization zone, while said material plasticizes, said thread in said plasticizing zone having a multitude of narrow passages passing therethrough, each passage having a width less than its radial depth and in the range of from about 0.8 to 1 mm and connecting the downstream side of said thread with the upstream side thereof in such a manner that plastic material traverses said passages during its travel through the plasticizing zone, the passages thus providing for heating of the plastic material through surface contact with the thread.

4,085,462
APPARATUS

Max Lorenz Booy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 4, 1977, Ser. No. 774,623
Int. Cl.[2] B01F *15/02*
U.S. Cl. 366—174 **4 Claims**

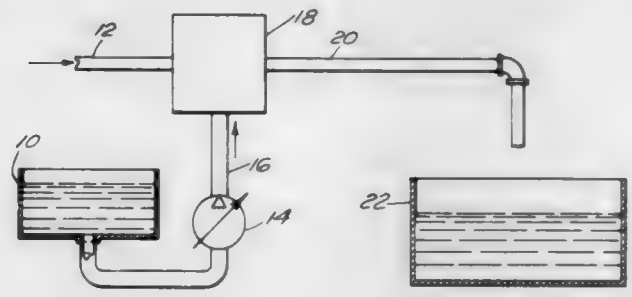


1. In a conduit for carrying a primary fluid flowing from an upstream direction, an apparatus positioned in said conduit for adding a secondary fluid to the primary fluid in said conduit comprising: an open cup positioned in said conduit, said cup being defined by a continuous side wall and a bottom wall; a plurality of troughs attached to spaced locations on and extending outwardly from said side wall, there being openings in said side wall at said spaced locations to allow communication from said cup to said troughs, each of said troughs having openings defined by edges, said edges having serrations therein, said trough openings and said cup opening facing the upstream direction of the conduit; and means for directing a stream of fluid to be added to the fluid in said conduit into said cup.

4,085,463
MIXING APPARATUS

Charles A. Wilson, Lincoln, R.I., assignor to General Signal Corporation, Stamford, Conn.

Filed Aug. 6, 1976, Ser. No. 712,177
Int. Cl.[2] B01F *15/02, 5/06*
U.S. Cl. 366—176 **4 Claims**

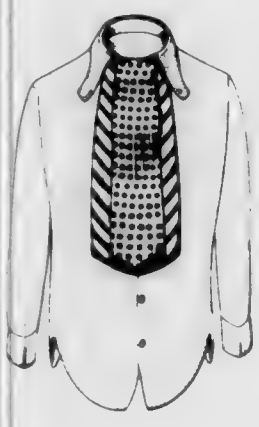


1. In combination a pump, said pump having an inlet connected to a supply of a first liquid material, a mixing chamber, a supply of a second liquid vehicle material connected to said chamber, the output of said pump connected to said mixing chamber, an elastomeric plug retained in said chamber, said plug having a solid wall, means including an inlet leading into said chamber, a seat about said inlet, said plug wall being urged against said seat, the pressure developed by said pump forcing the plug away from the seat to create an orifice whereby the first material is passed through said orifice into said chamber, said second material being passed into said chamber, discontinuities in the wall of said chamber substantially at right angles to the second material flow which creates turbulence, and a receiver for the output of said mixer.

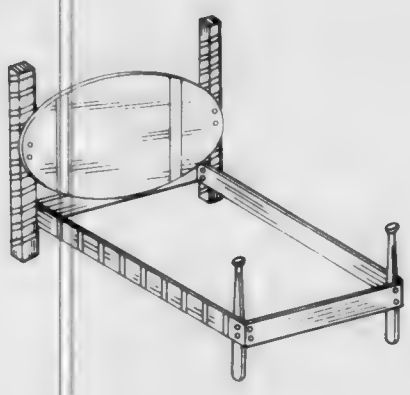
DESIGNS

APRIL 18, 1978

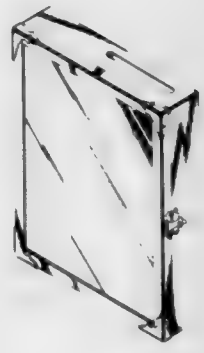
247,726
COMBINED SHIRT AND CRAVAT
James A. D. Halliwell, 2051 Jordan Dr., Burnaby 2, British Columbia, Canada (V5B 4E9)
Filed Apr. 14, 1976, Ser. No. 676,716
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—209



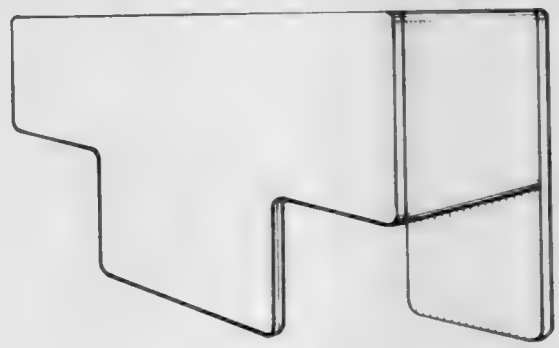
247,727
BEDSTEAD
Thomas R. Mitchell, 5856 Jefferson-Paige Rd., Shreveport, La. 71110
Filed Nov. 24, 1975, Ser. No. 634,364
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—83



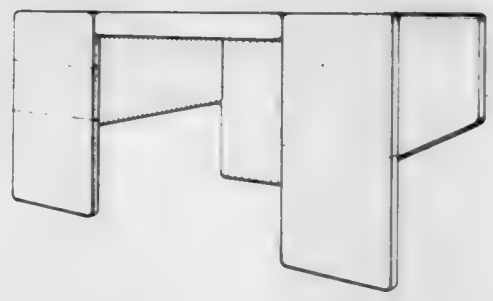
247,728
SLOTTED CONTAINER FOR RECEIVING PAID BILLS OR THE LIKE
Brian H. Nichols, 14115 - 45th St. N., Stillwater, Minn. 55082 55082
Filed Oct. 8, 1975, Ser. No. 620,649
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—127



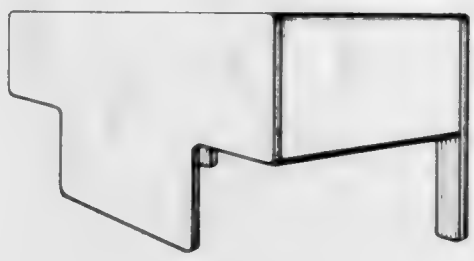
247,729
CREDENZA
A. Fuller Robinson, 408 St. Gabriel St., Montreal, Quebec, Canada
Filed Jul. 19, 1976, Ser. No. 706,873
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159



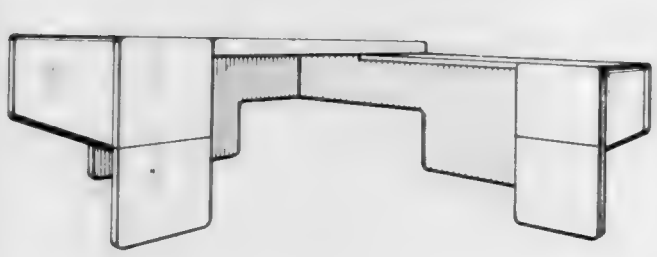
247,730
DESK
A. Fuller Robinson, 408 St. Gabriel St., Montreal, Quebec, Canada
Filed Jul. 19, 1976, Ser. No. 706,870
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



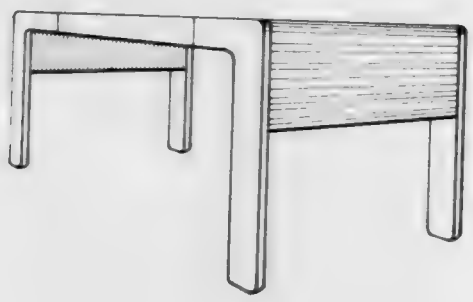
247,731
DESK
A. Fuller Robinson, 408 St. Gabriel St., Montreal, Quebec, Canada
Filed Jul. 19, 1976, Ser. No. 706,871
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



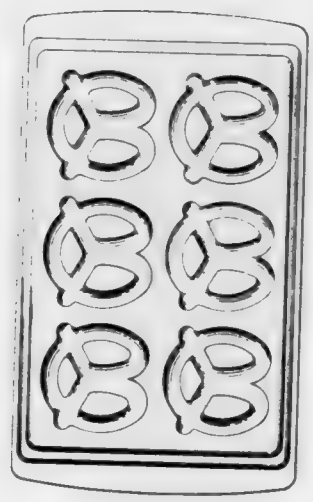
247,732
DESK
A. Fuller Robinson, 408 St. Gabriel St., Montreal, Quebec, Canada
Filed Jul. 19, 1976, Ser. No. 706,872
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



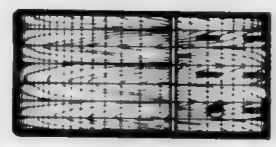
247,733
TABLE
A. Fuller Robinson, 408 St. Gabriel St., Montreal, Quebec, Canada
Filed Jul. 19, 1976, Ser. No. 706,874
Claims priority, application Canada, Apr. 9, 1976, 0904761
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

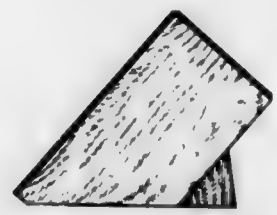


247,734
PRETZEL PAN
Delvin Richard Ryan, Jr., Terre Haute, Ind., assignor to The J. R. Clark Company, Stamford, Conn.
Filed Aug. 20, 1976, Ser. No. 716,169
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—43

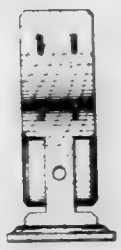


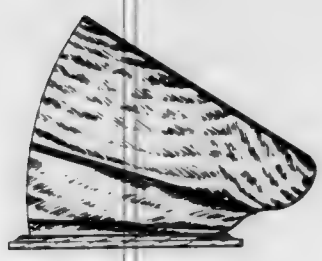
247,735
HOLDER FOR CUTLERY AND SHARPENING STEEL
Ronald J. Gangelhoff, Bemidji, Minn., and Robert L. Jacobi, Palatine, Ill., assignors to Chicago Cutlery Consumer Products, Inc., Minneapolis, Minn.
Filed Sep. 24, 1976, Ser. No. 727,145
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—74



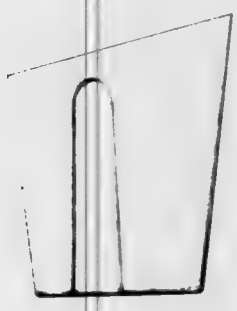


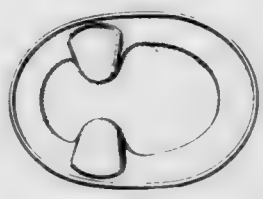
247,736
HOLDER FOR CUTLERY AND SHARPENER
Fred R. Gangelhoff, Largo, Fla., assignor to Chicago Cutlery Consumer Products, Inc., Minneapolis, Minn.
Filed Sep. 24, 1976, Ser. No. 727,146
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—74



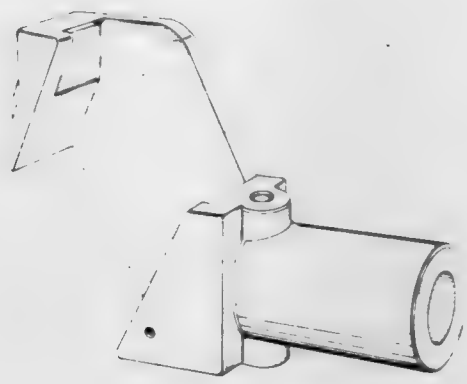


247,737
DOG FOOD SCOOP
Mark A. Alexander, Brockton, and Samuel F. Speers, North Attleboro, both of Mass., assignors to Ralston Purina Company, St. Louis, Mo.
Filed Aug. 16, 1976, Ser. No. 715,865
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—104

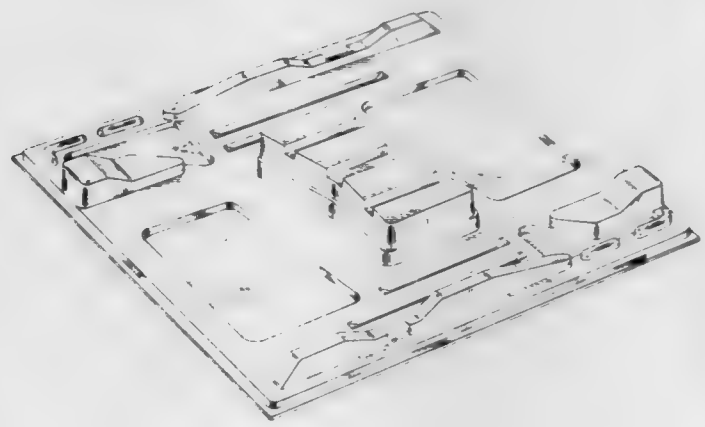




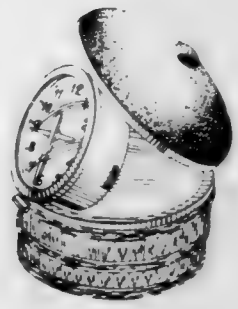
247,738
STUD MOUNTED BRACKET
Charles H. Rynearson, P.O. Box 69, Woodburn, Oreg. 97071
Filed Feb. 14, 1977, Ser. No. 768,356
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



247,739
DUAL RIBBON CARTRIDGE SHIPPING TRAY
Anthony N. Paone, Syracuse, and William P. Montgomery, Cortland, both of N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Jul. 12, 1976, Ser. No. 704,266
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



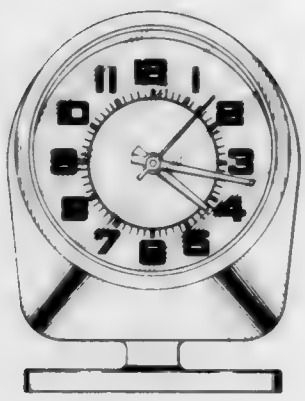
247,740
COMBINED CLOCK AND CASE
Frank A. Brady, Walnut Creek, Calif., assignor to General Time Corporation, Thomaston, Conn.
Filed Jul. 27, 1976, Ser. No. 709,210
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—18



247,741
CLOCK

Ellworth R. Danz, LaSalle, and John C. Crenshaw, Joliet, both of Ill., assignors to General Time Corporation, Thomaston, Conn.

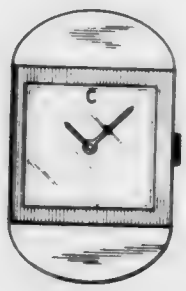
Filed Aug. 19, 1976, Ser. No. 715,672
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—23



247,742
WRIST WATCH

Charles Davidson, 35 Old Post Rd. N., Croton-on-Hudson, N.Y. 10520

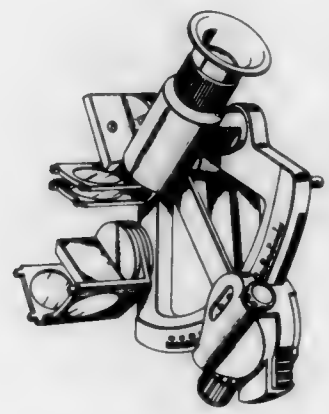
Filed Nov. 3, 1975, Ser. No. 628,291
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



247,743
SEXTANT

Gerd Finnern, Hamburg; Mario Fleig, Norderstedt; Friedrich Grothkopp, Hamburg; Peter Hein, Hamburg; Armin Rahn, Hamburg, and Lorenz Schneider, Kaltenkirchen, all of Germany, assignors to C. Plath, Hamburg, Germany

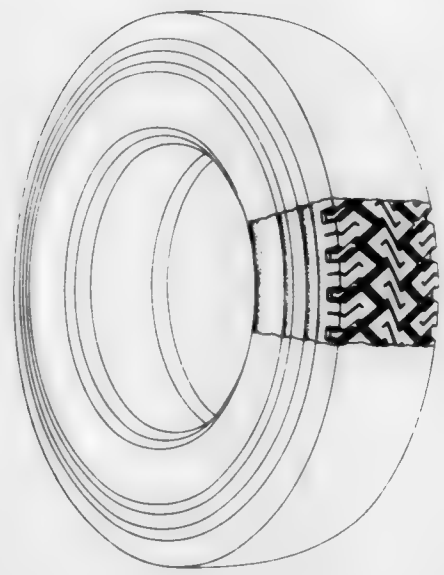
Filed Apr. 6, 1976, Ser. No. 674,103
Claims priority, application Germany, Oct. 10, 1975, AR 1808
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65



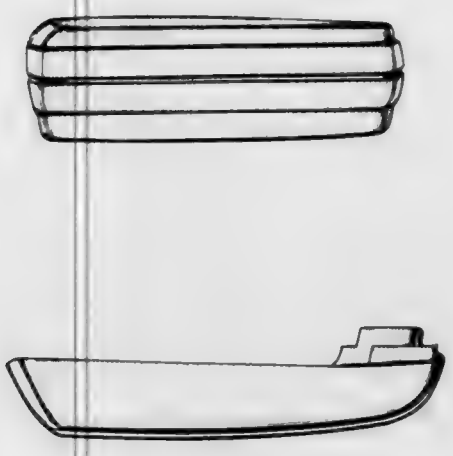
247,744
TIRE

Marcel Duchamp, Chamalieres, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

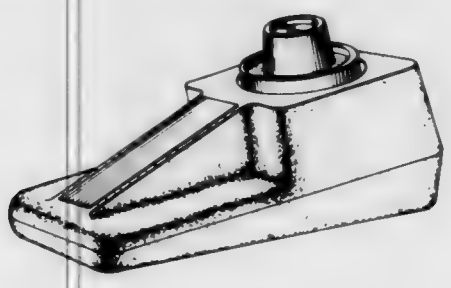
Filed Oct. 22, 1976, Ser. No. 735,112
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—137



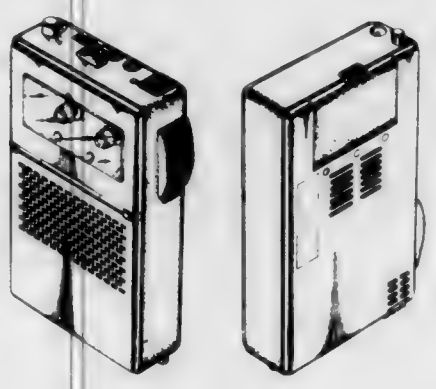
247,745
SIDE WING OF A CAR BUMPER
Michel Tixier, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Aug. 17, 1976, Ser. No. 715,005
Claims priority, application France, Mar. 1, 1976, 74.598
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—172



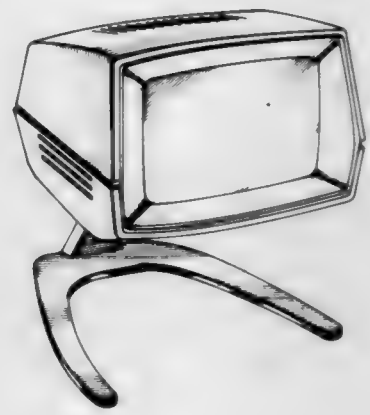
247,746
HAND HELD CONTROL UNIT
Randy K. Hall, Santa Clara, Calif., assignor to Atari, Inc., Sunnyvale, Calif.
Filed Oct. 22, 1976, Ser. No. 734,981
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—38



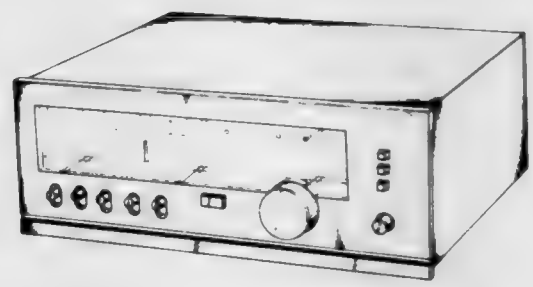
247,747
TAPE RECORDER
Shigeru Nemoto, Tachikawa, and Minoru Kobayashi, Hachioji, both of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan
Filed May 25, 1977, Ser. No. 800,161
Claims priority, application Japan, Dec. 3, 1976, 5147179
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



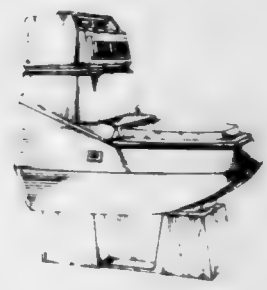
247,748
DISPLAY MONITOR OR SIMILAR ARTICLE
John Steven Ebner, Boca Raton; Francis Charles Pizzeri, Miami Shores, and Charles Grimes Sprecher, Pembroke Pines, all of Fla., assignors to Milgo Electronics Corporation, Miami, Fla.
Filed Mar. 2, 1976, Ser. No. 663,134
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—43



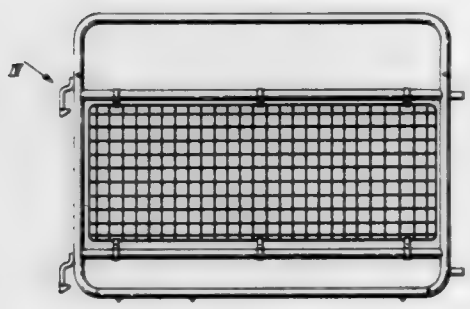
247,749
TUNER
Kazuhito Ohtomo, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Sep. 13, 1976, Ser. No. 722,461
Claims priority, application Japan, Mar. 27, 1976, 5111076
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—71



247,750
FLUSH TOILET
Tien-Pao Lu, and Shun-Chi Lee, both of No. 21, Lane 109, Nan Ning Road, Tai Nan, China /Taiwan
Filed Sep. 13, 1976, Ser. No. 722,363
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—65



247,751
PORTABLE CROWD CONTROL BARRICADE OR THE LIKE
William Edward Appleby, London, England, assignor to Tubular Barriers Limited, London, England
Filed Jun. 29, 1976, Ser. No. 700,832
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—45



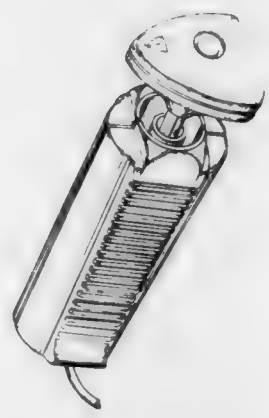
247,752
TELESCOPIC FRICTION LIGHTER
Taro Yanai, No. 3-13, Shirakawa 1-chome, Koto-ku, Tokyo, Japan
Filed Nov. 17, 1976, Ser. No. 742,656
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36



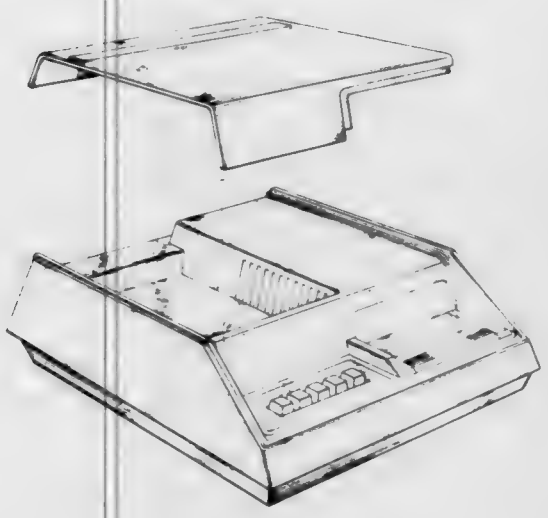
247,753
LIGHTER WITH MAGNETIZED TELESCOPIC TIP
Taro Yanai, No. 3-13, Shirakawa 1-chome, Koto-Ku, Tokyo, Japan
Filed Nov. 17, 1976, Ser. No. 742,655
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—38



247,754
HAND-HELD CONTROLLER FOR A VIDEO GAME OR THE LIKE
Nicholas F. Talesfore, San Jose, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Aug. 23, 1976, Ser. No. 716,625
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 R



247,755
VIDEO GAME CONSOLE
Nicholas F. Talesfore, San Jose, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Aug. 23, 1976, Ser. No. 716,848
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 R



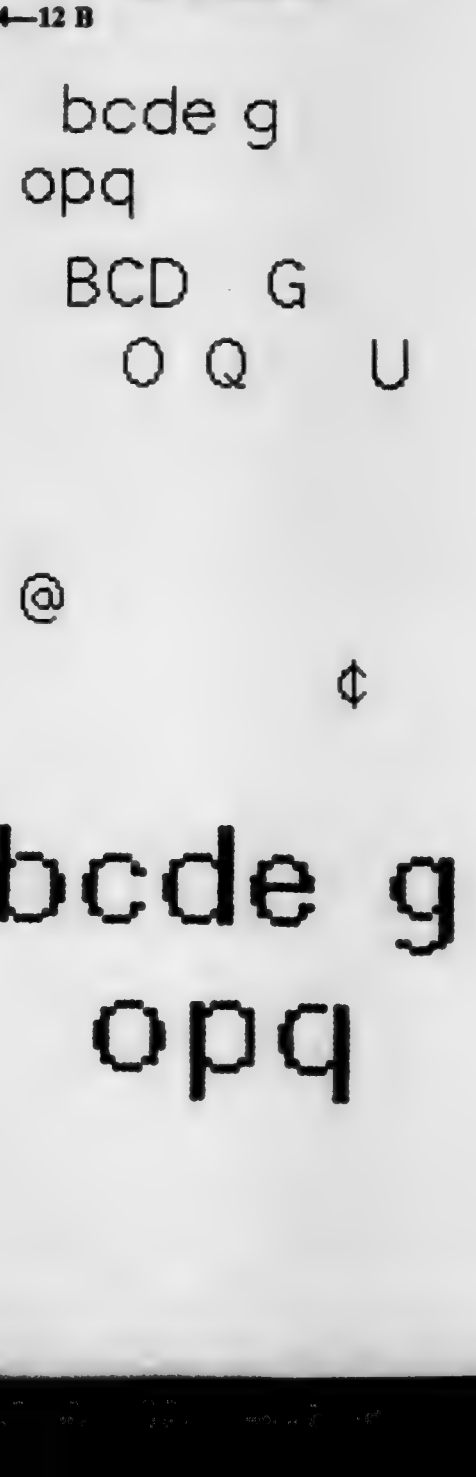
247,756
SUN LAMP
Petrus Jacobus Johanna Nagelkerke, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 31, 1975, Ser. No. 645,917
Claims priority, application Netherlands, Feb. 7, 1975, 5040001
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—20 H



247,757
SHELF LIGHT
Anthony C. Donato, Westfield, and Gerald Thurston, Cranford, both of N.J., assignors to Lightolier Incorporated, Jersey City, N.J.
Filed Dec. 27, 1976, Ser. No. 754,611
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 E



247,758
TYPE FONT
Timothy H. Archer, Washington Court House, Ohio, assignor to The Mead Corporation
Filed May 18, 1976, Ser. No. 687,552
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B

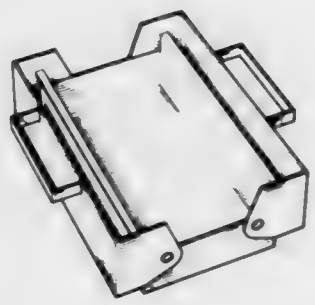


247,759

CARRYING CASE FOR TAPE CASSETTES

Ole Winther, Helsingor, Denmark, assignor to Esselte Obergs AB, Stockholm, Sweden

Filed Aug. 11, 1976, Ser. No. 713,542
Claims priority, application Sweden, Feb. 16, 1976, 760360
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D

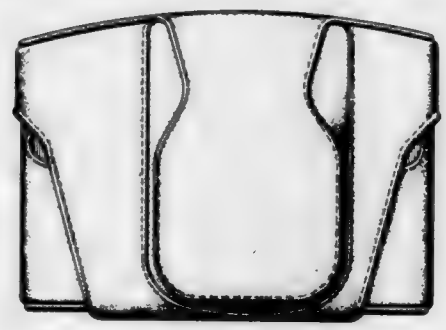


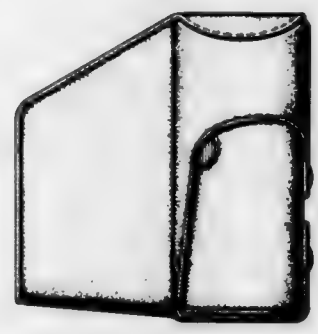
247,760

CARRYING CASE FOR A PHOTOGRAPHIC CAMERA

Gunter Rausch, Brunswick, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Aug. 24, 1976, Ser. No. 717,206
Claims priority, application Germany, Mar. 10, 1976, 1081
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—5 E





LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF APRIL, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.T.M.B. Societe Anonyme: *See*—
Naimo, Jean-Pierre, 4,084,289, Cl. 16-96.00R.

Assen, Torulf F.; Nisenson, Jules; and Pegg, Charles E., to Pitney-Bowes, Inc. Copying machine. 4,084,901, Cl. 355-16.000.

Aatinen, Eino, to Valmet Oy. Method of manufacturing, for a paper machine or the like, a roll having a grooved exterior surface. 4,084,302, Cl. 29-148.40D.

AB Sjuntorp: *See*—
Hallhagen, Rudolf G., 4,084,380, Cl. 61-1.00F.

AB Svenska Flaktfabriken: *See*—
Strindehag, Ove Magnus, 4,084,633, Cl. 165-8.000.

AB Volvo: *See*—
Ternehall, Runo Roy Oskar, 4,084,671, Cl. 192-30.00W.

Abend, Karl-Ludwig; Mattes, Bernhard; and Scheyhing, Hans, to Robert Bosch GmbH. Automotive vehicle speed control system. 4,084,659, Cl. 180-105.00E.

Abner, Larry David. Device for connecting corrugated drainage tiles and the like. 4,084,844, Cl. 285-373.000.

Abramyan, Evgeny Aramovich; and Sharapa, Anatoly Nikolaevich. Device for electrical deceleration of flow of charged particles. 4,085,376, Cl. 328-233.000.

Aczel, Thomas; and Plumlee, Karl W., to Exxon Research & Engineering Co. Hydrogen donor solvent coal liquefaction process. 4,085,032, Cl. 208-10.000.

Adachi, Ikuo; Ueda, Motohiko; and Kimoto, Sadatoshi, to Shionogi & Co., Ltd. 1,2-Benzoisoxazole derivatives and the production thereof. 4,085,114, Cl. 260-307.0DA.

Adachi, Syozo; and Tamori, Masato, to Iwatsu Electric Co., Ltd. Electrophotographic liquid developer containing a graft copolymer of a cyclized rubber. 4,085,058, Cl. 252-62.10L.

Adair, Edwin L. Method of sealing concentric tube ends to make sealed dual-wall tube. 4,085,185, Cl. 264-248.000.

Adams, James E.: *See*—
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,084,966, Cl. 96-1.0PS.

Adams, James R., Jr.; and Wilwerding, Dennis J., to Rollei of America, Inc. Remote sensor trigger circuit. 4,085,353, Cl. 315-241.00P.

Addressograph-Multigraph Corporation: *See*—
Schweitzer, Roy C.; and Fiori, Lee B., 4,084,510, Cl. 101-365.000.

Adolf, Horst R.: *See*—
Mein, Peter G.; and Adolf, Horst R., 4,085,191, Cl. 423-208.000.

Aerojet-General Corporation: *See*—
O'Brien, Charles J., 4,085,061, Cl. 252-301.10W.

Agence Nationale de Valorisation de la Recherche: *See*—
Chehikian, Alain; and Bouvier, Gerard, 4,085,401, Cl. 340-146.3AE.
Dubois, Jacques E.; and Miller, John A., 4,085,443, Cl. 364-900.000.
Neveu, Jean-Louis; and Melancon, Sylvio, 4,084,930, Cl. 425-198.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Pinard, Jacques Andre; and Juncar, Patrick Pierre Paul, 4,084,907, Cl. 356-106.00S.

Agency of Industrial Science & Technology: *See*—
Sano, Shiro; Hayashi, Hiroshi; and Takagi, Hiroyoshi, 4,084,979, Cl. 106-58.000.
Shimazaki, Kazumi; and Hirayama, Hiroyuki, 4,085,258, Cl. 429-125.000.

Ahmed, Adel Abdel Aziz, to RCA Corporation. Self-starting amplifier circuit. 4,085,359, Cl. 323-22.00T.

Ahn, Byong-Ho; Gilinson, Philip J., Jr.; and Moscaritolo, Anthony Michael, to Charles Stark Draper Laboratory, Inc. Torque reaction motor performance evaluation. 4,084,428, Cl. 73-117.300.

Aigrain, Pierre; Broussaud, Georges; Peltier, Jean Paul; and Spitz, Erich, to Thomson-Brandt. Method for protecting against drop-outs in a sound signal recorded on a video-disc. 4,085,426, Cl. 360-38.000.

Aisan Kogyo Kabushiki Kaisha: *See*—
Hashimoto, Masanao; Saitou, Tadashi; Kobayashi, Tatsuo; and Suzuki, Isamu, 4,084,373, Cl. 60-293.000.

Akonteh, Ayola Ngwa; and Kwor, Y. C. Richard. Skateboard with control unit. 4,084,831, Cl. 280-11.200.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Hydrothermally stable catalysts containing ammonium faujasite zeolites. 4,085,069, Cl. 252-455.00Z.

Alarmco Inc.: *See*—
Leslar, David Louis; and Kirk, John Cyril, 4,085,292, Cl. 179-2.00A.

Albers, Norbert C., to Designeers Midwest, Division Maswill Industries Incorporated. Apparatus for dispensing rings and for applying piston rings to pistons. 4,084,727, Cl. 221-298.000.

Albertazzi, Gastone, to Finike Italiana Marposs Soc. In. Accomandita Semplice di Mario Possati & C. Apparatus for measuring geometrical dimensions and/or errors on a mechanical part. 4,084,322, Cl. 33-174.00L.

Alexandrowicz, Norman J.: *See*—
Smith, Lee H.; and Alexandrowicz, Norman J., 4,084,675, Cl. 192-95.000.

Alfelder Machinen-und Modellfabrik Kunkel, Wagner & Co. KG: *See*—
Kunzmann, Konrad, 4,084,631, Cl. 164-4.000.

Alink, Bernardus A. Oude, to Petrolite Corporation. Xanthates of 2,3,4,5-tetrahydropyrimidine. 4,085,104, Cl. 260-251.00R.

Allebach, Gene E.; and Wisebaker, Robert E., to National Machinery Company, The. High speed transfer. 4,084,278, Cl. 10-76.00T.

Allen & Hanburys Limited: *See*—
Rhodes, Deryck; and Newton, Roger Frank, 4,085,222, Cl. 424-278.000.

Allen, James W. Magnetic separator with helical classifying path. 4,085,039, Cl. 209-220.000.

Allied Chemical Corporation: *See*—
Buff, Ernest Dorchester; and Plaut, Jonathan, 4,084,840, Cl. 280-744.000.

Alliger, Howard. Germ killing composition and method. 4,084,747, Cl. 239-4.000.

Allis-Chalmers Corporation: *See*—
Coxhill, Major, 4,084,756, Cl. 241-213.000.
McGrath, Laurence R., 4,084,397, Cl. 56-255.000.

Allmanna Svenska Elektriska Aktiebolaget: *See*—
Schultz, Goran; and Wiberg, Karl-Gunnar, 4,084,307, Cl. 29-460.000.

Allred, Victor Dean, to Marathon Oil Company. Combined combustion for in-situ retorting of oil shales. 4,084,640, Cl. 166-259.000.

Alm, Oddvar: *See*—
Nielsen, Tore Bernt; and Alm, Oddvar, 4,084,994, Cl. 149-44.000.
Samuelsen, Eirik; and Alm, Oddvar, 4,084,995, Cl. 149-56.000.

Ambasz, Emilio, to Center for Design Research and Development N.V. Chair. 4,084,850, Cl. 297-317.000.

Amdall, John K., to Caterpillar Tractor Co. Modified hypotrochoidal rotary mechanism. 4,084,927, Cl. 418-61.00A.

American Chain & Cable Company, Inc.: *See*—
Barker, Loren B., 4,084,306, Cl. 29-431.000.

American Colloid Company: *See*—
Clem, Arthur G., 4,084,382, Cl. 61-36.00R.

American Cyanamid Company: *See*—
DiLeone, Roland Ralph; and Robustelli, Albert George, 4,085,166, Cl. 260-876.00R.
Song, Dae Suk; Duffy, Richard Joseph; Witschonke, Charles Richard; Schiller, Arthur Maurice; and Higgins, Mark Allan, 4,085,045, Cl. 210-58.000.
Weiss, Martin Joseph; and Siuta, Gerald Joseph, 4,085,272, Cl. 560-121.000.

American Hospital Supply Corporation: *See*—
Mosior, Donald J., 4,084,594, Cl. 128-311.000.

American Security Equipment Company: *See*—
Lepow, Mark Norman, 4,084,879, Cl. 339-198.0GA.

Ames Safety Envelope Company: *See*—
DeWitt, David A., 4,084,911, Cl. 402-15.000.

Ametek, Inc.: *See*—
McIntyre, Robert Alfred; and Wolverton, Kenneth Harlan, 4,085,303, Cl. 200-61.410.

Ammons, Vernon G.: *See*—
Chang, Wen-Hsuan; and Ammons, Vernon G., 4,085,092, Cl. 260-77.5AN.

AMP Incorporated: *See*—
Dinger, Leon Joel, 4,084,876, Cl. 339-95.00D.
Pritulsky, James, 4,084,872, Cl. 339-19.000.

Ampex Corporation: *See*—
Harshberger, Robert P., Jr., 4,085,354, Cl. 318-87.000.

Amsterdamse Ballast Bagger: *See*—
Wolters, Tjako Aaldrik; and de Koning, Jan, 4,084,334, Cl. 37-67.000.

Anderson, Jack W.: *See*—
Anderson, Jack William; and Hughes, Glenn, 4,084,748, Cl. 239-74.000.

Anderson, Jack William; and Hughes, Glenn, to Anderson, Jack W. Spray sensing system. 4,084,748, Cl. 239-74.000.

Anderson, Leif Per Roland. Lifting device for moving goods between different levels. 4,084,660, Cl. 187-26.000.

Anderson, Thomas F.; and Hartless, Arlington L., to Dow Chemical Company, The. Pre-accelerated resin composition. 4,085,160, Cl. 260-837.00R.

Andrus, Ronald L.; and Reade, Richard F., to Corning Glass Works. Glass-ceramics with metallic iron surfaces. 4,084,972, Cl. 106-39.700.

Andrus, Ronald L.; and Reade, Richard F., to Corning Glass Works.

Glass articles with hematite and/or magnetite and/or metallic iron surfaces. 4,084,973, Cl. 106-39.700.
Anfelt, Bertil, to Landstingens Inkopscentral, Lic, Ekonomisk Forening. Protective glove. 4,084,265, Cl. 2-163.000.
Angst, Arthur H.: *See*—
Gravina, Anthony N.; Lev, Kenneth D.; and Angst, Arthur H., 4,085,363, Cl. 324-162.000.
Anhalt, Alfred E., to Stoelting Brothers Company. Slush freezer. 4,084,407, Cl. 62-342.000.
Anritsu Electric Company Limited: *See*—
Kuroda, Masahiro; and Yoshimura, Hiromitsu, 4,085,389, Cl. 332-31.00T.
Ansberg, Chris; and Maisel, Klaus, to International Standard Electric Corporation. Synchronous switching means for operating cable marking apparatus. 4,085,357, Cl. 318-590.000.
Ansul Company, The: *See*—
Rasheed, Khalid; and Warkentin, James D., 4,084,954, Cl. 71-90.000.
Anthony, William H.; Brock, Andrew J.; and Gullotti, Damian V., to Swiss Aluminium Limited. Aluminum base alloys containing zinc, magnesium, iron and cadmium, tin or lead. 4,084,963, Cl. 75-138.000.
Antos, George J.; Hayes, John C.; and Pollitzer, Ernest L., to UOP Inc. Hydrocarbon dehydrogenation using a nonacidic catalyst of a platinum group metal, rhenium, cobalt, tin, and an alkali or alkaline earth metal on a porous carrier. 4,085,154, Cl. 260-668.00D.
Aoki, Mitsuo; Watanabe, Kazuhiko; Murase, Shunichi; and Hiraoka, Isao, to Otsuka Pharmaceutical Factory, Inc. Amino acid parenteral solution containing reducing sugar. 4,085,207, Cl. 424-180.000.
Aoki, Takashi: *See*—
Mizutani, Yutaka; and Aoki, Takashi, 4,084,336, Cl. 37-184.000.
Aoki, Teruaki; Matsushita, Takeshi; Mifune, Tadayoshi; and Hayashi, Hisao, to Sony Corporation. Method of manufacturing a semi-insulating silicon layer. 4,084,986, Cl. 148-1.500.
Aoyagi, Hayao: *See*—
Kukino, Yoshinori; Miura, Mitsuo; and Aoyagi, Hayao, 4,084,383, Cl. 61-36.00R.
Applequist, Michael D.: *See*—
White, James F.; Shaw, Wilfrid G.; and Applequist, Michael D., 4,085,065, Cl. 252-437.000.
Arai, Kenichi: *See*—
Yamaoka, Sadao; and Arai, Kenichi, 4,084,900, Cl. 355-14.000.
Arai, Yoshiyuki: *See*—
Takahashi, Katuhiko; Arimoto, Kyozo; Arai, Yoshiyuki; Morinaga, Tsuyoshi; and Nakazawa, Yuji, 4,085,274, Cl. 560-176.000.
Aratani, Yoshio: *See*—
Nakagawa, Kiyoshi; Otaki, Yukio; Mineo, Masatoshi; Aratani, Yoshio; Tatsuoka, Yoshio; and Kusakabe, Haruhiko, 4,084,622, Cl. 139-420.00R.
Arbrook, Inc.: *See*—
Lindsey, Joseph W., 4,084,587, Cl. 128-193.000.
Arcamone, Federico: *See*—
Foglio, Maurizio; Scarponi, Ugo; and Arcamone, Federico, 4,085,113, Cl. 260-306.70C.
Ariga, Nagao; Nanbu, Junji; and Oikawa, Hiroshi, to Dainippon Ink and Chemicals, Inc. Photocurable resin compositions. 4,085,018, Cl. 204-159.150.
Arimoto, Kyozo: *See*—
Takahashi, Katuhiko; Arimoto, Kyozo; Arai, Yoshiyuki; Morinaga, Tsuyoshi; and Nakazawa, Yuji, 4,085,274, Cl. 560-176.000.
Armco Steel Corporation: *See*—
Labelle, Camille A., 4,084,784, Cl. 251-147.000.
Armstrong Cork Company: *See*—
Heckles, John S.; and Miller, Norman L., 4,085,081, Cl. 260-31.40R.
Kauffman, William J., 4,085,268, Cl. 544-221.000.
Armstrong, Currie: *See*—
Christophersen, Clarence E.; and Armstrong, Currie, 4,084,724, Cl. 221-20.000.
Armstrong, T. Wayne. Round hay bale loading and unloading carrier. 4,084,711, Cl. 214-1.0HH.
Arrandale, Thomas P.: *See*—
Spotts, Willard; Arrandale, Thomas P.; and Spotts, Glenn R., 4,084,491, Cl. 98-121.00A.
Arthur D. Little, Inc.: *See*—
Prior, William L.; and Lindstrom, Richard S., 4,084,982, Cl. 106-105.000.
Asahi Glass Company, Ltd.: *See*—
Fukuwatari, Tadashi; Mishima, Kiyotaka; Ichimura, Hiroshi; and Kurihara, Hideaki, 4,085,001, Cl. 162-145.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Ishikawa, Tatsuo; Yamashita, Keiji; Okubo, Norio; Sakashita, Masahira; Okamoto, Arimichi; and Kusunose, Tetsuhiro, 4,085,174, Cl. 264-49.000.
Misumi, Teruyuki; Miyaji, Toshio; and Kasai, Masao, 4,085,042, Cl. 210-33.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Karikawa, Tohru, 4,085,413, Cl. 354-137.000.
Asano, Kiyoji, to Shinsei Kogyo Co., Ltd. Toy construction set. 4,084,344, Cl. 46-28.000.
Asawa, Charles K.; and Plant, Thomas K., to Hughes Aircraft Company. Stark-tuned laser modulator. 4,085,387, Cl. 331-94.50M.
Ashfield, Herbert Edward; and Horsfall, Harry, to David Brown Tractors Limited. Control for a tractor power lift mechanism. 4,084,641, Cl. 172-9.000.
Ashland Oil, Inc.: *See*—
McConnell, Robert B.; and Keuer, Douglas W., 4,085,126, Cl. 260-404.000.
Aspaas, Finn. Frame and sash for doors and windows. 4,084,361, Cl. 52-204.000.
Asselman, George Albert Apolonia; Van der AA, Herman Henricus Maria; and Meijer, Roelf Jan, to U.S. Philips Corporation. Heating system. 4,084,376, Cl. 60-523.000.
Astro Development Corporation: *See*—
Dudek, Harold M., 4,084,654, Cl. 180-44.00R.
Atallah, Khaled; Berthold, Fritz; Kolbe, Wolfgang; Rauschenbach, Peter; and Simon, Helmut. Method and circuit for determining the quench corrected counting efficiency of liquid scintillation samples. 4,085,325, Cl. 250-328.000.
Atkins, Lyle D., to Biolec Corporation. Biological apparatus for generating electrical power and process for producing bacteria electrolyte. 4,085,254, Cl. 429-2.000.
Atkins, Thomas Joseph, to Du Pont de Nemours, E. I., and Company. Bicyclic and tricyclic trisaminomethanes. 4,085,106, Cl. 260-256.40F.
Atlantic Richfield Company: *See*—
Gallagher, James P.; and Mooi, John, 4,085,068, Cl. 252-455.00R.
Atomic Energy of Canada Limited: *See*—
Bertram, Robert W.; Norgate, Graham; and Isles, Robert, 4,085,398, Cl. 338-25.000.
Augis, Jacques Armand; Chen, Ho Sou; and Leamy, Harry John, to Bell Telephone Laboratories, Incorporated. Electric fuse. 4,085,396, Cl. 337-290.000.
Augstein, Joachim; Cairns, Hugh; and Rogers, Norman Harold, to Fisons Limited. Carboxamido tetrazoles. 4,085,115, Cl. 260-308.00D.
Aupac Kabushiki Kaisha: *See*—
Yoshida, Yuzuru, 4,085,346, Cl. 310-246.000.
Australian Atomic Energy Commission: *See*—
Thackray, Malcolm, 4,085,331, Cl. 250-493.000.
Automatic Specialties, Inc.: *See*—
Moineau, Hubert J., 4,084,624, Cl. 140-80.000.
Moineau, Hubert J., 4,084,779, Cl. 248-318.000.
Automobiles Peugeot: *See*—
Bonnaud, Michel, 4,084,765, Cl. 242-107.40B.
Avins, Jack, to RCA Corporation. Automatic control of free wheeling. 4,084,672, Cl. 192-.055.
AVX Corporation: *See*—
Galvagni, John L., 4,085,435, Cl. 361-433.000.
Ayres, John E. Fluid dispensing pump assembly. 4,084,731, Cl. 222-380.000.
B. E. Wallace Products Corporation: *See*—
Wallace, Bernard E., 4,084,794, Cl. 254-189.000.
B. F. Goodrich Company, The: *See*—
Morningstar, Marion George; and Bowles, Robert Lewis, 4,085,267, Cl. 526-74.000.
Babcock-Hitachi Kabushiki Kaisha: *See*—
Nakajima, Fumito; Takeuchi, Masato; Matsuda, Shimpei; Uno, Shigeo; Mori, Toshikatsu; Watanabe, Yoshihisa; and Imanari, Makoto, 4,085,193, Cl. 423-239.000.
Babicka, Josef, deceased: *See*—
Rokos, Josef; Kubat, Zdenek; Prochazka, Pavel; Zalabak, Vladislav; Babicka, Josef, deceased; Janecek, Jiri; Nohynek, Miroslav; and Mison, Petr, 4,085,206, Cl. 424-131.000.
Babickova, Marie, legal representative; Eva Zemanova, heir; Lubos Babicka, heir: *See*—
Rokos, Josef; Kubat, Zdenek; Prochazka, Pavel; Zalabak, Vladislav; Babicka, Josef, deceased; Janecek, Jiri; Nohynek, Miroslav; and Mison, Petr, 4,085,206, Cl. 424-131.000.
Babushkina, Natalya Borisovna: *See*—
Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich, 4,084,400, Cl. 57-156.000.
Back, Gerhard: *See*—
Beffa, Fabio; Buhler, Arthur; Donath, Peter; Schutz, Hans Ulrich; and Back, Gerhard, 4,085,097, Cl. 260-145.00A.
Badgley, C. Brent: *See*—
Russell, Arvin E., 4,084,706, Cl. 214-1.00D.
Badgley, Clifford E.: *See*—
Russell, Arvin E., 4,084,706, Cl. 214-1.00D.
Bae, Hyung Du, to International Telephone and Telegraph Corporation. Vibration densitometer. 4,084,425, Cl. 73-32.00A.
Baehr, Edward F., to United States of America, National Aeronautics and Space Administration. Flow compensating pressure regulator. 4,084,612, Cl. 137-484.200.
Bagby, John P.; Figge, Erwin E.; and Kim, Raymond W. H., to Bell & Howell Company. Film advancement control for motion picture projector. 4,084,892, Cl. 352-29.000.
Baker, Donald B.; and Sparko, William E., to Bird Machine Company, Inc. Spray cooling system. 4,085,171, Cl. 261-36.00R.
Ballast-Nedam Groep N.V.: *See*—
Wolters, Tjako Aaldrik; and de Koning, Jan, 4,084,334, Cl. 37-67.000.
Balmer, Oskar: *See*—
Focke, Heinz; and Balmer, Oskar, 4,084,627, Cl. 141-11.000.
Balz, Gunther W., to Roto-Finish Company. Finishing method. 4,084,355, Cl. 51-313.000.
Bankers Trust of South Carolina: *See*—
Frier, David Lee, 4,084,520, Cl. 109-56.000.
Banno, Yukio: *See*—
Hayashi, Toshiaki; Sugiura, Hiroshi; Ozaki, Toshio; Sugimoto, Eiji; and Banno, Yukio, 4,084,841, Cl. 280-745.000.

Baradel, Pierpaolo: *See—*
Bussi, Giancarlo; and Baradel, Pierpaolo, 4,085,054, Cl. 252-49.300.
Baranov, Vladimir Nikitich: *See—*
Shklyanov, Leonid Pavlovich; Baranov, Vladimir Nikitich; Koltyrev, Dmitry Nikiforovich; Lifshits, Viktor Senderovich; Polyansky, Ivan Ivanovich; and Osinskaya, Tamila Iosifovna, 4,084,484, Cl. 90-24.00C.
Baranowski, Conrad J. Method and apparatus for improving packaging density of discrete electronic components. 4,085,433, Cl. 361-396.000.
Barash, David: *See—*
Schorsch, John B.; Graul, William E.; and Barash, David, 4,084,387, Cl. 62-63.000.
Barber, Herbert Douglas; and Salter, Gary Curtis, to Linear Technology Inc. Class B amplifier. 4,085,382, Cl. 330-262.000.
Barker, Loren B., to American Chain & Cable Company, Inc. Method and apparatus for transporting and wrapping pipe insulation. 4,084,306, Cl. 29-431.000.
Barlow, Edson L., to MHz Enterprises, Inc. Antenna matching network. 4,085,405, Cl. 343-858.000.
Baron, Henry J. Contact lens. 4,084,890, Cl. 351-160.000.
Baron, Oscar: *See—*
Baron, Raul; and Baron, Oscar, 4,084,792, Cl. 254-106.000.
Baron, Raul; and Baron, Oscar. Cargo holder jack. 4,084,792, Cl. 254-106.000.
Bartley, William E.: *See—*
Rule, Adrian O.; and Bartley, William E., 4,084,570, Cl. 126-140.000.
Bartolini, Robert Alfred: *See—*
Bloom, Allen; Ross, Daniel Louis; Bartolini, Robert Alfred; and Hung, Ling Kong, 4,084,970, Cl. 96-88.000.
BASF Aktiengesellschaft: *See—*
Daumiller, Guenther; Merkel, Karl; Neumayr, Franz; and Schneider, Kurt, 4,085,269, Cl. 544-221.000.
Ohlinger, Manfred; Wagner, Gerhard; Honecker, Gerhard; Stritzinger, Heinz; and Spaehn, Heinz, 4,084,936, Cl. 21-2.70R.
Seib, Karl; Schwarz, Wolfgang; and Gausepohl, Hermann, 4,085,264, Cl. 526-47.000.
BASF Wyandotte Corporation: *See—*
Otrhalek, Joseph V.; Gomes, Gilbert Stephen; and Elfers, Gunther Hans, 4,085,000, Cl. 162-16.000.
Bathiany, Robert H.; and Jensen, Bernhard, to Wiltron Company. Measurement of frequency response with improved sensitivity and accuracy. 4,085,361, Cl. 324-57.0SS.
Battelle Development Corporation: *See—*
Nack, Herman; and Liu, Ke-Tien, 4,084,545, Cl. 122-4.00D.
Battelle Memorial Institute: *See—*
Columberg, Alfred, 4,085,070, Cl. 252-429.00R.
Bauer, Adolf: *See—*
Langbein, Adolf; Weber, Karl-Heinz; Bauer, Adolf; Boke, Karin; Lehr, Erich; and Kuhn, Franz Josef, 4,085,216, Cl. 424-263.000.
Bauer Bros. Co., The: *See—*
Egan, John J., 4,085,040, Cl. 209-244.000.
Bauer, Johann: *See—*
Kratel, Gunter; Bauer, Johann; Pichler, Engelbert; and Kalmuk, Hans-Peter, 4,085,087, Cl. 260-42.490.
Bausch & Lomb Incorporated: *See—*
Clark, James A., 4,084,459, Cl. 82-1.00C.
Baxter Travenol Laboratories, Inc.: *See—*
Cromie, Harry W., 4,084,758, Cl. 242-18.00G.
Mittleman, Herbert, 4,084,606, Cl. 137-102.000.
Bayer Aktiengesellschaft: *See—*
Hund, Franz; Holznagel, Wilhelm; Erfurth, Henning; Kindervater, Friedrich; and Hennings, Willi, 4,084,984, Cl. 106-300.000.
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,085,226, Cl. 424-322.000.
Wedemeyer, Karlfried; Kiel, Wolfgang; and Evertz, Werner, 4,085,141, Cl. 260-570.00R.
BBC Brown Boveri & Company Limited: *See—*
Meyer, Gundolf, 4,084,989, Cl. 148-11.50R.
Zboril, Josef, 4,084,920, Cl. 415-174.000.
Beach, Janet. Receptacle for collecting urine samples. 4,084,937, Cl. 23-259.000.
Beall, George H.; and Rittler, Hermann L., to Corning Glass Works. Method of making light-absorbing glass-ceramic articles. 4,084,974, Cl. 106-39.700.
Beard, David E.: *See—*
Dewsnap, Ronald F.; Higgins, Andrew D.; and Beard, David E., 4,084,798, Cl. 266-131.000.
Becker, Allen: *See—*
Humphrey, William D.; and Becker, Allen, 4,084,914, Cl. 404-10.000.
Becker, Willi. Mobile home frame. 4,084,834, Cl. 280-106.00T.
Becton, Dickinson and Company: *See—*
Rao, Pemmaraju Narasimha, 4,085,202, Cl. 424-1.000.
Beekenkamp, Gerald, to Black and Decker Manufacturing Company, The. Clamp and clamping arrangement for holding a workpiece. 4,084,803, Cl. 269-91.000.
Beffa, Fabio; Buhler, Arthur; Donath, Peter; Schutz, Hans Ulrich; and Back, Gerhard, to Ciba-Geigy AG. Process for the manufacture of chromium complexes from metallizable azo or azo methine dyes. 4,085,097, Cl. 260-145.00A.
Behr, Friedrich: *See—*
Schulten, Rudolf; and Behr, Friedrich, 4,085,200, Cl. 423-579.000.
Belardi, Richard J.; Moyer, Norman E.; and Ho, Ernest C., to Hughes Aircraft Company. Digital watch with two buttons and improved setting and display control. 4,084,401, Cl. 58-4.00A.
Bell & Howell Company: *See—*
Bagby, John P.; Figge, Erwin E.; and Kim, Raymond W. H., 4,084,892, Cl. 352-29.000.
Bell Telephone Laboratories, Incorporated: *See—*
Augis, Jacques Armand; Chen, Ho Sou; and Leamy, Harry John, 4,085,396, Cl. 337-290.000.
Bobeck, Andrew Henry; Bonyhard, Peter Istvan; and Nelson, Terence John, 4,085,453, Cl. 365-8.000.
Runge, Peter Klaus, 4,084,308, Cl. 29-527.200.
Seidel, Harold, 4,085,298, Cl. 179-175.30R.
Tompsett, Michael Francis, 4,085,456, Cl. 365-114.000.
Yeh, Yu Shuan, 4,085,368, Cl. 325-304.000.
Bendix Corporation, The: *See—*
Burnett, Richard Thomas, 4,084,665, Cl. 188-73.300.
Gaiser, Robert F., 4,084,377, Cl. 60-535.000.
Gallant, Janice Anne, 4,085,404, Cl. 343-754.000.
Myers, Bruce B., 4,084,304, Cl. 29-157.10R.
VanderVeen, Jaring, 4,084,857, Cl. 301-6.00A.
Bennett, John E.; and Elliott, Joseph E., to Diamond Shamrock Corporation. Elimination of impurities from sea water cell feed to prevent anode deposits. 4,085,014, Cl. 204-95.000.
Beppu, Yositugu: *See—*
Saito, Fumio; Yamai, Fumito; Beppu, Yositugu; and Nakayama, Shinpei, 4,085,169, Cl. 260-886.000.
Berg, David H.; Hamill, Robert L.; and Hoehn, Marvin M., to Eli Lilly and Company. Method of increasing feed utilization. 4,085,224, Cl. 424-283.000.
Berg, Donald L. Screw removing tool. 4,084,457, Cl. 81-425.00R.
Bernhard, Horst; and Marquard, Kurt, to Merck Patent Gesellschaft mit beschrankter Haftung. Dyed lustrous pigments. 4,084,983, Cl. 106-289.000.
Berthold, Fritz: *See—*
Atallah, Khaled; Berthold, Fritz; Kolbe, Wolfgang; Rauschenbach, Peter; and Simon, Helmut, 4,085,325, Cl. 250-328.000.
Bertram, Robert W.; Norgate, Graham; and Isles, Robert, to Atomic Energy of Canada Limited. Thin film resistance temperature detector. 4,085,398, Cl. 338-25.000.
Beswick, Geoffrey Ernest, to Imperial Chemical Industries Limited. Process for preparing o-hydroxyarylaldehydes. 4,085,146, Cl. 260-600.00R.
Bethlehem Steel Corporation: *See—*
Singleton, Alan H.; Homberg, Otto A.; and Sheldrake, Charles W., 4,085,199, Cl. 423-574.00R.
Betstone Industries Limited: *See—*
Willis, David John; Stevenson, Dennis Clifford; and Bettle, William, 4,084,274, Cl. 5-61.000.
Bettle, William: *See—*
Willis, David John; Stevenson, Dennis Clifford; and Bettle, William, 4,084,274, Cl. 5-61.000.
Bhuta, Pravin G.: *See—*
Jacoby, Jerold L.; Tierney, William S.; Wright, James E.; and Bhuta, Pravin G., 4,084,427, Cl. 73-88.00A.
Bianchi, John E.; and Nichols, Richard D. E., to Bianchi Leather Products, Inc. Combined shoulder and belt holster. 4,084,734, Cl. 224-2.00B.
Bianchi Leather Products, Inc.: *See—*
Bianchi, John E.; and Nichols, Richard D. E., 4,084,734, Cl. 224-2.00B.
Bibbero, Robert J., to Honeywell Inc. Multigas digital correlation spectrometer. 4,084,906, Cl. 356-96.000.
Bick, Rodger L.; and Fekete, Lajos F., to Bick, Rodger L.; Fekete, Lajos F.; and Wilson, William L. Clottable fibrinogen free Factor VIII product and process. 4,085,095, Cl. 260-112.00B.
Bicking, John B.: *See—*
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,085,125, Cl. 260-402.000.
Biggins, Walter F., to Dexter Corporation, The. Surgical face mask filtering medium. 4,084,949, Cl. 55-524.000.
Bijon, Jean-Paul: *See—*
Lainez, Lucien; Fichot, Bernard; and Bijon, Jean-Paul, 4,084,694, Cl. 206-444.000.
Billerbeck, Wilfred Jerome; and Jacobus, Nelson Mortimer, Jr., to Communications Satellite Corporation. High voltage transformer package. 4,085,395, Cl. 336-61.000.
Bilweis, Joseph, to Ethicon, Inc. Dispenser for surgical threads. 4,084,692, Cl. 206-403.000.
Bindra, Jasjit S., to Pfizer Inc. Tetrazolo[A]quinazol-5-ones antiallergy and antiulcer agents. 4,085,213, Cl. 424-251.000.
Biolec Corporation: *See—*
Atkins, Lyle D., 4,085,254, Cl. 429-2.000.
Bird Machine Company, Inc.: *See—*
Baker, Donald B.; and Sparko, William E., 4,085,171, Cl. 261-36.00R.
Biskeborn, Merle C., to Phelps Dodge Industries, Inc. Apparatus for monitoring core charging of waterproof communication cable. 4,084,997, Cl. 156-356.000.
Bissell, Inc.: *See—*
Rosendall, Henry J., 4,084,283, Cl. 15-48.000.
Black and Decker Manufacturing Company, The: *See—*
Beekenkamp, Gerald, 4,084,803, Cl. 269-91.000.
Black, John W., to Pemco-Kalamazoo, Inc. Shock absorber for swivel caster. 4,084,288, Cl. 16-21.000.
Blaich, Bernhard: *See—*
Zehender, Ernst; Blaich, Bernhard; Stein, Helmut; and Kerner, Karl, 4,085,248, Cl. 428-336.000.

Blake, William J. Waste gate control for supercharged engines. 4,084,378, Cl. 60-602.000.

Bleha, Miroslav; Votavova, Eva; and Plichta, Zdenek, to Ceskoslovenska akademie ved. Method of preparation of insoluble biologically active compounds. 4,085,005, Cl. 195-68.000.

Blevins, Margaret Mary; and Bluethman, Robert Glenn, to International Business Machines Corporation. Text merge with copies and envelopes. 4,085,445, Cl. 364-900.000.

Bloom, Allen; Ross, Daniel Louis; Bartolini, Robert Alfred; and Hung, Ling Kong, to RCA Corporation. Organic volume phase holographic recording media using sucrose benzoate. 4,084,970, Cl. 96-88.000.

Bluethman, Robert Glenn: *See—*
Blevins, Margaret Mary; and Bluethman, Robert Glenn, 4,085,445, Cl. 364-900.000.

Bobeck, Andrew Henry; Bonyhard, Peter Istvan; and Nelson, Terence John, to Bell Telephone Laboratories, Incorporated. Magnetoresistive detector for magnetic bubble memory. 4,085,453, Cl. 365-8.000.

Bodor, Nicolae S.: *See—*
Higuchi, Takeru; Bodor, Nicolae S.; and Kuo, Yu-Neng, 4,085,214, Cl. 424-253.000.

Boehringer Ingelheim GmbH: *See—*
Langbein, Adolf; Weber, Karl-Heinz; Bauer, Adolf; Boke, Karin; Lehr, Erich; and Kuhn, Franz Josef, 4,085,216, Cl. 424-263.000.

Boeing Company, The: *See—*
Marceau, J. Arthur; Firminhac, Ralph H.; and Moji, Yukimori, 4,085,012, Cl. 204-38.00A.

Boen, Charles G., to Caterpillar Tractor Co. Protective guard arrangement for track drive motors. 4,084,653, Cl. 180-9.480.

Bogert, Clayton. Safety closure for containers. 4,084,716, Cl. 215-217.000.

Boggild, Robert. Gymnastic pole and mount therefor. 4,084,814, Cl. 272-110.000.

Bohnlein, Horst. Multi-cylinder internal combustion engine. 4,084,554, Cl. 123-52.0MF.

Boke, Karin: *See—*
Langbein, Adolf; Weber, Karl-Heinz; Bauer, Adolf; Boke, Karin; Lehr, Erich; and Kuhn, Franz Josef, 4,085,216, Cl. 424-263.000.

Boland, John Gordon, to Foster Cathead Corporation. Power tong apparatus. 4,084,429, Cl. 73-139.000.

Bolton, Ivan Joseph: *See—*
Mercer, Alec Victor; Littlewood, Peter Stuart; Bolton, Ivan Joseph; and Fleck, Fritz, 4,085,101, Cl. 260-239.900.

Bonnaud, Michel, to Automobiles Peugeot; and Regie Nationale des Usines Renault. Winding device, in particular for a vehicle safety belt. 4,084,765, Cl. 242-107.40B.

Bonyhard, Peter Istvan: *See—*
Bobeck, Andrew Henry; Bonyhard, Peter Istvan; and Nelson, Terence John, 4,085,453, Cl. 365-8.000.

Boone, Ralph D.; and Griffin, Charles. Two-step roll ahead irrigation system. 4,084,610, Cl. 137-1.000.

Booth, Morris A., to Swanco. Method of forming a hermetically sealed container and the tools used therewith. 4,084,525, Cl. 113-1.00K.

Boots Company Limited, The: *See—* .
Kay, David, 4,084,442, Cl. 73-432.0PS.

Booy, Max Lorenz, to Du Pont de Nemours, E. I., and Company. Apparatus. 4,085,462, Cl. 366-174.000.

Borg-Warner Corporation: *See—*
Jones, John Arthur, 4,085,282, Cl. 544-197.000.
Rickert, Paul E., 4,084,564, Cl. 123-139.0AV.

Bossi, Oscar G., to Societe Diete: Stabilimento Industriale Construzione Macchinario Attrezzature. Process for machining gears and machine for performing the same. 4,084,481, Cl. 90-1.60R.

Botts, Marion F.: *See—*
Doyle, William C., Jr.; and Botts, Marion F., 4,084,956, Cl. 71-111.000.

Bouvier, Gerard: *See—*
Chehikian, Alain; and Bouvier, Gerard, 4,085,401, Cl. 340-146.3AE.

Bowers, John R., to Phillips Petroleum Company. Apparatus for preparing cross-lapped film structures. 4,084,464, Cl. 83-94.000.

Bowles, Robert Lewis: *See—*
Morningstar, Marion George; and Bowles, Robert Lewis, 4,085,267, Cl. 526-74.000.

Boyadjieff, George I., to Varco International, Inc. Pile handing methods. 4,084,385, Cl. 61-53.500.

Boyer, Edward J., to Whittaker Corporation. Reversible rubrail for vessels. 4,084,533, Cl. 114-219.000.

Boyle, Henry Bryant; and Johnson, Alexander James, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Load measurement. 4,084,430, Cl. 73-141.00R.

Bradley, W. L.; Frye, Bennie W.; and Reines, Joseph W. Method and apparatus for preventing theft of idling vehicles. 4,084,657, Cl. 180-114.000.

Brady, John F.: *See—*
Pyle, Lawrence F.; and Brady, John F., 4,084,912, Cl. 404-74.000.

Braun Aktiengesellschaft: *See—*
Flandorfer, Robert, 4,084,893, Cl. 352-141.000.

Bray Oil Co. Inc.: *See—*
Schenach, Thomas Anthony, 4,085,056, Cl. 252-59.000.

Brears, John H., to MacMillan Bloedel Limited. Method of finishing a random contoured surface. 4,084,356, Cl. 51-328.000.

Bremer, Noel J.: *See—*
Milberger, Ernest C.; Bremer, Noel J.; and Wong, Eunice K. T., 4,085,121, Cl. 260-346.750.

Brenneman, Daniel A., to Fedders Corporation. Chiller controls. 4,084,406, Cl. 62-211.000.

Bridgestone Tire Company Limited: *See—*
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; Shibata, Shoson; and Suzuki, Yoshikatsu, 4,085,262, Cl. 526-46.000.
Odaka, Fumio; Fujii, Yoshihiko; and Iseda, Yutaka, 4,085,165, Cl. 260-859.00R.

Briefer, Dennis K.: *See—*
Lee, Shih-Ying; and Briefer, Dennis K., 4,084,438, Cl. 73-706.000.

Brinegar, Claude E. Wire banding tool and cable splice. 4,084,625, Cl. 140-123.500.

Briody, Robert G., to PPG Industries, Inc. Preparation of monoperoxyphthalic acid. 4,085,133, Cl. 260-502.00R.

Briston, Rodney John; Canning, Rodger George; and Tomlinson, John Parker, to Reed International Limited. Process for manufacturing a differentially expanded resinous cellular sheet. 4,085,239, Cl. 427-208.000.

Britax (Wingard) Limited: *See—*
Cunningham, Douglas James, 4,084,848, Cl. 296-137.00E.

British Steel Corporation: *See—*
Dewsnap, Ronald F.; Higgins, Andrew D.; and Beard, David E., 4,084,798, Cl. 266-131.000.
Lewis, Richard, 4,084,444, Cl. 73-622.000.

Brock, Andrew J.: *See—*
Anthony, William H.; Brock, Andrew J.; and Gullotti, Damian V., 4,084,963, Cl. 75-138.000.

Brock, Robert K.: *See—*
Landers, Don B.; and Brock, Robert K., 4,084,801, Cl. 267-140.000.

Brodrene Gram A/S: *See—*
Gram, Hans, 4,084,926, Cl. 418-19.000.

Brooks, Ronald L.: *See—*
Harlan, Martin L.; Krause, John A.; and Brooks, Ronald L., 4,084,292, Cl. 17-50.000.

Broussaud, Georges: *See—*
Aigrain, Pierre; Broussaud, Georges; Peltier, Jean Paul; and Spitz, Erich, 4,085,426, Cl. 360-38.000.

Brown, James W. High impact resistance door. 4,084,347, Cl. 49-397.000.

Brown, Thomas R., Sr.: *See—*
Oshinsky, Frank W.; and Brown, Thomas R., Sr., 4,084,705, Cl. 213-127.000.

Brown, William E.; Magee, Ramon J.; and McCoy, Dennis R., to Hallmark Cards, Incorporated. Synthetic resin cured in place rotary embossing counter roller. 4,084,500, Cl. 101-28.000.

Bruck, Avraham: *See—*
Mindick, Leo R.; Bruck, Avraham; Inbar, Dan; and Koss, Leopold G., 4,085,006, Cl. 195-103.700.

Brundiek, Horst, to Loesche Hartzerkleinerungs-und Zementmaschinen GmbH & Co. KG. Combined vane-rotor separator. 4,084,754, Cl. 241-52.000.

Buchser, William J., to Whirlpool Corporation. Ice piece dispenser. 4,084,725, Cl. 221-75.000.

Bucknell, Ernest H.; Rauh, Jack K.; and Radecki, Tony. Diaphragm spout assembly. 4,084,620, Cl. 137-801.000.

Budecker, Ludwig; and Winter, Klaus, to ITT Industries, Incorporated. Pressure responsive distributing valve. 4,084,604, Cl. 137-101.000.

Budrose, Charles R., to Upaya, Inc. Adjustable wrench. 4,084,455, Cl. 81-140.000.

Buff, Ernest Dorchester; and Plaut, Jonathan, to Allied Chemical Corporation. Vehicle sensitive retractor. 4,084,840, Cl. 280-744.000.

Buhler, Arthur: *See—*
Beffa, Fabio; Buhler, Arthur; Donath, Peter; Schutz, Hans Ulrich; and Back, Gerhard, 4,085,097, Cl. 260-145.00A.

Buhrer, Erwin. Device for lifting-lowering and rotating operations. 4,084,709, Cl. 214-1.0BB.

Bull, Jeffrey Lawrence; Murphy, Tanya Ellen; and Gibson, Laurence Ernest, to Murphy, Ian R., by said Tanya Ellen Murphy. Towed vehicle brake. 4,084,859, Cl. 303-106.000.

Bullard Company, The: *See—*
Grinage, Claude M., 4,084,462, Cl. 82-36.00R.

Bullat, Jean, to Etablissements CARPANO & PONS. Torque-limiting stop device. 4,085,345, Cl. 310-117.000.

Bullock, Robert L., to Standard Car Truck Company. Railroad car side frame construction. 4,084,513, Cl. 105-197.0DB.

Bullock, Robert L., to Standard Car Truck Company. Damping railway truck bolster friction shoe. 4,084,514, Cl. 105-197.0DB.

Bunker Ramo Corporation: *See—*
Dragisic, Joseph, 4,084,310, Cl. 29-564.400.
Liaukus, Sigitas Julius; and Jen, Dixson Teh-Chao, 4,085,442, Cl. 364-900.000.
Smith, Oliver Dale; and Goldberg, Gerald M., 4,085,059, Cl. 252-118.000.

Burgarella, John P.; Turner, George, Jr.; and Stephansky, Robert L., to Polaroid Corporation. Electronic flash apparatus with extendable on/off switch control apparatus. 4,085,414, Cl. 354-145.000.

Burge, Edward V. Hydraulic junk retriever. 4,084,636, Cl. 166-65.00M.

Burgess, Harry L. Drilling mud degasser. 4,084,946, Cl. 55-184.000.

Burke, Harry W., to Raymond Lee Organization, Inc., The, a part interest. Vehicle radio mounting device. 4,085,369, Cl. 325-312.000.

Burke, Richard Lerda: *See—*
Giordano, Annie Sue; Burke, Richard Lerda; and Wixon, Harold Eugene, 4,085,243, Cl. 427-387.000.

Burnett, Richard Thomas, to Bendix Corporation, The. Disc brake and mounting means therefor. 4,084,665, Cl. 188-73.300.

Burrell, Raymond Alexander; and Cos, John Michael, to Imperial

Chemical Industries Limited. Pesticidal dihydrotetrazolo [1,5-a] quinazoline compound and processes and compositions for using the same. 4,085,212, Cl. 424-251.000.
Burroughs Corporation: *See*—
Green, Keith; and Lawson, Alastair, 4,085,428, Cl. 360-99.000.
Simpson, Adam, 4,084,805, Cl. 271-4.000.
Tulpule, Bhalchandra Ramchandra, 4,085,450, Cl. 364-900.000.
Wolfe, John Edmond, 4,085,330, Cl. 250-492.00A.
Burroughs Wellcome Co.: *See*—
Telling, Ronald Charles; Passingham, Roy John; Kitchener, Brian Lewis; and Hopkinson, David George, 4,085,203, Cl. 424-89.000.
Buser, Kenneth Rene; Roedel, Milton John; and Vassiliou, Eustathios, to Du Pont de Nemours, E. I., and Company. Simulated granite and its preparation. 4,085,246, Cl. 428-220.000.
Bussi, Giancarlo; and Baradel, Pierpaolo. Utilization of orthophosphoric esters for the production of aqueous fluids for working metals. 4,085,054, Cl. 252-49.300.
Butler, Frank M. Electric page turner. 4,084,468, Cl. 84-500.000.
Butler, Robert Gerald, to Copes-Vulcan Inc. Digital sootblower control systems and methods therefor. 4,085,438, Cl. 364-107.000.
Butts, Douglas Earl; and Rossborough, Walter Neil, to Rossborough Supply Company. Thermally stable injector lance. 4,084,800, Cl. 266-225.000.
Byrd Industries, Inc.: *See*—
Gardiner, William P., 4,084,793, Cl. 254-187.800.
C. van der Lely N.V.: *See*—
van der Lely, Cornelis, 4,084,394, Cl. 56-14.600.
van der Lely, Cornelis, 4,084,485, Cl. 91-210.000.
Cain, Gene; Teague, Joe Doyle; and Wright, Paul James, to Woodbine Corporation. Stabilization of earth subsurface layers. 4,084,381, Cl. 61-36.00C.
Cairns, Hugh: *See*—
Augstein, Joachim; Cairns, Hugh; and Rogers, Norman Harold, 4,085,115, Cl. 260-308.00D.
Caldon, Frank, to Sunshine Mining Company. Treatment of metal bearing mineral material. 4,084,961, Cl. 75-101.00R.
Calhoun, Fredrick L., to Industrial Dynamics Company, Ltd. Starwheel control in a system for conveying containers. 4,084,686, Cl. 198-468.000.
Calpis Shokuhin Kogyo Kabushiki Kaisha: *See*—
Kamada, Hidemoto; Miura, Chiaki; and Kano, Etsuo, 4,085,234, Cl. 426-618.000.
Calvert, Madeleine M. Rotary brush for removing hair from hair brushes. 4,084,282, Cl. 15-38.000.
Camilleri, Thomas M. Cushion blocks. 4,084,817, Cl. 273-53.000.
Canada-Cities Services, Ltd.: *See*—
Todd, John C., 4,084,637, Cl. 166-245.000.
Todd, John C., 4,084,639, Cl. 166-248.000.
Canada, Her Majesty in Right of, as Represented by the Minister of National Defence: *See*—
Carpenter, Wilfred C.; Schmitz, Gary N.; and Fenrick, Walter J., 4,084,440, Cl. 73-422.0GC.
Canadian Patents & Development Limited: *See*—
Rak, Jaromir R., 4,085,251, Cl. 428-485.000.
Schreiber, Ulrich; and Vidaver, William, 4,084,905, Cl. 356-85.000.
Canning, Rodger George: *See*—
Briston, Rodney John; Canning, Rodger George; and Tomlinson, John Parker, 4,085,239, Cl. 427-208.000.
Cannon, Harold Lee. Picture frame vise. 4,084,802, Cl. 269-41.000.
Canon Denshi Kabushiki Kaisha: *See*—
Hasegawa, Tachio, 4,085,429, Cl. 360-119.000.
Canon Kabushiki Kaisha: *See*—
Hasegawa, Tachio, 4,085,429, Cl. 360-119.000.
Hirabayashi, Yoichi; Minami, Setsuo; and Goshima, Takeshi, 4,084,881, Cl. 350-6.800.
Sekiguchi, Takeshi, 4,085,419, Cl. 358-55.000.
Cantarelli, Giorgio: *See*—
Carissimi, Massimo; Ravenna, Franco; and Cantarelli, Giorgio, 4,085,223, Cl. 424-278.000.
Capelli, Alfred J., to Sargent Industries, Inc. Bearing and bearing liner having a compliant layer. 4,084,863, Cl. 308-238.000.
Caraway, William Russell; and Falkingham, Clarence Mark, to Howmedica, Inc. Stoma drainage appliance. 4,084,590, Cl. 128-283.000.
Carissimi, Massimo; Ravenna, Franco; and Cantarelli, Giorgio, to Maggioni & C. S.p.A. Halogenated derivatives of 1,3-dioxolane having mucolytic activity. 4,085,223, Cl. 424-278.000.
Carley, Harold Edwin: *See*—
Miller, George Allen; and Carley, Harold Edwin, 4,085,209, Cl. 424-245.000.
Carlson, David T. Swivel drawer assembly. 4,084,518, Cl. 109-19.000.
Carpenter, Wilfred C.; Schmitz, Gary N.; and Fenrick, Walter J., to Canada, Her Majesty in Right of, as Represented by the Minister of National Defence. Chromatograph injection system. 4,084,440, Cl. 73-422.0GC.
Carus Corporation: *See*—
Mein, Peter G.; and Adolf, Horst R., 4,085,191, Cl. 423-208.000.
Casio Computer Co., Ltd.: *See*—
Kashio, Toshio, 4,085,312, Cl. 235-306.000.
Caspari, Gunter, to Standard Oil Company (Indiana). Metal dithiophosphate process and/composition. 4,085,053, Cl. 252-32.70E.
Castle & Cooke, Inc.: *See*—
Turover, Alan S., 4,085,233, Cl. 426-615.000.
Caswell, David Arlen: *See*—
Wenthe, Stephen James; and Caswell, David Arlen, 4,084,806, Cl. 271-80.000.
Caterpillar Tractor Co.: *See*—
Amdall, John K., 4,084,927, Cl. 418-61.00A.
Boen, Charles G., 4,084,653, Cl. 180-9.480.
Cole, Carroll R.; and Christian, Robert L., 4,084,335, Cl. 37-126.0AE.
Cole, Carroll R.; Dezelan, Joseph E.; and Easterling, Gene B., 4,084,644, Cl. 172-796.000.
Conroy, William E., 4,084,450, Cl. 74-713.000.
Easterling, Gene Baptist, 4,084,643, Cl. 172-795.000.
Johnson, Howard L., 4,084,609, Cl. 137-327.000.
Rowen, Harold E., 4,084,601, Cl. 137-49.000.
Schlecht, Charles H., 4,084,423, Cl. 72-256.000.
Stedman, Robert N., 4,084,715, Cl. 214-660.000.
Cavalieri, Michel: *See*—
Desplats, Andre; and Cavalieri, Michel, 4,084,788, Cl. 254-76.000.
Caw Industries, Inc.: *See*—
Willard, John Wesley, Sr., 4,084,938, Cl. 44-1.00R.
Center for Design Research and Development N.V.: *See*—
Ambasz, Emilio, 4,084,850, Cl. 297-317.000.
Central Engineering Co., Inc.: *See*—
Herzog, Fritz W., 4,084,285, Cl. 15-87.000.
Cervantes, Ramon H. Detachable gun lock. 4,084,341, Cl. 42-1.00Y.
Ceskoslovenska akademie ved: *See*—
Bleha, Miroslav; Votavova, Eva; and Plichta, Zdenek, 4,085,005, Cl. 195-68.000.
Chakrabarty, Naresh; and Weitze, Artur, to Siemens Aktiengesellschaft. Producing thick film circuits having terminal elements. 4,084,314, Cl. 29-626.000.
Champeau, Marcel; and Tabutin, Andre, to Societe Ramo S.A. Automatic feed for a lathe. 4,084,461, Cl. 82-21.00B.
Champion International Corporation: *See*—
Stillman, Nathan, 4,085,244, Cl. 428-192.000.
Champion Spark Plug Company: *See*—
Hinton, Jonathan W., 4,084,976, Cl. 106-48.000.
Chang, Wen-Hsuan; and Ammons, Vernon G., to PPG Industries, Inc. Transparent, optically clear poly(lactone-urethane) interlayers for laminated safety glass. 4,085,092, Cl. 260-77.5AN.
Chang, Yun Feng: *See*—
Labana, Santokh S.; and Chang, Yun Feng, 4,085,260, Cl. 526-16.000.
Chang, Yun-Te. Pulley puller. 4,084,305, Cl. 29-261.000.
Charles Stark Draper Laboratory, Inc.: *See*—
Ahn, Byong-Ho; Gilinson, Philip J., Jr.; and Moscaritolo, Anthony Michael, 4,084,428, Cl. 73-117.300.
Chauvel, Bernard: *See*—
Durand, Jean-Pierre; Gateau, Patrick; Dawans, Francois; and Chauvel, Bernard, 4,085,055, Cl. 252-50.000.
Chehikian, Alain; and Bouvier, Gerard, to Agence Nationale de Valorisation de la Recherche. Character recognition system. 4,085,401, Cl. 340-146.3AE.
Chemical Grout Company, Limited: *See*—
Yahiro, Teruo; and Yoshida, Hiroshi, 4,084,648, Cl. 175-67.000.
Chemisch-Pharmazeutische Fabrik Adolf Klinge & Co.: *See*—
Henschler, Dietrich; Wagner, Josef; and Hampel, Hans, 4,085,270, Cl. 560-105.000.
Chemische Werke Huels, A.G.: *See*—
Scharf, Helmut, 4,085,240, Cl. 427-302.000.
Chen, Ho Sou: *See*—
Augis, Jacques Armand; Chen, Ho Sou; and Leamy, Harry John, 4,085,396, Cl. 337-290.000.
Chen, Thomas T.; and Gergis, Isoris S., to Rockwell International Corporation. Bubble domain circuit organization. 4,085,451, Cl. 365-4.000.
Chenel, Pierre; and Vachet, Joel, to Saint-Gobain Industries. Process and apparatus for applying plastic filaments to sheets for multiple pane windows. 4,085,238, Cl. 427-207.00A.
Cheng, Paul J., to Phillips Petroleum Company. Carbon black process. 4,085,197, Cl. 423-450.000.
Cheng, Richard C. M. Model track section. 4,084,746, Cl. 238-10.00F.
Chiang, Mutong T.: *See*—
Gibbons, John P.; and Chiang, Mutong T., 4,085,075, Cl. 260-17.200.
Milkovich, Ralph; and Chiang, Mutong T., 4,085,168, Cl. 260-886.000.
Chicago Pneumatic Tool Company: *See*—
Wallace, William K., 4,084,487, Cl. 91-325.000.
Chikatsu, Masahiro, to Sony Corporation. Limiter circuit. 4,085,431, Cl. 361-56.000.
Chirico, Anthony N., to Ecodyne Corporation. Entrainment separator apparatus. 4,084,945, Cl. 55-38.000.
Chirico, Anthony Nicholas, to Ecodyne Corporation. Pure distillate recovery system. 4,084,944, Cl. 55-27.000.
Chiyoda Chemical Engineering & Construction Co., Ltd.: *See*—
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R.
Chrismas, Alan Gould. Tile cutter. 4,084,569, Cl. 125-23.00R.
Christian, Robert L.: *See*—
Cole, Carroll R.; and Christian, Robert L., 4,084,335, Cl. 37-126.0AE.
Christophersen, Clarence E.; and Armstrong, Currie, to Rockwell Enterprises, Inc. Map vending machine. 4,084,724, Cl. 221-20.000.
Ciba-Geigy AG: *See*—
Beffa, Fabio; Buhler, Arthur; Donath, Peter; Schutz, Hans Ulrich; and Back, Gerhard, 4,085,097, Cl. 260-145.00A.

Gregory, Maurice James, 4,084,951, Cl. 71-86.000.
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, 4,085,082, Cl. 260-31.600.
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, 4,085,083, Cl. 260-31.600.

Ciba-Geigy Corporation: *See—*
Green, George Edward, 4,085,019, Cl. 204-159.230.
Park, Kyong P.; and Vellturo, Anthony F., 4,085,132, Cl. 560-75.000.

Citizen Watch Company Limited: *See—*
Watanabe, Kisuke; and Takasugi, Tsuneji, 4,084,990, Cl. 148-11.50R.

Claassen, Volkert: *See—*
Welle, Hendricus Bernardus Antonius; and Claassen, Volkert, 4,085,225, Cl. 424-304.000.

Claessens, Pierre L.: *See—*
Janjua, Mohammad Barakat Ilahi; Claessens, Pierre L.; and Loutfy, Raouf O., 4,085,016, Cl. 204-104.000.

Clancy, David: *See—*
Williams, Winfried Wilbur, Sr.; and Clancy, David, 4,084,391, Cl. 53-120.000.

Clare-Pendar Co.: *See—*
Weisenburger, Lawrence P., 4,085,394, Cl. 336-20.000.

Clark Equipment Company: *See—*
Wolfe, Robert W., 4,084,448, Cl. 74-475.000.

Clark, James A., to Bausch & Lomb Incorporated. Method and apparatus for lens turning. 4,084,459, Cl. 82-1.00C.

Cleare, Peter John Vernon, to Imperial Chemical Industries Limited. Preparation of halogenated aldehydes. 4,085,148, Cl. 260-601.00H.

Clem, Arthur G., to American Colloid Company. Method and composition for preventing water contaminated with industrial waste seeping through soil containing said water. 4,084,382, Cl. 61-36.00R.

Clements, Herbert Arthur, to S.S.S. Patents Limited. Rotary power transmission devices. 4,084,673, Cl. 192-67.00A.

Clow, Richard G. Coherent optical computer for polynomial evaluation. 4,084,880, Cl. 350-3.720.

Cluzel, Philippe Henri Maurice; and Quivy, Michel Georges, to Etat Francais. Underwater piezoelectric transducers. 4,085,400, Cl. 340-10.000.

CMI Corporation: *See—*
Gurries, Raymond A., 4,084,618, Cl. 137-625.480.
Petersik, Adolph R., 4,084,928, Cl. 425-64.000.

Cobb, Raymond L., to Phillips Petroleum Company. Ammonialytic cleavage of lactams to ω-aminonitriles. 4,085,130, Cl. 260-465.200.

Cohen, Leonard Selwyn: *See—*
Couch, Harold Thompson; Cohen, Leonard Selwyn; and Coulter, Lawrence Joseph, 4,084,781, Cl. 249-83.000.

Cole, Carroll R.; and Christian, Robert L., to Caterpillar Tractor Co. Bowl and ejector apparatus. 4,084,335, Cl. 37-126.0AE.

Cole, Carroll R.; Dezelan, Joseph E.; and Easterling, Gene B., to Caterpillar Tractor Co. Motor grader or the like with hydraulic control system for circle gear. 4,084,644, Cl. 172-796.000.

Coleman, Arthur A.: *See—*
Lomax, George F., Jr.; and Coleman, Arthur A., 4,085,173, Cl. 264-3.00R.

Colgate-Palmolive Company: *See—*
Giordano, Annie Sue; Burke, Richard Lerda; and Wixon, Harold Eugene, 4,085,243, Cl. 427-387.000.
Williams, Winfried Wilbur, Sr.; and Clancy, David, 4,084,391, Cl. 53-120.000.
Zmoda, Barney J., 4,084,939, Cl. 44-7.00C.

Collin, Per Harald; and Widell, Bjorn, to Stora Kopparbergs Bergslags Aktiebolag. Method of reducing finely grained material containing iron oxides in a fluid bed. 4,084,958, Cl. 75-36.000.

Collins, Donald L.: *See—*
Rohrs, Donald L.; Downing, Harold A.; and Collins, Donald L., 4,084,713, Cl. 214-85.000.

Collins Industries, Inc.: *See—*
Rohrs, Donald L.; Downing, Harold A.; and Collins, Donald L., 4,084,713, Cl. 214-85.000.

Columberg, Alfred, to Battelle Memorial Institute. Process for the preparation of an olefin-polymerization catalyst. 4,085,070, Cl. 252-429.00R.

Combey, Malcolm: *See—*
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, 4,085,082, Cl. 260-31.600.
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, 4,085,083, Cl. 260-31.600.

Communications Satellite Corporation: *See—*
Billerbeck, Wilfred Jerome; and Jacobus, Nelson Mortimer, Jr., 4,085,395, Cl. 336-61.000.
Standing, Arthur Frederick, 4,085,390, Cl. 333-33.000.

Compen, Johannes Maria Azalina Antonius, to U.S. Philips Corporation. Method of manufacturing a cathode-ray tube. 4,085,235, Cl. 427-64.000.

Compton, Richard B. Fish house. 4,084,597, Cl. 135-1.00R.

Computer Peripherals, Inc.: *See—*
Moss, James R., 4,084,683, Cl. 197-170.000.
Viswanathan, Lakshminarasimhan, 4,085,288, Cl. 178-69.100.

Concast AG: *See—*
Schmid, Markus, 4,084,628, Cl. 141-284.000.

Conrad, Raymond M.; and Whitcomb, Charles R. Collapsible guard rail. 4,084,277, Cl. 5-331.000.

Conroy, William E., to Caterpillar Tractor Co. Thrust washer arrangement for differentials. 4,084,450, Cl. 74-713.000.

Consolidated Products Corporation: *See—*
Roe, Norman P., 4,085,183, Cl. 264-174.000.

Construction Products Corporation: *See—*
Jones, David P., 4,084,828, Cl. 277-207.00A.

Constructions Metalliques de Provence: *See—*
Laignel, Raymond A.; and Mommeja, Patrick F., 4,084,608, Cl. 137-316.000.

Continental Can Company, Inc.: *See—*
Rosynek, John J.; and Patel, Anilkumar U., 4,084,722, Cl. 220-270.000.

Continental Can Company of Canada Ltd.: *See—*
Hughes, Robert G., 4,084,688, Cl. 206-188.000.

Continental Group, Inc., The: *See—*
Perry, Walter Merton, deceased, 4,084,721, Cl. 220-269.000.

Continental Oil Company: *See—*
Goodwin, Thomas E., 4,085,155, Cl. 260-668.00R.

Control Data Corporation: *See—*
Palm, William A.; and Young, Duane A., 4,085,383, Cl. 330-295.000.
Zenk, George Edward; Johnson, Robert Joseph; and Miller, Charles Newell, 4,085,302, Cl. 200-5.00A.

Controlex Corporation of America: *See—*
Wolf, John C.; and Costello, Thomas G., 4,084,409, Cl. 64-11.00B.

Cook, Donald W., to Cook Specialty Company. Furniture base and method of making the same. 4,084,776, Cl. 248-188.700.

Cook, Kenneth C., to Systron-Donner Corporation. Explosion discharge valve. 4,084,602, Cl. 137-68.00A.

Cook, Melvin A. Stable blasting slurry. 4,084,993, Cl. 149-39.000.

Cook Specialty Company: *See—*
Cook, Donald W., 4,084,776, Cl. 248-188.700.

Cooper, Duane H. Synthetic supplementary channel matrix decoding systems. 4,085,291, Cl. 179-1.0GQ.

Cooper, Hugh Melvin: *See—*
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, 4,085,082, Cl. 260-31.600.
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, 4,085,083, Cl. 260-31.600.

Copar Corporation: *See—*
Schmidt, Robert W., 4,084,539, Cl. 118-8.000.

Copes-Vulcan Inc.: *See—*
Butler, Robert Gerald, 4,085,438, Cl. 364-107.000.

Corlett, Ewan Christian Brew, to Hydroconic Limited. Roll damping tanks for ships and like vehicles. 4,084,534, Cl. 114-125.000.

Corman, Warren. Cigarette case with timer. 4,084,415, Cl. 70-269.000.

Corning, Bly A. Plastic molding apparatus. 4,084,931, Cl. 425-218.000.

Corning Glass Works: *See—*
Andrus, Ronald L.; and Reade, Richard F., 4,084,972, Cl. 106-39.700.
Andrus, Ronald L.; and Reade, Richard F., 4,084,973, Cl. 106-39.700.
Beall, George H.; and Rittler, Hermann L., 4,084,974, Cl. 106-39.700.

Cos, John Michael: *See—*
Burrell, Raymond Alexander; and Cos, John Michael, 4,085,212, Cl. 424-251.000.

Cosentino, Edward A. Process for preparing slabs of building materials. 4,085,181, Cl. 264-158.000.

Costello, Thomas G.: *See—*
Wolf, John C.; and Costello, Thomas G., 4,084,409, Cl. 64-11.00B.

Cosyns, Jean: *See—*
Juguin, Bernard; Cosyns, Jean; LePage, Jean-Francois; and Miquel, Jean, 4,085,157, Cl. 260-673.000.

Cota, Dennis, to Saba Schwarzwaelder Apparate-Bau-Anstalt August Schwer Soehne GmbH. Phase-comparison logic circuit for dual signal television reception. 4,085,424, Cl. 358-181.000.

Couch, Harold Thompson; Cohen, Leonard Selwyn; and Coulter, Lawrence Joseph, to United States of America, Navy. Fabrication of ablator liners in combustors. 4,084,781, Cl. 249-83.000.

Coulmance, Jean-Pierre Rene; and Six, Jean-Claude Gerard, to U.S. Philips Corporation. Control device for electric heating systems of the bi-junction type for an apartment building. 4,085,310, Cl. 219-502.000.

Coulter, Lawrence Joseph: *See—*
Couch, Harold Thompson; Cohen, Leonard Selwyn; and Coulter, Lawrence Joseph, 4,084,781, Cl. 249-83.000.

Coursaut-Durand, Henri. Security closures. 4,084,719, Cl. 215-256.000.

Coussot, Pierre, to Societe d'Optique, Precision Electronique et Mecanique - SOPELEM. Microscope objective. 4,084,885, Cl. 350-175.0ML.

Coward, Michael D.; Dobinski, William J.; and Hinson, Rocose M., Jr., to Georgetown Steel Corporation. Shrouding apparatus. 4,084,799, Cl. 266-207.000.

Cox, William H.; and Wisdom, Norvell E., Jr., to Norton Company. Non-polluting waterproof cloth finish for abrasive cloth. 4,084,941, Cl. 51-295.000.

Coxhill, Major, to Allis-Chalmers Corporation. Gear and pinion backlash adjustment for the drive of a gyratory crusher. 4,084,756, Cl. 241-213.000.

CPC International Inc.: *See—*
Gibbons, John P.; and Chiang, Mutong T., 4,085,075, Cl. 260-17.200.
Gibbons, John P.; and Wondolowski, Lawrence, 4,085,076, Cl. 260-17.200.
Milkovich, Ralph; and Chiang, Mutong T., 4,085,168, Cl. 260-886.000.

CPL Corporation: *See*—
Rainer, William C., 4,085,186, Cl. 264-268.000.

Cragoe, Edward J., Jr.; Woltersdorf, Otto W., Jr.; and Hoffman, William F., to Merck & Co., Inc. 6,7-Disubstituted-5-(acyl)benzofuran-2-carboxylic acids. 4,085,117, Cl. 260-332.20A.

Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., to Merck & Co., Inc. 9-Thia-, 9-oxothia-, and 9-dioxothia-11,12-seco-prostaglandins and processes. 4,085,125, Cl. 260-402.000.

Cragoe, Edward J., Jr.; Woltersdorf, Otto W., Jr.; and Habecker, Charles N., to Merck & Co., Inc. Pyrazinecarboxamides and processes for preparing same. 4,085,211, Cl. 424-250.000.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. 1-Oxo-2,2-disubstituted-5-indanyloxy(or thio)alkanoic acids. 4,085,219, Cl. 424-269.000.

Creuzet, Robert Armand. Hot air aerostat. 4,084,771, Cl. 244-31.000.

Cromie, Harry W., to Baxter Travenol Laboratories, Inc. Machine having an improved take-up reel for winding hollow filaments. 4,084,758, Cl. 242-18.00G.

Croset, Michel; and Velasco, Gonzalo, to Thomson-CSF. Device for separating fluids and a method of manufacturing it. 4,085,048, Cl. 210-321.00R.

Crossley, Roger: *See*—
Curran, Adrian Charles Ward; Crossley, Roger; and Hill, David George, 4,085,110, Cl. 260-294.80B.
Curran, Adrian Charles Ward; Crossley, Roger; and Hill, David George, 4,085,215, Cl. 424-258.000.

Crowe, William P., to General Electric Company. Center hinge for top-mount, two-door refrigerator. 4,084,291, Cl. 16-170.000.

Crown Zellerbach Corporation: *See*—
Rucker, George I., 4,084,999, Cl. 156-466.000.

Cubic Tiltman Langley Limited: *See*—
Searle, Brian Christopher; and Ritter, Glenn Richard, 4,084,677, Cl. 194-100.00A.

Cull, Neville L.; Pine, Lloyd A.; and Maness, Dale D., to Exxon Research & Engineering Co. Sorbent preparation and process using same. 4,085,195, Cl. 423-244.000.

Culpepper, Will Lester, to Mead Corporation, The. Article carrier. 4,084,693, Cl. 206-427.000.

Cumberland Packing Corporation: *See*—
Eisenstadt, Marvin E., 4,085,232, Cl. 426-548.000.

Cunningham, Douglas James, to Britax (Wingard) Limited. Sliding roof assembly. 4,084,848, Cl. 296-137.00E.

Cunningham, Hugh, to PPG Industries, Inc. Electrolysis cell liquor emission control process. 4,085,015, Cl. 204-98.000.

Curran, Adrian Charles Ward; and Shepherd, Robin Gerald, to John Wyeth & Brother Ltd. Silicon derivatives of tetrahydroquinolines. 4,085,108, Cl. 260-283.0SC.

Curran, Adrian Charles Ward; Crossley, Roger; and Hill, David George, to John Wyeth & Brother, Ltd. 1,2,3,5,6,7-Hexahydrodicyclopenta[b,e]pyridine derivatives. 4,085,110, Cl. 260-294.80B.

Curran, Adrian Charles Ward; Crossley, Roger; and Hill, David George, to John Wyeth & Brother Ltd. Certain 5,6,7,8-tetrahydroquinoline-8-thiocarboxamides. 4,085,215, Cl. 424-258.000.

Custom-Bilt: *See*—
Murphy, Milo E., 4,084,658, Cl. 181-241.000.

Cutler, Royal A.: *See*—
Diana, Guy D.; and Cutler, Royal A., 4,085,144, Cl. 260-584.00R.

Cybernet Electronic Corporation: *See*—
Kakigi, Takao, 4,085,364, Cl. 325-20.000.

Dahlberg, John R.: *See*—
Gorman, Harold R.; Dahlberg, John R.; and Oravitz, James L., Jr., 4,084,737, Cl. 225-2.000.

Dai Nippon Toryo Co., Ltd.: *See*—
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,351, Cl. 313-486.000.

Daicel Ltd.: *See*—
Takahashi, Katuhiko; Arimoto, Kyozo; Arai, Yoshiyuki; Morinaga, Tsuyoshi; and Nakazawa, Yuji, 4,085,274, Cl. 560-176.000.

Daimler-Benz Aktiengesellschaft: *See*—
Kurrat, Klaus, 4,084,667, Cl. 188-275.000.

Dainippon Ink and Chemicals, Inc.: *See*—
Ariga, Nagao; Nanbu, Junji; and Oikawa, Hiroshi, 4,085,018, Cl. 204-159.150.
Mizuno, Shioji; Ishikawa, Ryoichi; and Miyazaki, Mitsumasa, 4,085,086, Cl. 260-40.0TN.

Dalton, Thomas B., to Westran Corporation. Valve actuator. 4,084,447, Cl. 74-89.140.

Daniel, James A., Jr.; and Hubbard, John T., Jr. Levelling and stabilization system for a vehicle. 4,084,830, Cl. 280-6.100.

Daniel, William H. Simulated deadlock for doors. 4,084,417, Cl. 70-431.000.

Data General Corporation: *See*—
Dunn, David, 4,085,427, Cl. 360-77.000.

Dümmuller, Guenther; Merkel, Karl; Neumayr, Franz; and Schneider, Kurt, to BASF Aktiengesellschaft. 1,3,5 Tris-(2-chloroformyl-oxyethyl)-isocyanurate. 4,085,269, Cl. 544-221.000.

Dauvergne, Michel: *See*—
Karinthi, Pierre; Dauvergne, Michel; and Hirschauer, Benoit, 4,085,252, Cl. 428-576.000.

David Brown Tractors Limited: *See*—
Ashfield, Herbert Edward; and Horsfall, Harry, 4,084,641, Cl. 172-9.000.

Davies, David Huw: *See*—
Mallams, Alan K.; and Davies, David Huw, 4,085,208, Cl. 424-180.000.

Davison, Sol: *See*—
Gergen, William P.; and Davison, Sol, 4,085,163, Cl. 260-857.00D.

Davydov, Vladimir Nikolaevich: *See*—
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivanovich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr Ivanovich; and Pilipenki, Vitaly Alexandrovich, 4,085,025, Cl. 204-224.00M.

Dawans, Francois: *See*—
Durand, Jean-Pierre; Gateau, Patrick; Dawans, Francois; and Chauvel, Bernard, 4,085,055, Cl. 252-50.000.

Day, Leon E., to Polygon, Inc. Socket head tool. 4,084,454, Cl. 81-121.00R.

Dayton Sure-Grip & Shore Company, The: *See*—
Mess, Richard C., 4,084,780, Cl. 249-59.000.

De Laval Separator Company, The: *See*—
Fett, Richard H. G., 4,084,750, Cl. 239-600.000.

Dearling, Harry S. Direct and indirect fragrance dispensing device. 4,084,732, Cl. 222-402.170.

Debruijn, Henricus Antonius: *See*—
Lippits, Gerardus Johannes Meinardus; Janssen, Petrus Johannes; Debruijn, Henricus Antonius; and van Ruler, Johannes, 4,085,285, Cl. 174-68.500.

Deere & Company: *See*—
Robinson, Michael, 4,084,962, Cl. 75-130.00A.

Deetz, David R., to Xerox Corporation. Enhanced underscoring methods and means for automatic typewriter and the like employing hammer-type impact printing mechanism. 4,084,680, Cl. 197-19.000.

de Gennes, Gerard, to Societe Anonyme Francaise du Ferodo. Diaphragm clutch assembly. 4,084,674, Cl. 192-89.00B.

Deggendorfer Werft und Eisenbau G.m.b.H.: *See*—
Hellmich, Gerhard, 4,084,527, Cl. 114-36.000.

Deinzer, Michael: *See*—
Grave, Burghard; Gutbier, Heinrich; and Deinzer, Michael, 4,085,255, Cl. 429-26.000.

Deitz, Paul H.; Durfee, Gary L.; and Wolff, Stephen S., to United States of America, Army. Spatial-multiplex, spatial-diversity optical communication scheme. 4,085,319, Cl. 250-199.000.

de Koning, Jan: *See*—
Wolters, Tjako Aaldrik; and de Koning, Jan, 4,084,334, Cl. 37-67.000.

Del Vecchio, Oscar. Footwear inner sole. 4,084,333, Cl. 36-43.000.

DeMaria, Anthony J.: *See*—
Gilden, Meyer; Reeder, Thomas M.; and DeMaria, Anthony J., 4,085,388, Cl. 331-107.00A.

Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Higuchi, Yoshiro; Harada, Yutaka; Sato, Toshio; Nakagawa, Koji; Kawaguchi, Iwazo; and Kasahara, Yasushi, 4,084,981, Cl. 106-96.000.

Den Otter, Marinus J. A. M.; Van Geenen, Albert A.; and Te Nijenhuis, Anne, to Stamicarbon, B.V. Phosphonate-isocyanurates. 4,085,283, Cl. 544-214.000.

dePolo, Harry Rudolph. Umbrella. 4,084,600, Cl. 135-20.00R.

De Ronde, Frans Christiaan: *See*—
Schiek, Burkhard; and De Ronde, Frans Christiaan, 4,085,391, Cl. 333-33.000.

Derrien, Robert F., to Societe Hure S A. Machine tools having a rotating spindle such as milling machines. 4,084,482, Cl. 90-11.00R.

Designeers Midwest, Division Maswill Industries Incorporated: *See*—
Albers, Norbert C., 4,084,727, Cl. 221-298.000.

DeSoto, Inc.: *See*—
Sekmakas, Kazys; and Shah, Raj, 4,085,020, Cl. 204-181.00C.
Sekmakas, Kazys; and Shah, Raj, 4,085,161, Cl. 260-837.00R.

Desplats, Andre; and Cavalieri, Michel, to Tractel S.A. Clutch control device for cable traction apparatus. 4,084,788, Cl. 254-76.000.

Detty, Garnett E. Knee sleeve. 4,084,584, Cl. 128-80.00C.

Deuring, Hans: *See*—
Vossieck, Paul; and Deuring, Hans, 4,084,826, Cl. 277-134.000.

De Vito, Michael G.; and Wieloch, Francis J., to Xerox Corporation. Transparencies for color xerographic copies. 4,085,245, Cl. 428-215.000.

DeWitt, David A., to Ames Safety Envelope Company. Flexible paper fastener. 4,084,911, Cl. 402-15.000.

Dewsnap, Ronald F.; Higgins, Andrew D.; and Beard, David E., to British Steel Corporation. Cooling systems for metal articles. 4,084,798, Cl. 266-131.000.

Dexter Corporation, The: *See*—
Biggins, Walter F., 4,084,949, Cl. 55-524.000.

Dey, Arabinda N., to P. R. Mallory & Co. Inc. High temperature organic electrolyte cells. 4,085,256, Cl. 429-48.000.

Dezelan, Joseph E.: *See*—
Cole, Carroll R.; Dezelan, Joseph E.; and Easterling, Gene B., 4,084,644, Cl. 172-796.000.

Deziel, Frederick T., to Honeywell Inc. Safe start checking liquid processing system. 4,084,547, Cl. 122-504.000.

Diamond Shamrock Corporation: *See*—
Bennett, John E.; and Elliott, Joseph E., 4,085,014, Cl. 204-95.000.

Diana, Guy D.; and Cutler, Royal A., to Sterling Drug Inc. N,N'-Bridged-bis(2-alkyl-2-hydroxyethylamine) dioxides. 4,085,144, Cl. 260-584.00R.

Diaz, Stephen Hunter: *See—*
Horsma, David August; and Diaz, Stephen Hunter, 4,085,286, Cl. 174-92.000.
Didier Engineering GmbH: *See—*
Fach, Horst, 4,084,712, Cl. 214-35.00R.
Diehl, Francis Louvaine: *See—*
Murphy, Alan Pearce; Seiden, Paul; Diehl, Francis Louvaine; and McCarty, Charles Bruce, 4,085,052, Cl. 252-8.600.
Diehl, Karl-Heinz: *See—*
Sandermann, Wilhelm; Eggensperger, Heinz; and Diehl, Karl-Heinz, 4,085,220, Cl. 424-274.000.
Dietz, Henry G. Liquid flow switch. 4,085,305, Cl. 200-83.00A.
DiLeone, Roland Ralph; and Robustelli, Albert George, to American Cyanamid Company. Impact resistant acrylic polymer composition. 4,085,166, Cl. 260-876.00R.
Dinger, Leon Joel, to AMP Incorporated. Electrical connector. 4,084,876, Cl. 339-95.00D.
Discwasher, Inc.: *See—*
Maier, Bruce R., 4,084,540, Cl. 118-48.000.
Dittloff, Dieter: *See—*
Herbold, Oskar; and Dittloff, Dieter, 4,084,521, Cl. 110-242.000.
Dittrich, Erich; and Grone, Siegfried, to Thyssen Industrie AG. Method for manufacturing annular metal workpieces. 4,084,419, Cl. 72-68.000.
Dixon, Rolland E.; and Hann, P. Douglas, to Phillips Petroleum Company. Isoamylenes from butenes. 4,085,158, Cl. 260-680.00E.
Dobinski, William J.: *See—*
Coward, Michael D.; Dobinski, William J.; and Hinson, Rocose M., Jr., 4,084,799, Cl. 266-207.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Dorsch, Heinz, 4,084,565, Cl. 123-140.0MP.
Doherty, Thomas E., to Owens-Illinois, Inc. Container bottom cutting apparatus and method. 4,084,490, Cl. 93-55.10R.
Dohrendorf, Franz, to Nordischer Maschinenbau Rud. Baader. Fish processing machine. 4,084,294, Cl. 17-57.000.
Dominguez, Richard Lee. Protective pad for musical instruments. 4,084,477, Cl. 84-327.000.
Dominguez, Richard Lee. Bracket for supporting stringed musical instruments. 4,084,778, Cl. 248-314.000.
Donath, Peter: *See—*
Beffa, Fabio; Buhler, Arthur; Donath, Peter; Schutz, Hans Ulrich; and Back, Gerhard, 4,085,097, Cl. 260-145.00A.
Dorsch, Heinz, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Combustion air supply apparatus for an internal combustion engine. 4,084,565, Cl. 123-140.0MP.
Dow Chemical Company, The: *See—*
Anderson, Thomas F.; and Hartless, Arlington L., 4,085,160, Cl. 260-837.00R.
McKendry, Lennon H., 4,085,278, Cl. 544-111.000.
McKendry, Lennon H., 4,085,279, Cl. 544-111.000.
Pierce, James K., 4,085,281, Cl. 544-185.000.
Schneider, John A.; and Mills, Jack F., 4,085,153, Cl. 260-649.00R.
Suh, Kyung W.; and Killingbeck, Graydon Wayne, 4,085,073, Cl. 260-2.50E.
Downing, Harold A.: *See—*
Rohrs, Donald L.; Downing, Harold A.; and Collins, Donald L., 4,084,713, Cl. 214-85.000.
Doyle, William C., Jr.; and Botts, Marion F., to Gulf Oil Corporation. Barban formulation. 4,084,956, Cl. 71-111.000.
Dragan, William Basil. Face bow. 4,084,319, Cl. 32-21.000.
Dragisic, Joseph, to Bunker Ramo Corporation. Apparatus for stripping and positioning an insulation conductor. 4,084,310, Cl. 29-564.400.
Drew, Allan Mathieson: *See—*
Jones, Ralph Archibald; and Drew, Allan Mathieson, 4,085,290, Cl. 179-1.0CN.
Drews, Ulrich; Werner, Peter; and Winkelmann, Lothar, to Robert Bosch GmbH. Method and apparatus for fuel injection control. 4,084,552, Cl. 123-32.0EA.
Drori, Mordeki. Flow reducing devices particularly useful as drip emitters for drip irrigation. 4,084,749, Cl. 239-271.000.
Dubois, Jacques E.; and Miller, John A., to Agence Nationale de Valorisation de la Recherche. Keyboard operated apparatus for simultaneous coding and display of chemical structure and similar graphical information. 4,085,443, Cl. 364-900.000.
Dubovik, Alexandr Ivanovich: *See—*
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivanovich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr Ivanovich; and Pilipenki, Vitaly Alexandrovich, 4,085,025, Cl. 204-224.00M.
Dudek, Harold M., to Astro Development Corporation. Partially fluid lacked vehicle drive train. 4,084,654, Cl. 180-44.00R.
Duffy, Richard Joseph: *See—*
Song, Dae Suk; Duffy, Richard Joseph; Witschonke, Charles Richard; Schiller, Arthur Maurice; and Higgins, Mark Allan, 4,085,045, Cl. 210-58.000.
Dugas, Clet. Sugar cane planter. 4,084,465, Cl. 83-103.000.
Duncan, William W., Sr. Detachable, self-dumping, self-retracting cargo bin for pickup trucks. 4,084,851, Cl. 298-14.000.
Dunchock, Richard S., to Optarac Corporation. Display rack. 4,084,700, Cl. 211-41.000.
Dunlap, Bill D., to KB-Denver, Inc. Keyboard switch assemblies. 4,085,306, Cl. 200-275.000.
Dunn, David, to Data General Corporation. Transducer positioning system. 4,085,427, Cl. 360-77.000.
Dunn, Wendell E., Jr. Process for recycle beneficiation of titaniferous ores. 4,085,189, Cl. 423-74.000.
Du Pont de Nemours, E. I., and Company: *See—*
Atkins, Thomas Joseph, 4,085,106, Cl. 260-256.40F.
Booy, Max Lorenz, 4,085,462, Cl. 366-174.000.
Buser, Kenneth Rene; Roedel, Milton John; and Vassiliou, Eustathios, 4,085,246, Cl. 428-220.000.
Frazer, August Henry, 4,085,091, Cl. 260-75.00R.
Goodrich, Lewis Charles; Holt, Theron Robert; Osborne, Joseph Cyril; Pusey, Donald Kirk; and Roxlo, James William, 4,084,434, Cl. 73-160.000.
Resnick, Paul Raphael; and Grot, Walther Gustav, 4,085,071, Cl. 260-22.00R.
Reynolds, James K., 4,084,952, Cl. 71-86.000.
Witt, Alan Caywood, 4,084,767, Cl. 242-164.000.
Zak, Dennis Joseph, 4,085,151, Cl. 260-635.00Y.
Duraiswamy, Kandaswamy: *See—*
Green, Norman W.; Duraiswamy, Kandaswamy; Lumpkin, Robert E.; Knell, Everett W.; Mirza, Zia I.; and Winter, Bruce L., 4,085,030, Cl. 208-8.000.
Durand, Jean-Pierre; Gateau, Patrick; Dawans, Francois; and Chauvel, Bernard, to Institut Francais du Petrole; and Rhone Poulenc Industries. Grafted copolymers and their use as additives for lubricating oils. 4,085,055, Cl. 252-50.000.
Durfee, Gary L.: *See—*
Deitz, Paul H.; Durfee, Gary L.; and Wolff, Stephen S., 4,085,319, Cl. 250-199.000.
Dwivedi, Basant K.: *See—*
Mackay, Donald A. M.; Witzel, Frank; Dwivedi, Basant K.; and Schoenholz, Daniel, 4,085,227, Cl. 426-3.000.
Dworkin, Robert Dally; and Ejk, Adam Joseph, to M&T Chemicals Inc. Method for stabilizing vinyl chloride polymers. 4,085,077, Cl. 260-23.0XA.
Dynapar Corporation: *See—*
Smith, Lee H.; and Alexandrowicz, Norman J., 4,084,675, Cl. 192-95.000.
Dyno Industrier A.S.: *See—*
Nielsen, Tore Bernt; and Alm, Oddvar, 4,084,994, Cl. 149-44.000.
Samuelsen, Eirik; and Alm, Oddvar, 4,084,995, Cl. 149-56.000.
E. F. Johnson Company: *See—*
Wahi, Chander Mohan, 4,084,878, Cl. 339-99.00R.
E. R. Squibb & Sons, Inc.: *See—*
Krapcho, John; and Turk, Chester Frank, 4,085,102, Cl. 542-450.000.
Krapcho, John; and Turk, Chester F., 4,085,280, Cl. 544-140.000.
Turk, Chester F.; and Krapcho, John, 4,085,142, Cl. 260-570.5CA.
Ear, Frank P. Filter apparatus for fast food kitchens exhaust. 4,084,947, Cl. 55-242.000.
Early California Industries, Inc.: *See—*
Howard, Charles W., 4,084,603, Cl. 137-88.000.
Easterling, Gene B.: *See—*
Cole, Carroll R.; Dezelan, Joseph E.; and Easterling, Gene B., 4,084,644, Cl. 172-796.000.
Easterling, Gene Baptist, to Caterpillar Tractor Co. Motor grader with blade support structure. 4,084,643, Cl. 172-795.000.
Eastman, Jay Morgan; and Refermat, Stanley J., to University of Rochester, The. Reflective polarization retarder and laser apparatus utilizing same. 4,084,883, Cl. 350-152.000.
Eastman Kodak Company: *See—*
Holmes, Jerry D., 4,085,143, Cl. 260-515.00R.
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,085,089, Cl. 260-45.8NT.
O'Brien, David Frank, 4,084,967, Cl. 96-29.00R.
Wenthe, Stephen James; and Caswell, David Arlen, 4,084,806, Cl. 271-80.000.
Ebauches S.A.: *See—*
Wiget, Fridolin, 4,084,404, Cl. 58-50.00R.
Eckel, Emery Lee, to Eckel Manufacturing Co., Inc. Power tongs. 4,084,453, Cl. 81-57.180.
Eckel Manufacturing Co., Inc.: *See—*
Eckel, Emery Lee, 4,084,453, Cl. 81-57.180.
Eckert, Konrad, to Robert Bosch GmbH. Fuel metering device. 4,084,562, Cl. 123-119.0EC.
Eckert, Robert L. Security lock for emergency door latch mechanism. 4,084,845, Cl. 292-92.000.
Ecodyne Corporation: *See—*
Chirico, Anthony N., 4,084,945, Cl. 55-38.000.
Chirico, Anthony Nicholas, 4,084,944, Cl. 55-27.000.
Eddens, Gerald R., to W. J. Industries, Inc. Cooling for magnetic particle devices. 4,085,344, Cl. 310-58.000.
Edison, David M.: *See—*
Quan, Wing C.; Edison, David M.; Hummert, George T.; and Sackin, Milton, 4,084,661, Cl. 187-29.00R.
Egan, John J., to Bauer Bros. Co., The. Front feed static screen. 4,085,040, Cl. 209-244.000.
Eggensperger, Heinz: *See—*
Sandermann, Wilhelm; Eggensperger, Heinz; and Diehl, Karl-Heinz, 4,085,220, Cl. 424-274.000.
Egnaczak, Raymond K.: *See—*
Warter, Peter J., Jr.; Squassoni, Gino F.; Tulagin, Vsevolod; Teumer, Roger G.; and Egnaczak, Raymond K., 4,084,896, Cl. 355-3.00P.
Ehernberger, John E.; and Mazza, Bud, to G.B.C., Inc. Method and

apparatus for crushing and separating metallic containers. 4,084,496, Cl. 100-35.000.

Eichholz, Werner; and Krebs, Gerd, to Phoenix Gummiwerke AG. Device for gripping, pressing and depositing tire cores. 4,084,998, Cl. 156-403.000.

Eichler, Horst. Flank drive for planing hull and displacement craft. 4,084,537, Cl. 115-50.000.

Eisai Co., Ltd.: *See*—
Takebe, Toshio; and Yamazaki, Takashi, 4,084,591, Cl. 128-285.000.

Eisenstadt, Marvin E., to Cumberland Packing Corporation. Neohesperidine dihydrochalcone sweetening compositions. 4,085,232, Cl. 426-548.000.

Ejk, Adam Joseph: *See*—
Dworkin, Robert Dally; and Ejk, Adam Joseph, 4,085,077, Cl. 260-23.0XA.

Ekman, Bror Fridolf Thure. Fluid coupling device. 4,084,614, Cl. 137-614.030.

Elbert, Donald Lee, to Monsanto Company. Nylon composition containing non-polar ester plasticizer. 4,085,080, Cl. 260-31.20N.

Electric Power Research Institute, Inc.: *See*—
Glenn, Robert G., 4,084,922, Cl. 416-220.00R.

Electricity Council, The: *See*—
Simpson, David Preston; and Lawton, James, 4,085,170, Cl. 261-1.000.

Electro-Chlor Corporation: *See*—
McCallum, John, 4,085,028, Cl. 204-269.000.

Elfers, Gunther Hans: *See*—
Otrhalek, Joseph V.; Gomes, Gilbert Stephen; and Elfers, Gunther Hans, 4,085,000, Cl. 162-16.000.

Eli Lilly and Company: *See*—
Berg, David H.; Hamill, Robert L.; and Hoehn, Marvin M., 4,085,224, Cl. 424-283.000.

Elliott, Joseph E.: *See*—
Bennett, John E.; and Elliott, Joseph E., 4,085,014, Cl. 204-95.000.

Ellis, Norbert E., to Met-Pro Systems, Inc. Carbon contact column. 4,085,043, Cl. 210-40.000.

Emerson Electric Co.: *See*—
Yagher, Charles, Jr., 4,085,397, Cl. 337-407.000.

Emmerich, Kenneth C.; and Hamlin, Ralston L., to Fansteel Inc. Self-retaining sleeve and bit. 4,084,856, Cl. 299-86.000.

Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Chiyoda Chemical Engineering & Construction Co., Ltd. Method for the thermal cracking of heavy hydrocarbon. 4,085,034, Cl. 208-48.00R.

Engel, Stephen August; and Fuhrhop, Ronald Elmer, to Union Carbide Corporation. Method and apparatus for making instantaneous scarfing cuts. 4,084,988, Cl. 148-9.500.

Engineered Systems, Inc.: *See*—
Van Ness, Bradford O., 4,085,313, Cl. 235-419.000.

Engle, Thomas H., to General Signal Corporation. Uncoupling valve with override feature. 4,084,858, Cl. 303-18.000.

Environetics, Inc.: *See*—
Winters, Raymond S., 4,084,358, Cl. 52-4.000.

Epple, Richard R., to Maryland Cup Corporation. Dispensing valve. 4,084,729, Cl. 222-307.000.

Erfurth, Henning: *See*—
Hund, Franz; Holznagel, Wilhelm; Erfurth, Henning; Kindervater, Friedrich; and Hennings, Willi, 4,084,984, Cl. 106-300.000.

Erneta, Modesto, to N L Industries, Inc. Hydrochlorination of spray dried magnesium chloride. 4,085,198, Cl. 423-498.000.

Ernst, Heinz-Hubert, to Metallgesellschaft Aktiengesellschaft. Process for producing shaped bodies. 4,084,957, Cl. 75-3.000.

Erwin, Arthur F. Contra-rotating vibrator. 4,084,445, Cl. 74-61.000.

Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik: *See*—
Sick, Erwin, 4,085,322, Cl. 250-227.000.

Esseluhn, Werner F., to Western Electric Co., Inc. Methods of and apparatus for sorting parts of a separated article. 4,085,038, Cl. 209-71.000.

Etablissements CARPANO & PONS: *See*—
Bullat, Jean, 4,085,345, Cl. 310-117.000.

Etat Francais: *See*—
Cluzel, Philippe Henri Maurice; and Quivy, Michel Georges, 4,085,400, Cl. 340-10.000.

Ethicon, Inc.: *See*—
Bilweis, Joseph, 4,084,692, Cl. 206-403.000.

Etnaer, Alexandr Ivanovich: *See*—
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivanovich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr Ivanovich; and Pilipenki, Vitaly Alexandrovich, 4,085,025, Cl. 204-224.00M.

Eumuco Aktiengesellschaft fur Maschinenbau: *See*—
Willenbrock, Walter; and Winkler, Helmut, 4,084,418, Cl. 72-31.000.

Evans, John C., Jr., to United States of America, National Aeronautics and Space Administration. Method for producing solar energy panels by automation. 4,084,985, Cl. 136-89.00P.

Evans, Robert, to Stone-Platt Crawley Limited. Check synchronism. 4,085,362, Cl. 324-83.00D.

Evans Rotork, Inc.: *See*—
Salamone, Saverio, 4,084,645, Cl. 173-13.000.

Evertz, Werner: *See*—
Wedemeyer, Karlfried; Kiel, Wolfgang; and Evertz, Werner, 4,085,141, Cl. 260-570.00R.

EVVA Werk Spezialerzeugung von Zylinder- und Sicherheitsschlossern Gesellschaft m.b.H. & Co. Kommanditgesellschaft: *See*—
Prunbauer, Kurt, 4,084,416, Cl. 70-276.000.

Exxon Research & Engineering Co.: *See*—
Aczel, Thomas; and Plumlee, Karl W., 4,085,032, Cl. 208-10.000.
Cull, Neville L.; Pine, Lloyd A.; and Maness, Dale D., 4,085,195, Cl. 423-244.000.
Plumlee, Karl W., 4,085,033, Cl. 208-10.000.
Van Auken, Richard L., 4,084,819, Cl. 273-80.00R.
Walchuk, George P., 4,085,031, Cl. 208-8.000.
Whitney, Thomas A., 4,085,138, Cl. 260-563.00R.
Wristers, Harry J., 4,085,064, Cl. 252-429.00B.
Wristers, Jos, 4,085,035, Cl. 208-143.000.

Ezaki, Masatsugu. Food processing device. 4,084,494, Cl. 99-450.700.

Fa. J. N. Eberle & Cie. GmbH: *See*—
Mogerlein, Heinrich; and Moser, Werner, 4,084,764, Cl. 242-107.000.

Fach, Horst, to Didier Engineering GmbH. Charging truck for feeding coal into horizontal-chamber coke-ovens. 4,084,712, Cl. 214-35.00R.

Fagan, John L., to Westinghouse Electric Corporation. Monolithic implementation of a fast Fourier transform. 4,085,441, Cl. 364-827.000.

Fagert, Russell Bruce; and Fogle, John Louis, to Rockwell International Corporation. Leakage drain for single lever control valve. 4,084,607, Cl. 137-312.000.

Fairchild Camera and Instrument Corporation: *See*—
Smith, Ronald A., 4,085,301, Cl. 200-4.000.

Fairey, Brian M.; and Plasschaert, Paulus E., to NCR Canada Ltd. - NCR Canada Ltee. Inked ribbon guide member with tracking surfaces thereon. 4,084,682, Cl. 197-168.000.

Falchle, Jorg; and Hahner, Reinhard, to Robert Bosch GmbH. Force-transmitting arrangement for hammer drills. 4,084,829, Cl. 279-99.000.

Falkingham, Clarence Mark: *See*—
Caraway, William Russell; and Falkingham, Clarence Mark, 4,084,590, Cl. 128-283.000.

Fansteel Inc.: *See*—
Emmerich, Kenneth C.; and Hamlin, Ralston L., 4,084,856, Cl. 299-86.000.
Fry, Stanley S., 4,084,965, Cl. 75-230.000.

Farafontov, Vladimir Ivanovich; Kalashnikov, Yaroslav Alexeevich; Novikov, Jury Nikolaevich; Volpin, Mark Efimovich; Vereschagin, Leonid Fedorovich; and Lysanov, Vladislav Sergeevich. Process for producing synthetic diamonds. 4,085,196, Cl. 423-446.000.

Farish, Owen; and Hundstad, Richard L., to Westinghouse Electric Corporation. Independent initiation technique of glow discharge production in high-pressure gas laser cavities. 4,085,386, Cl. 331-94.5PE.

Farrell, John H., to Houdaille Industries, Inc. Shape grinder and method. 4,084,349, Cl. 51-5.00D.

Farstad, Johan T., to IRD Mechanalysis, Inc. Piezo electric transducer for measuring instantaneous vibration velocity. 4,085,349, Cl. 310-319.000.

Faust, William D., to Ferro Corporation. Volatilizable frit composition forming oxidation-inhibiting vapors. 4,084,975, Cl. 106-48.000.

Fedders Corporation: *See*—
Brenneman, Daniel A., 4,084,406, Cl. 62-211.000.

Feder, Emil. Line cleats for securing ropes, but especially for lines to sails of sailboats. 4,084,532, Cl. 114-218.000.

Fedorov, Igor Konstantinovich: *See*—
Rakitin, Vladimir Jurievich; Fedorov, Igor Konstantinovich; Grigorian, Alfred Nikitovich; Lalov, Vitaly Viktorovich; and Prokofieva, Nina Vasilievna, 4,084,757, Cl. 241-301.000.

Fein, Michael E.; and Salisbury, Charles W., to Owens-Illinois, Inc. Gaseous laser device with damage-resistant cathode. 4,085,385, Cl. 331-94.50D.

Fekete, Lajos F.: *See*—
Bick, Rodger L.; and Fekete, Lajos F., 4,085,095, Cl. 260-112.00B.

Felt Products Mfg. Co.: *See*—
Pyle, Lawrence F.; and Brady, John F., 4,084,912, Cl. 404-74.000.

Fenrick, Walter J.: *See*—
Carpenter, Wilfred C.; Schmitz, Gary N.; and Fenrick, Walter J., 4,084,440, Cl. 73-422.0GC.

Ferag AG: *See*—
Reist, Walter; and Honegger, Werner, 4,084,808, Cl. 271-213.000.

Ferro Corporation: *See*—
Faust, William D., 4,084,975, Cl. 106-48.000.
van der Vliet, William Ewald, 4,085,021, Cl. 204-181.00N.

Fett, Richard H. G., to De Laval Separator Company, The. Nozzle assembly for filters. 4,084,750, Cl. 239-600.000.

Fettel, Bruce E.: *See*—
Ionescu, Marian I.; and Fettel, Bruce E., 4,084,268, Cl. 3-1.500.

Fichot, Bernard: *See*—
Lainez, Lucien; Fichot, Bernard; and Bijon, Jean-Paul, 4,084,694, Cl. 206-444.000.

Figge, Erwin E.: *See*—
Bagby, John P.; Figge, Erwin E.; and Kim, Raymond W. H., 4,084,892, Cl. 352-29.000.

Filtrol Corporation: *See*—
Alafandi, Hamid; and Stamires, Dennis, 4,085,069, Cl. 252-455.00Z.

Finike Italiana Marposs Soc. In. Accomandita Semplice di Mario Possati & C.: *See*—
Albertazzi, Gastone, 4,084,322, Cl. 33-174.00L.

Finnegan, Francis, to Texas Instruments Incorporated. Thermocouple circuit. 4,084,437, Cl. 73-361.000.

Fiori, Lee B.: *See—*
Schweitzer, Roy C.; and Fiori, Lee B., 4,084,510, Cl. 101-365.000.

Firmenich & Cie: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 4,085,109, Cl. 260-294.80E.

Firminhac, Ralph H.: *See—*
Marceau, J. Arthur; Firminhac, Ralph H.; and Moji, Yukimori, 4,085,012, Cl. 204-38.00A.

Fisher-Cornelssen, Kurt Anton, to Sandoz Ltd. Elevating mood in geriatric patients. 4,085,218, Cl. 424-267.000.

Fisons Limited: *See—*
Augstein, Joachim; Cairns, Hugh; and Rogers, Norman Harold, 4,085,115, Cl. 260-308.00D.

Flament, Ivon: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 4,085,109, Cl. 260-294.80E.

Flanagan, Joseph E.; and Frankel, Milton B., to Rockwell International Corporation. 1,3-Diazido-2-nitrazapropane. 4,085,123, Cl. 260-349.000.

Flandorfer, Robert, to Braun Aktiengesellschaft. Exposure control for motion picture cameras. 4,084,893, Cl. 352-141.000.

Flannery, Matt W. Continuous tension exerciser. 4,084,815, Cl. 272-119.000.

Fleck, Fritz: *See—*
Mercer, Alec Victor; Littlewood, Peter Stuart; Bolton, Ivan Joseph; and Fleck, Fritz, 4,085,101, Cl. 260-239.900.

Fleming, Gary L.: *See—*
Fritz, David P.; Weigand, Rex O.; and Fleming, Gary L., 4,084,396, Cl. 56-98.000.

FMC Corporation: *See—*
Fullerton, Donald Griswold; Kyrias, Gilbert Mowder; and Weber, Richard Baxter, 4,085,041, Cl. 210-7.000.

Focke, Heinz, to Focke & Pfuhl. Apparatus for making and filling hinged boxes of a foldable material. 4,084,393, Cl. 53-137.000.

Focke, Heinz; and Balmer, Oskar, to Focke & Pfuhl. Method of and apparatus for dispensing tobacco portions. 4,084,627, Cl. 141-11.000.

Focke & Pfuhl: *See—*
Focke, Heinz, 4,084,393, Cl. 53-137.000.
Focke, Heinz; and Balmer, Oskar, 4,084,627, Cl. 141-11.000.

Fogle, John Louis: *See—*
Fagert, Russell Bruce; and Fogle, John Louis, 4,084,607, Cl. 137-312.000.

Foglio, Maurizio; Scarponi, Ugo; and Arcamone, Federico, to Societa' Farmaceutici Italia S.p.A. Process for the preparation of azetidinone-thiazoline precursors for cephalosporin synthesis. 4,085,113, Cl. 260-306.70C.

Fohl, Artur. Closure for safety belts. 4,084,298, Cl. 24-230.0AL.

Fokker-VFW B. V.: *See—*
Godfried, Leo M., 4,085,247, Cl. 428-290.000.

Fondation Cum Plate: *See—*
von Platen, Baltzar, 4,084,408, Cl. 62-467.00R.

Fontana, Pietro: *See—*
Stefani, Giancarlo; and Fontana, Pietro, 4,085,122, Cl. 260-346.750.

Food Machinery Espanola, S.A.: *See—*
Sanchez de Leon Rodriquez-Roda, D. Juan Antonio, 4,084,697, Cl. 209-106.000.

Ford Motor Company: *See—*
Labana, Santokh S.; and Chang, Yun Feng, 4,085,260, Cl. 526-16.000.
vor der Bruck, Rolf; and Voll, Walter, 4,084,838, Cl. 280-715.000.

Forde, Diane: *See—*
Forde, Louis; and Forde, Diane, 4,084,553, Cl. 123-48.00B.

Forde, Louis; and Forde, Diane. Piston and rod assembly with displacement features. 4,084,553, Cl. 123-48.00B.

Forsman, Lars Osten. Energy absorbing unit for physical exercising devices. 4,084,810, Cl. 272-73.000.

Foster Cathead Corporation: *See—*
Boland, John Gordon, 4,084,429, Cl. 73-139.000.

Fradella, Richard B. Variable-speed regenerative brushless electric motor and controller system. 4,085,355, Cl. 318-168.000.

Francis, John Frederick, to Gillette Company, The. Safety razors. 4,084,316, Cl. 30-47.000.

Francis, Melvin A., to Industrial Drives, Inc. Stabilizing jack. 4,084,789, Cl. 254-86.00R.

Frank J. Zamboni & Co.: *See—*
Zamboni, Frank J., 4,084,763, Cl. 242-86.520.

Franke, Rainer-Burkhard; Hirschmann, Adolf; and Kaser, Klaus, to Labora Mannheim GmbH fur Labortechnik. Measuring and pipetting device. 4,084,730, Cl. 222-309.000.

Frankel, Milton B.: *See—*
Flanagan, Joseph E.; and Frankel, Milton B., 4,085,123, Cl. 260-349.000.

Franssen, Nico Valentinus, to U.S. Philips Corporation. Circuit arrangement for obtaining a chorus effect. 4,084,471, Cl. 84-1.010.

Franz, John E., to Monsanto Company. N-hydroxy-N-phosphonomethylglycines and the herbicidal use thereof. 4,084,953, Cl. 71-86.000.

Franz, Norman C. Additive metering system using a centrifugal pump. 4,084,605, Cl. 137-101.110.

Fraser, Douglas S., to FTS Systems, Inc. Flask for freeze drying with adjustable seal. 4,084,330, Cl. 34-92.000.

Fray, Derek John, to National Research Development Corporation. Apparatus for detecting elements. 4,085,023, Cl. 204-195.00S.

Frazer, August Henry, to Du Pont de Nemours, E. I., and Company. Thermally stable, rigid polyesters from thermally stable, rigid dibasic acids and aromatic dihydroxy compounds. 4,085,091, Cl. 260-75.00R.

Freedman, Clive M., to TBA Industrial Products Limited. Glass and refractory fibre materials and method for making same. 4,084,977, Cl. 106-50.000.

Fridkin, Matityahu: *See—*
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, 4,085,261, Cl. 526-19.000.

Frier, David Lee, to Bankers Trust of South Carolina. Currency drop safe. 4,084,520, Cl. 109-56.000.

Frilette, Vincent J.; and Rubin, Mae K., to Mobil Oil Corporation. Conversion of hydrocarbons. 4,085,156, Cl. 260-671.00R.

Fritz, David P.; Weigand, Rex O.; and Fleming, Gary L., to Hesston Corporation. Adjustable row spacing forage head. 4,084,396, Cl. 56-98.000.

Frohlich, Alfons; and Hochlehnert, Franz, to OPTI Patent- Forschungs- und Fabrikations-AG. Slide fastener. 4,084,297, Cl. 24-205.13C.

Frost Packaging Company: *See—*
Thurston, Benjamin L., 4,084,720, Cl. 220-76.000.

Fruh, Ernst Josef, to Iminex GmbH. Apparatus for the preparation of insulating material. 4,084,753, Cl. 241-34.000.

Fry, Stanley S., to Fansteel Inc. Columbium powder and method of making the same. 4,084,965, Cl. 75-230.000.

Frye, Bennie W.: *See—*
Bradley, W. L.; Frye, Bennie W.; and Raines, Joseph W., 4,084,657, Cl. 180-114.000.

FTS Systems, Inc.: *See—*
Fraser, Douglas S., 4,084,330, Cl. 34-92.000.

Fuchs, Alvin J., to Medalist Industries, Inc. Multiple tier screen printer. 4,084,504, Cl. 101-115.000.

Fuhrhop, Ronald Elmer: *See—*
Engel, Stephen August; and Fuhrhop, Ronald Elmer, 4,084,988, Cl. 148-9.500.

Fuji Photo Film Co., Ltd.: *See—*
Ikechi, Masai, 4,085,415, Cl. 354-316.000.
Nakamura, Koichi; and Shimamura, Isao, 4,084,969, Cl. 96-60.00R.

Fuji Photo Optical Co., Ltd.: *See—*
Yoshino, Takeshi, 4,085,412, Cl. 354-106.000.

Fuji Xerox Co., Ltd.: *See—*
Yoshino, Masaki, 4,084,894, Cl. 353-34.000.

Fujii, Yoshihiko: *See—*
Odaka, Fumio; Fujii, Yoshihiko; and Iseda, Yutaka, 4,085,165, Cl. 260-859.00R.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Harada, Hirokichi, 4,085,277, Cl. 544-27.000.

Fujita, Mituo, to Kabushiki Kaisha Shinsei Industries. Tape printer. 4,084,679, Cl. 197-6.700.

Fujiura, Takashi; Tsutsui, Kunio; and Nishida, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Fuel tank breathing means for small size boats. 4,084,531, Cl. 114-211.000.

Fukuura, Yukio: *See—*
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; Shibata, Shoson; and Suzuki, Yoshikatsu, 4,085,262, Cl. 526-46.000.

Fukuwatari, Tadashi; Mishima, Kiyotaka; Ichimura, Hiroshi; and Kurihara, Hideaki, to Asahi Glass Company, Ltd. Fiber reinforced cementitious substrate. 4,085,001, Cl. 162-145.000.

Fulk, James B., to Fulk, James B. Method and apparatus for producing web units. 4,084,804, Cl. 270-52.500.

Fullerton, Donald Griswold; Kyrias, Gilbert Mowder; and Weber, Richard Baxter, to FMC Corporation. Biological oxidation and flotation apparatus and method. 4,085,041, Cl. 210-7.000.

G.B.C., Inc.: *See—*
Ehernberger, John E.; and Mazza, Bud, 4,084,496, Cl. 100-35.000.

Gaiser, Robert F., to Bendix Corporation, The. Brake system failure condition indicator. 4,084,377, Cl. 60-535.000.

Gales, Peter W., to Jos. Schlitz Brewing Company. Foam monitor and method. 4,084,426, Cl. 73-60.100.

Galis, Alex J., to North American Galis Company. Self-propelled material storage and feeding vehicle. 4,084,751, Cl. 241-25.000.

Gallagher, James P.; and Mooi, John, to Atlantic Richfield Company. Hydrodenitrogenation and hydrocracking catalyst. 4,085,068, Cl. 252-455.00R.

Gallant, Janice Anne, to Bendix Corporation, The. Phasing optimization at the feed probes of a parallel plate lens antenna. 4,085,404, Cl. 343-754.000.

Galley, Geoffrey Harrison, to Global Vision (U.K.) Limited. Manufacture of contact lenses. 4,084,458, Cl. 82-1.00C.

Galuschak, George; and Malkiel, Saul Leon, to Singer Company, The. Combined angular displacement measuring system and multiplier. 4,085,375, Cl. 328-160.000.

Galvagni, John L., to AVX Corporation. Tantalum chip capacitor. 4,085,435, Cl. 361-433.000.

Gambell, James W.; and Tinker, H. Burnham, to Monsanto Company. Production of di-unsaturated carboxylic acids. 4,085,275, Cl. 560-130.000.

Game Time, Inc.: *See—*
Melrose, Kendrick B.; Kimmel, Gerald E.; and McCombs, William F., 4,084,812, Cl. 272-85.000.

Garching Instrumente-Gesellschaft zur industriellen Nutzung von Forschungsergebnissen mbH: *See—*
Guilino, Ernst, 4,085,335, Cl. 307-88.300.

Gardiner, William P., to Byrd Industries, Inc. Winch with automatic clutch assembly. 4,084,793, Cl. 254-187.800.

Garofalo, Nicholas J. Hand held nut running and crimping power tool. 4,084,460, Cl. 81-10.000.
Gaspar, Peter. Rotary engines. 4,084,550, Cl. 123-245.000.
Gassert, Willy. Quick-acting hose or pipe coupling. 4,084,843, Cl. 285-105.000.
Gateau, Patrick: *See*—
Durand, Jean-Pierre; Gateau, Patrick; Dawans, Francois; and Chauvel, Bernard, 4,085,055, Cl. 252-50.000.
Gausepohl, Hermann: *See*—
Seib, Karl; Schwarz, Wolfgang; and Gausepohl, Hermann, 4,085,264, Cl. 526-47.000.
Gauthier, John A.: *See*—
Thomas, Robert M.; and Gauthier, John A., 4,085,294, Cl. 179-16.0AA.
Gautschi, Fritz: *See*—
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 4,085,109, Cl. 260-294.80E.
General Cable Corporation: *See*—
Olszewski, Jerzy A.; and Jachimowicz, Ludwig, 4,085,284, Cl. 174-36.000.
General Electric Company: *See*—
Crowe, William P., 4,084,291, Cl. 16-170.000.
Hamill, James S., 4,085,425, Cl. 358-237.000.
MacKenzie, Burton Thornley, Jr.; and Wilkus, Edward Vincent, 4,085,162, Cl. 260-848.000.
Merrill, Duane F., 4,085,084, Cl. 260-33.6SB.
Smith, William Edward, 4,085,150, Cl. 260-621.00R.
Swank, Robert K.; and Yang, Kei-Hsiung, 4,085,327, Cl. 250-370.000.
General Signal Corporation: *See*—
Engle, Thomas H., 4,084,858, Cl. 303-18.000.
Wilson, Charles A., 4,085,463, Cl. 366-176.000.
Genesco, Inc.: *See*—
Turner, Newton C., Jr., 4,084,279, Cl. 12-142.00R.
Genesi, Robert Charles, to Sprague Electric Company. Light detector system with photo diode and current-mirror amplifier. 4,085,411, Cl. 354-51.000.
Genovese, Nunzio N. Adjustable eyeless fishing rod. 4,084,343, Cl. 43-22.000.
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; and Genrikh, Natalia Georgievna. High-voltage network for areas with high rate of icing. 4,085,338, Cl. 307-147.000.
Genrikh, Natalia Georgievna: *See*—
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; and Genrikh, Natalia Georgievna, 4,085,338, Cl. 307-147.000.
Georg Menshen & Co. KG.: *See*—
Stahl, Otto; and Hins, Johannes, 4,084,728, Cl. 222-153.000.
Georgetown Steel Corporation: *See*—
Coward, Michael D.; Dobinski, William J.; and Hinson, Rocose M., Jr., 4,084,799, Cl. 266-207.000.
Georgopulos, Thomas, to GTE Automatic Electric Laboratories Incorporated. Low insertion force connector. 4,084,874, Cl. 339-75.0MP.
Gergen, William P.; and Davison, Sol, to Shell Oil Company. Multicomponent polyamide-block copolymer-polymer blends. 4,085,163, Cl. 260-857.00D.
Gergis, Isoris S.: *See*—
Chen, Thomas T.; and Gergis, Isoris S., 4,085,451, Cl. 365-4.000.
Gerkema, Jan T.; and Gorter, Frederik Willem, to U.S. Philips Corporation. Thin film magnetic head with a gap formed between a loop shaped core part and a bridging core part. 4,085,430, Cl. 360-119.000.
Gervasi, Enzo. Continuous filter with continuous cake removal. 4,085,050, Cl. 210-332.000.
Gesellschaft fur Strahlen- und Umweltforschung mbH: *See*—
Stengel, Eberhard; and Soeder, Carl Johannes, 4,084,346, Cl. 47-1.400.
Gewerkschaft Eisenhutte Westfalia: *See*—
Hohn, Walter, 4,084,386, Cl. 61-85.000.
GF Business Equipment, Inc.: *See*—
Koepke, Earl H., 4,084,699, Cl. 211-11.000.
Gibbons, John P.; and Chiang, Mutong T., to CPC International Inc. Carbohydrate thermoset resins. 4,085,075, Cl. 260-17.200.
Gibbons, John P.; and Wondolowski, Lawrence, to CPC International Inc. Carbohydrate-based condensation resin. 4,085,076, Cl. 260-17.200.
Gibson, Laurence Ernest: *See*—
Bull, Jeffrey Lawrence; Murphy, Tanya Ellen; and Gibson, Laurence Ernest, 4,084,859, Cl. 303-106.000.
Gilden, Meyer; Reeder, Thomas M.; and DeMaria, Anthony J., to United Technologies Corporation. Mode-locked, surface acoustic wave oscillator. 4,085,388, Cl. 331-107.00A.
Gilinson, Philip J., Jr.: *See*—
Ahn, Byong-Ho; Gilinson, Philip J., Jr.; and Moscaritolo, Anthony Michael, 4,084,428, Cl. 73-117.300.
Gillette Company, The: *See*—
Francis, John Frederick, 4,084,316, Cl. 30-47.000.
Gilmour, George A., to Westinghouse Electric Corporation. Underwater viewing system. 4,085,421, Cl. 358-81.000.
Ginsberg, Irwin L. Steam bath device for shower. 4,084,271, Cl. 4-161.000.
Ginsberg, Thomas, to Union Carbide Corporation. Protective coatings for ferrous metals. 4,084,971, Cl. 106-1.170.
Giordano, Annie Sue; Burke, Richard Lerda; and Wixon, Harold Eugene, to Colgate-Palmolive Company. Method of treating a fabric prior to ironing with an anionic fabric conditioning composition. 4,085,243, Cl. 427-387.000.
Givaudan Corporation: *See*—
Virgilio, Joseph A.; and Manowitz, Milton, 4,085,062, Cl. 252-300.000.
Glaum, Gerald Vernon: *See*—
Subramanian, Kohur Nagaraja; and Glaum, Gerald Vernon, 4,085,188, Cl. 423-32.000.
Glenn, Robert G., to Electric Power Research Institute, Inc. Turbine rotor with pin mounted ceramic turbine blades. 4,084,922, Cl. 416-220.00R.
Global Vision (U.K.) Limited: *See*—
Galley, Geoffrey Harrison, 4,084,458, Cl. 82-1.00C.
Godber, Geoffrey Allan, to Plessey Handel und Investments A.G. Method for manufacturing electrical solid state devices utilizing shadow masking and ion-implantation. 4,084,987, Cl. 148-1.500.
Godel, Siegfried; Pudims, Albert Adam; and Wergzyn, Richard, to Sperry Rand Corporation. Control circuit arrangement for a portable electrically heated hair treatment appliance. 4,085,309, Cl. 219-364.000.
Godfried, Leo M., to Fokker-VFW B. V. Fire-protecting epoxy resin reinforced with glass fiber. 4,085,247, Cl. 428-290.000.
GOETZEWERKE Friedrich Goetze AG: *See*—
Vossieck, Paul; and Deuring, Hans, 4,084,826, Cl. 277-134.000.
Golay, Marcel J. E., to Marcel Golay. Heat insulator. 4,084,574, Cl. 126-270.000.
Goldberg, Gerald M.: *See*—
Smith, Oliver Dale; and Goldberg, Gerald M., 4,085,059, Cl. 252-118.000.
Gomes, Gilbert Stephen: *See*—
Otrhalek, Joseph V.; Gomes, Gilbert Stephen; and Elfers, Gunther Hans, 4,085,000, Cl. 162-16.000.
Goodrich, Lewis Charles; Holt, Theron Robert; Osborne, Joseph Cyril; Pusey, Donald Kirk; and Roxlo, James William, to Du Pont de Nemours, E. I., and Company. Apparatus for determining denier of yarn. 4,084,434, Cl. 73-160.000.
Goodvin, Harold R. Bale lifter and carrier attachment. 4,084,708, Cl. 214-1.0HA.
Goodwin, Thomas E., to Continental Oil Company. Preparation of alkyl substituted 1,3-dimethylbenzenes. 4,085,155, Cl. 260-668.00R.
Goodyear Tire & Rubber Company, The: *See*—
Hillhouse, Mial T.; and Ramsey, Richard L., 4,085,179, Cl. 264-122.000.
Hopper, Roger J., 4,085,093, Cl. 260-79.50P.
Lawrence, John P., 4,085,094, Cl. 260-79.50B.
Gordos Corporation: *See*—
Lacis, Laimons; and Horvath, Steven, 4,085,392, Cl. 335-58.000.
Gorman, Harold R.; Dahlberg, John R.; and Oravitz, James L., Jr., to PPG Industries, Inc. Oilless fluid for scoring glass. 4,084,737, Cl. 225-2.000.
Gorski, Charles R.: *See*—
Schettl, Alvin J.; and Gorski, Charles R., 4,084,572, Cl. 126-200.000.
Gorter, Frederik Willem: *See*—
Gerkema, Jan T.; and Gorter, Frederik Willem, 4,085,430, Cl. 360-119.000.
Goser, Karl; and Mueller, Ruediger, to Siemens Aktiengesellschaft. Circuit arrangement in a complementary CHL technique. 4,085,339, Cl. 307-213.000.
Goshima, Takeshi: *See*—
Hirabayashi, Yoichi; Minami, Setsuo; and Goshima, Takeshi, 4,084,881, Cl. 350-6.800.
Goto, Kiyoshi: *See*—
Tsuchiya, Shozo; Hayashi, Hideo; Iida, Kazuyoshi; and Goto, Kiyoshi, 4,085,085, Cl. 260-38.000.
Goto, Tadahiro; and Soma, Munemasa, to Iwatsu Electric Co., Ltd. Multi-frequency signal receivers. 4,085,295, Cl. 179-84.0VF.
Gough & Company (Hanley) Limited: *See*—
Gough, George Terah, 4,084,446, Cl. 74-61.000.
Gough, George Terah, to Gough & Company (Hanley) Limited. Vibratory machine. 4,084,446, Cl. 74-61.000.
Goupil, Marcel; and Ruel, Marc. Hockey stick with reinforcement filament winding. 4,084,818, Cl. 273-67.00A.
Gram, Hans, to Brodrene Gram A/S. Rotary gear pump. 4,084,926, Cl. 418-19.000.
Grandia, Johannes; and Hill, John Charles, to International Business Machines Corporation. Process for slicing boules of single crystal material. 4,084,354, Cl. 51-283.00R.
Grant, Nicholas J.; and Robinson, Ramon K., to Massachusetts Institute of Technology. High HfC-containing alloys. 4,084,964, Cl. 75-171.000.
Grate, Anton J. Lamp and holder combination with adapter. 4,084,873, Cl. 339-52.00R.
Graul, William E.: *See*—
Schorsch, John B.; Graul, William E.; and Barash, David, 4,084,387, Cl. 62-63.000.
Grave, Burghard; Gutbier, Heinrich; and Deinzer, Michael, to Siemens Aktiengesellschaft. Water separation cell for removing the reaction water from the electrolyte of fuel cells and fuel cell batteries. 4,085,255, Cl. 429-26.000.
Gravina, Anthony N.; Lev, Kenneth D.; and Angst, Arthur H., to Grumman Aerospace Corporation. Rate measuring system. 4,085,363, Cl. 324-162.000.
Gray, Herbert Ray. Web cutting device. 4,084,469, Cl. 83-542.000.
Grec, John W.: *See*—
Kerwin, Daniel; Zoberis, Walter B.; Grec, John W.; and McDonald, James A., 4,084,501, Cl. 101-76.000.

Green, George Edward, to Ciba-Geigy Corporation. Actinically-induced polyermization. 4,085,019, Cl. 204-159.230.
Green, James Edmond. Method and apparatus for producing a suspension of biological cells on a substrate. 4,084,902, Cl. 356-38.000.
Green, Keith; and Lawson, Alastair, to Burroughs Corporation. Apparatus for recording and reproducing information with respect to a flexible recording medium. 4,085,428, Cl. 360-99.000.
Green, Norman W.; Duraiswamy, Kandaswamy; Lumpkin, Robert E.; Knell, Everett W.; Mirza, Zia I.; and Winter, Bruce L., to Occidental Petroleum Corporation. Pyrolysis of carbonaceous materials with solvent quench recovery. 4,085,030, Cl. 208-8.000.
Green, William M. Process for producing a roasted peanut product. 4,085,230, Cl. 426-262.000.
Greenberg, Paul B.; and Patterson, Stephen D., to United Technologies Corporation. Thrust bearing damping means. 4,084,861, Cl. 308-26.000.
Gregory, Maurice James, to Ciba-Geigy AG. Silicon compounds containing nucleofugal phosphate group and method of regulating plant growth therewith. 4,084,951, Cl. 71-86.000.
Grenier, Aime J., to Texas Instruments Incorporated. Circuit breaker. 4,085,393, Cl. 335-202.000.
Griffin, Charles: *See—*
Boone, Ralph D.; and Griffin, Charles, 4,084,610, Cl. 137-1.000.
Griffiths, Kenneth F. Process for manufacturing aluminum oxide. 4,085,201, Cl. 423-625.000.
Grigorian, Alfred Nikitovich: *See—*
Rakitin, Vladimir Jurievich; Fedorov, Igor Konstantinovich; Grigorian, Alfred Nikitovich; Lalov, Vitaly Viktorovich; and Prokofieva, Nina Vasilievna, 4,084,757, Cl. 241-301.000.
Grinage, Claude M., to Bullard Company, The. Clamping means for a tool block in a vertical boring machine or the like. 4,084,462, Cl. 82-36.00R.
Grise, Frederick G. J.; and Lovell, Walter. Conservation of electrical energy. 4,085,333, Cl. 290-2.000.
Grone, Siegfried: *See—*
Dittrich, Erich; and Grone, Siegfried, 4,084,419, Cl. 72-68.000.
Grosch, Steven Wayne; and Stack, Michael John. Day/night outside mirror for vehicles. 4,084,886, Cl. 350-281.000.
Grossman, Harold, to Montclair Research Corporation. Body of tobacco with a deposit of particles added thereto. 4,084,596, Cl. 131-17.00R.
Grot, Walther Gustav: *See—*
Resnick, Paul Raphael; and Grot, Walther Gustav, 4,085,071, Cl. 260-22.00R.
Gruffaz, Max; and Locatelli, Jean Louis, to Rhone-Poulenc Industries. Thermosetting compositions based on a bis-imide and a polyurethane. 4,085,164, Cl. 260-858.000.
Grumman Aerospace Corporation: *See—*
Gravina, Anthony N.; Lev, Kenneth D.; and Angst, Arthur H., 4,085,363, Cl. 324-162.000.
Hamel, Bernard B.; Muntz, Eric P.; and Scott, Paul B., 4,084,943, Cl. 55-17.000.
GTE Automatic Electric (Canada) Ltd.: *See—*
Thomas, Robert M.; and Gauthier, John A., 4,085,294, Cl. 179-16.0AA.
GTE Automatic Electric Laboratories Incorporated: *See—*
Georgopulos, Thomas, 4,084,874, Cl. 339-75.0MP.
Guess, Westphal Claude. Collapsable table. 4,084,517, Cl. 108-153.000.
Guilino, Ernst, to Garching Instrumente-Gesellschaft zur industriellen Nutzung von Forschungsergebnissen mbH. Optical parametric device. 4,085,335, Cl. 307-88.300.
Gulf Oil Corporation: *See—*
Doyle, William C., Jr.; and Botts, Marion F., 4,084,956, Cl. 71-111.000.
Gulf Research & Development Company: *See—*
Murphy, Harry C., Jr.; and Stauffer, Harry C., 4,085,036, Cl. 208-212.000.
Gulla, Michael, to Shipley Company Inc. Catalyst composition and method of preparation. 4,085,066, Cl. 252-434.000.
Gullotti, Damian V.: *See—*
Anthony, William H.; Brock, Andrew J.; and Gullotti, Damian V., 4,084,963, Cl. 75-138.000.
Gurries, Raymond A., to CMI Corporation. Spool valve. 4,084,618, Cl. 137-625.480.
Gutbier, Heinrich: *See—*
Grave, Burghard; Gutbier, Heinrich; and Deinzer, Michael, 4,085,255, Cl. 429-26.000.
Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See—*
Katernberg, Helmut, 4,084,529, Cl. 114-46.000.
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, to Xerox Corporation. Imaging system using agglomerable migration marking material. 4,084,966, Cl. 96-1.0PS.
Habecker, Charles N.: *See—*
Cragoe, Edward J., Jr.; Woltersdorf, Otto W., Jr.; and Habecker, Charles N., 4,085,211, Cl. 424-250.000.
Hachiga, Takasi, to Nippondenso Co., Ltd. Contactless ignition system for internal combustion engine. 4,084,567, Cl. 123-148.00E.
Hadley, Chris L.: *See—*
Roch, Gerald V.; and Hadley, Chris L., 4,084,424, Cl. 72-389.000.
Haggedal, Lars Roger. Bingo game. 4,084,823, Cl. 273-269.000.
Hagiwara, Tatsuo; Nomiyama, Fumihiro; and Nagaoka, Shigenori, to Kawasaki Jukogyo Kabushiki Kaisha. Gap adjusting system for crusher and method. 4,084,752, Cl. 241-30.000.
Hagood, John S.: *See—*
Stratbucker, Robert A.; and Hagood, John S., 4,085,407, Cl. 346-33.0ME.
Hahn, Frank J.; and Santer, James O., to Monsanto Company. Method of coating with liquid aminoplast polyfunctional resin compositions. 4,085,242, Cl. 427-385.00R.
Hahner, Reinhard: *See—*
Falchle, Jorg; and Hahner, Reinhard, 4,084,829, Cl. 279-99.000.
Halbich, Frank. Plastic pillbox. 4,084,695, Cl. 206-532.000.
Haley, Frederick. Automatic brake for wheeled carriages. 4,084,663, Cl. 188-31.000.
Halford, Phillip Charles, to Imperial Metal Industries (Kynoch) Limited. Anode assembly for electrodeposition cell. 4,085,026, Cl. 204-242.000.
Hallhagen, Rudolf G., to AB Sjuntorp. Oil fence. 4,084,380, Cl. 61-1.00F.
Hallmark Cards, Incorporated: *See—*
Brown, William E.; Magee, Ramon J.; and McCoy, Dennis R., 4,084,500, Cl. 101-28.000.
Hamel, Bernard B.; Muntz, Eric P.; and Scott, Paul B., to Grumman Aerospace Corporation. Jet membrane gas separator and method. 4,084,943, Cl. 55-17.000.
Hamill, James S., to General Electric Company. Precise control of television picture size and position. 4,085,425, Cl. 358-237.000.
Hamill, Robert L.: *See—*
Berg, David H.; Hamill, Robert L.; and Hoehn, Marvin M., 4,085,224, Cl. 424-283.000.
Hamlin, Ralston L.: *See—*
Emmerich, Kenneth C.; and Hamlin, Ralston L., 4,084,856, Cl. 299-86.000.
Hammann, Ingeborg: *See—*
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,085,226, Cl. 424-322.000.
Hamner, James W.: *See—*
Hightower, James O.; Hamner, James W.; and Matthews, Richard L., 4,084,992, Cl. 149-17.000.
Hampel, Hans: *See—*
Henschler, Dietrich; Wagner, Josef; and Hampel, Hans, 4,085,270, Cl. 560-105.000.
Hancock, Richard John Taylor, to University of Edinburgh, The University Court of the. Control of sex ratio in mammalian offspring. 4,085,205, Cl. 424-105.000.
Handa, Noritoshi, to Nissan Motor Company, Limited. Seal assembly for rotary disc-type matrix of gas turbine engine. 4,084,634, Cl. 165-9.000.
Hann, P. Douglas: *See—*
Dixon, Rolland E.; and Hann, P. Douglas, 4,085,158, Cl. 260-680.00E.
Hannon, David Malcolm, to International Business Machines Corporation. Method and apparatus for the controlled generation of wall encoded magnetic bubble domains. 4,085,454, Cl. 365-30.000.
Happe, Peter, to Johann Baptist Rombach, Karlsruhe, GmbH & Co. KG. Pipeline cutoff device. 4,084,617, Cl. 137-625.280.
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, to Teijin Limited. Aromatic polymers containing a nitrogen-containing ring group, and process for preparation thereof. 4,085,090, Cl. 260-49.000.
Harada, Hirokichi, to Fujisawa Pharmaceutical Co., Ltd. 7(2-Phenyl or thienyl-2-isonicotinoyloxyacetamido)-3-(1-methyl-1-H tetrazol-5-yl)thiomethyl-3-cephem-4-carboxylic acid. 4,085,277, Cl. 544-27.000.
Harada, Yutaka: *See—*
Higuchi, Yoshiro; Harada, Yutaka; Sato, Toshio; Nakagawa, Koji; Kawaguchi, Iwazo; and Kasahara, Yasushi, 4,084,981, Cl. 106-96.000.
Haraikawa, Tetsuo, to Tokico Ltd. Disc brake. 4,084,664, Cl. 188-71.900.
Harlan, Martin L.; Krause, John A.; and Brooks, Ronald L., to Wolverine World Wide, Inc. Drum skinner. 4,084,292, Cl. 17-50.000.
Harris, Gordon Colin; Vere, Robert Paul; and Walker, Ronald, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Brittannic Majesty's Government of the. Baling of waterborne craft. 4,084,530, Cl. 114-183.00R.
Harris-Intertype Corporation: *See—*
Krygeris, Algirdas J.; and Manring, John M., 4,085,402, Cl. 340-163.000.
Harshberger, Robert P., Jr., to Ampex Corporation. Tape transport dynamic brake. 4,085,354, Cl. 318-87.000.
Hartless, Arlington L.: *See—*
Anderson, Thomas F.; and Hartless, Arlington L., 4,085,160, Cl. 260-837.00R.
Hartwick, Norman John Reid; and Lathe, Donald Charles Clayton. Skimming apparatus. 4,085,049, Cl. 210-242.00S.
Hase, Takashi: *See—*
Kagami, Akiyasu; Hase, Takashi; Hiraki, Minoru; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,350, Cl. 313-486.000.
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,351, Cl. 313-486.000.
Hasegawa, Kunio; Nishimura, Hidetomo; and Yamaguchi, Kiyoshi, to Hitachi, Ltd. Rotor for a rotary electrical machine having a superconductive field winding. 4,085,343, Cl. 310-52.000.
Hasegawa, Syoogo, to White Sewing Machine Company. Two-step buttonhole mechanism for sewing machine. 4,084,524, Cl. 112-158.00B.
Hasegawa, Tachio, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Magnetic head having optimum spacer thickness disposed between dummy and write-in core segments. 4,085,429, Cl. 360-119.000.

Hashimoto, Masanao; Saitou, Tadashi; Kobayashi, Tatsuo; and Suzuki, Isamu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Kogyo Kabushiki Kaisha. Secondary air supply system for internal combustion engines. 4,084,373, Cl. 60-293.000.

Hasler, William Sandford, to Shorrock Developments Limited. Vibration switch having threaded terminals and plural roller contacts. 4,085,304, Cl. 200-61.45R.

Hast, Gunnar. Sealing strip. 4,084,348, Cl. 49-475.000.

Hastings, Paul F. Lawn and yard implement. 4,084,284, Cl. 15-79.00A.

Hatayama, Katsuo: *See*—
Kyogoku, Kazuaki; Hatayama, Katsuo; Yokomori, Sadakazu; Sawada, Jiro; and Tanaka, Ichiro, 4,085,135, Cl. 260-520.00C.

Hattori, Tadashi; and Nakase, Takamichi, to Nippon Soken, Inc. Air-to-fuel ratio controlling system for internal combustion engines. 4,084,558, Cl. 123-97.00B.

Hattori, Tadashi; Iwata, Toshiharu; and Nakase, Takamichi, to Nippon Soken, Inc. Engine air-to-fuel ratio control system. 4,084,560, Cl. 123-119.0EC.

Hattori, Tadashi; Yamaguchi, Hiroaki; and Nakase, Takamichi, to Nippon Soken, Inc. Additional air control device for an internal combustion engine. 4,084,563, Cl. 123-119.0EC.

Hattori, Yoshiyuki: *See*—
Takagi, Shigeru; and Hattori, Yoshiyuki, 4,084,839, Cl. 280-736.000.

Hatwell, Henri: *See*—
Quets, Jean Marie; and Hatwell, Henri, 4,085,037, Cl. 209-1.000.

Haubner, Georg: *See*—
Meier, Werner; Hofer, Walter; Haubner, Georg; and Weckenmann, Albert, 4,085,403, Cl. 340-168.00R.

Hawkins, Harold M., deceased (by Hawkins, Marjorie Wood, executrix), to Phillips Petroleum Company. Method and apparatus for conducting fermentation. 4,085,007, Cl. 195-109.000.

Hawkins, Marjorie Wood, executrix: *See*—
Hawkins, Harold M., deceased, 4,085,007, Cl. 195-109.000.

Haworth Mfg., Inc.: *See*—
Saylor, Charles J.; Haworth, Richard G.; and Yerges, Lyle F., 4,084,366, Cl. 52-615.000.
Saylor, Charles J.; Haworth, Richard G.; and Yerges, Lyle F., 4,084,367, Cl. 52-615.000.

Haworth, Richard G.: *See*—
Saylor, Charles J.; Haworth, Richard G.; and Yerges, Lyle F., 4,084,366, Cl. 52-615.000.
Saylor, Charles J.; Haworth, Richard G.; and Yerges, Lyle F., 4,084,367, Cl. 52-615.000.

Hayashi, Hideo: *See*—
Tsuchiya, Shozo; Hayashi, Hideo; Iida, Kazuyoshi; and Goto, Kiyoshi, 4,085,085, Cl. 260-38.000.

Hayashi, Hiroshi: *See*—
Sano, Shiro; Hayashi, Hiroshi; and Takagi, Hiroyoshi, 4,084,979, Cl. 106-58.000.

Hayashi, Hisao: *See*—
Aoki, Teruaki; Matsushita, Takeshi; Mifune, Tadayoshi; and Hayashi, Hisao, 4,084,986, Cl. 148-1.500.

Hayashi, Kikuo. Door structure. 4,084,866, Cl. 312-138.00R.

Hayashi, Kiyoshi, to Shin-Shirasuna Electric Corporation. Tape tension imparting apparatus. 4,084,768, Cl. 242-186.000.

Hayashi, Toshiaki; Sugiura, Hiroshi; Ozaki, Toshio; Sugimoto, Eiji; and Banno, Yukio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic seat belt applying device. 4,084,841, Cl. 280-745.000.

Hayashi, Yoshimasa: *See*—
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; Sugihara, Kunihiko; and Takagi, Yasuo, 4,084,372, Cl. 60-278.000.

Hayashi, Yuzo: *See*—
Shimoiizaka, Junzo; Konosu, Akira; Hayashi, Yuzo; Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, 4,084,755, Cl. 241-95.000.

Hayes, John C.: *See*—
Antos, George J.; Hayes, John C.; and Pollitzer, Ernest L., 4,085,154, Cl. 260-668.00D.
Pollitzer, Ernest L.; and Hayes, John C., 4,085,067, Cl. 252-442.000.

Hayes, Thomas Edward: *See*—
Matthews, Russell Byron; and Hayes, Thomas Edward, 4,084,743, Cl. 236-1.00G.

Haynes, Elwood W. Revolvable rockable playpen. 4,084,273, Cl. 5-105.000.

Health Technology Laboratories, Inc.: *See*—
Stratbucker, Robert A.; and Hagood, John S., 4,085,407, Cl. 346-33.0ME.

Heckles, John S.; and Miller, Norman L., to Armstrong Cork Company. "Smoke-suppressant polyhalocarbon polymer compositions containing as plasticizer an unsaturated derivative of an ester polyol". 4,085,081, Cl. 260-31.40R.

Heimann, Edward W., to Wallace Business Forms, Inc. Continuous form multiple ply envelope assembly. 4,084,741, Cl. 229-69.000.

Heinrich, Theodore M.: *See*—
MacKenzie, Raymond W.; Wood, Peter; Heinrich, Theodore M.; and Oates, Robert M., 4,085,300, Cl. 219-10.49R.

Heinzl, Joachim; and Rosenstock, Guenter, to Siemens Aktiengesellschaft. Drive system for writing carriages in printing systems. 4,084,681, Cl. 197-82.000.

Helipebs Limited: *See*—
Skinner, Kenneth Charles, 4,084,303, Cl. 29-148.40D.

Hellmich, Gerhard, to Deggendorfer Werft und Eisenbau G.m.b.H. Hopper barge bottom seal construction. 4,084,527, Cl. 114-36.000.

Hennings, Willi: *See*—
Hund, Franz; Holznagel, Wilhelm; Erfurth, Henning; Kindervater, Friedrich; and Hennings, Willi, 4,084,984, Cl. 106-300.000.

Henrie, Thomas A.; Lindstrom, Roald E.; and Lei, Kenneth P. V., to United States of America, Interior. Recovery of copper and nickel from alloys. 4,085,017, Cl. 204-123.000.

Henschler, Dietrich; Wagner, Josef; and Hampel, Hans, to Chemisch-Pharmazeutische Fabrik Adolf Klinge & Co. Sympathicomimetic acyloxy-phenylethanolamine. 4,085,270, Cl. 560-105.000.

Henzi, Beat, to Sandoz Ltd. Azo dyes containing a heterocyclic ring having a quaternized nitrogen atom and at least one optionally substituted phenoxyalkyl or naphthyloxyalkyl substituent. 4,085,098, Cl. 260-157.000.

Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., Jr., to Murdock Machine & Engineering Company of Texas. Ball valve with linear elastomeric seal mounting. 4,084,785, Cl. 251-172.000.

Herbold, Oskar; and Dittloff, Dieter, to Lampl, Helma. Method and apparatus for the pyrolysis of waste products. 4,084,521, Cl. 110-242.000.

Hercules Incorporated: *See*—
Lomax, George F., Jr.; and Coleman, Arthur A., 4,085,173, Cl. 264-3.00R.

Hergeth KG Maschinenfabrik und Apparatebau: *See*—
Naarding, Willem J., 4,084,433, Cl. 73-159.000.

Herzog, Fritz W., to Central Engineering Co., Inc. Street sweeper with multi-position gutter brush. 4,084,285, Cl. 15-87.000.

Hesston Corporation: *See*—
Fritz, David P.; Weigand, Rex O.; and Fleming, Gary L., 4,084,396, Cl. 56-98.000.

Hettick, Lon R. Tubular support for enclosing a body member. 4,084,586, Cl. 128-157.000.

Hevezi, James M.: *See*—
Zermeno, Alfonso; Marsh, Lee M., Jr.; and Hevezi, James M., 4,085,324, Cl. 250-320.000.

Hewlett-Packard Co.: *See*—
Salesky, Emery; and Luehman, Kent W., 4,085,340, Cl. 307-237.000.

Heyraud, Marc; and Martin, Andre, to Portescap. Electric acutating device. 4,084,502, Cl. 101-93.290.

Higaki, Taiji: *See*—
Ishibashi, Yoshiyuki; Tagami, Eijiro; Higaki, Taiji; and Matsushita, Takao, 4,085,236, Cl. 427-121.000.

Higgins, Andrew D.: *See*—
Dewsnap, Ronald F.; Higgins, Andrew D.; and Beard, David E., 4,084,798, Cl. 266-131.000.

Higgins, Mark Allan: *See*—
Song, Dae Suk; Duffy, Richard Joseph; Witschonke, Charles Richard; Schiller, Arthur Maurice; and Higgins, Mark Allan, 4,085,045, Cl. 210-58.000.

Hightower, James O.; Hamner, James W.; and Matthews, Richard L., to Thiokol Corporation. Solid propellant with alumina burning rate catalyst. 4,084,992, Cl. 149-17.000.

Higuchi, Takeru; Bodor, Nicolae S.; and Kuo, Yu-Neng, to INTERx Research Corporation. Stable pro-drug forms of theophylline. 4,085,214, Cl. 424-253.000.

Higuchi, Yoshiro; Harada, Yutaka; Sato, Toshio; Nakagawa, Koji; Kawaguchi, Iwazo; and Kasahara, Yasushi, to Japanese National Railways; Denki Kagaku Kogyo Kabushiki Kaisha; and Toa Doro Kogyo Co., Ltd. Quick hardening cement-asphalt composition. 4,084,981, Cl. 106-96.000.

Hiki, Fumihiko: *See*—
Nakai, Setsuo; Kita, Shinichiro; Hiki, Fumihiko; and Shimizu, Masayuki, 4,085,266, Cl. 526-65.000.

Hill, David George: *See*—
Curran, Adrian Charles Ward; Crossley, Roger; and Hill, David George, 4,085,110, Cl. 260-294.80B.
Curran, Adrian Charles Ward; Crossley, Roger; and Hill, David George, 4,085,215, Cl. 424-258.000.

Hill, John Charles: *See*—
Grandia, Johannes; and Hill, John Charles, 4,084,354, Cl. 51-283.00R.

Hill, Ulderic Sylvio. Anti-burglar window shielding system and latch mechanism therefor. 4,084,519, Cl. 109-42.000.

Hillhouse, Mial T.; and Ramsey, Richard L., to Goodyear Tire & Rubber Company, The. Process for preparing dry mix brake lining. 4,085,179, Cl. 264-122.000.

Hilton, Richard Dickson. Digital waveform analyzer. 4,085,352, Cl. 315-169.00R.

Hins, Johannes: *See*—
Stahl, Otto; and Hins, Johannes, 4,084,728, Cl. 222-153.000.

Hinson, Rocose M., Jr.: *See*—
Coward, Michael D.; Dobinski, William J.; and Hinson, Rocose M., Jr., 4,084,799, Cl. 266-207.000.

Hinton, Jonathan W., to Champion Spark Plug Company. Lead-free glaze for alumina bodies. 4,084,976, Cl. 106-48.000.

Hirabayashi, Kanji, to Tokyo Shibaura Electric Co., Ltd. Multivalued data memory system using a charge coupled element. 4,085,459, Cl. 365-222.000.

Hirabayashi, Yoichi; Minami, Setsuo; and Goshima, Takeshi, to Canon Kabushiki Kaisha. Light beam scanning device. 4,084,881, Cl. 350-6.800.

Hiraki, Minoru: *See*—
Kagami, Akiyasu; Hase, Takashi; Hiraki, Minoru; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,350, Cl. 313-486.000.

Hiraoka, Isao: *See—*
Aoki, Mitsuo; Watanabe, Kazuhiko; Murase, Shunichi; and Hiraoka, Isao, 4,085,207, Cl. 424-180.000.

Hirayama, Hiroyuki: *See—*
Shimazaki, Kazumi; and Hirayama, Hiroyuki, 4,085,258, Cl. 429-125.000.

Hirose, Toru: *See—*
Miyata, Shigeo; Hirose, Toru; and Iizima, Noriko, 4,085,088, Cl. 260-45.70R.

Hirschauer, Benoit: *See—*
Karinthi, Pierre; Dauvergne, Michel; and Hirschauer, Benoit, 4,085,252, Cl. 428-576.000.

Hirschmann, Adolf: *See—*
Franke, Rainer-Burkhard; Hirschmann, Adolf; and Kaser, Klaus, 4,084,730, Cl. 222-309.000.

Hisatomi, Yukuo: *See—*
Kanemaru, Toyonusuke; Hisatomi, Yukuo; and Nishimoto, Takafumi, 4,084,399, Cl. 57-140.00C.

Hitachi, Ltd.: *See—*
Hasegawa, Kunio; Nishimura, Hidetomo; and Yamaguchi, Kiyoshi, 4,085,343, Cl. 310-52.000.
Ikuzaki, Kunihiko; Ito, Tsuneo; Ishihara, Masamichi; and Sato, Takashi, 4,085,458, Cl. 365-206.000.
Ishida, Isao; Sato, Hiroshi; and Kusumoto, Sho, 4,084,862, Cl. 308-139.000.
Itoh, Kiyoo, 4,085,457, Cl. 365-205.000.
Nakajima, Fumito; Takeuchi, Masato; Matsuda, Shimpei; Uno, Shigeo; Mori, Toshikatsu; Watanabe, Yoshihisa; and Imanari, Makoto, 4,085,193, Cl. 423-239.000.
Nakatani, Mitsuo, 4,084,506, Cl. 101-127.000.
Otani, Kouji; Sawa, Toshio; Kuroda, Osamu; Nakajima, Fumito; and Iijima, Tokuji, deceased, 4,085,194, Cl. 423-242.000.
Shinohara, Katsuhiko; Kuramochi, Yoshinori; Suehiro, Tetsuo; and Matsubara, Ichiro, 4,085,334, Cl. 307-11.000.
Suwa, Masateru; and Komuro, Katsuhiro, 4,084,669, Cl. 191-45.00R.
Tsunoda, Yoshito; Maeda, Takeshi; and Oshida, Yoshitada, 4,085,423, Cl. 358-128.000.

Hjort, Bo, to Siemens Aktiengesellschaft. Method and apparatus for measuring the bioelectrical activity under an electrode resting on a patient. 4,084,583, Cl. 128-2.06R.

Ho, Ernest C.: *See—*
Belardi, Richard J.; Moyer, Norman E.; and Ho, Ernest C., 4,084,401, Cl. 58-4.00A.

Hobrough, Gilbert L. Peak amplitude protection system for ribbon loudspeakers. 4,085,299, Cl. 179-184.000.

Hochlehnert, Franz: *See—*
Frohlich, Alfons; and Hochlehnert, Franz, 4,084,297, Cl. 24-205.13C.

Hoechst Aktiengesellschaft: *See—*
Semler, Gunther; and Schaeffer, Georg, 4,085,129, Cl. 260-463.000.

Hoeckelman, Ralph F., to United States Steel Corporation. Chromium plating process employing manganese dioxide coated anodes. 4,085,013, Cl. 204-51.000.

Hoehn, Marvin M.: *See—*
Berg, David H.; Hamill, Robert L.; and Hoehn, Marvin M., 4,085,224, Cl. 424-283.000.

Hofer, Walter: *See—*
Meier, Werner; Hofer, Walter; Haubner, Georg; and Weckenmann, Albert, 4,085,403, Cl. 340-168.00R.

Hoffman, William F.: *See—*
Cragoe, Edward J., Jr.; Woltersdorf, Otto W., Jr.; and Hoffman, William F., 4,085,117, Cl. 260-332.20A.

Hogan, Elmer R.; Hollis, Charles Edward; and Simpson, John I., to Smith-Berger Manufacturing Corporation. Fish-beheading machine and process. 4,084,293, Cl. 17-52.000.

Hogan, Vaughan Clarence; and Landgreen, Eleanor Anderson, to International Telephone and Telegraph Corporation. Connector member. 4,084,882, Cl. 350-96.200.

Hohn, Walter, to Gewerkschaft Eisenhutte Westfalia. Apparatus for and a method of tunnelling. 4,084,386, Cl. 61-85.000.

Hokuryo Denko Co., Ltd.: *See—*
Niwata, Tatuji; Okubo, Kazutomo; Nakanishi, Fumio; and Yamada, Masanori, 4,085,422, Cl. 358-118.000.

Holcomb, Stanley W., to Texas Instruments Incorporated. Regulated DC to DC power supply with automatic recharging capability. 4,085,358, Cl. 320-9.000.

Hollenton, Frank; and Ingalls, John L. Method and apparatus for manipulating rod-like articles. 4,084,685, Cl. 198-461.000.

Hollis, Charles Edward: *See—*
Hogan, Elmer R.; Hollis, Charles Edward; and Simpson, John I., 4,084,293, Cl. 17-52.000.

Holmes, Jerry D., to Eastman Kodak Company. Manufacture of alpha,-beta-unsaturated acids and anhydrides. 4,085,143, Cl. 260-515.00R.

Holmstrom, Tord: *See—*
Schibbye, Hjalmar; and Holmstrom, Tord, 4,084,405, Cl. 62-197.000.

Holt, Theron Robert: *See—*
Goodrich, Lewis Charles; Holt, Theron Robert; Osborne, Joseph Cyril; Pusey, Donald Kirk; and Roxlo, James William, 4,084,434, Cl. 73-160.000.

Holznagel, Wilhelm: *See—*
Hund, Franz; Holznagel, Wilhelm; Erfurth, Henning; Kindervater, Friedrich; and Hennings, Willi, 4,084,984, Cl. 106-300.000.

Homberg, Otto A.: *See—*
Singleton, Alan H.; Homberg, Otto A.; and Sheldrake, Charles W., 4,085,199, Cl. 423-574.00R.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Sato, Kazunobu; Suzuki, Takanori; Kobayashi, Tadataka; and Miyazawa, Takeshi, 4,084,568, Cl. 123-182.000.

Honda, Shinichi: *See—*
Ishimori, Shigeru; and Honda, Shinichi, 4,085,010, Cl. 204-16.000.

Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; Shibata, Shoson; and Suzuki, Yoshikatsu, to Bridgestone Tire Company Limited. Process for producing a high polymeric substance having isocyanate group. 4,085,262, Cl. 526-46.000.

Honecker, Gerhard: *See—*
Ohlinger, Manfred; Wagner, Gerhard; Honecker, Gerhard; Stritzinger, Heinz; and Spaehn, Heinz, 4,084,936, Cl. 21-2.70R.

Honegger, Werner: *See—*
Reist, Walter; and Honegger, Werner, 4,084,808, Cl. 271-213.000.

Honeywell Farms, Inc.: *See—*
Von Hagel, Leo J., 4,084,392, Cl. 53-131.000.

Honeywell Inc.: *See—*
Bibbero, Robert J., 4,084,906, Cl. 356-96.000.
Deziel, Frederick T., 4,084,547, Cl. 122-504.000.
Koepke, Barry G., 4,085,172, Cl. 264-1.000.
Nelson, Lorne W., 4,084,388, Cl. 62-152.000.
Wilwerding, Dennis J., 4,085,320, Cl. 250-201.000.

Honeywell Information Systems Inc.: *See—*
Michaels, Mark Joseph, 4,084,315, Cl. 29-740.000.

Hopkinson, David George: *See—*
Telling, Ronald Charles; Passingham, Roy John; Kitchener, Brian Lewis; and Hopkinson, David George, 4,085,203, Cl. 424-89.000.

Hopper, Roger J., to Goodyear Tire & Rubber Company, The. Sulfilimines as premature vulcanization inhibitors. 4,085,093, Cl. 260-79.50P.

Horii, Hideo: *See—*
Otsuki, Yutaka; Imai, Hirosuke; Kaiya, Atsushi; and Horii, Hideo, 4,085,263, Cl. 526-47.000.
Otsuki, Yutaka; Imai, Hirosuke; Kaiya, Atsushi; and Horii, Hideo, 4,085,265, Cl. 526-49.000.

Horowitz, William M. Guitar construction. 4,084,475, Cl. 84-291.000.

Horsfall, Harry: *See—*
Ashfield, Herbert Edward; and Horsfall, Harry, 4,084,641, Cl. 172-9.000.

Horsma, David August; and Diaz, Stephen Hunter, to Raychem Corporation. Heat-recoverable sealing article with self-contained heating means and method of sealing a splice therewith. 4,085,286, Cl. 174-92.000.

Horvath, Janos. Method and apparatus for generating buoyancy power via electrolysis. 4,084,375, Cl. 60-496.000.

Horvath, Steven: *See—*
Lacis, Laimons; and Horvath, Steven, 4,085,392, Cl. 335-58.000.

Hose, Eddy, to United States of America, Army. Inertial navigation system. 4,085,440, Cl. 364-454.000.

Hossalla, George J.; and Stein, Norman R., to Stein Industries, Inc. Refrigeration shelf. 4,084,703, Cl. 211-153.000.

Hotta, Takayosi: *See—*
Narushima, Hiroshi; and Hotta, Takayosi, 4,084,300, Cl. 29-26.00A.

Houdaille Industries, Inc.: *See—*
Farrell, John H., 4,084,349, Cl. 51-5.00D.
Schulz, Reginald O.; and Rivett, Larry R., 4,084,353, Cl. 51-220.000.

Hounsell, John Owen: *See—*
Sharp-Dent, Charles Edward Arthur; and Hounsell, John Owen, 4,084,652, Cl. 177-207.000.

Howald, Werner E. Combustion apparatus including an air-fuel premixing chamber. 4,084,371, Cl. 60-39.360.

Howard, Charles W., to Early California Industries, Inc. Fluid-blending system. 4,084,603, Cl. 137-88.000.

Howell, Mark Ian. Method and apparatus for determining the presence of or absence of an underground body. 4,085,360, Cl. 324-3.000.

Howmedica, Inc.: *See—*
Caraway, William Russell; and Falkingham, Clarence Mark, 4,084,590, Cl. 128-283.000.

Hoya Corporation: *See—*
Sagara, Hiroji, 4,084,978, Cl. 106-54.000.

Hozuma, Hiroshi: *See—*
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R.

Hrdlicka, Theodore Frederick; and Stafford, Floyd. Lighted fishing pole. 4,085,437, Cl. 362-109.000.

Hubbard, John T., Jr.: *See—*
Daniel, James A., Jr.; and Hubbard, John T., Jr., 4,084,830, Cl. 280-6.100.

Hughes Aircraft Company: *See—*
Asawa, Charles K.; and Plant, Thomas K., 4,085,387, Cl. 331-94.50M.
Belardi, Richard J.; Moyer, Norman E.; and Ho, Ernest C., 4,084,401, Cl. 58-4.00A.
McCoy, John H.; and Sullivan, Paul A., 4,085,329, Cl. 250-492.00A.
Moyer, Norman E., 4,084,402, Cl. 58-23.00R.

Hughes, Glenn: *See—*
Anderson, Jack William; and Hughes, Glenn, 4,084,748, Cl. 239-74.000.

Hughes, Robert G., to Continental Can Company of Canada Ltd. Bottle carrier. 4,084,688, Cl. 206-188.000.

Hughet, Roger E.: *See—*
Putt, Bernard J.; and Hughet, Roger E., 4,084,867, Cl. 312-198.000.
Hummert, George T.: *See—*
Quan, Wing C.; Edison, David M.; Hummert, George T.; and Sackin, Milton, 4,084,661, Cl. 187-29.00R.
Humphrey, William D.; and Becker, Allen. Self-erecting highway guide post. 4,084,914, Cl. 404-10.000.
Hund, Franz; Holznagel, Wilhelm; Erfurth, Henning; Kindervater, Friedrich; and Hennings, Willi, to Bayer Aktiengesellschaft. Temperature-stable inorganic yellow pigments. 4,084,984, Cl. 106-300.000.
Hundstad, Richard L.: *See—*
Farish, Owen; and Hundstad, Richard L., 4,085,386, Cl. 331-94.5PE.
Hung, Ling Kong: *See—*
Bloom, Allen; Ross, Daniel Louis; Bartolini, Robert Alfred; and Hung, Ling Kong, 4,084,970, Cl. 96-88.000.
Hunt-Grubbe, Robert H.: *See—*
Turcotte, Ronald E.; and Hunt-Grubbe, Robert H., 4,085,323, Cl. 250-252.000.
Hurco Manufacturing Company Inc.: *See—*
Roch, Gerald V.; and Hadley, Chris L., 4,084,424, Cl. 72-389.000.
Huston, Charles W. Mason's guide. 4,084,321, Cl. 33-86.000.
Hydroconic Limited: *See—*
Corlett, Ewan Christian Brew, 4,084,534, Cl. 114-125.000.
Ibbotson, Arthur, to Imperial Chemical Industries Limited. Carbodiimides. 4,085,140, Cl. 260-566.00R.
Ichimura, Hiroshi: *See—*
Fukuwatari, Tadashi; Mishima, Kiyotaka; Ichimura, Hiroshi; and Kurihara, Hideaki, 4,085,001, Cl. 162-145.000.
Ichinose, Shiro. Device for adjusting phase of flat screen. 4,084,505, Cl. 101-123.000.
ICI Americas Inc.: *See—*
Rutledge, Thomas F., 4,085,124, Cl. 260-396.00N.
Iida, Kazuyoshi: *See—*
Tsuchiya, Shozo; Hayashi, Hideo; Iida, Kazuyoshi; and Goto, Kiyoshi, 4,085,085, Cl. 260-38.000.
Iijima, Tokuji, deceased: *See—*
Otani, Kouji; Sawa, Toshio; Kuroda, Osamu; Nakajima, Fumito; and Iijima, Tokuji, deceased, 4,085,194, Cl. 423-242.000.
Iijima, Yoshie, administratrix: *See—*
Otani, Kouji; Sawa, Toshio; Kuroda, Osamu; Nakajima, Fumito; and Iijima, Tokuji, deceased, 4,085,194, Cl. 423-242.000.
Iizima, Noriko: *See—*
Miyata, Shigeo; Hirose, Toru; and Iizima, Noriko, 4,085,088, Cl. 260-45.70R.
Ikechi, Masai, to Fuji Photo Film Co., Ltd. Photographic processing apparatus. 4,085,415, Cl. 354-316.000.
Ikeda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Optical copying apparatus. 4,084,904, Cl. 355-66.000.
Ikuzaki, Kunihiko; Ito, Tsuneo; Ishihara, Masamichi; and Sato, Takashi, to Hitachi, Ltd. Random access memory. 4,085,458, Cl. 365-206.000.
Ilin, Vadim Sergeevich: *See—*
Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich, 4,084,400, Cl. 57-156.000.
Ilon, Bengt Erland. Cover for a lifting device and method of utilizing same. 4,084,275, Cl. 5-81.00R.
Imai, Hirosuke: *See—*
Otsuki, Yutaka; Imai, Hirosuke; Kaiya, Atsushi; and Horii, Hideo, 4,085,263, Cl. 526-47.000.
Otsuki, Yutaka; Imai, Hirosuke; Kaiya, Atsushi; and Horii, Hideo, 4,085,265, Cl. 526-49.000.
Imanari, Makoto: *See—*
Nakajima, Fumito; Takeuchi, Masato; Matsuda, Shimpei; Uno, Shigeo; Mori, Toshikatsu; Watanabe, Yoshihisa; and Imanari, Makoto, 4,085,193, Cl. 423-239.000.
Iminex GmbH: *See—*
Fruh, Ernst Josef, 4,084,753, Cl. 241-34.000.
Imperial Chemical Industries Limited: *See—*
Beswick, Geoffrey Ernest, 4,085,146, Cl. 260-600.00R.
Burrell, Raymond Alexander; and Cos, John Michael, 4,085,212, Cl. 424-251.000.
Cleare, Peter John Vernon, 4,085,148, Cl. 260-601.00H.
Ibbotson, Arthur, 4,085,140, Cl. 260-566.00R.
Lewis, John Didwith, 4,085,381, Cl. 330-147.000.
Preston, John; and Reeve, Austin John, 4,085,103, Cl. 260-250.00C.
Smith, Leslie Harold, 4,085,221, Cl. 424-275.000.
Tucker, Howard, 4,085,136, Cl. 260-559.00D.
Imperial Metal Industries (Kynoch) Limited: *See—*
Halford, Phillip Charles, 4,085,026, Cl. 204-242.000.
Imperial Oil Limited: *See—*
Todd, John C., 4,084,637, Cl. 166-245.000.
Todd, John C., 4,084,639, Cl. 166-248.000.
Inbar, Dan: *See—*
Mindick, Leo R.; Bruck, Avraham; Inbar, Dan; and Koss, Leopold G., 4,085,006, Cl. 195-103.700.
Industrial Drives, Inc.: *See—*
Francis, Melvin A., 4,084,789, Cl. 254-86.00R.
Industrial Dynamics Company, Ltd.: *See—*
Calhoun, Fredrick L., 4,084,686, Cl. 198-468.000.
Industrial Nucleonics Corporation: *See—*
Williams, Paul, 4,085,326, Cl. 250-339.000.
Ingalls, John L.: *See—*
Hollenton, Frank; and Ingalls, John L., 4,084,685, Cl. 198-461.000.
Ingersoll-Rand Company: *See—*
Kurt, Ewald Heinz, 4,084,646, Cl. 173-17.000.
Luthi, Oscar, 4,085,003, Cl. 162-259.000.
Ingram, Arlen E.; and Ingram, Norman H. Scrubber for golf balls. 4,084,287, Cl. 15-210.00R.
Ingram, Norman H.: *See—*
Ingram, Arlen E.; and Ingram, Norman H., 4,084,287, Cl. 15-210.00R.
Inoue, Takasuke: *See—*
Itani, Mituo; Kawashima, Hiroyuki; Inoue, Takasuke; and Muruyama, Mikio, 4,084,528, Cl. 114-45.000.
Institut Francais du Petrole: *See—*
Durand, Jean-Pierre; Gateau, Patrick; Dawans, Francois; and Chauvel, Bernard, 4,085,055, Cl. 252-50.000.
Mimoun, Hubert; Thao, Do; and Seree de Rochi, Irenee, 4,085,145, Cl. 260-592.000.
Institut National de la Recherche Agronomique: *See—*
Staron, Thadee Joseph, 4,085,229, Cl. 426-46.000.
Institute for Industrial Research and Standards: *See—*
Rees, Robin Gore, 4,084,535, Cl. 114-222.000.
Integrated Development & Manufacturing Co.: *See—*
Rule, Adrian O.; and Bartley, William E., 4,084,570, Cl. 126-140.000.
Intel Corporation: *See—*
Yen, Yao T., 4,084,869, Cl. 339-17.0CF.
International Audio Visual, Inc.: *See—*
Keegan, Pat, 4,085,296, Cl. 179-100.30R.
International Business Machines Corporation: *See—*
Blevins, Margaret Mary; and Bluethman, Robert Glenn, 4,085,445, Cl. 364-900.000.
Grandia, Johannes; and Hill, John Charles, 4,084,354, Cl. 51-283.00R.
Hannon, David Malcolm, 4,085,454, Cl. 365-30.000.
Kogge, Peter Michael, 4,085,448, Cl. 364-900.000.
Mathisen, Einar Skau, 4,084,909, Cl. 356-188.000.
Queener, Carl Allan, 4,084,897, Cl. 355-8.000.
Schmidt, John Michael; and Snow, Wallace Leon, 4,085,406, Cl. 343-895.000.
International Harvester Company: *See—*
Prosek, John R.; and Tamburino, James C., 4,084,852, Cl. 298-22.00C.
International Nickel Company, Inc., The: *See—*
Subramanian, Kohur Nagaraja; and Glaum, Gerald Vernon, 4,085,188, Cl. 423-32.000.
International Paper Company: *See—*
LaRosa, John, 4,084,910, Cl. 401-133.000.
International Standard Electric Corporation: *See—*
Ansberg, Chris; and Maisel, Klaus, 4,085,357, Cl. 318-590.000.
International Telephone and Telegraph Corporation: *See—*
Bae, Hyung Du, 4,084,425, Cl. 73-32.00A.
Hogan, Vaughan Clarence; and Landgreen, Eleanor Anderson, 4,084,882, Cl. 350-96.200.
Yamamoto, Stephen K., 4,084,875, Cl. 339-94.00M.
INTERx Research Corporation: *See—*
Higuchi, Takeru; Bodor, Nicolae S.; and Kuo, Yu-Neng, 4,085,214, Cl. 424-253.000.
Ionescu, Marian I.; and Fettel, Bruce E., to Shiley Laboratories, Incorporated. Prosthetic tissue heart valve. 4,084,268, Cl. 3-1.500.
IRD Mechanalysis, Inc.: *See—*
Farstad, Johan T., 4,085,349, Cl. 310-319.000.
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., to Eastman Kodak Company. Benzotriazole ultraviolet stabilizing compounds and their use in organic compositions. 4,085,089, Cl. 260-45.8NT.
Iseda, Yutaka: *See—*
Odaka, Fumio; Fujii, Yoshihiko; and Iseda, Yutaka, 4,085,165, Cl. 260-859.00R.
Ishibashi, Toshihiro, to Yazaki Sogyo Kabushiki Kaisha. Solar water heater of natural circulation type. 4,084,578, Cl. 126-271.000.
Ishibashi, Yoshiyuki; Tagami, Eijiro; Higaki, Taiji; and Matsushita, Takao, to Japan Synthetic Rubber Co., Ltd.; and Kanzaki Paper Manufacturing Co., Ltd. Process for producing electrostatic recording material. 4,085,236, Cl. 427-121.000.
Ishida, Hajime; and Tsumita, Mitsuyo, to Tomy Kogyo Co., Inc. Baby chair and bed. 4,084,849, Cl. 297-22.000.
Ishida, Isao; Sato, Hiroshi; and Kusumoto, Sho, to Hitachi, Ltd. Thrust support system for vertical shaft rotary machine. 4,084,862, Cl. 308-139.000.
Ishida, Tsutomu; Nomura, Masaaki; and Ohta, Wasaburo, to Ricoh Company, Ltd. Electrostatic copying machine. 4,084,899, Cl. 355-14.000.
Ishiguro, Toshihiro: *See—*
Nohara, Akira; Ishiguro, Toshihiro; and Sanno, Yasushi, 4,085,116, Cl. 260-308.00D.
Ishihara, Masamichi: *See—*
Ikuzaki, Kunihiko; Ito, Tsuneo; Ishihara, Masamichi; and Sato, Takashi, 4,085,458, Cl. 365-206.000.
Ishikawa, Ryoichi: *See—*
Mizuno, Shioji; Ishikawa, Ryoichi; and Miyazaki, Mitsumasa, 4,085,086, Cl. 260-40.0TN.
Ishikawa, Tatsuo; Yamashita, Keiji; Okubo, Norio; Sakashita, Masahira; Okamoto, Arimichi; and Kusunose, Tetsuhiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for spinning modified synthetic fibers. 4,085,174, Cl. 264-49.000.
Ishimori, Shigeru; and Honda, Shinichi, to Suzuki Motor Company

Limited. Process for powder-dispersed composite plating. 4,085,010, Cl. 204-16.000.

Ishioka, Kunio: *See*—
Shimoiizaka, Junzo; Konosu, Akira; Hayashi, Yuzo; Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, 4,084,755, Cl. 241-95.000.

Ishizaka, Sunao, to Nippon Kogaku K.K. Aperture interlocking device for a single lens reflex camera of the interchangeable viewfinder type. 4,085,416, Cl. 354-219.000.

Ishizaki, Hidenosuke. Button. 4,084,295, Cl. 24-95.000.

Isles, Robert: *See*—
Bertram, Robert W.; Norgate, Graham; and Isles, Robert, 4,085,398, Cl. 338-25.000.

Isomedics, Incorporated: *See*—
Mindick, Leo R.; Bruck, Avraham; Inbar, Dan; and Koss, Leopold G., 4,085,006, Cl. 195-103.700.

Itani, Mituo; Kawashima, Hiroyuki; Inoue, Takasuke; and Muruyama, Mikio, to Mitsui Engineering & Shipbuilding Co., Ltd. Working method of breaking up ship. 4,084,528, Cl. 114-45.000.

Itek Corporation: *See*—
Minnick, William A., 4,085,439, Cl. 364-200.000.

Ito, Hiromi, to Olympus Optical Co., Ltd. Dyeing and decolorization apparatus for use in a blood serum analyzer of an electrophoretic type. 4,084,541, Cl. 118-421.000.

Ito, Tsuneo: *See*—
Ikuzaki, Kunihiko; Ito, Tsuneo; Ishihara, Masamichi; and Sato, Takashi, 4,085,458, Cl. 365-206.000.

Itoh, Kiyoo, to Hitachi, Ltd. Memory system with a sense circuit. 4,085,457, Cl. 365-205.000.

Itoh, Masaki; and Yamasaki, Yorio, to Kawasaki Jukogyo Kabushiki Kaisha. Motorcycle stand with safety switch. 4,084,656, Cl. 180-103.00R.

Itou, Hidehiko: *See*—
Nakamura, Masahiko; and Itou, Hidehiko, 4,084,317, Cl. 30-94.000.

ITT Industries, Incorporated: *See*—
Budecker, Ludwig; and Winter, Klaus, 4,084,604, Cl. 137-101.000.

ITW-ATECO G.m.b.H.: *See*—
Schenk, Bernd, 4,084,913, Cl. 403-141.000.

Ivanoff, Alexander; and Ivanoff, Victor. Pump-motor assemblage for circulating a coolant. 4,084,924, Cl. 417-424.000.

Ivanoff, Victor: *See*—
Ivanoff, Alexander; and Ivanoff, Victor, 4,084,924, Cl. 417-424.000.

Ivanov, Lev Nikolaevich: *See*—
Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich, 4,084,400, Cl. 57-156.000.

Iwami, Koichi: *See*—
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; Shibata, Shoson; and Suzuki, Yoshikatsu, 4,085,262, Cl. 526-46.000.

Iwata, Toshiharu: *See*—
Hattori, Tadashi; Iwata, Toshiharu; and Nakase, Takamichi, 4,084,560, Cl. 123-119.0EC.

Iwata, Tsuyoshi: *See*—
Takamizawa, Akira; and Iwata, Tsuyoshi, 4,085,128, Cl. 260-456.00A.

Iwatsu Electric Co., Ltd.: *See*—
Adachi, Syozo; and Tamori, Masato, 4,085,058, Cl. 252-62.10L.
Goto, Tadahiro; and Soma, Munemasa, 4,085,295, Cl. 179-84.0VF.

Izaki, Hiroshi, to Kubota, Ltd. Applicator nozzle for use in centrifugal casting. 4,084,632, Cl. 164-72.000.

Jachimowicz, Ludwig: *See*—
Olszewski, Jerzy A.; and Jachimowicz, Ludwig, 4,085,284, Cl. 174-36.000.

Jacobs, Bernard W.: *See*—
Waloszyk, John S.; and Jacobs, Bernard W., 4,084,332, Cl. 35-9.00G.

Jacobs, Jacob M., Jr. Vehicle mounted motorcycle rack. 4,084,736, Cl. 224-42.03B.

Jacobus, Nelson Mortimer, Jr.: *See*—
Billerbeck, Wilfred Jerome; and Jacobus, Nelson Mortimer, Jr., 4,085,395, Cl. 336-61.000.

Jacoby, Jerold L.; Tierney, William S.; Wright, James E.; and Bhuta, Pravin G., to TRW Inc. Holographic recording instrument for structural integrity verification and other applications. 4,084,427, Cl. 73-88.00A.

Janecek, Jiri: *See*—
Rokos, Josef; Kubat, Zdenek; Prochazka, Pavel; Zalabak, Vladislav; Babicka, Josef, deceased; Janecek, Jiri; Nohynek, Miroslav; and Mison, Petr, 4,085,206, Cl. 424-131.000.

Janjua, Mohammad Barakat Ilahi; Claessens, Pierre L.; and Loutfy, Raouf O., to Noranda Mines Limited. Method and apparatus for the oxidation of organic material present in concentrated sulfuric acid. 4,085,016, Cl. 204-104.000.

Janome Sewing Machine Co. Ltd.: *See*—
Kasuga, Norboru, 4,084,523, Cl. 112-158.00A.

Janssen, Casper Johannes Gerardus Ferdinand; Postma, Lambertus; and Lippits, Gerardus Johannes Meinardus, to U.S. Philips Corporation. Method of manufacturing electrically conductive metal layers on substrates. 4,084,968, Cl. 96-48.0PD.

Janssen, Petrus Johannes: *See*—
Lippits, Gerardus Johannes Meinardus; Janssen, Petrus Johannes; Debruijn, Henricus Antonius; and van Ruler, Johannes, 4,085,285, Cl. 174-68.500.

Japan Non-Slip Pavement Co., Inc.: *See*—
Nakayama, Fukuzo, 4,085,176, Cl. 264-82.000.

Japan Synthetic Rubber Co., Ltd.: *See*—
Ishibashi, Yoshiyuki; Tagami, Eijiro; Higaki, Taiji; and Matsushita, Takao, 4,085,236, Cl. 427-121.000.

Japanese National Railways: *See*—
Higuchi, Yoshiro; Harada, Yutaka; Sato, Toshio; Nakagawa, Koji; Kawaguchi, Iwazo; and Kasahara, Yasushi, 4,084,981, Cl. 106-96.000.

Jaquith Industries, Inc.: *See*—
Shai, Arthur S., 4,084,328, Cl. 33-368.000.

Jarund Devello AB: *See*—
Jarund, Harry Sigurd Valdemar, 4,084,593, Cl. 128-295.000.

Jarund, Harry Sigurd Valdemar, to Jarund Devello AB. Bladder training apparatus. 4,084,593, Cl. 128-295.000.

Jen, Dixson Teh-Chao: *See*—
Liaukus, Sigitas Julius; and Jen, Dixson Teh-Chao, 4,085,442, Cl. 364-900.000.

Jenkins, John C., to TRW Inc. Weldable insulation fastener and apparatus for welding. 4,085,307, Cl. 219-98.000.

Jenks, Richard H.; and Kipp, Egbert M., to Revere Copper and Brass, Inc. Process for compression rolling of polymeric films. 4,085,187, Cl. 264-280.000.

Jensen, Bernhard: *See*—
Bathiany, Robert H.; and Jensen, Bernhard, 4,085,361, Cl. 324-57.0SS.

Jensen, William L., Jr.: *See*—
Wiley, Nathaniel C., Jr.; and Jensen, William L., Jr., 4,084,846, Cl. 296-1.00S.

Johann Baptist Rombach, Karlsruhe, GmbH & Co. KG: *See*—
Happe, Peter, 4,084,617, Cl. 137-625.280.

John Wyeth & Brother Ltd.: *See*—
Curran, Adrian Charles Ward; and Shepherd, Robin Gerald, 4,085,108, Cl. 260-283.0SC.
Curran, Adrian Charles Ward; Crossley, Roger; and Hill, David George, 4,085,110, Cl. 260-294.80B.
Curran, Adrian Charles Ward; Crossley, Roger; and Hill, David George, 4,085,215, Cl. 424-258.000.

John Zink Company: *See*—
Reed, Robert D.; and Schwartz, Robert E., 4,084,935, Cl. 431-202.000.

Johns-Manville Corporation: *See*—
Odle, Herbert Arnold; Ruehl, Donald Edward; Shadwick, Jan; Sullivan, Daryl Dean; and Welty, Dale Eugene, 4,085,318, Cl. 362-217.000.

Johnson, Alexander James: *See*—
Boyle, Henry Bryant; and Johnson, Alexander James, 4,084,430, Cl. 73-141.00R.

Johnson, Bruce K., to Polaroid Corporation. Battery assembly. 4,085,253, Cl. 429-1.000.

Johnson Controls, Inc.: *See*—
Matthews, Russell Byron; and Hayes, Thomas Edward, 4,084,743, Cl. 236-1.00G.

Johnson, Howard L., to Caterpillar Tractor Co. Cartridge type check valve. 4,084,609, Cl. 137-327.000.

Johnson & Johnson: *See*—
Tritsch, Ludwig, 4,084,592, Cl. 128-287.000.

Johnson, Leonard L., to Teco, Inc. Actuator for hydraulic systems in transportable mobile platforms. 4,084,619, Cl. 137-636.200.

Johnson, Matthey & Co., Limited: *See*—
Walter, Derek Oscar, 4,084,443, Cl. 73-517.00R.

Johnson, Robert Joseph: *See*—
Zenk, George Edward; Johnson, Robert Joseph; and Miller, Charles Newell, 4,085,302, Cl. 200-5.00A.

Johnson, Roy R., to KMS Fusion, Inc. Repetitive output laser system and method using target reflectivity. 4,084,908, Cl. 350-151.000.

Jones, David P., to Construction Products Corporation. Bell-and-spigot concrete pipe joint with plastic liner ring. 4,084,828, Cl. 277-207.00A.

Jones, Donald P., to Roblin Industries, Inc. Compression strut for suspended ceiling. 4,084,364, Cl. 52-484.000.

Jones, Hiram, Jr. Center finder. 4,084,325, Cl. 33-191.000.

Jones, John Arthur, to Borg-Warner Corporation. Process for preparing substituted triazines. 4,085,282, Cl. 544-197.000.

Jones, Ralph Archibald; and Drew, Allan Mathieson, to Post Office. Telephone conference amplifier. 4,085,290, Cl. 179-1.0CN.

Jones, Robert J. Waste heat utilization system. 4,084,745, Cl. 237-8.00R.

Jos. Schlitz Brewing Company: *See*—
Gales, Peter W., 4,084,426, Cl. 73-60.100.

Joyce, James E. Utility container. 4,084,865, Cl. 312-111.000.

Juergens, Wilfried; Roschy, Manfred; and Schauer, Alois, to Siemens Aktiengesellschaft. Process for the production of a thin-film circuit. 4,085,011, Cl. 204-37.00R.

Juguin, Bernard; Cosyns, Jean; LePage, Jean-Francois; and Miquel, Jean, to Societe Francaise des Produits pour Catalyse. New catalysts for hydrocarbon conversion to aromatics. 4,085,157, Cl. 260-673.000.

Jules, Samuel Edward; and McGarry, John James, Sr. Method for producing packing rings for fluid systems and the like. 4,085,184, Cl. 264-219.000.

Jules, Samuel Edward: *See*—
McGarry, John James, Sr.; and Jules, Samuel Edward, 4,084,929, Cl. 425-169.000.

Juncar, Patrick Pierre Paul: *See—*
Pinard, Jacques Andre; and Juncar, Patrick Pierre Paul, 4,084,907, Cl. 356-106.00S.

Juvonen, Vaino Esko, to Linden-Alimak AB. Hydraulically driven striking device. 4,084,486, Cl. 91-276.000.

Kabelschlepp Gesellschaft mit beschrankter Haftung: *See—*
Moritz. Werner, 4,084,370, Cl. 59-78.100.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Kitashima, Riichi; Matsumoto, Masakazu; and Tagaki, Shinji, 4,084,473, Cl. 84-1.140.

Kabushiki Kaisha Meidensha: *See—*
Tezuka, Minoru; and Kito, Yastami, 4,084,662, Cl. 187-29.00R.

Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,084,507, Cl. 101-110.000.

Kabushiki Kaisha Shinsei Industries: *See—*
Fujita, Mituo, 4,084,679, Cl. 197-6.700.

Kabushiki Kaisha Taiheiseisakusho: *See—*
Tsutsumino, Takeyoshi, 4,084,420, Cl. 72-138.000.

Kagami, Akiyasu; Hase, Takashi; Hiraki, Minoru; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, to Nippon Hoso Kyokai. Gaseous discharge light emitting element. 4,085,350, Cl. 313-486.000.

Kagami, Akiyasu: *See—*
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,351, Cl. 313-486.000.

Kaieda, Shozo: *See—*
Muto, Masayuki; Tashima, Norio; Kaieda, Shozo; and Kamimura, Kuniaki, 4,085,408, Cl. 346-75.000.

Kaiya, Atsushi: *See—*
Otsuki, Yutaka; Imai, Hirosuke; Kaiya, Atsushi; and Horii, Hideo, 4,085,263, Cl. 526-47.000.
Otsuki, Yutaka; Imai, Hirosuke; Kaiya, Atsushi; and Horii, Hideo, 4,085,265, Cl. 526-49.000.

Kajima Corporation: *See—*
Yahiro, Teruo; and Yoshida, Hiroshi, 4,084,648, Cl. 175-67.000.

Kakigi, Takao, to Cybernet Electronic Corporation. Circuit for setting transmission and reception frequencies. 4,085,364, Cl. 325-20.000.

Kalashnikov, Yaroslav Alexeevich: *See—*
Farafontov, Vladimir Ivanovich; Kalashnikov, Yaroslav Alexeevich; Novikov, Jury Nikolaevich; Volpin, Mark Efimovich; Vereschagin, Leonid Fedorovich; and Lysanov, Vladislav Sergeevich, 4,085,196, Cl. 423-446.000.

Kalir, Rami: *See—*
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, 4,085,261, Cl. 526-19.000.

Kalivas, Christopher G. Device to assist in holding a playing record to clean the same and the method of using the same. 4,084,824, Cl. 274-1.00R.

Kalmuk, Hans-Peter: *See—*
Kratel, Gunter; Bauer, Johann; Pichler, Engelbert; and Kalmuk, Hans-Peter, 4,085,087, Cl. 260-42.490.

Kalopissis, Gregoire, to L'Oreal. Process and cosmetic compositions for the treatment of skin and scalp. 4,085,217, Cl. 424-266.000.

Kamada, Hidemoto; Miura, Chiaki; and Kano, Etsuo, to Calpis Shokuhin Kogyo Kabushiki Kaisha. Process for manufacturing fast cooking rice. 4,085,234, Cl. 426-618.000.

Kameno, Yoshito: *See—*
Katsube, Junki; Kojima, Atsuyuki; Sunagawa, Makoto; Takashima, Yoshinori; Kameno, Yoshito; and Yamamoto, Hisao, 4,085,210, Cl. 424-248.400.

Kamimura, Kuniaki: *See—*
Muto, Masayuki; Tashima, Norio; Kaieda, Shozo; and Kamimura, Kuniaki, 4,085,408, Cl. 346-75.000.

Kaminsky, Igor Viktorovich; Shestakov, Vladimir Vladimirovich; Severov, Genrikh Fedorovich; Zaitsev, Aron Iosifovich; Litvinenko, Alexandr Fedorovich; Melnikov, Viktor Vasilievich; Zats, Boris Semenovich; Miropolsky, Mark Usherovich; and Maizlik, David Lvovich. Self-cleaning filter for cleaning liquids from suspended matter. 4,085,051, Cl. 210-333.00R.

Kanbara, Takahiro; and Mituhara, Toshihiko, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Apparatus for cutting and chamfering irregular shaped pipes. 4,084,463, Cl. 82-53.100.

Kanebo Ltd.: *See—*
Masuda, Yougoro; and Kawase, Shigeru, 4,085,057, Cl. 252-62.10P.

Kaneko, Tamaki; and Okuzawa, Tugio, to Ricoh Company, Ltd. Offset printing machine comprising improved control mechanism. 4,084,508, Cl. 101-142.000.

Kanemaru, Toyonusuke; Hisatomi, Yukuo; and Nishimoto, Takafumi, to Nippon Carbon Kabushiki Kaisha. Gut for racket. 4,084,399, Cl. 57-140.00C.

Kanmura, Hitoshi: *See—*
Sasakura, Hachiro; and Kanmura, Hitoshi, 4,084,548, Cl. 123-205.000.

Kano, Etsuo: *See—*
Kamada, Hidemoto; Miura, Chiaki; and Kano, Etsuo, 4,085,234, Cl. 426-618.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See—*
Ishibashi, Yoshiyuki; Tagami, Eijiro; Higaki, Taiji; and Matsushita, Takao, 4,085,236, Cl. 427-121.000.
Kawakami, Takajiro; Mizuno, Minesilo; Okushi, Akira; and Yasuda, Michio, 4,085,237, Cl. 427-150.000.

Kappas, Nick. Ski case and rack. 4,084,735, Cl. 224-42.10E.

Karasudani, Yasuo, to Tokico Ltd. Disc brake caliper mounting. 4,084,666, Cl. 188-73.300.

Karikawa, Tohru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for retarding camera shutter release. 4,085,413, Cl. 354-137.000.

Karinthi, Pierre; Dauvergne, Michel; and Hirschauer, Benoit, to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude. Composite wire with a base of cerium and other rare earths. 4,085,252, Cl. 428-576.000.

Karlberger, Walter Johann, to Morgardshammar Aktiebolag. Apparatus for twisting and guiding stock into roll grooves. 4,084,421, Cl. 72-231.000.

Karlberger, Walter Johann, to Morgardshammar Aktiebolag. Device intended for controlled cooling or wire, especially steel wire. 4,084,797, Cl. 266-106.000.

Karras, Ernest C., to Tekno Industries, Inc. Traffic usage recorder. 4,085,293, Cl. 179-8.00A.

Kasahara, Yasushi: *See—*
Higuchi, Yoshiro; Harada, Yutaka; Sato, Toshio; Nakagawa, Koji; Kawaguchi, Iwazo; and Kasahara, Yasushi, 4,084,981, Cl. 106-96.000.

Kasai, Masao: *See—*
Misumi, Teruyuki; Miyaji, Toshio; and Kasai, Masao, 4,085,042, Cl. 210-33.000.

Kaser, Klaus: *See—*
Franke, Rainer-Burkhard; Hirschmann, Adolf; and Kaser, Klaus, 4,084,730, Cl. 222-309.000.

Kashio, Toshio, to Casio Computer Co., Ltd. Input data-collating device. 4,085,312, Cl. 235-306.000.

Kashiwa, Norio: *See—*
Toyota, Akinori; Odawara, Kiyoshi; and Kashiwa, Norio, 4,085,276, Cl. 526-122.000.

Kasuga, Norboru, to Janome Sewing Machine Co. Ltd. Cam selecting device for a sewing machine. 4,084,523, Cl. 112-158.00A.

Katernberg, Helmut, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Floating dry dock with lifting pontoons. 4,084,529, Cl. 114-46.000.

Kathawala, Faizulla G., to Sandoz, Inc. α-Alkyl-p-phenoxy benzyl alcohols. 4,085,149, Cl. 260-613.00R.

Kato, Sumio, to Teijin Limited. Process for producing electrically conductive synthetic fibers. 4,085,182, Cl. 264-171.000.

Katsube, Junki; Kojima, Atsuyuki; Sunagawa, Makoto; Takashima, Yoshinori; Kameno, Yoshito; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Novel morpholine derivatives and the treatment of mental depression. 4,085,210, Cl. 424-248.400.

Katz, Robert E. Bind-in insert. 4,084,696, Cl. 206-629.000.

Kauffman, William J., to Armstrong Cork Company. Disubstituted s-triazines. 4,085,268, Cl. 544-221.000.

Kawaguchi, Iwazo: *See—*
Higuchi, Yoshiro; Harada, Yutaka; Sato, Toshio; Nakagawa, Koji; Kawaguchi, Iwazo; and Kasahara, Yasushi, 4,084,981, Cl. 106-96.000.

Kawahara, Toru: *See—*
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R.

Kawakami, Takajiro; Mizuno, Minesilo; Okushi, Akira; and Yasuda, Michio, to Kanzaki Paper Manufacturing Co., Ltd. Method and apparatus for manufacturing pressure sensitive copying sheet. 4,085,237, Cl. 427-150.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Fujiura, Takashi; Tsutsui, Kunio; and Nishida, Hiroshi, 4,084,531, Cl. 114-211.000.
Hagiwara, Tatsuo; Nomiyama, Fumihiro; and Nagaoka, Shigenori, 4,084,752, Cl. 241-30.000.
Itoh, Masaki; and Yamasaki, Yorio, 4,084,656, Cl. 180-103.00R.

Kawasaki, Yoichi: *See—*
Taniguchi, Seiho; Kawasaki, Yoichi; and Sugawara, Shin' Ichi, 4,085,249, Cl. 428-383.000.

Kawase, Shigeru: *See—*
Masuda, Yougoro; and Kawase, Shigeru, 4,085,057, Cl. 252-62.10P.

Kawashima, Hiroyuki: *See—*
Itani, Mituo; Kawashima, Hiroyuki; Inoue, Takasuke; and Muruyama, Mikio, 4,084,528, Cl. 114-45.000.

Kay, D. Alan R.; and Wilson, William G., to Molycorp, Inc. Methods of desulphurizing iron and steel and gases, such as stack gases and the like. 4,084,960, Cl. 75-58.000.

Kay, David, to Boots Company Limited, The. Control of processes. 4,084,442, Cl. 73-432.0PS.

KB-Denver, Inc.: *See—*
Dunlap, Bill D., 4,085,306, Cl. 200-275.000.

Keegan, Pat, to International Audio Visual, Inc. Modulated sound reading system. 4,085,296, Cl. 179-100.30R.

Keenan, John: *See—*
Keenan, Richard, 4,084,853, Cl. 298-24.000.

Keenan, Patrick: *See—*
Keenan, Richard, 4,084,853, Cl. 298-24.000.

Keenan, Richard, to Keenan, Richard; Keenan, Patrick; and Keenan, John, part interest to each. Hopper device for tractor vehicles. 4,084,853, Cl. 298-24.000.

Keeton, John H. Golf practice device. 4,084,822, Cl. 273-185.00D.

Keiser, John T.: *See—*
Poirier, Victor L.; and Keiser, John T., 4,084,266, Cl. 3-1.000.

Kelly, Charles A.: *See—*
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,085,089, Cl. 260-45.8NT.

Kelvinator, Inc.: *See—*
Schettl, Alvin J.; and Gorski, Charles R., 4,084,572, Cl. 126-200.000.

Kensetsu Kikai Chosa Kabushiki Kaisha: *See—*
Mizutani, Yutaka; and Aoki, Takashi, 4,084,336, Cl. 37-184.000.

Kerner, Karl: *See—*
Zehender, Ernst; Blaich, Bernhard; Stein, Helmut; and Kerner, Karl, 4,085,248, Cl. 428-336.000.

Kerr-McGee Chemical Corporation: *See—*
Poush, Kenneth A.; and Reynolds, James E., 4,085,027, Cl. 204-268.000.

Kersten, Samuel D., Jr., to Water Saver Faucet Co., Inc. Freeze proof emergency shower unit. 4,084,270, Cl. 4-145.000.

Kerwin, Daniel; Zoberis, Walter B.; Grec, John W.; and McDonald, James A., to Meyercord Co., The. Printing machine for printing groups of symbols. 4,084,501, Cl. 101-76.000.

Keuchel, Herbert W., to PNC Corporation. Process for producing a balanced nonwoven fibrous network by radial extrusion and fibrillation. 4,085,175, Cl. 264-51.000.

Keuer, Douglas W.: *See—*
McConnell, Robert B.; and Keuer, Douglas W., 4,085,126, Cl. 260-404.000.

Keuffel & Esser Company: *See—*
Kooi, J. Peter E., 4,084,327, Cl. 33-299.000.

KFC Corporation: *See—*
Sullivan, Neal, 4,084,492, Cl. 99-330.000.

Khan, Aman Ullah, to Whirlpool Corporation. Refuse compactor. 4,084,497, Cl. 100-53.000.

Khavkin, Viktor Pavlovich: *See—*
Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich, 4,084,400, Cl. 57-156.000.

Kibler, Nelson S. Scissor style paper clip and automatic dispenser for same. 4,084,864, Cl. 312-42.000.

Kiefer, Hans-Friedrich, to Robert Bosch GmbH. Sound motion-picture camera. 4,084,891, Cl. 352-22.000.

Kiel, Wolfgang: *See—*
Wedemeyer, Karlfried; Kiel, Wolfgang; and Evertz, Werner, 4,085,141, Cl. 260-570.00R.

Kikuchi, Hideo: *See—*
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R.

Killingbeck, Graydon Wayne: *See—*
Suh, Kyung W.; and Killingbeck, Graydon Wayne, 4,085,073, Cl. 260-2.50E.

Killinger, John J.: *See—*
Kornis, Gabriel; Nidy, Eldon G.; Vostral, Henry J.; and Steinhards, Arnolds, deceased, 4,084,955, Cl. 71-92.000.

Killion, Marvin L. Turf perforating machine. 4,084,642, Cl. 172-21.000.

Kim, Raymond W. H.: *See—*
Bagby, John P.; Figge, Erwin E.; and Kim, Raymond W. H., 4,084,892, Cl. 352-29.000.

Kimberley, David, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Redundant off-axis sensor assemblies. 4,084,774, Cl. 244-194.000.

Kimmel, Gerald E.: *See—*
Melrose, Kendrick B.; Kimmel, Gerald E.; and McCombs, William F., 4,084,812, Cl. 272-85.000.

Kimoto, Sadatoshi: *See—*
Adachi, Ikuo; Ueda, Motohiko; and Kimoto, Sadatoshi, 4,085,114, Cl. 260-307.0DA.

Kindervater, Friedrich: *See—*
Hund, Franz; Holznagel, Wilhelm; Erfurth, Henning; Kindervater, Friedrich; and Henningsa, Willi, 4,084,984, Cl. 106-300.000.

Kine, Masayoshi, to Shimano Industrial Company Limited. Brake lever for a bicycle. 4,084,449, Cl. 74-480.00R.

King, Alfred T. Automatically operational net weight filling machine. 4,084,626, Cl. 141-7.000.

King Radio Corporation: *See—*
Teter, Robert D.; Maddock, James W.; and Rothers, Paul L., 4,084,439, Cl. 73-718.000.

King, Roderick V., to VCA Corporation. Container and closure. 4,084,717, Cl. 215-217.000.

Kingsbury, William D., to SmithKline Corporation. Intermediate for dephthaloylation of azetidinone compounds. 4,085,100, Cl. 260-239.00A.

Kinney, Alfred W., to Phillips Petroleum Company. Method and apparatus for forming pleated closure construction. 4,084,488, Cl. 93-36.00B.

Kinzler, Raymond Carl, to Koppers Company, Inc. Reversing method and apparatus for the automatic heating change-over of a coke oven battery. 4,085,008, Cl. 202-151.000.

Kipp, Egbert M.: *See—*
Jenks, Richard H.; and Kipp, Egbert M., 4,085,187, Cl. 264-280.000.

Kirby, Raymond L.: *See—*
Kullmann, Donald J.; Seltzer, Daniel A.; and Kirby, Raymond L., 4,085,287, Cl. 178-66.00R.

Kirk, Glenn E.; and Medesha, Alfred L., to Motorola, Inc. Electrically isolated heat sink lead frame for plastic encapsulated semiconductor assemblies. 4,084,312, Cl. 29-588.000.

Kirk, John Cyril: *See—*
Leslar, David Louis; and Kirk, John Cyril, 4,085,292, Cl. 179-2.00A.

Kirschner, Jurgen: *See—*
Wechsung, Reiner; and Kirschner, Jurgen, 4,085,022, Cl. 204-192.00E.

Kita, Shinichiro: *See—*
Nakai, Setsuo; Kita, Shinichiro; Hiki, Fumihiko; and Shimizu, Masayuki, 4,085,266, Cl. 526-65.000.

Kitai, Kiyoshi; Ogihara, Masuo; Sato, Kozo; Shinozaki, Nobuo; Takazawa, Yuzuru; and Seki, Yoichi, to Seiko Koki Kabushiki Kaisha. Driving mechanism for a timepiece. 4,084,403, Cl. 58-23.00D.

Kitashima, Riichi; Matsumoto, Masakazu; and Tagaki, Shinji, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electric piano. 4,084,473, Cl. 84-1.140.

Kitchener, Brian Lewis: *See—*
Telling, Ronald Charles; Passingham, Roy John; Kitchener, Brian Lewis; and Hopkinson, David George, 4,085,203, Cl. 424-89.000.

Kito, Yastami: *See—*
Tezuka, Minoru; and Kito, Yastami, 4,084,662, Cl. 187-29.00R.

Klauke, Erich: *See—*
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,085,226, Cl. 424-322.000.

Klein, Norman E.; and Stewart, William H., Jr., to Milliken Research Corporation. Dyeing and printing of materials. 4,084,615, Cl. 137-624.110.

Kmetz, Richard C.; and Miner, Leland P., to Monsanto Company. Formaldehyde solutions stabilized with interpolymers of vinyl acetate, vinyl acetal and vinyl alcohol. 4,085,079, Cl. 260-29.60B.

KMS Fusion, Inc.: *See—*
Johnson, Roy R., 4,084,908, Cl. 350-151.000.
Sigler, Robert D., 4,084,887, Cl. 350-294.000.

Knell, Everett W.: *See—*
Green, Norman W.; Duraiswamy, Kandaswamy; Lumpkin, Robert E.; Knell, Everett W.; Mirza, Zia I.; and Winter, Bruce L., 4,085,030, Cl. 208-8.000.

Knickerbocker, Robert H., to Siemon-Dynamic Mfg. Company, The. Electrical connectors and terminal connecting block. 4,084,877, Cl. 339-97.00P.

Kobayashi, Tadataka: *See—*
Sato, Kazunobu; Suzuki, Takanori; Kobayashi, Tadataka; and Miyazawa, Takeshi, 4,084,568, Cl. 123-182.000.

Kobayashi, Tatsuo: *See—*
Hashimoto, Masanao; Saitou, Tadashi; Kobayashi, Tatsuo; and Suzuki, Isamu, 4,084,373, Cl. 60-293.000.

Koenig, Elmer A., to Sherwood Medical Industries Inc. Parenteral drug storage device with closure piercing coupling member. 4,084,588, Cl. 128-218.00R.

Koepke, Barry G., to Honeywell Inc. High strength halides. 4,085,172, Cl. 264-1.000.

Koepke, Earl H., to GF Business Equipment, Inc. File unit. 4,084,699, Cl. 211-11.000.

Kogge, Peter Michael, to International Business Machines Corporation. Data communication bus structure. 4,085,448, Cl. 364-900.000.

Kohler, Gisbert; Munkel, Hanns-Wilfried; Pohl, Hubert; Sommer, Walter; and Wendel, Gunther, to SKF Kugellagerfabriken GmbH. Apparatus for mounting an open end spinning turbine. 4,084,860, Cl. 308-15.000.

Kohshoh Limited: *See—*
Noda, Taizo, 4,084,299, Cl. 24-250.000.

Koike, Junro: *See—*
Kagami, Akiyasu; Hase, Takashi; Hiraki, Minoru; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,350, Cl. 313-486.000.
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,351, Cl. 313-486.000.

Kojima, Atsuyuki: *See—*
Katsube, Junki; Kojima, Atsuyuki; Sunagawa, Makoto; Takashima, Yoshinori; Kameno, Yoshito; and Yamamoto, Hisao, 4,085,210, Cl. 424-248.400.

Kojima, Takehiro: *See—*
Kagami, Akiyasu; Hase, Takashi; Hiraki, Minoru; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,350, Cl. 313-486.000.
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,351, Cl. 313-486.000.

Kolbe, Wolfgang: *See—*
Atallah, Khaled; Berthold, Fritz; Kolbe, Wolfgang; Rauschenbach, Peter; and Simon, Helmut, 4,085,325, Cl. 250-328.000.

Kolesnichenko, Anatoly Alexeevich: *See—*
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivanovich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr Ivanovich; and Pilipenki, Vitaly Alexandrovich, 4,085,025, Cl. 204-224.00M.

Kolosov, Leonid Pavlovich: *See—*
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivano-

vich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr Ivanovich; and Pilipenki, Vitaly Alexandrovich, 4,085,025, Cl. 204-224.00M.

Koltyrev, Dmitry Nikiforovich: *See*—
Shklyanov, Leonid Pavlovich; Baranov, Vladimir Nikitich; Koltyrev, Dmitry Nikiforovich; Lifshits, Viktor Senderovich; Polyansky, Ivan Ivanovich; and Osinskaya, Tamila Iosifovna, 4,084,484, Cl. 90-24.00C.

Koltz, Lawrence D.; and Pritzlaff, Herbert E., to Wisconsin Centrifugal, Inc. Apparatus and method for aligning and welding tubular metal components together. 4,084,739, Cl. 228-168.000.

Komanowsky, Michael; and Sinnamon, Howard I., to United States of America, Agriculture. Treatment of lime-sulfide tannery unhairing waste. 4,085,044, Cl. 210-45.000.

Komuro, Katsuhiro: *See*—
Suwa, Masateru; and Komuro, Katsuhiro, 4,084,669, Cl. 191-45.00R.

Kondo, Masatsune; Sawami, Yoshiaki; and Tamura, Yukio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seam in a body outer panel of a vehicle. 4,084,847, Cl. 296-28.00R.

Konosu, Akira: *See*—
Shimoiizaka, Junzo; Konosu, Akira; Hayashi, Yuzo; Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, 4,084,755, Cl. 241-95.000.

Kooi, J. Peter E., to Keuffel & Esser Company. Theodolite adjusting means. 4,084,327, Cl. 33-299.000.

Koppers Company, Inc.: *See*—
Kinzler, Raymond Carl, 4,085,008, Cl. 202-151.000.

Kornis, Gabriel; Nidy, Eldon G.; Vostral, Henry J.; and Steinhards, Arnolds, deceased (by Killinger, John J.), to Upjohn Company, The. Organic compounds and process. 4,084,955, Cl. 71-92.000.

Koss, Leopold G.: *See*—
Mindick, Leo R.; Bruck, Avraham; Inbar, Dan; and Koss, Leopold G., 4,085,006, Cl. 195-103.700.

Kowalczyk, Adam V. Carpet installation tool. 4,084,787, Cl. 254-57.000.

Krapcho, John; and Turk, Chester Frank, to E. R. Squibb & Sons, Inc. 2-Amino-8-arylideno-3,4,5,6,7,8-hexahydro-4-arlypyrido[4,3-d]pyrimidines. 4,085,102, Cl. 542-450.000.

Krapcho, John; and Turk, Chester F., to E. R. Squibb & Sons, Inc. 7-Aminoalkyl-3,7-diaryl-3,3A,4,5,6,7-hexahydro-2H-indazoles. 4,085,280, Cl. 544-140.000.

Krapcho, John: *See*—
Turk, Chester F.; and Krapcho, John, 4,085,142, Cl. 260-570.5CA.

Kratel, Gunter; Bauer, Johann; Pichler, Engelbert; and Kalmuk, Hans-Peter, to Wacker Chemie GmbH. Method of reducing static electricity in plastic compositions and antistatic compositions. 4,085,087, Cl. 260-42.490.

Krause, John A.: *See*—
Harlan, Martin L.; Krause, John A.; and Brooks, Ronald L., 4,084,292, Cl. 17-50.000.

Krebs, Gerd: *See*—
Eichholz, Werner; and Krebs, Gerd, 4,084,998, Cl. 156-403.000.

Kregness, Glen Roy: *See*—
Pertl, Jerry Hudson; and Kregness, Glen Roy, 4,085,447, Cl. 364-900.000.

Krehbiel, Vivian D., to Kreonite Inc. Liquid mixing device. 4,084,796, Cl. 366-137.000.

Kreonite Inc.: *See*—
Krehbiel, Vivian D., 4,084,796, Cl. 366-137.000.

Kreusler, George E. Router clamp. 4,084,629, Cl. 144-134.00D.

Krygeris, Algirdas J.; and Manring, John M., to Harris-Intertype Corporation. Multiplexing of actuator control signals. 4,085,402, Cl. 340-163.000.

KTA Corporation: *See*—
Tragert, William, 4,084,616, Cl. 137-625.400.

Kubach, Hans; and Zieher, Peter, to Robert Bosch GmbH. Amplifier for floating voltage source. 4,085,379, Cl. 330-69.000.

Kubat, Zdenek: *See*—
Rokos, Josef; Kubat, Zdenek; Prochazka, Pavel; Zalabak, Vladislav; Babicka, Josef, deceased; Janecek, Jiri; Nohynek, Miroslav; and Mison, Petr, 4,085,206, Cl. 424-131.000.

Kubota, Ltd.: *See*—
Izaki, Hiroshi, 4,084,632, Cl. 164-72.000.

Kuckhermann, Gustav. Roll support assembly. 4,084,761, Cl. 242-58.600.

Kuelzer, Peter: *See*—
Reier, Richard; and Kuelzer, Peter, 4,084,678, Cl. 197-1.00R.

Kuhn, Franz Josef: *See*—
Langbein, Adolf; Weber, Karl-Heinz; Bauer, Adolf; Boke, Karin; Lehr, Erich; and Kuhn, Franz Josef, 4,085,216, Cl. 424-263.000.

Kukino, Yoshinori; Miura, Mitsuo; and Aoyagi, Hayao, to Takenaka Komuten Co., Ltd. Apparatus and method for multiple spindle kneading for improving ground. 4,084,383, Cl. 61-36.00R.

Kulikov, Vasily Ivanovich: *See*—
Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich, 4,084,400, Cl. 57-156.000.

Kullmann, Donald J.; Seltzer, Daniel A.; and Kirby, Raymond L., to Neptune Water Meter Company. Data transmitting apparatus. 4,085,287, Cl. 178-66.00R.

Kulvi, Ruth L. Urine collection apparatus. 4,084,589, Cl. 128-278.000.

Kumazawa, Toshiharu, to Mitsubishi Precision Co., Ltd. Combustion apparatus. 4,084,934, Cl. 431-189.000.

Kunz, Andrew M.; Yates, Donald B.; and Tuck, Richard L., to Pullman Incorporated. Locking mechanism for hopper door actuator assembly. 4,084,515, Cl. 105-240.000.

Kunzmann, Konrad, to Alfelder Machinen-und Modellfabrik Kunkel, Wagner & Co. KG. Method and device for controlling a casting machine. 4,084,631, Cl. 164-4.000.

Kuo, Yu-Neng: *See*—
Higuchi, Takeru; Bodor, Nicolae S.; and Kuo, Yu-Neng, 4,085,214, Cl. 424-253.000.

Kuramochi, Yoshinori: *See*—
Shinohara, Katsuhiko; Kuramochi, Yoshinori; Suehiro, Tetsuo; and Matsubara, Ichiro, 4,085,334, Cl. 307-11.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R.

Kurihara, Hideaki: *See*—
Fukuwatari, Tadashi; Mishima, Kiyotaka; Ichimura, Hiroshi; and Kurihara, Hideaki, 4,085,001, Cl. 162-145.000.

Kurita, Takaji, to Minolta Camera Kabushiki Kaisha. Photocopying apparatus mirror drive means. 4,084,898, Cl. 355-8.000.

Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; Sugihara, Kunihiko; and Takagi, Yasuo. Internal combustion engine. 4,084,372, Cl. 60-278.000.

Kuroda, Masahiro; and Yoshimura, Hiromitsu, to Anritsu Electric Company Limited. Amplitude modulation circuit. 4,085,389, Cl. 332-31.00T.

Kuroda, Osamu: *See*—
Otani, Kouji; Sawa, Toshio; Kuroda, Osamu; Nakajima, Fumito; and Iijima, Tokuji, deceased, 4,085,194, Cl. 423-242.000.

Kurokawa, Teruo: *See*—
Matsudo, Kazuo; Shimomura, Takayoshi; and Kurokawa, Teruo, 4,084,991, Cl. 148-31.500.

Kurrat, Klaus, to Daimler-Benz Aktiengesellschaft. Vibration damper for vehicle spring systems. 4,084,667, Cl. 188-275.000.

Kurt, Ewald Heinz, to Ingersoll-Rand Company. Fluid actuated impact tool. 4,084,646, Cl. 173-17.000.

Kusakabe, Haruhiko: *See*—
Nakagawa, Kiyoshi; Otaki, Yukio; Mineo, Masatoshi; Aratani, Yoshio; Tatsuoka, Yoshio; and Kusakabe, Haruhiko, 4,084,622, Cl. 139-420.00R.

Kusumoto, Sho: *See*—
Ishida, Isao; Sato, Hiroshi; and Kusumoto, Sho, 4,084,862, Cl. 308-139.000.

Kusunose, Tetsuhiro: *See*—
Ishikawa, Tatsuo; Yamashita, Keiji; Okubo, Norio; Sakashita, Masahira; Okamoto, Arimichi; and Kusunose, Tetsuhiro, 4,085,174, Cl. 264-49.000.

Kwor, Y. C. Richard: *See*—
Akonteh, Ayola Ngwa; and Kwor, Y. C. Richard, 4,084,831, Cl. 280-11.200.

Kyo, Han Cha. Hitting device for martial arts. 4,084,811, Cl. 272-76.000.

Kyogoku, Kazuaki; Hatayama, Katsuo; Yokomori, Sadakazu; Sawada, Jiro; and Tanaka, Ichiro, to Taisho Pharmaceutical Co., Ltd. 2-(Carboxymethoxy)-chalcones. 4,085,135, Cl. 260-520.00C.

Kyowa Chemical Industry Co., Ltd.: *See*—
Miyata, Shigeo; Hirose, Toru; and Iizima, Noriko, 4,085,088, Cl. 260-45.70R.

Kyrias, Gilbert Mowder: *See*—
Fullerton, Donald Griswold; Kyrias, Gilbert Mowder; and Weber, Richard Baxter, 4,085,041, Cl. 210-7.000.

Labana, Santokh S.; and Chang, Yun Feng, to Ford Motor Company. Powder coating compositions with hydroxy containing acrylic copolymers-I and carboxylic acid or anhydride crosslinking agent. 4,085,260, Cl. 526-16.000.

Labelle, Camille A., to Armco Steel Corporation. Slide gate sealing closure. 4,084,784, Cl. 251-147.000.

Labora Mannheim GmbH fur Labortechnik: *See*—
Franke, Rainer-Burkhard; Hirschmann, Adolf; and Kaser, Klaus, 4,084,730, Cl. 222-309.000.

Lacis, Laimons; and Horvath, Steven, to Gordos Corporation. Reed switch construction. 4,085,392, Cl. 335-58.000.

Lagneau, Jean Henri. Liquid-actuated weighing apparatus. 4,084,651, Cl. 177-192.000.

Laignel, Raymond A.; and Mommeja, Patrick F., to Constructions Metalliques de Provence. Cocks having rotating valves and sliding seats. 4,084,608, Cl. 137-316.000.

Lainez, Lucien; Fichot, Bernard; and Bijon, Jean-Paul, to Thomson-Brandt. Container for video discs. 4,084,694, Cl. 206-444.000.

L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Karinthi, Pierre; Dauvergne, Michel; and Hirschauer, Benoit, 4,085,252, Cl. 428-576.000.

Laitram Corporation, The: *See*—
Lapeyre, James M., 4,084,687, Cl. 198-844.000.

Lalov, Vitaly Viktorovich: *See*—
Rakitin, Vladimir Jurievich; Fedorov, Igor Konstantinovich; Grigorian, Alfred Nikitovich; Lalov, Vitaly Viktorovich; and Prokofieva, Nina Vasilievna, 4,084,757, Cl. 241-301.000.

Lam, David Nicholas; and Lam, Stephen Joseph. Vibration free diamond polishing workbench. 4,084,351, Cl. 51-109.00R.

Lam, Stephen Joseph: *See*—
Lam, David Nicholas; and Lam, Stephen Joseph, 4,084,351, Cl. 51-109.00R.
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, to Ciba-Geigy AG. Polymers of vinyl acetate plasticized with low molecular weight polyesters. 4,085,082, Cl. 260-31.600.
Lamb, Frank; Combey, Malcolm; and Cooper, Hugh Melvin, to Ciba-Geigy AG. Plasticized polymers of vinyl acetate. 4,085,083, Cl. 260-31.600.
Lambert, Bernard Leon, to Societe Anonyme Potain Poclain Materiel (P.P.M.). Stabilizing apparatus incorporating telescopic structures. 4,084,777, Cl. 248-287.000.
Lampl, Helma: *See*—
Herbold, Oskar; and Dittloff, Dieter, 4,084,521, Cl. 110-242.000.
Landers, Don B.; and Brock, Robert K., to Oil States Rubber Company. Shock energy absorbing multi-segment load cell. 4,084,801, Cl. 267-140.000.
Landgreen, Eleanor Anderson: *See*—
Hogan, Vaughan Clarence; and Landgreen, Eleanor Anderson, 4,084,882, Cl. 350-96.200.
Landstingens Inkopscentral, Lic, Ekonomisk Forening: *See*—
Anfelt, Bertil, 4,084,265, Cl. 2-163.000.
Langbein, Adolf; Weber, Karl-Heinz; Bauer, Adolf; Boke, Karin; Lehr, Erich; and Kuhn, Franz Josef, to Boehringer Ingelheim GmbH. 2-(4-Phenyl-4-cyano-n-butyl)-1,2,3,4-tetrahydro-5(H)-pyrido-[4,3-b]-indoles and salts thereof. 4,085,216, Cl. 424-263.000.
Lapeyre, James M., to Laitram Corporation, The. Conveyor having resilient conveying surface. 4,084,687, Cl. 198-844.000.
LaRosa, John, to International Paper Company. Disposable self-contained liquid applicator. 4,084,910, Cl. 401-133.000.
Laserson, Gregory L.; and Madarasz, Miklos, to Sealectro Corporation. Miniature matrix programming board. 4,084,870, Cl. 339-18.00P.
Lathe, Donald Charles Clayton: *See*—
Hartwick, Norman John Reid; and Lathe, Donald Charles Clayton, 4,085,049, Cl. 210-242.00S.
Lauck, Helmut, to Varta Batterie Aktiengesellschaft. Light metal galvanic element. 4,085,259, Cl. 429-194.000.
Laurel Bank Machine Co., Ltd.: *See*—
Ohsako, Kyoichi; and Yamashita, Katusuke, 4,085,311, Cl. 235-92.0FP.
Laven, Merrill L. Swimming pools with overflow gutters. 4,084,272, Cl. 4-172.170.
Lawrence, John P., to Goodyear Tire & Rubber Company, The. Inhibiting premature vulcanization of rubbers. 4,085,094, Cl. 260-79.50B.
Lawson, Alastair: *See*—
Green, Keith; and Lawson, Alastair, 4,085,428, Cl. 360-99.000.
Lawson, Thomas E., to Lexington Instrument Corporation. Galvanic cell assembly for detecting oxygen and method of making said cell. 4,085,024, Cl. 204-195.00R.
Lawton, James: *See*—
Simpson, David Preston; and Lawton, James, 4,085,170, Cl. 261-1.000.
Leamy, Harry John: *See*—
Augis, Jacques Armand; Chen, Ho Sou; and Leamy, Harry John, 4,085,396, Cl. 337-290.000.
Lecoffre, Yves, to Societe Generale de Constructions Electriques et Mecaniques Alsthom S.A. Method of simulating cavitation by hydraulic testing. 4,084,432, Cl. 73-148.000.
Lee, Shih-Ying; and Briefer, Dennis K., to Setra Systems, Inc. Capacitive pressure sensing device. 4,084,438, Cl. 73-706.000.
Leedom, Marvin Allan, to RCA Corporation. Video disc package. 4,084,691, Cl. 206-313.000.
Lehr, Erich: *See*—
Langbein, Adolf; Weber, Karl-Heinz; Bauer, Adolf; Boke, Karin; Lehr, Erich; and Kuhn, Franz Josef, 4,085,216, Cl. 424-263.000.
Lei, Kenneth P. V.: *See*—
Henrie, Thomas A.; Lindstrom, Roald E.; and Lei, Kenneth P. V., 4,085,017, Cl. 204-123.000.
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivanovich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr Ivanovich; and Pilipenki, Vitaly Alexandrovich. Apparatus for electrochemical machining of workpieces. 4,085,025, Cl. 204-224.00M.
LePage, Jean-Francois: *See*—
Juguin, Bernard; Cosyns, Jean; LePage, Jean-Francois; and Miquel, Jean, 4,085,157, Cl. 260-673.000.
Lepow, Mark Norman, to American Security Equipment Company. Foil terminal block. 4,084,879, Cl. 339-198.0GA.
Leprino Cheese Co.: *See*—
Reinbold, George W.; and Reddy, Malireddy S., 4,085,228, Cl. 426-36.000.
Leroy, Jean Marie Louis; and Pechmeze, Jacques Pierre Edmond, to Produits Chimiques Ugine Kuhlmann. Water-insoluble nitrophenylazophenyl compounds containing a terminal —N—$(CH_2)_x$—O—CO— or —CO—O—CH_2—CH_2—C_3F_5 group. 4,085,099, Cl. 260-207.000.
Leslar, David Louis; and Kirk, John Cyril, to Alarmco Inc. Combination alarm and automatic telephone answering system. 4,085,292, Cl. 179-2.00A.
Leslie, Donald James. Selective high frequency compression device for speaker system. 4,084,474, Cl. 84-1.270.
Lev, Kenneth D.: *See*—
Gravina, Anthony N.; Lev, Kenneth D.; and Angst, Arthur H., 4,085,363, Cl. 324-162.000.
Levielle, Jean, to Teinturerie de Champagne. Apparatus for dyeing textile lengths. 4,084,412, Cl. 68-5.00C.
Lewis, Donald J.: *See*—
Motyka, Jerry J.; and Lewis, Donald J., 4,084,676, Cl. 194-87.000.
Lewis, Frederick M. Locking ring for a castellated nut. 4,084,630, Cl. 151-5.000.
Lewis, John Didwith, to Imperial Chemical Industries Limited. Amplifiers. 4,085,381, Cl. 330-147.000.
Lewis, Richard, to British Steel Corporation. Rotary ultrasonic testing apparatus. 4,084,444, Cl. 73-622.000.
Lewis, Sheldon N.; and Miller, John J., to Rohm and Haas Company. Carboxylic polymeric thickeners. 4,085,167, Cl. 260-885.000.
Lexington Instrument Corporation: *See*—
Lawson, Thomas E., 4,085,024, Cl. 204-195.00R.
Leybold-Heraeus GmbH & Co. Kommandit-Gesellschaft: *See*—
Wechsung, Reiner; and Kirschner, Jurgen, 4,085,022, Cl. 204-192.00E.
Liaukus, Sigitas Julius; and Jen, Dixson Teh-Chao, to Bunker Ramo Corporation. Data display system designed as a microcontroller. 4,085,442, Cl. 364-900.000.
Lichius, Kenneth Walter, to White-Westinghouse Corporation. Laminated stator core. 4,085,347, Cl. 310-259.000.
Life Savers, Inc.: *See*—
Mackay, Donald A. M.; Witzel, Frank; Dwivedi, Basant K.; and Schoenholz, Daniel, 4,085,227, Cl. 426-3.000.
Lifshits, Viktor Senderovich: *See*—
Shklyanov, Leonid Pavlovich; Baranov, Vladimir Nikitich; Koltyrev, Dmitry Nikiforovich; Lifshits, Viktor Senderovich; Polyansky, Ivan Ivanovich; and Osinskaya, Tamila Iosifovna, 4,084,484, Cl. 90-24.00C.
Linde AG: *See*—
Schneeberger, Martin; and Wittmann, Dieter, 4,084,546, Cl. 122-32.000.
Linden-Alimak AB: *See*—
Juvonen, Vaino Esko, 4,084,486, Cl. 91-276.000.
Lindsey, Joseph W., to Arbrook, Inc. Fluid heating apparatus. 4,084,587, Cl. 128-193.000.
Lindstrom, Richard S.: *See*—
Prior, William L.; and Lindstrom, Richard S., 4,084,982, Cl. 106-105.000.
Lindstrom, Rikard Emanuel. Arrangement for mouldering organic waste material. 4,084,269, Cl. 4-111.000.
Lindstrom, Roald E.: *See*—
Henrie, Thomas A.; Lindstrom, Roald E.; and Lei, Kenneth P. V., 4,085,017, Cl. 204-123.000.
Linear Technology Inc.: *See*—
Barber, Herbert Douglas; and Salter, Gary Curtis, 4,085,382, Cl. 330-262.000.
Linn, John Charles, to Texas Instruments Incorporated. Magnetic domain memory employing all-bubble logic elements. 4,085,452, Cl. 365-5.000.
Lippits, Gerardus Johannes Meinardus; Janssen, Petrus Johannes; Debruijn, Henricus Antonius; and van Ruler, Johannes, to U.S. Philips Corporation. Method of manufacturing printed circuit boards. 4,085,285, Cl. 174-68.500.
Lippits, Gerardus Johannes Meinardus: *See*—
Janssen, Casper Johannes Gerardus Ferdinand; Postma, Lambertus; and Lippits, Gerardus Johannes Meinardus, 4,084,968, Cl. 96-48.0PD.
Lissant, Kenneth J., to Petrolite Corporation. Emulsions of enhanced ignitibility. 4,084,940, Cl. 44-51.000.
Lister, William. Pneumatic percussion hammer. 4,084,647, Cl. 173-73.000.
Littlewood, Peter Stuart: *See*—
Mercer, Alec Victor; Littlewood, Peter Stuart; Bolton, Ivan Joseph; and Fleck, Fritz, 4,085,101, Cl. 260-239.900.
Litvinenko, Alexandr Fedorovich: *See*—
Kaminsky, Igor Viktorovich; Shestakov, Vladimir Vladimirovich; Severov, Genrikh Fedorovich; Zaitsev, Aron Iosifovich; Litvinenko, Alexandr Fedorovich; Melnikov, Viktor Vasilievich; Zats, Boris Semenovich; Miropolsky, Mark Usherovich; and Maizlik, David Lvovich, 4,085,051, Cl. 210-333.00R.
Liu, Chia-tsun, to Westinghouse Electric Corporation. Non-chromate pitting and general corrosion inhibitors for aluminum products and method. 4,085,063, Cl. 252-387.000.
Liu, Ke-Tien: *See*—
Nack, Herman; and Liu, Ke-Tien, 4,084,545, Cl. 122-4.00D.
Locatelli, Jean Louis: *See*—
Gruffaz, Max; and Locatelli, Jean Louis, 4,085,164, Cl. 260-858.000.
Lodi, Robert J., to Sperry Rand Corporation. Decoder buffer circuit for MNOS memory. 4,085,460, Cl. 365-230.000.
Loesche Hartzerkleinerungs-und Zementmaschinen GmbH & Co. KG: *See*—
Brundiek, Horst, 4,084,754, Cl. 241-52.000.
Lohr, Raymond J. Pedal car. 4,084,836, Cl. 280-254.000.
Lomax, George F., Jr.; and Coleman, Arthur A., to Hercules Incorporated. Manufacture of solid propellant. 4,085,173, Cl. 264-3.00R.
Lonza, Ltd.: *See*—
Stefani, Giancarlo; and Fontana, Pietro, 4,085,122, Cl. 260-346.750.
Looney, John H., to Xerox Corporation. Sheet stacking apparatus. 4,084,809, Cl. 271-220.000.
L'Oreal: *See*—
Kalopissis, Gregoire, 4,085,217, Cl. 424-266.000.
Lorenz, Achim R., to MacMillan Bloedel Limited. Two-piece shipping containers. 4,084,740, Cl. 229-23.00R.

Loutfy, Raouf O.: *See—*
Janjua, Mohammad Barakat Ilahi; Claessens, Pierre L.; and Loutfy, Raouf O., 4,085,016, Cl. 204-104.000.

Lovell, Walter: *See—*
Grise, Frederick G. J.; and Lovell, Walter, 4,085,333, Cl. 290-2.000.

Lozeau, Paul R.: *See—*
Pylant, John D.; Lozeau, Paul R.; and Packard, Newton R., 4,084,503, Cl. 101-96.000.

Lucchitta, Elio. Portable storage apparatus. 4,084,702, Cl. 211-88.000.

Ludwig, Lawrence P., to United States of America, National Aeronautics and Space Administration. Counter pumping debris excluder and separator. 4,084,825, Cl. 277-25.000.

Luebbers, Herman E. Chain link assembly and disassembly tool. 4,084,369, Cl. 59-7.000.

Luehman, Kent W.: *See—*
Salesky, Emery; and Luehman, Kent W., 4,085,340, Cl. 307-237.000.

Lummus, J. Frank. Moving display rack. 4,084,868, Cl. 312-268.000.

Lumpkin, Robert E.: *See—*
Green, Norman W.; Duraiswamy, Kandaswamy; Lumpkin, Robert E.; Knell, Everett W.; Mirza, Zia I.; and Winter, Bruce L., 4,085,030, Cl. 208-8.000.

Luria, David. Piston-type internal combustion engine. 4,084,557, Cl. 123-90.150.

Luthi, Oscar, to Ingersoll-Rand Company. Pressure pulp washer with pivoted baffle. 4,085,003, Cl. 162-259.000.

Lymar, Wasyl; and Manley, Alice Jean. Sliding door and window stop. 4,084,290, Cl. 16-96.00R.

Lysanov, Vladislav Sergeevich: *See—*
Farafontov, Vladimir Ivanovich; Kalashnikov, Yaroslav Alexeevich; Novikov, Jury Nikolaevich; Volpin, Mark Efimovich; Vereschagin, Leonid Fedorovich; and Lysanov, Vladislav Sergeevich, 4,085,196, Cl. 423-446.000.

M&T Chemicals Inc.: *See—*
Dworkin, Robert Dally; and Ejk, Adam Joseph, 4,085,077, Cl. 260-23.0XA.
Russo, Robert V., 4,085,072, Cl. 260-2.5AC.

MacFarland, Charles H., to Scott & Fetzer Company, The. Vacuum cleaner filter bag assembly. 4,084,948, Cl. 55-366.000.

Mackay, Donald A. M.; Witzel, Frank; Dwivedi, Basant K.; and Schoenholz, Daniel, to Life Savers, Inc. Long-lasting flavored chewing gum. 4,085,227, Cl. 426-3.000.

MacKenzie, Burton Thornley, Jr.; and Wilkus, Edward Vincent, to General Electric Company. Polyolefin with phosphorylated novolac and triallyl cyanurate. 4,085,162, Cl. 260-848.000.

MacKenzie, Raymond W.; Wood, Peter; Heinrich, Theodore M.; and Oates, Robert M., to White-Westinghouse Corporation, Inc. Frequency controlled induction cooking apparatus. 4,085,300, Cl. 219-10.49R.

MacMillan Bloedel Limited: *See—*
Brears, John H., 4,084,356, Cl. 51-328.000.
Lorenz, Achim R., 4,084,740, Cl. 229-23.00R.

Madarasz, Miklos: *See—*
Laserson, Gregory L.; and Madarasz, Miklos, 4,084,870, Cl. 339-18.00P.

Maddock, James W.: *See—*
Teter, Robert D.; Maddock, James W.; and Rothers, Paul L., 4,084,439, Cl. 73-718.000.

Madzay, Delbert R.: *See—*
Washnock, Robert S.; and Madzay, Delbert R., 4,084,813, Cl. 272-106.000.

Maeda, Keisuke; and Yamanaka, Akira, to Minolta Camera Kabushiki Kaisha. Photoflash mounting automatic light control camera. 4,085,410, Cl. 354-21.000.

Maeda, Takeshi: *See—*
Tsunoda, Yoshito; Maeda, Takeshi; and Oshida, Yoshitada, 4,085,423, Cl. 358-128.000.

Magee, Ramon J.: *See—*
Brown, William E.; Magee, Ramon J.; and McCoy, Dennis R., 4,084,500, Cl. 101-28.000.

Maggioni & C. S.p.A.: *See—*
Carissimi, Massimo; Ravenna, Franco; and Cantarelli, Giorgio, 4,085,223, Cl. 424-278.000.

Mahrer, Francois-Regis. Single-handle mixing valve. 4,084,611, Cl. 137-454.200.

Maier, Bruce R., to Discwasher, Inc. Apparatus for applying lubricating and protective film to phonograph records. 4,084,540, Cl. 118-48.000.

Maillefer, Charles E., to Maillefer S.A. Screw-type plastics extruder. 4,085,461, Cl. 366-90.000.

Maillefer S.A.: *See—*
Maillefer, Charles E., 4,085,461, Cl. 366-90.000.

Maisel, Klaus: *See—*
Ansberg, Chris; and Maisel, Klaus, 4,085,357, Cl. 318-590.000.

Maizlik, David Lvovich: *See—*
Kaminsky, Igor Viktorovich; Shestakov, Vladimir Vladimirovich; Severov, Genrikh Fedorovich; Zaitsev, Aron Iosifovich; Litvinenko, Alexandr Fedorovich; Melnikov, Viktor Vasilievich; Zats, Boris Semenovich; Miropolsky, Mark Usherovich; and Maizlik, David Lvovich, 4,085,051, Cl. 210-333.00R.

Makeev, Boris Anatolievich: *See—*
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivanovich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr Ivanovich; and Pilipenki, Vitaly Alexandrovich, 4,085,025, Cl. 204-224.00M.

Malek, John M. Method for separating liquid and solid products of liquefaction of coal or like carbonaceous materials. 4,085,029, Cl. 208-8.000.

Malkiel, Saul Leon: *See—*
Galuschak, George; and Malkiel, Saul Leon, 4,085,375, Cl. 328-160.000.

Mallams, Alan K.; and Davies, David Huw, to Schering Corporation. Process for preparing 4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitols and novel 1-epimers and 1-N-alkyl derivatives produced thereby; methods for the use of the 1-epimer derivatives as antibacterial agents and compositions useful therefor. 4,085,208, Cl. 424-180.000.

Maness, Dale D.: *See—*
Cull, Neville L.; Pine, Lloyd A.; and Maness, Dale D., 4,085,195, Cl. 423-244.000.

Manley, Alice Jean: *See—*
Lymar, Wasyl; and Manley, Alice Jean, 4,084,290, Cl. 16-96.00R.

Manowitz, Milton: *See—*
Virgilio, Joseph A.; and Manowitz, Milton, 4,085,062, Cl. 252-300.000.

Manring, John M.: *See—*
Krygeris, Algirdas J.; and Manring, John M., 4,085,402, Cl. 340-163.000.

Marathon Oil Company: *See—*
Allred, Victor Dean, 4,084,640, Cl. 166-259.000.

Marceau, J. Arthur; Firminhac, Ralph H.; and Moji, Yukimori, to Boeing Company, The. Method for providing environmentally stable aluminum surfaces for adhesive bonding and product produced. 4,085,012, Cl. 204-38.00A.

Marcel Golay: *See—*
Golay, Marcel J. E., 4,084,574, Cl. 126-270.000.

Margueratt, Oatway, to Seeburn Metal Products Limited. Resiliently four-way tiltable vehicle jack base. 4,084,791, Cl. 254-101.000.

Marion, Sebastino T. Batter training safety jacket. 4,084,264, Cl. 2-2.000.

Marquard, Kurt: *See—*
Bernhard, Horst; and Marquard, Kurt, 4,084,983, Cl. 106-289.000.

Marsh, Lee M., Jr.: *See—*
Zermeno, Alfonso; Marsh, Lee M., Jr.; and Hevezi, James M., 4,085,324, Cl. 250-320.000.

Marshall, Hugh G., to Midland-Ross Corporation. Heat recovery and heat distributing apparatus. 4,084,635, Cl. 165-107.000.

Marsiat, Arthur, to U C B, Societe Anonyme. Process for the preparation of powdered thermosetting compositions based on branched-chain carboxyl group-containing polyesters and epoxy compounds. 4,085,159, Cl. 260-835.000.

Martin, Andre: *See—*
Heyraud, Marc; and Martin, Andre, 4,084,502, Cl. 101-93.290.

Martin, James C.: *See—*
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,085,089, Cl. 260-45.8NT.

Martin, Michael D. Anti-theft device for automobile doors. 4,084,414, Cl. 70-181.000.

Maryland Cup Corporation: *See—*
Epple, Richard R., 4,084,729, Cl. 222-307.000.

Mashimo, Michiya; and Shinada, Hidehiro, to Tokyo Shibaura Electric Co., Ltd. Method for manufacture of lamp bulbs. 4,084,871, Cl. 316-19.000.

Maso-Therm Corporation: *See—*
Piazza, Matthew R., 4,084,362, Cl. 52-309.200.

Massachusetts Institute of Technology: *See—*
Grant, Nicholas J.; and Robinson, Ramon K., 4,084,964, Cl. 75-171.000.

Masuda, Yougoro; and Kawase, Shigeru, to Kanebo Ltd. Toner for electrostatic printing of sheet like materials containing triazine antistatic agent. 4,085,057, Cl. 252-62.10P.

Mathisen, Einar Skau, to International Business Machines Corporation. Drum monochromator. 4,084,909, Cl. 356-188.000.

Matovich, Mitchel J., Jr. Method of forming carton. 4,084,489, Cl. 93-36.800.

Matsubara, Ichiro: *See—*
Shinohara, Katsuhiko; Kuramochi, Yoshinori; Suehiro, Tetsuo; and Matsubara, Ichiro, 4,085,334, Cl. 307-11.000.

Matsuda, Shimpei: *See—*
Nakajima, Fumito; Takeuchi, Masato; Matsuda, Shimpei; Uno, Shigeo; Mori, Toshikatsu; Watanabe, Yoshihisa; and Imanari, Makoto, 4,085,193, Cl. 423-239.000.

Matsudo, Kazuo; Shimomura, Takayoshi; and Kurokawa, Teruo, to Nippon Kokan Kabushiki Kaisha. Enameled cold rolled sheet. 4,084,991, Cl. 148-31.500.

Matsumoto, Masakazu: *See—*
Kitashima, Riichi; Matsumoto, Masakazu; and Tagaki, Shinji, 4,084,473, Cl. 84-1.140.

Matsumoto, Osamu: *See—*
Terajima, Yasuhiko; and Matsumoto, Osamu, 4,084,807, Cl. 271-119.000.

Matsuo, Teruo: *See—*
Yamamoto, Satomi; Yoshii, Masataka; Matsuo, Teruo; and Yokoozi, Teruo, 4,084,959, Cl. 75-53.000.

Matsushita, Takao: *See—*
Ishibashi, Yoshiyuki; Tagami, Eijiro; Higaki, Taiji; and Matsushita, Takao, 4,085,236, Cl. 427-121.000.

Matsushita, Takeshi: *See—*
Aoki, Teruaki; Matsushita, Takeshi; Mifune, Tadayoshi; and Hayashi, Hisao, 4,084,986, Cl. 148-1.500.

Matsuzaka Iron Works, Inc.: *See*—
Nakamura, Masahiko; and Itou, Hidehiko, 4,084,317, Cl. 30-94.000.
Mattes, Bernhard: *See*—
Abend, Karl-Ludwig; Mattes, Bernhard; and Scheyhing, Hans, 4,084,659, Cl. 180-105.00E.
Matthews, Billy H. Collapsible temporary outdoor enclosure. 4,084,599, Cl. 135-4.00R.
Matthews, Richard L.: *See*—
Hightower, James O.; Hamner, James W.; and Matthews, Richard L., 4,084,992, Cl. 149-17.000.
Matthews, Russell Byron; and Hayes, Thomas Edward, to Johnson Controls, Inc. Interlock arrangement for a stack damper control. 4,084,743, Cl. 236-1.00G.
Maximov, Gennady Konstantinovich: *See*—
Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich, 4,084,400, Cl. 57-156.000.
May, Bob. Tooth brush. 4,084,280, Cl. 15-22.00R.
Mayfield, Alfred B. Radial misalignment coupling. 4,084,411, Cl. 64-19.000.
Mazza, Bud: *See*—
Ehernberger, John E.; and Mazza, Bud, 4,084,496, Cl. 100-35.000.
McCallum, John, to Electro-Chlor Corporation. Electrolytic chlorination device. 4,085,028, Cl. 204-269.000.
McCarty, Charles Bruce: *See*—
Murphy, Alan Pearce; Seiden, Paul; Diehl, Francis Louvaine; and McCarty, Charles Bruce, 4,085,052, Cl. 252-8.600.
McCombs, William F.: *See*—
Melrose, Kendrick B.; Kimmel, Gerald E.; and McCombs, William F., 4,084,812, Cl. 272-85.000.
McConnell, Robert B.; and Keuer, Douglas W., to Ashland Oil, Inc. Fatty alkanolamide detergent compositions. 4,085,126, Cl. 260-404.000.
McConnell, Robert G., to Woodward Governor Company. Frequency-to-voltage transducer for speed governor systems or the like. 4,085,373, Cl. 328-141.000.
McConway & Torley Corporation: *See*—
Oshinsky, Frank W.; and Brown, Thomas R., Sr., 4,084,705, Cl. 213-127.000.
McCoy, Dennis R.: *See*—
Brown, William E.; Magee, Ramon J.; and McCoy, Dennis R., 4,084,500, Cl. 101-28.000.
McCoy, John H.; and Sullivan, Paul A., to Hughes Aircraft Company. Hard X-ray and fluorescent X-ray detection of alignment marks for precision mask alignment. 4,085,329, Cl. 250-492.00A.
McDevitt, Robert F., to Penfold, Charles S. Device for obtaining a sample of molten material and deoxidizing element for use therewith. 4,084,441, Cl. 73-425.40R.
McDonald, Charles H. Low viscosity asphalt-rubber paving material. 4,085,078, Cl. 260-28.5AS.
McDonald, James A.: *See*—
Kerwin, Daniel; Zoberis, Walter B.; Grec, John W.; and McDonald, James A., 4,084,501, Cl. 101-76.000.
McEachern, Charles M. Stabilized dental implant. 4,084,318, Cl. 32-10.00A.
McFarland, Douglas. Round bale loading and unrolling machine. 4,084,707, Cl. 214-1.0HA.
McFarland, Robert Henry, to Tappan Company, The. See-through oven door with reticulated heat shield. 4,084,571, Cl. 126-198.000.
McGarry, John James, Sr.; and Jules, Samuel Edward. Apparatus for producing packing rings for fluid systems and the like. 4,084,929, Cl. 425-169.000.
McGarry, John James, Sr.: *See*—
Jules, Samuel Edward; and McGarry, John James, Sr., 4,085,184, Cl. 264-219.000.
McGrath, Laurence R., to Allis-Chalmers Corporation. Arbor assembly for rotary mowers. 4,084,397, Cl. 56-255.000.
McGraw-Edison Company: *See*—
Spotts, Willard; Arrandale, Thomas P.; and Spotts, Glenn R., 4,084,491, Cl. 98-121.00A.
McIntyre, Robert Alfred; and Wolverton, Kenneth Harlan, to Ametek, Inc. Safety double protection device for machines having plural circuit breaker assemblies associated with doffer roller and hand guard. 4,085,303, Cl. 200-61.410.
McKendry, Lennon H., to Dow Chemical Company, The. Substituted aminosulfonylamino pyridine thiocarboxylic acids and derivatives thereof. 4,085,278, Cl. 544-111.000.
McKendry, Lennon H., to Dow Chemical Company, The. Substituted (aminosulfonylamino) pyridine carboxylic acids and derivatives thereof. 4,085,279, Cl. 544-111.000.
McMurtry, David Roberts, to Rolls-Royce Limited; and Renishaw Electrical Limited. Measuring apparatus. 4,084,323, Cl. 33-174.00L.
McNeely, Michael Lee; and Rees, Herbert, to RCA Corporation. Method for producing injection molded and centrally apertured disc records. 4,085,178, Cl. 264-106.000.
Mead Corporation, The: *See*—
Culpepper, Will Lester, 4,084,693, Cl. 206-427.000.
Paranjpe, Suresh C., 4,085,409, Cl. 346-75.000.
Measuregraph Company, The: *See*—
Schwarz, Gail B., 4,084,467, Cl. 83-208.000.
Mechlowitz, Bela: *See*—
Hass, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,084,966, Cl. 96-1.0PS.
Meckler, Gershon. Air conditioning apparatus. 4,084,389, Cl. 62-179.000.
Med General, Inc.: *See*—
Miller, Curtis H., 4,084,595, Cl. 128-422.000.
Medalist Industries, Inc.: *See*—
Fuchs, Alvin J., 4,084,504, Cl. 101-115.000.
Medesha, Alfred L.: *See*—
Kirk, Glenn E.; and Medesha, Alfred L., 4,084,312, Cl. 29-588.000.
Meier, Werner; Hofer, Walter; Haubner, Georg; and Weckenmann, Albert, to Robert Bosch GmbH. Combined on-board remote control energy supply distribution and signaling system, particularly for automotive vehicles. 4,085,403, Cl. 340-168.00R.
Meijer, Roelf Jan: *See*—
Asselman, George Albert Apolonia; Van der AA, Herman Henricus Maria; and Meijer, Roelf Jan, 4,084,376, Cl. 60-523.000.
Mein, Peter G.; and Adolf, Horst R., to Carus Corporation. Process for recovery of potassium from manganate plant wastes. 4,085,191, Cl. 423-208.000.
Meinema, Herbert E. Speed control system for model railroads. 4,085,356, Cl. 318-331.000.
Melancon, Sylvio: *See*—
Neveu, Jean-Louis; and Melancon, Sylvio, 4,084,930, Cl. 425-198.000.
Melnikov, Viktor Vasilievich: *See*—
Kaminsky, Igor Viktorovich; Shestakov, Vladimir Vladimirovich; Severov, Genrikh Fedorovich; Zaitsev, Aron Iosifovich; Litvinenko, Alexandr Fedorovich; Melnikov, Viktor Vasilievich; Zats, Boris Semenovich; Miropolsky, Mark Usherovich; and Maizlik, David Lvovich, 4,085,051, Cl. 210-333.00R.
Melrose, Kendrick B.; Kimmel, Gerald E.; and McCombs, William F., to Game Time, Inc. Playground swing apparatus. 4,084,812, Cl. 272-85.000.
Mercer, Alec Victor; Littlewood, Peter Stuart; Bolton, Ivan Joseph; and Fleck, Fritz, to Sandoz Ltd. 1,3-Diaryl-2-pyrazoline derivatives. 4,085,101, Cl. 260-239.900.
Merck & Co., Inc.: *See*—
Cragoe, Edward J., Jr.; Woltersdorf, Otto W., Jr.; and Hoffman, William F., 4,085,117, Cl. 260-332.20A.
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,085,125, Cl. 260-402.000.
Cragoe, Edward J., Jr.; Woltersdorf, Otto W., Jr.; and Habecker, Charles N., 4,085,211, Cl. 424-250.000.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,085,219, Cl. 424-269.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Bernhard, Horst; and Marquard, Kurt, 4,084,983, Cl. 106-289.000.
Meric, Jean-Paul: *See*—
Peltier, Raymond; and Meric, Jean-Paul, 4,084,339, Cl. 40-560.000.
Merkel, Karl: *See*—
Daumiller, Guenther; Merkel, Karl; Neumayr, Franz; and Schneider, Kurt, 4,085,269, Cl. 544-221.000.
Merrill, Duane F., to General Electric Company. Silicone resins having good thermal stability. 4,085,084, Cl. 260-33.6SB.
Mess, Richard C., to Dayton Sure-Grip & Shore Company, The. Cavity forming plug for coil insert in concrete product. 4,084,780, Cl. 249-59.000.
Met-Pro Systems, Inc.: *See*—
Ellis, Norbert H., 4,085,043, Cl. 210-40.000.
Metallgesellschaft Aktiengesellschaft: *See*—
Ernst, Heinz-Hubert, 4,084,957, Cl. 75-3.000.
Metallurgie Francaise des Poudres-Metafram: *See*—
Yver, Jacques, 4,084,710, Cl. 214-1.0BB.
Metzger, William J., to Midland-Ross Corporation. Car coupler. 4,084,704, Cl. 213-100.00W.
Meyer, Gundolf, to BBC Brown Boveri & Company Limited. Method for producing a stabilized electrical superconductor. 4,084,989, Cl. 148-11.50R.
Meyercord Co., The: *See*—
Kerwin, Daniel; Zoberis, Walter B.; Grec, John W.; and McDonald, James A., 4,084,501, Cl. 101-76.000.
MHz Enterprises, Inc.: *See*—
Barlow, Edson L., 4,085,405, Cl. 343-858.000.
Michael Ebert: *See*—
Reick, Franklin G., 4,085,365, Cl. 325-21.000.
Michaels, Mark Joseph, to Honeywell Information Systems Inc. Fixture for soldering integrated circuit chips to a multilayer substrate. 4,084,315, Cl. 29-740.000.
Michon, Pierre, to Societe d'Etudes de Machines Thermiques. Flexible coupling device. 4,084,410, Cl. 64-12.000.
Midland-Ross Corporation: *See*—
Marshall, Hugh G., 4,084,635, Cl. 165-107.000.
Metzger, William J., 4,084,704, Cl. 213-100.00W.
Mifune, Tadayoshi: *See*—
Aoki, Teruaki; Matsushita, Takeshi; Mifune, Tadayoshi; and Hayashi, Hisao, 4,084,986, Cl. 148-1.500.
Milberger, Ernest C.; Bremer, Noel J.; and Wong, Eunice K. T., to Standard Oil Company, The. Preparation of maleic anhydride from four-carbon hydrocarbons using Ti, P, O, containing catalyst. 4,085,121, Cl. 260-346.750.
Miles, Charles M., to Walters, Paul F. Liquid flow activated switch. 4,085,336, Cl. 307-118.000.
Miles, Roscoe C.; Subrick, Joseph; and Talman, Woods G., to United States Steel Corporation. Water-driven air pumping and dust-suppressing apparatus. 4,084,855, Cl. 299-64.000.
Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Chemically joined, phase separated self-cured hydrophilic thermo-

plastic graft copolymers and their preparation. 4,085,168, Cl. 260-886.000.

Miller, Charles Newell: *See—*
Zenk, George Edward; Johnson, Robert Joseph; and Miller, Charles Newell, 4,085,302, Cl. 200-5.00A.

Miller, Curtis H., to Med General, Inc. Transcutaneous nerve stimulator. 4,084,595, Cl. 128-422.000.

Miller, George Allen; and Carley, Harold Edwin, to Rohm and Haas Company. Preparation and safening effect of 1-substituted imidazole metal salt complexes. 4,085,209, Cl. 424-245.000.

Miller, Harvey R. Throttle trimming device. 4,084,561, Cl. 123-103.00C.

Miller, John A.: *See—*
Dubois, Jacques E.; and Miller, John A., 4,085,443, Cl. 364-900.000.

Miller, John J.: *See—*
Lewis, Sheldon N.; and Miller, John J., 4,085,167, Cl. 260-885.000.

Miller, Norman L.: *See—*
Heckles, John S.; and Miller, Norman L., 4,085,081, Cl. 260-31.40R.

Milliken Research Corporation: *See—*
Klein, Norman E.; and Stewart, William H., Jr., 4,084,615, Cl. 137-624.110.

Mills, Jack F.: *See—*
Schneider, John A.; and Mills, Jack F., 4,085,153, Cl. 260-649.00R.

Milner, Peter James, to Volkswagenwerk Aktiengesellschaft. Wheel suspension for motor vehicles. 4,084,837, Cl. 280-668.000.

Mimoun, Hubert; Thao, Do; and Seree de Rochi, Irenee, to Institut Francais du Petrole. Process for manufacturing carbonyl compounds by oxidation with molecular oxygen of olefinic compounds in liquid phase in the presence of soluble bimetallic catalysts. 4,085,145, Cl. 260-592.000.

Mimura, Yoshiyuki: *See—*
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,351, Cl. 313-486.000.

Minami, Setsuo: *See—*
Hirabayashi, Yoichi; Minami, Setsuo; and Goshima, Takeshi, 4,084,881, Cl. 350-6.800.

Mindick, Leo R.; Bruck, Avraham; Inbar, Dan; and Koss, Leopold G., to Isomedics, Incorporated. Automatic cell analyzer method. 4,085,006, Cl. 195-103.700.

Mineo, Masatoshi: *See—*
Nakagawa, Kiyoshi; Otaki, Yukio; Mineo, Masatoshi; Aratani, Yoshio; Tatsuoka, Yoshio; and Kusakabe, Haruhiko, 4,084,622, Cl. 139-420.00R.

Miner, Leland P.: *See—*
Kmetz, Richard C.; and Miner, Leland P., 4,085,079, Cl. 260-29.60B.

Minnesota Mining and Manufacturing Company: *See—*
Mitsch, Ronald A.; and Zollinger, Joseph La Mar, 4,085,137, Cl. 260-561.0HL.
Schultz, Thomas E.; and Schuchardt, Peter W., 4,085,314, Cl. 235-487.000.

Minnick, William A., to Itek Corporation. Computer programming system having greatly reduced storage capacity and high speed. 4,085,439, Cl. 364-200.000.

Minolta Camera Kabushiki Kaisha: *See—*
Ikeda, Hiroshi, 4,084,904, Cl. 355-66.000.
Kurita, Takaji, 4,084,898, Cl. 355-8.000.
Maeda, Keisuke; and Yamanaka, Akira, 4,085,410, Cl. 354-21.000.
Muto, Masayuki; Tashima, Norio; Kaieda, Shozo; and Kamimura, Kuniaki, 4,085,408, Cl. 346-75.000.
Ogawa, Masaya; and Murasaki, Hiroshi, 4,084,895, Cl. 355-1.000.
Yamaoka, Sadao; and Arai, Kenichi, 4,084,900, Cl. 355-14.000.

Miquel, Jean: *See—*
Juguin, Bernard; Cosyns, Jean; LePage, Jean-Francois; and Miquel, Jean, 4,085,157, Cl. 260-673.000.

Miropolsky, Mark Usherovich: *See—*
Kaminsky, Igor Viktorovich; Shestakov, Vladimir Vladimirovich; Severov, Genrikh Fedorovich; Zaitsev, Aron Iosifovich; Litvinenko, Alexandr Fedorovich; Melnikov, Viktor Vasilievich; Zats, Boris Semenovich; Miropolsky, Mark Usherovich; and Maizlik, David Lvovich, 4,085,051, Cl. 210-333.00R.

Mirza, Zia I.: *See—*
Green, Norman W.; Duraiswamy, Kandaswamy; Lumpkin, Robert E.; Knell, Everett W.; Mirza, Zia I.; and Winter, Bruce L., 4,085,030, Cl. 208-8.000.

Mishima, Kiyotaka: *See—*
Fukuwatari, Tadashi; Mishima, Kiyotaka; Ichimura, Hiroshi; and Kurihara, Hideaki, 4,085,001, Cl. 162-145.000.

Mison, Petr: *See—*
Rokos, Josef; Kubat, Zdenek; Prochazka, Pavel; Zalabak, Vladislav; Babicka, Josef, deceased; Janecek, Jiri; Nohynek, Miroslav; and Mison, Petr, 4,085,206, Cl. 424-131.000.

Misumi, Teruyuki; Miyaji, Toshio; and Kasai, Masao, to Asahi Kasei Kogyo Kabushiki Kaisha. Solid-fluid contacting process. 4,085,042, Cl. 210-33.000.

Mithoff, Oliver M. Motorcycle safety light. 4,085,317, Cl. 362-72.000.

Mitsch, Ronald A.; and Zollinger, Joseph La Mar, to Minnesota Mining and Manufacturing Company. Poly(perfluoroalkylene oxide) derivatives. 4,085,137, Cl. 260-561.0HL.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Yasuoka, Akihiko; and Shibata, Hiroshi, 4,084,311, Cl. 29-571.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Nakano, Tatsuya; Yasuda, Kazuyoshi; and Miwa, Takeshi, 4,084,760, Cl. 242-18.00A.

Mitsubishi Petrochemical Co. Ltd.: *See—*
Nakajima, Fumito; Takeuchi, Masato; Matsuda, Shimpei; Uno, Shigeo; Mori, Toshikatsu; Watanabe, Yoshihisa; and Imanari, Makoto, 4,085,193, Cl. 423-239.000.

Mitsubishi Precision Co., Ltd.: *See—*
Kumazawa, Toshiharu, 4,084,934, Cl. 431-189.000.

Mitsui Engineering & Shipbuilding Co., Ltd.: *See—*
Itani, Mituo; Kawashima, Hiroyuki; Inoue, Takasuke; and Muruyama, Mikio, 4,084,528, Cl. 114-45.000.

Mitsui Petrochemical Industries Ltd.: *See—*
Toyota, Akinori; Odawara, Kiyoshi; and Kashiwa, Norio, 4,085,276, Cl. 526-122.000.

Mittenzwei, Hellmut: *See—*
Wacker, Adolf; Wacker, Dorthe; Pohler, Klaus; and Mittenzwei, Hellmut, 4,085,204, Cl. 424-101.000.

Mittenzwei, Helmut: *See—*
Wacker, Adolf; Wacker, Dorthe; Pohler, Klaus; and Mittenzwei, Hellmut, 4,085,204, Cl. 424-101.000.

Mittleman, Herbert, to Baxter Travenol Laboratories, Inc. Fluid transfer device. 4,084,606, Cl. 137-102.000.

Mituhara, Toshihiko: *See—*
Kanbara, Takahiro; and Mituhara, Toshihiko, 4,084,463, Cl. 82-53.100.

Miura, Chiaki: *See—*
Kamada, Hidemoto; Miura, Chiaki; and Kano, Etsuo, 4,085,234, Cl. 426-618.000.

Miura, Mitsuo: *See—*
Kukino, Yoshinori; Miura, Mitsuo; and Aoyagi, Hayao, 4,084,383, Cl. 61-36.00R.

Miwa, Takeshi: *See—*
Nakano, Tatsuya; Yasuda, Kazuyoshi; and Miwa, Takeshi, 4,084,760, Cl. 242-18.00A.

Miyaji, Toshio: *See—*
Misumi, Teruyuki; Miyaji, Toshio; and Kasai, Masao, 4,085,042, Cl. 210-33.000.

Miyamoto, Yoji. Protective cover for spectacle joint. 4,084,888, Cl. 351-97.000.

Miyata, Shigeo; Hirose, Toru; and Iizima, Noriko, to Kyowa Chemical Industry Co., Ltd. Fire-retarding thermoplastic resin composition. 4,085,088, Cl. 260-45.70R.

Miyazaki, Mitsumasa: *See—*
Mizuno, Shioji; Ishikawa, Ryoichi; and Miyazaki, Mitsumasa, 4,085,086, Cl. 260-40.0TN.

Miyazawa, Takeshi: *See—*
Sato, Kazunobu; Suzuki, Takanori; Kobayashi, Tadataka; and Miyazawa, Takeshi, 4,084,568, Cl. 123-182.000.

Mizuno, Minesilo: *See—*
Kawakami, Takajiro; Mizuno, Minesilo; Okushi, Akira; and Yasuda, Michio, 4,085,237, Cl. 427-150.000.

Mizuno, Shioji; Ishikawa, Ryoichi; and Miyazaki, Mitsumasa, to Dainippon Ink and Chemicals, Inc. Process for preparing flame retardant thermoplastic polyesters. 4,085,086, Cl. 260-40.0TN.

Mizutani, Yutaka; and Aoki, Takashi, to Kensetsu Kikai Chosa Kabushiki Kaisha. Vibrator equipped grab bucket. 4,084,336, Cl. 37-184.000.

Mobil Oil Corporation: *See—*
Frilette, Vincent J.; and Rubin, Mae K., 4,085,156, Cl. 260-671.00R.

Moehlenpah, Walter G. Apparatus for fabricating wood structures. 4,084,499, Cl. 100-231.000.

Moeller, Wolfgang W. Electric drill multi-functional apparatus. 4,085,337, Cl. 307-115.000.

Moertel, George B., to Textron Inc. Method of manufacture of oriented slide fastening element. 4,084,296, Cl. 24-205.130.

Mogerlein, Heinrich; and Moser, Werner, to Fa. J. N. Eberle & Cie. GmbH. Device for winding up a belt or web. 4,084,764, Cl. 242-107.000.

Mogi, Takao; Morita, Koji; and Okada, Hisao, to Sony Corporation. Automatically tuned memory television channel selecting apparatus. 4,085,371, Cl. 325-464.000.

Mogi, Takao; and Okada, Hisao, to Sony Corporation. Channel selecting apparatus for a television receiver with an electronic tuner. 4,085,372, Cl. 325-464.000.

Mohrbacker, William J.; and Thayer, Earl C., to Rexnord Inc. Castered load transfer axle stabilizer. 4,084,833, Cl. 280-81.00A.

Moineau, Hubert J., to Automatic Specialties, Inc. Method of fabricating a pot hanger. 4,084,624, Cl. 140-80.000.

Moineau, Hubert J., to Automatic Specialties, Inc. Pot hanger. 4,084,779, Cl. 248-318.000.

Moji, Yukimori: *See—*
Marceau, J. Arthur; Firminhac, Ralph H.; and Moji, Yukimori, 4,085,012, Cl. 204-38.00A.

Molnar, Frank. Multi-purpose vehicle service hoist. 4,084,790, Cl. 254-90.000.

Molycorp, Inc.: *See—*
Kay, D. Alan R.; and Wilson, William G., 4,084,960, Cl. 75-58.000.

Mommeja, Patrick F.: *See—*
Laignel, Raymond A.; and Mommeja, Patrick F., 4,084,608, Cl. 137-316.000.

Monsanto Company: *See—*
Elbert, Donald Lee, 4,085,080, Cl. 260-31.20N.
Franz, John E., 4,084,953, Cl. 71-86.000.
Gambell, James W.; and Tinker, H. Burnham, 4,085,275, Cl. 560-130.000.
Hahn, Frank J.; and Santer, James O., 4,085,242, Cl. 427-385.00R.
Kmetz, Richard C.; and Miner, Leland P., 4,085,079, Cl. 260-29.60B.

Montclair Research Corporation: *See—*
Grossman, Harold, 4,084,596, Cl. 131-17.00R.

Monte, George Leendert Adriaan, to U.S. Philips Corporation. X-ray examining device. 4,085,328, Cl. 250-416.0TV.

Mooi, John: *See—*
Gallagher, James P.; and Mooi, John, 4,085,068, Cl. 252-455.00R.

Moore, Alvin Edward. Light-weight, insulated, can-comprising construction member. 4,084,363, Cl. 52-309.400.

Morgardshammar Aktiebolag: *See—*
Karlberger, Walter Johann, 4,084,421, Cl. 72-231.000.
Karlberger, Walter Johann, 4,084,797, Cl. 266-106.000.

Mori, Koh: *See—*
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, 4,085,090, Cl. 260-49.000.

Mori, Toshikatsu: *See—*
Nakajima, Fumito; Takeuchi, Masato; Matsuda, Shimpei; Uno, Shigeo; Mori, Toshikatsu; Watanabe, Yoshihisa; and Imanari, Makoto, 4,085,193, Cl. 423-239.000.

Morinaga, Tsuyoshi: *See—*
Takahashi, Katuhiko; Arimoto, Kyozo; Arai, Yoshiyuki; Morinaga, Tsuyoshi; and Nakazawa, Yuji, 4,085,274, Cl. 560-176.000.

Morishita, Seishi, to Toyo Umpanki Co., Ltd. Inching control system for industrial vehicles. 4,084,670, Cl. 192-13.00R.

Morita, Kaneji: *See—*
Shimoiizaka, Junzo; Konosu, Akira; Hayashi, Yuzo; Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, 4,084,755, Cl. 241-95.000.

Morita, Koji: *See—*
Mogi, Takao; Morita, Koji; and Okada, Hisao, 4,085,371, Cl. 325-464.000.

Moritz, Werner, to Kabelschlepp Gesellschaft mit beschrankter Haftung. Apparatus for fastening a covering on an energy conducting chain. 4,084,370, Cl. 59-78.100.

Morningstar, Marion George; and Bowles, Robert Lewis, to B. F. Goodrich Company, The. Process for the suspension polymerization of vinyl chloride with low polymer buildup. 4,085,267, Cl. 526-74.000.

Morris, Edwin, Jr.; and Toler, David F., to United Technologies Corporation. Means of attaching a seal to a disk. 4,084,919, Cl. 415-136.000.

Morris, Kenneth John; and Salovsky, Jan, to Olin Energy Systems, Ltd. Isostatic mold apparatus. 4,084,932, Cl. 425-405.00H.

Morton-Norwich Products, Inc.: *See—*
Pelosi, Stanford S., Jr., 4,085,118, Cl. 260-343.600.

Moscaritolo, Anthony Michael: *See—*
Ahn, Byong-Ho; Gilinson, Philip J., Jr.; and Moscaritolo, Anthony Michael, 4,084,428, Cl. 73-117.300.

Moscrip, William Matthew, to United States of America, Navy. Light-weight small craft gun system. 4,084,480, Cl. 89-42.00B.

Moser, Werner: *See—*
Mogerlein, Heinrich; and Moser, Werner, 4,084,764, Cl. 242-107.000.

Moses, Robert W., to Peterson Machine Tool, Inc. Valve cleaning machine. 4,084,357, Cl. 51-419.000.

Mosior, Donald J., to American Hospital Supply Corporation. Surgical instrument and handle assembly therefor. 4,084,594, Cl. 128-311.000.

Moss, James R., to Computer Peripherals, Inc. Ribbon tracking system. 4,084,683, Cl. 197-170.000.

Motokawa, Shoichi: *See—*
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R.

Motoki, Hideo, to Shikoku Kaken Kogyo Kabushiki Kaisha. Process for preparing a foamed body. 4,084,980, Cl. 106-75.000.

Motorola, Inc.: *See—*
Kirk, Glenn E.; and Medesha, Alfred L., 4,084,312, Cl. 29-588.000.
Reinert, John Robert, 4,085,341, Cl. 307-247.00R.
Ryan, Carl R.; and Stilwell, James H., 4,085,378, Cl. 329-124.000.

Motyka, Jerry J.; and Lewis, Donald J., to Tobias, Lamar. Token operated ice dispenser. 4,084,676, Cl. 194-87.000.

Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich. Method of making self-twisted fibrous product from at least two strands. 4,084,400, Cl. 57-156.000.

Moyer, Norman E., to Hughes Aircraft Company. Timing circuit for display sequencing in a digital wristwatch. 4,084,402, Cl. 58-23.00R.

Moyer, Norman E.: *See—*
Belardi, Richard J.; Moyer, Norman E.; and Ho, Ernest C., 4,084,401, Cl. 58-4.00A.

Mueller, Heinrich: *See—*
Schmachtel, Florian; and Mueller, Heinrich, 4,084,390, Cl. 53-112.00A.

Mueller, Ruediger: *See—*
Goser, Karl; and Mueller, Ruediger, 4,085,339, Cl. 307-213.000.

Muhlfelder, Ludwig, to RCA Corporation. Roll/yaw body steering for momentum biased spacecraft. 4,084,772, Cl. 244-165.000.

Muhlfelder, Ludwig: *See—*
Schmidt, George Edwin, Jr.; and Muhlfelder, Ludwig, 4,084,773, Cl. 244-166.000.

Munier, Bernard, to Thomson-CSF. Electroacoustic device for reading an optical image in two dimensions. 4,085,348, Cl. 310-313.000.

Munkel, Hanns-Wilfried: *See—*
Kohler, Gisbert; Munkel, Hanns-Wilfried; Pohl, Hubert; Sommer, Walter; and Wendel, Gunther, 4,084,860, Cl. 308-15.000.

Muntz, Eric P.: *See—*
Hamel, Bernard B.; Muntz, Eric P.; and Scott, Paul B., 4,084,943, Cl. 55-17.000.

Murasaki, Hiroshi: *See—*
Ogawa, Masaya; and Murasaki, Hiroshi, 4,084,895, Cl. 355-1.000.

Murase, Shunichi: *See—*
Aoki, Mitsuo; Watanabe, Kazuhiko; Murase, Shunichi; and Hiraoka, Isao, 4,085,207, Cl. 424-180.000.

Murdock Machine & Engineering Company of Texas: *See—*
Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., Jr., 4,084,785, Cl. 251-172.000.

Murphy, Alan Pearce; Seiden, Paul; Diehl, Francis Louvaine; and McCarty, Charles Bruce, to Procter & Gamble Company, The. Fabric treatment compositions. 4,085,052, Cl. 252-8.600.

Murphy, Harry C., Jr.; and Stauffer, Harry C., to Gulf Research & Development Company. Process of hydrodesulfurization and separate solvent extraction of distillate and deasphalted residual lubricating oil fractions. 4,085,036, Cl. 208-212.000.

Murphy, Ian R.: *See—*
Bull, Jeffrey Lawrence; Murphy, Tanya Ellen; and Gibson, Laurence Ernest (said Tanya Ellen Murphy assors. to), 4,084,859, Cl. 303-106.000.

Murphy, Milo E., to Custom-Bilt. Tunable expansion chamber for internal combustion engines. 4,084,658, Cl. 181-241.000.

Murphy, Tanya Ellen: *See—*
Bull, Jeffrey Lawrence; Murphy, Tanya Ellen; and Gibson, Laurence Ernest, 4,084,859, Cl. 303-106.000.

Muruyama, Mikio: *See—*
Itani, Mituo; Kawashima, Hiroyuki; Inoue, Takasuke; and Muruyama, Mikio, 4,084,528, Cl. 114-45.000.

Muto, Masayuki; Tashima, Norio; Kaieda, Shozo; and Kamimura, Kuniaki, to Minolta Camera Kabushiki Kaisha. Liquid jet recording apparatus. 4,085,408, Cl. 346-75.000.

Myers, Bruce B., to Bendix Corporation, The. Method of constructing a valve. 4,084,304, Cl. 29-157.10R.

Myers, Robert F., to Pfizer Inc. 4-Substituted amino derivatives of oleandomycin. 4,085,119, Cl. 260-343.000.

N L Industries, Inc.: *See—*
Erneta, Modesto, 4,085,198, Cl. 423-498.000.

Naarding, Willem J., to Hergeth KG Maschinenfabrik und Apparatebau. Method and apparatus for quantitatively and qualitatively determining the dust content of fibrous material. 4,084,433, Cl. 73-159.000.

Nack, Herman; and Liu, Ke-Tien, to Battelle Development Corporation. Operating method. 4,084,545, Cl. 122-4.00D.

Nagahama, Yasuo, to Nippon Gakki Seizo Kabushiki Kaisha. Generator for generating control voltage waveform. 4,085,374, Cl. 328-143.000.

Nagamura, Fumitaka. Data storage and retrieval system. 4,085,446, Cl. 364-900.000.

Nagaoka, Shigenori: *See—*
Hagiwara, Tatsuo; Nomiyama, Fumihiro; and Nagaoka, Shigenori, 4,084,752, Cl. 241-30.000.

Nagayama, Keiji: *See—*
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R.

Naimo, Jean-Pierre, to A.T.M.B. Societe Anonyme. Guide rail for sliding panels, doors and the like. 4,084,289, Cl. 16-96.00R.

Nakagawa, Kiyoshi; Otaki, Yukio; Mineo, Masatoshi; Aratani, Yoshio; Tatsuoka, Yoshio; and Kusakabe, Haruhiko, to Toray Industries Inc. Textured polyester yarns and process for the production thereof. 4,084,622, Cl. 139-420.00R.

Nakagawa, Koji: *See—*
Higuchi, Yoshiro; Harada, Yutaka; Sato, Toshio; Nakagawa, Koji; Kawaguchi, Iwazo; and Kasahara, Yasushi, 4,084,981, Cl. 106-96.000.

Nakai, Setsuo; Kita, Shinichiro; Hiki, Fumihiko; and Shimizu, Masayuki, to Sumitomo Chemical Company, Limited. Process for the high pressure production of polyethylene. 4,085,266, Cl. 526-65.000.

Nakajima, Fumito; Takeuchi, Masato; Matsuda, Shimpei; Uno, Shigeo; Mori, Toshikatsu; Watanabe, Yoshihisa; and Imanari, Makoto, to Mitsubishi Petrochemical Co. Ltd.; Hitachi, Ltd.; and Babcock-Hitachi Kabushiki Kaisha. Catalytic process for reducing nitrogen oxides to nitrogen. 4,085,193, Cl. 423-239.000.

Nakajima, Fumito: *See—*
Otani, Kouji; Sawa, Toshio; Kuroda, Osamu; Nakajima, Fumito; and Iijima, Tokuji, deceased, 4,085,194, Cl. 423-242.000.

Nakajima, Yasuo: *See—*
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; Sugihara, Kunihiko; and Takagi, Yasuo, 4,084,372, Cl. 60-278.000.

Nakamura, Koichi; and Shimamura, Isao, to Fuji Photo Film Co., Ltd. Color photographic process. 4,084,969, Cl. 96-60.00R.

Nakamura, Masahiko; and Itou, Hidehiko, to Matsuzaka Iron Works, Inc. Shearing tool for synthetic resin tubes. 4,084,317, Cl. 30-94.000.

Nakanishi, Fumio: *See—*
Niwata, Tatuji; Okubo, Kazutomo; Nakanishi, Fumio; and Yamada, Masanori, 4,085,422, Cl. 358-118.000.

Nakano, Tatsuya; Yasuda, Kazuyoshi; and Miwa, Takeshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Transferring yarn in an automatic winder. 4,084,760, Cl. 242-18.00A.

Nakase, Takamichi: *See—*
Hattori, Tadashi; and Nakase, Takamichi, 4,084,558, Cl. 123-97.00B.
Hattori, Tadashi; Iwata, Toshiharu; and Nakase, Takamichi, 4,084,560, Cl. 123-119.0EC.
Hattori, Tadashi; Yamaguchi, Hiroaki; and Nakase, Takamichi, 4,084,563, Cl. 123-119.0EC.

Nakatani, Mitsuo, to Hitachi, Ltd. Metal mask for use in screen printing. 4,084,506, Cl. 101-127.000.

Nakayama, Fukuzo, to Japan Non-Slip Pavement Co., Inc. Method of manufacturing non-slip pavement blocks. 4,085,176, Cl. 264-82.000.

Nakayama, Shinpei: *See—*
Saito, Fumio; Yamai, Fumito; Beppu, Yositugu; and Nakayama, Shinpei, 4,085,169, Cl. 260-886.000.

Nakazawa, Yuji: *See—*
Takahashi, Katuhiko; Arimoto, Kyozo; Arai, Yoshiyuki; Morinaga, Tsuyoshi; and Nakazawa, Yuji, 4,085,274, Cl. 560-176.000.

Nanbu, Junji: *See—*
Ariga, Nagao; Nanbu, Junji; and Oikawa, Hiroshi, 4,085,018, Cl. 204-159.150.

Nannen, William G. Working vehicle. 4,084,395, Cl. 56-15.400.

Narita, Kinichiro: *See—*
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,351, Cl. 313-486.000.

Narushima, Hiroshi; and Hotta, Takayosi, to Okuma Machinery Works, Ltd. Automatic tool changing method and apparatus. 4,084,300, Cl. 29-26.00A.

National Can Corporation: *See—*
Sauer, Donald G., 4,085,177, Cl. 264-89.000.

National Casein of New Jersey: *See—*
Woo, Ming Cho, 4,085,074, Cl. 260-17.00R.

National Machinery Company, The: *See—*
Allebach, Gene E.; and Wisebaker, Robert E., 4,084,278, Cl. 10-76.00T.

National Research Development Corporation: *See—*
Fray, Derek John, 4,085,023, Cl. 204-195.00S.

National Semiconductor Corporation: *See—*
Ochi, Sam S., 4,085,417, Cl. 357-43.000.

NCR Canada Ltd. - NCR Canada Ltee: *See—*
Fairey, Brian M.; and Plasschaert, Paulus E., 4,084,682, Cl. 197-168.000.

Nelson, Lorne W., to Honeywell Inc. Refrigeration control system for optimum demand operation. 4,084,388, Cl. 62-152.000.

Nelson, Norman A., to Upjohn Company, The. 3(1'-Hydroxy-2'-hydroxyethyl)-4-hydroxy-6-silyloxyhexanoic acid 4α-lactone derivatives. 4,085,120, Cl. 260-343.600.

Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-PGE and PGD analogs. 4,085,139, Cl. 260-563.00R.

Nelson, Terence John: *See—*
Bobeck, Andrew Henry; Bonyhard, Peter Istvan; and Nelson, Terence John, 4,085,453, Cl. 365-8.000.

Neptune Water Meter Company: *See—*
Kullmann, Donald J.; Seltzer, Daniel A.; and Kirby, Raymond L., 4,085,287, Cl. 178-66.00R.

Neumayr, Franz: *See—*
Daumiller, Guenther; Merkel, Karl; Neumayr, Franz; and Schneider, Kurt, 4,085,269, Cl. 544-221.000.

Neveu, Jean-Louis; and Melancon, Sylvio, to Melancon, Sylvio; and Agence Nationale de Valorisation de la Recherche. Apparatus for the production of a yarn having a potential crimp. 4,084,930, Cl. 425-198.000.

New York Institute of Technology: *See—*
Nigam, Anant K., 4,084,582, Cl. 128-2.00V.

Newby, Jack C. Tire inflation gauge. 4,084,431, Cl. 73-146.200.

Newton, Roger Frank: *See—*
Rhodes, Deryck; and Newton, Roger Frank, 4,085,222, Cl. 424-278.000.

Nezelenov, Sergei Vladimirovich: *See—*
Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich, 4,084,400, Cl. 57-156.000.

Nicewonger, Dwight Harold. Solar heater unit. 4,084,575, Cl. 126-270.000.

Nichols, Richard D. E.: *See—*
Bianchi, John E.; and Nichols, Richard D. E., 4,084,734, Cl. 224-2.00B.

Nicol, William A. Seed dispenser. 4,084,726, Cl. 221-266.000.

Nicolaides, Ernest D.: *See—*
Tinney, Francis John; and Nicolaides, Ernest D., 4,085,096, Cl. 260-112.5LH.

Nidy, Eldon G.: *See—*
Kornis, Gabriel; Nidy, Eldon G.; Vostral, Henry J.; and Steinhards, Arnolds, deceased, 4,084,955, Cl. 71-92.000.

Niederer, Floyd S., to Otto Niederer Sons, Inc. Egg weighing device. 4,084,698, Cl. 209-121.000.

Nielsen, Hans Borge, to Vald. Henriksen A/S. Apparatus for liquid treatment and drying of bobbins. 4,084,413, Cl. 68-189.000.

Nielsen, Tore Bernt; and Alm, Oddvar, to Dyno Industrier A.S. Aqueous hydrocarbon oil-soluble lignosulphonate explosive composition. 4,084,994, Cl. 149-44.000.

Nigam, Anant K., to New York Institute of Technology. Ultrasonic imaging system. 4,084,582, Cl. 128-2.00V.

Niimi, Koji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with tone generation by recursive calculation. 4,084,472, Cl. 84-1.010.

Nikonets, Leonid Alexeevich: *See—*
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; and Genrikh, Natalia Georgievna, 4,085,338, Cl. 307-147.000.

Nippon Carbon Kabushiki Kaisha: *See—*
Kanemaru, Toyonusuke; Hisatomi, Yukuo; and Nishimoto, Takafumi, 4,084,399, Cl. 57-140.00C.

Nippon Concrete Kogyo Kabushiki Kaisha: *See—*
Okada, Senri, 4,084,782, Cl. 249-135.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Nagahama, Yasuo, 4,085,374, Cl. 328-143.000.
Niimi, Koji, 4,084,472, Cl. 84-1.010.

Nippon Hoso Kyokai: *See—*
Kagami, Akiyasu; Hase, Takashi; Hiraki, Minoru; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,350, Cl. 313-486.000.
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,351, Cl. 313-486.000.

Nippon Kogaku K.K.: *See—*
Ishizaka, Sunao, 4,085,416, Cl. 354-219.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Matsudo, Kazuo; Shimomura, Takayoshi; and Kurokawa, Teruo, 4,084,991, Cl. 148-31.500.

Nippon Oil Company, Limited: *See—*
Otsuki, Yutaka; Imai, Hirosuke; Kaiya, Atsushi; and Horii, Hideo, 4,085,263, Cl. 526-47.000.
Otsuki, Yutaka; Imai, Hirosuke; Kaiya, Atsushi; and Horii, Hideo, 4,085,265, Cl. 526-49.000.
Tsuchiya, Shozo; Hayashi, Hideo; Iida, Kazuyoshi; and Goto, Kiyoshi, 4,085,085, Cl. 260-38.000.

Nippon Otis Elevator Company: *See—*
Tezuka, Minoru; and Kito, Yastami, 4,084,662, Cl. 187-29.00R.

Nippon Soken, Inc.: *See—*
Hattori, Tadashi; and Nakase, Takamichi, 4,084,558, Cl. 123-97.00B.
Hattori, Tadashi; Iwata, Toshiharu; and Nakase, Takamichi, 4,084,560, Cl. 123-119.0EC.
Hattori, Tadashi; Yamaguchi, Hiroaki; and Nakase, Takamichi, 4,084,563, Cl. 123-119.0EC.
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,084,551, Cl. 123-32.0SP.
Sasakura, Hachiro; and Kanmura, Hitoshi, 4,084,548, Cl. 123-205.000.
Takagi, Shigeru; and Hattori, Yoshiyuki, 4,084,839, Cl. 280-736.000.

Nippon Steel Corporation: *See—*
Yamamoto, Satomi; Yoshii, Masataka; Matsuo, Teruo; and Yokoozi, Teruo, 4,084,959, Cl. 75-53.000.

Nippon Unicar Company Limited: *See—*
Taniguchi, Seiho; Kawasaki, Yoichi; and Sugawara, Shin' Ichi, 4,085,249, Cl. 428-383.000.

Nippondenso Co., Ltd.: *See—*
Hachiga, Takasi, 4,084,567, Cl. 123-148.00E.

Nisenson, Jules: *See—*
Aasen, Torulf F.; Nisenson, Jules; and Pegg, Charles E., 4,084,901, Cl. 355-16.000.

Nishida, Hiroshi: *See—*
Fujiura, Takashi; Tsutsui, Kunio; and Nishida, Hiroshi, 4,084,531, Cl. 114-211.000.

Nishimoto, Takafumi: *See—*
Kanemaru, Toyonusuke; Hisatomi, Yukuo; and Nishimoto, Takafumi, 4,084,399, Cl. 57-140.00C.

Nishimura, Hidetomo: *See—*
Hasegawa, Kunio; Nishimura, Hidetomo; and Yamaguchi, Kiyoshi, 4,085,343, Cl. 310-52.000.

Nissan Motor Company, Limited: *See—*
Handa, Noritoshi, 4,084,634, Cl. 165-9.000.
Tojo, Akio; and Ohnishi, Kimimasa, 4,084,623, Cl. 139-435.000.

Niwata, Tatuji; Okubo, Kazutomo; Nakanishi, Fumio; and Yamada, Masanori, to Hokuryo Denko Co., Ltd. Fee-charging apparatus for television sets. 4,085,422, Cl. 358-118.000.

Noda, Taizo, to Kohshoh Limited. Plastic clip. 4,084,299, Cl. 24-250.000.

Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, to Nippon Soken, Inc. Internal combustion engine. 4,084,551, Cl. 123-32.0SP.

Nohara, Akira; Ishiguro, Toshihiro; and Sanno, Yasushi, to Takeda Chemical Industries, Ltd. Novel chromone derivatives. 4,085,116, Cl. 260-308.00D.

Nohynek, Miroslav: *See—*
Rokos, Josef; Kubat, Zdenek; Prochazka, Pavel; Zalabak, Vladislav; Babicka, Josef, deceased; Janecek, Jiri; Nohynek, Miroslav; and Mison, Petr, 4,085,206, Cl. 424-131.000.

Nomiyama, Fumihiro: *See—*
Hagiwara, Tatsuo; Nomiyama, Fumihiro; and Nagaoka, Shigenori, 4,084,752, Cl. 241-30.000.

Nomura, Masaaki: *See—*
Ishida, Tsutomu; Nomura, Masaaki; and Ohta, Wasaburo, 4,084,899, Cl. 355-14.000.

Noordanus, Johannes: *See*—
van der Poel, Johannes; and Noordanus, Johannes, 4,085,370, Cl. 325-348.000.
Noranda Mines Limited: *See*—
Janjua, Mohammad Barakat Ilahi; Claessens, Pierre L.; and Loutfy, Raouf O., 4,085,016, Cl. 204-104.000.
Nordischer Maschinenbau Rud. Baader: *See*—
Dohrendorf, Franz, 4,084,294, Cl. 17-57.000.
Nordling, Karl I.: *See*—
Walsh, Dale M.; and Nordling, Karl I., 4,085,449, Cl. 364-900.000.
Norgate, Graham: *See*—
Bertram, Robert W.; Norgate, Graham; and Isles, Robert, 4,085,398, Cl. 338-25.000.
North American Galis Company: *See*—
Galis, Alex J., 4,084,751, Cl. 241-25.000.
Norton Company: *See*—
Cox, William H.; and Wisdom, Norvell E., Jr., 4,084,941, Cl. 51-295.000.
Norz, Gerald R. Windmill with cyclically feathering blades. 4,084,921, Cl. 416-17.000.
Nottoli, Le Roi G. Backgammon teaching device. 4,084,331, Cl. 35-5.00R.
Novikov, Jury Nikolaevich: *See*—
Farafontov, Vladimir Ivanovich; Kalashnikov, Yaroslav Alexeevich; Novikov, Jury Nikolaevich; Volpin, Mark Efimovich; Vereschagin, Leonid Fedorovich; and Lysanov, Vladislav Sergeevich, 4,085,196, Cl. 423-446.000.
Numbers, Jody L. Gun sight. 4,084,326, Cl. 33-245.000.
Nuova San Giorgio S.p.A.: *See*—
Piro, Mario, 4,084,759, Cl. 242-18.0PW.
Oates, Robert M.: *See*—
MacKenzie, Raymond W.; Wood, Peter; Heinrich, Theodore M.; and Oates, Robert M., 4,085,300, Cl. 219-10.49R.
O'Brien, Charles J., to Aerojet-General Corporation. Tritiated water treatment process. 4,085,061, Cl. 252-301.10W.
O'Brien, David Frank, to Eastman Kodak Company. Photographic elements containing vesicles of rhodopsin and lipids. 4,084,967, Cl. 96-29.00R.
Occidental Petroleum Corporation: *See*—
Green, Norman W.; Duraiswamy, Kandaswamy; Lumpkin, Robert E.; Knell, Everett W.; Mirza, Zia I.; and Winter, Bruce L., 4,085,030, Cl. 208-8.000.
Ochi, Sam S., to National Semiconductor Corporation. JFET switch circuit and structure. 4,085,417, Cl. 357-43.000.
Odaka, Fumio; Fujii, Yoshihiko; and Iseda, Yutaka, to Bridgestone Tire Co., Ltd. Polyurethane composition. 4,085,165, Cl. 260-859.00R.
Odawara, Kiyoshi: *See*—
Toyota, Akinori; Odawara, Kiyoshi; and Kashiwa, Norio, 4,085,276, Cl. 526-122.000.
Odle, Herbert Arnold; Ruehl, Donald Edward; Shadwick, Jan; Sullivan, Daryl Dean; and Welty, Dale Eugene, to Johns-Manville Corporation. Luminaire and luminaire reflector for use in an off-the roadway lighting arrangement. 4,085,318, Cl. 362-217.000.
Oe, Takanori; and Tsuruda, Mineo, to Yoshitomi Pharmaceutical Industries, Ltd. 1H-tetrazole derivatives. 4,085,111, Cl. 260-296.00H.
Officine Savio, S.p.A.: *See*—
Speranzin, Claudio, 4,084,766, Cl. 242-129.620.
Ogawa, Masaya; and Murasaki, Hiroshi, to Minolta Camera Kabushiki Kaisha. Projection device for a photocopying machine. 4,084,895, Cl. 355-1.000.
Ogihara, Masuo: *See*—
Kitai, Kiyoshi; Ogihara, Masuo; Sato, Kozo; Shinozaki, Nobuo; Takazawa, Yuzuru; and Seki, Yoichi, 4,084,403, Cl. 58-23.00D.
Ohlinger, Manfred; Wagner, Gerhard; Honecker, Gerhard; Stritzinger, Heinz; and Spaehn, Heinz, to BASF Aktiengesellschaft. Reducing corrosion in reactors used for the synthesis of chromium dioxide. 4,084,936, Cl. 21-2.70R.
Ohnishi, Kimimasa: *See*—
Tojo, Akio; and Ohnishi, Kimimasa, 4,084,623, Cl. 139-435.000.
Ohsako, Kyoichi; and Yamashita, Katusuke, to Laurel Bank Machine Co., Ltd. Memory device with error prevention of data during power failure. 4,085,311, Cl. 235-92.0FP.
Ohta, Wasaburo: *See*—
Ishida, Tsutomu; Nomura, Masaaki; and Ohta, Wasaburo, 4,084,899, Cl. 355-14.000.
Ohtake, Masaichi: *See*—
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R..
Oikawa, Hiroshi: *See*—
Ariga, Nagao; Nanbu, Junji; and Oikawa, Hiroshi, 4,085,018, Cl. 204-159.150.
Oil States Rubber Company: *See*—
Landers, Don B.; and Brock, Robert K., 4,084,801, Cl. 267-140.000.
Oji-Yuka Synthetic Paper Sales Co., Ltd.: *See*—
Yamagata, Ichiki, 4,084,689, Cl. 206-280.000.
Okada, Hisao: *See*—
Mogi, Takao; Morita, Koji; and Okada, Hisao, 4,085,371, Cl. 325-464.000.
Mogi, Takao; and Okada, Hisao, 4,085,372, Cl. 325-464.000.
Okada, Ryuzo; and Okamoto, Yoshikazu, to Rank Xerox, Ltd. Positioning apparatus for magnetic brush developing device. 4,084,542, Cl. 118-658.000.
Okada, Senri, to Nippon Concrete Kogyo Kabushiki Kaisha. Split mould for making tapered concrete poles. 4,084,782, Cl. 249-135.000.
Okamoto, Arimichi: *See*—
Ishikawa, Tatsuo; Yamashita, Keiji; Okubo, Norio; Sakashita, Masahira; Okamoto, Arimichi; and Kusunose, Tetsuhiro, 4,085,174, Cl. 264-49.000.
Okamoto, Yoshikazu: *See*—
Okada, Ryuzo; and Okamoto, Yoshikazu, 4,084,542, Cl. 118-658.000.
Okubo, Kazutomo: *See*—
Niwata, Tatuji; Okubo, Kazutomo; Nakanishi, Fumio; and Yamada, Masanori, 4,085,422, Cl. 358-118.000.
Okubo, Norio: *See*—
Ishikawa, Tatsuo; Yamashita, Keiji; Okubo, Norio; Sakashita, Masahira; Okamoto, Arimichi; and Kusunose, Tetsuhiro, 4,085,174, Cl. 264-49.000.
Okuma Machinery Works, Ltd.: *See*—
Narushima, Hiroshi; and Hotta, Takayosi, 4,084,300, Cl. 29-26.00A.
Okumura, Koji, to Xerox Corporation. Electrical information storage system. 4,085,455, Cl. 365-112.000.
Okushi, Akira: *See*—
Kawakami, Takajiro; Mizuno, Minesilo; Okushi, Akira; and Yasuda, Michio, 4,085,237, Cl. 427-150.000.
Okuzawa, Tugio: *See*—
Kaneko, Tamaki; and Okuzawa, Tugio, 4,084,508, Cl. 101-142.000.
Olin Energy Systems, Ltd.: *See*—
Morris, Kenneth John; and Salovsky, Jan, 4,084,932, Cl. 425-405.00H.
Olson, Knute E., Jr. Jet launch toy. 4,084,820, Cl. 273-96.00R.
Olszewski, Jerzy A.; and Jachimowicz, Ludwig, to General Cable Corporation. D-shield telephone cables. 4,085,284, Cl. 174-36.000.
Olympus Optical Co., Ltd.: *See*—
Ito, Hiromi, 4,084,541, Cl. 118-421.000.
Ongaro Dynamics, Ltd.: *See*—
Ongaro, Theodore, 4,084,350, Cl. 51-106.00R.
Ongaro, Theodore, to Ongaro Dynamics, Ltd. Correction of rubber tires for forces generated by dynamic non-uniformities. 4,084,350, Cl. 51-106.00R.
Optarac Corporation: *See*—
Dunchock, Richard S., 4,084,700, Cl. 211-41.000.
Optel Corporation: *See*—
Witzke, Horst, 4,085,257, Cl. 429-111.000.
OPTI Patent- Forschungs- und Fabrikations-AG: *See*—
Frohlich, Alfons; and Hochlehnert, Franz, 4,084,297, Cl. 24-205.13C.
Oravitz, James L., Jr.: *See*—
Gorman, Harold R.; Dahlberg, John R.; and Oravitz, James L., Jr., 4,084,737, Cl. 225-2.000.
Osborne, Joseph Cyril: *See*—
Goodrich, Lewis Charles; Holt, Theron Robert; Osborne, Joseph Cyril; Pusey, Donald Kirk; and Roxlo, James William, 4,084,434, Cl. 73-160.000.
Oshida, Yoshitada: *See*—
Tsunoda, Yoshito; Maeda, Takeshi; and Oshida, Yoshitada, 4,085,423, Cl. 358-128.000.
Oshinsky, Frank W.; and Brown, Thomas R., Sr., to McConway & Torley Corporation. Lock for a railway vehicle coupler. 4,084,705, Cl. 213-127.000.
Osinskaya, Tamila Iosifovna: *See*—
Shklyanov, Leonid Pavlovich; Baranov, Vladimir Nikitich; Koltyrev, Dmitry Nikiforovich; Lifshits, Viktor Senderovich; Polyansky, Ivan Ivanovich; and Osinskaya, Tamila Iosifovna, 4,084,484, Cl. 90-24.00C.
Otaki, Yukio: *See*—
Nakagawa, Kiyoshi; Otaki, Yukio; Mineo, Masatoshi; Aratani, Yoshio; Tatsuoka, Yoshio; and Kusakabe, Haruhiko, 4,084,622, Cl. 139-420.00R.
Otani, Kouji; Sawa, Toshio; Kuroda, Osamu; Nakajima, Fumito; and Iijima, Tokuji, deceased (by Iijima, Yoshie, administratrix), to Hitachi, Ltd. Waste flue gas desulfurizing method. 4,085,194, Cl. 423-242.000.
Otrhalek, Joseph V.; Gomes, Gilbert Stephen; and Elfers, Gunther Hans, to BASF Wyandotte Corporation. Method of recovering tall-oil soap from kraft black liquor. 4,085,000, Cl. 162-16.000.
Otsuka Pharmaceutical Factory, Inc.: *See*—
Aoki, Mitsuo; Watanabe, Kazuhiko; Murase, Shunichi; and Hiraoka, Isao, 4,085,207, Cl. 424-180.000.
Otsuki, Yutaka; Imai, Hirosuke; Kaiya, Atsushi; and Horii, Hideo, to Nippon Oil Company, Limited. Process for isomerization of lower polymers of butadiene. 4,085,263, Cl. 526-47.000.
Otsuki, Yutaka; Imai, Hirosuke; Kaiya, Atsushi; and Horii, Hideo, to Nippon Oil Company, Limited. Process for isomerization of lower polymers of butadiene. 4,085,265, Cl. 526-49.000.
Ottawa Roof Truss, Inc.: *See*—
Weaver, Austin S., 4,084,498, Cl. 100-210.000.
Otto Niederer Sons, Inc.: *See*—
Niederer, Floyd S., 4,084,698, Cl. 209-121.000.
Oude Alink, Bernardus A., to Petrolite Corporation. Hexahydropyrimidines. 4,085,105, Cl. 260-251.00A.
Outlaw, Homer G. Radial engine. 4,084,555, Cl. 123-58.0AA.
Ovation Instruments, Inc.: *See*—
Rickard, James H., 4,084,476, Cl. 84-293.000.
Owens-Illinois, Inc.: *See*—
Doherty, Thomas E., 4,084,490, Cl. 93-55.10R.
Fein, Michael E.; and Salisbury, Charles W., 4,085,385, Cl. 331-94.50D.
Pei, Yu Kun, 4,084,576, Cl. 126-270.000.

Ozaki, Toshio: *See—*
Hayashi, Toshiaki; Sugiura, Hiroshi; Ozaki, Toshio; Sugimoto, Eiji; and Banno, Yukio, 4,084,841, Cl. 280-745.000.
P. R. Mallory & Co. Inc.: *See—*
Dey, Arabinda N., 4,085,256, Cl. 429-48.000.
PACCAR Inc.: *See—*
Trexler, Ray W., Jr.; and Teodoro, Donald J., 4,084,276, Cl. 5-118.000.
Pace, Salvatore J., to Technicon Instruments Corporation. Methods for determination of enzyme reactions. 4,085,009, Cl. 204-1.00T.
Package Machinery Company: *See—*
Schoppee, Lawrence W., 4,084,509, Cl. 101-261.000.
Packard, Newton R.: *See—*
Pylant, John D.; Lozeau, Paul R.; and Packard, Newton R., 4,084,503, Cl. 101-96.000.
Padgett, Billy. Noise reduction device for citizen's band transceivers. 4,085,366, Cl. 325-22.000.
Paglia, Richard, to Polaroid Corporation. Spring force biasing means for electroacoustical transducer components. 4,085,297, Cl. 179-111.00R.
Palm, William A.; and Young, Duane A., to Control Data Corporation. Matrix selection amplifier circuit for low impedance heads in a magnetic disc memory device. 4,085,383, Cl. 330-295.000.
Paradyne Corporation: *See—*
Walsh, Dale M.; and Nordling, Karl I., 4,085,449, Cl. 364-900.000.
Paranjpe, Suresh C., to Mead Corporation, The. Method and apparatus for ink jet printing. 4,085,409, Cl. 346-75.000.
Park, Kyong P.; and Vellturo, Anthony F., to Ciba-Geigy Corporation. Process for the production of hydroxyalkylphenyl derivatives. 4,085,132, Cl. 560-75.000.
Parke, Davis & Company: *See—*
Tinney, Francis John; and Nicolaides, Ernest D., 4,085,096, Cl. 260-112.5LH.
Parker, Richard P. Container with built-in opening system. 4,084,723, Cl. 220-277.000.
Parkyn, Derek J., to U.S. Philips Corporation. High voltage A.C. to low voltage D.C. switching interface circuit. 4,085,342, Cl. 307-260.000.
Pasbrig, Max. Wrench. 4,084,456, Cl. 81-177.800.
Passingham, Roy John: *See—*
Telling, Ronald Charles; Passingham, Roy John; Kitchener, Brian Lewis; and Hopkinson, David George, 4,085,203, Cl. 424-89.000.
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, to Yeda Research and Development Co., Ltd. Organic reagents and process of preparing same. 4,085,261, Cl. 526-19.000.
Patel, Anilkumar U.: *See—*
Rosynek, John J.; and Patel, Anilkumar U., 4,084,722, Cl. 220-270.000.
Patterson, Stephen D.: *See—*
Greenberg, Paul B.; and Patterson, Stephen D., 4,084,861, Cl. 308-26.000.
Paul, Roy A. Apparatus for collecting and handling recycleable paper. 4,084,495, Cl. 100-34.000.
Pavlecka, Vladimir H., to Turbomachines, Inc. Wind motor rotor having substantially constant pressure and relative velocity for airflow therethrough. 4,084,918, Cl. 415-1.000.
Pearlman, Martin B. Surface treatment. 4,085,131, Cl. 252-470.000.
Pechmeze, Jacques Pierre Edmond: *See—*
Leroy, Jean Marie Louis; and Pechmeze, Jacques Pierre Edmond, 4,085,099, Cl. 260-207.000.
Pegg, Charles E.: *See—*
Aasen, Torulf F.; Nisenson, Jules; and Pegg, Charles E., 4,084,901, Cl. 355-16.000.
Pei, Yu Kun, to Owens-Illinois, Inc. Bulb-type solar energy collector. 4,084,576, Cl. 126-270.000.
Pelly, Charles W., to Sears Manufacturing Company. Vehicle seat. 4,084,775, Cl. 297-453.000.
Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. 5-(5-Halogenatedphenyl-2-furanyl)dihydro-2(3H)-furanones. 4,085,118, Cl. 260-343.600.
Peltier, Jean Paul: *See—*
Aigrain, Pierre; Broussaud, Georges; Peltier, Jean Paul; and Spitz, Erich, 4,085,426, Cl. 360-38.000.
Peltier, Raymond; and Meric, Jean-Paul. Illuminated display apparatus. 4,084,339, Cl. 40-560.000.
Pemco-Kalamazoo, Inc.: *See—*
Black, John W., 4,084,288, Cl. 16-21.000.
Penfold, Charles S.: *See—*
McDevitt, Robert F., 4,084,441, Cl. 73-425.40R.
Pennwalt Corporation: *See—*
Shetty, Bola Vithal, 4,085,107, Cl. 260-256.40Q.
Pequegnat, Willis E., to TerEco Corporation. Aquatic biotal monitor. 4,084,543, Cl. 119-3.000.
Perlmutter, Frank. Glove form. 4,084,733, Cl. 223-78.000.
Perry, Elisabeth D., executrix: *See—*
Perry, Walter Merton, deceased, 4,084,721, Cl. 220-269.000.
Perry, Walter Merton, deceased (by Perry, Elisabeth D., executrix), to Continental Group, Inc., The. Container with attached closure. 4,084,721, Cl. 220-269.000.
Pertl, Jerry Hudson; and Kregness, Glen Roy, to Sperry Rand Corporation. Right justified mask transfer apparatus. 4,085,447, Cl. 364-900.000.
Peters, Clifford M., to W-K-M Wellhead Systems, Inc. Combination high-low pilot valve. 4,084,613, Cl. 137-596.180.
Petersik, Adolph R., to CMI Corporation. Slip form having reinforcement accommodating means. 4,084,928, Cl. 425-64.000.
Peterson, Carl R., to Rapidex, Inc. Drag bit excavation. 4,084,854, Cl. 299-57.000.
Peterson, Donald John; and Robbins, Medford Dwight, to Procter & Gamble Company, The. Preparation of chrysanthemic acid compounds. 4,085,273, Cl. 560-124.000.
Peterson Machine Tool, Inc.: *See—*
Moses, Robert W., 4,084,357, Cl. 51-419.000.
Petro Canada Exploration Inc.: *See—*
Todd, John C., 4,084,637, Cl. 166-245.000.
Todd, John C., 4,084,639, Cl. 166-248.000.
Petrolite Corporation: *See—*
Alink, Bernardus A. Oude, 4,085,104, Cl. 260-251.00R.
Lissant, Kenneth J., 4,084,940, Cl. 44-51.000.
Oude Alink, Bernardus A., 4,085,105, Cl. 260-251.00A.
Quinlan, Patrick M., 4,084,950, Cl. 71-67.000.
Redmore, Derek; and Welge, Frederick T., 4,085,134, Cl. 260-502.500.
Petrometer Corporation: *See—*
Weik, Edward; and Thomson, Roger, 4,084,435, Cl. 73-299.000.
Pettersson, Bengt Edvard, to Sunds Aktiebolag. Bleaching tower for gas phase bleaching. 4,085,002, Cl. 162-238.000.
Pfizer Inc.: *See—*
Bindra, Jasjit S., 4,085,213, Cl. 424-251.000.
Myers, Robert F., 4,085,119, Cl. 260-343.000.
Phelps Dodge Industries, Inc.: *See—*
Biskeborn, Merle C., 4,084,997, Cl. 156-356.000.
Philip, Charles R. Fishing device. 4,084,342, Cl. 43-19.200.
Phillips Petroleum Company: *See—*
Bowers, John R., 4,084,464, Cl. 83-94.000.
Cheng, Paul J., 4,085,197, Cl. 423-450.000.
Cobb, Raymond L., 4,085,130, Cl. 260-465.200.
Dixon, Rolland E.; and Hann, P. Douglas, 4,085,158, Cl. 260-680.00E.
Hawkins, Harold M., deceased, 4,085,007, Cl. 195-109.000.
Kinney, Alfred W., 4,084,488, Cl. 93-36.00B.
Phillips Screw Company: *See—*
Simmons, Frederick A., 4,084,478, Cl. 85-45.000.
Phoenix Gummiwerke AG: *See—*
Eichholz, Werner; and Krebs, Gerd, 4,084,998, Cl. 156-403.000.
Piazza, Matthew R., to Maso-Therm Corporation. Anchored composite building module. 4,084,362, Cl. 52-309.200.
Pichler, Engelbert: *See—*
Kratel, Gunter; Bauer, Johann; Pichler, Engelbert; and Kalmuk, Hans-Peter, 4,085,087, Cl. 260-42.490
Pierce, James K., to Dow Chemical Company, The. Hexamethylenetetramine phenoxylalkyl salts. 4,085,281, Cl. 544-185.000.
Pilipenki, Vitaly Alexandrovich: *See—*
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivanovich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr Ivanovich; and Pilipenki, Vitaly Alexandrovich, 4,085,025, Cl. 204-224.00M.
Pinard, Jacques Andre; and Juncar, Patrick Pierre Paul, to Agence Nationale de Valorisation de la Recherche (ANVAR). Method and apparatus for determining the wave number of optical spectrum radiation. 4,084,907, Cl. 356-106.00S.
Pine, Lloyd A.: *See—*
Cull, Neville L.; Pine, Lloyd A.; and Maness, Dale D., 4,085,195, Cl. 423-244.000.
Pircher, Georges, to Thomson-CSF. High-precision mask photorepeater. 4,084,903, Cl. 355-53.000.
Piro, Mario, to Nuova San Giorgio S.p.A. Method and a device for winding up a yarn reserve. 4,084,759, Cl. 242-18.0PW.
Pitney-Bowes, Inc.: *See—*
Aasen, Torulf F.; Nisenson, Jules; and Pegg, Charles E., 4,084,901, Cl. 355-16.000.
Plant, Thomas K.: *See—*
Asawa, Charles K.; and Plant, Thomas K., 4,085,387, Cl. 331-94.50M.
Plasschaert, Paulus E.: *See—*
Fairey, Brian M.; and Plasschaert, Paulus E., 4,084,682, Cl. 197-168.000.
Plaut, Jonathan: *See—*
Buff, Ernest Dorchester; and Plaut, Jonathan, 4,084,840, Cl. 280-744.000.
Plessey Handel und Investments A.G.: *See—*
Godber, Geoffrey Allan, 4,084,987, Cl. 148-1.500.
Plichta, Zdenek: *See—*
Bleha, Miroslav; Votavova, Eva; and Plichta, Zdenek, 4,085,005, Cl. 195-68.000.
Plumlee, Karl W., to Exxon Research & Engineering Co. Hydrogen donor solvent coal liquefaction process. 4,085,033, Cl. 208-10.000.
Plumlee, Karl W.: *See—*
Aczel, Thomas; and Plumlee, Karl W., 4,085,032, Cl. 208-10.000.
PNC Corporation: *See—*
Keuchel, Herbert W., 4,085,175, Cl. 264-51.000.
Pohl, Hubert: *See—*
Kohler, Gisbert; Munkel, Hanns-Wilfried; Pohl, Hubert; Sommer, Walter; and Wendel, Gunther, 4,084,860, Cl. 308-15.000.
Pohler, Klaus: *See—*
Wacker, Adolf; Wacker, Dorthe; Pohler, Klaus; and Mittenzwei, Hellmut, 4,085,204, Cl. 424-101.000.
Poirier, Robert H.; and Poziomek, Edward J., to United States of

America, Army. 2-Formyl-3-alkyl-benzothiazolium halide oxime. 4,085,112, Cl. 260-304.00C.
Poirier, Victor L.; and Keiser, John T., to United States of America, Health, Education and Welfare. Artificial implant with fiber-flocked blood-contacting surface. 4,084,266, Cl. 3-1.000.
Polaroid Corporation: *See*—
Burgarella, John P.; Turner, George, Jr.; and Stephansky, Robert L., 4,085,414, Cl. 354-145.000.
Johnson, Bruce K., 4,085,253, Cl. 429-1.000.
Paglia, Richard, 4,085,297, Cl. 179-111.00R.
Pollitzer, Ernest L.; and Hayes, John C., to UOP Inc. Hydrocarbon isomerization catalyst. 4,085,067, Cl. 252-442.000.
Pollitzer, Ernest L.: *See*—
Antos, George J.; Hayes, John C.; and Pollitzer, Ernest L., 4,085,154, Cl. 260-668.00D.
Polyansky, Ivan Ivanovich: *See*—
Shklyanov, Leonid Pavlovich; Baranov, Vladimir Nikitich; Koltyrev, Dmitry Nikiforovich; Lifshits, Viktor Senderovich; Polyansky, Ivan Ivanovich; and Osinskaya, Tamila Iosifovna, 4,084,484, Cl. 90-24.00C.
Polygon, Inc.: *See*—
Day, Leon E., 4,084,454, Cl. 81-121.00R.
Portec, Inc.: *See*—
Ravani, Chandrakant D.; Robertson, James C.; and Rostafinski, Jaroslaw J., 4,084,516, Cl. 105-368.00R.
Portescap: *See*—
Heyraud, Marc; and Martin, Andre, 4,084,502, Cl. 101-93.290.
Post, Herman D. Self-moistening cleaning device. 4,084,286, Cl. 15-104.930.
Post Office: *See*—
Jones, Ralph Archibald; and Drew, Allan Mathieson, 4,085,290, Cl. 179-1.0CN.
Postma, Lambertus: *See*—
Janssen, Casper Johannes Gerardus Ferdinand; Postma, Lambertus; and Lippits, Gerardus Johannes Meinardus, 4,084,968, Cl. 96-48.0PD.
Poush, Kenneth A.; and Reynolds, James E., to Kerr-McGee Chemical Corporation. Hybrid bipolar electrode. 4,085,027, Cl. 204-268.000.
Power Controls Corporation: *See*—
Wall, Bill R., 4,085,399, Cl. 338-200.000.
Powers Regulator Company: *See*—
Tyler, Tommy N., 4,084,769, Cl. 243-3.000.
Poziomek, Edward J.: *See*—
Poirier, Robert H.; and Poziomek, Edward J., 4,085,112, Cl. 260-304.00C.
PPG Industries, Inc.: *See*—
Briody, Robert G., 4,085,133, Cl. 260-502.00R.
Chang, Wen-Hsuan; and Ammons, Vernon G., 4,085,092, Cl. 260-77.5AN.
Cunningham, Hugh, 4,085,015, Cl. 204-98.000.
Gorman, Harold R.; Dahlberg, John R.; and Oravitz, James L., Jr., 4,084,737, Cl. 225-2.000.
Preston, John; and Reeve, Austin John, to Imperial Chemical Industries Limited. 6-Substituted-4-hydroxycinnolin-3-yl-carboxylic acids and esters thereof. 4,085,103, Cl. 260-250.00C.
Prior, William L.; and Lindstrom, Richard S., to Arthur D. Little, Inc. Filled inorganic resin cements and compositions and process for forming them. 4,084,982, Cl. 106-105.000.
Pritulsky, James, to AMP Incorporated. Electrical commoning means. 4,084,872, Cl. 339-19.000.
Pritzlaff, Herbert E.: *See*—
Koltz, Lawrence D.; and Pritzlaff, Herbert E., 4,084,739, Cl. 228-168.000.
Probe, Incorporated: *See*—
Whiting, Cuthbert R., 4,084,638, Cl. 166-248.000.
Prochazka, Pavel: *See*—
Rokos, Josef; Kubat, Zdenek; Prochazka, Pavel; Zalabak, Vladislav; Babicka, Josef, deceased; Janecek, Jiri; Nohynek, Miroslav; and Mison, Petr, 4,085,206, Cl. 424-131.000.
Procter & Gamble Company, The: *See*—
Murphy, Alan Pearce; Seiden, Paul; Diehl, Francis Louvaine; and McCarty, Charles Bruce, 4,085,052, Cl. 252-8.600.
Peterson, Donald John; and Robbins, Medford Dwight, 4,085,273, Cl. 560-124.000.
Produits Chimiques Ugine Kuhlmann: *See*—
Leroy, Jean Marie Louis; and Pechmeze, Jacques Pierre Edmond, 4,085,099, Cl. 260-207.000.
Prokofieva, Nina Vasilievna: *See*—
Rakitin, Vladimir Jurievich; Fedorov, Igor Konstantinovich; Grigorian, Alfred Nikitovich; Lalov, Vitaly Viktorovich; and Prokofieva, Nina Vasilievna, 4,084,757, Cl. 241-301.000.
Prosek, John R.; and Tamburino, James C., to International Harvester Company. Roll-over protection structure for dump truck. 4,084,852, Cl. 298-22.00C.
Prunbauer, Kurt, to EVVA Werk Spezialerzeugung von Zylinder- und Sicherheitsschlossern Gesellschaft m.b.H. & Co. Kommanditgesellschaft. Magnetic-type lock. 4,084,416, Cl. 70-276.000.
Pudims, Albert Adam: *See*—
Godel, Siegfried; Pudims, Albert Adam; and Wergzyn, Richard, 4,085,309, Cl. 219-364.000.
Pullman Incorporated: *See*—
Kunz, Andrew M.; Yates, Donald B.; and Tuck, Richard L., 4,084,515, Cl. 105-240.000.
Pulse, Carl Frederick, to RCA Corporation. Video disc package having a center post. 4,084,690, Cl. 206-310.000.
Pusey, Donald Kirk: *See*—
Goodrich, Lewis Charles; Holt, Theron Robert; Osborne, Joseph Cyril; Pusey, Donald Kirk; and Roxlo, James William, 4,084,434, Cl. 73-160.000.
Putt, Bernard J.; and Hughet, Roger E. Storage cabinet for ski equipment. 4,084,867, Cl. 312-198.000.
Pylant, John D.; Lozeau, Paul R.; and Packard, Newton R., to Sheldon-Sodeco Printer, Inc. Printer apparatus. 4,084,503, Cl. 101-96.000.
Pyle, Lawrence F.; and Brady, John F., to Felt Products Mfg. Co. Method and assembly for sealing gaps between adjacent roadway slabs. 4,084,912, Cl. 404-74.000.
Quan, Wing C.; Edison, David M.; Hummert, George T.; and Sackin, Milton, to Westinghouse Electric Corporation. Elevator system. 4,084,661, Cl. 187-29.00R.
Queener, Carl Allan, to International Business Machines Corporation. Half-lens/mirror copier providing original-to-copy image reduction. 4,084,897, Cl. 355-8.000.
Quets, Jean Marie; and Hatwell, Henri, to Union Carbide Corporation. Process for separation of non-magnetic particles with ferromagnetic media. 4,085,037, Cl. 209-1.000.
Quinlan, Patrick M., to Petrolite Corporation. Use of polyquaternary ammonium methylene phosphonates as microbiocides. 4,084,950, Cl. 71-67.000.
Quinn, Peter T., to Rollei of America, Inc. Photographic flash device. 4,085,316, Cl. 362-16.000.
Quintana, Elias Dennis. Apparatus for producing foodstuff products. 4,084,493, Cl. 99-450.700.
Quivy, Michel Georges: *See*—
Cluzel, Philippe Henri Maurice; and Quivy, Michel Georges, 4,085,400, Cl. 340-10.000.
Radecki, Tony: *See*—
Bucknell, Ernest H.; Rauh, Jack K.; and Radecki, Tony, 4,084,620, Cl. 137-801.000.
Rainer, William C., to CPL Corporation. Process for producing flow-in closure sealing gaskets from hot melt compositions. 4,085,186, Cl. 264-268.000.
Raines, Joseph W.: *See*—
Bradley, W. L.; Frye, Bennie W.; and Raines, Joseph W., 4,084,657, Cl. 180-114.000.
Rainwater, Orman M. Linked collapsible shelter structure. 4,084,598, Cl. 135-3.00E.
Rak, Jaromir R., to Canadian Patents & Development Limited. High retention wood preservative composition. 4,085,251, Cl. 428-485.000.
Rakitin, Vladimir Jurievich; Fedorov, Igor Konstantinovich; Grigorian, Alfred Nikitovich; Lalov, Vitaly Viktorovich; and Prokofieva, Nina Vasilievna. Apparatus for continuous disintegration of cells of microorganisms. 4,084,757, Cl. 241-301.000.
Ramsey, Richard L.: *See*—
Hillhouse, Mial T.; and Ramsey, Richard L., 4,085,179, Cl. 264-122.000.
Randol, Glenn Talley. Protractor-type hatching control device. 4,084,329, Cl. 33-115.000.
Rank Organisation Limited, The: *See*—
Whitehouse, David John, 4,084,324, Cl. 33-174.00L.
Rank Xerox, Ltd.: *See*—
Okada, Ryuzo; and Okamoto, Yoshikazu, 4,084,542, Cl. 118-658.000.
Tanaka, Masaaki, 4,084,538, Cl. 118-4.000.
Terajima, Yasuhiko; and Matsumoto, Osamu, 4,084,807, Cl. 271-119.000.
Rao, Pemmaraju Narasimha, to Becton, Dickinson and Company. Testosterone derivatives. 4,085,202, Cl. 424-1.000.
Rapidex, Inc.: *See*—
Peterson, Carl R., 4,084,854, Cl. 299-57.000.
Rasheed, Khalid; and Warkentin, James D., to Ansul Company, The. Biocidally-active 1,3-benzodithiole-2-one compounds. 4,084,954, Cl. 71-90.000.
Ratera, Eliseo. Braiding machine. 4,084,479, Cl. 87-48.000.
Rauh, Jack K.: *See*—
Bucknell, Ernest H.; Rauh, Jack K.; and Radecki, Tony, 4,084,620, Cl. 137-801.000.
Rauschenbach, Peter: *See*—
Atallah, Khaled; Berthold, Fritz; Kolbe, Wolfgang; Rauschenbach, Peter; and Simon, Helmut, 4,085,325, Cl. 250-328.000.
Ravani, Chandrakant D.; Robertson, James C.; and Rostafinski, Jaroslaw J., to Portec, Inc. Foldable slidable vehicle end enclosure. 4,084,516, Cl. 105-368.00R.
Ravenna, Franco: *See*—
Carissimi, Massimo; Ravenna, Franco; and Cantarelli, Giorgio, 4,085,223, Cl. 424-278.000.
Raychem Corporation: *See*—
Horsma, David August; and Diaz, Stephen Hunter, 4,085,286, Cl. 174-92.000.
Raymond Lee Organization, Inc., The: *See*—
Burke, Harry W., 4,085,369, Cl. 325-312.000.
White, Thomas L., 4,084,701, Cl. 211-81.000.
Raynes, Edward Peter, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal devices. 4,084,884, Cl. 350-334.000.
Razdymakha, Pavel Semenovich: *See*—
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivanovich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr

Ivanovich; and Pilipenki, Vitaly Alexandrovich, 4,085,025, Cl. 204-224.00M.
RCA Corporation: *See*—
Ahmed, Adel Abdel Aziz, 4,085,359, Cl. 323-22.00T.
Avins, Jack, 4,084,672, Cl. 192-.055.
Bloom, Allen; Ross, Daniel Louis; Bartolini, Robert Alfred; and Hung, Ling Kong, 4,084,970, Cl. 96-88.000.
Leedom, Marvin Allan, 4,084,691, Cl. 206-313.000.
McNeely, Michael Lee; and Rees, Herbert, 4,085,178, Cl. 264-106.000.
Muhlfelder, Ludwig, 4,084,772, Cl. 244-165.000.
Pulse, Carl Frederick, 4,084,690, Cl. 206-310.000.
Schmidt, George Edwin, Jr.; and Muhlfelder, Ludwig, 4,084,773, Cl. 244-166.000.
Turski, Zygmond; and Rosen, Arye, 4,085,377, Cl. 329-116.000.
Varettoni, Leroy Wilfred, 4,085,432, Cl. 361-91.000.
Williams, John Chamberlin; and Sisco, William Braxton, 4,085,367, Cl. 325-67.000.
Read, John Cecil. One-piece roofing tile. 4,084,365, Cl. 52-529.000.
Reade, Richard F.: *See*—
Andrus, Ronald L.; and Reade, Richard F., 4,084,972, Cl. 106-39.700.
Andrus, Ronald L.; and Reade, Richard F., 4,084,973, Cl. 106-39.700.
Reckson, Harry. Combination spline groove. 4,084,360, Cl. 52-63.000.
Reddy, Malireddy S.: *See*—
Reinbold, George W.; and Reddy, Malireddy S., 4,085,228, Cl. 426-36.000.
Redmore, Derek; and Welge, Frederick T., to Petrolite Corporation. Amino-phosphonic-sulfonic acids. 4,085,134, Cl. 260-502.500.
Reed International Limited: *See*—
Briston, Rodney John; Canning, Rodger George; and Tomlinson, John Parker, 4,085,239, Cl. 427-208.000.
Reed, Jack K. Carbide tipped insertable saw tooth. 4,084,470, Cl. 83-841.000.
Reed, Robert D.; and Schwartz, Robert E., to John Zink Company. Smoke suppressant mixer for flared gases. 4,084,935, Cl. 431-202.000.
Reeder, Thomas M.: *See*—
Gilden, Meyer; Reeder, Thomas M.; and DeMaria, Anthony J., 4,085,388, Cl. 331-107.00A.
Rees, Herbert: *See*—
McNeely, Michael Lee; and Rees, Herbert, 4,085,178, Cl. 264-106.000.
Rees, Robin Gore, to Institute for Industrial Research and Standards. Apparatus for cleaning submerged surfaces. 4,084,535, Cl. 114-222.000.
Reeve, Austin John: *See*—
Preston, John; and Reeve, Austin John, 4,085,103, Cl. 260-250.00C.
Refermat, Stanley J.: *See*—
Eastman, Jay Morgan; and Refermat, Stanley J., 4,084,883, Cl. 350-152.000.
Regie Nationale des Usines Renault: *See*—
Bonnaud, Michel, 4,084,765, Cl. 242-107.40B.
Reick, Franklin G., to Michael Ebert, a part interest. Earphone adapter for aircraft radios. 4,085,365, Cl. 325-21.000.
Reier, Richard; and Kuelzer, Peter, to Siemens Aktiengesellschaft. Printer needle guide means for mosaic printers. 4,084,678, Cl. 197-1.00R.
Reifenhauser, Hans: *See*—
Reitemeyer, Paul; and Reifenhauser, Hans, 4,084,933, Cl. 425-467.000.
Reifenhauser KG: *See*—
Reitemeyer, Paul; and Reifenhauser, Hans, 4,084,933, Cl. 425-467.000.
Reinbold, George W.; and Reddy, Malireddy S., to Leprino Cheese Co. Preparation of pizza cheese. 4,085,228, Cl. 426-36.000.
Reinert, John Robert, to Motorola, Inc. Integrated injection logic circuit having reduced delay. 4,085,341, Cl. 307-247.00R.
Reist, Walter; and Honegger, Werner, to Ferag AG. Method and apparatus for stacking printed products continuously arriving in a substantially fish scale overlapping arrangement. 4,084,808, Cl. 271-213.000.
Reitemeyer, Paul; and Reifenhauser, Hans, to Reifenhauser KG. Apparatus for the sealing of the interior of synthetic-resin tubes during extrusion. 4,084,933, Cl. 425-467.000.
Renishaw Electrical Limited: *See*—
McMurtry, David Roberts, 4,084,323, Cl. 33-174.00L.
Repp, Arno, to Robert Bosch GmbH. Arrangement for the automatically releasable affixation of reels on rotatable hubs. 4,084,762, Cl. 242-68.300.
Resnick, Paul Raphael; and Grot, Walther Gustav, to Du Pont de Nemours, E. I., and Company. Ion exchange polymer film, consisting of fluorinated polymer with N-monosubstituted sulfonamido groups method and apparatus for electrolysis of alkali or alkaline earth metal halide. 4,085,071, Cl. 260-22.00R.
Reuter Technologie GmbH: *See*—
Zinsser, Rudolf G., 4,085,384, Cl. 331-74.000.
Revere Copper and Brass, Inc.: *See*—
Jenks, Richard H.; and Kipp, Egbert M., 4,085,187, Cl. 264-280.000.
Rexnord Inc.: *See*—
Mohrbacker, William J.; and Thayer, Earl C., 4,084,833, Cl. 280-81.00A.
Reynolds, James E.: *See*—
Poush, Kenneth A.; and Reynolds, James E., 4,085,027, Cl. 204-268.000.
Reynolds, James K., to Du Pont de Nemours, E. I., and Company. Use of alkyl(aminocarbonyl)phosphonate salts in rice culture for the control of problem herbaceous plant growth. 4,084,952, Cl. 71-86.000.
Rheinische Braunkohlenwerke AG.: *See*—
Schulten, Rudolf; and Behr, Friedrich, 4,085,200, Cl. 423-579.000.
Rhodes, Deryck; and Newton, Roger Frank, to Allen & Hanburys Limited. Pharmaceutical compositions containing 1,3-dioxanes. 4,085,222, Cl. 424-278.000.
Rhodes, William A. Solar radiation converting method and means. 4,084,577, Cl. 126-270.000.
Rhone Poulenc Industries: *See*—
Durand, Jean-Pierre; Gateau, Patrick; Dawans, Francois; and Chauvel, Bernard, 4,085,055, Cl. 252-50.000.
Gruffaz, Max; and Locatelli, Jean Louis, 4,085,164, Cl. 260-858.000.
Rickard, James H., to Ovation Instruments, Inc. Reinforced stringed musical instrument neck. 4,084,476, Cl. 84-293.000.
Rickert, Paul E., to Borg-Warner Corporation. Heat exchanger system for charge forming apparatus. 4,084,564, Cl. 123-139.0AV.
Ricoh Company, Ltd.: *See*—
Ishida, Tsutomu; Nomura, Masaaki; and Ohta, Wasaburo, 4,084,899, Cl. 355-14.000.
Kaneko, Tamaki; and Okuzawa, Tugio, 4,084,508, Cl. 101-142.000.
Ritter, Glenn Richard: *See*—
Searle, Brian Christopher; and Ritter, Glenn Richard, 4,084,677, Cl. 194-100.00A.
Rittler, Hermann L.: *See*—
Beall, George H.; and Rittler, Hermann L., 4,084,974, Cl. 106-39.700.
Rivett, Larry R.: *See*—
Schulz, Reginald O.; and Rivett, Larry R., 4,084,353, Cl. 51-220.000.
Roark, Charles Frederick. Combination solar collector and heat exchanger. 4,084,580, Cl. 126-271.000.
Robbins, Medford Dwight: *See*—
Peterson, Donald John; and Robbins, Medford Dwight, 4,085,273, Cl. 560-124.000.
Robert Bosch GmbH: *See*—
Abend, Karl-Ludwig; Mattes, Bernhard; and Scheyhing, Hans, 4,084,659, Cl. 180-105.00E.
Drews, Ulrich; Werner, Peter; and Winkelmann, Lothar, 4,084,552, Cl. 123-32.0EA.
Eckert, Konrad, 4,084,562, Cl. 123-119.0EC.
Falchle, Jorg; and Hahner, Reinhard, 4,084,829, Cl. 279-99.000.
Kiefer, Hans-Friedrich, 4,084,891, Cl. 352-22.000.
Kubach, Hans; and Zieher, Peter, 4,085,379, Cl. 330-69.000.
Meier, Werner; Hofer, Walter; Haubner, Georg; and Weckenmann, Albert, 4,085,403, Cl. 340-168.00R.
Repp, Arno, 4,084,762, Cl. 242-68.300.
Zehender, Ernst; Blaich, Bernhard; Stein, Helmut; and Kerner, Karl, 4,085,248, Cl. 428-336.000.
Robertson, James C.: *See*—
Ravani, Chandrakant D.; Robertson, James C.; and Rostafinski, Jaroslaw J., 4,084,516, Cl. 105-368.00R.
Robinson, Michael, to Deere & Company. After-treating alloy for making nodular iron. 4,084,962, Cl. 75-130.00A.
Robinson, Ramon K.: *See*—
Grant, Nicholas J.; and Robinson, Ramon K., 4,084,964, Cl. 75-171.000.
Roblin Industries, Inc.: *See*—
Jones, Donald P., 4,084,364, Cl. 52-484.000.
Robustelli, Albert George: *See*—
DiLeone, Roland Ralph; and Robustelli, Albert George, 4,085,166, Cl. 260-876.00R.
Roch, Gerald V.; and Hadley, Chris L., to Hurco Manufacturing Company Inc. Twin motor and screw drive for workpiece positioning stops and for press ram drive and the like. 4,084,424, Cl. 72-389.000.
Rockwell Enterprises, Inc.: *See*—
Christophersen, Clarence E.; and Armstrong, Currie, 4,084,724, Cl. 221-20.000.
Rockwell International Corporation: *See*—
Chen, Thomas T.; and Gergis, Isoris S., 4,085,451, Cl. 365-4.000.
Fagert, Russell Bruce; and Fogle, John Louis, 4,084,607, Cl. 137-312.000.
Flanagan, Joseph E.; and Frankel, Milton B., 4,085,123, Cl. 260-349.000.
Williford, Jerry G., 4,085,380, Cl. 330-107.000.
Roe, Norman P., to Consolidated Products Corporation. Method of making a strain member for use in an electromechanical cable. 4,085,183, Cl. 264-174.000.
Roedel, Milton John: *See*—
Buser, Kenneth Rene; Roedel, Milton John; and Vassiliou, Eustathios, 4,085,246, Cl. 428-220.000.
Roeder, George K. Double-acting, downhole pump assembly. 4,084,923, Cl. 417-393.000.
Rogers, Norman Harold: *See*—
Augstein, Joachim; Cairns, Hugh; and Rogers, Norman Harold, 4,085,115, Cl. 260-308.00D.
Rohm and Haas Company: *See*—
Lewis, Sheldon N.; and Miller, John J., 4,085,167, Cl. 260-885.000.
Miller, George Allen; and Carley, Harold Edwin, 4,085,209, Cl. 424-245.000.
Rohrs, Donald L.; Downing, Harold A.; and Collins, Donald L., to Collins Industries, Inc. Vehicle wheelchair ramp. 4,084,713, Cl. 214-85.000.
Rokos, Josef; Kubat, Zdenek; Prochazka, Pavel; Zalabak, Vladislav; Babicka, Josef, deceased (by Babickova, Marie, legal representative; Eva Zemanova, heir; Lubos Babicka, heir); Janecek, Jiri; Nohynek,

Miroslav; and Mison, Petr. Composition for treatment of infectious diseases in animals. 4,085,206, Cl. 424-131.000.

Rollei of America, Inc.: *See—*
Adams, James R., Jr.; and Wilwerding, Dennis J., 4,085,353, Cl. 315-241.00P.
Quinn, Peter T., 4,085,316, Cl. 362-16.000.

Rolls-Royce Limited: *See—*
McMurtry, David Roberts, 4,084,323, Cl. 33-174.00L.

Rondeau, Benjamin G.: *See—*
Spencer, Clark V.; and Rondeau, Benjamin G., 4,084,835, Cl. 280-148.000.

Roschy, Manfred: *See—*
Juergens, Wilfried; Roschy, Manfred; and Schauer, Alois, 4,085,011, Cl. 204-37.00R.

Rosen, Arye: *See—*
Turski, Zygmond; and Rosen, Arye, 4,085,377, Cl. 329-116.000.

Rosendall, Henry J., to Bissell, Inc. Floor sweeper. 4,084,283, Cl. 15-48.000.

Rosenstock, Guenter: *See—*
Heinzl, Joachim; and Rosenstock, Guenter, 4,084,681, Cl. 197-82.000.

Rosinger, Herbert P.; Wood, Derek A.; and Sheldon, Roger A., to Shell Oil Company. Preparation of meta-aryloxy-benzaldehydes. 4,085,147, Cl. 260-600.00R.

Ross, Daniel Louis: *See—*
Bloom, Allen; Ross, Daniel Louis; Bartolini, Robert Alfred; and Hung, Ling Kong, 4,084,970, Cl. 96-88.000.

Ross, David J. Vehicle-top sign display assembly. 4,084,338, Cl. 40-592.000.

Ross, Donald R., to U-S Safety Trolley Corporation. Trolley rail assembly. 4,084,301, Cl. 29-33.00K.

Rossborough Supply Company: *See—*
Butts, Douglas Earl; and Rossborough, Walter Neil, 4,084,800, Cl. 266-225.000.

Rossborough, Walter Neil: *See—*
Butts, Douglas Earl; and Rossborough, Walter Neil, 4,084,800, Cl. 266-225.000.

Rossi, Pietro Paolo: *See—*
Siclari, Francesco; and Rossi, Pietro Paolo, 4,085,127, Cl. 260-413.000.

Rostafinski, Jaroslaw J.: *See—*
Ravani, Chandrakant D.; Robertson, James C.; and Rostafinski, Jaroslaw J., 4,084,516, Cl. 105-368.00R.

Rosynek, John J.; and Patel, Anilkumar U., to Continental Can Company, Inc. Child resistant safety closure. 4,084,722, Cl. 220-270.000.

Rothers, Paul L.: *See—*
Teter, Robert D.; Maddock, James W.; and Rothers, Paul L., 4,084,439, Cl. 73-718.000.

Roto-Finish Company: *See—*
Balz, Gunther W., 4,084,355, Cl. 51-313.000.

Rovema Verpackungsmaschinen GmbH & Co. KG.: *See—*
Schmachtel, Florian; and Mueller, Heinrich, 4,084,390, Cl. 53-112.00A.

Rowen, Harold E., to Caterpillar Tractor Co. Speed control valve for a fluid operated clutch. 4,084,601, Cl. 137-49.000.

Roxlo, James William: *See—*
Goodrich, Lewis Charles; Holt, Theron Robert; Osborne, Joseph Cyril; Pusey, Donald Kirk; and Roxlo, James William, 4,084,434, Cl. 73-160.000.

RTR Incorporated: *See—*
Smitherman, Ray C., 4,084,436, Cl. 73-313.000.

Rubin, Mae K.: *See—*
Frilette, Vincent J.; and Rubin, Mae K., 4,085,156, Cl. 260-671.00R.

Rucker, George I., to Crown Zellerbach Corporation. Apparatus for forming containers with fin-type seams. 4,084,999, Cl. 156-466.000.

Rudkin-Wiley Corporation: *See—*
Wiley, Nathaniel C., Jr.; and Jensen, William L., Jr., 4,084,846, Cl. 296-1.00S.

Ruehl, Donald Edward: *See—*
Odle, Herbert Arnold; Ruehl, Donald Edward; Shadwick, Jan; Sullivan, Daryl Dean; and Welty, Dale Eugene, 4,085,318, Cl. 362-217.000.

Ruel, Marc: *See—*
Goupil, Marcel; and Ruel, Marc, 4,084,818, Cl. 273-67.00A.

Rule, Adrian O.; and Bartley, William E., to Integrated Development & Manufacturing Co. Fireplace closure and safety device. 4,084,570, Cl. 126-140.000.

Runge, Peter Klaus, to Bell Telephone Laboratories, Incorporated. Slicing method in fiber end preparation. 4,084,308, Cl. 29-527.200.

Russell, Arvin E., to Badgley, Clifford E.; and Badgley, C. Brent. Hoisting dolly. 4,084,706, Cl. 214-1.00D.

Russo, Robert V., to M&T Chemicals Inc. Process for preparing oxidatively stable polyurethane foam. 4,085,072, Cl. 260-2.5AC.

Rutledge, Thomas F., to ICI Americas Inc. Oxidative coupling of alkylphenols, alkoxyphenols and 1-naphthols catalyzed by metal complexes of amino compounds. 4,085,124, Cl. 260-396.00N.

Ryan, Carl R.; and Stilwell, James H., to Motorola, Inc. QPSK demodulator. 4,085,378, Cl. 329-124.000.

Rybicki, Robert Charles, to United Technologies Corporation. Redundant damper seals. 4,084,668, Cl. 188-312.000.

S.S.S. Patents Limited: *See—*
Clements, Herbert Arthur, 4,084,673, Cl. 192-67.00A.

Saba Schwarzwaelder Apparate-Bau-Anstalt August Schwer Soehne GmbH: *See—*
Cota, Dennis, 4,085,424, Cl. 358-181.000.

Sackin, Milton: *See—*
Quan, Wing C.; Edison, David M.; Hummert, George T.; and Sackin, Milton, 4,084,661, Cl. 187-29.00R.

Sagara, Hiroji, to Hoya Corporation. Glass for eye glass lens. 4,084,978, Cl. 106-54.000.

Saint-Gobain Industries: *See—*
Chenel, Pierre; and Vachet, Joel, 4,085,238, Cl. 427-207.00A.

Saito, Fumio; Yamai, Fumito; Beppu, Yositugu; and Nakayama, Shinpei, to Sekisui Kagaku Kogyo Kabushiki Kaisha; and Sekisui Kaseihin Kogyo Kabushiki Kaisha. Process for preparing styrenic polymer particles. 4,085,169, Cl. 260-886.000.

Saitou, Tadashi: *See—*
Hashimoto, Masanao; Saitou, Tadashi; Kobayashi, Tatsuo; and Suzuki, Isamu, 4,084,373, Cl. 60-293.000.

Sakashita, Masahira: *See—*
Ishikawa, Tatsuo; Yamashita, Keiji; Okubo, Norio; Sakashita, Masahira; Okamoto, Arimichi; and Kusunose, Tetsuhiro, 4,085,174, Cl. 264-49.000.

Salamone, Saverio, to Evans Rotork, Inc. Apparatus for securing T-edging and similar edging bands. 4,084,645, Cl. 173-13.000.

Salesky, Emery; and Luehman, Kent W., to Hewlett-Packard Co. Range switching transient eliminator circuit. 4,085,340, Cl. 307-237.000.

Salisbury, Charles W.: *See—*
Fein, Michael E.; and Salisbury, Charles W., 4,085,385, Cl. 331-94.50D.

Salovsky, Jan: *See—*
Morris, Kenneth John; and Salovsky, Jan, 4,084,932, Cl. 425-405.00H.

Salter, David Anthony; Scilly, Norman Frederick; and Watson, Keith Ellis, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Production of hexanitrostilbene. 4,085,152, Cl. 260-645.000.

Salter, Gary Curtis: *See—*
Barber, Herbert Douglas; and Salter, Gary Curtis, 4,085,382, Cl. 330-262.000.

Samuelsen, Eirik; and Alm, Oddvar, to Dyno Industrier A.S. Preparation of a cap sensitive particulate explosive composition comprising calcium nitrate. 4,084,995, Cl. 149-56.000.

Sanchez de Leon Rodriquez-Roda, D. Juan Antonio, to Food Machinery Espanola, S.A. Sizer for fruit and other agricultural products. 4,084,697, Cl. 209-106.000.

Sandermann, Wilhelm; Eggensperger, Heinz; and Diehl, Karl-Heinz, to Sterling Drug Inc. 2-Alkenyl-N-[(trichloromethyl)thio]succinimides. 4,085,220, Cl. 424-274.000.

Sandoz, Inc.: *See—*
Kathawala, Faizulla G., 4,085,149, Cl. 260-613.00R.

Sandoz Ltd.: *See—*
Fisher-Cornelssen, Kurt Anton, 4,085,218, Cl. 424-267.000.
Henzi, Beat, 4,085,098, Cl. 260-157.000.
Mercer, Alec Victor; Littlewood, Peter Stuart; Bolton, Ivan Joseph; and Fleck, Fritz, 4,085,101, Cl. 260-239.900.

San Miguel, Anthony, to United States of America, Navy. Pressure relief construction for controlled combustion of ordnance items. 4,084,512, Cl. 102-103.000.

Sanno, Yasushi: *See—*
Nohara, Akira; Ishiguro, Toshihiro; and Sanno, Yasushi, 4,085,116, Cl. 260-308.00D.

Sano, Shiro; Hayashi, Hiroshi; and Takagi, Hiroyoshi, to Agency of Industrial Science & Technology. Magnesia ceramic for insulation of high-frequency electricity. 4,084,979, Cl. 106-58.000.

Santer, James O.: *See—*
Hahn, Frank J.; and Santer, James O., 4,085,242, Cl. 427-385.00R.

Saporito, Thomas J., Jr. Renal dialysis concentrate delivery system. 4,085,046, Cl. 210-90.000.

Sargent Industries, Inc.: *See—*
Capelli, Alfred J., 4,084,863, Cl. 308-238.000.

Sasakura, Hachiro; and Kanmura, Hitoshi, to Nippon Soken, Inc. Rotary piston engine. 4,084,548, Cl. 123-205.000.

Sato, Hiroshi: *See—*
Ishida, Isao; Sato, Hiroshi; and Kusumoto, Sho, 4,084,862, Cl. 308-139.000.

Sato, Kazunobu; Suzuki, Takanori; Kobayashi, Tadataka; and Miyazawa, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Decompression-type internal-combustion engine and method of improving the characteristics of such engine. 4,084,568, Cl. 123-182.000.

Sato, Kozo: *See—*
Kitai, Kiyoshi; Ogihara, Masuo; Sato, Kozo; Shinozaki, Nobuo; Takazawa, Yuzuru; and Seki, Yoichi, 4,084,403, Cl. 58-23.00D.

Sato, Takashi: *See—*
Ikuzaki, Kunihiko; Ito, Tsuneo; Ishihara, Masamichi; and Sato, Takashi, 4,085,458, Cl. 365-206.000.

Sato, Toshio: *See—*
Higuchi, Yoshiro; Harada, Yutaka; Sato, Toshio; Nakagawa, Koji; Kawaguchi, Iwazo; and Kasahara, Yasushi, 4,084,981, Cl. 106-96.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Printing device for portable label printing machine. 4,084,507, Cl. 101-110.000.

Satow, Haruhiko, to Toyo Kogyo Co., Ltd. Rotary piston engine exhaust gas recycling means. 4,084,549, Cl. 123-217.000.

Sauer, Donald G., to National Can Corporation. Process for thermoforming a hollow plastic article using an extendible porous male mold assembly. 4,085,177, Cl. 264-89.000.

Savron, Emil. Motor vehicles. 4,084,655, Cl. 180-69.100.

Sawa, Toshio: *See*—
Otani, Kouji; Sawa, Toshio; Kuroda, Osamu; Nakajima, Fumito; and Iijima, Tokuji, deceased, 4,085,194, Cl. 423-242.000.

Sawada, Jiro: *See*—
Kyogoku, Kazuaki; Hatayama, Katsuo; Yokomori, Sadakazu; Sawada, Jiro; and Tanaka, Ichiro, 4,085,135, Cl. 260-520.00C.

Sawami, Yoshiaki: *See*—
Kondo, Masatsune; Sawami, Yoshiaki; and Tamura, Yukio, 4,084,847, Cl. 296-28.00R.

Sawyer, Craig D.: *See*—
United States of America, National Aeronautics and Space Administration; and Sawyer, Craig D., 4,085,004, Cl. 176-22.000.

Saylor, Charles J.; Haworth, Richard G.; and Yerges, Lyle F., to Haworth Mfg., Inc. Sound absorbing panel. 4,084,366, Cl. 52-615.000.

Saylor, Charles J.; Haworth, Richard G.; and Yerges, Lyle F., to Haworth Mfg., Inc. Sound absorbing panel. 4,084,367, Cl. 52-615.000.

Scarponi, Ugo: *See*—
Foglio, Maurizio; Scarponi, Ugo; and Arcamone, Federico, 4,085,113, Cl. 260-306.70C.

Schaeffer, Georg: *See*—
Semler, Gunther; and Schaeffer, Georg, 4,085,129, Cl. 260-463.000.

Scharf, Helmut, to Chemische Werke Huels, A.G. Process for improving the adhesion of coatings of vulcanized EPDM articles. 4,085,240, Cl. 427-302.000.

Schauer, Alois: *See*—
Juergens, Wilfried; Roschy, Manfred; and Schauer, Alois, 4,085,011, Cl. 204-37.00R.

Schenach, Thomas Anthony, to Bray Oil Co. Inc. Inhibitor composition containing an oligomer oil. 4,085,056, Cl. 252-59.000.

Schenk, Bernd, to ITW-ATECO G.m.b.H. Joint socket for an angle joint. 4,084,913, Cl. 403-141.000.

Schering Corporation: *See*—
Mallams, Alan K.; and Davies, David Huw, 4,085,208, Cl. 424-180.000.

Schettl, Alvin J.; and Gorski, Charles R., to Kelvinator, Inc. Self-cleaning oven shutter door. 4,084,572, Cl. 126-200.000.

Scheyhing, Hans: *See*—
Abend, Karl-Ludwig; Mattes, Bernhard; and Scheyhing, Hans, 4,084,659, Cl. 180-105.00E.

Schibbye, Hjalmar; and Holmstrom, Tord, to Svenska Rotor Maskiner Aktiebolag. Refrigerating system. 4,084,405, Cl. 62-197.000.

Schiek, Burkhard; and De Ronde, Frans Christiaan, to U.S. Philips Corporation. Micro-strip to a slotted line transducer. 4,085,391, Cl. 333-33.000.

Schiller, Arthur Maurice: *See*—
Song, Dae Suk; Duffy, Richard Joseph; Witschonke, Charles Richard; Schiller, Arthur Maurice; and Higgins, Mark Allan, 4,085,045, Cl. 210-58.000.

Schlecht, Charles H., to Caterpillar Tractor Co. Method for forming a track link bushing having a contoured opening. 4,084,423, Cl. 72-256.000.

Schlitz, Robert, to Zahnradfabrik Friedrichshafen AG. Hydrodynamic coupling. 4,084,374, Cl. 60-330.000.

Schloemann-Siemag Aktiengesellschaft: *See*—
Zilges, Franz Josef; and Siegert, Klaus, 4,084,422, Cl. 72-253.00R.

Schlumberger Technology Corporation: *See*—
Turcotte, Ronald E.; and Hunt-Grubbe, Robert H., 4,085,323, Cl. 250-252.000.

Schmachtel, Florian; and Mueller, Heinrich, to Rovema Verpackungsmaschinen GmbH & Co. KG. Apparatus for packaging bulk material. 4,084,390, Cl. 53-112.00A.

Schmid, Markus, to Concast AG. Conveyor apparatus for delivering flux powder to the mold of a continuous casting installation. 4,084,628, Cl. 141-284.000.

Schmideler, Jeffrey B. Loudspeaker system. 4,085,289, Cl. 179-1.0VE.

Schmidt, George Edwin, Jr.; and Muhlfelder, Ludwig, to RCA Corporation. Magnetic control of spacecraft roll disturbance torques. 4,084,773, Cl. 244-166.000.

Schmidt, John Michael; and Snow, Wallace Leon, to International Business Machines Corporation. Spiral antenna absorber system. 4,085,406, Cl. 343-895.000.

Schmidt, Robert W., to Copar Corporation. Voltage to air pressure transducer. 4,084,539, Cl. 118-8.000.

Schmitz, Gary N.: *See*—
Carpenter, Wilfred C.; Schmitz, Gary N.; and Fenrick, Walter J., 4,084,440, Cl. 73-422.0GC.

Schneeberger, Martin; and Wittmann, Dieter, to Linde AG. Heat exchanger. 4,084,546, Cl. 122-32.000.

Schneider, Fredric H. Carrier for automatic nailer. 4,084,738, Cl. 227-7.000.

Schneider, John A.; and Mills, Jack F., to Dow Chemical Company, The. Bromination of unreactive olefins with bromine chloride. 4,085,153, Cl. 260-649.00R.

Schneider, Josef F., to United States of America, Air Force. Random action event switching method and apparatus for a multiple input data processing system. 4,085,444, Cl. 364-900.000.

Schneider, Kurt: *See*—
Daumiller, Guenther; Merkel, Karl; Neumayr, Franz; and Schneider, Kurt, 4,085,269, Cl. 544-221.000.

Schoenholz, Daniel: *See*—
Mackay, Donald A. M.; Witzel, Frank; Dwivedi, Basant K.; and Schoenholz, Daniel, 4,085,227, Cl. 426-3.000.

Schonberger, Milton. Method of adjusting resistance of a thermistor. 4,084,313, Cl. 29-593.000.

Schoppee, Lawrence W., to Package Machinery Company. Apparatus for printing on an advancing web. 4,084,509, Cl. 101-261.000.

Schorsch, John B.; Graul, William E.; and Barash, David, to Union Corporation, The. Apparatus and process for refrigerating materials. 4,084,387, Cl. 62-63.000.

Schreiber, Ulrich; and Vidaver, William, to Canadian Patents & Development Limited. Apparatus for detecting and measuring fluorescence emission. 4,084,905, Cl. 356-85.000.

Schuchardt, Peter W.: *See*—
Schultz, Thomas E.; and Schuchardt, Peter W., 4,085,314, Cl. 235-487.000.

Schulten, Rudolf; and Behr, Friedrich, to Rheinische Braunkohlenwerke AG. Thermochemical process for producing methane and oxygen. 4,085,200, Cl. 423-579.000.

Schultz, Goran; and Wiberg, Karl-Gunnar, to Allmanna Svenska Elektriska Aktiebolaget. Method of joining two cables with an insulation of cross-linked polyethylene or another cross linked linear polymer. 4,084,307, Cl. 29-460.000.

Schultz, Thomas E.; and Schuchardt, Peter W., to Minnesota Mining and Manufacturing Company. Encodable retroreflective sheeting. 4,085,314, Cl. 235-487.000.

Schulz, Reginald O.; and Rivett, Larry R., to Houdaille Industries, Inc. Spade drill sharpening fixture. 4,084,353, Cl. 51-220.000.

Schutz, Hans Ulrich: *See*—
Beffa, Fabio; Buhler, Arthur; Donath, Peter; Schutz, Hans Ulrich; and Back, Gerhard, 4,085,097, Cl. 260-145.00A.

Schwartz, Robert E.: *See*—
Reed, Robert D.; and Schwartz, Robert E., 4,084,935, Cl. 431-202.000.

Schwartzman, Everett H. Energy conversion system. 4,084,379, Cl. 60-641.000.

Schwarz, Gail B., to Measuregraph Company, The. Apparatus for dispensing fabric from a bolt. 4,084,467, Cl. 83-208.000.

Schwarz, Wolfgang: *See*—
Seib, Karl; Schwarz, Wolfgang; and Gausepohl, Hermann, 4,085,264, Cl. 526-47.000.

Schweitzer, Roy C.; and Fiori, Lee B., to Addressograph-Multigraph Corporation. Ink fountain. 4,084,510, Cl. 101-365.000.

Scilly, Norman Frederick: *See*—
Salter, David Anthony; Scilly, Norman Frederick; and Watson, Keith Ellis, 4,085,152, Cl. 260-645.000.

Scott & Fetzer Company, The: *See*—
MacFarland, Charles H., 4,084,948, Cl. 55-366.000.

Scott, Paul B.: *See*—
Hamel, Bernard B.; Muntz, Eric P.; and Scott, Paul B., 4,084,943, Cl. 55-17.000.

Scudder, Gilbert Galde. Gun bore rust inhibiting method and apparatus. 4,084,340, Cl. 42-1.00N.

Sealectro Corporation: *See*—
Laserson, Gregory L.; and Madarasz, Miklos, 4,084,870, Cl. 339-18.00P.

Searle, Brian Christopher; and Ritter, Glenn Richard, to Cubic Tiltman Langley Limited. Coin validator modification. 4,084,677, Cl. 194-100.00A.

Sears Manufacturing Company: *See*—
Pelly, Charles W., 4,084,775, Cl. 297-453.000.

Seeburn Metal Products Limited: *See*—
Margueratt, Oatway, 4,084,791, Cl. 254-101.000.

Seib, Karl; Schwarz, Wolfgang; and Gausepohl, Hermann, to BASF Aktiengesellschaft. Process for preparing copolymers of acrylic acid or methacrylic acid and acrylic and methacrylic acid esters. 4,085,264, Cl. 526-47.000.

Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Measurement of current through a line subject to spurious high potentials. 4,085,298, Cl. 179-175.30R.

Seiden, Paul: *See*—
Murphy, Alan Pearce; Seiden, Paul; Diehl, Francis Louvaine; and McCarty, Charles Bruce, 4,085,052, Cl. 252-8.600.

Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; Ogihara, Masuo; Sato, Kozo; Shinozaki, Nobuo; Takazawa, Yuzuru; and Seki, Yoichi, 4,084,403, Cl. 58-23.00D.

Seki, Yoichi: *See*—
Kitai, Kiyoshi; Ogihara, Masuo; Sato, Kozo; Shinozaki, Nobuo; Takazawa, Yuzuru; and Seki, Yoichi, 4,084,403, Cl. 58-23.00D.

Sekiguchi, Takeshi, to Canon Kabushiki Kaisha. Color television camera. 4,085,419, Cl. 358-55.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Kanbara, Takahiro; and Mituhara, Toshihiko, 4,084,463, Cl. 82-53.100.
Saito, Fumio; Yamai, Fumito; Beppu, Yositugu; and Nakayama, Shinpei, 4,085,169, Cl. 260-886.000.

Sekisui Kaseihin Kogyo Kabushiki Kaisha: *See*—
Saito, Fumio; Yamai, Fumito; Beppu, Yositugu; and Nakayama, Shinpei, 4,085,169, Cl. 260-886.000.

Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Electrodeposition of aqueous dispersions of copolymers of polyethylenically unsaturated epoxy-amine adducts. 4,085,020, Cl. 204-181.00C.

Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Electrodeposition of aqueous dispersions of copolymers of polyethylenically unsaturated epoxy adducts including blocked isocyanate monomer. 4,085,161, Cl. 260-837.00R.

Seltzer, Daniel A.: *See*—
Kullmann, Donald J.; Seltzer, Daniel A.; and Kirby, Raymond L., 4,085,287, Cl. 178-66.00R.

Semler, Gunther; and Schaeffer, Georg, to Hoechst Aktiengesellschaft. Process for the preparation of chloroformic acid aryl esters and cyclic carbonates. 4,085,129, Cl. 260-463.000.

Senn, Charles. Steel mesh system and brackets. 4,084,916, Cl. 404-134.000.

Senoo, Masao: *See—*
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, 4,085,090, Cl. 260-49.000.
Serata, Shosei. Advanced slot stress control method of underground excavation. 4,084,384, Cl. 61-42.000.
Seree de Rochi, Irenee: *See—*
Mimoun, Hubert; Thao, Do; and Seree de Rochi, Irenee, 4,085,145, Cl. 260-592.000.
Setra Systems, Inc.: *See—*
Lee, Shih-Ying; and Briefer, Dennis K., 4,084,438, Cl. 73-706.000.
Severov, Genrikh Fedorovich: *See—*
Kaminsky, Igor Viktorovich; Shestakov, Vladimir Vladimirovich; Severov, Genrikh Fedorovich; Zaitsev, Aron Iosifovich; Litvinenko, Alexandr Fedorovich; Melnikov, Viktor Vasilievich; Zats, Boris Semenovich; Miropolsky, Mark Usherovich; and Maizlik, David Lvovich, 4,085,051, Cl. 210-333.00R.
Shadwick, Jan: *See—*
Odle, Herbert Arnold; Ruehl, Donald Edward; Shadwick, Jan; Sullivan, Daryl Dean; and Welty, Dale Eugene, 4,085,318, Cl. 362-217.000.
Shafer, Deborah L. Word game. 4,084,816, Cl. 273-1.00R.
Shaforostov, Vladillen Antonovich: *See—*
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivanovich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr Ivanovich; and Pilipenki, Vitaly Alexandrovich, 4,085,025, Cl. 204-224.00M.
Shah, Raj: *See—*
Sekmakas, Kazys; and Shah, Raj, 4,085,020, Cl. 204-181.00C.
Sekmakas, Kazys; and Shah, Raj, 4,085,161, Cl. 260-837.00R.
Shai, Arthur S., to Jaquith Industries, Inc. Method of adjusting angularity of light fixtures. 4,084,328, Cl. 33-368.000.
Sharapa, Anatoly Nikolaevich: *See—*
Abramyan, Evgeny Aramovich; and Sharapa, Anatoly Nikolaevich, 4,085,376, Cl. 328-233.000.
Sharp-Dent, Charles Edward Arthur; and Hounsell, John Owen, to Wright Machinery Company Limited. Weighing apparatus. 4,084,652, Cl. 177-207.000.
Shaw, Wilfrid G.: *See—*
White, James F.; Shaw, Wilfrid G.; and Applequist, Michael D., 4,085,065, Cl. 252-437.000.
Sheibley, Dean W., to United States of America, National Aeronautics and Space Administration. Inorganic-organic separators for alkaline batteries. 4,085,241, Cl. 427-385.00B.
Sheldon, Roger A.: *See—*
Rosinger, Herbert P.; Wood, Derek A.; and Sheldon, Roger A., 4,085,147, Cl. 260-600.00R.
Sheldon-Sodeco Printer, Inc.: *See—*
Pylant, John D.; Lozeau, Paul R.; and Packard, Newton R., 4,084,503, Cl. 101-96.000.
Sheldrake, Charles W.: *See—*
Singleton, Alan H.; Homberg, Otto A.; and Sheldrake, Charles W., 4,085,199, Cl. 423-574.00R.
Shell Oil Company: *See—*
Gergen, William P.; and Davison, Sol, 4,085,163, Cl. 260-857.00D.
Rosinger, Herbert P.; Wood, Derek A.; and Sheldon, Roger A., 4,085,147, Cl. 260-600.00R.
Van Scoy, Robert W., 4,085,192, Cl. 423-226.000.
Shepherd, Robin Gerald: *See—*
Curran, Adrian Charles Ward; and Shepherd, Robin Gerald, 4,085,108, Cl. 260-283.0SC.
Sheridan, Arthur L.: *See—*
Sipusic, Frank; and Sheridan, Arthur L., 4,084,466, Cl. 83-193.000.
Sherwood Medical Industries Inc.: *See—*
Koenig, Elmer A., 4,084,588, Cl. 128-218.00R.
Shestakov, Vladimir Vladimirovich: *See—*
Kaminsky, Igor Viktorovich; Shestakov, Vladimir Vladimirovich; Severov, Genrikh Fedorovich; Zaitsev, Aron Iosifovich; Litvinenko, Alexandr Fedorovich; Melnikov, Viktor Vasilievich; Zats, Boris Semenovich; Miropolsky, Mark Usherovich; and Maizlik, David Lvovich, 4,085,051, Cl. 210-333.00R.
Shetty, Bola Vithal, to Pennwalt Corporation. 1-Heterocyclic alkyl-1,2,3,4-tetrahydroquinazolinones. 4,085,107, Cl. 260-256.40Q.
Shiah, Chyn Duog. Production of rutile from ilmenite. 4,085,190, Cl. 423-80.000.
Shibata, Hiroshi: *See—*
Yasuoka, Akihiko; and Shibata, Hiroshi, 4,084,311, Cl. 29-571.000.
Shibata, Shoson: *See—*
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; Shibata, Shoson; and Suzuki, Yoshikatsu, 4,085,262, Cl. 526-46.000.
Shigeta, Masatomo: *See—*
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R.
Shikoku Kaken Kogyo Kabushiki Kaisha: *See—*
Motoki, Hideo, 4,084,980, Cl. 106-75.000.
Shiley Laboratories, Incorporated: *See—*
Ionescu, Marian I.; and Fettel, Bruce E., 4,084,268, Cl. 3-1.500.
Shimamura, Isao: *See—*
Nakamura, Koichi; and Shimamura, Isao, 4,084,969, Cl. 96-60.00R.
Shimano Industrial Company Limited: *See—*
Kine, Masayoshi, 4,084,449, Cl. 74-480.00R.
Shimazaki, Kazumi; and Hirayama, Hiroyuki, to Agency of Industrial Science & Technology. Combination type standard cell with low temperature coefficients. 4,085,258, Cl. 429-125.000.
Shimizu, Masayuki: *See—*
Nakai, Setsuo; Kita, Shinichiro; Hiki, Fumihiko; and Shimizu, Masayuki, 4,085,266, Cl. 526-65.000.
Shimoiizaka, Junzo; Konosu, Akira; Hayashi, Yuzo; Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, to Shimoiizaka, Junzo; and Yawamura Glass Kabushiki Kaisha. Method and apparatus for breaking up and separating waste glass to obtain cullet. 4,084,755, Cl. 241-95.000.
Shimomura, Takayoshi: *See—*
Matsudo, Kazuo; Shimomura, Takayoshi; and Kurokawa, Teruo, 4,084,991, Cl. 148-31.500.
Shin-Shirasuna Electric Corporation: *See—*
Hayashi, Kiyoshi, 4,084,768, Cl. 242-186.000.
Shinada, Hidehiro: *See—*
Mashimo, Michiya; and Shinada, Hidehiro, 4,084,871, Cl. 316-19.000.
Shinohara, Katsuhiko; Kuramochi, Yoshinori; Suehiro, Tetsuo; and Matsubara, Ichiro, to Hitachi, Ltd. Electronic system for process instrumentation and control. 4,085,334, Cl. 307-11.000.
Shinozaki, Nobuo: *See—*
Kitai, Kiyoshi; Ogihara, Masuo; Sato, Kozo; Shinozaki, Nobuo; Takazawa, Yuzuru; and Seki, Yoichi, 4,084,403, Cl. 58-23.00D.
Shinsei Kogyo Co., Ltd.: *See—*
Asano, Kiyoji, 4,084,344, Cl. 46-28.000.
Shionogi & Co., Ltd.: *See—*
Adachi, Ikuo; Ueda, Motohiko; and Kimoto, Sadatoshi, 4,085,114, Cl. 260-307.0DA.
Takamizawa, Akira; and Iwata, Tsuyoshi, 4,085,128, Cl. 260-456.00A.
Shipley Company Inc.: *See—*
Gulla, Michael, 4,085,066, Cl. 252-434.000.
Shklyanov, Leonid Pavlovich; Baranov, Vladimir Nikitich; Koltyrev, Dmitry Nikiforovich; Lifshits, Viktor Senderovich; Polyansky, Ivan Ivanovich; and Osinskaya, Tamila Iosifovna. Device for removing internal circular flash. 4,084,484, Cl. 90-24.00C.
Shkrabov, Boris Semenovich: *See—*
Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich, 4,084,400, Cl. 57-156.000.
Shorrock Developments Limited: *See—*
Hasler, William Sandford, 4,085,304, Cl. 200-61.45R.
Shubert, Nick J. Pyramidal solar heater. 4,084,573, Cl. 126-270.000.
Shutov, Gennady Nikolaevich: *See—*
Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich, 4,084,400, Cl. 57-156.000.
Sick, Erwin, to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik. Optical apparatus. 4,085,322, Cl. 250-227.000.
Siclari, Francesco; and Rosai, Pietro Paolo, to SNIA Viscosa Societa' Nazionale Industria Application Viscosa S.p.A. Method for producing aldehyde acids by selective ozonization of cyclo-olefins. 4,085,127, Cl. 260-413.000.
Siegert, Klaus: *See—*
Zilges, Franz Josef; and Siegert, Klaus, 4,084,422, Cl. 72-253.00R.
Siemens Aktiengesellschaft: *See—*
Chakrabarty, Naresh; and Weitze, Artur, 4,084,314, Cl. 29-626.000.
Goser, Karl; and Mueller, Ruediger, 4,085,339, Cl. 307-213.000.
Grave, Burghard; Gutbier, Heinrich; and Deinzer, Michael, 4,085,255, Cl. 429-26.000.
Heinzl, Joachim; and Rosenstock, Guenter, 4,084,681, Cl. 197-82.000.
Hjort, Bo, 4,084,583, Cl. 128-2.06R.
Juergens, Wilfried; Roschy, Manfred; and Schauer, Alois, 4,085,011, Cl. 204-37.00R.
Reier, Richard; and Kuelzer, Peter, 4,084,678, Cl. 197-1.00R.
Siemon-Dynamic Mfg. Company, The: *See—*
Knickerbocker, Robert H., 4,084,877, Cl. 339-97.00P.
Sigler, Robert D., to KMS Fusion, Inc. All-reflective optical target illumination system with high numerical aperture. 4,084,887, Cl. 350-294.000.
Silverman, Richard H. Price marking system for automated check-out of merchandize. 4,084,742, Cl. 235-419.000.
Simington, Jack F., to Simington Products Co. Oscillating saw chain sharpener. 4,084,452, Cl. 76-42.000.
Simington Products Co.: *See—*
Simington, Jack F., 4,084,452, Cl. 76-42.000.
Simmons, Frederick A., to Phillips Screw Company. Screw heads. 4,084,478, Cl. 85-45.000.
Simon, Helmut: *See—*
Atallah, Khaled; Berthold, Fritz; Kolbe, Wolfgang; Rauschenbach, Peter; and Simon, Helmut, 4,085,325, Cl. 250-328.000.
Simonson, Robert Clayton: *See—*
Stroud, Ruben Jasper; and Simonson, Robert Clayton, 4,084,925, Cl. 417-554.000.
Simpson, Adam, to Burroughs Corporation. Sheet handling device particularly useful as ledger feeder and stacker for accounting machines. 4,084,805, Cl. 271-4.000.
Simpson, David Preston; and Lawton, James, to Electricity Council,

The. Method and apparatus for increasing contact area in a multi-phase system. 4,085,170, Cl. 261-1.000.

Simpson, John I.: *See—*
Hogan, Elmer R.; Hollis, Charles Edward; and Simpson, John I., 4,084,293, Cl. 17-52.000.

Singer Company, The: *See—*
Galuschak, George; and Malkiel, Saul Leon, 4,085,375, Cl. 328-160.000.

Singleton, Alan H.; Homberg, Otto A.; and Sheldrake, Charles W., to Bethlehem Steel Corporation. Method for removing hydrogen sulfide from sulfur-bearing industrial gases with claus-type reactors. 4,085,199, Cl. 423-574.00R.

Sinnamon, Howard I.: *See—*
Komanowsky, Michael; and Sinnamon, Howard I., 4,085,044, Cl. 210-45.000.

Sipusic, Frank; and Sheridan, Arthur L., to Union Carbide Corporation. Apparatus for severing thin-walled tubing on a mandrel. 4,084,466, Cl. 83-193.000.

Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Insecticidal N-(substituted phenyl)-N'-benzoyl ureas. 4,085,226, Cl. 424-322.000.

Sisco, William Braxton: *See—*
Williams, John Chamberlin; and Sisco, William Braxton, 4,085,367, Cl. 325-67.000.

Siuta, Gerald Joseph: *See—*
Weiss, Martin Joseph; and Siuta, Gerald Joseph, 4,085,272, Cl. 560-121.000.

Six, Jean-Claude Gerard: *See—*
Coulmance, Jean-Pierre Rene; and Six, Jean-Claude Gerard, 4,085,310, Cl. 219-502.000.

Skeirik, Lewis. System for mixing and dispensing dental amalgam. 4,084,320, Cl. 32-60.000.

SKF Industrial Trading & Development Company B.V.: *See—*
van Nederveen, Hans Bertil, 4,084,649, Cl. 175-366.000.

SKF Kugellagerfabriken GmbH: *See—*
Kohler, Gisbert; Munkel, Hanns-Wilfried; Pohl, Hubert; Sommer, Walter; and Wendel, Gunther, 4,084,860, Cl. 308-15.000.

Skinner, Frank R., II, to Whirlpool Corporation. Conveyor transfer method and apparatus. 4,084,684, Cl. 198-467.000.

Skinner, Kenneth Charles, to Helipebs Limited. Forming roll for rolling cylindrical bodies from cylindrical rod stock, and a method of making the same. 4,084,303, Cl. 29-148.40D.

Sliva, Philip O., to Xerox Corporation. Multi-phase photoactivated switch. 4,085,321, Cl. 250-211.00R.

Smith-Berger Manufacturing Corporation: *See—*
Hogan, Elmer R.; Hollis, Charles Edward; and Simpson, John I., 4,084,293, Cl. 17-52.000.

Smith, Eugene David. Fluid-powered rotary brush. 4,084,281, Cl. 15-29.000.

Smith, James D. B., to Westinghouse Electric Corporation. Resin rich epoxide-mica flexible high voltage insulation. 4,085,250, Cl. 428-418.000.

Smith, Lee H.; and Alexandrowicz, Norman J., to Dynapar Corporation. Potentiometer having improved operating means. 4,084,675, Cl. 192-95.000.

Smith, Leslie Harold, to Imperial Chemical Industries Limited. Ethanolamine derivatives. 4,085,221, Cl. 424-275.000.

Smith, Oliver Dale; and Goldberg, Gerald M., to Bunker Ramo Corporation. Foam type coating remover. 4,085,059, Cl. 252-118.000.

Smith, Robert L.: *See—*
Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,085,125, Cl. 260-402.000.

Smith, Ronald A., to Fairchild Camera and Instrument Corporation. Hand-held controller device. 4,085,301, Cl. 200-4.000.

Smith, William Edward, to General Electric Company. Process for the ortho alkylation of phenols in the presence of a copper-zinc-aluminum mixed oxide catalyst. 4,085,150, Cl. 260-621.00R.

Smitherman, Ray C., to RTR Incorporated. Fuel oil level measuring apparatus. 4,084,436, Cl. 73-313.000.

SmithKline Corporation: *See—*
Kingsbury, William D., 4,085,100, Cl. 260-239.00A.

Snell, Thomas Bartlett. Survey apparatus. 4,084,359, Cl. 52-40.000.

SNIA Viscosa Societa' Nazionale Industria Application Viscosa S.p.A.: *See—*
Siclari, Francesco; and Rossi, Pietro Paolo, 4,085,127, Cl. 260-413.000.

Snow, Wallace Leon: *See—*
Schmidt, John Michael; and Snow, Wallace Leon, 4,085,406, Cl. 343-895.000.

Societa' Farmaceutici Italia S.p.A.: *See—*
Foglio, Maurizio; Scarponi, Ugo; and Arcamone, Federico, 4,085,113, Cl. 260-306.70C.

Societe Anonyme Francaise du Ferodo: *See—*
de Gennes, Gerard, 4,084,674, Cl. 192-89.00B.

Societe Anonyme Potain Poclain Materiel (P.P.M.): *See—*
Lambert, Bernard Leon, 4,084,777, Cl. 248-287.000.

Societe d'Etudes de Machines Thermiques: *See—*
Michon, Pierre, 4,084,410, Cl. 64-12.000.

Societe Diete: Stabilimento Industriale Construzione Macchinario Attrezzature: *See—*
Bossi, Oscar G., 4,084,481, Cl. 90-1.60R.

Societe d'Optique, Precision Electronique et Mecanique - SOPELEM: *See—*
Coussot, Pierre, 4,084,885, Cl. 350-175.0ML.

Societe Francaise des Produits pour Catalyse: *See—*
Juguin, Bernard; Cosyns, Jean; LePage, Jean-Francois; and Miquel, Jean, 4,085,157, Cl. 260-673.000.

Societe Generale de Constructions Electriques et Mecaniques Alsthom S.A.: *See—*
Lecoffre, Yves, 4,084,432, Cl. 73-148.000.

Societe Hure S A: *See—*
Derrien, Robert F., 4,084,482, Cl. 90-11.00R.

Societe Ramo S.A.: *See—*
Champeau, Marcel; and Tabutin, Andre, 4,084,461, Cl. 82-21.00B.

Soeder, Carl Johannes: *See—*
Stengel, Eberhard; and Soeder, Carl Johannes, 4,084,346, Cl. 47-1.400.

Soma, Munemasa: *See—*
Goto, Tadahiro; and Soma, Munemasa, 4,085,295, Cl. 179-84.0VF.

Sommer, Walter: *See—*
Kohler, Gisbert; Munkel, Hanns-Wilfried; Pohl, Hubert; Sommer, Walter; and Wendel, Gunther, 4,084,860, Cl. 308-15.000.

Song, Dae Suk; Duffy, Richard Joseph; Witschonke, Charles Richard; Schiller, Arthur Maurice; and Higgins, Mark Allan, to American Cyanamid Company. Low molecular weight hydrolyzed polyacrylamide used as a scale inhibitor in water systems. 4,085,045, Cl. 210-58.000.

Sony Corporation: *See—*
Aoki, Teruaki; Matsushita, Takeshi; Mifune, Tadayoshi; and Hayashi, Hisao, 4,084,986, Cl. 148-1.500.
Chikatsu, Masahiro, 4,085,431, Cl. 361-56.000.
Mogi, Takao; Morita, Koji; and Okada, Hisao, 4,085,371, Cl. 325-464.000.
Mogi, Takao; and Okada, Hisao, 4,085,372, Cl. 325-464.000.

Spaehn, Heinz: *See—*
Ohlinger, Manfred; Wagner, Gerhard; Honecker, Gerhard; Stritzinger, Heinz; and Spaehn, Heinz, 4,084,936, Cl. 21-2.70R.

Sparko, William E.: *See—*
Baker, Donald B.; and Sparko, William E., 4,085,171, Cl. 261-36.00R.

Spencer, Clark V.; and Rondeau, Benjamin G. Frame saver for logging trucks. 4,084,835, Cl. 280-148.000.

Speranzin, Claudio, to Officine Savio, S.p.A. Device to disrupt the balloon of yarn. 4,084,766, Cl. 242-129.620.

Sperry Rand Corporation: *See—*
Godel, Siegfried; Pudims, Albert Adam; and Wergzyn, Richard, 4,085,309, Cl. 219-364.000.
Lodi, Robert J., 4,085,460, Cl. 365-230.000.
Pertl, Jerry Hudson; and Kregness, Glen Roy, 4,085,447, Cl. 364-900.000.

Spisak, Edward G. Method of forming rings. 4,084,526, Cl. 113-116.00E.

Spitz, Erich: *See—*
Aigrain, Pierre; Broussaud, Georges; Peltier, Jean Paul; and Spitz, Erich, 4,085,426, Cl. 360-38.000.

Spotts, Glenn R.: *See—*
Spotts, Willard; Arrandale, Thomas P.; and Spotts, Glenn R., 4,084,491, Cl. 98-121.00A.

Spotts, Willard; Arrandale, Thomas P.; and Spotts, Glenn R., to McGraw-Edison Company. Oscillated louver assembly for breeze box fan. 4,084,491, Cl. 98-121.00A.

Sprague Electric Company: *See—*
Genesi, Robert Charles, 4,085,411, Cl. 354-51.000.

Squassoni, Gino F.: *See—*
Warter, Peter J., Jr.; Squassoni, Gino F.; Tulagin, Vsevolod; Teumer, Roger G.; and Egnaczak, Raymond K., 4,084,896, Cl. 355-3.00P.

Stack, Michael John: *See—*
Grosch, Steven Wayne; and Stack, Michael John, 4,084,886, Cl. 350-281.000.

Stafford, Floyd: *See—*
Hrdlicka, Theodore Frederick; and Stafford, Floyd, 4,085,437, Cl. 362-109.000.

Stahl, Otto; and Hins, Johannes, to Georg Menshen & Co. KG. Child-proof closure device for containers. 4,084,728, Cl. 222-153.000.

Stahlecker, Fritz; and Stahlecker, Hans. Mobile servicing arrangement for open-end spinning machines. 4,084,398, Cl. 57-34.00R.

Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, 4,084,398, Cl. 57-34.00R.

Stamicarbon, B.V.: *See—*
Den Otter, Marinus J. A. M.; Van Geenen, Albert A.; and Te Nijenhuis, Anne, 4,085,283, Cl. 544-214.000.

Stamires, Dennis: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,085,069, Cl. 252-455.00Z.

Standard Car Truck Company: *See—*
Bullock, Robert L., 4,084,513, Cl. 105-197.0DB.
Bullock, Robert L., 4,084,514, Cl. 105-197.0DB.

Standard Oil Company, The: *See—*
Milberger, Ernest C.; Bremer, Noel J.; and Wong, Eunice K. T., 4,085,121, Cl. 260-346.750.

Standard Oil Company (Indiana): *See—*
Caspari, Gunter, 4,085,053, Cl. 252-32.70E.

Standard Oil Company (Ohio), The: *See—*
White, James F.; Shaw, Wilfrid G.; and Applequist, Michael D., 4,085,065, Cl. 252-437.000.

Standing, Arthur Frederick, to Communications Satellite Corporation. Symmetrical stripline package. 4,085,390, Cl. 333-33.000.

Stansbury, Thomas A. Safety control system for hydraulic jet turbines. 4,084,536, Cl. 115-16.000.

Staron, Thadee Joseph, to Institut National de la Recherche

Agronomique. Process for the treatment of cakes and seeds of vegetable origin. 4,085,229, Cl. 426-46.000.

Stauffer, Harry C.: *See—*
Murphy, Harry C., Jr.; and Stauffer, Harry C., 4,085,036, Cl. 208-212.000.

Stedman, Robert N., to Caterpillar Tractor Co. Lift truck with means to pivot mast and the fork carriage thereon. 4,084,715, Cl. 214-660.000.

Stefani, Giancarlo; and Fontana, Pietro, to Lonza, Ltd. Production of maleic anhydride using a mixed-oxide oxidation catalyst containing vanadium and pentavalent phosphorus. 4,085,122, Cl. 260-346.750.

Stein, Helmut: *See—*
Zehender, Ernst; Blaich, Bernhard; Stein, Helmut; and Kerner, Karl, 4,085,248, Cl. 428-336.000.

Stein Industries, Inc.: *See—*
Hossalla, George J.; and Stein, Norman R., 4,084,703, Cl. 211-153.000.

Stein, Norman R.: *See—*
Hossalla, George J.; and Stein, Norman R., 4,084,703, Cl. 211-153.000.

Steinhards, Arnolds, deceased: *See—*
Kornis, Gabriel; Nidy, Eldon G.; Vostral, Henry J.; and Steinhards, Arnolds, deceased, 4,084,955, Cl. 71-92.000.

Stendel, Wilhelm: *See—*
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,085,226, Cl. 424-322.000.

Stengel, Eberhard; and Soeder, Carl Johannes, to Gesellschaft fur Strahlen- und Umweltforschung mbH. Method and arrangement for optimally supplying autotrophic organisms with CO_2 nutrient. 4,084,346, Cl. 47-1.400.

Stephansky, Robert L.: *See—*
Burgarella, John P.; Turner, George, Jr.; and Stephansky, Robert L., 4,085,414, Cl. 354-145.000.

Sterling Drug Inc.: *See—*
Diana, Guy D.; and Cutler, Royal A., 4,085,144, Cl. 260-584.00R.
Sandermann, Wilhelm; Eggensperger, Heinz; and Diehl, Karl-Heinz, 4,085,220, Cl. 424-274.000.

Stevens, Carlile R. Traffic control system. 4,085,434, Cl. 361-413.000.

Stevenson, Dennis Clifford: *See—*
Willis, David John; Stevenson, Dennis Clifford; and Bettle, William, 4,084,274, Cl. 5-61.000.

Stewart, William H., Jr.: *See—*
Klein, Norman E.; and Stewart, William H., Jr., 4,084,615, Cl. 137-624.110.

Stillman, Nathan, to Champion International Corporation. Balanced orientated flexible packaging composite. 4,085,244, Cl. 428-192.000.

Stilts, Kenneth Morris. Apparatus for insulating purlins. 4,084,368, Cl. 52-728.000.

Stilwell, James H.: *See—*
Ryan, Carl R.; and Stilwell, James H., 4,085,378, Cl. 329-124.000.

Stoelting Brothers Company: *See—*
Anhalt, Alfred E., 4,084,407, Cl. 62-342.000.

Stoffey, Donald G. Method for rigid enclosures and molded items. 4,085,180, Cl. 264-128.000.

Stoll, Max: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 4,085,109, Cl. 260-294.80E.

Stone-Platt Crawley Limited: *See—*
Evans, Robert, 4,085,362, Cl. 324-83.00D.

Stonitsch, Lawrence; and Stonitsch, Richard W. Conduit system with expansion coupling. 4,084,842, Cl. 285-47.000.

Stonitsch, Richard W.: *See—*
Stonitsch, Lawrence; and Stonitsch, Richard W., 4,084,842, Cl. 285-47.000.

Stora Kopparbergs Bergslags Aktiebolag: *See—*
Collin, Per Harald; and Widell, Bjorn, 4,084,958, Cl. 75-36.000.

Stratbucker, Robert A.; and Hagood, John S., to Health Technology Laboratories, Inc. Data plotter. 4,085,407, Cl. 346-33.0ME.

Strindehag, Ove Magnus, to AB Svenska Flaktfabriken. Rotor for rotary heat exchangers. 4,084,633, Cl. 165-8.000.

Stritzinger, Heinz: *See—*
Ohlinger, Manfred; Wagner, Gerhard; Honecker, Gerhard; Stritzinger, Heinz; and Spaehn, Heinz, 4,084,936, Cl. 21-2.70R.

Stroud, Ruben Jasper; and Simonson, Robert Clayton. Oil well pump with self-contained lubrication. 4,084,925, Cl. 417-554.000.

Stukenbrock, Heiner. Light pipe image display. 4,085,420, Cl. 358-56.000.

Stumpp, Bernard, to Zahnradfabrik Friedrichshafen AG. Turning tool, especially for copying turning. 4,084,917, Cl. 407-114.000.

Subramanian, Kohur Nagaraja; and Glaum, Gerald Vernon, to International Nickel Company, Inc., The. Reduction leaching of raw sea nodules with sulfides. 4,085,188, Cl. 423-32.000.

Subrick, Joseph: *See—*
Miles, Roscoe C.; Subrick, Joseph; and Talman, Woods G., 4,084,855, Cl. 299-64.000.

Suehiro, Tetsuo: *See—*
Shinohara, Katsuhiko; Kuramochi, Yoshinori; Suehiro, Tetsuo; and Matsubara, Ichiro, 4,085,334, Cl. 307-11.000.

Sugawara, Shin' Ichi: *See—*
Taniguchi, Seiho; Kawasaki, Yoichi; and Sugawara, Shin' Ichi, 4,085,249, Cl. 428-383.000.

Sugie, Akio: *See—*
Shimoiizaka, Junzo; Konosu, Akira; Hayashi, Yuzo; Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, 4,084,755, Cl. 241-95.000.

Sugihara, Kunihiko: *See—*
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; Sugihara, Kunihiko; and Takagi, Yasuo, 4,084,372, Cl. 60-278.000.

Sugimoto, Eiji: *See—*
Hayashi, Toshiaki; Sugiura, Hiroshi; Ozaki, Toshio; Sugimoto, Eiji; and Banno, Yukio, 4,084,841, Cl. 280-745.000.

Sugimura, Kazuo; and Sugimura, Nobuyuki. Accumulator consisting of welded vessel and lid. 4,084,621, Cl. 138-30.000.

Sugimura, Nobuyuki: *See—*
Sugimura, Kazuo; and Sugimura, Nobuyuki, 4,084,621, Cl. 138-30.000.

Sugiura, Hiroshi: *See—*
Hayashi, Toshiaki; Sugiura, Hiroshi; Ozaki, Toshio; Sugimoto, Eiji; and Banno, Yukio, 4,084,841, Cl. 280-745.000.

Suh, Kyung W.; and Killingbeck, Graydon Wayne, to Dow Chemical Company, The. Styrene polymer foam and the preparation thereof. 4,085,073, Cl. 260-2.50E.

Sullivan, Daryl Dean: *See—*
Odle, Herbert Arnold; Ruehl, Donald Edward; Shadwick, Jan; Sullivan, Daryl Dean; and Welty, Dale Eugene, 4,085,318, Cl. 362-217.000.

Sullivan, Neal, to KFC Corporation. System for providing like cooking medium volume in successive cooking cycles. 4,084,492, Cl. 99-330.000.

Sullivan, Paul A.: *See—*
McCoy, John H.; and Sullivan, Paul A., 4,085,329, Cl. 250-492.00A.

Sullivan, Paul E.: *See—*
Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., Jr., 4,084,785, Cl. 251-172.000.

Sumida, Yutaka: *See—*
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R.

Sumitomo Chemical Company, Limited: *See—*
Katsube, Junki; Kojima, Atsuyuki; Sunagawa, Makoto; Takashima, Yoshinori; Kameno, Yoshito; and Yamamoto, Hisao, 4,085,210, Cl. 424-248.400.
Nakai, Setsuo; Kita, Shinichiro; Hiki, Fumihiko; and Shimizu, Masayuki, 4,085,266, Cl. 526-65.000.

Sumiyoshi, Masaharu: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,084,551, Cl. 123-32.0SP.

Sunagawa, Makoto: *See—*
Katsube, Junki; Kojima, Atsuyuki; Sunagawa, Makoto; Takashima, Yoshinori; Kameno, Yoshito; and Yamamoto, Hisao, 4,085,210, Cl. 424-248.400.

Sunds Aktiebolag: *See—*
Pettersson, Bengt Edvard, 4,085,002, Cl. 162-238.000.

Sunshine Mining Company: *See—*
Caldon, Frank, 4,084,961, Cl. 75-101.00R.

Suslin, Vladimir Isaakovich: *See—*
Lekarev, Zinovy Abramovich; Razdymakha, Pavel Semenovich; Davydov, Vladimir Nikolaevich; Shaforostov, Vladillen Antonovich; Kolosov, Leonid Pavlovich; Suslin, Vladimir Isaakovich; Makeev, Boris Anatolievich; Dubovik, Alexandr Ivanovich; Kolesnichenko, Anatoly Alexeevich; Etnaer, Alexandr Ivanovich; and Pilipenki, Vitaly Alexandrovich, 4,085,025, Cl. 204-224.00M.

Suwa, Masateru; and Komuro, Katsuhiro, to Hitachi, Ltd. Composite collector. 4,084,669, Cl. 191-45.00R.

Suzuki, Isamu: *See—*
Hashimoto, Masanao; Saitou, Tadashi; Kobayashi, Tatsuo; and Suzuki, Isamu, 4,084,373, Cl. 60-293.000.

Suzuki Motor Company Limited: *See—*
Ishimori, Shigeru; and Honda, Shinichi, 4,085,010, Cl. 204-16.000.

Suzuki, Takanori: *See—*
Sato, Kazunobu; Suzuki, Takanori; Kobayashi, Tadataka; and Miyazawa, Takeshi, 4,084,568, Cl. 123-182.000.

Suzuki, Yoshikatsu: *See—*
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; Shibata, Shoson; and Suzuki, Yoshikatsu, 4,085,262, Cl. 526-46.000.

Svenska Rotor Maskiner Aktiebolag: *See—*
Schibbye, Hjalmar; and Holmstrom, Tord, 4,084,405, Cl. 62-197.000.

Svrjcek, Benjamin W., Jr., to United States of America, Navy. Electrolytic timing element. 4,084,511, Cl. 102-70.2GA.

Swanco: *See—*
Booth, Morris A., 4,084,525, Cl. 113-1.00K.

Swank, Robert K.; and Yang, Kei-Hsiung, to General Electric Company. Direct charge readout electron radiography apparatus with improved signal-to-noise ratio. 4,085,327, Cl. 250-370.000.

Swiss Aluminium Limited: *See—*
Anthony, William H.; Brock, Andrew J.; and Gullotti, Damian V., 4,084,963, Cl. 75-138.000.

Systron-Donner Corporation: *See—*
Cook, Kenneth C., 4,084,602, Cl. 137-68.00A.

Tabutin, Andre: *See—*
Champeau, Marcel; and Tabutin, Andre, 4,084,461, Cl. 82-21.00B.

Tagaki, Shinji: *See—*
Kitashima, Riichi; Matsumoto, Masakazu; and Tagaki, Shinji, 4,084,473, Cl. 84-1.140.

Tagami, Eijiro: *See—*
Ishibashi, Yoshiyuki; Tagami, Eijiro; Higaki, Taiji; and Matsushita, Takao, 4,085,236, Cl. 427-121.000.

Taisho Pharmaceutical Co., Ltd.: *See—*
Kyogoku, Kazuaki; Hatayama, Katsuo; Yokomori, Sadakazu; Sawada, Jiro; and Tanaka, Ichiro, 4,085,135, Cl. 260-520.00C.

Takagi, Hiroyoshi: *See—*
Sano, Shiro; Hayashi, Hiroshi; and Takagi, Hiroyoshi, 4,084,979, Cl. 106-58.000.

Takagi, Shigeru; and Hattori, Yoshiyuki, to Nippon Soken, Inc. Gas bag protection apparatus for vehicles. 4,084,839, Cl. 280-736.000.

Takagi, Yasuo: *See—*
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; Sugihara, Kunihiko; and Takagi, Yasuo, 4,084,372, Cl. 60-278.000.

Takahashi, Katuhiko; Arimoto, Kyozo; Arai, Yoshiyuki; Morinaga, Tsuyoshi; and Nakazawa, Yuji, to Daicel Ltd. Process for preparing 4-oxopentadecanedioic acid. 4,085,274, Cl. 560-176.000.

Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, to Dai Nippon Toryo Co., Ltd.; and Nippon Hoso Kyokai. Gaseous discharge light emitting element. 4,085,351, Cl. 313-486.000.

Takamizawa, Akira; and Iwata, Tsuyoshi, to Shionogi & Co., Ltd. Cyclic phosphamide derivatives. 4,085,128, Cl. 260-456.00A.

Takashima, Yoshinori: *See—*
Katsube, Junki; Kojima, Atsuyuki; Sunagawa, Makoto; Takashima, Yoshinori; Kameno, Yoshito; and Yamamoto, Hisao, 4,085,210, Cl. 424-248.400.

Takasugi, Tsuneji: *See—*
Watanabe, Kisuke; and Takasugi, Tsuneji, 4,084,990, Cl. 148-11.50R.

Takazawa, Yuzuru: *See—*
Kitai, Kiyoshi; Ogihara, Masuo; Sato, Kozo; Shinozaki, Nobuo; Takazawa, Yuzuru; and Seki, Yoichi, 4,084,403, Cl. 58-23.00D.

Takebe, Toshio; and Yamazaki, Takashi, to Eisai Co., Ltd. Water dispersible absorber for blood and the like. 4,084,591, Cl. 128-285.000.

Takeda Chemical Industries, Ltd.: *See—*
Nohara, Akira; Ishiguro, Toshihiro; and Sanno, Yasushi, 4,085,116, Cl. 260-308.00D.

Takenaka Komuten Co., Ltd.: *See—*
Kukino, Yoshinori; Miura, Mitsuo; and Aoyagi, Hayao, 4,084,383, Cl. 61-36.00R.

Taketani, Yutaka: *See—*
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, 4,085,090, Cl. 260-49.000.

Takeuchi, Masato: *See—*
Nakajima, Fumito; Takeuchi, Masato; Matsuda, Shimpei; Uno, Shigeo; Mori, Toshikatsu; Watanabe, Yoshihisa; and Imanari, Makoto, 4,085,193, Cl. 423-239.000.

Talman, Woods G.: *See—*
Miles, Roscoe C.; Subrick, Joseph; and Talman, Woods G., 4,084,855, Cl. 299-64.000.

Tamburino, James C.: *See—*
Prosek, John R.; and Tamburino, James C., 4,084,852, Cl. 298-22.00C.

Tamori, Masato: *See—*
Adachi, Syozo; and Tamori, Masato, 4,085,058, Cl. 252-62.10L.

Tamura, Yukio: *See—*
Kondo, Masatsune; Sawami, Yoshiaki; and Tamura, Yukio, 4,084,847, Cl. 296-28.00R.

Tanaka, Ichiro: *See—*
Kyogoku, Kazuaki; Hatayama, Katsuo; Yokomori, Sadakazu; Sawada, Jiro; and Tanaka, Ichiro, 4,085,135, Cl. 260-520.00C.

Tanaka, Masaaki, to Rank Xerox, Ltd. Ambient temperature compensating device for power source apparatus for developing electrodes. 4,084,538, Cl. 118-4.000.

Tanaka, Shoji: *See—*
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; Shibata, Shoson; and Suzuki, Yoshikatsu, 4,085,262, Cl. 526-46.000.

Tanaka, Taro: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,084,551, Cl. 123-32.0SP.

Tanaka, Yukiyasu: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,084,551, Cl. 123-32.0SP.

Tanaka, Yutaka, to Toytown Corporation. Toy helicopter. 4,084,345, Cl. 46-75.000.

Tanigami, Yoshinori: *See—*
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,351, Cl. 313-486.000.

Taniguchi, Seiho; Kawasaki, Yoichi; and Sugawara, Shin' Ichi, to Nippon Unicar Company Limited. Semiconductive composition having controlled strippability. 4,085,249, Cl. 428-383.000.

Tanuma, Itsuo: *See—*
Honda, Toshio; Tanuma, Itsuo; Tanaka, Shoji; Iwami, Koichi; Fukuura, Yukio; Shibata, Shoson; and Suzuki, Yoshikatsu, 4,085,262, Cl. 526-46.000.

Tappan Company, The: *See—*
McFarland, Robert Henry, 4,084,571, Cl. 126-198.000.

Tashima, Norio: *See—*
Muto, Masayuki; Tashima, Norio; Kaieda, Shozo; and Kamimura, Kuniaki, 4,085,408, Cl. 346-75.000.

Tatsuoka, Yoshio: *See—*
Nakagawa, Kiyoshi; Otaki, Yukio; Mineo, Masatoshi; Aratani, Yoshio; Tatsuoka, Yoshio; and Kusakabe, Haruhiko, 4,084,622, Cl. 139-420.00R.

TBA Industrial Products Limited: *See—*
Freedman, Clive M., 4,084,977, Cl. 106-50.000.

Teague, Joe Doyle: *See—*
Cain, Gene; Teague, Joe Doyle; and Wright, Paul James, 4,084,381, Cl. 61-36.00C.

Technicon Instruments Corporation: *See—*
Pace, Salvatore J., 4,085,009, Cl. 204-1.00T.

Teco, Inc.: *See—*
Johnson, Leonard L., 4,084,619, Cl. 137-636.200.

Teijin Limited: *See—*
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, 4,085,090, Cl. 260-49.000.
Kato, Sumio, 4,085,182, Cl. 264-171.000.

Teinturerie de Champagne: *See—*
Levielle, Jean, 4,084,412, Cl. 68-5.00C.

Tekno Industries, Inc.: *See—*
Karras, Ernest C., 4,085,293, Cl. 179-8.00A.

Telling, Ronald Charles; Passingham, Roy John; Kitchener, Brian Lewis; and Hopkinson, David George, to Burroughs Wellcome Co. Process for preparing vaccine. 4,085,203, Cl. 424-89.000.

Te Nijenhuis, Anne: *See—*
Den Otter, Marinus J. A. M.; Van Geenen, Albert A.; and Te Nijenhuis, Anne, 4,085,283, Cl. 544-214.000.

Teodoro, Donald J.: *See—*
Trexler, Ray W., Jr.; and Teodoro, Donald J., 4,084,276, Cl. 5-118.000.

Terajima, Yasuhiko; and Matsumoto, Osamu, to Rank Xerox, Ltd. Paper feeding roller. 4,084,807, Cl. 271-119.000.

TerEco Corporation: *See—*
Pequegnat, Willis E., 4,084,543, Cl. 119-3.000.

Ternehall, Runo Roy Oskar, to AB Volvo. Device for wear warning in a servo operated disc clutch. 4,084,671, Cl. 192-30.00W.

Terraillon: *See—*
Terraillon, Paul, 4,084,650, Cl. 177-174.000.

Terraillon, Paul, to Terraillon. Spring balance. 4,084,650, Cl. 177-174.000.

Teter, Robert D.; Maddock, James W.; and Rothers, Paul L., to King Radio Corporation. Pressure transducer with capacitor pick-up means. 4,084,439, Cl. 73-718.000.

Teumer, Roger G.: *See—*
Warter, Peter J., Jr.; Squassoni, Gino F.; Tulagin, Vsevolod; Teumer, Roger G.; and Egnaczak, Raymond K., 4,084,896, Cl. 355-3.00P.

Texas Instruments Incorporated: *See—*
Finnegan, Francis, 4,084,437, Cl. 73-361.000.
Grenier, Aime J., 4,085,393, Cl. 335-202.000.
Holcomb, Stanley W., 4,085,358, Cl. 320-9.000.
Linn, John Charles, 4,085,452, Cl. 365-5.000.

Textron Inc.: *See—*
Moertel, George B., 4,084,296, Cl. 24-205.130.

Tezuka, Minoru; and Kito, Yastami, to Nippon Otis Elevator Company; and Kabushiki Kaisha Meidensha. Control apparatus for an elevator system. 4,084,662, Cl. 187-29.00R.

Thackray, Malcolm, to Australian Atomic Energy Commission. Sources of nuclear radiation. 4,085,331, Cl. 250-493.000.

Thao, Do: *See—*
Mimoun, Hubert; Thao, Do; and Seree de Rochi, Irenee, 4,085,145, Cl. 260-592.000.

Thayer, Earl C.: *See—*
Mohrbacker, William J.; and Thayer, Earl C., 4,084,833, Cl. 280-81.00A.

Thiokol Corporation: *See—*
Hightower, James O.; Hamner, James W.; and Matthews, Richard L., 4,084,992, Cl. 149-17.000.

Thomas, Robert M.; and Gauthier, John A., to GTE Automatic Electric (Canada) Ltd. Control point driver circuit. 4,085,294, Cl. 179-16.0AA.

Thompson, Lester E. Blood leak detector. 4,085,047, Cl. 210-96.00M.

Thomson-Brandt: *See—*
Aigrain, Pierre; Broussaud, Georges; Peltier, Jean Paul; and Spitz, Erich, 4,085,426, Cl. 360-38.000.
Lainez, Lucien; Fichot, Bernard; and Bijon, Jean-Paul, 4,084,694, Cl. 206-444.000.

Thomson-CSF: *See—*
Croset, Michel; and Velasco, Gonzalo, 4,085,048, Cl. 210-321.00R.
Munier, Bernard, 4,085,348, Cl. 310-313.000.
Pircher, Georges, 4,084,903, Cl. 355-53.000.

Thomson, Roger: *See—*
Weik, Edward; and Thomson, Roger, 4,084,435, Cl. 73-299.000.

Thurston, Benjamin L., to Frost Packaging Company. Box construction. 4,084,720, Cl. 220-76.000.

Thyssen Industrie AG: *See—*
Dittrich, Erich; and Grone, Siegfried, 4,084,419, Cl. 72-68.000.

Tierney, William S.: *See—*
Jacoby, Jerold L.; Tierney, William S.; Wright, James E.; and Bhuta, Pravin G., 4,084,427, Cl. 73-88.00A.

Tinker, H. Burnham: *See—*
Gambell, James W.; and Tinker, H. Burnham, 4,085,275, Cl. 560-130.000.

Tinney, Francis John; and Nicolaides, Ernest D., to Parke, Davis & Company. New hexapeptides and methods for their production. 4,085,096, Cl. 260-112.5LH.

Toa Doro Kogyo Co., Ltd.: *See—*
Higuchi, Yoshiro; Harada, Yutaka; Sato, Toshio; Nakagawa, Koji; Kawaguchi, Iwazo; and Kasahara, Yasushi, 4,084,981, Cl. 106-96.000.

Tobias, Lamar: *See—*
Motyka, Jerry J.; and Lewis, Donald J., 4,084,676, Cl. 194-87.000.
Todd, John C., to Petro Canada Exploration Inc.; Canada-Cities Services, Ltd.; and Imperial Oil Limited. Method of producing viscous materials from subterranean formations. 4,084,637, Cl. 166-245.000.
Todd, John C., to Petro Canada Exploration Inc.; Canada-Cities Services, Ltd.; and Imperial Oil Limited. Electrode well for electrically heating a subterranean formation. 4,084,639, Cl. 166-248.000.
Tojo, Akio; and Ohnishi, Kimimasa, to Nissan Motor Company, Limited. Fluid jet loom with a yarn waste removing apparatus. 4,084,623, Cl. 139-435.000.
Tokico Ltd.: *See—*
Haraikawa, Tetsuo, 4,084,664, Cl. 188-71.900.
Karasudani, Yasuo, 4,084,666, Cl. 188-73.300.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Hirabayashi, Kanji, 4,085,459, Cl. 365-222.000.
Mashimo, Michiya; and Shinada, Hidehiro, 4,084,871, Cl. 316-19.000.
Toler, David F.: *See—*
Morris, Edwin, Jr.; and Toler, David F., 4,084,919, Cl. 415-136.000.
Tomizawa, Masaharu: *See—*
Endo, Tomizo; Sumida, Yutaka; Kawahara, Toru; Ohtake, Masaichi; Motokawa, Shoichi; Nagayama, Keiji; Shigeta, Masatomo; Hozuma, Hiroshi; Tomizawa, Masaharu; and Kikuchi, Hideo, 4,085,034, Cl. 208-48.00R.
Tomlinson, John Parker: *See—*
Briston, Rodney John; Canning, Rodger George; and Tomlinson, John Parker, 4,085,239, Cl. 427-208.000.
Tompsett, Michael Francis, to Bell Telephone Laboratories, Incorporated. Charge transfer imaging devices. 4,085,456, Cl. 365-114.000.
Tomy Kogyo Co., Inc.: *See—*
Ishida, Hajime; and Tsumita, Mitsuyo, 4,084,849, Cl. 297-22.000.
Toray Industries Inc.: *See—*
Nakagawa, Kiyoshi; Otaki, Yukio; Mineo, Masatoshi; Aratani, Yoshio; Tatsuoka, Yoshio; and Kusakabe, Haruhiko, 4,084,622, Cl. 139-420.00R.
Toyo Kogyo Co., Ltd.: *See—*
Satow, Haruhiko, 4,084,549, Cl. 123-217.000.
Toyo Umpanki Co., Ltd.: *See—*
Morishita, Seishi, 4,084,670, Cl. 192-13.00R.
Toyonaga, Ryuya: *See—*
Kagami, Akiyasu; Hase, Takashi; Hiraki, Minoru; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,350, Cl. 313-486.000.
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Tanigami, Yoshinori; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,085,351, Cl. 313-486.000.
Toyota, Akinori; Odawara, Kiyoshi; and Kashiwa, Norio, to Mitsui Petrochemical Industries Ltd. Process for preparing highly stereoregular polymers or copolymers of α-olefins containing at least three carbon atoms, and catalysts used therefor. 4,085,276, Cl. 526-122.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hashimoto, Masanao; Saitou, Tadashi; Kobayashi, Tatsuo; and Suzuki, Isamu, 4,084,373, Cl. 60-293.000.
Hayashi, Toshiaki; Sugiura, Hiroshi; Ozaki, Toshio; Sugimoto, Eiji; and Banno, Yukio, 4,084,841, Cl. 280-745.000.
Kondo, Masatsune; Sawami, Yoshiaki; and Tamura, Yukio, 4,084,847, Cl. 296-28.00R.
Toytown Corporation: *See—*
Tanaka, Yutaka, 4,084,345, Cl. 46-75.000.
Tractel S.A.: *See—*
Desplats, Andre; and Cavalieri, Michel, 4,084,788, Cl. 254-76.000.
Tragert, William, to KTA Corporation. Fluid proportioning device. 4,084,616, Cl. 137-625.400.
Trexler, Ray W., Jr.; and Teodoro, Donald J., to PACCAR Inc. Swing-away bunk. 4,084,276, Cl. 5-118.000.
Tritsch, Ludwig, to Johnson & Johnson. Disposable prefolded diaper with permanently attached adhesive closure system. 4,084,592, Cl. 128-287.000.
TRW Inc.: *See—*
Jacoby, Jerold L.; Tierney, William S.; Wright, James E.; and Bhuta, Pravin G., 4,084,427, Cl. 73-88.00A.
Jenkins, John C., 4,085,307, Cl. 219-98.000.
Tsuchiya, Shozo; Hayashi, Hideo; Iida, Kazuyoshi; and Goto, Kiyoshi, to Nippon Oil Company, Limited. Curable coating compositions. 4,085,085, Cl. 260-38.000.
Tsumita, Mitsuyo: *See—*
Ishida, Hajime; and Tsumita, Mitsuyo, 4,084,849, Cl. 297-22.000.
Tsunoda, Yoshito; Maeda, Takeshi; and Oshida, Yoshitada, to Hitachi, Ltd. Information reproducing apparatus with plural beam readout. 4,085,423, Cl. 358-128.000.
Tsuruda, Mineo: *See—*
Oe, Takanori; and Tsuruda, Mineo, 4,085,111, Cl. 260-296.00H.
Tsutsui, Kunio: *See—*
Fujiura, Takashi; Tsutsui, Kunio; and Nishida, Hiroshi, 4,084,531, Cl. 114-211.000.
Tsutsumino, Takeyoshi, to Kabushiki Kaisha Taiheiseisakusho. Method and an apparatus for producing a coiled spring. 4,084,420, Cl. 72-138.000.
Tsygulev, Leonid Nikiforovich: *See—*
Movshovich, Pavel Mikhailovich; Khavkin, Viktor Pavlovich; Maximov, Gennady Konstantinovich; Ivanov, Lev Nikolaevich; Babushkina, Natalya Borisovna; Kulikov, Vasily Ivanovich; Shkrabov, Boris Semenovich; Nezelenov, Sergei Vladimirovich; Shutov, Gennady Nikolaevich; Tsygulev, Leonid Nikiforovich; and Ilin, Vadim Sergeevich, 4,084,400, Cl. 57-156.000.
Tuck, Richard L.: *See—*
Kunz, Andrew M.; Yates, Donald B.; and Tuck, Richard L., 4,084,515, Cl. 105-240.000.
Tucker, Howard, to Imperial Chemical Industries Limited. Optically-active 1-aryloxy-2-propanol intermediates of (s)-absolute configuration. 4,085,136, Cl. 260-559.00D.
Tucker, Zane G. Visible message display apparatus. 4,084,337, Cl. 40-472.000.
Tulagin, Vsevolod: *See—*
Warter, Peter J., Jr.; Squassoni, Gino F.; Tulagin, Vsevolod; Teumer, Roger G.; and Egnaczak, Raymond K., 4,084,896, Cl. 355-3.00P.
Tulpule, Bhalchandra Ramchandra, to Burroughs Corporation. Performance invarient execution unit for non-communicative instructions. 4,085,450, Cl. 364-900.000.
Turbomachines, Inc.: *See—*
Pavlecka, Vladimir H., 4,084,918, Cl. 415-1.000.
Turcotte, Ronald E.; and Hunt-Grubbe, Robert H., to Schlumberger Technology Corporation. Calibrator for radioactivity well logging tools. 4,085,323, Cl. 250-252.000.
Turk, Chester F.; and Krapcho, John, to E. R. Squibb & Sons, Inc. 2-Aryl-6-arylidene-1-(substituted aminoalkoxy)-1-cyclohexenes. 4,085,142, Cl. 260-570.5CA.
Turk, Chester F.: *See—*
Krapcho, John; and Turk, Chester F., 4,085,280, Cl. 544-140.000.
Turk, Chester Frank: *See—*
Krapcho, John; and Turk, Chester Frank, 4,085,102, Cl. 542-450.000.
Turner, George, Jr.: *See—*
Burgarella, John P.; Turner, George, Jr.; and Stephansky, Robert L., 4,085,414, Cl. 354-145.000.
Turner, Newton C., Jr., to Genesco, Inc. Method of making mudguard style shoe. 4,084,279, Cl. 12-142.00R.
Turover, Alan S., to Castle & Cooke, Inc. Food product made from mushroom stumps and method for manufacturing the same. 4,085,233, Cl. 426-615.000.
Turski, Zygmond; and Rosen, Arye, to RCA Corporation. Microwave frequency discriminator comprising a one port active device. 4,085,377, Cl. 329-116.000.
Tyler, Tommy N., to Powers Regulator Company. Pneumatic delivery system. 4,084,769, Cl. 243-3.000.
U C B, Societe Anonyme: *See—*
Marsiat, Arthur, 4,085,159, Cl. 260-835.000.
U-S Safety Trolley Corporation: *See—*
Ross, Donald R., 4,084,301, Cl. 29-33.00K.
Ueda, Motohiko: *See—*
Adachi, Ikuo; Ueda, Motohiko; and Kimoto, Sadatoshi, 4,085,114, Cl. 260-307.0DA.
Unarco Industries, Inc.: *See—*
Upshaw, Clarence Ward, 4,084,832, Cl. 280-33.99S.
Union Carbide Corporation: *See—*
Engel, Stephen August; and Fuhrhop, Ronald Elmer, 4,084,988, Cl. 148-9.500.
Ginsberg, Thomas, 4,084,971, Cl. 106-1.170.
Quets, Jean Marie; and Hatwell, Henri, 4,085,037, Cl. 209-1.000.
Sipusic, Frank; and Sheridan, Arthur L., 4,084,466, Cl. 83-193.000.
Union Corporation, The: *See—*
Schorsch, John B.; Graul, William E.; and Barash, David, 4,084,387, Cl. 62-63.000.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Kimberley, David, 4,084,774, Cl. 244-194.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Raynes, Edward Peter, 4,084,884, Cl. 350-334.000.
Salter, David Anthony; Scilly, Norman Frederick; and Watson, Keith Ellis, 4,085,152, Cl. 260-645.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Brittannic Majesty's Government of the: *See—*
Harris, Gordon Colin; Vere, Robert Paul; and Walker, Ronald, 4,084,530, Cl. 114-183.00R.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the: *See—*
Boyle, Henry Bryant; and Johnson, Alexander James, 4,084,430, Cl. 73-141.00R.
United States of America
Agriculture: *See—*
Komanowsky, Michael; and Sinnamon, Howard I., 4,085,044, Cl. 210-45.000.
Air Force: *See—*
Schneider, Josef F., 4,085,444, Cl. 364-900.000.
Army: *See—*
Deitz, Paul H.; Durfee, Gary L.; and Wolff, Stephen S., 4,085,319, Cl. 250-199.000.
Hose, Eddy, 4,085,440, Cl. 364-454.000.
Poirier, Robert H.; and Poziomek, Edward J., 4,085,112, Cl. 260-304.00C.
Health, Education and Welfare: *See—*
Poirier, Victor L.; and Keiser, John T., 4,084,266, Cl. 3-1.000.
Interior: *See—*

Henrie, Thomas A.; Lindstrom, Roald E.; and Lei, Kenneth P. V., 4,085,017, Cl. 204-123.000.

National Aeronautics and Space Administration; administrator; with respect to an invention of:
Sawyer, Craig D. Control for nuclear thermionic power source. 4,085,004, Cl. 176-22.000.
Wilhelm, Horst E. Apparatus for extraction and separation of a preferentially photo-dissociated molecular isotope into positive and negative ions by means of an electric field. 4,085,332, Cl. 250-528.000.

National Aeronautics and Space Administration: *See*—
Baehr, Edward F., 4,084,612, Cl. 137-484.200.
Evans, John C., Jr., 4,084,985, Cl. 136-89.00P.
Ludwig, Lawrence P., 4,084,825, Cl. 277-25.000.
Sheibley, Dean W., 4,085,241, Cl. 427-385.00B.

Navy: *See*—
Couch, Harold Thompson; Cohen, Leonard Selwyn; and Coulter, Lawrence Joseph, 4,084,781, Cl. 249-83.000.
Moscrip, William Matthew, 4,084,480, Cl. 89-42.00B.
San Miguel, Anthony, 4,084,512, Cl. 102-103.000.
Svrjcek, Benjamin W., Jr., 4,084,511, Cl. 102-70.2GA.

U.S. Philips Corporation: *See*—
Asselman, George Albert Apolonia; Van der AA, Herman Henricus Maria; and Meijer, Roelf Jan, 4,084,376, Cl. 60-523.000.
Compen, Johannes Maria Azalina Antonius, 4,085,235, Cl. 427-64.000.
Coulmance, Jean-Pierre Rene; and Six, Jean-Claude Gerard, 4,085,310, Cl. 219-502.000.
Franssen, Nico Valentinus, 4,084,471, Cl. 84-1.010.
Gerkema, Jan T.; and Gorter, Frederik Willem, 4,085,430, Cl. 360-119.000.
Janssen, Casper Johannes Gerardus Ferdinand; Postma, Lambertus; and Lippits, Gerardus Johannes Meinardus, 4,084,968, Cl. 96-48.0PD.
Lippits, Gerardus Johannes Meinardus; Janssen, Petrus Johannes; Debruijn, Henricus Antonius; and van Ruler, Johannes, 4,085,285, Cl. 174-68.500.
Monte, George Leendert Adriaan, 4,085,328, Cl. 250-416.0TV.
Parkyn, Derek J., 4,085,342, Cl. 307-260.000.
Schiek, Burkhard; and De Ronde, Frans Christiaan, 4,085,391, Cl. 333-33.000.
van der Poel, Johannes; and Noordanus, Johannes, 4,085,370, Cl. 325-348.000.
Welle, Hendricus Bernardus Antonius; and Claassen, Volkert, 4,085,225, Cl. 424-304.000.

United States Steel Corporation: *See*—
Hoeckelman, Ralph F., 4,085,013, Cl. 204-51.000.
Miles, Roscoe C.; Subrick, Joseph; and Talman, Woods G., 4,084,855, Cl. 299-64.000.

United Technologies Corporation: *See*—
Gilden, Meyer; Reeder, Thomas M.; and DeMaria, Anthony J., 4,085,388, Cl. 331-107.00A.
Greenberg, Paul B.; and Patterson, Stephen D., 4,084,861, Cl. 308-26.000.
Morris, Edwin, Jr.; and Toler, David F., 4,084,919, Cl. 415-136.000.
Rybicki, Robert Charles, 4,084,668, Cl. 188-312.000.

University of Edinburgh, The University Court of the. *See*—
Hancock, Richard John Taylor, 4,085,205, Cl. 424-105.000.

University of Rochester, The: *See*—
Eastman, Jay Morgan; and Refermat, Stanley J., 4,084,883, Cl. 350-152.000.

University of Texas, The: *See*—
Zermeno, Alfonso; Marsh, Lee M., Jr.; and Hevezi, James M., 4,085,324, Cl. 250-320.000.

Uno, Shigeo: *See*—
Nakajima, Fumito; Takeuchi, Masato; Matsuda, Shimpei; Uno, Shigeo; Mori, Toshikatsu; Watanabe, Yoshihisa; and Imanari, Makoto, 4,085,193, Cl. 423-239.000.

Uno, Yoshihiro. Color image pick-up system using strip filter. 4,085,418, Cl. 358-44.000.

UOP Inc.: *See*—
Antos, George J.; Hayes, John C.; and Pollitzer, Ernest L., 4,085,154, Cl. 260-668.00D.
Pollitzer, Ernest L.; and Hayes, John C., 4,085,067, Cl. 252-442.000.

Upaya, Inc.: *See*—
Budrose, Charles R., 4,084,455, Cl. 81-140.000.

Upjohn Company, The: *See*—
Kornis, Gabriel; Nidy, Eldon G.; Vostral, Henry J.; and Steinhards, Arnolds, deceased, 4,084,955, Cl. 71-92.000.
Nelson, Norman A., 4,085,120, Cl. 260-343.600.
Nelson, Norman A., 4,085,139, Cl. 260-563.00R.
Yankee, Ernest W., 4,085,271, Cl. 560-121.000.

Upshaw, Clarence Ward, to Unarco Industries, Inc. Shopping cart with anti-pilferage character. 4,084,832, Cl. 280-33.99S.

Vachet, Joel: *See*—
Chenel, Pierre; and Vachet, Joel, 4,085,238, Cl. 427-207.00A.

Vald. Henriksen A/S: *See*—
Nielsen, Hans Borge, 4,084,413, Cl. 68-189.000.

Valmet Oy: *See*—
Aatinen, Eino, 4,084,302, Cl. 29-148.40D.

Van Auken, Richard L., to Exxon Research & Engineering Co. Golf club shaft for irons. 4,084,819, Cl. 273-80.00R.

Van der AA, Herman Henricus Maria: *See*—
Asselman, George Albert Apolonia; Van der AA, Herman Henricus Maria; and Meijer, Roelf Jan, 4,084,376, Cl. 60-523.000.

van der Lely, Cornelis, to C. van der Lely N.V. Harvester. 4,084,394, Cl. 56-14.600.

van der Lely, Cornelis, to C. van der Lely N.V. Driving mechanisms and housings for such mechanisms. 4,084,485, Cl. 91-210.000.

van der Poel, Johannes; and Noordanus, Johannes, to U.S. Philips Corporation. Radio receiver having co-channel interference operated squelch. 4,085,370, Cl. 325-348.000.

VanderVeen, Jaring, to Bendix Corporation, The. Drive key heat shield and support for wheel rim heat shield of multiple disc brake. 4,084,857, Cl. 301-6.00A.

van der Vliet, William Ewald, to Ferro Corporation. Electrophoretic porcelain enameling process. 4,085,021, Cl. 204-181.00N.

Van Geenen, Albert A.: *See*—
Den Otter, Marinus J. A. M.; Van Geenen, Albert A.; and Te Nijenhuis, Anne, 4,085,283, Cl. 544-214.000.

van Nederveen, Hans Bertil, to SKF Industrial Trading & Development Company B.V. Rock bit. 4,084,649, Cl. 175-366.000.

Van Ness, Bradford O., to Engineered Systems, Inc. Automatic product-dispensing system. 4,085,313, Cl. 235-419.000.

van Ruler, Johannes: *See*—
Lippits, Gerardus Johannes Meinardus; Janssen, Petrus Johannes; Debruijn, Henricus Antonius; and van Ruler, Johannes, 4,085.285, Cl. 174-68.500.

Van Scoy, Robert W., to Shell Oil Company. Selective removal of hydrogen sulfide from gaseous mixtures. 4,085,192, Cl. 423-226.000.

Varco International, Inc.: *See*—
Boyadjieff, George I., 4,084,385, Cl. 61-53.500.

Varettoni, Leroy Wilfred, to RCA Corporation. Voltage limiter circuit. 4,085,432, Cl. 361-91.000.

Varian Associates, Inc.: *See*—
Wadsworth, Brent Earl, 4,084,718, Cl. 215-247.000.

Varta Batterie Aktiengesellschaft: *See*—
Lauck, Helmut, 4,085,259, Cl. 429-194.000.

Vassileff, Neiko I. Sequestering compositions. 4,085,060, Cl. 252-180.000.

Vassiliou, Eustathios: *See*—
Buser, Kenneth Rene; Roedel, Milton John; and Vassiliou, Eustathios, 4,085.246, Cl. 428-220.000.

Vaughn, Daniel J. Apparatus for manufacturing foamed plastics. 4,084,795, Cl. 366-177.000.

VCA Corporation: *See*—
King, Roderick V., 4,084,717, Cl. 215-217.000.

Velasco, Gonzalo: *See*—
Croset, Michel; and Velasco, Gonzalo, 4,085,048, Cl. 210-321.00R.

Vellturo, Anthony F.: *See*—
Park, Kyong P.; and Vellturo, Anthony F., 4,085,132, Cl. 560-75.000.

Venaleck, Howard J. Face mask. 4,084,585, Cl. 128-146.200.

Vere, Robert Paul: *See*—
Harris, Gordon Colin; Vere, Robert Paul; and Walker, Ronald, 4,084,530, Cl. 114-183.00R.

Vereschagin, Leonid Fedorovich: *See*—
Farafontov, Vladimir Ivanovich; Kalashnikov, Yaroslav Alexeevich; Novikov, Jury Nikolaevich; Volpin, Mark Efimovich; Vereschagin, Leonid Fedorovich; and Lysanov, Vladislav Sergeevich, 4,085,196, Cl. 423-446.000.

Vidaver, William: *See*—
Schreiber, Ulrich; and Vidaver, William, 4,084,905, Cl. 356-85.000.

Vidnovic, Sam S. Magnetic collection device for bingo chips and similar game parts. 4,084,821, Cl. 273-148.00R.

Viennatone Gesellschaft m.b.H.: *See*—
Zadina, Alfred, 4,084,267, Cl. 3-1.100.

Vigoureux, Francis E. Apparatus for focusing and using solar energy. 4,084,581, Cl. 126-271.000.

Villalobos, Humberto Fernandez-Moran. Ultrasharp diamond edges and points and method of making. 4,084,942, Cl. 51-307.000.

Villella, Tony R. Internal combustion engine. 4,084,556, Cl. 123-75.00B.

Virgilio, Joseph A.; and Manowitz, Milton, to Givaudan Corporation. N,N'-bis-aromaticformamidines useful as sunscreening agents. 4,085,062, Cl. 252-300.000.

Vischer, Alfred, Jr., deceased (by Vischer, Peter, executor), to Vischer Optics, Inc. Eyeglass frame. 4,084,889, Cl. 351-121.000.

Vischer Optics, Inc.: *See*—
Vischer, Alfred, Jr., deceased, 4,084,889, Cl. 351-121.000.

Vischer, Peter, executor: *See*—
Vischer, Alfred, Jr., deceased, 4,084,889, Cl. 351-121.000.

Viswanathan, Lakshminarasimhan, to Computer Peripherals, Inc. Phase locked loop decoder. 4,085,288, Cl. 178-69.100.

Vitt, Stanley P., Jr.: *See*—
Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., Jr., 4,084,785, Cl. 251-172.000.

Volkswagenwerk Aktiengesellschaft: *See*—
Milner, Peter James, 4,084,837, Cl. 280-668.000.
Wallbaum, Hellmut, 4,084,559, Cl. 123-102.000.

Voll, Walter: *See*—
vor der Bruck, Rolf; and Voll, Walter, 4,084,838, Cl. 280-715.000.

Volpin, Mark Efimovich: *See*—
Farafontov, Vladimir Ivanovich; Kalashnikov, Yaroslav Alexeevich; Novikov, Jury Nikolaevich; Volpin, Mark Efimovich; Vereschagin, Leonid Fedorovich; and Lysanov, Vladislav Sergeevich, 4,085,196, Cl. 423-446.000.

Von Hagel, Leo J., to Honeywell Farms, Inc. Apparatus for printing and feeding caps to a bottle capping machine. 4,084,392, Cl. 53-131.000.

von Platen, Baltzar, to Fondation Cum Plate. Method of recovering

energy by means of a cyclic thermodynamic process. 4,084,408, Cl. 62-467.00R.

vor der Bruck, Rolf; and Voll, Walter, to Ford Motor Company. Motor vehicle rear axle suspension. 4,084,838, Cl. 280-715.000.

Vossieck, Paul; and Deuring, Hans, to GOETZEWERKE Friedrich Goetze AG. Shaft seal ring. 4,084,826, Cl. 277-134.000.

Vostral, Henry J.: *See*—
Kornis, Gabriel; Nidy, Eldon G.; Vostral, Henry J.; and Steinhards, Arnolds, deceased, 4,084,955, Cl. 71-92.000.

Votavova, Eva: *See*—
Bleha, Miroslav; Votavova, Eva; and Plichta, Zdenek, 4,085,005, Cl. 195-68.000.

W J. Industries, Inc.: *See*—
Eddens, Gerald R., 4,085,344, Cl. 310-58.000.

W-K-M Wellhead Systems, Inc.: *See*—
Peters, Clifford M., 4,084,613, Cl. 137-596.180.

W. R. Grace & Co.: *See*—
Weston, Joseph F. R., 4,085,231, Cl. 426-410.000.

Wacker, Adolf; Wacker, Dorthe; Pohler, Klaus; and Mittenzwei, Hellmut, to Mittenzwei, Helmut. Process for obtaining insulin like active substances. 4,085,204, Cl. 424-101.000.

Wacker Chemie GmbH: *See*—
Kratel, Gunter; Bauer, Johann; Pichler, Engelbert; and Kalmuk, Hans-Peter, 4,085,087, Cl. 260-42.490

Wacker, Dorthe: *See*—
Wacker, Adolf; Wacker, Dorthe; Pohler, Klaus; and Mittenzwei, Hellmut, 4,085,204, Cl. 424-101.000

Wadsworth, Brent Earl, to Varian Associates, Inc. Compression seal for elastomeric septum. 4,084,718, Cl. 215-247.000.

Wagner, Gerhard: *See*—
Ohlinger, Manfred; Wagner, Gerhard; Honecker, Gerhard; Stritzinger, Heinz; and Spaehn, Heinz, 4,084,936, Cl. 21-2.70R.

Wagner, Josef: *See*—
Henschler, Dietrich; Wagner, Josef; and Hampel, Hans, 4,085,270, Cl. 560-105.000.

Wahi, Chander Mohan, to E. F. Johnson Company. Connector. 4,084,878, Cl. 339-99.00R.

Walchuk, George P., to Exxon Research & Engineering Co. Coal liquefaction with subsequent bottoms pyrolysis. 4,085,031, Cl. 208-8.000.

Walker, James B. Pantograph apparatus 4,084,483, Cl. 90-13.300.

Walker, Ronald: *See*—
Harris, Gordon Colin; Vere, Robert Paul; and Walker, Ronald, 4,084,530, Cl. 114-183.00K.

Wall, Bill R., to Power Controls Corporation. Electrical power control assembly. 4,085,399, Cl. 338-200.000.

Wallace, Bernard E., to B. E. Wallace Products Corporation. Hoist or winch mechanism adapted for multiple variable rigging. 4,084,794, Cl. 254-189.000.

Wallace Business Forms, Inc.: *See*—
Heimann, Edward W., 4,084,741, Cl. 229-69.000.

Wallace, William K., to Chicago Pneumatic Tool Company. Pulse motor in a nut runner. 4,084,487, Cl. 91-325.000.

Wallbaum, Hellmut, to Volkswagenwerk Aktiengesellschaft. Speed control apparatus for an internal combustion engine. 4,084,559, Cl. 123-102.000.

Waloszyk, John S.; and Jacobs, Bernard W. System for visual communication. 4,084,332, Cl. 35-9.00G.

Walsh, Dale M.; and Nordling, Karl I., to Paradyne Corporation. Digital modem. 4,085,449, Cl. 364-900.000.

Walter, Derek Oscar, to Johnson, Matthey & Co., Limited. Accelerometers. 4,084,443, Cl. 73-517.00R.

Walters, Paul F.: *See*—
Miles, Charles M., 4,085,336, Cl. 307-118.000.

Walters, Tom. Valves. 4,084,786, Cl. 251-250.000.

Ward, John Lionel Raymond. Drive-transmitting mechanisms. 4,084,451, Cl. 74-867.000.

Warkentin, James D.: *See*—
Rasheed, Khalid; and Warkentin, James D., 4,084,954, Cl 71-90.000.

Warmann, Bruno D. Pneumatic tube conveyor dispatcher. 4,084,770, Cl. 243-25.000.

Warshawsky, Abraham: *See*—
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, 4,085,261, Cl. 526-19.000.

Warter, Peter J., Jr.; Squassoni, Gino F.; Tulagin, Vsevolod; Teumer, Roger G.; and Egnaczak, Raymond K., to Xerox Corporation. Photoelectrophoretic web imaging apparatus. 4,084,896, Cl. 355-3.00P.

Washnock, Robert S.; and Madzay, Delbert R. Toe board and measuring means. 4,084,813, Cl. 272-106.000.

Watanabe, Kazuhiko: *See*—
Aoki, Mitsuo; Watanabe, Kazuhiko; Murase, Shunichi, and Hiraoka, Isao, 4,085,207, Cl. 424-180.000.

Watanabe, Kisuke; and Takasugi, Tsuneji, to Citizen Watch Company Limited. Process for fabrication of decorative panel. 4,084,990, Cl. 148-11.50R.

Watanabe, Yoshihisa: *See*—
Nakajima, Fumito; Takeuchi, Masato; Matsuda, Shimpei; Uno, Shigeo; Mori, Toshikatsu; Watanabe, Yoshihisa; and Imanari, Makoto, 4,085,193, Cl. 423-239.000.

Water Saver Faucet Co., Inc.: *See*—
Kersten, Samuel D., Jr., 4,084,270, Cl. 4-145.000.

Watson, Keith Ellis: *See*—
Salter, David Anthony; Scilly, Norman Frederick; and Watson, Keith Ellis, 4,085,152, Cl. 260-645.000.

Weaver, Austin S., to Ottawa Roof Truss, Inc. Truss making apparatus. 4,084,498, Cl. 100-210.000.

Weber, Karl-Heinz: *See*—
Langbein, Adolf; Weber, Karl-Heinz; Bauer, Adolf; Boke, Karin; Lehr, Erich; and Kuhn, Franz Josef, 4,085,216, Cl. 424-263.000.

Weber, Richard Baxter: *See*—
Fullerton, Donald Griswold; Kyrias, Gilbert Mowder; and Weber, Richard Baxter, 4,085,041, Cl. 210-7.000.

Wechsung, Reiner; and Kirschner, Jurgen, to Leybold-Heraeus GmbH & Co. Kommandit-Gesellschaft. Method and apparatus for controlling the removal, by means of ion etching, of a thin layer from a substrate. 4,085,022, Cl. 204-192.00E.

Weckenmann, Albert: *See*—
Meier, Werner; Hofer, Walter; Haubner, Georg; and Weckenmann, Albert, 4,085,403, Cl. 340-168.00R.

Wedemeyer, Karlfried; Kiel, Wolfgang; and Evertz, Werner, to Bayer Aktiengesellschaft. Process for the preparation of anilines meta-substituted by chlorine. 4,085,141, Cl. 260-570.00R.

Wehmeyer, Richard L. Holder and operating table for swine and other animals. 4,084,544, Cl. 119-103.000.

Weigand, Rex O.: *See*—
Fritz, David P.; Weigand, Rex O.; and Fleming, Gary L., 4,084,396, Cl. 56-98.000.

Weik, Edward; and Thomson, Roger, to Petrometer Corporation. System for measuring water level in gasoline tank. 4,084,435, Cl. 73-299.000.

Weiler, Kurt W. Electronic breaker points for the ignition system of a gasoline engine. 4,084,566, Cl. 123-148.00E.

Weisenburger, Lawrence P., to Clare-Pendar Co. Contactless key switch. 4,085,394, Cl. 336-20.000.

Weiss, Allen. Ring light converter for electronic flash units. 4,085,436, Cl. 362-16.000.

Weiss, Martin Joseph; and Siuta, Gerald Joseph, to American Cyanamid Company. 11-(2-Hydroxyethylthio)prostenoic acid E_2 series derivatives. 4,085,272, Cl. 560-121.000.

Weitze, Artur: *See*—
Chakrabarty, Naresh; and Weitze, Artur, 4,084,314, Cl. 29-626.000.

Welge, Frederick T.: *See*—
Redmore, Derek; and Welge, Frederick T., 4,085,134, Cl. 260-502.500.

Welle, Hendricus Bernardus Antonius; and Claassen, Volkert, to U.S. Philips Corporation. Oxime ethers having anti-depressive activity. 4,085,225, Cl. 424-304.000.

Welty, Dale Eugene: *See*—
Odle, Herbert Arnold, Ruehl, Donald Edward; Shadwick, Jan; Sullivan, Daryl Dean; and Welty, Dale Eugene, 4,085,318, Cl. 362-217.000.

Wendel, Gunther: *See*—
Kohler, Gisbert; Munkel, Hanns-Wilfried; Pohl, Hubert; Sommer, Walter; and Wendel, Gunther, 4,084,860, Cl. 308-15.000.

Wenthe, Stephen James; and Caswell, David Arlen, to Eastman Kodak Company. Sheet handling apparatus. 4,084,806, Cl. 271-80.000.

Wergzyn, Richard: *See*—
Godel, Siegfried; Pudims, Albert Adam; and Wergzyn, Richard, 4,085,309, Cl. 219-364.000.

Werner, Peter: *See*—
Drews, Ulrich; Werner, Peter; and Winkelmann, Lothar, 4,084,552, Cl 123-32.0EA.

Western Electric Co., Inc.: *See*—
Esseluhn, Werner F., 4,085,038, Cl. 209-71.000.

Westinghouse Electric Corporation: *See*—
Fagan, John L., 4,085,441, Cl. 364-827.000.
Farish, Owen; and Hundstad, Richard L., 4,085,386, Cl. 331-94.5PE.
Gilmour, George A., 4,085,421, Cl. 358-81.000.
Liu, Chia-tsun, 4,085,063, Cl. 252-387.000.
Quan, Wing C.; Edison, David M.; Hummert, George T.; and Sackin, Milton, 4,084,661, Cl. 187-29.00R.
Smith, James D. B., 4,085,250, Cl. 428-418.000.

Weston, Joseph F. R., to W. R. Grace & Co. Container evacuation process. 4,085,231, Cl. 426-410.000.

Westran Corporation: *See*—
Dalton, Thomas B., 4,084,447, Cl. 74-89.140.

Wheeler, Bradford J. Lapidary machine. 4,084,352, Cl. 51-127.000.

Wheeler, Robert G., to Wood Processes, Oregon Ltd. Method of making a grooved, fiber-clad plywood panel. 4,084,996, Cl. 156-257.000.

Whirlpool Corporation: *See*—
Buchser, William J., 4,084,725, Cl. 221-75.000.
Khan, Aman Ullah, 4,084,497, Cl. 100-53.000.
Skinner, Frank R., II, 4,084,684, Cl. 198-467.000.

Whitcomb, Charles R.: *See*—
Conrad, Raymond M.; and Whitcomb, Charles R., 4,084,277, Cl. 5-331.000.

White, James F.; Shaw, Wilfrid G.; and Applequist, Michael D., to Standard Oil Company (Ohio), The. Process for the preparation of unsaturated acids from unsaturated aldehydes. 4,085,065, Cl. 252-437.000.

White Sewing Machine Company: *See*—
Hasegawa, Syoogo, 4,084,524, Cl. 112-158.00B.

White, Thomas L., to Raymond Lee Organization, Inc., The, a part interest. Trash can securing device. 4,084,701, Cl. 211-81.000.

White-Westinghouse Corporation: *See*—
Lichius, Kenneth Walter, 4,085,347, Cl. 310-259.000.

White-Westinghouse Corporation, Inc.: *See—*
MacKenzie, Raymond W.; Wood, Peter; Heinrich, Theodore M.; and Oates, Robert M., 4,085,300, Cl. 219-10.49R.
Whitehouse, David John, to Rank Organisation Limited, The. Measuring instrument. 4,084,324, Cl. 33-174.00L.
Whiting, Cuthbert R., to Probe, Incorporated. Method of production stimulation and enhanced recovery of oil. 4,084,638, Cl. 166-248.000.
Whitney, Thomas A., to Exxon Research & Engineering Co. Process for optical resolution of crude trans-1,2-cyclohexanediamine 4,085,138, Cl. 260-563.00R.
Whittaker Corporation: *See—*
Boyer, Edward J., 4,084,533, Cl. 114-219.000.
Wiberg, Karl-Gunnar: *See—*
Schultz, Goran; and Wiberg, Karl-Gunnar, 4,084,307, Cl. 29-460.000
Widell, Bjorn: *See—*
Collin, Per Harald; and Widell, Bjorn, 4,084,958, Cl. 75-36.00
Wieloch, Francis J.: *See—*
De Vito, Michael G.; and Wieloch, Francis J., 4,085,245, Cl. 428-215.000.
Wiget, Fridolin, to Ebauches S.A. Electronic watch. 4,084,404, Cl. 58-50.00R.
Wiley, Nathaniel C., Jr.; and Jensen, William L., Jr., to Rudkin-Wiley Corporation Universal support assembly for drag reducing equipment. 4,084,846, Cl. 296-1.00S.
Wilhelm, Horst E.: *See—*
United States of America, National Aeronautics and Space Administration; and Wilhelm, Horst E., 4,085,332, Cl. 250-528.000.
Wilkus, Edward Vincent: *See—*
MacKenzie, Burton Thornley, Jr.; and Wilkus, Edward Vincent, 4,085,162, Cl. 260-848.000.
Willard, John Wesley, Sr., to Caw Industries, Inc. Process for treating solid carbonaceous fossil fuels and the products thus prepared 4,084,938, Cl. 44-1.00R.
Willenbrock, Walter; and Winkler, Helmut, to Eumuco Aktiengesellschaft fur Maschinenbau. Device for controlling the manipulator movements in a forming machine, in particular in a hammer forging press. 4,084,418, Cl. 72-31.000.
Williams, John Chamberlin; and Sisco, William Braxton, to RCA Corporation. Method and detection of phase and frequency modulation. 4,085,367, Cl. 325-67.000.
Williams, Melvin L. Poultry-handling system. 4,084,714, Cl. 214-515.000.
Williams, Paul, to Industrial Nucleonics Corporation. Radiation reflection method and apparatus particularly for gauging materials exhibiting broadband absorption or scattering, or similar effects. 4,085,326, Cl. 250-339.000.
Williams, Winfried Wilbur, Sr.; and Clancy, David, to Colgate-Palmolive Company. Automatic packaging apparatus. 4,084,391, Cl. 53-120.000.
Williford, Jerry G., to Rockwell International Corporation. Biquad RC active filter. 4,085,380, Cl. 330-107.000.
Willis, David John; Stevenson, Dennis Clifford; and Bettle, William, to Betstone Industries Limited. Turning bed. 4,084,274, Cl. 5-61.000.
Wilson, Charles A., to General Signal Corporation. Mixing apparatus. 4,085,463, Cl. 366-176.000.
Wilson, Charles Edwin, Jr., to Wilson, Charles Edwin, Jr. Fire damper. 4,084,744, Cl. 236-49.000.
Wilson, William G.: *See—*
Kay, D. Alan R.; and Wilson, William G., 4,084,960, Cl. 75-58.000
Wilson, William L.: *See—*
Bick, Rodger L.; and Fekete, Lajos F., 4,085,095, Cl. 260-112.00B.
Wiltron Company: *See—*
Bathiany, Robert H.; and Jensen, Bernhard, 4,085,361, Cl. 324-57.0SS.
Wilwerding, Dennis J., to Honeywell Inc. Automatic focus system with loss of correlation inhibit. 4,085,320, Cl. 250-201.000.
Wilwerding, Dennis J.: *See—*
Adams, James R., Jr.; and Wilwerding, Dennis J., 4,085,353, Cl. 315-241.00P.
Winkelmann, Lothar: *See—*
Drews, Ulrich; Werner, Peter; and Winkelmann, Lothar, 4,084,552, Cl. 123-32.0EA.
Winkler, Helmut: *See—*
Willenbrock, Walter; and Winkler, Helmut, 4,084,418, Cl. 72-31.000.
Winter, Bruce L.: *See—*
Green, Norman W.; Duraiswamy, Kandaswamy; Lumpkin, Robert E.; Knell, Everett W.; Mirza, Zia I.; and Winter, Bruce L., 4,085,030, Cl. 208-8.000.
Winter, Klaus: *See—*
Budecker, Ludwig; and Winter, Klaus, 4,084,604, Cl. 137-101.000.
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, to Firmenich & Cie. Pyridine sulfur flavoring agents. 4,085,109, Cl. 260-294.80E.
Winters, Raymond S., to Environetics, Inc. Grain storage apparatus. 4,084,358, Cl. 52-4.000.
Wisconsin Centrifugal, Inc.: *See—*
Koltz, Lawrence D.; and Pritzlaff, Herbert E., 4,084,739, Cl. 228-168.000.
Wisdom, Norvell E., Jr.: *See—*
Cox, William H.; and Wisdom, Norvell E., Jr., 4,084,941, Cl. 51-295.000.
Wisebaker, Robert E.: *See—*
Allebach, Gene E.; and Wisebaker, Robert E., 4,084,278, Cl. 10-76.00T.
Wiseblood, Nathan. Method for reconditioning and resurfacing pavement. 4,084,915 Cl. 404-77.000.
Witschonke, Charles Richard: *See—*
Song, Dae Suk; Duffy, Richard Joseph; Witschonke, Charles Richard; Schiller, Arthur Maurice; and Higgins, Mark Allan, 4,085,045, Cl. 210-58.000.
Witt, Alan Caywood, to Du Pont de Nemours, E. I., and Company. Textile bobbin with yarn end fastening means. 4,084,767, Cl. 242-164.000.
Wittmann, Dieter: *See—*
Schneeberger, Martin; and Wittmann, Dieter, 4,084,546, Cl. 122-32.000.
Witzel, Frank: *See—*
Mackay, Donald A. M.; Witzel, Frank; Dwivedi, Basant K.; and Schoenholz, Daniel, 4,085,227, Cl. 426-3.000.
Witzke, Horst, to Optel Corporation. Radiant energy converter having storage. 4,085,257, Cl. 429-111.000.
Wixon, Harold Eugene: *See—*
Giordano, Annie Sue; Burke, Richard Lerda; and Wixon, Harold Eugene, 4,085,243, Cl. 427-387.000.
Wolf, Franz-Josef. Joint for pipes. 4,084,827, Cl. 277-168.000.
Wolf, John C.; and Costello, Thomas G., to Controlex Corporation of America Flexible coupling for rotatable shafts. 4,084,409, Cl. 64-11.00B.
Wolfe, John Edmond, to Burroughs Corporation. Focused ion beam mask maker. 4,085,330, Cl. 250-492.00A.
Wolfe, Robert W., to Clark Equipment Company. Escapement assembly for shift control mechanism. 4,084,448, Cl. 74-475.000.
Wolff, Stephen S.: *See—*
Deitz, Paul H., Durfee, Gary L.; and Wolff, Stephen S., 4,085,319, Cl. 250-199.000.
Wolter, Brigitte: *See—*
Wolter, Heinz; and Wolter, Brigitte, 4,085,315, Cl. 362-116.000.
Wolter, Heinz; and Wolter, Brigitte, to Wolter, Heinz. Light connectable with a key. 4,085,315, Cl. 362-116.000.
Wolters Tjako Aaldrik; and de Koning, Jan, to Ballast-Nedam Groep N.V.; and Amsterdamse Ballast Bagger. Suction dredge with swell compensating ladder mount. 4,084,334, Cl. 37-67.000.
Woltersdorf, Otto W., Jr.: *See—*
Cragoe, Edward J., Jr.; Woltersdorf, Otto W., Jr.; and Hoffman, William F., 4,085,117, Cl. 260-332.20A.
Cragoe, Edward J., Jr.; Woltersdorf, Otto W., Jr., and Habecker, Charles N., 4,085,211, Cl. 424-250.000.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,085,219, Cl. 424-269.000.
Wolverine World Wide, Inc.: *See—*
Harlan, Martin L., Krause, John A.; and Brooks, Ronald L., 4,084,292, Cl. 17-50.000.
Wolverton, Kenneth Harlan: *See—*
McIntyre, Robert Alfred; and Wolverton, Kenneth Harlan, 4,085,303, Cl. 200-61.410.
Wondolowski, Lawrence: *See—*
Gibbons, John P.; and Wondolowski, Lawrence, 4,085,076, Cl. 260-17.200.
Wong, Eunice K. T.: *See—*
Milberger, Ernest C.; Bremer, Noel J.; and Wong, Eunice K. T., 4,085,121, Cl. 260-346.750
Woo, Ming Cho, to National Casein of New Jersey. Pre-mixed catalyzed vinyl acetate polymer adhesive composition. 4,085,074, Cl. 260-17.00R.
Wood, Cecil Howard. Apparatus and method of manufacturing flexible ducting. 4,084,309, Cl. 29-561.000
Wood, Derek A.: *See—*
Rosinger, Herbert P., Wood, Derek A.; and Sheldon, Roger A., 4,085,147, Cl. 260-600.00R.
Wood, Peter: *See—*
MacKenzie, Raymond W.; Wood, Peter; Heinrich, Theodore M., and Oates, Robert M., 4,085,300, Cl. 219-10.49R.
Wood Processes, Oregon Ltd.: *See—*
Wheeler, Robert G., 4,084,996, Cl. 156-257.000.
Woodbine Corporation: *See—*
Cain, Gene; Teague, Joe Doyle; and Wright, Paul James, 4,084,381, Cl. 61-36.00C.
Woodward Governor Company: *See—*
McConnell, Robert G., 4,085,373, Cl. 328-141.000.
Wrasman, Thomas J. Molding tool for making valve. 4,084,783, Cl. 249-175.000.
Wright, James E.: *See—*
Jacoby, Jerold L.; Tierney, William S.; Wright, James E.; and Bhuta, Pravin G., 4,084,427, Cl. 73-88.00A.
Wright Machinery Company Limited: *See—*
Sharp-Dent, Charles Edward Arthur; and Hounsell, John Owen, 4,084,652, Cl. 177-207.000.
Wright, Paul James: *See—*
Cain, Gene, Teague, Joe Doyle; and Wright, Paul James, 4,084,381, Cl. 61-36.00C.
Wristers, Harry J., to Exxon Research & Engineering Co. Purple $TiCl_3$ by direct low temperature reduction. 4,085,064, Cl. 252-429.00B
Wristers Jos, to Exxon Research & Engineering Co. Hydrogenation process using noble metal catalysts promoted by liquid fluorine containing acids. 4,085,035, Cl. 208-143.000.
Xerox Corporation: *See—*
Deetz, David R., 4,084,680, Cl. 197-19.000
De Vito, Michael G.; and Wieloch, Francis J., 4,085,245, Cl. 428-215.000.

Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,084,966, Cl. 96-1.0PS.
Looney, John H., 4,084,809, Cl. 271-220.000.
Okumura, Koji, 4,085,455, Cl. 365-112.000.
Sliva, Philip O., 4,085,321, Cl. 250-211.00R.
Warter, Peter J., Jr.; Squassoni, Gino F.; Tulagin, Vsevolod; Teumer, Roger G.; and Egnaczak, Raymond K., 4,084,896, Cl. 355-3.00P.

Yagher, Charles, Jr., to Emerson Electric Co. Electrical switching device for thermal and overvoltage protection. 4,085,397, Cl. 337-407.000.

Yahiro, Teruo; and Yoshida, Hiroshi, to Kajima Corporation; and Chemical Grout Company, Limited. Process for the high-pressure grouting within the earth and apparatus adapted for carrying out same. 4,084,648, Cl. 175-67.000.

Yamada, Masanori: *See—*
Niwata, Tatuji; Okubo, Kazutomo; Nakanishi, Fumio; and Yamada, Masanori, 4,085,422, Cl. 358-118.000.

Yamagata, Ichiki, to Oji-Yuka Synthetic Paper Sales Co., Ltd. Packaging article. 4,084,689, Cl. 206-280.000.

Yamaguchi, Hiroaki: *See—*
Hattori, Tadashi; Yamaguchi, Hiroaki; and Nakase, Takamichi, 4,084,563, Cl. 123-119.0EC.

Yamaguchi, Kiyoshi: *See—*
Hasegawa, Kunio; Nishimura, Hidetomo; and Yamaguchi, Kiyoshi, 4,085,343, Cl. 310-52.000.

Yamai, Fumito: *See—*
Saito, Fumio; Yamai, Fumito; Beppu, Yositugu; and Nakayama, Shinpei, 4,085,169, Cl. 260-886.000.

Yamamoto, Hisao: *See—*
Katsube, Junki; Kojima, Atsuyuki; Sunagawa, Makoto; Takashima, Yoshinori; Kameno, Yoshito; and Yamamoto, Hisao, 4,085,210, Cl. 424-248.400.

Yamamoto, Satomi; Yoshii, Masataka; Matsuo, Teruo; and Yokoozi, Teruo, to Nippon Steel Corporation. Method for continuous refining of a molten iron base metal. 4,084,959, Cl. 75-53.000.

Yamamoto, Stephen K., to International Telephone and Telegraph Corporation. Electrical connector. 4,084,875, Cl. 339-94.00M.

Yamanaka, Akira: *See—*
Maeda, Keisuke; and Yamanaka, Akira, 4,085,410, Cl. 354-21.000.

Yamaoka, Sadao; and Arai, Kenichi, to Minolta Camera Kabushiki Kaisha. Jam detecting device in the electrophotographic copying machine. 4,084,900, Cl 355-14.000.

Yamasaki, Yorio: *See—*
Itoh, Masaki; and Yamasaki, Yorio, 4,084,656, Cl. 180-103.00R.

Yamashita, Katusuke: *See—*
Ohsako, Kyoichi; and Yamashita, Katusuke, 4,085,311, Cl. 235-92.0FP.

Yamashita, Keiji: *See—*
Ishikawa, Tatsuo; Yamashita, Keiji; Okubo, Norio; Sakashita, Masahira; Okamoto, Arimichi; and Kusunose, Tetsuhiro, 4,085,174, Cl. 264-49.000.

Yamazaki, Takashi: *See—*
Takebe, Toshio; and Yamazaki, Takashi, 4,084,591, Cl. 128-285.000.

Yang, Kei-Hsiung: *See—*
Swank, Robert K.; and Yang, Kei-Hsiung, 4,085,327, Cl. 250-370.000.

Yankee, Ernest W., to Upjohn Company, The. 5-Oxa-cis-13-PGF_1 compounds. 4,085,271, Cl. 560-121.000.

Yasuda, Kazuyoshi: *See—*
Nakano, Tatsuya; Yasuda, Kazuyoshi; and Miwa, Takeshi, 4,084,760, Cl. 242-18.00A.

Yasuda, Michio: *See—*
Kawakami, Takajiro; Mizuno, Minesilo; Okushi, Akira; and Yasuda, Michio, 4,085,237, Cl. 427-150.000.

Yasuoka, Akihiko; and Shibata, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Process for preparing complementary MOS integrated circuit. 4,084,311, Cl. 29-571.000.

Yates, Donald B.: *See—*
Kunz, Andrew M.; Yates, Donald B.; and Tuck, Richard L., 4,084,515, Cl. 105-240.000.

Yawamura Glass Kabushiki Kaisha: *See—*
Shimoiizaka, Junzo; Konosu, Akira; Hayashi, Yuzo; Morita, Kaneji; Sugie, Akio; and Ishioka, Kunio, 4,084,755, Cl. 241-95.000.

Yazaki Sogyo Kabushiki Kaisha: *See—*
Ishibashi, Toshihiro, 4,084,578, Cl. 126-271 000.

Yeda Research and Development Co., Ltd.: *See—*
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, 4,085,261, Cl. 526-19.000.

Yeh, Yu Shuan, to Bell Telephone Laboratories, Incorporated. Interference canceling method and apparatus. 4,085,368, Cl. 325-304.000.

Yen, Yao T., to Intel Corporation. Interconnector for integrated circuit package. 4,084,869, Cl. 339-17.0CF.

Yerges, Lyle F.: *See—*
Saylor, Charles J.; Haworth, Richard G.; and Yerges, Lyle F., 4,084,366, Cl. 52-615.000.
Saylor, Charles J.; Haworth, Richard G.; and Yerges, Lyle F., 4,084,367, Cl. 52-615.000.

Ying Mfg. Corporation: *See—*
Yu, Ying-Nien, 4,084,579, Cl. 126-271.000.

Yokomori, Sadakazu: *See—*
Kyogoku, Kazuaki; Hatayama, Katsuo; Yokomori, Sadakazu; Sawada, Jiro; and Tanaka, Ichiro, 4,085,135, Cl. 260-520.00C.

Yokoozi, Teruo: *See—*
Yamamoto, Satomi; Yoshii, Masataka; Matsuo, Teruo; and Yokoozi, Teruo, 4,084,959, Cl. 75-53.000.

Yoshida, Hiroshi: *See—*
Yahiro, Teruo; and Yoshida, Hiroshi, 4,084,648, Cl. 175-67.000.

Yoshida, Yuzuru, to Aupac Kabushiki Kaisha. Brush device for miniature electric motor. 4,085,346, Cl. 310-246.000.

Yoshii, Masataka: *See—*
Yamamoto, Satomi; Yoshii, Masataka; Matsuo, Teruo; and Yokoozi, Teruo, 4,084,959, Cl. 75-53.000.

Yoshimura, Hiromitsu: *See—*
Kuroda, Masahiro; and Yoshimura, Hiromitsu, 4,085,389, Cl. 332-31.00T.

Yoshino, Masaki, to Fuji Xerox Co., Ltd. Array of optical projection devices. 4,084,894, Cl. 353-34.000.

Yoshino, Takeshi, to Fuji Photo Optical Co., Ltd. Device for recording information on a film in a photographic camera. 4,085,412, Cl. 354-106.000.

Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Oe, Takanori; and Tsuruda, Mineo, 4,085,111, Cl. 260-296.00H.

Young, Duane A.: *See—*
Palm, William A.; and Young, Duane A., 4,085,383, Cl. 330-295.000.

Younger, Lloyd. Apparatus and method for sowing second crop in standing crop. 4,084,522, Cl. 111-14.000.

Youngquist, Rex Veech. Electric water heater for showers. 4,085,308, Cl. 219-309.000.

Yu, Ying-Nien, to Ying Mfg. Corporation. Lightweight solar heater employing tubes and channels. 4,084,579, Cl. 126-271.000.

Yver, Jacques, to Metallurgie Francaise des Poudres-Metafram. Apparatus for producing horizontal and vertical reciprocation movement of a transfer arm. 4,084,710, Cl. 214-1.0BB.

Zadina, Alfred, to Viennatone Gesellschaft m.b.H. Drive for an orthosis or a prosthesis. 4,084,267, Cl. 3-1.100.

Zahnradfabrik Friedrichshafen AG: *See—*
Schlitz, Robert, 4,084,374, Cl. 60-330.000.
Stumpp, Bernard, 4,084,917, Cl. 407-114.000.

Zaitsev, Aron Iosifovich: *See—*
Kaminsky, Igor Viktorovich; Shestakov, Vladimir Vladimirovich; Severov, Genrikh Fedorovich; Zaitsev, Aron Iosifovich; Litvinenko, Alexandr Fedorovich; Melnikov, Viktor Vasilievich; Zats, Boris Semenovich; Miropolsky, Mark Usherovich; and Maizlik, David Lvovich, 4,085,051, Cl. 210-333.00R.

Zak, Dennis Joseph, to Du Pont de Nemours, E. I., and Company. Butynediol production. 4,085,151, Cl. 260-635.00Y.

Zalabak, Vladislav: *See—*
Rokos, Josef; Kubat, Zdenek; Prochazka, Pavel; Zalabak, Vladislav; Babicka, Josef, deceased; Janecek, Jiri; Nohynek, Miroslav; and Mison, Petr, 4,085,206, Cl. 424-131.000.

Zamboni, Frank J., to Frank J. Zamboni & Co. Machine for handling artificial turf or the like. 4,084,763, Cl. 242-86.520.

Zats, Boris Semenovich: *See—*
Kaminsky, Igor Viktorovich; Shestakov, Vladimir Vladimirovich; Severov, Genrikh Fedorovich; Zaitsev, Aron Iosifovich; Litvinenko, Alexandr Fedorovich; Melnikov, Viktor Vasilievich; Zats, Boris Semenovich; Miropolsky, Mark Usherovich; and Maizlik, David Lvovich, 4,085,051, Cl. 210-333.00R.

Zboril, Josef, to BBC Brown Boveri & Company Limited. Arrangement for maintaining optimum minimum operating clearance between rotor and stator components of fluid-flow machines and method of operating the same. 4,084,920, Cl. 415-174.000.

Zehender, Ernst; Blaich, Bernhard; Stein, Helmut; and Kerner, Karl, to Robert Bosch GmbH. Method to apply a protective layer to the surface of optical reflectors, and so-made reflectors, particularly automotive vehicle head lamps. 4,085,248, Cl. 428-336.000.

Zenk, George Edward; Johnson, Robert Joseph; and Miller, Charles Newell, to Control Data Corporation. Membrane-type touch panel. 4,085,302, Cl. 200-5.00A.

Zermeno, Alfonso; Marsh, Lee M., Jr.; and Hevezi, James M., to University of Texas, The. Imaging by point absorption of radiation. 4,085,324, Cl. 250-320.000.

Zieher, Peter: *See—*
Kubach, Hans; and Zieher, Peter, 4,085,379, Cl. 330-69.000.

Zilges, Franz Josef; and Siegert, Klaus, to Schloemann-Siemag Aktiengesellschaft. Extrusion press. 4,084,422, Cl. 72-253.00R.

Zinsser, Rudolf G., to Reuter Technologie GmbH. Circuit for producing pulses by differentiating output of sawtooth oscillator. 4,085,384, Cl. 331-74.000.

Zmoda, Barney J., to Colgate-Palmolive Company. Audibly burning gelled alcohol. 4,084,939, Cl. 44-7.00C.

Zoberis, Walter B.: *See—*
Kerwin, Daniel; Zoberis, Walter B.; Grec, John W.; and McDonald, James A., 4,084,501, Cl. 101-76.000.

Zollinger, Joseph La Mar: *See—*
Mitsch, Ronald A.; and Zollinger, Joseph La Mar, 4,085,137, Cl. 260-561.0HL.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF APRIL, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Fullerton, Baxter T., to Warner & Swasey Company, The. Machine tool with indexible tool support. Re. 29,612, Cl. 29-47.000.

Kropfhammer, Georg. Inhaler apparatus. Re. 29,613, Cl. 128-203.000.

Lawrence, James Roger, to Steadley Company, Inc. Bed base for supporting a box spring. Re. 29,611, Cl. 5-200.00R.

Nippon Kogaku K.K.: *See*—
Toyoda, Kenji, Re. 29,615, Cl. 354-60.00E.

Protectoseal Co., The: *See*—
Zehr, William J., Re. 29,614, Cl. 169-26.000.

Steadley Company, Inc.: *See*—
Lawrence, James Roger, Re. 29,611, Cl. 5-200.00R.

Toyoda, Kenji, to Nippon Kogaku K.K. Off-photometric-range indicator for exposure meter. Re. 29,615, Cl. 354-60.00E.

Warner & Swasey Company, The: *See*—
Fullerton, Baxter T., Re. 29,612, Cl. 29-47.000.

Zehr, William J., to Protectoseal Co., The. Rupturing head for fire extinguishers. Re. 29,614, Cl. 169-26.000.

LIST OF PLANT PATENTEES

Blow, Elizabeth Parris; and Steppe, Muriel Fiscus. Dogwood tree — imperial white variety. 4,242, 4-18-78, Cl. 51.000.

Carlton Rose Nurseries, Inc.: *See*—
Van Veen, Jan, 4,241, Cl. 18.000.

Steppe, Muriel Fiscus: *See*—
Blow, Elizabeth Parris; and Steppe, Muriel Fiscus, 4,242, Cl. 51.000.

Van Veen, Jan, to Carlton Rose Nurseries, Inc. Rose plant. 4,241, 4-18-78, Cl. 18.000.

LIST OF DESIGN PATENTEES

Alexander, Mark A.; and Speers, Samuel F., to Ralston Purina Company. Dog food scoop. 247,737, 4-18-78, Cl. D7-104.000.

Appleby, William Edward, to Tubular Barriers Limited. Portable crowd control barricade or the like. 247,751, 4-18-78, Cl. D25-45.000.

Archer, Timothy H., to Mead Corporation, The. Type font. 247,758, 4-18-78, Cl. D64-12.00B.

Atari, Inc.: *See*—
Hall, Randy K., 247,746, Cl. D13-38.000.

Brady, Frank A., to General Time Corporation. Combined clock and case. 247,740, 4-18-78, Cl. D10-18.000.

Chicago Cutlery Consumer Products, Inc.: *See*—
Gangelhoff, Fred R., 247,736, Cl. D7-74.000.
Gangelhoff, Ronald J.; and Jacobi, Robert L., 247,735, Cl. D7-74.000.

Compagnie Generale des Etablissements Michelin: *See*—
Duchamp, Marcel, 247,744, Cl. D12-137.000.

Crenshaw, John C.: *See*—
Danz, Ellworth R.; and Crenshaw, John C., 247,741, Cl. D10-23.000.

Danz, Ellworth R.; and Crenshaw, John C., to General Time Corporation. Clock. 247,741, 4-18-78, Cl. D10-23.000.

Davidson, Charles. Wrist watch. 247,742, 4-18-78, Cl. D10-39.000

Donato, Anthony C.; and Thurston, Gerald, to Lightolier Incorporated. Shelf light. 247,757, 4-18-78, Cl. D48-20.00E.

Duchamp, Marcel, to Compagnie Generale des Etablissements Michelin. Tire. 247,744, 4-18-78, Cl. D12-137.000.

Ebner, John Steven; Pizzeri, Francis Charles; and Sprecher, Charles Grimes, to Milgo Electronics Corporation. Display monitor or similar article. 247,748, 4-18-78, Cl. D14-43.000.

Esselte Obergs AB: *See*—
Winther, Ole, 247,759, Cl. D87-1.00D.

Fairchild Camera and Instrument Corporation: *See*—
Talesfore, Nicholas F., 247,754, Cl. D34-5.00R.
Talesfore, Nicholas F., 247,755, Cl. D34-5.00R.

Finnern, Gerd; Fleig, Mario; Grothkopp, Friedrich; Hein, Peter; Rahn, Armin; and Schneider, Lorenz, to Plath, C. Sextant. 247,743, 4-18-78, Cl. D10-65.000.

Fleig, Mario: *See*—
Finnern, Gerd; Fleig, Mario; Grothkopp, Friedrich; Hein, Peter; Rahn, Armin; and Schneider, Lorenz, 247,743, Cl. D10-65.000.

Gangelhoff, Fred R., to Chicago Cutlery Consumer Products, Inc. Holder for cutlery and sharpener. 247,736, 4-18-78, Cl. D7-74.000.

Gangelhoff, Ronald J.; and Jacobi, Robert L., to Chicago Cutlery Consumer Products, Inc. Holder for cutlery and sharpening steel. 247,735, 4-18-78, Cl. D7-74.000.

General Time Corporation: *See*—
Brady, Frank A., 247,740, Cl. D10-18.000.
Danz, Ellworth R.; and Crenshaw, John C., 247,741, Cl. D10-23.000.

Grothkopp, Friedrich: *See*—
Finnern, Gerd; Fleig, Mario; Grothkopp, Friedrich; Hein, Peter; Rahn, Armin; and Schneider, Lorenz, 247,743, Cl. D10-65.000.

Hall, Randy K., to Atari, Inc. Hand held control unit. 247,746, 4-18-78, Cl. D13-38.000.

Halliwell, James A. D. Combined shirt and cravat. 247,726, 4-18-78, Cl. D2-209.000.

Hein, Peter: *See*—
Finnern, Gerd; Fleig, Mario; Grothkopp, Friedrich; Hein, Peter; Rahn, Armin; and Schneider, Lorenz, 247,743, Cl. D10-65.000.

J. R. Clark Company, The: *See*—
Ryan, Delvin Richard, Jr., 247,734, Cl. D7-43.000.

Jacobi, Robert L.: *See*—
Gangelhoff, Ronald J.; and Jacobi, Robert L., 247,735, Cl. D7-74.000.

Kobayashi, Minoru: *See*—
Nemoto, Shigeru; and Kobayashi, Minoru, 247,747, Cl. D14-6.000.

Lee, Shun-Chi: *See*—
Lu, Tien-Pao; and Lee, Shun-Chi, 247,750, Cl. D23-65.000.

Lightolier Incorporated: *See*—
Donato, Anthony C.; and Thurston, Gerald, 247,757, Cl. D48-20.00E.

Lu, Tien-Pao; and Lee, Shun-Chi. Flush toilet. 247,750, 4-18-78, Cl. D23-65.000.

Mead Corporation, The: *See*—
Archer, Timothy H., 247,758, Cl. D64-12.00B.

Milgo Electronics Corporation: *See*—
Ebner, John Steven; Pizzeri, Francis Charles; and Sprecher, Charles Grimes, 247,748, Cl. D14-43.000.

Mitchell, Thomas R. Bedstead. 247,727, 4-18-78, Cl. D6-83.000.

Montgomery, William P.: *See*—
Paone, Anthony N.; and Montgomery, William P., 247,739, Cl. D9-187.000.

Nagelkerke, Petrus Jacobus Johanna, to U.S. Philips Corporation. Sun lamp. 247,756, 4-18-78, Cl. D48-20.00H.

Nemoto, Shigeru; and Kobayashi, Minoru, to Olympus Optical Company Ltd. Tape recorder. 247,747, 4-18-78, Cl. D14-6.000.

Nichols, Brian H. Slotted container for receiving paid bills or the like. 247,728, 4-18-78, Cl. D6-127.000.

Ohtomo, Kazuhito, to Sansui Electric Co., Ltd. Tuner. 247,749, 4-18-78, Cl. D14-71.000.

Olympus Optical Company Ltd.: *See*—
Nemoto, Shigeru; and Kobayashi, Minoru, 247,747, Cl. D14-6.000.

Paone, Anthony N.; and Montgomery, William P., to SCM Corpora-

tion. Dual ribbon cartridge shipping tray. 247,739, 4-18-78, Cl. D9-187.000.

Pizzeri, Francis Charles: *See—*
Ebner, John Steven; Pizzeri, Francis Charles; and Sprecher, Charles Grimes, 247,748, Cl. D14-43.000.

Plath, C.: *See—*
Finnern, Gerd; Fleig, Mario; Grothkopp, Friedrich; Hein, Peter; Rahn, Armin; and Schneider, Lorenz, 247,743, Cl. D10-65.000.

Rahn, Armin: *See—*
Finnern, Gerd; Fleig, Mario; Grothkopp, Friedrich; Hein, Peter; Rahn, Armin; and Schneider, Lorenz, 247,743, Cl. D10-65.000.

Ralston Purina Company: *See—*
Alexander, Mark A.; and Speers, Samuel F., 247,737, Cl. D7-104.000.

Rausch, Gunter, to Rollei-Werke Franke & Heidecke. Carrying case for a photographic camera. 247,760, 4-18-78, Cl. D87-5.00E.

Regie Nationale des Usines Renault: *See—*
Tixier, Michel, 247,745, Cl. D12-172.000.

Robinson, A. Fuller. Credenza. 247,729, 4-18-78, Cl. D6-159.000.

Robinson, A. Fuller. Desk. 247,730, 4-18-78, Cl. D6-161.000.

Robinson, A. Fuller. Desk. 247,731, 4-18-78, Cl. D6-161.000.

Robinson, A. Fuller. Desk. 247,732, 4-18-78, Cl. D6-161.000.

Robinson, A. Fuller. Table. 247,733, 4-18-78, Cl. D6-177.000.

Rollei-Werke Franke & Heidecke: *See—*
Rausch, Gunter, 247,760, Cl. D87-5.00E.

Ryan, Delvin Richard, Jr., to J. R. Clark Company, The. Pretzel pan. 247,734, 4-18-78, Cl. D7-43.000.

Rynearson, Charles H. Stud mounted bracket. 247,738, 4-18-78, Cl. D8-354.000.

Sansui Electric Co., Ltd.: *See—*
Ohtomo, Kazuhito, 247,749, Cl. D14-71.000.

Schneider, Lorenz: *See—*
Finnern, Gerd; Fleig, Mario; Grothkopp, Friedrich; Hein, Peter; Rahn, Armin; and Schneider, Lorenz, 247,743, Cl. D10-65.000.

SCM Corporation: *See—*
Paone, Anthony N.; and Montgomery, William P., 247,739, Cl. D9-187.000.

Speers, Samuel F.: *See—*
Alexander, Mark A.; and Speers, Samuel F., 247,737, Cl. D7-104.000.

Sprecher, Charles Grimes: *See—*
Ebner, John Steven; Pizzeri, Francis Charles; and Sprecher, Charles Grimes, 247,748, Cl. D14-43.000.

Talesfore, Nicholas F., to Fairchild Camera and Instrument Corporation. Hand-held controller for a video game or the like. 247,754, 4-18-78, Cl. D34-5.00R.

Talesfore, Nicholas F., to Fairchild Camera and Instrument Corporation. Video game console. 247,755, 4-18-78, Cl. D34-5.00R.

Thurston, Gerald: *See—*
Donato, Anthony C.; and Thurston, Gerald, 247,757, Cl. D48-20.00E.

Tixier, Michel, to Regie Nationale des Usines Renault. Side wing of a car bumper. 247,745, 4-18-78, Cl. D12-172.000.

Tubular Barriers Limited: *See—*
Appleby, William Edward, 247,751, Cl. D25-45.000.

U.S. Philips Corporation: *See—*
Nagelkerke, Petrus Jacobus Johanna, 247,756, Cl. D48-20.00H.

Winther, Ole, to Esselte Obergs AB. Carrying case for tape cassettes. 247,759, 4-18-78, Cl. D87-1.00D.

Yanai, Taro. Telescopic friction lighter. 247,752, 4-18-78, Cl. D27-36.000.

Yanai, Taro. Lighter with magnetized telescopic tip. 247,753, 4-18-78, Cl. D27-38.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 18, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2	4,084,264
163	4,084,265

CLASS 3

1	4,084,266
1.1	4,084,267
1.5	4,084,268

CLASS 4

111	4,084,269
145	4,084,270
161	4,084,271
172.17	4,084,272

CLASS 5

61	4,084,274
81 R	4,084,275
105	4,084,273
118	4,084,276
200 R	Re.29,611
331	4,084,277

CLASS 10

76 T	4,084,278

CLASS 12

142 R	4,084,279

CLASS 15

22 R	4,084,280
29	4,084,281
38	4,084,282
48	4,084,283
79 A	4,084,284
87	4,084,285
104.93	4,084,286
210 R	4,084,287

CLASS 16

21	4,084,288
96 R	4,084,289
	4,084,290
170	4,084,291

CLASS 17

50	4,084,292
52	4,084,293
57	4,084,294

CLASS 21

2.7 R	4,084,936

CLASS 23

259	4,084,937

CLASS 24

95	4,084,295
205.13	4,084,296
205.13 C	4,084,297
230 AL	4,084,298
250	4,084,299

CLASS 29

26 A	4,084,300
33 K	4,084,301
47	Re.29,612
148.4 D	4,084,302
	4,084,303
157.1 R	4,084,304
261	4,084,305
431	4,084,306
460	4,084,307
527.2	4,084,308
561	4,084,309
564.4	4,084,310
571	4,084,311
588	4,084,312
593	4,084,313
626	4,084,314
740	4,084,315

CLASS 30

47	4,084,316
94	4,084,317

CLASS 32

10 A	4,084,318
21	4,084,319
60	4,084,320

CLASS 33

86	4,084,321
115	4,084,329
174 L	4,084,322
	4,084,323
	4,084,324
191	4,084,325
245	4,084,326
299	4,084,327
368	4,084,328

CLASS 34

92	4,084,330

CLASS 35

8 R	4,084,331
9 G	4,084,332

CLASS 36

43	4,084,333

CLASS 37

67	4,084,334
126 AE	4,084,335
184	4,084,336

CLASS 40

472	4,084,337
560	4,084,339
592	4,084,338

CLASS 42

1 N	4,084,340
1 Y	4,084,341

CLASS 43

19.2	4,084,342
22	4,084,343

CLASS 44

1 R	4,084,938
7 C	4,084,939
51	4,084,940

CLASS 46

28	4,084,344
75	4,084,345

CLASS 47

1.4	4,084,346

CLASS 49

397	4,084,347
475	4,084,348

CLASS 51

5 D	4,084,349
106 R	4,084,350
109 R	4,084,351
127	4,084,352
220	4,084,353
283 R	4,084,354
295	4,084,941
307	4,084,942
313	4,084,355
328	4,084,356
419	4,084,357

CLASS 52

4	4,084,358
40	4,084,359
63	4,084,360
204	4,084,361
309.2	4,084,362
309.4	4,084,363
484	4,084,364
529	4,084,365
615	4,084,366
	4,084,367
728	4,084,368

CLASS 53

112 A	4,084,390
120	4,084,391
131	4,084,392
137	4,084,393

CLASS 55

17	4,084,943
27	4,084,944
38	4,084,945
184	4,084,946
242	4,084,947
366	4,084,948
524	4,084,949

CLASS 56

14.6	4,084,394
15.4	4,084,395
98	4,084,396
255	4,084,397

CLASS 57

34 R	4,084,398
140 C	4,084,399
156	4,084,400

CLASS 58

4 A	4,084,401
23 D	4,084,403
23 R	4,084,402
50 R	4,084,404

CLASS 59

7	4,084,369
78.1	4,084,370

CLASS 60

39.36	4,084,371
278	4,084,372
293	4,084,373
330	4,084,374
496	4,084,375
523	4,084,376
535	4,084,377
602	4,084,378
641	4,084,379

CLASS 61

1 F	4,084,380
36 C	4,084,381
36 R	4,084,382
	4,084,383
42	4,084,384
53.5	4,084,385
85	4,084,386

CLASS 62

63	4,084,387
152	4,084,388
179	4,084,389
197	4,084,405
211	4,084,406
342	4,084,407
467 R	4,084,408

CLASS 64

11 B	4,084,409
12	4,084,410
19	4,084,411

CLASS 68

5 C	4,084,412
189	4,084,413

CLASS 70

181	4,084,414
269	4,084,415
276	4,084,416
431	4,084,417

CLASS 71

67	4,084,950
86	4,084,951
	4,084,952
	4,084,953
90	4,084,954
92	4,084,955
111	4,084,956

CLASS 72

31	4,084,418
68	4,084,419
138	4,084,420
231	4,084,421
253 R	4,084,422
256	4,084,423
389	4,084,424

CLASS 73

32 A	4,084,425
60.1	4,084,426
88 A	4,084,427
117.3	4,084,428
139	4,084,429
141 R	4,084,430
146.2	4,084,431
148	4,084,432
159	4,084,433
160	4,084,434
299	4,084,435
313	4,084,436
361	4,084,437
422 GC	4,084,440
425.4 R	4,084,441
432 PS	4,084,442
517 R	4,084,443
622	4,084,444
706	4,084,438
718	4,084,439

CLASS 74

61	4,084,445
	4,084,446
89.14	4,084,447
475	4,084,448
480 R	4,084,449
713	4,084,450
867	4,084,451

CLASS 75

3	4,084,957
36	4,084,958
53	4,084,959
58	4,084,960
101 R	4,084,961
130 A	4,084,962
138	4,084,963
171	4,084,964
230	4,084,965

CLASS 76

42	4,084,452

CLASS 81

10	4,084,460
57.18	4,084,453
121 R	4,084,454
140	4,084,455
177.8	4,084,456
425 R	4,084,457

CLASS 82

1 C	4,084,458
	4,084,459
21 B	4,084,461
36 R	4,084,462
53.1	4,084,463

CLASS 83

94	4,084,464
103	4,084,465
193	4,084,466
208	4,084,467
542	4,084,469
841	4,084,470

CLASS 84

1.01	4,084,471
	4,084,472
1.14	4,084,473
1.27	4,084,474
291	4,084,475
293	4,084,476
327	4,084,477
500	4,084,468

CLASS 85

45	4,084,478

CLASS 87

48	4,084,479

CLASS 89

42 B	4,084,480

CLASS 90

1.6 R	4,084,481
11 R	4,084,482
13.3	4,084,483
24 C	4,084,484

CLASS 91

210	4,084,485
276	4,084,486
325	4,084,487

CLASS 93

36 B	4,084,488
36.8	4,084,489
55.1 R	4,084,490

CLASS 96

1 PS	4,084,966
29 R	4,084,967
48 PD	4,084,968
60 R	4,084,969
88	4,084,970

CLASS 98

121 A	4,084,491

CLASS 99

330	4,084,492
450.7	4,084,493
	4,084,494

CLASS 100

34	4,084,495
35	4,084,496
53	4,084,497
210	4,084,498
231	4,084,499

CLASS 101

28	4,084,500
76	4,084,501
93.29	4,084,502
96	4,084,503
110	4,084,507
115	4,084,504
123	4,084,505
127	4,084,506
142	4,084,508
261	4,084,509
365	4,084,510

CLASS 102

70.2 GA	4,084,511
103	4,084,512

CLASS 105

197 DB	4,084,513
	4,084,514
240	4,084,515
368 R	4,084,516

CLASS 106

1.17	4,084,971
39.7	4,084,972
	4,084,973
	4,084,974
48	4,084,975
	4,084,976
50	4,084,977
54	4,084,978
58	4,084,979
75	4,084,980
96	4,084,981
105	4,084,982
289	4,084,983
300	4,084,984

CLASS 108

153	4,084,517

CLASS 109

19	4,084,518
42	4,084,519
56	4,084,520

CLASS 110

242	4,084,521

CLASS 111

14	4,084,522

CLASS 112

158 A	4,084,523
158 B	4,084,524

CLASS 113

1 K	4,084,525
116 E	4,084,526

CLASS 114

36	4,084,527
45	4,084,528
46	4,084,529
125	4,084,534
183 R	4,084,530
211	4,084,531
218	4,084,532
219	4,084,533
222	4,084,535

CLASS 115

16	4,084,536
50	4,084,537

CLASS 118

4	4,084,538
8	4,084,539
48	4,084,540
421	4,084,541
658	4,084,542

CLASS 119

3	4,084,543
103	4,084,544

CLASS 122

4 D	4,084,545
32	4,084,546
504	4,084,547

CLASS 123

32 EA	4,084,552
32 SP	4,084,551
48 B	4,084,553
52 MF	4,084,554
58 AA	4,084,555
75 B	4,084,556
90.15	4,084,557
97 B	4,084,558
102	4,084,559
103 C	4,084,561
119 EC	4,084,560
	4,084,562
	4,084,563
139 AV	4,084,564
140 MP	4,084,565
148 E	4,084,566
	4,084,567
182	4,084,568
205	4,084,548
217	4,084,549
245	4,084,550

CLASS 125

23 R	4,084,569

CLASS 126

140	4,084,570
198	4,084,571
200	4,084,572
270	4,084,573
	4,084,574
	4,084,575
	4,084,576
	4,084,577
271	4,084,578
	4,084,579
	4,084,580
	4,084,581

CLASS 128

2 V	4,084,582
2.06 R	4,084,583
80 C	4,084,584
146.2	4,084,585
157	4,084,586
193	4,084,587
203	Re.29,613
218 R	4,084,588
278	4,084,589
283	4,084,590
285	4,084,591
287	4,084,592
295	4,084,593
311	4,084,594
422	4,084,595

CLASS 131

17 R	4,084,596

CLASS 135

1 R	4,084,597
3 E	4,084,598
4 R	4,084,599
20 R	4,084,600

CLASS 136

89 P	4,084,985

CLASS 137

1	4,084,610
49	4,084,601
68 A	4,084,602
88	4,084,603
101	4,084,604
101.11	4,084,605
102	4,084,606
312	4,084,607
316	4,084,608
327	4,084,609
454.2	4,084,611

484.2 4,084,612
596.18 4,084,613
614.03 4,084,614
624.11 4,084,615
625.28 4,084,617
625.4 4,084,616
625.48 4,084,618
636.2 4,084,619
801 4,084,620

CLASS 138

30 4,084,621

CLASS 139

420 R 4,084,622
435 4,084,623

CLASS 140

80 4,084,624
123.5 4,084,625

CLASS 141

7 4,084,626
11 4,084,627
284 4,084,628

CLASS 144

134 D 4,084,629

CLASS 148

1.5 4,084,986
4,084,987
9.5 4,084,988
11.5 R 4,084,989
4,084,990
31.5 4,084,991

CLASS 149

17 4,084,992
39 4,084,993
44 4,084,994
56 4,084,995

CLASS 151

5 4,084,630

CLASS 156

257 4,084,996
356 4,084,997
403 4,084,998
466 4,084,999

CLASS 162

16 4,085,000
145 4,085,001
238 4,085,002
259 4,085,003

CLASS 164

4 4,084,631
72 4,084,632

CLASS 165

8 4,084,633
9 4,084,634
107 4,084,635

CLASS 166

65 M 4,084,636
245 4,084,637
248 4,084,638
4,084,639
259 4,084,640

CLASS 169

26 Re.29,614

CLASS 172

9 4,084,641
21 4,084,642
795 4,084,643
796 4,084,644

CLASS 173

13 4,084,645
17 4,084,646
73 4,084,647

CLASS 174

36 4,085,284
68.5 4,085,285
92 4,085,286

CLASS 175

67 4,084,648
366 4,084,649

CLASS 176

22 4,085,004

CLASS 177

174 4,084,650
193 4,084,651
207 4,084,652

CLASS 178

66 R 4,085,287
69.1 4,085,288

CLASS 179

1 GQ 4,085,291
1 VE 4,085,289
1. CN 4,085,290
2 A 4,085,292
8 A 4,085,293
16 AA 4,085,294
84 VF 4,085,295
100.3 R 4,085,296
111 R 4,085,297
175.3 R 4,085,298
184 4,085,299

CLASS 180

9.48 4,084,653
44 R 4,084,654
69.1 4,084,655
103 R 4,084,656
105 E 4,084,659
114 4,084,657

CLASS 181

241 4,084,658

CLASS 187

26 4,084,660
29 R 4,084,661
4,084,662

CLASS 188

31 4,084,663
71.9 4,084,664
73.3 4,084,665
4,084,666
275 4,084,667
312 4,084,668

CLASS 191

45 R 4,084,669

CLASS 192

13 R 4,084,670
30 W 4,084,671
67 A 4,084,673
89 B 4,084,674
95 4,084,675
055 4,084,672

CLASS 194

87 4,084,676
100 A 4,084,677

CLASS 195

68 4,085,005
103.7 4,085,006
109 4,085,007

CLASS 197

1 R 4,084,678
6.7 4,084,679
19 4,084,680
82 4,084,681
168 4,084,682
170 4,084,683

CLASS 198

461 4,084,685
467 4,084,684
468 4,084,686
844 4,084,687

CLASS 200

4 4,085,301
5 A 4,085,302
61.41 4,085,303
61.45 R 4,085,304
83 A 4,085,305
275 4,085,306

CLASS 202

151 4,085,008

CLASS 204

1 T 4,085,009
16 4,085,010
37 R 4,085,011
38 A 4,085,012
51 4,085,013
95 4,085,014
98 4,085,015
104 4,085,016
123 4,085,017
159.15 4,085,018
159.23 4,085,019
181 C 4,085,020
181 N 4,085,021
192 E 4,085,022
195 R 4,085,024
195 S 4,085,023
224 M 4,085,025
242 4,085,026
268 4,085,027
269 4,085,028

CLASS 206

188 4,084,688
280 4,084,689
310 4,084,690
313 4,084,691
403 4,084,692
427 4,084,693
444 4,084,694
532 4,084,695
629 4,084,696

CLASS 208

8 4,085,029
4,085,030
4,085,031
10 4,085,032
4,085,033
48 R 4,085,034
143 4,085,035
212 4,085,036

CLASS 209

1 4,085,037
71 4,085,038
106 4,084,697
121 4,084,698
220 4,085,039
244 4,085,040

CLASS 210

7 4,085,041
33 4,085,042
40 4,085,043
45 4,085,044
58 4,085,045
90 4,085,046
96 M 4,085,047
242 S 4,085,049
321 R 4,085,048
332 4,085,050
333 R 4,085,051

CLASS 211

11 4,084,699
41 4,084,700
81 4,084,701
88 4,084,702
153 4,084,703

CLASS 213

100 W 4,084,704
127 4,084,705

CLASS 214

1 BB 4,084,709
4,084,710
1 D 4,084,706
1 HA 4,084,707
4,084,708
1 HH 4,084,711
35 R 4,084,712
85 4,084,713
515 4,084,714
660 4,084,715

CLASS 215

217 4,084,716
4,084,717
247 4,084,718
256 4,084,719

CLASS 219

10.49 R 4,085,300
98 4,085,307
309 4,085,308
364 4,085,309
502 4,085,310

CLASS 220

76 4,084,720
269 4,084,721
270 4,084,722
277 4,084,723

CLASS 221

20 4,084,724
75 4,084,725
266 4,084,726
298 4,084,727

CLASS 222

153 4,084,728
307 4,084,729
309 4,084,730
380 4,084,731
402.17 4,084,732

CLASS 223

78 4,084,733

CLASS 224

2 B 4,084,734
42.03 B 4,084,736
42.1 E 4,084,735

CLASS 225

2 4,084,737

CLASS 227

7 4,084,738

CLASS 228

168 4,084,739

CLASS 229

23 R 4,084,740
69 4,084,741

CLASS 235

92 FP 4,085,311
306 4,085,312
419 4,084,742
4,085,313
487 4,085,314

CLASS 236

1 G 4,084,743
49 4,084,744

CLASS 237

8 R 4,084,745

CLASS 238

10 F 4,084,746

CLASS 239

4 4,084,747
74 4,084,748
271 4,084,749
600 4,084,750

CLASS 241

25 4,084,751
30 4,084,752
34 4,084,753
52 4,084,754
95 4,084,755
213 4,084,756
301 4,084,757

CLASS 242

18 A 4,084,760
18 G 4,084,758
18 PW 4,084,759
58.6 4,084,761
68.3 4,084,762
86.52 4,084,763
107 4,084,764
107.4 B 4,084,765
129.62 4,084,766
164 4,084,767
186 4,084,768

CLASS 243

3 4,084,769
25 4,084,770

CLASS 244

31 4,084,771
165 4,084,772
166 4,084,773
194 4,084,774

CLASS 248

188.7 4,084,776
287 4,084,777
314 4,084,778
318 4,084,779

CLASS 249

59 4,084,780
83 4,084,781
135 4,084,782
175 4,084,783

CLASS 250

199 4,085,319
201 4,085,320
211 R 4,085,321
227 4,085,322
252 4,085,323
320 4,085,324
328 4,085,325
339 4,085,326
370 4,085,327
416 TV 4,085,328
492 A 4,085,329
4,085,330
493 4,085,331
528 4,085,332

CLASS 251

147 4,084,784
172 4,084,785
250 4,084,786

CLASS 252

8.6 4,085,052
32.7 E 4,085,053
49.3 4,085,054
50 4,085,055
59 4,085,056
62.1 L 4,085,058
62.1 P 4,085,057
118 4,085,059
180 4,085,060
300 4,085,062
301.1 W 4,085,061
387 4,085,063
429 B 4,085,064
429 R 4,085,070
434 4,085,066
437 4,085,065
442 4,085,067
455 R 4,085,068
455 Z 4,085,069
470 4,085,131

CLASS 254

57 4,084,787
76 4,084,788
86 R 4,084,789
90 4,084,790
101 4,084,791
106 4,084,792
187.8 4,084,793
189 4,084,794

CLASS 260

2.5 AC 4,085,072
2.5 E 4,085,073
17 R 4,085,074
17.2 4,085,075
4,085,076
22 R 4,085,071
23 XA 4,085,077
28.5 AS 4,085,078
29.6 B 4,085,079
31.2 N 4,085,080
31.4 R 4,085,081
31.6 4,085,082
4,085,083
33.6 SB 4,085,084
38 4,085,085
40 TN 4,085,086
42.49 4,085,087
45.7 R 4,085,088
45.8 NT 4,085,089
49 4,085,090
75 R 4,085,091
77.5 AN 4,085,092
79.5 B 4,085,094
79.5 P 4,085,093
112 B 4,085,095
112.5 LH 4,085,096
145 A 4,085,097
157 4,085,098
207 4,085,099
239 A 4,085,100
239.9 4,085,101
250 C 4,085,103
251 A 4,085,105
251 R 4,085,104
256.4 F 4,085,106
256.4 Q 4,085,107
283 SC 4,085,108
294.8 B 4,085,110
294.8 E 4,085,109
296 H 4,085,111
304 C 4,085,112
306.7 C 4,085,113
307 DA 4,085,114
308 D 4,085,115
4,085,116
332.2 A 4,085,117
343 4,085,119
343.6 4,085,118
4,085,120
346.75 4,085,121
4,085,122
349 4,085,123
396 N 4,085,124
402 4,085,125
404 4,085,126
413 4,085,127
456 A 4,085,128
463 4,085,129
465.2 4,085,130
502 R 4,085,133
502.5 4,085,134
515 R 4,085,143
520 C 4,085,135
559 D 4,085,136
561 HL 4,085,137
563 R 4,085,138
4,085,139
566 R 4,085,140
570 R 4,085,141
570.5 CA 4,085,142
584 R 4,085,144
592 4,085,145
600 R 4,085,146
4,085,147
601 H 4,085,148
613 R 4,085,149
621 R 4,085,150
635 Y 4,085,151
645 4,085,152
649 R 4,085,153
668 D 4,085,154
668 R 4,085,155
671 R 4,085,156
673 4,085,157
680 E 4,085,158
835 4,085,159
837 R 4,085,160
4,085,161
848 4,085,162
857 D 4,085,163
858 4,085,164
859 R 4,085,165
876 R 4,085,166
885 4,085,167
886 4,085,168
4,085,169

CLASS 261

1 4,085,170
36 R 4,085,171

CLASS 264

1 4,085,172
3 R 4,085,173
49 4,085,174
51 4,085,175
82 4,085,176
89 4,085,177
106 4,085,178
122 4,085,179
128 4,085,180
158 4,085,181
171 4,085,182
174 4,085,183
219 4,085,184
248 4,085,185
268 4,085,186
280 4,085,187

CLASS 266

106 4,084,797
131 4,084,798
207 4,084,799
225 4,084,800

CLASS 267

140 4,084,801

CLASS 269

41 4,084,802
91 4,084,803

CLASS 270

52.5 4,084,804

CLASS 271

4 4,084,805
80 4,084,806
119 4,084,807
213 4,084,808
220 4,084,809

CLASS 272

73 4,084,810
76 4,084,811
85 4,084,812
106 4,084,813
110 4,084,814
119 4,084,815

CLASS 273

1 R 4,084,816
53 4,084,817
67 A 4,084,818
80 R 4,084,819
96 R 4,084,820
148 R 4,084,821
185 D 4,084,822
269 4,084,823

CLASS 274

1 R 4,084,824

CLASS 277

25 4,084,825
134 4,084,826
168 4,084,827
207 A 4,084,828

CLASS 279

99 4,084,829

CLASS 280

6.1 4,084,830
11.2 4,084,831
33.99 S 4,084,832
81 A 4,084,833
106 T 4,084,834
148 4,084,835
254 4,084,836
668 4,084,837
715 4,084,838
736 4,084,839
744 4,084,840
745 4,084,841

CLASS 285

47 4,084,842
105 4,084,843
373 4,084,844

CLASS 290

2 4,085,333

CLASS 292

92 4,084,845

CLASS 296

1 S	4,084,846
28 R	4,084,847
137 E	4,084,848

CLASS 297

22	4,084,849
317	4,084,850
453	4,084,775

CLASS 298

14	4,084,851
22 C	4,084,852
24	4,084,853

CLASS 299

57	4,084,854
64	4,084,855
86	4,084,856

CLASS 301

6 A	4,084,857

CLASS 303

11	4,084,858
106	4,084,859

CLASS 307

11	4,085,334
88.3	4,085,335
115	4,085,337
118	4,085,336
147	4,085,338
213	4,085,339
237	4,085,340
247 R	4,085,341
260	4,085,342

CLASS 308

15	4,084,860
26	4,084,861
139	4,084,862
238	4,084,863

CLASS 310

52	4,085,343
58	4,085,344
117	4,085,345
246	4,085,346
259	4,085,347
313	4,085,348
319	4,085,349

CLASS 312

42	4,084,864
111	4,084,865
138 R	4,084,866
198	4,084,867
268	4,084,868

CLASS 313

486	4,085,350
	4,085,351

CLASS 315

169 R	4,085,352
241 P	4,085,353

CLASS 316

19	4,084,871

CLASS 318

87	4,085,354
168	4,085,355
331	4,085,356
590	4,085,357

CLASS 320

9	4,085,358

CLASS 323

22 T	4,085,359

CLASS 324

3	4,085,360
57 SS	4,085,361
83 D	4,085,362
162	4,085,363

CLASS 325

20	4,085,364
21	4,085,365
22	4,085,366
67	4,085,367
304	4,085,368
312	4,085,369
348	4,085,370
464	4,085,371
	4,085,372

CLASS 328

141	4,085,373
143	4,085,374
160	4,085,375
233	4,085,376

CLASS 329

116	4,085,377
124	4,085,378

CLASS 330

69	4,085,379
107	4,085,380
147	4,085,381
262	4,085,382
295	4,085,383

CLASS 331

74	4,085,384
94.5 D	4,085,385
94.5 M	4,085,387
94.5 PE	4,085,386
107 A	4,085,388

CLASS 332

31 T	4,085,389

CLASS 333

33	4,085,390
	4,085,391

CLASS 335

58	4,085,392
202	4,085,393

CLASS 336

20	4,085,394
61	4,085,395

CLASS 337

290	4,085,396
407	4,085,397

CLASS 338

25	4,085,398
200	4,085,399

CLASS 339

17 CF	4,084,869
18 P	4,084,870
19	4,084,872
52 R	4,084,873
75 MP	4,084,874
94 M	4,084,875
95 D	4,084,876
97 P	4,084,877
99 R	4,084,878
198 GA	4,084,879

CLASS 340

10	4,085,400
146.3 AE	4,085,401
163	4,085,402
168 R	4,085,403

CLASS 343

754	4,085,404
858	4,085,405
895	4,085,406

CLASS 346

33 ME	4,085,407
75	4,085,408
	4,085,409

CLASS 350

3.72	4,084,880
6.8	4,084,881
96.20	4,084,882
151	4,084,908
152	4,084,883
175 ML	4,084,885
281	4,084,886
294	4,084,887
334	4,084,884

CLASS 351

97	4,084,888
121	4,084,889
160	4,084,890

CLASS 352

22	4,084,891
29	4,084,892
141	4,084,893

CLASS 353

34	4,084,894

CLASS 354

21	4,085,410
51	4,085,411
60 E	Re.29,615
106	4,085,412
137	4,085,413
145	4,085,414
219	4,085,416
316	4,085,415

CLASS 355

1	4,084,895
3 P	4,084,896
8	4,084,897
	4,084,898
14	4,084,899
	4,084,900
16	4,084,901
53	4,084,903
66	4,084,904

CLASS 356

38	4,084,902
85	4,084,905
96	4,084,906
106 S	4,084,907
188	4,084,909

CLASS 357

43	4,085,417

CLASS 358

44	4,085,418
55	4,085,419
56	4,085,420
81	4,085,421
118	4,085,422
128	4,085,423
181	4,085,424
237	4,085,425

CLASS 360

38	4,085,426
77	4,085,427
99	4,085,428
119	4,085,429
	4,085,430

CLASS 361

56	4,085,431
91	4,085,432
396	4,085,433
413	4,085,434
433	4,085,435

CLASS 362

16	4,085,316
	4,085,436
72	4,085,317
109	4,085,437
116	4,085,315
217	4,085,318

CLASS 364

107	4,085,438
200	4,085,439
454	4,085,440
827	4,085,441
900	4,085,442
	4,085,443
	4,085,444
	4,085,445
	4,085,446
	4,085,447
	4,085,448
	4,085,449
	4,085,450

CLASS 365

4	4,085,451
5	4,085,452
8	4,085,453
30	4,085,454
112	4,085,455
114	4,085,456
205	4,085,457
206	4,085,458
222	4,085,459
230	4,085,460

CLASS 366

90	4,085,461
137	4,084,796
174	4,085,462
176	4,085,463
177	4,084,795

CLASS 401

133	4,084,910

CLASS 402

15	4,084,911

CLASS 403

141	4,084,913

CLASS 404

10	4,084,914
74	4,084,912
77	4,084,915
134	4,084,916

CLASS 407

114	4,084,917

CLASS 415

1	4,084,918
136	4,084,919
174	4,084,920

CLASS 416

17	4,084,921
220 R	4,084,922

CLASS 417

393	4,084,923
424	4,084,924
554	4,084,925

CLASS 418

19	4,084,926
61 A	4,084,927

CLASS 423

32	4,085,188
74	4,085,189
80	4,085,190
208	4,085,191
226	4,085,192
239	4,085,193
242	4,085,194
244	4,085,195
446	4,085,196
450	4,085,197
498	4,085,198
574 R	4,085,199
579	4,085,200
625	4,085,201

CLASS 424

1	4,085,202
89	4,085,203
101	4,085,204
105	4,085,205
131	4,085,206
180	4,085,207
	4,085,208
245	4,085,209
248.4	4,085,210
250	4,085,211
251	4,085,212
	4,085,213
253	4,085,214
258	4,085,215
263	4,085,216
266	4,085,217
267	4,085,218
269	4,085,219
274	4,085,220
275	4,085,221
278	4,085,222
	4,085,223
283	4,085,224
304	4,085,225
322	4,085,226

CLASS 425

64	4,084,928
169	4,084,929
198	4,084,930
218	4,084,931
405 H	4,084,932
467	4,084,933

CLASS 426

3	4,085,227
36	4,085,228
46	4,085,229
262	4,085,230
410	4,085,231
548	4,085,232
615	4,085,233
618	4,085,234

CLASS 427

64	4,085,235
121	4,085,236
150	4,085,237
207 A	4,085,238
208	4,085,239
302	4,085,240
385 B	4,085,241
385 R	4,085,242
387	4,085,243

CLASS 428

192	4,085,244
215	4,085,245
220	4,085,246
290	4,085,247
336	4,085,248
383	4,085,249
418	4,085,250
485	4,085,251
576	4,085,252

CLASS 429

1	4,085,253
2	4,085,254
26	4,085,255
48	4,085,256
111	4,085,257
125	4,085,258
194	4,085,259

CLASS 431

189	4,084,934
202	4,084,935

CLASS 526

16	4,085,260
19	4,085,261
46	4,085,262
47	4,085,263
	4,085,264
49	4,085,265
65	4,085,266
74	4,085,267
122	4,085,276

CLASS 542

450	4,085,102

CLASS 544

27	4,085,277
111	4,085,278
	4,085,279
140	4,085,280
185	4,085,281
197	4,085,282
214	4,085,283
221	4,085,268
	4,085,269

CLASS 560

75	4,085,132
105	4,085,270
121	4,085,271
	4,085,272
124	4,085,273
130	4,085,275
176	4,085,274

CLASSIFICATION OF DESIGNS

D2—	209	247,726
D6—	83	247,727
	127	247,728
	159	247,729
	161	247,730
		247,731
		247,732
	177	247,733
D7—	43	247,734
	74	247,735
		247,736
	104	247,737
D8—	354	247,738
D9—	187	247,739
D10—	18	247,740
	23	247,741
	39	247,742
	65	247,743
D12—	137	247,744
	172	247,745
D13—	38	247,746
D14—	6	247,747
	43	247,748
	71	247,749
D23—	65	247,750
D25—	45	247,751
D27—	36	247,752
	38	247,753
D34-	5 R	247,754
		247,755
D48—	20 E	247,757
	20 H	247,756
D64—	12 B	247,758
D87—	1 D	247,759
	5 E	247,760

CLASSIFICATION OF PLANTS

P.—	18	4,241
	51	4,242

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41		
Alaska	2	Louisiana	22	Pennsylvania	42		
American Samoa	3	Maine	23	Puerto Rico	43		
Arizona	4	Maryland	24	Rhode Island	44		
Arkansas	5	Massachusetts	25	South Carolina	45		
California	6	Michigan	26	South Dakota	46		
Canal Zone	7	Minnesota	27	Tennessee	47		
Colorado	8	Mississippi	28	Texas	48		
Connecticut	9	Missouri	29	Utah	49		
Delaware	10	Montana	30	Vermont	50		
District of Columbia	11	Nebraska	31	Virginia	51		
Florida	12	Nevada	32	Virgin Islands	52		
Georgia	13	New Hampshire	33	Washington	53		
Guam	14	New Jersey	34	West Virginia	54		
Hawaii	15	New Mexico	35	Wisconsin	55		
Idaho	16	New York	36	Wyoming	56		
Illinois	17	North Carolina	37	U.S. Air Force	57		
Indiana	18	North Dakota	38	U.S. Army	58		
Iowa	19	Ohio	39	U.S. Navy	59		
Kansas	20	Oklahoma	40				

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,084,830		4,084,686		4,085,451		4,085,462		4,084,715		4,084,744
	4,084,992		4,084,695		4,085,454	12 :	4,084,282		4,084,722		4,084,783
	4,085,287		4,084,714	8 :	4,084,461		4,084,360		4,084,741		4,084,815
4 :	4,084,312		4,084,718		4,084,496		4,084,582		4,084,811		4,084,822
	4,084,315		4,084,724		4,084,640		4,084,792		4,084,842		4,084,856
	4,084,326		4,084,734		4,084,769		4,084,901		4,084,852		4,085,445
	4,084,477		4,084,738		4,084,867		4,084,915		4,084,873	22 :	4,084,465
	4,084,556		4,084,745		4,084,889		4,084,919		4,084,874		4,084,555
	4,084,566		4,084,763		4,084,897		4,085,046		4,084,892		4,084,687
	4,084,577		4,084,775		4,085,024		4,085,080		4,084,912		4,085,035
	4,084,645		4,084,804		4,085,041		4,085,181		4,084,927		4,085,195
	4,084,723		4,084,831		4,085,185		4,085,308		4,084,965		4,085,317
	4,084,778		4,084,845		4,085,228		4,085,425		4,085,020	23 :	4,084,937
	4,084,880		4,084,851		4,085,306		4,085,449		4,085,053	24 :	4,084,329
	4,085,078		4,084,863		4,085,316	13 :	4,084,389		4,085,067		4,084,511
	4,085,313		4,084,869		4,085,320		4,084,589		4,085,068		4,084,596
	4,085,341		4,084,875		4,085,332		4,084,693		4,085,075		4,084,616
5 :	4,084,417		4,084,879		4,085,353		4,084,733		4,085,076		4,084,729
	4,084,454		4,084,882		4,085,373		4,084,740		4,085,154		4,085,017
	4,084,711		4,084,886		4,085,437	16 :	4,084,517		4,085,161		4,085,107
6 :	4,084,281		4,084,918	9 :	4,084,277		4,085,394		4,085,168		4,085,319
	4,084,290		4,084,925		4,084,319	17 :	Re.29,614		4,085,191		4,085,390
	4,084,340		4,084,999		4,084,362		4,084,270		4,085,291		4,085,395
	4,084,341		4,085,004		4,084,391		4,084,280		4,085,293		4,085,404
	4,084,354		4,085,029		4,084,409		4,084,306	18 :	4,084,304		4,085,421
	4,084,364		4,085,030		4,084,462		4,084,310		4,084,375		4,085,441
	4,084,365		4,085,039		4,084,476		4,084,331		4,084,424	25 :	4,084,266
	4,084,379		4,085,056		4,084,657		4,084,332		4,084,441		4,084,320
	4,084,384		4,085,059		4,084,668		4,084,335		4,084,580		4,084,428
	4,084,385		4,085,061		4,084,721		4,084,358		4,084,619		4,084,437
	4,084,401		4,085,069		4,084,726		4,084,382		4,084,665		4,084,438
	4,084,402		4,085,095		4,084,781		4,084,450		4,084,690		4,084,455
	4,084,414		4,085,123		4,084,846		4,084,466		4,084,706		4,084,469
	4,084,415		4,085,180		4,084,861		4,084,467		4,084,725		4,084,478
	4,084,425		4,085,183		4,084,877		4,084,475		4,084,735		4,084,509
	4,084,427		4,085,233		4,084,924		4,084,483		4,084,743		4,084,533
	4,084,474		4,085,244		4,084,963		4,084,501		4,084,828		4,084,624
	4,084,489		4,085,286		4,085,119		4,084,510		4,084,844		4,084,663
	4,084,493		4,085,296		4,085,162		4,084,513		4,084,857		4,084,742
	4,084,503		4,085,301		4,085,166		4,084,514		4,085,178		4,084,779
	4,084,512		4,085,303		4,085,177		4,084,515		4,085,224		4,084,820
	4,084,518		4,085,329		4,085,213		4,084,522	19 :	4,084,707		4,084,854
	4,084,575		4,085,330		4,085,309		4,084,536		4,084,962		4,084,911
	4,084,579		4,085,354		4,085,323		4,084,539	20 :	4,084,357		4,084,949
	4,084,586		4,085,355		4,085,388		4,084,592		4,084,396		4,084,964
	4,084,590		4,085,356		4,085,442		4,084,594		4,084,411		4,085,066
	4,084,598		4,085,361		4,085,450		4,084,601		4,084,431		4,085,079
	4,084,602		4,085,380	10 :	4,084,434		4,084,606		4,084,439		4,085,092
	4,084,603		4,085,387		4,085,071		4,084,609		4,084,713		4,085,171
	4,084,618		4,085,417		4,085,091		4,084,643		4,084,796		4,085,231
	4,084,620		4,085,434		4,085,106		4,084,644		4,084,956		4,085,242
	4,084,629		4,085,439		4,085,124		4,084,653		4,085,214		4,085,253
	4,084,658		4,085,440		4,085,246		4,084,675	21 :	4,084,291		4,085,256

4,085,297
4,085,333
4,085,393
4,085,411
4,085,414
4,085,433
4,085,460
26 : 4,084,264
4,084,283
4,084,287
4,084,288
4,084,292
4,084,353
4,084,355
4,084,366
4,084,367
4,084,377
4,084,447
4,084,448
4,084,497
4,084,498
4,084,516
4,084,525
4,084,526
4,084,572
4,084,630
4,084,676
4,084,683
4,084,684
4,084,700
4,084,770
4,084,816
4,084,865
4,084,866
4,084,887
4,084,908
4,084,916
4,084,931
4,084,955
4,084,976
4,085,000
4,085,073
4,085,096
4,085,120
4,085,139
4,085,153
4,085,260
4,085,271
4,085,278
4,085,279
4,085,281
4,085,405
27 : 4,084,273
4,084,388
4,084,547
4,084,595
4,084,597
4,084,703
4,084,793
4,084,812
4,084,878
4,085,137
4,085,172
4,085,302
4,085,314
4,085,369
4,085,378
4,085,383
4,085,447
28 : 4,084,318
4,084,363

29 : Re.29,611
4,084,488
4,084,491
4,084,499
4,084,500
4,084,540
4,084,544
4,084,588
4,084,701
4,084,708
4,084,940
4,084,950
4,084,953
4,085,104
4,085,105
4,085,134
4,085,275
4,085,336
4,085,344
4,085,366
30 : 4,084,961
31 : 4,084,369
4,084,642
4,085,107
32 : 4,084,337
4,084,599
33 : 4,085,003
4,085,427
34 : 4,084,308
4,084,313
4,084,327
4,084,468
4,084,550
4,084,638
4,084,646
4,084,661
4,084,672
4,084,691
4,084,696
4,084,698
4,084,716
4,084,731
4,084,746
4,084,772
4,084,773
4,084,819
4,084,840
4,084,939
4,084,944
4,084,945
4,084,970
4,084,971
4,084,997
4,085,045
4,085,062
4,085,074
4,085,077
4,085,102
4,085,138
4,085,142
4,085,149
4,085,198
4,085,208
4,085,243
4,085,257
4,085,272
4,085,280
4,085,284
4,085,298
4,085,340
4,085,359

4,085,365
4,085,367
4,085,368
4,085,375
4,085,392
4,085,432
4,085,453
4,085,456
35 : 4,084,610
4,085,444
36 : 4,084,272
4,084,286
4,084,328
4,084,330
4,084,338
4,084,349
4,084,351
4,084,392
4,084,435
4,084,459
4,084,460
4,084,487
4,084,490
4,084,553
4,084,585
4,084,600
4,084,732
4,084,747
4,084,750
4,084,795
4,084,806
4,084,809
4,084,817
4,084,824
4,084,850
4,084,858
4,084,870
4,084,883
4,084,896
4,084,909
4,084,910
4,084,941
4,084,966
4,084,967
4,084,972
4,084,973
4,084,974
4,084,988
4,085,006
4,085,009
4,085,031
4,085,037
4,085,060
4,085,072
4,085,084
4,085,118
4,085,131
4,085,144
4,085,150
4,085,187
4,085,190
4,085,201
4,085,227
4,085,232
4,085,245
4,085,305
4,085,321
4,085,327
4,085,337
4,085,363
4,085,377

4,085,406
4,085,435
4,085,436
4,085,448
4,085,455
37 : 4,084,436
4,084,495
4,084,736
4,084,802
4,085,230
39 : Re.29,612
4,084,278
4,084,321
4,084,343
4,084,350
4,084,371
4,084,406
4,084,545
4,084,564
4,084,570
4,084,571
4,084,573
4,084,576
4,084,612
4,084,699
4,084,704
4,084,727
4,084,780
4,084,800
4,084,813
4,084,825
4,084,948
4,084,975
4,084,982
4,084,985
4,085,014
4,085,028
4,085,040
4,085,052
4,085,065
4,085,093
4,085,094
4,085,112
4,085,121
4,085,175
4,085,179
4,085,241
4,085,267
4,085,273
4,085,282
4,085,307
4,085,318
4,085,326
4,085,349
4,085,385
4,085,396
4,085,397
4,085,402
4,085,409
40 : 4,084,378
4,084,464
4,084,832
4,084,928
4,084,935
4,085,007
4,085,130
4,085,158
4,085,197
41 : 4,084,347
4,084,452
4,084,561

4,084.625
4,084,835
4,084,996
42 : 4,084,271
4,084,296
4,084,301
4,084,325
4,084,387
4,084,395
4,084,423
4,084,584
4,084,626
4,084,705
4,084,717
4,084,737
4,084,748
4,084,758
4,084,776
4,084,787
4,084,794
4,084,821
4,084,836
4,084,855
4,084,872
4,084,876
4,084,890
4,084,906
4,084,922
4,084,929
4,084,943
4,084,952
4,085,008
4,085,013
4,085,036
4,085,038
4,085,043
4,085,044
4,085,063
4,085,081
4,085,100
4,085,117
4,085,125
4,085,156
4,085,167
4,085,184
4,085,199
4,085,209
4,085,211
4,085,219
4,085,250
4,085,268
4,085,288
4,085,300
4,085,438
44 : 4,084,720
4,085,132
4,085,186
4,085,463
45 : 4,084,520
4,084,615
4,084,799
4,084,868
46 : 4,084,352
4,084,938
4,085,189
47 : 4,084,279
4,084,368
4,084,492
4,084,767
4,084,789

4,084,814
4,084,902
4,085,089
4,085,347
48 : 4,084,381
4,084,429
4,084,453
4,084,543
4,084,613
4,084,636
4,084,637
4,084,639
4,084,680
4,084,785
4,084,801
4,084,923
4,084,946
4,084,947
4,084,954
4,085,015
4,085,027
4,085,032
4,085,033
4,085,047
4,085,064
4,085,133
4,085,143
4,085,151
4,085,155
4,085,160
4,085,163
4,085,173
4,085,192
4,085,202
4,085,254
4,085,324
4,085,358
4,085,399
4,085,452
49 : 4,084,587
4,084,993
51 : 4,084,470
4,084,480
4,084,685
4,084,864
4,085,352
53 : 4,084,276
4,084,284
4,084,293
4,084,654
4,084,739
4,084,914
4,085,012
54 : 4,084,607
4,084,751
4,084,786
55 : 4,084,285
4,084,342
4,084,397
4,084,407
4,084,426
4,084,445
4,084,457
4,084,504
4,084,756
4,084,833
4,084,921
4,084,942
4,085,126
4,085,289

DESIGN PATENTS

6 : 247,740
247,746
247,754

12 : 247,736
247,748

17 : 247,741
18 : 247,734
22 : 247,727

25 : 247,737
27 : 247,728
247,735

34 : 247,757
36 : 247,739
247,742

39 : 247,758
41 : 247,738

PLANT PATENTS

37 : 4,242

U. S. GOVERNMENT PRINTING OFFICE : O - 1978

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

April 25, 1978

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

April 25, 1978 | Volume 969 | Number 4

CONTENTS

	Page
Patent and Trademark Notices	
Board of Appeals Decisions Rendered in the Month of March 1978	969 OG 22
October–December 1977 Classification Orders	969 OG 22
Patent Suits	969 OG 22
Reissue Applications Filed	969 OG 23
Patent Notices	
Service By Publication	969 OG 25
Certificates of Correction for the Week of April 25, 1978	969 OG 25
Disclaimers	969 OG 25
Erratum	969 OG 25
Condition of Patent Applications	969 OG 26
Reissue Patents Granted (29,616)	1197
Plant Patents Granted (4,243)	1199
Patents Granted	
General and Mechanical (4,085,464)	1201
Chemical (4,086,054)	1401
Electrical (4,086,424)	1505
Design Patents Granted (247,761)	1585
Index of Patentees	PI 1
Indices of Reissues, Plants and Designs	PI 42
Classification of	
Patents (Including Reissues)	PI 43
Designs and Plants	PI 45
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 46
Designs and Plants	PI 47
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $342.20 per annum for first class mailing, also available as fourth-class mail at $250.00; foreign mailing $85.55 additional; single copies $6.60 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $88.40 per annum, foreign mailing $22.10 additional; single copies $1.70 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS, price 60 cents each.

CIRCULARS OF GENERAL INFORMATION concerning TRADEMARKS, price 50 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of March 1978

Affirmed	186
Affirmed in part	18
Reversed	91
Total	295

October–December 1977 Classification Orders

The reclassifications covered by the following classification changes became effective between October and December 1977.

	Class	Subclasses
Classification Order 605, effective October 7, 1977:		
Abolished	526	48; 349; 350.
Established	526	47.1–47.9; 48.1–48.4; 52.1–52.5: 169.1–169.3; 229.5; 230.5: 232.1; 232.3; 232.5; 328.5: 329.1–329.7; 340.1–340.4: 344.1–344.3; 347.1; 347.2: 348.1–348.8; 352.2. Cross reference art collection. 918–923.
Position change	526	329.
Title change	526	230.
Classification Order 606, effective November 4, 1977:		
Abolished	240	All.
Established	2	209.2.
	33	348.2.
	(New) 362	1–458. Cross reference art collection. 800–812.
Classification Order 607, effec- November 10, 1977:		
Established	206	Cross reference art collection. 830.
Classification Order 608, effec- November 16, 1977:		
Abolished	235	150–198.
Established	235	301; 302; 302.1–302.4; 303: 303.1–303.4; 303.41; 303.42: 304; 304.1; 304.2; 306–309: 312; 310; 311.
	364	100–121; 400–527; 550–582; 600–608; 700–788; 800–864.
Classification Order 609, effective December 1, 1977:		
Abolished	73	67; 67.1–67.9; 69; 70; 70.1: 70.2; 71; 71.1–71.7; 552–561.
Established	73	570–672. Cross reference art collection. 900; 901.
Classification Order 610, effective December 27, 1977:		
Abolished	324	34; 36–48.
Established	324	200–263.
Classification Order No. 611, effective December 28, 1977:		
Abolished	259	All.
Established	(New) 366	1–349. Cross reference art collection. 600–607.

ALFRED C. MARMOR,
Administrator for Documentation.
January 17, 1978.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,925,719, Robbins and Linn, REFRIGERATING PACKAGE, **filed** Oct. 17, 1977, D.C. Conn. (New Haven), Doc. N–77–402, *Kay Laboratories, Inc.* v. *Hospital Marketing Services Co., Inc.*

2,937,940, Weisberg and Butler, SELECTIVE STRIPPING OF ELECTROPLATED METALS; **3,102,808,** same, COMPOSITION FOR SELECTIVELY STRIPPING ELECTROPLATED METALS FROM SURFACES, **filed** Oct. 11, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3750, *Philip A. Hunt Chemical Corporation* v. *Rin Inc. and Richard Wilczek.*

3,007,590, Mathew and Chapman, SHOVEL LOADERS, **filed** Oct. 13, 1977, D.C., M.D. Fla. (Tampa), Doc. 77–0844–C T.K., *Matbro (Canada), Limited* v. *J. I. Case Company, Inc., doing business as Case Power and Equipment.*

3,091,312, Woody, Scott and Jones, VEHICLE MOUNTED DERRICK, **filed** Oct. 19, 1977, D.C. N.D. Fla. (Pensacola), Doc. PCA 77–0548, *Lex Tex Ltd., Inc.* v. *Monsanto Textile Company.*

3,102,808. (See 2,937,940.)

3,117,657, S. J. Bruno, SHOWER ENCLOSURE, **filed** Oct. 21, 1977, D.C.N.J. (Newark), Doc. 77–2179, *R. B. Wyatt Manufacturing Co., Inc.* v. *Thermasol Ltd.*

3,147,853, R. L. Van Huis, CORNER POST ASSEMBLY; **3,185,289,** Kurtz and Graves, BELT CONVEYOR AND SAFETY MECHANISM THEREFOR; **3,707,141,** Boer and Van Huis, CAPSTAN CABLE DRIVE; **3,768,442,** R. L. Van Huis, MULTITIER CAGE CONSTRUCTIONS; **Re. 27,035,** same, FEED SAVER FOR AUTOMATIC FEED APPARATUS, **filed** June 17, 1977, D.C., E.D. Pa. (Philadelphia), Doc. 77–2143, *Big Dutchman Division of U.S. Industries, Inc.* v. *Favorite Manufacturing, Inc.*

3,183,623, E. Callen, TOY BOMBS, **filed** Oct. 11, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3776, *Callen Manufacturing Corporation* v. *Chemtoy Corporation.*

3,185,289. (See 3,147,853.)

3,202,308, A. L. Botkin, CLOSURE LINERS; **3,363,305,** A. L. Botkin, METHOD OF MAKING A SCREW CAP LINER AND ASSEMBLING SAME IN A SCREW CAP, **filed** Oct. 4, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3688, *Albert L. Botkin* v. *Brown Company, Selig Sealing Products Inc. and Koops Kaps Inc.*

3,225,799, Hayden and Tanner, LUMBER SAWING ATTACHMENT FOR PORTABLE CHAIN SAW; **3,366,150,** W. Malloff, SAW CHAIN, **filed** Oct. 6, 1977, D.C.N.J. (Newark), Doc. 77–2090, *Granberg Industries, Inc.* v. *Robert Sperber and Sperber Tool Works, Inc.*

3,230,675, Frommelt and Frommelt, DOCK PADS WITH ADJUSTABLE HEAD PAD; **3,352,314,** same, LOADING DOCK SHELTER; **3,538,655,** same; **3,557,508,** same, **filed** May 12, 1975, D.C., W.D.N.Y. (Buffalo), Doc. C–75–178, *Dubuque Awning & Tent Company* v. *Weather-Shield Corporation.* Stipulation and order filed dismissing all claims in the action with prejudice, Sept. 26, 1977.

3,351,707, Dreyfoos and Mergens, ELECTRONIC COLOR VIEWER; **3,471,740,** same, METHOD AND APPARATUS FOR CONTROLLING CATHODE RAY TUBE BRIGHTNESS AND CONTRAST, **filed** Oct. 7, 1977, D.C. Calif. (San Francisco), Doc. C–77–2268 RFP, *Photo Electronics Corporation* v. *Avery and Anna Rockfeller.*

3,352,314. (See 3,230,675.)

3,366,150. (See 3,225,799.)

3,383,487, R. Wiener, THIN FLEXIBLE MAGNETIC; **3,860,771,** Lynn and Seeger, KEYBOARD SWITCH ASSEMBLY WITH SAME SHAPED ACTUATOR HAVING ASSOCIATED UNDERLYING CONTRACTOR MEANS, **filed** Dec. 21, 1976, D.C. Conn. (Hartford), Doc. H76–499, *Rogers Corporation* v. *Chomerics, Inc.*

3,386,705, G. D. Griffin, COMPOSTING MACHINE; **3,791,593,** same, FORM OF TINED SHAFT AND CONSTRUCTIONS OF COMPOSTING MACHINE, **filed** Sept. 29, 1977, D.C., E.D. Pa. (Philadelphia), Doc. 77–3349, *Gordon D. Griffin* v. *Keystone Mushroom Farm, Inc.*

3,421,293, J. H. C. Halls, PAINT SPRAY BOOTHS, **filed** Oct. 21, 1977, D.C., E.D. Mich. (Detroit), Doc. 77–72528, *Schweitzer Industrial Corp.* v. *Binks Manufacturing Co.*

3,471,740. (See 3,351,707.)

3,538,655. (See 3,230,675.)

3,557,508. (See 3,230,675.)

3,557,644, G. W. Gregory, SQUEEZE ACTION WRENCH; **3,616,714,** same, RACK AND PINION SQUEEZE ACTION WRENCH, **filed** Oct. 7, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77–3763–DWW, *Gerrett W. Gregory* v. *Consumer Tool Co.*

3,616,714. (See 3,557,644.)

3,674,175, J. Jaquish, MULTIPLE SIZE PACKAGE DISPLAY AND DISPENSER, **filed** Oct. 3, 1972, D.C., S.D.N.Y., Doc. 72–C–4203, *Transworld Display* v. *Mechtronics Inc.*

Judgment, said patent is invalid and void and of no force and effect. The complaint is dismissed with prejudice, Oct. 11, 1977.

3,675,891, Reynolds, Pannier and Sorenson, CONTINUOUS CATHETER FLUSHING APPARATUS, **filed** Oct. 20, 1977, D.C., N.D. Tex. (Dallas), Doc. 3-77-1393F, *Sorenson Research Co. Inc. v. Jay Bruton Medical Electronics, Inc.*

3,707,141. (See 3,147,853.)

3,709,556, Allard and Allard, TELESCOPING I V POLE ATTACHMENT AND WHEEL, **filed** Sept. 23, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV-3562-MML, *Sana Products, Inc. v. Everst & Jennings International et al.*

3,768,442. (See 3,147,853.)

3,770,156, G. Yates, Jr., TAMPER PROOF CLOSURE, **filed** July 17, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2378, *Park Ohio Industries v. Growth International Industries.* Filed stipulation to dismiss under Rule 41 F.R.C.P., Oct. 19, 1977.

3,791,593. (See 3,386,705.)

3,831,788, A. E. Erlinder, LIFT HAVING SELF-FOLDING PLATFORM, **filed** Oct. 14, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3838, *Jane Erlinder Nesius v. Ontario Equipment Inc.*

3,851,914, T. Nii, COLLAPSIBLE CHAIR, **filed** Oct. 18, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3868, *Takeshi Nii and Trend Pacific Inc. v. Ida Stein & Associates and Intal Trade Inc.*

3,860,771. (See 3,383,487.)

3,873,884, F. C. Gabriel, ELECTRODELESS DISCHARGE LAMP AND POWER COUPLER THEREFOR, **filed** Sept. 27, 1977, D.C., E.D.N.Y., (Brooklyn), Doc. 77-c-1923, *Perkin-Elmer Corporation v. Westinghouse Electric Corporation.*

3,874,258, Semola and Droesbeke, KEYED ATTACHMENT DEVICE FOR VEHICLE WHEELS, **filed** July 6, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-2489-RJK, *Stallion Enterprises Inc. v. Kyo-Ei American Corporation et al.* Judgment upon default and order thereon enjoining defendants from further violations of plaintiff's patent, entered Oct. 19, 1977.

3,968,989, R. Schippers, ENCLOSURE STRUCTURE, **filed** Oct. 17, 1977, D.C., E.D. Tenn. (Knoxville), Doc. C-3-77-379, *Ronald Schippers v. Midas International Corp.*

3,990,115, D. G. Nester, ROLL TOP CUFFLESS SOCK AND METHOD OF FORMING SAME, **filed** Oct. 17, 1977, D.C., M.D. N.C. (Winston-Salem), Doc. C-77-497-WS, *Ridgeview Mills, Inc. v. Renform Corporation.*

4,003,571, W. U. Nipper, Jr., ROCKING DEVICE; **D. 243,469,** same, ROCKING TOY, **filed** June 27, 1977, D.C. Ala. (Birmingham), Doc. CA77-L-0882-NE, *Pixieland, Inc. v. Carl Duke, doing business as C.D. Rock-It-Ride, C.D. Lights Company, and Southern See-Saw.*

4,021,055, M. C. Okland, VEHICLE RUNNING BOARD, **filed** Oct. 17, 1977, D.C., S.D. Iowa (Des Moines), Doc. 77-301-2, *Tafco Equipment Co., doing business as Tafco Fabrication Division v. Scott Ankeny and Denny Elwell Payless Tire Co., Inc.*

Re. 27,035. (See 3,147,853.)

D. 243,217, E. E. Warsaw, SOFA, **filed** Mar. 18, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-1016-RF, *Sheffield Furniture Corp. v. Sofa Line.* Stipulation to consent judgment and order thereon permanently enjoining and restraining defendant from further violation of plaintiff's patent. Aug. 25, 1977. **Same,** filed Mar. 31, 1977, D.C. Ariz. (Phoenix), Doc. C-77-260 PhX, *Sheffield Furniture Corp. v. Continental Furniture Mfg. Co.* Consent judgment in favor of plaintiff granting injunctive relief, June 6, 1977. **Same, filed** June 6, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-2037-F, *Sheffield Furniture Corp. v. Superb Furniture, Inc.* **Same, filed** Oct. 31, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-4077-IH, *Sheffield Furniture Corp. v. Trendline, Inc.*

D. 243,330, K. Pichler, EYEGLASS FRAME, **filed** Sept. 27, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-3630-WPG, *Optyl Corp. v. G. Hundert, etc.* **Same, filed** Sept. 27, 1977, D.C., E.D.N.Y. (Brooklyn), Doc. 77-C-1917, *Optyl Corporation v. Meadows-Bud Optical Co., Inc.* **Same, filed** Sept. 29, 1977, D.C. Conn. (Bridgeport), Doc. B-77-313, *Optyl Corporation v. Welling International Corp.* **Same, filed** Oct. 12, 1977, D.C., E.D.N.Y. (Brooklyn), Doc. 77-C-2020, *Optyl Corporation v. Coronet Optical Co. Inc.*

D. 243,330, K. Pichler, EYEGLASS FRAME; **D. 245,169,** E. Teufelhart, **same, filed** Sept. 26, 1977, D.C., E.D.N.Y. (Brooklyn), Doc. 77-C-1900, *Optyl Corporation v. H.S. Optical Products Corp. and Harry Sherman, doing business as Rugby Optical Co.*

D. 243,469. (See 4,003,571.)

D. 245,169. (See D. 243,330.)

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,224,035, Re. S.N. 884,667, Filed Mar. 8, 1978, Cl. 16/163, HINGES, Richard Heinze, Sr. (deceased), by Richard Heinze, Jr. (heir), Owner of Record: *Inventor,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 352

3,391,420, Re. S.N. 880,221, Filed Feb. 21, 1978, Cl. 16/142, HINGE, Lloyd L. Anderson, Owner of Record: *Amerock Corporation, Rockford, Ill.,* Attorney or Agent: C. Frederick Leydig, Ex. Gp.: 353

3,459,070, Re. S.N. 875,265, Filed Feb. 6, 1978, Cl. 74/705, WHEEL DRIVE MECHANISM, John W. Holdeman, Owner of Record: *Borg-Warner Corporation, Chicago, Ill.,* Attorney or Agent: Donald W. Banner, Ex. Gp.: 345

3,748,079, Re. S.N. 852,363, Filed Nov. 17, 1977, Cl. 425/466, DOUGH SHEET SPREADER, Edward F. Ruiz, Owner of Record: *Inventor,* Attorney or Agent: Edward O. Ansell, Ex. Gp.: 322

3,941,149, Re. S.N. 875,343, Filed Feb. 6, 1978, Cl. 137/493.1, VALVE, Herbert Mittleman, Owner of Record: *Baxter Laboratories Inc., Morton Grove, Ill.,* Attorney or Agent: Paul C. Flattery, et al., Ex. Gp.: 341

3,943,343, Re. S.N. 883,351, Filed Mar. 3, 1978, Cl. 235/151.11, PROGRAM CONTROL SYSTEM FOR MANIPULATOR, Akiyoshi Irie, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 236

3,945,589, Re. S.N. 881,844, Filed Feb. 27, 1978, Cl. 244/30, AMPHIBIOUS DIRIGIBLE AIRSHIPS, George Crompton, Owner of Record: *Inventor,* Attorney or Agent: G. Lloyd Knight, Ex. Gp.: 315

3,970,907, Re. S.N. 876,195, Filed Feb. 8, 1978, Cl. 318/207 C, PULSATING TORQUE APPARATUS AND METHOD, Theodore F. Myers, Owner of Record: *Hobart Corporation, Troy, Ohio,* Attorney or Agent: Lawrence B. Biebel, et al., Ex. Gp.: 217

3,985,959, Re. S.N. 882,104, Filed Feb. 28, 1978, Cl. 235/153 AK, KEY TELEPHONE SYSTEM FOR SUBSCRIBERS, Shigeharu Komine et al., Owner of Record: *Oki Electric Industry Company, Tokyo, Japan,* Attorney or Agent: Henry N. Paul, et al., Ex. Gp.: 232

4,013,858, Re. S.N. 883,352, Filed Mar. 3, 1978, Cl. 200/321, ROCKER SWITCH WITH INTEGRAL OFF LOCK, Stuart W. Grebner, et al., Owner of Record: *Cutler Hammer, Inc., Milwaukee, Wis.,* Attorney or Agent: Hugh R. Rather, et al., Ex. Gp.: 241

4,030,625, Re. S.N. 881,841, Filed Feb. 27, 1978, Cl. 213/147 G, LOADER ATTACHMENT FOR HANDLING LOGS, BALES AND THE LIKE, Edward L. Koehnen, Owner of Record: *Inventor,* Attorney or Agent: L. Paul Burd, et al., Ex. Gp.: 314

4,035,479, Re. S.N. 869,472, Filed Jan. 16, 1978, Cl. 424/78, DELAYED AND SUSTAINED UREA RELEASE COMPOSITIONS, Henry H. George, Jr., et. al., Owner of Record: *Celanese Corporation, New York, N.Y.,* Attorney or Agent: Thomas J. Morgan, et al., Ex. Gp.: 125

4,040,900, Re. S.N. 881,843, Filed Feb. 27, 1978, Cl. 162/158, METHOD OF SIZING PAPER, Emil D. Mazzarella, et al., Owner of Record: *National Starch and Chemical Corporation, Bridgewater, N.J.,* Attorney or Agent: Harold James, et al., Ex. Gp.: 173

4,059,515, Re. S.N. 879,981, Filed Feb. 22, 1978, Cl. 210/54, PROCESS FOR CLARIFICATION OF OIL-CONTAINING WASTE, William J. Fowler, et al., Owner of Record: *Betz Laboratories, Inc., Trevose, Pa.,* Attorney or Agent: Alexander D. Ricci, et al., Ex. Gp.: 176

PATENT NOTICES

Certificates of Correction for the Week of Apr. 25, 1978

D. 245,308	4,041,185	4,054,503	4,063,811
D. 246,077	4,041,662	4,054,533	4,063,816
3,888,919	4,041,670	4,054,656	4,063,915
3,927,136	4,041,980	4,054,832	4,063,942
3,933,566	4,042,348	4,055,996	4,063,947
3,955,899	4,042,564	4,056,080	4,064,083
3,957,886	4,042,664	4,056,084	4,064,095
3,959,233	4,043,097	4,056,613	4,064,101
3,971,056	4,043,768	4,056,901	4,064,109
3,974,542	4,044,172	4,057,192	4,064,340
3,976,868	4,044,551	4,057,390	4,064,348
3,999,229	4,044,880	4,057,624	4,064,485
4,013,718	4,045,093	4,057,675	4,064,500
4,018,490	4,045,095	4,057,705	4,064,503
4,019,311	4,045,269	4,057,732	4,064,816
4,020,090	4,045,448	4,058,317	4,064,826
4,020,896	4,046,739	4,058,533	4,064,959
4,020,932	4,046,866	4,058,567	4,065,054
4,021,224	4,046,972	4,059,085	4,065,059
4,022,408	4,047,893	4,059,283	4,065,268
4,022,859	4,048,174	4,059,534	4,065,378
4,022,872	4,049,397	4,059,642	4,065,563
4,023,485	4,049,651	4,061,007	4,065,580
4,024,056	4,049,672	4,061,400	4,065,867
4,024,240	4,049,931	4,061,740	4,066,115
4,026,887	4,050,074	4,061,849	4,066,325
4,028,538	4,050,230	4,062,037	4,066,397
4,029,876	4,051,065	4,062,313	4,066,466
4,032,655	4,051,656	4,062,420	4,066,519
4,035,220	4,051,681	4,062,623	4,067,006
4,035,910	4,051,779	4,062,717	4,067,155
4,035,941	4,052,112	4,062,852	4,067,206
4,037,740	4,052,327	4,062,860	4,067,436
4,037,761	4,052,436	4,062,880	4,067,442
4,038,342	4,052,476	4,063,199	4,067,450
4,038,494	4,052,553	4,063,208	4,068,018
4,039,920	4,053,063	4,063,310	4,068,210
4,040,647	4,053,308	4,063,313	4,068,899
4,040,673	4,053,387	4,063,406	4,069,128
4,040,860	4,053,724	4,063,409	4,069,132
4,040,946	4,053,887	4,063,726	
4,041,013	4,054,248	4,063,765	

Disclaimers

3,730,566. *John Kazmierski, Jr.*, Ringoes, *Benjamin Lawson, Jr.*, Somerset, *Craig Edward Thornton*, Flemington, and *Gerard Louis Verrelli, Jr.*, Manville, N.J. DUCT CONNECTOR. Patent dated May 1, 1973. Disclaimer filed Feb. 24, 1978, by the assignee, *Johns-Manville Corporation*.

Hereby enters this disclaimer to all claims of said patent.

4,032,951.—*John Christian De Winter*, Howell Township, *Robert Edward Nahory*, Lincroft, and *Martin Alan Pollack*, Westfield, N.J. GROWTH OF III-V LAYERS CONTAINING ARSENIC, ANTIMONY AND PHOSPHORUS, AND DEVICE USES. Patent dated June 28, 1977. Disclaimer filed Mar. 13, 1978, by the assignee, *Bell Telephone Laboratories, Incorporated*.

Hereby enters this disclaimer to claims 1, 5, 6, 7, 9 and 10 of said patent.

Service by Publication

Suvrat Kirtikar

In accordance with 37 CFR 1.47(b) (Rules of Practice in Patent Cases), notice is hereby given of the filing on February 27, 1975, of an application for patent entitled "Electrostatic Recorder With a Recording Head Which Floats on a Fluid Cushion" on behalf of Suvrat Kirtikar, whose last known addresses are: J 106 Wilber Hall, Stanford, Calif. 94305; P.O. Box 6829, Stanford, Calif. 94305; 609 Summerlea St., Shadyside, Pa. 15232; S–6 Samarpan, Ahmedabad-6, India; and % Sri Ram Chandra, Etmadpur, Agra, U.P., India. The application was made in compliance with 37 CFR 1.47(b) and 35 U.S.C. 118 by Varian Associates without execution by the said Suvrat Kirtikar.

Any action to be taken by the said Suvrat Kirtikar in connection with the said application must be taken within thirty (30) days of the publication of this notice.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents and Trademarks.

Erratum

All reference to Patent No. 4,071,626 to Michael J. Green and Ho-Jane Shue of the United States for 7a-Halogeno-3, 20-Dioxo-1,4-Pregnadienes, Methods for their Manufacture, their use as Anti-Inflammatory Agents, and Pharmaceutical Formulations Useful Therefor appearing in the OFFICIAL GAZETTE of January 31, 1978 should be deleted since no patent was granted.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 25, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-12-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-25-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-25-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-14-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-27-76
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	10-1-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-9-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-23-77
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-27-76
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-10-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-28-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	7-14-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-16-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-9-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-18-77

Expiration of patents: The patents within the range of numbers indicated below expire during March 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,973,519 to 2,977,597, inclusive
Plant Patents..... Numbers 2,032 to 2,039, inclusive

REISSUES

APRIL 25, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,616
HALOVINYLIDENE ARYLENE POLYMERS AND PROCESS FOR MAKING THE SAME

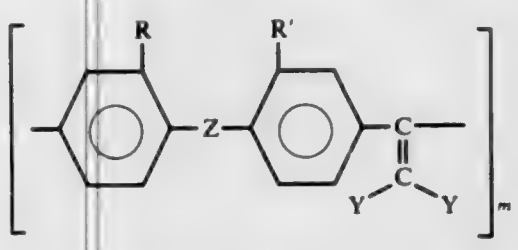
Tohru Takekoshi, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Original No. 3,824,214, dated Jul. 16, 1974, Ser. No. 343,139, Mar. 20, 1973. Application for reissue Mar. 18, 1977, Ser. No. 779,155

Int. Cl.[2] C08G *8/04, 8/28*

U.S. Cl. 260—52 **12 Claims**

1. A polymer composed of recurring units of the formula

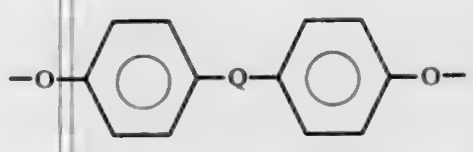


where R and R′ are members selected from the class consisting of hydrogen, halogen, and the methyl radical, Z is a direct bond or is a member selected from the class consisting of —O—, —S—, the

[$-O-\{(CH_2)_n O\}_q-$]

$-O-\{(CH_2)_2O\}_q$

radical, and divalent radicals of the general formula



where Y is chlorine or bromine, Q is a member of the class of —O—, —S—, —SO_2—, >C=O and divalent alkyl radicals of from 1 to 4 carbon atoms, m is a whole number in excess of 1, and [n and q are whole numbers from 1 to 2, inclusive] *q is a whole number equal to 1 or 2.*

Re. 29,617
ARYL METHYLENE POLYMERS PREPARED FROM CHLORAL, BROMAL OR GLYOXALIC ACID

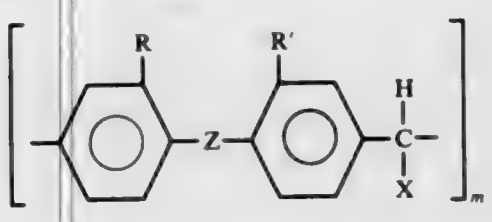
Tohru Takekoshi, Scotia, and Jimmy L. Webb, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Original No. 3,855,181, dated Dec. 17, 1974, Ser. No. 343,138, Mar. 20, 1973. Application for reissue Mar. 18, 1977, Ser. No. 779,154

Int. Cl.[2] C08G *8/04, 75/20, 75/23*

U.S. Cl. 260—49 **7 Claims**

1. A polymer composed of recurring units of the formula

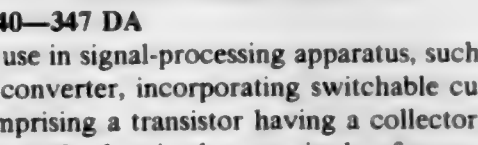


where R and R′ are members selected from the class consisting of hydrogen, halogen, and the methyl radical, X is a member selected from the class of —COOH and —CY_3 radicals, Z is a direct bond or is a member selected from the class consisting of —O—, —S—, the

[$-O-\{(CH_2)_n O\}_q-$]

$-O-\{(CH_2)_2O\}_q$

radical, and divalent radicals of the general formula



where Y is chlorine or bromine, Q is a member of the class of —O—, —S—, —SO_2—,

>C=O

and divalent alkyl radicals of from 1 to 4 carbon atoms, m is a whole number in excess of 1, and [n and q are whole numbers from 1 to 2, inclusive] *q is a whole number equal to 1 or 2.*

Re. 29,618
SUPPRESSION OF CARDIAC VENTRICULAR FIBRILLATION AND CARDIAC ARRHYTHMIAS WITH BRETYLIUM TOSYLATE

Marvin B. Bacaner, Minneapolis, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Original No. 3,441,649, dated Apr. 29, 1969, Ser. No. 573,209, Aug. 18, 1966. Application for reissue Mar. 28, 1977, Ser. No. 781,654

Int. Cl.[2] A61K *31/205*

U.S. Cl. 424—316 **13 Claims**

1. A method for suppressing cardiac ventricular fibrillation and cardiac ventricular arrhythmias in living beings which comprises administering bretylium tosylate to said beings in a small but effective amount at least sufficient to restore sinus rhythm.

Re. 29,619
CONSTANT-CURRENT DIGITAL-TO-ANALOG CONVERTER

James J. Pastoriza, Lincoln, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

The portion of the term of this patent subsequent to Aug. 15, 1989 has been disclaimed.

Original No. 3,803,590, dated Apr. 9, 1974, Ser. No. 220,016, Jan. 24, 1972. Division of Ser. No. 809,700, Mar. 24, 1969, Pat. No. 3,685,045. Application for reissue Apr. 7, 1976, Ser. No. 674,749

Int. Cl.[2] H03K *13/04, 1/12*

U.S. Cl. 340—347 DA **13 Claims**

10. For use in signal-processing apparatus, such as a digital-to-analog converter, incorporating switchable current source means comprising a transistor having a collector, an emitter, and a base, and wherein the magnitude of current flow produced by such source is set by a resistor connected at one end to said emitter to carry the emitter current of such transistor, there being DC power supply means having a pair of output terminals connected respectively to the base of such transistor and to the remote end of said resistor to maintain a DC voltage differential therebetween, whereby to produce from the collector of such transistor an output current which is relatively unaffected by changes in load at the output of the current source;

that improvement for maintaining the output current of such current source *means* constant in the face of changes in

operating characteristics of such current-source transistor, comprising:

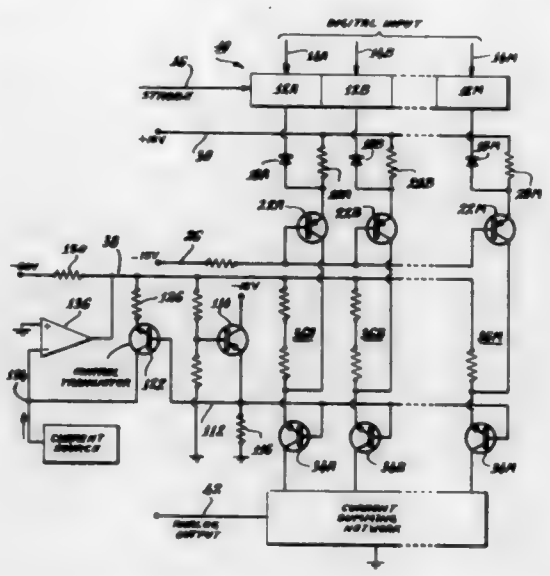
a reference transistor having a collector, an emitter and a base, said reference transistor being located adjacent said current source transistor and matched thereto;

a reference resistor connected at one end to the emitter of said reference transistor;

circuit means connecting said power supply means output terminals respectively to the base of said reference transistor and to the remote end of said reference resistor;

sensing means responsive to changes in magnitude of the collector current of said reference transistor; and

feedback voltage adjustment means under the control of said sensing means for automatically altering the DC voltage produced at said DC power supply output terminals as required to maintain constant the collector current from said reference transistor, thereby serving to continuously adjust the DC voltage applied to said current source transistor so as to maintain constant the collector current



thereof in the face of changes in operating characteristics of the current-source transistor.

PLANT PATENTS

GRANTED APRIL 25, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,243

ROSE PLANT

Herbert C. Swim, Ontario, and Arnold W. Ellis, Bakersfield, both of Calif., assignors to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Apr. 13, 1977, Ser. No. 787,285
Int. Cl.[2] A01H *5/02*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of hybrid tea rose, substantially as described and illustrated herein, and having a tall upright bushy habit of growth, with medium size to large glossy foliage and smooth erect peduncles, the variety being characterized especially in the bicolored flowers which it bears, these comprising petals of an orange color on their inner surfaces and a yellow reverse on their outer surfaces, said flowers having from 25 to 35 petals and from 1 to 5 petaloids disposed about approximately 90 pistils.

4,244

CHRYSANTHEMUM NAMED YELLOW JACKET

David Greinke, Bradenton, Fla., assignor to Pan-American Plant Company, West Chicago, Ill.

Filed May 16, 1977, Ser. No. 797,495
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—75 **1 Claim**

1. A new and distinct chrysanthemum cultivar substantially as herein shown and described, characterized by its abundant production of small, bright yellow blooms which appear in single flower form in a relatively open spray formation on a short, compact plant which has excellent breaking ability and abundant medium sized, dark green and glossy foliage.

PATENTS

GRANTED APRIL 25, 1978

ERRATA

For CLASS	See PATENT NO.
061–045 D	4,085,592
251–298	4,085,952
254–010 C	4,085,953
256–034	4,085,954
366–212	4,085,955
029–446	4,086,065
062–002	4,086,072
144–193 A	4,086,111
106–293	4,086,123
427–157	4,086,183
202–248	4,086,231
424–273 R	4,086,235
206–454	4,086,263
252–454	4,086,264
560–241	4,086,267
560–252	4,086,268
364–757	4,086,474
362–432	4,086,479
362–148	4,086,480
362–428	4,086,481
362–376	4,086,482
362–311	4,086,483
340–015.5 TS	4,086,504
337–102	4,086,558
365–036	4,086,570
365–012	4,086,572
354–023 D	4,086,581
354–033	4,086,582
354–038	4,086,583
354–062	4,086,584
354–115	4,086,585
363–037	4,086,621
363–037	4,086,622
363–041	4,086,623
363–127	4,086,624
364–104	4,086,625
364–200	4,086,626
364–200	4,086,627
364–200	4,086,628
364–200	4,086,629
364–410	4,086,630
364–416	4,086,631
364–444	4,086,632
364–474	4,086,633

PATENTS

GRANTED APRIL 25, 1978

GENERAL AND MECHANICAL

4,085,464

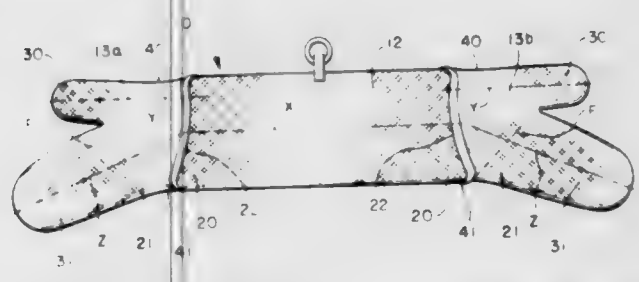
DOUBLE OVEN MITT

Ely Simonoff, Wheeling, Ill., assignor to Opelika Manufacturing Corporation, Chicago, Ill.

Filed Nov. 5, 1976, Ser. No. 739,281

Int. Cl.[2] A41D *25/00*

U.S. Cl. 2—158 **2 Claims**



1. A double oven mitt fabricated of flexible heat-resistant material for handling a dish with an upper lip, comprising:

a. a pair of end hand mitts for receiving the left and right hands of a wearer, and

b. a band elongated on an axis and connecting said end hand mitts whereby the palm of each of said mitts is an extension of said band,

c. each of said end hand mitts including a thumb portion and a finger portion, wherein said thumb portion is formed coextensive the upper edge of said mitt,

d. the axis of each of said thumb portions normally extending substantially parallel to said connecting band axis,

e. the axis of each of said finger portions normally inclined downwardly at an angle to the axis of a corresponding thumb portion and the axis of said connecting band whereby each of said finger portions fold about a line in the palm of a correpsonding end hand mitt inwardly under a dish being grasped by the wearer to support the dish flat on its bottom without bunching up or otherwise distorting to prevent the wearer's grip from being uncomfortable and jeopardizing safe handling of the dish while said band engages and supports the circumference of the dish and said thumb portions and band underlie the upper lip of the dish.

4,085,465

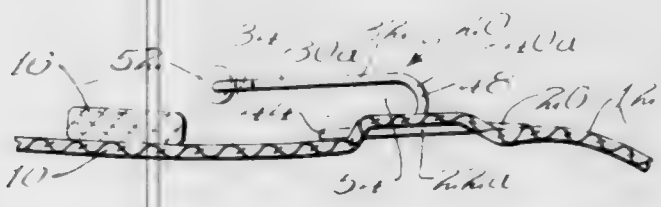
SHOULDER STRAP GUARD

Clifford K. Brown, 5913 London Rd., Duluth, Minn. 55804

Filed Jan. 31, 1977, Ser. No. 764,160

Int. Cl.[2] A41D *27/22*

U.S. Cl. 2—271 **5 Claims**



1. A wire shoulder strap guard comprising a first pair of laterally spaced portions including straight sections, said first portions residing in one plane and having free pointed ends for insertion into the shoulder region of a garment, a second pair of laterally spaced portions including straight sections, said second portions residing in a second plane above said one plane and the spacing of said second portions being less than that of said first portions, and a third pair of portions including arcuate first sections curving inwardly from the straight sections of said first portions and residing in substantially said one plane, straight second sections also substantially in said one plane and extending in the general direction of said pointed ends but terminating in a spaced relation with respect to said pointed ends and arcuate third sections curving upwardly from said second straight sections to the straight sections of said second portions to maintain said second portions in said second plane, whereby a shoulder strap can be received under said second portions when said first portions have been inserted into the garment.

4,085,466

PROSTHETIC JOINT DEVICE

John William Goodfellow, Woodeaton; John Joseph O'Connor, Oxford, both of England, and Nigel Graham Shrive, NW. Calgary, Canada, assignors to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 633,034, Nov. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 632,824, Nov. 17, 1975, abandoned. This application Aug. 4, 1977, Ser. No. 821,905

Claims priority, application United Kingdom, Nov. 18, 1974, 49795/74

Int. Cl.[2] A61F *1/24*

U.S. Cl. 3—1.91 **11 Claims**



1. A prosthetic joint device comprising:

a first component having a generally convex articulatory bearing surface;

a second component having a relatively flattened articulatory bearing surface compared to that of said first component;

and a third component having two articulator bearing surfaces in back-to-back disposition and of individual forms substantially complementary to said first and second component articulatory surfaces, said third component being located between said first and second components with the two pairs of said complementary surfaces freely slidably and individually non-captively engaged.

4,085,467

INTRAOCULAR LENS

Edgar A. Rainin, 5747 Tamarack Way, Concord, Calif. 94521, and Emery Major, 17 Skylark Dr., Larkspur, Calif. 94939

Filed Nov. 17, 1975, Ser. No. 632,834

Int. Cl.[2] A61F *1/16, 1/24*

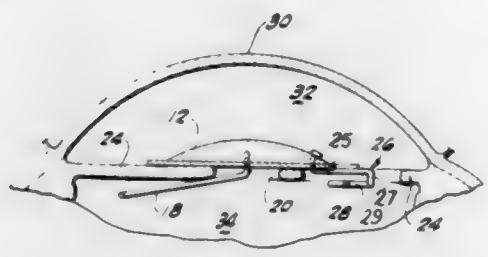
U.S. Cl. 3—13 **10 Claims**

1. An intraocular lens device intended for insertion within the eye; the iris of the eye having at least an opening therethrough comprising:

a. lens portion intended for placement against a side of the iris, said lens portion adapted for covering at least a portion of the pupil;

b. means for stabilizing said lens portion, said stabilizing means affixed to said lens portion and intended to extend through the pupil of the eye to the side of the iris opposite that of said lens portion placement;

c. means for anchoring said lens portion intended for extending through the iris opening and affixed to said lens portion such that said lens portion lies over the pupil of the eye, said anchoring means comprising a member connected to said lens portion, said member having an intermediate portion intended for passing through the iris opening, said member having a terminus which is enlarged and has a dimension greater than the width of the iris opening.

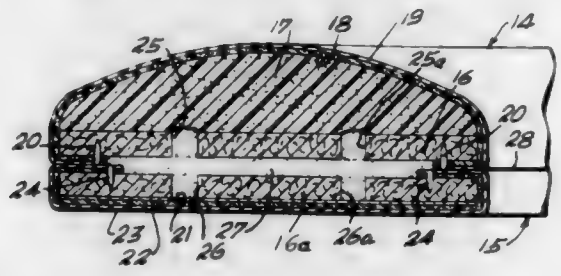


4,085,468

CUSHIONED TOILET SEAT ASSEMBLY

Abe Seiderman, 7365 SW. 132 St., Miami, Fla.

Filed Feb. 3, 1977, Ser. No. 765,084
Int. Cl.[2] A47K *13/02*
U.S. Cl. 4—237 **6 Claims**



1. A cushioned toilet seat member, comprising, in combination, a pair of substantially flat upper and lower base members, upholstery material covering the respective top and bottom of said upper and lower base members, a cushioning material interposed between said upholstery material and said upper base member said upholstery material comprising outer sheet material layers surrounding peripheral edge portions of their respective upper and lower base members and terminating in marginal portions overlapping the respective bottom and top of said upper and lower base members, means tacking said marginal overlapping portions to the bottom and top of said upper and lower base members, respectively, a plurality of aligned through openings in said upper and lower base members, and glue means for securing the respective bottom and top of said upper and lower base members in aligned, face-to-face engagement, said glue means comprising hardened glue extending through voids defined by aligned ones of said pluralities of openings to simulate riveting together of said upper and lower base members.

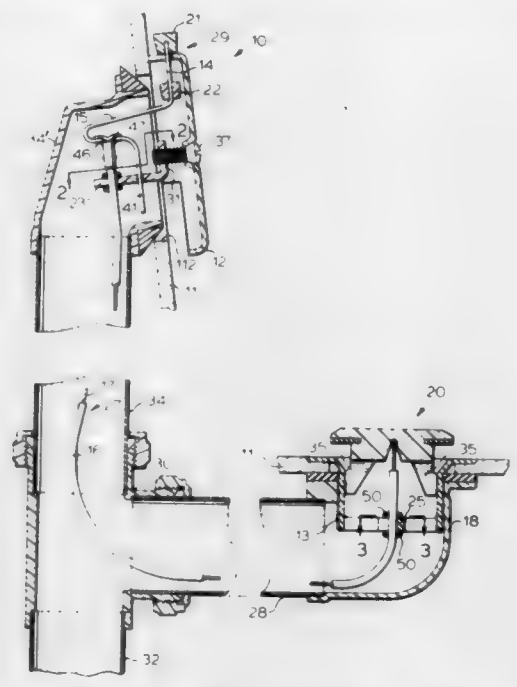
4,085,469

WASTE CONTROL WITH REPLACEABLE CABLE

Sigurdur G. Petursson, 2169 Linby Street, Mississauga, Ontario, Canada

Filed Sep. 15, 1976, Ser. No. 723,441
Int. Cl.[2] E03C *1/24, 1/22*
U.S. Cl. 4—199 **8 Claims**

1. In combination with a water fillable opentopped ablution receptacle having a drain pipe depending in sealed relation from a drain opening in the receptacle to connect with a drainage system when installed, a drain operating control having a handle secured to the receptacle, a flexible tube having one end secured in fixed relation adjacent said handle, clip means accessible through said opening removeably securing the remote end of said tube adjacent said drain opening, and a resilient cable having one end thereof removeably connected to said control handle, extending in slideable relation through said tube, the outside diameter of said cable being sufficiently smaller than the inside diameter of said tube, to permit bending



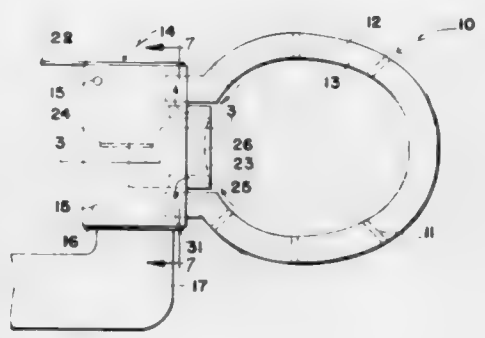
of the tube in a desired path conforming relation without entrapment of the cable therein, the other end of said cable extending upwardly from the tube being moveable vertically relative thereto in response to motion of said control handle to raise and lower a stopper located in flow controlling relation in said drain opening.

4,085,470

VENTILATED TOILET DEVICE

George Roberts, 2219 Edward Street, Regina, Canada

Filed Jan. 14, 1977, Ser. No. 759,421
Int. Cl.[2] E03D *9/04;* A47K *13/00*
U.S. Cl. 4—213 **6 Claims**



1. A toilet ventilating device for toilet bowls which include an upper open side and a rear planar portion behind said upper open side; comprising in combination a substantially horseshoe-shaped element engageable upon said upper open side of said bowl, a suction housing secured to the ends of said elements and engageable upon said rear planar portion; conduit means connected to said suction housing operatively connected to a source of negative air pressure, and air intake means in said suction housing connecting to the interior of said bowl when said device is in position upon said bowl, means to control the degree of communication between the interior of the bowl and the interior of the suction housing via said air intake means in said suction housing, said means to control the degree of communication including a drawer component slidably engaging within the front of said suction housing and extending into said suction housing, and means in said drawer component communicating between the interior of said suction

housing and said bowl, the degree of communication depending upon the position of said drawer component with said suction housing.

4,085,471

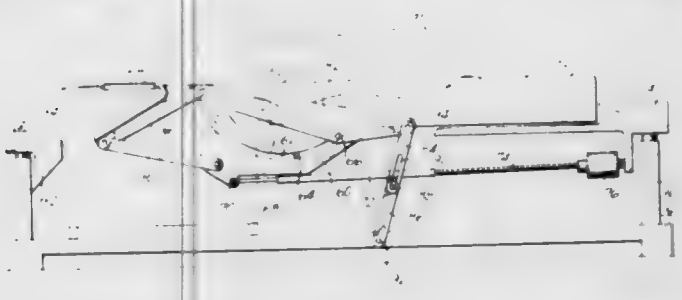
INVALID BED ARRANGEMENT

Paul L. DiMatteo, Huntington, and Henry V. Diaferia, Brentwood, both of N.Y., assignors to Dynell Electronics Corporation, Melville, N.Y.

Division of Ser. No. 685,415, May 11, 1976, which is a continuation-in-part of Ser. No. 544,710, Jan. 28, 1975. This application Jun. 15, 1977, Ser. No. 806,777

Int. Cl.[2] A61G *7/08, 7/02*

U.S. Cl. 5—90 **12 Claims**



1. A method for transferring a person from a reclined position to a seated position comprising the steps of: supporting the back side of the person with the person's posterior at a first location; supporting the calves of the person; raising the calves of the person and bending the knees of the person; freeing substantially the posterior of the person, the weight of said person being directed away from said posterior during freeing thereof; returning said person to a reclined position; and lowering said person with posterior to a second location onto a seating member so that the posterior of the person is directly in contact with said seating member.

4,085,472

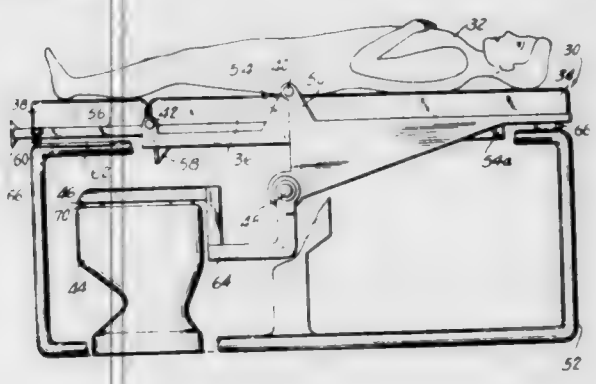
INVALID BED ARRANGEMENT

Paul L. DiMatteo, Huntington, N.Y., assignor to Dynell Electronics Corporation, Melville, N.Y.

Division of Ser. No. 628,131, Nov. 3, 1975, Pat. No. 4,023,218, which is a continuation-in-part of Ser. No. 544,710, Jan. 28, 1975, Pat. No. 4,016,005. This application Nov. 22, 1976, Ser. No. 744,122

Int. Cl.[2] A61G *7/08, 7/02*

U.S. Cl. 5—90 **8 Claims**



1. A method for transferring a person from a reclined position to a upright seated position comprising the steps of: supporting the backside of the person with posterior at a first location; moving the thighs of the person in a direction towards the front side of the other part of the person's body; bending said person's knees; placing a seating member in contact with the posterior of said person; moving said person together with said seating member to an upright seated position with the lower part of the legs directed downward; subdividing a bed member into first, second and third sections; reclining said person on said bed member; turning said first bed member section for carrying out said step of moving the thighs of the person in a direction towards the front side of the other part of the person's body; removing said first bed member section from contact with the posterior of said person prior to said step of placing a seating member in contact with the posterior of said person; and turning at least third bed member section for carrying out said step of moving said person together with said seating member to an upright seated position.

4,085,473

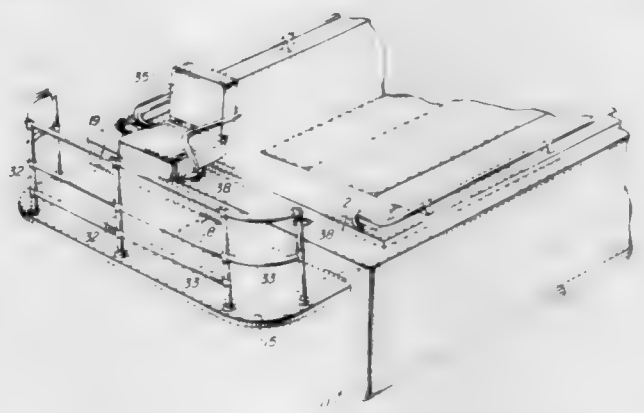
DECK PLATFORM EXTENSION FOR BOATS

Dwaine R. Franklin, 1845 Arizona Ave., Yuma, Ariz. 85364

Filed Sep. 2, 1976, Ser. No. 719,927

Int. Cl.[2] B63B *29/00*

U.S. Cl. 9—1.7 **8 Claims**



1. An improvement for attachment to the transom on the stern of the hull of a boat having a recessed cockpit and a gunwale surrounding the recessed cockpit adjacent the transom including, in combination:

a deck platform member having a length substantially equal to the width of the stern of the boat for mounting across the stern of the boat;

support means attached to said deck platform member for supporting said platform against the transom of the boat;

first fastening means for attachment to the upper portion of the transom of the boat; second fastening means attached to said deck platform member;

means for removably interconnecting said first and second fastening means together to permit said deck platform member to be removably attached to the transom of the boat;

railing means attached to the upper side of said deck platform member and extending around at least a part of the periphery of said platform member; and at least one chair mounted on the upper edge of the hull at the stern of the boat and facing rearwardly, and said platform member is spaced downwardly from the upper edge of the hull at the stern of the boat a sufficient distance to provide a natural footrest outboard of the hull of said boat for a person sitting in said chair over the gunwale portion of said boat substantially outboard of the cockpit area thereof.

4,085,474

APPARATUS FOR INTERIORLY CLEANING LENGTHS OF PIPE

Herbert R. Murphy, 3067 E. 1st St., Long Beach, Calif. 90803

Filed Aug. 23, 1976, Ser. No. 716,885

Int. Cl.[2] B08B *9/02*

U.S. Cl. 15—104.1 R **7 Claims**

1. Apparatus for interiorly cleaning lengths of pipe, said apparatus comprising;

an elongated primary carrier;

locating means on said primary carrier defining a cleaning station for receiving and orienting a length of pipe for cleaning;

clamping means for securing said length of pipe in said cleaning station;

an elongated secondary carrier located adjacent and in general longitudinal alignment with said primary carrier;

an elongated drive shaft;

a plurality of coupled bearing means longitudinally movable on and carried by said secondary carrier, and spaced along the length of and rotatably supporting said drive shaft adjacent said cleaning station;

a cutting tool mounted to said drive shaft;

drive means for rotating said shaft for rotating said cutting tool;

a carriage on said secondary carrier supporting said drive means and longitudinally movable on said secondary carrier in one direction for moving said cutting tool inwardly of and along the length of said length of pipe for effecting longitudinal movement of said plurality of bear-



ing means toward said cleaning station and closer to one another, said carriage being coupled to at least one of said plurality of bearing means and longitudinally movable in a direction opposite said one direction for moving said cutting tool outwardly of said length of pipe and for effecting longitudinal movement of said plurality of bearing means away from said cleaning station and farther from one another;

means on said primary carrier for receiving said secondary carrier in a retracted position with respect to said primary carrier;

means for moving said secondary carrier between said retracted position and an extended position; and

means for locking said secondary carrier in said extended position.

4,085,475

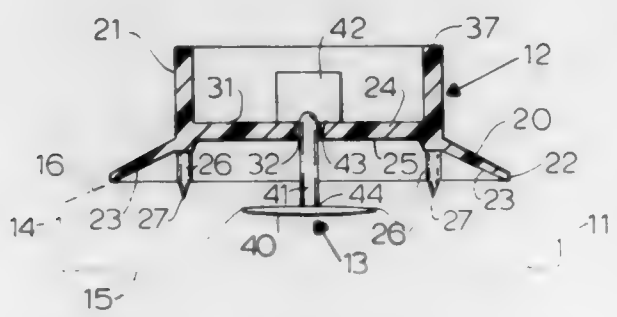
SCOURING DEVICE

Louis J. Silver, 3434 Baker St., San Francisco, Calif. 94123

Continuation-in-part of Ser. No. 638,348, Dec. 8, 1975, abandoned. This application Oct. 7, 1976, Ser. No. 730,372

Int. Cl.[2] A47L *17/08*

U.S. Cl. 15—209 D **14 Claims**



9. A scouring pad holder, comprising a single unitary rigid member having a rigid handle portion comprising a vertical wall surrounding a central cavity having a flat bottom wall with a central slit opening therethrough, and

a downwardly and outwardly sloping, frustoconical, rigid skirt portion surrounding the lower end of said vertical wall and having downwardly and outwardly sloping upper and lower surfaces, said holder having an upwardly recessed lower surface below said flat bottom wall and having downwardly extending projections.

4,085,476

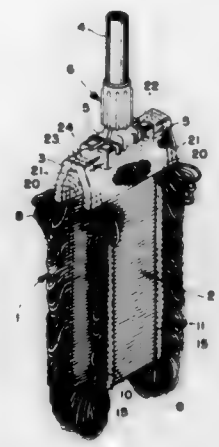
MOP CONSTRUCTIONS AND METHOD OF MAKING SAME

Theron V. Moss, Cleveland, Tenn., assignor to South Eastern Cordage Company, Cleveland, Tenn.

Filed Aug. 5, 1975, Ser. No. 602,149

Int. Cl.[2] A47L *13/12, 13/20*

U.S. Cl. 15—229 A **31 Claims**



1. A mop construction comprising a mop head consisting of a length of cord material, said cord material comprising one or more cords of yarn extending in a substantially continuous manner back and forth to provide plural mop cords extending generally transversely from one side of said mop head to the other to form loops of cord material along the opposite side edges of said mop head over a predetermined length, plural rows of stitching extending lengthwise of said mop head toward the ends of the length thereof parallel to the side edges thereof for securing said mop cords together, means for securing the ends of said mop head together to form a closed loop completely open in the center with said loops of cord material along the opposite side edges thereof, and means attached to said cord material at one point along the circumference of said closed loop extending transversely thereof providing for attachment of said cord material to a handle.

22. A mop construction comprising a mop head consisting of a length of cord material, and means connected to said cord material providing for attachment of said cord material to a handle, said cord material comprising one or more cords of yarn extending in a substantially continuous manner back and forth to provide plural mop cords extending generally transversely from one side of said mop head to the other to form loops of cord material along the opposite side edges of said mop head over a predetermined length, plural rows of stitching extending lengthwise of said mop head toward the ends of the length thereof parallel to the side edges thereof for securing said mop cords together, and means for securing the ends of said mop head together to form a closed loop with said loops of cord material along the opposite side edges thereof, said cord material having a fabric backing, the ends of said cord material being connected together to form a closed loop with said fabric backing on the inside of said closed loop, said ends of said mop head being turned back and secured together to expose the ends of said fabric backing which form a headband for said mop head.

4,085,477

FLUE AND CHIMNEY CLEANERS

Charles H. Anderson, P.O. Box 54, Accord, N.Y. 12404

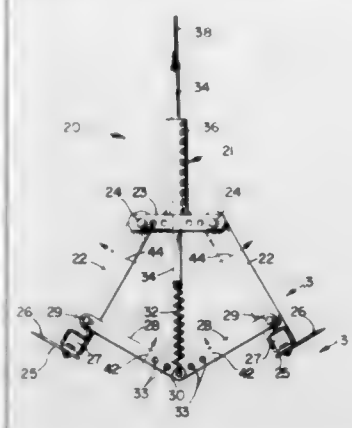
Filed May 13, 1977, Ser. No. 796,606

Int. Cl.[2] F23J *3/00*

U.S. Cl. 15—243 **6 Claims**

1. A tool for cleaning chimneys, flues, and the like comprising: a support opposed depending arms pivotally fixed at their upper ends to opposite ends of said support; scrapers having outwardly facing scraping edges fixed to the lower ends of said arms; inwardly extending levers pivotally secured at their outer ends to the lower ends of said depending arms; an actua-

tor rectilinearly displaceable relative to said support; and a spring fixed at one end to said actuator; the other end of said spring pivotally connecting together the inner ends of said levers, whereby rectilinear displacement of said actuator rela-



tive to said support will effect pivotal movement of said arms relative to said support with said spring providing a resilient connection therebetween to aid in the prevention of binding between the scrapers and a structure being cleaned.

4,085,478

SQUEEGEE APPARATUS

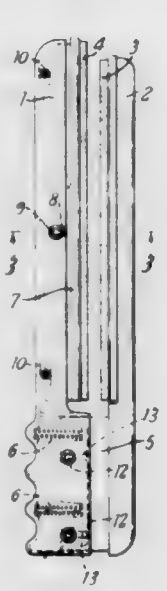
Thomas Alan Bailes, and Eric Taylor, both of 2-6 Boswell Court, London WC1N 3PS, England

Filed Oct. 7, 1976, Ser. No. 730,438

Claims priority, application United Kingdom, Oct. 17, 1975, 42795/75

Int. Cl.[2] B60S *1/04*

U.S. Cl. 15—245 **10 Claims**



1. Hand-held squeegee apparatus comprising:

first and second parallel arms adapted to be moved toward and away from one another while always remaining parallel;

first and second squeegee blades, one blade mounted on a first portion of each of said arms, at least one of said blades being resiliently mounted on its portion, said blades being positioned on their respective portions so as to face one another;

means for coupling corresponding second portions of said arms to one another so as to always maintain said two second portions parallel to one another; and

compression means positioned between said two second portions for urging said arms away from one another;

said second portions being adapted to be squeezed together by hand for urging said first and second arms toward one another.

4,085,479

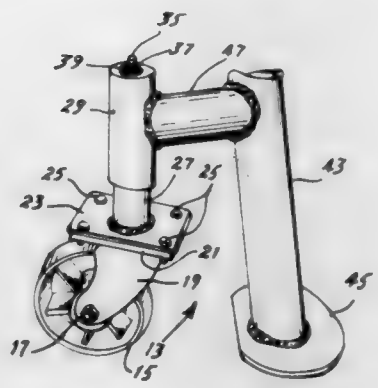
TOOL FOR REMOVAL AND REPLACEMENT OF CASTER SPRINGS

Rodney L. Barney, 2776 Crest Rd., Atwater, Calif. 95301

Filed May 31, 1977, Ser. No. 801,679

Int. Cl.[2] B60B *33/00*

U.S. Cl. 16—45 **1 Claim**



1. In combination, a caster assembly including a wheel journalled to a bracket attached to a caster plate having a plurality of holes therein, a jack plate having a corresponding plurality of holes in alignment with the holes in said caster plate, a bolt received in each of two opposing aligned holes in said caster and jack plates, an inner cylinder fixedly attached to the upper surface of said jack plate and extending upwardly therefrom, an outer cylinder slidably positioned over said inner cylinder, said outer cylinder being closed at the upper end and having a central aperture through the upper surface thereof, an elongated rod fixedly attached to the upper surface of said jack plate and extending axially upward through the center of said inner and outer cylinders, the upper end of said rod being threaded and extending through the aperture in said outer cylinder, an helical compression spring positioned inside said inner and outer cylinders around said rod urging said outer cylinder upward, a nut engaging the threads on said rod for maintaining said outer cylinder in a downward position, and a tool for removing and replacing said helical compression spring comprising a rectangular plate having a central opening therein for clearing the nut on said elongated rod, the bottom surface of said rectangular plate in contact with the top surface of said outer cylinder, two holes in said rectangular plate in alignment with two other opposing aligned holes in said caster and jack plates, two elongated threaded studs extending through the other aligned holes in said rectangular plate and said caster and jack plates, a nut threaded on each end of each stud to maintain said inner and outer cylinders in a fixed relative position while the nut on the elongated rod is removed, the nuts on said studs being loosended to allow said outer cylinder to move upward and relieve the pressure on said helical compression spring thereby permitting the spring to be removed and the caster assembly to be disassembled.

4,085,480

DECORATIVE DRAPERY ROD ASSEMBLY

David C. Kromm, Finksburg, and Henry Znamirowski, Ellicott City, both of Md., assignors to Roper Corporation, Kankakee, Ill.

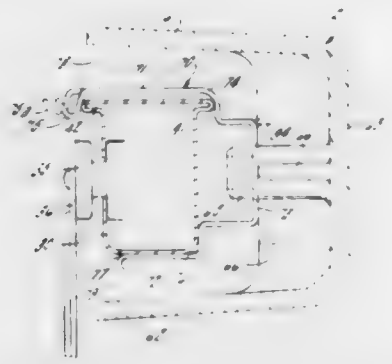
Filed Jan. 14, 1977, Ser. No. 759,264

Int. Cl.[2] A47H *1/04, 15/00*

U.S. Cl. 16—94 D **11 Claims**

1. A decorative drapery rod assembly comprising, in combination, a hollow rod of rectangular shape formed of partially telescoped inner and outer sections having laterally projecting beads extending along the top corners and a runner slot extending along the back surface, spaced wall brackets having stirrups projecting over the top surface of the rod for lockingly engaging the beads thereby to support the rod in horizontal working position, a series of decorative modules of channel shape fitted end to end in a repetitive pattern to provide an

illusion of solid continuity and having top, bottom and front walls for nestingly enclosing the rod, each module having a pair of C-shaped spring clips spaced therein, the spring clips being seated inside the front wall and having upper and lower arms spaced inwardly from the top and bottom walls respectively, the spring clips being dimensioned to accommodate both the inner and outer sections of the rod, the upper arm of each spring clip having an associated shoulder for engaging one of the beads and having a detent spaced therefrom for



engaging the other bead, the lower arm underlying the rod and serving to press the rod relatively upwardly into engagement with the shoulder and detent so that each module may be horizontally snapped into a captive forwardly-facing position on the rod after the rod has been installed in its horizontal working position on the wall, the detent presenting a surface enabling easy snapping on and off the rod, the modules being individually slideable endwise on the rod for centering of the series of modules with respect to the rod.

4,085,481

HAMMER-SET HOUSING FOR FURNITURE HINGES

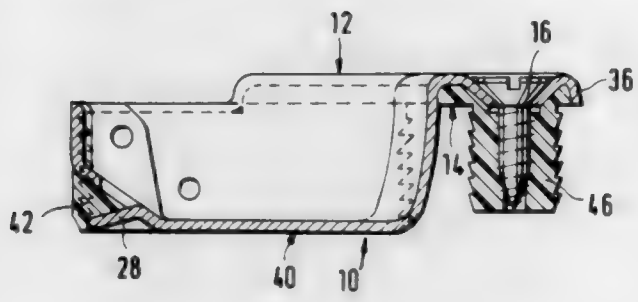
Karl Lautenschläger, Reinheim, Odenwald, Germany, assignor to Karl Lautenschläger, KG, Reinheim, Odenwald, Germany

Filed Feb. 9, 1977, Ser. No. 767,071

Claims priority, application Germany, Feb. 17, 1976, 2606181; Aug. 14, 1976, 2636767

Int. Cl.[2] E05D *5/02*

U.S. Cl. 16—159 **19 Claims**



1. Hammer-set housing for furniture hinges, having a hammer-set cup which can be pressed into a bore of suitable undersize in a furniture part, and which has at its outer margin a projecting lip which rests in a specified installed position on the flat outside of the furniture part and is adapted to be fastened to the part by additional mounting means, said hammer-set housing having first means visible in the installed state and consisting essentially of metal, and also having second means including two lateral plastic arms to be placed in the area within the bore in the furniture part, said second means also including a flat lip uniting said lateral plastic arms so as to form an integrally coherent plastic part, said first means having a dish-shaped metal part open at the top and inserted between the plastic arms, and also having a flange covering the plastic lip and projecting integrally from the upper margin of said metal part, said plastic part and said metal part being joined together releasably.

4,085,482

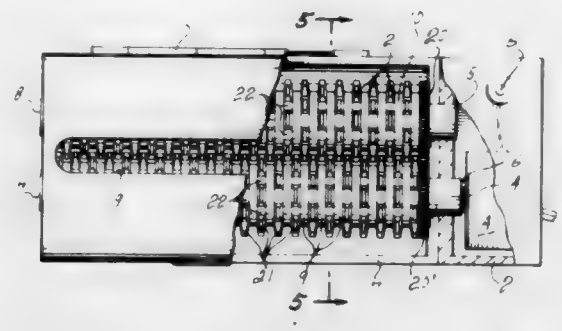
MEAT TENDERING MACHINE

Gérard Charron, 232 Lachapelle Street, Sherbrooke, Canada (J1G 3J2)

Continuation-in-part of Ser. No. 583,627, Jun. 4, 1975, abandoned. This application Sep. 7, 1976, Ser. No. 720,565

Int. Cl.[2] A22C *9/00*

U.S. Cl. 17—26 **2 Claims**



1. A meat tenderizing machine comprising a pair of cylindrical rollers extending alongside each other, drive means connected to the rollers and counterrotating the latter at the same speed, each roller having similar meat tenderizing teeth projecting outwardly at the periphery thereof and disposed in annular rows with the teeth equally separated by intervening free spaces within said annular rows and with the bottom of said free spaces substantially coinciding with the outer cylindrical surface of the roller, the annular rows of teeth being spaced axially of the roller to define free annular zones between the annular rows of each pair of annular rows, the teeth of each second annular row of any one roller being in substantial register axially of the roller, the teeth of any one annular row of any one roller being in substantial register with the intervening free spaces of adjacent annular rows axially of the roller, the teeth of one roller engaging the annular zones of the other roller and the teeth of the other roller engaging the annular zones of the one roller, the teeth of any one roller, when fully engaging the annular zones of the other roller, being, axially of the roller, in register with, close to but out of contact with, a tooth of the other roller on one side of said teeth and being, axially of the roller, in register with one intervening free space and with one annular zone of the other roller, on the other side of said teeth, the width of the teeth of any one roller, axially of the roller, being smaller than the sum of the widths of said intervening free space and of the adjacent annular zone and being greater than the space separating said teeth from the teeth of the other roller on said one side, this registering intervening space and adjacent annular zone defining a meat holding cavity wherein meat is free of compression by the teeth to enable flowing into the portion of the meat in said cavity of the internal blood of the meat compressed out by the action of the teeth on the remaining zones of the meat.

4,085,483

APPARATUS FOR SHIRRING TUBULAR FILMS

Bruno Winkler, Weinheim-Oberflockenbach, Germany, assignor to Naturin-Werk Becker & Co., Weinheim, Germany

Filed Jan. 22, 1975, Ser. No. 543,073

Claims priority, application Germany, Jan. 25, 1974, 2403470

Int. Cl.[2] A22C *13/02*

U.S. Cl. 17—42 **15 Claims**

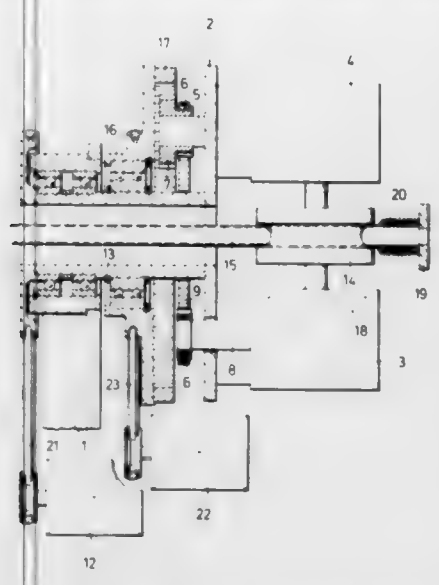
1. Apparatus for shirring a tubular film, comprising:

a shirring mandrel having an axis;

a plurality of shirring rollers, disposed about said mandrel, each of said rollers being rotatable on a roller axis perpendicular to said mandrel axis and having a plurality of substantially identical teeth, said rollers being arranged to continuously rotate in a selected direction about said mandrel axis;

and means for rotating said rollers on said roller axes to cause said teeth to apply shirring forces, parallel to said

mandrel axis, to a tubular film on said mandrel and for continuously rotating said rollers about mandrel axis to



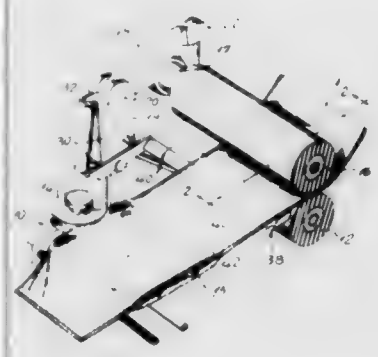
cause the points at which said shirring forces are applied to continuously rotate about said mandrel axis.

4,085,484

APPARATUS FOR TREATING TUBULAR FABRICS

Edward I. Aronoff, St. Laurent; William J. McLay, and Robert E. Mitchell, both of Montreal, all of Canada, assignors to Knit-Fin Machinery Ltd., Montreal, Canada

Filed Dec. 15, 1975, Ser. No. 640,854
Int. Cl.[2] D06C *5/00*
U.S. Cl. 26—84 **3 Claims**



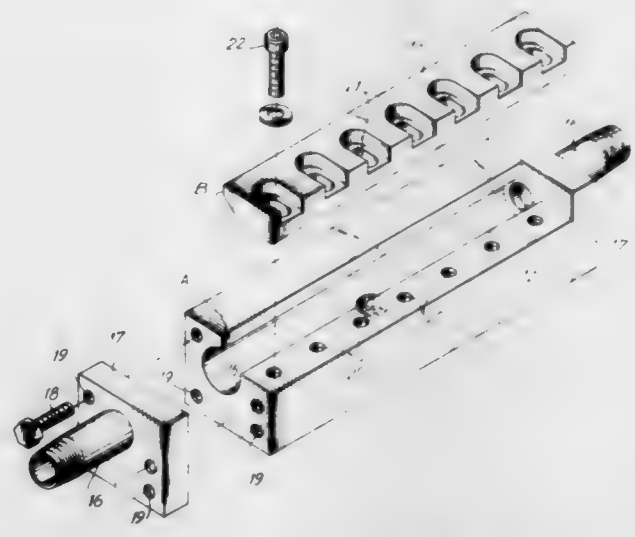
1. An apparatus for treating tubular fabrics comprising a frame on which at least a pair of pressure squeeze rollers are provided forming a nip, a plane defined at the nip coincidental with the path of the tubular fabric passing therethrough, spreader means provided in the path upstream of the nip and subtended between drive rollers, a blade extending laterally of the path of the fabric in contact with the tubular fabric, but below it, upstream of the squeeze rollers and downstream of the spreader, at least one of the squeeze rollers being journaled at each end to one of a pair of levers pivoted to the frame, means adapted to move the levers so as to move the one squeeze roller from the other, actuating means connected to the blade and to the means for moving the levers such that if an obstacle hits the blade during the operation, the actuating means will activate the moving means to open the gap between the squeeze rollers.

4,085,485

PROCESS AND DEVICE FOR FORMING NON-WOVEN FABRICS

Ralph E. Brandon, Monroe; Michael Ring, Warwick, and Raymond Redner, III., Newburgh, all of N.Y., assignors to International Paper Company, New York, N.Y.

Filed Jul. 26, 1976, Ser. No. 708,537
Int. Cl.[2] D04H *1/46*
U.S. Cl. 28—104 **27 Claims**



1. A device for applying a liquid against a batt of fibers to entangle the fibers, comprising:

a first member, having a recessed portion defining at least a major portion of a longitudinal chamber, adapted to contain a liquid delivered therein from a liquid supply source under a pressure sufficient to effect fiber entanglement upon application of the liquid from the device against the fiber batt, and having an integral first machined surface extending substantially the length of said chamber;

a second member, having a second machined surface extending substantially along its entire length and conforming to an open portion of said first member, to form with said first member said longitudinal chamber and a slot providing communication from said chamber to the exterior of the device; and

means for securing together said first and second members, so that said first and second machined surfaces define said slot;

said first and second machined surfaces being essentially parallel and rigid, whereby a substantially non-diverging curtain of liquid can be delivered through said slot for application against the batt of fibers; and

at least one of said first and second machined surfaces being serrated, the serrations being uniform along the length of said surfaces, so that the curtain delivered through said slot in the area of two similar serrations is substantially uniform and similar in width.

4,085,486

METHOD OF PRODUCING NEEDLED, NON-WOVEN TUBING

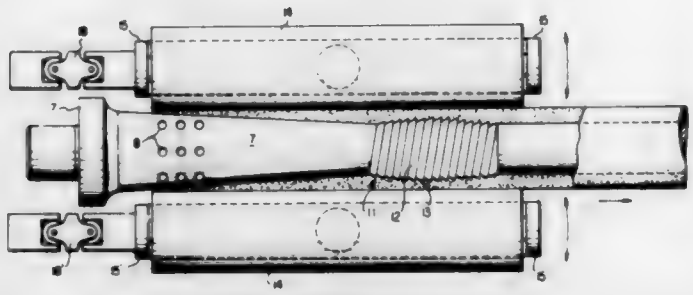
Richard Dilo, Eberbach-N, Germany, assignor to Rontex America, Inc., Chelmsford, Mass.

Continuation-in-part of Ser. No. 386,552, Aug. 8, 1973, Pat. No. 3,952,121, which is a division of Ser. No. 116,030, Feb. 17, 1971, Pat. No. 3,758,926, which is a continuation-in-part of Ser. No. 882,391, Dec. 1, 1969, abandoned, which is a division of Ser. No. 741,492, Jul. 1, 1968, Pat. No. 3,530,557. This application Apr. 19, 1976, Ser. No. 681,089
Claims priority, application Germany, Nov. 21, 1975, 2552243
Int. Cl.[2] D04H *1/46*
U.S. Cl. 28—110 **4 Claims**

1. The method of making non-woven tubing comprising:

(a) winding at least one non-woven web of fibers at an angle forming a helix of at least partially overlapping turns,

(b) needling a multiplicity of fibers from each turn transversely through at least one subjacent turn to fasten said turns to each other,
(c) permitting said needled turns to shrink substantially radially,
(d) radially compressing said needled turns, and



(e) continuously ejecting said needled turns from said winding step by compression thereof against a helical surface generally parallel to the direction of ejection while rotating one of said helical surface and said needled turns with respect to the other.

4,085,487

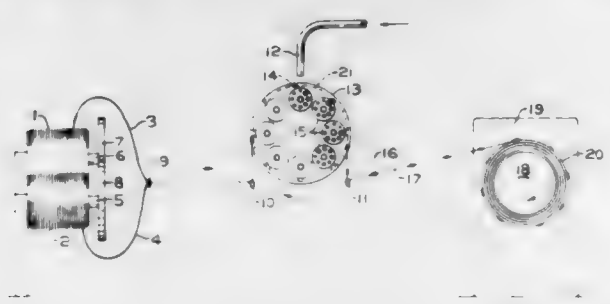
METHOD FOR PRODUCING SLUBBY YARN

Herbert W. Barch, Natrona Heights, and August G. Bohy, Lower Burrell, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 749,198, Dec. 9, 1976, which is a continuation-in-part of Ser. No. 639,723, Dec. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 582,493, May 30, 1975, abandoned. This application May 26, 1977, Ser. No. 800,990

Int. Cl.[2] D02G *1/16, 3/24;* D02J *1/06*

U.S. Cl. 28—252 **17 Claims**



1. A method of providing a slubby strand of fibers comprising passing a consolidated strand containing a multiplicity of fibers over a surface, providing on said surface a multiplicity of fluid passages over which said strand is passed, introducing onto the surface of the strand a fluid at high pressure continuously, passing said fluid through said strand and exhausting a portion of said fluid through said fluid passages and below the surface of the strand to thereby form a plurality of slubs in said strand with said fluid and collecting from said surface a strand having slub thereon.

4,085,488

METHOD AND APPARATUS FOR WINDING AND FORMING COOLING COILS

Eckehard Hanert, Sennestadt, and Anton Ehlen, Warburg, both of Germany, assignors to Benteler-Werke Aktiengesellschaft Werk Neuhaus, Schloss Neuhaus, Germany

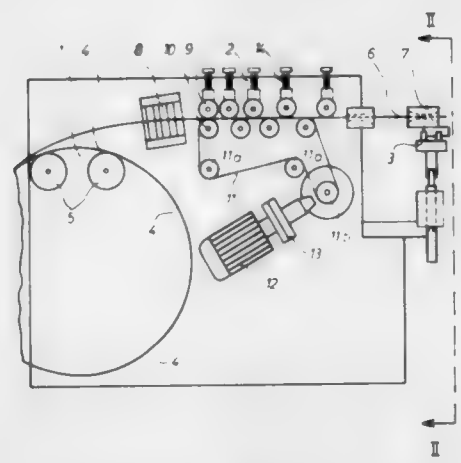
Filed Oct. 15, 1976, Ser. No. 733,020

Claims priority, application Germany, Oct. 18, 1975, 2546766

Int. Cl.[2] B21D *53/06*

U.S. Cl. 29—33 G **15 Claims**

1. Apparatus for winding cooling coils of substantially rectangular form with outwardly bulging stamped corner portions, comprising a winding table of rectangular configuration rotatable from a starting position about a central axis; at least four rolls respectivly mounted in the region of the corners of the rectangular table, each movable in radial direction between an inner winding position and an outer forming position; at least four punch means arranged for cooperation with said rolls and each movable between an outer starting position outwardly spaced from said table to permit rotation of the latter about its axis and an inner forming position closely adjacent to said rolls; first moving means cooperating with said rolls for moving the same from said inner winding position to said outer forming position; second moving means connected to said punch means for moving the latter between said positions thereof; means for clamping the front end of an elongated tube to be wound into a coil to said table; means for rotating said table about said axis after the front end of the tube has been clamped thereon while said rolls are in said inner winding position and said punch means are in said outer starting position so that a tube will be



wound in a coil about the rolls at the corners of said table; means upstream of said table for maintaining the tube during winding thereof in taught condition; tube guide means between said upstream means and said table and movable in a direction of said axis and in a direction transverse thereto; means cooperating with said tube guide means for moving the latter in the direction of said axis during rotation of said table about said axis; and control means for actuating said first moving means to move said rolls from said inner winding position to said outer forming position and said second moving means to move said punch means from said outer starting position to said inner forming position to thereby form said outwardly bulging corner portions while stretching the tube portions between said corner portions when the table after having made a predetermined number of revolutions about its axis has returned to said rest position.

4,085,489

PROCESS FOR FABRICATING HOLLOW RACES OR WHEELS PROVIDED AT THEIR LATERAL ENDS WITH AXLE STUMPS IN WHICH PROCESS SUBSTANTIALLY NO CHIPS ARE PRODUCED; AND RACES AND WHEELS MANUFACTURED IN ACCORDANCE WITH THIS PROCESS

Dietfried Tresser, Gusterath, Germany, assignor to Laeis-Werke AG., Trier, Germany

Filed Apr. 11, 1977, Ser. No. 786,279

Claims priority, application Germany, Apr. 10, 1976, 2615738

Int. Cl.[2] B21B *27/02*

U.S. Cl. 29—110 **8 Claims**

1. An improved process for producing a roller and the like, having axle stumps at both of their ends, from hollow cylindrical pipes, the improvement comprising the steps of

conically reduced and shaping opposite end portions of a

pipe, having an exterior diameter corresponding to that of the roller, by means of a pipe shaping machine; and



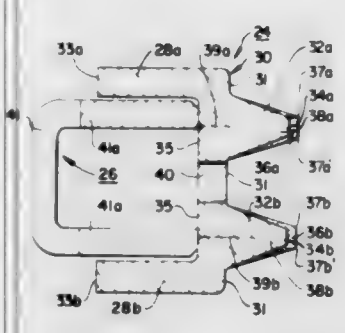
thereafter bending inwardly into said pipe said conically shaped end portions.

4,085,490

METHOD OF MAKING A ROLLED METAL PISTON RING

Harold E. McCormick, Ballwin; Herbert F. Prasse, Town and Country; William F. Ott, and Donald J. Mayhew, both of St. Louis, all of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Filed Apr. 1, 1976, Ser. No. 672,751
Int. Cl.[2] B23P *15/06;* B21D *53/84*
U.S. Cl. 29—156.6 **17 Claims**



1. In a method of forming a piston ring for location in a circumferential groove in a piston movable in a cylinder bore of an internal combustion engine, which piston ring comprises a steel strip of split ring shape and has an intermediate wall portion and a pair of sidewalls extending radially inwardly therefrom and has at its outer periphery a pair of axially spaced cylindrical surfaces for oil scraping engagement with the cylinder bore and which are each located respectively at the outer end of a solid rigid rim which extends radially outwardly with respect to the intermediate wall portion, the steps of providing a strip of steel of uniform width and thickness and which strip has opposite major surfaces and opposite edges, moving said strip linearly through a series of metal forming stations, progressively forming said strip in said stations into a channel-form shape having an intermediate wall portion with sidewall portions extending in one direction therefrom and with a pair of parallel solid rigid rim portions extending in the opposite direction therefrom, each of said solid rigid rims being provided with a flat outer surface at said outer end, coiling the formed steel strip into a helical coil with the sidewall portions extending radially inwardly and the solid rigid rims extending radially outwardly, and slitting said helical coil lengthwise to form individual piston rings.

4,085,491

SOLAR ENERGY HEAT EXCHANGER AND METHOD FOR MAKING SAME

Richard G. Mathwig, 2218 E. Evergreen, Mesa, Ariz. 85203

Filed Mar. 1, 1976, Ser. No. 662,362
Int. Cl.[2] B23P *15/26*
U.S. Cl. 29—157.3 AH **1 Claim**

1. A method for manufacturing a heat exchanger from a fluted strip and a pipe, said method comprising the steps of:

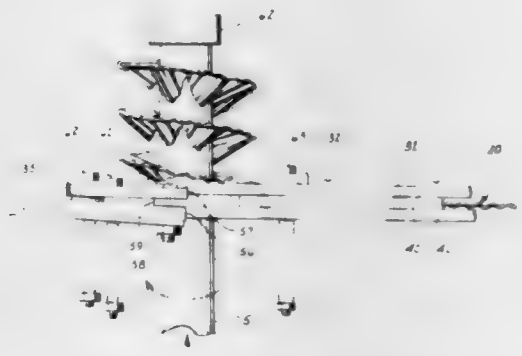
a. introducing the fluted strip through a feed chute;

b. supporting the pipe within an aperture;

c. guiding the strip from the feed chute through a spiral trough within the aperture and disposed about the supported pipe;

d. securing the beginning of the strip to the pipe with at least one stanchion;

e. simultaneously rotating and translating the pipe to draw the strip through the feed chute and trough and spirally wind the strip about the pipe;



f. forming the flutes along one edge of the strip to define a line generally representative of a first sinusoidal curve superimposed upon a helix;

g. forming simultaneous with step (f) the sinusoidal flutes along another edge of the strip to define a line generally representative of a second sinusoidal curve superimposed upon a helix;

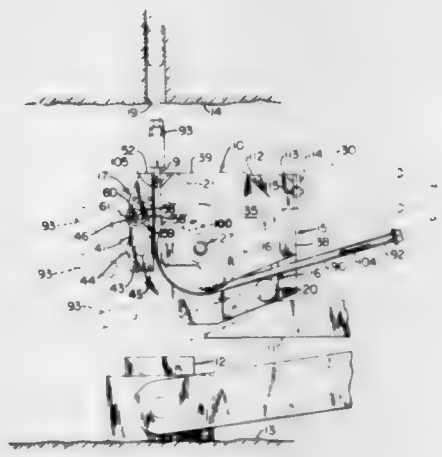
h. attaching the terminal end of the strip to the pipe with at least one stanchion.

4,085,492

BENDING AND STRAIGHTENING MECHANISM FOR MINE ROOF BOLTS

Ronald R. Stange, Denver, Colo., assignor to Tools for Bending, Inc., Denver, Colo.

Division of Ser. No. 565,421, Apr. 7, 1975, Pat. No. 4,003,233.
This application Nov. 15, 1976, Ser. No. 741,731
Int. Cl.[2] E21D *21/00*
U.S. Cl. 29—431 **4 Claims**



1. The method of inserting mine roof bolts into holes in the roof of a mine tunnel, comprising the steps of:

moving a portable bolt bending apparatus into alignment with a hole in the roof;

placing a shank of limited length having an expandible head so that its leading end is at right angles to the hole and intially bending the leading end of said shank at a location a spaced distance rearward of said expandible head around a curved guide path on said apparatus to place an initial bend in said shank until said leading end is in axial alignment with said hole;

advancing said shank along the guide path to successively bend said shank into axial alignment with said hole at

progressively rearward locations along its length away from said leading end while simultaneously applying straightening forces on the bent portions of said shank as said bent portions advance into axial alignment with said hole.

4,085,493

METHOD OF PRODUCING EGG COOKING INDICATOR

Duane G. Chadwick, 555 E. 3rd North, Logan, Utah 84321

Division of Ser. No. 608,570, Aug. 28, 1975, Pat. No. 3,998,099.
This application Dec. 3, 1976, Ser. No. 747,359
Int. Cl.[2] B21D *39/00*; B23P *19/04*
U.S. Cl. 29—455 R **2 Claims**



1. A method of producing an egg cooking indicator comprising attaching a thermometer to a backing member;

insulating around a temperature responsive end of the thermometer and affixing the thermometer to the backing member in a calibrated position;

suspending the backing member and thermometer in a tubular transparent housing such that an air space substantially surrounds the insulated temperature responsive end of the thermometer;

silvering the inside of the housing surrounding the temperature responsive end of the thermometer; and

sealing the end of the housing through which the thermometer and backing member were inserted to be suspended.

4,085,494

METHOD OF AND APPARATUS FOR POSITIONING BLADES OF A WOOD-CHIPPING CUTTER DRUM

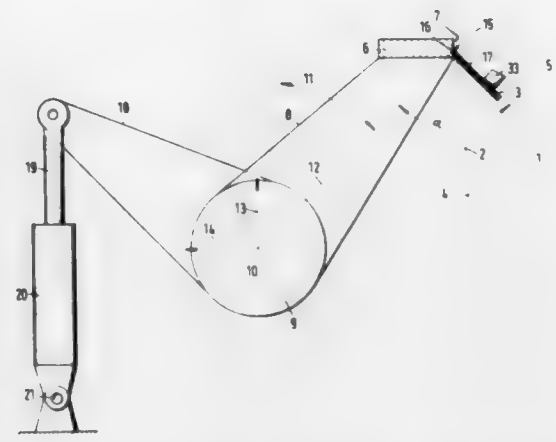
Hans Sybertz, Hargesheim, and Reinhold Riedl, Gensingen, both of Germany, assignors to Hombak Maschinenfabrik KG, Bad Kreuznach, Germany

Filed Nov. 8, 1976, Ser. No. 740,231
Claims priority, application Germany, Nov. 8, 1975, 2550318; May 11, 1976, 7614862
Int. Cl.[2] B23Q *3/00*
U.S. Cl. 29—468 **9 Claims**

1. In combination with a drum elongated in the direction of and rotatable about a drum axis and carrying at least one axially elongated blade having a cutting edge defining an orbit on rotation of said drum and radially displaceable in a blade direction crossing said orbit relative to said drum axis, an adjustment device for aligning said cutting edge on an ideal desired orbit centered on said drum axis, said device comprising:

an elongated alignment bar having a flat surface and pivotal about a bar axis fixed relative to said drum axis and substantially parallel to said surface; and

means for pivoting said bar about said bar axis for pressing said surface against said cutting edge and displacing the same toward said drum axis in said blade direction until said cutting edge lies on said ideal desired orbit.

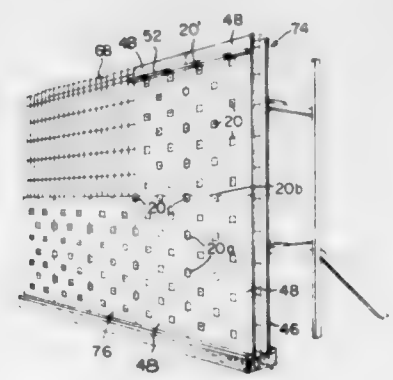


4,085,495

METHOD OF ERECTING FORMS FOR A CONCRETE FORM

Napoleon R. Hebert, 2301 I St., NE., Auburn, Wash. 98002

Filed Oct. 4, 1976, Ser. No. 729,023
Int. Cl.[2] B23P *21/00*
U.S. Cl. 29—469 **12 Claims**



1. A method of erecting a form for a concrete wall, said method comprising:

a. providing a first panel having through holes therein at spaced locations over a substantial portion of the panel, some of which holes are edge holes located proximate edge portions of said panel at a predetermined edge distance therefrom,

b. inserting tie rods through said panel holes, each of said tie rods having a spacing element which engages an inner surface of said panel, placing wedging plates against an outer surface of said panel and engaging the rods with the wedging plates in secure wedging relationship in slotted openings in the wedging plates, so that spacing elements of the tie rods firmly engage the inner surface of the panel,

c. placing the panel in a vertically erect position and bracing the panel in that position,

d. providing a second panel, inserting tie rods therein, each of said tie rods having a spacing element which engages an inner surface of said second panel, and placing wedging plates against the second panel in wedging engagement with the tie rods, so that the spacing elements of the tie rods firmly engage the inner surface of the second panel,

e. placing the second panel in a vertically erect position adjacent the first panel,

f. at least one lateral dimension of at least one of the wedging plates, measured from the slotted opening of the plate to the edge of the plate being greater than the edge distance of its related panel to thus provide an overlapping portion of the wedging plates to engage the adjacent panel, and

g. completing the form by placing a second set of panels opposite the first two panels in spaced relationship therefrom, so that the opposite ends of the tie rods extend through the other panels, with spacing elements on the opposite ends of the tie rods engaging inner surfaces of the second set of panels, engaging the other panels and the opposite ends of the tie rods with wedging plates to secure the other panels to the first and second panels and placing at least one waler mounted in waler brackets with at least some of the wedging plates.

4,085,496

MANUFACTURE OF METALLIC STRIP

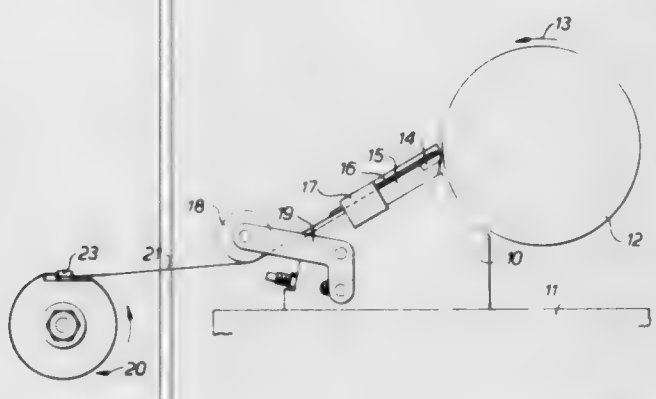
Dalip T. Malkani, and Andrew Middlemiss, both of Sheffield, England, assignors to British Steel Corporation, London, England

Filed Dec. 28, 1976, Ser. No. 755,060

Claims priority, application United Kingdom, Jan. 14, 1976, 1393/76

Int. Cl.[2] B22D *11/126*

U.S. Cl. 29—527.2 **8 Claims**



1. A method of manufacturing metallic strip which differs in composition across its width which method includes the steps of rotating about its longitudinal axis, a cylindrical workpiece comprising a plurality of co-axial cylindrical components of equal diameter, adjacent components being comprised of material of differing composition, feeding a cutting tool continuously into the peripheral surface of the workpiece as it rotates so as to produce a continuous strip peeled from the surface of the workpiece, and collecting the peeled strip by winding it under tension around a coiler.

4,085,497

TERMINATION APPARATUS FOR ELECTRICAL CONNECTORS

John Peter Nijman, West Hill, and Terence Neville Tompkins, Newmarket, both of Canada, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 27, 1976, Ser. No. 735,956

Int. Cl.[2] H01R *43/04*

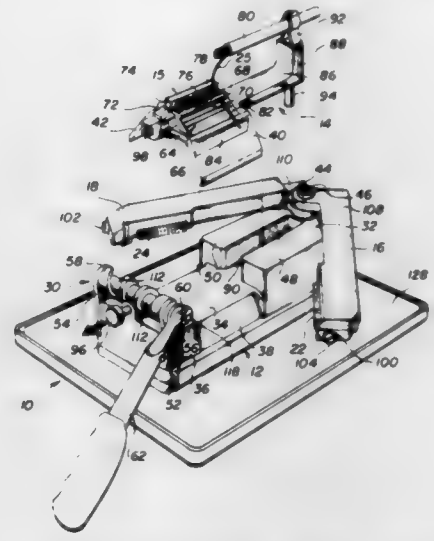
U.S. Cl. 29—566.3 **21 Claims**

1. An apparatus for terminating a plurality of insulated electrical conductors in respective insulation-piercing contact portions of an electrical connector, comprising:

a frame; means carried by the frame for supporting said connector and aligning said conductors adjacent respective insulation-piercing contact portions of said connector;

a pair of insertion arms rotatably mounted on said frame for movement toward respective sides of said connector, each of said arms carrying at least one insertion means for engaging and pressing respective insulated conductors into respective insulation-piercing contact portions of said connector; and

actuator means responsive to a common applied force for simultaneously applying sufficient operating force to each of said insertion arms and for causing said insertion arms to simultaneously cut and insert said conductors into



respective insulation-piercing contact portions of said connector.

4,085,498

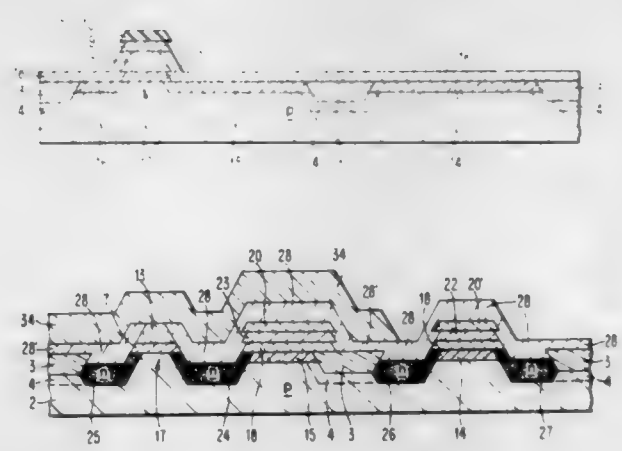
FABRICATION OF INTEGRATED CIRCUITS CONTAINING ENHANCEMENT-MODE FETS AND DEPLETION-MODE FETS WITH TWO LAYERS OF POLYCRYSTALLINE SILICON UTILIZING FIVE BASIC PATTERN DELINEATING STEPS

Vincent L. Rideout, Mohegan Lake, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 656,756, Feb. 9, 1976. This application Jul. 2, 1976, Ser. No. 702,247

Int. Cl.[2] H01L *21/28, 29/78;* B01J *17/00*

U.S. Cl. 29—571 **26 Claims**



1. A method for fabricating an array of one-device memory cells and enhancement-mode and depletion-mode FETs on the same semiconductive substrate which comprises:

(A) providing a semiconductive substrate of a first conductive type containing active impurities of a first conductive type;

(B) providing and delineating predetermined oxide isolation regions above or recessed into the substrate to provide insulating field oxide regions between said memory cell and said enhancement-mode and said depletion-mode FETs and other memory cells and FETs on the same semiconductive substrate;

(C) providing an enhancement mode FET gate insulator;

(D) depositing and doping a layer of polycrystalline silicon above said gate insulator;

(E) then delineating the predetermined polycrystalline silicon gate regions of the enhancement mode FET with an oxidation barrier layer;

(F) providing a capacitor insulator and depletion-mode FET gate insulator;

(G) thermally diffusing or ion implanting active impurities of

a second and opposite conductivity type into predetermined regions of the semiconductive substrate to provide depletion-mode channel regions above which regions are to be subsequently delineated polycrystalline silicon gate regions of depletion-mode FETs; and to provide lower doped silicon electrodes of the storage capacitors above which electrodes are to be subsequently delineated polycrystalline silicon upper electrodes of the storage capacitors of the one-device memory cells;

(H) then depositing and doping a second and subsequent layer of polycrystalline silicon above the capacitor insulator, and above said depletion-mode FET gate insulator;

(I) then delineating the second and subsequent layer of doped polycrystalline silicon to provide upper electrode regions above the corresponding doped lower silicon electrodes of the storage capacitors, and to provide depletion-mode FET gate regions above corresponding doped depletion-mode channel regions;

(J) thermally diffusing or ion implanting active impurities of a second and opposite conductive type into predetermined regions of the semiconductive substrate and at greater doping concentration than the doping concentration employed in step (G) and being sufficient to provide doped sources and drains of both the enhancement-mode FETs and the depletion-mode FETs;

(K) thermally growing a silicon dioxide insulating layer over regions of the structure but not over the polycrystalline silicon enhancement-mode FET gate which is still protected by an oxidation barrier layer;

(L) removing the oxidation barrier layer from over the enhancement-mode FET gate by use of an etchant;

(M) delineating contact holes to polycrystalline silicon upper capacitor electrodes; to doped sources and drains in circuits peripheral to the array of memory cells; and to polycrystalline silicon depletion-mode FET gates; and

(N) depositing and delineating a metallic-type high-conductivity electrical interconnection pattern that makes electrical connection to the polycrystalline silicon FET gates, to polycrystalline silicon upper capacitor electrodes, and to source and drain regions.

4,085,499

METHOD OF MAKING A MOS-TYPE SEMICONDUCTOR DEVICE

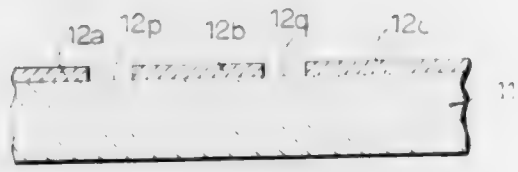
Shigeo Kuninobu, Kyoto, and Takeshi Ishihara, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 27, 1976, Ser. No. 754,261

Claims priority, application Japan, Dec. 29, 1975, 50-159294; Dec. 29, 1975, 50-159295; Dec. 29, 1975, 50-159296; Feb. 20, 1976, 51-18098

Int. Cl.² B01J *17/00*

U.S. Cl. 29—571 **2 Claims**



1. A method of making an MOS-type semiconductor device, comprising the steps of:

forming a SiO_2 layer on a silicon substrate;

selectively etching the SiO_2 layer to form openings which are located in correspondence to regions where functional regions are to be formed in the silicon substrate;

coating the face of the thus formed structure with a polycrystalline silicon layer;

diffusing a first impurity into selected regions of the polycrystalline silicon layer;

forming a silicon nitride mask on selected surface areas of the polycrystalline silicon layer for preventing subsequent oxidation of the regions under said areas;

heating and oxidizing the region of the polycrystalline silicon layer other than that covered with the silicon nitride layer for diffusing the impurities into the silicon substrate from the polycrystalline silicon regions facing the substrate to form the functional regions and also diffusing said first impurity from the polycrystalline silicon region into the substrate through the SiO_2 layer for forming a shallowly diffused region having said impurity diffused thereinto to a depth less than the depth to which said substrate regions facing the polycrystalline silicon through said openings have had said impurity diffused thereinto;

removing the silicon nitride layer; and

providing conductors on the exposed silicon oxide.

4,085,500

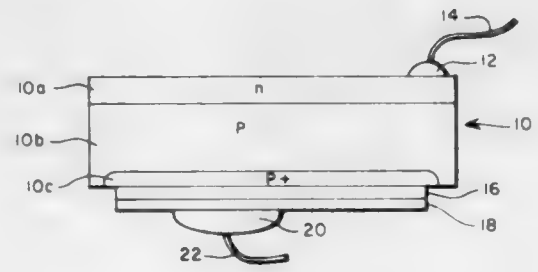
OHMIC CONTACTS TO P-TYPE MERCURY CADMIUM TELLURIDE

Robert J. Hager, Minneapolis; Eric S. Johnson, Minnetonka; M. Walter Scott, Minnetonka, and Ernest L. Stelzer, Minnetonka, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 596,890, Jul. 17, 1975, Pat. No. 4,000,508. This application Sep. 29, 1976, Ser. No. 727,814

Int. Cl.² B01J *17/00*

U.S. Cl. 29—589 **25 Claims**



1. A method of forming a contact to p-type mercury cadmium telluride, the method comprising:

depositing a Column IB metal on at least a portion of a surface of p-type mercury cadmium telluride;

depositing a buffer material on the Column IB metal; and

contacting the buffer material with a low melting temperature bonding material.

4,085,501

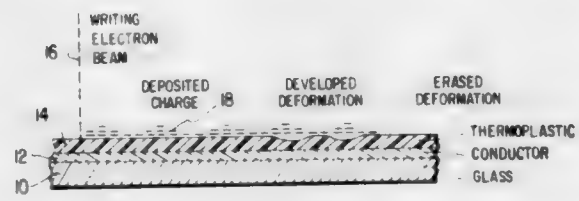
METHOD FOR FABRICATION OF INTEGRATED OPTICAL CIRCUITS

George Daniel Currie, Brighton, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Sep. 18, 1975, Ser. No. 614,523

Int. Cl.² H01S *4/00*

U.S. Cl. 29—593 **11 Claims**



1. The method of making an integrated optical circuit, which comprises the steps of:

(a) forming a layer of synthetic resinous material capable of supporting guided wave propagation of coherent light and having a selected index of refraction on a substrate which comprises a material having an index of refraction less than said selected index of refraction; and

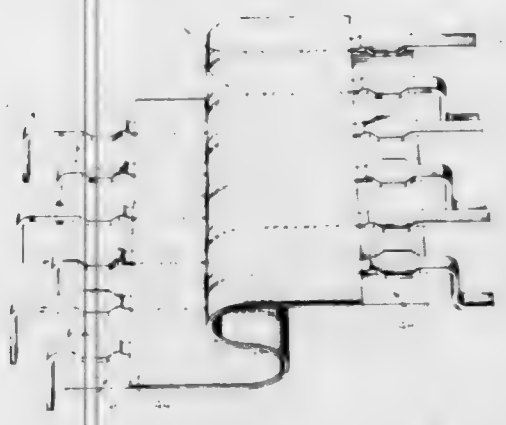
(c) forming by selected local impingement of a scanning

electron beam directly on said layer, series of optical components optically aligned in said layer and which optically affect guided wave propagation of coherent light supported by said layer.

4,085,502
JUMPER CABLE

Barry I. Ostman, Merrimack, and Joseph A. Roberts, Hudson, both of N.H., assignors to Advanced Circuit Technology, Inc., Merrimack, N.H.

Filed Apr. 12, 1977, Ser. No. 786,886
Int. Cl.[2] H02G *15/00*
U.S. Cl. 29—629 **14 Claims**



1. A method of forming a jumper cable having a plurality of spaced metallic conductors, each of said conductors including a pair of spaced, relatively rigid ends, and at least one region of relative flexibility between said ends and integral therewith, said method comprising the steps of:

(A) providing a flexible metallic sheet;

(B) forming mesas of thickness approximating that desired for said rigid ends on edge regions of said sheet;

(C) milling said sheet so as to define said conductors and integral ends; and

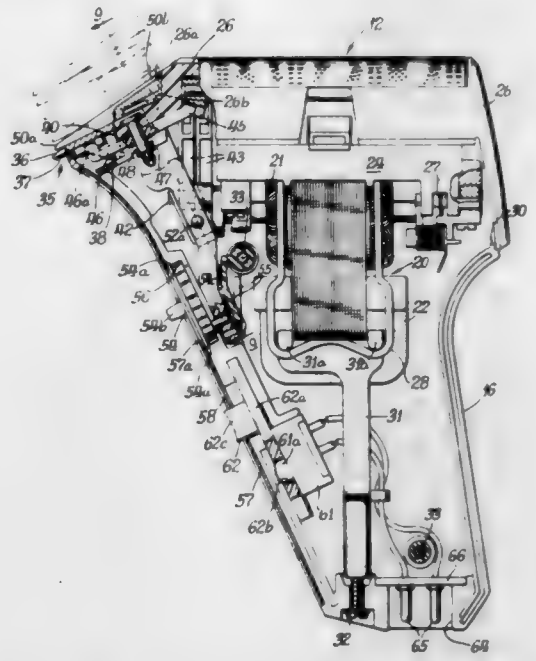
(D) covering said spaced conductors at least in part with a flexible insulating material while maintaining said conductors in spaced relation to one another.

4,085,503
ELECTRIC DRY SHAVER WITH ADJUSTABLE LONG HAIR TRIMMER

William P. Beck, Westchester; Francis L. Carr, Downers Grove, and Jerry P. Gronwick, Park Ridge, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Dec. 23, 1974, Ser. No. 535,949
Int. Cl.[2] B26B *19/10*
U.S. Cl. 30—34.1 **9 Claims**

2. A long hair clipper for trimming hair close to the skin and for trimming hair at selected lengths comprising a blade set including a comb fixed with respect to a housing and a cutter, said comb and cutter each having a row of teeth formed along one edge thereof, a motor drivingly connected to said cutter for reciprocating said cutter with said teeth on said cutter in shearing engagement with the teeth on said comb, said comb being a flat plate mounted on a recessed surface on said housing with said cutter positioned between said comb and the housing, a wedge-shaped guard member having a grooved outer face and a flat inner face adapted to lie flat against said comb, said guard member having a thin edge tapering to a thick edge, slots in said guard member extending from said thin edge toward said thick edge forming pointed teeth which extend substantially to the middle of said guard member, said housing defining a wedge-shaped recess within which said comb is mounted, said recess being shaped to receive said guard member in its lowermost position flat against said comb, the walls of said housing defining said recess being substantially flush with outer surface of said guard member in said lowermost position, and support means carried by said guard member extending into said housing to selectively position said guard member at any of a number of elevated positions spaced

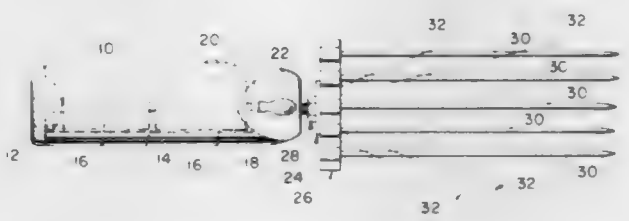


from said comb, said support means including support legs which extend normal to said comb through slots in said housing which slots guide said legs for lengthwise movement.

4,085,504
MULTI-BLADED KNIFE

Janos Nagy, 2600 Monroe St., Hollywood, Fla. 33020

Filed Jan. 24, 1977, Ser. No. 761,995
Int. Cl.[2] B26B *3/04*
U.S. Cl. 30—123 **9 Claims**



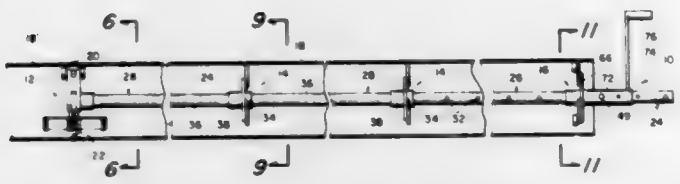
1. A multi-bladed knife comprising a handle, light producing means for emanating light beams in the direction of the object to be cut by said knife, fastening means for securing at least one blade to said handle, a plurality of blades, said blades extending parallel to each other in spaced apart relationship and having the longitudinal axes of said blades parallel to the longitudinal axis of said handle when said blades are secured to said handle utilizing said fastening means therefore, said fastening means including a bar threadingly secured to one end of said handle, the longitudinal axis of said bar transverse to said longitudinal axis of said handle, said bar having a cover plate for removable engagement to said bar, said cover plate extending substantially the length of said bar along said longitudinal axis thereof, said bar and said cover plate having co-terminus notches located in spaced apart relationship in the adjacent faces of said bar and said cover plate, said notches having blade securing means for engaging one end of each of said blades to said bar, said cover plate capturing said one end of said each of said blades and preventing the inadvertent disengagement of said end of said each of said blades from said bar, each of said notches having a first internal wall, said first wall parallel to said longitudinal axis of said handle.

4,085,505

POLYETHYLENE INTERNAL BEAD REMOVER

Arthur H. McElroy, 5619 E. Independence, Tulsa, Okla. 74115

Filed Nov. 15, 1976, Ser. No. 741,558
Int. Cl.[2] B26B *3/00*
U.S. Cl. 30—278 **9 Claims**



1. Apparatus for removing the internal bead from a joint between two lengths of polyethylene pipe joined by the butt fusion method, comprising an assembly having in combination;

(a) a torque tube of adjustable length, having at a distal end, adapted to be inserted into the open end of a polyethylene pipe, a cutter head means adapted to be positioned over said bead, and at the proximal end outside said pipe, a crank handle assembly means;

(b) said cutter head means comprising an assembly, including support leg means to rest against the inner surface of said pipe in a straddling position over said bead, a cutter arm means rotatably supported to said leg means about an axis which is offset from and parallel to the axis of said pipe, the length of said cutter arm means being such that the free end of said cutter arm means is spaced from the said inside surface of said pipe in a first position and in contact with said inside surface in a second position, a cutter blade positioned at said free end at a selected angle the outermost end of said blade positioned substantially parallel to said torque tube and approximately at the inner surface of said pipe, and means co-axially with said offset axis to attach said distal end of said torque tube to said cutter arm; and

(c) means to rotatably support said torque tube within said pipe.

4,085,506

LOCKING DEVICE FOR DENTAL PROSTHESES

Isaih Lew, 29 Bayberry Dr., Pleasantville, N.Y. 10570

Filed Jul. 22, 1976, Ser. No. 707,604
Int. Cl.[2] A61C *13/00*
U.S. Cl. 32—2 **7 Claims**



1. A locking device (especially useful) for dental prostheses, which comprises:

(a) a hollow cylinder with openings at both ends, which is adapted to be affixed to or in a dental prosthesis, and

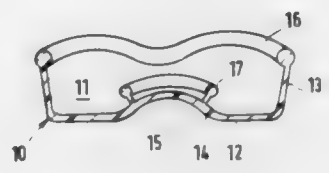
(b) a plunger slidably mounted in the cylinder so that the locking end of the plunger may be extended from one end of the cylinder or substantially retracted to that end of the cylinder as the plunger is slid into or away from the cylinder by the manipulation of the other end of the plunger; whereby when extended from the cylinder affixed to or in a dental prosthesis in the mouth, the end of the plunger engages an orifice in a fixture in the mouth and when retracted into the cylinder, the end of the plunger is withdrawn from the orifice in the fixture in the mouth, thereby respectively locking the the prosthesis to the fixture or unlocking it from the fixture.

4,085,507

APPLIANCE FOR TAKING DENTAL IMPRESSIONS AND METHOD AND APPARATUS FOR MAKING THE SAME

F. Heinrich Lehn, Unionstrasse 5, 4760 Werl, and Hans-Jürgen Schmitter, Sonnenwall 29, 4300 Duisburg, bothof, Germany

Filed Jul. 12, 1976, Ser. No. 704,546
Claims priority, application Germany, May 5, 1976, 2619799
Int. Cl.[2] A61C *9/00*
U.S. Cl. 32—17 **2 Claims**



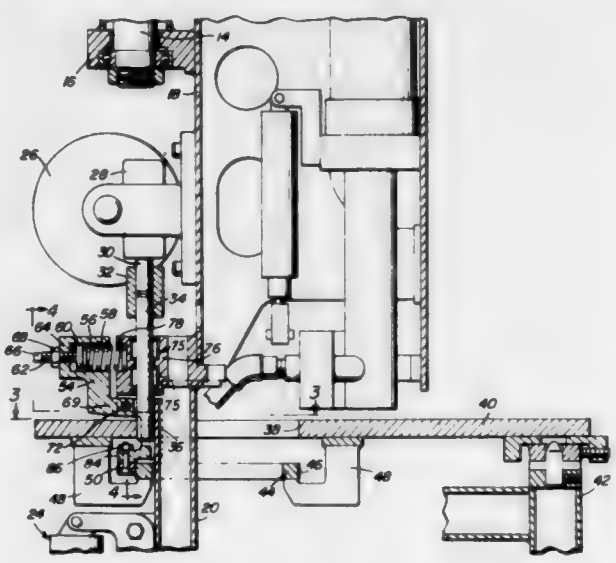
1. A dental impression appliance comprising: a one-piece molded part of synthetic material with a form-stable reception channel for impression material, said reception channel being horseshoe-shaped to correspond to a human jaw, a handgrip extending from the closed side of the horseshoe outward, a base plate with a plane in which the handgrip extends, said reception channel being bounded on one side by said plane, said reception channel being bounded along its inside and outside edges by sections raised towards the same side from the plane of said base plate, said sections having retention edges on the inside of said channel forming undercuts running at a distance from the base plate in the area of the open side of the channel.

4,085,508

TWIN TEMPLATE CAM TRACKER

Josef Gyongyosi, P.O. Box 314, Southfield, Mich. 48075

Filed Dec. 21, 1976, Ser. No. 752,832
Int. Cl.[2] B26D *5/30*
U.S. Cl. 33—27 K **4 Claims**



1. A cam tracker comprising a master cam having a master cam surface thereon, means supporting said master cam, a master cam follower, a drive shaft supporting said cam fol-

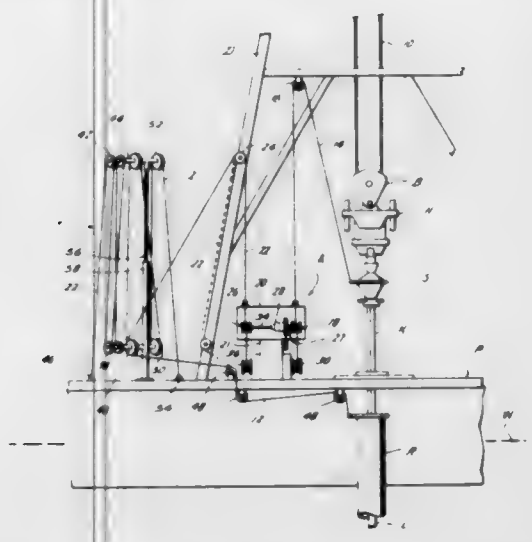
lower in rolling contact with said cam surface on said master cam, means rotatably supporting said drive shaft, drive means connected with said drive shaft for rotating the drive shaft and cam follower thereby moving the cam follower and cam surface in relation to each other, a control cam having a control cam surface thereon, means supporting said control cam in axially spaced, fixed relation to the master cam with the control cam surface being in radially opposed relation to the master cam surface, a control cam follower, means supporting said control cam follower in rolling contact with said control cam surface with the control cam follower being freely rotatably supported by its supporting means, said supporting means for the cam follower including a movable mounting member rotatably journaling said control cam follower, housing means, rotatably connected to said drive shaft means movably supporting said mounting member from said housing means, and spring means connected between said mounting member and said housing means to resiliently bias the mounting member in one direction to resiliently retain the control cam follower in rolling contact with the control cam surface and to resiliently bias said master cam follower in the opposite direction into rolling contact with said master cam.

4,085,509

APPARATUS FOR COMPENSATING FOR THE HEAVING OF A FLOATING DRILLING PLATFORM FOR CONNECTION WITH APPARATUS FOR MEASURING THE RATE OF PENETRATION OF PIPE RUN INTO AN OFFSHORE WELL

Leo A. Bell, and Norbert C. Peterson, both of Santa Ana, Calif., assignors to Martin-Decker Company

Filed Apr. 7, 1976, Ser. No. 674,490
Int. Cl.[2] G01B *3/12*
U.S. Cl. 33—134 R **12 Claims**



1. A heave compensating apparatus for use in measuring the rate of penetration of drill pipe run into a well situated beneath a floating drilling platform heaving relative to a stationary riser pipe located beneath the platform, wherein a derrick support assembly including a swivel is mounted on such platform for supporting such drill pipe in such riser pipe, comprising:

a first measuring wheel adapted for mounting on such platform and a first measuring line in operable engagement therewith, said first measuring line adapted for extending from said first measuring wheel to such swivel for measuring relative movement between such platform and such drill pipe;

a second measuring wheel adapted for mounting on such platform having a second measuring line in operable engagement therewith, said second measuring line adapted for extending from said second measuring wheel to such riser pipe for measuring relative movement between such riser and such platform;

said first and second measuring lines providing linear responses indicative of relative movement between such platform and such swivel and between such platform and such riser, said measuring wheels being mounted for rotation for converting said linear response into rotational response;

resultant rotation means operatively connecting said first and second measuring wheels for providing a resultant rotation indicative of actual drill pipe movement; and

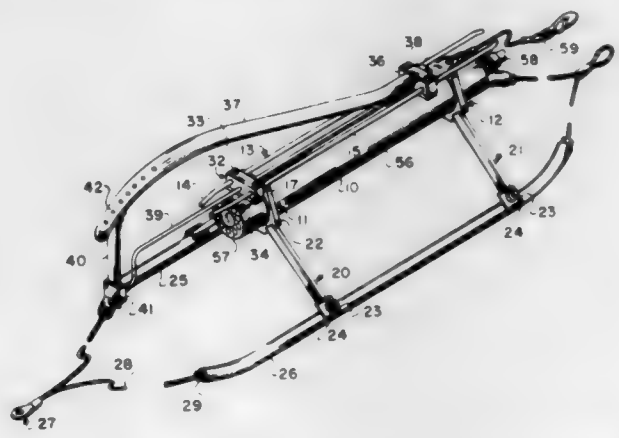
said second measuring wheel being adjustable to a circumference whereby there is no rotation of said resultant rotation means when the platform heaves about and pipe movement relative to the stationay riser pipe is caused only by platform heave.

4,085,510

DEFLECTION DEVICE FOR MEASURING THE INTERIOR OF A CONDUIT

John A. Kirschke, P.O. Box 125, Boerne, Tex. 78006

Filed Jul. 26, 1976, Ser. No. 708,717
Int. Cl.[2] G01B *5/12*
U.S. Cl. 33—178 F **8 Claims**



1. A deflection device for measuring the interior of a conduit having a central axis substantially parallel to the earth's surface, said conduit having a top portion above said central axis and a bottom portion below said central axis, said deflection device comprising:

a. an elongated central body projecting on the said central axis of said conduit, said elongated central body mounted on,

b. elongated skid means supporting said central body movably in the said bottom portion of said conduit,

c. a spring loaded deflection arm mounted on said elongated body, said spring loaded deflection arm projecting away from said skid means and being biased into contact with, the top portion of said conduit, and moving responsive to said deflection arm contacting a surface, and

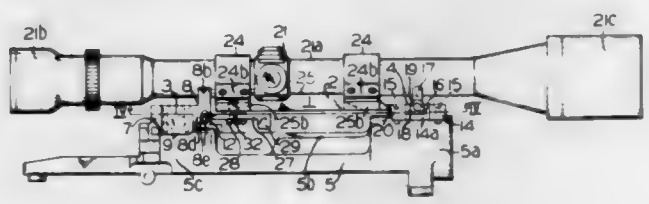
d. an elongated ruler fixedly attached at one end to said deflection arm and operatively connected to said body to extend toward said central axis, said ruler moving responsive to movement of said deflection arm.

4,085,511

TELESCOPIC SIGHT GUN MOUNT

Joseph L. Kovac, 606 Beech Dr., Trafford, Pa. 15085

Filed Oct. 14, 1976, Ser. No. 732,207
Int. Cl.[2] F41G *1/38*
U.S. Cl. 33—250 **10 Claims**



1. A mount for readily attaching a telescopic sight to a gun and for quickly detaching the telescopic sight from the gun comprising, first and second saddle means spaced apart and

fixedly secured to the gun, said first saddle means having a rearwardly facing angular contact edge, said second saddle means having a forwardly facing flat deflectable leaf member and a locking lip adjacent to said leaf member and extending orthogonally to the plane of said leaf member, an elongated carrier having one end formed to agree and to abut with said angular contact edge, and a manipulatable lever pivotally connected at the other end of said elongated carrier for movement about an axis extending orthogonally to the plane defined by said locking lip and having a portion for frictionally engaging said locking lip and deflecting said flat deflectable leaf member whereby said elongated carrier and the telescopic sight are positively locked in fixed relationship with said first and said second saddle means.

4,085,512

LUMBER CUTTING MEASUREMENT APPARATUS AND METHOD

Dennis Lee Bod, Federal Way, and Kale Franklin Skutley, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 27, 1976, Ser. No. 754,137
Int. Cl.[2] G01C *15/06;* **G01B** *11/30*
U.S. Cl. 33—293 **2 Claims**



1. Lumber cutting measurement apparatus comprising:

a body portion having

a workpiece contacting, forward end, a rearward, scale end, with a longitudinal axis extending therebetween, and being of the character to be hand-held against a surface of said workpiece;

measurement shaft means disposed partially within said body portion and being axially movable along said axis and having

a workpiece contacting end face movable from a point axially outward from said workpiece contacting forward end of said body portion to a point axially therewithin;

spring means carried by said body portion in axially forwardly urging engagement with said measurement shaft means for causing a compressive, with a repeatably constant force, contact between said workpiece contacting end face and said surface of said workpiece; and

axially graduated scale means affixed to said measurement shaft means and extending axially rearwardly from said rearward, scale end of said body portion;

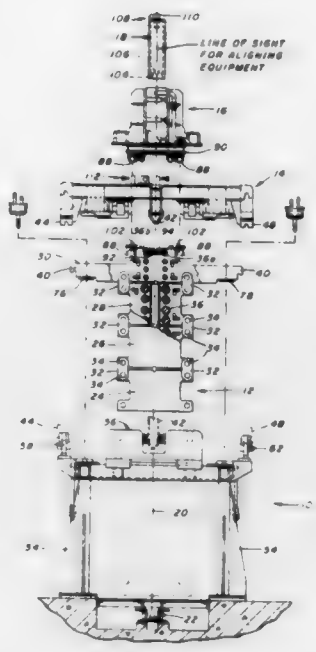
said measurement shaft means further including articulation means disposed contiguously to said workpiece contacting end face for providing a rotational, swivel type freedom of adjustment movement of said measurement apparatus while maintaining said compressive contact between said end face and said workpiece.

4,085,513

CONTINUOUS CASTER-ALIGNMENT APPARATUS

Alfred J. Capriotti, Falls Township, Bucks County, and Louis G. Lazzaretti, Harmony Township, Beaver County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 596,035, Jul. 14, 1975, Pat. No. 3,967,362.
This application Mar. 3, 1976, Ser. No. 663,390
Int. Cl.[2] B22D *11/12;* **G01C** *15/00*
U.S. Cl. 33—286 **6 Claims**



1. A test and alignment stand for use in a continuous casting plant for prealigning and supporting a discharge rack, a mold oscillator table, a mold support and a mold prior to their placement within a continuous-casting machine for providing greater alignment accuracy and shortening caster downtime during alignment, said test and alignment stand comprising:

means for supporting such discharge rack in a level orientation, said supporting means including a target means including a sighting point having a predetermined dimensional relationship with a point representing the center line entrance point to the remainder of the continuous-casting machine, said supporting means being configured to support such discharge rack over said target means and to provide for the horizontal movement of such discharge rack relative to said target means;

means, located adjacent said discharge rack supporting means, for supporting such mold oscillator table, together with such mold and mold support supported thereupon, in overlying relationship to such discharge rack over said target means and for providing for movement of such mold oscillator table relative to said target means; and

means for horizontally adjusting such mold oscillator table relative to said target means and to such discharge rack, the adjustment of such mold oscillator table relative to said target means also resulting in horizontal adjustment of such mold and such mold support which are supported upon such mold oscillator table.

4,085,514

PARALLEL WALL INDICATOR

Boris T. Stefanoff, 16039-132nd Pl. SE., Renton, Wash. 98055

Filed Nov. 14, 1975, Ser. No. 631,994
Int. Cl.[2] G01B *3/56;* **G01C** *9/12;* **A61C** *3/00*
U.S. Cl. 33—343 **11 Claims**

1. A dental instrument, comprising:

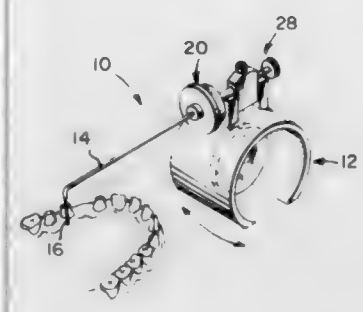
indicator means including an elongated portion of length sufficient to be insertable into a mouth with one end portion thereof adjacent a prepared tooth, and a pointer portion projecting from said one end portion for indicating a reference line;

pendulum means movable with respect to a rest position

about a pivot axis parallel to the longitudinal axis of said elongated portion; and

connector means for connecting the other end portion of said elongated portion with said pendulum means such that said pointer portion will be positioned at a predetermined angular position with respect to vertical when said pendulum means assume said rest position during successive comparisons of the angular disposition of said reference line with the angles of inclination of corresponding prepared teeth surfaces.

10. In a geometric instrument including pendulum means, and a pointer positionable by said pendulum means at an angular position with respect to vertical when said pendulum means assume a rest position, the improvement comprising:



connector means connected to said pendulum means and said pointer for permitting selective movement of said pointer with respect to said pendulum means in order to selectively adjust the angular position at which said pointer will be positioned when said pendulum means assume said rest position;

said pointer including an elongated portion and a pointer portion projecting from said elongated portion;

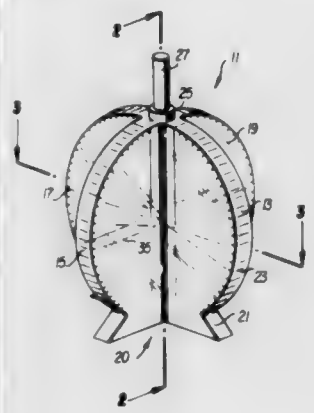
said pendulum means swinging about a pivot axis spaced from the longitudinal axis of said elongated portion and parallel thereto.

4,085,515

ALIGNMENT DEVICE

Donald R. Darden, 519 Corday St., Lot 3, Pensacola, Fla. 32503

Filed Jan. 17, 1977, Ser. No. 759,880
Int. Cl.[2] G01C *9/22*
U.S. Cl. 33—377 **5 Claims**



1. An alignment device comprising

a plurality of hollow transparent arcuate sections, each of said sections comprising;

substantially parallel side walls joined at their perimeters by an arcuate outer wall; said sections being secured together at the inner edges of adjacent side walls so as to form a common hollow central section;

a base secured to and supporting said arcuate sections;

an aperture in said instrument for admission of a liquid;

scalar indicia about the outer edges of each of said arcuate sections;

means in said device for removably retaining a rigid rod, said rod being adapted for insertion into the chuck of a drill; and

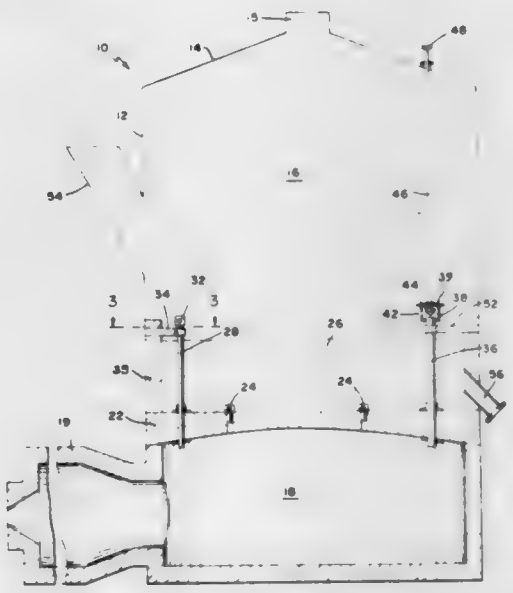
means within said hollow central section for restricting fluid flow between said arcuate sections.

4,085,516

FLUIDIZED BED DRYING PROCESS FOR POROUS MATERIALS

Walfred Wilhelm Jukkola, Westport, and Richard Ernest Svencer, Norwalk, both of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Sep. 30, 1976, Ser. No. 728,332
Int. Cl.[2] F26B *3/08*
U.S. Cl. 34—10 **2 Claims**



1. A fluidized bed drying process for moist, porous, particulate materials comprising the steps of, providing a body of fine particulate solids composed of said moist, porous materials, heating a gas to a temperature in the range from about 1200° to about 2000° F, passing a major portion of said hot gas through said body of particulate solids to fluidize same and establish in the fluidized body a temperature in the range from about 160° to about 325° F whereby large quantities of moisture are evaporated from said fluidized body, said gas, in moving through said fluidized bed, elutriating fine, moist particles of said particulate solids into the freeboard region above said bed, introducing a second smaller portion of said hot gases into a conduit traversing said fluidized bed and discharging this portion directly into the freeboard region above said fluidized bed in a volume sufficient to maintain in said freeboard region a temperature in the range from about 160° up to about 325° F so that the fine particles elutriated from said fluidized body are subjected to the temperature prevailing in the freeboard region and evaporation of moisture from said fine particles continues in said freeboard region and in the exhaust gas system.

4,085,517

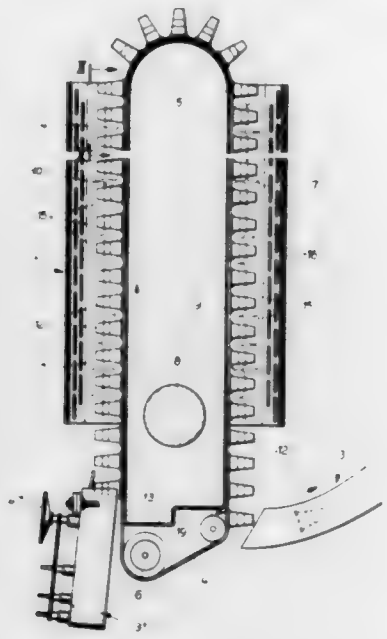
ARTICLE TREATMENT APPARATUS

Alfons W. Thiel, Mainz; Hans Martini; Peter Wolf, both of Wiesbaden, and Albert Runkel, Mainz, all of Germany, assignors to Bellaplast GmbH, Wiesbaden, Germany

Filed Aug. 23, 1976, Ser. No. 716,565
Int. Cl.[2] F26B *25/00*
U.S. Cl. 34—21 **23 Claims**

1. Apparatus for the heat treatment such as drying of cup-shaped articles that have had a surface treatment of heat-sensitive material, such as printing or coating, comprising a heat treatment device having tunnel means containing moving article transporting apertured belt means and associated suction means disposed for acting through said belt means for holding said articles in inverted position on said belt means to transport said articles in a predetermined direction between an inlet and an outlet of said tunnel means and means in the tunnel

means for heat treating the moving articles, in combination with means for feeding a succession of said surface treated articles into said device at said inlet in such predetermined orientation that said articles are transferred to said belt means while moving laterally at substantially the same speed and in



the same direction of movement as said belt means and enter said treatment device with their open ends facing said belt means.

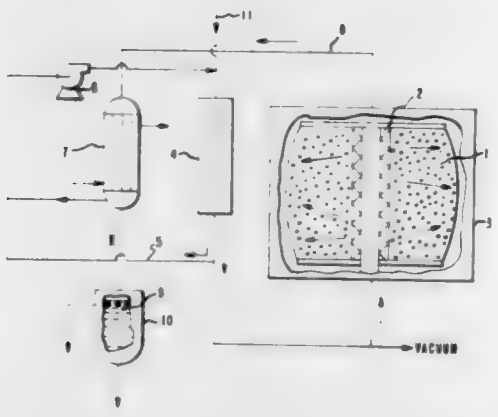
15. Apparatus as defined in claim 1, including means for causing independent rotation of each article about its longitudinal axis which passing through said tunnel means.

4,085,518

DRYING OF WATER-WET SOLID MATERIALS

Harold L. Jackson, Hockessin, Del., and Frederick W. Mader, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 8, 1976, Ser. No. 721,441
Int. Cl.[2] F26B *5/00*
U.S. Cl. 34—37 **9 Claims**



1. Process of drying water-wet solid materials, which process comprises, in a system,

a. forcibly contacting the water-wet solid material with circulating vapor of a fluorocarbon having a fluorine to carbon atom ratio of at least 1.0 and a boiling temperature of less than about 80° C at atmospheric pressure, said fluorocarbon vapor being at a temperature above about 100° C and said contacting being carried out in the absence of a substantial amount of a noncondensable gas,

b. passing the resulting mixture of fluorocarbon vapor and water vapor from step (a) through a zone maintained at a temperature less than 100° and at least 1° C above the atmospheric pressure boiling temperature of the fluorocarbon to condense a substantial portion of the water vapor but not a substantial portion of the fluorocarbon vapor,

c. heating the vapor mixture from step (b) to a temperature above about 100° C and recycling the mixture to step (a),

d. repeating steps (a), (b) and (c), while maintaining substantially constant in the system the amount of fluorocarbon vapor, until the solid material is substantially free of water and contains only fluorocarbon vapor on its surfaces and-/or occluded in its interstices, and thereafter

e. removing and recovering from the solid material the fluorocarbon vapor values and

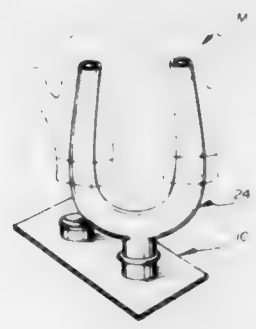
f. recovering solid material which is substantially free of water and fluorocarbon.

4,085,519

DRYING DEVICE

Nicholas Masika, 7 Desmond Ave., Ottawa, Ontario, Canada (K2B 7W6)

Filed Aug. 18, 1976, Ser. No. 715,618
Claims priority, application Canada, May 7, 1976, 252009
Int. Cl.[2] F26B *25/00*
U.S. Cl. 34—104 **3 Claims**



1. An ariticle drying device adapted for use in association with a household forced hot air furnace, said device comprising a cover plate for fitting over and completely enclosing an air outlet of a forced hot air furnace, said cover plate being in the form of a flat rectangular plate with a rectangular flange extending downwardly from the bottom face thereof, said flange being adapted to extend into a rectangular furnace outlet in close proximity to the edges thereof, at least one circular hole in said cover plate with a tubular sleeve fixed therein and a nozzle member mountable in said tubular sleeve, said nozzle member being an elongated tublar member, one end thereof including a cylindrical tubular portion snugly engagable with said tubular sleeve and the other end merging into an angularly extending tubular nozzle portion, said cylindrical tubular portion including a peripheral abutment ring for engaging the top of the tubular sleeve.

4,085,520

ANTI-POLLUTION GRAIN DRYING APPARATUS

Charles F. Lambert, Jr., Louisville, Ky., assignor to Clayton & Lambert Manufacturing Company, Buckner, Ky.

Filed Oct. 13, 1976, Ser. No. 731,552
Int. Cl.[2] F26B *19/00*
U.S. Cl. 34—79 **10 Claims**

1. An anti-pollution grain drying apparatus comprising:

A. a grain drying bin having a perforated floor through which hot air is blown upwardly for drying purposes;

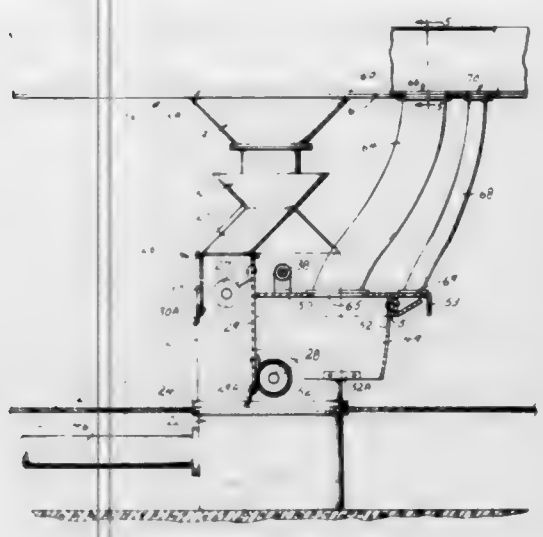
B. a rotary sweep mounted in the bin for sweep movement over the floor, said sweep having distributing means on its lag side for distributing wet grain over the floor and radially-extending retrieving means on its lead side for removing dried grain from the floor;

C. means for feeding wet grain to said distributing means;

D. means for receiving dried grain from said retrieving means and conveying said grain outside of the bin; and

E. an anti-pollution suction system for removing and capturing dust coming from grain adjacent the sweep, said system including

1. a suction chamber embracing dust created adjacent the sweep, and
2. anti-pollution means for suctioning air and dust from the suction chamber and conducting it into equipment for separating dust from the air and capturing the dust, said



anti-pollution means having intercommunicating conduits including

a. a 1st conduit carried by the sweep for rotation therewith, and

b. a 2nd conduit stationarily supported within the bin.

4,085,521

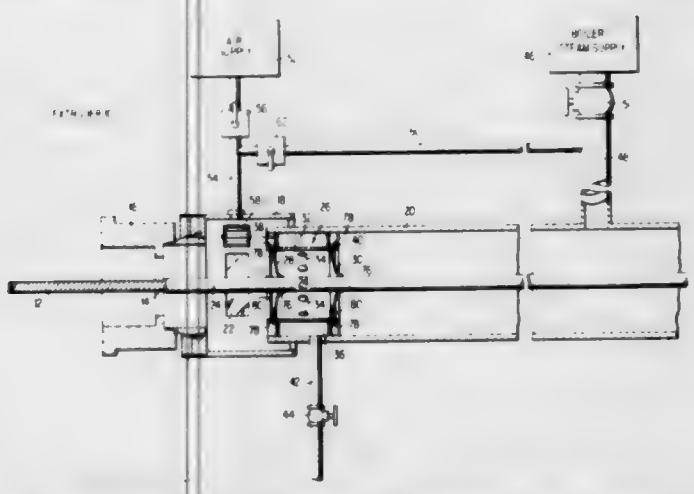
AIR-STEAM INTERFACE IN CONTINUOUS VULCANIZATION PROCESS FOR ALLOWING ACCURATE OPTICAL MEASUREMENTS

David H. Neuroth, Theresa, N.Y., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Oct. 12, 1976, Ser. No. 731,220

Int. Cl.[2] F26B *19/00*

U.S. Cl. 34—89 **7 Claims**



1. An apparatus for permitting unobscured observation of a product being treated in a high temperature, high pressure atmosphere, comprising:

chamber means for containing said high temperature, high pressure atmosphere,

baffle assembly means for defining a buffer region substantially closing one end of said chamber means,

observation housing means including an observation window coupled to said baffle assembly so that said buffer region is positioned between said observation housing means and said chamber means; and

fluid flow means coupled to said chamber means, said baffle assembly means and to said observation housing means for establishing a leakage flow from said chamber means and from said observation housing means into said buffer region whereby said high temperature, high pressure atmosphere is prevented from influencing conditions within said observation housing means, said fluid flow control means comprising,

a high pressure air supply,

an air line coupling said air supply to said observation housing means for establishing a high pressure air atmosphere within said observation housing means,

a high pressure, high temperature steam supply,

a steam line coupling said steam supply to said chamber means for establishing said high pressure, high temperature atmosphere therein,

slits in said baffle assembly means for allowing leakage of steam and air into said buffer region,

an exhaust line coupled to said buffer region for removing steam and air therefrom; and

a start-up line coupled between said steam line and said air line for allowing steam to be selectively introduced into said observation housing means.

4,085,522

METHOD AND APPARATUS FOR FREELY SUSPENDING MOVING WEBS OF MATERIAL

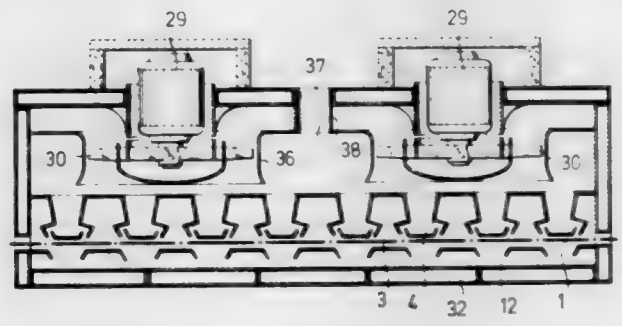
Joachim Stroszynski, Naurod, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Oct. 29, 1973, Ser. No. 410,340

Claims priority, application Germany, Oct. 30, 1972, 2253170

Int. Cl.[2] B65H *17/32;* **F26B** *17/10*

U.S. Cl. 34—156 **29 Claims**



1. A method for freely suspending a moving web of material in a gaseous medium, which comprises impinging, by means of a stable emitting system, a stream of gaseous medium onto the surface of the web from one side only in order to produce at least one stationary stable pressure zone, in which a repelling force decreases continually with an increasing distance from the emitting system,

forming at least one stationary stable suction zone adjacent said stationary pressure zone, in which a suction force decreases continually with an increasing distance from means forming the suction zone to a smaller degree than the repelling force in the pressure zone,

and regulating the applied stable pressure of the stable emitting system and the suction of the stable suction zone in order to make the repelling force equal to the suction force at the zone where the web is freely suspended between the emitting system and the means forming the suction zone.

4,085,523

TEACHING MACHINE

Ernest R. Duncan, Harmony Hill, Mount Harmony Rd., Bernardsville, N.J. 07924

Division of Ser. No. 641,280, Dec. 16, 1975, Pat. No. 3,977,092, which is a division of Ser. No. 382,273, Jul. 24, 1973, Pat. No. 3,925,909. This application Aug. 24, 1976, Ser. No. 717,386

Int. Cl.[2] G09B *7/02*

U.S. Cl. 35—9 A **5 Claims**

4. An educational system which comprises the combination of a record member and a teaching machine having:

a housing adapted to receive a record member;

an incremental advancement means connected to said hous-

ing for advancing a record member received in said housing;

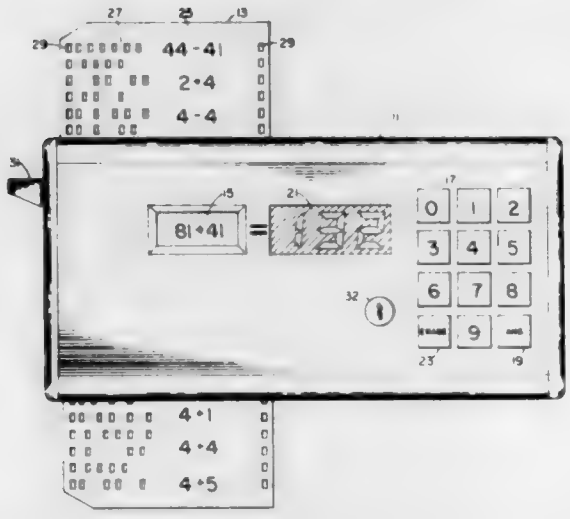
a keyboard on said housing, in which a student enters one at a time on said keyboard the answers to a plurality of problems serially presented to him;

a display on said housing, constructed and arranged for displaying the answers to said problems when the correct answer is entered; and

actuatable interrogating means comprising:

means for counting the number of answers attempted and number of correct answers entered by the student on said keyboard; and

actuatable means for enabling the display on said display of the contents of said counting means;



the record member comprising:

first and second opposing planar surfaces;

a column of visibly readable statements of problems on said first planar surfaces;

a column of machine readable answers on said first planar surface corresponding to the problems on the column of visibly readable statements of problems;

indexing means on said record member to enable incremental advancement of said record member; and

the machine readable answers in said column of answers being displaced from the corresponding visibly readable statement of a problem in said column of problems to impede visual decoding of the machine readable answer.

4,085,524

SIMULATED DIGITAL RADAR SYSTEM WITH EARTH CURVATURE AND ATMOSPHERIC EFFECTS

Jerome W. Meyer, Santa Clara, Calif., assignor to The Singer Company, Binghamton, N.Y.

Division of Ser. No. 499,302, Aug. 21, 1974, abandoned. This application Jun. 4, 1976, Ser. No. 692,817

Int. Cl.[2] G01S *9/00*

U.S. Cl. 35—10.4 **5 Claims**

1. An earth curvature correction circuit adapted for use in a digital radar landmass system for accumulatively decreasing the terrain elevation of each range point thereof to simulate the effect of the earth's curvature, comprising:

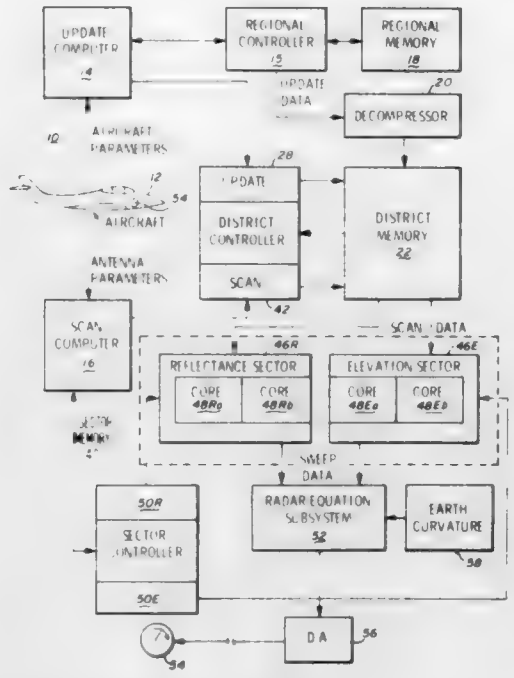
a range point counter having an output which increases during each sweep line and which remains proportional to the current range point;

a curvature control having an output proportional to the desired radius curvature;

a multiplier which forms the product of the range output of the counter and the curvature output of the control;

an adder which forms the sum for each range point of the multipler product plus the multiplier product for the previous range point; and

output register for temporarily holding the sum for each range point for outputting and for returning each sum to



the adder to be added to the next range point product to form the next range point sum.

4,085,525

SHOE SUPPORT

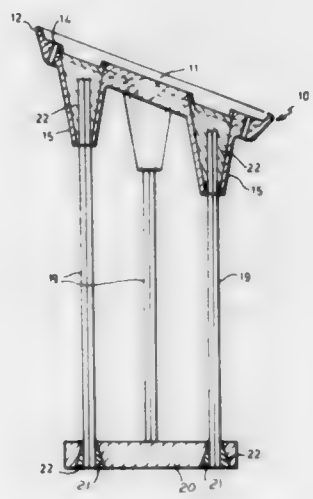
Horace Allan Wilkinson, 13 Korocan Rd., Lilli Pilli, Sydney, New South Wales, Australia (2229)

Filed Jul. 14, 1976, Ser. No. 705,208

Claims priority, application Australia, Aug. 11, 1975, PC2728

Int. Cl.[2] A43B *21/00*

U.S. Cl. 36—34 R **9 Claims**



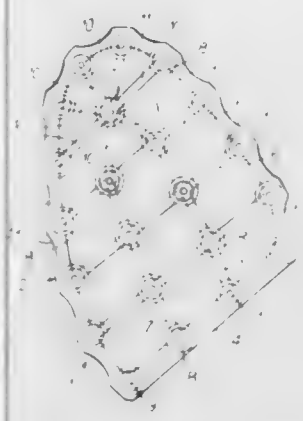
1. A shoe support comprising an upper support member; a lower support member; a plurality of column members extending between said support members, each of said column members being an elongated rod straight throughout the entire length thereof; at least one of said support members including portions defining cavities receiving the ends of said column members and having sufficient dimension to permit alignment of said column members therein over a range of angles to accommodate various heel elevations; and a hardenable adhesive material within at least some of said cavities and surrounding said column ends to anchor said column ends within said cavities.

4,085,526

SOLE FOR ATHLETIC SHOE

Lorenz Hemmer, Ottersthal-Saverne, France, assignor to Adidas Fabrique de Chaussures de Sport, Landersheim, France

Filed Jul. 30, 1976, Ser. No. 710,145
Claims priority, application France, Aug. 1, 1975, 75 24910; Aug. 7, 1975, 75 25290
Int. Cl.[2] A43B *23/28*
U.S. Cl. 36—59 R **8 Claims**



1. Inner sole adapted to be used in a sole for an athletic shoe, which inner sole is made of a hard synthetic material and has a shape corresponding to the shape of the front half of the sole and a flat reticular structure with large meshes, the junction zones of which form supporting zones for cleats which project from the structure perpendicular to its plane and are integral therewith.

4,085,527

ATHLETIC SHOE

Donnie E. Riggs, 1606 Monteval Ct., San Jose, Calif. 95120

Filed Feb. 1, 1977, Ser. No. 764,696
Int. Cl.[2] A43B *5/00, 23/28, 13/04*
U.S. Cl. 36—114 **7 Claims**



1. An athletic shoe comprising in combination:
a shoe upper portion having heel, shank and toe areas and forming a cavity for receiving the foot;
a sole attached to said shoe upper portion for supporting the foot on the running surface, said sole comprising;
a cushioning pad of resilient material fixed to the upper portion;
a plurality of compressible cleats fixed to the bottom side of said cushioning pad and projecting downward to contact the running surface, said cleats being distributed throughout the area of the sole between the heel and the toe portions of the shoe; and
said cleats at the heel portion of the shoe being of at least two different heights and being intermingled such that the longer cleats will contact the running surface first to provide a first cushioning action and upon compression, will permit the shorter cleats to contact the running surface to provide additional cushioning action for the foot.

4,085,528

SKI-BOOT

Marc Delery, Caluire, France, assignor to Trappeur, S. A., St-Etienne de St-Geoirs, France

Filed Oct. 1, 1976, Ser. No. 728,738
Claims priority, application France, Nov. 4, 1975, 75 34375
Int. Cl.[2] A43B *5/04*
U.S. Cl. 36—121 **18 Claims**



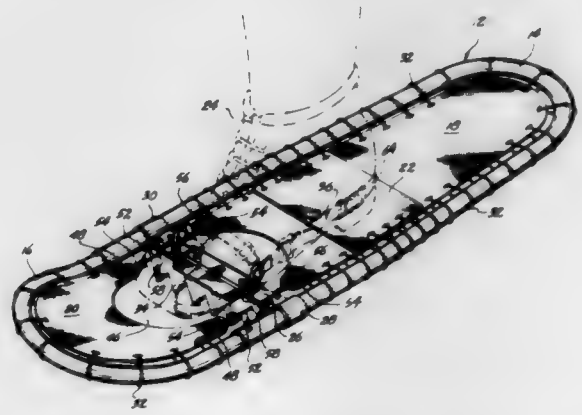
1. An injection molded ski-boot of plastics, and preferably thermoplastics material, said boot comprising:
a rigid upper;
a rigid sole and heel integral with the upper;
a collar surrounding the top of the upper, effective to surround the leg of the wearer;
a U-shaped reinforcement;
a horizontal base on said reinforcement which extends through the sole near the heel;
limbs on the reinforcement which extend towards the top of the boot, said limbs being each situated at the rear of the boot, and which bear firmly against a major portion of the rear of the upper of the boot, one on each side of the longitudinal centre-line of the boot; and an upper arm on each limb, each upper arm being secured at a free end near to the top of the rear of the upper; and
means on each side of the upper for adjustment of the position of the limbs.

4,085,529

SNOWSHOE

Fred C. Merrifield, 8746 Overlade Dr. W., Bellevue, Wash. 98004

Filed Nov. 19, 1976, Ser. No. 743,335
Int. Cl.[2] A43B *5/04*
U.S. Cl. 36—125 **34 Claims**



1. In a snowshoe having a rigid frame, said frame including a pair of spaced side members, a toe portion and a heel portion, the improvement comprising:
decking having a peripheral portion sized to fit within at

least a portion of said frame, said decking having a plurality of spaced apertures in said peripheral portion adjacent said frame,

a plurality of discrete tie members passing around at least a portion of said frame, each of said tie members passing through only one of said apertures and being wrapped around said frame to secure said decking to said frame and for positioning said decking between the side members of said frame.

4,085,530

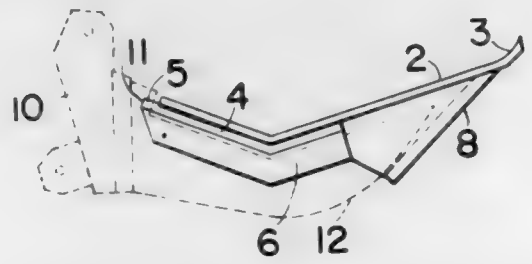
BACK HOE RIPPER-TRENCHER CONVERTER

Ronald L. Landry, 1604 Glendale Ave., Windsor, Ontario, Canada

Continuation of Ser. No. 554,983, Mar. 3, 1975, abandoned. This application Sep. 2, 1976, Ser. No. 720,052

Int. Cl.[2] E02F *5/02, 9/28*

U.S. Cl. 37—98 **1 Claim**



1. In combination, a ripper of a back-hoe machine and a converter for converting the ripper to a ripper-trencher for digging a trench of predetermined width, said ripper having an upper edge with a sharp bend therein forming an obtuse angle, an inner end, and a horn-shaped outer end, the inner end of said ripper having a hole therein and a reentrant cavity adjacent the upper edge; said converter comprising an elongate, flat rectangular upper plate having an inner end and terminating at an outer end in a sharp-edged digger, said upper plate having a sharp bend therein forming an obtuse angle substantially equal to the obtuse angle of said upper edge, the width of said upper plate and the digger being of the same width and substantially equal to the width of the trench to be dug, a separate lower plate attached to the lower surface of said upper plate and being narrower and shorter than said upper plate, said lower plate also having a sharp bend therein forming an obtuse angle substantially equal to the obtuse angle of said upper plate, said lower plate extending a short distance beyond the inner end of the upper plate to form a ledge, said ledge being received in said reentrant cavity of said ripper, a pair of vertical, parallel side walls attached to said lower plate and spaced apart a distance slightly greater than the thickness of said ripper to provide an elongate cavity to receive the upper edge of said ripper, said side walls also being bent to conform with the contour of the upper edge of said ripper, an additional plate positioned at an angle with respect to an outer end portion of said upper plate, and additional side walls attached to said additional plate, spaced outwardly from said side walls, and extending beyond the forward ends of said side walls, said additional plate and said additional side walls forming a hollow, wedge-shaped pocket with said upper plate at the underside of said upper plate just behind said sharp-edged digger to receive and contain therein the horn-shaped end of said ripper, said side walls of said converter having holes therein positioned to be aligned with said ripper hole when said horn-shaped end of said ripper is received in said wedge-shaped pocket.

4,085,531

GRAVE DIGGING MACHINE

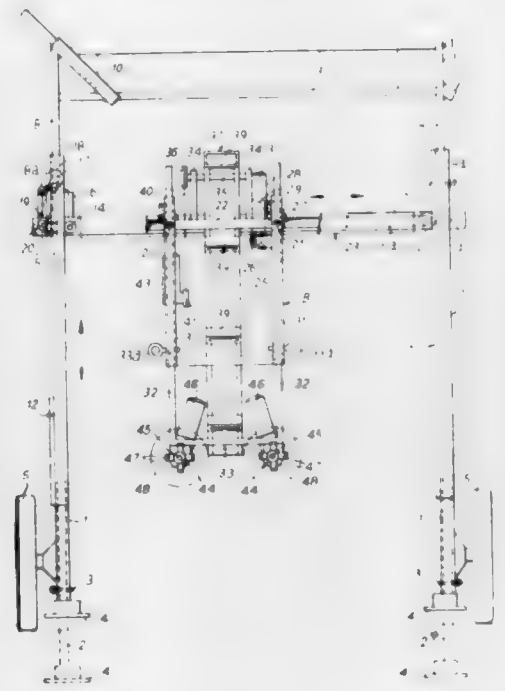
Georges Aubert, La Cerisae, 71570 La Chapelle, Pontanevaux, France

Continuation-in-part of Ser. No. 631,343, Nov. 12, 1975, abandoned, which is a continuation of Ser. No. 536,693, Dec. 26, 1974, abandoned, which is a continuation of Ser. No. 422,905, Dec. 7, 1973, abandoned. This application Mar. 14, 1977, Ser. No. 777,107

Claims priority, application France, Sep. 14, 1973, 73 34049

Int. Cl.[2] E02F *5/20*

U.S. Cl. 37—190 **2 Claims**



1. A grave digging apparatus comprising, in combination:

(i) a supporting frame including:

(a) two side frame structures spaced transversely of the frame

(b) two cross-bars disposed one at each end of the frame and connected releasably to the lower part of each side frame structure

(c) two upper cross-members engaged releasably with the side frame structures at a respective end of the frame, and

(d) vertical rack means on said side frame structures;

(ii) a carrier disposed longitudinally in the frame between the two side frame structures, said carrier including pinion means meshing with said vertical rack means, and drive means connected to the pinion means to drive the carrier up and down within the frame; said carrier further including horizontal rack means thereon;

(iii) a digging assembly supported on and movable along said carrier in the longitudinal direction of the frame, said digging assembly having pinion means meshed with said horizontal rack means and drive means for rotating said pinion means for driving the digging assembly along the carrier, said digging assembly including a sub-frame, a rigid structure telescopically vertically slidable with respect to said sub-frame, a belt and bucket excavator carried on said sub-frame and on said rigid structure, and means for driving said belt and bucket excavator.

4,085,532

EMBROIDERY HOOPS

Bruce Hehn, 110 Shepherd Ter., St. Clairsville, Ohio 43950

Filed May 3, 1977, Ser. No. 793,245

Int. Cl.[2] D05C *1/04*

U.S. Cl. 38—102.2 **1 Claim**

1. In hoop means for tensioning a portion of embroidery fabric and the like including an outer ring formed by a yieldable material having a circumferential inner surface adapted to clamp the fabric over and against a cooperating circumferen-

tial outer surface of an inner ring, the improvement which comprises a cylindrical outer ring having:

(i) two ends formed by a radial discontinuity in the ring;

(ii) an outer circumferential surface;

(iii) a radially extending circumferential rib around the outer circumference surface of the ring;

(iv) an axially extending circumferential segment on the outer edge of the radial rib adjacent each end thereof;

(v) a first raised abutment extending outwardly from the outer circumferential surface of the ring to each circumferential segment and spaced from the radial discontinuity, thereby forming a pocket at each end of the ring;



(vi) the radially extending rib having an opening in each pocket adjacent to each first raised abutment; and

(vii) a second raised abutment intermediate each opening and radial discontinuity, said ring being in combination with a coil spring having ends which project tangentially from the coil on the same side of the axis of the coil, each end being turned back on itself to form a hook whereby the spring may be placed in the pockets formed by ring, the circumferential segments, and the first raised abutment with the ends of the springs extending through the openings and engaging the second raised abutments.

4,085,533

DEVICE FOR PRODUCING AESTHETIC EFFECTS

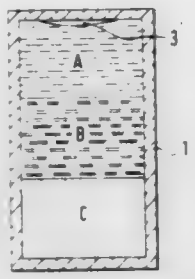
Alfred Ewald, 62 Wiesbaden Nerotal 3, Germany

Filed Nov. 24, 1975, Ser. No. 634,642

Claims priority, application Germany, Nov. 25, 1974, 2455638

Int. Cl.[2] G09F *13/24*

U.S. Cl. 40—406 **39 Claims**



1. A device for producing visual aesthetic effects said device comprising a vessel with a wall which transmits light, said vessel containing at least two liquids of different density which are not completely and not permanently miscible with each other, and said device resulting from the bringing together in said vessel at least three liquids wherein said three liquids include at least one from each of the following three groups:

(a) liquid paraffin, silicone oil, naphthene, and hexachlorobutadiene;

(b) water, and an ether;

(c) an ester with chemically bound phosphorus, an ester with chemically bound halogen, an ester with chemically bound phosphorus and halogen, an ester of phthalic acid, a carbonic acid ester, ethanediolmonophenylether, and tetrahydrothiophene-1, 1-dioxide; wherein the said at least three selected liquids are not completely and not permanently miscible with each other.

4,085,534

DATA CARRIER HOLDER

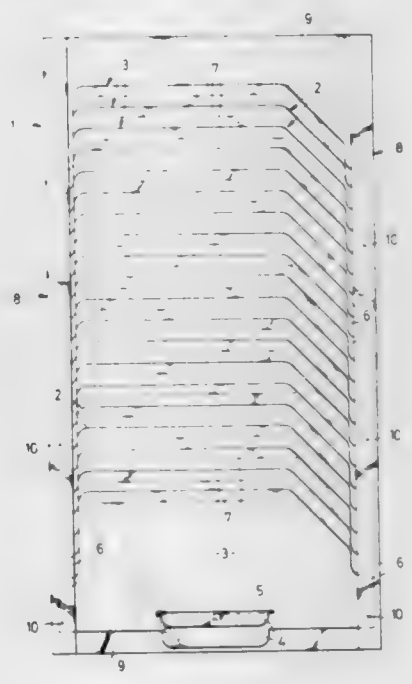
Werner Willi Gustav Eckstein, Coburg, Neuses, and Dieter Klaus-Jürgen Schweinsberg, Lautertal-Unterlauter, both of Germany, assignors to Eichner Organisation KG, Coburg, Germany

Filed May 18, 1976, Ser. No. 687,595

Claims priority, application Germany, Dec. 18, 1975, 2557065

Int. Cl.[2] G09F *1/10*

U.S. Cl. 40—124.2 **1 Claim**



1. A holder for data carriers which comprises

a plurality of flexible, plastic members arranged adjacent one another; each member being of approximately rectangular shape so as to have top, side and a bottom edges and each having both a tongue projecting away from the bottom edge and a slot positioned above the tongue so as to extend in a lateral direction, each slot extending laterally at least the same length as the length of the tongue; said members being arranged such that the tongue of one member is inserted into a slot of an adjacent member so as to form holder compartments for data carriers therebetween; each member having fastening flaps projecting from both side edges thereof at a point near the bottom edge; each member having a beveled corner between the top edge and a side edge; and each member having a portion of the top edge bent outwardly at a slight angle away from a plane formed by the member; and

securing means extending along both the side edges of the plurality of members and engagable with fastening flaps of each member to secure said members into a holder.

4,085,535

DATA CARRIER HOLDER

Dieter Klaus-Jürgen Schweinsberg, Lautertal-Unterlauter, Germany, assignor to Eichner Organisation KG, Coburg, Germany

Filed May 18, 1976, Ser. No. 687,596

Claims priority, application Germany, Feb. 2, 1976, 2603794

Int. Cl.[2] G09F *1/10*

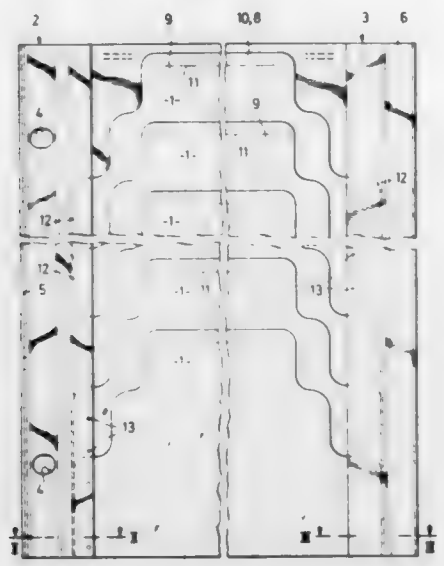
U.S. Cl. 40—124.2 **2 Claims**

1. A data carrier holder which comprises:

a plurality of overlapping, generally V-shaped slip-in data carrier means inserted within each other, each of said data carrier means providing a compartment for receiving data carriers;

generally V-shaped transparent means positioned to cover

the outer surfaces of each of said data carrier means and able to form a pocket therebetween, said pocket formed between each said transparent means and each said data



carrier means serving to receive strips with information identifying the contents of the compartment in the associated data carrier means, said information on said strips being visible through said transparent means.

4,085,536

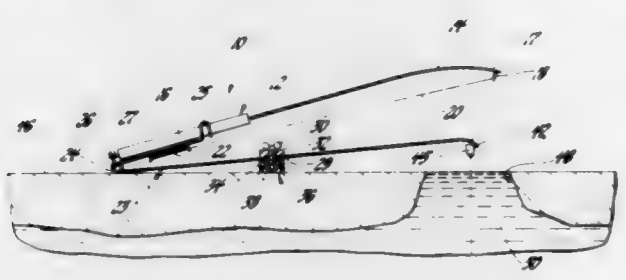
AUTOMATIC FISHING DEVICE

Everett J. Wood, Jr., Rte. No. 2, Box 342, Hillman, Mich. 49746

Filed Dec. 13, 1976, Ser. No. 750,290

Int. Cl.[2] A01K *97/00*

U.S. Cl. 43—15 **8 Claims**



1. An automatic fishing device comprising, in combination, a support; a fishing rod comprising a handle and a tip; a fishing line secured to said fishing rod and extending from said tip; a spring having elongated first and second ends thereof in a first predetermined angular position therebetween and a resilient section between said spring ends whereby flexing of said resilient section changes said angular position; means for securing said first spring end to said support; means for securing said fishing rod handle to said second spring end; and trigger means for holding said fishing line in tension whereby said fishing rod handle and said second spring end are held against resilient forces of said resilient section in a second predetermined angular position relative to said first spring end and said fishing rod handle and second spring end are released upon pulling of said fishing line so that a pull on said fishing line releases said fishing rod and said second spring end and permits said resilient section to move said second spring end from said second predetermined position to said first predetermined position.

4,085,537

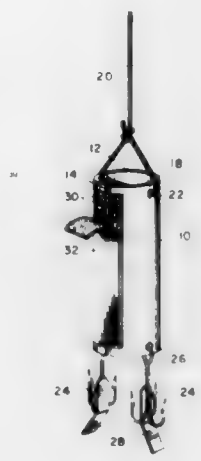
FISHING LURE RETRIEVER

Harry V. Todd, 2429 Windmill View, El Cajon, Calif. 92020

Continuation-in-part of Ser. No. 686,584, May 14, 1976, abandoned, which is continuation-in-part of Ser. No. 643,548, Dec. 22, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 741,796

Int. Cl.[2] A01K *97/00*

U.S. Cl. 43—17.2 **4 Claims**



1. A fishing lure retriever comprising:

(a) a side wall defining a non-buoyant tubular member having a front end and a rear end and a longitudinal slot extending therethrough;

(b) means for retaining a fishing line inserted through said slot within said tubular member; and

(c) a plurality of spaced swivel mounted hooks depending from the rear edge of said member;

(d) each of said hooks having a deflector element attached thereto and angled rearwardly and outwardly from the axis of said tubular member to cause said hooks to expand when lowered through the water to straddle a lure on the end of a fishing line and expose an unobstructed corridor defined by said tubular member to receive a lure, said deflector elements also acting to deflect said hooks together into engagement with a lure positioned therebetween when said retriever is raised through the water.

4,085,538

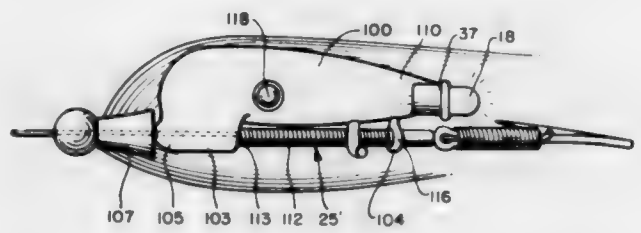
FISHING LURE

Tadeusz R. Jankowski, 2054 N. LaCrosse, Chicago, Ill. 60039

Filed Jul. 19, 1976, Ser. No. 706,695

Int. Cl.[2] A01S *85/01*

U.S. Cl. 43—17.6 **5 Claims**



1. A fishing lure comprising a housing, a light emitting diode mounted thereon, an electrical circuit including a source of electromotive potential within the housing, and means for coupling said circuit with said diode for causing a current to flow therethrough to glow said diode, and said circuit comprising a switch in the form of a compression spring adapted to be threaded with the housing onto a fishing line, and said circuit including a pair of spaced contacts disposed in an open-circuit arrangement, and said spring being optionally positionable in bridging closed circuit arrangement with the contacts or displaced from at least one of the contacts in an open circuit arrangement.

4,085,539

PLATFORM TOY

Steven P. Hanson, Bloomington, Minn., assignor to Reynolds W. Guyer, St. Paul, Minn.

Filed Oct. 27, 1976, Ser. No. 736,265
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—1 C **10 Claims**



1. An action toy including:

a platform having a resilient sheet member providing a playing surface on the upper side thereof and means for supporting said sheet member from any suitable support with the under side of said sheet member spaced from said support,

manually operated vibrating apparatus for vibrating said sheet member, said vibrating apparatus comprising an elongated resilient member mounted on said platform with its longitudinal axis extending generally in the same direction as said playing surface with a portion thereof extending inwardly beneath said sheet member and a portion projecting outwardly beyond said platform, the inner end of said inwardly extending portion and the outer end of said outwardly extending portion both being free to vibrate,

said resilient member having an impact member adjacent the inner end thereof and positioned to intermittently engage the under side of said sheet member when said resilient member is vibrated and being designed adjacent its outer end for engagement by an extremity of a player so that upon pressure being applied to said outer end and suddenly removed, said outer portion vibrates,

and means for securing said elongated resilient member to said platform in such a manner that when said outer portion of said resilient member is vibrated, the inner portion beneath said sheet member is repeatedly vibrated to cause said impact member repeatedly to engage the under side of said sheet member,

and at least one playing piece designed for being placed upon said playing surface and for movement therealong when said playing surface is vibrated.

4,085,540

MECHANICAL TOY ATHLETE

Hans Ebbe Ingevar Jernstrom, 279 B Rolling Wood L.B.S., Barrington, Ill. 60010, and Thomas Lee Long, 2528 N. Walnut, Arlington Heights, both of Ill. 60004

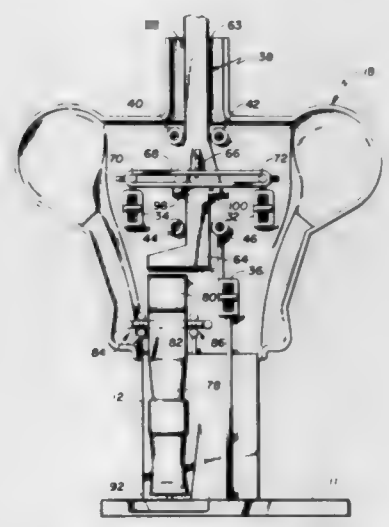
Continuation-in-part of Ser. No. 612,495, Sep. 11, 1975, abandoned. This application Jun. 14, 1976, Ser. No. 695,824
Int. Cl.[2] A63H *13/04*
U.S. Cl. 46—119 **21 Claims**

1. A mechanical toy, which resembles a human figure, comprising:

a hollow body portion that includes bearing means, which hollow body portion comprises the torso of the human figure;

a lever arm that includes an axle member pivotally mounted in said bearing means to enable rotation of said lever arm from a rest position, into which said lever arm is biased, toward an extended position for propelling a toy projectile and back again, which lever arm resembles in appearance and movement a limb of the human figure;

a slidable plunger mounted in said hollow body portion to enable longitudinal movement of said slidable plunger from a rest position, into which said slidable plunger is biased, toward an extended position by application of an externally supplied force and back again, which slidable plunger cooperates with said lever arm to rotate said lever arm toward its extended position when said slidable plunger is moved toward its extended position;



a striker secured to the top of said slidable plunger; and

keying means for orienting said striker relative to said slidable plunger, wherein said keying means includes:

a longitudinal channel in said top end of said slidable plunger;

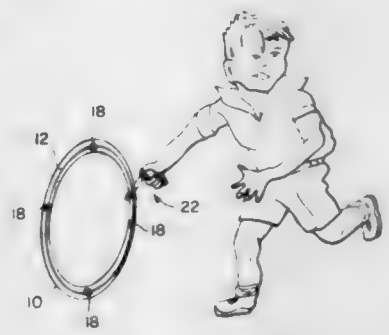
a square opening in said striker for accepting said slidable plunger, which striker includes a keying flange extending into said square opening for cooperation with said longitudinal channel.

4,085,541

ILLUMINATED HOOP TOY

Calvin R. Mapp, 1125 NW. 88th St., Miami, Fla. 33150

Filed Feb. 4, 1977, Ser. No. 765,843
Int. Cl.[2] A63H *33/26*
U.S. Cl. 46—228 **5 Claims**



1. An illuminatable hoop toy comprising:

a hoop adapted to be rolled along a surface;

an electrically conductive ring embedded in opposed sidewalls of said hoop, each of said rings having an exposed electrically conductive surface on its respective sidewall;

a plurality of spaced bulbs mounted in electrical parallel relationship in said hoop between said conductive rings; and

stick means adapted to contact said exposed conductive surfaces of said rings mounted on said hoop for propelling said hoop along a surface and for illuminating said bulbs in said hoop.

said stick means including an electrical power source with two terminals of opposite polarity,

said stick means having a pair of spaced protruding conductive members,

one of said conductive members electrically connected to one terminal of said power source and the other protruding conductive member electrically connected to the other terminal of said power source,

said pair of protruding conductive members disposed in spaced apart relationship for simultaneous eletrical contact with said exposed conductive surfaces whereby one member electrically engages one said exposed conductive surface and said other member electrically engages said other exposed conductive surface.

4,085,542

SONIC RESPONSIVE TOY VEHICLE STEERING SYSTEM

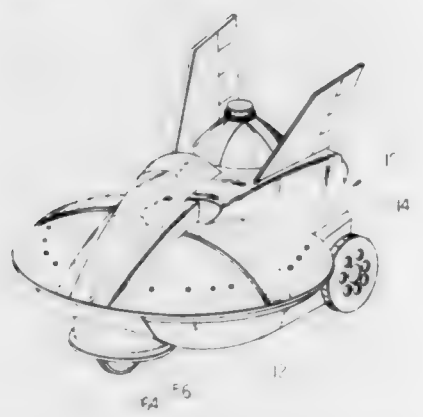
Isao Mitamura, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Dec. 30, 1976, Ser. No. 755,863

Claims priority, application Japan, Jul. 30, 1976, 51-102792[U]

Int. Cl.[2] A63H *29/22*

U.S. Cl. 46—256 **9 Claims**



1. A toy vehicle and remote control steering system, comprising a chassis, a single wheel for propelling and guiding said vehicle, means mounting said wheel for rotation about a first axis to propel the vehicle along a surface and for turning about a second axis to steer the vehicle along a surface, propulsion means within said chassis, means operatively connecting said wheel and said propulsion means to rotate said wheel to propel said vehicle, means for sensing sound waves and temporarily connecting said propulsion means and said wheel for turning said wheel to steer said vehicle, and means remote from said vehicle for generating said sound waves.

4,085,543

HEAT DISTRIBUTION SYSTEM

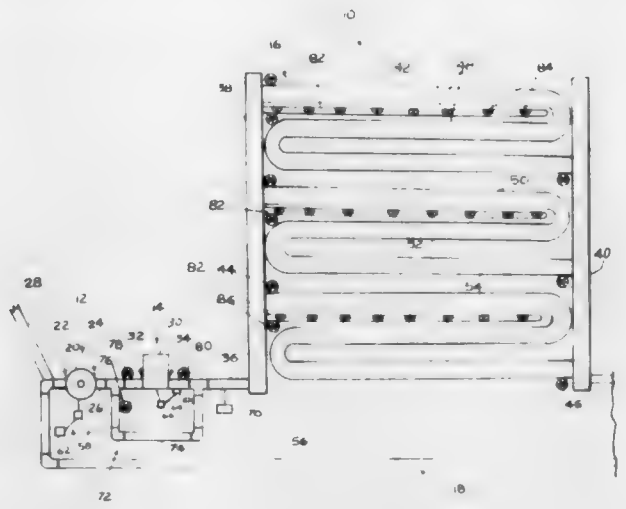
Edwin Ralph Barnard, 305 Boca Ciega Pt. Blvd., St. Petersburg, Fla. 33708

Filed Jan. 27, 1977, Ser. No. 762,834

Int. Cl.[2] A01G *15/00*; E01H *13/00*

U.S. Cl. 47—2 **2 Claims**

1. A heat distribution system for the protection of foliage during periods of low temperature by the conduction of heat from water in close proximity to the foliage, said heat distribution system comprises a water supply means including a pump to supply water to said heat distribution system, a pump inlet means to feed water to said pump, a pump outlet means to feed water from said pump and an automatic control means coupled to said pump to start said pump at a first predetermined air temperature and to stop said pump at a second predetermined air temperature, a network of conduit means including a plurality of primary conduit means disposed in close proximity to the foliage operatively coupled to said water supply means so that water from said water supply means flows through said plurality of primary conduit means wherein heat is transferred by conduction through said plurality of primary conduit means to the foliage and a heater means coupled between said pump means and said network of conduit means to selectively heat the water, said heater means including an automatic temperature control means and heater by-pass means to selectively feed water through said heater means to heat the water at a first predetermined temperature and through said heater by-pass means at a second predetermined temperature, said network of conduit means further comprises an inlet header and an outlet header, each said primary conduit means operatively coupled to said inlet header at one end and said outlet header at the opposite end, each said primary conduit means including an inlet shut off valve means and an outlet shut off valve means to selectively isolate any of said plurality of primary conduit means from said inlet header and said outlet header, said network of conduit means further comprises a plurality of auxiliary conduit means to afford additional protection of foliage during periods of low temperatures by spraying a mist of water near the foliage so as to raise the air temperature in the vicinity



of the foliage, said auxiliary conduit means being operatively coupled to said water supply means so as to receive water therefrom, said auxiliary conduit means including a plurality of nozzle means operatively coupled thereto to spray the water near the foliage, each said auxiliary conduit means including an auxiliary inlet shut off valve means to selectively actuate each said auxiliary conduit means independent of each other and said primary conduit means, each said primary conduit means further comprises a plurality of legs to evenly distribute heat to the ground between said inlet header and said outlet header, said plurality of legs being substantially parallel, said plurality of legs comprises a first leg operatively coupled to said inlet header, a second leg operatively coupled to said first leg and a third leg operatively coupled at one end to said second leg and operatively coupled at the other end to said outlet header.

4,085,544

PLANT SUPPORTING, MOVING AND WATERING APPARATUS

Gordon William Blake, 35 Winders Ave., Tugan, Gold Coast Queensland, Australia (4224)

Filed Jul. 21, 1976, Ser. No. 707,197

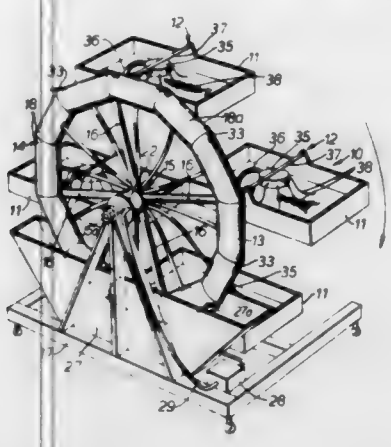
Claims priority, application Australia, Jul. 25, 1975, PC2508

Int. Cl.[2] A47G *7/00*

U.S. Cl. 47—39 **1 Claim**

1. A garden arrangement including a conveyer assembly having mounted thereon a plurality of longitudinally spaced apart mounting means each adapted to support a container for growth material in such manner that each container is maintained in a material-containing attitude, and said conveyer assembly being arranged for movement along a predetermined path whereby the said containers are successively advanced to an accessible location for tending by a gardener, said conveyer assembly being a rotary conveyer rotatable about a horizontal axis and each said mounting means comprising a gimball mounting arrangement for pivotally supporting the respective container in said material-containing attitude, said rotary conveyer being provided with a plurality of circumferentially spaced water containers operatively associated with water

supply means and flow control valve means in such manner that water is maintained only in the said water containers which are disposed at one side of the vertical plane passing through the axis of rotation of said rotary conveyer so as to provide a turning moment about said axis to rotate said conveyer, each said water container being constituted by a segment of the hollow annular rim disposed concentrically about said axis and connected to said rotary conveyer for movement therewith, the dividing wall between each adjacent pair of



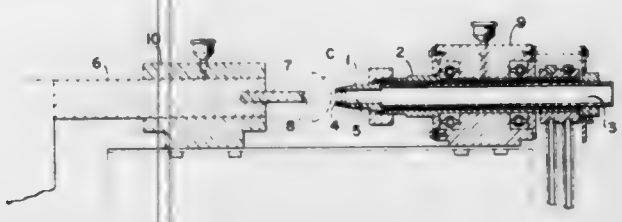
rim-segments including a one-way valve which, when said segments are disposed at said one side, prevents water flowing downwards from one segment to the next whereby each said segment may successively fill with water from a water inlet communicating through an axially disposed gland fitting with said water supply means, and each said segment having a normally closed trip valve means adapted to cooperate with a trip member adjacent the lowermost portion of said rim to open said trip valve means to sequentially spill water from said segments as the latter reach their lower position.

4,085,545

DEVICE FOR THE EXTRACTION OF SUGAR CANE GEMMAS DESTINED TO THERMOTHERAPIC TREATMENT FOR THE CONTROL OF THE BLIGHT OF SUGAR CANE STUMPS LEFT AFTER CUTTING

Wilson Marcelo Da Silva, Piracicaba, Brazil, assignor to Cooperativa Central dos Produtores de Acucar E Alcool do Estado de Sao Paulo, Sao Paulo, Brazil

Filed Oct. 22, 1976, Ser. No. 735,063
Int. Cl.[2] A01G *1/00*
U.S. Cl. 47—58 **5 Claims**



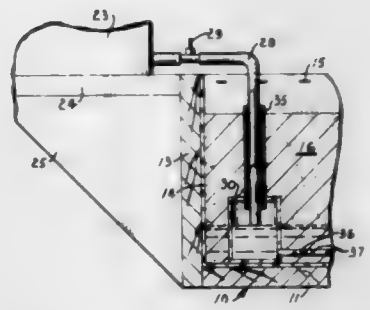
1. Apparatus for cutting the gemma or bud section from a sugar cane culm, comprising a supporting structure, a first bearing member mounted on said supporting structure, a hollow shaft rotatably mounted in said bearing member, a tubular lining in said hollow shaft, a hollow thimble member rigidly secured at one end to one end of said hollow shaft, said thimble member having a principal internal diameter slightly less that that of the tubular lining, and having an internal diameter slightly less than that of the principal diameter at its opposite end, the outside diameter of the thimble member being tapered at said opposite end to form a sharp cutting edge, a second bearing member mounted on said supporting structure in alignment with said first bearing member, a punch member carried by said thrust member coaxially and in alignment with said thimble member, the diameter of said punch member being slightly less than the diameter of the end portion of said thimble member, means for rotating said hollow shaft and thimble member and for moving said thrust member and punch member axially, whereby a culm placed between the punch and the thimble is first pressed against the rotating cutting edge of the thimble and then a section of the culm is cut out and moved into the hollow thimble and tubular lining.

4,085,546

LIQUID SUPPLY SYSTEM FOR GARDENS

James O. Hallar, 126 S. Courtland, Topeka, Kans. 66606

Filed Jun. 14, 1976, Ser. No. 695,599
Int. Cl.[2] A01G *31/00*
U.S. Cl. 47—59 **11 Claims**



1. Apparatus for supplying liquid to a plant container that contains material in which plants are grown, said apparatus comprising:

a substantially airtight tank for containing the liquid;

a substantially hollow member removably disposed in the material in the plant container and covered by the material, said hollow member presenting an air chamber interiorly thereof;

a liquid supply tube having an upper end communicating with said tank to receive liquid therefrom and a lower end disposed within said hollow member to supply liquid thereto, said liquid supply tube being arranged to receive air in the lower end thereof for passage to said tank to provide the sole access for air to enter the tank to displace the liquid therein;

at least one outlet in said hollow member for discharging liquid therefrom; and

an air inlet to said air chamber located at a level above the lower end of said liquid supply conduit to provide air which continually fills said chamber above the water level in said hollow member,

whereby liquid from said tank flows through said supply tube and hollow member to the plant container whenever the lower end of said supply tube is above the level of the liquid in the plant container with air passing through said tube to the tank to displace the water which flows out of the tank.

4,085,547

SKATE SHARPENER

John B. Lawson, Central Falls, R.I.; Charles Simpson Cooper, Attleboro, Mass., and Alfred Slocum Vail, Barrington, R.I., assignors to Lawson-Hemphill Inc., Central Falls, R.I.

Filed May 2, 1977, Ser. No. 792,910
Int. Cl.[2] B24B *7/02*
U.S. Cl. 51—47 **7 Claims**

1. A skate sharpener for sharpening an inverted, vertically-clamped skate by moving a grinding wheel supported over said skate in successive strokes across the skate blade, the improvement comprising:

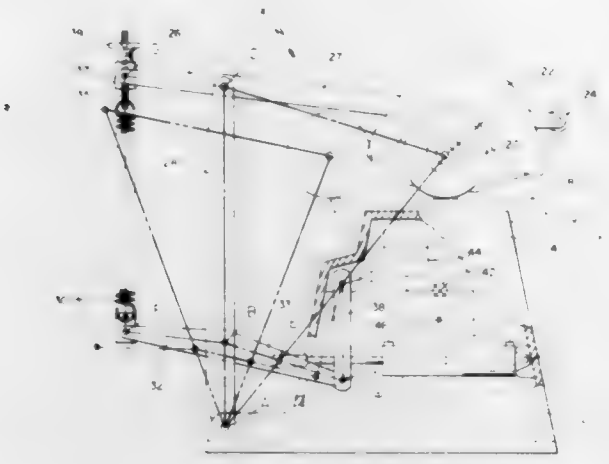
a parallelogram linkage supporting said grinding wheel, said parallelogram linkage including

a vertical arm pivoted at the sharpener base about a base axis,

a support arm supporting said grinding wheel for rotation about a grinding wheel axis and pivotally connected to said vertical arm about a third axis,

a control arm, said control arm parallel with said support

arm and pivotally connected about a fourth axis to said vertical arm, said fourth axis coplanar with said third axis and said base axis, said control arm having a control axis coplanar with said base axis and said grinding wheel axis, said control axis defining with said fourth axis a plane parallel with the plane defined by said grinding wheel axis and said third axis; and



means defining with said vertical arm, said support arm, and said control arm a fourth member of said parallelogram linkage;

said fourth member comprising spring means to partially support the grinding wheel load; and

control means to keep said control axis substantially parallel with the sharpened surface of the skate blade, thereby also keeping said grinding wheel axis substantially parallel with the sharpened surface of the skate blade.

4,085,548

APPARATUS FOR MANUFACTURE OF INSULATION PRODUCTS

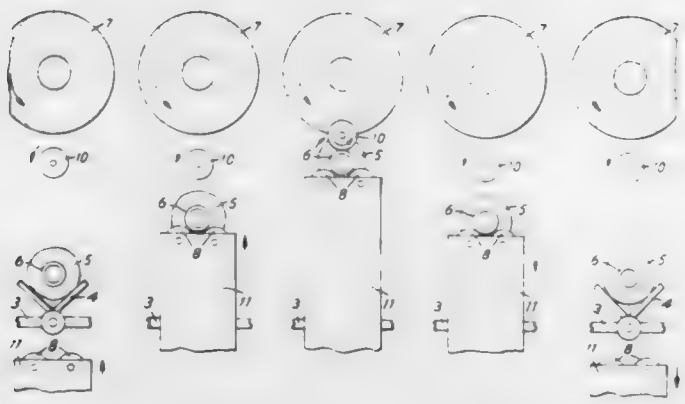
Robert Graham, Chester-le-Street, England, assignor to Newalls Insulation Company Limited, Manchester, England

Filed Feb. 15, 1977, Ser. No. 768,777

Claims priority, application United Kingdom, Feb. 21, 1976, 06899/76

Int. Cl.² B24B *5/32, 21/02*

U.S. Cl. 51—103 WH **3 Claims**



1. In an apparatus for manufacturing sections by wrapping fibrous mat around mandrels to form lengths of fibrous, tubular pipe insulation in which the fibers are thereafter bonded by setting a binder in situ in the mat prior to removal of the mandrels, the improvement comprising the provision for an abrasive treatment apparatus which comprises;

conveyor means operable to receive said sections mounted on their respective forming mandrels after setting the binder and to forward said sections on said mandrels to an abrasive treatment station;

abrading means at said station to abrade the outer surface of said sections; and,

means to rotate a section, on its mandrel, in contact with said abrading means whilst maintaining a controlled spacing between the mandrel and the abrading means wherein each mandrel is longer than a section mounted thereon and has a free end portion projecting axially from each end of said section, said apparatus having transfer means comprising lifting members engageable with said free end portions and displaceable relative to the direction of travel of the conveyor means so as to lift said mandrel from the conveyor means to present a section thereon to the abrading means, the transfer means further comprising a drive means engageable with one of said free ends and operable to rotate said mandrel and section when so presented, said lifting members being thereafter displaceable to return the mandrel and treated section to the conveyor means.

4,085,549

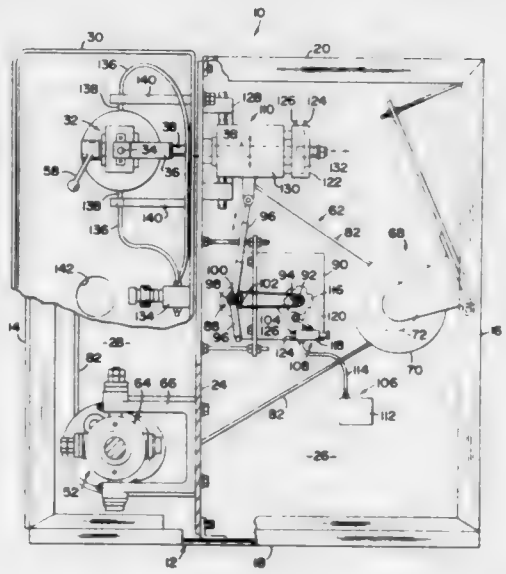
LENS POLISHING MACHINE

Lee R. Hodges, 14073 Passage Way, Largo, Fla. 33540

Filed Nov. 26, 1976, Ser. No. 745,073

Int. Cl.² B24B *7/00*

U.S. Cl. 51—119 **8 Claims**



1. A high speed lens polishing machine comprising a cabinet having a polishing element mounted thereon, said polishing element including a spindle and lap tool holder configured to retain a lap tool thereon, a rotary drive attached to said cabinet operatively coupled to said polishing element, a lens blank holder attached to said cabinet, said lens blank holder configured to retain a lens blank thereon, a linear drive including a secondary drive assembly attached to said cabinet operatively coupled to said lens blank holder, said lap tool holder disposed relative to said lens blank holder to hold said lens blank in operative engagement with said lap tool, said rotary drive rotating said lap tool holder and said lap tool relative to said lens blank holder and said lens blank, said linear drive moving said lens blank holder and said lens blank linearally relative to said lap tool holder and said lap tool such that said rotary and linear motion are independent of each other during the polishing process, said linear drive comprising a lateral drive to move said lens blank holder and said lens blank laterally relative to said lap tool holder and said lap tool during the polishing process and a longitudinal drive comprising a fluid drive means, control means operable between a first and second position operatively coupled to said secondary drive assembly and said fluid drive means and an actuator means movable between a first and second position operatively coupled to said control means, said actuator means coupled to said lens blank holder such that as said control means moves from said first position to said second position said actuator means moves from said first position to said second position and as said control means moves from said second position to said first position said actuator means moves from said second position to said first position to move said lens blank holder and said lens blank longitudinally relative to said lap tool holder and said lap tool during the polishing process.

4,085,550
APPARATUS FOR ABRASIVELY TREATING INSULATION PRODUCTS

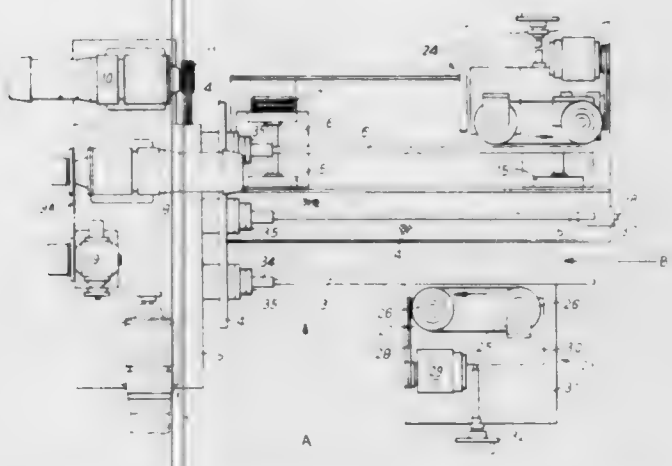
Robert Graham, Chester-le-Street, England, assignor to Newalls Insulation Company Limited, Manchester, England

Filed Feb. 15, 1977, Ser. No. 768,789

Claims priority, application United Kingdom, Feb. 21, 1976, 06898/76

Int. Cl.[2] B24B *21/02*

U.S. Cl. 51—145 T **14 Claims**



1. Apparatus for applying an abrasive treatment to the outer surface of a section comprising a length of bonded fibrous tubular pipe insulation, said apparatus comprising, a support, a mandrel rotatably mounted thereon for receiving a section to be treated, abrading means which comprises an endless, abrasive-coated belt and means for re-circulating said belt, in use, through a sensibly flat path parallel to the longitudinal axis of said mandrel with at least the length of a section presented to said flat path, the direction of travel of the belt in said flat path being selected whereby the section is urged onto the mandrel whilst presented to the abrading means at an abrasive treatment station, means for effecting relative displacement between the mandrel and the abrasive treatment station so as to present the outer surface of a section on said mandrel to the abrasive treatment station for abrasive treatment by the abrading means thereat, together with means for rotating the section whilst so presented.

4,085,551
GRINDING MACHINES

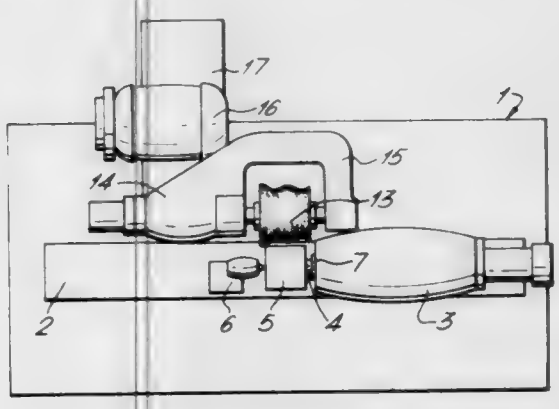
Maurice Miller Ward, April Cottage, Ringwood Road, Ferndown, Dorset, England

Filed Aug. 5, 1976, Ser. No. 711,786

Claims priority, application United Kingdom, Aug. 8, 1975, 33232/75

Int. Cl.[2] B24B *49/16*

U.S. Cl. 51—165 R **11 Claims**



1. A grinding machine comprising:
means for mounting a grinding tool;
means for driving a grinding tool installed on said mounting means;
spindle means for supporting a workpiece to be ground, said spindle means defining an axis about which a workpiece may be rotated;
means for rotating said spindle means about its axis, said spindle means rotating means including means for automatically limiting to a predetermined value the torque exerted on said spindle means during rotation; and
means for effecting relative linear movement between said grinding wheel mounting means and said spindle means so as to bring a grinding tool on said mounting means into contact with a rotating workpiece on said spindle means.

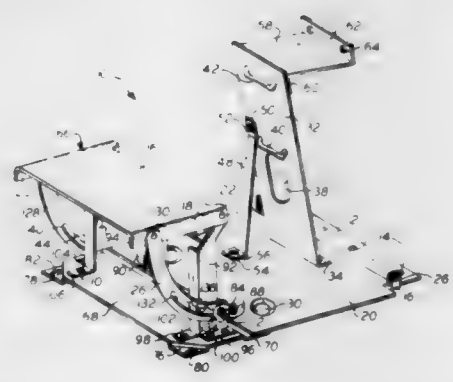
4,085,552
WORK TOOL STAND

James H. Horine, Lexington; Lowell K. Watts; Hershel R. Wininger, both of Richmond; Dale Kelley, London, and Charles L. Sears, Somerset, all of Ky., assignors to Irvin Industries, Inc., Stamford, Conn.

Filed Mar. 11, 1977, Ser. No. 776,703

Int. Cl.[2] B24B *41/00*

U.S. Cl. 51—166 R **11 Claims**



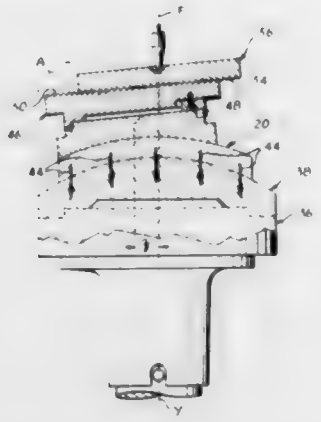
1. A stand for selectively supporting a work tool in either one of two positions, said stand comprising:
(a) a fixed plate;
(b) a support plate having one edge pivotally connected to said fixed plate and disposed for movement from a first position wherein said support plate lies in a plane substantially parallel to the plane of said fixed plate, to a second position wherein said support plate lies in a plane intersecting the plane of said fixed plate;
(c) a bracket mounted on said support plate and extending upwardly therefrom when said plate is in its first position, said bracket having clasp means adapted to mount the work tool thereon and permit movement of said tool conjointly with movement of said plate;
(d) said bracket further having a leg projecting outwardly therefrom when said support plate is in its first position, said leg being located in spaced relation to said support plate;
(e) said fixed plate and said support plate constituting adjacent supports of said stand when said support plate is in its first position; and
(f) said fixed plate and said leg constituting spaced supports of said stand when said support plate is in its second position; and
(g) a work support platform detachably connected to a second edge of said support plate;
whereby the work tool is supported in a first position when said support plate is in its first position and said work tool is supported in a second position when said support plate is in its second position.

4,085,553

LENS SURFACING ADAPTOR

Louis Prunier, Oxford, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 21, 1977, Ser. No. 779,655
Int. Cl.[2] B24B *13/00*
U.S. Cl. 51—216 LP **10 Claims**



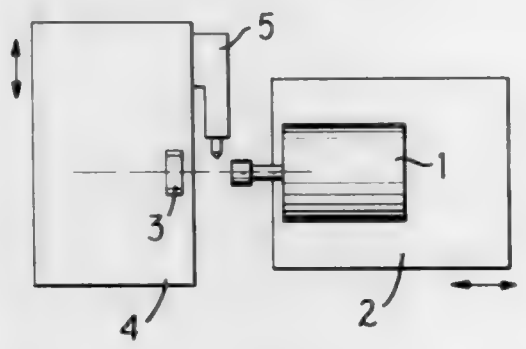
1. A lens surfacing adaptor for blocked lenses comprising:
a first member on one side having means to detachably fit upon a block used to support a lens for surfacing and an opposite coupling surface;
a second member on one side having means to centrally receive a force required for lens surfacing and an opposite coupling surface;
said coupling surfaces of said first and second members having uniformly geometrically patterned interfitting protrusions and receiving recesses interlocking said members against displacement when said surfaces are brought together and releasable by separation of said surfaces; whereby
separation of said first and second members permits selective universal lateral adjustment of one member relative to the other for centering of said second member over the geometrical center of a blocked lens to be surfaced and bringing said members together locks said members in place for applying said surfacing force geometrically centrally against said lens during a surfacing operation.

4,085,554

METHOD TO DRESS A GRINDING WHEEL

Terumitsu Sugita, Narashino, Japan, assignor to Seiko-Seiki Kabushiki Kaisha, Japan

Filed Nov. 9, 1976, Ser. No. 739,854
Claims priority, application Japan, Nov. 11, 1975, 50-135552
Int. Cl.[2] B24B *1/00*
U.S. Cl. 51—325 **4 Claims**



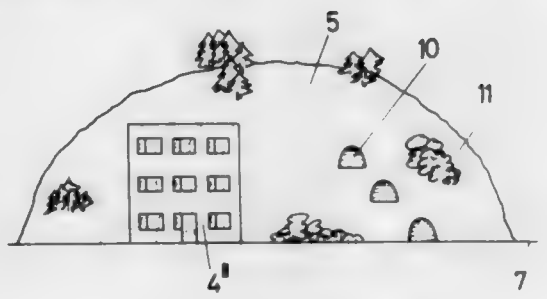
1. A method of dressing a grinding wheel, comprising:
positioning a dressing tool relative to a grinding wheel for dressing the same;
repeatedly traversing the dressing tool across the grinding wheel;
measuring a force developed between the dressing tool and the grinding wheel during each traverse of the dressing tool across the grinding wheel;
determining from the forces measured during each traverse of the dressing tool when the grinding wheel has been sufficiently dressed; and
terminating traversing of the dressing tool across the grinding wheel to complete the dressing operation when said measured force reaches a predetermined value so that the grinding wheel has been sufficienctly dressed.

4,085,555

MULTI-STORIED BUILDING

Harald Mann, Rainerstr. 5, A-5021 Salzburg, Austria

Filed Jul. 3, 1974, Ser. No. 485,583
Claims priority, application Austria, Jul. 3, 1973, 5862/73
Int. Cl.[2] E04H *9/00, 9/04, 1/00*
U.S. Cl. 52—169.6 **1 Claim**



1. A multi-storied residential building adapted for protection against bombs and radiation, said building comprising:
a plurality of stories having ceilings supported by a supporting framework, each of said stories having permanent living quarters;
a front wall having windows communicating with said living quarters;
an earth covering extending over the ceiling of the top of said stories and over all of the walls of said building except said front wall, said earth covering thus covering all of said stories, said earth covering extending downwardly and outwardly from the cover of said top story to a natural ground level and thus forming a naturally-sloping hill;
at least one protective room on each of said stories, each protective room being enclosed by shielded and radiation proof concrete walls;
said window-containing front wall projecting from the slope of said hill, and said protective rooms extending into said hill;
exits communicating with each of said stories and extending through said earth covering to open onto the slope of said hill;
a wall located in front of said wall of windows, said wall having on each story thereof loggia-like recesses fitted with preferably radiation proof roller blinds, hinged curtains or the like;
each of said exits from each of said stories comprising a substantially horizontal tunnel leading through said earth covering; and
each said protective room being closed by means of a radiation- and gas-proof door which opens into said tunnel.

4,085,556

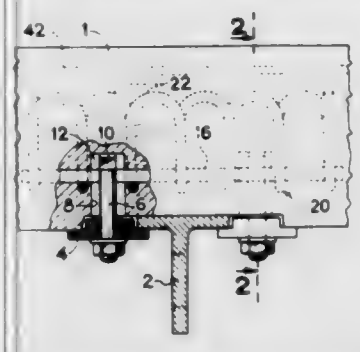
DEVICE FOR ANCHORING FIXING MEANS IN A CONCRETE ELEMENT

Roger Paul Sonneville, 5 Rue Maurice Ravel, 92210 Saint-Cloud, France

Filed Mar. 2, 1977, Ser. No. 773,557
Claims priority, application France, Mar. 24, 1976, 76 08530
Int. Cl.[2] E04B *1/38;* **E04C** *3/10*
U.S. Cl. 52—223 R **11 Claims**

1. An assembly comprising a concrete element having an outer face, a structure to be clamped against said outer face,

and a device for clamping said structure to said outer face and comprising at least two substantially T-shaped fixing means having a head and located in a plane and on opposite sides of said structure, the concrete element comprising, for each fixing means, a passageway in the element and opening onto the outer face of the element, a cavity in the element and allowing the rotation of the head of the corresponding fixing means through 90° and extending the passageway, a longitudinal reinforcement having a longitudinal axis which is substantially parallel to the outer face and substantially parallel to said plane and located at a short distance from the outer face of the concrete element and near to an inner end of the passageways, the reinforcement defining, in the region of each passageway, an opening for the passage of the head of the corresponding fixing means when said head extends in a direction parallel to the



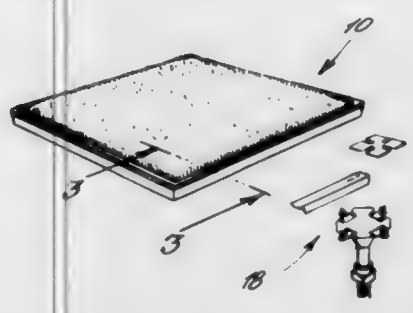
longitudinal axis of the reinforcement and the reinforcement defining surfaces for engaging and retaining the heads of the fixing means adjacent said openings for retaining the heads when they are perpendicular to said longitudinal axis of the reinforcement, and arch-shaped members which are fixed to a surface of the reinforcement adjacent the outer face of the concrete element and have inclined branches which extend into the concrete in a direction opposed to said outer face to a sufficient depth and arranged substantially symmetrically relative to said longitudinal axis to distribute the forces within the concrete element, the fixing means having, in a region of the fixing means remote from said head, means defining surfaces which are in bearing relation to said structure and to said outer face of said element for retaining said structure against said outer face of the element.

4,085,557

RAISED ACCESS FLOOR SYSTEM

James A. Tharp, P.O. Box 10816, Dallas, Tex. 75207, assignor to James A. Tharp, Dallas, Tex.

Filed Jun. 1, 1976, Ser. No. 691,839
Int. Cl.[2] E04F *15/024*
U.S. Cl. 52—263 **3 Claims**



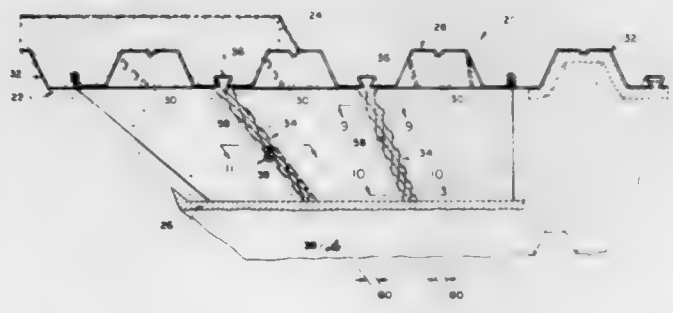
1. A raised access floor system, comprising, in combination, a pan of galvanized steel, a high density chip board core material placed inside said pan, the sides of both said pan and said core material both flaring upwardly outward with said pan flaring greater than said core material, thus forming an upwardly flaring space therebetween, a PVC impact molding resting upon an upper edge of said pan and upon an upper edge of said core material, said PVC impact molding forming a frame around a central opening, an inner edge of said molding including an inwardly extending flange and an angularly inclined side wall to form an acute corner, a galvanized steel sheet in said central opening resting on said flange, and a carpet placed upon said galvanized sheet, the edges of said carpet extending into said acute corner along said inner edge of said PVC impact molding, and a downward extending fin integral with an underside of said PVC impact molding extending into said space between said pan and the sides of said core material, said fin being downwardly tapered in thickness and outwardly bowed, so a mid-portion thereof abuts with said pan side while a lower edge thereof abuts with said core material, said core material having a density between 44 and 47 pounds per cubic foot, and said raised access floor panel including a substructure for support thereof elevated above a building floor.

4,085,558

METAL CELLULAR DECKING SECTION AND METHOD OF FABRICATING THE SAME

Raymond E. Albrecht, Sewickley, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 696,517, Jun. 16, 1976, abandoned. This application Jun. 8, 1977, Ser. No. 804,735
Int. Cl.[2] E04F *12/04*; E04B *5/23*
U.S. Cl. 52—451 **20 Claims**



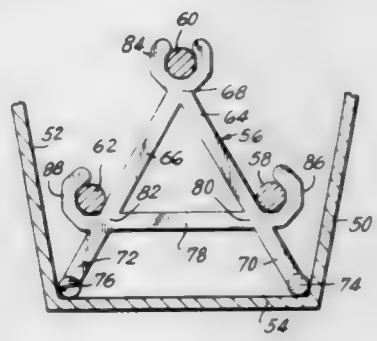
1. A metal cellular decking section comprising:
an integral corrugated upper metal sheet presenting plural crests and plural valleys and webs connecting adjacent ones of said crests and said valleys;
a correlative lower metal sheet secured to said upper metal sheet along contiguous portions thereof and cooperating therewith to define parallel enclosed cells; and
said lower metal sheet having at least one expanded metal zone formed integrally therein and extending longitudinally of said decking section beneath one of said valleys.

4,085,559

HOG SLAT REINFORCING BAR SUPPORT

Robert J. Ilukowicz, Coram, N.Y., assignor to Preco Industries, Ltd., Plainview, N.Y.

Continuation-in-part of Ser. No. 625,635, Oct. 24, 1975, Pat. No. 4,007,572. This application Jul. 23, 1976, Ser. No. 708,122
Int. Cl.[2] E04C *5/16*; E04G *17/06*
U.S. Cl. 52—687 **10 Claims**



1. In combination: a concrete form of inverted trapezoidal cross-section including a bottom wall and side walls connected thereto, a plurality of parallel reinforcing rods in said form and at least one monolithic plastic reinforcing rod support holding said rods in position in said form, said support including an A-shaped frame and support portions on said frame for elastically receiving and retaining said reinforcing rods, at least one

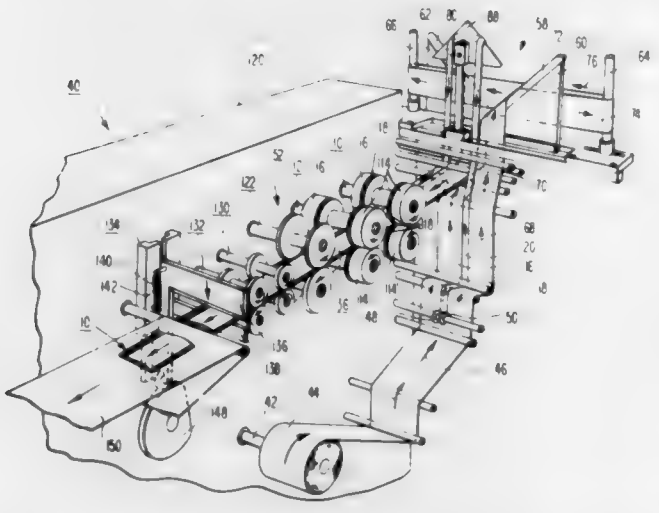
of the support portions being located at a higher level in the form than a second and third of the support portions, said one support portion opening directly upwards and said second and third support portions opening obliquely upwards, said frame including laterally extending portions in the form of diverging legs forming an inverted V and engaging against said walls and being adapted for being urged against the side walls by the weight of the reinforcing rods in said support portions, said frame including a cross-bar extending between said legs and including ends at which said second and third support portions are respectively positioned.

4,085,560

APPARATUS AND METHOD OF FORMING COVERS FOR FLEXIBLE COMMODITY-CONTAINING PACKAGES

Robert B. McClosky, Hope, N.J., assignor to Wrap-ade Machine Company, Inc., Clifton, N.J.

Filed Oct. 27, 1976, Ser. No. 736,103
Int. Cl.[2] B65B *41/18, 51/16, 9/02*
U.S. Cl. 53—27 **39 Claims**



1. A method of continuously forming covers connected to flexible commodity-containing packages, said method comprising the steps of:

a. continuously directing at least two webs into overlying relationship with each other;

b. feeding flexible commodity-containing packages between the overlying webs with a margin of the packages being superimposed with a margin of each of the overlying webs;

c. applying pressure to the superimposed margins of the overlying webs and flexible packages to join together the packages and webs at the superimposed margins to form a composite; and

d. severing the composite in discrete, spaced-apart sections to form a plurality of discrete packages, each package being joined to a cover member that includes sections of the overlying webs.

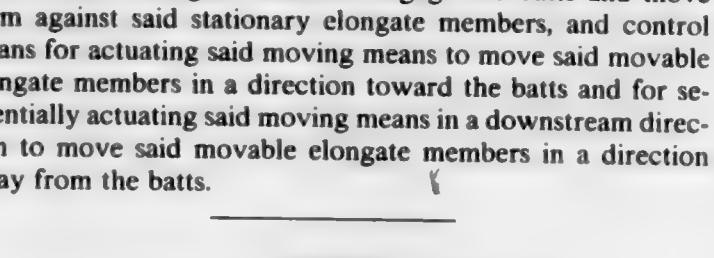
4,085,561

METHOD AND APPARATUS FOR DEPOSITING PACKAGES OF SOFT-PACK GOODS IN A BOX

Marless Wayne Waldrop, 9933 Harwin Dr., Houston, Tex. 77036

Filed Jan. 21, 1977, Ser. No. 761,211
Int. Cl.[2] B65B *35/58*
U.S. Cl. 53—35 **9 Claims**

1. A method for depositing packages of soft packed goods in a box, comprising the steps of moving the packages facing up or down, singly receiving successive ones of the packages on a support means, alternately rotating said support means approximately 180° in opposite rotative directions when successive packages are received thereon so as to invert and permit alternate ones of said packages to fall onto two respective stack sites in the box, and continuing to singly receive successive ones of the packages on the support means and alternately



rotating support means in opposite directions in order to invert and stack additional packages one above the other at each stack site.

4,085,562

APPARATUS FOR PACKING COMPRESSIBLE FIBROUS BATTS

Lawrence R. Finn, Toledo; Daniel A. McCartan, Heath, both of Ohio, and Gary M. Schmandt, Bellevue, Wash., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 585,161, Jun. 9, 1975, abandoned. This application Dec. 29, 1976, Ser. No. 755,370
Int. Cl.[2] B65B *57/10, 63/04*
U.S. Cl. 53—59 R **15 Claims**



1. Apparatus for producing a package of compressed fibrous batts comprising means for forming an elongate compressible layer of randomly-disposed fibers held together by a binder, means for severing said layer into batts of determinate lengths, packaging apparatus for forming the batts into a compressed, spiral configuration, and means for retaining said batts and for moving said batts in end-to-end relationship to said packaging apparatus, said last-named means comprising a conveyor, a plurality of movable elongate members disposed along one side of said conveyor, means for moving said elongate members horizontally to engage the batts, a plurality of stationary elongate members located along the side of said conveyor opposite said movable elongate members, said batts being retained when said movable elongate members engage the batts and move them against said stationary elongate members, and control means for actuating said moving means to move said movable elongate members in a direction toward the batts and for sequentially actuating said moving means in a downstream direction to move said movable elongate members in a direction away from the batts.

4,085,563

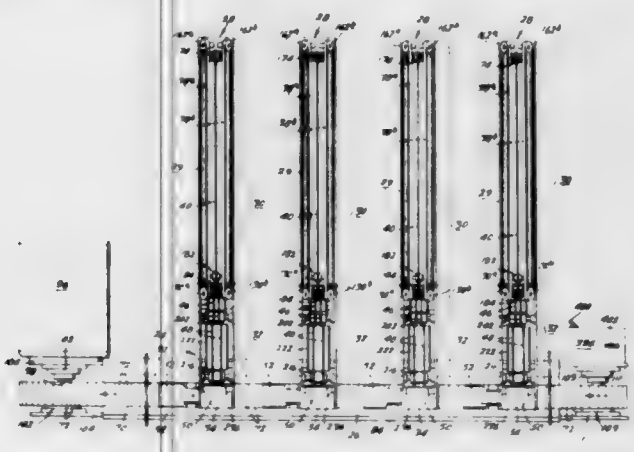
COOKIE DISPENSING APPARATUS

Walter W. Egee, Wallingford, Pa., and Clarence W. Cramer, Burlington, N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Jan. 31, 1977, Ser. No. 764,190
Int. Cl.[2] B65B *57/10, 35/44*
U.S. Cl. 53—59 R **23 Claims**

1. Cookie dispensing apparatus for dispensing stacks of cookies into the pockets of cookie packaging trays comprising a tray conveyor assembly including a tray conveyor belt successively advancing spaced multi-pocketed cookie trays thereon, drive means for intermittently driving said tray conveyor belt, at least one cookie delivery assembly associated with said tray conveyor assembly, said cookie delivery assem-

bly comprising a cookie delivery line and a dispenser assembly, said cookie delivery line being adapted to deliver cookies to said dispenser assembly, said dispenser assembly being disposed above said tray conveyor belt and including a stacking chamber for receiving cookies from said cookie delivery line, and a gate selectively movable to discharge a stack of cookies from said stacking chamber, gate actuating means for controlling movement of said gate, said cookie delivery line comprising a shingler assembly for receiving an array of edge-supported face-abutting cookies and tilting said cookies into a shingled attitude, and a separator assembly for receiving cookies from said shingler assembly and delivering them individually in spaced relation to said dispenser assembly, said apparatus including control means for controlling the delivery of cookies from said cookie delivery line to said dispenser assembly and from said dispenser assembly to said conveyed trays.

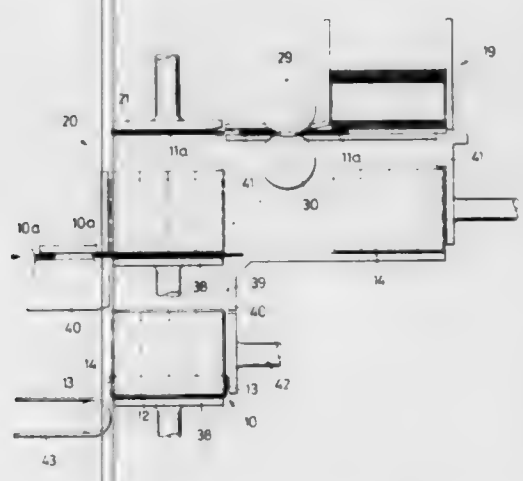


4,085,564

METHOD AND APPARATUS FOR MAKING TRAY-TYPE PACKETS

Heinz Focke, Verden, Aller, Germany, assignor to Focke & Pfuhl, Verden, Aller, Germany

Filed Aug. 13, 1975, Ser. No. 604,283
Claims priority, application Germany, Aug. 27, 1974, 2440885
Int. Cl.[2] B65B *11/08, 11/50*
U.S. Cl. 53—32 **8 Claims**



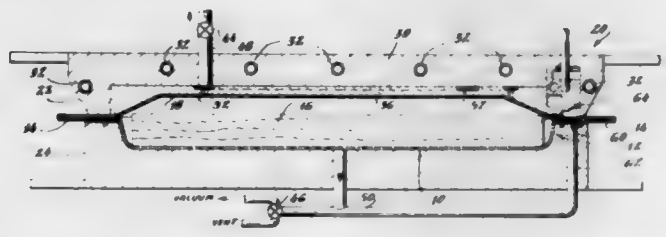
1. A method of making tray packets with a cover flap which encloses the material in the packet in a U-shape and whose side webs engage a bottom part formed with vertical side walls, comprising the steps of: forming from a flat blank a cover flap which has maximum dimensions for the height of the side webs in accordance with the dimensions in height of the material in the packet, resulting from detected dimensions; cutting the excess lengths of the side webs such that the side webs are fixed at a distance above the material resting on a blank forming the bottom part; folding the side webs laterally in the direction of the material; lowering the resulting U-shaped cover flap on to the material and further lowering the cover flap and the material together with a blank forming the bottom part and having parts projecting from the material such that by moving the blank relative to stationary folding walls, projecting parts thereof are folded upwards to form the side walls of the bottom part that engage the side webs.

4,085,565

PACKAGING APPARATUS FOR FORMING SPECIALLY SHAPED PACKAGES

Reid A. Mahaffy, Montclair; Joseph M. Psota, Hawthorne, and John A. Giordano, West Paterson, all of N.J., assignors to Mahaffy & Harder Engineering Co., Totowa, N.J.

Filed Dec. 8, 1976, Ser. No. 748,650
Int. Cl.[2] B65B *31/02*
U.S. Cl. 53—112 A **5 Claims**



1. In vacuum packaging apparatus of the type wherein upper and lower continuous webs of plastic packaging material are transported past packaging stations where various operations are performed, and wherein the lower web is formed into receptacles with surrounding flanges, said receptacles being loaded with product and the top web thereafter being laid over the lower web to be sealed thereto to form vacuum packages;

apparatus for making crowned packages comprising:

evacuation-and-seal means having relatively reciprocable upper and lower means to surround the package and providing spaces above and below said package;

said evacuation-and-seal means including means to evacuate said spaces and said package;

said evacuation-and-seal means further including first heated means to seal said two webs together to make an hermetically-sealed package;

said upper means including means providing an enclosed region having a top surface located at a substantial vertical height above the line where said two webs are located and configured to accommodate movement of said product together with the top web upwards into said region;

said upper means further including second heated means at said top surface above the top web presenting a heated surface to said top web;

means operable during evacuation of said package to stretch the top web up said substantial vertical height to a position adjacent said heated surface to transfer heat to said top web to heat it to an elevated temperature providing for forming thereof; and

means to selectively sequentially vent said upper and lower spaces to provide for shifting of said product to a final position in which a portion of the product and the top web is above said flanges, thereby to produce a crowned effect.

4,085,566

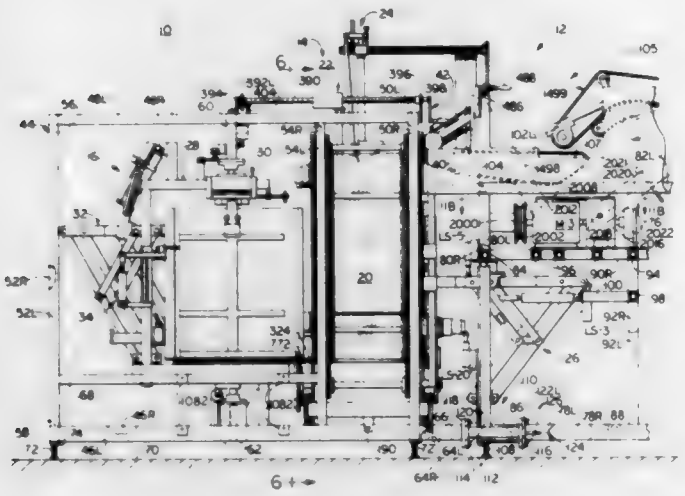
MACHINE FOR STACKING AND CASING ARTICLES

Norman P. Crowe, Miami Township, Clermont County, and Joseph M. Lohse, Terrace Park, both of Ohio, assignors to Multifold-International, Inc., Milford, Ohio

Filed Mar. 16, 1977, Ser. No. 778,129
Int. Cl.[2] B65B *63/02, 57/10, 35/50*
U.S. Cl. 53—124 D **19 Claims**

1. A machine for arranging flat articles in a stack which comprises means for delivering articles to a stack forming station, endless flight supports mounted on opposite sides of the stack forming station, opposed flights mounted on the flight supports for supporting a stack of the articles therebetween, stack support means below the stack forming station,

means for lowering the flights as the stack builds up thereon until a complete stack has been formed and for lowering the complete stack onto the stack support means, the flights passing the stack support means to return to the stack forming station, means for advancing the complete stack from the stack support means as the flights return, a table, a rug mounted on the table with a pile face of the rug exposed and aligned with the stack support means, the stack advancing means advancing



the stack from the stack support means onto the pile face of the rug, side guides, side guide supports above the side guides for supporting the side guides substantially parallel to and on opposite sides of the path of stack advance from the stack support means, resilient means connecting the side guide supports to the side guides to resiliently support the side guides, and means releasably clamping lower edge portions of the side guides against the pile face of the rug on opposite sides of the path of stack advance.

4,085,567

HIGH SPEED WRAPPING MACHINE WITH ROTARY FOLDER

Roger L. Putnam, Jr., East Longmeadow; Richard H. Provost, Brimfield, and Alfred D'Antonio, East Longmeadow, all of Mass., assignors to Package Machinery Company, East Longmeadow, Mass.

Filed Jun. 24, 1976, Ser. No. 699,518
Int. Cl.[2] B65B *11/28*
U.S. Cl. 53—225 **18 Claims**



1. A high speed wrapping machine for individually wrapping tablet-like products comprising:

a rotatable wrapping wheel having a plurality of product-receiving pockets distributed about the periphery of the wheel for receiving the products at one point on the periphery and discharging at another point and continuously moving the products between said points as the wrapping operation is carried out;

a set of plungers associated respectively with each of the peripheral pockets and disposed for revolving movement with the respective pockets at opposite axial sides of the wheel to plunge the products in the axial direction in and out of the pockets as the wrapping wheel rotates;

wrapper feeding means having a feed path for delivering individual wrapper panels to one axial side of the wheel between a respective pocket and one of the plungers;

product feeding means for delivering individual products adjacent said one axial side of the wheel between an individual wrapper panel and one of the plungers whereby the plunger may move the product and wrapper panel axially into a pocket with the wrapper draped over the product and panel portions extending from the pocket at said one side of the wrapping wheel; and

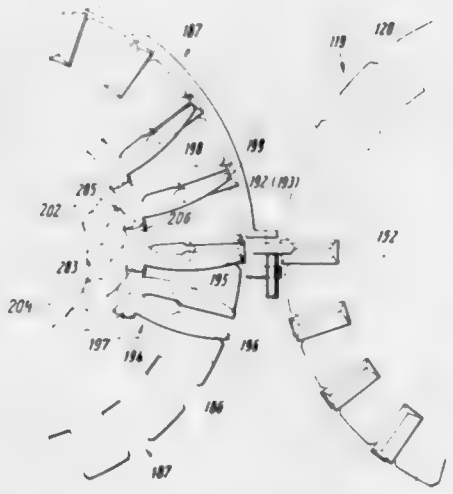
rotary folding means positioned adjacent said one side of the rotatable wrapping wheel and including two rotors, each of which carries a plurality of folding blades and which are rotated continuously in one direction about spaced = parallel axes situated radially outward of the periphery of the wrapping wheel, the blades of one rotor being passed over the blades of the other rotor as the blades of both rotors are brought synchronously into contact with the extending panel portions to flatten the panel portions against the products in the pockets.

4,085,568

FOLDABLE BLANKS FOR MAKING PACKETS FOR ROD-SHAPED ARTICLES

Heinz Focke, and Kurt Liedtke, both of Verden, Aller, Germany, assignors to Focke & Pfuhl, Verden, Aller, Germany

Filed Apr. 21, 1975, Ser. No. 570,152
Claims priority, application Germany, Apr. 23, 1974, 2419437; Aug. 16, 1974, 2439192
Int. Cl.[2] B65B *11/32*
U.S. Cl. 53—234 **12 Claims**



1. In an apparatus for the manufacture and closure of packets from a blank which

(a) encloses the contents of the packet in the manner of a hose and

(b) has end flaps which

(i) project from two opposite faces and

(ii) can be connected together by pressing them together, said apparatus comprising a first turret having pockets for receiving the packets, the improvement comprising a plurality of pairs of closing tongs individually mounted on said first turret adjacent to each of said pockets, each of said closing tong pairs comprising two tong arms relatively pivotable with respect to each other about a common axis, said tong arms being shaped and positioned to press together the end flaps on a packet positioned in the associated pocket with its end flaps projecting from the pocket, one tong arm of each pair including a pivot arm extending beyond said axis and terminating in cam follower means, and a first toothed segment, the other tong arm of each pair including a second toothed segment in engagement with an adjacent first toothed segment, and a cam

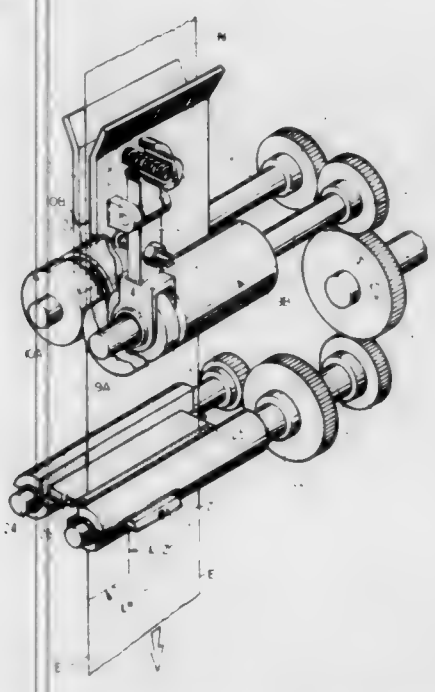
dis mounted proximate said first turret, in engagement with said cam follower means, and shaped to control said closing tongs, whereby the successive pivoting movement of each of said one tong arms is transmitted to an adjacent one of said other tong arms via said first and second toothed segments.

4,085,569

DEVICE FOR PREPARING PIECES OF WRAPPING MATERIAL FOR USE AS THE INNER WRAP IN HINGE LID CIGARETTE PACKS

Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Italy

Filed Sep. 3, 1976, Ser. No. 720,430
Claims priority, application Italy, Apr. 29, 1974, 3370 A/74
Int. Cl.[2] B65B *41/16*
U.S. Cl. 53—389 **9 Claims**



1. In a machine for producing inner wrappers for hinge-lid packets of cigarettes, the combination of;

a pair of driving rolls having axes parallel to one another the rolls being disposed to engage mutually opposite surfaces of a continuous web of flexible material for making inner wrappers of batches of cigarettes to be packed in packets of cardboard material having hinge-lids; means for rotating the driving rolls in mutually opposite directions for movement of the web in a direction parallel to longitudinal side edges of the web and transverse of the cigarettes, and of the axes of the driving rolls;

a pair of cutting rolls having axes parallel to those of the driving rolls, each cutting roll having cutting means thereon extending along the roll and transversely of the web; means for rotating the cutting rolls in mutually opposite directions to cut longitudinally successive sheets from the web on rotation of the cutting rolls, each sheet to provide an entire one of the inner wrappers for a batch of cigarettes to be packed in one of the packets having a hinge-lid;

a scoring disk coaxial with one of the driving rolls, rotatable therewith by the means for rotating it and having scoring edge portions for scoring a line of sheet-weakening indentations, parallel to the longitudinal side edges of the web and to the direction of the movement of the web, in each of the sheets, the scored edge portions being spaced apart to leave, in the line of sheet-weakening indentations, sheet portions linking the removable part with the remainder of the wrapper and disposed at corners of the wrapper; and

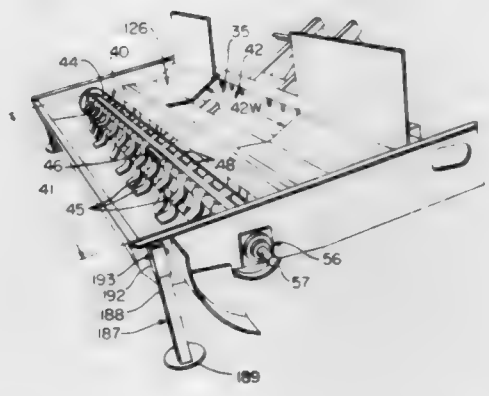
a back-up roller, generally coaxially disposed relative to the other one, of the pair of driving rolls opposite the scoring disk, to thereby provide an end part of each inner wrapper extending transversely of the cigarettes adjacent one end thereof and readily removable from the entire inner wrapper by applying a tractive force to the end part when the hinge-lid of the packet has been opened, for manual breaking of the wrapper along the line of sheet-weakening indentations.

4,085,570

FORAGE HARVESTER AND ATTACHMENT THEREFOR

Marvin L. Joray, Celina; Warner M. Heckley, Rockford, and Lyman J. Gunyou, Celina, all of Ohio, assignors to Avco Corporation, Coldwater, Ohio

Filed Apr. 8, 1976, Ser. No. 675,184
Int. Cl.[2] A01D *45/00*
U.S. Cl. 56—2 **23 Claims**



1. In combination, a mobile agricultural machine adapted to traverse ground for cutting, conditioning and moving a crop to a crop transfer zone within said machine and then directly away from said zone, and a chopper adapted to trail said machine, said machine having:

flail means for cutting and conditioning standing crop in one mode of operation and for picking up a pre-cut ground swath of a crop in another mode of operation,

said machine having means for gathering crop and moving crop from the flail means to the transfer zone, and

said machine having means for selectively moving crop directly from said transfer zone toward said chopper and toward the ground.

4,085,571

RESILIENT MOUNTING FOR AGRICULTURAL MACHINERY ATTACHMENT

Frans H. Mortier, Maldegem, and Frans Degraeve, Zedelgem, both of Belgium, assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Apr. 21, 1976, Ser. No. 678,839
Claims priority, application United Kingdom, May 2, 1975, 18318/75
Int. Cl.[2] A01D *67/00*
U.S. Cl. 56—208 **14 Claims**



1. An agricultural machine adapted to move in a field and process field crops, comprising:

a base structure,

an attachment extending from one end of the base structure

for receiving crop material from the field and for conveying it to the base structure,

pivot means on said one end of the base structure for pivotally mounting the attachment thereon, the attachment being movable between operative and transport positions,

resilient means attached at one end to the attachment at a location above the pivot means and at the other end to the base structure for resiliently compensating the weight of the attachment and for floatingly maintaining the attachment in contact with the ground contour when in an operative position, and,

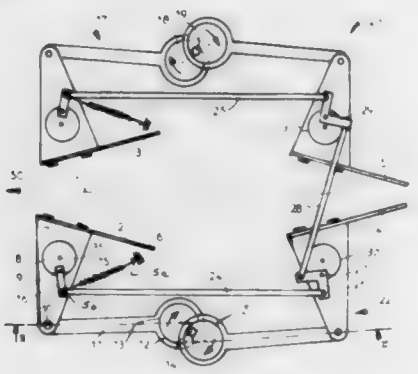
independent lifting means pivotally mounted on the base structure at said one end and below the pivot means and reaching beneath the attachment for lifting the attachment from the operative position to a transport position.

4,085,572

SELF-ADJUSTING BEATING DEVICE FOR A GRAPE HARVESTING MACHINE

Alain Bruel, Domaine Le Petit Chaumont, Eigues Mortes, Gare, France

Filed Dec. 2, 1975, Ser. No. 637,040
Claims priority, application France, Dec. 2, 1974, 74 40716
The portion of the term of this patent subsequent to Jun. 24, 1992, has been disclaimed.
Int. Cl.[2] A01D *46/00*
U.S. Cl. 56—330 **9 Claims**



1. A beating device for a grape harvesting machine for the harvesting of grapes from a row of grapevines, said beating device comprising:

a frame;

a pair of beaters mounted on said frame in opposing relationship to define thereinbetween a longitudinal space for the passage of said row of grapevines, each of said beaters comprising:

a plurality of vertically spaced, horizontally disposed whips;

a pivotally mounted lever, said whips being carried at one end of said lever;

a first eccentric, said eccentric being carried by said lever at a point inwardly spaced from said whips, said lever being pivotable about the center of said first eccentric;

a first vertical shaft rotatably carried by said frame, said eccentric being integral with said shaft and rotatable therewith in an eccentric relationship;

an arm member carried by said first eccentric;

an adjustable, resilient return means having one end fixed to said frame, while the other end thereof is carried by said arm member in such a manner that said resilient return means functions to automatically return said whip toward said longitudinal space, the amount of the resilient force increasing in response to the resistance to said whip returning to said space such that said first eccentric is rotated about its vertical axis;

a second shaft carried by said frame for rotation about a second vertical axis;

a second eccentric driven by said second shaft;

a connecting rod having one end connected to said second eccentric and the other end connected to an end of said lever opposite said whip-carrying end of said lever; and

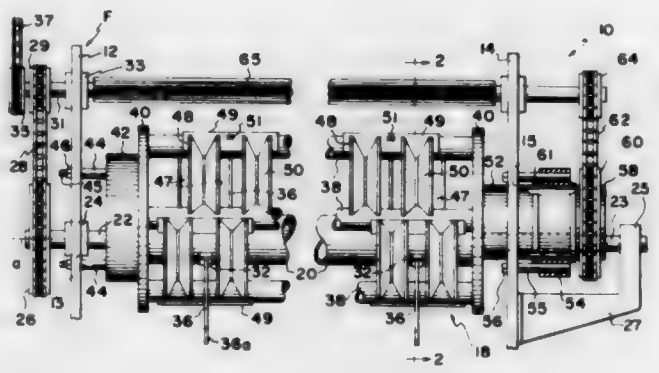
means for rotating said second shaft about said vertical axis.

4,085,573

FARM CROP PICK-UP APPARATUS

Preston Marsh, Rte. 1, Hope, Mich. 48628

Filed Apr. 8, 1976, Ser. No. 674,955
Int. Cl.[2] A01D *89/00*
U.S. Cl. 56—364 **14 Claims**



1. Farm crop handling apparatus for handling severed farm crop deposited on the ground comprising:

portable frame support means movable in a path of travel;

longitudinally extending, rotary, crop pick-up means mounted on said frame support means for movement therewith and for rotation thereon about a longitudinal axis, transverse to said path of travel, for lifting crop off the ground and propelling it in a direction opposite to the path of travel of said frame support means;

generally cylindrical, generally hollow, longitudinally extending crop stripping means rotatable about its longitudinal axis for stripping the crop from said crop lifting means when said crop pick-up means and said crop stripping means are rotated;

said crop stripping means including a plurality of longitudinally spaced openings;

said crop pick-up means including support means disposed interiorly of said stripping means, and a plurality of radially outwardly extending, circumferentially and longitudinally spaced pick-up tines on said support means successively movable in said openings between radially outer positions to pick-up crop and radially inner positions to deposit the picked up crop on said crop stripping means as said crop pick-up means and crop stripping means are rotated;

means for rotatably driving said crop pick-up means and said stripping means in timed relation including:

a first drive means coupled to one end of said pick-up means for rotatably driving said pick-up means about its axis; and

a second drive means, independent of said first drive means, coupled to said stripping means adjacent the opposite end of said pick-up means for rotatably driving said stripping means in timed relation with rotation of said pick-up means;

axially extending annular mount means on one end of said stripping means adjacent said opposite end of said pick-up means;

said frame support means including a first axially extending opening therethrough receiving said annular mount means;

said stripping means being disposed on one axial side of said opening;

said annular mount means including a drive portion on the axially opposite side of said opening coupled to said second drive means.

4,085,574

APPARATUS FOR AUTOMATICALLY ANCHORING, TWISTING AND WINDING FILAMENT, OR THE LIKE, ONTO A SPOOL

Philippe Hardy-The McLain, Columbia, and Bob Gene Shepherd, West Columbia, both of S.C., assignors to Shakespeare Company, Columbia, S.C.

Filed Oct. 7, 1976, Ser. No. 730,160
Int. Cl.[2] D01H *7/26, 7/50*
U.S. Cl. 57—68 7 Claims



1. Filament spooling apparatus comprising:
a spool shaft;
a filament receiving spool non-rotatably mounted on said spool shaft for translational reciprocation;
a winding means disposed at least in part radially of said filament receiving spool including
a flier having a hub, spacer arms extending outwardly of said hub in diametric opposition,
a positioning rod mounted transversely of each said spacer arm to be disposed substantially parallel to said spool shaft,
a pick-up and turning head carried on one said positioning arm and a counterweight mounted on the other of said positioning rods, said pick-up and turning head including a mounting plate secured to the positioning rod on which the pick-up and turning head is mounted, a thread catcher mounted in spaced relation with respect to said mounting plate and a sheave rotatably journaled between said mounting plate and said thread catcher; and
means to rotate said winding means with respect to said filament receiving spool, said means to rotate being operatively connected to said hub.

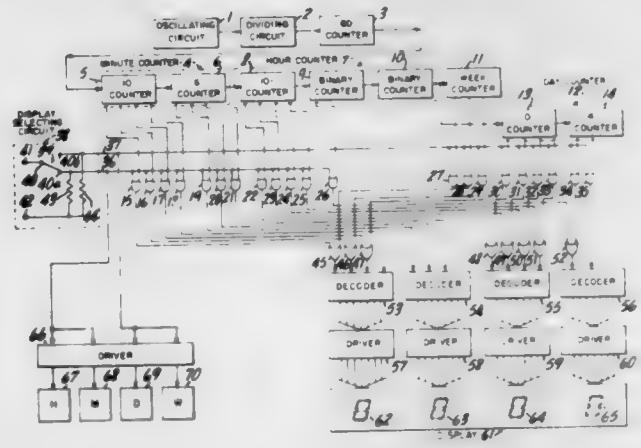
3. Filament spooling apparatus, comprising:
a spool shaft;
a filament receiving spool mounted on and having an axis coincident with said spool shaft for translational reciprocation;
a lead-in pulley located axially outwardly of said receiving spool and mounted to rotate about an axis oriented substantially transversely with respect to the axis of said receiving spool;
a winding means disposed at least in part radially of said filament receiving spool;
means to effect relative rotation between said winding means and said filament receiving spool;
means provided in conjunction with said lead-in pulley to preclude any twist imparted to that portion of the filament extending from one side of said lead-in pulley from being transmitted to that portion of the filament extending from the other side of said lead-in pulley; and
an orienting pulley presented in proximity to that end of the filament receiving spool axially opposite the lead-in pulley, a feed and a tailing run of filament extending between said lead-in and orienting pulleys, said orienting pulley being canted to effect selective engagement of said feed run by said winding means.

4,085,575

DIGITAL ELECTRONIC TIMEPIECE

Kojiro Tanaka, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Sep. 21, 1976, Ser. No. 725,329
Claims priority, application Japan, Sep. 22, 1975, 50-114540
Int. Cl.[2] G04B *19/24, 19/34;* G04C *3/00*
U.S. Cl. 58—4 A 3 Claims



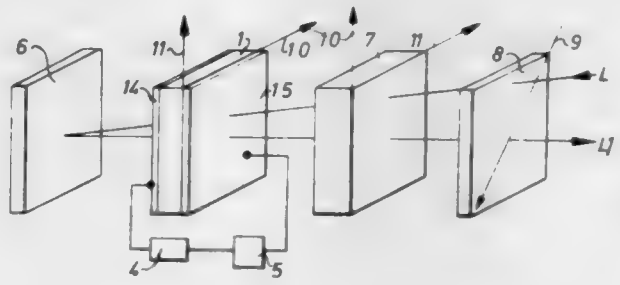
1. A digital electronic timepiece displaying the time and the day of the week, comprising a numeric display means for selectively displaying only numbers, said display means comprising a plurality of display elements each of which comprises means for selectively displaying a digit, display selecting means controlling said display means to display the time and alternatively to display a number representing a day of the week, said number representing a day of the week being selectively displayed by one of the same display elements as used for displaying time, and means coordinated with said display selecting means to indicate whether time or day of the week is displayed.

4,085,576

MONOCRYSTALLINE DISPLAY DEVICE WITH STORAGE EFFECT FOR AN ELECTRONIC TIMEPIECE

Jacques Alain Deverin, Bienne, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services, S.A., Bienne, Switzerland

Filed Sep. 11, 1974, Ser. No. 504,891
Claims priority, application Switzerland, Sep. 27, 1973, 13824/73
Int. Cl.[2] G04C *3/00;* G04B *19/06;* G11B *9/02;* G02B *5/23*
U.S. Cl. 58—23 R 10 Claims



1. Display arrangement exhibiting a storage effect for use with an electronic timepiece which timepiece includes a time standard, an electronic control circuit, an energy source and

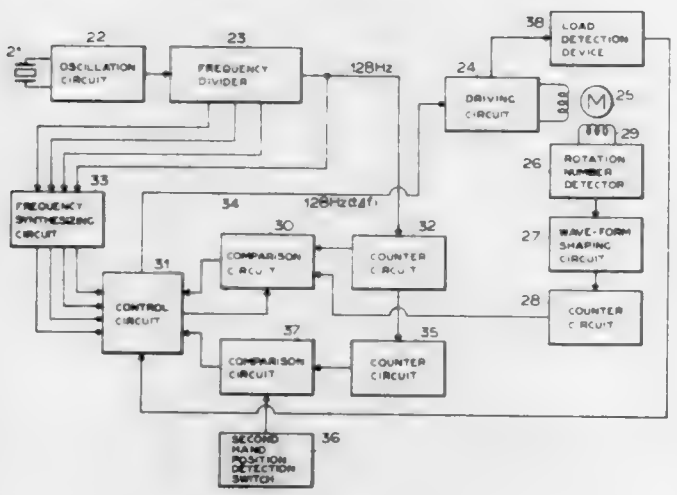
voltage increasing means wherein is provided one single domain ferroelectric monocrystal belonging to a relatively low symmetry group in order to assure different optical properties for different orientation domains selected from the group consisting of sodium nitrate, lead germanate, bismuth titanate, and crystals having polar symmetry in enantiomorphous and non-enantiomorphous classes having symmetry: $1=C_1$, $2=C_2$, $m=C_{1h}$, $mm2=C_{2v}$, $4=C_4$, $3=C_3$, electrode means arranged and adapted to apply voltage pulses from the control circuit to the crystal thereby to cause said crystal to change in a reversible manner from a first to a second stable state, said first and second stable states being optically different, at least one polarizing filter located proximate one face of the crystal, a reflecting surface located proximate the opposite face thereof, and a second ferroelectric monocrystal of substantially the same composition, cut, and crystallographic orientation as said one ferroelectric monocrystal positioned between said polarizing filter and said reflecting or diffusing surface to constitute a passive compensating crystal, said reflecting surface being positioned and adapted to receive light passing through both said ferroelectric monocrystals and to reflect said light back through both said ferroelectric monocrystals.

4,085,577

ELECTRONIC TIMEPIECE

Minoru Natori, Tokyo, Japan, assignor to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Jul. 1, 1976, Ser. No. 701,655
Claims priority, application Japan, Jul. 2, 1975, 50-81573
Int. Cl.² G04C *3/00*; G05B *5/01*
U.S. Cl. 58—23 D **5 Claims**



1. An electronic timepiece driven by a pulse motor comprising:

(1) a time standard signal generator:

(2) a frequency divider connected to said time standard signal generator;

(3) a pulse motor driving circuit applied by frequency-divided pulses for keeping the rotation inertia of a rotor from said frequency divider and driving said pulse motor;

(4) a means for detecting the rotation number of said pulse motor;

(5) a load detection means connected with said pulse motor driving circuit for detecting the load on said pulse motor;

(6) a means for periodically comparing the rotation number of said pulse motor with the number of driving pulses from said frequency divider; and

(7) a control means including means for selecting the driving frequency of said pulse motor; and

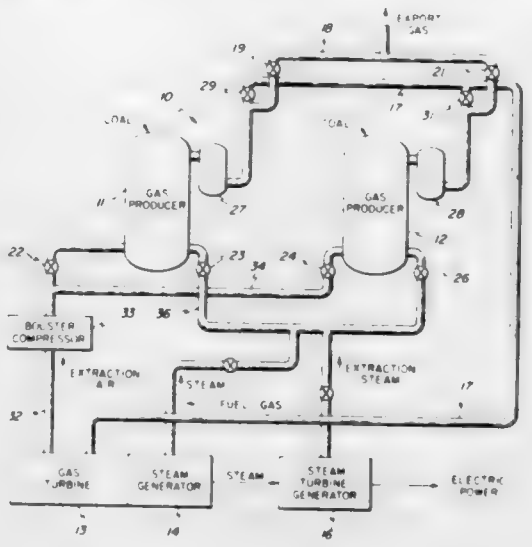
whereby a second hand of said electronic timepiece is continuously carried.

4,085,578

PRODUCTION OF WATER GAS AS A LOAD LEVELING APPROACH FOR COAL GASIFICATION POWER PLANTS

Paul H. Kydd, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 634,468, Nov. 24, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 777,328
Int. Cl.² F02B *43/08*
U.S. Cl. 60—39.02 **14 Claims**



8. In a process for generating electric power in an integrated coal gasification plant wherein low BTU gas is produced from coal introduced into fixed bed coal gasifiers, said coal gasifiers being connected to systems for cleaning the low BTU gas, the low BTU gas after cleanup is conducted to at least one combustor, each such combustor being part of a system for the generation of system and production of electric power, and air from a boost compressor together with steam from said system are supplied to the underside of the beds of said coal gasifiers, the improvement comprising:

alternately operating said coal gasifiers in the base load mode of power generation in which all of said coal gasifiers receive a continuous blast of steam and air to generate low BTU gas and in the mid-range mode of power generation in which said coal gasifiers are utilized as first and second sets of coal gasifiers, said first set being operated to generate low BTU gas with a compressed air blast for delivery to said at least one combustor and said second set being simultaneously operated to generate intermediate BTU gas with a steam blast for discharge from said coal gasification plant and the operation of said first and second sets is periodically interchanged.

4,085,579

METHOD AND APPARATUS FOR IMPROVING EXHAUST GASES OF A GAS TURBINE INSTALLATION

Immanuel Holzapfel, Stuttgart, and Werner Bruder, Neckarrems, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Apr. 3, 1975, Ser. No. 564,918
Claims priority, application Germany, Apr. 6, 1974, 2416909
Int. Cl.² F02C *7/02, 9/14*
U.S. Cl. 60—39.04 **52 Claims**

1. A method for operating a gas turbine installation which includes a combustion chamber having a combustion zone, and in which air is compressed and heated up by utilizing the exhaust gas heat of the gas turbine installation, fuel is combusted with an air excess under supply of compressed air forming a primary air, and resulting gas of the combusted fuel is thinned out by an admixture of compressed heated air forming a secondary air and is cooled off to produce gases which are expanded while giving off a useful output, the method comprising the steps of:

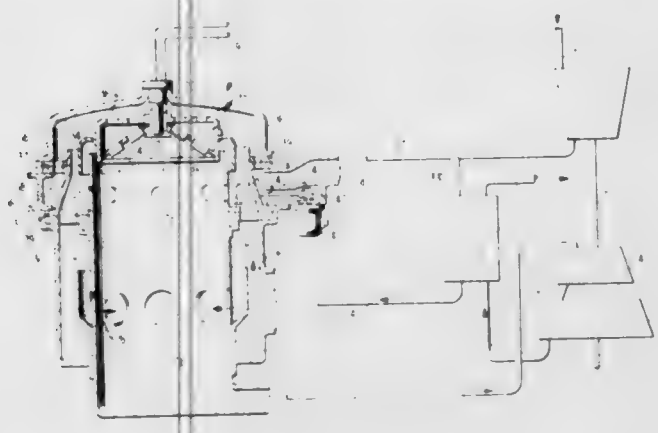
admixing a more or less large quantity of non-preheated air

to the preheated primary air in a mixing chamber disposed outside of the combustion chamber,

directing the flow of admixed non-preheated air and preheated primary air into the combustion chamber and combustion zone at least within a lower partial load range, the step of admixing the non-preheated air to the preheated primary air in the mixing chamber takes place as a function of load,

and controlling the rate of air flow of the gas turbine installation so that at most approximately 15% of the rate of air flow of the gas turbine installation in non-preheated air is admixed.

9. A gas turbine installation comprising compressor means for compressing air, heat-exchanger means for heating the compressed air by utilizing the exhaust gas heat of the gas turbine installation, combustion chamber means for combust-



ing fuel with an excess of air under supply of compressed air constituting the primary air, means for thinning resulting gas of the combusted fuel by an admixture of compressed heated air constituting secondary air and cooling the same for producing gases for use in turbine means, and means including said turbine means for expanding the produced gases while producing a mechanical output, characterized in that a mixing chamber means is disposed outside of said combustion chamber means for intimately combining and mixing a more or less large quantity of substantially non-preheated air to the preheated primary air prior to the entry thereof into a combustion zone of the combustion chamber means at least within a lower partial load range, means operable as a function of the load of the gas turbine installation for controlling the amount of non-preheated air so that at most approximately 15% of the rate of air flow of the gas turbine installation is admixed in non-preheated air by said controlling means.

4,085,580

COMBUSTION CHAMBERS FOR GAS TURBINE ENGINES

Sidney Edward Slattery, Foston, England, assignor to Rolls-Royce Limited, London, England

Filed Nov. 16, 1976, Ser. No. 742,181

Claims priority, application United Kingdom, Nov. 29, 1975, 49138/75

Int. Cl.² F02C *7/18*

U.S. Cl. 60—39.65 **10 Claims**

1. An axially extending combustion chamber for a gas turbine engine, the combustion chamber having an upstream wall for admission of air to the interior of the chamber and for cooling the wall, said upstream wall comprising:

a perforated upstream meter panel and a perforated heat shield member spaced axially downstream of said perforated meter panel, said perforated meter panel and said perforated heat shield member defining a plenum chamber therebetween whereby in operation of the engine, air passes through said perforated upstream meter panel into said plenum chamber and impinges on the upstream side of said perforated heat shield to cool the same, said heat shield member having a plurality of enlarged openings therein in addition to the perforations, a plurality of deflector plates axially spaced downstream from said perforated heat shield member in alignment with said openings, each of said deflector plates having a dimension greater than each of said openings, and said heat shield member and said deflector plates defining a plurality of second plenum chambers axially downstream of said first plenum chamber, each of said second plenum chambers having at



least one radially directed aperture formed therein whereby air passing axially downstream from said first plenum chamber through said openings in said perforated shield member into said second plenum chambers is directed radially outwardly as a cooling film over the downstream side of said heat shield member to further cool the same and protect said perforated meter panel from heat within said combustion chamber.

4,085,581

GAS-TURBINE COMBUSTOR HAVING AN AIR-COOLED SHIELD-PLATE PROTECTING ITS END CLOSURE DOME

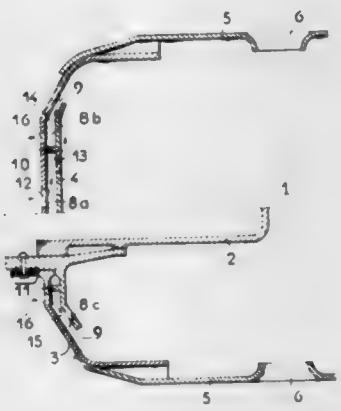
Jacques Emile Jules Caruel, Dammarie-les-Lys, and Guy Daniel Stora, Melun, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed May 27, 1976, Ser. No. 690,669

Claims priority, application France, May 28, 1975, 75 17087

Int. Cl.² F02C *7/22*

U.S. Cl. 60—39.66 **4 Claims**



1. In a gas-turbine combustion chamber extending longitudinally from an upstream end which comprises:

longitudinal side walls opposite one another bounding said combustion chamber;

a transverse dome-shaped closure at said upstream end connecting said side walls and mechanically uniting the same to form an integral box-like structure capable of withstanding mechanical stresses;

a transverse shield-plate within said chamber extending adjacent to and spaced inwardly of said dome-shaped closure to thermally screen the same, said shield-plate

being so mounted with respect to said integral structure as to be substantially unaffected by mechanical stresses withstood thereby; and

prevaporized fuel injecting means projecting into said combustion chamber from said dome-shaped closure through said shield-plate and having a portion bent back to discharge fuel in an upstream direction towards and onto the downstream-facing side of said shield-plate;

wherein the improvement comprises

means positioned between said dome-shaped closure and said shield-plate to partition the space between said dome-shaped closure and the upstream-facing side of said shield-plate into a plenum;

compressed air passage means opening through said dome-shaped closure into said plenum to feed the same with compressed air and to cool said shield-plate by impact on said upstream-facing side thereof by air jets formed by said passage means; and

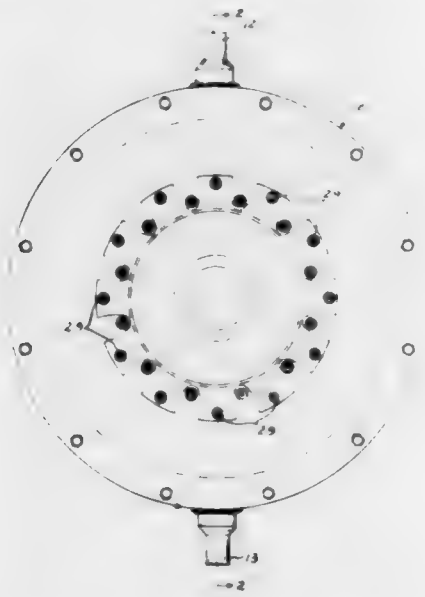
a plurality of outwardly-inclined elemental nozzles extending through said shield-plate from said plenum and having a total cross-sectional area which is substantially smaller than the total cross-sectional area of said compressed air passage means, said elemental nozzles functioning to issue high-velocity air jets from the air located in said plenum through said shield-plate whereby any liquid fuel streaming over said downstream-facing side is atomized by said high-velocity air jets and said air jets increase local turbulence adjacent said downstream-facing side.

4,085,582

WALL AND NOZZLE ASSEMBLY FOR COLLOIDAL CORE REACTOR

Brian A. Hausfeld, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 4, 1976, Ser. No. 738,915
Int. Cl.[2] G21D *1/00*
U.S. Cl. 60—203 **1 Claim**



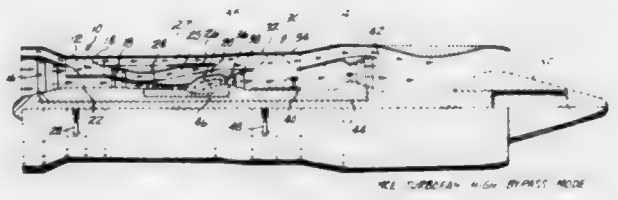
1. In a multi-component flow small length to diameter ratio confined particulate vortex system having a cylindrical chamber with a first wall member and a second wall member spaced from the first wall member; means for providing a flow of low molecular weight gas into said chamber; means, including a plurality of gas flow directing vanes, having slots therebetween, for providing a vortex flow within said chamber; said gas flow directing vanes dividing said chamber into an outer annular plenum chamber and an inner vortex chamber; means for providing a flow of particles into said chamber; a wall and nozzle assembly for said confined vortex system comprising: a vortex chamber exit nozzle; said nozzle having a wall member extending radially therefrom and forming a portion of said first wall member; said exit nozzle being coaxial with the inner vortex chamber; an annular manifold, in said first wall member and surrounding said exit nozzle; means for supplying a low molecular weight gas to said manifold; a plurality of annular slots in the first wall member on the side of said first wall adjacent said inner vortex chamber; means connected between said manifold and said annular slots for directing a flow of gas through the annular slots into the inner vortex chamber radially outward adjacent said first wall; said means for directing the flow through the annular slots including means for providing a circumferential flow to the gas in a direction corresponding to the flow in the inner vortex chamber; means within said wall and nozzle member for supplying a flow of gas to the throat of said nozzle; said means for supplying a flow of gas to the throat of said nozzle including means for providing a circumferential flow to the said gas in a direction corresponding to the direction of flow in the inner vortex chamber.

4,085,583

METHOD FOR SELECTIVELY SWITCHING MOTIVE FLUID SUPPLY TO AN AFT TURBINE OF A MULTICYCLE ENGINE

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 563,538, Mar. 31, 1975, abandoned, and a continuation-in-part of Ser. No. 196,422, Nov. 8, 1971, Pat. No. 3,779,282, Ser. No. 226,850, Feb. 16, 1972, Pat. No. 3,792,584, and Ser. No. 329,768, Feb. 5, 1973, Pat. No. 3,854,286. This application Jul. 27, 1976, Ser. No. 709,059
Int. Cl.[2] F02K *3/06, 3/12*
U.S. Cl. 60—204 **4 Claims**



1. In a multicycle engine for a supersonic aircraft which includes a forwardly located fan means; a core gas generator including compressor, combustor, and turbine stages; an aft turbine stage located downstream of said core gas generator and a second combustor stage located upstream of and adjacent to said aft turbine stage to provide combustion gases acting directly on said aft turbine stage; a method for improving engine cycle efficiency comprising;

passing air through said fan means and said core gas generator and discharging it into a region surrounding said aft turbine stage;

passing air through said fan means and around said core gas generator then into and through said second combustor stage; and

switching the air passing through said core gas generator from its path into said region surrounding said aft turbine stage such that it passes into and through said second combustor stage and said aft turbine stage.

4,085,584

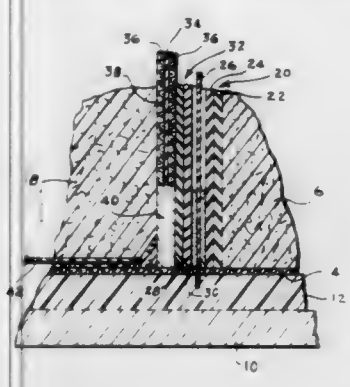
BARRIER SYSTEM FOR DUAL-PULSE ROCKET MOTOR

Roy A. Jones, Crawford, and Marshall W. Mabry, Waco, both of Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 5, 1976, Ser. No. 734,158
Int. Cl.[2] F02K *9/04*
U.S. Cl. 60—250 **1 Claim**

1. A barrier system for use in dual pulse, solid propellant rocket motors comprising an assembly positioned between a first and second pulse rocket propellant gain, said assembly being adhesively attached at one end to the interior diameter of a rocket motor case liner and composed of (1) a restrictor assembly having (a) a dual layer of rubber with one surface thereof positioned adjacent to said first pulse grain to function

as a grain inhibitor and flame barrier during the burnout of the said first pulse grain and (b) a thin plastic film positioned adjacent to the other surface of said dual layer of rubber; (2) a thermal barrier assembly having a dual layer of rubber positioned adjacent to said thin plastic film of said restrictor assembly; and (3) an igniter assembly covered by a thin plastic film and positioned adjacent to said thermal barrier assembly, and interdisposed between said thermal barrier assembly and said second pulse grain to activate the ignition of said second pulse grain subsequent to the burnout of said first pulse grain.

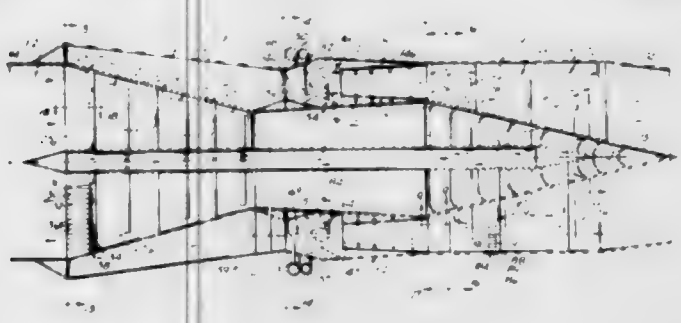


4,085,585

IMPACTION/INDUCTION JET ENGINE

Thomas H. Sharpe, Belvedere, S.C. 29841

Filed Jun. 28, 1976, Ser. No. 700,488
Int. Cl.[2] F02K *1/02*
U.S. Cl. 60—262 **9 Claims**



1. An impaction and induction jet engine comprising:

a fresh air duct having a leading end and a trailing end, said fresh air duct open to the atmosphere at its leading end and closed at its trailing end;

a burner unit having a burner inlet and a burner outlet;

a compressor air impaction unit associated with said fresh air duct adjacent its leading end, said compressor air impaction unit including a plurality of air impaction vanes positioned in said fresh air duct and an impaction duct communicating with said burner inlet and said air impaction vanes, each of said air impaction vanes defining an air impaction passage therein, a forwardly facing air inlet opening to said air impaction passage in said fresh air duct, and an air outlet opening from said air impaction passage to said impaction duct so that a portion of the fresh air flowing through said fresh air duct will impact in said air impaction passage and be transferred to said impaction duct so that the separated portion of the fresh air in said impaction duct will be received through the burner inlet;

fuel injector means for injecting fuel into said burner unit to form a combustible air-fuel mixture in said burner unit so that the exhaust gases will be directed out of said burner outlet; and,

an air induction unit connected to said burner unit for receiving the exhaust gases from said burner outlet, said air induction unit connected to said fresh air duct adjacent its trailing end and constructed and arranged to cause fresh air from said fresh air duct

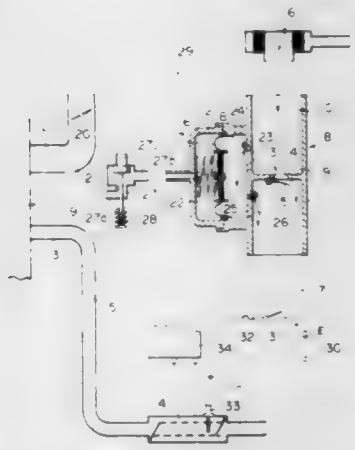
to be induced into the exhaust gases as the gases pass through said air induction unit and cause additional fresh air from the atmosphere to be drawn into said fresh air duct and through said compressor air impaction unit.

4,085,586

SECONDARY AIR SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Norio Shibata, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 4, 1976, Ser. No. 693,125
Claims priority, application Japan, Feb. 26, 1976, 51-20499
Int. Cl.[2] F01N *3/10*
U.S. Cl. 60—277 **4 Claims**



1. A secondary air supply system for an internal combustion engine having intake and exhaust manifolds comprising:

an air passage means having an upstream end opened to the atmosphere and a downstream end connected to the exhaust manifold of the engine;

first and second air pumping means incorporated in parallel in said air passage means;

said first air pumping means being a check valve which allows air to flow through said air passage means only from the upstream end toward the downstream end thereof;

said second air pumping means being a diaphragm pump comprising a casing member, a diaphragm mounted in said casing member and defining an actuating chamber and a pumping chamber in said casing member;

a first check valve which connects said pumping chamber to said air passage means at the upstream side of said first air pumping means;

a second check valve which connects said pumping chamber to said air passage means at the downstream side of said first air pumping means; and

a conduit means which connects said actuating chamber directly to the intake manifold of the engine.

4,085,587

FAIL SAFE LIQUID POWER DEVICE

Ronald E. Garlinghouse, 2415 E. Washington, Duarte, Calif. 90021, assignor to Leslie H. Garlinghouse, Los Angeles, Calif.

Division of Ser. No. 628,154, Nov. 3, 1975, abandoned, and Ser. No. 776,101, Mar. 10, 1977. This application Dec. 8, 1976, Ser. No. 748,484
Int. Cl.[2] F15B *11/06*
U.S. Cl. 60—403 **10 Claims**

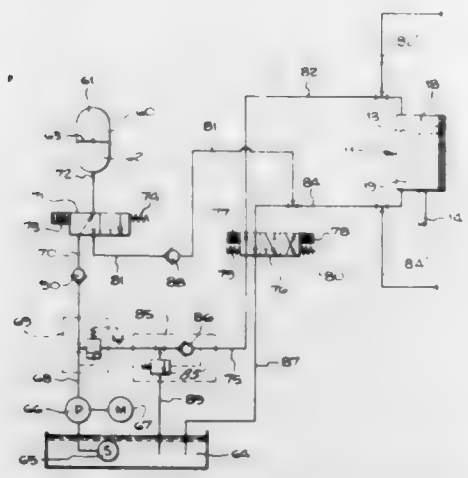
1. In a system for performing work by operation of a hydraulic ram having a piston therein forming in said ram a forward chamber and a reverse chamber,

said system comprising a source of fluid at operating pressure,

a fluid pressure storage container including fluid passage means connecting said container to said source,

operating valve means having fluid passage means interconnecting said operating valve means with said source, said container and said ram for selectively directing fluid at said operating pressure to said chamber,

said operating valve means having one adjustment wherein said operating pressure is passed to said forward chamber and said reverse chamber has a connection to exhaust,
sequence valve means interconnected respectively to said container, said source and said control valve means,
and energizing means for said valve means,



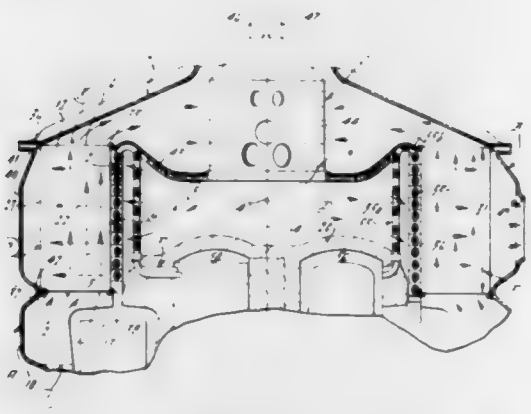
said sequence valve means having an adjustment at pressures less than said operating pressure which inhibits passage of fluid by said operating valve means to said chambers until said container is at said operating pressure,
said operating valve means having another adjustment wherein said operating pressure is passed to said reverse chamber and said forward chamber has a connection to exhaust.

4,085,588

CONCENTRIC CROSSFLOW RECUPERATOR FOR STIRLING ENGINE

Lowell A. Reams, Plymouth, and Thomas F. Dunlap, Riverview, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 5, 1976, Ser. No. 673,789
Int. Cl.[2] F02G *1/04*
U.S. Cl. 60—517 **2 Claims**



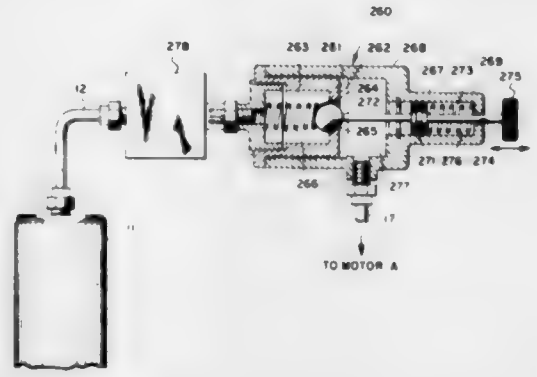
1. In a Stirling engine having an external heating circuit in a closed working fluid system, an assembly for transferring heat from said circuit to said closed working fluid system, comprising:
(a) an induction means for providing a positive supply of air to said circuit,
(b) an exhaust means for said circuit,
(c) a combustion unit for adding fuel to said inducted supply of air and for combusting said air mixture,
(d) a heating chamber receiving the products of combustion from said combustion unit and within which is disposed a heater tube array for absorbing a predetermined heat content of said combustion products passing thereabout, and
(e) heat exchange means having a fixed matrix concentrically arranged about the axis of said heater tube array, said fixed matrix having walls defining layers of first passages interleaved with walls of defining layers of second passages, said induction means being fluidly connected to one end of said first passages and the combustion unit being fluidly connected to the other end of said first passages, said exhaust means being fluidly connected to one end of said second passages and the heating chamber being fluidly connected to the other end of said second passages, said fluid connections between said intake and exhaust, and between the heating chamber and burner unit, are provided by ceramic ring seals disposed along the edges of said concentrically arranged ceramic matrix, said fixed matrix being formed substantially of heat resisting ceramic material and being defined as a toroid comprised of fused segments, each of the edges of said toroid at opposite faces thereof having said ceramic seals in intimate contact therealong, the inner cylindrical wall of said concentric matrix serving to delimit the outer extremity of said heating chamber, said heating chamber needing no external side insulation other than the ceramic matrix.

4,085,589

GAS POWERED MOTOR AND SYSTEM

John H. Breisch, Lakewood, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 633,425, Nov. 19, 1975, which is a division of Ser. No. 483,575, Jun. 27, 1974, Pat. No. 3,981,229, which is a continuation-in-part of Ser. No. 378,334, Jul. 11, 1973, abandoned, which is a division of Ser. No. 173,832, Aug. 23, 1971, abandoned. This application Jan. 22, 1976, Ser. No. 651,548
Int. Cl.[2] F02N *9/04*
U.S. Cl. 60—626 **17 Claims**



1. A gas powered starting system for two and four cycle internal combustion engines preferably of a size that delivers less than 10 horsepower and possesses in its cycle a compression stroke at the end of which said engine is fired, said system comprising:
an energy cell containing liquified gas under pressure;
a motor having an output shaft;
clutch means engaging said output shaft to permit said motor to drive said engine through its cycles for starting same; and
self-regulating metering valve means in fluid communication with said energy cell and said motor, said self-regulating valve means comprising a valve for controlling the flow of gas from said energy cell, a fluid passage between said energy cell and said valve and a fluid passage between said valve and said motor, said valve being operable to cut off flow of gas from said energy cell through said valve while permitting gas in said fluid passage between said valve and said motor to expand and flow to and operate said motor after said valve has cut off the flow of gas from said energy cell, whereby said valve means is operable to automatically meter an amount of gas within a predetermined range from said energy cell to said motor sufficient to enable said motor to start said engine.

4,085,590

HYDRIDE COMPRESSOR

James R. Powell, Wading River, and Francis J. Salzano, Patchogue, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 5, 1976, Ser. No. 646,703
Int. Cl.[2] F01K *25/10*
U.S. Cl. 60—673 1 Claim



1. Apparatus for producing hydrogen gas power comprising:

a. at least one longitudinally extending outer, nonporous, chemical pressure tube means containing inner, porous tube means having a metal hydride bed sandwiched therebetween for selectively desorbing and adsorbing hydrogen gas and having a longitudinally extending heat exchange jacket around the outer tube means;

b. low temperature heat source means connected to the heat exchange jacket for selectively heating the metal hydride bed to desorb hydrogen gas;

c. high temperature heat source means for receiving, transporting and further heating the desorbed hydrogen gas;

d. power extraction means for receiving and extracting power from the further heated hydrogen gas;

e. regenerator means for transferring heat from the hydrogen gas leaving the power extraction means to the desorbed hydrogen gas prior to the desorbed hydrogen gas entering the high temperature heat source; and

f. cooling means connected to the heat exchange jacket for controlling the temperature of the metal hydride bed by selectively rejecting heat therefrom to the surroundings during adsorption of the hydrogen gas leaving the regenerator means.

4,085,591

CONTINUOUS FLOW, EVAPORATIVE-TYPE THERMAL ENERGY RECOVERY APPARATUS AND METHOD FOR THERMAL ENERGY RECOVERY

Lawrence E. Bissell, 1242 26th St., Apt. B, Santa Monica, Calif. 90404

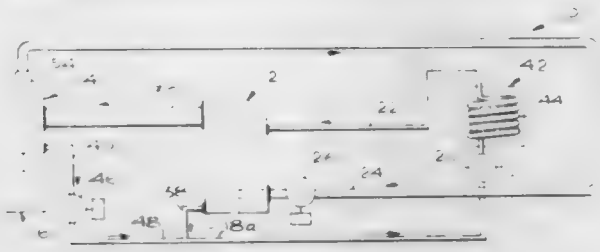
Filed Sep. 23, 1975, Ser. No. 615,931
Int. Cl.[2] F01K *21/04*
U.S. Cl. 60—674 17 Claims

1. An evaporative-type thermal energy recovery apparatus, which comprises:

a. a source of volatile liquid,

b. a source of gaseous fluid,

c. evaporator means including a mixing chamber connected to said liquid and gaseous fluid sources for causing evaporation within said chamber of at least a portion of liquid from said liquid source into gaseous fluid from said gaseous fluid source, said mixing chamber including a first elongated pipe extending transversely of the chamber in the upper portion thereof, said pipe being connected to said liquid source and having a series of perforations located about the pipe and along its length inside the chamber for releasing liquid within the chamber, and a second pipe extending transversely of the chamber within a lower portion thereof, said second pipe being connected to the gaseous fluid source and having a series of enlarged



openings along the upper side of said second pipe within the mixing chamber for releasing said gaseous fluid into contact with liquid dropping from the first pipe perforations, and

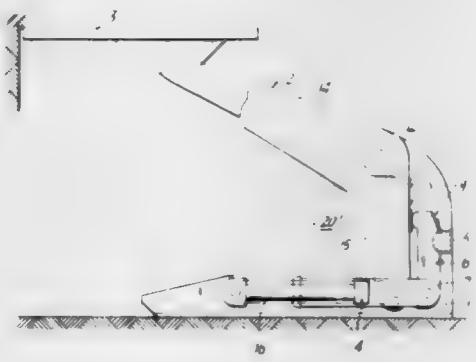
d. a prime mover connected to said evaporator means for receiving gaseous fluid and evaporated liquid therefrom and being operative thereby for the production of work, electrical energy or the like.

4,085,592

SHIELD TUBBING FOR LONGWALLS

Werner Dahlem, Moers, Germany, assignor to Rheinstahl AG, Germany

Filed Feb. 5, 1976, Ser. No. 655,155
Claims priority, application Germany, Feb. 13, 1975, 2506076
Int. Cl.[2] E21D *15/44*
U.S. Cl. 61—45 D 7 Claims



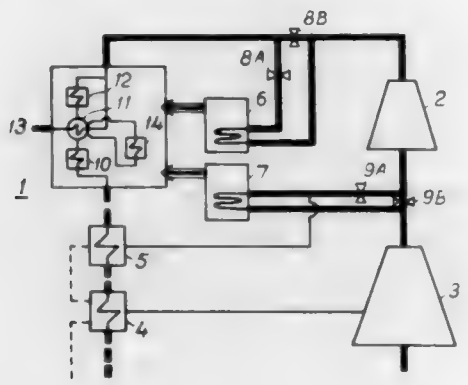
1. A shield tubbing for longwalls, comprising a support tub, a break shield, break shield pivotal support means pivotally supporting said break shield on said tub, a double arm balance beam having first and second arms, balance beam support means pivotally supporting said balance beam on said tub, a hydraulic ram having one end acting adjacent the end of said balance beam first arm and an opposite arm connected to said break shield, said second arm of said balance beam bearing on said shield between said pivotal support means and the connection of said ram to said shield.

4,085,593

STEAM POWER PLANT WITH FLUIDIZED BED HEAT SOURCE FOR SUPERHEATER AND METHOD OF PRODUCING SUPERHEATED STEAM

Gunnar Larsen, Finspong, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden

Filed Sep. 7, 1976, Ser. No. 720,527
Claims priority, application Sweden, Sep. 12, 1975, 7510165
Int. Cl.[2] F01K *3/24*
U.S. Cl. 60—676 **10 Claims**



1. A steam generating plant for a turbine machine comprising

(a) a steam boiler;

(b) a superheating means comprising at least two stages;

(c) the first of said stages being integral with said steam boiler and being heated from a common heat source therewith;

(d) the second of said stages being heated separately in a fluidized bed;

(e) the first of said stages comprising means for heating steam up to a maximum of 540° C; and

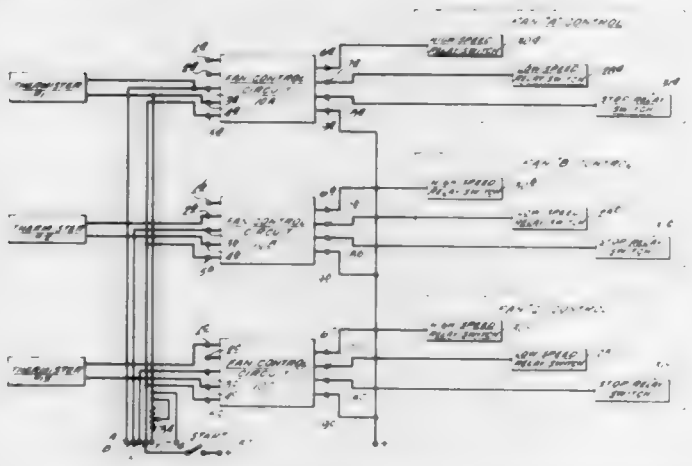
(f) the second of said stages comprising means for heating said steam above 540° C.

4,085,594

CONTROL SYSTEM FOR COOLING TOWER FANS

Robert Mayer, Ardmore, Pa., assignor to Suntech, Inc., Wayne, Pa.

Filed Feb. 14, 1977, Ser. No. 768,295
Int. Cl.[2] G05B *11/18*
U.S. Cl. 62—171 **6 Claims**



1. A control system for automatically controlling the operation of a cooling tower fan with a two speed fan motor in response to the temperature of the coolant circuit comprising:

(a) means, responsive to the temperature of the coolant being above a predetermined first temperature, for producing a first actuating signal;

(b) means, responsive to the first actuating signal, for producing a first energizing signal having a first predetermined time duration;

(c) means, responsive to the first energizing signal, for turning the fan motor on at its low speed;

(d) means, responsive to the first energizing signal, for producing an energy termination signal having a second predetermined time duration less than said first predetermined time duration;

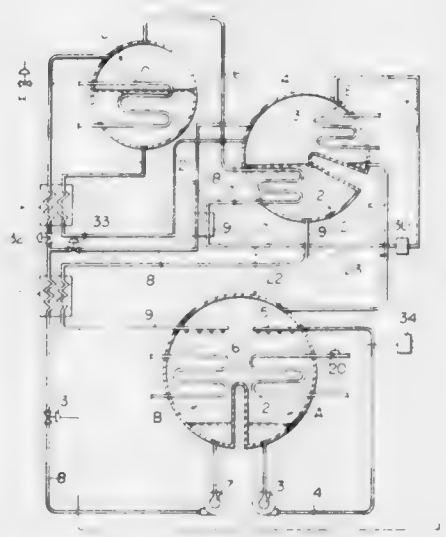
(e) means, responsive to the energy termination signal, for disconnecting power supplied to the fan motor, whereby the fan motor is first disconnected from its power supply for said second predetermined time duration before being turned on at its low speed.

4,085,595

DOUBLE EFFECT ABSORPTION REFRIGERATING SYSTEM

Shozo Saito, and Naoyuki Inoue, both of Yokohama, Japan, assignors to Ebara Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1976, Ser. No. 752,661
Claims priority, application Japan, Dec. 29, 1975, 50-156358
Int. Cl.[2] F25B *15/00, 33/00*
U.S. Cl. 62—476 **13 Claims**



1. A double effect absorption refrigerating system comprising:

an evaporator having therein a line for passing medium to be chilled;

an absorber associated with the evaporator;

a first generator associated with a heat source;

a second generator;

a condenser associated with said second generator;

means for circulating solution from the absorber to the first generator and thence to the second generator and for returning the solution to the absorber;

means for circulating refrigerant from the first generator to the evaporator through the second generator to the condenser and from at least one of the condenser and the portion of the refrigerant circulating means downstream of the second generator to the evaporator;

means for bypassing a portion of the solution fed from the absorber to the first generator to the second generator; and

a heat exchanger disposed in said bypassing means and arranged to effect heat transfer between the solution bypassed and the refrigerant passed through the second generator.

4,085,596

ABSORPTION REFRIGERATOR OF DOUBLE EFFECT TYPE

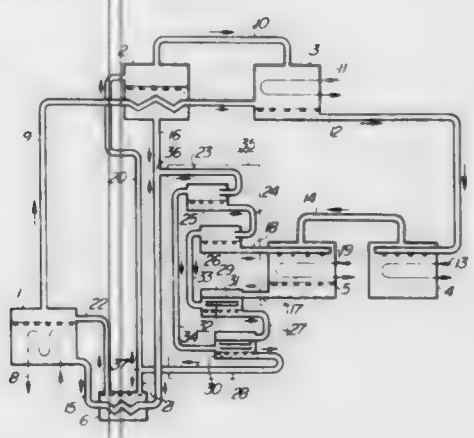
Seigo Miyamoto, Takahagi; Kazuo Takezoe, Ibaraki; Hayao Yahagi, Hitachi, and Shigeo Sugimoto, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 23, 1977, Ser. No. 771,209

Claims priority, application Japan, Mar. 3, 1976, 51-22114

Int. Cl.[2] F25B *15/00, 33/00*

U.S. Cl. 62—476 **14 Claims**



1. In a double effect type absorption refrigerator comprising a first generator for heating a weak solution to cause refrigerant to be flashed from said weak solution to produce a strong solution, a condenser for introducing said refrigerant vapor thereinto to condense and liquidize the same, an evaporator for introducing said condensed solution thereinto to produce refrigerant vapor to provide cooling, an absorber for introducing said refrigerant vapor thereinto to dilute the strong solution fed from said first generator, means for causing said weak solution to flow through said first generator, means for circulating said strong solution produced within said first generator toward said absorber, a second generator having a lower temperature than that of said first generator and through which the refrigerant vapor produced in said first generator is directed to said condenser, said second generator being arranged such that the refrigerant vapor from said first generator is caused to heat exchange with the weak solution from said absorber to flash the refrigerant and produce a strong solution said strong solution produced within the first generator flowing into the strong solution produced within the second generator to be circulated into said absorber, the improvement comprising a flash type heat exchanging means provided at a portion at which the weak solution transported from said absorber to said both generators and the strong solution transported from said both generators to said absorber flow in parallel with each other and for flashing said strong solution to produce gaseous refrigerant to be absorbed into said weak solution.

4,085,597

KNITTING MACHINE COUPLED WITH THE PROGRAM READING DEVICE

Shigeo Kamikura; Hideaki Itagaki; Yutaka Kagaya, and Ryoiti Kawaoka, all of Kodaira, Japan, assignors to Silver Seiko Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1976, Ser. No. 737,433

Claims priority, application Japan, Nov. 4, 1975, 50/131534; Feb. 21, 1976, 51/17487

Int. Cl.[2] D04B *7/00, 15/66*

U.S. Cl. 66—75.2 **21 Claims**

1. A providing system for providing electric signals representative of data for selecting knitting needles in a needle bed of a knitting machine comprising, in combination,

a frame mounted alongside the needle bed;

a holder rotatably supported on said frame;

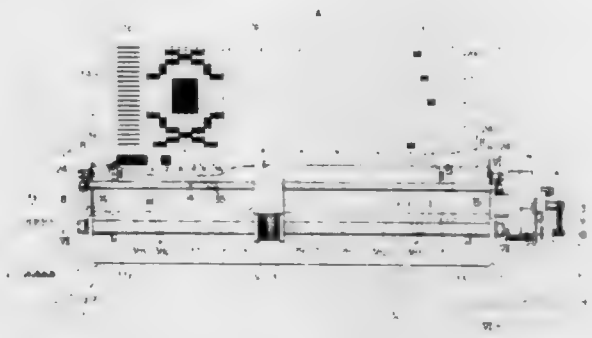
a program carrier removably supported on said holder and having thereon a program of a pattern to be knitted;

first drive means including an electromagnetic means for driving said holder to rotate around its axis thereby to incrementally feed the program carrier in one or the other direction;

a guide bar mounted in parallel with said axis;

a member slidably mounted on said guide bar;

a scanning sensor mounted on the slidable member for reading the program on said program carrier along a predetermined scanning line;



second drive means including an electric motor for driving said slidable member to move from one to the other stroke end and vice versa;

pulse generator means for generating an interval pulse each time said slidable member moves an increment; and

control means including a control circuit for controlling said first and second drive means to effect feeding of the program carrier in a selected direction and scanning by the scanning sensor.

4,085,598

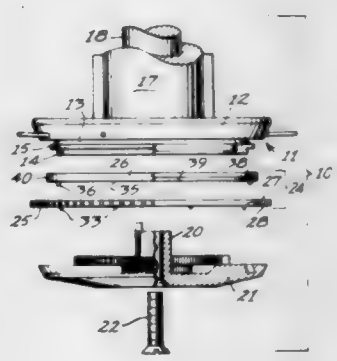
RING SAW FOR CIRCULAR KNITTING MACHINE

Clarence W. Minton, 4802 Dakota Ave., Nashville, Tenn. 37209

Filed Dec. 27, 1976, Ser. No. 754,173

Int. Cl.[2] D04B *15/61*

U.S. Cl. 66—145 R **1 Claim**



1. In a circular knitting machine including a welting dial having dial walls defining interstices therebetween and rotatably mounted upon a dial pad having an annular bearing surface, a knife mounted upon and depending from the periphery of the dial pad, a rotary saw apparatus adapted to be mounted between said dial and said dial pad, comprising:

(a) a discrete ring saw blade having parallel, substantially continuously planar top and bottom surfaces, a circular inner perimeter, and an outer rim forming uniformly circumferentially spaced teeth having radially projecting top and bottom planar teeth surfaces,

(b) a plurality of lugs depending from the bottom face of said ring saw blade adapted to detachably seat within interstices berween the dial walls of said welting dial for rotary movement of said ring saw blade with said welting dial in operative position,

(c) a discrete ring carrier having a top surface and a bottom planar surface, a cylindrical inner bearing surface, and a cylindrical outer flange projecting upward substantially above the top surface of said ring carrier, the outer diame-

ter of said flange being substantially less than the diameter of said outer rim of said saw blade,

(d) the inner diameter of said inner perimeter of said saw blade and said inner bearing surface of said ring carrier being substantially equal to the diameter of the annular bearing surface of said dial pad so that said carrier and said saw blade receive and rotatably engage the bearing surface of said dial pad in said operative position,

(e) an annular recess in the top face of said saw blade having an outer diameter substantially equal to the outer diameter of said outer flange, the bottom surface of said ring carrier being adapted to seat concentrically within said annular recess,

(f) dog-and-slot means on said carrier and said saw blade for detachably securing said carrier to said saw blade for rotary movement together and permitting axial separation of said saw blade from said carrier to facilitate the sharpening of the teeth of said ring saw blade independently of said carrier,

(g) said outer flange projecting upward substantially above the top planar face of said saw blade when said ring carrier is seated in said annular recess, and

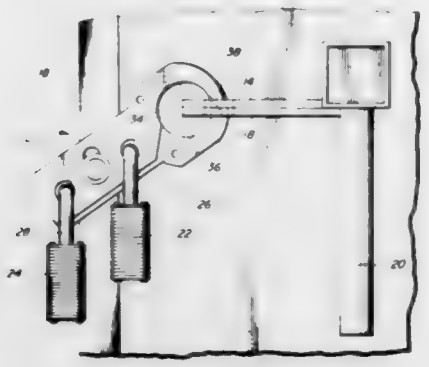
(h) only said planar top surface of said saw blade, including said top planar teeth surfaces, engaging the knife in said operative position.

4,085,599

PADLOCK ADAPTER ASSEMBLY

Don G. Fischer, Peru, and Harold Holland, Wabash, both of Ind., assignors to Square D Company, Park Ridge, Ill.

Filed May 23, 1977, Ser. No. 799,630
Int. Cl.[2] E05B *73/00*
U.S. Cl. 70—14 **8 Claims**



1. A padlock adapter assembly for use with a plurality of padlocks each having a shackle to enable any one said padlocks to be retained on said assembly while enabling said assembly to be detached from a latch element, the improvement comprising:

a pair of plates each having a pair of spaced passages with each passage adapted to be aligned with a respective spaced passage in the other plate for receiving a shackle of a respective padlock through the aligned pair of passages,

and means formed adjacent one end of each plate for engagement with said latch element to prevent entrance into a closure and pivotable about an axis passing through either passage of said pair of spaced passages for releasing said means from said latch element in response to the removal of the respective shackle.

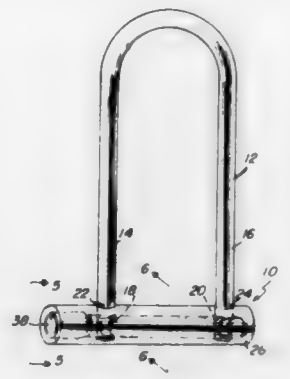
4,085,600

DOUBLE CONTACT LOCKING MECHANISM

Ahmed El Bindari, 1217 Beacon St., Brookline, Mass. 02146

Continuation-in-part of Ser. No. 646,477, Jan. 5, 1976, abandoned. This application Sep. 15, 1976, Ser. No. 723,589
Int. Cl.[2] E05B *67/06, 67/22*
U.S. Cl. 70—39 **1 Claim**

1. A padlock comprising a shackle terminating in a pair of spaced arms, said arms each having a lip thereon proximate the ends thereof, a locking pin of sufficient length, to bridge the shackle arms, said pin having at least one indented portion which rotates about the longitudinal axis of rotation of said pin, said indented portion being positioned to engage both shackle lips upon axial rotation thereof and to swing clear from said shackle arms when further rotated, lock housing means for holding said shackle lips and said indented portion in engaging proximity, means to axially rotate said locking pin into locking engagement with said shackle arms and means to further rotate said locking pin to disengage said indented portion from said



shackle arms to release said shackle to permit the opening of said padlock;

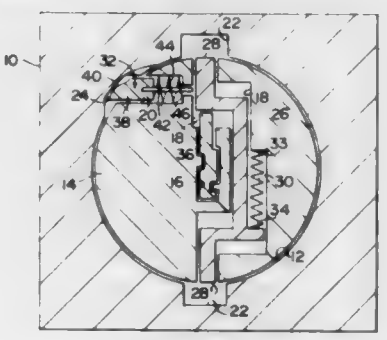
one of said shackle arms extending substantially straight to the end thereof and the other of said shackle arms extending substantially parallel to the first arm part way then bending inwardly toward said first arm then bending again to substantially parallel said first arm proximate said lock housing means to provide a protective shackle arm overhang which prevents direct blows to the lock housing said overhang limited to the axial extent of said lock housing.

4,085,601

NONPICKABLE LOCK

Kenneth D. Sauder, 1861 Brentwood Dr., Clearwater, Fla. 33516

Continuation of Ser. No. 518,108, Oct. 25, 1974, abandoned. This application Jan. 30, 1976, Ser. No. 653,743
Int. Cl.[2] E05B *29/02*
U.S. Cl. 70—364 R **1 Claim**



1. A lock comprising a housing having a bore formed therein; a cylindrical lock plug rotatably mounted within said bore, said plug having an axially extending keyway formed therein; a plurality of cross bores formed in said plug in communicating relation to said keyway; a corresponding plurality of clearance slots extending inwardly from the periphery of said plug and perpendicularly intersecting said cross bores; a plurality of lock slots formed in said housing each one being in registry with a corresponding end of one of said plurality of cross bores in the locked position of said lock; a corresponding plurality of tumbler biasing slots formed in said housing, each of said tumbler biasing slots being formed in communicating relation to a corresponding one of said clearance slots in the locked position of said lock; a corresponding plurality of tumbler means, said plurality of said tumbler means being respectively mounted for reciprocal movement in said plurality of cross bores; each of said tumbler means including one bar blocking portion on one end thereof; a plurality of tumbler spring means interposed between said plug and said plurality of
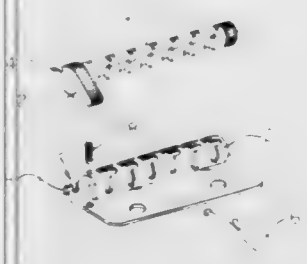
tumbler means for yieldably shifting said plurality of tumbler means in said cross bores to normally extend said bar blocking portion of each of said plurality of tumbler means into a corresponding one of said lock slots in the locked position of said lock; said bar blocking portions comprising a tongue with each of said lock slots further comprising a circumferentially extending groove dimensioned to matingly receive a corresponding one of said tongues in the unlocked position of said lock, said tumbler means being of such length as to block rotation of said plug by extending said bar blocking portions into said lock slots, said tumbler spring means comprising a plurality of leaf springs interposed between said plurality of tumbler means and said plug whereby the outward biasing force of a key exceeds the inward biasing force of said tumbler spring means when a key is inserted in said keyway, side bar biasing spring means comprising a leaf springs movably mounted in each of said clearance slots and cooperating with said tumbler means and said tumbler biasing slot to project one end of said side bar biasing spring means into contact with a corresponding one of said tumbler means to prevent movement thereof upon rotation of said plug, said side bar biasing spring means having a first end mounted to said plug and having a second end for contacting said tumbler means, said first end of said side bar biasing spring means being receivable within a slot within said cylindrical lock plug; and said side bar biasing spring means having a projecting tip portion interposed between said first and second ends for cooperation with the wall of said tumbler biasing slot upon movement of the spring.

4,085,602

KEY CASE HEAD

Oskar Alexander Hellwig, Springfield, Mass., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Jun. 3, 1977, Ser. No. 803,301
Int. Cl.[2] A47G *29/10*
U.S. Cl. 70—456 B **2 Claims**



1. A key case head comprising an elongated inner member, an elongated generally cylindrical outer member, said inner member being adapted to move rotatably within said outer member, said inner and outer members being adapted to releasably retain key hooks therein, an actuator fixed to one end of said inner member and having recessed and non-recessed portions, said outer member having lug and recess means complemental to and adapted to receive said recessed and non-recessed portions of said inner member to interconnect said inner and outer members to permit relative rotational movement and prevent relative longitudinal movement thereof.

4,085,603

METHOD OF MAKING V-SHAPED MAGNETIC CIRCUIT ELEMENTS

Jaroslav Vanek, 35, rue des Cascades, 75020 Paris, France

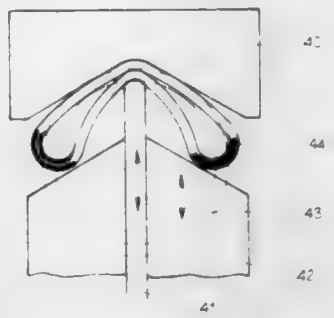
Division of Ser. No. 577,014, May 13, 1975, abandoned. This application Feb. 9, 1977, Ser. No. 767,225
Claims priority, application France, May 21, 1974, 74 17646; Oct. 18, 1974, 74 35225; Mar. 27, 1975, 75 09707
Int. Cl.[2] B21D *31/00*; H01F *3/04*
U.S. Cl. 72—41 **7 Claims**

1. A method for manufacturing a V-shaped magnetic circuit element comprising the following steps:

manufacturing a wound magnetic tore,

positioning said tore in a stamping die having a portion with a V-shape according to a determined angle,

punching said tore against the V-shaped portion of the stamping die to flatten the tore fully against itself into said V-shape by successively operating punches of succes-



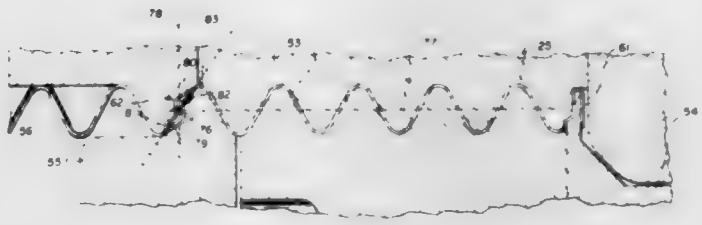
sively increasing sizes, the first of said punches being operated to press the tore toward only the neighborhood of the central area of said V-shaped portion and the last of said punches being operated to press the resulting extremities of the tore against the outer extremities of said V-shaped portion.

4,085,604

METHOD OF MAKING CORRUGATED FLEXIBLE METAL TUBING

Leroy E. Anderson; Michael P. Schmidt, and William W. Weaver, all of Detroit Lakes, Minn., assignors to Manufacturers Systems, Inc., Detroit Lakes, Minn.

Division of Ser. No. 656,389, Feb. 9, 1976. This application Nov. 8, 1976, Ser. No. 739,571
Int. Cl.[2] B21C *37/12*
U.S. Cl. 72—50 **7 Claims**



1. A method of forming a corrugated cylindrical tube consisting in:

(a) corrugating longitudinally an elongated narrow flat strip of readily formable metal of light gauge and forming U-shaped seam elements extending along opposite side edges thereof and facing outwardly in opposite directions at substantially right angles to the plane of the strip;

(b) progressing and helically warping said strip into and through a helically extending warping member into contiguous convolutions to form a tubular member and thereby bringing the U-shaped seam element at one side of said strip into interengaging relation with the U-shaped seam element at its opposite side, with the outer leg of each of said elements extending into and to the bottom of the other;

(c) deforming and compressing the legs of each of said U-shaped seam elements transversely against each other to form a seam member thereof and to constitute a common leg of a currugation for the contiguous convolutions of said strip and

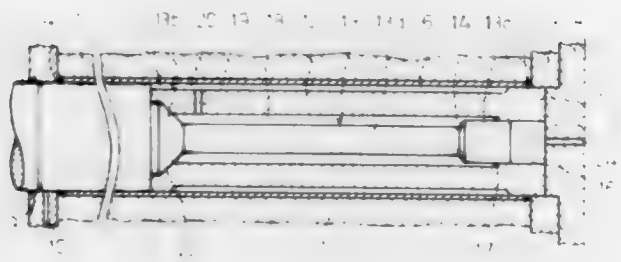
(d) deforming each of the compressed elements of said seam member simultaneously intermediate its ends into the completed form of said seam and thereby bending corresponding portions of each out of its general plane in a direction transverse to its length and thereby interlocking said elements.

4,085,605

METHOD AND APPARATUS FOR PLASTIC DEFORMATION AT HIGH AMBIENT PRESSURE

Martin Burstrom; Hans Larker, and Jan Nilsson, all of Robertsfors, Sweden, assignors to ASEA AB, Vesteras, Sweden

Filed Mar. 1, 1977, Ser. No. 773,272
Claims priority, application Sweden, Mar. 4, 1976, 7603002
Int. Cl.[2] B21D *22/10*
U.S. Cl. 72—54 **5 Claims**



1. A method of plastically de-forming material in a high pressure cylinder provided with a pressure chamber, the material being pre-formed into a mandrel billet with an attachment portion and a piston at respective opposite ends thereof and interconnected by an intermediate portion having a smaller cross section than said piston, comprising the steps of:

fixedly securing said attachment portion by inserting a holder in said pressure cylinder including a seat for receiving said attachment portion and a groove for slidably engaging said piston, with said mandrel billet mounted in said holder, positioning said high pressure cylinder with said groove communicating with the atmosphere outside said high pressure cylinder;

filling the pressure chamber with a pressurizable pressure medium; and

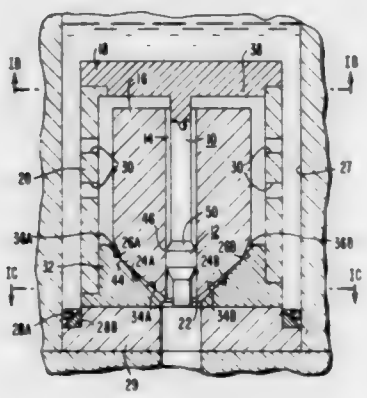
pressurizing said pressure chamber by movement of a pressure generating punch therein, whereby the pressure medium acts via the holder on the transition surface between the intermediate portion and said piston and causes an elongation of the intermediate portion of said mandrel billet.

4,085,606

HYDROSTATIC EXTRUSION APPARATUS FOR PRODUCING HOLLOW ELONGATED BODIES OF RECTANGULAR CROSS SECTION

Robert Lugosi, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 9, 1976, Ser. No. 748,971
Int. Cl.[2] B21D *22/10*
U.S. Cl. 72—60 **5 Claims**



1. An apparatus for hydrostatically extruding hollow, open-ended bodies of generally rectangular cross section, said apparatus comprising:

a fluid-tight pressure chamber containing a pressure transmitting medium;

a die disposed in said pressure chamber and having an opening therethrough, said opening being bounded at a first end by a tapered entrance wall and at a second end by an exit wall having an opening of rectangular cross section;

a mandrel positioned in said pressure chamber, said mandrel having a forming end which cooperates with said die in providing an extrusion path therebetween, said forming end having a periphery that changes in an axial direction from a cylindrically shaped sealing surface through a transition portion to a rectangularly shaped portion with said transition portion having a surface constituting a series of planes disposed in alternating relation with a series of curved, tapered surfaces, said planes being tangent to and extending from said cylindrically shaped surface to the sides of said rectangularly shaped portion;

said die's tapered entrance wall including a first frusto conical surface having a first apex angle; and

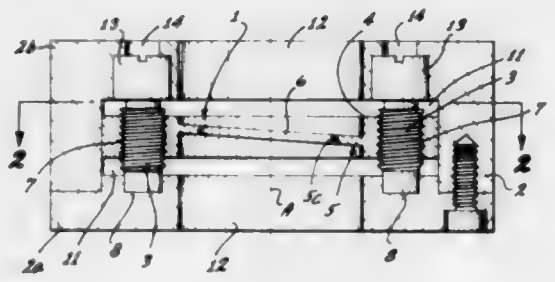
means for pressurizing said pressure transmitting medium whereby said extrusion is caused to occur.

4,085,607

HELICALLY CORRUGATING TUBES

Kurt Müller, Hanover, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte AG., Hanover, Germany

Filed May 2, 1977, Ser. No. 792,726
Claims priority, application Germany, May 12, 1976, 2620913
Int. Cl.[2] B21D *15/04*
U.S. Cl. 72—77 **6 Claims**



1. In a machine tool for helically corrugating smooth wall tubes, a corrugating tool for rotation on an axis and co-acting with a tube, the combination comprising: a housing having an opening and a plurality of blind bores arranged around that opening;

an annular means in the housing having inwardly directed helical, working edge means and having a plurality of radial grooves, further having a plurality of azimuthally arranged threaded bores; and

a plurality of bolts respectively threadedly inserted in said bores and bearing against said blind bores and being adjusted for defining a particular pitch of the annular means and of the edge means, permitting change of the pitch.

4,085,608

RETURN ELBOW AND CROSSOVER BENDER

Lawrence A. Franks, and Eugene E. Eldridge, both of Sturgis, Mich., assignors to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Filed May 2, 1977, Ser. No. 792,518
Int. Cl.[2] B21D *7/02, 9/05*
U.S. Cl. 72—297 **11 Claims**

1. An apparatus for forming a C-shaped elbow from an elongated tubular element, comprising:

a frame;

a first forming means stationarily positioned on the frame and having a first nonlinear forming groove extending at least part way therearound;

support means swingably supported on said frame for swinging about a first pivot axis which is spaced from said first groove and extends substantially perpendicular to the lengthwise direction thereof;

driving means connected to said support means to swingably

move same between first and second positions which are spaced apart by a selected angular extent;

a second forming means positioned adjacent said first forming means and having a second forming groove therein, with at least portions of said first and second forming grooves being disposed opposite one another to define a forming bore therebetween into which extends said tubular element;

intermediate supporting means for supporting said second forming means on said support means for permitting said second forming means to both pivotally move relative to said support means about a second pivot axis which is



substantially parallel to said first pivot axis and linearly moves relative to said support means within a plane which is substantially perpendicular to said first pivot axis; and

guide means coacting with said intermediate supporting means for constraining same to move along a selected nonlinear path which is substantially parallel and conforms to the nonlinear configuration of said first forming groove in response to swinging movement of said support means, whereby said opposed first and second forming grooves thus define said forming bore therebetween which is progressively displaced along said first groove in response to swinging of said support means to cause progressive bending of said tubular element.

4,085,609

DROPWEIGHT SAMPLE TESTER

John H. Kelly, Burlington, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Canada

Filed Sep. 22, 1976, Ser. No. 725,399
Claims priority, application Canada, Jul. 26, 1976, 257740
Int. Cl.[2] G01N *3/30*
U.S. Cl. 73—101 **1 Claim**

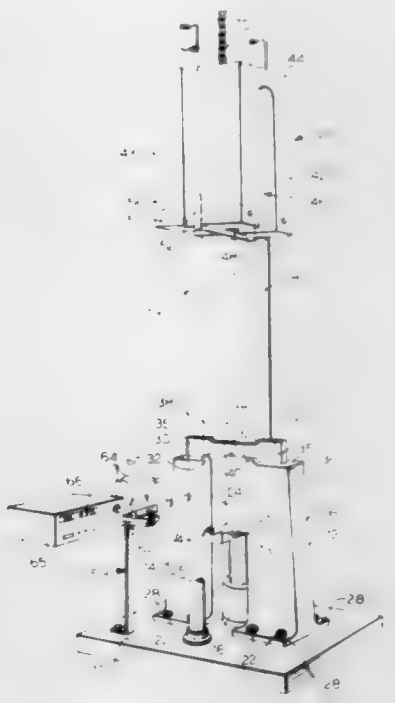
1. Apparatus for determining the energy absorbed by an elongated test-piece of material during fracture thereof, comprising:

support means for supporting the test-piece during fracture including anvil means at either end of the test-piece;

a dropweight, vertical guide means for the dropweight, means for raising the dropweight along the guide means, and means for releasing the dropweight from a raised position directly above the test-piece to undergo substantial free-fall vertically after release,

and means for measuring a determining characteristic of the motion of the dropweight after the test-piece has been fractured, the latter means including two retro-reflective areas affixed in vertically separated relation on the dropweight, a photoelectric beam projecting such that the retro-reflective areas pass sequentially into said beam, light-detecting means for sensing light reflected from said areas and for generating two time-separated electrical signals as the two areas pass sequentially into the beam, and electronic period-counter means to measure the time elapsing between the two electrical signals,

the dropweight being an integral mass of metal shaped to define tow downwardly extending, laterally spaced-apart arms joined integrally together at the top thereby providing an internal slot extending upward from the bottom, the said guide means maintaining the dropweight in an orientation such that the test-piece is aligned with said internal slot, the dropweight including a striker bar supported horizontally across and at right-angles to said slot and said test-piece, whereby the striker bar contacts the test-piece substantially mid-way of each so that the fractured sepa-



rated ends of the test-piece can pivot inwardly and into the slot above the striker bar, thus avoiding interference with the further downward free-fall of the dropweight.

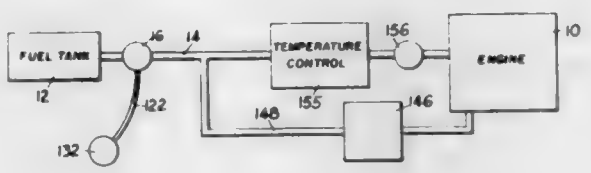
and means directly beneath the initial test-piece location for catching and decelerating the dropweight after fracture of the test-piece.

4,085,610

COMPENSATED FUEL MEASURING SYSTEM FOR ENGINES

Curtis L. Erwin, Jr., 5805 SE. Gladstone, Portland, Oreg. 97206

Division of Ser. No. 456,264, Mar. 29, 1974, Pat. No. 3,949,602.
This application Mar. 22, 1976, Ser. No. 669,292
Int. Cl.[2] G01F *9/00*
U.S. Cl. 73—113 **35 Claims**



34. A compensated measuring system in combination with an engine, fuel supply means for said engine, slow flow type volumetric measuring means measuring fuel flow in said measuring system, compensating means in said system arranged to compensate the measurement of said measuring means for variations in the physical characteristics of the fuel, and indicating means arranged to indicate the compensated rate of fuel flowing through said measuring means.

4,085,611

RECORDING COMPRESSION TESTING METER

Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.

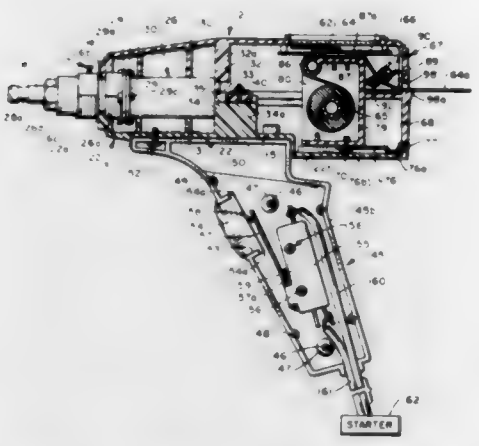
Filed Jun. 24, 1977, Ser. No. 809,638
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—115 **12 Claims**

1. In a meter for testing the compression pressure developed

by an engine piston in an engine cylinder, the pressure being transmitted by a tube to a measuring cylinder from the spark-plug hole of the engine cylinder and a measuring piston located within the measuring cylinder to move an indicator in response to compression pressure; the improvement comprising:

a casing containing said measuring cylinder and being open at the one end;

a removable cartridge insertable into said casing at said open end and containing a roll of recording paper;



a platform on said cartridge over which said paper passes when unrolled from said roll; and

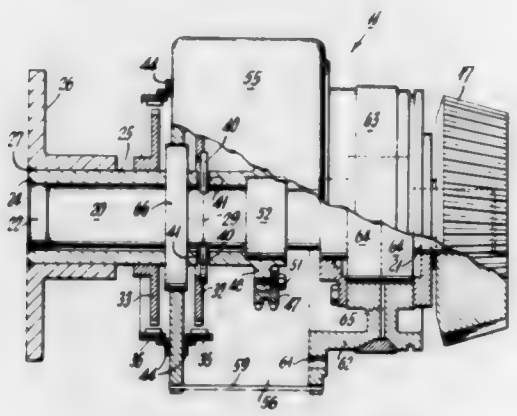
marking means on said indicator located opposite said platform and movable across said recording paper on said platform in order to indicate increase in compression pressure in said measuring cylinder with successive strokes of said engine piston.

4,085,612

HEAVY DUTY TORQUE COUPLING

Herbert A. Rundell, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Sep. 20, 1976, Ser. No. 724,483
Int. Cl.[2] G01L *3/10*
U.S. Cl. 73—136 A **1 Claim**



1. Heavy-duty dynamic high-torque measuring coupling unit for transmitting a torque load in connection with rotary drilling employing a rotary table, comprising in combination

a shaft for transmitting said torque load and having an output end and an input end,

flange means integrally attached to said shaft at said input end for making a direct longitudinal torque coupling,

gear means mounted on said output end for transmitting said torque load to said rotary table,

means for dynamically measuring the relative angular displacement between said input end of said shaft and a predetermined location spaced along said shaft between said input and said output ends thereof, comprising

a dynamic torque meter having a pair of rotors and stators,

a plurality of spokes for attaching a first of said rotors to said shaft at said predetermined location,

alternative means for making a lateral input torque coupling at said input end of shaft, comprising

a coaxial sleeve surrounding said shaft,

a pair of chain sprockets securely attached to said sleeve, and

welding means for securely attaching said sleeve to said shaft at said input end thereof,

said means for dynamically measuring also comprises means for attaching a second of said rotors to said sleeve on the opposite side of said first rotor from said pair of chain sprockets,

unitary means for supporting said stators adjacent to one another,

a corresponding plurality of slots in said sleeve for permitting said spokes to pass therethrough with freedom for maximum relative angular displacement, and

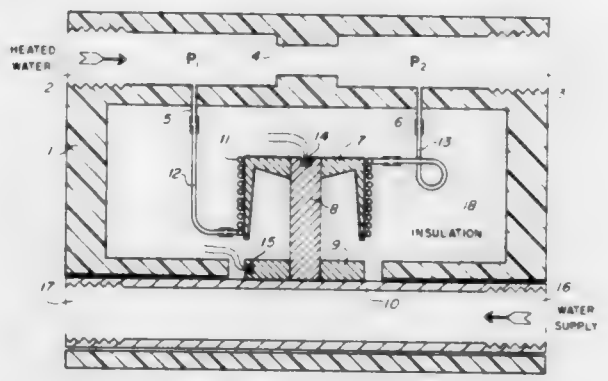
a housing for protecting said chain sprockets and including an opening for access to said sprockets for making said lateral alternative input torque coupling.

4,085,613

THERMAL ENERGY FLOWMETER

Joseph D. Richard, 3613 Loquat Ave., Miami, Fla. 33133

Filed Mar. 7, 1977, Ser. No. 774,932
Int. Cl.[2] G01K *17/08*
U.S. Cl. 73—193 R **10 Claims**



1. Apparatus for measuring heat conveyed by a flowing fluid comprising:

a conduit adapted to receive a flowing fluid;

a constriction within said conduit for providing differential pressure proportional to the rate of fluid flow;

a by-pass tube connected across the said constriction through which some of the aforementioned fluid flows at a rate proportional to the differential pressure;

a thermal shunt having first and second ends and a relatively high thermal conductivity;

a heat exchanger for facilitating the transfer of heat between fluid flowing within the said by-pass tube and the first end of the said thermal shunt, the said heat exchanger and thermal shunt being otherwise thermally isolated from the fluid within the said conduit;

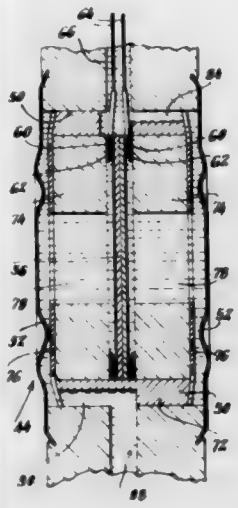
a heat sink for maintaining the second end of the said thermal shunt at a reference temperature; means for measuring the temperature differential across at least a portion of the said thermal shunt; and

means for indicating the heat flow through the said conduit as a function of the said measured temperature differential.

4,085,614
VORTEX FLOW METER TRANSDUCER

John R. Curran, Attleboro; George E. Sgourakes, Millis, and David A. Richardson, Sheldonville, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 463,301, Apr. 23, 1974, abandoned.
This application Dec. 11, 1975, Ser. No. 639,776
Int. Cl.[2] G01F *1/32*
U.S. Cl. 73—194 VS 11 Claims



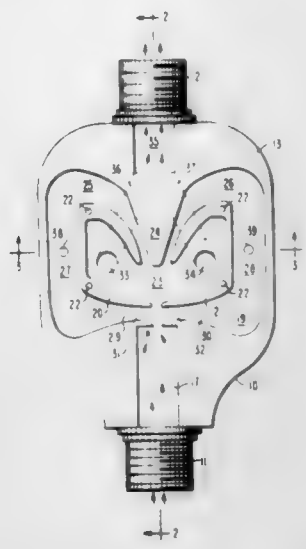
1. Flow-metering apparatus of the vortex-shedding type comprising:
a flow-pipe section adapted to be coupled into a flow system;
a vortex-generating body mounted in said flow pipe section;
means defining an enclosed chamber downstream of said body including flexible diaphragm means as one wall of said chamber arranged to respond to the pressure fluctuations of vortices shed from said body and to transmit such pressure fluctuations into the interior of said chamber;
sensor means located outside of said flow-pipe section, remote from the process fluid flowing through the associated flow system;
said sensor means comprising an enclosed compartment;
a pressure-responsive piezo-electric sensor element in said compartment;
the area of said sensor element being about 2.5 times the area of said diaphragm means;
conduit means connecting said compartment with said enclosed chamber; and
liquid filling in said conduit means, said chamber, and said compartment, to transmit vortex pressure pulses from said flexible diaphragm means to said piezo-electric sensor element to produce a pulsating flow signal corresponding to the fluid flow rate.

4,085,615
LINEAR FLOWMETER

Kenneth B. Haefner, Schenectady, and Carl G. Ringwall, Scotia, both of N.Y., assignors to General Electric Company, Wilmington, Mass.

Filed Nov. 22, 1976, Ser. No. 743,907
Int. Cl.[2] G01F *1/32*
U.S. Cl. 73—194 B 8 Claims

1. A flowmeter of the fluid oscillator type comprising:
(a) a proportional fluid amplifier having an interaction chamber, fluid accelerating means receiving at least a portion of the fluid, the flow rate of which is to be measured for forming a fluid jet directed into the chamber,
(b) receiver means disposed on opposite sides of the jet to receive a differentially variable portion of the jet fluid,
(c) conduit means forming control ports for laterally deflecting the jet with respect to the receiver means,
(d) feedback conduit means interconnecting the receiver means and control ports of the amplifier to establish the differential pressure to deflect said jet whereby the amplifier is caused to oscillate continuously at a frequency variable in accordance with the flow rate of the fluid passing through the fluid accelerating means,
(e) flow rate indicating means sensing the jet oscillation frequency,

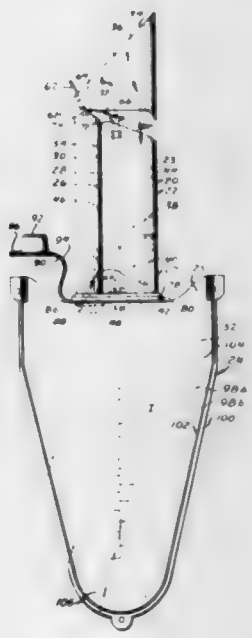


(f) said fluid accelerating means being in the form of a sharp-edged orifice having an aspect ratio which provides a predetermined constant orifice discharge coefficient whereby the flow vs. frequency characteristic of said flowmeter is linear for Reynold's numbers in the range from 200 to 50,000.

4,085,616
LIQUID MEASURING AND COLLECTION DEVICE

Bhupendra C. Patel, Elgin, and Steven M. Boedecker, McHenry, both of Ill., assignors to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 524,021, Nov. 15, 1974, abandoned.
This application Mar. 10, 1976, Ser. No. 665,666
Int. Cl.[2] G01F *1/00, 23/00*
U.S. Cl. 73—215 25 Claims



2. A device to receive a discharge of urine, comprising:
a receptacle having a cavity to receive and measure the discharge, a transverse lower wall having a lower surface and defining a lower part of said cavity, a hollow extension depending below said lower wall and defining port means to direct passage of urine from the receptacle, and means for measuring a characteristic of said discharge associated with flow of the discharge in said cavity; and
a container having a chamber, a relatively rigid transverse upper wall for placement in closely spaced facing relationship adjacent said lower surface of said lower wall and having opening means to receive said extension, and

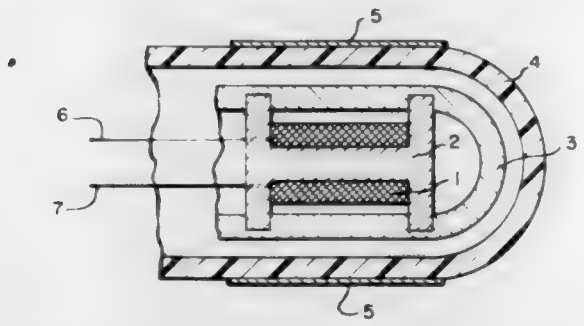
means for releasably attaching the container directly to the receptacle and for supporting the container from the receptacle with the extension received through the opening means into said chamber, whereby urine is directed through the port means in said extension to the chamber of the container for collection therein.

4,085,617

FAST RESPONSE THERMOMETER

Edwin Langberg, 33 Manning La., Cherry Hill, N.J. 08003

Filed Apr. 5, 1976, Ser. No. 673,806
Int. Cl.[2] G01K *7/38*
U.S. Cl. 73—362 CP **3 Claims**



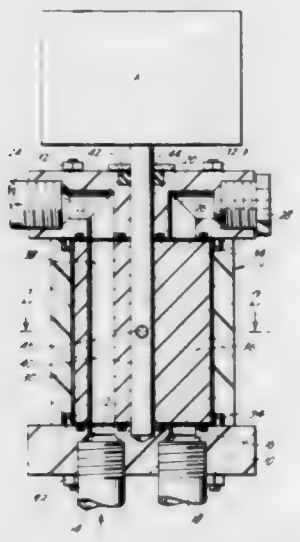
1. A thermometer probe comprising: means for generating an electromagnetic field; a housing for said means for generating an electromagnetic field; a temperature sensing material which forms a magnetic path with said electromagnetic field; said temperature sensing material disposed on a thermally and electrically insulating removable, disposable sheath fitted over said housing.

4,085,618

COMPOSITE SAMPLING SYSTEM AND ROTATABLE SAMPLING VALVE THEREFOR

Henry R. Collins, Jr., Livingston, Tex., assignor to Collins Products Company

Filed Oct. 27, 1976, Ser. No. 736,259
Int. Cl.[2] G01N *1/20*
U.S. Cl. 73—422 TC **6 Claims**



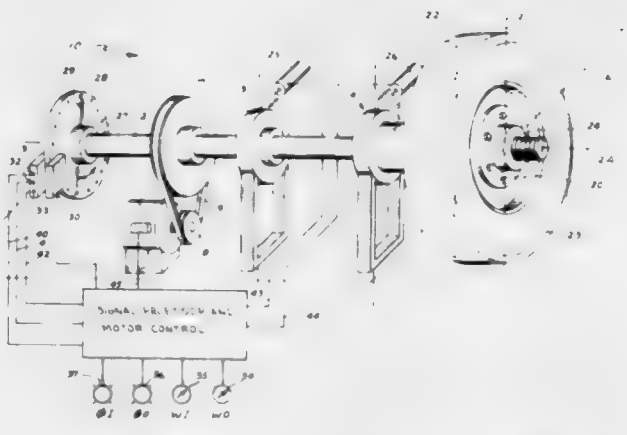
1. A composite sampling system for obtaining composite samples from a flow stream, comprising:
(a) an inlet conduit for the flow stream;
(b) sampling valve means in fluid communication with said inlet conduit, said sampling valve means comprising:
(1) a base plate member having an inlet port for receiving fluid from said inlet conduit;
(2) a cap plate member having an outlet port for transferring fluid from said sampling valve means;
(3) a transfer port for transferring samples obtained by said sampling valve means;
(4) a sampling body member mounted between said base plate member and said cap plate member;
(5) said sampling body member having a sample receiving tube formed therein;
(6) said sample receiving tube having a fixed size to receive a predetermined volume of the flow stream therein; and
(7) said sample receiving tube being normally aligned in a first position between said inlet port and said outlet port for flow of the flow stream therethrough in order to continually retain a sample of predetermined volume therein;
(c) actuator means for rotationally moving said sampling body member to move said sample receiving tube from said first position to a second position aligning said sample receiving tube with said transfer port to transfer the sample of predetermined volume from said sampling valve means; and
(d) shearing insert means mounted in said sampling valve means in at least one of said inlet port, said outlet port, said transfer port and said sample receiving tube for shearing debris in the flow stream during movement of said sampling body member; and
(e) inclined cutting edges formed in said shearing insert means to assist in shearing debris in the flow stream.

4,085,619

ELECTRONIC BALANCER FOR VEHICLE WHEELS

Haskell Shapiro, Corona del Mar, and Robert E. DeCaro, Tustin, both of Calif., assignors to Royal Industries, Inc., Osseo, Minn.

Filed Feb. 9, 1976, Ser. No. 656,606
Int. Cl.[2] G01M *1/08*
U.S. Cl. 73—462 **30 Claims**



1. Electronic wheel balancing apparatus comprising in combination:
(a) a shaft for rotatably mounting a wheel and tire;
(b) reversible motor means driveably connected to said shaft;
(c) control means for energizing said motor from a source of energy;
(d) first and second bearing means rotatably journaling said shaft, said bearing means having mounting means permitting motion thereof in parallel planes,
(e) first and second sources of signal connected to said first and second bearing means, said first and second sources of signal being indicative of the velocity of motion of the respective bearing means;
(f) third and fourth sources of signal, said third source of signal being indicative of the angular position of said shaft and the direction of rotation of said shaft, and said fourth source of signal being indicative of the rotational velocity of said shaft;
(g) signal responsive means connected to said first and second signals to indicate the magnitude of an imbalance in each of said planes and connected to said third signal to indicate the angular location of an imbalance in each of said planes;

(h) means connecting said sources of signal to said control means whereby said motor means is energized to attain a predetermined rotational velocity, the first and second signals are displayed on said signal responsive means to indicate the magnitude of imbalance in each of said planes, the third signal is displayed on said signal responsive means for indicating the angular location of the imbalance in each of said planes;

(i) means to energize said motor means in a reverse direction to thereby tend to stop said shaft; and,

(j) means to de-energize said motor when the positional source of signal reverses direction allowing said shaft to remain at rest.

4,085,620

PRESSURE-ELECTRIC TRANSDUCERS

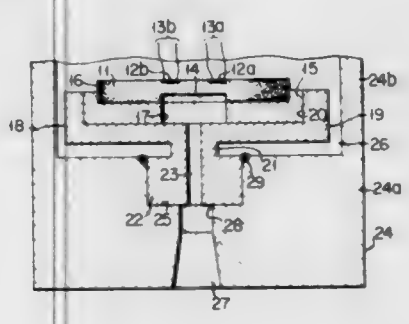
Akio Tanaka, Kodaira, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 28, 1976, Ser. No. 727,536

Claims priority, application Japan, Sep. 30, 1975, 50-117902; Sep. 30, 1975, 50-117903; Apr. 16, 1976, 51-43406; Nov. 17, 1975, 50-155187[U]

Int. Cl.[2] G01L *9/04*

U.S. Cl. 73—727 **9 Claims**



1. A pressure-electric transducer comprising a substrate having an opening for receiving pressure transmitting fluid; a stress absorbing member having a connecting section provided with a fluid passage communicated with said opening and secured to said substrate, a neck section connected to the connecting section and having a diameter not larger than that of the connection section and a head section connected to the neck section and having a diameter larger than that of said neck section, said neck and said head sections being integral with said connecting section; a semiconductor pressure sensitive element mounted on the head section of said stress absorbing member with the pressure receiving surface of said pressure sensitive element disposed to close said fluid passage, said stress absorbing member having substantially the same linear expansion coefficient as said semiconductor pressure sensitive element; and means for deriving from said semiconductor pressure sensitive element an electric signal corresponding to the pressure of said pressure transmitting fluid, a detection casing containing said semiconductor pressure sensitive element, a temperature compensator contained in said detection casing and electrically connected to said pressure sensitive element, an amplifier casing removably connected to said detection casing, and an amplifier contained in said amplifier casing for amplifying said derived electric signal.

4,085,621

TRAVERSING MECHANISM

Bernard Milton Hadaway, Melbourne, Australia, assignor to Repco Research Proprietary Limited, Dandenong, Australia

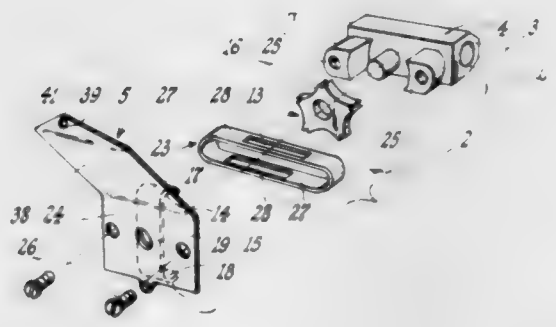
Filed Jul. 26, 1976, Ser. No. 708,355

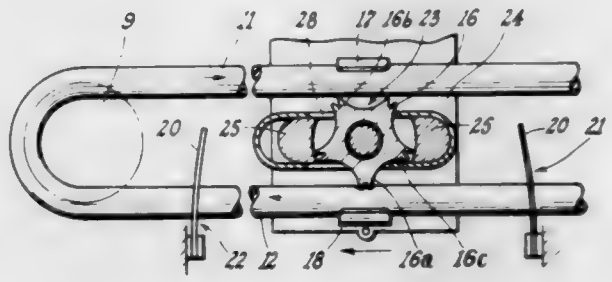
Claims priority, application Australia, Aug. 4, 1975, 2626/75

Int. Cl.[2] F16H *19/06*

U.S. Cl. 74—37 **6 Claims**

1. A traversing mechanism including: a carriage; guide means slidably supporting said carriage for movement along a predetermined path; drive means including an endless belt arranged so that each of two runs of the belt are located on opposite sides respectively of the carriage and extend generally parallel to said path, and power means operatively connected to said belt to cause rotation thereof in one direction; a drive coupling mounted on said carriage for movement therewith and being operative to engage either one of said belt runs so as to lock said carriage thereto for movement with that run, said coupling including a single rotatable element having a plurality of radially projecting lobes arranged so that in one rotational position of said element one of said lobes engages one of said belt runs to effect said lock, and in another rotational position of said element another of said lobes engages the other of said belt runs to effect said lock, said lobe arrangement being such that only one of said belt runs is locked to said carriage in any one of said rotational positions of said coupling element; an escapement slidably mounted on said carriage for movement independent of the movement of said coupling element between two operative positions, in each of which said escapement prevents rotation of the coupling element in the direction in which it is influenced by the particular belt run with which





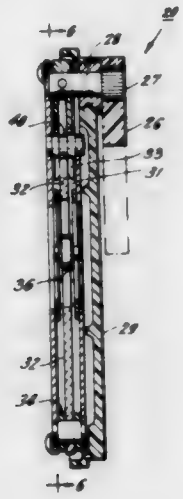
it engages; and stop means located in the path of travel of said carriage at each of two positions spaced apart along that path, each being operative to cause movement of said escapement from one said operative position to another as said carriage approaches the respective stop means, and to thereafter present a barrier to further travel of said carriage towards that stop means; said escapement being operative during each said change of operative position to free said coupling element for limited rotation only in the direction of movement of the engaged belt run, which is sufficient to advance said coupling element from one said rotational position to another; whereby as said stop means presents a barrier to said carriage, continuing movement of the belt run locked to said carriage causes said coupling element to rotate in the direction of said belt run movement to adopt a rotational position in which a said lobe thereof engages the other said belt run so that said carriage is moved in the direction opposite to said one direction, and movement of said coupling element beyond that new rotational position is prevented by said escapement until there is a further change of the escapement operative position.

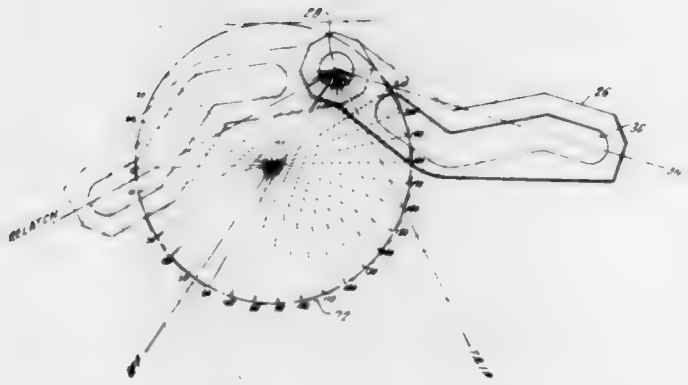
4,085,622

ELECTRICAL OPERATOR FOR CIRCUIT BREAKERS

Carl E. Gryctko, Haddon Heights, N.J.; Anthony B. Michetti, Warminster, and Peter J. McGinnis, Chester Township, Delaware County both of Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Dec. 4, 1973, Ser. No. 421,536
Int. Cl.[2] F16H *25/08*
U.S. Cl. 74—53 9 Claims





1. A device for operating an electrical switch, said device including a power operated driving means, a main output element operatively connectable to a circuit breaker handle for moving same; and linkage means, including a cam means, interconnecting said driving means to said output element to obtain a mechanical advantage at said output element that varies for different positions thereof generally in relation to force required to operate said output element at each of said different positions; said linkage means including first and second arms extending between said driving means and said output element; said cam means providing a driving connection between said arms; said cam means including means defining a longitudinally extending cam formation on said second arm and follower means at a fixed location on said first arm in operative engagement with said cam formation.

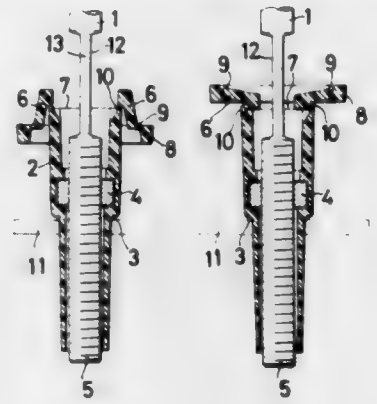
4,085,623

DEVICE FOR ADJUSTING LENGTH OF ROD

Takuo Yuda, Yokohama, Japan, assignor to NIFCO Inc., Tokyo, Japan

Filed Apr. 16, 1976, Ser. No. 677,658
Claims priority, application Japan, Apr. 18, 1975, 50-51950[U]
Int. Cl.[2] F16H *27/02*
U.S. Cl. 74—89.15 6 Claims

1. A one-piece plastic device adapted for adjustment of a rod having a screw threaded free end portion and a flattened portion adjacent thereto, said device including a substantially cylindrical open-ended body portion, female threaded means positioned internally and intermediate the extremities of said body and adapted to cooperate with said threaded portion of said rod, enlarged cavity means positioned and extending between said female threaded means and one end of said body, locking means including a pair of freely swingable pawls disposed opposite each other at the open cavity end of said body with each said pawl being integrally connected adjacent one end to the free end edge of said body by a flexible hinge and each said pawl being connected by a flexible hinge at their opposite end to the inner edge of an annular operating member, said member encircling said body in spaced relation adjacent



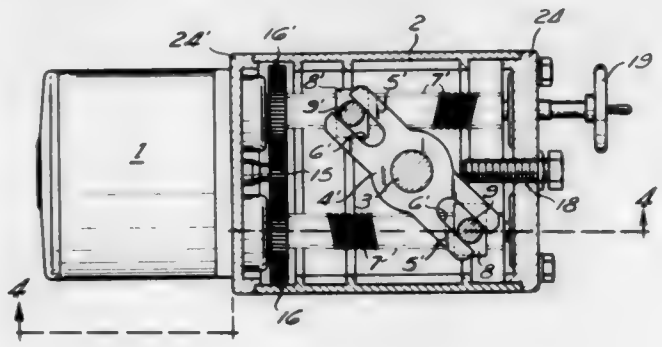
the cavity end of said body, said pawls initially being disposed in an open unobstructing position relative to said open cavity end while axial movement of said operating member in the direction of said open end causes the said one end of said pawls to swing radially inwardly over the free end edge of said body to thereby restrict movement of said rod relative to said body by engaging the flattened portion of said rod and preventing rotation of the body relative to the rod and positioning means located on the exterior of intermediate the extremities of said body.

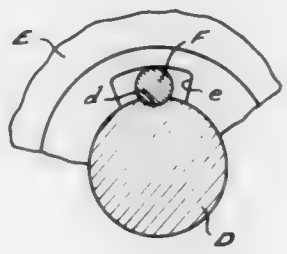
4,085,624

ELECTRICALLY DRIVEN ACTUATOR

Chifuru Nomura, Chino, Japan, assignor to Kitazawa Shoji Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1976, Ser. No. 669,890
Int. Cl.[2] F16H *27/02*
U.S. Cl. 74—89.15 16 Claims





1. An electrically driven actuator comprising a housing portion including means by which the actuator is connected to a driven apparatus, a pair of threaded shafts arranged in paral-

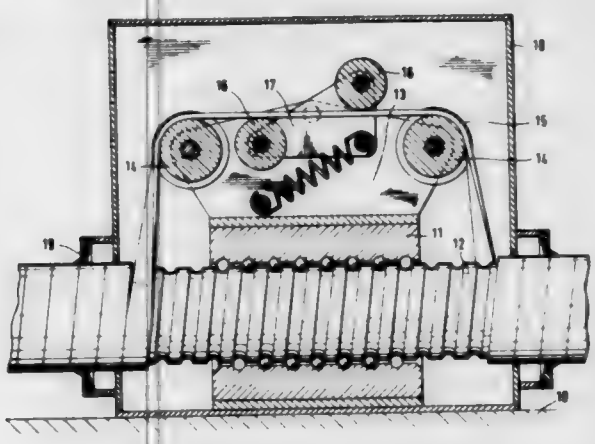
lel to each other in a plane extending transversely of a rotary shaft which has at least one end adapted to be associated with a valve stem to be actuated, said pair of threaded shafts being located symmetrically with respect to said rotary shaft, operating means adapted to convert rotation of said pair of threaded shafts into rotation of said rotary shaft, and a rotary drive source comprising an electric motor adapted to drive said pair of threaded shafts, wherein at least one of said pair of threaded shafts is associated in a section for drive transmission from said rotary drive source with a mechanism adapted to adjust, absorb and combine any relative phasal shift between both threaded shafts, and said mechanism for adjustment of the phasal shift between the pair of threaded shafts comprises a wide groove formed in a wheel adapted to be engaged with an associated threaded shaft along an engaging opening in said wheel, said groove having a constant depth from the surface of the associated threaded shaft, and a pin adapted to be urged into a gap defined by the associated threaded shaft surface and said groove after an angular position relative to a predetermined position on the shaft side has been adjusted.

4,085,625

PROTECTIVE DEVICES FOR THREADED DRIVE SHAFTS

Werner Jung, Friedhof strasse 21, D-4050 Monchengladbach, Germany

Filed Oct. 5, 1976, Ser. No. 729,824
Claims priority, application Germany, Oct. 21, 1975, 2546988
Int. Cl.[2] F16H *27/02*
U.S. Cl. 74—89.22 **10 Claims**



1. A protective device for a threaded shaft driven machine having relatively fixed and movable parts with a threaded shaft extending therebetween and connected thereto in respective rotary and driving engagement, said device comprising a protective belt connected at at least one end to said shaft at a point adjacent said fixed machine part, said belt being wound around and completely enclosing and protecting said shaft excluding the portion of said shaft engaged by said movable machine part, rotary member means mounted on and movable with said movable machine part for supporting said protective belt, said protective belt extending away from said shaft at a point immediately adjacent the shaft engaging portion of said movable machine part and being passed around and supported by said rotary member means for take-up and pay-out to the shaft during rotation thereof dependent upon the direction of rotation.

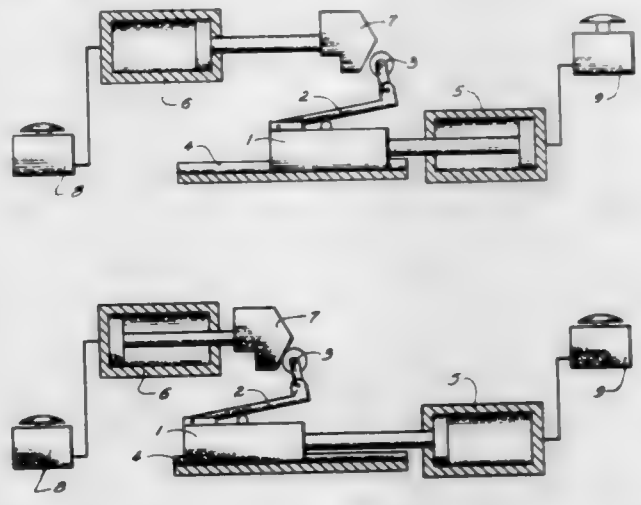
4,085,626

TWO HANDED MOMENTARY ACTUATOR

Fred F. Richards, 6837 Chevy Chase, Dallas, Tex. 75225

Filed Oct. 12, 1976, Ser. No. 731,208
Int. Cl.[2] F16H *21/44*
U.S. Cl. 74—110 **2 Claims**

1. In an actuating mechanism for an operator actuated device, the combination of two members movable between opposite positions, support means for mounting said members on said device, a cam member extending from the longitudinal axis of one movable member and aligned to travel parallel to a guide-way, a toggle-lever operated member extending from the longitudinal axis of a second movable member, said toggle-lever operated member being mounted to travel on said guide-way opposite the direction of travel of said cam member, said movable members having longitudinal axis parallel to each other and to said guide-way, said cam and said toggle-lever operated member being aligned and disposed to engage said



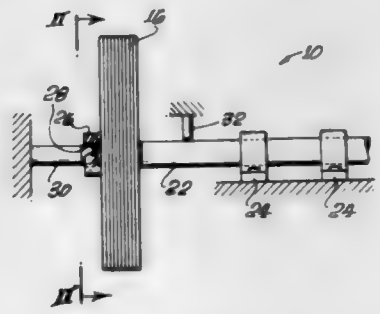
cam and said toggle-lever only when said cam and said toggle-lever have both been moved toward each other, said toggle-lever hingedly supported on an actuating member to move as a rigid unit therewith when engaged by said cam in one direction of movement, said toggle-lever being supported on said actuating member to pivot thereon and to ride over said cam without moving actuating member when said cam moves in the opposite direction.

4,085,627

ELLIPTICAL FLYWHEEL APPARATUS

Jon R. Losee, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 22, 1976, Ser. No. 707,583
Int. Cl.[2] F16F *15/10*; F16H *33/02*
U.S. Cl. 74—574 **4 Claims**



1. A flywheel apparatus comprising:
a pair of radially extending diametrically opposed spokes;
a rim mounted on said spokes;
said rim being elliptical with the major axis being substantially coextensive with the longitudinal axes of the spokes;
the difference in length between the major and minor axes being such that when the flywheel apparatus is at full speed the rim is substantially circular and contact is maintained between the rim and the spokes;
a shaft;
said spokes and rim being rigidly mounted on the shaft for unitary rotation;
the shaft extending from one side of the spokes;
means rotatably supporting only said extension of the shaft so that the spokes and rim are cantilevered for rotation;
a boss centrally mounted on the spokes on a side opposite said shaft;

said boss having an annular recess which is coextensive with the shaft; and

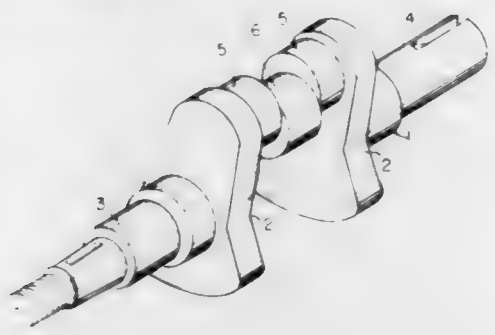
a cylinder mounted for extension within said recess and having a diameter which is smaller than the recess so that vibrations of the spokes and rim can be damped by contact of the cylinder and the boss within the recess.

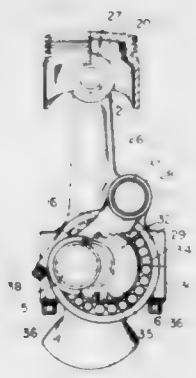
4,085,628

INTRA-ARTICULATE RECIPROCATING ENGINE SYSTEM

Edward Milton McWhorter, 6931 Greenbrook Cir., Citrus Heights, Calif. 95610

Filed Jun. 7, 1976, Ser. No. 693,682
Int. Cl.[2] G05G *1/00*; F02B *75/32*
U.S. Cl. 74—579 E **2 Claims**





1. A crankshaft comprising a plurality of longitudinally aligned and longitudinally spaced mainshafts having arms fixed on the adjacent ends of said mainshafts lateral crankpins projecting from each said arm and attached to a common central crankpin having an axial centerline parallel with said lateral crankpins but whose axial center is displaced from that of said lateral crankpins, lateral connecting rods rotatively mounted on said lateral crankpins at one end and pivotally attached to a central connecting rod at the other end said central connecting rod having a journal at one end for pivotally mounting a piston and being rotatively attached to a link at the other end, said link being rotatively mounted on said common central crankpin.

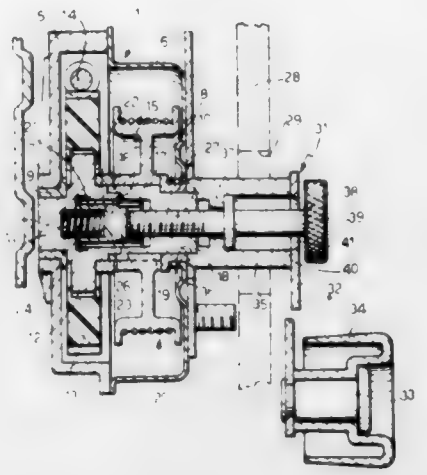
4,085,629

ELECTRIC WINDOW REGULATOR FOR MOTOR VEHICLES WITH MEANS FOR MANUAL EMERGENCY OPERATION

Pier Paolo Fogarollo, Chiavari (Genoa), Italy, assignor to LAMES Societa per Azioni, Chiavari (Genoa), Italy

Filed Jan. 25, 1977, Ser. No. 762,369
Int. Cl.[2] G05G *1/08*; E05F *15/00*
U.S. Cl. 74—625 **3 Claims**

1. An electric window regulator for motor vehicles, comprising a grooved drum upon which is wound a window operating cable, an electric motor drivingly connected to the drum through a reduction gear, the driven member of the reduction gear being disposed alongside the grooved drum, a coupling for connecting the drum torsionally to the said driven member, the said coupling having an axially movable member, loaded by resilient means so as normally to couple the driven member and the drum together, and an auxiliary handle for effecting manual emergency operation of the regulator, said handle being adapted to fit on to an outer end portion of the hub of the drum and having a threaded shank which is adapted to be



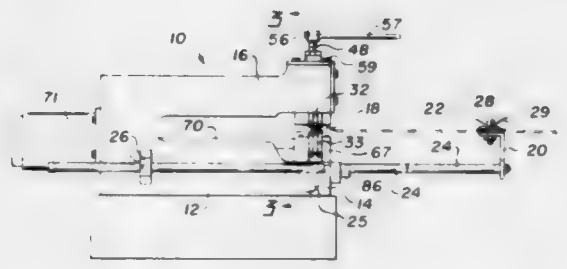
screwed into the said hub to displace the movable member of the coupling axially until it ceases to couple together the drum and the driven member of the reduction gear, thereby making possible manual operation of the drum by means of the said auxiliary handle.

4,085,630

APPARATUS FOR ADJUSTING CONDITION OF METAL OF SAWS

Christopher Williams, 5490 Forglen Dr., South Burnaby, British Columbia, Canada (V5H 3K7)

Filed Aug. 26, 1976, Ser. No. 717,937
Claims priority, application Canada, Jun. 8, 1976, 254343
Int. Cl.[2] B23D *63/18*
U.S. Cl. 76—27 **14 Claims**



1. Apparatus for adjusting the condition of the metal of saws, comprising support means for supporting a saw for movement in the plane of the saw, a first roll positioned to engage one face of the supported saw and to roll over said one face, said first roll having a peripheral surface slightly curved in cross section, a second roll positioned to engage an opposite face of the supported saw in opposition to the first roll and to roll over said opposite face in the same direction as the first roll, said rolls being rotatable on substantially parallel axes and said axes being parallel to the plane of the saw on said support means, said second roll having an annular groove in the periphery thereof dividing said periphery into two annular roll sections of the same diameter, the peripheral surfaces of said roll sections being parallel to said saw plane, the peripheral surfaces of said first roll and each of said roll sections being slightly curved in cross section, pressure means for moving one of said rolls towards the other of said rolls to cause the rolls to grip the saw therebetween, shifting means connected to one of said rolls for changing the relative position axially of the first roll and the second roll selectively to locate the peripheral surface of the first roll opposed to any portion of the peripheral surface of either of the annular roll sections and of said annular groove,

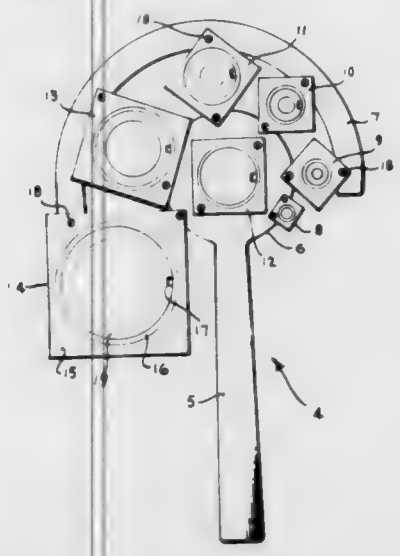
and power means connected to one of said rolls operable to rotate the latter roll.

4,085,631

CANNON PLUG WRENCH

Gerard D. Bellerose, 94-820 Awanei St. #8, Waipahu, Hi. 96797

Filed Mar. 24, 1977, Ser. No. 780,721
Int. Cl.[2] B25B *13/48*
U.S. Cl. 81—3 R **1 Claim**



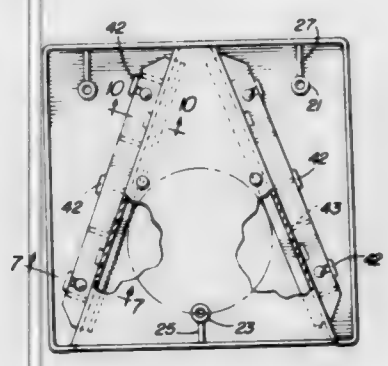
1. A Cannon plug wrench comprising
a handle,
a circular plate member affixed to one end thereof,
a crescent shaped support member,
a Cannon plugholding member mounted on said circular plate member, and
a multiplicity of Cannon plug holding members mounted between said circular plate member and said crescent shaped support member, each Cannon plug holding member being of a different size and adapted to accommodate a different discrete Cannon plug, each said Cannon plug holding member comprising a base plate member and a short segment hollow cylindrical member perpendicularly mounted thereon, the inner diameter thereof being substantially equal to the outer diameter of the base portion of a given Cannon plug and having a protruding key ridge thereon, said key ridge being configured and oriented to mate with a keyway in the base of said Cannon plug.

4,085,632

SCREW CAP OPENER

Jesse M. Hogan, and Violet L. Hogan, both of Vivian, La., assignors to Kap-Key, Inc., Vivian, La.

Filed Jan. 4, 1977, Ser. No. 759,588
Int. Cl.[2] B67B *7/36*
U.S. Cl. 81—3.3 R **4 Claims**



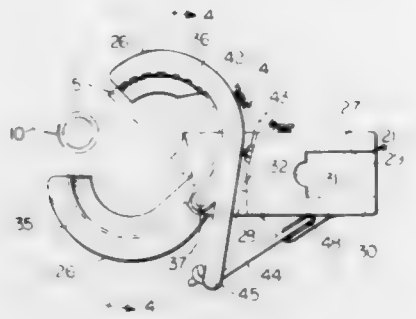
1. In an opener for containers having screw caps thereon, the opener having opposing body portions which have facing planar side walls disposed at an angle to each other to form a V-shaped wedge opening for receiving screw caps of varying dimensions, the improvement comprising:
a first blade member replaceably held within a first elongated slot in one of said side walls, the first blade member having angled tooth-like projections extending therefrom into the wedge opening, the first blade member being disposed in said slot with the projections facing toward the rear of the wedge opening, the first blade member having spaced alignment apertures formed along the length thereof, the alignment apertures being offset from the longitudinal axis of the first blade member to prevent inverted assembly of the first blade member within the first elongated slot;
a second blade member replaceably held within a second elongated slot in the other of said side walls, edge surfaces of the second blade member extending into the wedge opening being substantially planar, the second blade member having spaced alignment holes formed along the length thereof, the alignment holes being centered along the longitudinal axis of the second blade member, the distance between the alignment holes in said second blade member being different from the distance between the alignment apertures in said first blade member;
alignment ridges formed on the respective body portions of the opener and spaced from the respective side walls for abutting edge portions of the respective first and second blade members to locate said blade members in a predetermined relation to the slots in said side walls;
support ridges formed on the respective body portions of the opener between the alignment ridges and the respective slots, the support ridges being of a height less than the alignment ridges and abutting the respective blade members along planar surfaces thereof to support said blade members, distal surface portions of the support ridges being aligned with edge portions of the slots nearest to surfaces of the body portions from which the support ridges extend; and,
mounting pins formed on the respective body portions of the opener between the alignment ridges and the respective slots, upper portions of each of the mounting pins opposite the first slot being received within the alignment apertures formed in the first blade member, upper portions of each of the mounting pins opposite the second slot being received within the alignment holes formed in the second blade member, the upper portions of the mounting pins being reduced in diameter relative to the lower portions of said mounting pins, the upper portions of said mounting pins snap-fitting into the alignment apertures and alignment holes respectively, planar surfaces of the blade members abutting and being supported by substantially planar shoulder portions of the lower portions of the mounting pins, the mounting pins received within the alignment apertures of the first blade member being spaced apart a distance equal to the spacing of said alignment apertures, the mounting pins received within the alignment holes of the second blade member being spaced apart a distance equal to the spacing of said alignment holes, the spacing of the mounting pins and alignment apertures and holes preventing accidental interchange of the blade members on assembly or replacement of said blade members, the opposing edge surfaces of the first and second blade members gripping a screw cap on insertion of a container within the wedge opening to facilitate removal of the screw cap from the container.

4,085,633

SPRINKLER ADJUSTOR AND ESCUTCHEON APPLICATOR TOOL

Jimmy Jackson, 4360 Vinson Ave., Macon, Ga. 31206, and William D. Roquemore, Rte. 1, Box 171B, Musella, Ga. 31066

Filed Jan. 12, 1977, Ser. No. 758,748
Int. Cl.[2] B25B *13/28*
U.S. Cl. 81—111 **13 Claims**



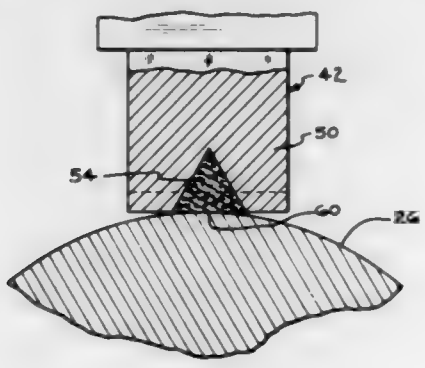
1. A combination wrench and clamping tool comprising a tool head mounted on one end of an elongated tool handle means, said tool head having a wrench means and a clamping means disposed in a generally opposing relationship, said clamping means having a pair of arcuately shaped tong means, said tong means including means for supporting a pivoted fixture member, at least one of said tong means being movable between an open and closed position relative to the other of said tong means, and remotely controlled operating means for moving said movable tong means into a closing relationship with the other of said tong means, whereby a pivoted fixture member received by said clamping means will be closed as said tongs are moved into said closing relationship.

4,085,634

CAM AND CAM FOLLOWER ASSEMBLY

Robert I. Sattler, Grosse Pointe Shores, Mich., assignor to LaSalle Machine Tool, Inc., Warren, Mich.

Filed Jun. 13, 1974, Ser. No. 479,046
Int. Cl.[2] B23B *3/28*; F16H *53/06*
U.S. Cl. 82—19 **3 Claims**



1. In apparatus which includes a substantially cylindrical cam having a longitudinal axis and a cam follower engaged with and movable longitudinally of said cam, said cam follower comprising a body having a cavity at one end and a diamond material filling said cavity and having an arcuate working surface, said working surface being curved solely in planes parallel to the longitudinal axis of said cam and to each other and one of which planes intersects said axis, said working surface being substantially straight in a plane substantially perpendicular to said planes that are parallel to the longitudinal axis of said cam, whereby said cam and follower have arcuate surfaces which are tangent to each other and are curved in planes that are substantially perpendicular to each other thereby providing for substantially point contact between said surfaces, said point being located on said working surface.

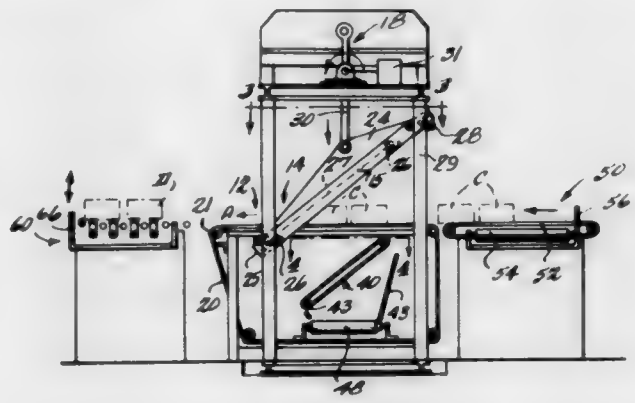
3. In a piston turning machine, elongated rotatable shaft means having an axis, means for supporting a piston to be turned on one end of said shaft means, a cam member intermediate the ends of said shaft means, said cam member having an external surface curved about said axis, a support bar mounted for movement substantially parallel to said axis, a turning tool secured to said bar and extending toward said axis for engagement with a piston on said support means, a cam follower secured to said bar and engaged with said cam member, means urging said follower into engagement with said cam member, said cam follower comprising a body having a cavity at one end and a diamond material filling said cavity and having an arcuate working surface engaged with said cam member surface, said diamond material working surface being curved solely in planes that are parallel to the longitudinal axis of said cam and are also parallel to each other and one of which planes intersects said axis, said working surface being substantially straight in a plane substantially perpendicular to said planes that are parallel to the longitudinal axis of said cam, whereby said cam and follower have arcuate surfaces which are tangent to each other and are curved in planes that are substantially perpendicular to each other thereby providing for substantially point contact between said surfaces, said point being located on the arcuate surface of said diamond material.

4,085,635

WIRE BRICK CUTTER

Hans Lingl, Sr., Neu-Ulm, Ludwigsfeld, Germany, assignor to Lingl Corporation, Paris, Tenn.

Filed Oct. 8, 1976, Ser. No. 731,096
Claims priority, application Germany, Feb. 27, 1976, 2608041
Int. Cl.[2] B28B *11/14*; B26D *1/10*
U.S. Cl. 83—13 **10 Claims**



1. A method for cutting clay columns comprising the steps of

a. moving a clay column in a given generally horizontal direction A,

b. disposing at least one cutting wire in a generally vertical plane at a fixed angle of substantially less than 90° with respect to said direction A,

c. reciprocating the at least one cutting wire from a position out of contact with the clay column toward, into engagement with, and through the clay column while continuously moving the clay column in direction A, to provide at least one cut through the column disposed in a plane that is parallel to a line extending in direction A, by moving said at least one wire in a downward direction from generally above the clay column, toward, into engagement with, and to a position generally below the clay column, in a path wherein each point of the wire moves in a straight line, generally perpendicular to said direction A.

6. Apparatus for cutting a conveyed article comprising

a. a generally horizontal disposed conveyor system including at least two continuous parallel conveyor belts spaced apart from each other a distance X in a direction transverse to the direction A in which articles disposed on said conveyor belts are conveyed,

b. means for mounting at least one cutting wire so that it extends in a generally vertical plane and is disposed at a fixed angle of substantially less than 90° with respect to

said direction A, and so that it passes through the space between said conveyor belts, said at least one cutting wire having a horizontal dimension less than X,

c. means for powering said conveyor belts for movement of articles disposed thereon in said direction A,

d. means for moving said at least one cutting wire mounting means so that at least one cutting wire moves from a position above an article downwardly toward and into engagement with and through an article continuously being moved by said conveyor belts in said direction A to provide at least one cut through the article disposed in a plane that is parallel to a line extending in direction A, and

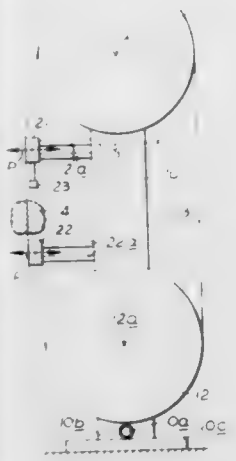
e. means for guiding the movement of said at least one cutting wire mounting means so that it is reciprocal, each point of said at least one cutting wire moving in a straight line, generally perpendicular to said direction A, during movement of said at least one cutting wire toward, into engagement with, and through an article on said conveyor belts.

4,085,636

METHOD AND MACHINE FOR BAND SAWING

Urban Eklund, Soderhamn, Sweden, assignor to Kockums Automation AB, Vasteras, Sweden

Filed Jul. 29, 1976, Ser. No. 709,852
Claims priority, application Sweden, Aug. 5, 1975, 7508801
Int. Cl.² B27B *13/10*
U.S. Cl. 83—56 **3 Claims**



1. In a method of continuously preserving the correct line of cut on a band sawing machine including an endless saw blade having a cutting edge and being entrained over two saw pulleys and a pair of blade guides and a means for sensing the lateral position of the saw blade, the steps of: continuously sensing for an lateral displacement of the saw blade during sawing from the correct line of cut and countering the adverse effect of such a lateral displacement by generating a corrective movement involving a lateral displacement in the opposite sense of the cutting edge of the saw blade through a lateral movement of at least one blade guide in the said opposite sense relative to the correct line of cut, the corrective movement of the blade guide being carried out as a rectilinear lateral displacement.

4,085,637

APPARATUS FOR CUTTING SCRAP STRIP

Walter L. Michaels, Unionville, Conn., assignor to Plainville Special Tool, Inc., Plainville, Conn.

Filed May 10, 1976, Ser. No. 685,110
Int. Cl.² B26D *5/26*
U.S. Cl. 83—69 **8 Claims**

1. A portable apparatus for cutting into lengths scrap strip received from a press or the like and adapted to be positioned in line or at an angle to the scrap strip comprising:

A. a support providing a bed:

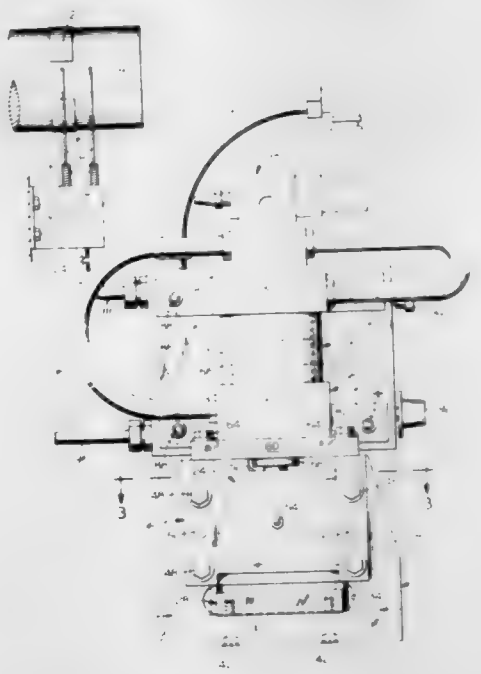
B. piston means mounted on said support for reciprocal movement of a piston toward and away from said bed, said piston having an exposed portion at its end adjacent said bed:

C. a cutting member on said exposed portion of said piston;

D. a die member on said bed cooperating with said cutting member to cut scrap strip being fed along said bed intermediate said cutting and die members:

E. a pressurized fluid inlet adapted to be connected to a source of pressurized fluid;

F. valve means connected to said pressurized fluid inlet and to said piston means to effect said reciprocal movement of said piston by controlling flow of pressurized fluid from said source, said valve means having a first operating position wherein said piston is moved toward said bed and a second operating position wherein said piston is moved away from said bed; and



G. electrical control means connected in circuit relation with said valve means and including probe means adapted to be mounted adjacent to a rotating shaft of a press or the like providing scrap strip for intermittent electrical contact with said shaft occasioned by rotation thereof, said control means including presetting means operable for presetting the interval between successive movements, as defined hereinbelow, of said valve means, said control means being responsive to periodic movement of the press for a preset interval to cause said valve means to move to said first operating position thereof whereby said piston is actuated by said pressurized fluid and said cutting member is driven toward said die member to cut scrap strip therebetween, said control means moving said valve means to said second operating position thereof following said actuation of said piston whereby said cutting member is moved away from said die member.

4,085,638

APPARATUS FOR CUTTING LUMBER TO VARIABLE CLEAR LENGTHS

James T. Fifer, 791 N. Shore Rd., Lake Oswego, Oreg. 97034

Filed Nov. 10, 1976, Ser. No. 740,532
Int. Cl.² B27B *5/00*
U.S. Cl. 83—71 **8 Claims**

1. An apparatus for cutting lumber to variable clear lengths comprising:

a. infeed means configured for supporting and transporting a piece of lumber longitudinally,

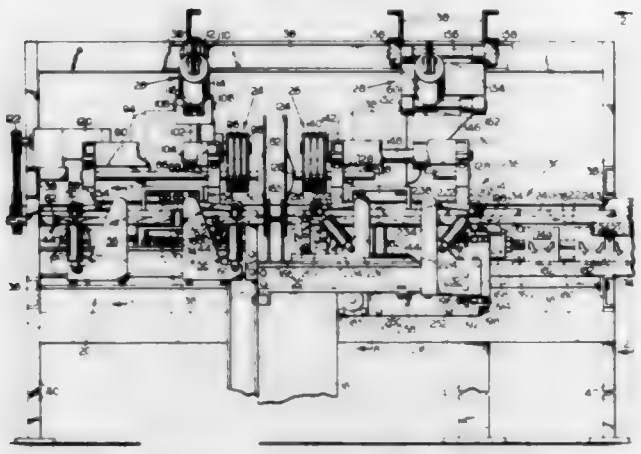
b. at least one fixed saw located above the downstream and of the infeed means in a manner for cutting a piece of lumber transversely at a first position,

c. at least one sliding saw located adjacent to the fixed saw

and movable longitudinally with respect thereto for cutting the piece of lumber transversely at a second position a spaced distance from the first position,

d. saw actuation means connected to the fixed and sliding saws and configured for actuating them between cutting positions for cutting a piece of lumber, and clear positions out of contact with the piece of lumber,

e. saw positioning means joined to the sliding saw and configured for positioning the sliding saw longitudinally with respect to the fixed saw for spacing the cut at the first



position a specified distance from the cut at the second position, and

f. outfeed means located adjacent to the sliding saw configured for transporting the cut piece of lumber out of the apparatus,

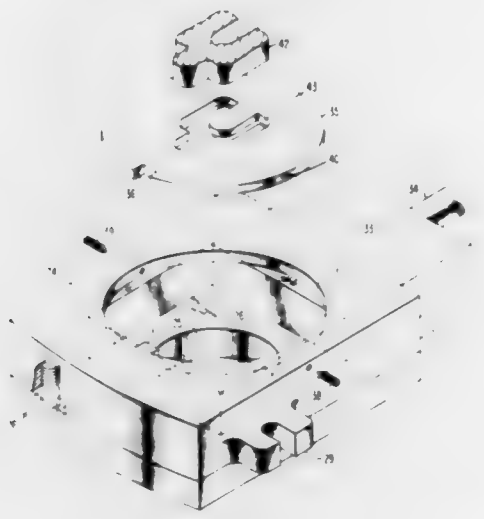
g. said outfeed means connected to the saw positioning means in a manner for following the sliding saw at a close spaced distance while maintaining a lineal transport speed matching the feed rate of the infeed means so that the sliding saw may be positioned simultaneously with transportation of the piece of lumber in the apparatus.

4,085,639

BLANKING DIE AND HOLDER CONSTRUCTION FOR PUNCH PRESSES

Joseph Marconi, 428 Jensen Rd., Vestal, N.Y. 13850

Division of Ser. No. 564,658, Apr. 3, 1975, Pat. No. 3,965,784.
This application Feb. 23, 1976, Ser. No. 660,271
Int. Cl.[2] B26D *7/18*
U.S. Cl. 83—157 **1 Claim**



1. A blanking die holder for supporting a relatively thin die plate into which a punch of a press forces material during blanking of parts blanks, said die holder comprising:

a housing including a bottom and upstanding walls, said walls defining a circular opening which receives and supports said thin die plate, said wall having an inwardly extending lip and inwardly extending set screws, said lip and set screws extending into said circular opening to engage a radially inwardly extended cutout and circumferentially spaced indentations, respectively on said die plate which is disk shaped;

a slidable support block, said support block being cyclically movable into a space within said housing defined by said die plate, walls, and bottom, said support block underlying said thin die plate to support said die plate during blanking of the parts; and

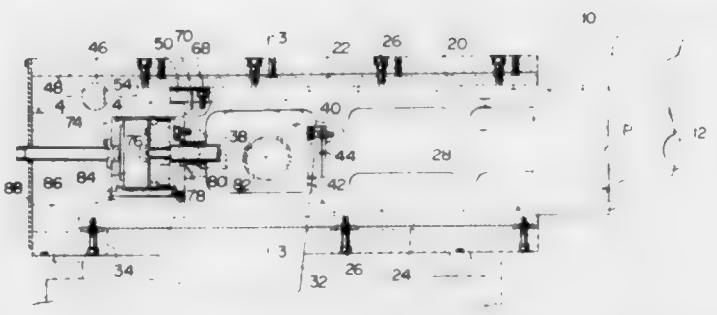
an opening in the bottom of said housing to allow gravitational removal of the parts blanks upon the movement of said support block out of said space under said die plate.

4,085,640

APPARATUS FOR SHEARING WIRE, ROD, OR THE LIKE

Takashi Furuto, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 21, 1977, Ser. No. 779,564
Claims priority, application Japan, Mar. 19, 1976, 51-29308
Int. Cl.[2] B26D *3/16*
U.S. Cl. 83—198 **6 Claims**



1. In shearing apparatus having a movable and a fixed shear element, the combination thereof with:

frame means including means forming a slideway;

a slide slidably mounted in said frame means for reciprocating movement between a first and a second position along said slideway, said slide carrying said movable shear element for moving same with respect to said fixed shear element;

actuator means for moving said slide between said first and said second positions;

an abutment on said slide, said actuator means abutting on said abutment for exerting pressure therethrough on said slide while moving the latter from said first to said second position;

stop means for terminating the travel of said slide in said first position as said slide is moved back from said second position by said actuator means; and

resilient means through which said slide is moved from said second to said first position by said actuator means, said resilient means yielding, when said slide is moved to and stopped in said first position, to permit said actuator means to travel an additional distance in a direction away from said second position whereby a space is created between said actuator means and said abutment;

whereby said actuator means is permitted to travel back unloaded through said space before moving said slide from said first to said second position.

4,085,641

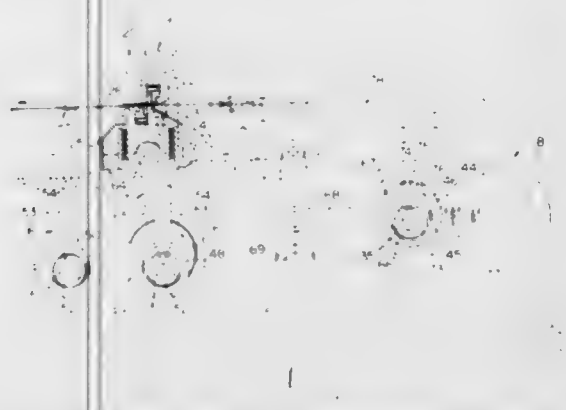
FLYING SHEAR MACHINE FOR CUTTING TRAVELING STOCK

Kunihiro Ito, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Dec. 29, 1976, Ser. No. 755,611
Claims priority, application Japan, Dec. 30, 1975, 50-158747; Dec. 30, 1975, 50-158748; Dec. 30, 1975, 50-158749
Int. Cl.[2] B26D *1/56*
U.S. Cl. 83—328 **5 Claims**

1. In a flying shear apparatus for cutting a traveling stock, employing a shiftable shear housing having upper and lower

knife holders in mutually opposed relation, one being stationary, the other being movable in a vertical direction, and supported by shifting support means enabling said shear housing to reciprocate in the traveling direction of said stock, shearing drive means for driving said movable knife holder in a reciprocal manner to cut said stock, and shifting drive means to drive the shiftable shear housing for reciprocation at a speed synchronized with the travel speed of the stock at the time of stock cutting, said shifting drive means defined by a driving main shaft rotating in a first direction, circular inner eccentric cam means affixed to said main shaft, circular outer eccentric cam means slidably fitted around said inner eccentric cam means and driven by drive shaft means in a second direction opposite to said first direction at the same rotational speed as said main shaft and said inner eccentric cam means, and a motion transmitting mechanism connected at one end to said shear housing and slidably fitted around said outer eccentric



cam means at the other end, for transmitting driving motion from said shifting drive means to said shear housing, said apparatus including: said shifting support means having parallel shafts, circular eccentric cams affixed to said parallel shafts, a pair of straps forming a parallel crank mechanism pivotally connected at one end to said shear housing and slidably fitted at the other end around said eccentric cams, and being further defined by driving means, first transmission means coupling said driving means to said main shaft and said outer eccentric cam drive shaft, second transmission means coupling said driving means to said parallel shafts, said first and second transmission means being operable to cause said parallel shafts and thereby said eccentric cams to rotate two revolutions per revolution of said main shaft, whereby a movement approximating a straight-line motion along the travel direction of said stock is imparted to said shiftable shear housing in at least a shearing interval of the forward stroke during the reciprocal motion thereof.

4,085,642

BREAD SLICING AND STORAGE CONTAINER

Thomas F. Birmingham, Beacon Bldg., Tulsa, Okla. 74103

Filed May 5, 1977, Ser. No. 794,250

Int. Cl.[2] B26D *4/50, 7/20*

U.S. Cl. 83—764 **4 Claims**

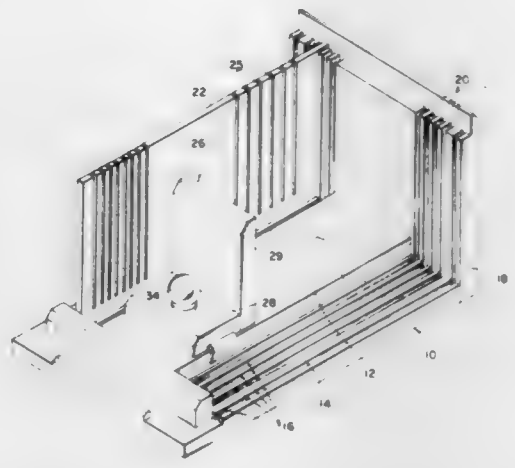
1. An apparatus for slicing bread, which comprises:

a base for supporting the loaf, having a plurality of spaced longitudinal grooves;

an end wall perpendicularly secured to one end of the base, having a plurality of longitudinal grooves aligned with the base grooves;

a first movable side member capable of being positioned in an aligned groove common to the base and end wall, having a plurality of knife guide slits;

a second movable side member capable of being positioned in an aligned groove common to the base end wall, having a plurality of knife guide slits; and



an adjustable end plate substantially parallel to the end wall, slidably mounted to the base.

4,085,643

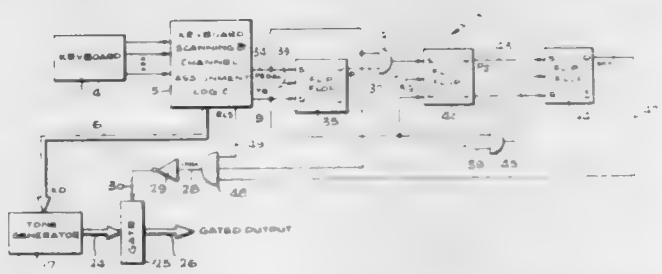
TRUNCATED DECAY SYSTEM

Glen Griffith, Westminister, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 3, 1977, Ser. No. 773,980

Int. Cl.[2] G10H *1/00*

U.S. Cl. 84—1.01 **4 Claims**



1. A truncated decay system for a time-shared electronic musical instrument of the type wherein selected keys are assigned to respective time slots in a repetitive timing interval, said instrument providing, at each such time slot, a keyboard signal designating the keyboard of the key assigned to that time slot, and a release signal indicating whether the corresponding key has been released so that the note is decaying, said truncated decay system being associated with a designated keyboard, comprising:

first bistable circuit means, reset at the beginning of each timing interval, connected to said musical instrument so as to be set during each timing interval by occurrence of the first keyboard signal corresponding to the designated keyboard,

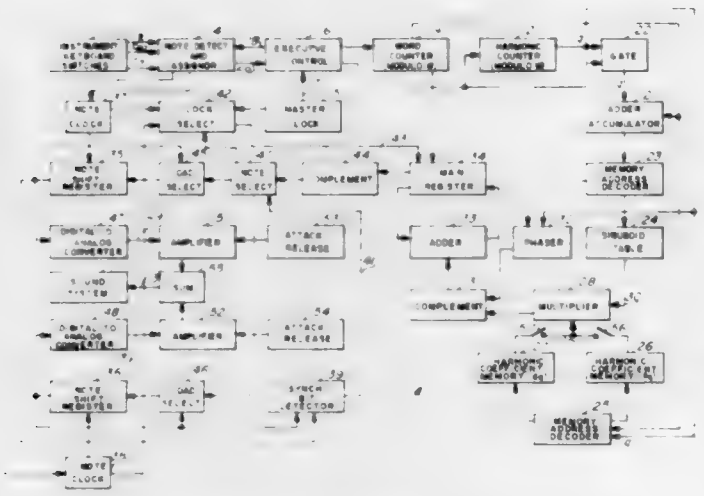
second bistable circuit means, reset at the beginning of each timing interval, and connected to said first bistable circuit means so as to be set during each timing interval by occurrence of a second keyboard signal for the designated keyboard, and

inhibit means, responsive to setting of said second bistable circuit means and to said release signal and operative during the following timing interval, for inhibiting production of the note corresponding to each released assigned key of said designated keyboard when at least one key of said designated keyboard is still actuated, irrespective of whether all of the time slots currently have keys assigned to them.

4,085,644
POLYPHONIC TONE SYNTHESIZER

Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Deutsch Research Laboratories, Ltd., Los Angeles, Calif.

Filed Aug. 11, 1975, Ser. No. 603,776
Int. Cl.[2] G10H *1/00*; G10F *1/00*
U.S. Cl. 84—1.01 **36 Claims**

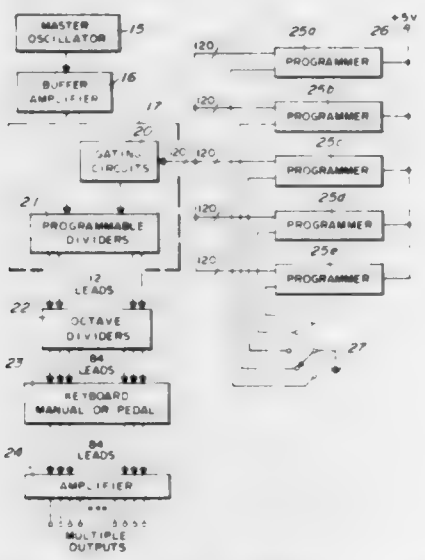


1. A musical instrument comprising;
means for computing a master data set during each computation cycle of a sequence of computation cycles,
a first memory means for writing said master data set to be thereafter read out,
a second memory means for writing input information to be thereafter read out,
means for reading said master data set from first memory means and writing master data set as input information in said second memory means,
means for repetitiously reading out information from second memory means, and
means for producing musical waveshapes from said read out information from second memory means.

4,085,645
INSTANTLY RETUNABLE TONE GENERATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

Donald Carroll Ryon, Carol Stream, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 29, 1976, Ser. No. 736,985
Int. Cl.[2] G10H *5/06*
U.S. Cl. 84—1.01 **8 Claims**

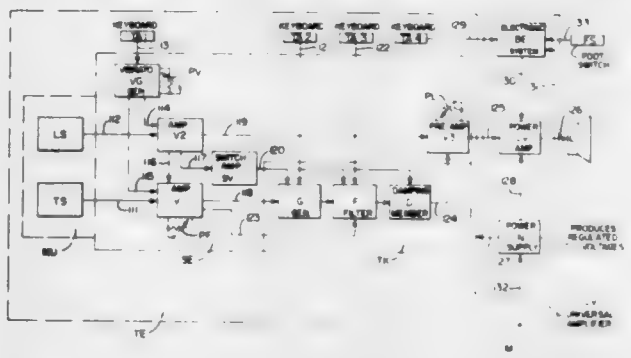


1. In a programmable tone generator for simultaneously providing a multiplicity of signal frequencies having a predetermined frequency relationship therebetween corresponding to one of a plurality of musical scales, a system for providing instant access to ones of a multiplicity of programs comprising:
a source of reference frequency;
DC programmable divider means coupled to the frequency source;
DC controlled switching means coupled to the divider means;
a source of DC potential for controlling said switching means;
a multiplicity of programming means coupled to the switching means for programming the divider means; and
manual switching means for selectively coupling the source of DC potential to one of the programming means.

4,085,646
ELECTRONIC MUSICAL INSTRUMENT

Klaus Naumann, Friedrich-Panzer-Weg 6 D-8000, Munich 83, Germany

Filed May 27, 1976, Ser. No. 690,557
Claims priority, application Germany, May 28, 1975, 2523623
Int. Cl.[2] G10H *3/02, 5/00*
U.S. Cl. 84—1.09 **49 Claims**



1. An electronic musical instrument providing continuous cybernetic tone finding controlled by the functions of the human mouth, comprising
a mouthpiece into which air is to be blown from the mouth of the player;
measuring means mounted at least in part of said mouthpiece for producing a pitch determining signal representing a measure of the mouth cavity of the player and a volume determining signal representing the velocity or pressure of the air blown into the mouthpiece;
tone generating means for generating a tone signal whose frequency varies with the level of a control signal applied thereto;
first control means responsive to said pitch determining signal for applying to said tone generating means a control signal having a level representing a measure of the mouth cavity of the player;
amplifier means having a variable amplification for amplifying the output of said tone generating means;
second control means responsive to said volume determining signal for varying the amplification of said amplifier means; and
means for converting the output of said amplifier means to sound.

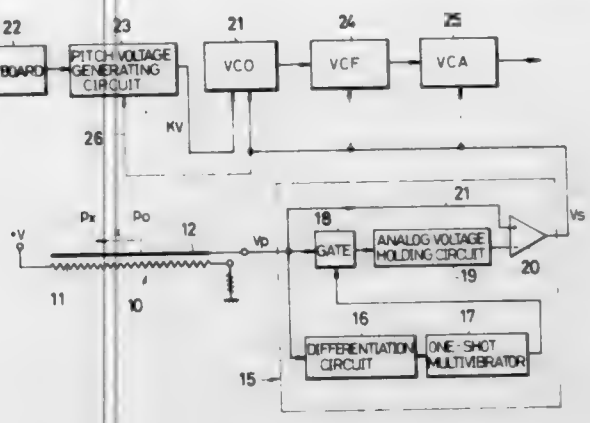
4,085,647
ELECTRONIC MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Feb. 22, 1977, Ser. No. 770,717
Claims priority, application Japan, Feb. 27, 1976, 51-21329
Int. Cl.[2] G10H *1/02*
U.S. Cl. 84—1.24 **4 Claims**

1. An electronic musical instrument comprising:
actuator means actuated by a sliding operation for producing a voltage variable according to the actuated position thereof in each instant;
control signal generating means for producing a signal pro-

portional to a sliding distance in said actuator means responsive to the output voltage of said actuator means; and



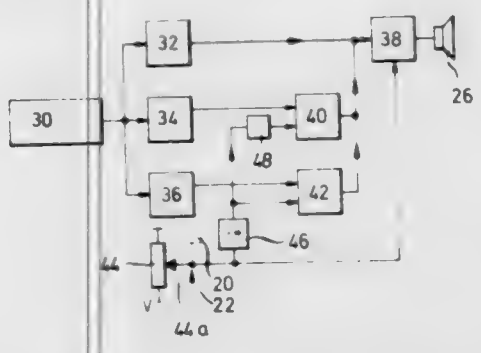
control means for controlling a musical tone element by the output signal of said control signal generating means.

4,085,648

ELECTRONIC SOUND SYNTHESIS

Jobst Fricke, Cologne, and Wolfgang Geiseler, Berlin, both of Germany, assignors to CMB Colonia Management-und Beratungsgesellschaft mbH & Co. K.G., Cologne, Germany

Filed Jun. 19, 1975, Ser. No. 588,486
Claims priority, application Germany, Jun. 21, 1974, 2429871
Int. Cl.[2] G10H *1/02*
U.S. Cl. 84—1.24 **7 Claims**



1. A system for producing electrical signals representing sounds of predetermined pitch and variable loudness value, wherein

signals for each sound of predetermined loudness value comprise component signals corresponding to partial tones of said sound, said component signals having frequencies above a fundamental frequency determing the pitch of the sound and forming a spectral amplitude/frequency pattern when the amplitudes are plotted as a function of their frequency, and including at least one formant region represented by a maximum in said amplitude/frequency pattern;

said spectral amplitude/frequency pattern determining the timbre of the sound;

signals representing sounds of different loudness values differing in the shape of the amplitude/frequency pattern of the component signals;

said system comprising

a signal source including means (**12, 14; 30, 34, 36**) providing at least first and second signal versions for each sound of predetermined pitch, said first and second signal versions having component signal forming different first and second spectral amplitude/frequency patterns corresponding to different first and second loudness values, respectively;

sound volume control means (**20**) for selecting a desired sound loudness value in a range between said first and second loudness values;

control means (**16, 16*a*; 18, 18*a*; 40, 42, 44*a*, 46, 48**) connected to and controlled by the sound volume control means and further connected to the means (**12, 14; 30, 34, 36**) providing said signal versions for selecting a portion of said first signal version and a portion of said second signal version, the selection of the respective portions being controlled by said sound volume control means, for selecting the said sound loudness value and to vary said first and second portions inverse to each other and in accordance with the variations of the setting of said sound volume control selecting means;

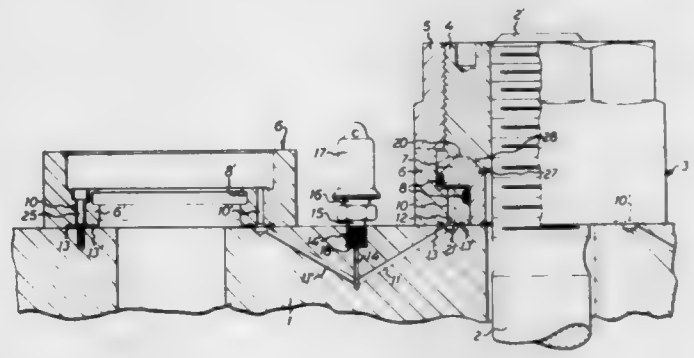
and means for combining said selected signal portions into a combined signal, which is the electrical sound signal to be produced.

4,085,649

BOLT ASSEMBLY

Nils Artur Christensson, Hamburg, Germany, assignor to Chris-Marin I Malmo AB, Malmo, Sweden

Filed Jan. 31, 1977, Ser. No. 763,986
Claims priority, application Sweden, Feb. 5, 1976, 7601236
Int. Cl.[2] F16B *35/00*
U.S. Cl. 85—1 T **5 Claims**



1. A hydraulic tensioning means for fastening a first element to a second element with uniform pressure comprising, a single hydraulic nipple inlet disposed on said first element, a plurality of passageways eminating from said nipple within said first element serially connecting a plurality of bolt assemblies, said bolt assemblies including a bolt fastened to said second element extending through and out of said first element having a threaded portion disposed outwardly of said first element, an inner nut having inner and outer threads thereon fastened to said threaded portion of said bolt, an outer nut threaded on the outer threads of said inner nut, a cylinder underlying said outer nut and substantially adjacent to said first element and a piston disposed within said cylinder which underlies said inner nut and surrounds said bolt, said piston having a portion thereon which communicates with said passageways whereby hydraulic pressure within said passageways causes said piston to tension by stretching said bolt through each of said inner nuts, and said pressure simultaneously causes said outer nuts to raise therewith and the tension can therefore be adjusted by tightening said outer nut on said cylinder, releasing said pressure and turning down said inner nut.

4,085,650

HINGE SECURITY STUD

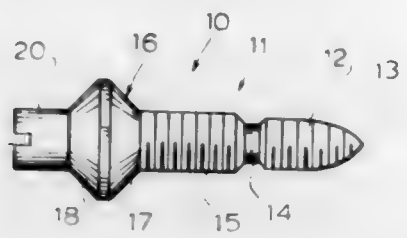
Jean Louis Flynn, P.O. Box 1868, Deland, Fla. 32720

Filed Feb. 28, 1977, Ser. No. 772,725
Int. Cl.[2] F16B *25/00*
U.S. Cl. 85—41 **4 Claims**

1. A hinge security stud comprising:

an elongated screw having an elongated threaded portion, a head portion and a stud portion, said head portion having a pair of oppositely disposed back-to-back of said bevelled portions tapering of annular bevelled portions, one inwardly in the direction of said threaded portion and the second of said bevelled portions tapering inwardly in said stud direction, and said stud portion being an elongated generally cylindrical member intersecting said second annular, bevelled portion, and having a screwdriver tip engaging means formed therein, and said threaded portion

of said security stud being divided into two portions, one having self-threading wood type threads located on the point of said threaded portion of said screw and the second portion having machine type screw threads located between the head portion of said screw and said self-threading wood type threads.

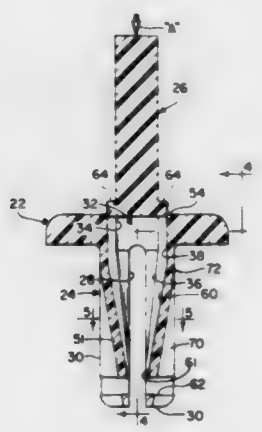


4,085,651

PLASTIC FASTENER

Richard A. Koscik, Richton Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 14, 1977, Ser. No. 768,673
Int. Cl.[2] F16B *13/08*
U.S. Cl. 85—72 **8 Claims**



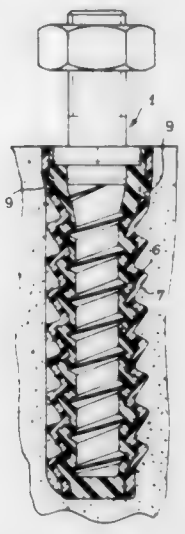
1. A plastic fastener having a head and an integral bifurcated shank forming at least two shank portions, an axial bore traversing said head and extending throughout said shank, said bore being substantially cylindrical adjacent said head and adapted to accept a complimentary axially moveable drive pin having a predetermined diameter, said bore being tapered and defined within said shank by tapered facing surfaces on said shank portions and said tapered bore having its major diameter terminating at said cylindrical bore adjacent said head, said tapered bore having a substantially uniform radius of curvature of varying depth relative to the axis of said fastener with said radius of curvature being substantially complementary to said pin, each shank portion including an axially disposed radial relief means that extends throughout substantially all of the axial extent of each of said shank portions, said relief means on each shank portion including an axially disposed slot means which is substantially perpendicular to and opens into said bifurcation while extending radially outwardly from said bifurcation at tapering depths for a substantial portion of the axial extent of each shank portion and a second slot means extending radially inwardly from the circumferential outer surface of each shank portion to form between the two tapered slots a thin walled buckle section joining two substantially equal sections of each shank portion, said drive pin which includes at least one laterally extending lug projecting downwardly therefrom and acceptable from axial movement within one of said shank portion slots communicating with said bore, recess means communicating with said one slot adjacent to but spaced from the free end of said shank, said recess means adapted to accept said at least one lug in positive locking relationship when said pin is driven axially in said bore to expand said shank portions.

4,085,652

SCREW FIXING DEVICE FOR STRUCTURAL UNITS OF AGGLOMERATED MATERIAL

Guy Vanotti, Oyonnax, France, assignor to Etablissements Vape, Oyonnax, France

Filed Jun. 24, 1976, Ser. No. 699,480
Claims priority, application France, Jun. 25, 1975, 75 19908
Int. Cl.[2] F16B *37/04*
U.S. Cl. 85—83 **2 Claims**



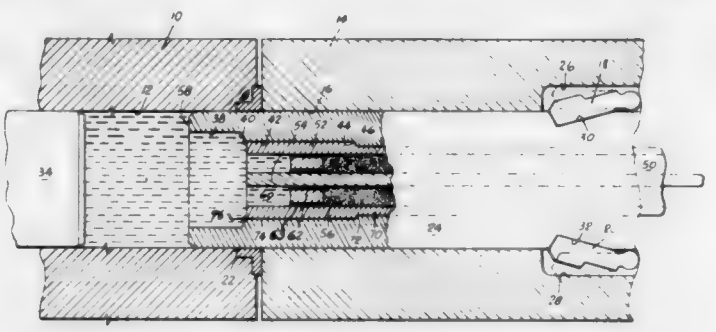
1. A screw-fixing device intended to be integrated in a structural member of agglomerated material, such as plaster or concrete, at the moment of manufacturing of said agglomerated material, comprising a screw and an anchoring sheath adapted to be integrated in said structural member, said anchoring sheath being made of two parts of plastic material, the first part comprising an inner part moulded onto the screw, the second part comprising an outer part surrounding said inner part, said inner and outer parts being shaped so as to be restrained from moving axially with respect to each other, and having a free space between said two parts for accommodating expansion of said sheath material, an outer surface of the inner part and an inner surface of the outer part being provided with helical interlocking structure, said restraint from axial movement being provided by said helical interlocking structure of said inner and outer parts, permitting contingently to unscrew and replace the screw with said inner part of the sheath moulded thereto.

4,085,653

IGNITION DEVICE

Douglas Pray Tassie, St. George, Vt., and Robert A. Pustell, Andover, Mass., assignors to General Electric Company, Burlington, Vt.

Filed Sep. 15, 1976, Ser. No. 723,367
Int. Cl.[2] F41F *1/04*
U.S. Cl. 89—7 **10 Claims**



1. A gun comprising:

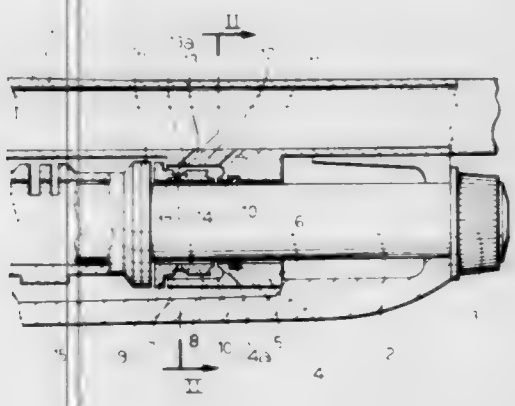
a gun barrel having a projectile receiving cavity, and
an igniter including
an outer tubular element having a conductive inner surface;
an inner element substantially coextensive longitudinally with said outer element and having a conductive outer surface;
a volume, free of internal voids, of closely packed particles of dielectric material, disposed between and interlocked with said inner and outer elements, the peripheral particles of said volume being partially imbedded into said conductive surfaces of said inner and outer elements;
said volume extending less than the full length of said inner element to provide a void at a first end of said igniter, said void being defined by an exposed portion of said conductive surface of said inner element mutually confronting an exposed portion of said conductive surface of said outer element, and the end face of said volume;
sealing means including a solid annulus of dielectric material disposed within said void, in abutment with said end face of said volume and said conductive surfaces of said inner and outer elements, said annulus, said exposed portion of said conductive surface of said inner element and said exposed portion of said conductive surface of said outer element defining a spark chamber which is in fluid flow communication with said projectile receiving cavity.

4,085,654

GAS-OPERATED DEVICE FOR ACTIVATING THE RELOADING MECHANISM OF A GAS-OPERATED AUTOMATIC RIFLE

Giannantonio Panigoni, Brescia, Italy, assignor to Luigi Franchi S.p.A., Brescia, Italy

Filed Aug. 18, 1976, Ser. No. 715,580
Claims priority, application Italy, Sep. 29, 1975, 27752/75
Int. Cl.[2] F41D *5/04*
U.S. Cl. 89—191 A **4 Claims**



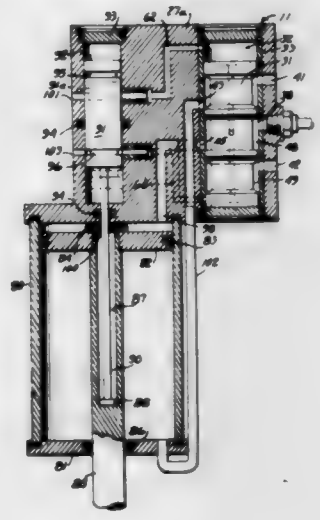
1. In an automatic rifle, a gas-operated device for activating the reloading mechanism of the rifle, comprising:
a cylinder fixed to the rifle barrel, said cylinder having an open end and a closed end;
a piston slidable in said cylinder;
a chamber formed within said cylinder between said piston and said closed end;
means defining a first gas duct communicating with said chamber, and means defining a first opening of said first gas duct into said rifle barrel;
wherein the improvement comprises:
(a) said cylinder and said piston define between them an interstice, coaxial with said cylinder and said piston and communicating with said chamber;
(b) means defining at least one second gas duct communicating with said interstice;
(c) means defining at least one second opening of said at least one second gas duct into said rifle barrel, said at least one second opening being at a position closer to the breech end of said rifle barrel than said first opening of said first gas duct; and
(d) means defining an annular groove in the surface of said piston and means defining at least one vent of said at least one second gas duct into said interstice, said annular groove being opposite said at least one vent in the fully inserted position of said piston in said cylinder.

4,085,655

CONTROL FOR RECIPROCATING PUMPS OR THE LIKE

Lawrence P. Olson, 18006 Pine Ave., Fontana, Calif. 92335

Filed Mar. 29, 1976, Ser. No. 671,121
Int. Cl.[2] F01L *25/06*
U.S. Cl. 91—307 **1 Claim**



1. A control valve for alternately applying fluid pressure to a first and second work chamber to cause a reciprocating stroke of a work device, comprising:
a valve housing having a cylinder therein closed at opposite ends,
an inlet in said housing for admitting pressurized fluid into said cylinder,
means forming a first delivery passage communicating said cylinder with said first chamber,
means forming a second delivery passage communicating said cylinder with said second chamber,
means forming first and second outlet passage in said housing and opening into said cylinder,
a piston slidable in said cylinder between first and second positions,
said piston having annular recesses therein effective when said piston is in said first position to communicate said inlet with said first delivery passage and to communicate the second outlet passage with said second delivery passage,
said recesses being effective when said piston is in said second position to communicate said inlet with said second delivery passage and to communicate the first outlet passage with said first delivery passage,
an additional passage extending through said piston between opposite ends thereof,
said piston having cavities at said opposite ends and said additional passage opening into said cavities,
means for admitting pressurized fluid into said additional passage,
first vent means controlled by said work device when at one end of said stroke to vent one end of said cylinder whereby to enable pressurized fluid at the opposite end of said cylinder to move said piston to said one end of said cylinder, and
second vent means controlled by said work device when at the opposite end of said stroke to vent the opposite end of said cylinder whereby to enable pressurized fluid at said

one end of said cylinder to move said piston to said opposite end of said cylinder,

said piston having a large diameter portion intermediate certain of said recesses therein, which large diameter portion is in sliding engagement with said cylinder and is undercut toward the root of an adjacent one of said recesses, and

said large diameter portion having a circumferential groove therein,

the root of said groove extending adjacent the root of said undercut portion whereby to form a ring section having a flexible root section,

said ring section flexing about said root section upon application of fluid pressure in said adjacent recess.

4,085,656

VACUUM BOOSTER

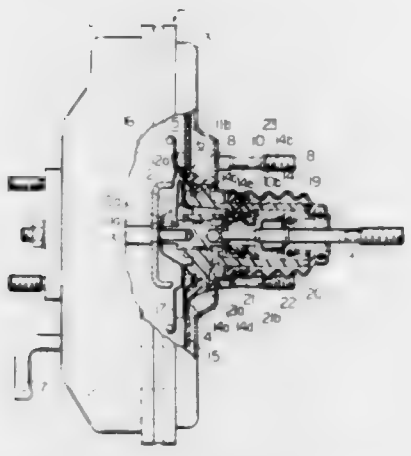
Hiromi Ando, Tokyo, Japan, assignor to Tokico Ltd., Japan

Filed Jul. 12, 1976, Ser. No. 704,621

Claims priority, application Japan, Jul. 19, 1975, 50-88486; Jul. 19, 1975, 50-100333[U]

Int. Cl.[2] F15B *9/10*

U.S. Cl. 91—376 R **11 Claims**



1. A vacuum booster comprising a housing having a movable wall therein dividing the housing into two chambers, a plunger slidably fitted in a cylinder portion of a valve body, valve seats defined respectively by one end of the plunger and one end of the cylinder portion of the valve body, and an axially extendable and contractive valve member one end of which is secured to the valve body and the other end of which is displaceable in radial and axial directions and defining a seating surface thereon for cooperating with the valve seats for controlling communication respectively between said two chambers defined in the housing and between at least one of the chambers and atmosphere, wherein at least one portion of the seating surface of the valve member with which at least one of said valve seats engages is formed of a surface of rotation around the axis of the valve member and is other than a flat plate radial surface.

4,085,657

POWER STEERING MECHANISM

Gilbert Kervagoret, Argenteuil, France, assignor to Societe Anonyme D.B.A., Paris, France

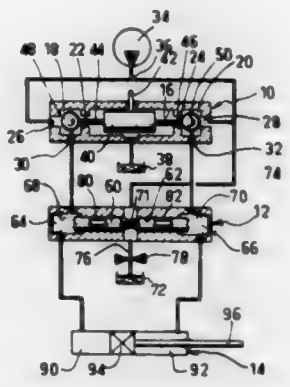
Filed Aug. 11, 1976, Ser. No. 713,326

Claims priority, application France, Aug. 21, 1975, 75 25863

Int. Cl.[2] F15B *9/10*

U.S. Cl. 91—380 **9 Claims**

1. Power steering mechanism comprising a housing defining a cavity and a bore, an input member extending into said cavity and adapted for rotation by an operator, an output member also extending into said cavity and disposed coaxial with the input member, said output member being provided for transmitting rotation which is applied to said input member, said input and output members being resiliently connected, a fluid motor cooperating with the output member for assisting the rotation of the output member in response to rotary motion of the input member, an intermediate sleeve disposed within the cavity and coaxial with the input and output members, said intermediate sleeve being movable relative to the input and output members along their axes of rotation in response to a rotation of the input member, distributing means carried in said housing bore and communicating with said fluid motor, said



distributing means including a valve member within said housing bore and a control piston slidably mounted within said housing bore, said control piston operatively engaging said valve member and connecting with said intermediate sleeve, said control piston being responsive to the movement of said intermediate sleeve to move said valve member relative to the housing bore, thereby controlling the communication to said fluid motor via said valve member.

4,085,658

OPERATING MEANS

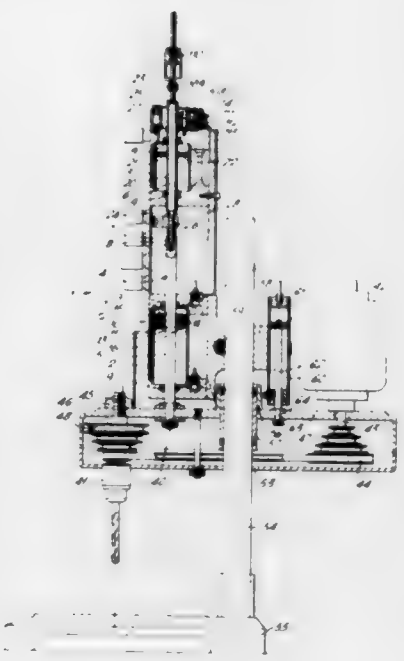
Keld Torben Schneider Sorensen, Auckland, New Zealand, assignor to K. & V. Sorensen Engineering Limited, Auckland, New Zealand

Filed Feb. 27, 1976, Ser. No. 661,928

Claims priority, application New Zealand, Mar. 5, 1975, 176840

Int. Cl.[2] F15B *13/042, 15/22*

U.S. Cl. 91—461 **9 Claims**



1. Operating means comprising an air cylinder and a hydraulic cylinder, said air cylinder and hydraulic cylinder being mounted such that the longitudinal axes thereof lie on substantially the same line, a rod-like member passing through both cylinders, a piston in said air cylinder mounted on said rod-like member, a hollow member passing through said hydraulic cylinder and extending from the ends thereof, said hollow

member being positioned about said rod-like member, a piston in said hydraulic cylinder mounted on said hollow member and dividing the interior of said hydraulic cylinder into first and second chambers, axially adjustable first engagement means between said rod-like member and said hollow member such that movement of the piston in said air cylinder in the direction away from said hydraulic cylinder causes said rod-like member to move a distance predetermined by the position of said first engagement means on said rod-like member before said engagement means engages the end of said hollow member that is further from said air cylinder to thereby cause said hollow member to move said piston in said hydraulic cylinder, second axially adjustable engagement means positioned on said rod-like member between said hollow member and said air cylinder such that movement of the piston in said air cylinder in the direction toward said hydraulic cylinder causes said rod-like member to move through a distance predetermined by the position of said second engagement means on said rod-like member before said second engagement means engages the end of said hollow member that is nearer said air cylinder to thereby cause said hollow member to move said piston in said hydraulic cylinder, means defining a first passageway extending externally of said hydraulic cylinder and connecting the first and second chambers of said hydraulic cylinder and having therein a non-return valve to prevent flow from the second chamber to the first chamber and a flow rate controlling valve such that the flow rate of hydraulic fluid through said first passageway may be varied, means defining a second passageway extending externally of said hydraulic cylinder and connecting the second and first chambers of said hydraulic cylinder and having a non-return valve therein to substantially prevent fluid flow from the first chamber to the second chamber and a flow rate controlling valve therein whereby the flow rate through said second passageway may be controlled, and a stop for limiting the extent to which movement of said rod-like member in the direction from the hydraulic cylinder towards the air cylinder may occur, said stop comprising a substantially cup-shaped threaded nut engageable onto threads on said rod-like member, the diameter of the cup being of a size so that the rim of said cup may engage on parts of said operating means adjacent said hydraulic cylinder, encompassing if necessary said first engagement means.

4,085,659

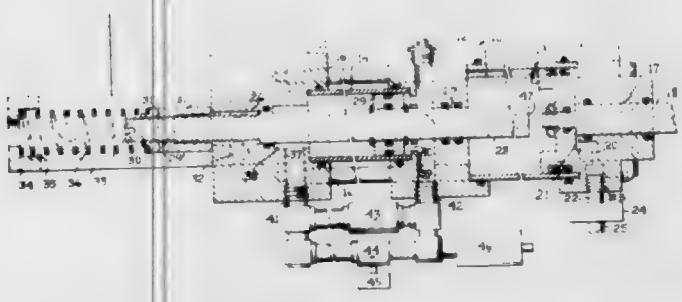
CONTROL DEVICE FOR POWER TOOLS

Barry A. Stunkel, 1170 West Fork, Lake Forest, Ill. 60045

Filed May 28, 1976, Ser. No. 691,005

Int. Cl.[2] F15B *15/22*

U.S. Cl. 92—8 **2 Claims**



1. A movement control device for power tools comprising

(a) a housing providing a pair of axially aligned independent cylinders,

(b) a first piston in one cylinder and having an elongated piston rod extending from one side thereof and out of one end of said housing,

(c) a second piston in the second cylinder mounted upon an elongated piston rod intermediate its ends, with said rod disposed in both cylinders and having one end extending out of the other end of said housing,

(d) a source of driving medium having communication with said one cylinder for moving said first piston in the direction of said second piston and into contact therewith for correspondingly moving said second piston in one direction in said second cylinder,

(e) resilient means exteriorly of said housing and connected to said one end of said second piston rod for moving the same in an opposite direction through said second cylinder,

(f) a hydraulic system in connection with said second cylinder and having open communication to both sides of said second piston therein,

(g) valve means in said hydraulic system restrictively regulating the flow of fluid from said second cylinder through said hydraulic system so as to regulate the speed of movement of said second piston in one direction by corresponding movement of said first piston through said first cylinder, and

(h) an electrically controlled flow valve connected in parallel to said valve means in said hydraulic system and having an open and a closed position and adapted to permit, in its open position, free flow of hydraulic fluid therethrough in either direction by movement of said second piston as said said second piston is moved by said first piston and said resilient means, said resilient means comprising a coil spring engaging a spring retainer at one end of said second piston rod exteriorly of said housing so as to move the same in one direction through said second cylinder.

4,085,660

PIVOTAL SUPPORT FOR A FLUID ACTUATED CYLINDER WITH MEANS FOR COMMUNICATING PRESSURIZED FLUID THERETO

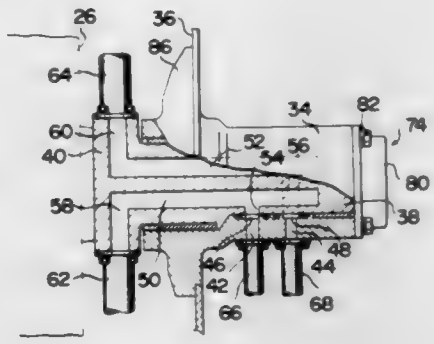
Sumio Yoshinouchi, and Hiroki Tanaka, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Nov. 24, 1976, Ser. No. 744,927

Claims priority, application Japan, Dec. 25, 1975, 50-174379[U]

Int. Cl.[2] F01B *15/04, 29/00*

U.S. Cl. 92—119 **6 Claims**



1. A pivotal support mechanism for a fluid actuated cylinder, said fluid actuated cylinder having piston means forming a pair of opposed fluid chambers, comprising in combination:

a stationary sleeve;

a first pair of fluid passages formed in said stationary sleeve;

a trunnion rotatably received in said stationary sleeve;

a second pair of fluid passages formed in said trunnion;

a pair of annular grooves formed in an inner peripheral surface of said stationary sleeve, wherein each of said second pair of fluid passages is in respective constant fluid communication with a respective one of said first pair of fluid passages through a respective one of said pair of annular grooves and is further in constant fluid communication with a respective one of said pair of opposed fluid chambers in said fluid actuated cylinder;

means formed at one end of said trunnion for securely holding said fluid actuated cylinder; and

thrust bearing means at the other end of said trunnion for holding said trunnion in position in said stationary sleeve

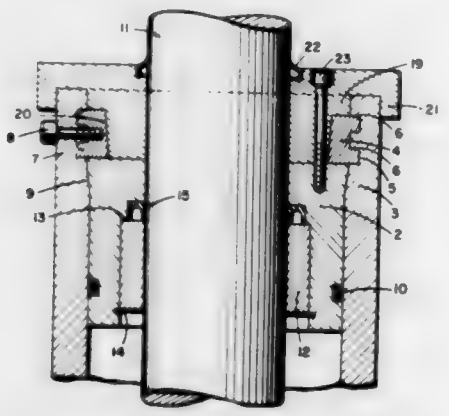
against axial thrust which may be applied to said trunnion in either axial direction.

4,085,661

DOUBLE WEDGE-LOCK CYLINDER HEAD

William W. Schriever, Orient, N.Y., assignor to Edward D. Meyer, Cutchoque, N.Y.

Filed Jul. 16, 1976, Ser. No. 705,889
Int. Cl.[2] F16J *15/18, 11/02*
U.S. Cl. 92—170 **26 Claims**



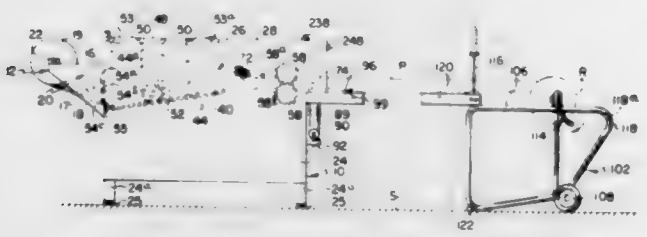
1. An hydraulic cylinder construction comprising
a hollow cylinder having an internal wall provided with a plurality of closely spaced circular grooves in the internal wall near an end each to a depth less than one-half the thickness of the cylinder,
a head slidably fitted with said cylinder and to the interior of said plurality of grooves,
a restraining means to limit further entry of said head into said cylinder, said restraining means being provided by a truncated conical taper in said internal wall to the interior of said plurality of grooves, a portion of said head being tapered accordingly to provide an abutting surface,
a sealing means to prevent leakage of operating fluid between said head and said cylinder,
a plurality of arcuate locking segments engaged in said grooves and abutting at least a major portion of the perimeter of the exterior surface of said head, and
a retaining means separate from said head to hold said locking segments in place.

4,085,662

METHOD OF MAKING AND USING CUSHIONING DUNNAGE MATERIAL

Gary W. Ottaviano, Bedford Heights, Ohio, assignor to Ranpak Corporation, Eastlake, Ohio

Division of Ser. No. 573,615, May 1, 1975, Pat. No. 4,026,198.
This application Nov. 22, 1976, Ser. No. 744,153
Int. Cl.[2] B31F *1/00*
U.S. Cl. 93—1 WZ **10 Claims**



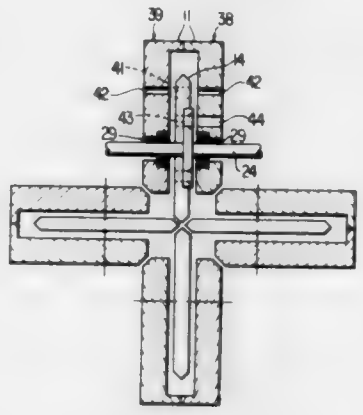
5. In a method of utilizing cushioning dunnage material in pad-like form produced on a dunnage machine comprising, producing a predetermined length of pad-like dunnage material on a dunnage producing machine, and emitting it from the latter through an exit opening in the machine, storing it as it is being emitted by said dunnage producing machine directly onto a mobile transfer cart, separable from the dunnage machine, moving the transfer cart to a location remote from the dunnage producing machine for use of the dunnage material at such remote location, and wherein the transfer cart includes a rotatable spindle mounted generally horizontally thereon, said spindle including a U-shaped bracket attached thereto and projecting laterally therefrom, and including the step of inserting the leading end of the dunnage produced on the dunnage producing machine into the U-shaped bracket to secure said leading end to the spindle and rotating said spindle on the cart so as to roll-up a predetermined amount of the dunnage material being emitted from the dunnage producing machine, onto the transfer cart simultaneous with the production of said dunnage material by said dunnage producing machine.

4,085,663

CRIMPER ASSEMBLY

Herbert K. Holden, Bon Air, and Peter W. Mansfield, Richmond, both of Va., assignors to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 562,911, Mar. 28, 1975, Pat. No. 4,007,668.
This application Sep. 2, 1976, Ser. No. 719,690
Int. Cl.[2] A24C *5/50*
U.S. Cl. 93—1 C **1 Claim**



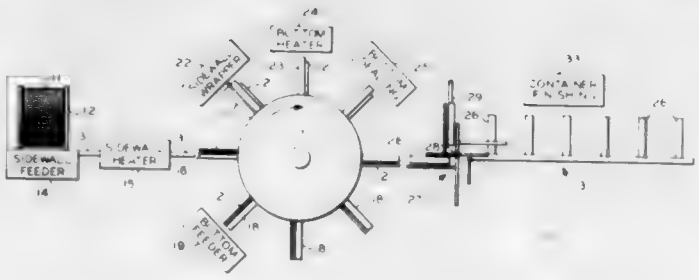
1. In a crimping assembly for crimping a rod of fibrous material, said assembly having at least one pair of crimping wheels each having embossing means defined on its peripheral surface, means for rotatably supporting each pair of crimping wheels so as to juxtapose their respective embossing means and means for rotating each crimping wheel, the improvement comprising at least one radial alignment slot located in each of said crimping wheels for aligning said wheels within the assembly, said radial slot being alignable with holes in side plate bearing blocks mounted on each side of said crimping wheels, and including means for securing each of said crimping wheels on the wheel rotating means while said radial alignment slot is aligned with said holes.

4,085,664

UNIVERSAL MANDREL FOR CONTAINER FORMING APPARATUS

Silvio T. Farfaglia, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 15, 1976, Ser. No. 723,396
Int. Cl.[2] F01B *19/00*
U.S. Cl. 93—44.1 R **11 Claims**



1. A kit for quickly modifying the circumferential dimension or shape of the container that can be formed by an apparatus

which forms a tubular container by first clamping a flat blank of sheet material against a basic mandrel with a clamping means comprising a basic clamping shoe and a clamping arm capable of moving the basic clamping shoe from a position which allows a blank to be placed between the basic clamping shoe and the basic mandrel to a position which holds a portion of the blank so positioned against the basic mandrel and then folding the thus clamped blank around said basic mandrel with a folding means,

said kit comprising (1) at least one tubular mandrel sleeve being designed so that if a tubular container were formed by folding an appropriately sized blank around said mandrel sleeve the thus formed tubular container could be slid off the mandrel sleeve and so that the mandrel sleeve is capable of being removably secured around said basic mandrel in coaxial alignment therewith, wherein the internal diameter of the tubular mandrel sleeve is larger than that necessary to allow the mandrel sleeve to be removably secured around the basic mandrel and the mandrel sleeve contains in one end thereof indentation means corresponding to a projection portion of a flange to which the basic mandrel is mounted so that when said mandrel sleeve is placed over said basic mandrel said indentation means can mate with said portion of said flange to insure that the mandrel sleeve is in coaxial alignment with said basic mandrel, and (2) a corresponding replacement clamping shoe for the respective mandrel sleeve, each replacement shoe being of such size that when the corresponding mandrel sleeve is secured around said basic mandrel and the respective replacement clamping shoe is substituted for said basic clamping shoe the thus altered clamping means without further substantial adjustment or modification will be able to function to move said replacement clamping shoe from a position which allows a blank to be placed between said replacement shoe and said mandrel sleeve to a position in which the replacement clamping shoe will hold a blank against the corresponding mandrel sleeve.

4,085,665

ADJUSTABLE AUTOMOBILE VENT

Stephen J. Paxton, Troy, Mich., assignor to Stephen J. Paxton, Trust, Troy, Mich.

Filed Oct. 22, 1976, Ser. No. 734,720
Int. Cl.[2] B60J *1/20*
U.S. Cl. 98—2.12 **2 Claims**



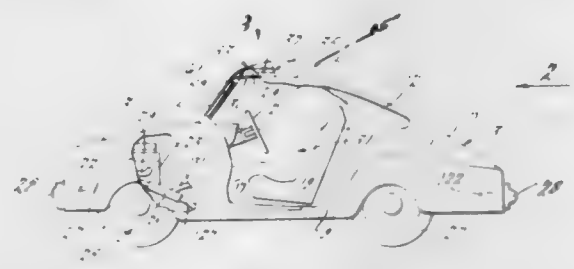
1. An adjustable automobile vent comprising a single base, means securing said base to the inside of a stationary pillar of an automotive vehicle, an elongated deflector having an arcuate cross section creating a recessed surface on one side thereof, and means movably mounting said deflector on said base in a manner permitting the deflector to be moved between a first position inside the vehicle with the axis of said arcuate cross section closely parallel to and adjacent said pillar and a second operating position extending partially out of and partially into the car interior through an opening created by partial retraction of the adjacent vehicle window, said mounting means comprising a stem extending from the concave surface of said deflector adjacent one end thereof and carrying a ball, said base having a socket receiving said ball, said socket being open in a rearward direction whereby said deflector may be swung rearwardly from its stored position and then swung outwardly through a window opening to a position wherein the axis of said arcuate cross section is transverse to said pillar.

4,085,666

ROOF-TOP OBSERVATION CENTER FOR AUTOMOBILES

William A. Ternes, 1122 Three Mile Dr., Grosse Pointe Park, Mich. 48230

Filed Dec. 15, 1975, Ser. No. 641,114
Int. Cl.[2] B60H *1/26*
U.S. Cl. 98—2.14 **16 Claims**



1. An observation center for an automobile, said automobile including a body with a front windshield and side sections having windows therein and a roof and back section and defining an interior passenger compartment including a driver's seat, said observation center comprising means forming an upper compartment as a part of said body and located above the level of said roof, said upper compartment extending transversely across a substantial part of the width of the body and opening on its bottom side into said passenger compartment approximately vertically above the driver's seat, said means including a first section forming the top and front of said compartment, said means including a pair of second sections forming respectively the opposite sides of the compartment, said second sections including transparent wall portions facing to at least the side and rear of the body, said means including a third section forming the back of said compartment, said third section being located ahead of the rear ends of the windows in said sidewalls and including a window extending transversely across a substantial part of the width of the body and located vertically above said roof to provide an unobstructed line of sight from said window to and beyond the rearmost portion of the body, rear image viewing optical means in said upper compartment having a line of sight extending through said compartment window and providing a rear image visible to a driver seated in said driver's seat whereby said compartment provides means for the driver to observe the scene at the rear of the body, each of said second sections including signals light means adjacent said transparent wall portions for signalling at least stops and turns whereby said compartment provides means for others to observe from at least the side and rear signals of deceleration and turning of the automobile, said second sections also including signal light means providing parking, running, and emergency lights.

12. An observation center for an automobile, said automobile including a body with a front windshield and side sections having windows therein and a roof and back section and defining an interior passenger compartment including a driver's seat, said observation center comprising means forming an upper compartment as a part of said body and located above the level of said roof, said upper compartment extending transversely across a substantial part of the width of the body and opening on its bottom side into said passenger compartment approximately vertically above the driver's seat, said means including a first section forming the top and front of said compartment, said means including a pair of second sections forming respectively the opposite sides of the compartment, said

second sections including transparent wall portions facing to at least the side and rear of the body, said means including a third section forming the back of said compartment, said third section being located ahead of the rear ends of the windows in said sidewalls and including a window extending transversely across a substantial part of the width of the body and located vertically above said roof to provide an unobstructed line of sight from said window to and beyond the rearmost portion of the body, rear image viewing optical means in said upper compartment having a line of sight extending through said compartment window and providing a rear image visible to a driver seated in said driver's seat whereby said compartment provides means for the driver to observe the scene at the rear of the body, each of said second sections including signal light means adjacent said transparent wall portions for signalling at least stops and turns whereby said compartment provides means for others to observe from at least the side and rear signals of deceleration and turning of the automobile, said second sections comprising separate signal light fixtures closing the sides of the compartment.

4,085,667

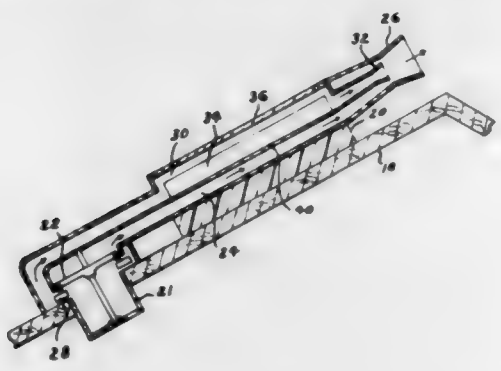
ATTIC EXHAUST SYSTEM

Neil B. Christianson, 10813 Broadwater Dr., Fairfax, Va. 22030

Filed Feb. 24, 1977, Ser. No. 771,497

Int. Cl.[2] F24F *7/02*

U.S. Cl. 98—43 R **4 Claims**



1. An attic exhaust system adapted to be supported on the roof of a building having an attic, comprising: a diffuser nozzle; an ejector nozzle positioned within the diffuser nozzle and having its nozzle adjacent the throat of the diffuser nozzle; an attic vent; means, connected between said attic vent and said diffuser nozzle, for providing a first air flow channel between the attic vent and the diffuser nozzle; means, connected between said attic vent and said ejector nozzle, for providing a second air flow channel between the attic vent and the ejector nozzle; a turbine rotor within said first flow channel; means, connected to turbine rotor, for supplying compressed air to said second flow channel; means for admitting solar radiation energy to said second flow channel; means, within said second flow channel, for absorbing solar energy radiation, whereby the air in said second flow channel is heated by radiant energy absorbed by the solar energy radiation absorbing means.

4,085,668

HEAT EXCHANGE APPARATUS FOR PRODUCTS IN CONTAINERS

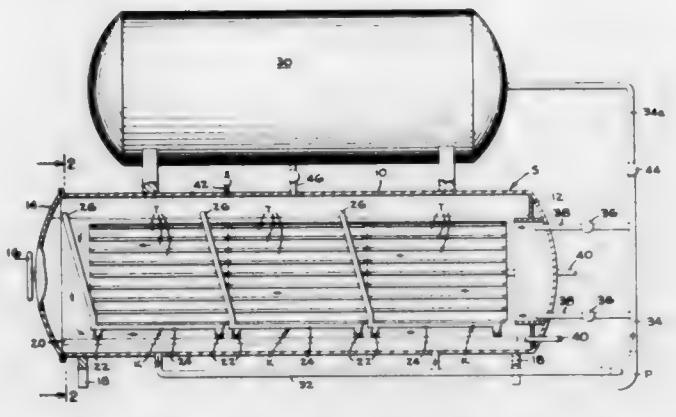
Adil A. Mughannam, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 26, 1977, Ser. No. 762,537

Int. Cl.[2] A23C *3/02*

U.S. Cl. 99—483 **18 Claims**

1. In a fluid treatment apparatus for food products or the like in containers, said apparatus being of the type comprising a processing chamber, means for mounting open ended channel-like container supporting trays having a bottom wall and side walls in said chamber, the side walls of a lower tray supporting a tray above it and means for circulating hot water along said trays for heat exchange with the products; the improvement wherein the upper sides of the bottom walls of said trays are provided with laterally spaced, longitudinally disposed upwardly projecting members for supporting the bottoms of containers above the bottom wall of their trays and the under



sides of the bottom walls of the trays are provided with laterally spaced, longitudinally disposed, downwardly projecting members for confining the tops of containers in the trays below, during treatment.

4,085,669

OVERLOAD PROTECTOR FOR MECHANICAL PRESS

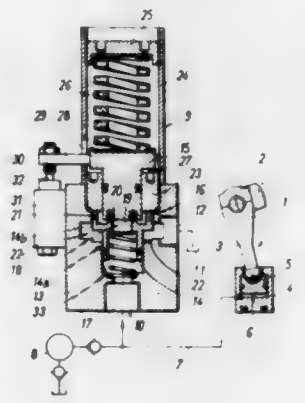
Keitaro Yonezawa, Kobe, Japan, assignor to Aioi Seiki Kabushiki Kaisha

Filed Apr. 27, 1976, Ser. No. 680,731

Claims priority, application Japan, May 15, 1975, 50-58055; Dec. 12, 1975, 50-152099

Int. Cl.[2] B30B *15/28*

U.S. Cl. 100—53 **4 Claims**



1. In an overload protector for a mechanical press having force transmitting means defined by a piston in a cylinder defining a space therebetween filled with an incompressible fluid and relief valve means for relieving said fluid in response to an overload, the improvement comprising:

a valve body having a bore therein;

a main valve slidable in said bore and having a passageway therethrough; said main valve dividing said bore into upper and lower chambers with the area of said main valve exposed to said upper chamber being greater than the area thereof exposed to said lower chamber;

a fluid connection from said lower chamber to said space and a venting outlet from said upper chamber, said outlet being closed by said main valve when in an upper position and open to said upper chamber where said main valve moves downwardly;

a pilot valve seat around the upper end of said passageway;

a pilot valve moveable downwardly into said upper chamber to engage said seat and close said passageway when said main valve is in said upper position;

yieldable means urging said main valve upwardly; and

adjustable yieldable means urging said pilot valve downwardly.

4,085,670

CHECK DIGIT NUMBERING MECHANISMS

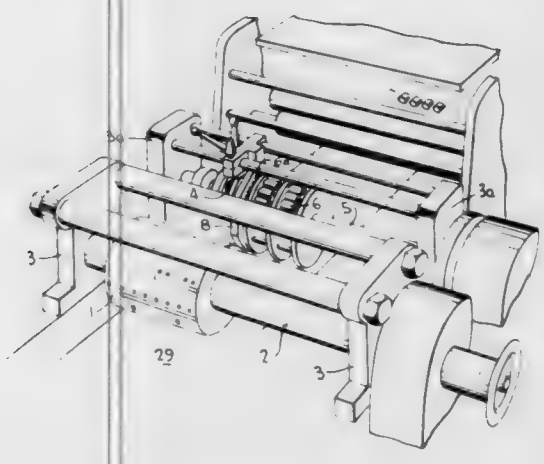
William Poole, Paragon Works, Canning Town, London E. 16, England

Filed Jul. 1, 1976, Ser. No. 701,804

Claims priority, application United Kingdom, Jul. 4, 1975, 28198/75

Int. Cl.[2] B41U *3/42*

U.S. Cl. 101—76 10 Claims



1. Check digit numbering mechanism for generating check digits in accordance with a check digit load setting, comprising:

printing means for seriatim printing of reference numbers on a printing medium;

check digit printing means for printing a check digit on said printing medium for at least some of said reference numbers;

means for generating a signal each time a reference number is printed;

check digit numerator means for indexing said means for printing a check digit;

a plurality of solenoids and a corresponding plurality of armatures each associated with a particular one of said solenoids, said solenoids and said check digit numerator means being movable with respect to one another, at least one of said armatures being movable to engage said check digit numerator means for the actuation thereof with the relative motion of said check digit numerator means and said solenoids;

control means responsive to each of said signals for selectively actuating said plurality of solenoids to index said check digit numerator means whereby a check digit associated with said reference number is printed on said printing medium; and

said control means including switching means for changing the setting of said control means to select those solenoids to receive said signals in accordance with said check digit loading setting.

4,085,671

TORQUE LIMITING USED SCREEN TAKE-UP ASSEMBLY AND DRIVE

Albert George Ronald Gates, and Michael Maynard, both of London, England, assignors to Gestetner Limited, London, England

Filed Oct. 26, 1976, Ser. No. 735,776

Claims priority, application United Kingdom, Oct. 27, 1975, 44139/75

Int. Cl.[2] B41F *15/12, 15/38*

U.S. Cl. 101—128.1 11 Claims

1. A duplicator comprising:

(a) rotatable duplicator cylinder means;

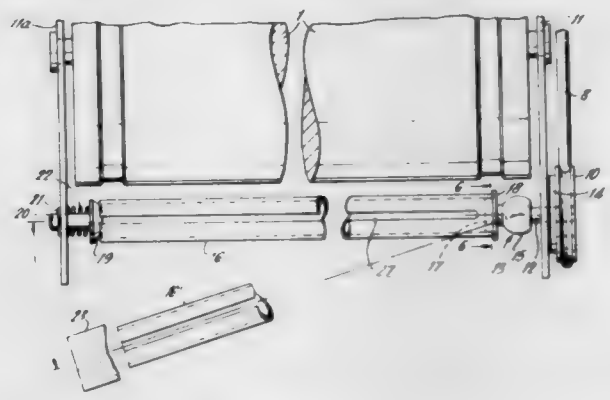
(b) a stencil-supporting ink screen mounted on said duplicator cylinder means to circulate about said duplicator cylinder means during rotation of said cylinder means in use of the duplicator and adapted to carry a stencil;

(c) core means for receiving said stencil or ink screen;

(d) means for mounting said core means alongside said duplicator cylinder means;

(e) first drive transmission means driveably connected to said duplicator cylinder means normally driving said duplicator cylinder means in a first direction of rotation;

(f) second drive transmission means driveably connected between said first drive transmission means and said means for mounting said core means alongside said duplicator cylinder means, for driving said core means in rotation, said second drive transmission means and said core means being dimensioned to ensure that the peripheral speed of



said core means when driven by said second drive transmission means is higher than the peripheral speed of said duplicator cylinder means;

(g) torque-limiting frictional engagement means in said second drive transmission means to limit the driving torque to said core mounting means to a value lower than that required to rupture said stencil or ink screen during rotation of said duplicator cylinder means in a direction opposite to said first direction during transfer to said core means; and

(h) a one-way clutch in said second drive transmission means and arranged to transmit drive to the core means during rotation of said duplicator cylinder means in said opposite direction of rotation and to freewheel during rotation of said duplicator cylinder means in said first direction.

4,085,672

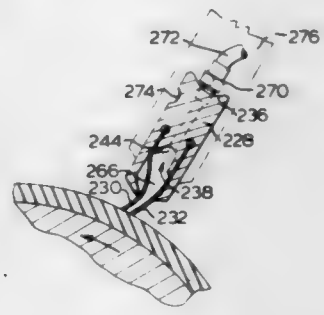
INKING DEVICE

John Grosart, 14 Benedict Rd., Islington, Ontario, (M9A 1X2) Canada

Continuation-in-part of Ser. No. 612,505, Sep. 11, 1975, abandoned. This application Dec. 21, 1976, Ser. No. 753,071

Int. Cl.[2] B41F *9/10*

U.S. Cl. 101—169 6 Claims



1. An device for applying ink to a printing surface, the device comprising:

a body in the form of an elongate one-piece extrusion defining two spaced limbs extending longitudinally of the extrusion, and a central formation intermediate said limbs and defining with said limbs two longitudinally extending slots;

two ink flow control blades having respective inner portions received in said slots in the body, said limbs of the body clamping the blades against said central portion, and the blades projecting from the body to define an ink chamber with the body and parallel outer edges for contact with a printing surface in use;

sealing means located at respectively opposite ends of the blades to define ends of said ink chamber; and,

inlet means in the body for delivery of ink to said chamber;

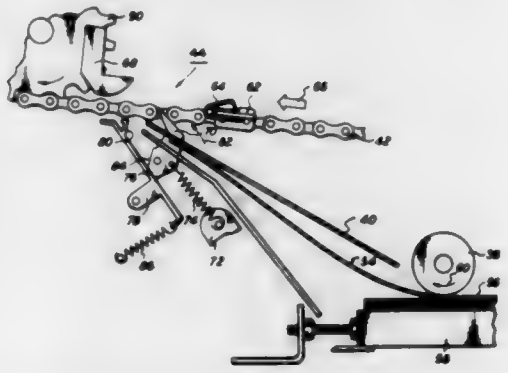
whereby, in use, when the device is arranged with the blades in contact with a printing surface and spaced from one another, ink flows from the ink chamber between the blades and onto the printing surface.

4,085,673

SHEET FEEDING APPARATUS

Ronald R. Wierszewski, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 12, 1974, Ser. No. 496,503
Int. Cl.[2] B41F *21/04*
U.S. Cl. 101—242 **6 Claims**



1. A sheet feeding apparatus of the type being arranged to separate and advance successive sheets from a stack thereof, wherein the improvement includes;

a normally closed sheet gripping member;

means for advancing said sheet gripping member;

means for aligning successive sheets, said aligning means includes a frame, a registration member having a generally planar surface extending transversely to the path of sheet movement, said registration member being mounted pivotably on said frame, and biasing means, for resiliently urging said registration member to pivot from the inoperative position, wherein the planar surface thereof is spaced from the path of sheet movement, to the operative position, wherein the planar surface thereof extends transversely to the path of sheet movement;

means, responsive to said advancing means moving said sheet gripping member to a first preselected position, for moving said aligning means from an inoperative position spaced from the path of movement of the advancing sheet to an operative position in the path of movement of the advancing sheet so that the leading edge of the sheet engages said aligning means, said moving means includes a first cam member mounted pivotably on said frame member and in engagement with said registration member, said cam member having a profile such that in a first position the planar surface of said registration member is spaced from the path of sheet movement and in the second position the planar surface of said registration member extends transversely to the path of sheet movement, and biasing means resiliently urging said first cam member to pivot from the second position to the first position; and

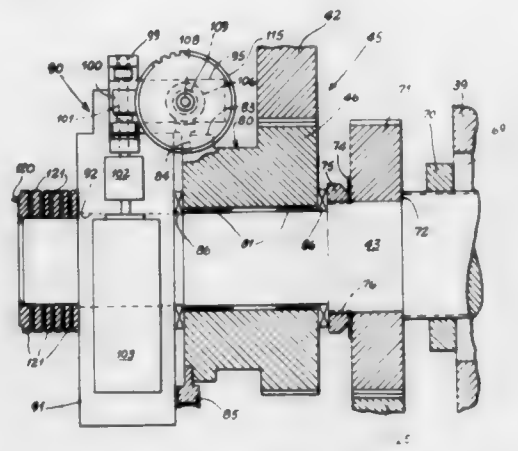
means for opening said sheet gripping member in response to said advancing means moving said sheet gripping member to a second preselected position, said moving means returning said aligning means to the inoperative position in response to said gripping member being at the second preselected position so that the opened sheet gripping member receives the leading edge of the sheet.

4,085,674

REGISTRATION UNIT FOR PRINTING OR COLLATING APPARATUS

Frank M. Biggar, III, Angola, N.Y., assignor to Frank M. Biggar, Jr., Hamburg, N.Y.

Filed Jul. 30, 1976, Ser. No. 710,143
Int. Cl.[2] B41F *13/14*
U.S. Cl. 101—248 **19 Claims**



1. In an apparatus for performing operations on a continuous paper web, a registration unit for changing the phase of a first shaft relative to a second shaft, said shafts rotatably mounted between parallel frame members, said registration unit comprising a sleeve rotatably mounted about said second shaft and having an output gear mounted thereto and rotatably therewith, said gear being concentric with said second shaft, an output drive gear mounted to said sleeve and concentric with said second shaft for rotation with said sleeve, means responsive to rotation of said output gear for drivingly rotating said first shaft, means rotatably driving said second shaft, and means mounted to said second shaft for rotation therewith outboard of said sleeve and frame members and at the same side of said frame as said sleeve and engaging said output drive gear for selectively rotating said output drive gear relative to said second shaft, said means mounted to said shaft and engaging said output drive gear further comprising a split collar secured to said second shaft for rotation therewith outboard of said sleeve, an electric motor secured to said collar for rotation therewith and said second shaft, slip ring means concentric and rotatable with said second shaft for supplying electrical power to energize said motor, gear drive means for driving said output drive gear relative to said second shaft in response to rotation of said motor shaft, and means for selectively energizing said motor for selective rotational displacement of said output drive gear, sleeve, output gear and first shaft relative to said second shaft.

4,085,675

AUTOMATIC ELECTRICAL CREDIT-CARD IMPRINTER

Naohiro Yoshikawa, Itabashi; Sadaharu Sato, Kodaira; Masanori Matsubara, Futususa, and Masao Hosoda, Higashiyamto, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Nov. 29, 1976, Ser. No. 748,621
Claims priority, application Japan, Dec. 2, 1975, 50-144375
Int. Cl.[2] A41F *3/04*
U.S. Cl. 101—269 **12 Claims**

1. An apparatus for imprinting indicia from a master on a copy sheet, said apparatus comprising:

a support having a holder for said master;

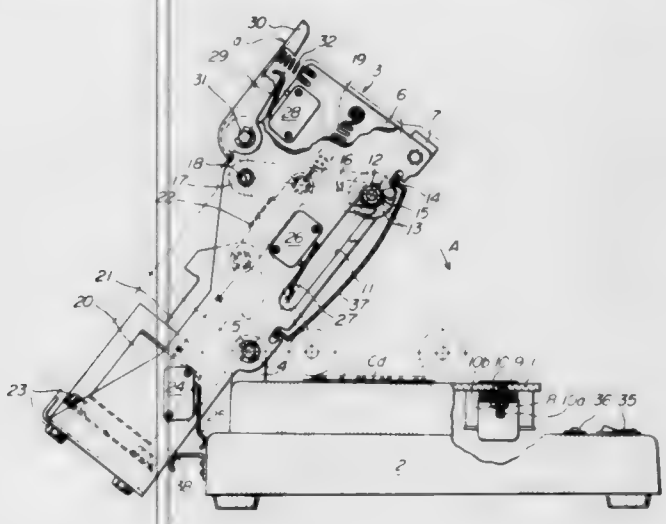
a printing head movable on said support between an inoperative position spaced from said holder and an operative position closely juxtaposed with said holder;

a roller displaceable on said printing head between a pair of roller end positions and engageable in said operative position of said head through a copy sheet lying on a master in said holder with said master;

means including an electromagnetic element and having a

ferromagnetic element for holding said head in said operative position, one of said elements being on said head and the other element being on said support;

means including a switch between said head and said roller, connected in circuit with said electromagnetic element, and displaceable between a closed position corresponding to one end position of said roller for energization of said electromagnetic element and an open position corresponding to the other end position of said roller for deenergization of said electromagnetic element;



means in said head including an electrical actuator electrically energizable to move said roller from said one end position into said other end position;

a spring urging said roller into said one end position;

an operating member on said head; and

a switch connected between said operating member and said head and connected in circuit with said actuator for deenergizing same on actuation of said operating member.

4,085,676

ELONGATED FLEXIBLE DETONATING DEVICE

Brooke J. Calder, Jr., Solon; Robert J. Belock, Wellston, and Roger N. Prescott, Lyndhurst, all of Ohio, assignors to Austin Powder Company, Beachwood, Ohio

Division of Ser. No. 582,993, Jun. 2, 1975, Pat. No. 4,024,817. This application Dec. 2, 1976, Ser. No. 746,825

Int. Cl.² F42D *1/04*

U.S. Cl. 102—23 **3 Claims**



1. A method of detonating an explosive in a bore hole having an innermost end and an outermost end, said method comprising the steps of:

a. providing a first detonating cord having two ends and a transversely transmittable energy sufficient to detonate said explosive;

b. providing an elongated detonating device having first and second ends and including an inner second detonating cord and an outer energy absorbing layer which device adjacent said layer has a transversely transmittable energy insufficient to detonate said explosive and said first detonating cord;

c. stripping said outer layer from first end of said elongated device;

d. connecting said first end of said elongated device to one end of said first detonating cord;

e. placing said connected end adjacent said innermost end of said bore hole with said second end of said elongated device extending to a position adjacent said outermost end of said bore hole and said first cord extending from said innermost end toward said outermost end of said bore hole; and,

f. initiating said second end of said element.

4,085,677

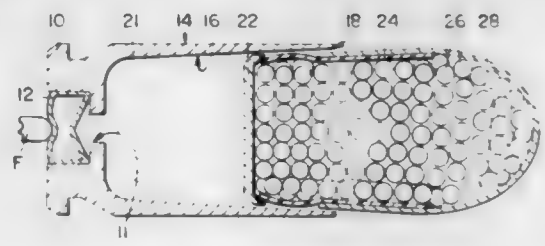
HAND LOADED SHOT SHELL

Michael John Marcinkiewicz, 13 Madison St., Chicopee, Mass. 01020

Filed Oct. 26, 1976, Ser. No. 735,421

Int. Cl.² F42B *7/04*

U.S. Cl. 102—42 R **8 Claims**



1. A shotshell comprising: a tubular case having a cylindrical sidewall and a base and a mouth at its opposite ends and with the I.D. of the sidewall increasing progressively from base to mouth,

the base having a primer pocket and a flash-hole leading through the base from the primer pocket,

a primer in the primer pocket,

a powder charge in the case forwardly of the base, means comprising a non-obturating type wad for allowing a gradual progressive release of the gas around the wad periphery and into the progressively increasing annular space between wad periphery and sidewall I.D. and interiorly of the nose cap for achieving nose cap blow off in advance of shot charge propulsion,

said means comprising a non-obturating type wad seated in the case forwardly of the powder charge with a peripheral edge in embracement with the sidewall I.D.,

a shot charge forwardly of the wad, and

a nose cap forwardly of the shot charge and seated within the case mouth.

4,085,678

KINETIC ENERGY, IMPACT-SEPARATED, FOLLOW-THROUGH UNGULA PENETRATOR

William R. Heincker, Eglin AFB, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 25, 1977, Ser. No. 790,647

Int. Cl.² F42B *11/14*

U.S. Cl. 102—52 **1 Claim**

1. A munition, adapted for use in penetrating a hard concrete target, comprising:

a. a forward section having a fore end, and a cylinderlike aft end of preselected diameter and in the structural form of

an ungula having a rear surface inclined at a predetermined angle;

b. an aft section comprising:

(1) a threaded, cylinder-like fore end of the same diameter as said aft end of said forward section, and in the structural form of an ungula having a front surface inclined complementary to said inclined rear surface of said aft end of said forward section;

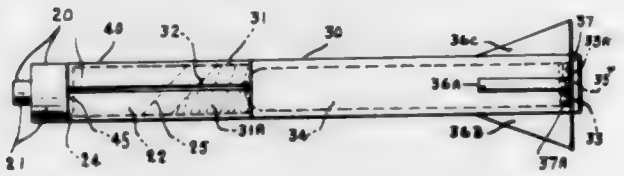
(2) a closed openable aft end that is finned;

(3) a cavity having a mouth, with said mouth located at said closed openable aft end;

(4) and, a plug threadedly connected to said closed openable aft end for selectively closing and opening said aft end;

c. and, a hollow cylinder-like frangible intermediate section interposed between, and releasably interconnecting, said forward section and said aft section, wherein said intermediate section has:

(1) a first open end into which said aft end of said forward section is press fitted;



(2) a second open end, threaded complementary to said threaded fore end of said aft section, into which the said threaded fore end of said aft section is threadedly fitted;

(3) and, an external surface with two horizontal grooves therein, with said grooves oppositely disposed in parallel-spaced relationship;

whereby said forward section, said aft section, and said interconnecting intermediate section are integrated to form a single cylinder-like configurated munition;

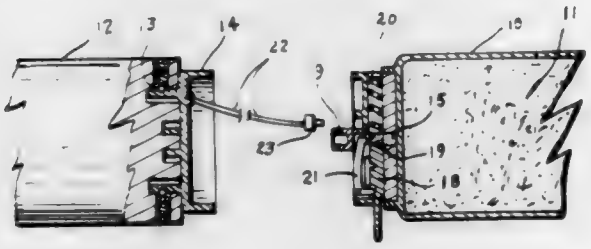
and, whereby upon impact of said forward section with said hard concrete target, said intermediate section breaks along said grooves and separates from said forward section and also from said aft section, and said forward section fractures the hard concrete target and makes a penetration therein and therethrough, and thereafter said aft section passes into and through said fractured and penetrated hard concrete target.

4,085,679

FUZE FOR EXPLOSIVE MAGNETOHYDRODYNAMIC GENERATOR

George Webb, Richmond, and Keith D. Burgess, Rushville, both of Ind., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 23, 1976, Ser. No. 753,960
Int. Cl.[2] F42C *15/34*
U.S. Cl. 102—70 R **2 Claims**



1. Apparatus for detonating an explosive charge at the center of an MHD generator comprising

an explosive charge container,

an explosive charge within said container,

a booster explosive element mounted on said container in detonating communication with said explosive charge,

a firing pin housing structure fixedly attached to said explosive charge container, said firing pin housing structure defining a channel transverse and adjacent to said booster explosive element, said channel having a closed end and an open end,

a lever type firing pin pivotally mounted within said firing pin housing structure,

a detonator element in said channel

a spring in said channel interposed between said closed end of said channel and said detonator element,

a slider member in said channel, said slider member having one end thereof abutting said detonator element and the other end thereof in alignment with said open end of said channel, said slider member having means thereon for rotating said firing pin into the detonating position,

a safety pin member inserted to hold said slider member in an inoperative position within said channel,

a release housing structure removably affixed to said firing pin housing structure said release housing structure having an extractor rim,

a lanyard connected between said release housing structure and said safety pin member,

a safety wire locking said release housing structure to said firing pin housing structure, and

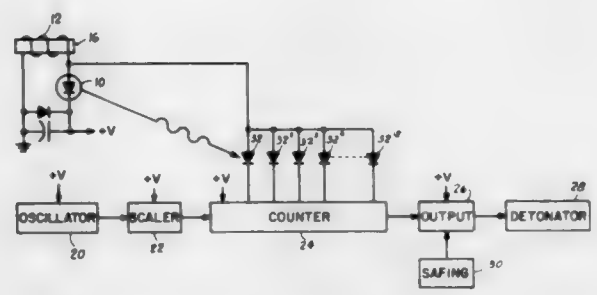
a reciprocating ram element, said ram element having a safety wire severing means and a mechanism for engaging the extractor rim of said release housing structure, said reciprocating ram element being adapted to sever said safety wire and engage and retain said release housing structure, firing pin housing structure and explosive charge container in a retracting action and retain said release housing structure and eject said firing pin housing structure and explosive charge container in a thrusting action whereby full extension of said lanyard removes said safety pin member to enable said spring to bias said detonator element into alignment with said booster explosive element and move said slider member through said open end of said channel into an operative position, said rotating means on said slider member thereby rotating said firing pin causing the subsequent detonation of said explosive charge.

4,085,680

FUZE ENCODER

Richard Thomas Ziemba, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Feb. 17, 1977, Ser. No. 769,649
Int. Cl.[2] F42C *11/04*; G06K *7/10*
U.S. Cl. 102—70.2 R **8 Claims**



1. A fuze for ordnance comprising:

a power supply including a source of radiation;

counter means;

means for presetting said counter means to a selectively variable count, including

radiation responsive switching means, and

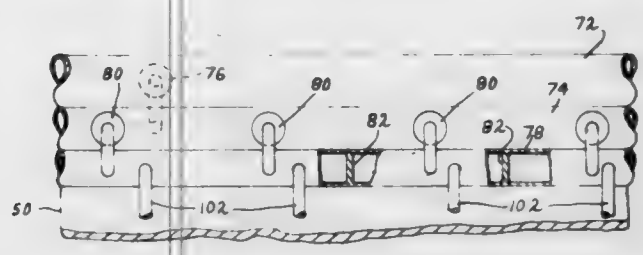
means for selectively passing radiation from said source of radiation to said switching means.

4,085,681

TRANSPORTATION SYSTEM

Gerald L. Barber, 1209 Edwards Rd., Greenville, S.C. 29607

Filed Apr. 29, 1976, Ser. No. 681,417
Int. Cl.[2] B61B *13/08, 13/12*
U.S. Cl. 104—23 FS **19 Claims**



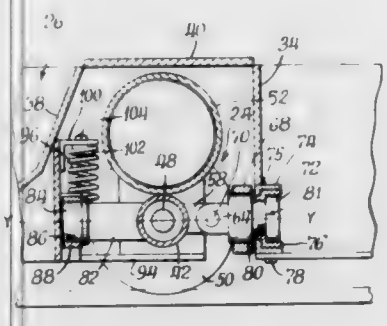
1. In a transportation system; track means, carriage means movable along said track means, air supply means extending along said track means, said carriage means and track means forming levitation chamber means therebetween, linear air turbine means formed by cooperating elements on said track means and carriage means, first valve means for admitting air from said supply means to said chamber means to support said carriage means in the track means, and second valve means operable for controlling the supply of air from said supply means to said turbine means to propel said carriage means along said track means, said air supply means comprising a series of parallel and longitudinally coextensive conduits, compressor means connected to one of the conduits of said series, pressure reducing valve means connecting each conduit with the next adjacent conduit so the pressure reduces in the conduits from said one conduit to the final conduit at the other end of the series of conduits, the final conduit of said series of conduits comprising a plurality of longitudinally spaced unvalved partitions dividing the conduit into axial segments, said second valve means being interposed between said turbine means and respective segments of the last-mentioned said conduit, each said segment of said final conduit supplied with air from the preceding conduit in the series of conduits via a respective one of said pressure reducing valves, and a flow control valve in series with each pressure reducing valve.

4,085,682

VEHICLE SHOCK ABSORBING ARTICULATED JOINTED SUSPENSION

Robert C. Nelson, and David Toney, both of Bluefield, W. Va., assignors to New River Manufacturing Company, Inc., Glen Lyn, Va.

Filed Dec. 8, 1976, Ser. No. 748,639
Int. Cl.[2] B61F *3/00, 5/16, 5/30, 5/50*
U.S. Cl. 105—157 R **5 Claims**



1. In a vehicle, a frame, an axle assembly having an axle housing with a wheel supporting axle rotatably journaled therein, wheels at the ends of said axle, connecting means mounted on the frame by trunnion means which provide a pivotal connection about a fixed axis extending generally longitudinally of the direction of movement of the vehicle; improved ride suspension means comprising:

separate means for pivotally securing said connecting means to one side of the axle housing about a horizontal axis intersecting and extending generally transversely of the longitudinal axis,

support means at the other side of said axle housing being tiltable up and down about said transverse pivotal connection, and

spring means mounted on said support means for supporting said frame for cushioned up and down movement,

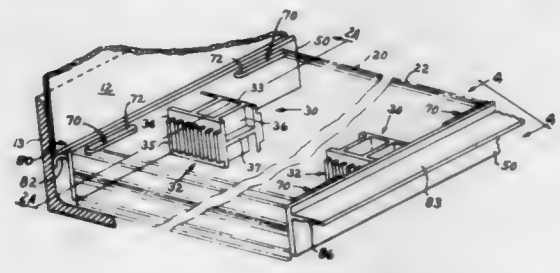
whereby shocks applied to the axle housing through the wheels are absorbed by rocking of the axle assembly about said longitudinal axis and by up and down tilting movement of said transverse pivotal connection within a range permitted by said spring means.

4,085,683

PLASTIC CLOSURE FOR NAILABLE STEEL FLOORING PANELS

Gary L. Harting, St. Charles; Robert F. Sutter, St. Louis, and Lowell L. Malo, St. Peters, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 562,998, Mar. 27, 1975, abandoned. This application Dec. 9, 1976, Ser. No. 749,141
Int. Cl.[2] B61D *17/10*
U.S. Cl. 105—424 **39 Claims**



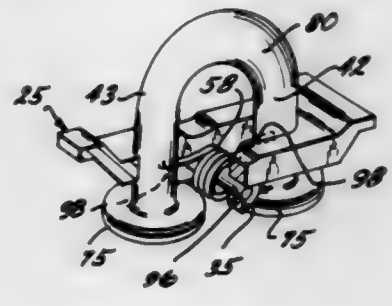
1. A nailable steel flooring insert comprising: a plastic member including a generally vertical end closure closing one of the vertical openings which occurs at opposite ends of nailable steel flooring panels extending in a transportation vehicle to a position adjacent, but laterally spaced from, a generally vertical wall in said vehicle; at least one gap closure flap attached to a first face of said end closure effective to engage the vehicle wall in interference fit and close the gap between said end closure and said vehicle wall; in engaged position said flap being at least partially deformed and thereby urging said insert into engagement with said nailable steel flooring panel and said vehicle wall.

4,085,684

QUICK DISCONNECT TIE-DOWN ANCHOR

Richard Earl McLennan, Rancho Palos Verdes, and Robert Looker, Carpenteria, both of Calif., assignors to Satron, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 596,666, Jul. 17, 1975, Pat. No. 4,020,770. This application Jan. 26, 1977, Ser. No. 762,384
Int. Cl.[2] A44B *19/00;* **B25B** *25/00;* **B60P** *7/08;* **B61D** *45/00*
U.S. Cl. 105—482 **5 Claims**



1. A quick disconnect dual stud-type tie-down anchor for use with a track having a groove and spaced upper flanges, the flanges forming a series of slotted lips, each of predetermined

dimensions, the tie-down anchor being assembled to the track by insertion of the studs thereof through the slots for retention under the flanges and being removed by passage of the studs through the slots, comprising:

retainer means including spaced lifting portions, a single aperture elongated in the direction of the track, and locking means dimensioned to be received through a slot of the track;

insert means positioned in the single aperture, having a generally U-shaped body, and including substantially parallel legs for alignment with the slots of the track and extending through the single aperture;

stud means at the end of each of said legs dimensioned to be received through the slots of the track; and,

biasing means positioned in the single aperture and acting between said insert means and said retainer means to bias said locking means into a slot of the track when said stud means are positioned under the lips of the track.

4,085,685

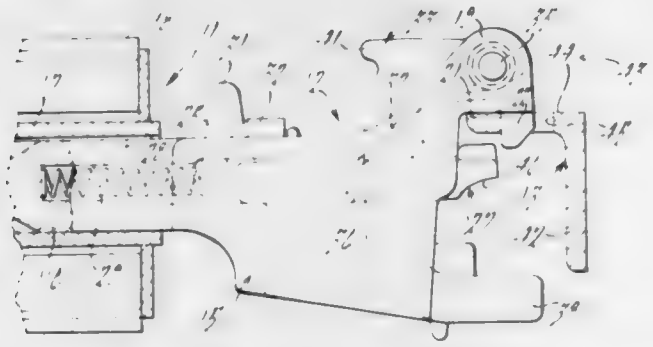
END FITTING

Thomas G. Stone, Farmington, Mich., assignor to Evans Products Company, Portland, Oreg.

Continuation of Ser. No. 328,929, Feb. 2, 1973, abandoned. This application Dec. 16, 1974, Ser. No. 532,908

Int. Cl.[2] B60P *7/08*

U.S. Cl. 105—498 **2 Claims**



1. An end fitting for detachably interconnecting a cross bar of the like interchangeably to a plurality of different type belt rails including a first type of belt rail having a horizontally disposed leg with longitudinally spaced openings and a second type of belt rail having a vertically upstanding portion and a portion formed with longitudinally spaced openings in a vertical face thereof, said end fitting having at least one downwardly extending projection adapted to extend through a selective aperture in the first type of belt rail to fix said end fitting longitudinally and transversely to the first type of belt rail said downwardly extending projection being adapted to extend behind the vertically upstanding projection of the second type of belt rail to fix said end fitting transversely to the second type of belt rail, said end fitting further defining a pocket, a first latch member slidably supported in said pocket for movement between a latched position and a released position, spring means engaging said first latch member for urging said first latch member to its latched position, said first latch member being adapted to underlie the horizontally disposed leg of the first type of belt rail for detachably affixing said end fitting against vertical movement relative to the first type of belt rail, said end fitting having an upstanding portion adjacent its downwardly extending projection, a pivot pin affixed to said upstanding portion, and a second latch member pivotally supported by said pivot pin for movement between a latched position and a released position, said second latch member having a portion adapted to enter into a selected one of the apertures of the second type of belt rail for detachably affixing said end fitting against longitudinal and vertical movement relative to said type of belt rail, said first latch member and said second latch member being supported for movement independent of each other whereby movement of one of said latch members is not accompanied by movement of the other of said latch members, said first latch member having an elongated opening through which a portion of said second latch member extends, said elongated opening being sized to permit movement of either of the said latch members between its respective latched position and released position without corresponding movement of the other latch member.

4,085,686

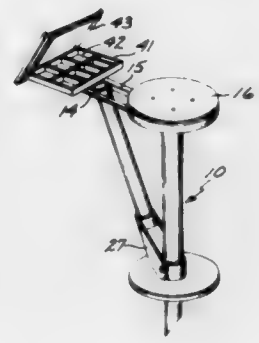
COLLAPSIBLE FISHING STOOL

Raymond R. Turner, 10852 Woodward La., Garden Grove, Calif. 92640; Elton W. Turner, 316 Lenore Trail, Chesapeake, Va. 23320; Jerry Turner, 711 Ballard Dr., Melbourne, Fla. 32935, and Robert J. Winkler, 2101 E. 4th St., Santa Ana, Calif. 92704

Filed Jul. 25, 1977, Ser. No. 818,307

Int. Cl.[2] A47C *7/62*

U.S. Cl. 108—25 **6 Claims**



1. A collapsible stool assembly adapted for alternate arrangements comprising:

a first tubular support member;

a first circular collar attached around said first support member proximate the lower end thereof said collar including radially extending pivot pins formed on the exterior thereof;

a seat assembly comprising a first and second elongate brace segment, a circular seat attached to the one ends of said first and second brace segments, storage means attached to the other ends of said brace segments, said first and second brace segments being pivotally attached proximate said one ends thereof to the upper end of said first support member the pivotal axis of said brace segments being substantially parallel to the axis of said pivot pins;

a second tubular support member pivotally attached to said pivot pins at the lower end thereof; and

engagement means formed in said brace segments for engaging the upper end of said second support member when said brace segments are pivoted to an alignment substantially orthogonal relative said first support member.

4,085,687

REMOTE ENVELOPE DEPOSITORY CONSTRUCTION

Robert Beck; Herbert J. Morello, both of North Canton, and Jack M. Richardson, Canton, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

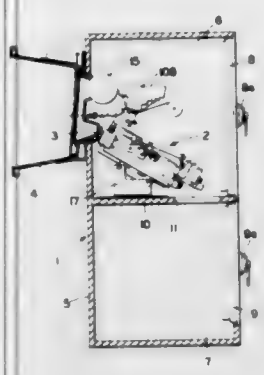
Filed Jan. 12, 1976, Ser. No. 648,281

Int. Cl.[2] G07G *5/00*

U.S. Cl. 109—24.1 **6 Claims**

1. In envelope depository construction of a type in which a conveyor transports a deposite envelope from an entry slot in a depository unit and delivers it to a safe-like chest in said unit, and in which printer means prints identifying indicia on the envelope before delivery to the chest; the combination of double, endless, laterally continuous, opposed belt conveyor means having entry and exit ends for transferring an envelope trapped in the bite between said opposed belts from conveyor entry to exit ends; drive means for the conveyor means; entry channel means located adjacent the conveyor entry end; exit channel means located adjacent the conveyor exit end; gate

plate means including a plate member located adjacent each of the conveyor entry and exit ends; means slidably mounting the gate plate members for movement between closed and open positions; means for moving the gate plate members between closed and open positions including a lever pivotally mounted intermediate its ends, one of the lever ends engaging the entry gate plate member and the other lever end engaging the exit gate plate member whereby the exit plate may be moved to open position when the entry plate is moved to closed position and vice versa, spring means engaging the lever normally biasing the lever to hold the entry gate plate member in closed position, solenoid means having an armature connected with the biasing spring means, the solenoid means when energized



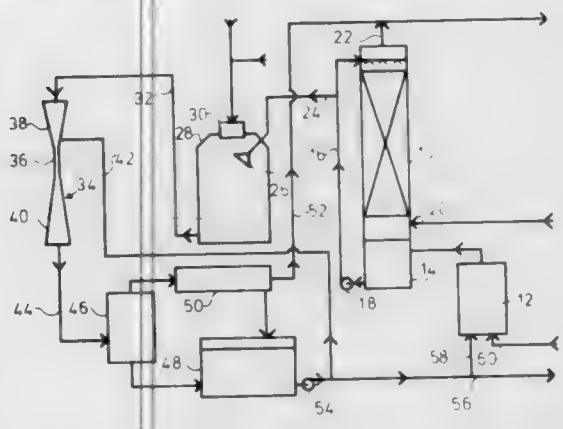
actuating the lever to move the entry gate plate member from closed to open position and when deenergized permitting the biasing spring means to actuate the lever to move the entry gate plate member from open to closed position, a slidably mounted movable cam plate operatively connected with the solenoid armature and the biasing spring means, the cam plate having slot and pin connection with the lever, and the cam slot having a lock portion engaging the pin to lock the entry gate plate member in locked position when the lever is biased to normally closed position by the spring means; and means for energizing the conveyor drive means and the plate moving mean to move the entry gate plate member to open position for accepting a deposited envelope.

4,085,688

TREATMENT OF EFFLUENT

Clive Richard Smith, 2 Bent Lea,, Bradley, Huddersfield, HD2 1QW, and Brian Mills, 14 Victoria Road, Liversedge, West Yorkshire, both of England

Filed Dec. 17, 1975, Ser. No. 641,869
Int. Cl.[2] F23G *7/04*
U.S. Cl. 110—238 **4 Claims**



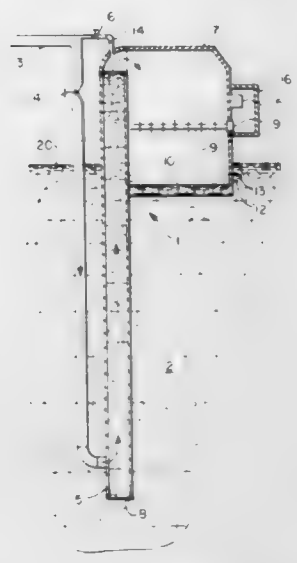
1. A process for incinerating aqueous liquor containing alkali or metal salts which is pre-concentrated by heat exchange from incineration gases, comprising atomising said liquor into droplet form, bringing said liquor in droplet form into direct contact with hot incineration gases to effect partial evaporation of liquor from the surface of the droplets and cooling of said gases, and passing the partially evaporated liquor in the vapor and/or particulate phase to an incineration chamber for incineration of the partially evaporated liquor and the production of hot incineration gases containing substantially all the solid particulate product of the incineration for pre-concentration of subsequently atomised liquor.

4,085,689

FIBROUS FILTER INCINERATOR

Seymour Kershner, 2902 Henley Rd., Norristown, Pa. 19403

Filed Jul. 1, 1976, Ser. No. 701,507
Int. Cl.[2] F23G *5/12;* C02C *1/12*
U.S. Cl. 110—252 **9 Claims**



1. An apparatus for the removal and destruction of fibrous material from a liquid, which comprises:

(a) an incinerator chamber having an upper portion and a lower portion;

(b) air lift pump means for pumping the liquid from a source thereof into said upper portion of said incinerator chamber, said pump means comprising

(i) an elongated air lift pipe means having an open lower end thereof submerged in a source of said liquid and an open uppper end thereof in fluid communication with said upper portion of said incinerator chamber;

(ii) air supply pipe means having a first branch thereof in fluid communication with said air lift pipe means adjacent said submerged open end thereof and a second branch in fluid communication with said upper portion of said incinerator chamber adjacent said upper open end of said air lift pipe means; and

(iii) valve means for selectively controlling the flow of air from said air supply pipe means to said first and second branches thereof;

(c) grid means disposed in said incinerator chamber between said upper and lower portions thereof for filtering the fibrous material from the liquid pumped therein;

(d) means for incinerating the fibrous material while the material is disposed on said grid means; and

(e) means for automatically controlling predetermined time periods for (i) passing air through said first branch of said air supply pipe means so as to pump the fibrous liquid through said elongated air lift pipe means and into said incinerator chamber, (ii) passing air through said second branch of said air supply pipe means directly into said incinerator chamber, and (iii) incinerating the fibrous material disposed on said grid means.

8. A method for removing and destroying fibrous material contained in a liquid, which comprises the steps of:

supplying air to an elongated open-ended pipe which has its lower end submerged in a source of fibrous liquid and its upper end in fluid communication with an incineration chamber such that the air passes upwardly through said pipe and thereby pumps the fibrous liquid through said pipe and into said incinerator chamber;

filtering the fibrous material from the liquid pumped into said incinerator chamber;

periodically, at predetermined intervals and for a medetermined period of time, discontinuing the flow of air into said pipe and passing air directly into said incinerator chamber to force excess liquid to drain from the filtered fibrous material;

incinerating the filtered and drained fibrous material;

cooling said incinerator chamber; and

removing any ashes remaining from the incinerating step.

4,085,690

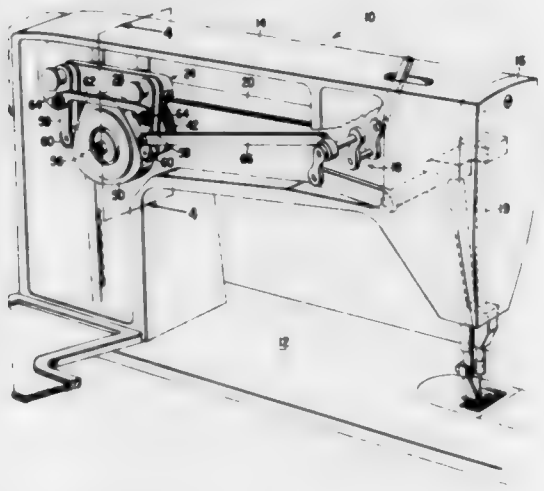
NEEDLE JOGGING MECHANISMS

Reinhold Papajewski, Buchig, Germany, assignor to The Singer Company, New York, N.Y.

Filed Jun. 21, 1976, Ser. No. 697,885

Int. Cl.[2] D05B *3/02*

U.S. Cl. 112—158 R **2 Claims**



1. In a sewing machine having a base, a bracket arm, a needle bar supported for endwise reciprocation and lateral jogging movement in said bracket arm, and a sewing machine drive shaft in said bracket arm for imparting endwise reciprocation to said needle bar, a needle jogging mechanism comprising:

a. a frame located within said bracket arm and attached thereto;

b. a single cam means rotatably journaled in said frame for rotation about its central axis;

c. means for rotating said cam means in timed relation with said sewing machine drive shaft;

d. a pair of follower levers located on opposite sides of the axis of rotation of said cam means;

e. means for pivotally mounting each of said follower levers at points on said frame spaced from each other;

f. a pair of cam followers rotatably attached one to each of said follower lever for tracking substantially diametrically opposite edges of said single cam means;

g. a cross-link extending from one of said follower levers to said other follower lever;

h. means for pivotally mounting said cross-link to each of said follower levers such that said cross-link influences parallel motion of said follower levers in response to the tracking of said cam means by said cam followers;

i. means for adjusting said cam followers toward and away from each other to compensate for wear and variations in the manufacture of said cam means while maintaining a tracking relation on substantially diametrically opposite sides of said cam means; and

j. means for transferring the parallel motion of said follower levers to said needle bar for moving said needle bar transversed to the direction of material feed.

4,085,691

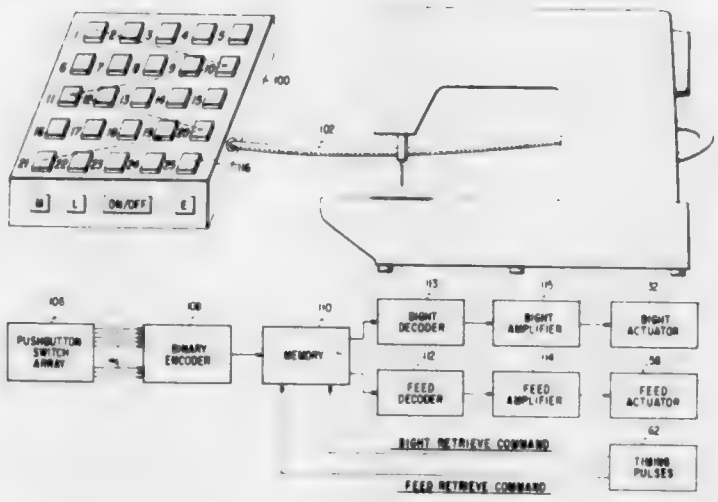
SEWING MACHINE WITH PROGRAMMABLE MEMORY

Donald Jay Coughenour, Morristown, and Jack Brown, Union, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Jul. 27, 1976, Ser. No. 709,049

Int. Cl.[2] D05B *3/02*

U.S. Cl. 112—158 E **9 Claims**



8. A programmable memory unit for a sewing machine having a stitch forming means operative to form successive stitches, including mechanism for influencing the stitch position coordinates of said successive stitches in the formation of a pattern of stitches, logic means responsive to input data representative of stitch position coordinates for producing stitch position coordinate electric signals, actuating means responsive to signals from said logic means for controlling the position of said stitch forming means in accordance with input data fed to said logic means, and means for initiating actuation of successive stitches in the formation of said pattern of stitches, said programmable memory unit comprising:

means responsive to operator manipulation for programming a stitch pattern selected by an operator, said programming means including a plurality of selector buttons with each of said buttons having the capability of generating a digital code corresponding to a stitch position coordinate of a stitch pattern;

read-write static memory means continuously available for storing new digital input data corresponding to stitch position coordinates of a stitch pattern selected by an operator;

encoder means for converting the digital code generated by each of said buttons of said programming means actuated by an operator into digital input data suitable for storing in said static memory means; and,

means for coupling said programmable memory unit to said initiating means and said logic means of said sewing machine.

4,085,692

MOTOR CONTROL APPARATUS FOR ELECTRICALLY-DRIVEN SEWING MACHINE

Katsuji Soeda; Fumio Sakuma, and Mitsuhiro Oyama, all of Sukagawa, Japan, assignors to Yamamoto Electric Industrial Co., Ltd., Japan

Filed Oct. 12, 1976, Ser. No. 731,686

Claims priority, application Japan, Mar. 5, 1976, 51-23882

Int. Cl.[2] D05B *69/22*

U.S. Cl. 112—275 **5 Claims**

1. A motor speed control apparatus for an electrically-driven sewing machine capable of effecting a single stitch, comprising:

a main motor circuit for supplying a motor current from an AC power supply through a main switch and a semiconductor element with a controlled electrode to a motor;

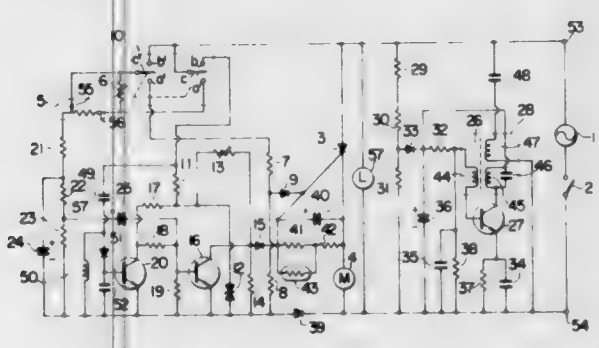
a first control means for controlling said semiconductor element in order to effect normal operation;

a controller adapted to change between a first and a second state to control the speed of said motor continuously when said first control means is energized;

a second control means for controlling said semiconductor element in order to effect a single stitch wherein said controller initiates the operation of the single stitch; and

a change-over means for changing over the operation between said first and said second control means; and

said second control means including means for setting the trigger voltage for turning on said semi-conductor element, a switching element coupled with said trigger-voltage setting means, a bias means for energizing said switch element, and a charge-discharge circuit means, said bias



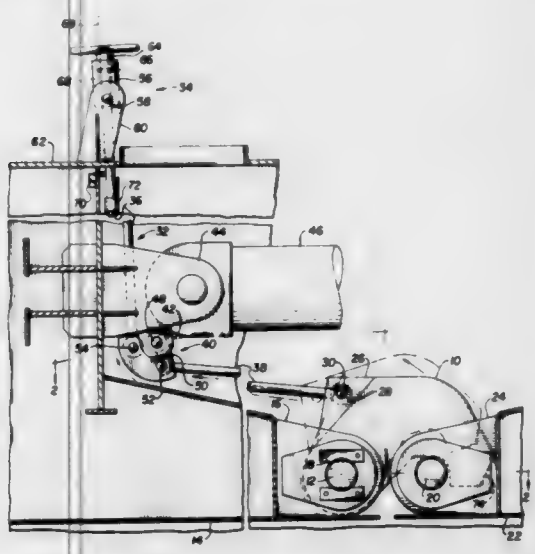
means having a needle position detector means for detecting the position of a needle bar, said bias means supplying said switching element with a first bias to hold said switching element off when said needle position detector means detects the absence of said needle bar at said predetermined position, and supplying said switching element with a second bias sufficient to turn said switching element on when said needle position detector means detects the fact that said needle bar is at said predetermined position, said charge-discharge circuit means preventing said bias means from supplying a sufficient bias to turn said switching element on for a predetermined period of time after said controller is operated to initiate the single stitch operation, said trigger voltage setting means being rendered ineffective by the conduction of said switching means.

4,085,693

MECHANICAL LOCKING DEVICE FOR A LONGITUDINALLY SPLIT BOTTOM DUMP BARGE

Robert R. Seiford, c/o Twin City Shipyard, Inc. P.O. Box 3032, St. Paul, Minn. 55165

Filed Dec. 27, 1976, Ser. No. 754,213
Int. Cl.[2] B63B *35/30*
U.S. Cl. 114—29 **7 Claims**



1. A device for mechanically locking together first and second halves of a longitudinally split bottom dump barge when the hopper formed by the two halves is closed wherein both halves are pivotable about a common longitudinal axis which is centrally disposed along the top deck of the barge, and the barge includes means for opening and closing the hopper by pulling together, or pushing apart, the respective bottom portions of the two halves, said device comprising:

a first longitudinally extending pin mounted to a bottom portion of the first half of the dump barge;

a second longitudinally extending pin mounted to a corresponding bottom portion of the second half of the dump barge opposite said first pin;

a locking member, having one end journaled to said first pin for pivotal movement thereabout, and an opposite hook-shaped end which hooks about, and rests upon, said second pin; and

positioning and supporting means for said locking member, for pivotally moving the hooked end of said locking member upward to an unlocked position, or downward to a locking position, said positioning and supporting means for said locking member comprises:

a third longitudinally extending pin carried by said locking member;

an operating wheel assembly which includes a housing member pivotably mounted on a top deck of the first half of the dump barge, an operating wheel having an internally threaded hub portion which is supported by and rotatable within said housing member, and an externally threaded shaft extension member which extends through said housing member and is in threaded contact with said operating wheel; and

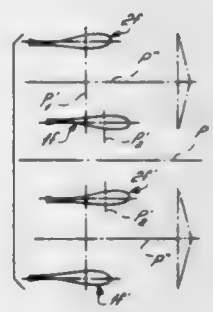
a locking device operating shaft assembly, which has a lower end journaled to said third pin and an upper end connected to said shaft extension member.

4,085,694

DUAL RUDDER ASSEMBLY

Karl Schilling, and Horst Rathert, both of Minden, Germany, assignors to Werftunion G.m.b.H. & Co., Dortmund, Germany

Filed Mar. 4, 1976, Ser. No. 663,816
Claims priority, application Germany, Mar. 8, 1975, 2510256
Int. Cl.[2] B63H *25/06*
U.S. Cl. 114—163 **1 Claim**



1. In combination with a ship having a pair of drives generating a pair of parallel screw races passing backwardly parallel to each other to each side of a ship keel plane, the improvement comprising a pair of rudders in each of said races pivotal about parallel pivot axes, the pivot axes of each pair being equispaced to either side of the center of the respective race, each rudder having a central plane lying parallel to said keel plane during normal straight forward travel of said ship, each rudder further having an inner face turned toward the center of the respective screw race and an outer face formed by a convex front portion generally in front of the respective pivot axis and a concave rear portion generally behind the respective axis and forming with the respective central plane an angle of between 2° and 10°, the axis of the rudder of each pair further from said keel plane lying behind the other axis of each pair.

4,085,695

LOGISTICAL SUPPORT OF OFFSHORE DRILLING FACILITIES

John J. Bylo, 7272 Willoughby Ave., Los Angeles, Calif. 90046

Continuation-in-part of Ser. No. 649,645, Jan. 16, 1976, which is a division of Ser. No. 439,375, Feb. 4, 1974, Pat. No. 3,934,532, which is a continuation-in-part of Ser. No. 187,537, Oct. 7, 1971, Pat. No. 3,793,974, which is a continuation-in-part of Ser. No. 794,938, Jan. 29, 1969, abandoned. This application Apr. 19, 1976, Ser. No. 678,079

Int. Cl.[2] B63B *35/40*

U.S. Cl. 114—260 10 Claims



1. Apparatus for logistical support of an offshore drilling facility from a shore-based supply location comprising

1. a plurality of modular work deck units of generally rectangular plan shape and of generally uniform external configuration and dimension over the bottom and lower side and end portions thereof,
2. a self-propelled vessel having an exposed deck portion dimensioned and configured to releasably mate with and to support any one, and only one at any time, of the work deck units and cargo carried thereby in substantially laterally and longitudinally fixed position on the vessel, the vessel including ballast means operable for increasing and decreasing the draft of the vessel when mated with a work deck unit sufficiently that the vessel can ballast down from a separately supported deck unit and move out from thereunder,
3. a plurality of dock facilities at the supply location defined in cooperation with the vessel and the work deck units
   a. for movement thereinto of the vessel with a work deck unit thereon and
   b. for engaging and supporting a work deck unit therein
      i. for loading and unloading of cargo to and from the deck unit, and
      ii. for transfer to and from the vessel in response to ballasting of the vessel,
4. a deck unit-to-vessel receiving and discharging station at the offshore drilling facility,
5. the offshore drilling facility including a platform elevated above the adjacent water surface, and
6. the receiving and discharging station including elevator means at an elevated location in the drilling facility and engageable with a work deck unit, the elevator means being operable for engaging a work deck unit supported by the vessel and for raising and lowering a deck unit to and from a receiving location elevated in the offshore facility above the water surface.

4,085,696

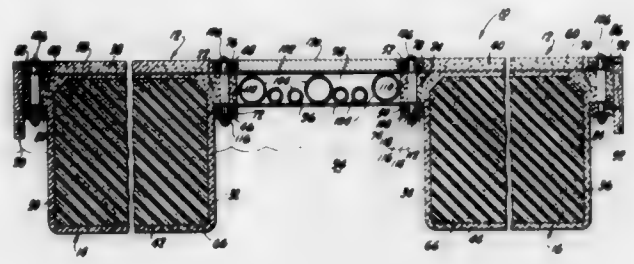
UTILITY CHASE FOR FLOATING UNITS

Myron L. Shorter, Jr., 834 Vallejo Rd., Novato, Calif. 94947

Filed Nov. 1, 1976, Ser. No. 737,496

Int. Cl.[2] B63B *35/44*

U.S. Cl. 114—266 20 Claims



1. A utility chase for floating units comprising:

a. a plurality of float units each having a flange structure projecting therefrom, each of said flange structures extending along a side of each of said float units, said flange structure having a first and a second side, each of said float units having upper deck;

b. a first stringer mounted against said first side of said flange structure of a first float unit of said plurality of float units;

c. a second stringer mounted against said first side of said flange structure of a second float unit of said plurality of float units, said flange structure of said first float unit spaced from said flange structure of said second float unit;

d. at least one bar mounted against said first side of said flange structure of said first float unit, said at least one bar also mounted against said first side of said flange structure of said second float unit, said bar spanning the space between said first and second float units below said upper deck thereof;

e. fastening means for securing, in compression each of said flange structures of said first and second of said plurality of float units, said first and second stringers, and said at least one bar spanning the space between said first and second float units, said fastening means including a rod element extending through each of said first and second stringers and said at least one bar spanning the space between said first and second float units.

4,085,697

ALL-TERRAIN VEHICLE

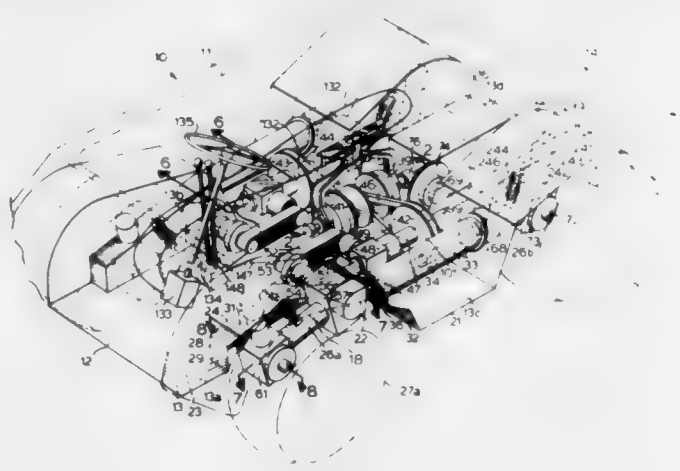
Johannes Leonardus Gaasenbeek, 56, Burns Avenue, RR No. 3, Belleville, Ontario, Canada

Filed Jul. 15, 1976, Ser. No. 705,399

Claims priority, application United Kingdom, Feb. 24, 1976, 07255/76

Int. Cl.[2] B60F *3/00;* B62D *11/04*

U.S. Cl. 115—1 R 10 Claims



1. A self-propelled vehicle having a vehicle body, an engine supported on the body, front and rear ground wheels carried

on the body at each side, at least one ground wheel on each side of the vehicle having suspension means acting between the wheel and the vehicle body for resiliently resisting upward movement of the wheel relative to the body, the wheel being coupled to and driven from one end of a torsional energy storing drive shaft extending longitudinally of the vehicle, means supporting said shaft on the vehicle for pivoting about a transverse axis at the other end of said shaft, a transverse drive shaft supported on the vehicle body at said other end of said longitudinal shaft and driving a speed-reducing drive coupling which drives said longitudinal energy-storing shaft, whereby small instantaneous advancements and retardations of the vehicle wheel and small torques derived from rocking of the wheel and its energy storing shaft about the speed-reducing drive coupling are stored in said energy-storing shaft without being transmitted to said transverse shaft, a transmission between the engine and each transverse shaft, and steering control means operatively connected to the transmissions for varying differentially the speed of a ground wheel on one side of the vehicle and a ground wheel on the opposite side of the vehicle so that one wheel is speeded-up while the other wheel is slowed down, whereby the steering of the vehicle can be effected.

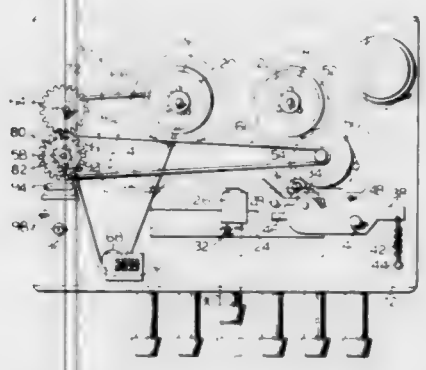
2. A vehicle as claimed in claim 1 having a buoyant watertight body, a tube extending longitudinally along each side of the body and a propeller supported in each tube, the propeller being drivingly connected to the transverse shaft driving the ground wheel on the respective side of the vehicle body.

4,085,698

DEVICE FOR DETECTING ROTATIONAL SPEED OF A TAPE REEL

Jirou Kajino, and Naoyuki Ohara, both of Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 16, 1976, Ser. No. 696,701
Claims priority, application Japan, Jun. 19, 1975, 50-75128; Jun. 20, 1975, 50-75970; Jun. 20, 1975, 50-75969
Int. Cl.[2] G08B *5/36;* G01D *5/32;* G11B *15/18;* B65H *25/30*
U.S. Cl. 116—114 J **3 Claims**



1. A device for detecting the rotational speed of a tape reel in a tape recording and/or reproducing apparatus comprising:

tape moving means for moving a tape at a constant speed;

a supply reel;

first rotating means having a frictional mechansim connected to said supply reel for being driven by said supply reel to rotate at a speed in proportion to the speed of said supply reel;

second rotating means connected to said tape moving means for being driven by said tape moving means to rotate at a constant speed greater than the initial speed of said first rotating means and mounted coaxially with said first rotating means;

a first pinion gear driven by said first rotating means;

a second pinion gear mounted rotatably on said second rotating means and meshed with said first pinion gear for being rotated from a first position to a second position when the rotational speed of said first rotating means exceeds the constant speed of said second rotating means;

a magnet fixed on said second pinion gear;

a magnetically sensitive element adjacent said magnet for being actuated by said magnet at the second position of said second pinion gear; and

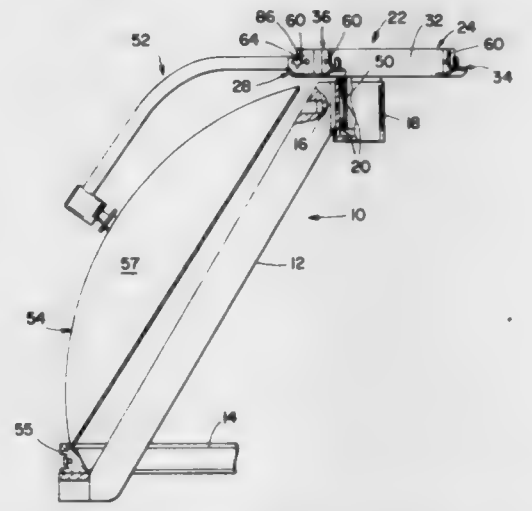
indicating means responsive to said magnetically sensitive element for indicating that the rotational speed of said supply reel is higher than a predetermined speed when said second pinion gear is rotated to the second position.

4,085,699

MOUNTING FOR ARMS OF A THIN-FILM APPARATUS

Gunard O. B. Mahl, San Francisco, Calif., assignor to CHA Industries, Menlo Park, Calif.

Filed Mar. 30, 1977, Ser. No. 782,822
Int. Cl.[2] B05C *13/00*
U.S. Cl. 118—500 **2 Claims**



1. In a thin-film deposition apparatus comprising a rotatable means, a plurality of racks, each having a circular outer periphery, a plurality of arm means, each rack being rotatably mounted relative to an arm means, each arm means being operatively associated with the rotatable means, and means for imparting rotary motion to the racks about their centers, responsive to rotation of the rotatable means, the improvement comprising:

means operatively coupling each arm means and the rotatable means for allowing removal of an individual arm means from the rotatable means, said means operatively coupling each arm means and the rotatable means comprising a first arm means portion removably seatable in a first depression defined by the rotatable means and a second arm means portion removably seatable in a second depression defined by the rotatable means, the rotatable means supporting said first and second arm means portion each arm means being generally T-shaped in configuration with the oppositely extending limbs of the generally T-shaped arm means defining the first and second arm means portion, the first and second depressions being generally U-shaped in configuration and positioned such that the first and second arm means portions are positioned to rest in the first and second generally U-shaped impressions under the weight of the arm means, the rotatable means defining a plurality of pairs of spaced apart flange means, each pair of flange means defining a respective first and second depression; and

means supported by said flange means for resisting torque forces applied to said arm means while allowing substantially unrestricted insertion and removal of said arm means, said torque forces resisting means comprising a plurality of rods each pivotally mounted adjacent the ends thereof in each respective of the pairs of flanges substantially parallel to the oppositely extending limbs of the respective T-shaped arm means and a pair of hook means attached to extend laterally from each respective rod with a concave side of each of said hook means facing away

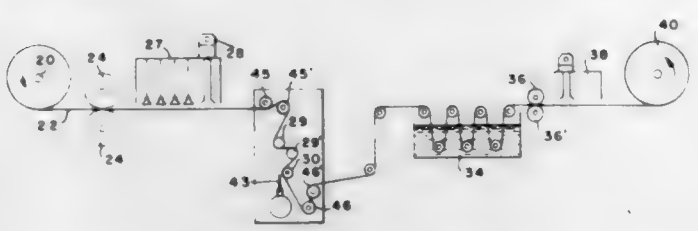
from the respective rod to form pairs of aligned mouths, the aligned mouths being positioned to contact respective oppositely extending limbs of the respective generally T-shaped arm means as said first and second arm means portions thereof are seated in said respective first and second depressions.

4,085,700

APPARATUS FOR SCULPTURING PILE FABRICS

Walter Engels, Tryon, N.C., and Charles E. Willbanks, Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 15, 1976, Ser. No. 750,888
Int. Cl.[2] D06C *23/02*
U.S. Cl. 118—37 **11 Claims**



1. Apparatus for producing a pile fabric having selected regions in which the pile has been trimmed, comprising:

(a) means for stiffening selected regions of a pile fabric whereby a pile fabric having regions of stiffened and unstiffened fibers is formed;

(b) cutter means for trimming the pile from the stiffened regions, said cutter means including:

(i) blade means for contacting both the stiffened fibers in the pile fabric and the unstiffened fibers while severing the stiffened fibers and deflecting the unstiffened fibers without severing them, said blade means cutting in the same fashion as a knife or razor as opposed to cutting like a pair of scissors;

(ii) support means closely adjacent to said blade means for maintaining said pile fabric in contact with said blade means; and

(iii) means for effecting relative motion between said blade means and said pile fabric, and

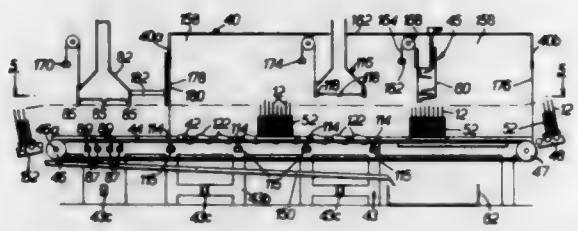
(c) means for supplying said pile fabric having regions of stiffened and unstiffened fibers to said cutter means.

4,085,701

APPARATUS FOR WAX IMPREGNATION

George Anson, Armadale, and John Liberts, Clayton, both of Australia, assignors to Andax Pty. Ltd., Australia

Filed Nov. 20, 1974, Ser. No. 525,358
Claims priority, application Australia, Feb. 28, 1974, PB6766
Int. Cl.[2] B05C *5/00, 7/02, 13/02*
U.S. Cl. 118—57 **7 Claims**



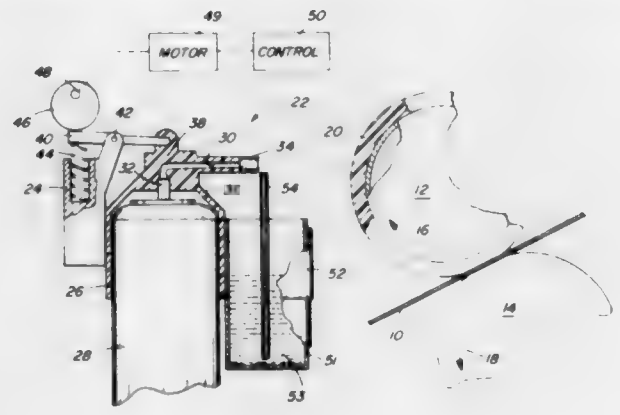
1. Apparatus for applying liquid settable material to a board product formed from board having substantially straight parallel open-ended internal interstices, said apparatus comprising, flow means for generating a zone of cascading flow of said material and generally horizontal conveyor means for passing the board product thereon through said zone with said interstices in a substantially vertical position and open to said flow, clearance means for clearing excess liquid settable material from said interstices after the board product has passed through said flow means, said clearance means including an inclined ramp adjacent said conveyor means over which said product is caused to move as it is carried by said conveyor means, said ramp being upwardly inclined in the direction of travel and having an upper end, whereby the board product is subjected to jolting pursuant to termination of downward movement of the board product after it passes over the upper end of the ramp.

4,085,702

OFFSET PREVENTION DURING FIXING

James William Consaul, East Rochester, and Thomas Arthur Jadwin, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1976, Ser. No. 671,875
Int. Cl.[2] G03G *15/20*
U.S. Cl. 118—60 **6 Claims**



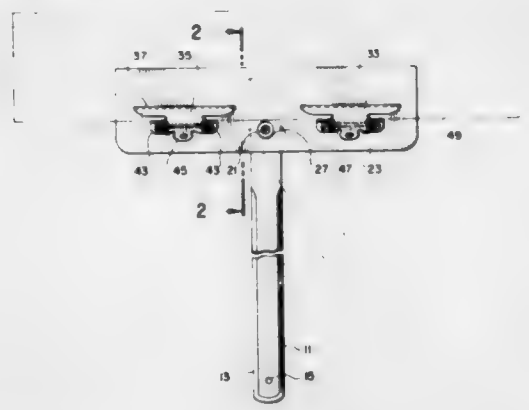
1. In a device for contact fixing electrostatic marking particles carried on a support material, said fixing device being of the type including a member having a fixing surface and a container for a supply of offset preventing material, the improvement comprising applicator means for distributing offset preventing material having a viscosity of at least approximately 10,000 centistokes from said container onto the fixing surface of the member without physically contacting the fixing surface of the member by said applicator means.

4,085,703

PAINTING SHIELD

Frank J. Glowacki, 10801 Vickers Ave., Garden Grove, Calif. 92640

Continuation of Ser. No. 670,599, Mar. 26, 1976, abandoned. This application Aug. 3, 1977, Ser. No. 821,265
Int. Cl.[2] B05C *11/00*
U.S. Cl. 118—504 **3 Claims**



1. Apparatus for shielding protected areas during spray painting operations, comprising:

an elongate handle, one end of which includes a gripping portion, the other end of which includes an aperture normal to the longitudinal axis of said handle;

a rigid, flat reinforcing member having a length and width shorter than the length of said elongate handle, said rein-

forcing member lying flat against the side of said handle at said other end of said handle, said reinforcing member lying in a plane parallel to the longitudinal axis of said elongate handle, said reinforcing member including an aperture corresponding with said handle aperture;

a pivot shaft passing normal to the longitudinal axis of said handle through said handle aperture and said reinforcing member aperture to permit said handle to pivot freely to any position in a 180° arc within a plane parallel to the plane defined by said reinforcing member; and

a painting shield, formed of thin sheet material, removably attached to said flat reinforcing member and extending beyond said reinforcing member on at least one side thereof, the plane defined by said painting shield, the plane defined by said reinforcing member, and the plane defined by the pivoting movement of said handle all being parallel to each other and perpendicular to said pivot shaft.

4,085,704

ANIMAL LITTER

Stephen E. Frazier, Orlando, Fla., assignor to Rush-Hampton Industries, Longwood, Fla.

Filed Nov. 30, 1976, Ser. No. 746,020
Int. Cl.[2] A01K *29/00*
U.S. Cl. 119—1 **16 Claims**

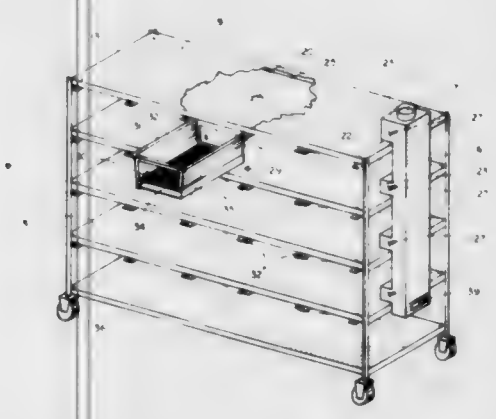
1. An animal litter which slowly, continuously and uniformly releases an odor control agent comprising a suitable absorbent material admixed with from about 1% to about 50% by weight of a highly porous, chemically inert silica gel or mullite vehicle which has been previously impregnated with from about 1% to about 50% by weight of an odor control agent.

4,085,705

ANIMAL CAGE

Thomas M. Gland, and Robert C. A. Frederickson, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 17, 1976, Ser. No. 724,429
Int. Cl.[2] A01K *1/00*
U.S. Cl. 119—17 **7 Claims**



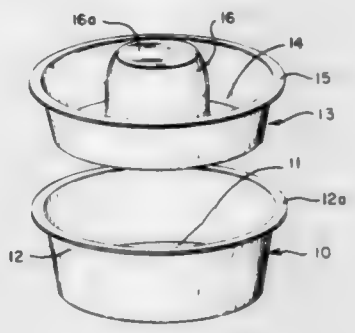
1. A portable animal cage rack having a plurality of shelves with each shelf supporting a plurality of animal cages which are removably suspended on the shelf's underneath side, a main air duct mounted on one end of the shelves, a branch air duct in each shelf connected to said main air duct, an opening in said main air duct or one of said branch air ducts adapted for connection to an exhaust system, and an exhaust opening in each said branch air duct directly over a supported animal cage for transmitting air from an animal cage into said branch air duct.

4,085,706

COMBINED ANIMAL WEANING, WATERING AND FEEDING DISHES

Virginia Sunner Evans, 3471 S. Park Rd., Bethel Park, Pa. 15102

Filed Dec. 27, 1976, Ser. No. 754,190
Int. Cl.[2] A01K *5/00*
U.S. Cl. 119—61 **4 Claims**



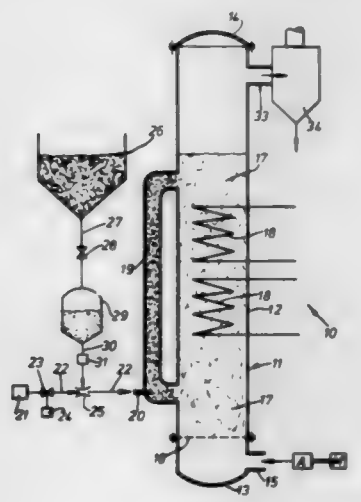
1. A combined weaning, watering and feeding dish for puppies and like animals, comprising an outer dish member having a bottom and a generally vertically upstanding rim fixed thereto, an inner dish member removably spaced from the outer dish having an annular generally U-shaped trough with an outer sidewall having an outer edge engaging the top of the upstanding rim of the outer dish member to support it centrally therein in a first position adapted to contain a temperature stabilizing means in the area between said inner and outer dishes, and a central upstanding generally cylindrical member in the center of the annulus of said inner dish member spaced from said outer sidewall by a bottom trough surface and extending above the outer edge of said inner dish, said cylindrical member having a flat top closure adapted to support the inner dish in an inverted second position removed from the outer dish member whereby the bottom trough surface of said inner dish acts as an ear protective water dish by diverting a dog's ears away from the cylindrical member in said inverted position.

4,085,707

COMBUSTION OR PART-COMBUSTION IN FLUIDIZED BEDS

Gerald Moss, Oxford, England, assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Feb. 12, 1976, Ser. No. 657,540
Claims priority, application United Kingdom, Feb. 14, 1975, 6355/75
Int. Cl.[2] F22B *1/02*; F23D *19/00*
U.S. Cl. 122—4 D **25 Claims**



1. A method of at least partly combusting a solid or semi-solid fuel at an elevated temperature in a bed containing particles which are fluidized by an upwardly passing gas capable of

converting the fuel to at least partly combusted gaseous products at the elevated temperature, comprising passing a mixture comprising the fuel and non-combustible fluidizable particulate solids into a bottom region of the bed so that the fuel when within the bed is dispersed at least among the particulate solids whereby the conversion of the fuel is effected in an extended portion of the bed volume, and causing or permitting particles to leave a top region of the bed, wherein at least some of the particles which leave the top portion of the bed are employed as particulate solids in said mixture comprising fuel and particulate solids, whereby to maintain the top of the bed at approximately a substantially constant level and promoting a generally upward movement of particles and any other materials in the bed.

17. An apparatus for use in at least partly combusting a fuel at an elevated temperature in a bed of fluidizable particulate solids, the apparatus comprising a vessel for containing the bed in a selected volume, a gas distributor for distributing an oxygen-containing fluidizing gas into the bottom of said volume substantially uniformly across the horizontal cross-section of the bottom of said volume, a conduit above the top of said volume through which gas leaving the volume can pass out of the vessel, at least one duct having an upper end open to a top region of the bed volume and a lower end open to a bottom region of the bed volume so as to provide communication through the duct between top and bottom regions of the bed volume, the duct being so constructed and/or arranged that substantially no fluidizing gas will pass thereinto from said volume and so that said particulate solids will enter the upper end of the duct and pack therein to a greater apparent density than the apparent density of said bed contained in said volume and a fuel supply means for passing fuel into the bottom region through the lower end of the duct whereby to mix the fuel with solids at the lower end of the duct and to cause the resulting mixture of solids and fuel to pass into the bottom region of the bed volume so as to disperse the fuel among the particulate solids in the bottom region of said bed volume.

4,085,708

STEAM BOILERS

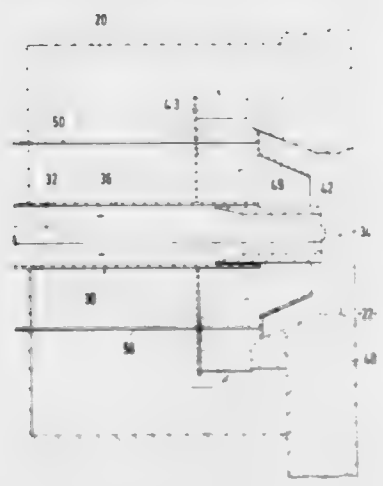
Ronald Arthur Ashdown, Redhill, England, assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Feb. 4, 1977, Ser. No. 765,566

Claims priority, application United Kingdom, Feb. 18, 1976, 6464/76

Int. Cl.[2] F22B *1/18*; F23J *5/00*

U.S. Cl. 122—7 B **4 Claims**



1. A power plant comprising:

(i) a waste heat steam boiler including walls defining a furnace, one of said walls having an opening formed therethrough,

(ii) at least one fuel burner associated with said one furnace wall, one end of said burner adjacent said opening in said one wall,

(iii) an air blower for supplying primary combustion air to said fuel burner,

(iv) a windbox disposed adjacent said one wall to which secondary combustion air can be passed for supplying said burner,

(v) a gas turbine including an exhaust section for passing heated exhaust gases including air from said turbine,

(vi) a forced draught fan,

(vii) means for supplying the exhaust from said turbine or the output from said forced draught fan to said windbox for use as secondary combustion air to be supplied to said burner,

(viii) a throat associated with said opening in said one wall and adjacent said burner through which combustion products pass into said furnace, secondary combustion air passed into said throat from said windbox, and

(ix) means for adjusting said throat between an open full quarl position when said secondary air is the exhaust from said turbine and a partially closed position where the effective quarl diameter is reduced when said secondary air is supplied by the forced draught fan.

4,085,709

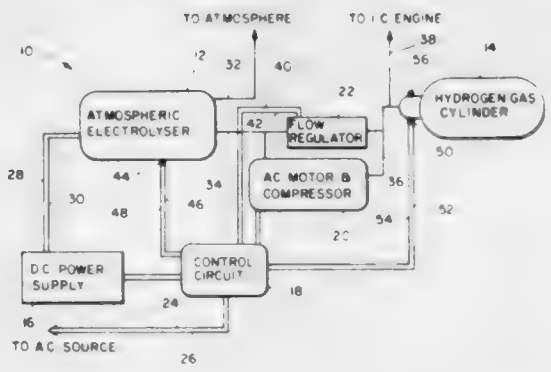
HYDROGEN FUEL SYSTEM FOR A VEHICLE

Kuldip Chand Tangri, 5126 W. Concord, Chicago, Ill. 60639

Filed Dec. 4, 1975, Ser. No. 637,736

Int. Cl.[2] F02B *43/10*

U.S. Cl. 123—1 A **12 Claims**



1. A hydrogen fuel system for a vehicle powered by an internal combustion engine, said system being mounted on the vehicle and comprising gas storage means for storing hydrogen gas, said storage means being connected to a fuel input for the internal combustion engine, an electrolyzer for generating hydrogen gas which is stored in said gas storage means, a D.C. power supply having an output connected to said electrolyzer and including means for converting A.C. current to D.C. current, and control circuit means connected to said D.C. power supply to said electrolyzer and to said gas storage means for controlling the generation and storage of hydrogen gas, said control circuit means being operable from and connectible to a conventional A.C. source.

4,085,710

HYDRAULIC ENGINE PISTON

Sundar Savarimuthu, 17 Gleneagle Crescent, Willowdale, Ontario, Canada

Filed Aug. 3, 1976, Ser. No. 711,404

Int. Cl.[2] F02B *71/00*; F15B *21/00*

U.S. Cl. 123—19 **1 Claim**

1. A two piston hydraulic fluid separated internal combustion cylinder system having fuel admission means, comprising a first piston, a second piston, said second piston having a smaller diameter than said first piston, said first piston and said second piston being co-axially aligned, said first piston and said second piston being housed in a common cylinder, a first cavity located in said cylinder, said first piston being housed slidably in said first cavity, said fuel admission means coupled to said first cavity, a first side of said first piston being disposed

opposite said fuel admission means, a second cavity, said second cavity being disposed in said cylinder, a second piston being disposed slidably mounted in said second cavity, the second side of said first piston being disposed facing said second cavity, a first side of said second piston being disposed facing said second side of said first piston, hydraulic oil, said hydraulic oil being disposed filling said second cavity, the second side of said second piston being disposed coupling a crank shaft, a plug, said plug being disposed in said first cavity, a viewing window, said viewing window being disposed in a



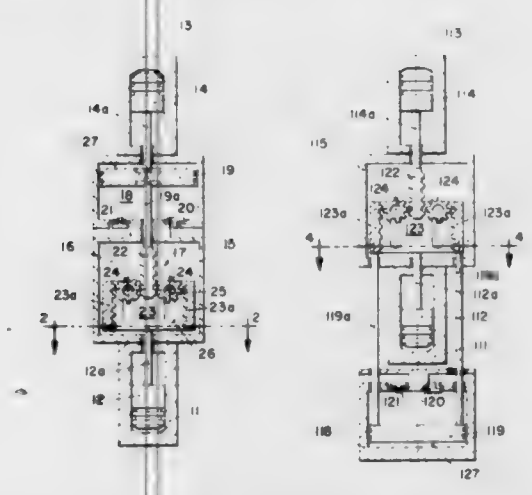
wall of said window at a location in said second cavity, guiding means for guiding said first piston within said first cavity, a cylindrical block, said cylindrical block being disposed located in said cylinder and having an opening therein, said opening for guiding said second piston therein, said means to guide said first piston including a groove extending along a portion of the length of said wall of said cylinder in said first cavity, said first piston having a mating protrusion extending outwardly therefrom, said mating protrusion being disposed engaging said groove.

4,085,711

FREE PISTON ENGINE WITH OPPOSED CYLINDERS

Anton Braun, 6421 Warren Ave., Minneapolis, Minn. 55435

Filed Sep. 12, 1975, Ser. No. 612,710
Int. Cl.[2] F02B *71/00, 75/06*
U.S. Cl. 123—46 B **7 Claims**



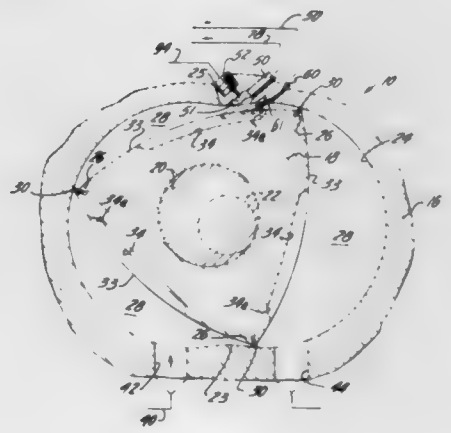
1. A free piston engine comprising a pair of opposed and axially spaced apart cylinders on a common longitudinal axis, a first power piston in one of said cylinders, a second power piston in the other of said cylinders, an energy absorbing device operably connected to and movable with said first power piston, and motion reversing, synchronizing and counterbalancing means centered on said axis and operably interconnecting said energy absorbing means and said second power piston, said synchronizing and counterbalancing means including a double rack, a pair of spaced gears with one gear each engaging one side each of said double rack and a pair of spaced and rigidly interconnected racks also engaging said gears on opposite sides of said double rack and pair of gears and said cylinders being arranged to fire simultaneously so that each power piston will exert a force in the same direction on said energy absorbing device to cause it to move in one direction.

4,085,712

ROTARY ENGINE WITH PILOT AND MAIN FUEL NOZZLES DOWNSTREAM OF TOP CENTER

David M. Myers, Upper Saddle River, and Harold D. Lamping, Oakland, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Feb. 14, 1977, Ser. No. 768,050
Int. Cl.[2] F02B *53/10*
U.S. Cl. 123—205 **6 Claims**



1. A rotary combustion engine comprising:

a. an outer body having an internal cavity, the inner peripheral surface of which has a multi-lobe profile such that the junctions of said lobes are disposed relatively close to the engine axis;

b. an inner body of generally polygonal profile having a plurality of apex portions mounted for relative rotation within said outer body cavity with the apex portions of said inner body having sealing cooperation with said multi-lobe peripheral surface to form a plurality of working chambers between the peripheral surfaces of said inner and outer bodies, which chambers vary in volume in response to said relative rotation;

c. said outer body having an air inlet port and an exhaust outlet port disposed adjacent to and on opposite sides of one of the junctions of the two lobes of said multi-lobe peripheral surface;

d. a first fuel nozzle mounted on the outer body adjacent to and on the downstream side, relative to the direction of inner body rotation, of a second lobe junction of said multi-lobe peripheral surface adjacent to which combustion takes place and disposed to discharge its fuel through said surface in a generally upstream direction into each working chamber after the charge therein has been substantially compressed;

e. an igniter mounted on the outer body adjacent to said first fuel nozzle for igniting fuel discharging from said nozzle; and

f. a second fuel nozzle mounted on said outer body adjacent to and on the downstream side of the said second lobe junction and disposed to discharge its fuel through said surface into each working chamber also after the charge therein has been substantially compressed for ignition by the burning of the fuel discharged from said first nozzle, a major portion of the fuel discharging from said second nozzle being directed in a generally upstream direction into each working chamber.

4,085,713

TORCH IGNITION INTERNAL COMBUSTION ENGINE

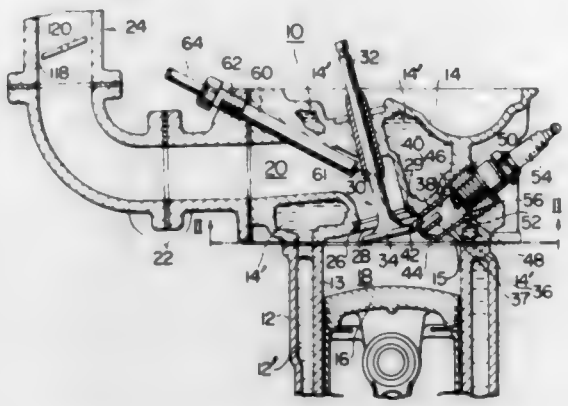
Masaaki Noguchi, Nagoya; Masaharu Sumiyoshi, Toyota; Yukiyasu Tanaka, Okazaki, and Taro Tanaka, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation-in-part of Ser. No. 445,785, Feb. 25, 1974, Pat. No. 3,982,504. This application Jul. 1, 1976, Ser. No. 701,863

Claims priority, application Japan, Feb. 27, 1973, 48-23926; Nov. 6, 1973, 48-124663; Nov. 13, 1973, 48-127952; Nov. 23, 1973, 48-131836; Jul. 4, 1975, 50-83048; Aug. 9, 1975, 50-96773

Int. Cl.[2] F02B *23/00*

U.S. Cl. 123—75 B **6 Claims**



1. A torch ignition internal combustion engine comprising a cylinder, a piston, a cylinder head cooperating with said cylinder and said piston to define a main combustion chamber for the combustion of a lean mixture of air and a fuel, an intake port connected at its upstream end to an air intake pipe and having a valve seat at the downstream end of said intake port, an intake valve movably positioned with respect to said valve seat, an auxiliary combustion chamber formed of a pot-shaped cavity having at least one suction aperture positioned near to said valve seat and at least one discharge aperture, said suction and discharge aperture being always communicated with said main combustion chamber during the time when said intake valve is closed, said suction aperture being adapted to be communicated with said intake port through a part of said main combustion chamber when said intake valve is opened, an ignition plug having a set of electrodes disposed in said pot-shaped cavity, a fuel injection nozzle having a discharge orifice disposed within said intake port upstream of said intake valve for discharging the fuel at a pressure higher than the atmospheric pressure, and means for continuously supplying the fuel to said fuel injection nozzle so that the fuel is continuously discharged from said discharge orifice into said intake port, said discharge orifice being positioned within said intake port such that an amount of the fuel discharged by said fuel injection nozzle during an intake stroke of each cycle of engine operation is moved through said intake port and through said part of said main combustion chamber toward said suction aperture of said pot-shaped cavity.

4,085,714

ELECTRONIC IGNITION TIMING ADJUSTING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Tadashi Hattori; Minoru Nishida, and Yoshiki Ueno, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 25, 1976, Ser. No. 670,108

Claims priority, application Japan, Apr. 14, 1975, 50-45684

Int. Cl.[2] F02P *5/04*

U.S. Cl. 123—117 R **6 Claims**

1. An electronic ignition timing adjusting system for an internal combustion engine comprising:

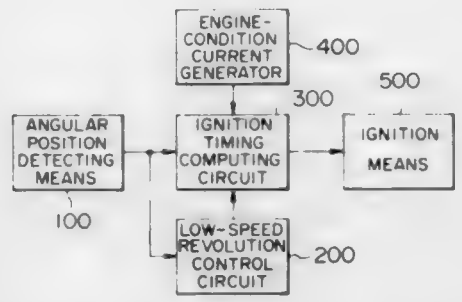
angular position detecting means for detecting two different angular positions of the crankshaft of an engine to generate a first detection signal at one end of said two angular positions and a second detection signal at the other of said two angular positions which is preset to correspond to a minimum ignition advance angular position;

a capacitor;

charging means for charging said capacitor during a period from the generation of said second detection signal until the generation of said first detection signal;

discharging means for beginning to discharge said capacitor upon generation of said first detection signal;

engine condition detecting means for detecting at least the rotational speed of said engine to control either one of a charging current and a discharging current of said capacitor in accordance with at least the rotational speed so that discharging of said capacitor is completed in a shorter period as said rotational speed becomes higher;



discharge completing means for forcibly completing the discharging of said capacitor in response to the generation of said second detection signal when the discharging of said capacitor has not been completed upon the generation of the same; and

ignition signal generating means for generating an ignition signal when the discharging of said capacitor has been completed, whereby ignition advance angular position is determined to coincide with said minimum ignition advance angular position when said rotational speed is lower than a predetermined value and to become greater than said minimum ignition advance angular position as said rotational speed becomes higher than said predetermined value.

4,085,715

IGNITION TIMING CONTROL SYSTEM

Syoichi Otaka, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1976, Ser. No. 712,347

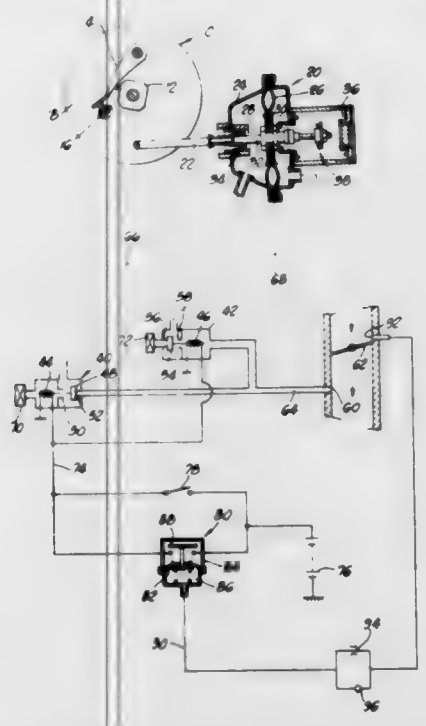
Claims priority, application Japan, Aug. 11, 1975, 50-109915[U]

Int. Cl.[2] F02P *5/04*

U.S. Cl. 123—117 A **1 Claim**

1. An ignition timing control apparatus for an internal combustion engine on a vehicle, the engine having an intake passageway with a throttle valve, comprising: a distributor having a timing adjustment mechanism, an actuator assembly for positioning said timing adjustment mechanism, said actuator assembly including a housing, a diaphragm, an actuator fixed to move with said diaphragm, an outlet in the intake passageway below the throttle valve, a first drive mechanism for driving said actuator in a first direction responsive to increased engine vacuum at said outlet, said first drive mechanism being defined by a first portion of said housing in cooperation with said diaphragm, a second drive mechanism for driving said actuator in a second direction responsive to increased engine vacuum at said outlet, said second drive mechanism being defined by a second portion of said housing in cooperation with said diaphragm, linkage for coupling said actuator to said timing adjustment mechanism such that movement of said actuator in said first direction will advance said timing adjustment mechanism, and movement of said actuator in said second direction will retard said timing adjustment mechanism, control valve means including a first valve assembly, a second valve assembly, a vacuum passageway extending from said

outlet, said first valve assembly including a first valve, a first actuating solenoid, first biasing means, said first valve connecting said first drive mechanism to said vacuum passageway when said first actuating solenoid is energized and to atmosphere by said first biasing means when said first actuating solenoid is de-energized, said second valve assembly including a second valve, a second actuating solenoid, second biasing means, said second valve connecting said second drive mechanism to atmosphere when said second actuating solenoid is energized, and to said vacuum passageway by said second biasing means when said second actuating solenoid is de-energized, valve actuator means including a cruise switch for energizing said actuating solenoids when the internal combustion



engine is operating under steady state driving conditions, said cruise switch including a vacuum actuated switch, an opening slightly above said throttle valve in said intake passageway, a vacuum line extending from said opening, two-way valve means positioned in said vacuum line, said two-way valve means including parallel passageways, a restrictive orifice in one of said parallel passageways, a check valve in the other of said parallel passageways, said two-way valve means allowing slow vacuum build-up in said vacuum actuated switch and allowing fast vacuum release in said valve actuated switch, and a vehicle velocity switch for energizing said actuating solenoids when the vehicle attains a preselected velocity, said control valve means being actuated by either of said vehicle velocity switch and said cruise switch.

4,085,716

INTERNAL COMBUSTION ENGINE WITH AIR-FUEL RATIO CONTROL DEVICE

Hidehiro Minami, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Mar. 15, 1976, Ser. No. 666,671

Claims priority, application Japan, Mar. 20, 1975, 50-38592[U]; Mar. 20, 1975, 50-38598[U]

Int. Cl.[2] F02M *7/00;* F02B *33/00*

U.S. Cl. 123—119 EC **3 Claims**

1. An internal combustion engine having a combustion chamber comprising:

a carburetor for supplying an air-fuel mixture into the combustion chamber, including an air-fuel mixture induction passage with a venturi portion, a float bowl, a throttle valve rotatably disposed within said air-fuel mixture induction passage for providing communication with the combustion chamber, a main discharge nozzle opened at the venturi portion located upstream of the throttle valve, a main well communicating with the main discharge nozzle and communicating with the float bowl of the carburetor, a main air bleed communicating with the main well, and an auxiliary air bleed communicating with the main well;

actuating means for taking a first state in which the flow amount of air supplied into the main well through the auxiliary air bleed is increased to a value greater than a predetermined level and a second state in which the flow amount of the same air is decreased to a value less than the predetermined level, said actuating means including

a cup-shaped cover,

a diaphragm covering the open portion of said cup-shaped cover and defining an operating chamber thereinside,

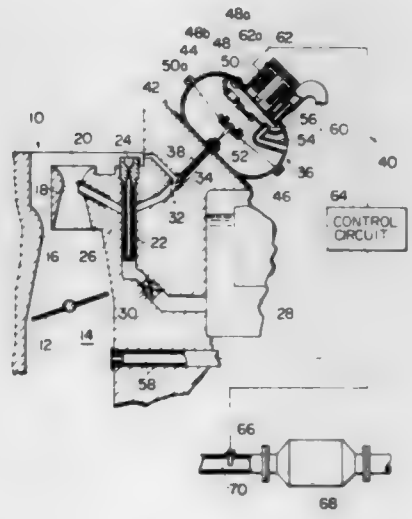
a needle valve fixedly connected to said diaphragm and the valve head to open or close the auxiliary air bleed,

a partition wall disposed to divide the operating chamber into a first chamber defined by the closed portion of said cup-shaped cover, and a second chamber defined by the diaphragm, said partition wall having a restricted opening therethrough for communicating the first chamber with the second chamber,

a return spring disclosed in the second chamber between said partition wall and said diaphragm to urge the valve head of said needle valve in a direction to close the auxiliary air bleed,

means defining an air inlet open to the first chamber and communicating with the atmosphere,

means defining a vacuum inlet open to the first chamber and an opening thereof being opposed to an opening of said air



means defining said inlet, said means defining said vacuum inlet communicating with a portion of the air-fuel mixture induction passage located downstream of the throttle valve of said carburetor,

a swingable valve member made of a plate spring, disposed in the first chamber and fixed at one end thereof to the inner wall of the closed portion of said cup-shaped cover, the other end of the valve member being located between the openings of said means defining an air inlet and said means defining a vacuum inlet to close either of the openings of said means defining an air inlet and said means defining a vacuum inlet, said other end of the valve member normally being urged to close the opening of said means defining a vacuum inlet,

a solenoid actuator electrically connected to said control circuit and sealingly disposed at the closed portion of said cup-shaped cover, said solenoid actuator having an actuating rod projectable to push the valve member to open the opening of said means defining a vacuum inlet and to close the opening of said means defining an air inlet when the solenoid of the solenoid actuator is energized, and to be withdrawn to allow the valve member to close the opening of said means defining a vacuum inlet and open the opening of said means defining an air inlet when the solenoid of said solenoid actuator is de-energized;

a control circuit electrically connected to said actuating means to generate a first operating signal for placing the

actuating means in the first state and a second operating signal for placing the actuating means in the second state, the first and second operating signals comprising an energizing signal for energizing the solenoid of the solenoid actuator of said actuating means and a de-energizing signal for de-energizing the solenoid of the same solenoid actuator; and

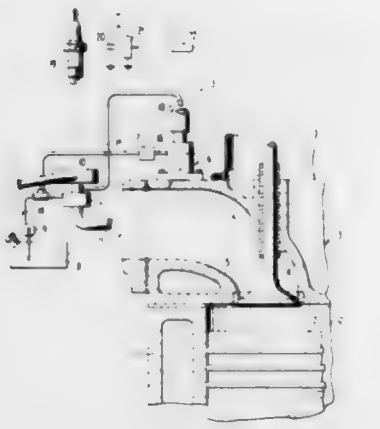
an exhaust gas sensor disposed in the exhaust system of the engine and electrically connected to the control circuit to generate a first information signal for causing the control circuit to generate the first operating signal when exhaust gases from the combustion chamber have a first composition correspond to a condition where the combustion chamber is fed with an air-fuel mixture richer than a predetermined level, and a second information signal for causing the control circuit to generate the second operating signal when the exhaust gases have a second composition corresponding to a condition where the combustion chamber is fed with an air-fuel mixture leaner than the predetermined level.

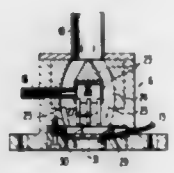
4,085,717

ATOMIZATION DEVICE FOR INTERNAL COMBUSTION ENGINES

Karl Willmann, Buchenbach, and Helmut Säufferer, Esslingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed May 7, 1976, Ser. No. 684,194
Claims priority, application Germany, May 13, 1975, 2521141
Int. Cl.[2] F02B *51/04;* F02M *29/00*
U.S. Cl. 123—119 E **45 Claims**





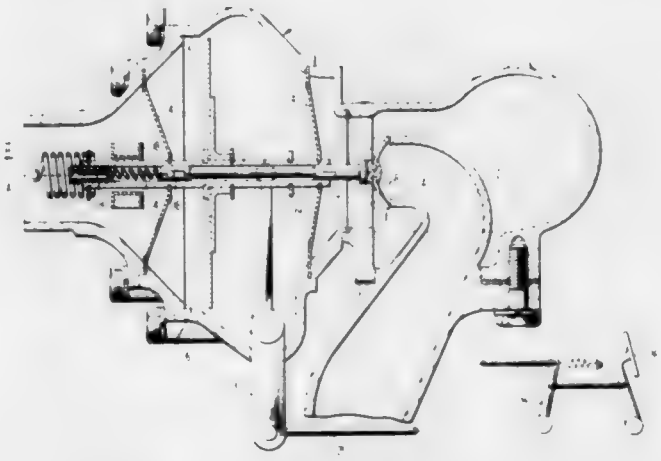
1. An atomization installation for internal combustion engines for the atomization of fuel in an air stream, comprising a first internal combustion engine space means and a second atomization space means separate from said first space means and traversed by at least a part of the combustion air, an electrically conductive fuel supply means projecting into said second atomization space means and terminating therein, counter-electrode means electrically insulated with respect to the fuel supply means and arranged at a distance opposite to the fuel supply means, and means for applying a high voltage potential between the fuel supply means and the counter-electrode means, wherein said fuel supply means includes a plurality of small capillary tube means electrically connected with each other, mounting means for said small capillary tube means, said small capillary tube means freely projecting into said atomization space means from said mounting support means, fuel being able to flow through said small capillary tube means, said capillary tube means forming part of the fuel supply means, the counter-electrode means and being arranged facing with the electrode surface thereof the discharge openings of the small capillary tube means, and air guide means for guiding the air as regards flow velocity and flow direction at least within the area of the counter-electrode means in such a manner that the forces aerodynamically exerted on the atomized and electrically charged droplets by the flowing air predominate with respect to the electrostatic attracting forces exerted on the droplets by the counter-electrode means and thereby are operable to keep the droplets away from the counter-electrode means.

4,085,718

EXHAUST GAS RETURN SYSTEM FOR AUTO-IGNITING INTERNAL COMBUSTION ENGINES

Christian Schaal, Walddorf, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Feb. 2, 1977, Ser. No. 764,840
Claims priority, application Germany, Feb. 6, 1976, 2604604
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **31 Claims**



1. An exhaust gas return installation for auto-ignition internal combustion engines for admixing a part of the exhaust gases to the sucked-in air, characterized by a control means including a spring-loaded baffle disk means acted upon by the suction air stream and a valve means acted upon by the exhaust counterpressure for controlling the exhaust gas admixture at least approximately corresponding to output and rotational speed of the internal combustion engine.

4,085,719

VAPOR PRESSURE REGULATOR FOR A VAPORIZED LIQUID FUEL SYSTEM

Douglas R. Hamburg, Birmingham, and Dante S. Giardini, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 23, 1976, Ser. No. 660,285
Int. Cl.[2] F02B *43/00*
U.S. Cl. 123—122 E **5 Claims**

1. A reservoir for storage of a vaporized fuel which is liquid at standard temperature and pressure comprising in combination:

housing means;

movable wall means received within said housing means cooperative with said housing means to define a variable volume vapor storage zone;

inlet fluid conduit means communicating in fluid tight relation with said vapor storage zone;

outlet fluid conduit means communicating in fluid tight relation with said vapor storage zone;

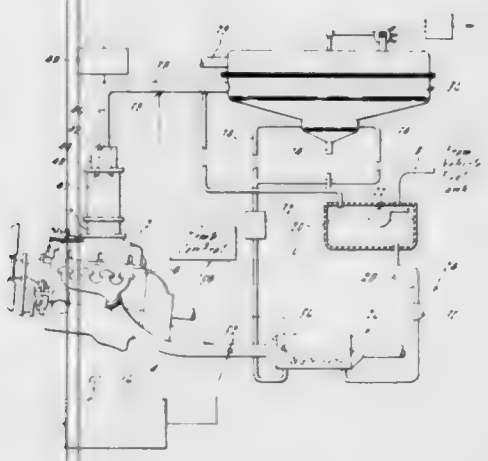
said inlet fluid conduit means operative to communicate said vapor storage zone with a source of vaporized liquid fuel and said outlet fluid conduit means operative to communicate said vapor storage zone with a vaporized liquid fuel utilization means;

reference means communicating the nonvapor side of said movable wall means with a preselected reference pressure

whereby the vapor pressure may be arranged to have a predetermined relationship with respect to the reference pressure;

cup-shaped condensate collection means dependent from said housing means arranged for fluid communication with a reservoir of the liquid fuel;

said inlet fluid conduit means being attached to said condensate collection means whereby higher temperature inlet



vapor from said inlet fluid conduit means may elevate the temperature of vapor within the lower portions of the vapor storage zone; and

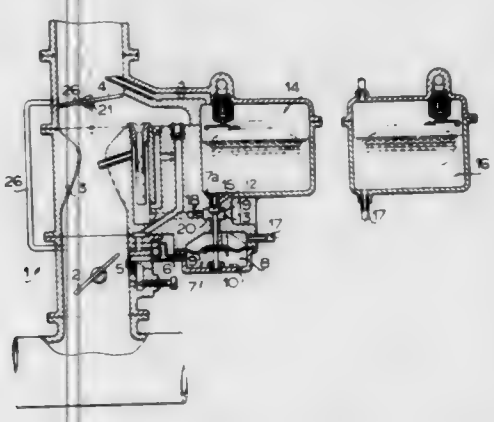
thermally floating separator means received within and spaced apart from said condensate collection means and supported by said inlet fluid conduit means operative to provide a thermal barrier between vapor flowing through said inlet fluid conduit means and condensed vapor.

4,085,720

FUEL SUPPLY SYSTEM FOR MULTI-FUEL INTERNAL COMBUSTION ENGINES

Motoaki Etoh, Ageo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1976, Ser. No. 713,513
Int. Cl.[2] F02M *13/00, 13/04, 13/08*
U.S. Cl. 123—127 **3 Claims**



1. A fuel supply system for multi-fuel internal combustion engines, comprising

a carburetor having an intake passage, and a throttle valve operatively disposed in said intake passage,

a first fuel chamber for first fuel,

a second fuel chamber for second fuel,

fuel feeding passages means for respectively feeding the fuels from said first and second fuel chambers, respectively, to said carburetor, said fuel feeding passages means defining closable ports, respectively, communicating with said first and second fuel chambers, respectively,

a selector valve means for selectively opening and closing said ports of said fuel feeding passages means,

a vacuum actuator means for operating said selector valve means,

a first passage communicating said vacuum actuator means with the intake passage at a position adjacent, above and upstream of a closed position of said throttle valve,

said selector valve means upon communication with atmosphere pressure for opening one of said ports communicating with said first fuel chamber for the first fuel and upon communication with a negative pressure for opening the other of said ports communicating with said second fuel chamber for the second fuel,

a branch passage connected to said first passage,

another valve means provided in said branch passage for communicating said branch passage to atmosphere, and

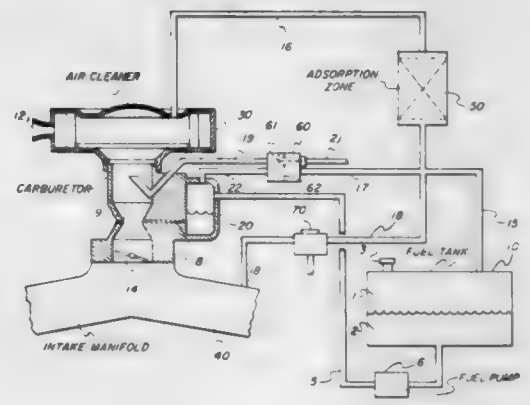
means for operating said another valve means to open itself and said branch passage to atmosphere in the cold.

4,085,721

EVAPORATION PURGE CONTROL DEVICE

Joseph Vardi, and Milton J. Kittler, both of New York, N.Y., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 773,480, Nov. 5, 1968, abandoned, and a continuation-in-part of Ser. No. 548,702, May 9, 1966, abandoned. This application Jun. 16, 1976, Ser. No. 696,535
Int. Cl.[2] F02M *37/00*
U.S. Cl. 123—136 **8 Claims**



1. In a fuel vapor recovery process for an internal combustion engine fuel system including adsorption means for adsorbing and storing fuel vapor otherwise released to the atmosphere from the engine fuel system, the steps comprising:

(a) desorbing said adsorption means of stored fuel vapors by passing atmospheric air therethrough;

(b) directing said atmospheric air and desorbed fuel vapors to said internal combustion engine for combustion therein; and

(c) controlling as a function of exhaust manifold pressure, the flow of atmospheric air through said adsorption means to permit desorption of said adsorption means only when the total air intake throughput to said engine exceeds a predetermined minimum amount substantially greater than that which occurs during engine idle, whereby stored fuel vapors from said adsorption means are combusted in said engine under optimum conditions of engine operation to minimize the amount of unburned fuel in the engine exhaust.

4,085,722

DISTRIBUTOR TYPE FUEL PUMP

John M. Bailey, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 1, 1976, Ser. No. 728,471
Int. Cl.[2] F02M *49/00;* **F04B** *19/22*
U.S. Cl. 123—139 AL **8 Claims**

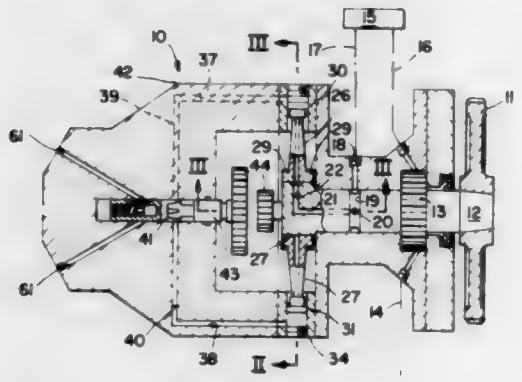
1. A distributor type fluid pump comprising:

a housing having a plurality of passages adapted for connection to a plurality of cylinders;

a first bore in said housing defining a first, longitudinal axis;

a rotatable shaft received in said first bore;

a second bore in said housing defining a second, longitudinal axis;
a rotor mounted in said second bore for both reciprocating and rotating movement;
pump means connected to said shaft for providing fluid under pressure, said pump means comprising:
an eccentric on said rotatable shaft,
a pair of oppositely directed pump rods each having an end rotatably mounted on said eccentric,
a piston mounted on a free end of each said rod,
each said piston being slidably received in a bore defining a chamber with said housing,
a passage in each said pump rod intercommunicating the piston end with the end rotatably mounted on the eccentric,



an arcuate slot in said eccentric,
passage means in said shaft intercommunicating said slot with a source of fluid whereby rotation of said shaft causes fluid to be alternately communicated to each said chamber so as to supply said rotor with fluid;
first passage means in said housing communicating each said chamber with said rotor so as to provide pressure fluid thereto;
scroll means on said rotor for directing and metering fluid alternately to each one of said plurality of passages depending upon the rotational position of said rotor; and,
timing means interconnecting said rotatable shaft with said rotor for changing the rotative position of said shaft with respect to said rotor whereby timing of said pump may be adjusted.

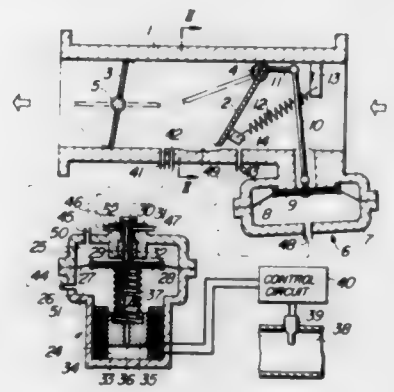
4,085,723

FUEL CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Eizi Tanaka, Anjo; Michihiro Ohashi, Handa, and Hiroshi Mochizuki, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 14, 1976, Ser. No. 695,555
Claims priority, application Japan, Jun. 25, 1975, 50-79675
Int. Cl.[2] F02M *69/00*
U.S. Cl. 123—139 AW **6 Claims**

1. A fuel control system for an internal combustion engine comprising:
an air intake pipe through which air is introduced into an engine;
a throttle valve pivotally disposed in said intake pipe for controlling the flow rate of intake air flowing therethrough;
an unbalanced sensing vane pivotally disposed in said intake pipe upstream of said throttle valve;
pressure responsive actuating means having a pressure chamber, a movable member operable in response to a pressure introduced into said pressure chamber, and connecting means for operatively interconnecting said movable member with said sensing vane, whereby said actuating means actuates said sensing vane to open and close in response to the pressure introduced into said pressure chamber;
conduit means communicating said pressure chamber with said intake pipe between said sensing vane and said throttle valve, to thereby introduce a pressure produced in said intake pipe between said sensing vane and said throttle valve into said pressure chamber;
pressure difference responsive means for controlling the introduction of the pressure into said pressure chamber in response to a pressure difference between a pressure in said intake pipe upstream of said sensing vane and a pressure in said intake pipe downstream of said sensing vane so as to maintain the pressure difference across said sensing vane at a constant value, whereby said sensing vane is pivoted in proportion to the flow rate of the intake air;



fuel delivering means operatively coupled to said sensing vane for delivering fuel in response to the pivotal displacement of said sensing vane;
an air-fuel ratio sensor mounted in an exhaust pipe of the engine for sensing the air-fuel ratio based on the composition of the exhaust gas and generating an output signal when the detected air-fuel ratio is deviated from a predetermined value; and
means operatively coupled to said air-fuel ratio sensor and said pressure difference responsive means for changing the constant value of the pressure difference across said sensing vane to another constant value in response to said output signal.

4,085,724

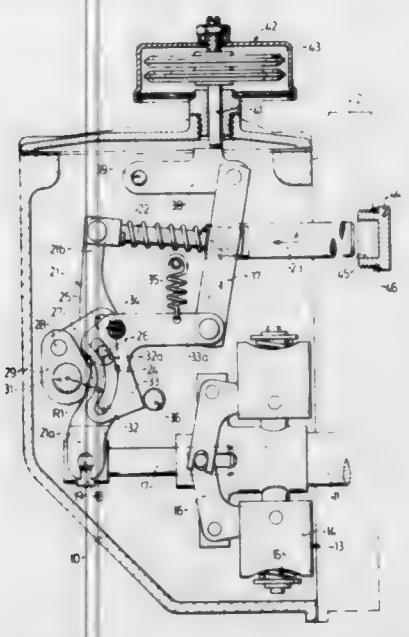
FUEL REGULATOR FOR INTERNAL COMBUSTION ENGINES WITH INJECTION SYSTEM

Ilija Djordjevic, Stuttgart; Hans-Jürgen Jaenke, Ditzingen; Ernst Ritter, Stuttgart, and Heinrich Staudt, Markgroningen-Talhausen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 9, 1976, Ser. No. 694,213
Claims priority, application Germany, Jun. 12, 1975, 2526148
Int. Cl.[2] F02D *1/14*
U.S. Cl. 123—140 MC **14 Claims**

1. In a regulator for the fuel supply system of a fuel-injected internal combustion engine, said regulator including a housing containing: an rpm-dependent governor member; part of a fuel quantity control member of the fuel supply system; an intermediate lever, with the governor member being linked by the intermediate lever to the fuel quantity control member; an actuating member; and a pin, with said intermediate lever being pivoted on the pin and attached thereby to the actuating member, and further including a correcting device, mounted to the housing and coupled to said pin to change the position thereof independently of said actuating member to thereby also change the position of said fuel quantity control member, the improvement comprising:
said intermediate lever being provided with a slotted track within which said pin moves;
a bell crank element, pivotably connected to and forming part of said actuating member and fixedly carrying said pin and a further pin; and
a cam-plate, pivotably attached to said housing and provided with a cam-track in which said further pin moves, and

pivotably connected to said correcting device, whereby the pivotal axis of said cam-plate is disposed in the housing such that, in an idling position of said actuating member a



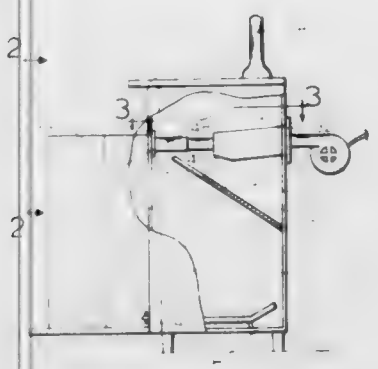
lesser or greater correction of the position of the fuel quantity control member is controllable by said correcting device than in a full-load position of said actuating member.

4,085,725

FORCED AIR ROOM HEATER FOR FRANKLIN STOVE

Michael V. Mesenbrink, 10902 SW. 63rd, Portland, Oreg. 97219

Filed Oct. 7, 1976, Ser. No. 730,339
Int. Cl.² F24H *3/08*
U.S. Cl. 126—110 B **5 Claims**



1. A forced air heater for installation into a stove of the type having a firebox enclosed by side walls, a back wall, a top, a bottom, and a front wall, having an opening in the front wall with doors piviotably attached thereto arranged for closing the opening, having flue openings in both the top and in the back wall, containing spaced bores in said back wall arranged around the flue opening located therein for mounting a cover plate, and having a baffle diagionally dividing the firebox into a lower burning section and an upper heating section, the heater comprising:

(a) a mounting plate configured for covering the flue opening in the back wall of the stove, said mounting plate having a central opening passing there through in alignment with the flue opening;

(b) the mounting plate having bores located therein in a manner for aligning with the bores in the stove backwall;

(c) bolts configured for being received in the bores in the mounting plate and in the backwall for fastening the mounting plate to the stove;

(d) a rectangular plenum chamber configured for placement in the upper heating section of the stove firebox;

(f) the plenum having a first wall defining an opening configured to be in alignment with the central opening in the mounting plate;

(g) the mounting plate having holes located in a spaced array around said central opening;

(h) studs mounted on said first wall of the plenum chamber in a manner for communicating with the holes in the mounting plate, and nuts configured for engagement with the studs, securing the plenum chamber to the mounting plate;

(i) a fan and fan mounting means interconnecting the fan to the mounting plate in alignment with the central opening located therein; and

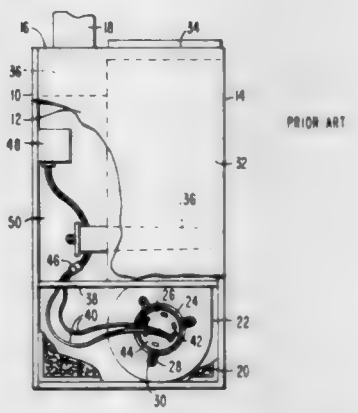
(j) outlet means connected to the plenum chamber and opening outside the stove.

4,085,726

FORCED AIR FURNACE MOTOR LEAD WIRE PROTECTION

Donald G. Van Boven, Elyria; John C. Burdett, Lima, and Richard J. Vales, Elyria, all of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 20, 1976, Ser. No. 752,720
Int. Cl.² F24F *3/06*
U.S. Cl. 126—110 R **4 Claims**



1. In a forced air furnace including a cabinet having a double-inlet centrifugal blower housing a fan wheel and a direct drive motor resiliently mounted internally thereof, the blower housing being mounted on one side of a slidable support plate, and the motor having non-metallically shielded electrical leads exiting from one end of the motor and blower housing inlet and extending through the support plate to a location in the cabinet on the other side of the support plate, a conversion arrangement for shielding the leads and connections in the space on the blower side of the support plate, comprising:

an electrical junction box mounted on the same side of said blower support plate as said blower and with a side of said junction box in generally planar alignment with the one inlet side of said blower from which the motor leads exit;

a generally channel-shaped raceway having a length to extend from said junction box to the location on said motor end where said leads exit;

means facing the open side of said channel and connected thereto at selected locations to hold said leads within the channel of the raceway after the leads are threaded along the channel;

means securing one end of said raceway to said side of said junction box;

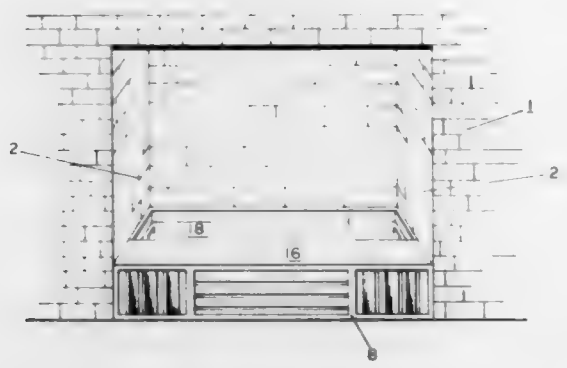
means securing said raceway at an intermediate location along its length to said one inlet side of said blower housing;

the end of said raceway facing said motor end being spaced away from said motor end and being unconnected thereto so that the resilient character of the mounting of the motor within said housing is unimpaired by said shielding raceway.

4,085,727
AIR CIRCULATING HEATER FOR FIREPLACES

Sherman R. Gillpatrick, 402 Chambers #54, El Cajon, Calif. 92020

Filed Jun. 30, 1976, Ser. No. 701,232
Int. Cl.[2] F24B 7/02
U.S. Cl. 126—121 7 Claims

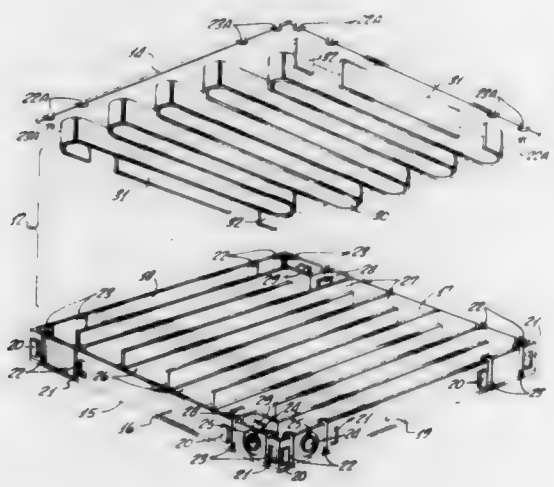


1. An air circulating heater for a fireplace comprising a generally rectangular metal enclosure having a floor, and side and rear walls, and a front panel, said panel having central inlet louvered and end air discharge louvered areas, said enclosure being relatively shallow in height for positioning on the floor and in the bottom of said fireplace, a cover hinged to said enclosure and covering only the front portion thereof, electrical circulating fan means connected to a source of power and arranged in said enclosure beneath said cover and to the rear of said central louvered panel area, a flat metal fireplate arranged on said enclosure to the rear of said cover for heating air flowing therebeneath in said enclosure, and baffle plate means formed on the underside of said fireplate and extending into said enclosure for circulating air rearwardly and thence forwardly of said enclosure, cold air from the room being drawn through said central louvered panel area into said enclosure and directed through said baffle plate means for heating and recirculating through said enclosure and return to the room through said end discharge louvered areas.

4,085,728
SOLAR ENERGY HEATER

Sigfrid A. Tomchak, 16896 Lolo Cir., Fountain Valley, Calif. 92708

Filed Aug. 16, 1976, Ser. No. 714,691
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—270 7 Claims

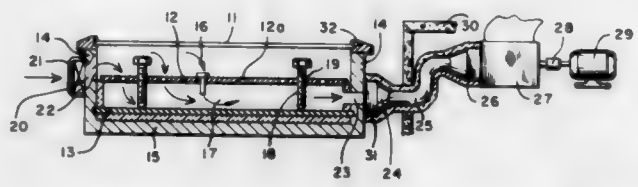


1. A modular energy cell comprising
first and second surfaces,
a plurality of side members connected to peripheral edges of said first and second surfaces to form a cavity therein,
at least a first baffle wall attached to one of said side members and extending toward the opposite side member,
at least a second baffle wall attached to said opposite side member and extending toward said one side member,
a continuous rib member attached to at least one of said first and second surfaces,
said rib member including a plurality of elongated portions and a plurality of arcuate portions,
said elongated portions disposed in spaced, parallel relationship to and on each side of each said baffle wall,
said arcuate portions disposed around the free end of the respective one of said baffle walls and spaced from said side members, said arcuate portions connected to said elongated portions to form a continuous rib member having a sinuous configuration, and
alignment means on each of said side members,
said alignment means comprises a projection from and a depression in each of said side members such that adjacent solar energy cells can be joined together in an interlocking array.

4,085,729
SOLAR AIR HEATER

Roger N. Schmidt, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 10, 1976, Ser. No. 740,639
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—270 7 Claims



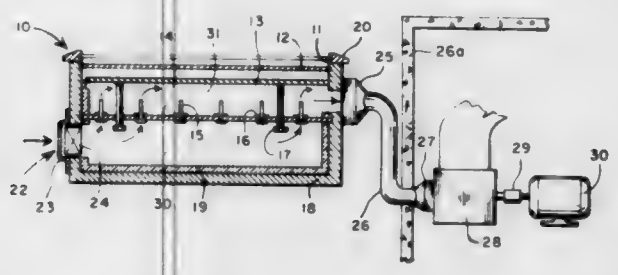
1. A solar air heater comprising:
a window member in substantially sheet form for admitting solar radiation to said air heater, said window member being transparent to solar radiation and impervious to air;
an absorber member in substantially sheet form disposed in spaced relation to said window member, said absorber member being highly absorbent to solar energy, impervious to air and disposed to receive solar energy transmitted by said window member;
an air distribution member in substantially sheet form interposed between said absorber member and said window member in spaced relation thereto said distribution member being transparent to solar radiation and having a plurality of openings therein;
closure means adapted to receive said window, absorber and air distribution members in spaced relation forming chambers therebetween, said chambers including a first chamber formed between said window member and said air distribution member and a second chamber formed between said air distribution member and said solar energy absorber member;
and wherein said plurality of openings in said air distribution member are predetermined in size and pattern such that air flowing from said first chamber to said second chamber impinges on the absorbing surface of said absorber member;
means for admitting unheated air to said first chamber; and
means for exhausting heated air from said second chamber.

4,085,730

SOLAR AIR HEATER

Asbjorn M. Severson, Minneapolis, and Richard L. Sampson, Excelsior, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 10, 1976, Ser. No. 740,640
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—270 11 Claims



1. A solar air heater comprising:

at least one window member in substantially sheet form transparent to solar energy and impervious to air for admitting solar energy to said air heater;

an absorber member in substantially sheet form beyond said window in spaced relation, thereto said absorber member being highly absorbent to solar energy, heat conductive, impervious to air and disposed to directly receive the solar energy transmitted by said window member;

an air distribution member in substantially sheet form beyond said absorber member and disposed in spaced relation thereto said distribution member having a plurality of openings therein said plurality of openings being of a predetermined size and pattern such that air flowing therethrough toward said absorber member impinges on said absorber member;

closure means adapted to receive said window, absorber and air distribution members in spaced relation forming chambers therebetween, said closure means having a lower surface forming a chamber with said air distribution member;

means for admitting unheated air to said chamber formed between said air distribution member and said lower surface; and

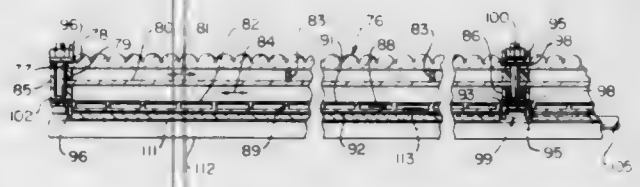
means for exhausting heated air from said chamber formed between said absorber and air distribution members.

4,085,731

SOLAR ENERGY CONVERSION SYSTEM

Richard Lloyd Weir, 75 Sinclair Ave., Dayton, Ohio 45405

Filed Mar. 10, 1976, Ser. No. 665,504
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—271 3 Claims



1. A solar energy conversion system comprising

a top panel having an upper surface of solid half-round cylindrical lens sections of rod-like configuration, said sections extending continuously from one end of said panel to the other;

a base plate spaced below said top panel;

means forming a sealed air chamber between said top panel and said base plate;

means forming a black-faced fluid circulating chamber below said base plate; and

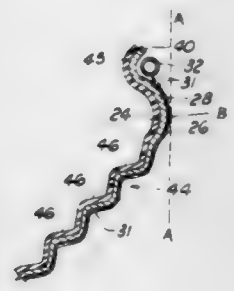
means forming an air circulating chamber between said base plate and said fluid circulating chamber and extending substantially over the entire black face of the fluid circulating chamber for passing air there-through.

4,085,732

METHOD AND APPARATUS FOR HEATING A LIQUID USING SOLAR ENERGY

Ervin E. Hysom, 2307 Hyacinth, Wichita, Kans. 67204

Filed Jun. 7, 1976, Ser. No. 693,349
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—271 6 Claims



1. An apparatus for heating a liquid using solar energy, the apparatus comprising:

an absorber plate with horizontal corregations and having a frontside and a backside, the frontside of said plate positioned at an angle to face the sun, the corregations of said plate positioned transverse to the flow of a liquid as the liquid is fed across the backside of said plate and downwardly along the length of the backside of said plate;

a supply line for distributing a thin film of liquid onto the backside of said plate, the liquid flowing downwardly by gravity across the correga..d surface of the backside of said plate and along the length of the backside of said plate; and

a drain line disposed adjacent the bottom of the backside of said plate, said drain line receiving the heated liquid therein and discharging the liquid from the apparatus;

the top portion of said plate curved upwardly and below a portion of said supply line, said supply line disposed above the curved top portion of said plate and adjacent a vertical plane tangent to the backside of said plate at a position where the top portion of said plate starts to curve upwardly.

4,085,733

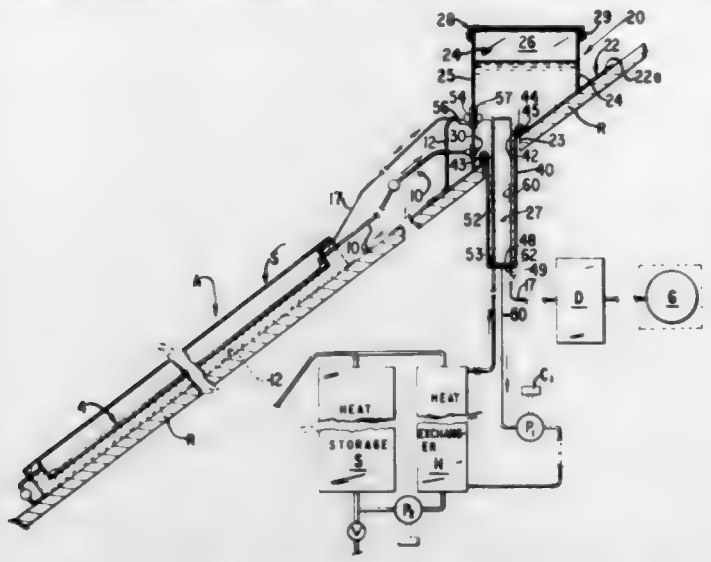
ROOF-MOUNTABLE CHAMBER AND CONDUIT DEVICE FOR SOLAR HEAT COLLECTING APPARATUS

Vernon O. Bowles, 342 Third Ave. N., Naples, Fla. 33940

Continuation-in-part of Ser. No. 676,156, Apr. 12, 1976. This application Aug. 30, 1976, Ser. No. 718,565
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—271 5 Claims

1. A roof-mountable combined chamber and conduit device for an apparatus for collecting solar heat, which apparatus includes at least one substantially planar radiation receptor mounted on a sloped support structure such as a roof and adapted to confine liquid in a thin layer across a path of solar radiation, conduit means for conducting liquid heated in said receptor in a flow circuit from the receptor to a heat exchange zone beneath said support structure and thence back into the receptor, and a chamber for holding liquid in communication with and at an elevation higher than the liquid in said receptor so as to permit expansion and contraction of the liquid while keeping said receptor and said circuit filled with the liquid under a limited hydrostatic pressure, said device comprising a liquid impermeable base member sealable upon said support structure about an opening therethrough, a side wall upstanding from said base member and forming said chamber, a tubular extension depending from said base member and forming a wall portion of said chamber extending through said opening, an inlet through said side wall for passing liquid heated in said

receptor into said chamber from a part of said conduit means, and an outlet from the lower end of said extension for downflow of said heated liquid into a part of said conduit means leading to said heat exchange zone, whereby said device will



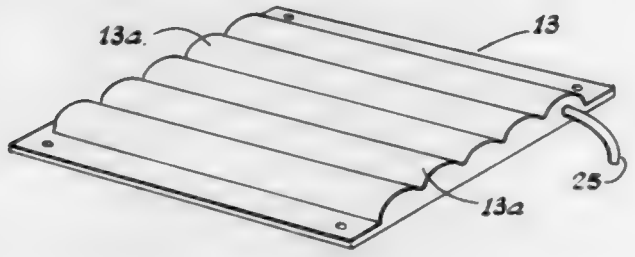
serve for initial filling of said receptor and said flow circuit with liquid, for venting air and vapors therefrom and, during operation, as said expansion chamber and as a roof-traversing part of said conduit means.

4,085,734

SOLAR HEATERS

Norman S. Gibbs, Rte. 1, Box 176, Loveland, Colo. 80537

Filed Sep. 7, 1976, Ser. No. 721,097
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **3 Claims**



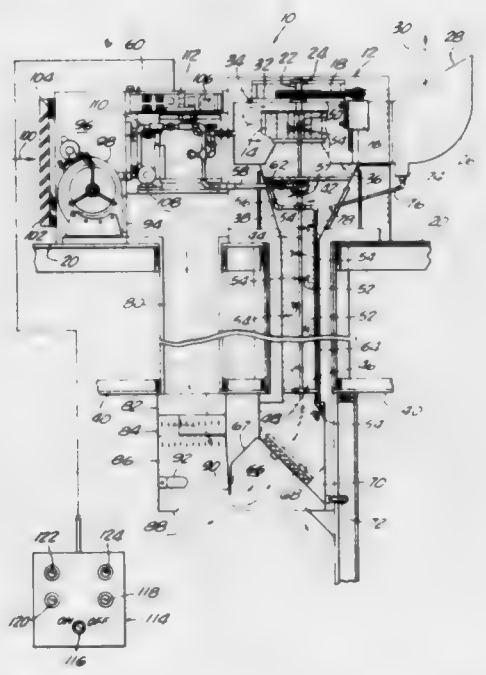
1. A solar heat collector unit comprising a metal frame, a thick plastic heat insulative material piece formed integral with the frame, a liquid seal sheet means completely covering a side of the insulative material, a single likeshaped metal heat absorber plate means completely covering said seal sheet means and having a plurality of convex formed channels therein with the channels formed on a side thereof opposite from the seal sheet means side and adapted to act as liquid ducts and connected with each other by a convex liquid distribution duct, a single transparent dome member means completely sealingly covering said heat absorber plate means in sealed spaced air relationship thereover, said frame and heat absorber plate means and seal sheet means and dome each having collar means adapted for adjacent abutment so as to be clampingly held thereby together peripherally, a ring washer between the liquid sheet seal means and the heat absorber plate means, a plurality of fastening means extending through the frame and seal sheet means and absorber plate means and dome member and adapted for compressing and holding the collar means of each together in sealed relationship, liquid ducts communicating the interior of said channels with a reservoir, an air tube sealed duct communicating the underside of the transparent member with an air suction pump for providing an air tight connection with the space between the underside of the dome member and the adjacent exterior of said channels with an air suction pump, an operable air suction pump connected with said air tube duct, whereby upon operation the air suction pump a vacuum is created thereby in the scope between the transparent member and the channels of the heat absorber plate means when the fastening means is so sealingly tightened to hold the frame and seal sheet means and metal absorber plate means and dome member sealingly together in tight seal relationship.

4,085,735

AIR VENTILATION AND WASHING SYSTEM

Arnold S. Kaufman, Studio City, and Robert L. Anderson, Reseda, both of Calif., assignors to National Food Service Equipment Fabricators, Inc., Glendale, Calif.

Filed Jan. 26, 1976, Ser. No. 652,484
Int. Cl.² F24C *15/20*
U.S. Cl. 126—299 E **15 Claims**



1. In a ventilation system including an interior wall defining a chamber through which contaminated hot air is adapted to pass, an improved cleaning and fire extinguishing system for cleaning contaminants from said interior wall and extinguishing any fire or incipient fire in the proximity of said chamber, comprising:

a fluid dispersing member in said chamber; said fluid dispersing member having outlet openings through which cleaning fluid may be dispersed onto said interior wall of said chamber to wash away contaminants thereon;

pump means for delivering cleaning fluid through said fluid dispersing member and onto said interior wall of said chamber;

means for selectively operating said pump means to selectively deliver cleaning fluid to said fluid dispersing member and through said outlet openings thereof and onto said interior wall of said chamber;

temperature sensing means in close proximity to said chamber for sensing the temperature within said chamber; and

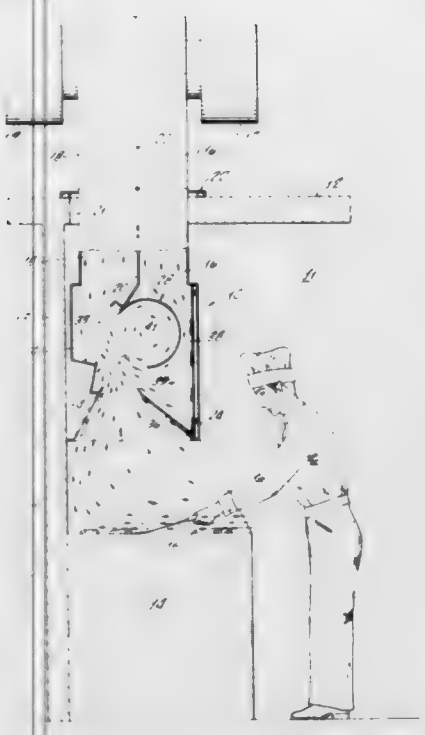
means operatively associated with said temperature sensing means for operating said pump means when said temperature sensing means senses a temperature above a first predetermined level in the vicinity of said chamber to deliver fluid to said fluid dispersing means and into said chamber, and further including a bypass line passing around said pump means for delivering fluid from a source of fluid to said fluid dispersing member and into said chamber; and further including a normally closed valve means in said bypass line; and further including means connected to said valve means for opening said valve means when the temperature in the vicinity of said chamber exceeds a second predetermined level above said first predetermined level for opening said valve means to deliver fluid from a source of fluid to said fluid dispersing member and into said chamber.

4,085,736

GREASE-HOOD APPARATUS

Irvin R. Kuechler, San Bernardino, Calif., assignor to Vent-Cair, Inc., San Bernardino, Calif.

Filed Oct. 1, 1975, Ser. No. 618,831
Int. Cl.[2] F24C *15/20*
U.S. Cl. 126—299 D **16 Claims**



1. A grease-hood apparatus of the vortex type, which comprises:

(a) grease-filter means adapted to have passed therethrough grease and fumes from the cooking appliance with which the grease-hood apparatus is associated, the upstream face of said grease-filter means comprising surface means which is curved,

(b) vortex-liner means mounted adjacent said filter means and adapted to receive air and fumes deflected off said curved upstream face of said filter means and then to curve said air and fumes in a vortex,

(c) means to pass air and fumes from the cooking appliance into the vicinity of said filter means,

(d) means to draw air and fumes through said filter means, and

(e) means to supply make-up air to said grease hood and to effect vortical flow in such vortex-liner means of such make-up air and of air and fumes from said cooking appliance, said vortical flow resulting not only from the shape of said vortex-liner means but also of said shape of said upstream face of said grease-filter means.

4,085,737

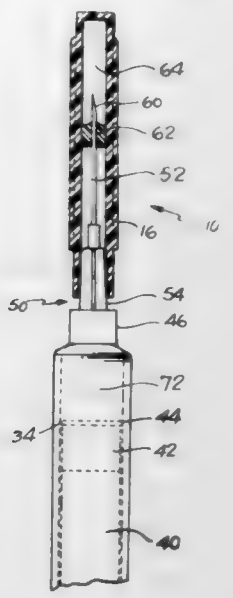
DEVICE AND TECHNIQUE FOR MINIMIZING RISK OF CONTAMINATION BY BLOOD SAMPLE

Richard A. Bordow, 6114 Terryhill Dr., La Jolla, Calif. 92037

Filed Sep. 3, 1976, Ser. No. 720,624
Int. Cl.[2] A61B *19/00*
U.S. Cl. 128—2 F **17 Claims**

1. In combination with a blood sampling syringe having a needle with an open end, apparatus which comprises means for covering said open end of said needle and means for drawing a small amount of fluid from said syringe into said covering means through said open end.

12. A technique for reducing the risk of contamination by sampled blood, which comprises the steps of taking a blood sample by drawing blood from a patient through an open-



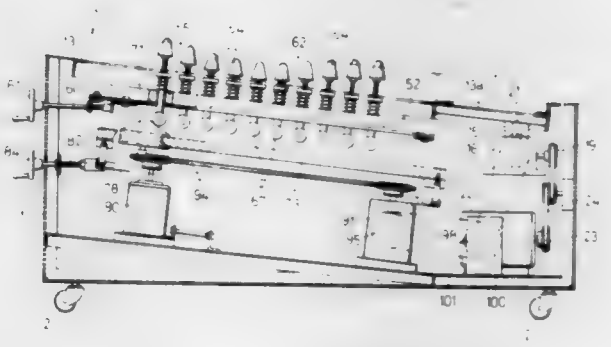
ended needle into a syringe, and enclosing the open end of the needle of the syringe in an evacuated chamber.

4,085,738

AUTOMATIC DISEASE-DETECTING TREATMENT APPARATUS FOR THE SPINE

Katsuji Kodera, 35-12, Wada 1-chome, Suginami, Tokyo, Japan

Filed Mar. 4, 1977, Ser. No. 774,653
Claims priority, application Japan, Jul. 23, 1976, 51-087176
Int. Cl.[2] A61B *5/00;* **A61F** *5/00*
U.S. Cl. 128—2 N **13 Claims**

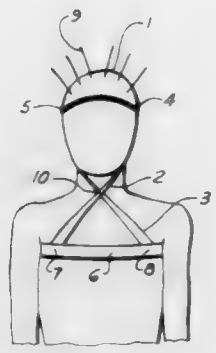


1. An automatic disease-detecting treatment apparatus of the spine comprising a machine base, a mobile bed which moves in the longitudinal direction on said machine base, an adjustable pillow stand, a head-rest located on said pillow stand, which pillow stand and head-rest are located at one end of said mobile bed, two adjustable cross members mounted at intervals parallel to the longitudinal movement of said mobile bed, a plurality of cylindrical pressure members of adjustable mounting height which form covered pressure members at the tips, an angular cam which engages itself with said pressure members at the lower surface of said pressure members and which moves longitudinally in the direction of the movement of said bed, a flexible member fixed at one end to said head-rest of said mobile bed and at the other to said machine base, a plurality of indicator plates on said flexible member arranged in accordance with the positions of human organs, showing each of these organs, and a pointer provided at said angular cam, which moves longitudinally at the back of the said flexible member.

4,085,739
ELECTROENCEPHALOGRAPH CAP AND ELECTRODE HARNESS

Marvin W. Sams, P.O. Box 3515, Toledo, Ohio 43608

Filed Nov. 22, 1976, Ser. No. 743,571
Int. Cl.[2] A61B 5/04
U.S. Cl. 128—2.1 B 5 Claims

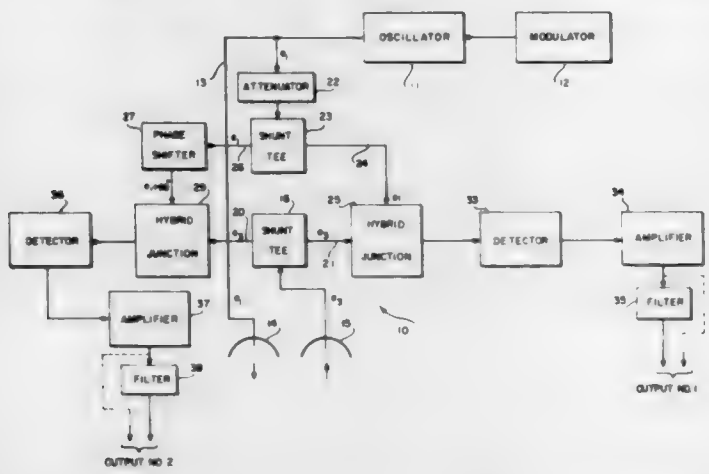


1. A harness for holding electrodes in contact with selected points on a patient's head while obtaining electroencephelographic data, said harness comprising, in combination, a cap of flexible material and size to loosely fit a patient's head, a plurality of electrodes mounted at selected points in said cap and arranged to contact the patient's scalp, a harness band of sufficient length to encircle the patient's body below the armpits, and a pair of elastic straps attached to and extending from lateral portions of the cap in criss-cross manner to said harness band, whereby the cap is held firmly in place without inducing muscular reaction or inhibiting free movement of the patient's head.

4,085,740
METHOD FOR MEASURING PHYSIOLOGICAL PARAMETER

William P. Allen, Jr., Atlanta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Mar. 28, 1966, Ser. No. 538,023
Int. Cl.[2] A61B 5/02
U.S. Cl. 128—2.05 R 10 Claims



1. A method of measuring a body function parameter of an organism, comprising the steps of:

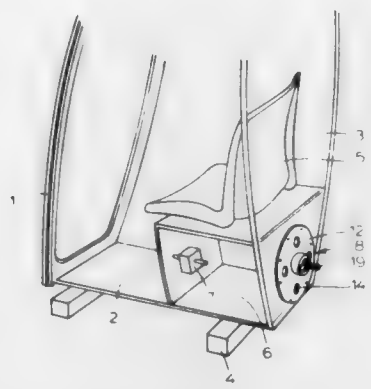
directing a beam of phased energy toward the body of the organism at a region thereon which undergoes physical movement in response to a variation in the body function parameter being measured; and

receiving phased energy reflected from said region of the body to produce a received signal corresponding to said physical movement of the body region and thus corresponding to said variations in the body function parameter being measured.

4,085,741
APPARATUS FOR EFFECTING PLETHYSMOGRAPHY

Gerrit Jacob Rotgans, Hilversum, Netherlands, assignor to Gould Godart B.V., Bilthoven, Netherlands

Filed Aug. 11, 1976, Ser. No. 713,606
Int. Cl.[2] A61B 5/08
U.S. Cl. 128—2.08 4 Claims

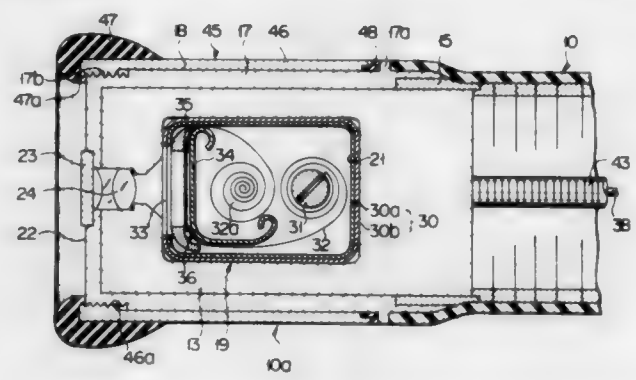


1. Apparatus for effecting plethysmography, comprising an airtight measuring cell adapted to enclose a person to be examined, and constituted substantially of a compliant transparent material such that the compliance of said measuring cell is substantially determined by the rigidity of said material, a smaller reference cell having a measurable volume and compliance, said reference cell being disposed within said measuring cell such that exterior pressure variations cause equal pressure variations in both cells, means for measuring the difference between the pressures in said two cells, and means for adjusting the ratio of the volume to the compliance of said reference cell, so that this ratio may be made exactly equal to the corresponding ratio for said measuring cell.

4,085,742
ENDOSCOPE EQUIPPED WITH A FILM CASSETTE

Takeshi Okada, 13-45,, Terada-machi, Hachioji-shi Tokyo, Japan

Filed Jul. 23, 1976, Ser. No. 708,032
Claims priority, application Japan, Jul. 28, 1975, 50-91656
Int. Cl.[2] A61B 1/00
U.S. Cl. 128—4 3 Claims



1. An endoscope equipped with a film cassette comprising:

a sheath with a detachable film cassette incorporated in the forward end thereof;

a control section connected to the base end of the sheath;

a film cassette access opening formed in the outer periphery of the forward section of the sheath;

outer cover means comprising a hollow member having a shape corresponding to that of the outer periphery of the forward section of the sheath and detachably fitted thereon to permit the film cassette access opening to be closed;

and a hood member made of an elastic material and integrally secured to at least the outer periphery of the forward end portion of the hollow member to protect the front end surface of the forward section of the sheath and

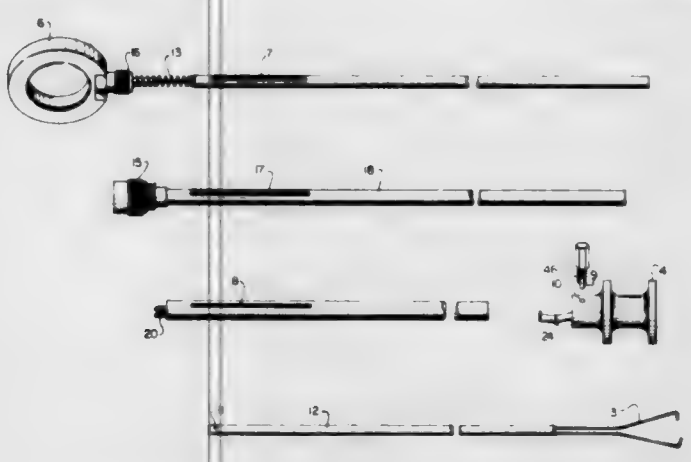
to impart no injury to the inner cavity of a human being during the insertion of the sheath into said inner cavity.

4,085,743

MULTIPLE OCCLUSION RING APPLICATOR AND METHOD

In Bae Yoon, 2213 Forest Ridge Rd., Timonium, Md. 21093

Filed Mar. 2, 1976, Ser. No. 663,103
Int. Cl.[2] A61B *1/06, 17/12*
U.S. Cl. 128—6 **46 Claims**



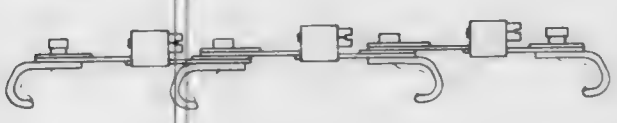
26. A multiple ring applicator device for use in sequentially applying multiple elastic occluding rings to anatomical tubular structures which comprises a cylinder like element, the proximal end portion of said cylinder-like element being adapted to receive an elastic occluding ring, forceps means slidably associated with said cylinder-like element and operative to grasp an anatomical tubular structure and draw it inside said cylinder-like element to form a bend therein, a first ring pushing means, the proximal end portion thereof being adapted to receive an elastic occluding ring, said first ring pushing means being movably and operatively associated with said cylinder-like element for displacing an elastic occluding ring from said cylinder-like element to a position around said bend, thereby forming a closed loop in said anatomical tubular structure, a second ring-pushing means movably and operatively associated with said first ring pushing means for displacing an elastic occluding ring therefrom to a position on the proximal end portion of the cylinder-like element to reload the device and operating slide means being in selective engaging relationship with the forceps means, the cylinder-like element and the first and second ring pushing means for effecting relative movement therebetween, thereby forming said closed loop in the anatomical tubular structure, reloading its device and discharging the occluded anatomical tubular structure from the device.

4,085,744

SPINAL COLUMN PROSTHESES ORTHOSES

David Warren Lewis, Rte. 2, Box 198, Charlottesville, Va., and Robert K. Greenlaw, 708 George St., Sydney, Canada

Filed Jan. 31, 1977, Ser. No. 764,049
Int. Cl.[2] A61F *5/00*
U.S. Cl. 128—69 **2 Claims**



1. Spinal column prostheses/orthoses which will correct problems involving scoliosis, kyphosis, spinal instability from a variety of causes, and rotational and mal-alignments by exerting a combination of forces on one or more pairs of vertebrae, comprising:

A. a first elongated member having a longitudinal axis and a second elongated member overlapping said first member and having a longitudinal axis which is parallel to the longitudinal axis of said first member;

B. adjustment means on one end of both said first and second members for controlling the longitudinal length of the combination of the first and second elongated members;

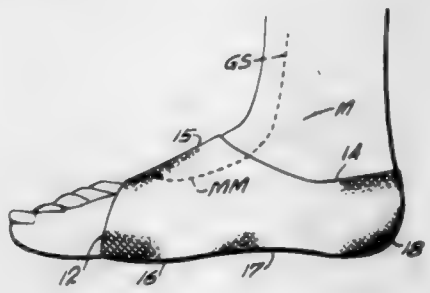
C. a first hook means positioned at the end of said first member opposite said adjustment means, said hook means being attached to said first member through joint means by which said hook means is inserted into a hole in said first member followed by a 90° rotation of said hook means with respect to said first member, and a second hook means positioned at the end of said second member opposite said adjustment means by second joint means identical to said first joint means, each of said joint means including means for allowing rotation of each of said hook means about an axis perpendicular to the longitudinal axis of each of said members, the combination of said first and second hook means in conjunction with said first and second members and said adjustment means taken in combination to provide, upon hooking onto two chosen vertebrae, tension in the vertebrae, the amount of which is controlled by the surgeon by said adjustment means.

4,085,745

ELASTIC SUPPORT FOR THE VEINS OF THE FOOT

Santiago S. Alenares, 3038 SW. 8th St., Apt. B202, Miami, Fla. 33135

Filed Feb. 14, 1977, Ser. No. 768,598
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—165 **4 Claims**

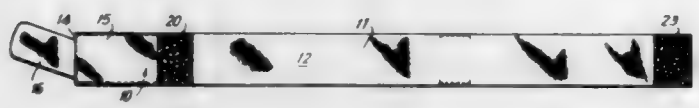


1. A foot sock for supporting the superficial veins of the foot formed of a two-way stretch elastic fabric material comprising a modified tubular body having a front toe opening and a top ankle opening, each with a finished border, said tubular body having a relatively straight configuration extending between said front and top openings along an upper side thereof defining a dorsum portion and an irregular configuration along the bottom side defining a metatarsal enlargement, an arch constriction and a heel enlargement, when in operative position on the foot said toe opening positioning the border thereof along the base of the toes, said top ankle opening being located to position the border thereof to extend above the heel at the lower part of the Achilles tendon and forwardly in a substantially horizontal direction along both sides of the foot passing just below the lateral malleolus and on the opposite side at the same level spaced below the medial malleolus and to curve upwardly across the dorsum just below the angle of the ankle, said dorsum portion cooperating with said metatarsal enlargement, said arch constriction and said heel enlargement to exert a uniform support pressure of a predetermined magnitude on the superficial veins of the metatarsal and tarsal areas of the foot including the medial marginal and lateral marginal veins.

4,085,746
ANKLE WRAP

Ignatius F. Castiglia, New York, N.Y., assignor to Lenox Hill Brace Shop, Inc., New York, N.Y.

Filed Sep. 20, 1976, Ser. No. 724,495
Int. Cl.[2] A61F *13/06*
U.S. Cl. 128—166 12 Claims

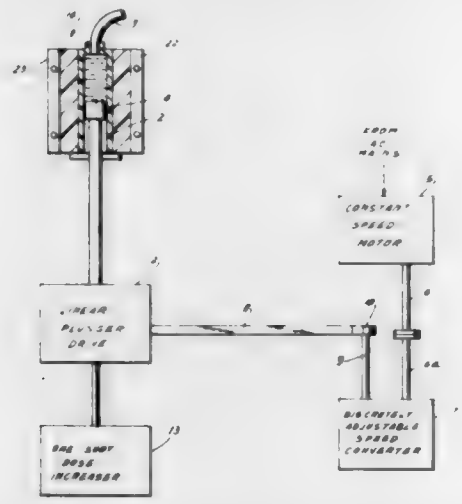


1. An ankle wrap comprising in combination an elongated panel, first fastening means secured to a first elongated end portion of said panel, and second fastening means carried by said panel are positioned spaced apart from said first fastening means when said elongated portion of said panel between said first and second fastening means is wrapped around the arch portion of a foot said portion of said panel between said first and second fastening means being inelastic, and further fastening means disposed at the other elongated end portion of said elastic panel for releasably securably fastening said panel about said ankle and arch portion after said panel has been alternately wrapped about said ankle and arch portion in a predetermined manner said portion of said elongated panel between said second fastening means and third fastening means being elastic.

4,085,747
INFUSION PUMPS AND DOSAGE CONTROL MEANS THEREFOR

Arnold St. Jacques Lee, Red Bank, N.J., assignor to Milstein Medical Research Foundation, Inc., New York, N.Y.

Filed Dec. 13, 1976, Ser. No. 750,189
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—214 F 18 Claims

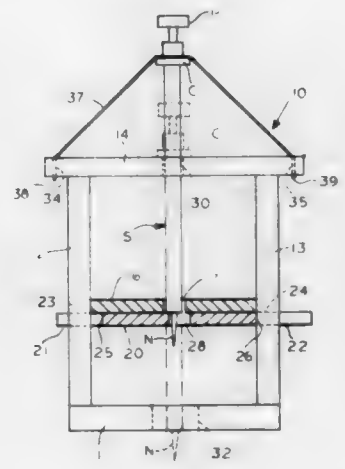


1. In an infusion pump for delivering a metered amount of a drug, cylindrical barrel means adapted to receive a quantity of the drug, the barrel means having an open rear end for receiving the front end of a plunger and further having an opening in a forward wall thereof through which the drug can be ejected upon a forward movement of the plunger in the barrel means, the barrel means comprising, in combination, a thin-walled, relatively compliant cylindrical syringe adapted to receive the plunger and having a nominal outer diameter, a cylindrical clamping member axially coextensive with and radially positionable coaxially over the syringe, the inner diameter of the clamping member being adjustable inwardly to an inner limit representing a fixed standard inner diameter smaller than the nominal outer diameter of the syringe, and means for releasably applying an inwardly directed radial clamping force to the clamping member to deform the wall of the syringe into conformance with the standard inner diameter of the clamping member, whereby the syringe forms an intimately adhering liner for the clamping member.

4,085,748
SYRINGE INJECTOR

Emanual F. Boyer, 4826 Oak Orchard Rd., Albion, N.Y. 14411

Filed Nov. 1, 1976, Ser. No. 737,275
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—215 6 Claims



1. A device for inserting the needle of a syringe into a body, comprising

a first pair of spaced members having therein a pair of registering openings,

two additional members mounted adjacent each other in the space between said first pair of members,

one of said additional members having therein an opening registering with the pair of openings in said first pair of members,

means mounting the other of said additional members for movement selectively between a cocked position in which an opening herein is laterally offset slightly from the opening in said one additional member, and a fired position in which the opening therein registers with the opening in said one additional member, and

resilient means mounted on one of said first pair of members and operable, when the other of said additional members is in its cocked position, releasably to support a syringe needledown in the opening in said one of said first pair of members with the lower end of said syringe urged resiliently against a marginal portion of said other additional member adjacent said opening therein,

said marginal portion of said other additional member being movable from beneath said lower end of the syringe upon movement of said other additional member to its fired position, whereupon the syringe is urged suddenly downwardly through the now-registering openings in said members to inject the needle on the lower end thereof through the opening in the other of said first pair of members and into any portion of a body registering therewith.

4,085,749
METHOD AND APPARATUS FOR CONTROLLING THE MOVEMENT OF FLUID TO AND FROM A SYRINGE

Edmond Chambron, Paris, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Jan. 4, 1977, Ser. No. 756,665
Claims priority, application France, Jan. 14, 1976, 76 00887
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—215 12 Claims

1. A method for aspirating and expelling fluid to and from a syringe comprising the steps of:

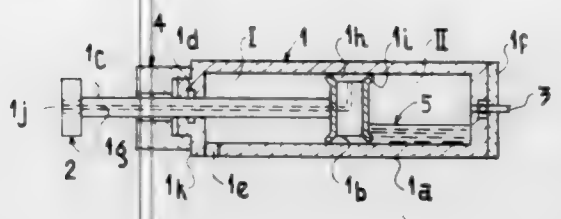
providing an actuator having a cylinder-piston assembly and defining first and second chambers in said cylinder;

admitting a measured quantity of pressurized hydraulic medium to said first chamber in said actuator;

providing a syringe and coupling the motions of the piston of said syringe to the motions of the piston of said actuator;

admitting a quantity of liquifiable gas to said second cham-

ber of said actuator; whereby the saturated vapor pressure of said liquifiable gas exerts a counter-pressure on said



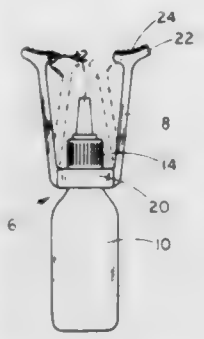
piston in opposition to the pressure of said hydraulic medium.

4,085,750

EYEDROPPER BOTTLE ATTACHMENT

Barry L. Bosshold, 1005 J St., #366, Davis, Calif. 95616

Filed Mar. 10, 1975, Ser. No. 556,739
Int. Cl.[2] A61M *31/00*
U.S. Cl. 128—233 **9 Claims**



8. An attachment for a lightweight squeeze type eyedropper bottle comprising;

a flexible cup;

pads on opposite rims of said cup being spaced to engage against the outer surfaces of the eyelids for frictional engagement thereof;

means for securing said cup near the top of said eyedropper bottle to extend upwardly therefrom;

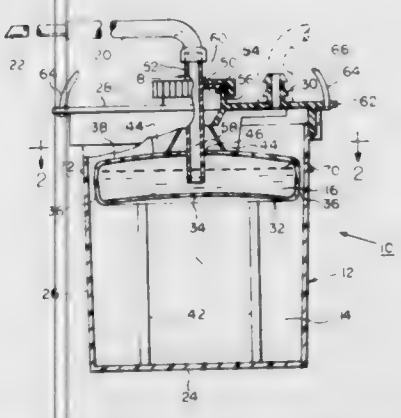
the flexibility of said cup enabling said opposite rims to be grasped and forced closer together before being placed against the eyelids but asserting flexural strength around the cup to restore it to normal configuration and force the eyelids apart.

4,085,751

DRAINAGE APPARATUS

Larry H. Dodge, St. Charles, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Oct. 2, 1975, Ser. No. 619,109
Int. Cl.[2] G01F *19/00*; A61B *5/00*
U.S. Cl. 128—275 **25 Claims**



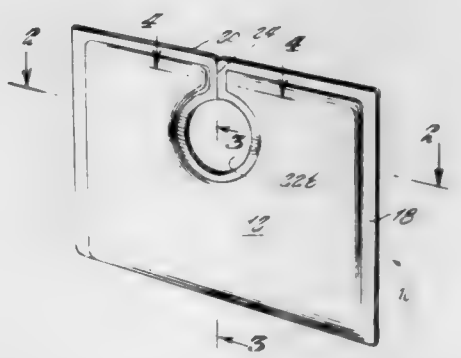
1. A fluid drainage device for collecting drainage fluid from a cavity of a patient comprising a relatively rigid container having a fluid drainage collection chamber therein, a liquid seal chamber therein having a bottom wall, side walls, an upper wall extending generally radially inwardly from said side walls and spaced above said bottom wall, and an opening in said upper wall connecting said collection and seal chambers in fluid communication for the passage of fluid therebetween, gas outlet means for removing gas from the interior of said container, said seal chamber being disposed above said collection chamber with its vertical axis substantially coincident with the vertical axis of said collection chamber and adapted to receive and capable of holding an initial quantity of liquid therein, fluid passage means extending into said container in fluid communication with said collection and seal chambers, and means for connecting a tube to said passage means for connecting said passage means in fluid communication with a cavity of a patient to be drained, said passage means extending into said seal chamber such that all gas flowing from the cavity to said gas outlet means flows into said seal chamber and through the liquid therein before reaching said gas outlet means and liquid flowing from the cavity to said collection chamber flows over the upper side of said upper wall before flowing into said collection chamber during operation of the device.

4,085,752

COLOSTOMY BAG PAD

James Canale, c/o General Delivery, Collins Ct., Eastport, N.Y. 11941

Filed May 7, 1976, Ser. No. 684,120
Int. Cl.[2] A61F *5/44*
U.S. Cl. 128—283 **7 Claims**



1. A colostomy bag pad adapted to be interposed between the colostomy bag and the stoma, comprising a laminate including two opposing sides formed of at least one layer of a liquid permeable sheet, at least one layer of a liquid impermeable sheet disposed in opposing relation between said two opposing sides, a liquid absorbent substance sandwiched between said liquid permeable and liquid impermeable layers, said laminate having an aperture therein and a slit communicating between said aperture and one lateral edge of said laminate, wherein each of said layers is formed of a single sheet folded substantially in half to form said laminate.

4,085,753

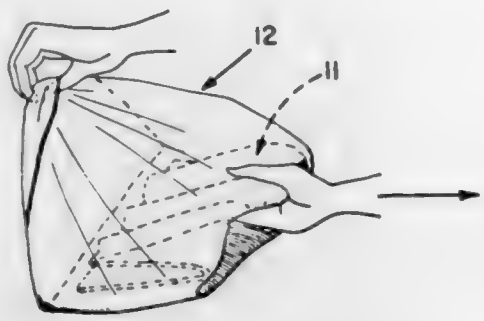
DISPOSABLE DIAPER WITH INTEGRAL DISPOSAL BAG

Dale Albert Gellert, Aurora, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 498,268, Oct. 20, 1965, Pat. No. 3,877,432. This application Apr. 14, 1975, Ser. No. 567,896
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—284 **1 Claim**

1. A damp resistant diaper ensemble in the configuration of a flat elongated rectangle, said ensemble having a means for manual eversion of a bag to enclose a used damp diaper comprising a diaper having on one half length, at least one adhesive means across the width thereof, a water resistant bag of sheet material of a size substantially coextensive of the diaper and having an opening in a first end portion and attached on the outside surface adjacent its second end portion to said diaper

adhesive means, said outside surface of said bag adjacent its opening and the diaper second half being joined by an adhesive tack means to define a disengageable attachment means between the bag and diaper whereby said bag opening defines a



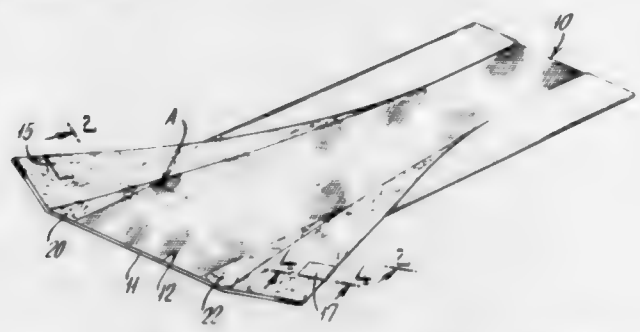
hand insertion means so said diaper second half portion may be readily detached from the bag, folded over the remaining first portion to cover the soiled surfaces, and be enclosed in the bag by said manual eversion thereof.

4,085,754

DISPOSABLE DIAPER INNER FACING

Irving Stanley Ness, Princeton Borough, and Michael R. Fechillas, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 3, 1976, Ser. No. 663,323
Int. Cl.[2] A41B *13/02*
U.S. Cl. 128—287 **6 Claims**



1. In a disposable diaper of the type having a fluid impervious outer facing, a fluid pervious inner facing, an absorbent core between said facings and adhesive tabs for fastening the diaper around the wearer thereof, an improved inner facing comprising a porous nonwoven fabric having at least one entire surface thereof being treated with a water insoluble adhesive release agent whereby that surface is capable of being a releasable surface for said adhesive tape tabs, said porous nonwoven fabric having a multiplicity of openings therethrough, which are substantially uniformly arranged and sufficiently large to allow fluid to pass through after said fabric has been treated with a water insoluble adhesive release agent, causing said treated fabric to be pervious to fluid.

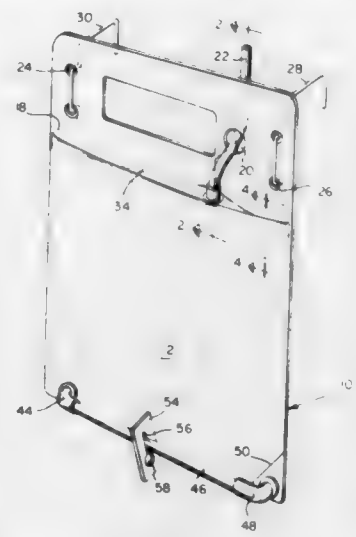
4,085,755

URINARY DRAINAGE BAG

Benjamin Stuart Burrage, 94 Lingarde Dr., Scarborough, Ontario, Canada (M1R 1X9)

Continuation-in-part of Ser. No. 681,394, Apr. 29, 1976, abandoned. This application Sep. 1, 1977, Ser. No. 829,965
Int. Cl.[2] A61F *5/42*
U.S. Cl. 128—295 **9 Claims**

1. A fluid drainage bag comprising a first ply, a second ply, a fold in said first ply, a hollow fitting provided at said fold and forming a drainage opening through said first ply into said bag, a resilient self closing flap valve for closing said drainage opening, a flexible drainage tube secured to said fitting and means for flexing a portion of said drainage tube between said fitting and the upper end of said bag, the flexed portion of said drainage tube opening said fold and drawing said flap valve away from said second ply to permit free opening of the flap valve in a manner so as to preclude sticking in the open position to the second ply, the arrangement being such that said fitting is inclined from the horizontal and said flap valve is



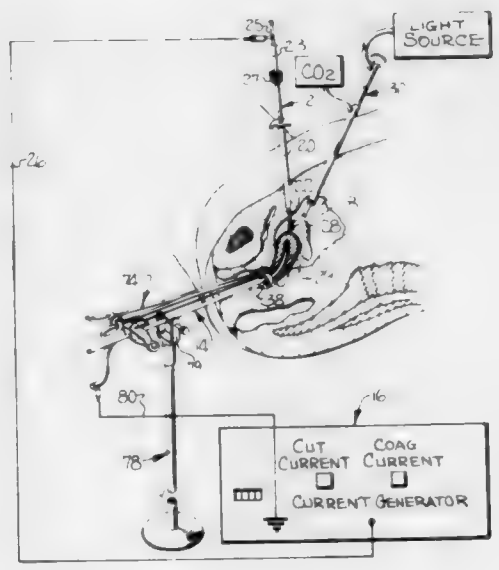
inclined from the vertical so that fluid draining through said drainage tube flows down through said fitting onto said flap valve which opens under the weight of the fluid.

4,085,756

METHOD AND APPARATUS FOR PERFORMING AN ELECTROSURGICAL PROCEDURE

Kenneth Weaver, 1511 N. Main St., Waynesville, N.C. 28786

Continuation-in-part of Ser. No. 594,203, Jul. 9, 1975, Pat. No. 4,000,743. This application Sep. 30, 1976, Ser. No. 728,122
Int. Cl.[2] A61B *17/36*
U.S. Cl. 128—303.17 **12 Claims**



6. In an electrosurgical apparatus useful, for example, in sterilizing a human female by cutting and coagulating the fallopian tubes, and having an active terminal, a ground terminal, and a high frequency current generator operatively connected to each of the active and ground terminals, the improvement wherein said ground terminal comprises

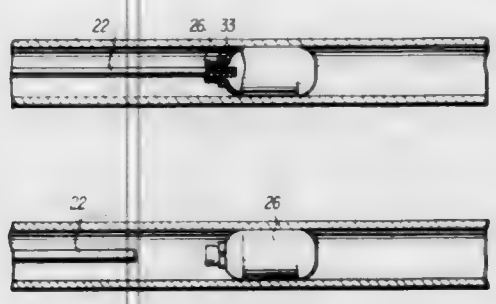
an elongate rod having a forward end portion adapted to be inserted through the vagina and into an operative position in the uterine cavity, and a rearward end portion adapted to remain outside the body when the forward end portion is in said operative position, and with at least said forward end portion being fabricated of an electrically conductive material, whereby the electrosurgical current employed in the procedure is collected by said forward end portion and thus passes a relatively short distance through the body of the patient to minimize the opportunity for burns or other injury.

4,085,757

MINIATURE BALLOON CATHETER METHOD AND APPARATUS

Paul H. Pevsner, 4121 King Crest Pkwy., Richmond, Va. 23221

Filed Apr. 29, 1976, Ser. No. 681,676
Int. Cl.[2] A61M 25/00
U.S. Cl. 128—325 10 Claims



1. A miniaturized balloon catheter assembly for use in small vessels comprising:

a cannula having proximal and distal ends including an attaching means at the proximal end thereof for attaching to a source of pressurized fluid and having a small outer diameter for insertion into small vessels;

an inflatable balloon including a means forming a mouth at a proximal end thereof mounted on an external surface of the cannula at the distal end of the cannula to be in fluid communication therewith, the cannula and balloon together adapted to be carried by the fluid in a vessel to desired locations therein, whereupon attachment of the cannula fluid source of pressurized fluid and introduction of amounts of pressurized fluid flow inflate the balloon to fix it in position against the wall of said vessel at a desired location; and,

a balloon-retaining means responsive to a predetermined further amount of pressure to initiate a desired procedure within the small vessels, said balloon-retaining means including a resilient contracting member surrounding said means forming said mouth for holding said means forming said mouth on said external surface of said cannula, said resilient contracting member being constructed to have a specific predetermined internal size when in a contracted state for: contracting with a uniform predetermined tension about said means forming said mouth when said means forming said mouth is mounted on said cannula to hold said balloon on said cannula upon said balloon being inflated to fix it in position against the wall of said vessel at said desired location, expanding in response to said predetermined further amount of pressure in said balloon to release said cannula from said mouth, and thereafter contracting toward said specific predetermined internal size to close said balloon mouth and thereby retain said inflated balloon fixed in position against said wall.

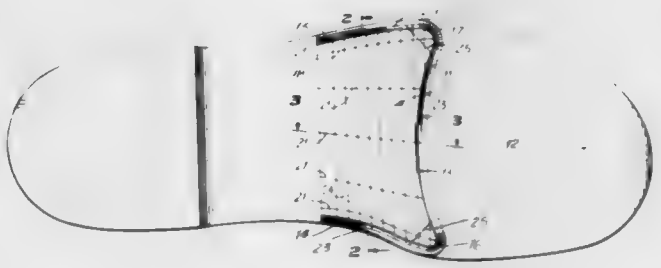
4,085,758

WEIGHT-REDISTRIBUTION ORTHOPEDIC APPLIANCE

Ignatius F. Castiglia, New York, N.Y., assignor to Lenox Hill Brace Shop, New York, N.Y.

Filed Nov. 15, 1976, Ser. No. 742,146
Int. Cl.[2] A61F 5/14
U.S. Cl. 128—589 12 Claims

1. A weight-redistribution orthopedic appliance comprising a non-resilient pad, said non-resilient pad including a securing surface adapted to be secured to the bottom of the sole of a shoe, forward of the break line of the sole said pad including an outer surface facing in substantially the same direction as the bottom of the sole of the shoe to which the securing surface is secured, and including slits selectively disposed in at least said



outer surface of said pad for contouring said non-resilient pad to flexibly conform to said shoe sole, said slits being disposed in said outer surface and oriented into a first group of slits substantially parallel to a longitudinal axis of said pad and a second group of slits substantially transverse to said longitudinal slits.

4,085,759

AUTOMATIC APPARATUS FOR TRANSFERRING CIGARETTE CONTAINERS FROM DEVICES ARRANGED TO FILL SUCH CONTAINERS TO HOPPER LOADING MECHANISMS IN PACKAGING MACHINES FOR FORMING PACKETS OF CIGARETTES

Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa Per Azioni, Italy

Filed Dec. 4, 1975, Ser. No. 637,665
Claims priority, application Italy, Dec. 11, 1974, 3560 A/74
Int. Cl.[2] A24C 5/35
U.S. Cl. 131—25 9 Claims

1. A system for manufacturing and packeting cigarettes and for feeding containers for them between manufacturing and packeting areas and for compensating operating unbalances of cigarette manufacturing and packeting operations, comprising:

a group of *n* cigarette manufacturing machines, each having means for filling empty cigarette containers with newly manufactured cigarettes;

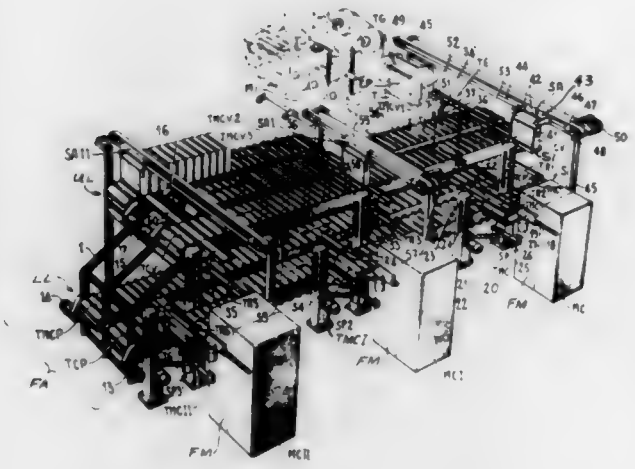
a cigarette packeting machine for packeting cigarettes received in the full cigarette containers from the several manufacturing machines at an output speed *v* substantially equal to a sum of operating speeds of the manufacturing machines, each operating speed being substantially equal to *v/n* and the packeting machine having, for feeding it with the cigarettes, a grouping hopper having a loading mechanism for loading it by emptying full cigarette containers into the hopper and by discharging empty cigarette containers;

a feeding conveyor system having a full-container feeding conveyor intermittently movable in successive steps past the manufacturing machines in a direction toward the loading mechanism for feeding the full cigarette containers to said mechanism, the feeding conveyor system also having an empty-container feeding conveyor parallel and adjacent to the full-container feeding conveyor and similarly movable synchronously with the same in a direction from said mechanism past the manufacturing machines for feeding the empty cigarette containers to the latter machines;

a feeding transfer system having primary container transferring device groups, one for each manufacturing machine, disposed adjacent the same and similarly synchronously movable transversely of the feeding conveyors to transfer full cigarette containers directly upon the filling thereof by the manufacturing machines onto the full-container feeding conveyor during halting intervals thereof, and similarly to transfer empty cigarette containers from the empty-container feeding conveyor to the manufacturing machines for filling with newly manufactured cigarettes, and a secondary container transferring device group disposed adjacent the loading mechanism of the grouping hopper and similarly synchronously movable for correspondingly similarly transferring full and empty cigarette containers between that mechanism and the feeding conveyor system;

a storage conveyor system having elongate full-container storage conveyor means and similar empty-container storage conveyor means both parallel and adjacent the feeding conveyors and intermittently, synchronously with the feeding conveyors, movable in movements along the same, each storage conveyor means in either direction of the feeding conveyors; and

a conveyor transfer system having container transferring apparatus disposed adjacent the several conveyors and similarly synchronously movable for transferring full and empty cigarette containers between the respective feeding and storage conveyors during halting intervals thereof, and memory means controllable by presence and absence of cigarette containers on successive portions of the several conveyors for controlling the storage conveyor system and the conveyor transfer system to automatically effect the movements of the storage conveyor means in the direction of one of the feeding conveyors, and the transferring of the containers between the conveyors so as to compensate for operating unbalances of the several machines.



4,085,760

TOBACCO FILTER

Iwao Toyoshima, Tondabayashi; Kunio Ishii, Himeji; Hideo Sawada, Osaka; Junji Kawamoto, Sakai, and Hiromu Yokota, Himeji, all of Japan, assignors to Daicel Ltd., Sakai, Japan

Filed Sep. 10, 1976, Ser. No. 722,131

Claims priority, application Japan, Sep. 19, 1975, 50-113222; Dec. 12, 1975, 50-148299

Int. Cl.[2] A24B *15/027*

U.S. Cl. 131—268 **8 Claims**

1. A tobacco filter comprising a mass of cellulose acetate fibers which are not completely soluble in acetone and which have been prepared by contacting cellulose fibers in the solid fibrous state, with a gaseous or liquid acetylating agent, under conditions effective to acetylate said cellulose fibers to an average degree of acetylation, calculated as combined acetic acid, of from 10 to 50 percent, while continuously maintaining said fibers in a solid fibrous state.

4,085,761

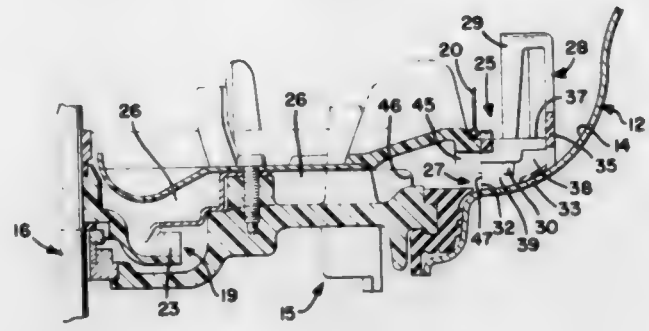
DRAIN FILTER FOR A DISHWASHING MACHINE

Ernst Grunewald, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Oct. 6, 1976, Ser. No. 730,134

Int. Cl.[2] B08B *3/02*

U.S. Cl. 134—104 **5 Claims**



1. A dishwashing machine including a drain filter for filtering out certain waste items when the dishwashing machine is being drained, the dishwashing machine having a tank, a drain pump for draining water from the tank, a drain conduit having an opening into the tank for sealing against the drain filter for receiving filtered fluid therefrom and conveying it to the drain pump, a sump in the bottom of the tank, and a motor/pump assembly for recirculating water from the sump onto dishes supported within the tank, the drain filter comprising:

(a) a two portion filter body dimensioned to be seated on said sump, one of said portions being fixed thereon and the other removable,

(b) manually operable means for attaching and releasing said removable filter portion to and from said fixed filter portion in a predetermined position with respect thereto and in the fluid flow path between the dishwasher tank and the drain conduit, and

(c) each portion of said drain filter separately including its own:

(i) base,

(ii) body portion extending upwardly from the respective said base,

(iii) means defining a first inlet opening into the respective said body portion located at a predetermined position above the respective said base,

(iv) means forming an outlet opening through the respective said drain filter portion,

(v) means forming labyrinthine passageways connecting said first inlet opening to said outlet opening through each said drain filter portion, said passageways being dimensioned and shaped to pass items up to a first predetermined size and to block passage of larger items,

(vi) means forming a second inlet opening into the respec-

tive said body portion extending to the bottom thereof, and

(vii) means connecting said second inlet opening to said outlet opening and being dimensioned to pass items up to a second predetermined size and to block passage of larger items, said second predetermined size being substantially smaller than said first predetermined size,

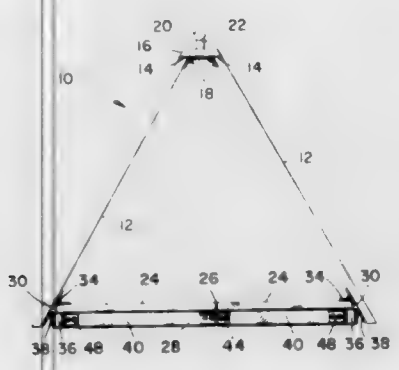
said drain filter rapidly draining fluids and suspended debris smaller than said first predetermined size when the fluid level is above said predetermined position, and continuing to drain fluids after the fluid level has fallen below said predetermined position, the passage through the drain filter of debris larger than said second predetermined size being effectively terminated when the fluid level has fallen therebelow.

4,085,762

FOLDING, RIGID, TENT-LIKE STRUCTURE

Edward D. O'Brian, 910 Iroquois, Anaheim, Calif. 92801, and William M. Plachy, 3353 San Marcos Blvd., Los Angeles, Calif. 92069

Filed Apr. 12, 1977, Ser. No. 786,824
Int. Cl.[2] A45F *1/16*
U.S. Cl. 135—4 R **5 Claims**



1. A folding, rigid, tent-like structure useful for play purposes which comprises:

a pair of rigid sides, each of said sides having a top edge and a bottom edge,

connecting means attached to said top edges of said sides for pivotally connecting said sides so that they may be pivoted relative to one another between a folded position in which said sides are adjacent to one another and an expanded position in which said sides are at an angle to one another,

a pair of bottom walls located between said sides, each of said bottom walls having a side edge located adjacent to a bottom edge of one of said sides and center edges, said center edges being located adjacent to one another,

a side edge hinge means connecting the side edge of each of said bottom walls to the adjacent of said sides,

a center edge hinge means connecting said center edges of said bottom walls to one another,

said side edge and said center edge hinge means being located so as to permit said bottom walls to be pivoted so as to lie adjacent to one another between said sides when said sides are in said folded position,

folding link means attached to said sides and extending beneath said bottom walls for limiting the amount said sides can pivot relative to said connecting means away from one another and for supporting said bottom walls when said sides are in said expanded position so that said bottom walls are coplanar.

4,085,763

QUAD CANE

Morton I. Thomas, Nyack, N.Y., assignor to Temco Products, Inc., Passaic, N.J.

Continuation-in-part of Ser. No. 683,978, May 6, 1976, Pat. No. 4,056,115. This application Sep. 2, 1976, Ser. No. 719,741
Int. Cl.[2] A45B *9/04*
U.S. Cl. 135—69 **2 Claims**



1. A quad cane apparatus comprising:

an upper section having a handle and a hollow sleeve attached thereto, said hollow sleeve including a plurality of apertures therein;

a lower section including a tubular means received by said hollow sleeve in an interlocking telescoping relationship;

a foot portion attached to said tubular means, said foot portion including four feet having rubber-like tips;

a locking means for locking said hollow sleeve relative to said tubular means, said locking means comprising a spring-loaded button at least partially housed inside of said tubular means, said spring-loaded button being adapted to pop through one of said apertures in said hollow sleeve; and, a stabilizing means including:

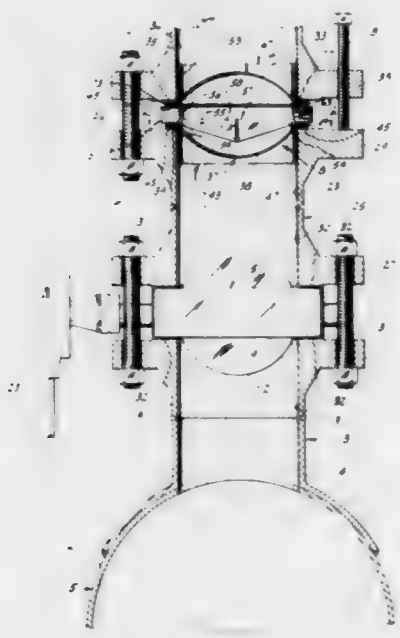
a collar attached to said hollow sleeve, said collar including a threaded hole therethrough, said threaded hole being located opposite one of said apertures in said hollow sleeve; and,

a connecting means for selectively connecting said collar to said tubular means through at least one of said apertures in said hollow sleeve, said connecting means comprising a wing-type threaded screw-like means threadably received in said threaded hole, the threads of said threaded screw-like means including a stop means thereon so that said threaded screw-like means cannot back out of said threaded hole, said collar further including a first section through which a portion of said threaded screw-like means is visible, a second approximately annular section with a diameter slightly less than the outside diameter of said hollow sleeve, and a third relief section for accomodating the flow of said hollow sleeve when said apparatus is assembled on said hollow sleeve.

4,085,764
APPARATUS FOR PROTECTING A GAS PRESSURE SYSTEM FROM OVER PRESSURE

John H. Raidl, Jr., 6625 Milhaven Dr., Shawnee Mission, Kans. 66202

Filed Oct. 20, 1975, Ser. No. 623,593
Int. Cl.[2] F16K *17/40*
U.S. Cl. 137—68 R 14 Claims

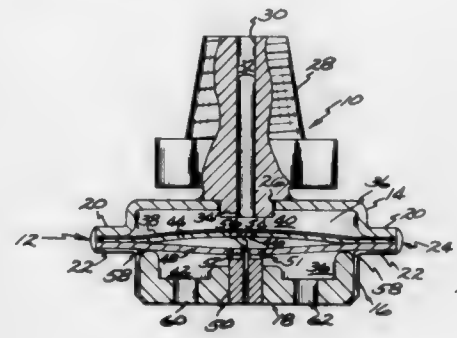


1. Apparatus for protecting a fluid pressure system from over-pressure comprising an assembly of a reverse acting rupture disk means, knife means, a spacer ring, and a prebulged rupture disk means adapted to be sealingly mounted in an outlet of said system between inner and outer companion flanges of the outlet, said reverse acting rupture disk means having a part spherical, thin rupturable dome and a generally flat annular flange surrounding the dome and integral therewith, the flange of the reverse acting dome fitting on the inner flange of the said outlet with said dome being directed upstream in said outlet for exposure of the convex face of the reverse acting rupture dome to the system fluid pressure, said reverse acting dome being adapted to snap over center from a convex to a concave configuration upon said system fluid pressure exceeding a predetermined pressure level, said spacer ring fitting on the face of said flange of said reverse acting dome opposite said inner flange of said outlet, said knife means being carried by said spacer ring for cutting said reverse acting dome as the latter snaps over center, said prebulged rupture disk means comprising a part spherical, thin rupturable dome and an annular flange surrounding said prebulged dome and being integral therewith, one face of said annular flange of said prebulged dome fitting on the other face of said spacer ring and the other face of the last-said annular flange fitting on the outer flange of said outlet with the concave face of said prebulged dome facing the concave face of said reverse acting dome whereby said prebulged dome is adapted to burst upon its concave face being subjected to said system fluid pressure as occassioned by the rupture of said reverse acting dome, said outlet having a circular bore, and said apparatus further comprising guide means for alignment of said dome of said reverse acting rupture disk means with respect to the bore of said outlet, said guide means comprising a tubular sleeve of somewhat smaller diameter than the diameter of said bore of said outlet, said sleeve being secured to said annular flange of said reverse acting dome and extending into said bore whereby said sleeve centers said reverse acting dome with respect to said bore.

4,085,765
PRESSURE RELIEF VALVE

Kris L. Nelson, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 3, 1976, Ser. No. 682,545
Int. Cl.[2] F16K *17/40*
U.S. Cl. 137—68 R 7 Claims

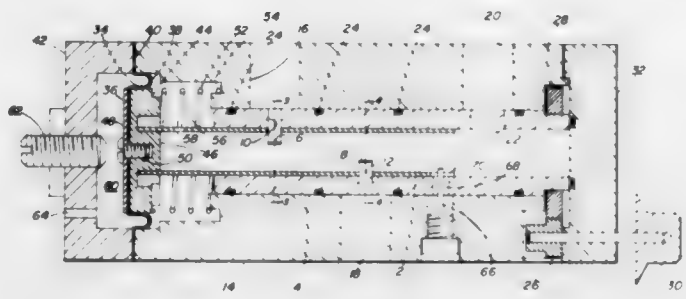


1. A pressure responsive device comprising a housing with first and second casing members, said first casing member providing a first cavity and said second casing member providing a second cavity, a membrane positioned intermediate said first and second casing members, a pressure responsive snap-acting disc member positioned adjacent said membrane, said member formed with an aperture therethrough, said member substantially coextensive in area with said membrane, said membrane and said disc member being secured at their marginal periphery between said first and second casing members, said membrane separates and seals said first cavity from said second cavity, said disc member having a deformed portion therein responsible for its snap action, said first casing member providing an orifice communicating with said first cavity to admit fluid under pressure against one side of said membrane directly and through said membrane against said disc to effect snap action of said disc in response to said pressure in a direction toward said second casing member and piercing means securely mounted in said housing extending into said second cavity in axial registry with said aperture in said disc member to provide for piercing of said membrane during snap action of said disc to vent said pressure source.

4,085,766
ADJUSTABLE GAS MIXING VALVE

James Weigl, and Leo James Lichte, both of Riverside, Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Apr. 15, 1976, Ser. No. 677,344
Int. Cl.[2] F16K *11/00*
U.S. Cl. 137—88 1 Claim



1. A gas mixing valve for a medical respirator comprising:
a manifold having at least two gas inlet portals for receiving gases to be mixed and an outlet portal providing exit for gases so mixed;
a cap attached to and sealing one end of said manifold so as to prevent escape of gas;
a cup-shaped housing member secured to and sealing another end of said manifold so as to prevent escape of gas;
a hollow, cylindrical sleeve movably lodged within said manifold and having at least two gas inlet ports formed by

notches cut into diametrically opposite sides of said sleeve and also having an outlet port;

a gear assembly mounted at one end of said sleeve comprising a driven gear attached on the outer circumference of said sleeve engaged by a drive gear housed within said manifold and controlled by a knob attached thereto so as to rotate said sleeve about its longitudinal axis within said manifold;

sealing means for preventing fluid communication between said sleeve and said manifold along mutual longitudinal dimensions thereof except at said portals and said ports;

a hollow, open-ended, cylindrical piston slidably lodged within said sleeve having at least two openings formed from notches cut into said piston such that a notch forming a first opening is cut into said piston at an angle approximately perpendicular to a notch forming a second opening, for receiving gases to be mixed from the inlet ports of said sleeve;

a plug having a cylindrical boss and secured thereby at one end of said piston;

a diaphragm comprising a flat central portion, a flexible, resilient convolution and a flat peripheral flange, secured between one end of said manifold and said cup-shaped housing member at said flat peripheral flange, said flat central portion being secured to said plug by means of a bolt and a flat plate;

an inner compartment formed in the wall of said manifold and further bounded by said plug, one side of said diaphragm an end of said sleeve and said piston, said piston having an opening providing fluid communication between said inner compartment and the interior of said piston,

an outer compartment formed in said cup-shaped housing member and further bounded by the other side of said diaphragm and the flat plate attached to said diaphragm;

a settable screw threaded into said cup-shaped housing member for adjusting the allowable travel of said diaphragm;

an orifice in said cup-shaped housing for the introduction of a reference pressure into said outer compartment;

a pin threaded into said manifold and projecting into a longitudinal slot formed at the open end of said piston through a partial circumferential opening formed in said sleeve; and

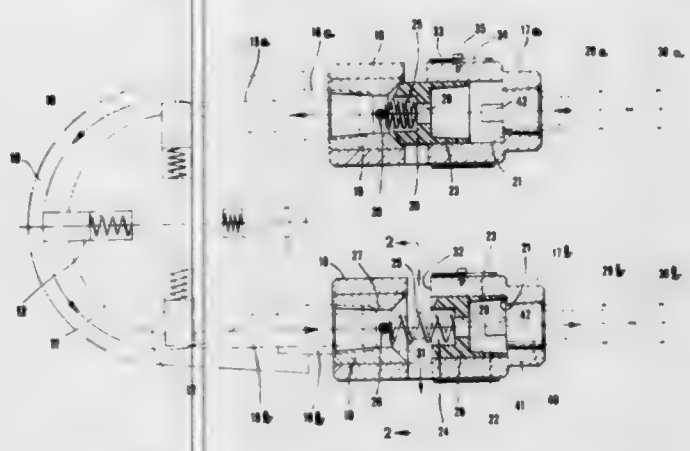
a coil spring located in said inner compartment in compression so as to bear against an interior wall of said manifold and said plug so as to urge said plug and thus said diaphragm into said outer compartment.

4,085,767

REVERSE FLOW VALVE FOR PNEUMATIC SYSTEMS

James Whitman Gibbs, Hialeah, Fla., assignor to Gibbs-Ryder Materials Handling Systems, Inc., Hialeah, Fla.

Filed Nov. 21, 1975, Ser. No. 634,135
Int. Cl.[2] F16K *45/00*; G05D *11/03*
U.S. Cl. 137—102 **12 Claims**
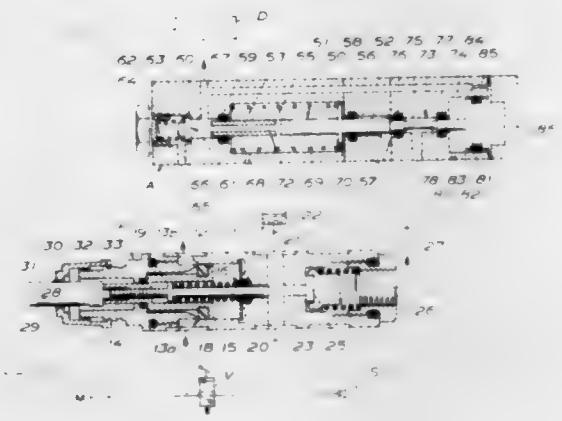


1. A reversible valve for selectively delivering a pressurized gaseous mixture to and exhausting it from a pressure operated device comprising; housing means having bore means therein, a pair of spaced port means in said housing means, one of said pair of spaced port means connected with the pressure operated device, lateral exhaust opening means in said housing means interposed between said pair of spaced port means, a piston axially movable in said bore means of said housing means to open and close said exhaust opening means, flow port means in said piston establishing flow communication for the gaseous mixture through said bore means in said housing means between said pair of spaced port means, diverter means in said bore means of said housing means and positioned between said one of said pair of spaced port means and lateral exhaust opening means directing flow of gaseous mixture from the pressure operated device to said exhaust opening means in said housing means, and biasing means operative with flow of gaseous mixture from the pressure operated device through said one of said pair of spaced port means to move said piston to open said exhaust opening means for the discharge of gaseous mixture therethrough, said piston movable with flow of the gaseous mixture to the pressure operated device against the action of said biasing means to close said exhaust opening means and transmit the gaseous mixture through said pair of spaced port means and said flow port means.

4,085,768

PRESSURE FLUID IMPULSE CONVERTER

Ulf Einar Sigvard Norr, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sep. 15, 1976, Ser. No. 723,314
Claims priority, application Sweden, Sep. 17, 1975, 7510374
Int. Cl.[2] F16K *31/124*
U.S. Cl. 137—102 **9 Claims**



1. A pressure fluid impulse converter for transforming, at a predetermined rate, primary pressure fluid impulses of a higher frequency into secondary pressure fluid impulses of a lower frequency, in which the improvement comprises:

a positive displacement hydraulic pump (P) actuated by the primary pressure fluid impulses, the displacement of the hydraulic pump (P) being variable.

a pressure fluid supply valve (61) activatable from a closed to an opened position, to provide secondary pressure fluid impulses when activated to its opened position,

an activating means (51) actuatable by pressure fluid from said hydraulic pump (P), said activating means (51) having a substantially larger displacement than said pump (P), and being arranged to be stepwise displaced by repeated strokes of said pump (P) so as to activate said valve (61) to its opened position after a predetermined number of said pump strokes, and

means for varying the displacement of said pump (P) to thereby vary the impulse frequency transforming rate.

4,085,769

FLUID DISTRIBUTION SYSTEM

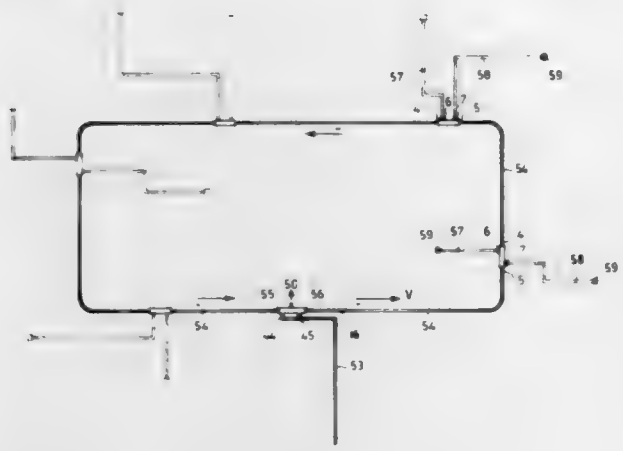
Lourens Theodor van Haaften, Plantsoen Laanhorn 18, Amstelveen, Netherlands

Filed Mar. 8, 1976, Ser. No. 664,484

Claims priority, application Netherlands, Mar. 17, 1975, 7503122; Apr. 1, 1975, 7503836

Int. Cl.[2] A01G *27/00*

U.S. Cl. 137—119 **19 Claims**



1. A system for distributing a fluid supplied under pressure comprising:

a. a conduit for conducting said fluid;

b. a plug element within said conduit and moveable therethrough;

c. a plurality of valves arranged along said conduit, each of said valves having an outlet and a valve closing means which may be selectively opened and closed for distributing said fluid through said outlet, said valve closing means including a plug receiving member;

d. engagement means for selectively engaging and disengaging said plug and said plug receiving member, said plug receiving member being arranged to open said valve closing means when engaged with said plug element and being arranged to permit said plug element to move from one valve to the next when disengaged; and

e. means for selectively controlling the engaging and disengaging of said engagement means;

whereby said system distributes said fluid by sequentially opening and closing said valves as said plug element moves through said conduit and into engagement and disengagement with the valve closing means in each of said plurality of valves.

4,085,770

SEAT AND TRUNNION ASSEMBLIES FOR ROTARY VALVES

Romuald Woronowicz, 13324-126 Avenue, Edmonton, Alberta, Canada (T5L 3E1)

Filed Apr. 21, 1976, Ser. No. 678,925

Claims priority, application Canada, Dec. 5, 1975, 241168

Int. Cl.[2] F16K *5/20, 5/22*

U.S. Cl. 137—238 **28 Claims**

1. A plug valve comprising:

a. a valve body having a valve chamber and inlet and outlet flow passages disposed in fluid communication with said valve chamber;

b. a plug member rotatably disposed within said valve chamber and having a flow passage extending through it for alignment with said inlet and outlet passages in the open position of said valve;

c. means for imparting rotation to said plug member between the open and closed positions thereof;

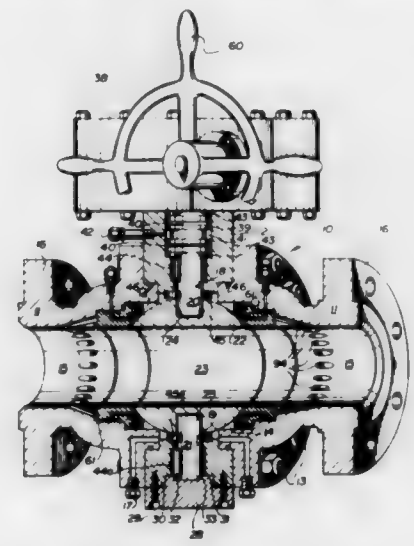
d. a seat recess formed in said valve body about at least one of said inlet and outlet flow passages and adjacent to said valve chamber, in axial alignment with said flow passage, the interior surface of said seat recess being joined to the interior surface of said flow passage by a generally radially extending shoulder surface;

e. a seat assembly disposed in said recess and axially movable toward and away from said plug member, said seat assembly including a resilient sealing member disposed therein in sealing engagement with said plug member;

f. means establishing a fluid-tight seal between said valve body and said seat assembly;

g. means urging said seat assembly toward said plug member;

h. the end of said seat assembly axially remote from said plug member terminating in a generally radially extending



shoulder surface disposed adjacent to, and generally coextensively with, said radially extending shoulder surface of said seat recess, whereby the motion of said seat assembly in an axial direction away from said plug member is limited;

i. at least one fluid conduit extending through the valve body from the interior surface of said flow passage to the said radially extending shoulder surface of said seat recess, thereby providing means for fluid passage between the said surfaces; and

j. means permitting fluid passage between said valve chamber and the outlet of said conduit on said radially extending surface of said seat recess.

4,085,771

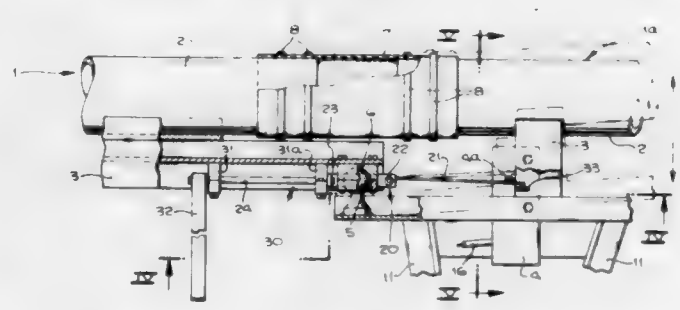
ANGULARITY SENSOR MEANS FOR CENTER PIVOT IRRIGATION SYSTEM

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Filed Oct. 12, 1976, Ser. No. 731,695

Int. Cl.[2] B05B *3/12*

U.S. Cl. 137—344 **9 Claims**

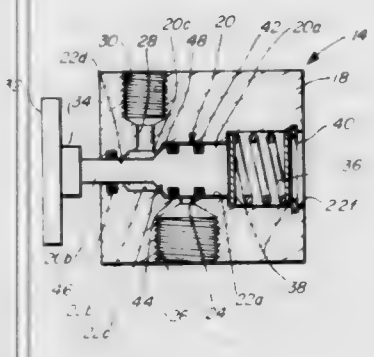


1. In a center pivot irrigation system having a plurality of self-propelled articulated span units mounting inter-connected sections of water carrying conduit, each such span unit having motor means and motor control means for regulating the operation of the associated motor means to maintain said span units in a pre-determined relative alignment, the improvement in control means comprising the provision of:

angularity sensor means operable between at least one of said span units and an adjacent span unit and connected

with the motor control means of one of said span units for sensing changes in angularity between said span unit and said adjacent span unit, said angularity sensor means having means for sensing said changes in angularity relative to a plane truely vertical to the earth.

4,085,772
VALVE ASSEMBLY
Harry Roger, 702 Florence, Lot 43, Lafayette, La. 70501
Filed May 17, 1976, Ser. No. 686,837
Int. Cl.[2] F16K *17/00*
U.S. Cl. 137—464 **13 Claims**



1. A valve assembly comprising:

a valve body having a bore therein, a first opening communicating with said bore and of limited circumferential extent in said bore, and a second opening longitudinally displaced from said first opening and communicating with said bore;

a valve element slidably mounted in said bore for longitudinal movement in said bore between a first position in which said first opening is sealed from communication with said second opening and a second position permitting communication between said first and second openings via said bore, said valve element including means defining a pressure reaction area exposed to fluid pressure from said second opening in said second position whereby said valve element is retained in said second position upon the presence of fluid pressure in said second opening in excess of a predetermined limit;

annular seal means carried by said valve element and sealing between said valve body and said valve element between said first and second openings in said first position;

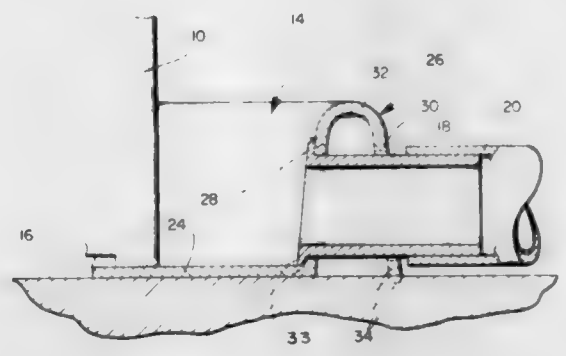
wherein said bore includes a substantially uniform diameter section including a portion of said bore against which said seal means seals in said first position and a portion of said bore directly intersecting said first opening;

stop means cooperative between said valve body and said valve element to retain said seal means in substantial but non-sealing alignment with said first opening in said second position; and

return means, operatively associated with said valve element, for automatically returning said valve element to said first position upon the absence of fluid pressure above said limit in said second opening.

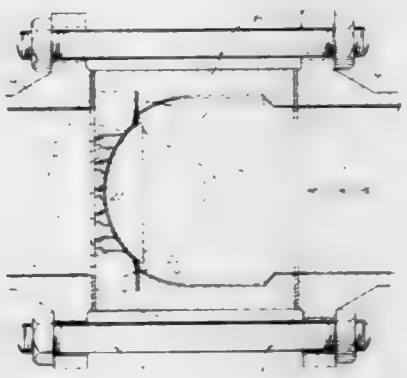
4,085,773
WATER HEATER OVERFLOW PAN
Lyle D. Tinney, R.R. 1, Box 114, Leesburg, Fla. 32748
Continuation-in-part of Ser. No. 696,566, Jun. 16, 1976. This application Oct. 6, 1976, Ser. No. 729,961
Int. Cl.[2] F17D *1/00*
U.S. Cl. 137—571 **6 Claims**

1. A water heater overflow pan comprising, a plastic slightly yieldable pan having a bottom wall for receiving the bottom of the heater, the bottom of said bottom wall having outer face means to be seated on a supporting surface when the heater is received on said bottom wall, said pan further having a continuous side wall including a generally upright inner wall and a generally upright outer wall interconnected at their upper portions, said outer wall having bottom edge means to be seated on the supporting surface and said bottom edge means extending slightly downwardly from said outer face means of said bottom wall to be flexed into firm seated engagement with the supporting surface as said pan yields responsive to the heater being received on said bottom wall, and a coupling



opening through said side wall for connection with a drain, said coupling being in sealed engagement with said inner wall and extending freely through said outer wall to permit free relative movement between said coupling and said outer wall as said pan and heater are seated on said supported surface.

4,085,774
ANTICAVITATION AND LOW NOISE MEANS FOR ROTARY VALVES
Hans D. Baumann, 32 Pine St., Rye, N.H. 03870
Filed Jul. 19, 1976, Ser. No. 706,541
Int. Cl.[2] F16K *47/08*
U.S. Cl. 137—625.3 **9 Claims**



1. In a rotary valve including a body having inlet and outlet flow passages therein and a valve closure rotatably mounted therein, said closure having an arcuate convex spherical surface head portion, and cavitation resistance discharge means in said valve comprising:

a plate secured in said outlet flow passage, said plate having an inner concave spherical surface complementary and closely spaced to, the path of rotation of said convex surface head portion; and

a plurality of anti-cavitation passageways through said plate parallel to the axis of said outlet flow passage, each of said anti-cavitation passageways having an enlarged entrance portion opening from said concave surface and terminating within said plate near the downstream surface thereof, and

an exit portion of smaller cross-section communicating with said entrance portion and opening from the downstream side of said plate.

4,085,775

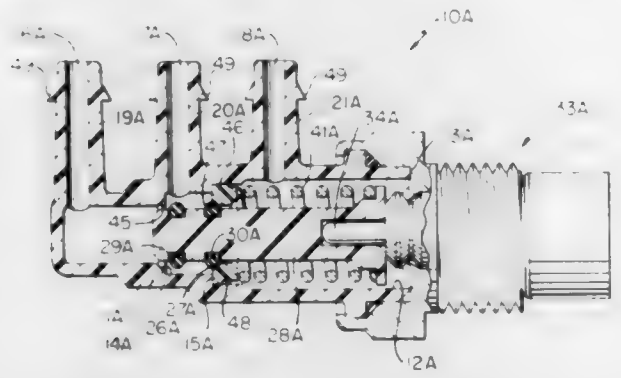
THREE PORT VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME

Everett T. Steele, Jr., Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 14, 1976, Ser. No. 686,472

Int. Cl.[2] F16K *11/02*

U.S. Cl. 137—625.5 **8 Claims**



1. A three port valve construction comprising a one-piece plastic valve housing body having a stepped cylindrical opening through one end thereof that defines a pair of spaced annular shoulders, said body having three ports therein transversely disposed to said opening and respectively intersecting with said opening with one port being located between said shoulders and the other two ports being respectively disposed outboard of said shoulders, one of said shoulders being beveled and defining a first valve seat, an annular plastic valve seat member ultrasonically welded to the other of said shoulders to define a second valve seat, and an axially movable valve member slidingly disposed in said opening to control said first and second valve seats, said body having three integral nipples extending outwardly therefrom and respectively having said ports therethrough, said nipples each having integral annular barb means thereon.

4,085,776

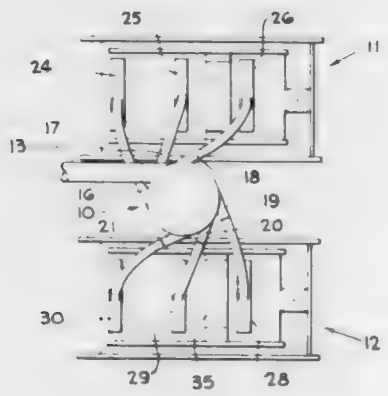
FLOW DIVIDER

H. William Derrick, Jr., Williamsville, N.Y., assignor to Derrick Manufacturing Corporation, Buffalo, N.Y.

Filed Jan. 29, 1976, Ser. No. 653,364

Int. Cl.[2] F15D *1/14*

U.S. Cl. 137—561 A **7 Claims**



1. A flow divider for separating a stream of liquid having particles of solid material entrained or suspended therein into a plurality of streams having substantially uniform concentrations of solid particles therein, said flow divider comprising a cylindrical tank having an inlet passage for said liquid disposed at an upper portion of said tank and entering the same tangentially, a plurality of discharge passages at a lower portion of said tank and arranged to leave the tank tangentially in the direction of circular flow of said liquid in said tank, and an annular flange extending horizontally about the interior of the tank and extending radially inwardly from the wall thereof above and in proximity said outlet passages to cause the peripheral portions of the liquid and solids to flow radially inwardly whereby such portions are carried downwardly into more central portions of the liquid substantially at the level of the discharge passages and are admixed therewith in the radially outward flow of such more central portions to the discharge passages.

4,085,777

ARRANGEMENT FOR THE CONTROL OF WEFT INTRODUCED INTO LOOMS

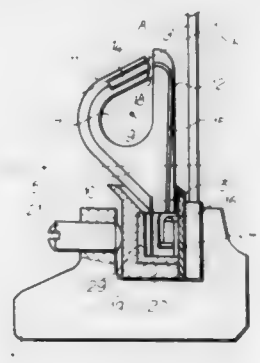
Zdenek Dadák, Brno; Jaroslav Janda, Ceska u Brna, and Karel Kakač, Brno, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Continuation-in-part of Ser. No. 680,681, Apr. 27, 1976, abandoned, which is a continuation of Ser. No. 491,318, Jul. 24, 1974, abandoned. This application Jan. 26, 1977, Ser. No. 762,589

Claims priority, application Czechoslovakia, Jul. 24, 1973, 5267/73

Int. Cl.[2] D03D *51/34*

U.S. Cl. 139—370.2 **1 Claim**



1. In an arrangement for controlling the introduction of a weft thread from a picking comb composed of a system of plates into a shed in a loom, the plates of the picking comb each having a picking opening and a slot for the removal of the weft thread, the arrangement comprising a control plate having opposed arms defining a picking opening and a fixed slot for the removal of the weft, the fixed slot communicating with the picking opening in the control plate, the control plate substantially corresponding in shape to the shape of the plates of the picking comb for insertion at a desired point of the comb, a light source and a photocell individually disposed in aligned spaced relation at opposite sides of the fixed slot adjacent the picking space of the control plate, the fixed slot being narrowed to a dimension substantially equal to the diameter of the weft thread at the location of the respective light source and photocell, the improvement wherein at least one of the light source and photocell projects into the fixed slot, whereby an exit of the weft thread through the fixed slot exerts a positive wiping action on the said one of the light source and photocell which projects into the fixed slot.

4,085,778

PACKAGING MACHINE

Donald R. Wright, Midland, Mich., assignor to The Kartridg Pak Company, Davenport, Iowa

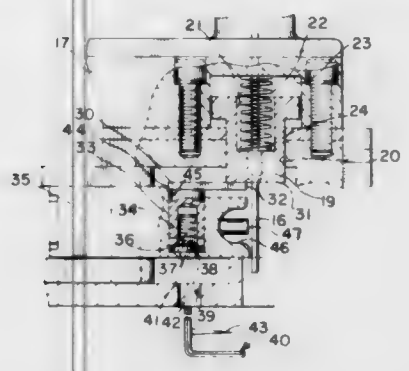
Filed Apr. 5, 1977, Ser. No. 784,730

Int. Cl.[2] B65B *13/28, 51/04;* B26D *5/08*

U.S. Cl. 140—93 A **6 Claims**

1. In a machine in which wire is fed and cut into pieces of predetermined lengths and the pieces formed into U-shaped clips for clinching about a constricted product-filled tube, means for varying the lengths of the cut off wire pieces, comprising: a frame or housing; a wire receiving member slidably mounted on said frame and protruding through a guide opening in said frame and having a wire cut off surface on its projecting end, said member being slidable in said guide opening

along an axis; means for feeding wire through said member as as to emerge through said wire cut off surface; a clip forming plate reciprocably mounted on said frame for forming cut off pieces of wire into U-shaped clips, said plate being reciprocable in a direction transverse to said axis; a knife blade mounted on said plate and with a wire shearing edge having transverse sliding engagement with said wire cut off surface, said knife



blade being laterally movable with respect to said plate in a direction parallel to said axis; means for adjustably positioning one of said wire receiving member and said knife blade; and, spring means maintaining said wire shearing edge and said wire cut off surface in wire cutting engagement as said wire receiving member is moved on said axis and said knife blade is moved with respect to said plate in a direction paralleling said axis.

4,085,779

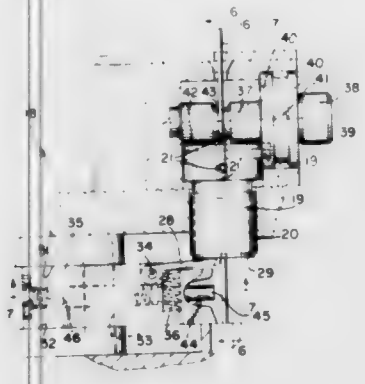
PACKAGING MACHINE

Roy E. Wells, Maquoketa, Iowa, assignor to The Kartridg Pak Company, Davenport, Iowa

Filed Apr. 6, 1977, Ser. No. 785,119

Int. Cl.[2] B65B *13/28, 51/04;* B26D *5/08, 5/18*

U.S. Cl. 140—93 A **10 Claims**



1. In a machine in which wire is fed by wire feeding means and cut into pieces of predetermined lengths which are formed into U-shaped clips and clinched about a constricted product-filled tube, said machine having a wire cut off and clip forming unit including frame means providing a channel in which a combination cut off block and clip forming plate is reciprocable, means for varying the lengths of said pieces of wire, comprising: a wire receiving member slidably mounted on said frame means on an axis extending perpendicular to the direction of reciprocation of said wire cut off block and clip forming plate; positioning means carried by said frame means and operably connected with said wire receiving member for adjusting the extent to which member protrudes into said channel towards one side of said cut off block and forming plate, the protruding portion of said member having a wire cut off end surface through which wire emerges from said member into said channel; a wire cutting blade having a shearing edge pivotally mounted on said one side of said cut off block and forming plate; and spring means acting between said blade and said cut off block and forming plate to maintain the shearing edge of said blade in engagement with said wire cut off end surface during reciprocation of said cut-off block-forming plate.

4,085,780

LIQUID DISPENSING MEANS

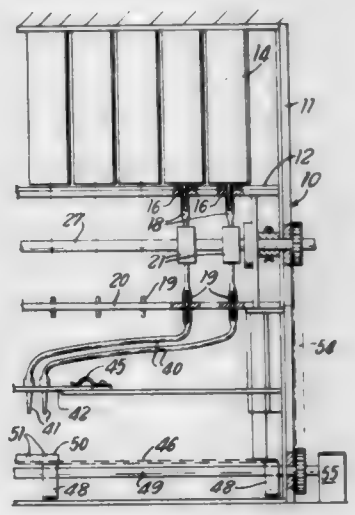
John Ernest Foster Holley, Westerham, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Oct. 14, 1975, Ser. No. 621,797

Claims priority, application United Kingdom, Oct. 14, 1974, 44493/74

Int. Cl.[2] B65B *3/04*

U.S. Cl. 141—1 **12 Claims**



10. A method of dispensing liquid to wells of a multi-well tray, the method comprising the steps of relatively moving the tray and a two-dimensional array of nozzles from a first position, in which said tray and said array of nozzles are spaced apart to permit loading of the tray onto support means therefor, to a second position in which said tray and said array of nozzles are in proximity whereby each well of the tray is located in registration with a respective one of the nozzles, supplying a predetermined quantity of liquid from a respective one of an array of pumps to each of the nozzles so as to provide a droplet suspended thereon, transferring each droplet to its associated well by contact with the well when said tray and array of nozzles are moved to said second position, and stopping the pump and relatively moving the tray and the array of nozzles to the first position for unloading the tray from said support means.

4,085,781

MATERIALS DELIVERY SYSTEM FOR OFFSHORE TERMINAL AND THE LIKE

Luis B. Serpas, Belmont; Sam W. Small, Walnut Creek, and Frederick S. Ellers, Menlo Park, all of Calif., assignors to Bechtel International Corporation, San Francisco, Calif.

Filed May 13, 1976, Ser. No. 685,966

Int. Cl.[2] B65B *3/00*

U.S. Cl. 141—1 **49 Claims**



32. A method of transferring materials from the bottom of a body of water to a floating materials receiver near the water surface comprising: providing a tubular spar defining a materials delivery path between the bottom of said body of water and

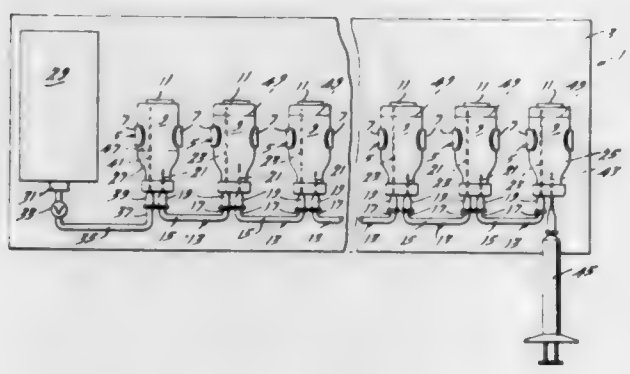
a location adjacent to the water surface with the upper end portion of said path being capable of lateral movement relative to the lower end portion of the path; coupling the upper end portion of said spar to the materials receiver and applying an upward force on the spar with the source of the force being on the materials receiver to maintain the upper end portion of said spar in a generally fixed location relative to said materials receiver as the latter rotates about and pitches relative to said path; and directing a mass of materials along said path while permitting said materials receiver to rotate about and to pitch relative to said path.

4,085,782

VACCINE AND MEDICAMENT DISPENSING SYSTEM

Harold W. Carlson, 18070 Wildemere, Detroit, Mich. 48221

Filed May 24, 1976, Ser. No. 689,008
Int. Cl.[2] B65B *3/04*
U.S. Cl. 141—1 **4 Claims**



3. The method of increasing the efficiency with which syringes are filled with liquid vaccine or medicament which comprises arranging a multiplicity of conventional vials containing said liquid so that the vials are upside down with the liquid resting on the penetratable self sealing membrane in the vial, inserting syringe-type needles through the membrane, attaching tubing to said needles and interconnecting said vials in series relationship so that liquid flows in series from one vial to the adjacent vial in a direction from the first to the last of the vials in the series, supplying a fluid at a pressure slightly above ambient to the first in said series of vials to thereby pressurize the liquid in the vial-conduit system, and withdrawing liquid from the last of the vials by insertion of a syringe into the last of said vials to fill said syringe with a desired amount of said liquid.

4,085,783

PROCESS AND APPARATUS FOR LOOSENING BARK FROM LOGS

Charles A. Jones, 26 Gladstone Ave., Oshawa, Ontario, Canada

Continuation of Ser. No. 544,547, Jan. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 510,942, Oct. 2, 1974, abandoned. This application Sep. 27, 1976, Ser. No. 727,117
Claims priority, application United Kingdom, Oct. 3, 1973, 47157/73
Int. Cl.[2] B27L *1/00*
U.S. Cl. 144—208 R **4 Claims**



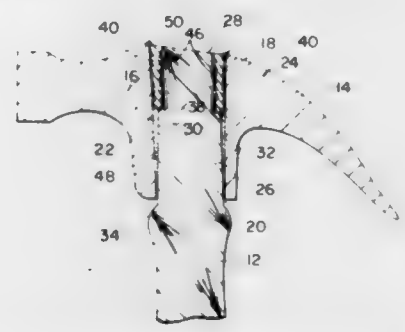
1. Apparatus for debarking of logs, including a loading station, a pressure applying station and a debarking station, and platform means for carrying a stack of logs, said platform means being mounted on wheels via spring suspension means for movement of said stack from the loading station to the pressure applying station and subsequently to said debarking station, said pressure applying station including means for supporting said platform means independently of said wheels and a pressure member with means for causing said pressure member to descend forcefully on a stack of logs on said platform means to subject the sides of the logs to compressive forces sufficient to expel juices therefrom, and said debarking station including means for debarking logs the bark of which has been loosened in said pressure applying station.

4,085,784

IMPACT TOOL AND HANDLE ASSEMBLY THEREFOR

Herbert L. Fish, 6525 Kerns Rd., Falls Church, Va. 22044

Filed Jun. 26, 1975, Ser. No. 590,565
Int. Cl.[2] B25C *1/00*; B25D *1/00*
U.S. Cl. 145—29 R **10 Claims**



1. An impact tool comprising a head and a handle, said head having a tapered eye therethrough extending from an outer opening to a smaller inner opening, said handle having an end portion extending through said inner opening to the vicinity of said outer opening and having a longitudinal notch at at least one side of said handle end portion, said notch having a longitudinal surface extending continuously along said handle end portion from a terminal surface of said handle end portion adjacent to said outer opening to a transverse notch surface on said handle end portion located intermediate the outer and inner openings of the eye, said longitudinal surface of said notch being parallel to an adjacent taper-forming surface of said eye and diverging from the longitudinal surface of the opposite side of the handle end portion so that the notched handle end portion has a taper similar to the eye taper, said handle end portion being small enough to pass through said inner eye opening despite the taper of said handle end portion, the last-mentioned longitudinal surface of said handle end portion being braced by an adjacent surface of said eye, and said notch containing a hard insert filling the space between the longitudinal surface of the notch and the associated taper-forming surface of the eye and terminating intermediate the outer and inner openings of the eye for preventing withdrawal of the handle from the head through the inner opening of the eye.

4,085,785

INFLATABLE COOLER CONTAINER

Eric F. Hoot, Cambridge, Canada, assignor to The Raymond Lee Organization Inc., New York, N.Y., a part interest

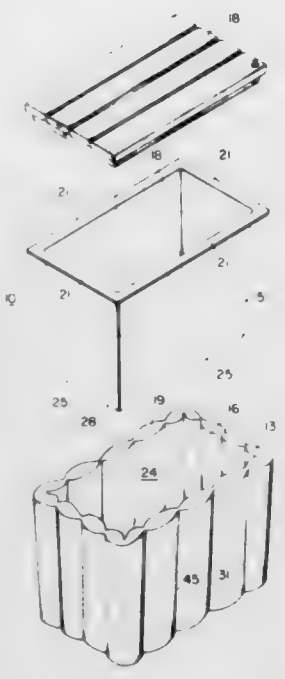
Filed Oct. 4, 1976, Ser. No. 729,280
Int. Cl.[2] B65D *31/04*
U.S. Cl. 150—.5 **1 Claim**

1. A collapsible inflatable container for use, when inflated, as a thermal insulated container in the form of an inflatable box structure, open to the top, fitted with a removable inflatable cover, in which

the box structure is formed of a continuous flexible inner side wall joined to an inner flexible bottom wall, and a continuous flexible outer side wall joined to an outer flexible bottom wall, with the said inner side wall joined to the said outer side wall by a continuous top edge wall, and with an inlet valve mounted in a said wall for use in inflat-

ing with air the spacing between said inner and said outer walls, and in which

the cover is formed with a continuous flexible outer wall joined to a continuous flexible inner wall by a flexible end wall, with said end wall shaped so as to form a flanged wall section of a shape to detachably fit over the top edge wall of the box structure and about an adjoining portion of the inner side wall of the inflated box structure, when the



interior spacing between the said cover outer and inner walls are inflated with air, together with valve means fitted to the cover for inflating said interior spacing,

together with a plastic liner shaped as a pail of a size to detachably fit inside the said box structure and formed with a flange shaped to fit between the adjacent surfaces of the box structure and the cover, in the installed position of the liner and inflated cover to the inflated box structure.

4,085,786

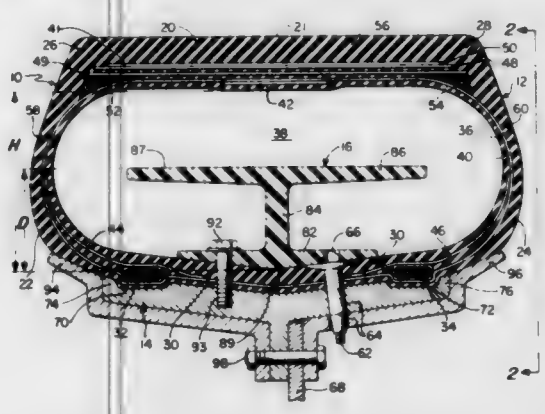
INTEGRALLY BUILT AND CURED TIRE AND WHEEL ASSEMBLY

Vito A. Caravito, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 19, 1975, Ser. No. 633,534

Int. Cl.² B60C *5/00*

U.S. Cl. 152—158 **17 Claims**



1. An integral pneumatic tire and rim assembly in which said tire is of a closed torus contruction and has at least one carcass ply that is joined in the tread area to provide a circumferential splice, a circumferentially extending tread portion, said splice disposed centrally in said tread portion of said tire, a radial inner wall engaging the rim and a pair of sidewalls connecting the respective axial outer edges of the tread and radial inner wall; and said rim is an annular unitary rigid member, said assembly being further characterized by an annular unitary rigid means disposed in the cavity of a tire adjacent said radial inner wall, said annular unitary rigid means having a clamping member, an annular support member which extends circumferentially about said tire and radially outward of said clamping member and a generally cylindrical support member for supporting the tread when the tire is run in an uninflated condition and means extending between and connecting said clamping member and said rim to clamp said tire on said rim.

4,085,787

PNEUMATIC TIRE FOR A VEHICLE HAVING A RADIAL CARCASS AND IMPROVED BEADS

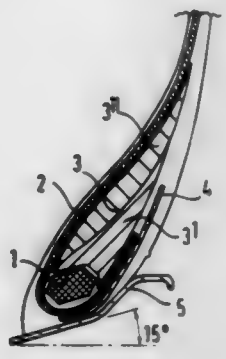
Luigi Maiocchi, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Jul. 12, 1976, Ser. No. 704,580

Claims priority, application Italy, Jul. 23, 1975, 25657 A/75

Int. Cl.² B60C *15/06*

U.S. Cl. 152—362 R **9 Claims**



1. In a pneumatic tire for vehicle wheels, provided with a radial carcass, in which each bead comprises at least a bead core of metallic wires around which carcass fabric plies are turned up, a filler having an approximately triangular elongated section arranged on each bead core, and at least a reinforcement element arranged within the axially external area of the bead and external to the turn-up of said carcass plies, consisting essentially of a metallic cord fabric strip, radially extending from a point located at about the height of said bead core up to an external point of the rim flange and to the end of the carcass ply turn-up, said filler being constituted, at least in its portion facing said reinforcement, of a compound having a hardness between 70° and 80° Shore A; the improvement wherein

said compound of hardness between 70° and 80° Shore A has a modulus at 100% (CAl) of between 65 and 85 Kg/cm²; and

said reinforcement consists essentially of metallic cords of high elongation lang-lay type, the rigidity of said reinforcement resulting from the number of said cords per cm in the fabric and their angle of inclination to the circumferential direction of the tire, said angle of inclination being between 15° and 45°, whereby the rigidity of said filler throughout and the rigidity of said reinforcement are so combined with each other that they give rise to a tire bead having a constant rigidity gradient varying from point to point in a substantially continuous manner.

4,085,788

REINFORCING MEANS FOR ROLL-UP SHUTTER

Richard Gregory Bernardo, 1230 S. Dixie Hwy., East, Pompano Beach, Fla. 33060

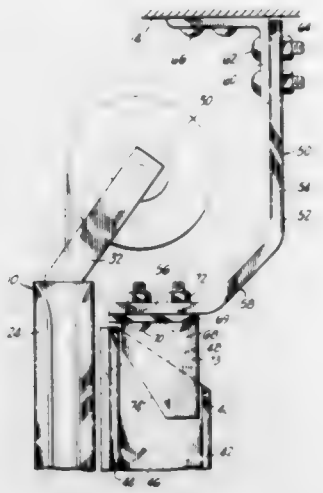
Continuation of Ser. No. 546,039, Jan. 31, 1975, abandoned. This application Jul. 1, 1976, Ser. No. 701,953

Int. Cl.² E06B *9/08*

U.S. Cl. 160—133 **9 Claims**

8. In combination with a roll-up shade closure assembly mounted within an opening in a wall of a building, said closure assembly in said opening includes side frames, a floor frame connected to said side frames, and an articulated, horizontally slatted, roll-up shutter connected adjacent the top of said side

frames, and said opening having a top barrier portion, side walls, and a bottom barrier portion; a detachable interlocking vertically disposed reinforcing beam with an upper end portion and a lower end portion disposed in said opening in close proximity with said shutter; first attaching means includes a connecting member, a slotted means carried by said connecting member and means securing one end permanently to said top barrier portion between said side frames for detachably interlocking said upper end of said beam to said top barrier portion of said building and second means for locking said lower end of said beam to said floor frame, said beam solely supported by said first means and second means to provide additional independent support of the shutter.

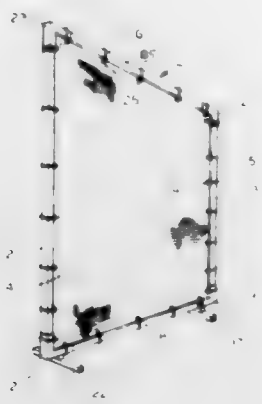


4,085,789

MODULAR WELDING SCREEN APPARATUS

Robert J. Steiner, Highland Park, and John Kuzelka, Itasca, both of Ill., assignors to Steiner Industries, Inc., Chicago, Ill.

Filed Jul. 27, 1976, Ser. No. 708,710
Int. Cl.[2] A47G *5/00*
U.S. Cl. 160—135 **11 Claims**



1. A modular welding screen apparatus for shielding welding work locations comprising:

a plurality of welding frame panel sections,

each of said welding frame panel sections constructed of a plurality of substantially square-shaped horizontal and vertical tubular frame means connected in a substantially rectangular arrangement;

a plurality of interchangeable pivot connection means capable of alternative attachment and removal from said panel sections in a facilitated manner,

said plurality of pivot connection means pivotally hinging three or more of said plurality of welding frame panel sections together as desired for substantially free pivotal movement therebetween,

one or more of said tubular frame means providing means along the top and bottom ends of said panel section for attachment thereto of said pivot connection means;

each of said pivot connection means including a rigid connecting member directly spanning the distance between said respective ends of said respectively connected panel sections; and

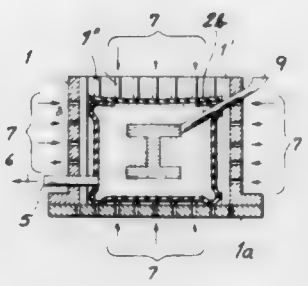
substantially flexible welding curtain means positioned between said horizontal and vertical tubular frame means so as to be generally framed by said horizontal and vertical frame means, thereby providing a protective shield for said welding work location.

4,085,790

CASTING METHOD USING CAVITYLESS MOLD

Adalbert Wittmoser, Lampertheim, Germany, assignor to Grunzweig & Hartmann und Glasfaser AG, Ludwigshafen, Germany

Filed Apr. 30, 1976, Ser. No. 682,037
Claims priority, application Germany, May 2, 1975, 2519463
Int. Cl.[2] B22C *15/20, 9/04*
U.S. Cl. 164—7 **2 Claims**



1. A method of casting a metallic article, comprising the steps of:

providing a cavityless mold bounded by flexible membranes on at least one pair of opposite sides as well as on its top and bottom;

filling said mold with a free-flowing mass of refractory particles;

imbedding in said mass a pattern of vaporizable material conforming to the shape of the article to be cast;

compacting said mass from said opposite sides and from said top and bottom between said membranes by simultaneously exerting upon said membranes an external fluid pressure exceeding the internal pressure of said mold; and

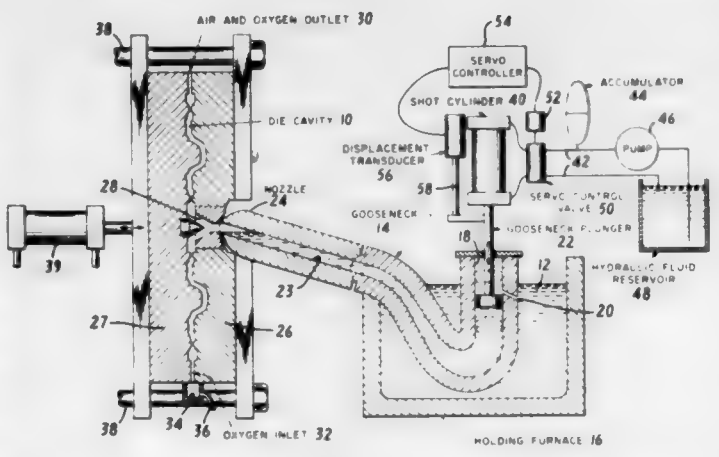
introducing molten metal into said mold in the presence of said fluid pressure for vaporizing said pattern while forming the desired article in its place.

4,085,791

METHOD OF PORE-FREE DIE CASTING

Willard D. Kaiser, Grove City, Ohio, assignor to International Lead Zinc Research Organization, Inc., New York, N.Y.

Filed Jan. 26, 1976, Ser. No. 652,121
Int. Cl.[2] B22D *27/20, 17/04*
U.S. Cl. 164—55 **6 Claims**



1. A method of reducing the pores formed in a material cast in a die cavity by the hot chamber process including a goose-

neck and nozzle combination for filling the die cavity, the method comprising the steps of:

substantially displacing non-reactive gas from the gooseneck and nozzle combination with the material by filling at least a portion of the gooseneck and nozzle combination to a predetermined level with the material;

maintaining the material in the gooseneck and nozzle combination at said predetermined level while purging the die cavity with a reactive gas and thereafter until the die cavity is to be filled with the material; and

filling the die cavity with the material through the gooseneck and nozzle combination whereby substantially no non-reactive gas is forced into the die cavity by the material as the material fills the die cavity, the reactive gas reacting with the material in the die cavity to form a solid compound therewith rather than the pores which non-reactive gas would have formed in the cast material.

4,085,792
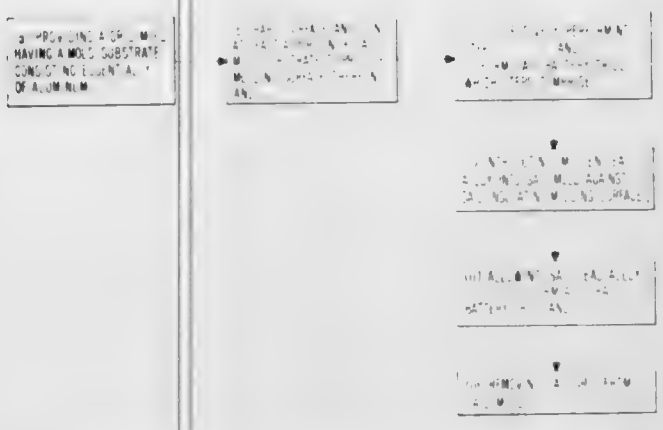
METHOD OF CASTING LEAD ALLOY AUTOMOTIVE BATTERY PARTS

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 618,772, Oct. 2, 1975, Pat. No. 3,980,126, which is a continuation-in-part of Ser. No. 432,545, Jan. 11, 1974, Pat. No. 3,954,216, which is a continuation-in-part of Ser. No. 395,528, Sep. 10, 1973, Pat. No. 3,861,575, which is a division of Ser. No. 184,388, Sep. 28, 1971, abandoned. This application Feb. 19, 1976, Ser. No. 659,572

Int. Cl.[2] B22C *3/00*

U.S. Cl. 164—72 **9 Claims**



1. A method of producing a storage battery grid of uniform thickness comprising the steps of:

(a) providing a grid mold having a mold substrate consisting essentially of aluminum and defining a grid mold cavity comprising a shallow lattice of thin grid strut mold voids having dimensions larger than those of the grid to be cast therein;

(b) hard surface anodizing at least a portion of said mold substrate to produce an insulating molding surface thereon and to reduce the dimension of said grid mold cavity to the desired grid dimensions to be cast therein;

(c) introducing molten lead alloy into said grid mold cavity against said insulating molding surface, said molding surface allowing said molten lead alloy to flow into and fill all of the interstices of said mold; and

(d) allowing said lead alloy to cool to produce a dimensionally uniform storage battery grid comprising a lattice of thin lead struts.

4,085,793

PLATE MOULD HAVING TWO TILTABLY ADJUSTABLE END WALLS

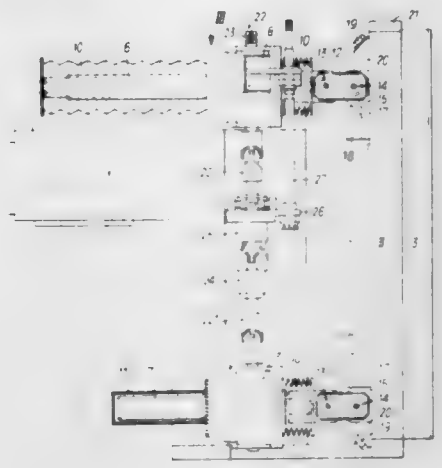
Alois Scheinecker, Linz; Karl Koller, St. Polten, and Günter Holleis, Linz, all of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Nov. 15, 1976, Ser. No. 741,548

Claims priority, application Austria, Nov. 24, 1975, 8908/75

Int. Cl.[2] B22D *11/00, 11/124*

U.S. Cl. 164—436 **6 Claims**



1. In a plate mould, having two tiltably adjustable end walls and two broad-side walls to give the plate mould a rectangular cross-section, for continuously casting steel slabs, and two adjustment drives hinged to opposed end portions of each one of said said two end walls, the improvement which comprises a pair of parallel link plates hinged to a respective one of said two adjustment drives as well as to a respective end wall, to connect each one of said end walls with a two adjustment drives engaging thereat in a four-bar-linkage manner.

4,085,794

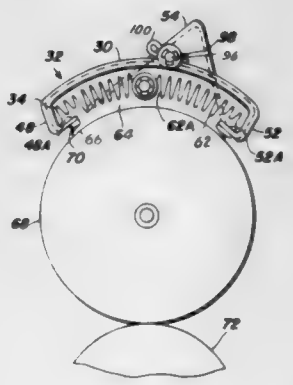
METHOD AND APPARATUS FOR FUSER ASSEMBLY COOLING IN AN ELECTROSTATOGRAPHIC MACHINE

Karl Mueller, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 214,305, Dec. 30, 1971, Pat. No. 3,993,124. This application Jun. 16, 1976, Ser. No. 696,469

Int. Cl.[2] F28F *1/06*

U.S. Cl. 165—1 **3 Claims**



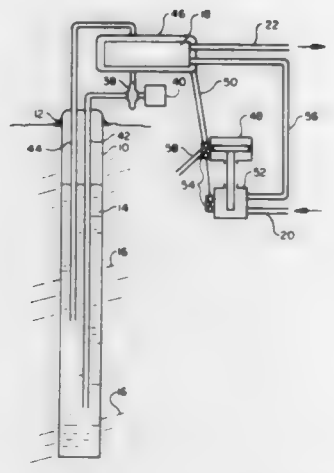
1. A two roller fuser assembly having cooperating pressure and fusing rollers, the improvement comprising heat transfer means for selectively cooling an end portion of at least one of said pressure and fusing rollers.

4,085,795

METHOD FOR USING GEOTHERMAL ENERGY

George Herbert Gill, 1817 W. 21st St., Joplin, Mo. 64801

Filed May 10, 1976, Ser. No. 684,611
Int. Cl.[2] F28D *15/00;* B01J *8/00*
U.S. Cl. 165—45 2 Claims



1. A method for using geothermal energy cmprising the steps of;

immersing a chemical reaction vessel in which a chemical reaction which requires heat is to occur in a geothermal fluid having temperatures sufficient to maintain said chemical reaction;

wherein the step of immersing comprises surrounding said chemical reaction vessel by a jacket and pumping said geothermal fluid through said jacket around said chemical reaction vessel;

inputting the chemical reactants necessary for said chemical reaction to said chemical reaction vessel;

pressurizing said chemical reactants from the natural pressure of said geothermal fluid; and

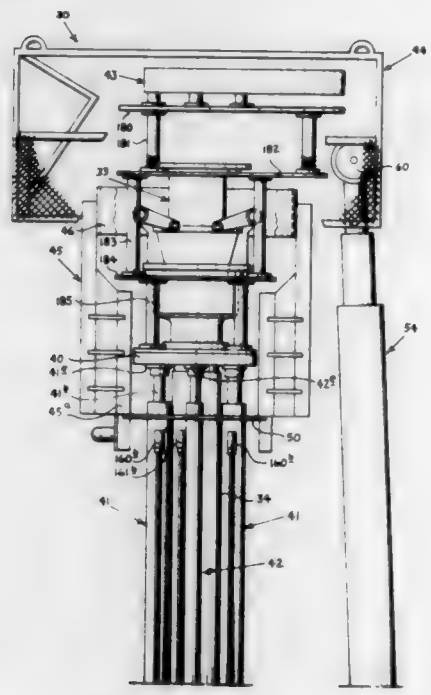
discharging the end product of said chemical reaction from said chemical reaction vessel into a storage container.

4,085,796

WELL TUBING HANDLING SYSTEM

Malcolm N. Council, Richardson, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 16, 1976, Ser. No. 742,331
Int. Cl.[2] E21B *33/03*
U.S. Cl. 166—77.5 19 Claims



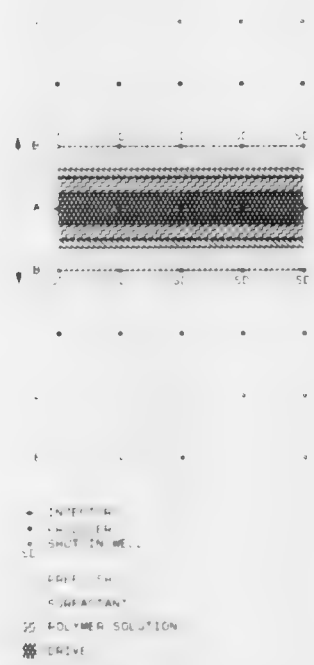
1. A well tubing handling system comprising: stationary gripping means for holding an elongated member being inserted into or removed from a well bore; traveling gripping means axially aligned with said stationary gripping means for engaging and moving an elongated member into and out of a well bore; power means for driving said traveling gripping means toward and away from a well bore including a plurality of hydraulic cylinder-piston units having substantially equal effective operating strokes and different effective cross-sectional working areas; and means for selectively directing hydraulic fluid to one or a combination of said hydraulic units for varying the lifting and snubbing capacity and speeds of movement of said traveling gripping means.

4,085,797

PROGRESSIVE DISPLACEMENT OF RESIDUAL WATER PAST SHUT-IN WELLS PREPARATORY TO TERTIARY OIL RECOVERY

Joseph C. Trantham, Bartlesville, Okla., and Robert F. Meldau, Santa Maria, Calif., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 22, 1976, Ser. No. 752,951
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—245 10 Claims



1. A method comprising:

injecting a preflush fluid through at least one injection well into an underground formation in an oil field having a plurality of wells around said injection well, which oil field has been subjected to a water flood recovery operation;

producing formation fluid from at least one production well spaced apart from said injection well by at least one shut in well located between said at least one injection well and said at least one production well;

thereafter injecting a chemical fluid through said at least one injection well;

thereafter injecting drive fluid through said at least one injection well;

keeping said at least one shut in well shut in until said preflush fluid reaches said at least one shut in well;

thereafter opening said at least one shut in well and recovering oil therefrom; and

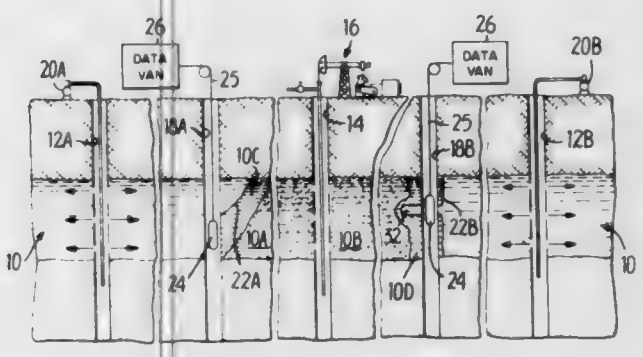
after oil between said at least one injection well and said thus opened at least one shut in well has been essentially depleted, converting said thus opened well to a new preflush injection well, shutting in said at least one injection well and repeating the above steps at wells spaced further apart from said at least one injection well.

4,085,798

METHOD FOR INVESTIGATING THE FRONT PROFILE DURING FLOODING OF FORMATIONS

Jeffrey S. Schweitzer, Ridgefield, and Ralph M. Tapphorn, Danbury, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 15, 1976, Ser. No. 750,846
Int. Cl.[2] E21B *47/00*; G01V *5/00*; G01T *1/00*
U.S. Cl. 166—252 26 Claims



1. A method of investigating in situ the profile of a flood front in an oil-bearing earth formation as it progresses through the formation towards a producing well communicating with the formation from a plurality of injection wells traversing the formation and spaced about the periphery of the producing well, comprising the steps of:

adding a tracer element to the flood fluid injected through each injection well, each tracer element having a characteristic gamma ray emission energy which differs from that of the other tracer element or elements, at least one of the tracer elements being a normally stable element which emits gamma rays at said characteristic energy when irradiated with nuclear radiation;

irradiating the formation at each of a plurality of observation boreholes with said nuclear radiation to induce the emission by said tracer element of gamma rays at said characteristic energy, said observation boreholes being located intermediate said injection wells and said producing well;

detecting gamma rays emanating from the formation at each of said plurality of observation boreholes located intermediate to said injection wells and said producing well; and

obtaining, by spectral analysis of the detected gamma rays, an indication of the presence of said tracer elements for use in determining the time of arrival at said observation boreholes of the flood fluids from the respective injection wells.

4,085,799

OIL RECOVERY PROCESS BY IN SITU EMULSIFICATION

Issam S. Bousaid; Alfred Brown, and Thomas W. Norman, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 18, 1976, Ser. No. 742,922
Int. Cl.[2] E21B *43/22, 43/24*
U.S. Cl. 166—272 24 Claims

1. A method for recovering oil from a subterranean, oil containing, permeable formation penetrated by at least one injection well and by at least one spaced apart prodution well, both wells being in fluid communication with the formation, comprising:

(a) injecting into the formation via the injection well an organic liquid which is liquid at formation conditions, having dispersed therein alkali metal particles, the size of the alkali metal particles being less than the size of the major flow channels of the formation; and

(b) injecting water into the formation to displace the organic liquid alkali metal dispersion through the formation to react with water in the formation forming alkali metal hydroxide, hydrogen and generating heat; and

(c) recovering oil displaced by the fluids of steps (a) and (b) from the formation via the production well.

4,085,800

PLUGGING EARTH STRATA

Charles J. Engle, and John H. Runnels, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 7, 1976, Ser. No. 748,336
Int. Cl.[2] E21B *43/24, 33/138*
U.S. Cl. 166—288 11 Claims

9. A process for stimulating the oil production of permeable strata in a subterranean oil-bearing formation whereby the highly permeable strata are plugged by a surfactant-steam mixture prior to steam injection in which the improvement comprises:

preheating the portion of the strata to be plugged by injecting into said portion of the strata a noncondensible gas, the temperature of which is higher than that of the strata, then, while the preheated portion of the strata is at substantially its preheated temperature, injecting the surfactant-steam mixture to plug the highly permeable strata.

4,085,801

CONTROL OF INCOMPETENT FORMATIONS WITH THICKENED ACID-SETTABLE RESIN COMPOSITIONS

Thomas R. Sifferman, and Derry D. Sparlin, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 5, 1976, Ser. No. 739,216
Int. Cl.[2] E21B *33/138*
U.S. Cl. 166—295 17 Claims

1. In a method for controlling an incompetent formation comprising:

(a) admixing to form a mixture consisting essentially of an acid-settable liquid thermosetting resin, a substantially neutral hydrocarbon oil, and an oil soluble acidic catalyst; and

(b) positioning the mixture in contact with the incompetent formation; the improvement comprising:

incorporating in the mixture of (a) sufficient of a quaternary ammonium salt of cellulose sulfate, a quaternary group of said quaternary salt of cellulose sulfate containing at least 16 carbon atoms, to produce a minimum apparent viscosity in the mixture positioned in contact with the incompetent formation of at least 50 cps, but less than 5000 cps at the temperature and pressure prior to positioning and an apparent minimum viscosity at conditions in the locus of the incompetent formation of at least 25 cps.

4,085,802

USE OF THICKENED OIL FOR SAND CONTROL PROCESSES

Thomas R. Sifferman, and Derry D. Sparlin, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Jan. 17, 1977, Ser. No. 760,251
Int. Cl.[2] E21B *33/138*
U.S. Cl. 166—295 19 Claims

1. In a method for controlling an incompetent formation comprising:

(a) admixing to form a mixture consisting essentially of a base-settable liquid thermosetting resin, a substantially neutral hydrocarbon oil, and a basic catalyst; and

(b) positioning the mixture in contact with the incompetent formation;

the improvement comprising:

incorporating in the mixture of (a) sufficient of a carboxy vinyl polymer, a neutralizing agent therefor, and a miscible polar solvent therefor to produce a minimum apparent viscosity in the mixture positioned in contact with the

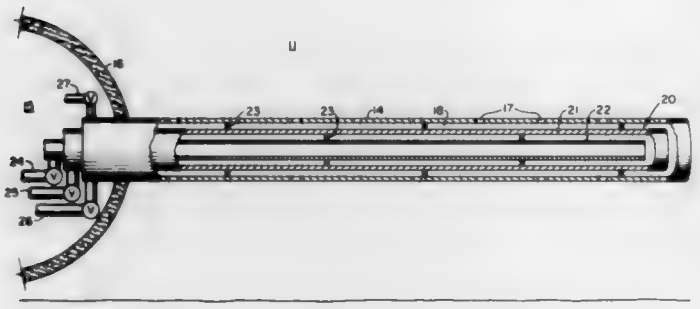
incompetent formation of at least 50 cps, but less than 5000 cps at the temperature and pressure prior to positioning and an apparent minimum viscosity at conditions in the locus of the incompetent formation of at least 25 cps.

4,085,803

METHOD FOR OIL RECOVERY USING A HORIZONTAL WELL WITH INDIRECT HEATING

Roger Moore Butler, Calgary, Canada, assignor to Exxon Production Research Company, Houston, Tex.

Filed Mar. 14, 1977, Ser. No. 777,293
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—303 **16 Claims**



16. In a method for recovering viscous hydrocarbons from a subterranean formation comprising

positioning a perforated conduit substantially horizontally into said formation;

disposing in said conduit a heating means to heat fluids in said conduit;

injecting a fluid into the formation through said perforated conduit;

permitting fluids including the formation hydrocarbons to flow into said conduit;

heating said fluid in said conduit with said heating means to a temperature such that at least a portion of the drained fluid passes into said formation; and

recovering formation hydrocarbons from the formation through said conduit.

4,085,804

WELL TUBING ANCHOR WITH AUTOMATIC SLIP RELEASE

John S. Page, Jr., 10424 Echo River Ct., Fountain Valley, Calif. 92708

Continuation-in-part of Ser. No. 595,561, Jul. 14, 1975, Pat. No. 3,977,473. This application Aug. 30, 1976, Ser. No. 718,916
Int. Cl.[2] E21B *23/04, 40/00*
U.S. Cl. 166—315 **14 Claims**

1. In apparatus to anchor well tubing to well casing,

a. an upright tubular body connectible in series with a well tubing string, there being a wedge surface on the body and tapering axially,

b. slip means movable axially relative to the body and positioned to be urged relatively radially outwardly toward the casing by the wedge surface,

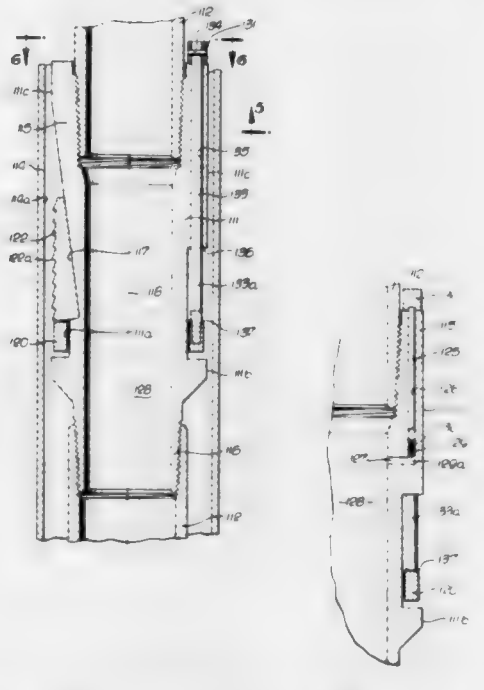
c. piston means carried for axial movement relative to the body, and having piston surface extent exposed to well fluid pressure acting to urge the piston means, and slip means axially as aforesaid, and

d. delay means on the body acting to block said movement of the slip means relative to the body while well fluid pressure exerted on said piston surface extent remains below a predetermined level, and to unblock said relative movement when the well fluid pressure reaches said level whereby the pressure is then operable to effect axial movement of the slip means,

e. there being structure including a rod extending axially of the body to transmit force from the piston means to the slip means.

11. The method of anchoring a pipe string to casing in a well and at an anchor location deep in the well, the anchor including slip means, that includes the steps,

a. allowing fluid to rise in the pipe string above said location and allowing the string to correspondingly elongate downwardly in the well, and



b. utilizing the static pressure of the rising fluid to cause the slip means to move upwardly, for anchoring the string to the casing at said location subsequent to said elongation, thereby to block the string against downward movement only, but allowing the string to move up in the well,

c. producing upward flow of well fluid, while the string is anchored, and

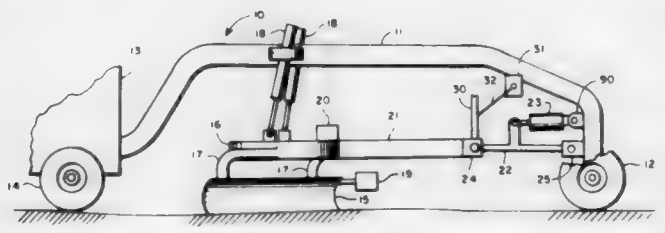
d. maintaining the annulus about the anchor open while said upward production flow is continued.

4,085,805

EARTH WORKING MACHINE WITH ELEVATION CONTROL FOR TOOL THEREOF

Royal R. Hawkins, Bloomington, Minn., and Leland E. Kuntz, Arlington Heights, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 26, 1976, Ser. No. 652,010
Int. Cl.[2] E02F *3/76*
U.S. Cl. 172—4.5 **11 Claims**



1. In an earth working machine having a main frame and a support assembly for supporting an earth working tool to the main frame, a control system for controlling the horizontal orientation of the support assembly comprising:

a cam surface and cam sensor means adapted to be mounted between the main frame and the support assembly, said cam sensor means having a cam follower for following said cam surface to provide a control signal dependent upon deviations of said support assembly from a prescribed horizontal orientation, said cam surface contoured to predetermine the horizontal orientation of said support assembly; and,

control means connected to said cam sensor means by a

circuit means, said control means receiving said control signal through said circuit means to produce an output therefor proportional to said control signal to control the horizontal orientation of the support assembly.

4,085,806

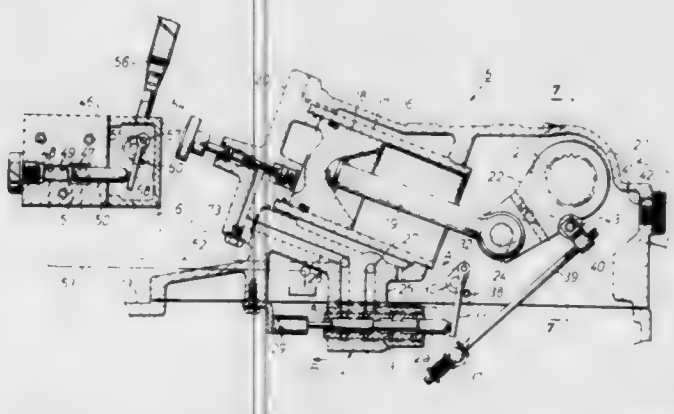
HYDRAULIC CONTROL SYSTEM FOR TRACTOR

Masahide Osujyo; Isamu Yamanishi; Akio Inamori; Kaoru Fujikawa; Noboru Wakabayashi; Seiichi Ikegami; Makoto Okada, and Morimitsu Katayama, all of Sakai, Japan, assignors to Kubota Tekko Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 555,296, Mar. 4, 1975, abandoned. This application Jan. 5, 1977, Ser. No. 757,010

Int. Cl.[2] A01B *63/112*

U.S. Cl. 172—9 **4 Claims**



1. A hydraulic control system for a tractor, comprising hydraulic means for raising and lowering a working implement mounted on the frame of the tractor, a position control valve for controlling the operation of the hydraulic means, a first manual manipulating means, said means for manipulating the position control valve, means for operating the position control valve operable by said first manipulating means, a hitch mounted on the tractor frame to mount the working implement and having a draft force sensing member, a draft control valve, a second manual manipulating means, said means for manipulating the draft control valve, means for operating the draft control valve operable by the said second manual manipulating means, draft feed back means interconnecting the operating means and the draft force sensing member, the manual manipulating means for the position control valve and for the draft control valve being independently operable such that movement of one manipulating means cause no movement of the other manipulating means and being separately provided with, respectively, a bypass communicating with a tank and located in an intermediate portion of an oil passage extending from the position control valve to the hydraulic means for applying oil pressure to the piston of the hydraulic means, the position control valve and the draft control valve being separate from and independent of each other, the draft valve being disposed in the bypass, the draft control valve being operable to completely shut off inflow of working oil into the bypass to thereby render the system operable solely for position control when the draft control valve manual manipulating means is shifted to its raised position, the draft control valve being operable to control return flow of oil to the tank through the bypass in response to variations in draft force when the position control valve manual manipulating means is in its raised position, permitting pressure to act on the piston of the hydraulic means, so that upon a decrease in draft resistance the throttling degree of the draft control valve for the bypass decreases, increasing the return flow of oil to the tank and thereby reducing the pressure on the piston, while upon an increase in draft resistance the throttling degree increases, reducing the return flow of oil to the tank and thereby increasing the pressure on the piston.

4,085,807

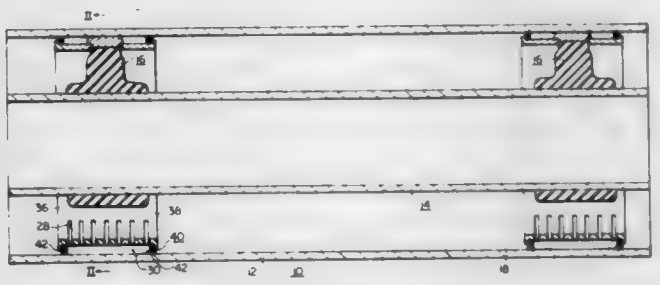
GAS-INSULATED TRANSMISSION LINE WITH CLOSED PARTICLE TRAP

Philip C. Bolin, Westborough, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 16, 1977, Ser. No. 797,097

Int. Cl.[2] H01B *9/04*

U.S. Cl. 174—14 R **10 Claims**



1. A gas-insulated transmission line comprising:

an elongated outer sheath;

an elongated inner conductor disposed within said outer sheath;

an insulating gas disposed within said outer sheath and electrically insulating said inner conductor from said outer sheath;

means for insulatably supporting said inner conductor within said outer sheath;

an apertured trapping member disposed within, and electrically connected to, said outer sheath, said trapping member being spaced-apart from said outer sheath at least at some portion thereof and forming a low field region therebetween for the entrapment of particles therein, said trapping member having first and second longitudinal end portions; and

first means connected to said trapping member first end portion and said outer sheath for prohibiting the movement of particles from said low field region to outwardly longitudinally beyond said first end portion.

4,085,808

SELF-DRIVING AND SELF-LOCKING DEVICE FOR TRAVERSING CHANNELS AND ELONGATED STRUCTURES

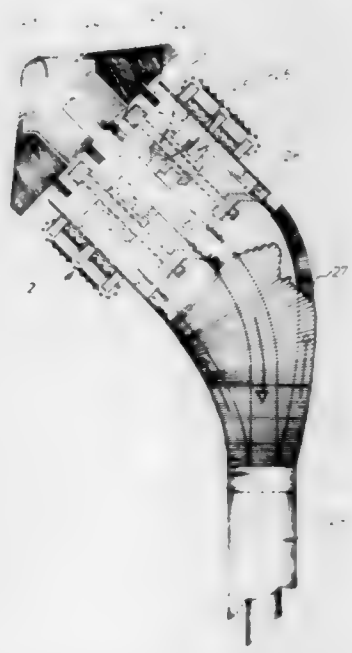
Miguel Kling, Seestrasse 38, 8131 Berg, Germany

Filed Jan. 28, 1977, Ser. No. 763,671

Claims priority, application Germany, Feb. 3, 1976, 2604063

Int. Cl.[2] E21C *7/00*

U.S. Cl. 175—94 **32 Claims**



1. A self-driving and self-locking device for traversing the

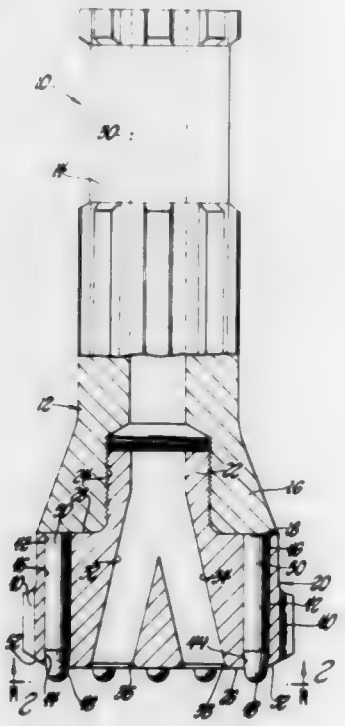
inner walls of channels enclosed on all sides, or for traversing the outer casing of structures with a substantially constant cross-section over their lengths, and for affixing itself thereon, comprising a frame, propulsive elements disposed on said frame and individual drive means for each of said propulsive elements to produce movement in the desired direction of movement of said device, said propulsive elements being distributed about the outer or inner circumference relative to a longitudinal axis coinciding substantially with the direction of forward movement and adjustable with respect to the longitudinal axis in a substantially radial direction relative to said frame to adapt to the contact surfaces in the channel or on the elongated structure.

4,085,809

RECONDITIONABLE DRILL BIT ASSEMBLY

Robert Lovell, 224 Burning Tree Dr., Naples, Fla. 33940, and John K. Stott, 16 Glen Edyth Place, Toronto, Canada

Filed Jan. 10, 1977, Ser. No. 757,928
Int. Cl.[2] E21C *13/00*
U.S. Cl. 175—410 **4 Claims**



1. A reconditionable drill bit assembly comprising: a drill bit body including means at one end for attaching the assembly to a drill string and a thrust face at the opposite end and a head section separably connected to said drill bit body; said head section including a working face and an opposite rear face engaging said thrust face and a plurality of bores extending through said head section and opening on said working face, said bores including a tapered seat portion adjacent said working face and a generally cylindrical section extending from said seat portion to said rear face, a tapered carbide cutting insert seated in said seat portion and a back-up pin located in said cylindrical section engaging the inner end of said cutting insert and said thrust face to hold said cutting insert in place whereby said cutting inserts are replaceable by separating said head section from said drill bit body and removing said back-up pins and said cutting inserts through said cylindrical sections of said bores.

4,085,810

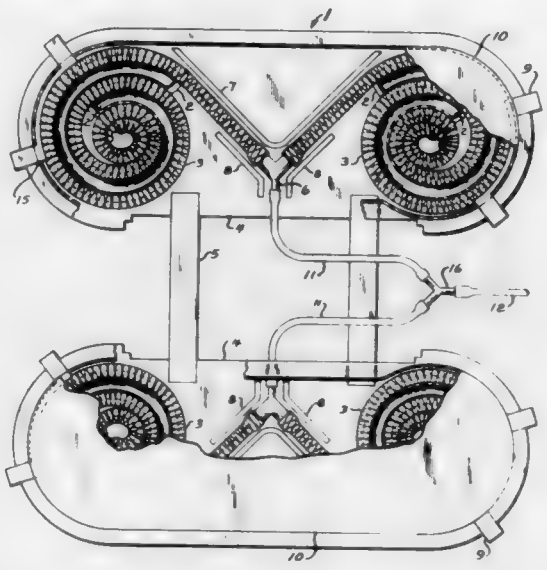
WEIGHT BEARING TREADLE

Lester R. Wellman, 110 Lakewood Pl., Highland Park, Ill. 60035

Filed Dec. 13, 1976, Ser. No. 749,773
Int. Cl.[2] G01G *5/04*
U.S. Cl. 177—209 **10 Claims**

1. A weight-bearing treadle having at least one substantially rigid horizontal plate and comprising, in cooperative relationship:

(a) a reinforced, first flexible tube (i) disposed upon said horizontal plate and adapted to react compressively to a



weight, and, (ii) sealed at one end thereof and connectable at the other end to a weight-read-out means; and,

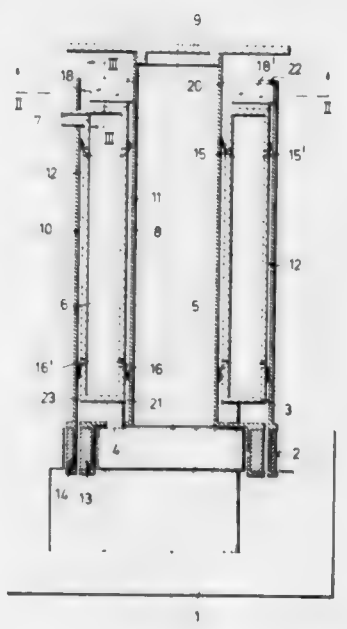
(b) a second flexible tube (i) sealed at both ends thereof and, (ii) in contiguous side-wall support relationship with at least a portion of said first flexible tube.

4,085,811

ELECTROMAGNETICALLY COMPENSATING BEAMLESS DYNAMOMETER OR WEIGHING DEVICE

Knothe, Erich, Eddigehausen; Christoph Berg, and Eberhard Stadler, both of Goettingen, all of Germany, assignors to Sartorius-Werke GmbH und. vorm. Goettinger Praezisionswaagenfabrik GmbH, Goettingen, Germany

Filed Aug. 3, 1976, Ser. No. 711,368
Claims priority, application Germany, Aug. 11, 1975, 2535758
Int. Cl.[2] G01G *21/10, 7/00*
U.S. Cl. 177—210 EM **19 Claims**



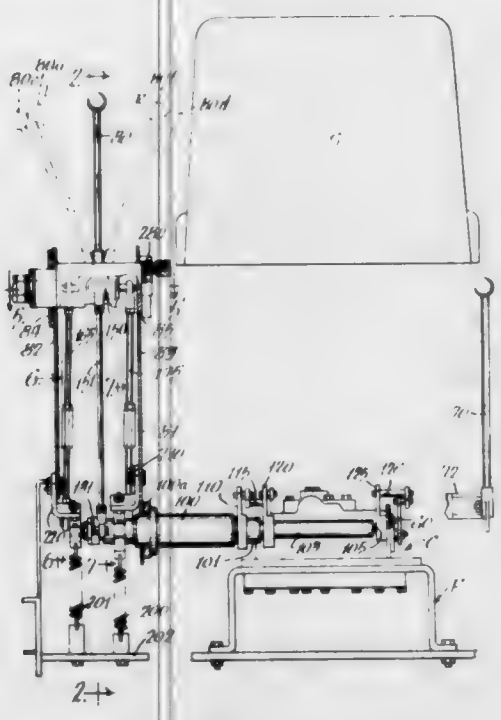
1. An electromagnetically-compensating beamless dynamometer or weighing device which comprises a fixed magnet, a working gap provided by said magnet, a coil movable within said working gap, and an arrangement for guiding movement of said movable coil relative to said fixed magnet, said guiding arrangement comprising a fixed guiding cylinder and an air-mounted slidable sleeve connected to said coil, said cylinder and sleeve forming an air bearing, and wherein the slidable sleeve has a transverse element which rests, substantially without friction in a recess in the guiding cylinder.

4,085,812

ACTUATOR SYSTEM FOR DUAL PATH TRANSMISSION

William J. Robinson, and Harold G. Martin, both of Ames, Iowa, assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 24, 1976, Ser. No. 744,937
Int. Cl.[2] B62D *11/04*
U.S. Cl. 180—6.48 23 Claims



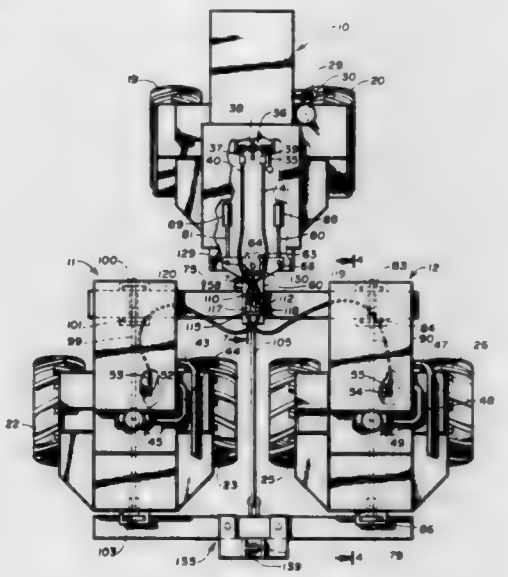
21. A single lever actuator system for speed and steer control of a vehicle such as a crawler tractor or the like having a pair of independent hydrostatic transmission units including at least one variable displacement power unit having a displacement control responsive to a hydraulic control pressure, a control console having a ratio valve and a pair of steer valves mountable on the vehicle and in hydraulic communication with said variable displacement means for the hydrostatic power units, a control station at a location remote from the control console and having a manually operable control lever movable about one axis for setting a uniform speed as well as forward or reverse travel direction for the transmission units and movable about another axis for establishing a turn for the vehicle, three separate motion-transmitting linkages each having a part operatively connected to the control lever and associated one with each of the ratio valve and the pair of steer valves, said motion-transmitting linkages including a series of coaxial rotatable shafts of different lengths extending adjacent the control console and with each shaft having an output arm with there being two shafts and output arms connected one to each of the steer valves and a third shaft and output arm connected to the ratio valve, each of said rotatable coaxial shafts extending to different positions underlying the control station and having an input arm whereby motion applied to an input arm results in rotation of an associated output arm by rotation of the interconnecting rotatable coaxial shaft, a first rod extended between the control lever and an input arm which operates the ratio valve whereby movement of the control lever about said one axis results in movement of the ratio valve to establish a control pressure and a direction of travel for the vehicle, the motion-transmitting linkages for the steer control valves each having a rod extended between the control lever and an associated input arm of said rotatable coaxial shafts; said input arms for the steer control valves being urged by yieldable urging means to a null position against an adjustable stop and with movement of the control lever in one direction about said other axis causing the associated rod to move the associated input arm away from its adjustable stop and against the force of said yieldable urging means; each of the rods of the motion-transmitting linkages for the steer control valves being of a two-part construction with a loose coupling therebetween and having a first part connected to the control lever whereby only one of the rods is operative in one direction of movement of the control lever about the other axis to urge an input arm away from its adjustable stop while the other rod has its first part moving without affecting its associated input arm because of the loose coupling, said control lever in moving about said other axis having a first range of movement in one direction to move a steer valve an amount sufficient to reduce the speed of an associated transmission unit to zero and having a further range of movement for operation of a steer valve to cause the associated transmission unit to operate in the opposite direction and means associated with the rods of the motion-transmitting linkages for the steer valves to impart additional resistance to manual movement of the control lever when said control lever moves into said further range of movement.

4,085,813

THROTTLE CONTROL FOR ARTICULATED TRACTOR WITH MULTIPLE POWER PLANTS

Jerauld D. Joubert, Longmont, Colo., assignor to Steiger Tractor Inc., Fargo, N. Dak.

Filed Nov. 30, 1976, Ser. No. 746,154
Int. Cl.[2] B62D *11/04*
U.S. Cl. 180—14 A 8 Claims



1. A throttle control system for an articulated tractor comprising first, second and third tractor vehicles, each having a rotatable axle, a pair of ground engaging driving elements coupled to said axle adjacent opposite ends thereof, and an engine drivingly connected to said axle to drive said driving elements, said first tractor vehicle also having an operator's compartment, each of said engines having a throttle positioner for adjustably positioning the throttle of the engine for varying the power output thereof,

coupling means for pivotally securing said second and third tractor vehicles to the rear of said first tractor vehicle for pivotal movement with respect to said first vehicle about a generally vertical axis,

a throttle control in the operator's compartment of said first tractor vehicle, means operatively connecting said throttle control to the throttle positioners of each of said vehicles for simultaneous adjustment of each of said throttle positioners in the same power changing direction upon movement of said throttle control,

steering means including a steering control in the operator's compartment of said first tractor vehicle for changing the angular relationship of said second and third tractor vehicles with respect to said first tractor vehicle to temporarily cause an angular relationship to exist between the longitudinal axes of said second and third vehicles and the longitudinal axis of said first tractor vehicle, and

means responsive to such change in angular relationship to affect the relative positions of the throttle positioners of said second and third vehicles so that the engine of the vehicle on the inside of the turn tends to operate at a lower

speed than the engine of the vehicle on the outside of the turn.

4,085,814

MOTORIZED BICYCLE

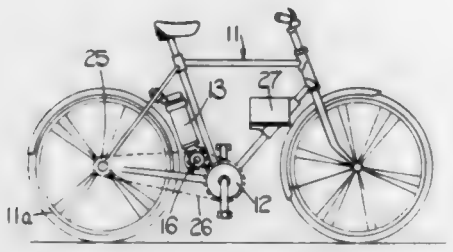
Charles Patrick Duncan Davidson, Droitwich, and Harry Simister Bottoms, Solihull, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jun. 18, 1976, Ser. No. 697,279

Claims priority, application United Kingdom, Jun. 21, 1975, 26449/75

Int. Cl.[2] B62M *7/00*

U.S. Cl. 180—33 C **4 Claims**



1. An electrically assisted cycle including a frame, a ground engaging wheel rotatably mounted on the frame, a rotatable drive member rotatably wound on the frame and arranged to be rotated by the rider of the cycle, an endless, non-extensible flexible member for transmitting motion of said drive member to said wheel whereby rotation of said drive member propels the cycle, an electric drive arrangement and an associated power source carried by the frame, a drive output of the electric drive arrangement being coupled to said wheel whereby said electric drive arrangement can drive the wheel means mounting at least that part of the drive arrangement carrying the drive output on the frame for limited movement relative thereto against the action of a resilient bias, electrical switch means operable in response to movement of said part of said drive arrangement relative to the frame, and the arrangement being such that said part of said drive arrangement is moved relative to the frame, against said resilient bias to operate said switch by the application to said drive member, by the rider of driving force to propel the cycle, said switch means in use being so associated with the electric drive arrangement that the electric drive arrangement cannot be energised unless said switch means is operated.

4,085,815

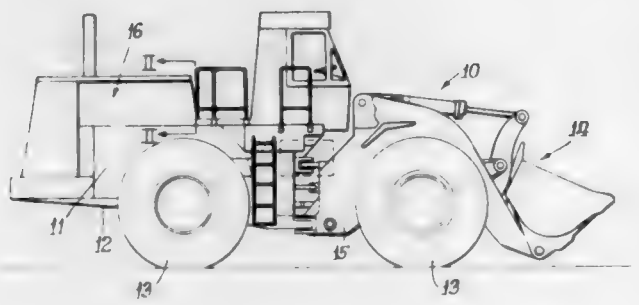
VEHICLE COMPONENT ASSEMBLY

Lindell L. Miller, Plano, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 8, 1976, Ser. No. 674,783

Int. Cl.[2] B60R *27/00*; B62D *25/00*

U.S. Cl. 180—54 R **3 Claims**



1. In a vehicle having a frame, wheels carrying said frame, an engine carried by said frame between a pair of said wheels, a transmission, an engine lubricating system, a plurality of auxiliary structures including an engine lubricant filter, a pilot control system filter, a filler tube having an inlet for delivering lubricant to the lubricating system, and a dipstick having a manipulating portion for indicating the quantity of lubricant in the lubricating system, an air filter for cleaning air to be delivered to the engine, and an engine fuel filter, the improvement comprising: enclosure means above said engine and defining a service space having a side opening, said side opening being disposed to open horizontally to above one of said wheels; means for disposing a majority of the engine lubricant filter, transmission oil filter, pilot control system filter, engine lubricant filler tube inlet, engine lubricant dipstick manipulating portion, engine air filter, and engine fuel filter auxiliary structures in said service space for facilitated servicing of the auxiliary structures therein from adjacent said one wheel; and selectively positionable closure means for providing selective access to substantially only said service space.

4,085,816

HEAT SHIELD FOR AN EXHAUST TAIL PIPE

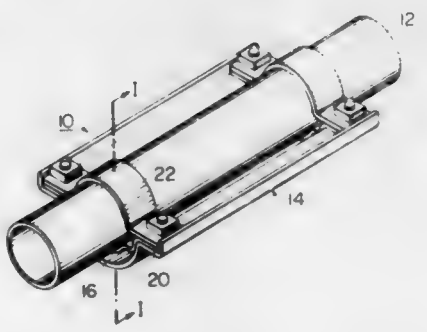
Susumu Amagai; Shizuya Kawai; Hiroyasu Kan, all of Yokohama, and Hideo Aizawa, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Mar. 31, 1976, Ser. No. 672,464

Claims priority, application Japan, Apr. 4, 1975, 50/40921

Int. Cl.[2] B60K *13/04*

U.S. Cl. 180—64 A **5 Claims**



1. For use in a motor vehicle having an internal combustion engine and a body which is spaced from a road surface on which said vehicle stands, a combination comprising:

a cylindrical exhaust tube mounted in use beneath a body of a vehicle to allow the exhaust gases from an internal combustion engine to pass therethrough;

a rectangular heat shielding plate of lesser axial length than said tube provided with a longitudinally extending concave recess having at opposite lateral sides of said concave recess respective step portions extending along the length of the concave recess, the concave recess having a semicircular cross section the radius of which is larger than that of an outer cylindrical surface of said exhaust tube;

at least two axially spaced bridge members each having longitudinal ends respectively connected to said step portions and a middle portion transversely spanning said concave recess, said middle portion being bent toward a bottom of said concave recess to form a round section on which said exhaust tube is disposed in frictional contact therewith, the radius of said round section being smaller than that of said concave recess thereby to define a semicylindrical space between a surface of said heat shielding plate, defining said concave recess and an outer surface of said bridge member whereby a certain semicylindrical air space is defined between said surface of said concave recess and an outer surface of said exhaust tube; and

at least two axially spaced bracket members each having longitudinal ends respectively connected to said step portions of said heat shielding plate and a middle portion covering said exhaust tube and in frictional contact therewith to attach said heat shielding plate to said exhaust tube in such a manner that the bottom of said concave recess is located between said exhaust tube and a road surface when said heat shielding plate is mounted on said exhaust

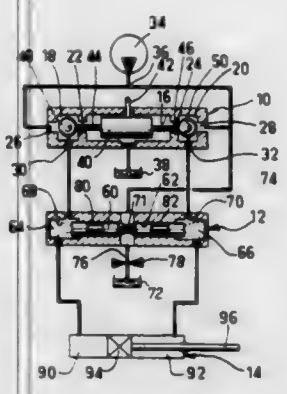
tube and such that said heat shielding plate may move axially relative to said tube.

4,085,817

POWER STEERING DEVICE

Gilbert Kervagoret, Argenteuil, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Aug. 23, 1976, Ser. No. 717,051
Claims priority, application France, Aug. 21, 1975, 75 25864
Int. Cl.[2] B62D *5/08*
U.S. Cl. 180—132 **7 Claims**



1. A hydraulic power steering device for a motor vehicle having a high pressure source and a low pressure source comprising:

a distribution valve communicating with the high pressure source;

a hydraulic assisting motor having a piston which substantially defines a first chamber and a second chamber which communicate with said distribution valve such that movement of said distribution valve increases the pressure in one of said first and second chambers and decreases the pressure in the other of said first and second chambers;

a by-pass passage communicating the high pressure source with the low pressure source; and

means intersecting said by-pass passage, said means being responsive to a pressure differential between the first and second chambers of said hydraulic assisting motor to move relative to the by-pass passage and to control the flow of fluid through said by-pass passage, said means defining a first cross-section area which normally restricts the flow of fluid through said by-pass passage and a second cross-section area which restricts the flow of fluid through said by-pass passage when said means moves in response to the pressure differential between the first and second chambers to dispose the second cross-section area within said by-pass passage, and said means further including a surface for interrupting the flow of fluid through said by-pass passage when said by-pass passage intersects said means between the first cross-section area and the second cross-section area.

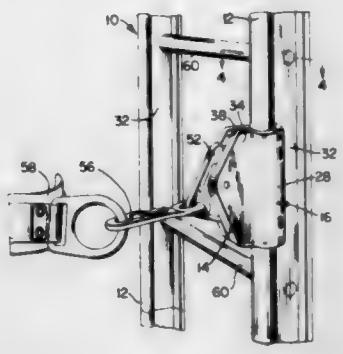
4,085,818

PLASTIC LADDER AND SAFETY DEVICE

William E. Swager, P.O. Box 656, Fremont, Ind. 46737

Filed May 20, 1976, Ser. No. 688,145
Int. Cl.[2] E06C *5/36, 7/08*
U.S. Cl. 182—47 **13 Claims**

1. In combination, a step-ladder having an elongated fiber reinforced plastic rail having a clamp sliding surface shaped to receive a safety clamp, a web extending from and supporting said sliding surface and a base supporting said web and said surface providing clear and free sliding support of said clamp on said surface, a safety clamp sized and shaped to surround and to engage and slide on said rail, said safety clamp having a clamping portion comprising a wide smooth cam-shaped surface evenly bearing in its width against the correspondingly shaped and smooth sliding surface of said rail, said cam surface being alternately positioned to slide easily with said clamp or to bear against and firmly grip the surface of said plastic rail frictionally in a position of clamped engagement therewith, a trigger arm extending from said clamping portion engageable by a rope or chain carried by a climber for easy pull on said trigger arm and clamp to slide said clamp upward or downward on said rail in ascending or descending movement of said climber on said ladder, means above said cam surface biasing



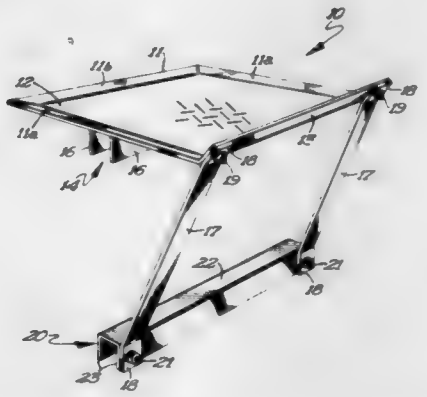
said clamping portion into a clamping engagement of said rail, said pull offsetting said bias sufficient to allow easy sliding movement of said clamp in normal upward or downward movement of the climber, said clamping portion being actuated into firmly clamped engagement with the surface of said rail by rapid downward pull of said rope or chain upon said trigger arm.

4,085,819

PLATFORM ATTACHMENT FOR A LADDER

Rudy Ohnstad, 9010 Old Highway 8, New Brighton, Minn. 55112

Filed May 6, 1977, Ser. No. 794,543
Int. Cl.[2] E06C *7/16*
U.S. Cl. 182—121 **1 Claim**



1. A platform attachment for a ladder comprising:

a substantially flat, generally rectangularly shaped platform having substantially straight longitudinal and transverse edges, the longitudinal and transverse edge portion of said platform being bent upwardly, one of said longitudinal edge portions being bent upwardly at a greater degree than the remaining longitudinal and transverse edge portions to define a lip,

a first elongate channel member including a web portion secured to the lower surface of said platform, and including a pair of legs integral with and depending from said web portion, said channel member having a length corresponding to and extending substantially the width of said platform,

a pair of generally vertically oriented elongate substantially flat stages each having angularly offset end portion of each strap being secured to the lip of said platform,

a second elongate channel member corresponding in size to said first channel member and including a web portion and a pair of legs integral with and depending from said web portion, the other end of each of said straps being secured

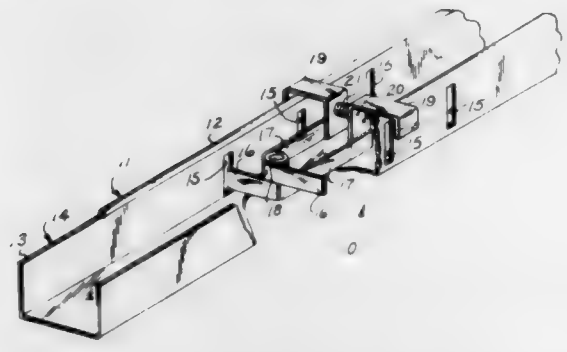
to one leg of said channel member whereby when said first channel member engages one rung of the ladder, the second channel member will engage the next adjacent lower rung to position platform in horizontal relation.

4,085,820

LADDER LEVELER

Louis F. Cerny, 2594 Chase St., Denver, Colo. 80214

Filed Jul. 5, 1977, Ser. No. 813,163
Int. Cl.[2] E06C *7/44*
U.S. Cl. 182—204 **2 Claims**



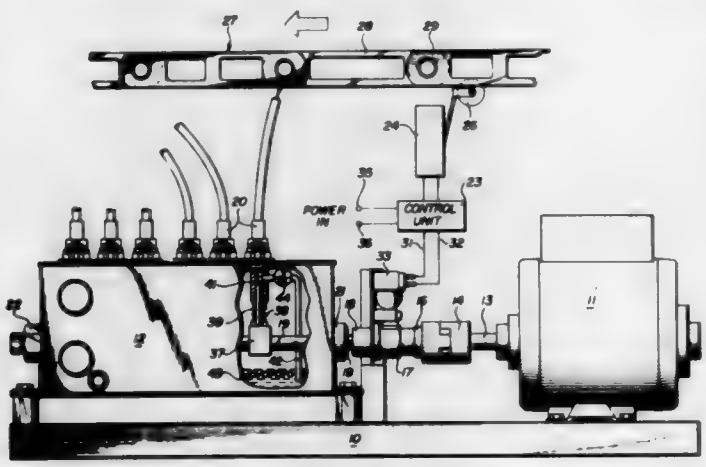
1. A ladder leveler, comprising in combination, a latch mechanism, an inner rail and an outer rail, said rails each being of U-shaped transverse configuration, said inner rail being slidably fitted inside said outer rail, a plurality of equally spaced apart slots along opposite side walls of each said rail, a longitudinal edges of said outer rail being rolled around longitudinal edges of said inner rail; said mechanism comprising a pair of L-shaped arms, an inside corner of each said arm being around a side of a pivot-pin, a short leg of each said arm extending generally in opposite directions, while a long leg of said arms extend generally parallel to each other, a U-shaped member being affixed to an end of said long leg of each said arm, a compression coil spring between said members, whereby squeezing said members together cause the ends of said arm short legs to pivot about said pivot pin so to shorten a distance between said short arm ends, and thus be released from said outer rail slots and allow slide adjustment of said rails respective to each other.

4,085,821

LUBRICATION SYSTEM

Philip J. Kast, Madison, and James F. Schmitt, Marshall, both of Wis., assignors to Madison-Kipp Corporation, Madison, Wis.

Filed Sep. 7, 1976, Ser. No. 720,816
Int. Cl.[2] F16N *7/24*
U.S. Cl. 184—15 A **5 Claims**



1. A lubricating system for delivering a clean shot of a fluid lubricant to a selected point on a moving conveyor or the like, said system comprising:

a positive displacement metering piston pump actuated by a rotatable shaft, said pump being adapted to deliver a predetermined volume of lubricant on each revolution of said shaft;

a single revolution clutch having a driven end and a driving end, said driven end being operatively connected to said shaft of said pump;

an electric motor operatively connected to the driving end of said clutch; and

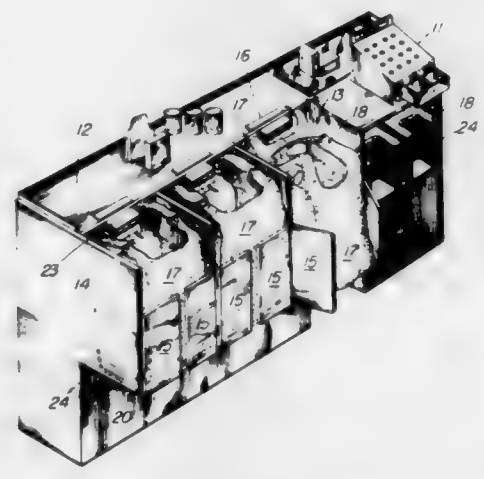
a control system for actuating said clutch to couple said motor to said pump for a single revolution of said shaft when said conveyor has arrived at a predetermined location, whereby said pump delivers a clean shot to a predetermined section of said conveyor.

4,085,822

BAG ASSEMBLY AND METHOD AND APPARATUS FOR LOADING INDIVIDUAL BAGS

Paul V. Osborn, Webster, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 637,801, Dec. 4, 1975, abandoned. This application Apr. 21, 1977, Ser. No. 789,381
Int. Cl.[2] E04H *3/04*
U.S. Cl. 186—1 A **1 Claim**



1. An apparatus to facilitate the bagging of articles comprising a check-out counter having a section with a flat top where articles are placed, a bag stack comprising a plurality of open mouth thermoplastic bags each of said bags having integral handles on opposite sides of the open mouth portion of said bags, said bag being suspended from a location adjacent to and below the top of said counter; a pneumatic device comprising a blower and air plenum chamber provided with an air outlet above and adjacent said open mouth portion of said bags to provide a steady stream of air into the mouth of the outermost of said bags, to open said bag and to maintain said bag in an open position while it is being loaded with said articles; said individual loaded bag being removed from said bag pack by grasping said handles of said loaded bag and positioning said loaded bag at a point removed from said section; said apparatus being further characterized by having a bag support surface which is located adjacent to and slightly above the bottom of said bag stack whereby when individual bags are inflated thereby causing the individual bag bottom to rise slightly when said bag is in an inflated condition said bag bottom will be supported on the said support surface.

4,085,823

ELEVATOR SYSTEM

William R. Caputo, Wyckoff, and John J. De Lorenzi, Manalapan, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 3, 1975, Ser. No. 628,448
Int. Cl.[2] B66B *5/02*
U.S. Cl. 187—29 R **31 Claims**

1. An elevator system, comprising:

a structure,

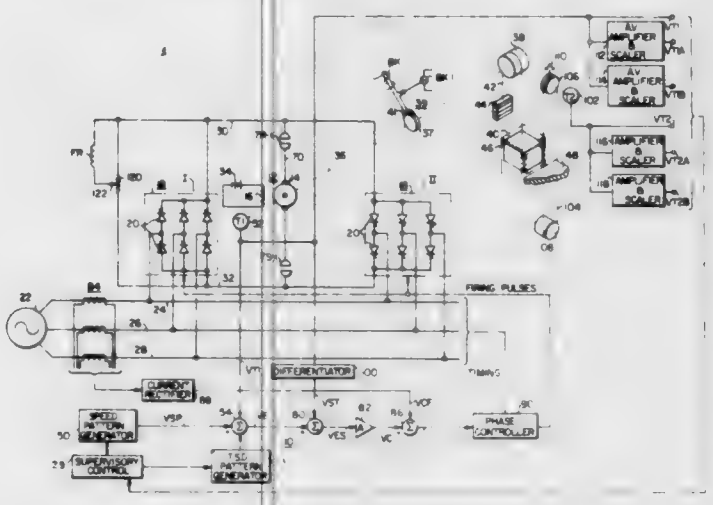
an elevator car mounted for movement in said structure,

motive means including motor means for effecting movement of said elevator car,

control means for operating said motive means, including means providing a speed pattern signal having a magnitude responsive to the desired speed of the elevator car,

means providing a first speed signal having a magnitude responsive to said motor means,

means responsive to said speed pattern signal for providing a response signal indicative of the expected response of the elevator car to the speed pattern signal,



comparator means comparing said first speed signal and said response signal, said comparator means providing a predetermined output signal when the compared signals differ by a predetermined magnitude,

and modifying means for modifying the operation of the elevator car in response to the comparator means providing said predetermined output signal when the elevator car is moving.

4,085,824

WARNING DEVICE FOR FRICTION PAD IN DISK BRAKE

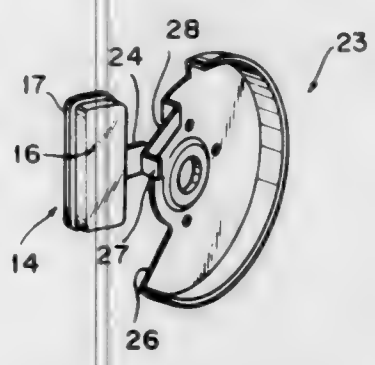
Yoshihisa Nomura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyotashi, Japan

Filed Dec. 21, 1976, Ser. No. 752,863

Claims priority, application Japan, Dec. 29, 1975, 50-176522[U]; Dec. 29, 1975, 50-176523[U]

Int. Cl.[2] F16D *66/02*

U.S. Cl. 188—1 A **4 Claims**



1. A warning device for a friction pad in a disk brake of a vehicle which includes a brake disk, and a pair of friction means which are disposed on the opposite sides of said brake disk and slidable towards said brake disk so as to hold said brake disk therebetween for frictional engagement, said friction means each consisting of a friction pad and a shoe holding said pad, said device comprising:

a resonant member comprising a flat shaped dust cover secured to a body of the vehicle in the vicinity of said brake disk in a manner that said dust cover surrounds said brake disk for protecting said brake disk from mud and dust;

a contacting piece being secured to said resonant member and extending towards one of the side surfaces of said brake disk;

an arm portion being formed on said shoe in one of said friction means and being capable of pressing and contacting piece towards one of the side surfaces of said brake disk when said friction means slides towards said brake disk; and

a plurality of serrations or projecting portions being provided in part of the surface of said brake disk and extending in the radial direction and being arranged in the circumferential direction of said brake disk, said projecting portions being capable of contacting said contacting piece so as to vibrate said piece when said friction pad is worn down beyond a predetermined limit;

the vibration of said contacting piece being amplified by said resonant member due to resonance.

4,085,825

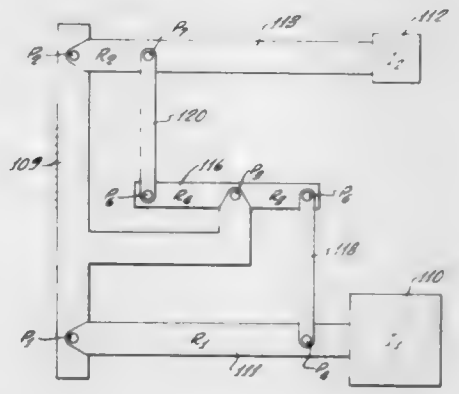
VIBRATORY SYSTEM ISOLATION AND FLEXURE PIVOT

William M. Scarborough, Whittier, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 3, 1975, Ser. No. 564,950

Int. Cl.[2] F16F *7/10*

U.S. Cl. 188—1 B **9 Claims**



1. In a gyroscopic device having a gyro body assembly vibratably rotated with respect to a gyro case, the improvement comprising means for providing vibration isolation between said assembly and said case, said means comprising

a mass member rotatably mounted to said case, and

rigid coupling means interconnecting said gyro body and said mass member for counter-rotating said mass member in synchronism with said body,

said assembly being mechanically tuned to a preselected resonant frequency.

4,085,826

BRAKE WEAR INDICATOR

Irving Ray Ritsema, and John Lewallen Turak, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

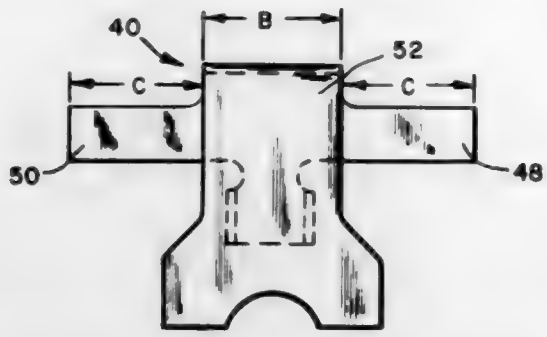
Filed Dec. 13, 1976, Ser. No. 750,105

Int. Cl.[2] F16D *66/02*

U.S. Cl. 188—1 A **1 Claim**

1. In a disc brake having a rotor secured to a rotating portion of an axle housing, a torque member secured to a non-rotating portion of the axle housing and a caliper slidably mounted on the torque member, said caliper cooperating with a pair of friction elements to urge the friction elements into engagement with the rotor, the improvement wherein a brake wear indicator attaches to one of said friction elements, said brake wear indicator comprising a generally U-shaped spring clip defining two substantially parallel legs, one of said legs being secured to said one friction element and the other of said legs having a prong extending therefrom which is engageable with the rotor when said one friction element is worn to a predetermined dimension, said other leg also having a flange extending from

said U-shaped spring clip in a direction normal to the prong, said flange being free to vibrate when said prong is engageable with said rotor to generate an audible signal, and said prong



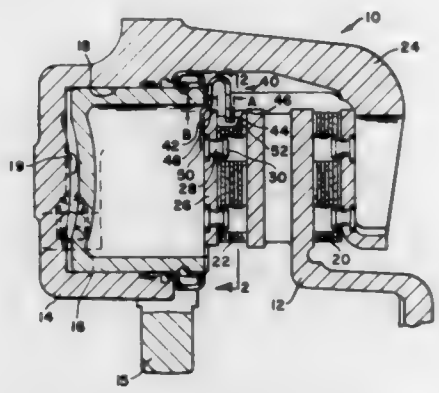
comprising a pair of prongs extending normal to said other leg and said flange comprising a pair of flanges extending from each side of said other leg.

4,085,827

DISC BRAKE WEAR INDICATOR

William J. Kestermeier, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Oct. 22, 1976, Ser. No. 734,907
Int. Cl.[2] F16D *66/02*
U.S. Cl. 188—1 A **1 Claim**



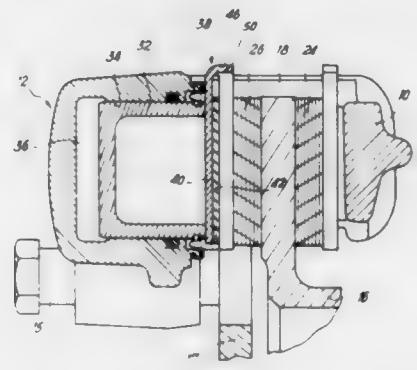
1. In a disc brake having a pair of friction elements that are enageable with a disc during braking, a backing plate supporting one of the pair of friction elements and being movable with the one friction element when the latter is urged into engagement with the disc, and a brake wear indicator attached to the backing plate for providing a warning when the one friction element is worn to a predetermined dimension, the improvement in which said brake wear indicator comprises a U-shaped spring clip which extends from an attachment on one side of the backing plate to the other side, said one friction element having a recess for receiving a portion of said U-shaped spring clip which extends on the other side of the backing plate and said U-shaped spring clip terminating at the portion in a pair of axially outwardly extending prongs which are engageable with the portion of the disc that is engageable with the one friction element when the latter is worn to a predetermined dimension, said backing plate being engageable with a piston cup which moves the backing plate and one friction element toward the disc during braking, said U-shaped spring clip extending radially outwardly past the piston cup around the outer edge of the backing plate between the attachment with the backing plate and the axially outwardly extending prongs, said prongs and attachment being disposed on opposite sides of the backing plate at substantially the same radial position, said U-shaped spring clip including a bend adjacent the connection to the backing plate to remain spaced from the piston cup when the piston cup is engaging the backing plate, and said U-shaped spring clip including at least one recess adjacent the attachment with said backing plate to avoid interfering with the means for supporting the one friction element to the backing plate.

4,085,828

DISC BRAKE AND HEAT SHIELD FOR THE SAME

Alain Thioux, Chennevieres, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Feb. 25, 1977, Ser. No. 772,042
Claims priority, application France, Mar. 16, 1976, 76 07459
Int. Cl.[2] F16D *65/84*
U.S. Cl. 188—71.6 **7 Claims**



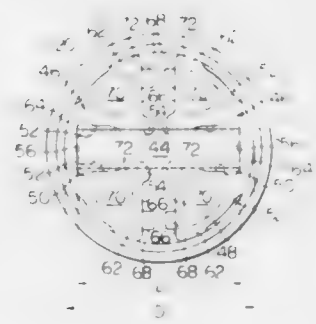
1. A disc brake comprising brake applying means cooperating with a caliper so as to urge two friction pads toward respective faces of a rotary disc, said brake applying means comprising at least one piston mounted in a cylinder and capable of moving toward the disc from an idle position so as to urge one of the pads toward a corresponding face of the disc upon operation of the brake, a detachable heat shield between said piston and said one pad, the shield having at least one layer of thermal insulation, said caliper including an aperture defining two circumferentially spaced edges, each edge defining at least one sliding surface with which the pad cooperates according to the wear on its lining, at least one of said edges also including a recess offset toward the piston relative to the corresponding sliding surface, the dimensions of the recess permitting radial extraction of the pad through the aperture in the absence of the heat shield when the piston is in its idle position and preventing this extraction in the presence of the heat shield.

4,085,829

DISC BRAKE

Kazuaki Shimizu, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Dec. 15, 1976, Ser. No. 750,673
Claims priority, application Japan, Dec. 19, 1975, 50-151291
Int. Cl.[2] F16D *55/228*
U.S. Cl. 188—72.5 **6 Claims**



1. A disc brake comprising:
directly and indirectly operated pads;
a yoke;
an actuator operative between said directly operated pad and said yoke, said actuator including a movable component having a blind bore with a cylindrical wall;
said yoke having a tongue projecting into said blind bore,

said tongue having a rectangular cross section and having two opposed faces;

a pair of insert members of a resilient material in said blind bore between said tongue and said cylindrical wall;

said pair of insert members having grooves, respectively, which receive said tongue, each groove having two spaced sidewalls and a bottom wall interconnecting said sidewalls,

each pair of insert members having a generally cylindrical outer surface engaging said cylindrical wall, a first brace portion interconnecting one of said spaced sidewalls of its groove and the adjacent portion of said part cylindrical surface and a second brace portion interconnecting the other one of said spaced sidewalls of its groove and the adjacent portion of said part cylindrical surface, and

said first and second brace portions of each pair of insert members being constructed and disposed such that they are compressed to bias said sidewalls of the groove of the insert member into firm engagement with said two opposed faces of said tongue, respectively, and to bias said part cylindrical surface into firm engagement with said cylindrical wall of said blind bore.

4,085,830

AUTOMATIC SLACK ADJUSTERS FOR VEHICLE BRAKES

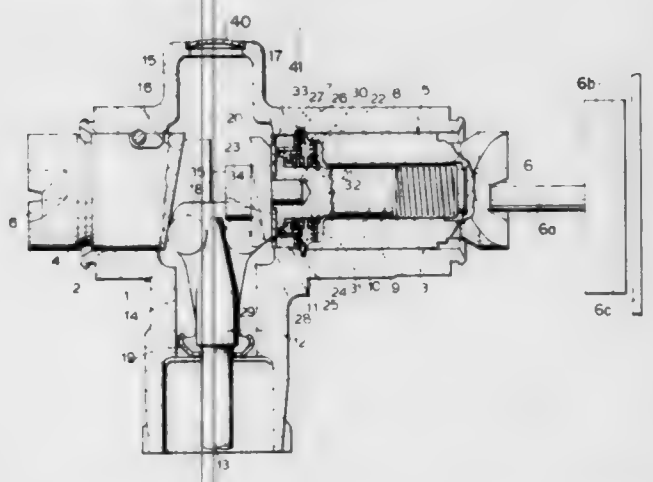
Harry Simister Bottoms, Solihull, and John Richard Archer, Wantage, both of England, assignors to Girling Limited, Birmingham, England

Filed Sep. 24, 1976, Ser. No. 726,119

Claims priority, application United Kingdom, Oct. 3, 1975, 40452/75

Int. Cl.[2] F16D *65/56*

U.S. Cl. 188—196 D **6 Claims**



1. An automatic slack adjuster for a vehicle brake, comprising a strut assembly including at least two parts, a driven ring surrounding one of said parts, adjusting means for controlling the effective length of said strut assembly, said adjusting means comprising an adjuster member acting on said one part through said driven ring, clutch faces provided on said driven ring and said one part, overload spring means urging said clutch faces into engagement so that a reaction between said clutch faces is produced and said driven ring and said part are movable together unless a reaction between said clutch faces exceeds the reaction produced by the loading of said overload spring, means allowing said driven ring to rotate relative to said strut assembly when the reaction exceeds the loading of said spring so as to preclude adjustment at this point, and locking means for locking said adjuster member against movement with said strut assembly in a brake releasing direction beyond a distance necessary to establish a desired braking clearance between a braking member and a rotatable braking surface in said brake, said adjuster member comprising a drive ring which surrounds said driven ring, teeth being provided in the inner peripheral edge of said drive ring, complementary teeth being provided in the outer peripheral edge of said driven ring, said teeth meshing with a degree of lost-motion corresponding to said desired braking clearance.

4,085,831

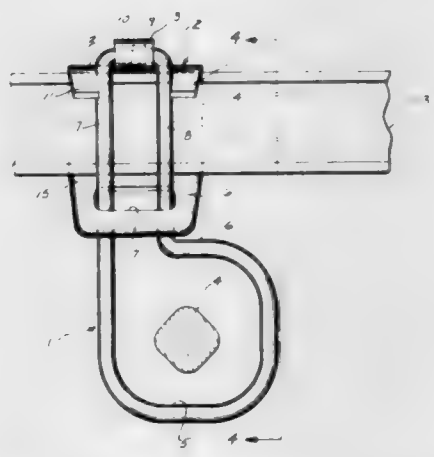
ROD GUARD FOR BOTTOM BRAKE ROD

Herschell H. Hartzell, and Norbert F. Mullaney, both of Milwaukee, Wis., assignors to A. O. Smith Corporation, Milwaukee, Wis.

Filed Apr. 11, 1977, Ser. No. 786,344

Int. Cl.[2] B61H *13/34*

U.S. Cl. 188—210 **5 Claims**



1. A rod guard adapted to be attached to a brake beam member to prevent a loose, disconnected bottom brake rod from falling from a railway car, which comprises a looped hanger formed with a loop at the lower end portion to receive the brake rod assembly and terminating in a pair of horizontally space upwardly extending arms in turn terminating in an inwardly turned horizontal member at the upper end, a clamp having a configuration to be assembled over and encircle the brake beam member to which it is to be secured, with a lower portion disposed to project forwardly of the beam with which it is assembled and having an opening therein, a center tab extending from the upper surface of the clamp and disposed to receive the inwardly turned member of the arms of the hooped hanger and to be reversely bent over the inwardly turned member to secure the looped hanger to the clamp, and end tabs secured to the clamp at either side of the center tab and disposed to be bent over the brake beam member to secure the clamp and the assembled rod guard to the brake beam member.

4,085,832

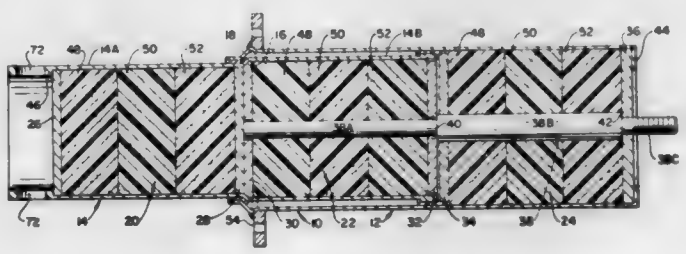
MULTI-CHAMBERED FOAM ENERGY ABSORBER

Donald Raymond Gaines, Farmington, Mich., and Bronco Felex Jelenic, deceased, late of Ann Arbor, Mich. (by Ronald B. Jelenic, administrator), assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Continuation-in-part of Ser. No. 577,277, May 14, 1975, abandoned. This application Jan. 18, 1977, Ser. No. 760,268

Int. Cl.[2] F16F *9/30*

U.S. Cl. 188—268 **6 Claims**



1. A shock absorber comprising a pair of telescoped male and female cylinders each having an outer end portion and a telescoped inner end portion; a rod within and coaxial with

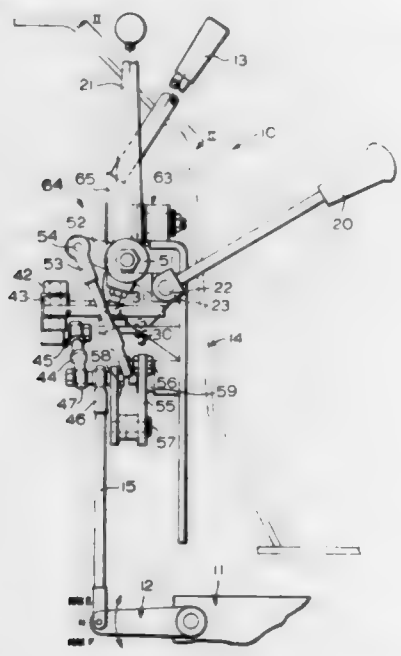
said cylinders, said rod being fixed relative to said female cylinder; each of said cylinders having an inner surface; a first chamber in the outer end portion of said male cylinder, a second chamber within the telescoped inner end portion of said male cylinder, a third chamber in the outer end portion of said female cylinder; said first chamber being defined by a first axial portion of the inner surface of said male cylinder, a first partition affixed to and closing the outer end of said male cylinder, and a second partition disposed slidably within said male cylinder, said second partition being fixed relative to said rod and said female cylinder and having a circumferential edge axially slidably engaging said first portion of said inner surface of said male cylinder; said second chamber being defined by a second axial portion of the inner surface of said male cylinder, a third partition fixed in said male cylinder inwardly adjacent said second partition, and a fourth partition fixed relative to said rod and said female cylinder inwardly of said third partition, said fourth partition having a circumferential edge axially slidably engaging said second portion of said inner surface of said male cylinder; said third chamber being defined by an axial portion of the inner surface of said female cylinder, a fifth partition fixed to and closing said telescoped inner end portion of said male cylinder, and a sixth partition fixed to and closing said outer end portion of said female cylinder, said fifth partition and telescoped inner end portion of said male cylinder having a circumferential edge axially slidably engaging said portion of said inner surface of said female cylinder; said rod having a first end fixed to said sixth partition and a second end disposed in said male cylinder, and compressible foamed plastic material filling each said first, second and third chambers radially to the corresponding inner surface portion of said cylinders defining said chambers and axially between the corresponding partitions of said chambers, inward movement of said male cylinder relative to said female cylinder simultaneously displacing said first, third and fifth partitions respectively toward said second, fourth and sixth partitions, whereby all said material in said first chamber is axially compressed between said first and second partitions, all said material in said second chamber is axially compressed between said third and fourth partitions and all said material in said third chamber is axially compressed between said fifth and sixth partitions.

4,085,833

HYDROSTATIC TRANSMISSION CONTROL

Stamos I. Papasideris, Bristol, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 27, 1976, Ser. No. 754,296
Int. Cl.[2] B60K *41/26*; G05G *11/00, 5/08*
U.S. Cl. 192—4 B **16 Claims**



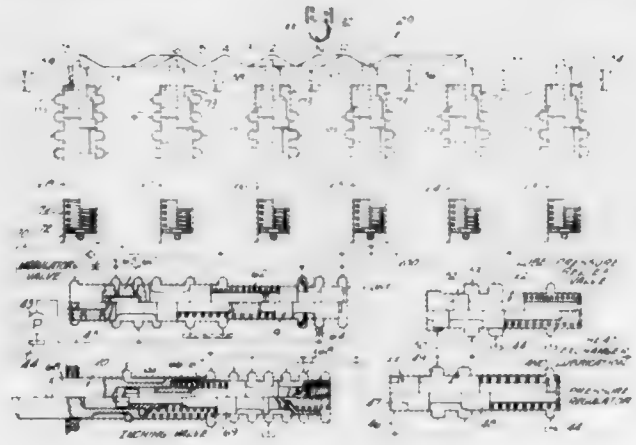
1. In a vehicle drive having speed control means including a movable control element for causing the speed of the drive to vary in accordance with the positioning of said control element, and a manually operable speed lever, the improvement comprising: a manually operable range selector lever; connecting means interconnecting said speed lever and said control element for moving said control element as a function of movement of said speed lever; and adjusting means connected to said range selector lever for causing the amount of movement of said control element resulting from a movement of said speed lever to be any one of a plurality of preselected amounts.

4,085,834

VALVE ASSEMBLY FOR POWER SHIFT TRANSMISSION

Ernest A. Kreitzberg, Mukwonago, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 2, 1976, Ser. No. 710,907
Int. Cl.[2] F16D *25/10*
U.S. Cl. 192—87.13 **10 Claims**



1. A valve assembly for a power shift transmission comprising, a valve body, means adapting said valve assembly for mounting on a transmission housing having an opening for receiving said valve body, means defining a plurality of flow control valves in said valve body adapted for connection to a plurality of hydraulic actuators in the power shift transmission, resilient means normally biasing each of said flow control valves to a closed position, a valve actuator mounted in said valve body for actuating said flow control valves, means defining cammed surfaces on said valve actuator for selectively and alternatively biasing each of said flow control valves to an open position, a valve cover for covering said opening in said transmission and integrally connected with said valve body including means defining pressure control valves including a modulator valve and a pressure regulator valve, a control lever pivotally mounted on said valve cover, a mechanism pivotally connected to said control lever and said valve actuator, detent means selectively positioning said valve actuator in a selected one of a plurality of positions, inlet passage means adapted for connecting to a pump, connecting passage means connecting said inlet passage means to said pressure regulator valve for regulating pressure from said pump in said inlet passage means, said connecting passages connecting said inlet passage to said modulator valve, and flow control passage means connecting said modulator valve to said flow control valves for supplying modulated pressurized fluid through said flow control valves to the hydraulic actuators in the power shift transmission.

4,085,835

LIQUID COOLED CLUTCHES

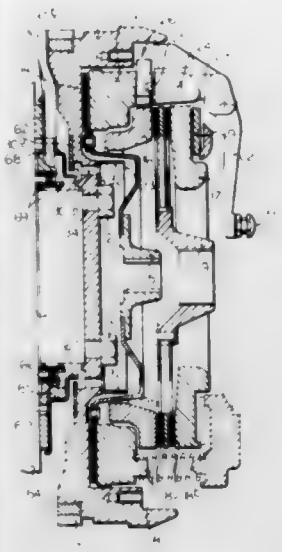
Richard John Bailey, Sheffield, England, assignor to GKN Transmissions Limited, Birmingham, England

Filed Jul. 22, 1976, Ser. No. 707,671
Claims priority, application United Kingdom, Jul. 28, 1975, 31471/75; Jul. 8, 1976, 28385/76; Jul. 8, 1976, 28386/76
Int. Cl.[2] F16D *13/72*
U.S. Cl. 192—113 AB **8 Claims**

1. A clutch assembly comprising a housing, driving and driven plates disposed within said housing and arranged to be

relatively movable between engaged and disengaged positions, a mechanism for effecting such relative movement, and means for establishing circulation of a liquid through the clutch assembly, said means comprising:

a chamber on the housing, said chamber having an open mouth facing generally tangentially in opposition to the



direction of rotation of the driving plate, whereby in use liquid impelled by rotation of the driving plate is caught by the chamber and some part at least of the kinetic energy of such liquid is converted into a static pressure head,

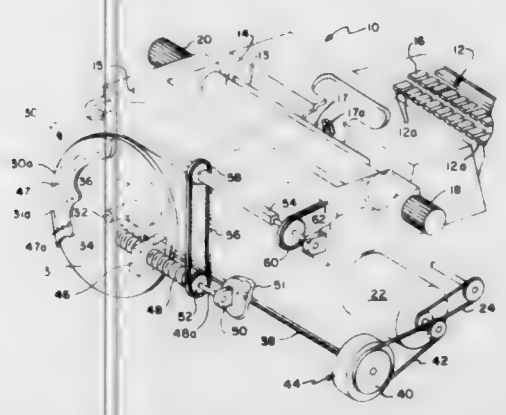
duct means extending from said chamber for carrying liquid therefrom to a required place in the clutch assembly under the influence of said static pressure head.

4,085,836

ROTARY MAGNETIC STORAGE MEDIUM FOR TYPEWRITERS

Michael J. Markakis, Palo Alto, Calif., assignor to SCM Corporation, New York, N.Y.

Filed Nov. 17, 1975, Ser. No. 632,632
Int. Cl.² B41J *5/30*
U.S. Cl. 197—19 **14 Claims**



1. In combination with a typewriter having a keyboard and print members together with a platen for holding and feeding a printing medium to produce printed copy, and including a manually operable key for controlling line feed of the platen:

an indexless magnetic storage medium mounted on said typewriter for rotational movement through plural revolutions,

means defining a large number of spaced storage tracks adjacent one another on said storage medium,

a single transducer effective to enter characters into and read characters from said tracks during the rotational movement of the storage medium,

means mounting said transducer on the typewriter in operative relation to the storage medium,

means for moving said transducer from one storage track to an adjacent track in cooperation with said track-defining means and only in response to line feed of said printing medium,

means operable independently of the rotational orientation of said storage medium and responsive to actuation of the line feed key during a recording operation for recording a variably-located preamble signal and a postamble signal relative to the characters entered in said storage medium, and

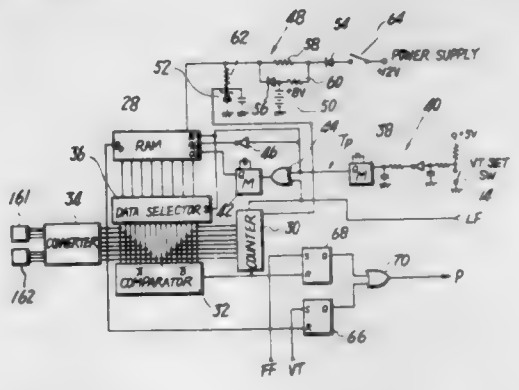
means responsive to receiving the postamble signal during replay operation for actuating line feed of the printing medium.

4,085,837

VERTICAL TABULATION CONTROL FOR HIGH SPEED PRINTER

Rikuo Takano, Musashino; Yutaka Ohta, Kodaira; Yuji Sumitomo, Nara; Yoichi Shimazawa, Yamatokoriyama, and Masahiko Aiba, Nara, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Sharp Kabushiki Kaisha, both of, Japan

Filed May 6, 1976, Ser. No. 683,960
Claims priority, application Japan, May 8, 1975, 50-55694
Int. Cl.² B41J *15/00*
U.S. Cl. 197—133 R **11 Claims**



1. A vertical tabulation control circuit for a high speed printer in which vertical tabulation is achieved by a predetermined number of line feed operations, comprising:

a presettable memory for storing vertical tabulation addresses;

a counter for counting the number of line feed operations;

means for developing a continous line feed termination command when the contents of the counter reach a preset vertical tabulation address;

a power supply;

a power switch for activating said printer by selective interconnection thereof to said power supply; and

a rechargeable battery means interconnected with said power switch, said presettable memory and said counter, which is charged from said power supply when the high speed printer is activated through said power switch, said rechargeable battery means supplying said presettable memory and said counter with a necessary voltage for maintaining their contents when the power supply to said printer through said power switch is terminated.

4,085,838

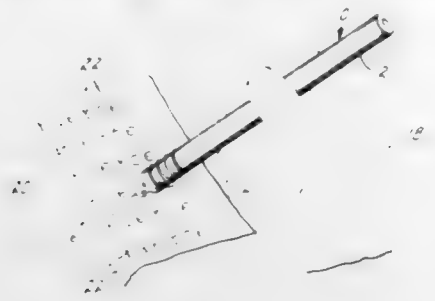
TYPE CORRECTION ARTICLE EMPLOYING ADHESIVES

James N. Pierce, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 14, 1974, Ser. No. 451,111
Int. Cl.² B41J *29/16*
U.S. Cl. 197—181 **10 Claims**

1. An article having particular utility in the corrective removal of typewritten ink characters from typing substrates such as paper, said characters being of the type characterized by greater internal cohesion than external adhesion to said substrates, said article comprising

(a) at least one discriminating adhesive portion comprising a fused blend of 30 to 55 parts by weight vinyl resin and 70 to 45 parts by weight compatible plasticizer, said portion



defining a deformable resilient projection, the surface of said projection having a discriminating affinity for typewriter ink, and

(b) means by which said article can be gripped.

4,085,839

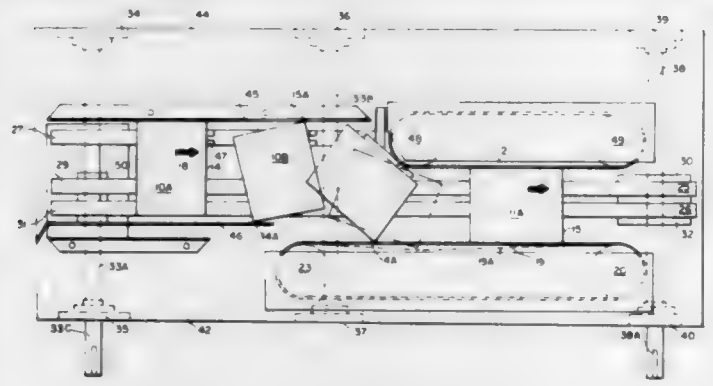
APPARATUS FOR CONVEYING AND TURNING ARTICLES

Lynn D. Crawford, San Jose, Calif., assignor to Genevieve I. Hanscom, Robert M. Magnuson & Lois J. Thomson, Trustees of the Estate of Roy M. Magnuson, all of San Jose, Calif.

Filed Aug. 30, 1976, Ser. No. 719,059

Int. Cl.[2] B65G *47/24*

U.S. Cl. 198—410 **6 Claims**



1. Apparatus for conveying and rotating a train of articles comprising, in combination:

a horizontal platform conveyor for carrying each article forward along a predetermined path;

a bumper positioned in the path of said article to contact a forward corner thereof adjacent a first side of the conveyor to initiate rotation of said article by slowing forward movement of the contacted corner;

a first side facing belt extending on the second side of said conveyor and supported about pulleys driveably rotated about axes extending upward from the plane of the conveyor, said first side facing belt being positioned to contact and guide the side of said article opposite the bumper for continuing the pivoting of the article about the bumper in a controlled manner;

first and second fenders on the first and second sides of said conveyor respectively, said fenders being spaced apart a distance slightly greater than the width of the article as it passes therebetween along the conveyor;

said platform-type conveyor including first and second power driven horizontal belts adjacent said first and second fenders respectively and having a horizontal surface for carrying said articles along said predetermined path;

means for driving said second horizontal belt at a speed greater than that of the first belt so as to initiate rotation of the article prior to contact with the bumper; and

said first and second fenders being spaced apart a sufficient distance so as to limit rotation of the article due to the differential speeds between the first and second horizontal belts prior to the article coming in contact with the bumper.

4,085,840

BAKERY FLEXIBLE BELT CARRYING PLATE

Torahiko Hayashi, Post Ooffice Box 50, 2-3, Nazawa-machi Utsunomiya 320, Japan

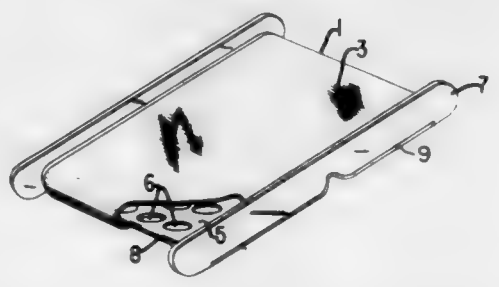
Continuation of Ser. No. 518,951, Oct. 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 213,277, Dec. 29, 1971, Pat. No. 3,844,402. This application Jun. 23, 1976, Ser. No. 698,819

Claims priority, application Japan, Jan. 14, 1971, 46-461172

The portion of the term of this patent subsequent to Oct. 29, 1991, has been disclaimed.

Int. Cl.[2] B65G *47/00*

U.S. Cl. 198—472 **1 Claim**



1. A carrying plate assembly for semimanufactured sticky dough products, such as bread and doughnuts, comprising

a carrying plate assembly adapted to be movingly carried by moving conveyor means by placement on said moving conveyor means,;

said assembly having a substantially rectangular, flat core plate with the top and bottom surfaces of said flat core plate being substantially parallel to each other and an endless flexible belt with laterally extending ridges rotatable around the upper and lower surfaces at the front end of said core plate thereby forming a substantially pointed end at said front end;

said front end of said core plate being acute-angled and said flexible belt being sufficiently thin so as to contact the surfaces of said core plate adjacent to said front end of said core plate;

said front end of said core plate havng a substantially flat upper surface and a sharply receding lower surface;

said carrying plate assembly adapted to be placed on said moving conveyor means independent of any supporting means other than said moving conveyor;

said carrying plate assembly having a bottom plate engaging said moving conveyor means;

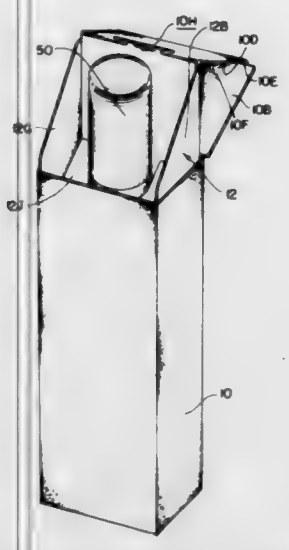
said flexible belt adapted to be turned by frictional contact with means engaging said belt directly when said carrying plate assembly approaches a transfer station, wherein said belt turns from the upper surface to the bottom of said core plate around the front end of said core plate and said belt turns from the bottom surface to the upper surface around the rear end of said core plate;

the configuration of said belt in its cross-section of laterally extending ridges being such that when said belt turns around the front end of said core plate the distance between the outward ends of any adjacent pair of ridges increases to such extent that the dough product thereon becomes separated from the ridges, thereby enabling separation of the dough product from said belt.

4,085,841
CARTON ASSEMBLY

Matsuyama, Glen, Los Angeles, Calif., assignor to Graphic Arts Packaging Corporation, Gardena, Calif.

Filed Apr. 29, 1977, Ser. No. 792,202
Int. Cl.[2] B65D *5/50*
U.S. Cl. 206—45.15 6 Claims

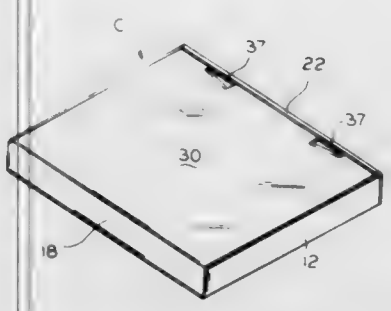


1. A carton assembly comprising: a hollow shell having a rectangular cross-section, a rectangular cover hinged by a scoreline to the rear edge of the upper end of the shell, a first flap hinged by a scoreline to the outer edge of the cover, and a second flap hinged by a scoreline to the outer edge of the first flap, the first and second flaps having a slot therein extending partially along said last-named scoreline; and a hollow insert having a rectangular cross-section slidable in said shell, said insert having a rear wall panel and further having a tab integral with the upper edge of the said insert and extending into said slot to couple the insert to the junction of the first and second flaps with the second flap being positioned against the rear wall panel of the insert and turning with respect to the first flap as the insert is moved within the shell.

4,085,842
GARMENT HANGER BOX

Robert E. Beck, Chicago, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 10, 1977, Ser. No. 757,926
Int. Cl.[2] B65D *85/18*
U.S. Cl. 206—289 1 Claim



1. In a one piece garment container formed from a unitary blank of foldable paperboard including a pair of telescoping sections for holding at least one garment on a hanger having a hook, the combination of:

a. a generally rectangular, relatively narrow common bottom wall;

b. a pair of tray-like sections foldably joined to opposite side edges of said bottom wall and disposed for telescoping relation one within the other, each of said sections including:

i. a side wall;

ii. a pair of opposed end walls;

iii. a top wall;

iv. and said common bottom wall;

c. said side wall of at least one of said sections having a slot formed therein along the top edge thereof;

d. said top wall of at least one of said sections including:

i. a flat upper panel foldably joined at its front edge to the upper edge of said one section side wall;

ii. a relatively narrow, substantially triangularly shaped connecting panel having a straight upper edge foldably joined to one edge of said upper panel and having upwardly diverging lower edges;

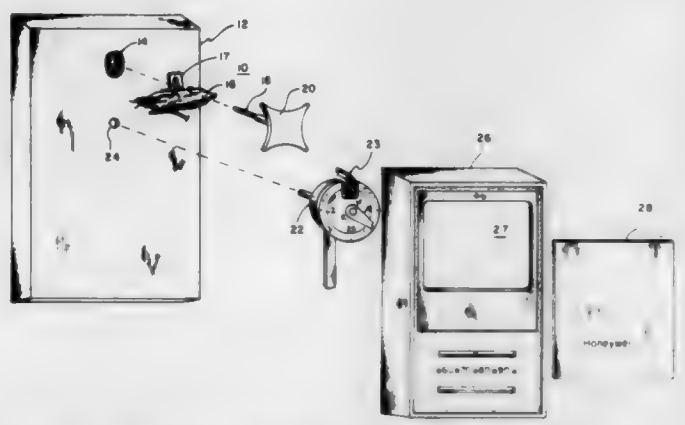
iii. a lower panel having its rear edge foldably joined to the lower edges of said connecting panel and having a locking tab projecting outwardly from its front edge, and a pair of parallel slits centrally positioned in said lower panel to receive said hanger hook;

e. said locking tab being received in said slot to secure said top wall in a closed position and support the garment, whereby the crown of said hanger is located below said upper panel.

4,085,843
THERMOSTAT

John C. Espander, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 6, 1976, Ser. No. 747,834
Int. Cl.[2] B65D *85/00, 85/38*
U.S. Cl. 206—328 6 Claims



1. A thermostat, for mounting on a wall, comprising:

a base, having an aperture therein for mounting to the wall;

a temperature sensing means mounted on said base, and adapted to move with changes in temperature;

switching means mounted on said base, and adapted to operate when said temperature sensing means reaches a predetermined temperature; and

a restraining means removably attached to said switching means and adapted to restrain said switching means during said shipment of said thermostat, said restraining means being positioned in said aperture means to prevent mounting of said base to a surface without removal of said restraining means from said switching means.

4,085,844
STORAGE CONTAINER

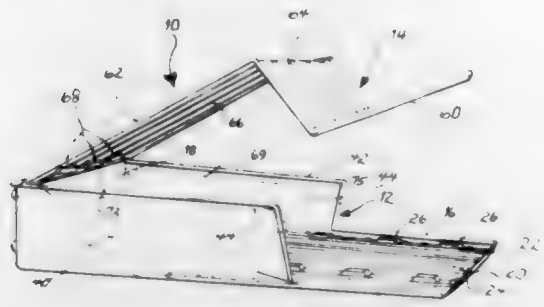
Richard S. Dunchock, 27545 Gateway Dr., Farmington Hills, Mich. 48024

Filed May 5, 1977, Ser. No. 794,054
Int. Cl.[2] B65D *85/68*
U.S. Cl. 206—335 6 Claims

1. An automobile top storage container comprising:

a body having an upright wall contoured to receive and support the roof of an automobile top, said body having a lower inclined wall integral with said upright wall, said inclined wall being contoured to receive and support the rear window portion of said automobile top, said body having side walls extending laterally from the lower portion of said upright wall and integral with said upright wall and said inclined wall, said side walls being con-

toured to receive and support the sides of said automobile top;



a cover having a Z-shaped configuration and received by said body, said cover being contoured to support said automobile top and enclose said top in said body; and

means for releasably securing said cover to said body.

4,085,845

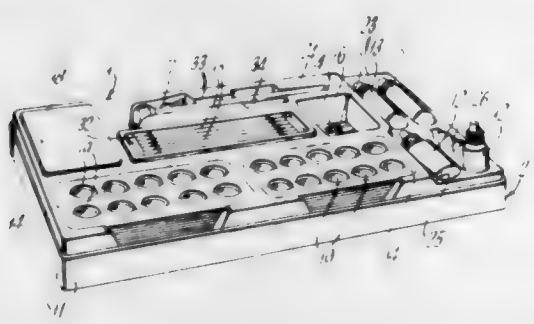
CONTAINER AND UTILITY TRAY

Alan J. Perfect, Allentown, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Dec. 15, 1975, Ser. No. 641,001

Int. Cl.[2] B65D *1/36, 85/62*

U.S. Cl. 206—564 **8 Claims**



1. A combination container and utility tray comprising

an outer container having sides and a bottom,

a tray formed of relatively thin flexible material supported by said container and secured thereto

said tray having a downwardly extending flange around the periphery thereof the width of said flange being greater than the width of the sides of said container and said downwardly extending flange contacting the sides of said container, said tray having a plurality of depressed areas formed therein for holding articles to be used,

at least one of said depressed areas being positioned near one side of said tray and having an access thereto through said downwardly extending flange the bottom of said depressed area being on the same plane as the edge of said flange and the bottom of said depressed area being secured to the bottom of said container,

and at least one of said depressed areas being in the form of a well designed for holding a vial having an upper portion and a lower portion with said well having a shallow portion and a deep portion

the shallow portion of said well having substantially the same configuration as that of the upper portion of said vial and

the deep portion of said well having substantially the same configuration as that of the lower portion of said vial

whereby the vial may be supported in a prone position in the shallow portion of said well and in

an upright position in the deep portion of said well and raised from its prone position to its upright position by pressure on the lower portion of said vial.

4,085,846

CONTAINERS ATTACHED TO PALLETS

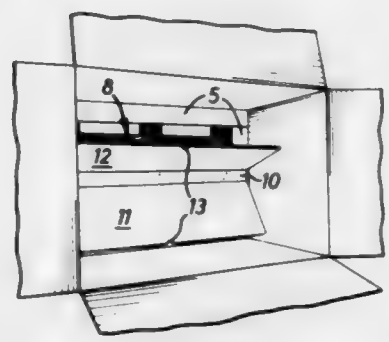
John[1] Williams, Leamington Spa, England, assignor to South Warwickshire Packaging Services Limited, Wellesbourne, England

Filed Feb. 25, 1977, Ser. No. 772,279

Claims priority, application United Kingdom, Mar. 5, 1976, 8957/76

Int. Cl.[2] B65D *19/20*

U.S. Cl. 206—600 **3 Claims**



1. A container assembly an originally separate rigid base;

a body of container board having a substantially continuous rim extending around the lower marginal part thereof,

means defining a notch at each one of a pair of opposed locations on said rim, these two notches opening toward one another;

a floor defined by an intermediate part of container board stock secured to said base and having two opposed side edges, and a flap hingedly connected to each side edge of the intermediate part, the flaps being foldable to a first folded close together position wherein the body can be fitted on the base with each flap passing at the ends thereof through both of the notches in the rim and to a second, spread outwards position wherein the flaps, perimetrically thereof, except at said side edges trap the rim against the base thereby forming the container.

4,085,847

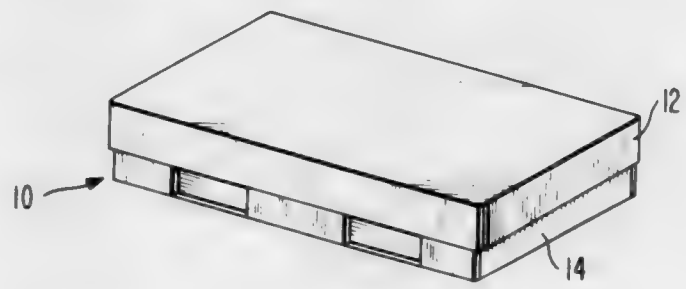
PALLET BOX PACK

Richard P. Jacalone, Owosso, Mich., assignor to Olinkraft, Inc., West Monroe, La.

Continuation-in-part of Ser. No. 744,816, Nov. 24, 1976, abandoned. This application Mar. 4, 1977, Ser. No. 774,477

Int. Cl.[2] B65D *19/20*

U.S. Cl. 206—600 **11 Claims**



1. A pallet box pack comprising

a pallet base including a base member, load carrying means, and supporting spacer means;

said base member having a rectangular bottom panel, a pair of end flaps extending upward from respective opposite ends of the bottom panel, and a pair of side flaps extending upward from respective opposite sides of the bottom panel;

said pair of side flaps of the base member each having lift arm holes formed therein adjacent the bottom panel for receiving lift arms of a fork lift truck;

said supporting spacer means supporting said load carrying means above the bottom panel within the base member

and forming passage means through the pallet base for receiving lift arms of a fork lift truck;

said flaps of the base member having upper portions extending above the load carrying means to form a shallow tray defined by the load carrying means and the upper portions of the flaps of the base member in the top of the pallet base;

a top cover fitting over the pallet base;

a collapsed tube assembly received in the shallow tray of the pallet base underneath the top cover;

said tube assembly including a pair of side wall panels, a pair of end wall panels, and four bottom flanges hinged at a common scoreline to bottom edges of the respective tube wall panels;

said tube side wall panels being connected between the opposite edges of the tube end wall panels at score lines;

said tube side wall panels further having respective reverse scorelines dividing each side wall panel into a pair of half side wall panels folded between the end wall panels;

said bottom flanges on the bottom edges of the tube side wall panels extending substantially the full lengths of the side wall panels;

said bottom flanges on the bottom edges of the tube side wall panels further having the reverse scorelines extending thereacross and being folded with the tube side wall panels; and

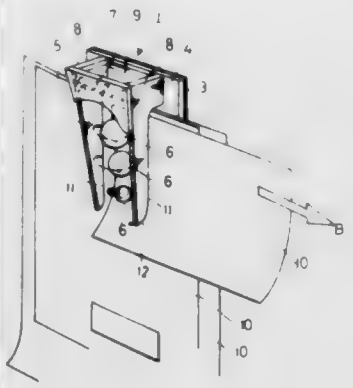
said tube assembly being adapted to be erected to form with the pallet base and the top cover a receptacle for bulk material.

4,085,848

HOLDER DEVICE FOR SUSPENDING ARTICLES SUCH AS PAPER AND THE LIKE

Kenji Tsuge, 1-3-16 Higashi Kaigan Tsujido, Fujisawa City, Japan (251)

Filed Sep. 12, 1977, Ser. No. 832,107
Claims priority, application Japan, Jan. 10, 1977, 52-753
Int. Cl.[2] A44B *21/00*; A47F *7/16*
U.S. Cl. 211—45 **10 Claims**



1. A holder device for suspending articles comprising:

a back plate,

a front plate,

a top plate and a pair of side plates joining said front and back plates together, a slot being formed between said back plate and a portion of said side plates, said front plate being inclined towards said back plate in the direction running from said top plate to form a ramp,

said top, front, back and side plates forming a receptacle,

a plurality of balls retained in the receptacle formed by said plates in a series arrangement along the ramp formed between said front and back plates, and

means for mounting said holder with said back plate running at a downward verticle angle,

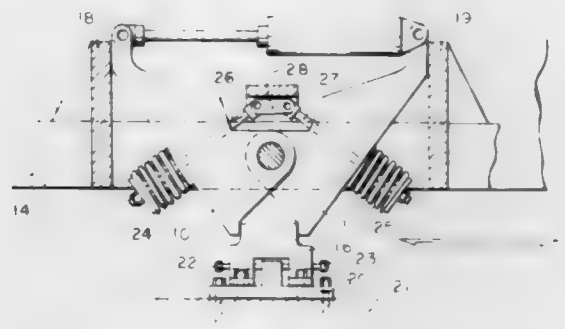
whereby when articles are inserted in said slot, they pass between said balls and said back plate and are retained by the gravity action of said balls after they are so inserted.

4,085,849

MACHINERY LOCATING DEVICE

Richard Jablin, P.O. Box 514, Winchester, Va. 22601

Filed Feb. 10, 1976, Ser. No. 656,895
Int. Cl.[2] B65G *65/50*
U.S. Cl. 214—1 BB **3 Claims**



1. A locating device for accurately moving into and maintaining in position massive traveling machinery having a normal drive comprising:

(a) at least one stop secured to a fixed structure, said stop being accurately aligned to a desired position for locating said traveling machinery;

(b) a housing mounted on said traveling machinery;

(c) power-operated clamp means for contacting and gripping said stop, to independently of said normal drive, move into and maintain in said desired position said traveling machinery and for retracting from said stop to permit said traveling machinery to move past said stop without interference between said stop and said clamp means, said clamp means being contained in said housing and, when opened, retracting at least partially into said housing;

(d) a plurality of cam rollers mounted on said clamp means and cam track means, in which said cam rollers ride for causing said clamp means to retract when opened and to project from said housing when closed; and

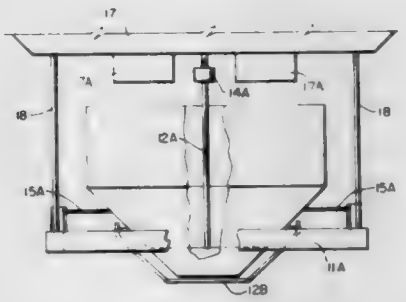
(e) power means independent of said normal drive, mounted on said traveling machinery for operating said clamp means.

4,085,850

SINGLE LOAD CELL WEIGH HOPPER SYSTEM

Carl J. Heltzel, 523 Country Club Dr. NE., Warren, Ohio 44484

Filed Dec. 13, 1976, Ser. No. 750,126
Int. Cl.[2] G01G *13/22*
U.S. Cl. 214—2 **1 Claim**



1. A weigh hopper stabilizing and weighing system comprising:

a. a weigh hopper,

b. a rigid frame about said weigh hopper,

c. a single load cell,

d. load cell support means connected to said rigid frame positioning said single load cell so that said weigh hopper bears directly thereon,

e. weigh hopper aligning rods one end of each of which is secured to said rigid frame and the other end of which engages the hopper but it is not secured thereto but are spaced about the weigh hopper for centering the weigh hopper over and upon the load cell, and

f. a bulk material bin having discharge outlet means, rigid

spacer means connected to space said rigid frame and weigh hopper below said bin discharge outlet means, said load cell support means being a spider frame having a central rod with the single load cell connected between said spider frame and the bulk bin.

4,085,851

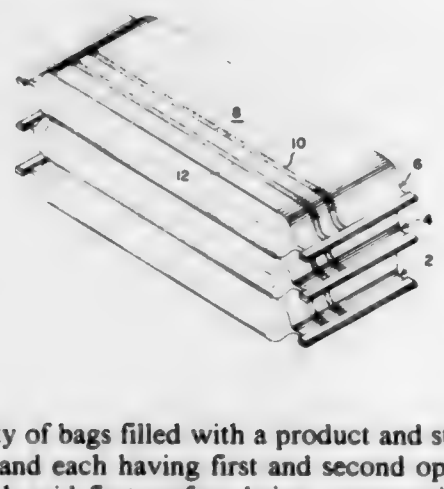
COATING FOR MULTI-WALL BAGS

Buck R. Young, Helena, Ark., assignor to Hudson Pulp & Paper Corporation, New York, N.Y.

Continuation of Ser. No. 213,513, Dec. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 776,506, Nov. 18, 1968, Pat. No. 3,642,697. This application Apr. 21, 1975, Ser. No. 569,656

Int. Cl.[2] B65D *57/00*

U.S. Cl. 214—10.5 R **4 Claims**



1. A plurality of bags filled with a product and stacked one upon another and each having first and second opposite surfaces with each said first surface being a supporting surface which is substantially co-extensive with the second surface of the next adjacent bag and said surfaces being pressed together by the weight of each upper bag pressing downwardly onto the bag beneath it, at least one of said surfaces on each of said bags having anti-slip coating means thereon for producing variable adhesion for controlling the friction between the coating means and the co-extensive surface of the next adjacent bag, said coating means comprising means for increasing adhesion and cohesion between said coating means and said next adjacent surface as the pressure to which they are subjected increases and for decreasing the cohesion and adhesion upon removal of said pressure, whereby the cohesion and adhesion between the supporting surfaces of the top two bags is minimum and the cohesion and adhesion between each other pair of co-extensive surfaces is greater than the next adjacent pair above it because of the increased pressure resulting from the weight of the product in the bag between them, and whereby the removal of the top bag in the stack produces a decrease in said cohesion and adhesion between the remaining of said co-extensive surfaces in the stack, said means for increasing and decreasing cohesion comprising a composition of low density polypropylene or polyethylene polymer, a tackifying resin and a plasticizer.

4,085,852

METHOD AND APPARATUS FOR DETERMINING THE COVERING OF A COKE WHARF WITH QUENCHED COKE

Wolfgang Teschner, Ratingen-Hosel, and Hans-Jürgen von Massow, Recklinghausen, both of Germany, assignors to Firma Carl Still Recklinghausen, Germany

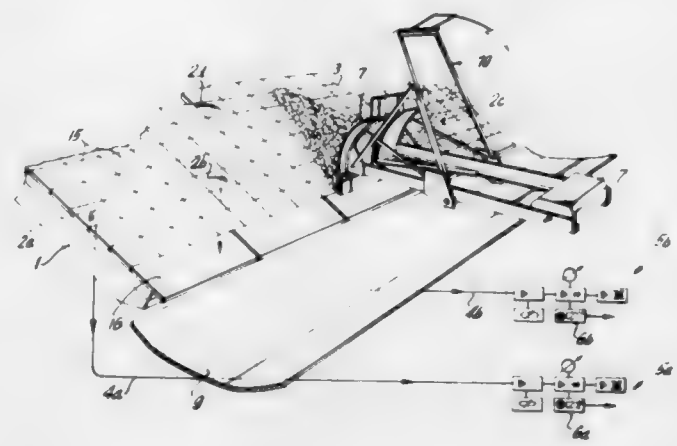
Filed Oct. 4, 1976, Ser. No. 729,020

Claims priority, application Germany, Oct. 9, 1975, 2545264

Int. Cl.[2] C10B *39/18*

U.S. Cl. 214—17 R **6 Claims**

1. A method of determining the covering of quenched coke on a coke wharf while using electric current connected to plates or strips of wear-resistant, electrically well-conducting plates which are inserted flush into the electrically poorly conducting facing of the wharf, material to an electrical potential relative to that of the surrounding facing, sensing the change of the potential of the plates as the coke is dumped on the plates and facing and as they are being cleared of the coke, and controlling subsequent moving operations in accordance with the potential change effected with the coke removal from the wharf.



5. A wharf for receiving glowing coke, comprising an inclined receiving ramp having a plurality of non-conductive areas and conductive plates interposed in said areas at spaced locations, electrical circuit control means connected to said plates and subjecting said plates to an electrical potential, said potential being variable in accordance with the coke overlying said plates, and said control means effecting a control pulse in accordance with the potential sensed.

4,085,853

CONSTRUCTION OF BUILDINGS OR PARTS THEREOF

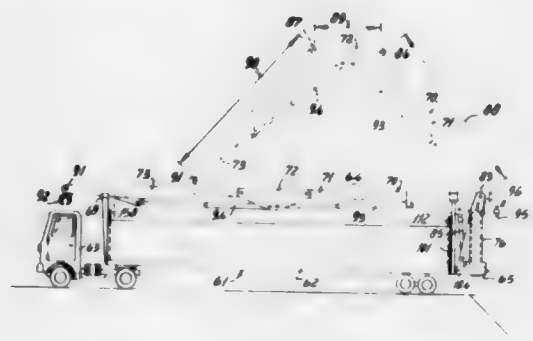
Cornelis van der Lely, 7, Bruschenrain, Zug, and Hendricus Jacobus Cornelis Nieuwenhoven, Hirssattelweg, 6340 Baar, both of Switzerland

Continuation of Ser. No. 318,244, Dec. 26, 1972, abandoned. This application Apr. 26, 1976, Ser. No. 680,383

Claims priority, application Netherlands, Dec. 27, 1971, 7117854

Int. Cl.[2] B60P *1/48*

U.S. Cl. 214—77 R **24 Claims**



1. A transport means for conveying walls, construction jigs for production of walls to building sites, said transport means comprising a load carrying portion thereof having at least one storage compartment divided into three longitudinally extending spaces adapted to carry said walls and jigs in an upright position generally parallel to the usual direction of travel of the transport means, and a discharging device located at one end of the load carrying portion of the transport means for said walls and jigs, wherein the discharging device includes a supporting member that can occupy a position in which it projects beyond the normal boundaries of the transport means as seen in plan view, said supporting member having three parts, one of said parts being a central part, hydraulic means connecting said central part to the other two said parts, said hydraulic means being all disposed on the same side of said supporting member, the discharging device also comprising coupling means for temporary connection to said walls and jigs to enable any such

temporarily connected part to be lifted vertically from the transport means by the discharging device and transferred to substantially its appointed correct position relative to the building that is being constructed, the supporting member being extensible whereby it can convey said walls and jigs to substantially any position within the area of a building site adjacent beyond the transport means from a single position, said area having a magnitude of not less than substantially one hundred square meters.

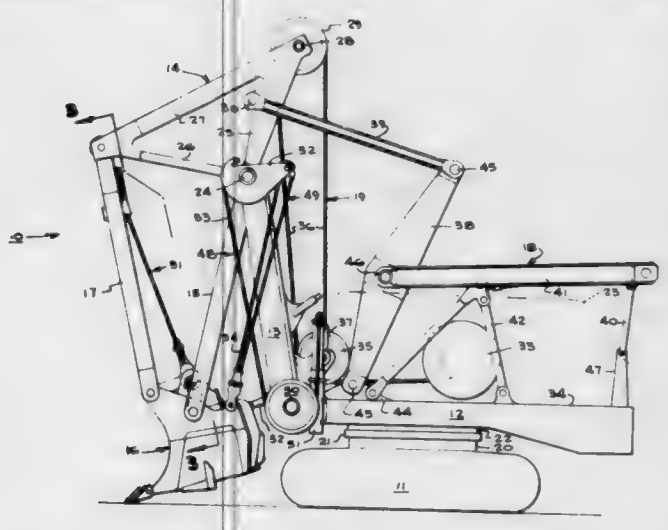
23. A tractor trailer combination for transporting mold parts for forming molds to cast at least a substantial portion of a building, which comprises a bed of said trailer, sides and forward and after walls mounted around the periphery of said trailer bed enclosing an elongated rectangular area as seen from above adapted for receiving said mold parts in an upright position disposed generally parallel to the longitudinal axis of said trailer, a discharging device mounted on the after portion of said trailer, said discharging device comprising an arm capable of projecting beyond the entire periphery of said trailer bed, said arm comprising three articulated interconnected parts and being provided with means whereby it is turnable from its after mounting about a substantially vertical axis, a first of said arm parts extending from said after mounting, a second of said arm parts extending from said first arm part, and a third arm part extending from said second arm part and having coupling means for lifting said mold parts on its opposite end, said first and third arm parts being substantially equal in length and said second arm part being substantially shorter in length than said first and third arm parts, two hydraulic mechanisms for articulating said parts relative to each other connected to said second arm part and to said first and third arm parts whereby said arm is foldable from a horizontal aligned position to an inverted V-shaped folded position in which said first and third arm parts are inclined downwardly from said second arm part which is retained in a substantially horizontal position.

4,085,854

PITCH STOP ASSEMBLY FOR POWER SHOVELS

George B. Baron, Marion, Ohio, assignor to Marion Power Shovel Co., Inc., Marion, Ohio

Filed Oct. 3, 1975, Ser. No. 619,453
Int. Cl.[2] E02F *3/32*
U.S. Cl. 214—138 R **30 Claims**



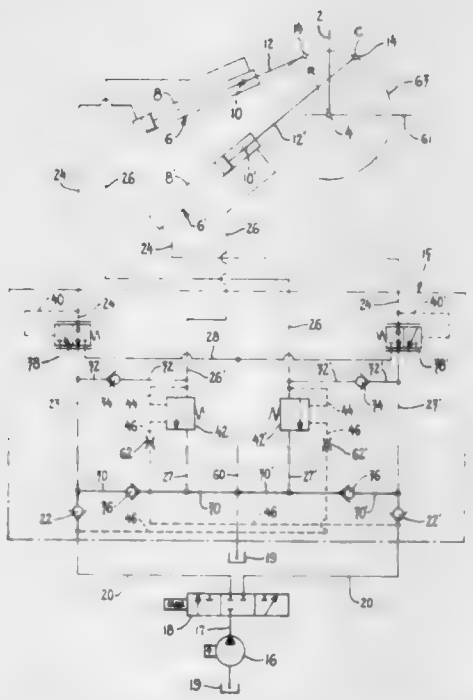
1. In a power shovel including a base unit; a support unit rotatably mounted on said base unit; a front end assembly including a stiffleg pivotally connected at a lower end thereof to said support unit, a dipper handle operatively connected to said stiffleg, a dipper pivotally connected to said dipper handle, a hoist frame pivotally connected to said stiff leg, and a hoist link pivotally connected at the ends thereof to said hoist frame and said dipper, said dipper handle, dipper, hoist link and hoist frame defining a four bar linkage; a crowd system operatively interconnecting said support unit and said front end assembly; a hoist system operatively interconnecting said support unit and said front end assembly; and control means mounted on said support means for operating said crowd and hoist systems to crowd, hoist, lower and retract said dipper, a pitch stop assembly comprising a flexible tension member interconnecting selected points of two different components of said four bar linkage for limiting the angular displacement of said dipper relative to said handle when said dipper is caused to pitch upwardly.

4,085,855

MECHANISM CONTROL

David L. Worback, Highland, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 654,675, Feb. 2, 1976, which is a continuation-in-part of Ser. No. 559,271, Mar. 17, 1975, Pat. No. 4,007,845. This application Dec. 1, 1976, Ser. No. 746,572
The portion of the term of this patent subsequent to Feb. 15, 1994, has been disclaimed.
Int. Cl.[2] E02F *3/32*
U.S. Cl. 214—138 D **3 Claims**



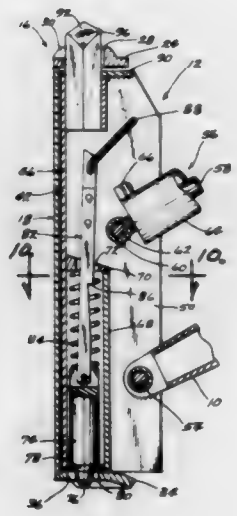
1. In a control for a swing member mounted for side-to-side singing movement having a power source, sump and power means connected with the swing member for causing the swing member to swing in opposite directions in response to flow of fluid in opposite directions to and from respective ends of the power means including at least one pair of lines for conducting fluid to and from the power means; the swing member being responsive to flow of fluid to said power means in one of said lines to swing in one direction, and responsive to flow of fluid to the power means in the other of said lines to swing in the opposite direction; a pressure reducing metering valve controlling one of said lines, said pressure reducing metering valve being operable to limit pressure to the power means through said one line to a predetermined maximum pressure upon movement of the swing member in one direction, and to meter fluid from the power means through said one line upon movement of the swing member in opposition to fluid supplied to the power means; a metering valve operable to permit flow of fluid from said power means through said other line during the swinging movement of the swing member only when a predetermined minimum pressure exists in one of said lines; and a cross line extending between said one line and the sump; the improvement comprising: a check valve in said one line located between said cross line and the power source permitting flow to one end of said power means through said one line but preventing flow from the one end of said power means through said one line.

4,085,856

QUICK ATTACH MEANS FOR END LOADERS OR THE LIKE

Neal W. Westendorf, Smithland, Iowa 51056

Filed Jan. 21, 1977, Ser. No. 761,323
Int. Cl.[2] E02F *3/81*
U.S. Cl. 214—145 A 4 Claims



1. In combination,

an end loader adapted to be mounted on a powered vehicle and including a pair of pivotal booms,

said end loader including a pair of hydraulic cylinders which are each pivotally connected at one end to one of said booms,

a first hook-up bracket means pivotally secured to one of said booms and one of said hydraulic cylinders,

a second hook-up bracket means pivotally secured to the other of said booms and the other of said hydraulic cylinders,

an attachment having a pair of spaced-apart pocket means secured to its rearward end which are adapted to detachably receive said hook-up bracket means therein,

each of said pocket means including a channel having upper and lower ends, a top plate secured to the upper end of said channel, a bottom plate secured to the lower end of said channel,

each of said hook-up bracket means including a channel having upper and lower ends, said bracket means channel being received by said pocket means channel between said top and bottom plates,

and a locking means secured to each of said hook-up bracket means, each of said locking means including a spring-loaded plunger means which is generally vertically movable within the lateral confines of said hook-up bracket means from an unlocked position to a locked position, each of said plunger means being received by one of said bottom plates when in said locked position when said bracket means channel is received by said pocket means channel,

said locking means including coacting means on said plunger and on said hook-up bracket means rearwardly of said plunger for maintaining said spring-loaded plunger means in its unlocked condition, said coacting means movable fore and aft into and out of engagement, and

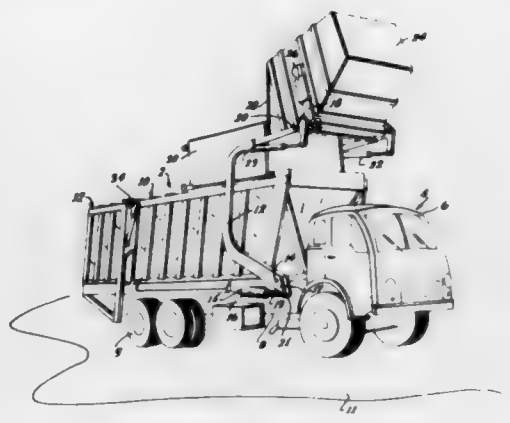
means for automatically disengaging said coacting means for movement of said plunger means to their locked position upon a predetermined amount of pivotal movement of said bracket means relative to said pivotal booms.

4,085,857

FRONT END LOADER WITH IMPROVED APPARATUS FOR OPERATING THE LIFTING ARMS

Fred T. Smith, Newark, Ohio, assignor to Sargent Industries, Inc., Century City, Calif.

Division of Ser. No. 497,129, Aug. 12, 1974, Pat. No. 3,988,979.
This application Aug. 5, 1976, Ser. No. 712,082
Int. Cl.[2] B65F *3/02*
U.S. Cl. 214—302 14 Claims



1. In combination in refuse equipment for depositing refuse from a container,

a storage body for the refuse,

means providing an opening in the top of the storage body,

lifting arms pivotally mounted relative to the storage body for lifting the container for obtaining a deposit of the refuse in the container into the storage body through the opening in the top of the storage body,

first hydraulic means operatively coupled to the lifting arms to pivot the lifting arms between a lowered position and a position for obtaining a deposit of refuse into the storage body through the opening in the top of the storage body,

fork arms pivotally coupled to the lifting arms at one end and constructed at the other end to grasp and retain the container for the lifting of the container by the lifting arms,

second hydraulic means operatively coupled to the fork arms to pivot the fork arms,

third hydraulic means operatively coupled to the first and second hydraulic means for obtaining a simultaneous operation of the first and second hydraulic means to provide a lifting of the container by the lifting arms and a simultaneous maintenance of the container in a horizontal relationship by the fork arms,

fourth hydraulic means for indicating any differences in weight on the lifting arms between a full container and an empty container, and

means associated with the third hydraulic means and responsive to an indication by the fourth hydraulic means of an empty container on the lifting arms for inhibiting the operation of the third hydraulic means during the lowering of the lifting arms to maintain the fork arms in position for retaining the containers on the fork arms.

4,085,858

FRONT END LOADER WITH IMPROVED APPARATUS FOR LIFTING THE LIFTING ARMS AND OPENING AND CLOSING THE DOORS

Fred T. Smith, Newark, Ohio, assignor to Sargent Industries, Inc., Century City, Calif.

Division of Ser. No. 497,129, Aug. 12, 1974, Pat. No. 3,988,979.
This application Aug. 5, 1976, Ser. No. 711,864
Int. Cl.[2] B65F *3/02*
U.S. Cl. 214—303 38 Claims

1. A front end loader comprising:

a refuse storage body mounted on a vehicle;

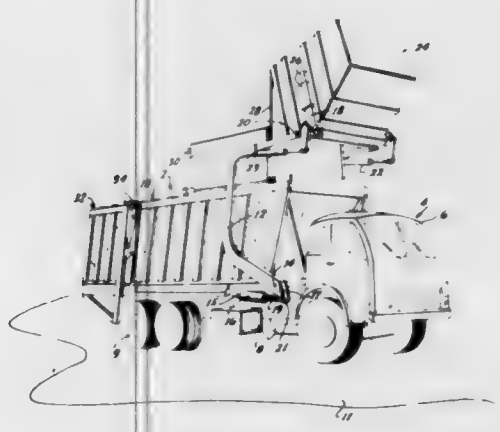
an upper opening into said storage body for depositing refuse within said body;

lifting arms pivotally mounted with respect to said storage body and vehicle for raising and lowering of said arms in picking up a refuse container to dump refuse therefrom through said opening and into said storage body and to return the empty container to ground level;

a closure means for said upper opening;

said closure means positioned adjacent said upper opening with said closure means being movable between an open and a closed position;

first hydraulic motor means, including at least a first cylinder and a first piston, connected to said lifting arms to provide movement of said arms;



second hydraulic motor means, including second cylinders and second pistons, connected to said closure means to provide movement of said closure means;

means to supply hydraulic fluid to said first motor means to drive the first piston in the first cylinder; and

means hydraulically connecting the first and second cylinders to provide for the passage of hydraulic fluid between the first and second cylinders in accordance with the movement of the first piston in the first cylinder and to provide for synchronous operations of the lifting arms and the closure means.

4,085,859

CAR-TOP BOAT LOADER

Roman L. Petron, 836 E. George, Hazel Park, Mich. 48030

Filed Jun. 1, 1976, Ser. No. 691,373

Int. Cl.[2] B60R *9/00*

U.S. Cl. 214—450 **10 Claims**



1. A retrofit car-top boat loader for loading a boat, gunwhale down, atop a car already fitted with a car-top carrier of the type that includes spaced front and rear carrier bars fixedly supported on the car top parallel to each other and transverse to the longitudinal centerline of the car, the transverse carrier bars extending generally out to each side of the car top, said loader comprising a loader bar, said bar comprising an elongated member having a cross-section of sufficient dimension to provide an effective abutment along substantially the entire length thereof against which the boat gunwhale can be retained in transit, an effective length at least equal to the maximum width of the boat at the gunwhale and a minimum overall length at least equal to the dimension between the outside edges of the carrier bars, whichever is greater, and a yoke member comprising a generally U-shaped portion having a width sufficient to receive a boat gunwhale with clearance so that the boat gunwhale can be moved without interference through said yoke during loading and unloading and a pivot pin extending from said U-shaped portion, said yoke member being pivotally mounted directly on and to said elongated member near one end thereof, with said yoke member physically engaging said elongated member, said yoke being open away from said elongated member and pivotable, said pivot pin extending normal to the centerline of said elongated member, said effective length being equal to the dimension between said yoke opening and the opposite end of said bar, and means for securing said elongated member directly to the top of the front and rear bars so that said elongated member is disposed entirely above the top surfaces of the front and rear bars.

4,085,860

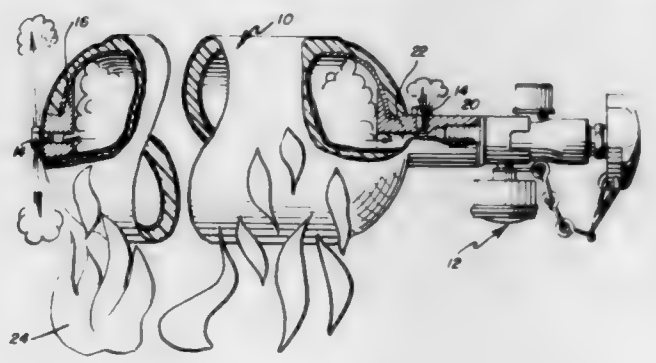
THERMAL PROTECTION SYSTEM FOR FILAMENT WOUND PRESSURE VESSELS

Russell Olson Hawkins, and James Francis Mallatt, both of Lincoln, Nebr., assignors to Brunswick Corporation, Skokie, Ill.

Filed May 20, 1976, Ser. No. 688,116

Int. Cl.[2] B65D *25/00*

U.S. Cl. 220—89 B **5 Claims**



1. A pressure release device for mounting on a metal element of a light weight fiber wound pressure vessel and for cooperating therewith, comprising:

(a) a thermal release plug having a shank portion and a head portion, the shank portion mountable on the pressure vessel, the head portion open to the atmosphere;

(b) a "T" shaped channel in the plug with the leg of the "T" positioned in the shank of the plug and communicating with the interior of the vessel, and the head of the "T" channel being substantially uniform in cross section, communicating with opposite sides of the head and being in cooperative relationship with the leg for providing a biforcated path to bleed the inside of the vessel;

(c) a heat softening material bonded in the channel, the material having a melting point below the degradation temperature of the vessel and above the maximum ambient operating temperature of the vessel.

4,085,861

INSULATING DRINK-THROUGH CLOSURE LIDS FOR POTABLE OPEN-TOP CONTAINERS

Stanley L. Ruff, 9 Arbor Dr., New Rochelle, N.Y. 10804

Continuation-in-part of Ser. No. 434,649, Jan. 18, 1974, Pat. No. 3,938,695. This application Dec. 31, 1975, Ser. No. 645,567

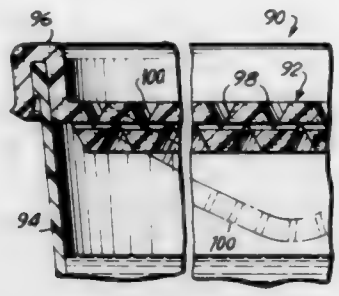
The portion of the term of this patent subsequent to Feb. 17, 1993, has been disclaimed.

Int. Cl.[2] A47G *19/22*

U.S. Cl. 220—90.4 **5 Claims**

1. A drink-through closure lid for detachably capping the open top of a hot potable container, said lid having a crown and peripheral means for releasably sealingly engaging the lip of the container, means providing at least one opening in the crown through which the hot potable in the container may be drunk through the lid, while the lid is in container-capping position, and means providing an upper surface of low heat conductivity over at least the portion of the top surface of said crown engaged by the inner surface of the lip of a person

drinking the hot potable in the container through the lid, said lid being provided with flutes juxtaposed with the means providing at least one opening in the crown and being expandable



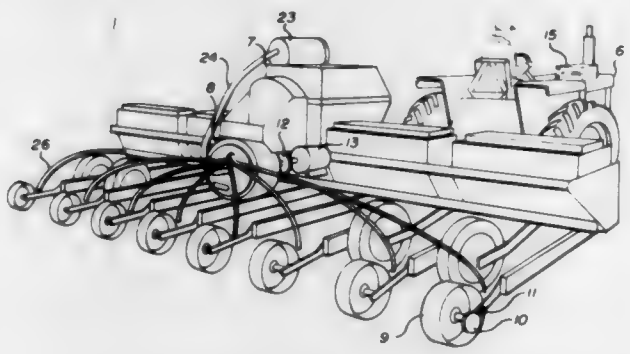
downwardly upon application of manual downward pressure to the crown whereby to form a depression to accommodate the nose of a person drinking the hot potable from the container through the lid.

4,085,862

AUTOMATICALLY CONTROLLED SEED PLANTER

David Eugene Steffen, Chatham, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Filed Oct. 8, 1976, Ser. No. 730,784
Int. Cl.[2] G07F *11/00*
U.S. Cl. 221—8 **19 Claims**



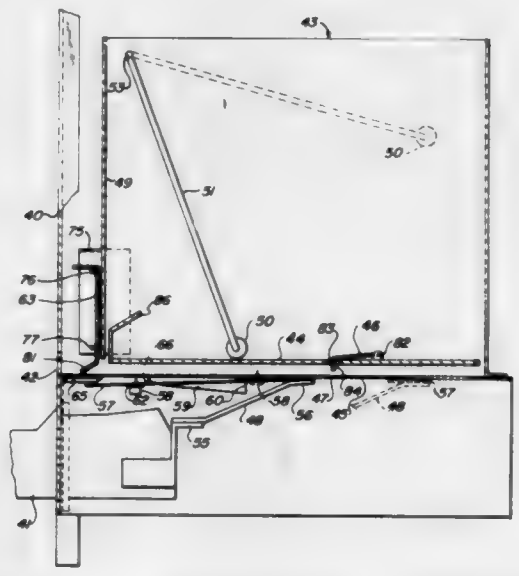
1. An automatically controlled mobile seed planter apparatus having at least one rotatable drum means for holding a plurality of seeds, motor means for rotating the drum means, said drum means having a plurality of holes, said holes being smaller than said seeds, air pressure means for holding a plurality of said seeds against said holes as said drum means rotates, and means for releasing said seeds from said holes at a predetermined point in the rotation of said drum means, a means for receiving said seeds from said releasing means, and forming a path of travel for the passage of seeds therethrough to a desired point of discharge, variable speed control means for said motor means, a first transducer means for detecting the rotational speed of said drum means and providing a drum speed signal, second transducer means for detecting the speed of said planter along the ground and providing a ground speed signal, control means comprising input means for providing both a desired seed spacing signal and a drum hole configuration signal, means for receiving said drum speed, ground speed, drum hole configuration, and desired seed spacing signals, means for comparing said desired seed spacing signal with said drum hole configuration signal, said ground speed signal and said drum speed signal, means for providing an output control signal from said comparing means to said variable speed control means, to adjust the variable speed control means in response to changes in the drum speed signal, the ground speed signal, the drum hole configuration signal or the desired seed spacing signal and combinations thereof, for maintaining desired seed spacing corresponding to said desired seed spacing signal, means for combining said drum speed signal and said ground speed signal and providing an expected seed spacing signal in response thereto, readout means for displaying said expected seed spacing signal, means for detecting excessive rotational speed of the drum, absence of drum rotation, absence of drum speed signal, and absence of ground speed signal of a minimum predetermined value and producing malfunction signals in response thereto, and means for displaying said malfunction signals.

4,085,863

MAP VENDING MACHINE

Ralph S. Johnson, 907 Frontier Park Ave., Cheyenne, Wyo. 82001

Filed Aug. 7, 1975, Ser. No. 602,829
Int. Cl.[2] G07F *11/16*
U.S. Cl. 221—20 **17 Claims**



1. The method of dispensing generally flat documents or the like from a stack in a container having a slot opening in the lower extremity of a vertical wall thereof, the document container having an actuator associated therewith for providing a reciprocal motion cycle of a linear forward portion and a linear backward portion, comprising the steps of:

applying a downward pressure across at least a portion of the upper surface of the uppermost document in the stack,

gripping the lowermost document of the stack by embedding a pin into the lowermost document when the reciprocal motion is at the end of the forward portion,

sliding the gripped lowermost document into the container aperture by coupling the linear backward motion to the embedded pin,

withdrawing the pin from the lowermost document at the end of each linear backward motion portion, and

maintaining the pin clear of the lowermost document for all but the last segment of each linear forward motion portion.

4,085,864

NEWSPAPER VENDING MACHINE

Roger G. Gordon, San Leandro, Calif., assignor to Safe Rack, Inc., San Leandro, Calif.

Filed Oct. 12, 1976, Ser. No. 731,135
Int. Cl.[2] G07F *11/08*
U.S. Cl. 221—155 **5 Claims**

1. A newspaper vending machine or the like, comprising in combination:

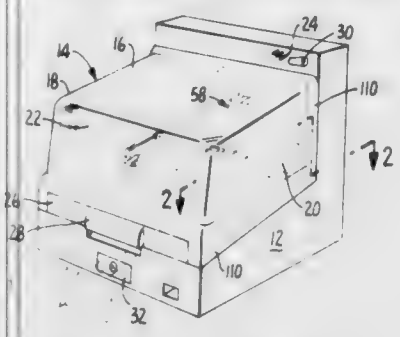
a. a base member with catches;

b. a generally horizontal surface formed on said base member adapted to hold a plurality of flat articles;

c. a transparent cover for said plurality of flat articles, said transparent cover having a transparent front, sides a top and catches engaging said catches on said base;

d. a pair of locking pins slidably mounted in each side of said cover, said pins having biasing means normally biasing said pins to extend downwardly into mating holes in said base member preventing lateral movement of said cover with respect to said base;

e. a coinbox slidably mounted in said base, said coin box having cam surfaces on each side thereof;
f. a pair of slidably mounted transverse rods having cam followers thereon on the inside ends thereof, said cam followers pressing on the cams on the sides of the coin box, said transverse rods having cam surfaces on the opposite ends acting on said pins whereby when said coin



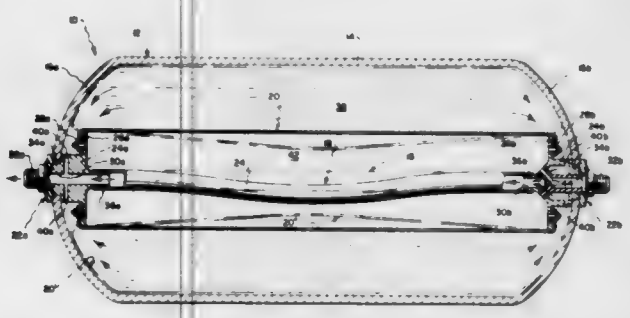
box is inserted in said base, said transverse rods are retracted away from said box, causing said pins to lock said cover onto said base and wherein said cam surfaces on said coinbox are actuated by said coin box to withdraw said pins from said base when said coin box is withdrawn, thereby
g. permitting said transparent cover to be lifted completely off of said base.

4,085,865

ELASTOMERIC BLADDER FOR POSITIVE EXPULSION TANK

Leo M. Thompson, Niagara Falls; Robert K. Anderson, Lockport; Lawrence H. Kocher, Tonawanda, and John W. Jackel, Grand Island, all of N.Y., assignors to Textron Inc., Providence, R.I.

Filed May 13, 1976, Ser. No. 685,753
Int. Cl.[2] B67D *5/54*
U.S. Cl. 222—1 **3 Claims**



1. A method of storing a fluid product in a positive expulsion tank and subsequently expelling said product from said tank by means of an expulsion fluid wherein the tank is to be subject to storage within a range of temperatures including a minimum design temperature and a maximum design temperature and is characterized as enclosing a bladder having an as-fabricated configuration and formed of a resiliently deformable material, which tends to become "set" when maintained under said minimum design temperature and is subject when "set" while in a relatively highly tensioned condition to damage/failure upon the application to said tank of handling/transport forces, said method including the steps of:

mounting said bladder within said tank to define a boundary between a product receiving cavity and an expulsion fluid receiving cavity which are disposed one relatively outwardly of said bladder and the other relatively inwardly of said bladder and which inversely vary in volume as said bladder is subjected to first and second tension modes, a first of said tension modes evolving an expansion of said bladder from said as-fabricated configuration to decrease the volume of said product receiving receiving to effect expulsion of product therefrom, the other of said tension modes evolving an expansion of said bladder from said as-fabricated configuration to decrease the volume of said expulsion fluid receiving cavity to accommodate for an increase in volume of said product within said product receiving cavity incident to an increase in temperature thereof between said minimum design temperature and said maximum design temperature;

filling said product receiving cavity with said product at a filling temperature disposed within said range of temperatures and at a volume at said filling temperature permitting said product to fill said product receiving cavity at said minimum design temperature while permitting said bladder to assume said as-fabricated configuration; and

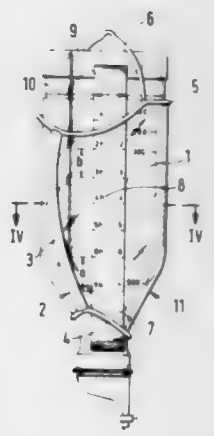
introducing said expulsion fluid into said expulsion fluid receiving cavity at least when said product is to be expelled from said product receiving cavity.

4,085,866

GRADUATED CONTAINER

Werner Fekl, Erlangen, Germany, assignor to J. Pfrimmer & Co., Erlangen, Germany

Filed Sep. 22, 1976, Ser. No. 726,015
Claims priority, application Germany, Mar. 13, 1976, 7607842
Int. Cl.[2] B67D *5/38*
U.S. Cl. 222—158 **1 Claim**



1. A device for dispensing fluid at a controlled rate, comprising a container for said fluid having means associated therewith for regulating the rate of fluid discharge therefrom, said container being at least partially transparent to permit viewing of the fluid level in the container, a scale means having indicia thereon calibrated in units of time longitudinally thereof and including a zero-time datum marking for relating the changing liquid level within the container to the passage of time, said scale means being initially independent of said container, and mounting means for mounting said scale means on said container so as to extend longitudinally thereof with said zero-time datum marking on said scale means in alignment with the initial fluid within the container to thereby relate changes in the fluid level in the container to the indicia on said scale means, said mounting means comprising a flexible mounting halter including a pair of spaced ring elements adapted to be mounted adjacent opposed ends of the container and a rib connected therebetween, a flappable loop element being connected to one of said ring elements for suspending the container in dispensing position, said ring elements, when the container is suspended in dispensing position, bearing against the scale means to retain same in fixed position relative to the container.

4,085,867

DISPENSING CONTAINERS AND HOLDER

Peter Van Nest Heller, 213 Esplanade, San Clemente, Calif. 92672

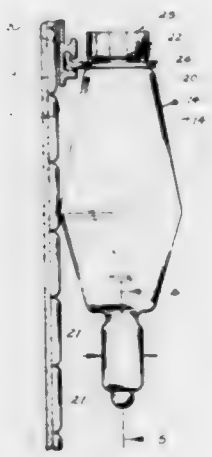
Filed Jul. 26, 1976, Ser. No. 708,373
Int. Cl.[2] B67D *3/00*
U.S. Cl. 222—181 **6 Claims**

1. Dispensing containers and holder for liquid shampoo and the like, comprising, in combination:

(a) an elongated flat strip having securing means on its rear surface for fastening the strip to a bathroom wall and defining on its front surface a horizontally extending track means:

(b) a plurality of identically constructed containers, each having a main chamber and smaller pump chamber integrally formed beneath the main chamber, the top of the main chamber having a threaded neck defining a fill opening and a threaded cap receivable over said neck; and

(c) a washer shaped member with detent projections on the washer faces receivable over said threaded neck for se-



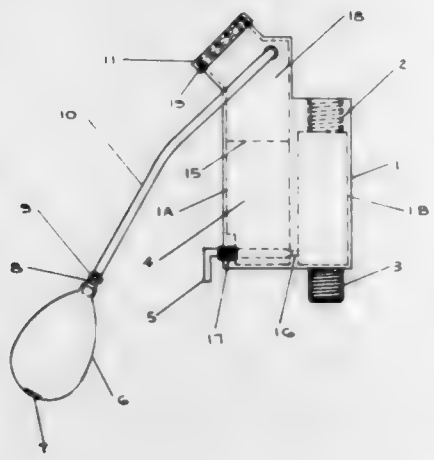
curement to the container by said cap with cooperating detent depressions and including an integral laterally extending flange terminating in an upturned bead portion, said track means defining a channel facing forwardly with an undercut in its upper wall for receiving said upturned bead portion to thereby support the container in any set horizontal position along said channel so that said containers may be held on said strip in side-by-side relationship and whereby said containers may be hung, swung or slid from said track means for easy removal and use in other bathrooms or for replacement.

4,085,868

BATH OIL INJECTION DEVICE FOR SHOWER BATH

Robert Lynn Blair, Box 2515, Sarasota, Fla. 33578

Filed Sep. 1, 1976, Ser. No. 719,702
Int. Cl.[2] B05B *7/32*
U.S. Cl. 222—193 **1 Claim**



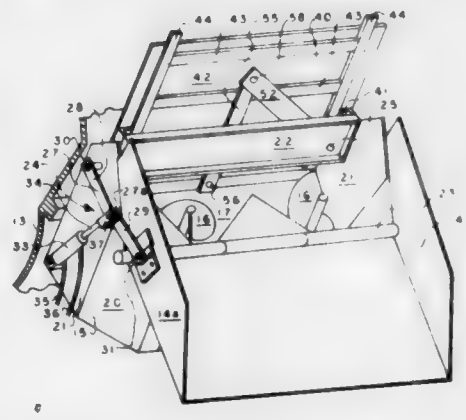
1. A shower bath attachment comprising: a housing; a reservoir for liquid additive formed in the housing; a filling opening and an air inlet opening formed in the housing and leading from outside the housing to the reservoir; a closure cap for the filling opening; a one-way check valve positioned in the air inlet opening allowing air to enter the reservoir; an open-ended water flow passage formed in the housing; couplings at the upstream and downstream ends of the water flow passage for connection, respectively, to a shower supply pipe and a shower spray head; a liquid additive passage formed in the housing for conducting liquid additive from the reservoir to the water flow passage; a manually adjustable needle valve, accessible from outside the housing, positioned in the liquid additive passage for controlling the flow of liquid additive through the passage; a flexible conduit having one end connected at the exterior of the housing to the air inlet opening for introducing compressed air into the reservoir to urge liquid additive from the reservoir through the liquid additive passage into water flowing through the water flow passage; a manually compressible resilient bulb, including a one-way air inlet check valve and an air outlet, connected to the other end of the flexible conduit for developing compressed air to be introduced into the reservoir.

4,085,869

LEVER-OPERATED FEED DISPENSER

Benjamin Ray Neier, Dodge City, Kans., assignor to B J Manufacturing Company, Inc., Dodge City, Kans.

Filed Dec. 2, 1976, Ser. No. 746,698
Int. Cl.[2] B65G *33/14*
U.S. Cl. 222—271 **12 Claims**



1. An improved feed dispenser for conveying a flow of mixed feed from a discharge opening of a mixing hopper and for directing the flow exiting the dispenser, said dispenser comprising:

at least one auger communicating with the discharge opening of the mixing hopper;

auger trough means, having bottom, side and top portions, for containing at least the lower longitudinal portion of said auger, said trough means extending upwardly from said discharge opening of said mixing hopper and terminating in a lip portion at the distal end thereof;

an outlet door slideably disposed between said discharge opening of said mixing hopper and said trough means;

means connected to said outlet door for sliding said outlet door to communicate the proximal end of said trough means with the mixing hopper, said means comprising:

lever means fulcrummed at a central portion thereof;

a fluidic cylinder having a connected end and an operative end and attached at its operative end to a first end of said lever means; and

bar means pivotably mounted at one end thereof to said slideable door, said bar means pivotably connected at the other end thereof to the second end of said lever means,

whereby when said fluidic cylinder retracts said attached first end of said lever is drawn toward said cylinder turning said lever means about to central fulcrum, thereby to propel said slideable door in a direction opposite to the retraction;

retractable spout means disposed at the distal end of said trough means for closing the distal end of said trough means when in a first position and for directing the flow of the feed existing said trough means when in a second position; and

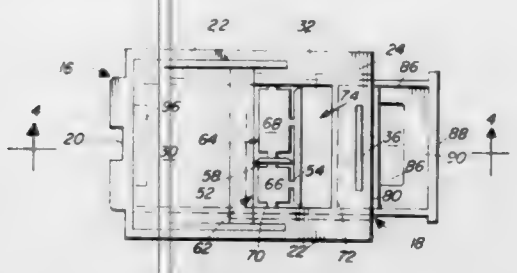
means connected to said spout means for moving said spout means between the first and second positions.

4,085,870

DISPENSING DRAWER ASSEMBLY

John W. Von Holdt, 6864 Lexington La., Niles, Ill. 60648

Filed Nov. 5, 1976, Ser. No. 739,200
Int. Cl.[2] G01F *11/18*
U.S. Cl. 222—361 **6 Claims**



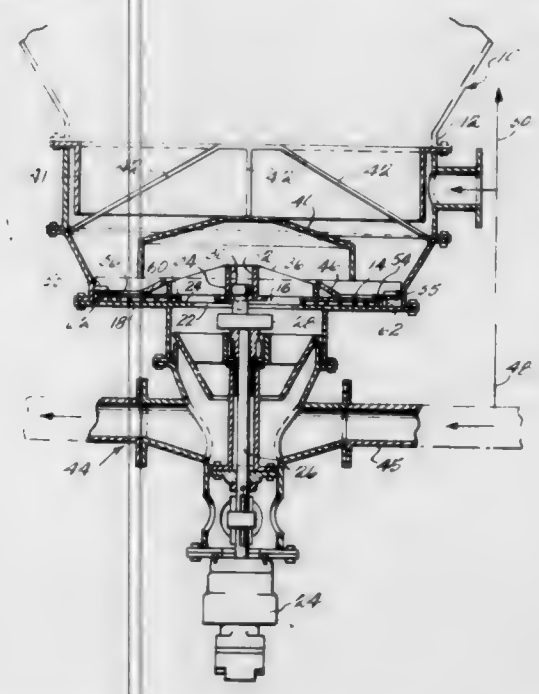
1. A dispensing drawer for use in a dispensing drawer assembly having a wall spaced from a passage transmitting material from a container for deposit on said wall and thereafter movable by said drawer from said wall for dispensing the material in response to the movement of the drawer to an open position, the improvement comprising: means carried by said drawer for selecting the volume of material deposited on said wall, said volume selecting means including a plurality of chambers with at least one of said chambers having a removable metering wall, said removable metering wall having its major plane extending transverse said passage to capture material in the metering wall chamber and prevent passage of the material past said metering wall; and frangible means coupling said metering wall to the walls defining the metering wall chamber, whereby said metering wall may be removed by breaking said frangible means.

4,085,871

ORBITAL PLATE FEEDER

Frank J. Miksitz, 603 Barrymore St., Phillipsburg, N.J. 08865

Filed Jun. 1, 1976, Ser. No. 691,303
Int. Cl.[2] B65G *65/48*
U.S. Cl. 222—404 **11 Claims**



1. In apparatus for feeding granular material with gravity assist from a mass of the material, said apparatus having a shroud positioned with at least its lower end disposed within the mass of material, a horizontal centrally apertured feed plate disposed directly below the shroud and having an upper surface at least partially exposed to the mass of material, the arrangement being such that the material does not flush freely through the central aperture in the feed plate, and means for orbiting said feed plate about a vertical axis so that during orbital movement of the feed plate material from the mass passes in a controlled manner into the central aperture in the feed plate, the improvement comprising an annular plate disposed within the mass of material independent of the feed plate, said plate closely overlying at least the leading edge of the orbiting feed plate while leaving a radially inward portion of the plate exposed to the mass of material, thereby reducing the tendency of the feed plate to become jammed by the granular material.

4,085,872

SLING FOR TENNIS RACKET

Kenneth Foo, New York, N.Y., assignor to Theodore Gottlieb, New York, N.Y.

Filed Mar. 23, 1976, Ser. No. 669,708
Int. Cl.[2] A41D *27/20*; B65D *85/00*
U.S. Cl. 224—5 D **4 Claims**



4. A carrier for a tennis racket comprising a strap dimensioned to extend diagonally across one side of the upper body of the user, from shoulder to opposite hip; said strap forming loops at each end thereof; one loop being larger than the other; the larger loop being of elastic fabric and being sized to clampingly engage the grip of the racket; the smaller loop to house means for affixing the strap to the racket frame; the racket when thus affixed to its carrier forming a part rigid, part elastic structure which can be diagonally clamped across the body as aforesaid.

4,085,873

KNAPSACK WITH INTEGRAL STORAGE AND CARRYING POUCH

Judith J. Schweitzer, 431 N. Armistead St., #T-5, Alexandria, Va. 22312

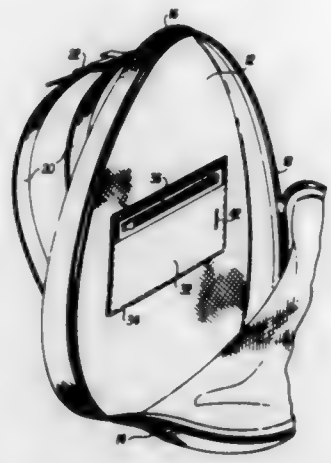
Filed Sep. 7, 1976, Ser. No. 720,526
Int. Cl.[2] A45F *3/04*
U.S. Cl. 224—8 R **13 Claims**

1. In a portable receptacle made of thin, flexible material, said receptacle being a knapsack having a wall, and means permitting said knapsack to be carried on the back of the user, the improvement comprising:

a patch of said material attached to said wall around the perimeter of said patch;

an opening through said patch within said perimeter to provide access to the volume between said patch and said wall whereby the portion of said wall covered by said patch may be pushed out through said opening whereby said patch is reversed in order that the side of said patch which is next to said portion prior to pushing said portion through said opening forms a portion of the exterior surface of a pouch and when said pouch is formed the recep-

tacle may be stuffed into the pouch for ease of storage and transportation and



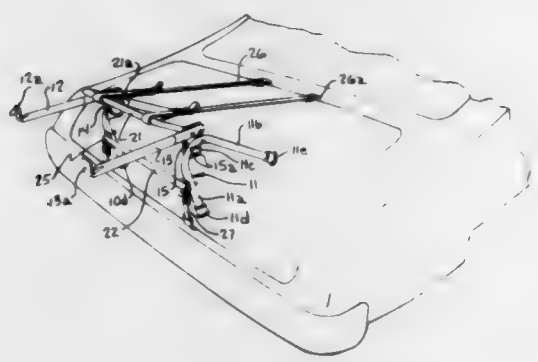
first closure means operable for shutting said opening after said receptacle has been stuffed into said pouch.

4,085,874

AUTOMOBILE BICYCLE CARRIER

Joseph V. Graber, 3739 County Trunk M, Middleton, Wis. 53562

Filed Jan. 2, 1976, Ser. No. 646,175
Int. Cl.[2] B60R *9/10*
U.S. Cl. 224—29 R **6 Claims**



1. An automobile bicycle carrier comprising:

(a) a pair of rigid generally U-shaped side frames disposed in relatively parallel planes, said side frames each being of one-piece tubular stock and having an arcuate intermediate portion and two straight leg portions integral with the ends of the respective intermediate portion and diverging therefrom at an acute angle along lines generally tangent to the ends of the arcuate intermediate portion, whereby the spacing between the leg portions of each side frame is substantially greater at the free ends thereof than adjacent the respective arcuate intermediate portion; the leg portions having resilient vehicle engaging feet on the free ends thereof, one of said leg portions on each side frame being shorter than the other leg portion and extending generally perpendicular to a plane through the vehicle engaging feet, the other leg portion of each side frame extending at an acute angle to the plane through the vehicle engaging feet,

(b) a pair of elongated bicycle support arms each of tubular stock and each having an upturned bicycle stop at one end,

(c) a U-shaped cross member having lateral end portions connected to the other ends of respective ones of the bicycle support arms and a connecting portion extending between said lateral end portions to effect movement of said bicycle support arms in unison and to maintain said arms in parallel spaced relation,

(d) said arcuate intermediate portions of said side frames each having spaced openings therethrough perpendicular to the plane of the respective side frame, means including fasteners extending through said spaced openings in the arcuate intermediate portions of the side frames attaching said other ends of said bicycle support arms to the arcuate intermediate portion of respective ones of said side frames for angular adjustment of the arms in planes paralleling the side frames through a plurality of positions with each of the arms extending generally horizontally outwardly from the arcuate intermediate portion of its associated frame at different angles to the plane through the vehicle engaging feet, and

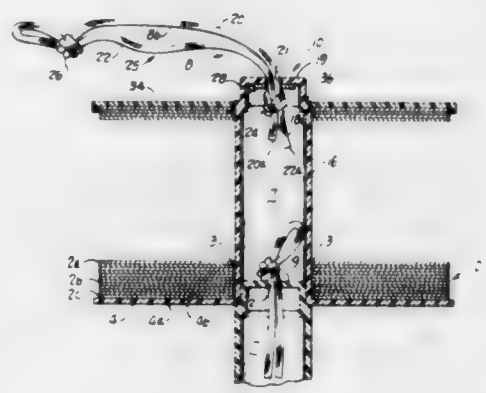
(e) strap means for attaching the bicycle carrier to a vehicle with the vehicle engaging feet resting on the vehicle.

4,085,875

RECORD CARRIER

Louis Campbell, 1503 Meadowview La., Martinsville, Va. 24112, and Edward G. Keshock, 1625 Kingsway Rd., Norfolk, Va. 23518

Filed Mar. 15, 1976, Ser. No. 666,757
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 K **7 Claims**



1. An apparatus for carrying a stack of objects each of which has an aperture extending through it, the apparatus comprising:

(a) a base;

(b) a tubular spindle extending from said base, adapted for projection through the apertures of objects when said objects are stacked upon said base, said spindle having its extending end closed, said spindle having end portions of different external size the smaller of which is at the extending end of said spindle and said extending end has an aperture in its closed extending end and which said aperture is smaller than the interior of said spindle, said spindle having a larger end portion at said base and has its interior sized to receive the extending smaller end portion of another of said spindle whereby the extending end portion of said another spindle of a like apparatus can be inserted therein and like devices thus stacked one upon another;

(c) a retractable carrying handle extending through said aperture in said closed extending end of said spindle and being slidable therein and connected with said spindle by having enlarged portions within and without said spindle, said enlarged portions of said carrying handle being of greater size than said aperture in said closed extending end of said spindle and of smaller size than the exterior of said larger part of said spindle.

4,085,876

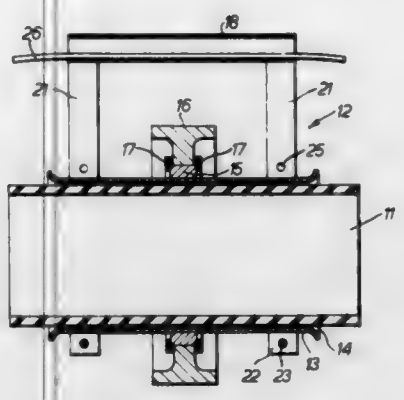
HOSE FITTING

Raymond Albert Buckell, 41, Belmont Crescent, Maidenhead, Berkshire, England

Filed Jul. 22, 1976, Ser. No. 707,538
Claims priority, application United Kingdom, Jul. 22, 1975, 30624/75
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 R **5 Claims**

1. A hose fitting comprising a sleeve through which a hose

extends, a wheel mounted to rotate around the sleeve about the axis of the sleeve, and a handle attached to the sleeve and



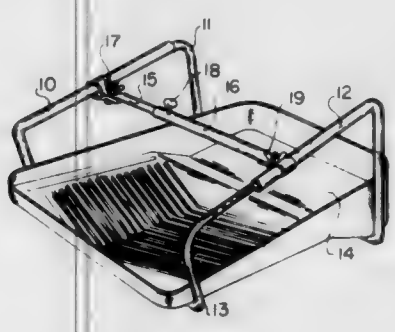
including a hollow tube parallel with and displaced from the sleeve axis, and supply lines which extend through the hollow tube.

4,085,877

PAINT TRAY CARRIER

George M. Hildebrand, P.O. Box 135, Junction City, Calif. 90648

Filed Jan. 19, 1977, Ser. No. 760,682
Int. Cl.[2] A47G *23/06*
U.S. Cl. 224—48 R **3 Claims**



1. A paint tray carrier and paint tray combination comprising: a paint tray; an endless tubular bracket configured to surround the paint tray and comprising a pair of spaced and parallel lower transverse tubular sections adapted to extend under the tray and a pair of spaced and parallel upper longitudinal tubular sections adapted to extend above the tray at each side thereof; and a handle member extending across the tray from one of the upper sections to the other, and which includes at least one clip member attached to and projecting downwardly from the undersurface of the tray to engage one of the lower transverse tubular sections of the bracket.

4,085,878

DISPENSER-CUTTER FOR TACKY FABRIC MATERIALS

Joseph Anthony Nausedas, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,472
Int. Cl.[2] B26F *3/02*
U.S. Cl. 225—19 **8 Claims**

1. Apparatus for dispensing random length cut pieces from a supply of continuous length fabric product, comprising, in combination:

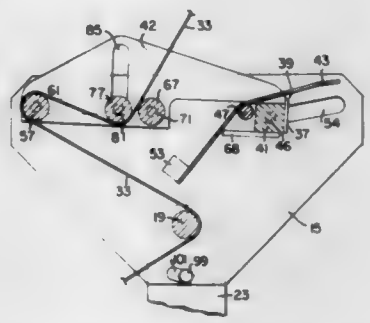
a fixed frame provided with a pair of side plates disposed in a fixed parallel juxtaposed generally vertical orientation each with respect to the other, separated by a distance greater than the width of the fabric product to be dispensed;

a moveable carriage disposed between the frame side plates and arranged and adapted to move reciprocally in a generally horizontal locus between first and second positions relative to the fixed frame, having carriage side plates arranged and disposed in parallel relationship each with respect to the other and generally parallel to the frame side plates, separated by a distance greater than the width of the fabric product to be dispensed;

fabric cutting blade means on the movable carriage mounted with a blade cutting edge upwardly oriented transversely of and extending between proximal ends of the carriage side plates;

first roller means extending transversely between distal ends of the carriage side plates;

second roller means extending transversely between the carriage side plates at a location between the proximal and the distal ends thereof;



third roller means extending transversely between the carriage side plates at a location between the first roller means and the second roller means, moveable reciprocally vertically with respect to said carriage side plates between a first position in which it will depress fabric spanning the first and second roller means when the moveable carriage is in its first position, and a second position to which it is urged by tensioned fabric when the carriage is in its second position; and

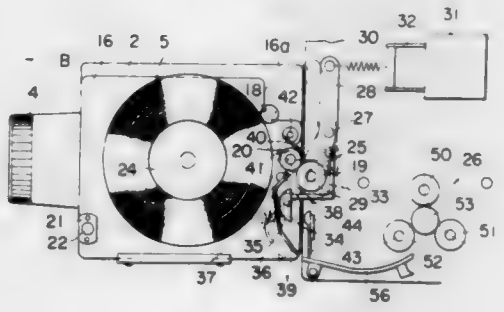
cutting blade guard means mounted transversely of the fixed parallel side plates, arranged and disposed to shield the fabric cutting blade cutting edge when the carriage is in its first position.

4,085,879

PAPER SUPPLYING DEVICE IN COIN WRAPPING APPARATUS

Iizuka Nobuhiro, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Himeji, Japan

Filed Jun. 28, 1977, Ser. No. 810,818
Claims priority, application Japan, Jul. 5, 1976, 51-79600
Int. Cl.[2] B26F *3/02*
U.S. Cl. 225—93 **4 Claims**



1. In a paper supplying device in a coin wrapping apparatus, comprising a movable paper carrying body and a plurality of paper supporting members provided on said paper carrying body, each of the paper supporting members supporting a specific kind of paper wound into a roll and adapted for wrapping a corresponding kind of coins, said paper carrying body being movable for bringing the paper supporting member corresponding to a selected kind of coins into a paper supplying position facing a coin wrapping mechanism of the coin wrapping apparatus, the improvement comprising a single cutting blade provided stationarily at a position between the paper carrying body and the coin wrapping mechanism and

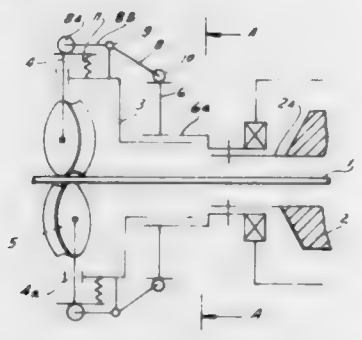
apart from the path of the movement of the paper carrying body, for cutting the paper into a piece of a predetermined length, and means for guiding paper provided in each of said paper supporting members for retracting the leading end of the wrapping paper from said path during the paper changing movement of said paper carrying body.

4,085,880

DEVICE FOR PLANETARY ELECTRODE WIRE-FEEDING HAVING AUTOMATIC ADJUSTING MEANS FOR THE PUSHING FORCE EXERTED ON THE ELECTRODE WIRE

David Albert Samokovliski; Petko Kostadinov Grozdanov; Alfred Emmerich Nemechek; Simeon Georgiev Punchev, and Peter Dimitrov Petrov, all of Sofia, Bulgaria, assignors to Institute po Zavaryavane, Sofia, Bulgaria

Filed Sep. 24, 1976, Ser. No. 726,424
Claims priority, application Bulgaria, Sep. 24, 1975, 33771
Int. Cl.[2] B65H *17/22*
U.S. Cl. 226—90 **8 Claims**



1. A device for planetary feeding of an electrode-wire by means of a pair of rollers which are adapted to contact and convey the electrode-wire with a force that is automatically adjusted, comprising in combination,

a rotatable housing having an axial bore through which the electrode-wire is adapted to be fed, said housing having a pair of radially extending bores;

a pair of pistons reciprocally mounted in said pair of bores, each piston rotatably supporting a roller of said pair of rollers, the axes of said pair of rollers being skewed relative to each other;

biasing means connected to said pair of pistons and biasing them radially outwardly relative to said electrode-wire;

a motor having a drive shaft;

a cam drivingly connected to said drive shaft;

a pair of double-armed levers being fulcrumed to opposite sides of said housing;

a first arm of said double-armed levers coacting with one of said pistons of said pair of pistons and the second arm coacting with said cam, so that when said cam is rotated by said drive shaft said first arm is pivoted and urges said piston to contact said electrode-wire against the action of said biasing means to cause said housing to rotate and said pair of rollers to convey said electrode-wire;

said cam and housing being coaxially disposed for mutual coaction and said electrode-wire being axially fed therethrough.

4,085,881

APPARATUS FOR ADVANCING A LINEAR FIBROUS ELEMENT

Cletis L. Roberson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 581,257, May 27, 1975, Pat. No. 4,005,505. This application Jun. 25, 1976, Ser. No. 699,922
Int. Cl.[2] B65H *17/28*
U.S. Cl. 226—95 **4 Claims**

1. Apparatus for advancing a strand comprising:

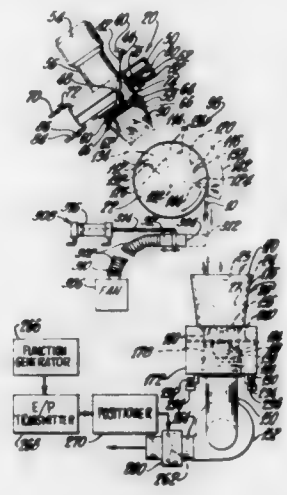
a driven hollow rotary means for advancing a strand, such rotary means having an interrupted wall portion defining an external peripheral surface for engagement with the strand;

a fluid supply;

a nozzle;

a regulator for providing a first stream of fluid having a first flow rate to the nozzle;

an oscillator for intermittently providing a second stream of fluid having a second flow rate to the nozzle, the regulator and oscillator being connected to and between the fluid



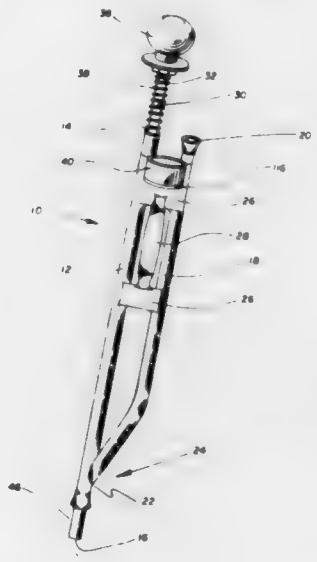
supply and the nozzle in parallel relationship with each other to provide a continuously flowing stream of fluid to the nozzle having a discharge flow rate that oscillates between a bias flow rate and a pulse flow rate, the nozzle being oriented to direct the continuously flowing stream of gas from within the hollow rotary means toward the interrupted wall portion to remove the strand from the external peripheral surface and to impart lateral oscillation to the strand advancing from the rotary means.

4,085,882

NAILING TOOL

Robert Stamper, 302 E. High St., Huntington, Ind. 46750

Filed Feb. 24, 1977, Ser. No. 771,440
Int. Cl.[2] B25C *1/02*
U.S. Cl. 227—110 **7 Claims**



1. A nailing tool comprising an elongated ram rod tube having upper and lower ends and a smooth, uniform internal bore dimensioned to coaxially and slideably receive a nail therein, means for feeding nails into said lower end into a nailing position substantially coaxial therewith, said nail feeding means including an elongated nail feeding tube having an inside diameter dimensioned to slideably and coaxially receive a nail therein and being fixedly secured to said ram rod tube in generally parallel spaced-apart relationship thereto, one end of

said nail feeding tube being angled inwardly and intersecting said ram rod tube at an oblique angle, the interior of said nail feeding tube and the interior of said ram rod tube forming a smooth junction, whereby, a nail deposited into said nail feeding tube will pass therethrough into said nailing position, ram rod means including a ram rod for driving a nail in said nailing position into a work piece, said ram rod being reciprocally moveable in said ram rod tube between retracted and nail striking positions, and being complementary to the bore of said ram rod tube, said ram rod closing said junction when in said striking position, said junction being open when said ram rod is in said retracted position to thereby permit a nail held in said feeding tube to pass into said nailing position, foot attachment means removeably secured to said lower end, and including at least one positioning surface for locating said tool with respect to said workpiece, and thereby a nail being driven by said tool, a nail holder fixedly secured to said tool adjacent the upper end of said ram rod tube, said nail holder including an open container having a magnetic surface, nails deposited in said holder being removeably retained therein by said magnet.

4,085,883

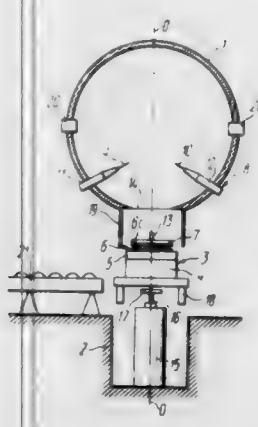
INSTALLATION FOR EXPLOSIVE TREATMENT OF MATERIALS

Andrei Andreevich Deribas, ulitsa Pravdy, 1, kv. 20; Alexandr Fedorovich Demchuk, ulitsa Tereshkovoi, 12, kv. 6, both of Novosibirsk; Rudolf Aronovich Braunshtein, prospekt Metallurgov, 34, kv. 28, Novokuznetsk Kemerovskoi oblasti; Boris Nikolaevich Bochkarev, ulitsa Sovetskaya, 79 a, kv. 59, Novosibirsk; Vladimir Borisovich Viktorov, ulitsa Kurako, 4, kv. 48, Novokuznetsk Kemerovskoi oblasti; Gennady Semenovich Karkishko, prospekt Metallurgov, 15, kv. 4, Novokuznetsk Kemerovskoi oblasti; Sergei Vasilievich Baranov, prospekt Metallurgov, 25, kv. 8, Novokuznetsk Kemerovskoi oblasti; Alexandr Ivanovich Prakhov, ulitsa Sheinkmana, 24, kv. 11, Sverdlovsk; Vladimir Semenovich Kasatkin, ulitsa Ordzhonikidze, 2 a, kv. 52, Sverdlovsk, and Alexandr Timofeevich Rozhkov, ulitsa Volgogradskaya, 184, kv. 83, Sverdlovsk, all of U.S.S.R.

Filed Sep. 22, 1976, Ser. No. 725,505

Int. Cl.[2] B23K *21/00*

U.S. Cl. 228—2.5 **5 Claims**



1. An installation for explosive treatment of materials comprising: a fixed support; a chamber mounted on said fixed support; an opening provided in the wall of said chamber in the bottom part thereof; a work table for supporting the material being treated, the work table being adapted for reciprocal movement between a lowermost position out of engagement with the sides of said opening and an upmost position tightly sealing said opening; an explosive charge on said work table; a system for initiating an explosion; a drive for effecting the reciprocal movements of said work table mounted on said fixed support; said work table being made in such a form that, upon introduction into said chamber, it tightly seals said opening; the walls of said chamber adjacent to said opening being inclined to the horizontal plane at an angle which is greater than the angle of friction of the treated material with the walls of said chamber, whereby the treated material is fed under gravity to said work table while the latter is being withdrawn from said chamber; a ventilation system mounted in said chamber for removing detonation products of said explosive charge.

4,085,884

PAPER SUPPLY BOX

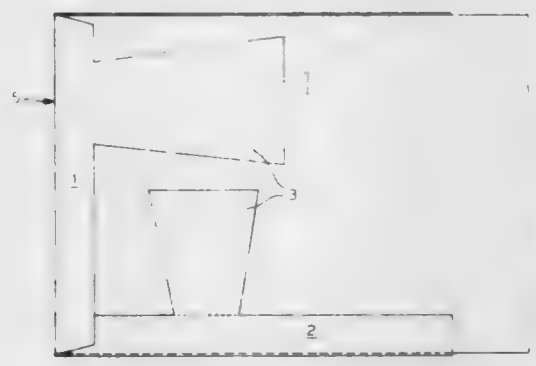
Helmut Johann Högenett, Kreuzstr. 5, Inden, Germany (D 5176), and Valentin Raimund Veithen, Buirer Str. 35, Golzheim, Germany (D 5159)

Filed Nov. 16, 1976, Ser. No. 742,247

Claims priority, application Germany, Nov. 17, 1975, 7536471[U]

Int. Cl.[2] B65D *5/72*

U.S. Cl. 229—17 S **4 Claims**



1. An improved box of the type used as a paper supply container for copying and recording equipment and the like, the improvement comprising at least one end of said box being adapted to provide an open end for removal therethrough of paper sheets from the interior of said box, said box being made of a folded die cut material and having therewithin a folded over portion disposed adjacent ends thereof other than said one end of said box, at least two movable flaps in the interior of said box, said flaps each having one end fastened in the interior of said box and an opposite free end, said flaps each lying in an initial position within said box against one wall of said box and being adapted to move from said initial position towards an opposite wall of said box, as paper is removed therefrom, to a position in which said flaps block full insertion of other paper sheets into the interior of said box.

4,085,885

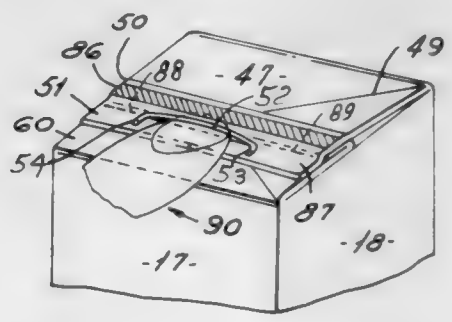
LIQUID PROOF FLAT TOP CONTAINER WITH THUMB NOTCH RELEASE MEANS

Robert E. Lisiecki, Orchard Lake; Duncan J. Crawford, Franklin, and Daniel J. Wise, Farmington, all of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Jul. 23, 1976, Ser. No. 707,969

Int. Cl.[2] B65D *5/72, 5/54*

U.S. Cl. 229—17 R **23 Claims**



1. In a paperboard container, the combination, comprising:

(a) a tubular body having a flat top and closure thereon;

(b) said flat top end closure overlying said body, and including first and second triangular panel members folded flat over the top end of said body, and a pair of rectangular

shaped panels defined as inner and outer roof panels which are folded over said triangular panel members;

(c) each of said triangular panel members is flanked by a pair of fold back panels which join said triangular panel members to said inner and outer roof panels;

(d) first and second pouring panels as part of said fold back panels flanking said first triangular panel member;

(e) first and second closure panels as part of said fold back panels flanking said second triangular panel member;

(f) a sealing rib including said inner and outer roof panels, said first and second pouring panels and said first and second closure panels;

(g) a hold down tab sealing the outer roof panel to said inner roof panel;

(h) said hold down tab being provided with release means for separating the hold down tab from the inner roof panel;

(i) said release means comprises a thumb notch release means;

(j) said hold down tab is frangible and it is ruptured when the hold down tab is separated from the inner roof panel and seal edge members are positioned at the ends of said hold down tab; and

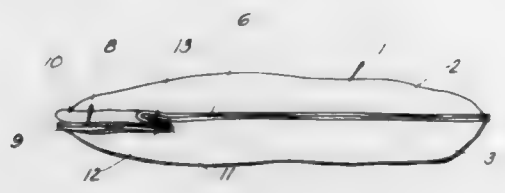
(k) said release means comprises a cut line extending longitudinally of the hold down tab and lies between said hold down tab seal edge members.

4,085,886

RECLOSABLE TWIN-Z-FOLD DISPENSING VALVE CONSTRUCTION FOR A LIQUID CONTAINING FILM POUCH

Masato Nishioka, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 3, 1977, Ser. No. 756,442
Int. Cl.² B65D *33/38*
U.S. Cl. 229—62.5 **8 Claims**



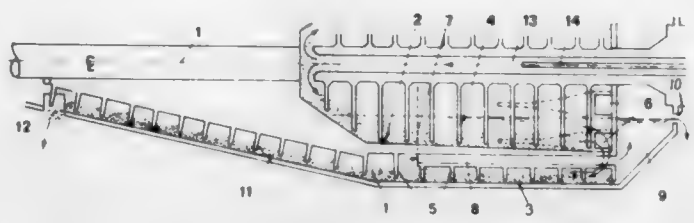
1. A reclosable valve for controlling the flow of a liquid between first and second liquid-proof flexible films joined together in a fluid-tight seal along at least two spaced apart edge portions, said valve comprising a twin-Z fold incorporating both of said films and extending between said spaced apart edge portions, said twin-Z fold comprising first and second oppositely oriented and spaced folds in said films, said first and second films at said twin-Z fold therein being sealed together and to themselves at said spaced apart edge portions to maintain said twin-Z fold, said films at said twin-Z fold therein being discrete between said two spaced apart edge portions, whereby said twin-Z fold will partially unfold between said two edge portions to form a passage for said liquid when said valve is subjected to fluid pressure sufficient to cause said unfolding, said twin-Z fold refolding sufficiently to prevent further passage of said liquid therethrough when said fluid pressure is reduced to a value below that sufficient to cause said unfolding.

4,085,887

CENTRIFUGE FOR DRAINING OFF SEWAGE SLUDGE

Jørgen Steen 4, Bye-Jørgensen, Jernbane Alle, 3050 Humlebaek; Gunnar Valdemar Hartvig Larsen, 15, Sofienbergvej, 2960 Rungsted Kyst, and Poul Henrik Vermehren, 64, Slotsvej, 2920 Charlottenlund, all of Denmark

Filed Apr. 12, 1976, Ser. No. 675,898
Claims priority, application Denmark, Apr. 21, 1975, 1702/75
Int. Cl.² B04B *1/20*
U.S. Cl. 233—7 **8 Claims**



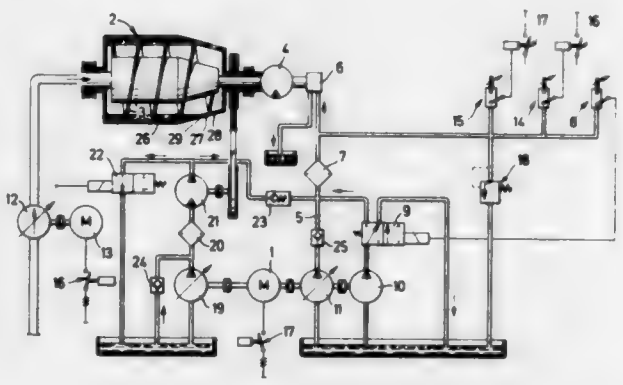
1. In a centrifuge for separating solids, such as sewage sludge, from liquid in which the solids are initially suspended, inner rotary drum and scraper means for receiving the liquid with the solids suspended therein and for subjecting them to an initial separating stage, outer rotary drum and scraper means coaxially surrounding said inner rotary drum and scraper means for subjecting the liquids and solids to a final separating stage, said outer rotary drum and scraper means including a drum formed at opposed end regions with outlets for the separated solids and liquid, respectively, and passage means operatively connected with both of said inner and outer rotary drum and scraper means for providing a common path of travel for the liquid and solids flowing from said inner rotary drum and scraper means subsequent to the initial separating stage to said outer rotary drum and scraper means to be subjected to the final separating stage, said inner rotary drum and scraper means initially receiving the liquids and solids suspended therein at one end region of said inner rotary drum and scraper means and feeding the liquids and solids during the initial separating stage toward an opposite end region of said inner rotary drum and scraper means, said passage means communicating with said inner rotary drum and scraper means at said opposite end region thereof, and said liquid outlet of said drum of said outer rotary drum and scraper means communicating primarily only with said outer rotary drum and scraper means for receiving liquid only after the liquid has been subjected to said final separating stage.

4,085,888

PROCESS AND APPARATUS FOR THE TREATMENT OF SUSPENSIONS

Ernst Adolf Jäger, Vilsbiburg, Germany, assignor to Flottweg-Werk Dr. Georg Bruckmayer GmbH & Co. KG, Germany

Filed Nov. 18, 1976, Ser. No. 743,076
Claims priority, application Germany, Nov. 18, 1975, 2551789
Int. Cl.² B04B *1/20, 9/10, 11/02*
U.S. Cl. 233—7 **39 Claims**



1. In a solid-shell screw-type conveyor centrifuge system,

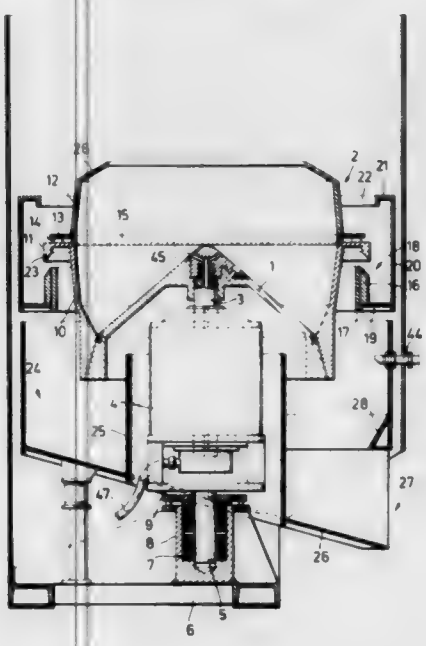
the centrifuge having a screw which rotates at a differential speed with respect to the shell, one of the shell and the screw being coupled to a drive mechanism and the other of the shell and screw being rotated by means of a hydraulic motor, the improvement comprising: means for sensing an accumulation of solid matter in conveying channels of the screw, means for comparing the sensed accumulation of solid matter with a desired optimum accumulation of solid matter, and means for controlling the differential speed between the shell and the screw in response to a signal from said comparing means such that the differential speed is increased upon an accumulation of solid matter above the desired optimum value until such time as the accumulation of solid matter returns to the desired optimum accumulation of solid matter.

4,085,889

CENTRIFUGE HAVING SEPARABLE CENTRIFUGE VESSEL

Richard Steimel, Frankfurter Strasse 134, 5202 Hennef, Sieg, Germany

Filed Nov. 5, 1976, Ser. No. 739,339
Int. Cl.² B04B *9/02, 7/04, 15/06*
U.S. Cl. 233—20 R **10 Claims**



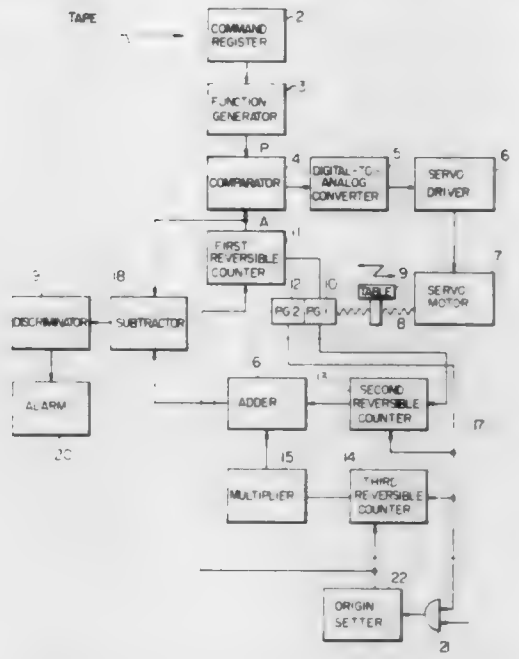
1. A centrifuge comprising:
a support;
an upright shaft;
bearing for mounting said shaft on said support rotatably about an upright axis, for preventing said shaft from moving axially, and for permitting limited horizontal displacement of said shaft relative to said support;
a floor member fixed to said shaft and having a downwardly flared support surface;
an annular wall member having a downwardly flared support surface supportable on said surface of said floor member, said wall member having at least one radially open hold and being provided below said hole with a radially outwardly extending flange;
a trough surrounding said wall member below said flange;
a lift ring surrounding said wall member below said flange; and
means for raising said lift ring into engagement with said flange for lifting said wall member off said floor member and for lowering said lift ring to set said wall member with its surface on said surface of said floor member.

4,085,890

POSITION DETECTING SYSTEM

Toshihiro Kimura, Nagoya; Yoshimaro Hanaki, Kasugai, and Humio Nomura, Komaki, all of Japan, assignors to Okuma Machinery Works Ltd., Nagoya, Japan

Filed Jul. 15, 1976, Ser. No. 705,567
Claims priority, application Japan, Feb. 20, 1976, 51-18380
Int. Cl.² G06F *7/02;* **G05B** *19/24;* **G06F** *15/46, 7/38*
U.S. Cl. 235—419 **3 Claims**



1. In a position-detecting system for a machine, including a moving amount detection pulse generator for incrementally detecting the position of a moving part of the machine; the improvement comprising a reference point detection pulse generator for determining reference points providing predetermined reference distances within the control range of the moving part, means for numerically calculating the position of said moving part on the basis of the output of said reference point detection pulse generator and said moving amount detection pulse generator, means for comparing the position of said moving part based on the output of said moving amount detection pulse generator with the position of said moving part based on the output of said moving part position calculator means, and means for issuing an alarm when the positions based on the outputs of said moving amount detection pulse generator and said moving part position calculator means fail to coincide with each other.

4,085,891

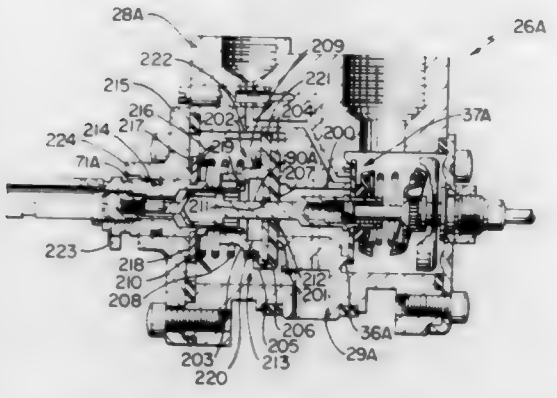
FUEL CONTROL SYSTEM AND CONTROL DEVICE THEREFOR OR THE LIKE

Charles D. Branson, and Roy C. Demi, both of Greensburg, Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 570,863, Apr. 23, 1975, Pat. No. 4,007,672, which is a division of Ser. No. 530,605, Dec. 9, 1974, Pat. No. 3,989,064, which is a continuation-in-part of Ser. No. 443,783, Feb. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 380,389, Jul. 18, 1973, abandoned. This application Nov. 18, 1976, Ser. No. 742,846
Int. Cl.² F23N *1/00*
U.S. Cl. 236—15 A **2 Claims**

1. In a fuel control system for a fuel burning apparatus or the like having a source of fuel adapted to be interconnected by passage defining means to burner means of said apparatus, a pair of control devices disposed in said passage defining means in series relation and respectively having poppet valve means for opening and closing said passage defining means, said poppet valve means of one of said control devices being a main directly manually operated "on-off" valve means for said system, said one control device having a thermostatically operated valve means for controlling the flow of fuel through

said passage defining means intermediate said poppet valve means, said one control device having a movable selector means for setting said thermostatically operated valve means whereby said thermostatically operated valve means will tend to maintain the output temperature effect of said burner means at the temperature setting of said selector means, said poppet valve means of said one control device being operatively associated with said selector means to be moved to an open position thereof as said selector means is moved between an "off" position thereof and a certain other position thereof in one



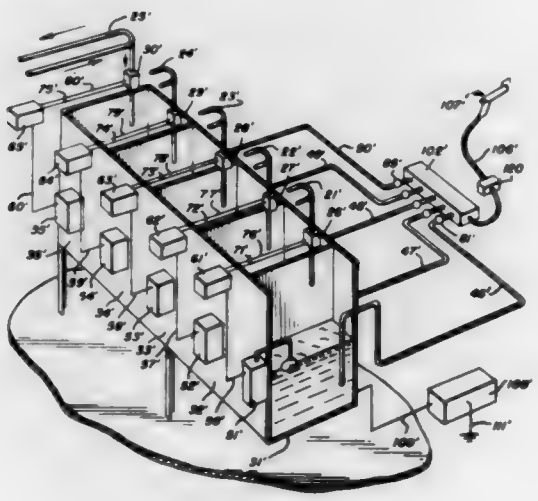
direction, said selector means causing said poppet valve means of said one control device to close as said selector means is moved between said certain other position and said "off" position thereof in an opposite direction to said one direction, said selector means being rotatable and including a rotatable shaft means, the improvement wherein said poppet valve means of said one control device is moved axially along the axis of rotation of said shaft means as said shaft means is being rotated to open or close said poppet valve means of said one control device.

4,085,892

CONTINUOUSLY ENERGIZED ELECTROSTATIC COATING VOLTAGE BLOCK

Robert E. Dalton, 859 E. 169th St., South Holland, Ill. 60473

Filed Apr. 21, 1976, Ser. No. 678,862
Int. Cl.[2] B05B *5/02*
U.S. Cl. 239—15 **9 Claims**



1. In an electrostatic coating system having a spray gun for ejecting highly electrically conductive coating material and an electrode charged to high voltage adjacent the location of ejection of the coating material from the spray gun having a high voltage power supply, and having a coating material supply system supplying coating material to the gun, wherein the improvement comprises,

a first sub-system in said coating material supply system containing coating material electrically grounded,

a second sub-system in said coating material supply system containing coating material insulated from electrical ground and connected to said high voltage power supply,

means for periodically ejecting predetermined masses of coating material into the atmosphere forming a portion of said first sub-system, and

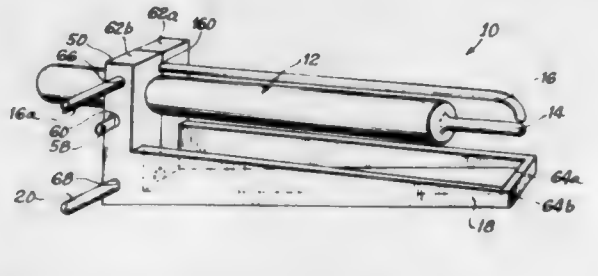
means forming a portion of said second sub-system for periodically receiving said predetermined masses of coating material ejected across a predetermined air space, said air space having a sufficiently large predetermined dimension between said first and second means and said masses of coating material being of a relatively small predetermined size to prevent arcing in said air space when said second system is charged to a high voltage by said high voltage power supply.

4,085,893

ULTRASONIC HUMIDIFIERS, ATOMIZERS AND THE LIKE

Benton A. Durley, III, Rte. 45, Druce Lake, P.O. Box 304, Grayslake, Ill. 60030

Continuation-in-part of Ser. No. 525,487, Mar. 20, 1974, abandoned. This application Sep. 3, 1976, Ser. No. 720,431
Int. Cl.[2] B05B *17/06*
U.S. Cl. 239—102 **11 Claims**



1. An ultrasonic device for atomizing a liquid, comprising a front end mass,

a tail mass,

a pair of piezoelectric elements secured between said front end mass and said tail mass for imparting ultrasonic vibrations thereto,

an electrode secured between said piezoelectric elements,

a mounting member having an opening therein receiving said piezoelectric elements and portions of said masses,

said mounting member affording electrical insulation around said piezoelectric elements and said electrode,

said front end mass having a reduced end portion constituting a vibratory member,

a liquid supply conduit mounted on said mounting member and extending to a point adjacent and above said vibratory member for delivering a liquid into contact with said vibratory member,

and a collection receptacle mounted on said mounting member and disposed beneath said vibratory member for collecting any excess liquid draining from said vibratory member.

4,085,894

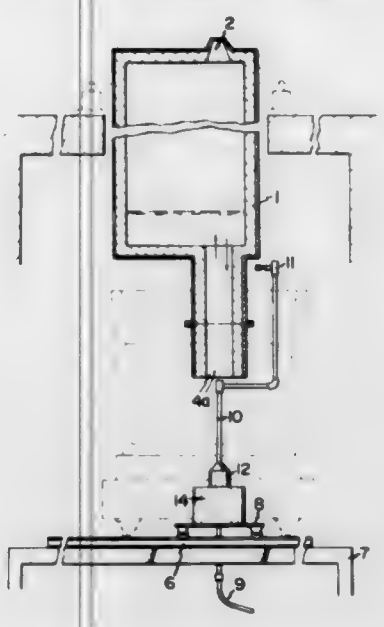
APPARATUS FOR AUTOMATICALLY REPAIRING THE LINING OF A FURNACE

Sueki Kubo, Kitakyushu; Katsuya Toso, Ashiya, and Masayuki Fujita, Kitakyushu, all of Japan, assignors to Kurosaki Refractories Co., Ltd., Fukuoka, Japan

Filed May 28, 1976, Ser. No. 691,111
Claims priority, application Japan, Jun. 24, 1975, 50-79104
Int. Cl.[2] B05B *13/06*
U.S. Cl. 239—121 **13 Claims**

1. Apparatus for automatically repairing the lining of a furnace comprising a transport car movable on a floor, a turntable rotatably mounted on said transport car and rotatable about a first vertical axis, movable car means carried on said transport car, a vertically disposed spray means mounted on said car means and operable to spray a refractory material onto

the lining of said furnace, said vertically disposed spray means being rotatable about a second vertical axis eccentrically displaced from said first vertical axis such that rotation of said turntable about its first vertical axis will cause said vertically disposed spray means to revolve about said first vertical axis, elevating means on said car means for raising and lowering said



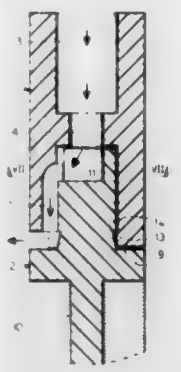
spray means as the latter sprays said refractory material, and rotatable means on said car means for rotating said spray means as the latter sprays said refractory material, whereby said spray means is capable of automatically spraying refractory material onto the various areas of the lining on the interior of said furnace.

4,085,895

ADJUSTABLE SPRAY DEVICE

Byron V. Curry, 1150 Oriole Rd., Montecito, and Michael G. Walton, P.O. Box 5638, Santa Barbara, both of Calif. 93108

Filed Mar. 25, 1977, Ser. No. 781,138
Int. Cl.[2] A62C *31/22*
U.S. Cl. 239—276 16 Claims



1. An adjustable spray device for receiving liquid under pressure and emitting a spray of a volume determined by the adjustment of the device, the device comprising:

a tubular member including an internal channel of generally circular cross-section, the channel having an inlet portion and an outlet portion,

a cylindrical insert member received in the outlet portion of the internal channel of the tubular member, the insert member including a flared head seating against one end of the tubular member,

the insert member further including a chamber formed in the end received within the tubular member, the chamber being in fluid communication with the inlet portion of the internal channel within the tubular member,

an orifice between the chamber and the internal channel of the outlet portion of the tubular member, the orifice being defined by an opening in the side wall of the insert member, the remainder of the side wall of the insert member being sufficiently flexible to be distended by the pressure of liquid within the chamber into a sealing engagement with the interior side wall of the tubular member,

the tubular member also including a longitudinal channel in its side wall extending laterally from an inlet portion adjacent the chamber to an outlet portion adjacent the flared head of the insert member,

an aperture for liquid being provided adjacent the junction of the longitudinal channel in the tubular member and the head of the insert member, and

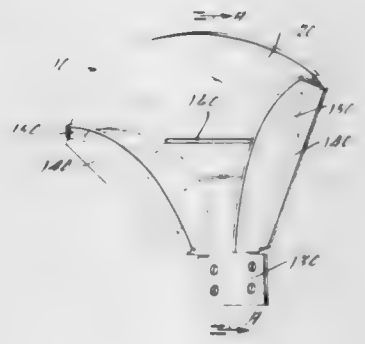
means holding the insert member within the tubular member while permitting rotational adjustment of the insert member relative to the tubular member, whereby in one rotational adjustment the chamber orifice will be misaligned with the longitudinal channel in the tubular member and the side wall of the chamber distended into sealing engagement with the tubular member to prevent liquid from flowing through the device, while in another rotational adjustment the orifice will be at least partially aligned with the longitudinal channel to permit liquid to flow through the inlet portion of the tubular member, the chamber in the insert member and the longitudinal channel in the outlet portion of the tubular member to strike against the head of the insert member and be emitted from the aperture.

4,085,896

APPARATUS AND SPRAY HEAD FOR FLUID DISPERSION

Robert Dorsch, and Daryl Leach, both of Warren, Mich., assignors to Alpha-Debon Industries, Inc., Troy, Mich.

Filed Dec. 6, 1976, Ser. No. 747,510
Int. Cl.[2] B05B *1/26*
U.S. Cl. 239—504 5 Claims



1. An apparatus for removing particulate matter from air wherein contaminated air containing undesirable particulate matter is passed through a fluid spray whereupon said air is scrubbed to remove substantially all of the undesirable particulate matter, wherein said fluid spray is produced upon the impact of pressurized fluid with the surface of a spray head comprising a rigid bent spray plate with two rigid head side plates attached thereto, and two rigid spray side guide bars attached to each of said side plates, wherein said spray plate is bent in a radius of from about 2 inches to about 6 inches to form an angle of between about 95° to about 155°, and wherein said spray plate flares out beyond the bent portion extending through an angle of between about 60° to about 120°.

4,085,897

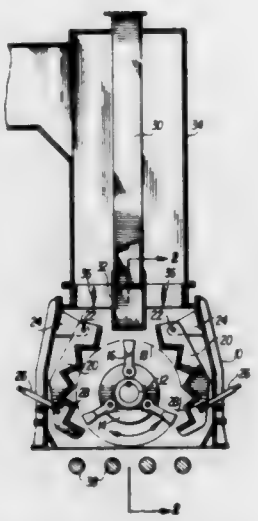
CRUSHER-DRYER AND METHOD OF CRUSHING

William F. Hahn, Devon; Joseph P. Nigro, Villanova, and Frank Wallitsch, Jr., Center Valley, all of Pa., assignors to Pennsylvania Crusher Corporation, Broomall, Pa.

Continuation of Ser. No. 746,379, Dec. 1, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,828

Int. Cl.[2] B02C *23/24*

U.S. Cl. 241—18 **11 Claims**



10. A method of crushing and drying moist materials such as coal and other materials, comprising the steps of:

causing said material to drop through a first essentially vertically oriented duct;

causing said material to leave said first duct at a short distance above the impact circle defined by the outer extremities of the impact members of a crushing machine having a housing, a rotor mounted for rotation on an axis in said housing, impact members mounted on said rotor for striking and crushing material falling through said impact circle and at least one breaker plate mounted in said housing in position to be impacted by material thrown off by said impact members;

passing a flow of hot air into said crushing machine in parallel with said material through at least one second duct spaced outboard of said first duct on the down-running side of said rotor; and

selectively directing said flow of hot air through said crushing machine and between said breaker plate and said rotor; behind said breaker plate; or both.

4,085,898

APPARATUS FOR COMMINUTION OF WELDING ELECTRODE JACKETS

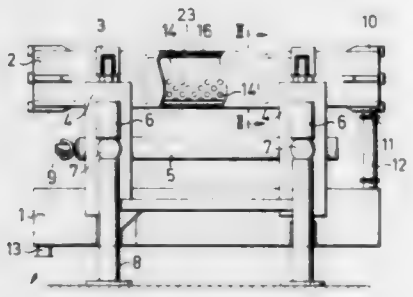
Dieter Jacubasch, Eisenberg, Pfalz; Rudolf Eisenhauer, Cologne; Jüergen Greifenberg, Bensberg-Refrath, and Rolf-Dieter Goebel, Cologne, all of Germany, assignors to Klockner-Humboldt-Deutz AG, Germany

Filed Aug. 9, 1976, Ser. No. 712,942

Claims priority, application Germany, Aug. 9, 1975, 2535711

Int. Cl.[2] B02C *17/08*

U.S. Cl. 241—175 **6 Claims**



1. Apparatus for comminuting the jacket material carried on jacket support rods, comprising: a first hollow chamber;

oscillating means connected to said first hollow chamber for oscillating said first hollow chamber;

a second hollow chamber for receiving the jacketed rods, said second hollow chamber removably mounted within and spaced from the inner surface of said first hollow chamber; and

a plurality of grinding rods in said second hollow chamber for breaking up the jacket material as the first and second hollow chambers are oscillated,

said second hollow chamber including a perforate wall portion for the passage of broken jacket material therethrough into the space between said first and second hollow chambers, and

said first hollow chamber including a discharge opening in communication with the space between said first and second hollow chambers for passage of the broken jacket material to the exterior of said first hollow chamber.

4,085,899

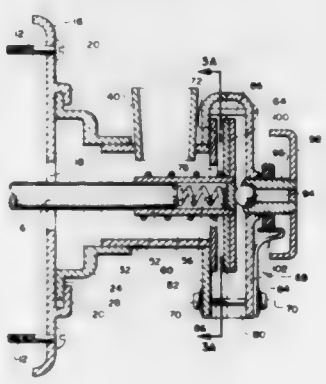
GRINDING APPARATUS

Leland Harman Boothe, 251 S. 600 East, Alpine, Utah 84003

Filed Nov. 22, 1976, Ser. No. 743,862

Int. Cl.[2] B02C *7/13, 7/14*

U.S. Cl. 241—247 **15 Claims**



1. Grinding apparatus for grinding grain and the like comprising

first and second grinding discs, said first disc having an opening centrally located therein

support structure on which said first disc is fixedly mounted,

a support shaft having one end fixed to said second disc and extending from the center of a front side of said second disc, normal thereto, and adapted for mounting coaxially on the drive shaft of a motor so that when so mounted, the support shaft extends through the opening in the first disc to support the second disc in a generally coaxial, mutually facing relationship with the first disc, said second disc being rotatable as the motor drive shaft is rotated,

biasing means disposed in contact with the motor drive shaft and said support shaft for biasing the support shaft and second disc in a direction outwardly from the end of the motor drive shaft,

a bearing element disposed on a back side of said second disc opposite the front side thereof, said bearing element defining a bearing surface,

a cover mounted on said support structure to fit substantially over and about said discs, and

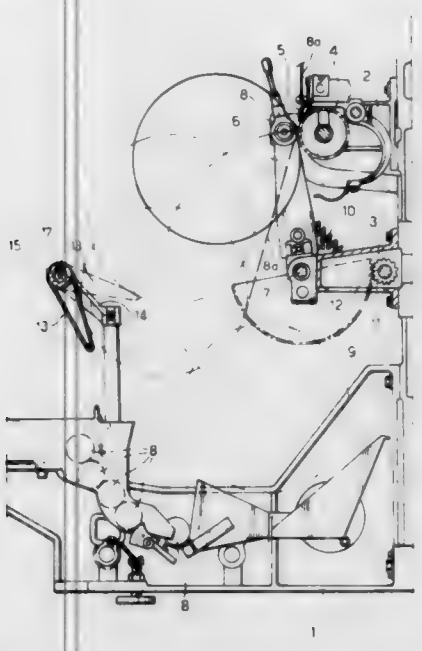
a bearing member disposed in said cover for contacting and pressing against said bearing surface of the bearing element to thereby maintain the support shaft on the motor drive shaft, said bearing member including a ball means loosely held by said cover to protrude from said cover and contact and press against said bearing surface of the bearing element.

4,085,900

BOBBIN-CHANGING DEVICE WITH AUTOMATIC MEANS FOR SEVERING THE THREAD OR STRIP

Pietro Marcio', Arese (Milan), Italy, assignor to Sant' Andrea Novara Officine Meccaniche e Fonderie S.p.A., Novara, Italy

Filed Sep. 28, 1976, Ser. No. 727,565
Claims priority, application Italy, Oct. 3, 1975, 69458 A/75
Int. Cl.[2] B65H *54/46*
U.S. Cl. 242—18 DD **6 Claims**



1

1. A textile winding machine for winding an elongate filamentary member composed of textile fibres, the machine comprising:

means for rotatably supporting a rotary winding member for receiving the filamentary member;

means for rotating the rotary winding member in a wind-on direction and while in a winding zone, to wind the filamentary member thereon;

guide means for guiding the filamentary member to a part of the periphery of the rotary winding member which descends during rotation of the rotary winding member in the wind-on direction;

means for allowing the fully wound rotary winding member to descend from its winding zone and follow a descent path; and

a frictional member in the descent path and on the side of the axis of the rotary winding member towards which the bottom part of the rotary winding member rotates in the wind-on direction, whereby the frictional member is engaged by the periphery of the fully wound rotary winding member to accelerate the winding member in the wind-on direction thereby breaking the filamentary member.

4,085,901

APPARATUS FOR PACKAGING LINEAR MATERIAL

James E. Sanders, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

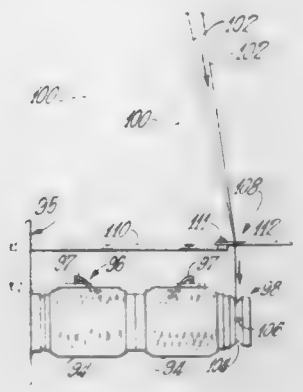
Continuation of Ser. No. 590,756, Jun. 26, 1975, abandoned.
This application May 27, 1977, Ser. No. 801,191
Int. Cl.[2] B65H *54/00*
U.S. Cl. 242—18 G **5 Claims**

1. Apparatus for packaging a first and a second supplied strand comprising:

a. a rotatable collet having a first package collection region for collecting the first strand, a second package collection region for collecting the second strand and a temporary collection region;

b. a strand engaging member having a recess and a guide surface terminating at one end at the recess; and

c. means for moving the member so that the strands can be moved along the collet between the package collection regions and the temporary collection region, the guide surface being disposed to first contact and laterally guide the first strand toward the recess and then contact and laterally guide the second strand toward the recess so that both strands are collected in the recess and are gathered into a single bundle therein when the member is moved along a path to move each strand from its respective



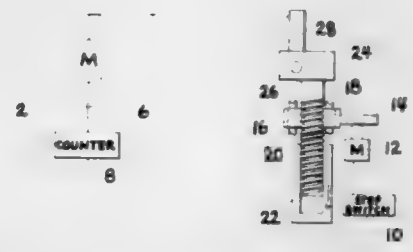
package collection region to the temporary collection region, the recess being disposed tending to hold the single bundle therein and thus urge movement of the bundle of the strands with it when the member is moved back along the path such that each strand individually releases from the recess at its package collection region.

4,085,902

STRAIGHT HOLE FORMATION WITH MOVING GUIDE PATH

William A. Wagner, Somers, N.Y., assignor to Windings, Inc., Goldens Bridge, N.Y.

Continuation of Ser. No. 690,882, May 28, 1976, abandoned.
This application Apr. 14, 1977, Ser. No. 787,304
Int. Cl.[2] B65H *54/28, 55/02*
U.S. Cl. 242—43 R **2 Claims**



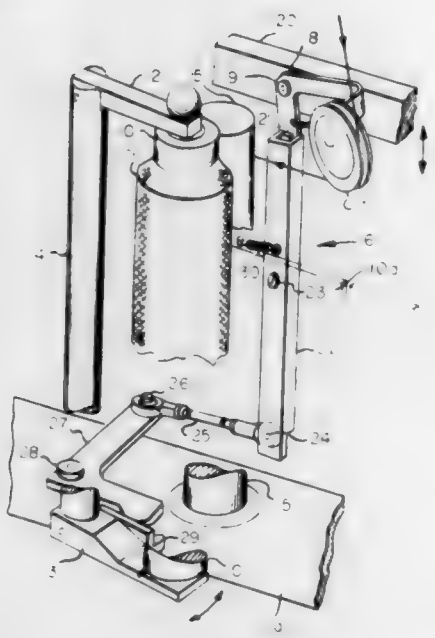
1. In a machine for winding flexible material into a package comprising a rotatably driven spindle, a movable material guide, means to reciprocate the guide along the spindle so as to lay upon the spindle successive layers of figure-8 windings in which the crossovers progress angularly around the package in each layer, and means to change the relative movement between the spindle and guide so as to produce in each layer of the windings a hole therethrough, the improvement comprising, means to shift the reciprocating travel path of the guide progressively with respect to the spindle in synchronism with the rotation of the spindle so as to maintain a line joining the reciprocating travel path of the guide to the surface of the material wound on the spindle at all times tangent to such surface in the same spatially fixed line radial to the axis of rotation of the spindle, whereby the holes in the layers of the windings are radially aligned to form a straight hole radially of the package.

4,085,903

YARN WINDING APPARATUS

Klaus Dieter Kuhnemann, Kingston, Canada, assignor to Du Pont of Canada Ltd., Montreal, Canada

Filed Sep. 9, 1976, Ser. No. 721,767
Claims priority, application Canada, Nov. 12, 1975, 239616
Int. Cl.[2] B65H *57/28*
U.S. Cl. 242—43.1 **2 Claims**



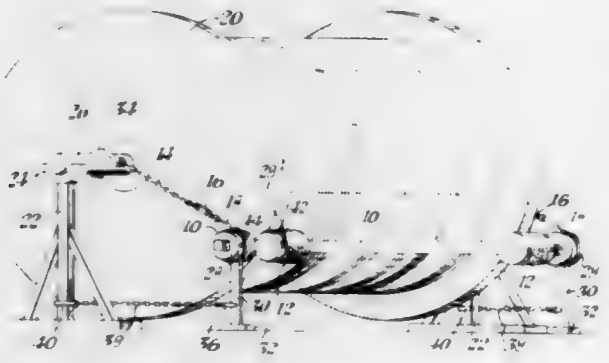
1. A yarn winding apparatus comprising:
a frame;
a driven friction roller rotatably mounted to said frame in a vertical position;
a rotatable package in surface contact with said roller;
a layrail horizontally positioned in close proximity to said friction roller; means for reciprocating the layrail longitudinally of the package;
a modulating yarn guide means for imparting vibratory motion to the yarn; and means connected between said modulating yarn guide and said layrail for traversing said modulating yarn guide means the length of said package; so that the modulating yarn guide imparts a vibratory motion to the yarn throughout the length of the package immediately before it is laid down on a package.

4,085,904

PORTABLE CABLE REEL DRIVE

James A. McElroy, 951 Spanish Cir., Delray Beach, Fla. 33444, assignor to James A. McElroy, Delray Beach, Fla.

Continuation-in-part of Ser. No. 542,550, Jan. 20, 1975, abandoned. This application Feb. 11, 1976, Ser. No. 657,229
Int. Cl.[2] B65H *49/00, 75/00*
U.S. Cl. 242—54 R **3 Claims**



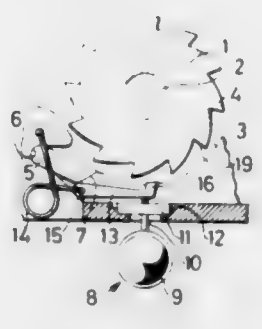
1. A portable cable reel drive for rotating a cable reel having a hub and mounted on an axle and an axle support comprising:
a drive shaft;
at least one reel drive hub connected to said drive shaft;
a drive shaft hanger assembly rotatably coupled to said drive shaft at one end and coupleable to said cable reel axle;
said drive shaft hanger assembly mounting said drive shaft in proximity to said reel hub for engaging said reel drive hub with said reel hub;
a detachable drive shaft stabilizing means for securing said drive shaft in a fixed position relative to said reel and said stabilizing means connected to said drive shaft and said axle support; and
means connected to said drive shaft for coupling said drive shaft to a mechanical rotational energy source;
said drive shaft hanger assembly includes a first flexible connector, having an axle coupling means disposed at one end and a drive shaft coupling means disposed at the opposite end, said drive shaft coupling means being rotatably coupled to said drive shaft to permit rotation of said drive shaft and means for adjusting the length of said first flexible connector.

4,085,905

BLOCKING DEVICE PREFERABLY FOR REEL-TYPE SAFETY BELTS FOR VEHICLES

Oskar Lennart Lindbald, Hedasgatan 6 440 20, Vargarda, Sweden

Filed Aug. 18, 1975, Ser. No. 605,348
Claims priority, application Sweden, Aug. 29, 1974, 7410929
Int. Cl.[2] B65H *75/48*
U.S. Cl. 242—107.4 A **11 Claims**



1. Blocking device for vehicle reel-type safety belts comprising a rotatably mounted ratchet wheel having teeth and capable of being connected to the reels of the safety belts, a pivotally mounted blocking pawl positioned for at times engaging the teeth of said ratchet wheel for preventing rotation of said ratchet wheel in one direction, actuating means being operable upon an abnormal change of speed of the vehicle, a pivotally mounted auxiliary pawl being postioned for being pivoted by said actuating means into engagement with said teeth and pivoting said blocking pawl into engagement with said teeth upon actuation of said actuating means, and resilient means tending to retain said auxiliary pawl into engagement with said actuating means.

4,085,906

MAGNETIC TAPE CARTRIDGE TRANSPORT

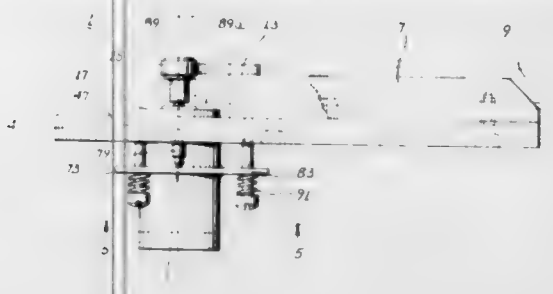
John Conlan Dahl, and David Lee Barnett, both of Phoenix, Ariz., assignors to Three Phoenix Company, Phoenix, Ariz.

Filed Dec. 13, 1976, Ser. No. 749,838
Int. Cl.[2] G11B *15/32;* B65H *17/24*
U.S. Cl. 242—192 **10 Claims**

1. In a magnetic tape cartridge transport for transporting magnetic tape enclosed in a cartridge having capstan means accessible through a front edge thereof for receiving rotary motion from a drive roller coupled to an electric motor which passes through a motor opening in a base plate of the transport, the improvement comprising:
(a) an attachment bracket secured to the motor and extending laterally therefrom and having first, second and third apertures therein;
(b) first, second and third downwardly extending shafts

positioned in spaced relationship about the motor opening of the base plate and secured to the base plate, said first, second and third shafts protruding respectively through the first, second and third apertures in said attachment bracket and including shoulders on the lower ends thereof;

(c) pivot means for permitting said attachment bracket to



pivot the drive roller in a plane perpendicular to the front edge of the cartridge; and

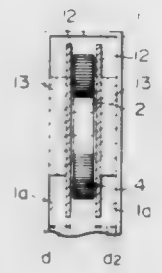
(d) biasing means surrounding each of said shafts and positioned between said shoulder and said attachment bracket for biasing said attachment bracket against said pivot means and for biasing the drive roller of the motor against the capstan means of the cartridge to transfer rotary motion from the drive roller to the capstan means.

4,085,907

MAGNETIC TAPE MAGAZINE

Osamu Suzuki; Kengo Oishi; Goro Akashi, and Kenji Sega, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 685,900, May 12, 1976, abandoned. This application Mar. 14, 1977, Ser. No. 777,536
Claims priority, application Japan, May 12, 1975, 50-56553
Int. Cl.[2] G11B *23/10*
U.S. Cl. 242—199 **4 Claims**



1. A magnetic tape magazine comprising a casing, a tape feed-out core, a tape take-up core, a magnetic tape wound in convolutions on said feed-out and take-up cores, and a pair of friction sheets interposed between the tape convolutions and inner walls of the casing wherein the improvement comprises a pair of cushion sheets made of elastic material interposed between said friction sheets and the inner walls of the tape magazine, said cushion sheets each having a thickness larger than the space between the side faces of the tape convolutions and the inner wall of the tape magazine, the thickness being so selected that the pressure imparted on the side faces of the tape convolutions is 0.1 to 0.69g/cm^2.

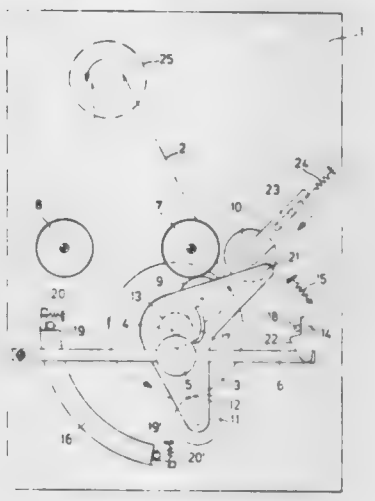
4,085,908

TAPE RECORDER CONTROL UNIT

Reinhold Emmert, Furth, Germany, assignor to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig, Furth, Germany

Filed Oct. 18, 1976, Ser. No. 733,030
Claims priority, application Germany, Dec. 19, 1975, 2557319
Int. Cl.[2] G11B *15/10, 15/29, 15/30*
U.S. Cl. 242—201 **10 Claims**

1. In a cassette type tape recorder of the type having: "start", "stop" and "rewind" modes of operation, a d.c. drive motor, means for altering the polarity of the voltage applied to said drive motor, a tape transport shaft driven by said drive motor, a fly wheel mounted concentrically about said shaft, a pressure roller lever, a pressure roller mounted for rotation on said lever and adapted to engage a length of tape to hold said tape in operational engagement with said shaft, a tape take-up reel driver, a tape supply reel driver and idler means mounted to be driven through said flywheel and to be coupled to the reel



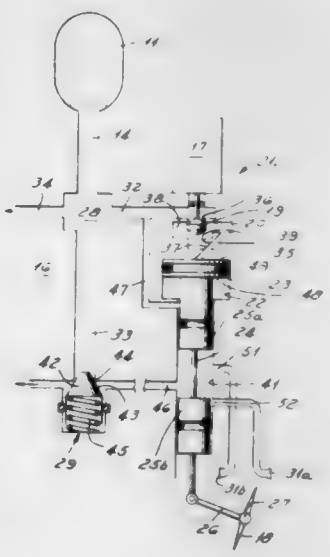
drivers; the improvement comprising: a swing arm rotatably mounted about said shaft, clutch means for frictionally connecting said swing arm to said fly wheel, said idler means being mounted to said swing arm for movement therewith whereby reversal of the direction of said drive motor causes said swing arm to rotate from a first position wherein said idler means engages one of said drivers to a second position wherein said idler means engages the other of said drivers.

4,085,909

COMBINED WARM GAS FIN AND REACTION CONTROL SERVO

George F. East, Whittier, and Charles E. Hallum, Irvine, both of Calif., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1976, Ser. No. 729,512
Int. Cl.[2] F42B *15/16, 15/18*
U.S. Cl. 244—3.21 **14 Claims**



1. A reaction nozzle and movable fin servo system for providing reaction and fin directional control of a missile during low and high velocity flight phases, comprising:

a gas generator having a stepped flow rate that is high shortly after ignition and low during sustaining operation,

a plurality of independent actuator means each coupled to a movable fin for controlling the aerodynamic lift orientation of the latter,

a control valve means for controlling gas flow to each actuator means,
each actuator means including diversion valve means for controlling gas flow to reaction nozzles,
a manifold having flow passages to duct gas from the gas generator to each control valve means and each diversion valve means,
and a pressure responsive valve means controlling the gas flow through the flow passages connecting the gas generator and the diversion valve means,
the pressure responsive valve means being open in response to relatively high manifold pressure during high gas flow rate permitting full flow to the diversion valve means and normally being closed during low gas flow rate.

4,085,910

DUAL MODE OPTICAL SEEKER FOR GUIDED MISSILE CONTROL

William G. Baker, Rolling Hills Estates; James H. Gisbrecht, Rolling Hills, and Edward T. Luszcz, Anaheim, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 12, 1972, Ser. No. 243,280
Int. Cl.[2] F41G *7/00*; F42B *15/02*; G06F *15/50*
U.S. Cl. 244—3.16 **8 Claims**



1. In a dual mode optical seeker having an optical assembly comprising optical units for separately sensing visible signals and infra-red signals, said optical assembly being mounted for pivotal motion about azimuth and elevation axes, the improvement comprising means for inertially stabilizing said optical assembly without mounting said assembly on a stable platform, said improvement including:
a stable platform unit,
means for inertially stabilizing said platform unit, and
rod means for interconnecting said platform unit with said optical assembly to cause said optical assembly to precisely physically follow said platform unit in azimuth and elevation.

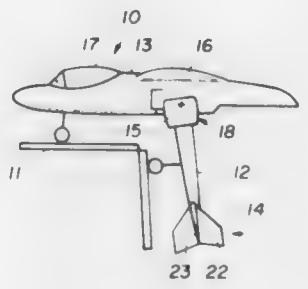
4,085,911

VERTICAL TAKEOFF AND LANDING AIRCRAFT

Richard J. Nahodyl, Massapequa Park, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 699,388, Jun. 24, 1976, abandoned. This application May 23, 1977, Ser. No. 799,510
Int. Cl.[2] B64C *1/30*
U.S. Cl. 244—12.4 **1 Claim**

1. An aircraft comprising:
a fuselage having air inlet means for a cavity having an opening at the rear thereof;
wings fixed to said fuselage and extending from an upper portion of said fuselage on each side thereof;
a separate longitudinal supporting structure carrying a tail assembly including movable aerodynamic control surfaces at one end thereof, said surfaces being elevon and rudder surfaces located on each side of said fuselage and beneath said fuselage;
an engine means submerged in the cavity of said fuselage between said air inlet means and said opening which forms an exhaust port for said engine means;
a plurality of ducted fan means attached to said longitudinal supporting structure, at least one of said ducted fan means on each side of said fuselage, said ducted fan means being under said wings and exhausting air flow over and about said aerodynamic control surfaces under said fuselage;
operative connections between said engine means and said ducted fan means for driving said ducted fan means and for producing the exhausting air flow and thrust thereby; and



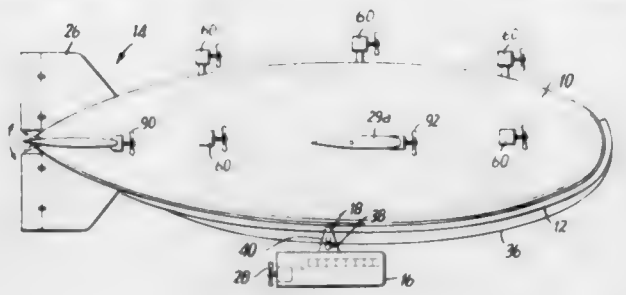
means to pivot said longitudinal supporting structure under and away from said fuselage whereby said longitudinal supporting structure will pivot said ducted fan means about an axis transverse to said fuselage to a position substantially normal to and under said wings to change the direction of thrust produced by said fan means, and whereby said aerodynamic control surfaces remain immersed in the slipstream from said ducted fan means at all positions of said longitudinal supporting structure to effect yaw, roll and pitch movements of said aircraft upon displacement of said aerodynamic control surfaces.

4,085,912

CONVERTIBLE AIRSHIP

Saul I. Slater, 1427 W. 22 St., Sunset Island 4, Miami Beach, Fla. 33140

Continuation-in-part of Ser. No. 552,793, Feb. 25, 1975, Pat. No. 3,971,533. This application Apr. 14, 1976, Ser. No. 674,278
The portion of the term of this patent subsequent to Jul. 27, 1993, has been disclaimed.
Int. Cl.[2] B64B *1/38*
U.S. Cl. 244—25 **53 Claims**



1. An airship convertible between a generally horizontal configuration and a generally vertical configuration, comprising:
a generally elongate outer envelope structure adapted to house a lighter-than-air gas and any enclosure means used for containing the gas;
a gondola adapted to be mounted to said envelope structure;
means for generally slidably mounting said gondola to said envelope structure to enable rotation of the longitudinal axis of said envelope structure between generally horizontal and generally vertical orientations while said gondola maintains a generally horizontal orientation by variably positioning said gondola generally along said envelope structure from a point generally under said envelope structure when its longitudinal axis is generally horizontal to a point generally at the nose of the envelope structure when its longitudinal axis is generally vertical;

means for variably positioning said gondola relative to said envelope structure;

stabilizer means mounted to said envelope structure, said stabilizer means being operable from said gondola to assist controlling said airship during flight and maneuvering; and

first propulsion means mounted to said envelope structure adapted to provide thrust generally parallel to said longitudinal axis,

such that when said longitudinal axis is generally horizontal, said first propulsion means can provide generally horizontally-oriented thrust for driving said airship in flight, and when said longitudinal axis is generally vertical, said first propulsion means can provide generally vertically-oriented thrust for urging said airship to descend.

44. A method for anchoring an airship containing a lighter-than-air gas, which is convertible between generally horizontal and generally vertical configurations, comprising the steps of:

ceasing generally all generally horizontally directed propulsion;

generally slidably moving the airship gondola to a point generally at the nose of the airship envelope structure for orienting the longitudinal axis of the airship envelope structure to a generally vertical orientation while maintaining the gondola in a generally horizontal orientation;

propelling the airship downwardly;

positioning magnet means attached to the gondola in position for attraction to a magnetically attractive member secured to the earth; and

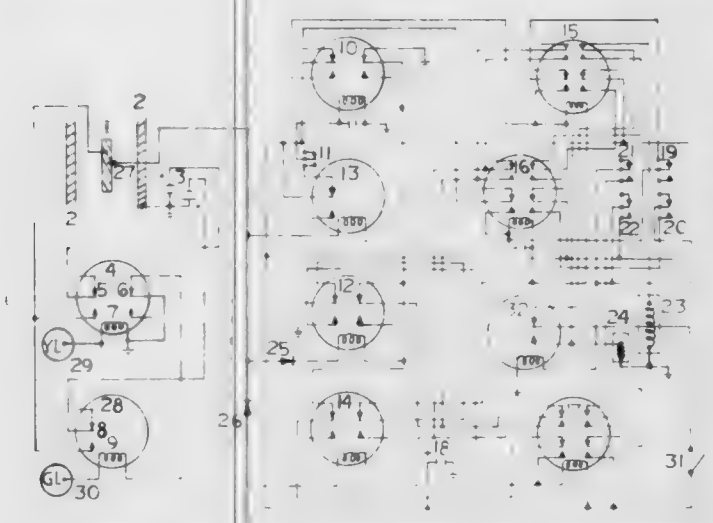
allowing the magnet means and the magnetically attractive member to become coupled by magnetic attraction therebetween.

4,085,913

DEVICE FOR PREVENTING COLLISION OF TRAINS

Chen-Kun Chang, 3733 Quintara St., San Francisco, Calif. 94116

Filed Jan. 12, 1977, Ser. No. 758,560
Int. Cl.[2] B61L *1/08*
U.S. Cl. 246—63 A **5 Claims**



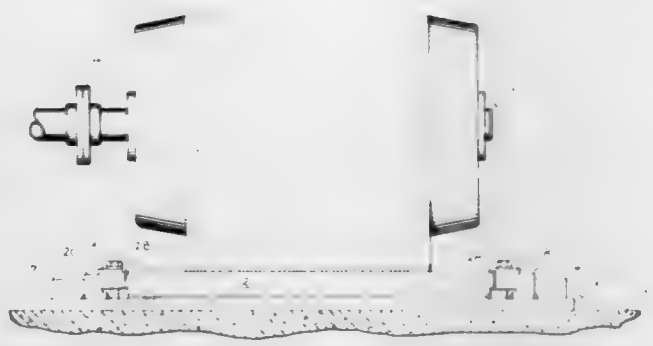
1. A railway automatic signal sending unit from a wayside to a locomotive, consisting of two relays, two storage batteries, a stationary wayside contact, a yellow traffic light, a green traffic light, and electric circuits, wired such that when the yellow traffic light is on, a D. C. voltage on the stationary wayside contact is positive, when the green traffic light is on, the D. C. voltage on the stationary wayside contact is negative, and when neither the yellow nor green traffic light is on, the D. C. voltage on the stationary wayside contact is zero.

4,085,914

DYNAMOELECTRIC MACHINE MOUNTING ASSEMBLY

John J. Gavin, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 9, 1976, Ser. No. 665,351
Int. Cl.[2] F16M *5/00*
U.S. Cl. 248—19 **5 Claims**



1. A dynamoelectric machine mounting assembly comprising a foundation soleplate having a flat upper surface, a dynamoelectric machine having a mounting pedestal with two substantially parallel planar sides, said pedestal being slidably disposed on said upper surface of said plate, first and second holding blocks welded to the upper surface of the foundation soleplate each, respectively, on opposite sides of said pedestal adjacent one of said planar sides, at least one cam block welded to said upper surface in abutting relationship with one of said holding blocks, between it and said pedestal, said cam block having a cam surface beveled at an angle in the range of 65° to 85° relative to said flat upper surface, a wedge bar positioned between the cam block and said pedestal, said wedge bar having a planar surface juxtaposed with the nearest planar side of said pedestal and having a beveled surface positioned in sliding relationship on the beveled cam surface of said cam block, the beveled surfaces of said wedge bar and cam block being approximately equal in length to the length of the planar side of the pedestal adjacent thereto, first wall means defining a plurality of spaced apertures extending through the wedge bar from the top to the bottom surface thereof, second wall means defining a plurality of threaded apertures extending through the upper surface of said foundation soleplate into the body thereof, and a plurality of threaded bolts each positioned, respectively, through one of the apertures in said wedge bar and into threaded engagement with one of the apertures in said sole plate, said bolts being operable, responsive to rotation thereof that forces their heads against the top of the wedge bar, to drive the beveled surface of the wedge bar against said beveled cam surface thereby to position one planar surface of the pedestal against the other holding block and to stress-load the wedge bar by compressing it between the pedestal and the cam block, said stress-loaded wedge bar being effective to retain the pedestal in a fixed position when the pedestal is subjected to thrust loading along an axis transverse to the planar sides thereof.

4,085,915

COUPLING DEVICE FOR EQUIPPING A CAMERA ONTO THE TRIPOD

Kyong Jin Song; Yong Shik Song; Jong Shik Song, and Jung Shik Song, all of 57-1, Kyongwon-dong 1-ka, Jonju, North Korea

Filed Jan. 11, 1977, Ser. No. 758,550
Int. Cl.[2] F16M *11/04*
U.S. Cl. 248—187 **3 Claims**

1. A coupling device for attaching a camera to a tripod, said device comprising:

a first coupling member attached on the underneath side thereof to the top of said tripod;

a hollow upright member on the top, central portion of said

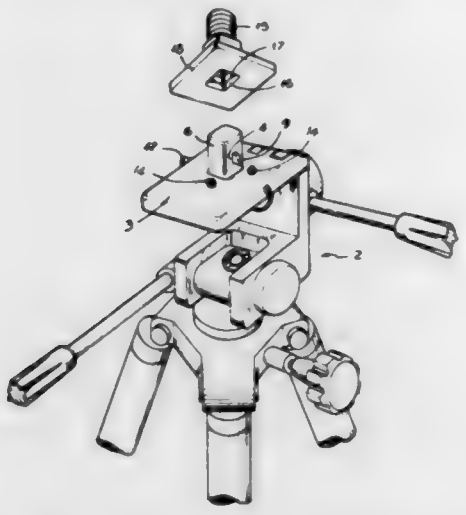
first coupling member, said hollow member having a hole through at least one upright side wall thereof;

a hook member pivotally mounted in said hollow member and extending through said hole in the side thereof;

push means within said first coupling plate adjacent said hook member for pushing against said hook member and causing said hook member to pivot;

first spring means on the side of said hook member opposite said push means for biasing said hook member against said push means;

a second coupling member attached to the bottom of said



camera, said second coupling member having a screw portion at the top thereof threaded into said camera and an open cavity in the bottom thereof beneath said screw portion and inserted over said hollow upright member, and said second coupling further having inside said cavity at least one locking groove engageable with said hook member;

at least one rubber packing member slidably extending upward from said first coupling member beneath said second coupling member; and

second spring means beneath said rubber packing for urging said packing upward.

4,085,916

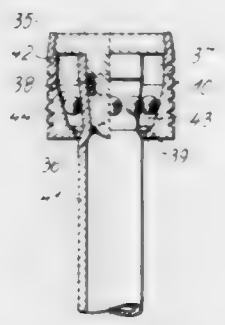
RELEASABLE LOCKING DEVICE

Jorgen Gammelgaard Pedersen, Vaegtens Kvarter 4B, DK-2620 Albertslund, Denmark

Continuation-in-part of Ser. No. 448,636, Mar. 6, 1974, abandoned. This application Nov. 13, 1975, Ser. No. 631,664

Int. Cl.[2] **F16M** *11/16*

U.S. Cl. 248—188 **13 Claims**



1. A releasable locking device comprising in combination:

a first socket-like member having a recess and a separate second member having a projecting portion, said members being relatively movable substantially in the axial direction of said projecting portion into and out of a mutually fully engaged position in which said projecting portion of said second member is received in said recess in said first member, said first member having a stud portion arranged centrally within said recess and extending towards the opening thereof and said projecting portion of said second member having at its free end a pocket or bore for receiving said stud member in the fully engaged position of said first and second members and having an outer surface part diverging towards the free end of said projecting portion and defining together with a radially oppositely located inner wall part of said recess of said first member an annular channel section having a radial width decreasing in the direction towards the opening of the recess in said first member from a maximum width to a minimum width,

at least one latch element arranged within said channel section, the maximum radial dimension of the latch element receivable in said channel section being greater than said minimum width and smaller than said maximum width of the channel section, said latch element being freely movable in said channel section between locking and releasing positions in which said members are locked by said latch element in their fully engaged position and in which said members may be disengaged, respectively, said latch element being movable from its releasing position to its locking position and vice versa exclusively by its own weight, whereby said members may be disengaged only in certain positions of the locking device.

4,085,917

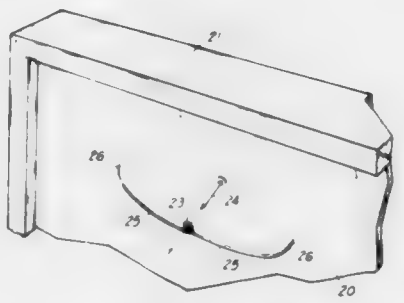
PICTURE HANGER

Haskew H. Brantley, Jr., 6114 Riverside Dr. NW., Atlanta, Ga. 30328

Continuation-in-part of Ser. No. 599,928, Jul. 29, 1975. This application Jun. 21, 1976, Ser. No. 697,875

Int. Cl.[2] **A47G** *1/24*

U.S. Cl. 248—489 **9 Claims**



1. A hanger for pictures and the like comprising an elongated wire body having diverging arms for engaging the wall throughout substantial portions of their lengths and upstanding suspension elements on the ends of said arms on which a picture frame may rest, and means between said arms on the body portion substantially midway between said suspension elements and including a closed loop element substantially at its longitudinal center for anchoring the hanger to a wall or the like, the upper ends of said suspension elements terminating above said loop element so that said picture frame may be flat against the wall when supported by said elements.

4,085,918

COMPOSITE CONSTRUCTION FORM SYSTEM

Joseph Felton Wilkerson, Rte. 2, Roxboro, N.C. 27573

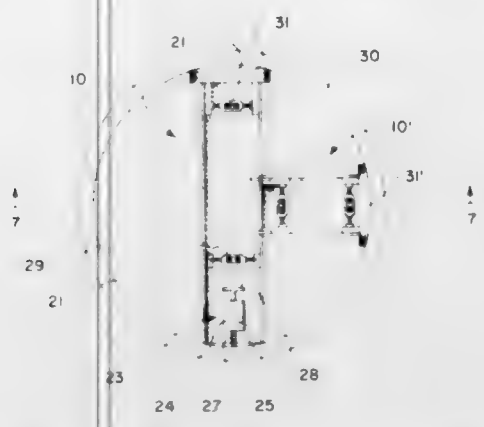
Filed Sep. 15, 1976, Ser. No. 723,495

Int. Cl.[2] **B28B** *7/30, 7/16;* **E02D** *29/10*

U.S. Cl. 249—11 **6 Claims**

1. A system of forms for use with concrete and other setable materials comprising: a first relatively thin walled, semi-cylindrical form means having two open end portions and being elongated so as to define a longitudinal axis through said form means, an open side and two edges adjacent such side; means secured adjacent and extending between opposite edges across said open side for drawing said edges toward each other; a generally flat cover means removably enclosing said open side of said form; means for releasably retaining said cover means relative to said form means; and an adjustable anchoring means connected to said form means adjacent one of said open end

portions and movable in a direction generally parallel to said longitudinal axis for steadying said form means during the



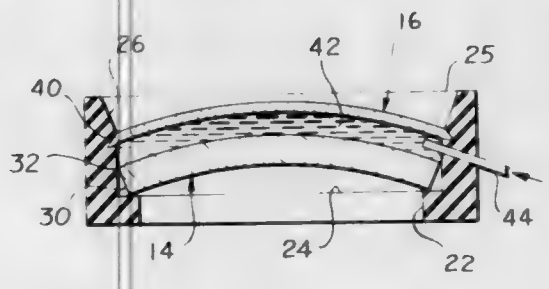
pouring of setable material whereby an improved form system is provided.

4,085,919

LENS-CASTING CELL

Philip J. Sullivan, Worcester, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Continuation of Ser. No. 713,933, Aug. 12, 1976, abandoned.
This application Jul. 5, 1977, Ser. No. 812,925
Int. Cl.[2] B29C *1/00*; B29D *11/00*
U.S. Cl. 249—134 **3 Claims**



1. A lens-casting cell comprising:

an annular gasket of resilient material having an inwardly directed flange adjacent a first of its sides, an internally disposed perimetrical groove adjacent its second side and an inner uniformly diametrally dimensioned wall extending between said flange and groove, there being in internal chamfer adjacent said second side of said gasket and extending inwardly and toward said groove to facilitate entrance of said first and second mold halves through said second side of said cell, said cell requiring single side loading of said mold halves

a first meniscus mold half of circular configuration seated against said flange internally of said gasket, said mold half being of an outer diametral dimension greater than that of said wall of said gasket for indenturing said gasket wall and providing a fluid tight seal between said first mold half and gasket;

a second meniscus mold half of circular configuration having a diametral dimension greater than said diametral dimension of said gasket wall, said second mold half being peripherally engaged in said groove; and

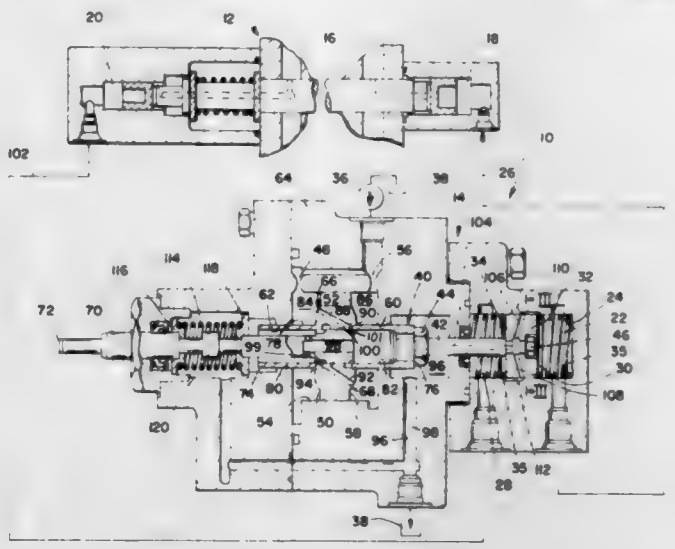
said first and second meniscus mold halves each having concave and convex opposite sides, a convex side of one of said mold halves and a concave side of the other of mold half being disposed in spaced facing relationship to form a lens casting cavity therebetween.

4,085,920

PILOT CONTROL VALVE WITH SERVO MEANS

Claude A. Waudoit, Villers-la-Ville, Belgium, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 15, 1976, Ser. No. 742,033
Int. Cl.[2] F16K *31/122*; F15B *13/042*
U.S. Cl. 251—57 **10 Claims**



6. In a valve system comprising a fluid operated main control valve and adjustable servo valve means for controlling said main valve, said main valve including a main valve spool reciprocal therewithin, an improved adjusting means operating via fluid displacement, comprising:

a servo valve housing having a hole therein and a rod movable within said hole, a first end of said rod extending from said housing to allow operator-initiated movement of said rod within said hole;

a sleeve within said hole, a first end of said sleeve opening towards said first end of said rod and a second end of said sleeve opening away from said first end of said rod, said sleeve having an exterior surface fitting reciprocally adjacent a control portion of said hole and an interior surface against which said rod reciprocally fits, said sleeve having a flange extending outwardly from the exterior surface thereof intermediate said first and second ends of said sleeve in reciprocating fit within a control bore coaxial with said hole and extending outwardly into said housing from said control portion of said hole, said flange separating said control bore into a first control chamber and a second control chamber;

a pressurized fluid source communicating via a first restricted orifice with said first control chamber and via a second restricted orifice with said second control chamber;

a first passageway from said first control chamber to a first position on the interior surface of said sleeve;

a second passageway from said second control chamber to a second position on the interior surface of said sleeve, said second position being intermediate said first position and said first end of said sleeve;

a first passage from said first position to a sump;

a second passage from said second position to said sump;

means on said rod for partially increasing the restriction of the respective one of said first and second passages while temporarily partially decreasing the restriction of a respective other thereof so that said flange experiences a pressure differential between said first control chamber and said second control chamber, said pressure differential causing said flange to move within said control bore and said sleeve to move therewith within said hole to reduce said pressure differential by reducing the temporary restriction of said respective one of said first and second passages;

a piston communicating with the second end of said sleeve, said piston being in reciprocating fit within a sensing-

adjusting bore in said housing and separating said sensing-adjusting bore into a first space and a second space;

means flow-communicating said first space with said first main valve chamber, said first main valve chamber and said first space together comprising a first fixed volume; and

means flow-communicating said second space with said second main valve chamber, said second main valve chamber and said second space together comprising a second fixed volume, so that as said piston moves to displace fluid from said first space into said first main valve chamber, said main valve spool moves to displace an equal volume of fluid from said second main valve chamber into said second space.

4,085,921

MULTIPLE-MODE FLUID-FLOW CONTROL VALVE ARRANGEMENT

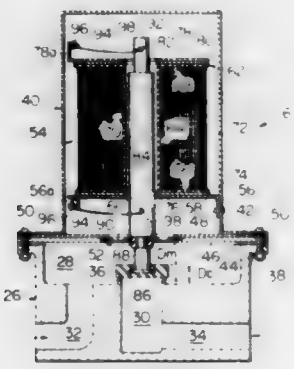
Yasukiyo Ueda; Keiichi Mori, and Keijiro Mori, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 6, 1976, Ser. No. 674,305

Claims priority, application Japan, Apr. 9, 1975, 50-43658; Aug. 18, 1975, 50-100401

Int. Cl.[2] F16K *31/06*

U.S. Cl. 251—129 **3 Claims**



1. A multiple-mode fluid-flow control valve arrangement comprising, a valve unit operable in different conditions including a variable-flow mode condition passing fluid therethrough at a rate continuously variable between predetermined minimum and maximum values, a constant-flow mode condition passing the fluid therethrough at a fixed rate equal to said minimum value and a zero-flow mode condition interrupting the flow of the fluid therethrough; signal generating means for producing an analog signal representative of a prescribed operational variable; control means responsive to said signal for operating said valve means between said two different conditions depending upon predetermined ranges of said analog signal, said valve unit comprising stationary valve seat means provided between first and second cavities forming part of a passageway for passing the fluid through the valve unit, a valve element movable relative to said stationary valve seat means continuously between a first position seated on said valve seat means and isolating said first and second cavities from each other for establishing said zero-flow mode condition and a second position spaced apart a maximum distance from said valve seat means through a third position spaced apart a predetermined distance from the valve seat means for providing said fixed flow rate, a valve actuator responsive to said signal for moving said valve element between said first and second positions, said valve actuator comprising a solenoid-operated type having a solenoid coil to move said valve element from said first position through a distance which is substantially proportional to the current supplied to said solenoid coil, said signal generating means comprising a variable-voltage element operative to produce as said analog signal a signal voltage representative of the detected magnitude of said operational variable and said control means comprising a constant-current power supply circuit, a differential amplifier circuit connected between said power supply circuit and said solenoid coil, first switch means connected between said differential amplifier and said variable-voltage element and operative to compare said signal voltage with a predetermined first reference voltage for providing connection between said variable-voltage element and said differential amplifier circuit when the signal voltage is higher than said first reference voltage, second switch means connected between said variable-voltage element and ground in shunt across said differential amplifier circuit and operative to compare said signal voltage with a predetermined second reference voltage lower than said first reference voltage for connecting said differential amplifier to ground when the signal voltage is lower than said second reference voltage, said differential amplifier circuit being operative to supply said solenoid coil with a constant current when said first and second switch means are non-conducting and with a current varying with said signal voltage when said first switch means is conducting and said second switch means is non-conducting, said valve element being in said first position when said second switch means is conducting to ground said differential amplifier circuit and deenergized said solenoid coil and in said third position when said solenoid coil is being supplied with said constant current, and said valve element being moved between said second and third positions thereof when said solenoid coil is being energized with said current varying with said signal voltage.

4,085,922

METHOD AND APPARATUS FOR CONTINUOUSLY MEASURING THE ANNEALING LEVEL ON WIRES OR STRIPS

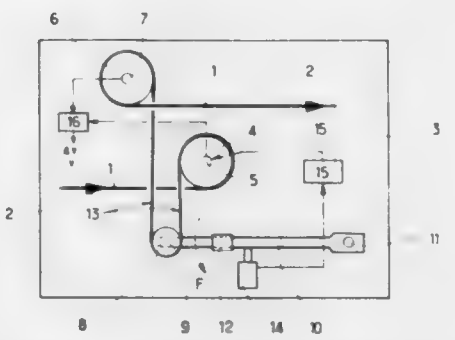
Marc Moreau, Asnieres, France, assignor to Trefimetaux, Paris, France

Division of Ser. No. 691,608, Jun. 1, 1976. This application Jan. 12, 1977, Ser. No. 758,831

Claims priority, application France, Jun. 6, 1975, 75 18328

Int. Cl.[2] C21D *9/64*

U.S. Cl. 266—90 **12 Claims**

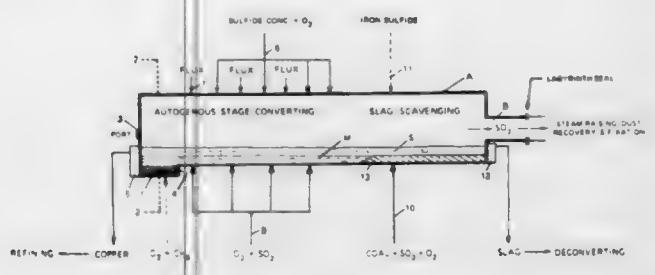


1. An apparatus for continuously measuring and adjusting the annealing level on wire or the like comprising, at the discharge end of a continuous annealing installation, an upstream capstan, a freely rotating pulley of a diameter smaller than said upstream capstan downstream of the upstream capstan, a pivotally mounted arm, said arm including a free end mounting said pulley, means for applying a force to said arm tending to bias said arm and pulley in a first direction, a downstream capstan, means for controlling the speed of one of the capstans in response to the position of the arm, the wire or the like passing successively over the upstream capstan, the arm mounted pulley to the side thereof toward which the pulley is biased, and the downstream capstan, the diameter of the pulley and the tension in the wire as it moves thereabout being such so as to effect a permanent elongation of the wire or the like as it passes about the pulley and means responsive to the difference in relative speed of the capstans, effected by the elongation of the wire or the like therebetween, for use in adjusting the annealing level.

4,085,923
APPARATUS FOR A METALLURGICAL PROCESS USING OXYGEN

Paul E. Queneau, Cornish, N.H., and Reinhardt Schuhmann, Jr., West Lafayette, Ind., assignors to Q-S Oxygen Processes, Inc., Portland, Me.

Division of Ser. No. 357,012, May 3, 1973, Pat. No. 3,941,587.
This application Sep. 29, 1975, Ser. No. 617,375
Int. Cl.[2] C22B *15/14*
U.S. Cl. 266—215 **9 Claims**



1. An elongated, gently sloped, rounded cross-section, tiltable, refractory-lined furnace for continuously recovering metal values from non-ferrous metal sulphide concentrates, said furnace having inlets for concentrates, flux and oxidizing gas and outlets for value metal-rich material, slag and off-gas, said furnace being adapted to contain a molten bath consisting of a value metal-rich phase extending at least a portion of its length and a slag phase extending its entire length, characterized in that

a. said furnace is sealed;

b. said metal-rich material and slag outlets are located at opposite ends of said furnace;

c. said furnace is provided with several upwardly directed gas injectors extending through the refractory lining thereof communicating with its interior below the bath surface and distributed lengthwise along a substantial portion of its length;

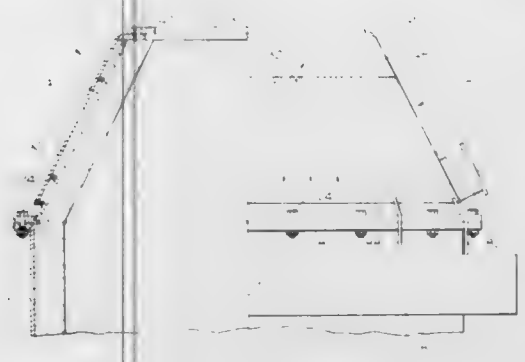
d. at least some of said injectors are provided with independently regulatable means for introduction therethrough of oxidizing gas and protective fluid simultaneously, both in variable amounts, and

e. said furnace is provided with several independently regulatable solid material feeders so positioned as to discharge said concentrates, as a spray with an oxidizing gas directly into the atmosphere within said furnace above the molten bath, said feeders being distributed lengthwise thereof along a substantial portion of its length.

4,085,924
COOLING ASSEMBLY FOR METALLURGICAL VESSELS

Howard M. Fisher, and Harry T. Montgomery, both of New Castle, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Jul. 15, 1977, Ser. No. 815,792
Int. Cl.[2] C21C *5/42*
U.S. Cl. 266—241 **10 Claims**



1. A metallurgical vessel having a top opening and cooling means disposed on the surface of said vessel and adjacent said top opening,

a plurality of elongate members affixed to the surface of said vessel in a side-by-side relation and extending from a mid-region of said vessel toward said top opening, said members defining with the surface of said vessel a plurality of adjacent flow passages having upper ends adjacent said top opening and lower ends adjacent said mid-region,

first means defining a first elongate flow passageway disposed adjacent said top opening and communicating with the upper ends of said flow passages,

second means defining a second flow passageway surrounding a substantial portion of the mid-region of said vessel and communicating with the lower ends of a first portion of adjacent ones of said flow passages,

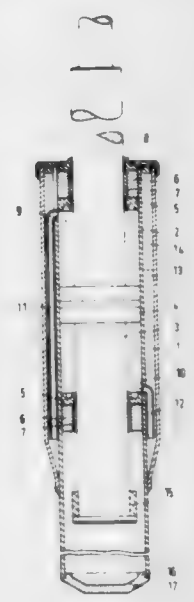
drain means disposed adjacent the lower ends of the remaining ones of said flow passageway and being connected thereto,

and baffle means disposed in said first flow passageway for preventing the flow of cooling water from that portion of said first flow passageway disposed above the first portion of said flow passages until the same are substantially full.

4,085,925
HYDRO-PNEUMATIC SHOCK ABSORBER

Carl Ullrich Peddinghaus, Obere Lichtenplatzer Str. 276, 56 Wuppertal-Barmen, Germany, and Franz Josef Overkott, Gevelsberg, Germany, assignors to Carl Ullrich Peddinghaus, Wuppertal-Barmen, Germany

Filed Mar. 31, 1976, Ser. No. 672,454
Int. Cl.[2] F16F *5/00*
U.S. Cl. 267—64 R **7 Claims**



1. A hydro-pneumatic shock absorber of the kind wherein a piston mounted on a piston rod subdivides the interior of a fluid-containing cylinder into two chambers of variable volume, and wherein a compensation chamber is provided for the absorber fluid and a compressed gas pressure is maintained therein, characterized in that the piston is secured to the piston rod approximately in the middle of said rod which in turn projects through a gland at each end of the cylinder and in that each of said two chambers of variable volume communicates with said comensation chamber by means of a communication port which permits flow of hydraulic fluid therethrough in each of two opposite directions of flow.

4,085,926

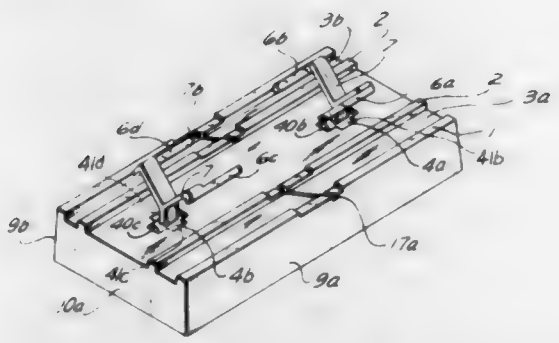
TAPE SPLICER

Herman D. Post, Great Neck; Edward Perper, Brooklyn, and George Alexandrovich, Sr., Commack, all of N.Y., assignors to Robins Industries Corporation, Commack, N.Y.

Filed Apr. 8, 1976, Ser. No. 675,055

Int. Cl.[2] B23Q *3/00*

U.S. Cl. 269—295 **13 Claims**



1. A tape splicer, comprising a base; at least one pair of parallel ribs extending longitudinally along said base and delimiting therebetween on said base at least one positioning groove for a tape; a blade-guiding cutting slot intersecting said ribs and a portion of the thickness of said base and a pair of bistable clamping toggles spaced laterally of said groove and longitudinally along said base on opposite sides of the intersection between said slot and said groove and tiltable onto said base, said toggles having a longitudinally extending anchoring axle embedded in said base, arm means extending substantially perpendicularly from said axle and an elongated clamp means provided at the end of said arm means and extending parallel with said base, said toggles being movable between a first stable position in which said clamp means reaches into said groove and engages a tape inserted in said groove to damp motion of said tape during its splicing in the area of said slot, and a second stable position in which the clamp means is withdrawn from said groove.

4,085,927

APPARATUS FOR GATHERING FOLDED SHEETS IN BOOKBINDING MACHINES

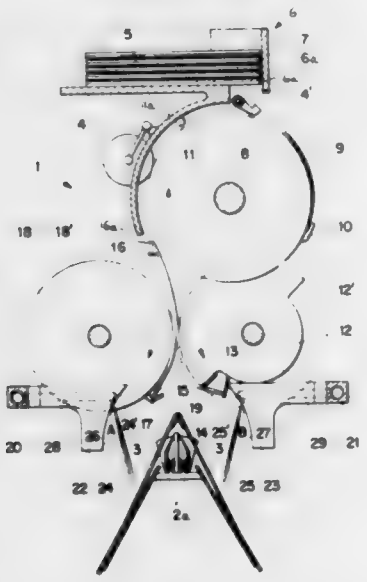
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Oct. 27, 1976, Ser. No. 735,975

Claims priority, application Switzerland, Nov. 14, 1975, 14763/75

Int. Cl.[2] B65H *39/02*

U.S. Cl. 270—54 **14 Claims**



1. Apparatus for gathering folded sheets of the type having a folded back and two front edge portions opposite the back, comprising a conveyor having an elongated portion moving in a predetermined direction; a plurality of magazines adjacent to said conveyor portion and spaced apart from each other, as considered in said direction, each magazine being arranged to store a supply of sheets; and discrete means for delivering sheets from each of said magazines to said conveyor portion, each of said delivering means including means for withdrawing sheets seriatim from the respective magazine in such orientation that the back of each withdrawn sheet is located at a level above the respective front edge portions and above said conveyor portion, spreading means for opening each withdrawn sheet including means for engaging the front edge portions, for moving the thus engaged front edge portions away from each other and for releasing the front edge portions before the respective sheet reaches said conveyor portion, and means to guide the opened sheet intermediate said spreading means and said conveyor portion, said guide means including first and second guide members disposed at opposite sides of a vertical plane passing through said elongated conveyor portion and having guide faces for engaging and guiding the respective released front edge portions of the opened sheet, each of said guide faces including at least two portions which diverge downwardly away from and at different angles to said vertical plane.

7. Apparatus for gathering folded sheets of the type having a folded back, comprising a conveyor having an elongated portion moving in a predetermined direction; a plurality of successive magazines adjacent to said conveyor portion and spaced apart from each other, as considered in said direction, each magazine being arranged to store a supply of sheets; discrete means for delivering sheets from successive magazines onto successive parts of said conveyor portion, including means for opening the sheets and for advancing the opened sheets to said parts of said conveyor portion in such orientation that opened sheets delivered from a preceding magazine are overlapped by opened sheets delivered from the next-following magazine whereby the overlapping and overlapped sheets on successive parts of said conveyor portion form a series of piles in each of which the back of the innermost sheet rides on said conveyor portion; and mechanical means for biasing the sheets against said conveyor portion intermediate said magazines.

4,085,928

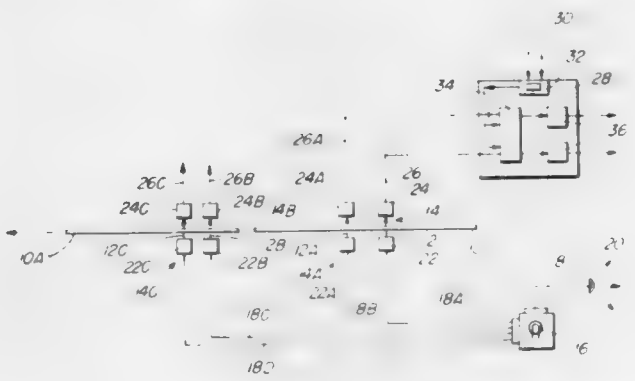
FOLDING SYSTEM WITH PHOTOELECTRIC DETECTION MEANS

Arthur Sussman, 299 Briarcliff Rd., Teaneck, N.J. 07666

Continuation-in-part of Ser. No. 646,271, Jan. 2, 1976, abandoned. This application Jan. 25, 1977, Ser. No. 762,274

Int. Cl.[2] G02B *5/14*; H01J *5/16, 39/12*

U.S. Cl. 270—61 R **6 Claims**



1. In an apparatus for folding sheet or film form material comprising means to propel a plurality of foldable work pieces toward a folding means; switch control means operative in combination with said work piece adapted to activate said folding means; the improvement which comprises said switch control means comprising a remote light source; a plurality of optical fiber light guides each having one end in optical alignment for reception of light from said light source and the other end optically aligned, through an optical cable coupling means,

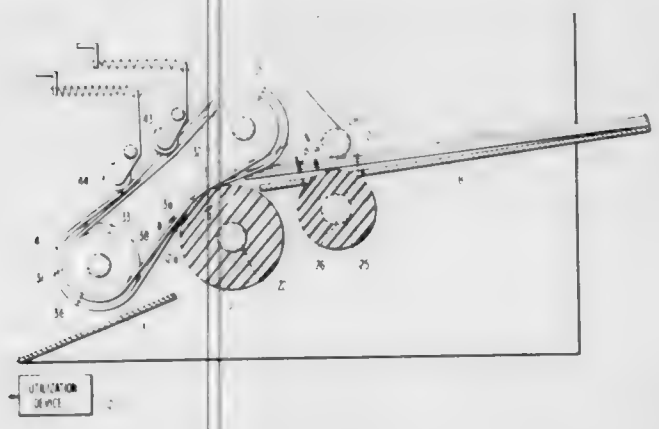
with an optical lens in a projector assembly; mounting means which positions said projector assembly in cleaning relation proximate to said workpieces; photo receptor means comprising photo detector means, spaced from and optically aligned with said projector assembly adapted to permit passage of said work pieces between said receptor means and said projector assembly in a light modulating manner; and means, associated with and operated by each of said photo receptor means, to activate and inactivate respectively said folding means as a function of said workpiece induced light modulation.

4,085,929

PAPER FEEDER INCLUDING AUXILIARY BELTS FOR IMPROVING PAPER FEEDING

Keiji Tuchiya; Junjiro Kubota; Katuo Takahashi, and Etsuo Suzuki, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1977, Ser. No. 756,652
Int. Cl.[2] B65H *3/52*
U.S. Cl. 271—122 **12 Claims**



1. A paper feeder for successively feeding sheets of paper one by one from a stack thereof to a utilization device through an output point, comprising a feed roller rotatable around a substantially horizontal fixed axis, a first belt movable in contact with a first area of an upper half circumferential surface of said roller, supply means for supplying at least one sheet from said stack to said first area through a planar area approximately tangential to said roller along a line parallel on said first area to said fixed axis, first means for rotating said roller so as to drive said first area in a first sense of drive away from said planar surface towards said output point, and second means for driving said first belt in a second sense of drive opposite at said first area to said first sense, said roller being placed between said planar area and said output point, said first belt being extended partially adjacently of said first area along a first straight line forming a first acute angle with said planar surface, wherein the improvement comprises a second belt in contact with a second area of said upper half circumferential surface, said second belt being extended partially adjacently of said second area substantially parallel to said first belt and along a second straight line forming a second acute angle with said planar area, said second acute angle being smaller than said first acute angle.

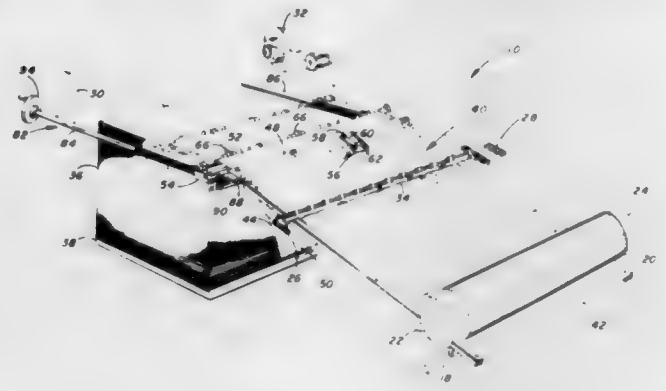
4,085,930

SHEET DELIVERY MECHANISM FOR SHEET FED PRINTING MACHINES

Willi Weisgerber, Johannisberg-Rheingau, and Ernst Federhen, Ingelheim am Rhein, both of Germany, assignors to Miller Western Corporation, Pittsburgh, Pa.

Filed Sep. 28, 1976, Ser. No. 727,337
Claims priority, application Germany, Oct. 4, 1975, 2544566
Int. Cl.[2] B65H *29/04, 31/20*
U.S. Cl. 271—204 **10 Claims**

1. Apparatus for delivering individual sequentially supplied sheets of paper or the like from a delivery source to an area for accumulating a pile of such sheets comprising, a stationary support member, conveying means carried by said stationary support member for transporting individual sheets of such supplied sheets through an elongated delivery path from an entrance end to a discharge portion with each such transported sheet being released within said discharge portion in overlying relationship to an area for receiving a pile of such transported sheets, sheet movement retarding means movably carried by said stationary support member and having at least one portion thereof engageable with the trailing edge of each such transported sheet in said discharge portion, said retarding means being selectively movable to vary the length of said delivery path and the location at which said trailing edge of each such transported sheet is engaged in said discharge portion with respect to said entrance end, sheet support means carried by



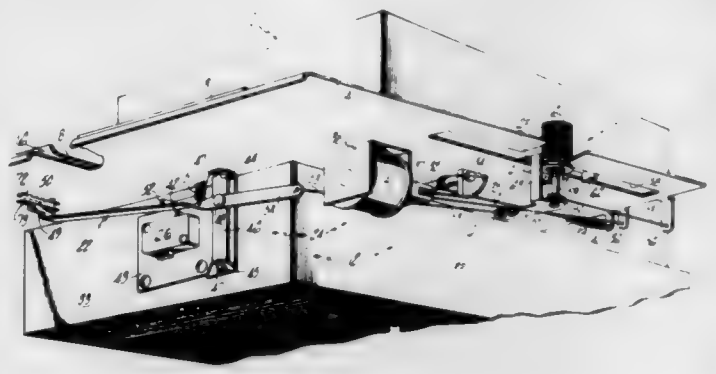
said stationary support member having an elongated surface thereon extending below at least a portion of said delivery path from said entrance end to adjacent said retarding means, said surface being of an extent and spacing with respect to said portion of said delivery path to maintain a cushion of air between said surface and each such transported sheet while moving through said portion of said delivery path, and said sheet support means having at least a portion thereof selectively movable to vary the length of said surface below said portion of said discharge path in conformity with the variations of length of said portion of said delivery path resulting from selectively locating said retarding means and maintain said cushion of air regardless of the location of said retarding means.

4,085,931

DOCUMENT ACTUATED INTERLOCK MECHANISM

Ludwick Szeluga, South Windsor, and Howard J. Voegelin, Cheshire, both of Conn., assignors to Veeder Industries Inc., New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 781,589
Int. Cl.[2] B65H *5/00*
U.S. Cl. 271—265 **6 Claims**



1. In a document processing machine adapted to be successively conditioned, first in preparation for processing a document and subsequently for processing a document and having a document channel for feeding a document along a predetermined path to an initial processing station of the machine and

a document actuated interlock mechanism for selectively conditioning the machine in its said first preparatory condition when a document is partly fed along said predetermined path to said initial processing station and in its said subsequent processing condition when the document is fully fed to said initial processing station and having a control switch adapted to be successively actuated to first and second switching positions thereof for successively conditioning the machine in its said preparatory and said subsequent processing conditions respectively; the improvement wherein the document actuated interlock mechanism comprises first and second document feelers along said predetermined path adapted to be actuated by the document when it is partly and fully fed to said initial processing station respectively, and mechanical interconnect means having switch operating means actuated by the first document feeler for operating the control switch to its said first switch position when the first document feeler is actuated by a document and actuated by the second document feeler for operating the control switch to its said second switch position when the second document feeler is actuated by the document.

4,085,932

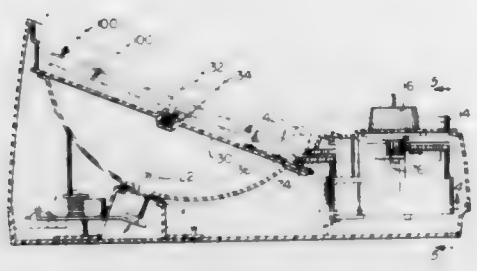
AMUSEMENT DEVICE FEATURING VARIABLE LIGHTING EFFECTS

Nubuo Hamano, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Oct. 14, 1976, Ser. No. 732,193

Int. Cl.[2] A63H *33/22*; G09F *11/04*

U.S. Cl. 272—8 P **10 Claims**



1. An amusement device, comprising a housing, a light source within said housing, first and second transparent turntables mounted for rotation with respect to said housing, means rotating said first and second turntables and means permitting the direction and speed of rotation of said second turntable to be varied with respect to said first turntable, including a first gear wheel mounted for rotation and having radially extending ridges on one face thereof, a shaft mounted for rotation, a second gear mounted to slide along said shaft and including teeth along the periphery thereof which mesh with said ridges of said first gear wheel such that as said second gear slides along said shaft the direction and speed of rotation of said second gear is varied, and a disk associated with at least one of said turntables, said disk provided with a cut-out pattern of predetermined configuration.

4,085,933

SPRING-HOOK DEVICE FOR SCORING IN A TARGET TYPE GAME

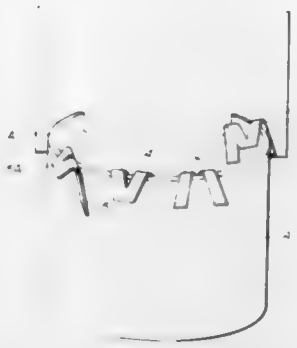
David W. Currie, 1552 Wittekind Terrace, Cincinnati, Ohio 45224

Filed Dec. 27, 1976, Ser. No. 754,333

Int. Cl.[2] A63B *71/00*

U.S. Cl. 273—95 R **6 Claims**

1. In a game of the type having a game target receptacle with a raised edge, an integral one piece projectile playing element bent so as to have a first planar portion and a second planar portion forming an acute angle with one end of said first planar portion, said first planar portion being V-shaped and said second planar portion being extensions of the legs of said first portion, said projectile being composed of a resilient material so allowing it to act as a spring which when pressed and released may launch said projectile towards said game target



receptacle, whereby a score may be obtained when said projectile is received completely within said receptacle or when said first and second portions hook over the raised edge of said game target receptacle.

4,085,934

GOLF CLUB

Roy Alexander Churchward, 6444 Nineteenth Ave. South, Richfield, Minn. 55423

Continuation-in-part of Ser. No. 277,739, Aug. 3, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,080

Int. Cl.[2] A63B *53/08*

U.S. Cl. 273—171 **3 Claims**



1. A golf club comprising a shaft, a grip disposed at one end of said shaft and a club head disposed at the other end of said shaft, said club head including a body portion, an impact block means disposed in said body portion and a sole plate, said sole plate substantially covering the bottom of said club head, said impact block means having defined therein a plurality of openings and a plurality of weights disposed in selected ones of said openings, said weights being cylindrical in shape and being slideably inserted in said openings, the axis of said cylindrical weights being perpendicular to said sole plate, said weights extending only through a portion of said impact block means and said impact block means being invertable to raise and lower the weights in said club head.

4,085,935

AMUSEMENT DEVICE

John James Mason, Carlton, England, assignor to J. J. Mason Limited, Great Britain

Filed Sep. 7, 1976, Ser. No. 720,806

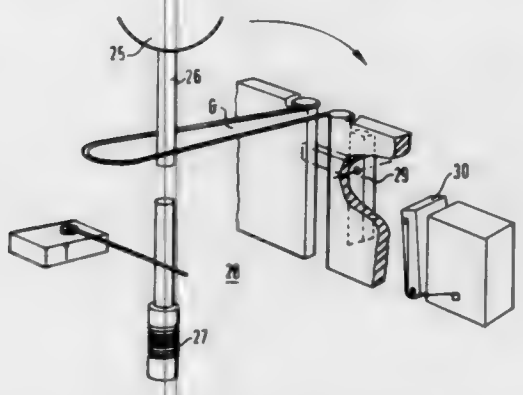
Claims priority, application United Kingdom, Sep. 6, 1975, 36773/75

Int. Cl.[2] A63B *69/36*

U.S. Cl. 273—185 D **7 Claims**

1. A device for practicing repetitive striking movements comprising a support, a strikable object mounted on said support for movement towards a displaced position and biassed into the striking position, adjustable detecting means mounted

on said support to detect movement of the object when struck, said detecting means being adjustable to select a width of a predetermined path of travel of said object, means to signal when that movement follows said predetermined path, said signalling means being actuated by said detecting means,



means for holding the object in the displaced position remote from the striking position for a predetermined period after it has been struck and means to effect release of the object at the end of that predetermined period to allow it to be biassed back to the striking position.

4,085,936

PRACTICE GOLF CLUB WITH MEANS FOR HOLDING AND RELEASING BALL

Roy M. Patterson, 1547 W. Beryl Ave., Phoenix, Ariz. 85021

Filed Apr. 18, 1977, Ser. No. 788,518
Int. Cl.[2] A63B *69/36;* F41B *3/04*
U.S. Cl. 273—186 A **9 Claims**



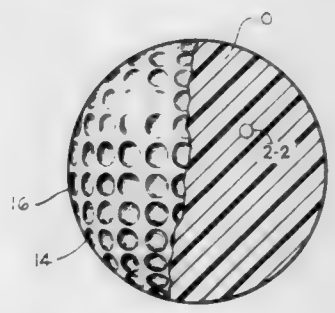
1. A practice golf club comprising:
a shank portion having a hand gripping area at one end,
a head portion having a ball striking surface mounted at the other end of said shank portion,
at least one projecting member extending outwardly from said striking surface a distance less than the diameter of a golf ball,
means for detachably positioning and holding a golf ball against said member,
said means comprising an elongated member mounted on and arranged to extend juxtapositioned to said shank from a point adjacent said gripping area to a point adjacent said striking surface,
a finger grip formed on one end of said elongated member adjacent said gripping area for grasping by a finger of the hand of the user engaging the gripping area,
a holding finger means mounted on the other end of said elongated member adjacent said striking surface and biased for holding a golf ball against said projecting member and biasing said elongated member toward said projecting member,
whereby when said elongated member is pulled toward said gripping area by a finger of a user against the biasing action of said holding finger means a golf ball held between said holding finger means and said projecting member will be released.

4,085,937

COMPOSITION FOR A FLOATER GOLF BALL AND THE FLOATER GOLF BALL MADE THEREFROM

Bernard H. Schenk, Crown Point, Ind., assignor to Hugh J. McLaughlin & Son, Inc., Crown Point, Ind.

Filed Sep. 26, 1975, Ser. No. 617,267
Int. Cl.[2] A63B *37/00;* C08J *9/32;* C08K *7/14*
U.S. Cl. 273—218 **8 Claims**



1. A polymeric composition suitable for molding floater golf balls comprising a peroxide-coagent vulcanizate having dispersed therein from about 5% to about 10% by weight of the composition of hollow glass microspheres wherein at least 90% by volume of said microspheres have a size of from about 20 to about 95 microns, have a density in the range of from about 0.2 to about 0.4 grams/cc., and have a ratio of wall thickness to diameter in the range of from about 1.5% to about 3.0%, wherein said polymeric composition has a specific gravity of less than 0.98.

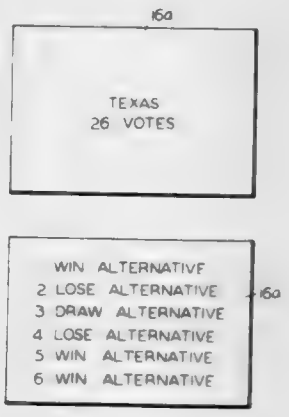
4. A floater golf ball having a weight of less than about 39 grams and comprising a preformed solid core, said core being compounded of a peroxide-coagent vulcanizate intermixed with a flotation material comprising from about 5% to about 10% by weight of hollow glass microspheres dispersed throughout said core, wherein at least 90% by volume of said microspheres have a size of from about 20 to about 95 microns, said microspheres have a density in the range of from about 0.2 to about 0.4 grams/cc., and said microspheres have a ratio of wall thickness to diameter in the range of from about 1.5% to about 3.0%.

4,085,938

ELECTION GAME APPARATUS AND METHOD OF PLAYING SAME

James H. Bean, Jr., 336 Jerris St., SE., Salem, Oreg. 97302

Filed Mar. 16, 1977, Ser. No. 778,075
Int. Cl.[2] A63F *3/04*
U.S. Cl. 273—279 **9 Claims**



1. A game apparatus comprising:
(a) a board displaying a map of the United States showing each state thereof;
(b) a deck of playing cards equal in number to the number of

states shown on the board, each card having indicated thereon one of the states represented on the board, there being one card for each state shown on the board;

(c) each card having indicated thereon an equal number of play alternatives including a predetermined number of win alternatives and a predetermined number of lose alternatives, and having indicated thereon a set of different identifying indicia, a respective one of said indentifying indicia being randomly associated with each of the play alternatives; and

(d) means for randomly generating one of the set of identifying indicia.

4,085,939

REWORKING OF A PLAYBACK OR RECORDING MEMBER GUIDE BODY

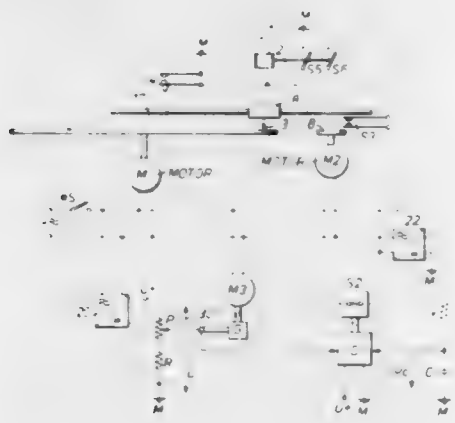
Günter Joschko, and Karl-Ekkehard Schriefl, both of Berlin, Germany, assignors to TED Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec, Zug, Switzerland

Filed Apr. 21, 1976, Ser. No. 678,764

Claims priority, application Germany, Apr. 30, 1975, 2519172

Int. Cl.[2] G11B *3/56, 3/58*

U.S. Cl. 274—1 R **12 Claims**



1. In a method for repeatedly reworking a body whose tip, during use, engages a record carrier track to guide a playback or recording member along the track, by subjecting the body to successive reworking operations, each such operation occurring between successive periods of use, each period of use being accompanied by wearing of the tip to a certain maximum depth and alteration of the original tip shape and each reworking operation involving removal of material from the tip of the body to a certain maximum depth to restore the original shape of the tip, the improvement comprising, over the lifetime of the body: deriving a detectable representation of at least an approximation of the maximum wear depth occurring during each period of use between successive reworking operations; and automatically adjusting the maximum removal depth during successive reworking operations to maintain a predetermined relationship with the value of such maximum wear depth during each corresponding preceding period of use.

4,085,940

PHONOGRAPH RECORD PLAYER

Susumu Hoshimi, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 16, 1976, Ser. No. 751,180

Claims priority, application Japan, Dec. 17, 1975, 50-150896

Int. Cl.[2] G11B *17/06*

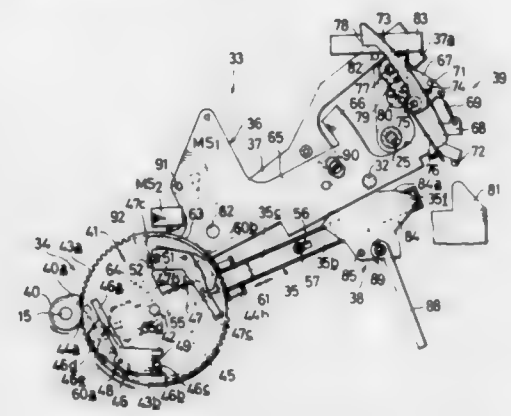
U.S. Cl. 274—15 R **24 Claims**

1. In a phonograph record player having a rotatable turntable for supporting a phonograph record during the playing thereof, drive means including an electric motor operable for rotating said turntable, and a tone arm assembly including a tone arm carrying a pickup with a stylus to track the groove of a phonograph record on said turntable during playing of the record and being mounted for lateral swinging across said turntable and for raising and lowering of the tone arm relative to said turntable: control means capable of a lead-in operation for effecting lead-in movement of said tone arm from an elevated rest position outside the perimeter of said turntable to a set-down position on a record supported by said turntable so as to commence said playing of the record, and a return operation for effecting a return movement of said tone arm to said rest position from a position on the record, said control means comprising

a drive gear rotatable by said drive means;

a rotatable control gear;

clutch means actuable for engaging said control gear with said drive gear and thereby causing turning of said control gear from a stop position to a play position in said lead-in operation and from said play position to said stop position in said return operation;



lever means engaged with said control gear and being swingable by the latter for effecting said lead-in and return movements of the tone arm in response to said turning of the control gear in said lead-in and return operations, respectively;

trigger means operable to actuate said clutch means with said control gear in said stop and play positions thereof; p1 manually actuable means for generating an electrical command signal;

memory means for retaining said command signal and providing a corresponding memory output;

sensor means for detecting completion of at least one of said lead-in and return operations and providing a corresponding sensor output; and

means for electrically operating said trigger means in response to the simultaneous occurrence of said memory output and said sensor output.

4,085,941

STERN SEALS FOR SHIPS

Samuel Clifford Walter Wilkinson; Ronald Sydney Sweett, both of Chichester, and Thomas Walter Bunyan, London, all of England, assignors to Crane Packing Limited, Slough, England

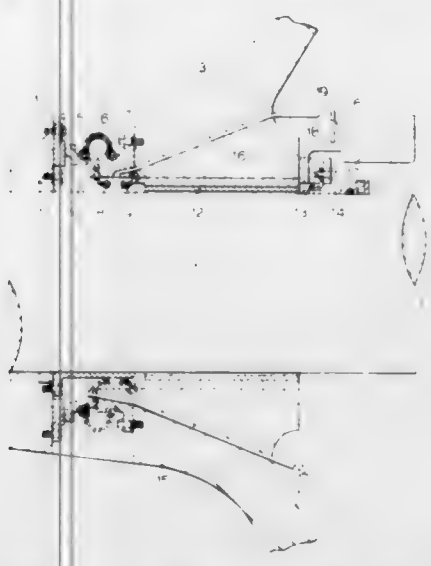
Filed Jun. 11, 1976, Ser. No. 694,956

Int. Cl.[2] F16J *15/34*

U.S. Cl. 277—3 **7 Claims**

1. A stern seal and bearing assembly for ships comprising a bearing, a stern shaft rotatable in said bearing, means for supplying low pressure oil to said bearing, said bearing having inboard and outboard ends, a first seal assembly mounted at the outboard end of said bearing, a second seal assembly axially spaced away from said first seal assembly in a direction away from said bearing, a stern frame, said stern frame having mounted therein said first and second seal assemblies and said bearing and defining, between said seal assemblies, a void

space, and means draining said void space, said first seal assembly comprising two lip seals spaced apart axially to define a



second void space and directed towards one another, and means draining said second void space.

4,085,942

PACKING FOR USE IN STEEL-PIPE HYDRAULIC TESTING APPARATUS

Mitsuo Yoshida, Osaka; Wataru Furukawa; Takashi Yamaguchi, both of Wakayama, and Kazuo Sasaki, Minoo, all of Japan, assignors to Sumitomo Kinzoku Kogyo Kabushiki Kaisha, Osaka; Kabushiki Kaisha Yamamoto Suiatsu Kogyosho, Toyonaka and Nihon Valqua Kogyo Kabushiki Kaisha, Tokyo, all of, Japan

Filed Sep. 16, 1976, Ser. No. 724,057

Claims priority, application Japan, Oct. 6, 1975, 50-120500

Int. Cl.[2] F16J *15/16*

U.S. Cl. 277—30 **1 Claim**



1. A seal for use in the hydraulic testing of a pipe length, said seal comprising an annular resilient body, an annular recess in and around the inner periphery of said body, arcuate backing pieces of hard material mounted in said inner annular recess at locations circumferentially spaced relative to each other, and a plurality of adaptor pieces of hard material embedded in said annular recess and circumferentially spaced relative to each other in such manner as to bridge the spaces between adjacent backing pieces and be slidable on the outer peripheral surfaces thereof.

4,085,943

SELF EJECTING DRILL CHUCK KEY

Sigmund D. Travis, Brookfield, Ill., assignor to C. R. Reichel Engineering Co. Inc., San Francisco, Calif.

Filed Oct. 12, 1976, Ser. No. 731,782

Int. Cl.[2] B25B *13/44*

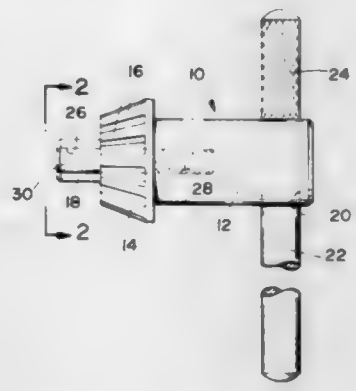
U.S. Cl. 279—1 K **5 Claims**

1. A self ejecting drill chuck key device comprising:

a key element with a plurality of teeth adapted to mesh with matching teeth of a drill chuck assembly;

a main body extending axially from one end of said key element and having a handle member;

a guide pin extending from the other end of said key element and being axially aligned with said element and said body, said guide pin having a groove on one side along its full length, said groove being axially aligned with a bore that extends through said element and terminates within said



body, said bore having a larger cross section than said groove;

and a slidable ejector member within said groove having an outer end that remains essentially flush with the outer end of said pin when said device is not in use and spring means attached to the inner end of said ejector member and extending within said bore for allowing retraction of said ejector member upon movement of said key element into its operative position.

4,085,944

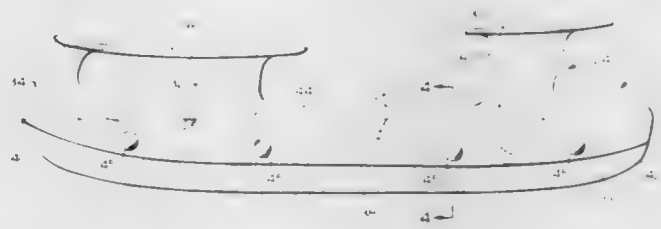
COMPOSITE SKATE ASSEMBLY

Alan F. Chambers, Agincourt, Canada, assignor to Nylite Skate Company of Canada Ltd., Markham, Canada

Continuation-in-part of Ser. No. 678,007, Apr. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 608,499, Aug. 28, 1975, abandoned. This application Dec. 20, 1976, Ser. No. 752,343

Int. Cl.[2] A63C *1/32*

U.S. Cl. 280—11.12 **7 Claims**



1. An ice skate assembly of the type including a hardened steel blade and a blade-supporting body of synthetic plastic material adapted to be mounted to a skate boot, the blade including an ice-engaging lower surface and a transversely rounded upper surface, and defining a plurality of longitudinally spaced holes formed transversely of said blade subadjacent the upper surface of the blade, the blade-supporting body including a downwardly opening groove generally coextensive in length with the upper surface of the blade, the blade being partially disposed within the body and the bottom of the groove being rounded to match the upper surface of the blade so that the upper surface of the blade seats against the bottom of said groove, said body defining a plurality of holes formed transversely of said groove and coaxially aligned with the holes in the blade, and the assembly further including fastening means extending through the aligned body and blade holes to mechanically interlock the blade to the body.

4,085,945

VEHICLE SUSPENSION SYSTEM

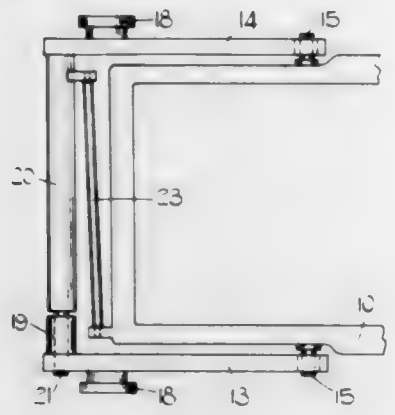
John Richard Bicht, Hemel Hempstead, and Peter Stuart Warner, Henlow, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Sep. 20, 1976, Ser. No. 724,672

Claims priority, application United Kingdom, Oct. 3, 1975, 40484/75

Int. Cl.[2] B60G *11/16*

U.S. Cl. 280—106.5 R **2 Claims**



1. A suspension system for a pair of vehicle rear wheels comprising a pair of elongate arms each having first and second opposite ends, means at a first end of each arm for pivotal connection of said arms to the frame of the vehicle so that the arms extend rearwardly of said pivotal connections, two wheel hubs carried by said arms respectively at positions to the rear of said first ends, and a member connecting said second ends of said arms together across the vehicle, said member incorporating a single pivotal joint which is capable of rotation about an axis lengthwise of said member, and the system further comprising springs arranged to act between said member and the vehicle frame.

4,085,946

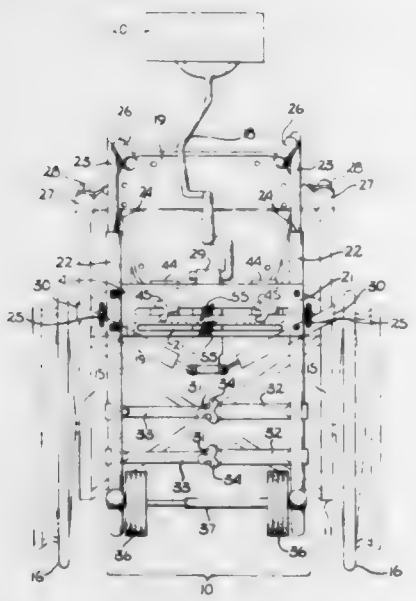
WHEEL CHAIR CONVERTER

Leon B. Krupp, 4800 N. Stanton, El Paso, Tex. 79902

Filed Jan. 27, 1977, Ser. No. 762,872

Int. Cl.[2] A61G *15/00*

U.S. Cl. 280—289 WC **3 Claims**



1. For use in combination with a wheel chair having a frame which includes a seat member, a back member, and side members, a set of large rear wheels and a set of small front wheels, a wheel chair converter, for converting the wheel chair to a dental chair, comprising:

a. a back rest and head rest assembly;

b. a rectangular plate member which is mechanically coupled to said back rest and head rest assembly, said rectangular plate adapted to span the back member of the frame of the wheel chair laterally;

c. a pair of tubular members which are disposed parallel to each other and which are mechanically coupled together by said rectangular plate, said tubular members are placed behind the back member of the wheel chair; and

d. a pair of backwardly extending legs, each of which is mechanically coupled to one of said pair of tubular member so that each of said legs is disposed substantially perpendicular thereto in order to stabilize said wheel chair converter.

4,085,947

REARWARDLY CONTROLLED SNOW SKIS

John J. Sarver, 11 Carmel Bay Dr., Corona Del Mar, Calif. 92625

Continuation-in-part of Ser. No. 648,140, Jan. 12, 1976, Pat. No. 4,007,946. This application Mar. 23, 1976, Ser. No. 669,643

The portion of the term of this patent subsequent to Feb. 15, 1994, has been disclaimed.

Int. Cl.[2] A63C *5/04*

U.S. Cl. 280—607 **11 Claims**



1. A pair of rearwardly controlled snow skis for mounting ski bindings thereon for receipt of ski boots, each ski comprising:

a relatively rigid weight-bearing rear portion for mounting of said ski bindings to position the boot received therein with the toe and heel over the respective front and rear of said weight-bearing portion, said ski projecting rearwardly to form a trailing portion projecting rearwardly of the heel of said boot a distance no greater than 17% of the overall ski length and terminating in a trailing edge and further projecting forwardly to form a relatively flexible planing portion turned upwardly at its front extremity to form a shovel, the bottom surfaces of said rear and planing portions being substantially flat to facilitate shifting from side-to-side of said ski and having a substantially continuous downwardly facing longitudinal contour; and

the top and bottom surfaces of said planing portion tapering gradually and continuously forwardly and inwardly toward one another to form a relatively thick aft-end joined with said weight-bearing portion and narrowing to a relatively thin forward end joined with said shovel, the lateral sides of said ski further tapering inwardly and rearwardly from the width of said shovel to terminate at said trailing portion in a relatively narrow aft-end, the total length of said ski being at least 90 centimeters.

4,085,948

VEHICLE SUSPENSION

William Stanley Turner, Northallerton, England, assignor to York Trailer Company Limited, Northallerton, England

Filed Feb. 23, 1976, Ser. No. 660,325

Claims priority, application United Kingdom, Nov. 17, 1975, 47308/75

Int. Cl.[2] B60G *5/04*

U.S. Cl. 280—682 **9 Claims**

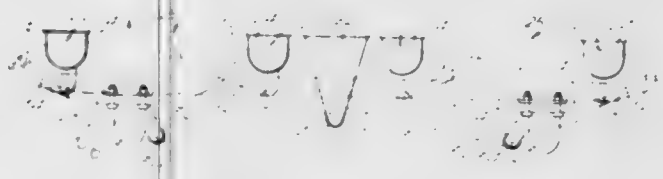
1. A tandem axle suspension system for a vehicle, said suspension system connecting a front axle and a rear axle together

in tandem, said suspension system, on each side of said vehicle, comprising

a front rocker plate, at least one central rocker plate, and a rear rocker plate, all of said rocker plates being pivotally connected to said vehicle,

a front leaf spring connected to said front axle, and a rear leaf spring connected to said rear axle, the front end of said front leaf spring being engaged with said front rocker plate, the rear end of said front leaf spring and the front end of said rear leaf spring being engaged with said central rocker plate, and the rear end of said rear leaf spring being engaged with said rear rocker plate,

a connecting rod pivotally connected at one end to said front rocker plate, pivotally connected intermediate the ends thereof to said central rocker plate, and pivotally connected at the rear end to said rear rocker plate, said rocker plates and connecting rod cooperating so that, when one



of said axles is subjected to a vertical load during use, a part of that load is transmitted through said connecting link and said rocker plates to the other of said axles to establish sharing of the load between said axles,

at least one slipper pad connected to each rocker plate, each slipper pad being positioned to rest on the upper face of an end of a leaf spring, those slipper pads cooperating with said front leaf spring being located forwardly of the pivot connections of said front and central rocker plates, and those slipper pads cooperating with said rear leaf spring being located rearwardly of the pivot connections of said central and rear rocker plates, and

a first radius rod connected at one end to said front axle and at the other end to said vehicle, and a second radius rod connected at one end to said rear axle and at the other end to said vehicle, said radius rods preventing front-to-rear motion of said axles but permitting up-and-down motion of said axles.

4,085,949

RECORDING SHEETS

Yasuzi Asao, and Yasuhiro Ogata, both of Fujimiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 22, 1976, Ser. No. 725,905
Claims priority, application Japan, Sep. 22, 1975, 50-114432
Int. Cl.[2] B32B *3/26;* **B41M** *5/16, 5/22*
U.S. Cl. 282—27.5 **6 Claims**

1. A recording sheet comprising a support having coated thereon a continuous layer of microcapsules containing color former, said microcapsules being 0.1 to 100 microns in size and said support having a regularly embossed pattern thereon, said pattern being about 10 to 250 mesh and having a depth of 1 to about 200 microns.

4,085,950

GAS RISER APPARATUS AND METHOD

Sam Alewitz, Painesville, Ohio, assignor to Perfection Corporation, Madison, Ohio

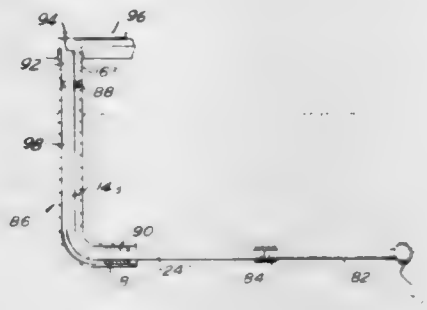
Continuation of Ser. No. 495,200, Aug. 6, 1974, and a continuation-in-part of Ser. No. 349,681, Apr. 10, 1973. This application Oct. 22, 1976, Ser. No. 735,106
The portion of the term of this patent subsequent to Oct. 26, 1993, has been disclaimed.
Int. Cl.[2] F16L *21/00*
U.S. Cl. 285—45 **2 Claims**

1. A double-walled riser apparatus for conducting fluid from a non-metallic service line disposed below ground level to a point of delivery at a member above ground level, said apparatus comprising in combination:

a tubular element having a first end and a second end, said first end being adapted to be disposed above ground level there being provided means at said first end to connect said tubular element to a delivery member, said tubular element having a sufficient length such that said second end thereof is disposed below ground level;

fluid conducting means having a first end and a second end, said first end of said fluid conducting means being disposed within said tubular element, said fluid conducting means extending through said tubular element to said second end thereof;

sealing means between said tubular element and said fluid conducting means;



said sealing means coacting with said tubular element and said fluid conducting means;

said tubular element being defined by a metallic member;

said fluid conducting means being defined, at the second end thereof, by a non-metallic tubular member, there being provided means at said second end of said fluid conducting means to interconnect said fluid conducting means to a nonmetallic service line disposed below ground level;

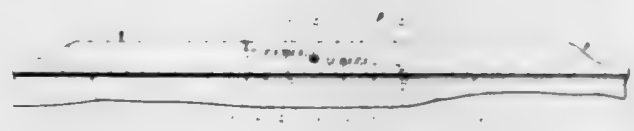
whereby, fluid from a buried non-metallic service line may be conducted to a delivery member above ground level by means of said fluid conducting means, the portion of said fluid conducting means located above ground level being protected by said tubular element, said sealing means prohibiting the flow of gas between said tubular element and said gas conducting means at a location below said sealing means.

4,085,951

HYDRIL-TYPE CONNECTOR

James B. N. Morris, Gretna, La., assignor to Wonder Products Company, Harvey, La.

Filed Oct. 28, 1976, Ser. No. 736,492
Int. Cl.[2] F16L *15/00*
U.S. Cl. 285—334 **7 Claims**



1. A joint for interconnecting a pair of pipes, said joint comprising coaxial pin and box members respectively including interengaged external and internal first threads, and interengaged external and internal second threads, said first threads on said pin member being adjacent the free terminal forward end of said pin member and being of smaller outer diameter than said second threads, said threads holding the pipes against separation, said first threads and said second threads having substantially the same pitch and outline characteristics, said pin member being screwed about its axis longitudinally forwardly into said box member, metal-to-metal seating surfaces on said pin and box members, said surfaces in interengagement when undamaged, an annular pin member shoulder providing a stepped portion on said pin member between said first threads

and said second threads, an annular box member shoulder providing a stepped portion on said box member between said first threads and said second threads, said pin member shoulder being contiguous with an annular groove opening radially outwardly and extending about said pin member, and an annularly continuous ring of relatively rigid, internally tenacious plastic or rubber material received in said groove, the axial relationship between undamaged metal-to-metal seating surfaces, the first and second threads, the ring and the pin member shoulder and the box member shoulder being such that when the said joint is made up to cause said metal-to-metal seating surfaces to interengage, the ring is compressed between said pin member shoulder and said box member shoulder to form a seal.

4,085,952

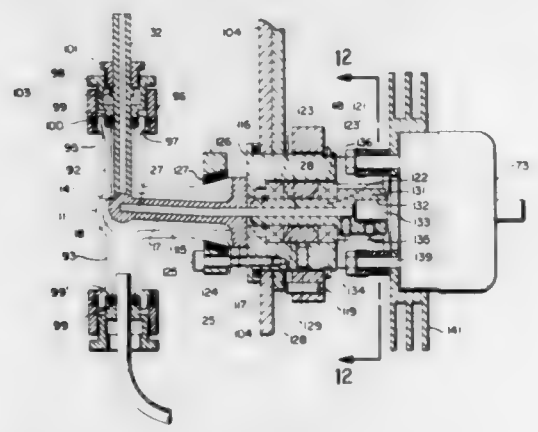
FLEXIBLE STEM VALVE

Thomas D. Sharples, Atherton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 467,278, May 6, 1974, abandoned. This application Jul. 28, 1975, Ser. No. 599,360

Int. Cl.[2] F16K *11/00, 5/00*

U.S. Cl. 251—298 **10 Claims**



1. A valve comprising in combination:

a valve body having a chamber with surrounding walls formed with fluid-conveying openings through the walls into the chamber,

an elongated resilient connector mounted in at least one of said openings, one end of said connector extending into said chamber to form a movable valve seat, said one end of said connector being unsupported in a lateral direction with respect to the longitudinal axis of said connector,

a valve member for cooperation with the valve seat, movable in an arcuate path into and out of engagement with the valve seat, said valve member being slightly recessed within said valve seat when in engagement with said valve seat,

a flexible stem mounted in one of said walls and having an inner end extending into said chamber, the stem being of sufficient flexibility to permit deflection of the inner end, and

means for deflecting the inner end of the stem, the inner end being in operative relationship with the valve member, whereby deflection of the inner end of the stem moves the valve member into or out of engagement with the valve seat, said one end of said connector with said valve seat movable within said chamber to allow said valve seat to shift as a unit laterally to engage and follow said valve member in a sealed relation to ensure a satisfactory seal between said valve member and said valve seat as said valve member moves in said arcuate path to engage said valve seat.

4,085,953

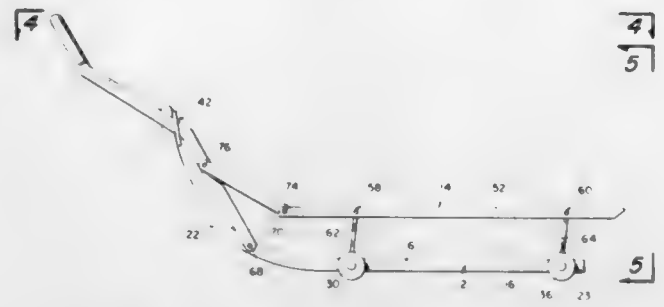
DOLLY APPARATUS

Paul E. Farwell, 5503 E. Archer, Tulsa, Okla. 74115

Filed Jun. 16, 1976, Ser. No. 696,577

Int. Cl.[2] B66F *5/00*

U.S. Cl. 254—10 C **1 Claim**



1. A wheeled dolly apparatus comprising main support frame means carried by support wheel means, secondary frame means movably secured to the main support frame means and movable between raised and lowered positions with respect thereto, transversely extending rotatable plate means secured between the main support frame means and seconeary frame means for providing said raised and lowered positions for the secondary frame means, lifting lever means operably connected between the main support frame means and the secondary frame means for moving the secondary frame means between said raised and lowered positions, latch means engagable with said lifting lever means for locking the secondary frame means in said raised position, said main support frame means being of a width less than the inboard dimension of said support wheel means, and said secondary frame means being of a width greater than the outboard dimension of the support wheel means, and wherein said main support frame means comprises a pair of spaced longitudinally extending mutually parallel side brace members, a plurality of cross members secured between said side brace members, a pair of pipe members extending between said side brace members and having the opposite ends thereof open, an axle member disposed in each of said pipe members and having the opposite ends thereof extending longitudinally beyond the respective pipe members, wheel members journalled at the opposite ends of each of said axle members and disposed outboard of the said side brace members to provide said support wheel means for the dolly apparatus, and wherein said rotatable plate means comprises transversely extending pipe members provided on the secondary frame means in the proximity of each of the first mentioned pipe members, and transversely extending plate means secured between the complementary positioned pipe members of the main frame means and secondary frame means, and wherein the secondary frame means includes a pair of transversely spaced mutually parallel longitudinally extending side frame members terminating along the side edges thereof slightly outboard of the support wheels and overlaying a portion of the support wheels in the lowered position of the secondary frame means.

4,085,954

SLAT ASSEMBLY FOR CHAIN LINK FENCE

Omer A. Thompson, 25080 S.E. Hwy. 212, Boring, Oreg. 97009

Continuation of Ser. No. 475,669, Jun. 3, 1974, abandoned. This application Jun. 5, 1975, Ser. No. 583,918

Int. Cl.[2] B21F *27/00*

U.S. Cl. 256—34 **2 Claims**

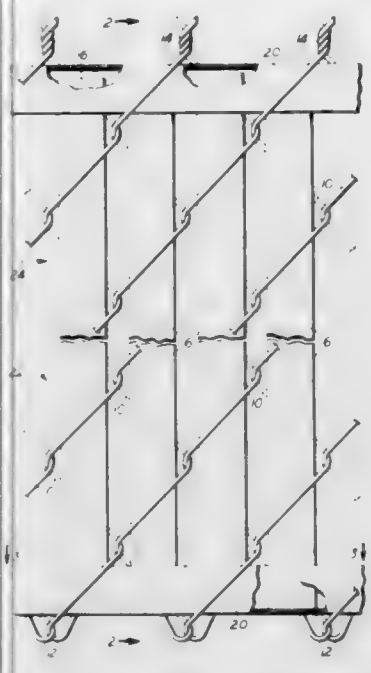
1. For use with chain link fencing, a slat assembly comprising:

a. a plurality of elongated slats proportioned to be woven flatwise through the links of chain link fencing in spaced, parallel arrangement, and

b. an elongated retainer member U-shaped in cross section having an external thickness not exceeding the corresponding thickness of the fence link openings, whereby to

accommodate insertion of the retainer member flatwise through the fence link openings adjacent one end of the slats and at an intercepting angle to the latter,

c. the U-shaped retainer member having spaced parallel sides closed at the end away from the slat ends and open



at the end facing the slats for receiving the slat ends for retention within the retainer member, the internal width of the retainer member between the spaced parallel sides thereof being substantially the same as the external flatwise width of the slats.

4,085,955

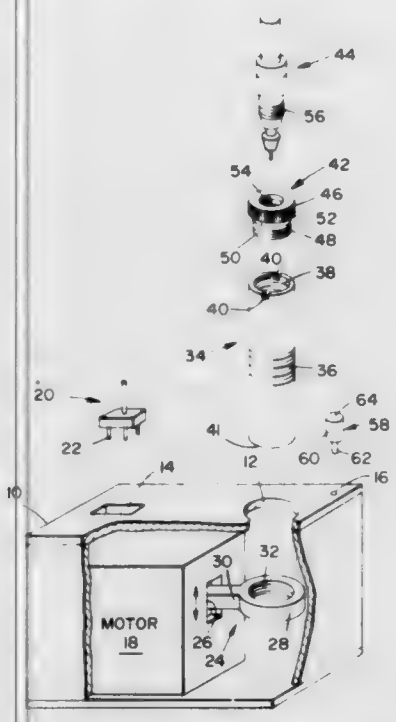
PEN SHAKING DEVICE

Donald A. Salle, 3313 Shasta Dr., San Mateo, Calif. 94403

Filed Nov. 22, 1976, Ser. No. 744,005

Int. Cl.[2] B01F *11/00*; B08B *7/02*

U.S. Cl. 366—212 **16 Claims**



1. Apparatus for vibrating a member, comprising:

a) a housing;

b) a casing having means for removably holding said member;

c) a shaft, positioned within said housing, having at one end a collar holding said casing, said casing having means for removably connecting said casing within said collar from outside said housing; and

d) a vibratory motor, connected to the other end of said shaft, for vibrating said shaft in a predetermined plane.

4,085,956

BUMPER CONSTRUCTED AS AN ELASTOMERIC HOLLOW SPRING

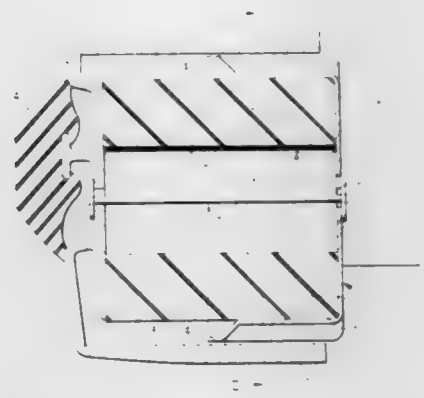
Helmut Weisshappel, Sindelfingen; Wolfgang Klie, Korntal, and Wolfgang Fischer, Leinfelden, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Mar. 26, 1976, Ser. No. 670,905

Claims priority, application Germany, Mar. 27, 1975, 2513589

Int. Cl.[2] B60R *19/06*

U.S. Cl. 293—86 **17 Claims**



1. A shock absorber constructed as an elastomer hollow spring which is arranged between a vehicle bumper with sections directed toward the vehicle and a fixed vehicle part and which is supported thereat under prestress, characterized in that the shock absorber includes at its end near the vehicle a C-shaped frame-like means receiving said shock absorber and having an inner surface area abutting at the shock absorber and an outer surface area abutting at the inner sides of the sections of the bumper directed toward the vehicle, and wherein first means are provided for securing said frame-like means and said shock absorber to said bumper, and second means are provided for securing said frame-like means to said fixed vehicle part.

4,085,957

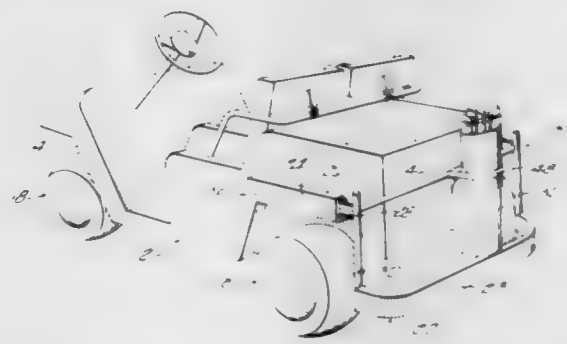
BUMPER DEVICE FOR A VEHICLE

Charles E. Hines, and John L. Stransky, both of Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 24, 1976, Ser. No. 669,715

Int. Cl.[2] B60R *19/04*

U.S. Cl. 293—88 **5 Claims**



1. A vehicle comprising a vehicle frame including a pair of laterally spaced channel members respectively having a pair of spaced generally horizontal walls, said frame supporting a wheel and tire assembly, a bumper including a pair of laterally spaced bracket members having end portions, horizontally extending pivot means respectively pivotally connecting said end portions within said channel members, and yielding means for retaining said bumper at a first position with respect to said vehicle frame during normal vehicle operation, said yielding means comprising a pair of rubber blocks respectively positioned within said channel members for engagement with one of said horizontal walls and one of said pivotally connected

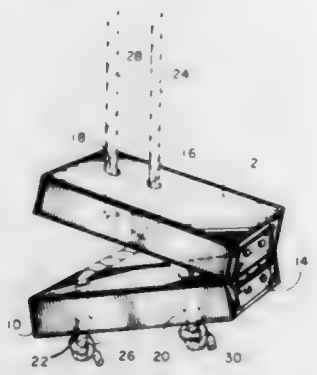
end portions, said rubber blocks being yieldable to afford displacement of said bumper from said first position into said wheel and tire assembly in response to collision of said bumper with an object.

4,085,958

FLUE LINER HANDLING DEVICE

Robert Gaudette, 35 Granite St., Biddeford, Me. 04005

Filed Mar. 30, 1977, Ser. No. 783,068
Int. Cl.[2] B66C *1/44*
U.S. Cl. 294—97 **4 Claims**



1. A device for the raising and lowering of a chimney flue liner pipe within a chimney comprised of:

a wedge element having a wedge element rope aperture defined centrally therein and a wedge element lowering rope aperture defined toward one end of said wedge element;

a release element having a release element lowering rope aperture defined centrally therein and a release element release rope aperture defined toward one end of said release element;

a lowering rope which passes through said release element lowering rope aperture of said release element and through said wedge element lowering rope aperture of said wedge element and is fastened to said wedge element by fastening means;

a release rope passing through said release element release rope aperture of said release element and through said wedge element release rope aperture of said wedge element and is fastened to said wedge element by fastening means; and

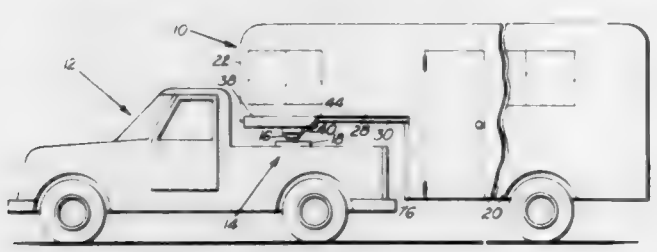
a hinge member affixed to said wedge element at its end opposite to said wedge element lowering rope aperture of said wedge element, and affixed to said release element at its end opposite to said release element release rope aperture of said release element.

4,085,959

FIFTH WHEEL TRAILER HOME WITH FOLDING FORWARD SECTION

Royal H. Dimick, 1357 NW. Scenic Dr., Albany, Oreg. 97321

Filed Sep. 27, 1976, Ser. No. 726,823
Int. Cl.[2] B62D *53/04*
U.S. Cl. 296—23 MC **8 Claims**



1. A travel trailer comprising;

(a) a body having a full height rear section and a vertically foreshortened forward section which is configured for extending over a towing vehicle for fifth wheel connection therewith,

(b) folding side walls and a front wall configured for extending the foreshortened forward section downward, providing full height throughout,

(c) hinges mounting said side walls and front wall to the forward section, allowing folding movement about horizontal axes between vertical living positions and horizontal travel positions, and

(d) a vertically movable floor located in the forward section of the trailer, and lifting means arranged for moving the floor between a raised travel position above the folding side walls and front wall, when in their travel positions, and a lowered living position adjacent to the lower margins of the side walls and front wall when in their living positions.

4,085,960

TILTING CAB LATCH MECHANISM

Clarence A. Sherman, Birmingham, Mich., assignor to Terry McDermid, Southfield, Mich.

Filed Jun. 1, 1976, Ser. No. 691,278
Int. Cl.[2] B62D *27/06*
U.S. Cl. 296—28 C **15 Claims**



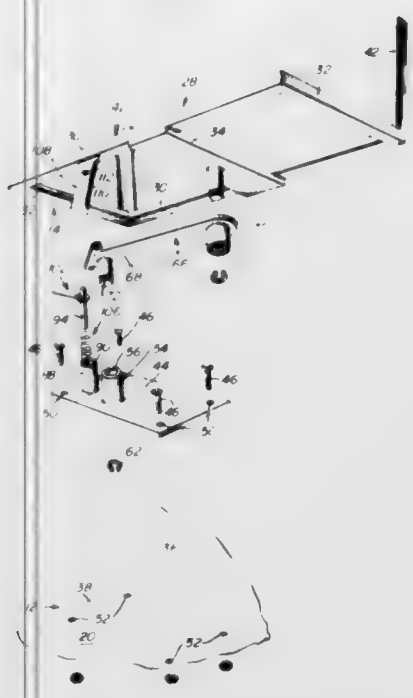
1. A latch mechanism for use with a tilting cab vehicle including a cab having a body member, a frame mounting the cab for tilting movement between access and use positions and having a frame member, said latch mechanism comprising: a keeper adapted to be mounted on one of said members; a base adapted to be mounted on the other of said members and defining a keeper opening for receiving the keeper when the cab is moved to the use position; a bolt movable on the base between latching and non-latching positions so as to engage or disengage the keeper in a manner that latches the cab in the use position or allows movement thereof to the access position; a cylinder on the base defining a cylinder bore and including a piston sealingly slidable within the bore; said piston having a first side including a connecting rod portion extending therefrom and fixedly mounting the bolt; the piston having a second side that faces in the opposite direction as the first side and includes a depression extending within the piston toward the connecting rod portion thereof; a seal located intermediate the first and second sides of the piston so as to slidably seal with the cylinder; a helical spring having a first end seated by the cylinder and a second end seated within the depression in the second side of the piston so as to bias the piston in a direction that moves the bolt to the latching position; and a fluid port for selectively feeding fluid to the cylinder bore on the first side of the piston such that the piston slides against the bias of the spring to move the bolt to the nonlatching position and thereby releases the keeper to permit the cab to be moved to the access position.

4,085,961

TOOL BOX MOUNT FOR PICKUP TRUCK

Manuel D. Brown, 21855 Walnut Ave., Riverdale, Calif. 93627

Filed Jun. 17, 1976, Ser. No. 696,842
Int. Cl.[2] B65D *43/16*
U.S. Cl. 296—37.6 **7 Claims**



1. A tool box mount for a pickup truck, comprising, in combination:
(a) a frame arranged for supporting a tool box; and
(b) support means connected to the frame for attaching the frame to a bed of a pickup truck and permitting the frame to swing over the bed between a first position and a second position, the support means including in combination:
(1) base means anchorable to the bed of a pickup truck;
(2) arm means rotatably connected both to the base means and to the frame for swinging the frame between the first position and the second position; and
(3) lock means mounted on the base means and selectively engageable with the arm means for retaining the frame in one of the first position and the second position, with the frame means including a framework which lies in a single plane, is rectangular in plan, and includes a longitudinal element disposed bisecting the framework, the arm means being connected to the longitudinal element, with the first position being when the longitudinal element is perpendicular to an adjacent side of the bed of the truck, and the second position being when the longitudinal element is perpendicular and adjacent to a rear edge of the bed of the truck, with the side wall and rear edge being disposed at substantially right angles with respect to one another.

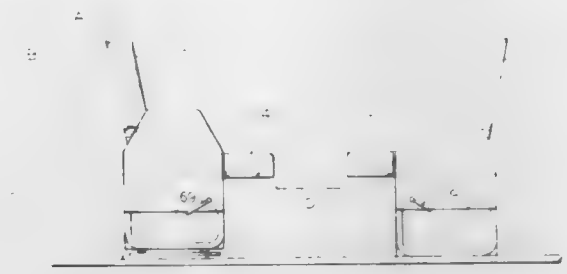
4,085,962

SEAT ASSEMBLY

Robert A. Wahls, McHenry, Ill., assignor to The Freedman Seating Company, Evanston, Ill.

Filed Sep. 13, 1976, Ser. No. 722,681
Int. Cl.[2] B60N *1/10*
U.S. Cl. 296—65 R **13 Claims**

1. A seat assembly for a vehicle, said seat assembly comprising:
a base,
said base being anchored to the floor of said vehicle;
at least one seat on said base,
said seat including a seat frame,
said seat further including a back,
said back including a back frame,
said back frame being pivotally associated with said seat frame whereby the rake of said back frame with respect to said seat frame is variable;
means to selectively recline said back frame with respect to said seat frame, and to maintain a selected attitude of rake of said back frame with respect to said seat frame;
means to extend said seat frame with respect to said base,
said seat extension means including means to telescopically cooperate with said base;



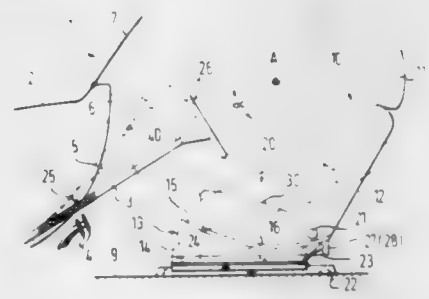
means to mount said seat frame to said seat extension means; and
means to control said reclining means and said seat extension means to selectively adjust and maintain said rake and to allow said seat extension means to be operated to move said seat frame with respect to said base.

4,085,963

SAFETY SEAT FOR VEHICLES

Heinz H. Bullerdieck, Friederickh-Ebert-Str. 41, D-3500 Kassel, Germany

Filed Nov. 26, 1975, Ser. No. 635,510
Claims priority, application Germany, Nov. 27, 1974, 2456028
Int. Cl.[2] B60R *21/10*
U.S. Cl. 296—65 A **9 Claims**



1. A safety seating arrangement for motor vehicles comprising in combination:
(a) a seat having a safety belt associated therewith,
(b) a supporting base for said seat,
(c) a first sliding member attached to the bottom of said seat, said first sliding member being convex in a downward direction,
(d) a second sliding member attached to an upper portion of said supporting base, said second sliding member being concave in an upward direction, said first and second sliding members both having smooth-faced matching surfaces so as to permit sliding movement therebetween,
(e) driving means for rapidly moving said first sliding member relative to said second sliding member so that the seat can assume an inclined safety position,
(f) means for activating said driving means, and
(g) braking means for progressively retarding said first and second sliding members when moved relative to each other.

4,085,964

VEHICLE INSECT PROTECTION APPARATUS

Ernest L. Hutto, 608 Lillian Dr., Orlando, Fla. 32806, and Charles A. Tovey, 1660 Cheyenne Trail, Maitland, Fla. 32751

Filed Sep. 13, 1976, Ser. No. 722,827
Int. Cl.[2] B60J *1/20*; B60K *11/04*
U.S. Cl. 296—91 7 Claims



1. A vehicle insect protection apparatus having an air current deflector shield attachable to the hood of a vehicle by an elongated bracket extending transversely to and under a front lip of a vehicle hood, the improvement comprising:

a flexible mesh screen shaped to fit over a portion of the front end of a vehicle and having at least two flexible reinforcing edges on the periphery thereof;

fastener means having a plurality of portions thereof attached to said air current deflector shield bracket and a plurality of mating portions attached to one said flexible screen reinforcing edge at predetermined positions thereon;

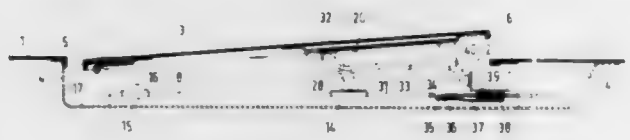
a plurality of flexible, strap bumper fasteners attached to a second said flexible reinforcing edge for attaching said screen to a bumper of a vehicle whereby a rapidly attaching insect screen may be attached to an existing air deflector.

4,085,965

SLIDING ROOFS FOR AUTOMOBILES

Albert Schlapp, Sprendlingen, Germany, assignor to American Sunroof Manufacturing Company, Southgate, Mich.

Filed Jul. 16, 1976, Ser. No. 705,956
Claims priority, application Germany, Jul. 18, 1975, 2532187
Int. Cl.[2] B60J *7/04*
U.S. Cl. 296—137 F 8 Claims



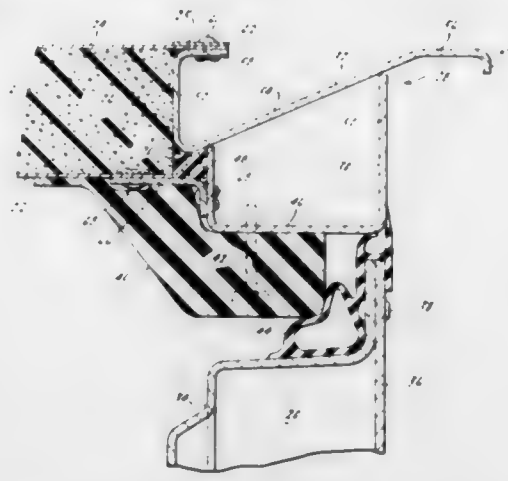
1. a sliding roof for an automobile having a fixed roof surface with an opening thereon, having a rigid sliding cover, guide rails mounted laterally of the opening in the fixed roof of the automobile extending in the sliding direction of the cover, forward and rear sliding shoes mounted on said guide rails for guiding said cover, guided thrust-transmitting cables engaging said rear sliding shoes for driving said cover, pivot bearings mounted on the forward sliding shoes for journalling said cover to pivot about a horizontal axis extending transversely to the direction of sliding, guide blocks attached to said cover along the lateral edges thereof, and guide pins mounted on said rear sliding shoes engageable with said guide blocks, so that the sliding cover, starting from its closed position, can either be swung upwards like front-hinged ventilator flaps by raising the rear edge thereof above the fixed roof surface of the automobile, or, after the rear edge thereof has been lowered, can be slid underneath the fixed roof surface of the automobile to the rear of the opening therein, whereby a force connection exists between parts attached to the sliding cover and stationary parts which prevents sliding of the cover in the direction of an opening movement while the sliding cover is being swung in from a swung-out position into its closed position, the improvement comprising a guide finger attached to the sliding cover in the vicinity of the rear edge thereof and extending transversely to the sliding direction thereof, a stationary guide element means constituting an integral portion of one of said rails for slideably guiding the cover and extending in the direction of sliding and having a recess therein located adjacent to said guide finger when said sliding cover is in the closed position thereof, a spring-loaded detent element selectively engageable with the recess in said stationary guide element means, a guide piece situated in the region of the rear edge of said sliding cover and slidably guided on the adjacent one of said guide rails and connected to said detent element, said guide piece being connected by a connecting strap to the sliding cover, said connecting strap being hinged at one end to the sliding cover and at the other to said guide piece so as to execute pivotal movements in a vertical plane lying in the direction of sliding, whereby said guide finger, when the rear edge of the cover is lowered, disengages the detent element from the recess, passes through the recess and, during subsequent sliding of the cover, is guided along the underface of the guide element.

4,085,966

DOOR HEADER CONSTRUCTION

Stephen J. Ringe, Detroit, Mich., assignor to Fruehauf Corporation, Detroit, Mich.

Filed Nov. 4, 1976, Ser. No. 738,851
Int. Cl.[2] B60J *1/00*
U.S. Cl. 296—146 7 Claims



1. A combination door header and rain gutter comprising a generally U-shaped member having vertically extending inner and outer leg portions connected by a horizontal bight portion, said outer leg portion having a greater vertical dimension than said inner leg portion, and a second member secured to the ends of said leg portions, said second member having an upwardly rearwardly inclined central web portion, a vertical flange at the inner end thereof, and an outwardly extending generally horizontal flange at the outer end thereof, the central portion of said second member forming a closed box section with said U-shaped member to define said door header, the vertical flange and the central web portion of said second member defining said rain gutter.

4,085,967

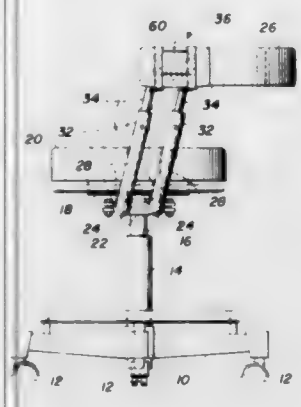
OPERATORY STOOL WITH CLUTCH FOR REST MEMBER

Bruce J. Spencer, Spring Grove, Pa., assignor to Dentsply Research & Development Corporation, Milford, Del.

Filed Aug. 3, 1977, Ser. No. 821,267
Int. Cl.[2] A47C *13/00*
U.S. Cl. 297—115 11 Claims

1. A stool having a seat supported by depending means engageable with a floor-like supporting surface, an arcuate rest

member positioned above said seat and substantially parallel thereto, and a pair of upstanding parallel support members for said rest pivotally interconnected at the opposite ends thereof respectively to said seat and rest for laterally adjusted positioning of said rest relative to said seat, in combination with position retaining means between said rest and arms comprising: a



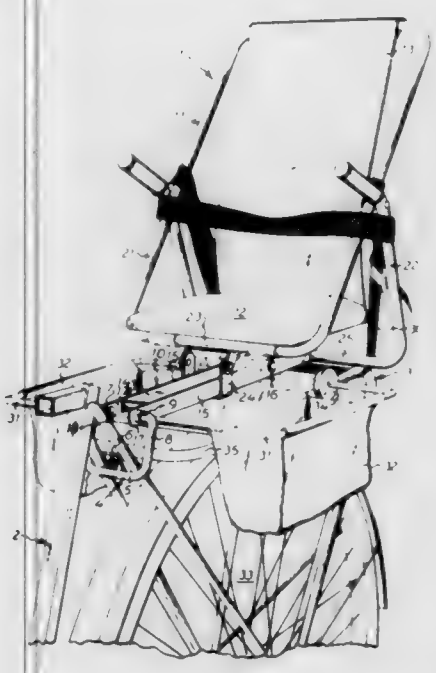
pair of co-engageable clutch members respectively connected to said rest and upper ends of said support members, pressure means normally urging said clutch members releasably into clutching engagement, and manually operable actuating means connected to one of said clutch members and operable to effect sufficient disengagement of said clutch members to permit lateral movement of said rest member relative to said seat.

4,085,968

BICYCLE CHAIR FOR CHILDREN

Sven Arne Svensson, Bastad, and Bengt Ebbe Oscar Ebbeson, Halmstad, both of Sweden, assignors to Origoverken I Halmstad AB, Halmstad, Sweden

Filed Jul. 2, 1976, Ser. No. 702,290
Claims priority, application Sweden, Jul. 7, 1975, 7507749
Int. Cl.[2] A47D *1/10*
U.S. Cl. 297—243 **9 Claims**



1. A bicycle chair for children, having a mounting for fixing the chair on the bicycle, said mounting comprising a substantially U-shaped stirrup having a web, a bracket secured to said web for connection to the bicycle, said stirrup having bent ends in register with each other, and having a frame which is to abut against the luggage carrier of the bicycle and supports a rack, for a seat and the back support, said frame comprising a longitudinal, centrally located beam and two arms placed adjacent each longitudinal side of the beam and pivotally connected thereto, the arms projecting ahead of the beam and having, at their projecting ends, holes for receiving the registering ends of the stirrup, wherein the mounting is adapted to be fixedly mounted on the bicycle in a position immediately ahead of the luggage carrier, and wherein the frame also forms a locking device for releasable locking of the frame on the mounting.

4,085,969

HINGE FITTING FOR ADJUSTABLE BACK RESTS OF VEHICLE SEATS

Mototaka Nakane, Hekinan, and Takami Terada, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Sep. 28, 1976, Ser. No. 727,421
Claims priority, application Japan, Oct. 7, 1975, 50-121463
Int. Cl.[2] B60N *1/02*
U.S. Cl. 297—367 **7 Claims**



1. In a hinge fitting for adjusting the inclination of the back rest of a vehicle seat, comprising a pair of hinge plates pivotably connected to each other, a first of said hinge plates adapted to be secured to one side of the seat or the back rest and the second hinge plate to one side of the back rest or the seat; and means for rigidly locking said hinge plates in different angular positions to each other;

the improvement wherein said locking means comprises

a semicircularly toothed internal rack secured within said first hinge plate;

a pawl lever swingably pivoted on said second hinge plate and including a detent element swingably meshed with the teeth of said rack in a vertical common plane and a lever portion integrally extended from said detent element via the backside of said rack, the pivot position of said pawl lever being arranged on an outer tangent of the semicircularly aligned teeth of said rack to provide linear engagement of said detent element with the teeth of said rack;

a locking lever pivoted coaxially with said hinge plates and movable between a locked position in which said detent element is engaged with the teeth of said rack by engagement of said locking lever against said detent element and an unlocked position in which said detent element is disengaged from the teeth of said rack by engagement of said locking lever against said pawl lever; and

means for biasing said locking lever to maintain the engagement of said locking lever with said detent element.

4,085,970

PAPERBOARD CHAIR OF UNITARY CONSTRUCTION

Sheldon D. Klein, Chicago, Ill., assignor to Chippewa Paper Products Company, Hillside, Ill.

Filed Jul. 21, 1976, Ser. No. 707,375
Int. Cl.[2] A47C *7/00*
U.S. Cl. 297—440 **2 Claims**



1. A chair of stiff corrugated paperboard and the like, comprising

a. a single pre-stamped and scored blank defining a unitary structure and comprising

(1) a seat-supporting base including a pair of laterally spaced opposed side panels and a front panel integrally formed with one of said side panels and connected to forwardly directed vertically extending forward edges of said side panels and extending therebetween, said side panels being generally L-shaped and having integrally formed upward extensions at rearward portions thereof, each of said side panels providing a horizontally disposed seat supporting edge and an upwardly projecting back rest supporting edge, each of said side panels being formed with a downwardly extending upwardly opening slot projecting into the side along a line defined by each said back rest supporting edge as a virtual extension thereof, a downwardly directed lower marginal portion of said back rest panel extending into each said slot to engage said side panels,

(2) a back panel integrally joined to each said side panels and bridging between and interconnecting said side panels at rearmost vertically extending extremities thereof,

(3) a seat panel integrally formed with and hingedly connected to a top edge of said front panel along a horizontally extending fold line formed at a juncture of said front panel and said seat panel, said seat panel being pivotal rearwardly at said fold line to abut, bear upon, and to cover said horizontally-disposed seat-supporting edge of each of said side panels,

(4) a back rest panel integrally formed with and hingedly connected to said back panel along a scored hinge line at a juncture of an upper edge of said back panel with said back rest panel, said back rest panel being pivotal forwardly and downwardly about said hinge line generally to overlie said back panel and to abut and cover said back rest supporting edge of each of said upward extensions of said side panels, and

(5) a laterally extending locking flange integrally formed with said seat panel at a rearward terminus thereof and joined to said seat panel along a laterally extending fold line, said locking flange being adapted to project downwardly into and to engage within the slot in each of said side panels and contiguously to abut said lower marginal portion of said back rest panel, thereby to lock said seat panel and said back rest panel firmly in place; and

b. a seat-supporting vertical wall generally V-shaped in horizontal section and defining a unitary structure separate from said blank, said wall being disposed as an auxiliary strut within said base of said chair beneath said seat panel, said wall having a height equal to the height of said side panels at each seat supporting edge thereof,

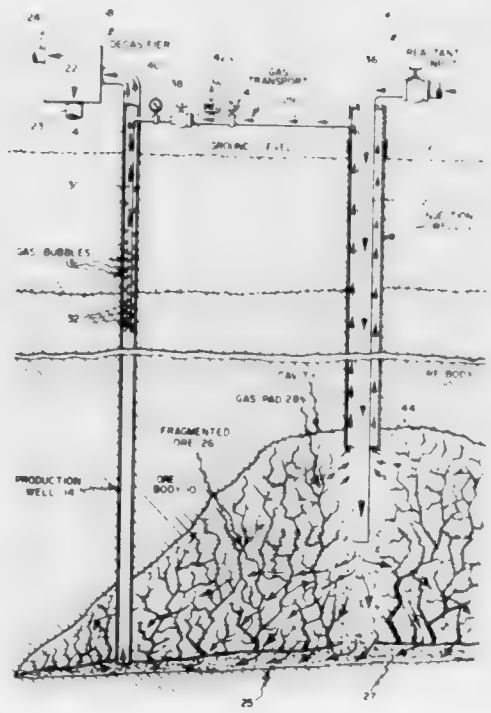
whereby, as said seat panel bears upon said seat-supporting edge of each of said side panels, said seat panel also abuts a top edge portion of said wall to constitute an auxiliary weight-bearing support for said seat panel.

4,085,971

ENERGY CONSERVING MINING SYSTEM AND METHOD

Charles H. Jacoby, Dalton, Pa., assignor to Occidental Minerals Corporation, Lakewood, Colo.

Filed Nov. 17, 1976, Ser. No. 742,632
Int. Cl.[2] E21C *41/14*
U.S. Cl. 299—4 **35 Claims**



1. A system for conserving energy incidental to in situ mining a fluid permeable underground cavity confined ore body containing sought-for mineral values, said system comprising:

means for flowing a fluid which is chemically reactive with said mineral values into said ore body to produce a soluble mineral product while evolving pressurized gas incidental to the reaction(s);

means for collecting and raising out of said ore body said mineral product(s) to an upper level processing facility; and

means for collecting portions of said evolved gases and utilizing them to assist in raising said mineral product(s) to said upper level.

4,085,972

SITU MINING OF FOSSIL FUEL CONTAINING INORGANIC MATRICES

Sambhunath Ghosh, Homewood, and Donald L. Klass, Barrington, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed May 25, 1977, Ser. No. 800,357
Int. Cl.[2] C12B *1/00;* E21B *43/22;* E21C *41/10*
U.S. Cl. 299—7 **10 Claims**

1. A process for recovering underground fossil fuel deposits retained in an inorganic matrix comprising:

contacting said deposit with an aqueous medium of anaerobic organisms under mesophilic or thermophilic temperature conditions for a time sufficient to produce particles of said deposit of a size capable of forming a slurry with said aqueous medium;

pumping said aqueous slurry containing said organisms and particulates of organic fossil fuel and inorganic matrix to the ground surface;

separating said particulates from the aqueous medium of anaerobic organisms, the particulates being further processed to separate the organic carbon and hydrocarbon component from the inorganic matrix; and

recycling said aqueous medium of anaerobic organisms to the underground fossil fuel deposit for further production of particles of said deposit.

4,085,973

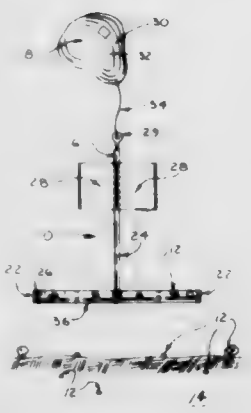
OCEAN FLOOR SURFICIAL DREDGING APPARATUS

John C. Payne, 23-51-32 St., Long Island City, N.Y. 11105

Filed Oct. 27, 1976, Ser. No. 736,226

Int. Cl.[2] E21C *45/00*

U.S. Cl. 299—8 **7 Claims**



1. Surficial dredging apparatus for automatically and selectively retrieving a plurality of particulate minerals of at least predetermined size from on and embedded in the surface of the ocean seabed comprising first means for providing sufficient downwardly driving forces for enabling said first means to at least partially penetrate the ocean seabed and for receiving the particulate minerals therein; second means operatively connected to said first means and being actuable for providing sufficient positive buoyant force for extricating said first means from the seabed and for returning said apparatus toward the ocean surface; and third means operatively connected to said first means for permitting the passup of particulate minerals on and embedded in the seabed surface therepast into said first means whenever downwardly penetrating the seabed and for automatically and selectively trapping a plurality of particulate minerals of at least predetermined sizes in said first means whenever said first means in being extricated from the seabed and ascending towards away from the ocean floor in response to actuation of the said second means, said second means is comprised of an inflatable member connected to the tubular member and upon actuation providing a sufficient positive buoyant force for extricating the first means and said third means from the seabed, wherein said positive buoyant force is less than the downwardly driving force of the first means.

4,085,974

DRUM CUTTER

Willy Lanfermann, Bochum; Friedhelm Henrich, Bochum-Weitmar, and Klaus Oberste-Beulmann, Sprockhovel, all of Germany, assignors to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed Mar. 23, 1977, Ser. No. 780,526

Claims priority, application Germany, Mar. 25, 1976, 2612671

Int. Cl.[2] E21C *25/08*

U.S. Cl. 299—53 **11 Claims**

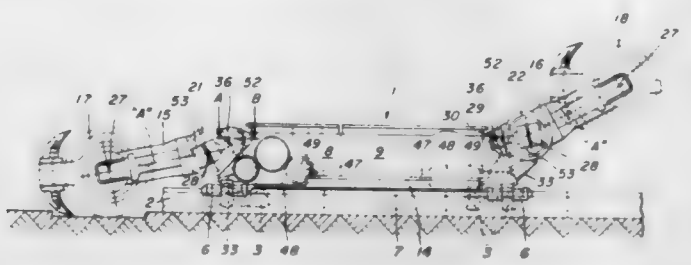
1. A drum cutter to release coal from a mine face while traveling along a mine floor, said drum cutter including the combination of:

a machine body including a pivot shaft at each of opposed ends thereof, the pivot shafts extending parallel to the mine floor at right angles to the direction of travel by the machine body therealong,

two support arms each having two laterally-spaced bores at one end thereof extending transversely to the extended length of the support arm, each bore in the end of each support arm being adapted to selectively receive a pivot shaft at one end of the machine body for pivotal support thereby,

a lever releasably mounted onto each of said support arms adjacent the ends thereof having said space bores,

a cutter drum projecting from the free end of each of said



two support arms at the coal side of the machine body for releasing coal from the mine face,

jack means supported by said machine body and operatively coupled to a lever for pivoting a support arm to position a cutter drum supported thereby, and

motor means supported on each support arm at the stow side, the extended ends of the motor means being supported to said pivot shafts.

4,085,975

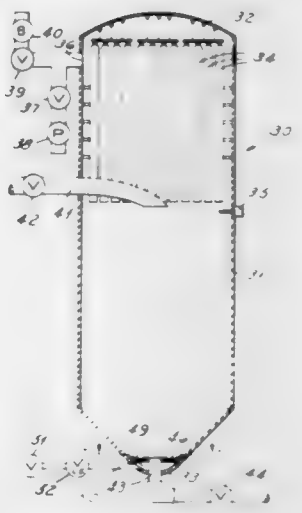
AERATING BARGE UNLOADING SYSTEM

Ib Bentzen Bilkvist, Ann Arbor, Mich., assignor to Dundee Cement Company, Dundee, Mich.

Filed Jul. 29, 1976, Ser. No. 709,846

Int. Cl.[2] B65G *53/26*

U.S. Cl. 302—23 **2 Claims**



1. In a method for filling a reloader with dry bulk particulate material under the influence of a vacuum and thereafter emptying said reloader of said dry bulk particulate material by air pressure, from a blower, the improvement of:

filling said reloader with dry bulk particulate material; and

simultaneously introducing air into said reloader during said filling step at a different location than the filling said reloader with dry bulk particulate material, said air being at a greater pressure than the air inside said reloader for mixing said air and said dry bulk material to form a homogenous mixture in said reloader;

whereby said homogenous mixture flows at a faster rate under the influence of said blower to empty said reloader.

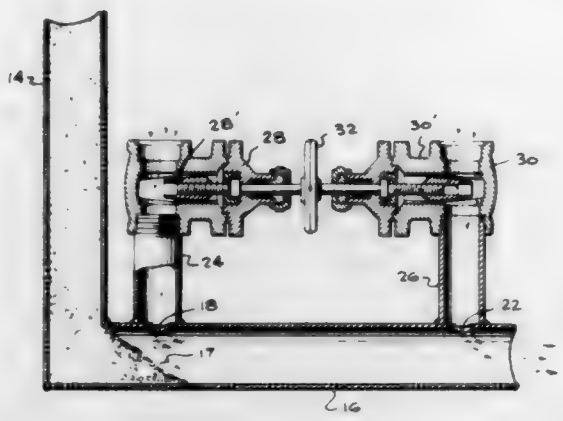
4,085,976
PULVERULENT MATERIAL METERING AND DELIVERY SYSTEM AND METHOD

Joseph Franklin Edwards; Johnny Milton Brown; James Vernon Christian, all of Kingsport, and Clayton Elkins, Jonesboro, all of Tenn., assignors to General Shale Products Corporation, Kingsport, Tenn.

Division of Ser. No. 636,649, Dec. 1, 1975. This application Sep. 27, 1976, Ser. No. 726,756

Int. Cl.[2] B65G *53/04*

U.S. Cl. 302—25 **16 Claims**



1. A method of providing a metered flow of finely powdered coal into a combustion chamber, said method consisting of the steps of providing a surface of repose of said finely powdered coal oriented at approximately 45° from horizontal, causing an ambient air stream to move substantially downwardly to continuously impinge upon said surface of repose to entrain coal particles therefrom and conveying said removed coal particles and the air from said air stream into said combustion chamber.

4,085,977
FEEDING OF FIBROUS MATERIAL TO CARDING MACHINES

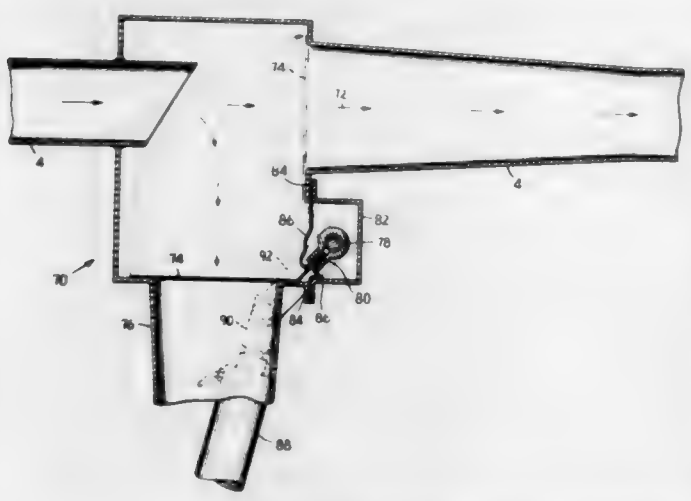
John Maximilian Jules Varga, Halifax, England, assignor to Carding Specialists Co. Limited, England

Continuation of Ser. No. 620,348, Oct. 8, 1975, abandoned, which is a continuation of Ser. No. 530,828, Dec. 9, 1974, abandoned, which is a continuation of Ser. No. 426,956, Dec. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 114,764, Feb. 12, 1971, abandoned. This application Sep. 1, 1977, Ser. No. 829,953

Claims priority, application United Kingdom, Feb. 12, 1970, 6818/70

Int. Cl.[2] B65G *53/06*

U.S. Cl. 302—28 **11 Claims**



1. A method for feeding agglomerated fibrous material to a chute for feeding a carding machine through at least one duct having a preselected cross sectional area comprising the steps of generating a flow of moving air in said duct, preselecting the air flow rate and feeding said material at a selected rate to provide not less than 0.022 pounds of said material per cubic foot of air used, whereby said cross sectional area, said air flow rate and said feeding rate are selected so that said material is pushed or pulled along said duct and not suspended.

10. In a pneumatic transport system of the type having at least one chute and a duct for feeding fibrous material to said chute comprising a flap mounted in a C-clamp, means for pivotally mounting said flap inside said duct for pivoting between a first position in which said flap is positioned to deflect said material into said chute and a second position in which said flap is positioned to close said chute to said material, said means for pivotally mounting said flap comprises a pivot pin, said C-clamp being fixedly mounted to said pivot pin, and at least one flexible member mounted in said duct for covering said means for pivotally mounting said flap to prevent the entry of said fibrous material to said means for pivotally mounting said flap.

4,085,978
VEHICULAR HYDRAULIC BRAKE APPARATUS

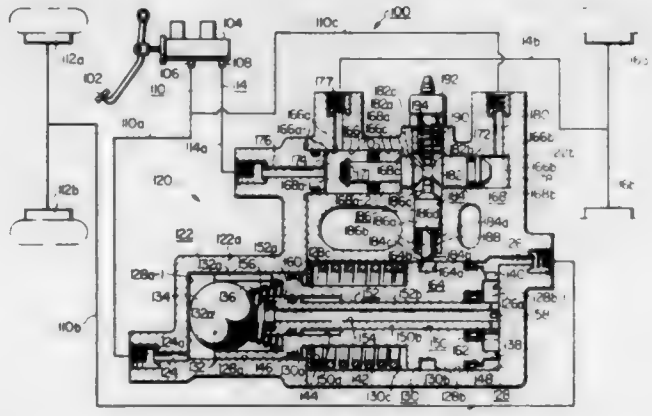
Tomoyuki Nogami, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 4, 1977, Ser. No. 793,758

Claims priority, application Japan, Nov. 24, 1976, 51-140928

Int. Cl.[2] B60T *8/04*

U.S. Cl. 303—6 C **10 Claims**



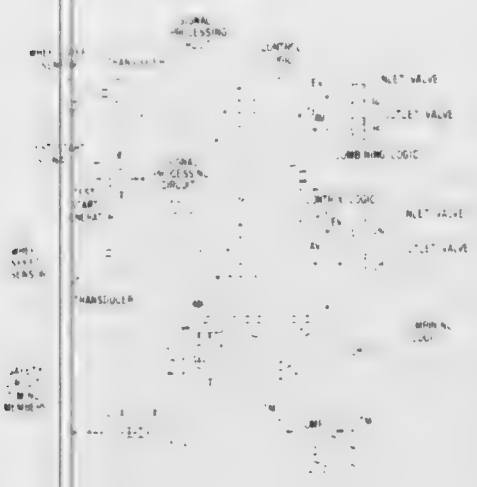
1. A vehicular hydraulic brake apparatus comprising a tandem master cylinder having front and rear sections, front and rear wheel brake cylinders, independent front and rear wheel braking hydraulic circuits connecting the front and rear sections of said master cylinder to the front and rear wheel brake cylinders, respectively, and deceleration responsive braking pressure control means disposed in one of said front and rear wheel braking hydraulic circuits and having pressure inlet and outlet normally communicated with each other, said braking pressure control means including deceleration responsive valve means and a differential piston both disposed between said pressure inlet and outlet, said valve means being responsive to a predetermined deceleration of a vehicle to interrupt the communication between said pressure inlet and outlet, said differential piston having a first pressure receiving area exposed to the hydraulic pressure at said pressure inlet and a second pressure receiving area larger than said first pressure receiving area and exposed to the hydraulic pressure at said pressure outlet, and means responsive to a difference in pressure between said master cylinder front and rear sections for locking said differential piston against movement at least in the upstream direction.

4,085,979

TESTING ARRANGEMENT FOR ANTILOCKING CONTROL SYSTEM WITH TWO IDENTICAL ANTILOCKING CONTROL UNITS

Heinz Leiber, Leimen; Jürgen Gerstenmeier, Ngm-Waldhilsbach, and Hermann Klotz, Schwetzingen, all of Germany, assignors to Teldix GmbH, Heidelberg, Germany

Filed Apr. 1, 1977, Ser. No. 783,734
Claims priority, application Germany, Apr. 1, 1976, 2614016
Int. Cl.[2] B60T *8/00*
U.S. Cl. 303—92 10 Claims



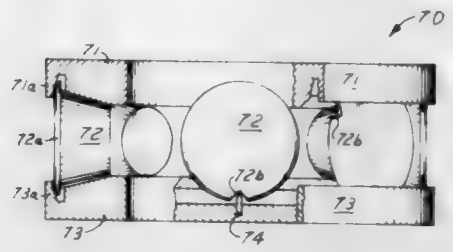
1. In an antilocking control system for wheel brakes of a vehicle, said system including two identically designed antilock control units for various wheels of the vehicle with each said control unit comprising at least one sensor for providing an output signal indicative of the rotational behavior of an associated vehicle wheel, an evaluation circuit means responsive to the output signal from said sensor for providing output control signals, and a brake pressure control means responsive to the output control signals from said evaluation circuit means for varying the brake pressure at the wheel brake of the associated wheel to prevent locking of same; and test circuit means for testing the operability of said antilocking control system at certain time intervals; the improvement wherein said test circuit means comprises: signal generating means responsive to a start instruction for simultaneously feeding at least one identical test signal to each of said two antilock control units; and interrogation and testing means for determining the effect of said test signal on each of said two antilock control units by comparing output signals from given corresponding points in each of said antilock control units for at least approximate coincidence with respect to the timely occurrence and/or magnitude of an output signal and for generating an output control signal if there is a deviation between the two signals being compared which is greater than a given value, whereby said output control signal from said interrogation and testing means may be used to switch off said antilocking control system and/or provide a warning indication, said interrogation and testing means including a separate logic circuit associated with each of said control units for linking the signals generated at various points of the associated control unit as a result of the input test signal in a manner so that a sequence of logic "O" and "L" signals is produced, the presence of which at a given point in time after feeding in the input signal is characteristic for the creation and/or disappearance of certain signals in the various points of said control units, and a comparison circuit means for comparing the two signal sequences generated by said logic circuits for coincidence.

4,085,980

TOOTHED ROLLING CONTACT DEVICES

Earl W. Traut, 8040 Palm Lake Dr., Orlando, Fla. 32811

Division of Ser. No. 437,937, Jan. 30, 1974, Pat. No. 3,998,506.
This application Dec. 13, 1976, Ser. No. 750,257
Int. Cl.[2] F16C *33/36*
U.S. Cl. 308—205 1 Claim



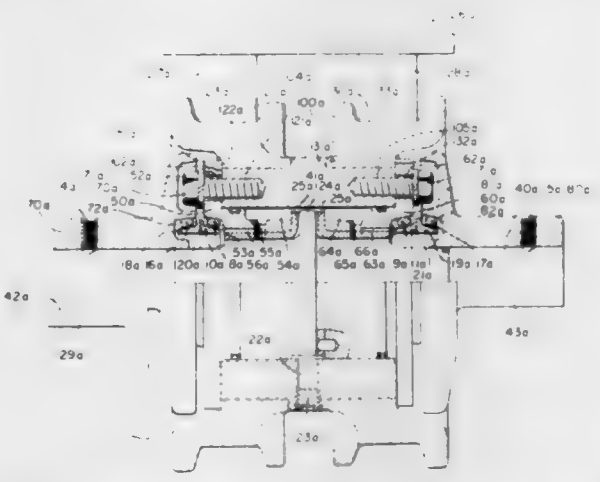
1. A rolling contact bearing comprising only:
two bearing races,
said bearing races being circular,
one rotating means,
said rotating means including a plurality of rollers,
one projection on each said race,
one notch in each said roller,
said projections engaging said notches as said rollers roll against said races,
said projections and said notches serving to maintain constant spacing between said rollers.

4,085,981

TRACK ROLLER DEVICE

Hideo Takenaka, 16-10, Kugahara 6-chome Ohta-ku, Tokyo, Japan

Filed Aug. 2, 1976, Ser. No. 710,404
Claims priority, application Japan, Aug. 15, 1975, 50-112048[U]
Int. Cl.[2] F16C *13/00, 33/74, 35/02*
U.S. Cl. 308—20 5 Claims



1. A track roller device, comprising: a shaft; a pair of axially spaced-apart inner cylinders rotatably supported on said shaft, said inner cylinders each having a radially outwardly extending flange at the axially outer end thereof; an intermediate cylinder surrounding said pair of inner cylinders with its opposite axial ends being disposed in confronting relationship to said flanges and being secured thereto for rotation therewith, said intermediate cylinder having an annular radially outwardly projecting boss at about the axial midpoint thereof; a pair of separate rollers sleeved on said intermediate cylinder on axially opposite sides of said boss with each roller being disposed in association with one of said inner cylinders, said rollers each having an enlarged internal cylindrical recess in the axially outer side thereof and a radially extending end wall at the inner end of said recess, said end wall of said roller

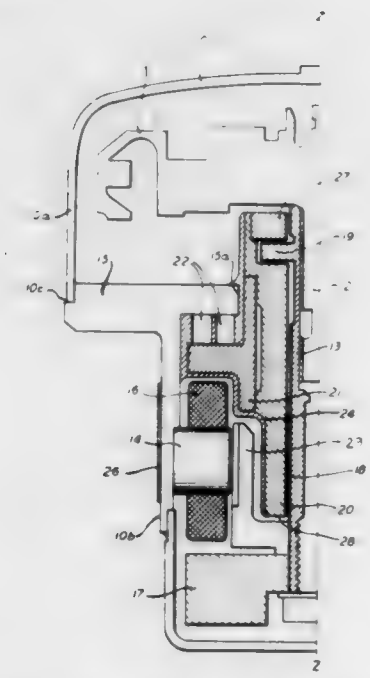
abuttingly engaging the flange of its associated inner cylinder so that said roller is retained on said intermediate cylinder by said flange, and the opposite axially inner sides of said rollers abutting against the opposite sides of said annular boss whereby said rollers are clamped between said flanges and said boss; cooperating wall means defining a pair of lubricant flow passages which respectively extend between said intermediate cylinder and one of said inner cylinders and have a first branch extending radially inwardly to between said shaft and said inner cylinder and a second branch extending axially into a sealed lubrication zone surrounding said shaft and disposed axially outside of said inner cylinder; and radially extending passage means in said annular boss of said intermediate cylinder for supplying lubricant to said lubricant flow passages.

4,085,982

SEAL FREE LIQUID BEARING

Bo Hans Gunnar Ljung, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Sep. 27, 1976, Ser. No. 726,895
Int. Cl.[2] F16C *37/00*
U.S. Cl. 308—76 **12 Claims**



5. A seal free fluid bearing device comprising:
means for enclosing said device,
means within said enclosing means for rotation therein,
means within said enclosing means for supporting said rotation means,
means interposed between the inner surface of said supporting means and said rotation means for reducing friction therebetween, and
means within said enclosing means for conducting heat from said friction reducing means.

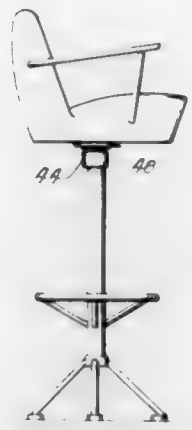
4,085,983

SWIVEL THRUST BEARING

Carl B. Johnson, Pontiac, Ill., assignor to Pontiac Furniture Industries, Inc., Pontiac, Ill.

Filed May 6, 1976, Ser. No. 683,901
Int. Cl.[2] F16C *11/00, 27/06*
U.S. Cl. 308—134.1 **6 Claims**

1. A thrust bearing comprising a flat ring member, a lubricating liner embracing the inner periphery of said ring member and both sides thereof adjacent to said inner periphery, and a second member having an annular surface in contact with said liner in facing relation to one side of said ring member, said second member having an integral neck portion extending through the central apertures of said ring member and liner and having integral ledge means extending radially outwardly from said neck portion in contact with the liner on the opposite side of said ring member, said annular surface and ledge means enabling said second member to receive or transmit thrust in either axial direction from or to said ring member through the



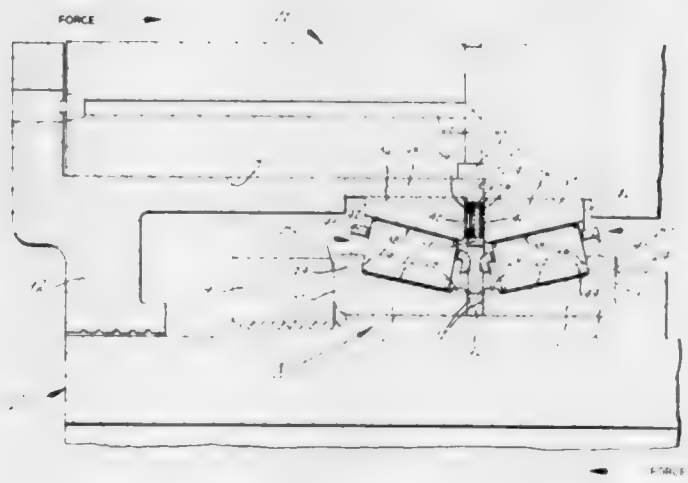
interposed liner, said integral outwardly-extending ledge means constituting the sole means of maintaining the assembly of said ring member, interposed liner, and second member.

4,085,984

DOUBLE ROW BEARING ASSEMBLY WITH TAPERED ROLLER BEARINGS

Robert W. Cameron, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Jun. 30, 1977, Ser. No. 811,577
Int. Cl.[2] F16C *23/06*
U.S. Cl. 308—207 A **11 Claims**



1. A double row bearing assembly for supporting a structure such as a shaft within another structure such as a housing and being capable of accommodating thrust loading in both axial directions as well as radial loading; said bearing assembly comprising: a set of inner races positioned on the one structure with each inner race having an outwardly presented raceway; a set of outer races positioned on the other structure with each outer race having an inwardly presented raceway located opposite the outwardly presented raceways of the inner races, the races of one of the sets being fixed in position with respect to each other and the races of the other set being movable axially with respect to each other; rolling elements between the raceways of corresponding inner and outer races, whereby the rolling elements are arranged in two circumferential rows, the rolling elements of one of the rows and the raceways against which they are located being configured to accommodate thrust loading in one axial direction, the rolling elements of the other row and the raceways against which they are located being configured to accommodate thrust loading in the other axial direction; a spacer between the axially movable races and being fixed in position with respect to the structure along which those races are located so as to serve as an abutment for those races; and springs carried by the spacer and urging the movable raceways away from each other, whereby

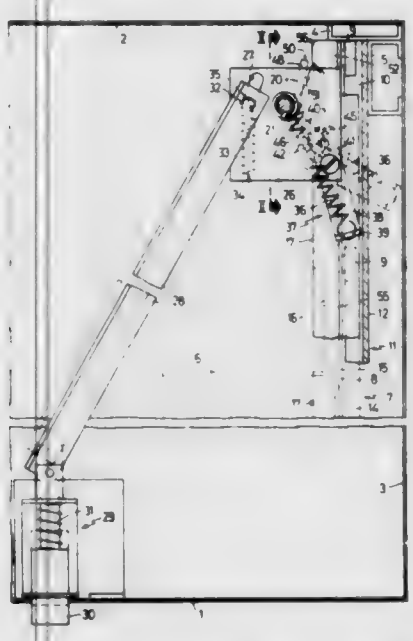
when a thrust load is applied in one axial direction, one movable race will be blocked by the spacer and the thrust load will maintain the rolling elements of that race seated against its raceway and the raceway of the corresponding fixed race for a full 360°, and the springs will urge the other movable race away from the spacer to the extent that the rolling elements along that movable race will remain seated against its raceway and against the raceway for the corresponding fixed race for a full 360°, and vice-versa when the thrust loading is applied in the other direction.

4,085,985

CENTRAL LOCKING MECHANISM

Michael Weber, Gaildorf-Unterrot, Germany, assignor to Wilhelm Bott KG, Gaildorf, Germany

Filed Oct. 7, 1976, Ser. No. 730,473
Int. Cl.[2] E05B *65/46*
U.S. Cl. 312—216 **8 Claims**



1. A central locking mechanism for an item of furniture having a plurality of drawers arranged side by side or one above the other comprising a blocking projection integral with each of said drawers and arranged transversely to the sliding direction of the respective drawer, a locking bolt extending beyond all of said drawers pivotable about a stationary axis into the path of movement of the blocking projections, said stationary axis extending parallel to the longitudinal axis of the locking bolt so that the closed drawers cannot be opened and said locking bolt, in the locked position of the central locking mechanism, being pivotable against the force of a spring out of the blocked position when an opened drawer is being closed, a driving member, a bistable member coupling said driving member and said locking bolt said locking bolt being connected to a lever arm which, in the unlocking position of the locking bolt, projects into the path of a stopping face on each said blocking projection so that the stopping face is engageable with the lever arm when opening a drawer and the locking bolt is pivotable into the locking position.

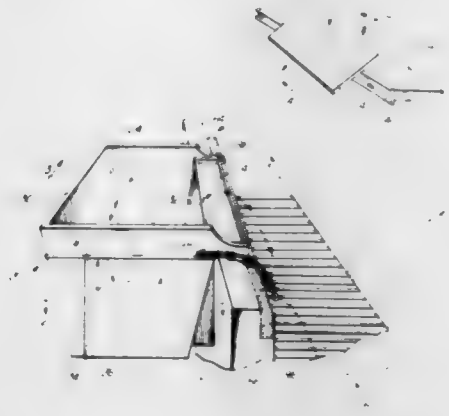
4,085,986

AUXILIARY REFRIGERATED DISPLAY CASE

Ronald H. Taub, Highland Park, Ill., assignor to Taub Family Trust U/A Sept. 1, 1967, Chicago, Ill.

Filed Sep. 22, 1976, Ser. No. 725,644
Int. Cl.[2] A47B *77/08*; A47F *3/04*; A47B *81/00*
U.S. Cl. 312—236 **5 Claims**

1. In the combination of an open top refrigerated display case constituting a primary case having a front wall and including refrigeration means for maintaining the interior of the primary case at a reduced temperature to promote safe storage of heat-sensitive items contained therein, with a secondary display case physically distinct from the primary case and positioned exteriorly thereto adjacent a front face of said front wall, said secondary case including a floor, a pair of opposed end walls, and front and rear walls defining an upwardly open chamber for storage and display of articles disposed therewithin at a reduced temperature, said secondary case being devoid of independent refrigeration means and there being no auxiliary air pump means or duct means associated with said secondary case; the improvement wherein said primary case further comprises air deflection means in a flow path of cool air emanating from the primary case for directing transfer of cool



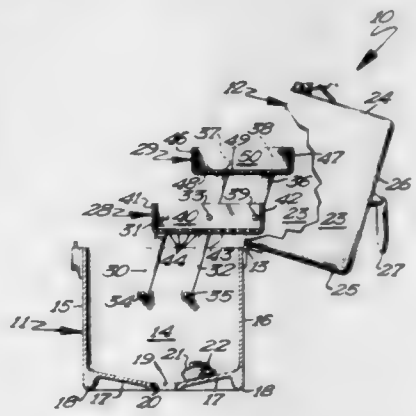
air from the interior of the primary case to the chamber of the secondary case, said air deflection means comprising a laterally-elongated, panel-like vane comprising a fixed attachment to said primary case, and means supporting said vane at a position above said secondary case and in proximity thereto, wherein said vane is supported by a shelf extending laterally in a zone generally above said primary display case and rearwardly of and in line with said secondary case, and said vane is angled to project upwardly and rearwardly with respect to said secondary case.

4,085,987

TACKLE BOX

Robert B. Vartdal, Drawer 9, Sanibel, Fla. 33957

Filed Mar. 29, 1976, Ser. No. 671,338
Int. Cl.[2] A47B *77/16*
U.S. Cl. 312—269 **1 Claim**



1. A fishing tackle box for use in conjunction with salt water fishing, comprising:

a generally rectangular shaped lower box section having opposed end walls, a front wall, a rear wall, and a generally upwardly concave bottom wall, said bottom wall extending downwardly and inwardly from said front wall, said rear wall and said end walls to a substantially central portion,

a drainage opening in said central portion,

a removable closure for said opening, attached to a portion of said lower section by a chain or the like,

a generally rectangular shaped upper box section defining

a cover for said tackle box and being hingedly connected to said lower box section for swinging movement between opened and closed positions,

a plurality of shelves pivotedly mounted on said lower box section by interconnecting arms and adapted to be enclosed between the upper and lower box sections,

each shelf including upstanding peripheral walls and a perforated bottom wall whereby when said tackle box is opened and the interior thereof sprayed with fresh water to clean the box and its contents said water will readily drain from the shelves through the perforate openings therein into the lower box section and through said central opening,

said lower box section is provided with integral downwardly projecting support elements at the periphery of said bottom wall,

said support elements extending below the top of said drainage opening, whereby said water may flow freely from said fishing tackle box, at least one of said shelves is compartmented and adapted to receive fishing gear or the like,

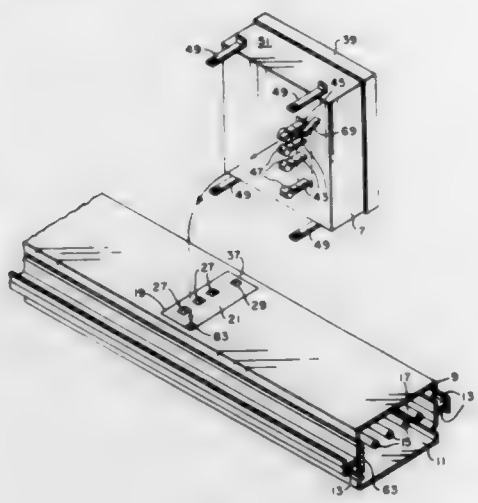
said shelves are so arranged with respect to each other, that said fresh water may be poured in each shelf independently.

4,085,988

BUS DUCT PLUG-IN GROUND STAB

Dennis H. Gamble, Brighton Township, Beaver County, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1977, Ser. No. 763,202
Int. Cl.[2] H01R *3/06*
U.S. Cl. 339—14 R **5 Claims**



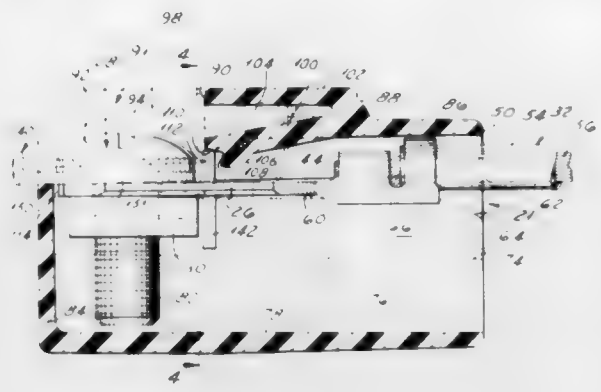
1. A multiphase electrical power distribution apparatus comprising a section of bus duct including top and bottom walls and opposite side walls forming a housing, a plurality of multi-phase bus bars supported within the housing, a ground bar mounted on a side wall of the housing, one of the walls having an outlet opening, a plug-in unit detachably mounted on the bus duct, the plug-in unit being a box-like member having a bottom wall, the bottom wall including an aperture aligned with the outlet opening when the plug-in unit is attached to the bus duct, the plug-in unit having electrically conductive means extending through the opening and detachably engaging the multi-phase bus bars, ground conductor means within and electrically connected to the plug-in unit and comprising a flexible conductor extending through the opening, and the conductor being biased in detachable contact with the ground bar in the bus duct.

4,085,989

CONNECTOR BLOCK AND TERMINAL ASSEMBLY

Willard B. McCardell, Royal Oak, Mich., assignor to Altair Tool & Engineering Inc., Mt. Clemens, Mich.

Filed Nov. 3, 1975, Ser. No. 628,073
Int. Cl.[2] H01R *9/16*
U.S. Cl. 339—59 M **12 Claims**



1. A connector block and terminal assembly comprising:

an insulating housing,

at least one longitudinally extending cavity defined by the housing opening outwardly thereof at one end to form a terminal receiving entrance and opening laterally outwardly thereof spaced from said entrance to form an access aperture with the cavity being closed intermediate said openings,

a terminal slidably received in said cavity and having a wire gripping portion at one end and an apertured hook-up portion therefrom for receiving a screw fastener projected through the apertured hook-up portion,

a nut separable from said terminal received in said cavity and positioned adjacent said lateral access opening on the opposite side of said apertured hook-up portion therefrom for receiving a screw fastener projected through the apertured hook-up portion,

means on said terminal for retaining said nut in the cavity in sufficient registry with the aperture in the hook-up portion independent of any screw fastener to enable screw threaded engagement of a screw fastener projected through the apertured hook-up portion, and

locking tang means on the housing for engaging the terminal to hold it in the cavity.

4,085,990

LONGITUDINALLY ACTUATED ZERO FORCE CONNECTOR

Max Leroy Jayne, North Warren, Pa., assignor to GTE Sylvania, Incorporated, Stamford, Conn.

Filed Mar. 25, 1977, Ser. No. 781,295
Int. Cl.[2] H01R *13/62*
U.S. Cl. 339—74 R **11 Claims**

1. A longitudinally actuated connector comprising:

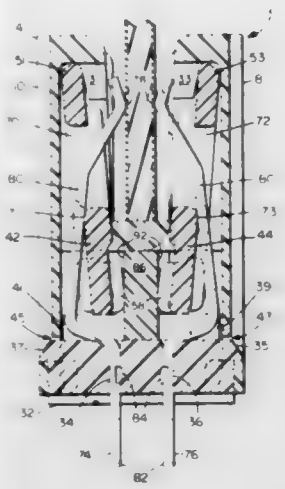
a hollow support member having two side walls which extend along the longitudinal axis of said member and are connected by two end walls;

at least one contact holder positioned within said support member and extending along said longitudinal axis, the internal surface of said holder including at least one cam follower and wherein said contact holder includes at least one edge portion extending along said longitudinal axis and at least one of said side walls includes a lip to provide pivot point;

at least one resilient electrical contact engaging said holder, said contact urging said cam follower toward said longitudinal axis; and,

at least one actuator plate slidingly affixed internal of said support member, said plate including at least one cam surface which engages said cam follower and includes a high point and a low point, said actuator plate extending

through an aperture in said support member to provide a portion outside of said support member by means of which said plate may be moved along said longitudinal axis, said movement forcing said contact holder and contacts engaging said holder away from said longitudinal axis by pivotal movement of the contact holder about said pivot



point as said high point approaches said cam follower and allowing said contact holder and contacts engaging said holder to move towards said longitudinal axis by pivotal movement of the contact holder about said pivot point in a reverse direction as said low point approaches said cam follower.

4,085,991

ELECTRICAL SOCKET

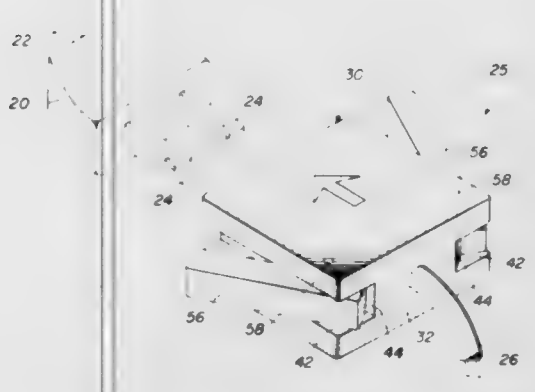
Bruce H. Marshall, 2256 W. Arthur Ave., Chicago, Ill. 60645, and Henry E. Blenner, 1515 E. Central Rd., Arlington Heights, Ill. 60005

Continuation-in-part of Ser. No. 745,531, Nov. 29, 1976. This application Apr. 21, 1977, Ser. No. 789,409

The portion of the term of this patent subsequent to Nov. 29, 1994, has been disclaimed.

Int. Cl.[2] H01R *13/54*

U.S. Cl. 339—75 P **14 Claims**



1. An electrical socket for interconnection with a male electrical plug having two spaced-apart prongs, respectively with apertures near the ends thereof, said socket comprising a body having a pair of spaced-apart channels therein respectively to receive the prongs of the male electrical plug, said body further having therein a pair of outwardly facing, oppositely directed recesses, a pair of electrical contacts in said body and respectively adjacent to said channels and in communication therewith, a pair of legs pivotally mounted on said body and movable between a locking position respectively in said recesses and respectively alongside said channels and an unlocking position respectively out of said recesses and respectively away from said channels, and a pair of fingers respectively carried by said legs and located thereon respectively to enter the apertures of the prongs when the legs are in the locking positions thereof and to be withdrawn from the apertures when the legs are in the unlocking positions thereof.

4,085,992

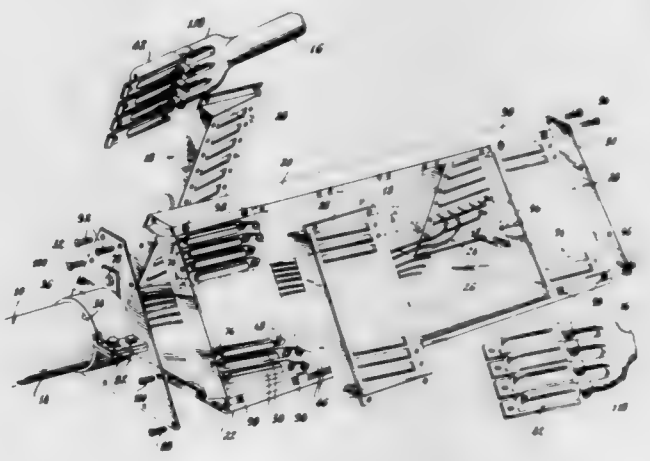
METHOD AND APPARATUS FOR CONNECTING MULTI-CONDUCTOR CABLES

George Edward Ayer, Endicott, N.Y., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 448,476, Mar. 6, 1974, Pat. No. 3,958,850, which is a division of Ser. No. 248,595, Apr. 28, 1972, Pat. No. 3,820,056. This application Mar. 5, 1976, Ser. No. 664,125

Int. Cl.[2] H01R *13/54*

U.S. Cl. 339—91 R **5 Claims**



1. An assembly for physically and electrically connecting a first multi-conductor cable to a plurality of second multi-conductor cables, comprising:

at least three panels;

connecting means for joining said panels to form an enclosure for said first cable;

a plurality of first connector elements mounted in at least one of said panels, each of said connector elements having a selected group of first cable conductors physically and electrically connected thereto;

a plurality of second connector elements adapted to mate with said first connector elements, each of said second connector elements being physically and electrically connected to a selected group of conductors of said second cables; and

releasable engagement means operative when a second connector element is mated in a corresponding first connector element for preventing the elements from being spuriously separated but for permitting them to be separated if desired,

said releasable engagement means including a holddown secured at one end of the first connector element and at the other end to a point near one end of the second connector element, and a screw securing a point near the other end of the second connector element to said panel.

4,085,993

SEALED CONNECTOR WITH BARRIERS TO CONTACT BRIDGING

James L. Cairns, 16946 Cloudcroft Dr., Poway, Calif. 92064

Filed Sep. 7, 1976, Ser. No. 720,846

Int. Cl.[2] H01R *13/52*

U.S. Cl. 339—94 M **7 Claims**

1. In combination:

a plug having contacts to enter a receptacle and matingly engage contacts therein;

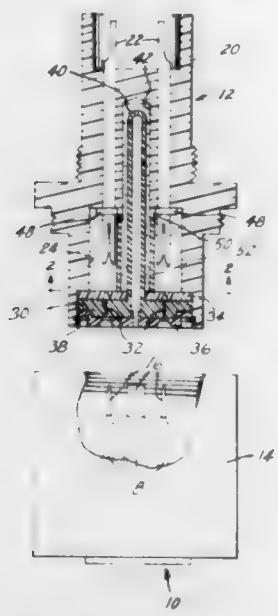
a receptacle including a housing having a chamber sealed by a slitted, self-sealing cap,

said chamber being filled with dielectric fluid;

a hollow flexible member integral with said cap extending into said chamber,

said cap having a central opening to expose the interior of said flexible member to the exterior of said housing;

electrical contacts spaced about said flexible member and secured in said housing opposite said cap;
respective barrier means extending from said flexible member and between each pair of said electrical contacts,



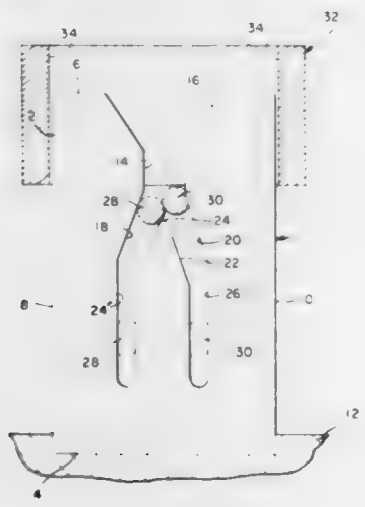
each barrier means being dimensioned to prevent any foreign conductive matter entering said fluid from spanning the electrical contacts separated thereby;
and means to prevent movement of any of said barrier means out of contact separating position.

4,085,994

DUAL SLOT CONTACT

Robert Volinskie, Hershey, Pa., assignor to AMP, Incorporated, Harrisburg, Pa.

Filed Aug. 12, 1976, Ser. No. 713,724
Int. Cl.[2] H01R *9/08*
U.S. Cl. 339—95 R **2 Claims**



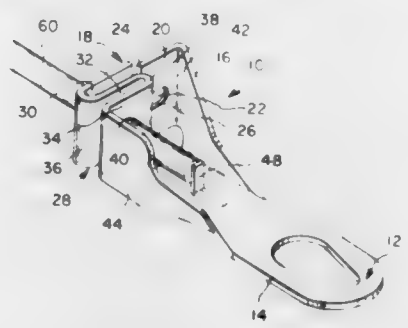
1. A slotted plate electrical contact, comprising:
a single metal plate having a slot therein,
said slot including an initial slot portion and first and second diverging slot portions each having an entryway communicating with said first slot portion,
a portion of said plate having an apex between said diverging first and second slot portions,
said initial slot portion having a width greater than the diameter of a first or a second uninsulated, relatively small diameter wire to be connected electrically in said slot but less than the sum of diameters of said first and second wires,
said first and second diverging slot portions each having a width less than the diameter of a first or a second wire to be connected electrically in said slot, and a length greater than the diameter of a first or a second wire to be electrically connected in said slot,
said apex being so constructed and arranged for diverting a first wire to either side thereof into one said entryway of one of said diverging slot portions, whereby a first wire is detained in one said entryway, and
a second wire is diverted by a first wire detained in one said entryway into an entryway of the remaining diverging slot portion,
whereby a first and a second wire are positioned respectively in said entryways for corresponding wire termination in said diverging slot portions.

4,085,995

ELECTRICAL TERMINAL

Stephan Douglas Kautz, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 27, 1977, Ser. No. 810,260
Int. Cl.[2] H01R *11/20*
U.S. Cl. 339—97 R **2 Claims**



1. An electrical terminal stamped and formed from a coplanar sheet of conductive material, comprising:
a. a connecting strip;
b. means at the front end of the strip for attachment to electrical connectors;
c. vertical side walls extending rearwardly from each side of the strip with the ends of the side walls being movable towards each other;
d. an insulation cutting blade attached to the end of one side wall and positioned transverse to the longitudinal axis of the terminal, said blade having a wire-receiving slot therein with the opening being towards the other side wall; and
e. a wire retaining assembly attached to the end of the other side wall and positioned transverse to the longitudinal axis of the terminal, said assembly having a front, middle and rear walls with a blade-receiving opening between the middle and rear walls, and aligned apertures in the walls adapted to receive a wire therethrough,
so that with a wire positioned through the apertues, the side walls may be squeezed together causing the blade to enter into the blade-receiving opening thereby driving the wire into the slot so that the edges thereof may cut through the insulation and electrically contact the underlying conductor.

4,085,996

CUBICAL THREE-CONDUCTOR ELECTRICAL TAP

Robert C. Koslo, Mentor, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 29, 1977, Ser. No. 782,414
Int. Cl.[2] H01R *13/50, 25/02*
U.S. Cl. 339—159 C **1 Claim**

1. An adapter device for converting a single three-conductor grounded electrical service outlet into three service outlets, said device comprising, in combination:
an integral one-piece housing of insulating material and having at least six sides thereof;
first and second line conductor terminals slidably inserted and mounted within said housing and respectively extending parallel to one another and from a pair of spaced-apart

openings on one surface of said housing, through said housing and projecting externally of said housing and away from a second surface which is opposite said one surface;

a first ground conductor terminal slidably inserted and mounted within said housing and extending from a third opening on said one surface through said housing, parallel to said first and second terminals, away from said housing and on one side of the plane formed by said first and second terminals in spaced-apart relationship therewith;

third and fourth line conductor terminals slidably inserted and mounted within said housing and respectively extending from a pair of spaced-apart openings on a third surface of said housing to a pair of openings on a fourth surface of said housing which is opposite to said third surface, said third and fourth line conductor terminals being parallel to one another and transverse to said first and second conductor terminals;

a second ground conductor slidably inserted and mounted within said housing and extending transversely of said first



ground conductor and between said third surface and a third opening on said fourth surface, said second ground conductor being spaced-apart from the plane formed by said third and fourth conductor terminals;

means for connecting said first and second ground connectors within said housing and for connecting said first and second line conductor terminals respectively with said third and fourth line conductor terminals, said means including an integral snap-in fastener on each of said conductors for retainingly engaging a mating fastener on the corresponding conductor to which each conductor is respectively connected, wherein the respective connected conductors are fixedly mounted within said housing by sliding one of said connected connectors into snap-in retaining engagement with the other of said connected conductors; and,

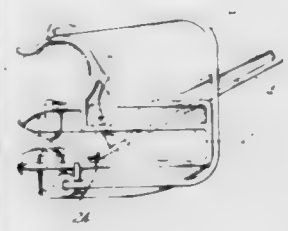
said third surface having a third opening therein which is spaced-apart from the plane formed by said third and fourth line conductors and which overlies an intermediate portion of said first ground conductor.

4,085,997

ANODIZE CLAMP

William Alfred Hainsworth, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 30, 1977, Ser. No. 782,805
Int. Cl.[2] H01R *11/22*
U.S. Cl. 339—255 P **8 Claims**



1. An apparatus for electrically connecting a part to be anodized to a conductor bar in an anodizing process which comprises:

a member adapted to attach to said conductor bar;

a frame disposed on said member for holding said part to be anodized;

means for slidably mounting an electrical conductor within said frame between said conductor bar and said part to be anodized; and

means for forcing said part to be anodized against the slidably mounted conductor for securing electrical contact between said conductor bar and said part to be anodized.

4,085,998

DUAL CLIP CONNECTOR

James L. Owens, Clemmons, N.C., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,399
Int. Cl.[2] H01R *13/12*
U.S. Cl. 339—258 P **6 Claims**



1. An electrical connector for interconnecting first and second electrical devices and coupling the interconnected devices to external circuitry comprising:

means for electrically coupling the connector to the external circuitry;

at least two resilient fingers in generally opposed spaced relationship for engaging and receiving the first electrical device therebetween; and

a projecting finger formed in an intermediate portion of the connector and extending in a given direction therefrom in generally opposed spaced relationship to a portion of one of the resilient fingers extending in the given direction from the intermediate portion of the connector, for engaging and receiving the second electrical device therebetween.

4,085,999

TRANSPARENT THERMAL INSULATING SYSTEM

Day Chahroudi, Kentfield, Calif., assignor to Energy Materials, Inc., Carte Madera, Calif.

Continuation of Ser. No. 471,767, May 20, 1974, Pat. No. 3,953,110. This application Apr. 8, 1976, Ser. No. 674,804
The portion of the term of this patent subsequent to Apr. 27, 1993, has been disclaimed.
Int. Cl.[2] F24D *5/00*; G02B *13/14*
U.S. Cl. 350—1.1 **14 Claims**

1. A thermal insulating system having controllable transmissivity to visible radiation comprising:

a first layer transmissive to visible radiation;

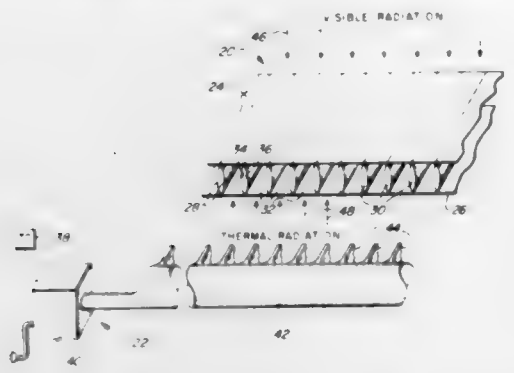
a second layer transmissive to visible radiation and spaced from said first layer;

means for defining the space between said layers into at least one compartment;

a thermal radiation suppressor device for suppressing thermal radiation transmission; and

a variable visible radiation control device including a contin-

uous, non-movable variable transmission layer whose opacity to visible radiation varies as a function of tempera-



ture for controlling transmission of visible radiation as a function of temperature.

4,086,000

VIEWFINDER OPTICS WITH ZERO POWER DOUBLET

Arthur Cox, Park Ridge, and Walter R. Linke, Chicago, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Aug. 23, 1976, Ser. No. 716,626
Int. Cl.[2] G02B *23/14*
U.S. Cl. 350—54 **6 Claims**



1. An optical system of a chromatically neutral viewfinder system, the system having:

an aperture stop;

positive elements spaced forward of said aperture stop;

positive elements spaced rearward of said forward elements and said aperture stop, the rearward elements including an eyepiece element; and

every one of the elements forwardly and rearwardly of said aperture stop having convex surfaces, no element forwardly or rearwardly of said aperture stop having a concave surface,

a hyperchromatic component which includes a chromatic aberration opposite to the chromatic aberration generated by said positive elements, the component being interposed along the optical axis substantially at the position of said aperture stop between said positive forward elements and said positive rearward elements

whereby said component chromatically neutralizes the image.

4,086,001

PLANAR OPTICAL WAVEGUIDE

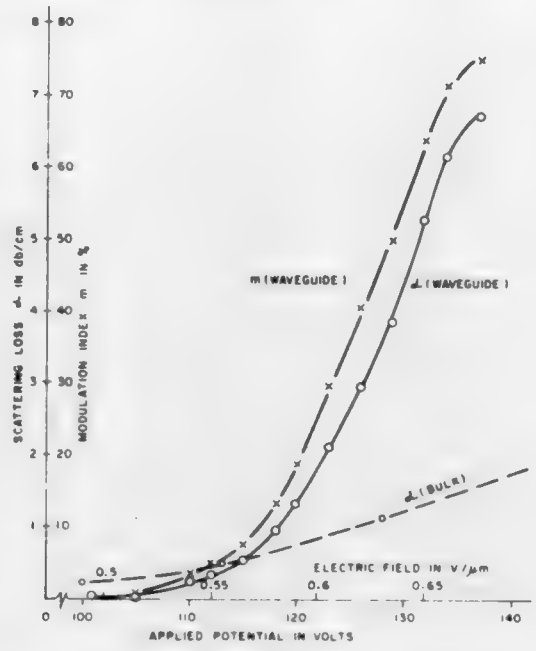
Di Chen, Minnetonka, and Barry G. Koepke, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 13, 1975, Ser. No. 540,919
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.14 **3 Claims**

1. A planar optical waveguide comprising:

a substrate having an index of refraction; and

a stress created planar optical waveguide region in contact with the substrate, wherein the waveguide region is formed by polishing the planar waveguide region having an index of refraction greater than the index of refraction



of the substrate as a result of residual stress within the waveguide region.

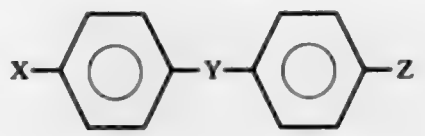
4,086,002

FIELD EFFECT LIGHT SHUTTER EMPLOYING LOW TEMPERATURE NEMATIC LIQUID CRYSTALS

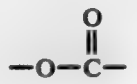
Sardari L. Arora, Kent, Ohio, assignor to Haffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 223,310, Feb. 3, 1972, abandoned. This application Nov. 20, 1973, Ser. No. 417,501
Int. Cl.[2] C09K *3/34*; G02F *1/13*
U.S. Cl. 350—350 **4 Claims**

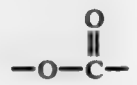
1. In a field effect liquid cyrstal display of the type in which a layer of liquid crystal material of positive dielectric anisotropy is sandwiched between transparent conductive electrodes; the improvement wherein said liquid crystal material comprises a mixture of at least three different liquid crystal compounds wherein in at least the first two of said compounds have the general formula:



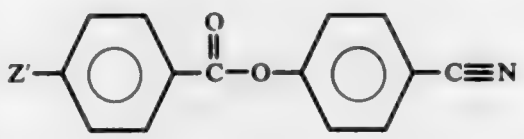
wherein the radical Y comprises an ester linkage



and the X and Z radicals are selected from the group consisting of a saturated alkyl group having 1 to 18 carbon atoms and an alkoxy group having 1 to 18 carbon atoms, and the third of said compounds



has the general formula:



wherein the radical Z' is selected from the group consisting of

methyl and an alkoxy group having 1 to 18 carbon atoms and wherein the third of said compounds is present in the range of about 3 to 40 weight percent.

4,086,003

ELECTROCHROMIC DISPLAY CELL

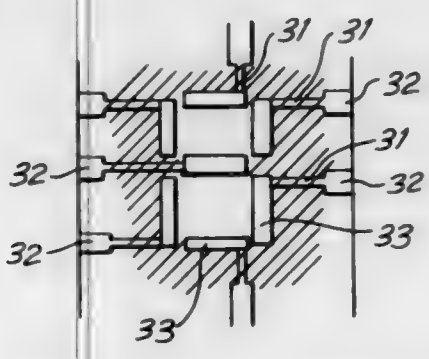
Akihiko Kouchi; Tsutomu Otake; Hiroshi Takeshita, all of Suwa, and Kunihiro Inoue, Okaya, all of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 15, 1975, Ser. No. 596,135

Claims priority, application Japan, Jul. 15, 1974, 49-80934; Jul. 22, 1974, 49-83933

Int. Cl.[2] G02B *5/23*; G02F *1/01, 1/11, 1/17*

U.S. Cl. 350—357 **4 Claims**



1. The electrochromic display cell, comprising a first transparent wall, at least one transparent conductive electrode on the inner surface thereof, a second wall opposed to and spaced apart from said first wall, a reflective metal selected from the group consisting of gold and silver on the interior surface of said second wall, an electrochromic material in solution between said opposing inner surfaces, said electrochromic material in solution being the sole electrochromic material in said cell, at least one contact region proximate the edge of said first wall, a transparent conductive lead connecting said electrode on said first wall with said contact region, and an insulating layer over at least a portion of said transparent conductive lead, said reflective metal having an area including at least that area immediately opposite said conductive electrode on said first wall, said electrode on said first wall and said reflective metal being connectable to an exterior source of voltage and said reflective metal being selected to be inert when rendered negative at the voltage necessary for erasing a display generated by making said transparent electrode negative.

4,086,004

EYE GLASSES

Leonard Scrivo, Tuckahoe, N.Y., and Sidney Goldstein, Wynmoor, Pa., assignors to Vicon Products Corporation, Pelham Manor, N.Y.

Filed May 26, 1976, Ser. No. 689,967

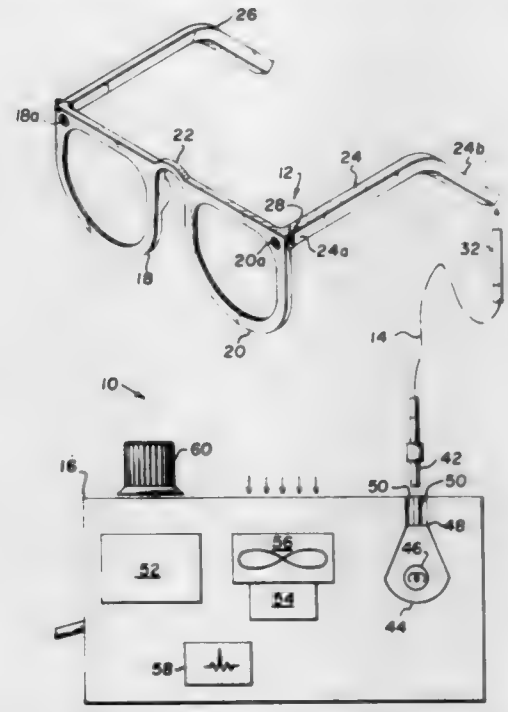
Int. Cl.[2] G02C *1/00, 5/14*; G02B *5/14*

U.S. Cl. 351—158 **19 Claims**

1. An improved viewing device comprising, in combination:

a spectacle frame including a pair of lens-holding members connected by a bridge member, and a pair of side-supporting arms, said side-supporting arms each including a first end connected to one of said lens-holding members and a second end including an ear-engagement portion;

means for transmitting light including a fiber-optic bundle disposed in at least one of said side-supporting arms, said fiber-optic bundle extending axially between said first and second ends and including a first optical face adjacent said first end of said side-supporting arm for projecting light within the viewing area between said spectacle frame and the object to be viewed, and a second optical face adjacent said second end of said side-supporting arm; and



means for connecting the second optical face of said fiber-optic bundle to a power supply for transmitting light through said fiber-optic bundle to said first optical face.

4,086,005

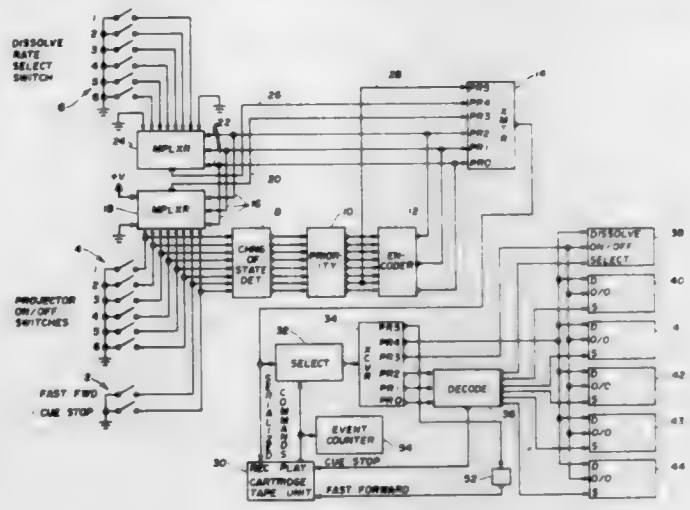
AUDIO-VISUAL PROGRAMMER

Erik N. Honebrink, Champlin, Minn., and Jon N. Myntti, Dayton, Ohio, assignors to Audio-Sine, Inc., Minneapolis, Minn.

Filed Oct. 26, 1976, Ser. No. 735,594

Int. Cl.[2] G03B *15/03*

U.S. Cl. 352—133 **11 Claims**



1. Apparatus for controlling the operation of plural photographic projectors comprising, in combination:

(a) manually operable switching means for selecting which of and how a plurality of projectors are to be activated;

(b) encoding means coupled to said switching means for developing multibit Program Command Words upon each operation of said switching means;

(c) a change of state detector connected intermediate said switching means and said encoding means for detecting a change in the status of said switching means; and

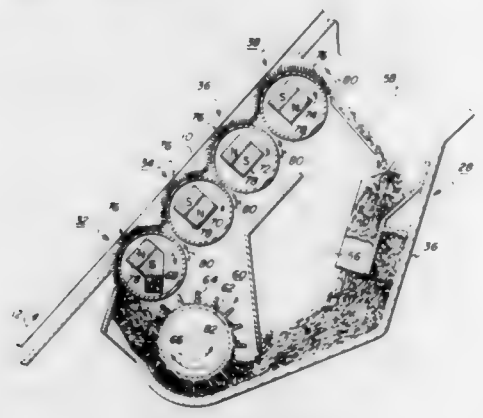
(d) decoding means responsive to said Program Control Words for applying control signals to selected ones of said plural projectors for causing said selected projectors to operate in a desired fashion.

4,086,006

PURGING SYSTEM FOR A DEVELOPMENT APPARATUS

Oscar G. Hauser, Rochester, and Frederick R. Ruckdeschel, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 30, 1976, Ser. No. 728,101
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—3 DD **23 Claims**



1. An apparatus for developing a latent image recorded on a member with developer particles, including:

a housing defining a chamber for storing a supply of developer particles therein;

means, disposed in the chamber of said housing and arranged to be in communication with the latent image recorded on the member, for depositing developer particles on the latent image; and

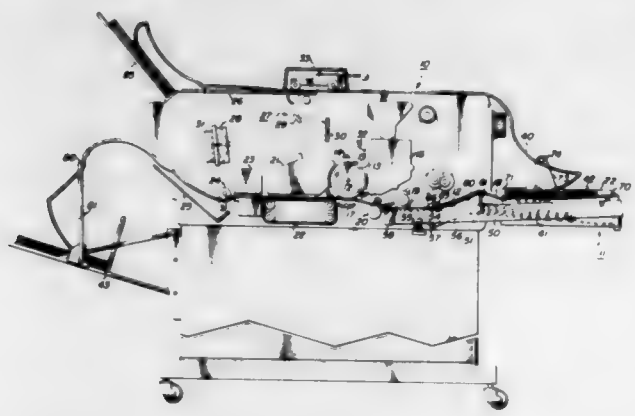
means for cleaning the developer particles from the chamber of said housing to permit developer particles of a different color to be disposed therein.

4,086,007

DUAL PURPOSE DOCUMENT AND COPY SHEET FEED CASSETTE

Craig A. Smith, Pittsford, and Clifford L. George, Macedon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1976, Ser. No. 737,302
Int. Cl.[2] B65H *29/22*; G03G *15/28*
U.S. Cl. 355—3 R **20 Claims**



9. In a reproducing apparatus including:

means for forming an image on a sheet of material, said image forming means including a photosensitive surface;

exposure means for viewing a document and for projecting an image thereof onto said photosensitive surface;

means for feeding said document to said exposure means; and

a cassette including a frame and means connected to said frame for supporting a supply of sheet material for feeding to said image forming means, said cassette and frame being arranged to be removable from said apparatus;

the improvement wherein said cassette further includes means connected to said frame for supporting said document for feeding to said exposure means;

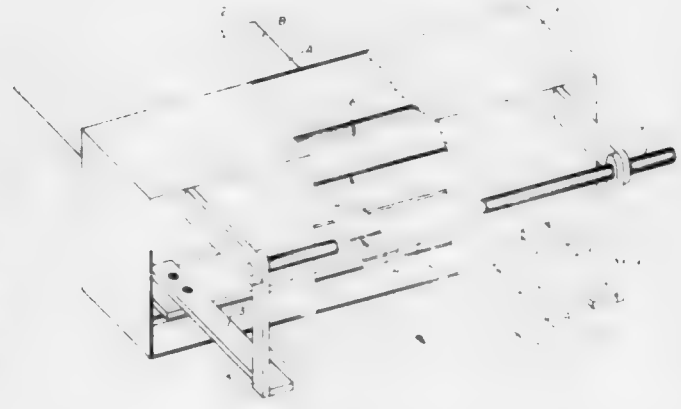
whereby removal of said cassette from said apparatus removes both said means for supporting said supply of sheet material for feeding to said imaging means and said means for supporting said document for feeding to said exposure means from said apparatus.

4,086,008

ELECTROPHOTOGRAPHIC COPYING APPARATUS WITH DEVICE FOR EXPOSING IMAGED PHOTOCONDUCTIVE PLATE

Leon M. W. Winthaegen, Maasbree, and Mathias J. J. M. Vola, Sittard, both of Netherlands, assignors to Océ-van der Grinten, N.V., Venlo, Netherlands

Filed Nov. 4, 1976, Ser. No. 738,906
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—7 **3 Claims**



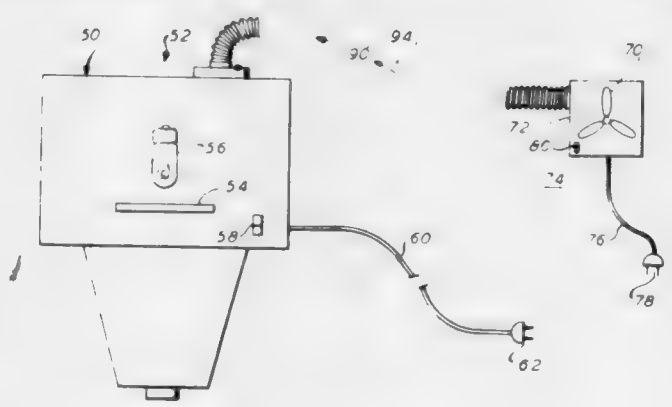
1. In an electrophotographic copying apparatus in which a photoconductive plate bearing a latent image is movable in a path to a station for developing the image and an exposure device comprising a light source and a movable light shield disposed over said path, said shield normally lying in a position to obstruct passage of light from said source to said plate and being displaceable away from said position for selectively exposing to such light areas of said plate outside the area of said image, the improvement wherein said light shield is made slightly light transmitting to effect a weak uniform exposure of the image area of said plate when said shield is in said position.

4,086,009

PHOTOGRAPHIC ENLARGING EQUIPMENT AND METHOD

William Gewirtz, New York, N.Y., assignor to Gerry Wind Assoc. Color Labs., New York, N.Y.

Filed Mar. 4, 1977, Ser. No. 774,449
Int. Cl.[2] G03B *27/52, 27/32*
U.S. Cl. 355—30 **4 Claims**



1. A photographic enlarger comprising:

(a) an enlarger head;

(b) illuminating means disposed within said enlarger head;

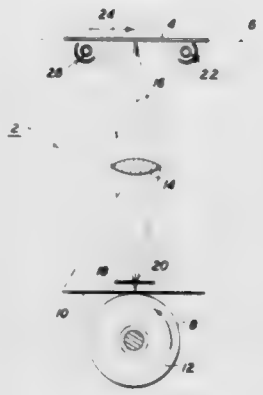
(c) enlarging component means supported by said enlarging head at least some of which are proximate said illuminating means;
(d) fan means for generating a flow of air into said enlarger head for cooling the interior of same and;
(e) means for supporting said fan means, wherein said means for supporting said fan means supports said fan means removed from said enlarger head;
(f) circuit means for providing suitable power to said illuminating means and said fan means to operate same; and
(g) control means associated with said fan means and enlarger head to reduce the effect of vibrations from said fan means upon said enlarger head, the elements housed therewithin and photographic items made thereby, wherein said control means include flexible hose means for interconnecting said fan means to said enlarger head and wherein said control means includes selectively operable switch means electrically interconnected to said fan means to selectively control operation thereof and operable to shut off said fan means, said switch means being spaced from said enlarger head and thereby eliminate vibrations therefrom and the effect of such vibrations upon said enlarger head.

4,086,010

ILLUMINATION SYSTEM UTILIZING TWO OPPOSING DC LAMPS WITH AN OPTIMUM BARREL-SHAPED SLIT

Charles F. Gallo, Jr.; Thomas J. Hammond, both of Penfield, and James D. Rees, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1976, Ser. No. 737,299
Int. Cl.[2] G03B *27/54*
U.S. Cl. 355—70 **6 Claims**



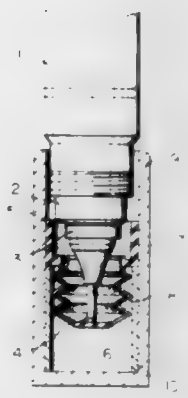
1. An optical system for projecting an image from an object plane to an image plane, including the following disposed along an optical axis:
a. an object platen to support an object in said object plane,
b. a projection lens,
c. a photoreceptor disposed in said image plane, and
d. an illumination system to illuminate said object platen including:
1. a first linear lamp disposed adjacent to and parallel to said object platen, said first lamp being a DC gas discharge lamp having an anode at one end and a cathode at the other end thereof and having an asymmetrical distribution pattern of output light intensity along its length,
2. a second linear lamp similar to the first and disposed parallel to said first lamp, with the anode and cathode of said second lamp disposed at the ends thereof in the reverse polarity with respect to said first lamp, the asymmetrical distribution patterns of light output intensity of said first and second lamps combining in a resultant symmetrical distribution pattern of output light intensity to illuminate said object platen with non-uniform, symmetrical light intensity along the dimension of said platen corresponding to the length of said lamps to compensate for off-axis light attenuation at said image plane.

4,086,011

SEALING GASKET FOR A CAPILLARY PEN COVER

Lasse Kuparinen, Sulfeld, Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Feb. 22, 1977, Ser. No. 770,491
Claims priority, application Germany, Mar. 22, 1976, 2612072
Int. Cl.[2] B43K *9/00, 1/00*
U.S. Cl. 401—258 **6 Claims**



1. In a covering cap for the point of a capillary writing pen of the type having a sleeve supporting an ink reservoir in communication with an axially extending tubular writing point, a gasket comprising:
A. A cup-shaped inner sleeve, supportable against the inner wall of the covering cap and conformed complementally with the writing pen sleeve so as to define:
i. a cylindrical guide
ii. an upper edge shoulder engagable with the pen sleeve, and
iii. a lower, radially inwardly extending annular seal, and
B. An elongatable bellows-like sealing chamber depending from said annular seal and including an axially extendable bottom surface;
C. Said cup-shaped inner sleeve, as a writing pen tip is fitted therein, sealingly supporting the lower end of said sleeve and said bottom surface being axially, distended while sealingly engaging the writing point of said pen.

4,086,012

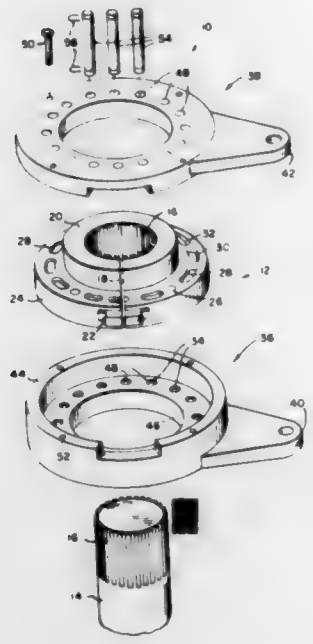
ROTATIONAL ENERGY ABSORBING COUPLING

William H. Buckley, Rockville, Md., and Garnett Ryland, II, Warsaw, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 20, 1976, Ser. No. 724,807
Int. Cl.[2] B63B *1/28*
U.S. Cl. 403—2 **5 Claims**

1. A rotational energy absorbing coupling for shaft-to-crank arm applications comprising:
first disc means affixed to a shaft, the first disc means comprising an inner disc which has a collar portion adapted to be secured against rotation relative to the shaft, a flange portion formed radially outwardly from said collar portion, and a uniaxial circular pattern of holes in said flange portion;
second disc means adjacent said first disc means and connected to a rotation means, said second disc means comprising a pair of outer discs, one on either side of said flange portion of said inner disc so as to envelope said inner disc and a uniaxial circular pattern of holes in said

pair of outer discs and in register with said uniaxial circular pattern of holes in said flange portion of said inner disc;



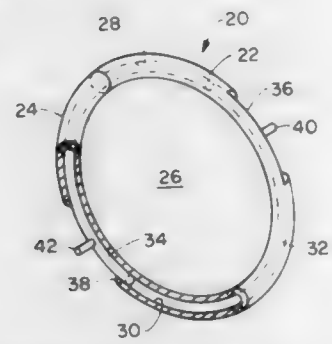
a plurality of yieldable means connecting said first and second disc means, said yieldable means being adapted to sequentially bend and then shear to absorb an impact load.

4,086,013

COUPLING MECHANISM

Elgin J. Miller, 2212 Gates Ave., Redondo Beach, Calif. 90278

Filed Sep. 6, 1974, Ser. No. 503,609
Int. Cl.[2] F16B *7/00*
U.S. Cl. 403—292 **4 Claims**



1. A basic mechanism comprising:

a first member having a first internal chamber of constant cross-sectional area, said first internal chamber being arcuate along its length;

a second member having a second internal chamber of constant cross-sectional area, said second internal chamber being arcuate along its length, said first member and said second member connectable together with their ends in abutting contact with said first and said second chambers forming a continuous chamber, said first chamber being substantially the same size in cross-section as said second chamber with said first and said second members connected together there being an aperture entirely through the basic mechanism connecting with the ambient at each end;

a third member contained within said first chamber establishing a close fit with the interior of said first chamber, said third member movable within said second chamber to occupy both a portion of said second chamber and a portion of said first chamber, said third member being no greater in length than the length of said first chamber;

means for moving said third member within said continuous tubular chamber, said means permitting selecting of a first position of said third member solely within the confines of said first chamber or a second position occupying a portion of both said first chamber and said second chamber;

a fourth member contained within said second chamber, said fourth member movable within said first chamber to occupy both a portion of said first chamber and a portion of said second chamber, said fourth member being no greater in length than the length of said second chamber, said fourth member establishing a substantially close fit with said first and second chambers;

said third member being equal in length to said fourth member; and

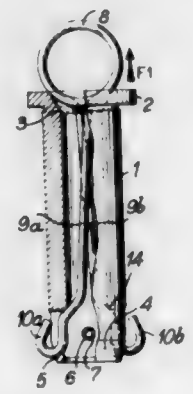
the length of said third member being substantially equal to the length of said first chamber, the length of said fourth member being substantially equal to the length of said second chamber.

4,086,014

QUICK LOCKING AND UNLOCKING CONNECTOR

Jean-Pierre Jalaguier, Marignane, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed May 24, 1976, Ser. No. 689,050
Int. Cl.[2] B25G *3/00*
U.S. Cl. 403—317 **8 Claims**



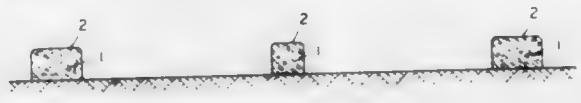
1. Quick locking and unlocking connector for joining a plurality of members comprising a tubular body adapted to be removably inserted through a bore formed in the members to be connected and an operating member comprising a metal wire looped at its mid section to form a pull ring and two elongated legs extending therefrom, each leg ending with a hook curved upwardly and towards the inside, said operating member being removably inserted with said tubular body so that said pull ring abuts one end thereof and the hooks extending resiliently radially outward of the other end thereof, said tubular body being formed with a frustoconical ramp on its inner surface at said other end and said legs being formed with a bent portion cooperating with said ramp to partly retract said hooks towards the inside of said tubular body on removal of said member, said hooks being further formed with a rounded portion on its radial exterior followed by straight inwardly directed portion cooperating with the bore of the parts being assembled to completely retract said hooks towards the inside of said tubular body on movement of the tubular body through said bore.

4,086,015

CRASH MODERATION SYSTEM FOR ROADS, HIGHWAYS, RAILWAYS, AIRFIELDS AND HARBORS

Sonja Margareta Isabella Eliasson, Roskildevagen 17 A, S-217 46 Malmo, Sweden

Filed Sep. 27, 1976, Ser. No. 727,163
Int. Cl.[2] E01F *13/00*
U.S. Cl. 404—6 **10 Claims**



1. A crash moderation system for placement on a supporting surface and comprising a barrier which includes:

(a) strong, kinetic-energy-absorbing, lightweight, pellet-

form material with a maximum density of approximately 40 pounds per cubic foot and pellets ranging from 0 to 1.25 inches in diameter, and

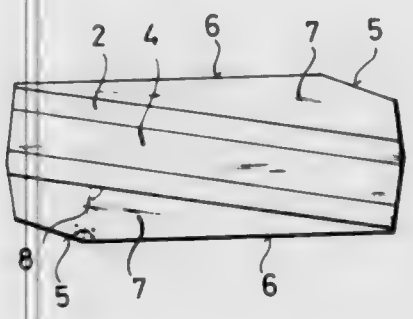
(b) material-surrounding binding means to contain the pellets, to sustain their kinetic-energy absorbing effect and to provide the barrier with a surface that makes an angle with the supporting surface which is steeper than the angle of repose for the lightweight material.

4,086,016

CUTTING TOOL

Alfons Goeke, Solingen, Germany, assignor to Th. Kieserling & Albrecht, Solingen, Germany

Filed Nov. 12, 1975, Ser. No. 631,413
Claims priority, application Spain, Nov. 13, 1974, 207.422
Int. Cl.² B26D *1/00*
U.S. Cl. 407—114 **1 Claim**



1. A cutting tool having a cutting edge defined by main and secondary cutting edges intersecting one another at an included obtuse angle, said secondary cutting edge being substantially longer than said main cutting edge, a chip deflecting step extending along said cutting edge substantially perpendicular to a line bisecting said angle, with each of the two cutting edges having an angular relationship to said chip deflecting step converging and diverging in opposite directions; said tool comprising an insert having said cutting edge thereon and a carrier member for said insert, said carrier member having opposite ends, opposite side edges and opposite faces, a pair of said inserts attached to one of said faces in reversely positioned relationship to one another with said secondary cutting edges on said pair of inserts extending generally parallel to one another and said main cutting edges extending from said secondary edges to said opposite ends; said tool having a longitudinal axis of elongation and said carrier member having a web located between said inserts, said web having a web axis of elongation intersecting said longitudinal axis whereby said web extends generally diagonally across said carrier member, parallel to the chip deflecting step and perpendicular to said bisecting line.

4,086,017

DEVICE FOR LOCATING PIANO HAMMERS FOR DRILLING

Charles A. Nessler, deceased, late of Carnegie, Pa., and by Mary M. Mulhern, executrix, 221 Greenway Rd., Ridgewood, N.J. 07450

Filed May 2, 1977, Ser. No. 793,040
Int. Cl.² B23B *47/28*
U.S. Cl. 408—89 **6 Claims**

1. A device for positioning piano hammers for drilling an opening to receive a supporting stem which extends through the longitudinal axis of the piano hammer and at a preselected angle relative to a plane normal to the longitudinal axis, said device comprising:

(a) a support assembly including;

(i) a horizontal base;

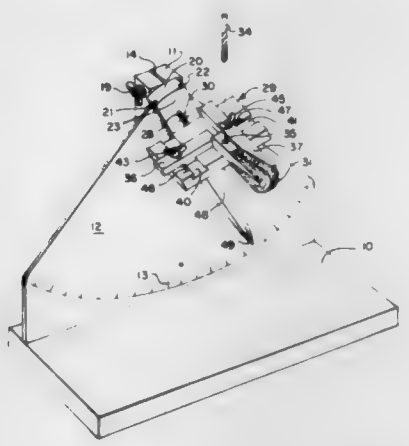
(ii) a supporting column extending upwardly from said base; and

(iii) a vertically disposed plate member extending from said base in contiguous relation with said supporting column;

(b) a selectively rotatable shaft journaled in said supporting column and extending from the latter in a plane parallel with and spaced from said base;

(c) supporting means fixed on said rotatable shaft and supporting a platen support shelf on which a piano hammer is positioned for drilling;

(d) said supporting means including;



(i) means for selectively raising and lowering said platen support shelf thereon for locating the longitudinal axis of a hammer to be drilled co-axial with the axis of said rotatable shaft; and

(ii) means for rotating said rotatable shaft to pivot said platen support shelf to a predetermined position while maintaining the longitudinal axis of the hammer co-axial with said shaft to effect drilling an opening through the hammer at an angle.

4,086,018

DEBURRING TOOL

William R. Robinson, Farmington Hills, and James L. Roberts, Clinton, both of Mich., assignors to Robinson Tool Company, Redford Township, Mich.

Filed Apr. 7, 1977, Ser. No. 785,489
Int. Cl.² B23B *51/16*
U.S. Cl. 408—226 **4 Claims**



1. A deburring tool comprising: an elongated arbor formed with a cutting blade recess; a unitary cutting tool having a cutting head with an elongated, flat, resilient blade extending therefrom and received in said recess; and mounting means securing the end of said blade opposite said cutting head to said arbor in non-pivotal relationship with respect to said arbor with said cutting blade projecting from said recess and the portion of said blade extending from said mounting means being yieldable to permit said cutting head to move inwardly with respect to said recess, said mounting means comprising a pair of axially spaced pins mounted in said body and extending transversely through said recess and said blade.

4,086,019

TRANSMISSION MEANS FOR CENTRIFUGAL COMPRESSORS

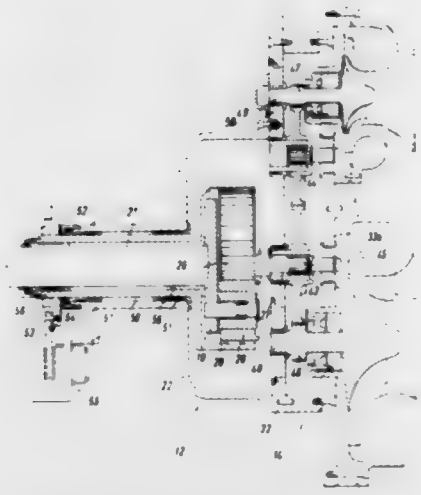
Eric John Poole, Wendover, England, assignor to Compair Industrial Limited, England

Continuation-in-part of Ser. No. 543,182, Jan. 22, 1975, abandoned. This application May 21, 1976, Ser. No. 688,561

Claims priority, application United Kingdom, Jan. 31, 1974, 4604/74

Int. Cl.[2] **F01B** *25/02;* **F01D** *17/08, 15/12;* **F16H** *37/06*

U.S. Cl. 415—18 **9 Claims**



1. A centrifugal compressor comprising at least one stage with its own impeller shaft, a bearing for said shaft;

an inlet for gas to be compressed;

an outlet for compressed gas;

an epicyclic gear train for driving the impeller shaft which epicyclic gear train comprises three members, a sun gear, a ring gear and a carrier on which a series of planet gears are mounted in mesh with the sun and ring gears, means to connect power input means to one of the members of the epicyclic gear train and means connecting a second of the members to the impeller shaft, said last means comprising a step-up gear train composed of at least two parallel shaft gears;

means for braking the rotational speed of the third of said members to control the speed of the impeller shaft; and,

actuating means for automatically releasing the braking means to unload the impeller shaft when the pressure of the compressed gas falls whereby to prevent the impeller shaft from running in the bearing in an unloaded high speed condition.

4,086,020

HYDRAULIC MACHINE

Seiichi Tanabe, and Syoji Ito, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

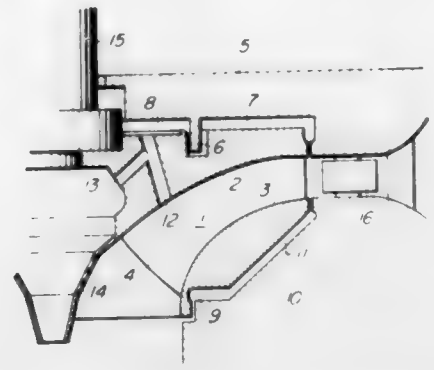
Continuation-in-part of Ser. No. 584,253, Jun. 6, 1975, abandoned. This application Jul. 7, 1976, Ser. No. 703,240

Claims priority, application Japan, Jun. 7, 1974, 49-64081

Int. Cl.[2] **F04D** *29/66*

U.S. Cl. 415—106 **10 Claims**

1. A hydraulic machine comprising: a runner having a crown ring, a shroud ring, a runner boss, and a plurality of blades interposed between said crown ring and said shroud ring, a runner crown chamber arranged between said crown ring and an upper cover disposed in spaced juxtaposed relation with the crown ring, a plurality of first balance hole means formed in said crown ring for communicating between said runner crown chamber and low pressure sections defined by said blades, and a plurality of second balance hole means formed in said crown ring for communicating between said runner crown chamber and the interior of said runner boss whereby said first and second balance holes means have reverse thrust characteristics with respect to each other so that a thrust of a substantially constant value is applied to said runner



regardless of a variation in the number of revolutions of said runner.

4,086,021

COOLED GUIDE VANE

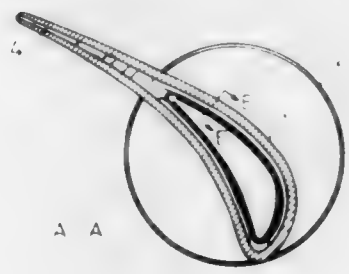
Svante Bengt Gosta Stenfors, Finspong, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden

Filed Jan. 19, 1977, Ser. No. 760,610

Claims priority, application Sweden, Jan. 19, 1976, 7600473

Int. Cl.[2] **F01D** *25/12*

U.S. Cl. 415—115 **12 Claims**



1. A cooled guide vane for a gas turbine, comprising:

a hollow blade body having a wall, a leading edge and a trailing edge;

means for introducing cooling air flow to the interior of said hollow blade body;

at least one perforation through said wall of said hollow blade body at said trailing edge for exhausting cooling air from the interior of said hollow blade body;

a plurality of grooves on the interior of said wall, said grooves extending essentially parallel with the direction of gas flow over the outside of said hollow blade body;

imperforate plate means, located in the interior of said hollow blade body, and shaped to cover at least a portion of said plurality of grooves, for preventing air flow directly from said means for introducing cooling air to said at least one perforation through said wall, said imperforate plate being open toward said leading edge; and

perforated plate means, located in the interior of said hollow blade body and positioned at least partially within and partially overlapped with said imperforate plate means, said perforated plate means having at least one perforation for passing cooling air to said leading edge of said hollow guide vane,

whereby cooling air from said means for introducing cooling air flows through said at least one perforation in said perforated plate means, through said plurality of grooves and through said at least one perforation through said wall of said hollow blade body.

4,086,022

GAS TURBINE ENGINE WITH IMPROVED COMPRESSOR CASING FOR PERMITTING HIGHER AIR FLOW AND PRESSURE RATIOS BEFORE SURGE

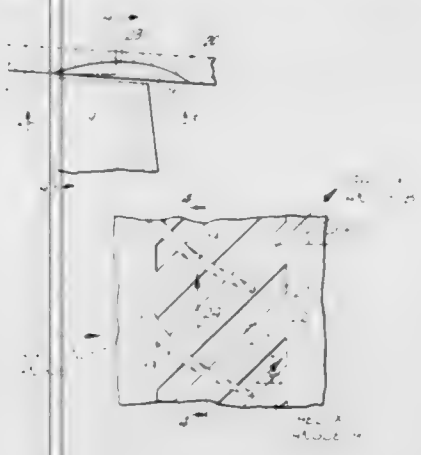
Christopher Freeman, Farnsfield, and Robert Rudolph Moritz, Littleover, both of England, assignors to Rolls-Royce Limited, London, England

Filed Sep. 7, 1976, Ser. No. 720,656

Claims priority, application United Kingdom, Sep. 25, 1975, 39260/75

Int. Cl.² F01D *5/26, 25/04;* **F04D** *29/68*

U.S. Cl. 415—119 **2 Claims**



1. An axial flow compressor for a gas turbine engine comprising:

a rotor having at least one blade row with an axis of rotation;

a compressor casing having an internal cylindrical surface surrounding said at least one blade row, said compressor casing having at least one circumferential row of slots, each of said slots having side walls, a bottom wall and a helical angle of inclination to the axis of rotation of said at least one blade row, said slots being disposed within the internal cylindrical surface of said casing adjacent to said at least one blade row and said slots having an axial length substantially greater than that of said at least one blade row and terminating downstream of said at least one blade row, said helical angle of inclination of each of said slots to the axis of rotation of said at least one blade row being substantially the same angle as an exit angle of fluid leaving said at least one blade row, and said bottom wall of each of said slots having a concave shape which is of substantially aerodynamic form so that high pressure fluid entering each slot adjacent said blade row is ducted along said slot to a location downstream of said at least one blade row and directed back into a main stream of fluid passing through the compressor.

4,086,023

WINDMILL

Burton D. Morgan, Hudson, Ohio, assignor to Concept Development Institute, Inc., Kent, Ohio

Filed Oct. 8, 1975, Ser. No. 620,855

Int. Cl.² F03D *3/06*

U.S. Cl. 416—132 B **2 Claims**

1. A windmill comprising

a support member,

a vertically positioned support shaft means operatively and rotatably positioned on said support member,

a plurality of elongated molded plastic vanes of arcuate shape and of uniform thickness in horizontal section operatively secured at one edge thereof to said support shaft means and extending outwardly therefrom, said vanes being equally spaced circumferentially about said shaft and being slightly flexible so winds engaging the concave surface of said vanes will urge said vanes to a flatter shape and will make the arc of other vanes tighter by engaging the convex surfaces of such other vanes to provide rotational forces on said vanes and provide an automatic feathering of the vanes, and

generator means positioned on said support member and operatively connected to said shaft means to provide power therefrom on rotation of said shaft means,



said vanes being semi-rigid and being deflected varied amounts by winds of different velocities whereby a variable feathering action is provided in said vanes, which have no moving parts, dependent upon the prevailing velocity, said vanes being more resistant to deflection by fluid forces engaging their concave surfaces than by fluid forces engaging their convex surfaces.

4,086,024

APPARATUS FOR CONNECTING A ROTOR BLADE TO A ROTOR HUB

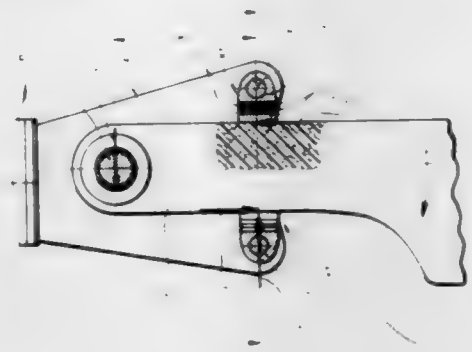
Emil Weiland, Hohenbrunn; Alois Schwarz, Putzbrunn; Karl-Heinz Mautz, Ottobrunn, and Hubert Frommlet, Munich, all of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Germany

Filed Sep. 15, 1976, Ser. No. 723,440

Claims priority, application Germany, Sep. 20, 1975, 2541998

Int. Cl.² B64C *27/48*

U.S. Cl. 416—140 **12 Claims**



1. In a hingeless helicopter rotor structure having a hub, a plurality of pairs of arms rigidly connected to said hub and extending radially therefrom, a first bolt means journaled in each pair of arms and extending parallel to the axis of said hub, a plurality of rotor blades each having a neck rigidly affixed thereto, each bolt extending through a separate one of said necks for pivotally, positively mounting said rotor blades to said hub, second bolt means extending between each pair of arms further radially outwardly from the axis of said hub than said first bolt means, damping means comprising a first and second spaced apart metal plate with at least one elastomeric element sandwiched therebetween, and means mounting said damping means to damp relative movement of said rotor neck with respect to said second bolt means in response to rotation of said neck about the axis of said first bolt means, whereby said first and second bolt means and damping means cooperate

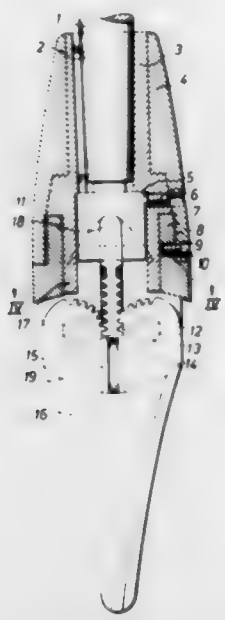
to transmit forces between said rotor blade and rotor hub in a damped manner.

4,086,025

PROPELLERS WITH RETRACTABLE BLADES

Sven Ingvar Åstrand, Barrstigen 14, S-151 50 Sodertalje, Sweden

Filed Aug. 13, 1976, Ser. No. 714,128
Claims priority, application Sweden, Aug. 22, 1975, 7509357
Int. Cl.[2] B63H *1/24*
U.S. Cl. 416—142 **4 Claims**



1. A propeller driven by a propeller drive shaft rotatable in either a forward or reverse direction comprising

a hub mounted for rotation with respect to said drive shaft for a limited period after the initiation of rotation of said drive shaft;

retractable blades disposed on said hub, each said blade being pivotably mounted on said hub and pivotable between an outward working position and an inward inactive position, each said blade including a gear segment portion;

a rack extending between said blades and coacting with the gear segments thereof, said rack being mounted for axial movement;

converter means for converting rotation of said propeller drive shaft in either its forward or reverse direction to an axial movement of said rack to thereby positively open said blades from said inward inactive position to said outward working position during said limited period of rotation of said drive shaft with respect to said hub, the positive opening of said blades occurring regardless of whether said drive shaft is rotating in either its forward or reverse direction.

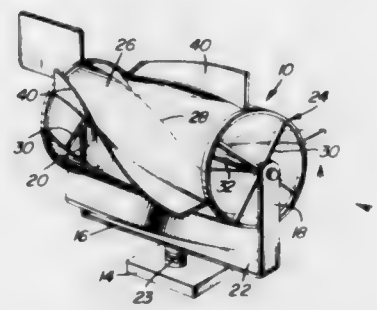
4,086,026

WINDMILL WITH RADIAL VANES

Robert J. Tamanini, 4 Pinewood Rd., Wyomissing, Pa. 19610

Filed Feb. 4, 1977, Ser. No. 766,055
Int. Cl.[2] F03D *1/06*
U.S. Cl. 416—176 **2 Claims**

1. A wind rotor comprising an elongated cylindrical body of a greater length than its diameter, having a cylindrical side wall and open at its opposite ends and journaled for rotation about an axis generally coinciding with the center axis of said body, said body including a plurality of circumferentially spaced longitudinally extending slots similarly slightly inclined relative to radial planes of said body passing through said slots, one set of corresponding edge portions of said cylindrical side wall defining corresponding longitudinal edges of said slots including integral outwardly projecting substantially rectangular outer vanes extending along said slots, said vanes comprising outwardly deflected integral portions of said cylindrical side wall, said vanes being disposed generally normal to lines tangent to said body at the base edges of said vanes integral with said body, the other set of corresponding edges of said cylindrical side wall defining the corresponding longitudinal edges of said slots including integral inwardly projecting substantially rectangular inner vanes extending along said slots, said inner vanes also being disposed generally normal to lines tangent to said body at the base edges of said inner vanes, the circumferential extent of each of said cylindrical side wall portions between corresponding outer and inner vanes comprising a narrow side wall band defining an offset between adjacent outer and inner vanes of considerably less circumferential extent than the radial extent of either of said corresponding vanes, each slot disposed between adjacent outer and inner vanes being of a width substantially equal to the combined radial extent of last mentioned vanes, said rotor including front and rear ends adapted to face into and opposite to the wind, a base from which said body is journaled, said base including support means for mounting said base for oscillation about an axis substantially normal to the first mentioned axis and disposed forwardly of the rear end of said rotor, said base including a wind vane generally paralleling said axes and disposed rearward of said support means, said outer vanes supported by said bands each leading the corresponding inner vane in the direction of rotation of said rotor as a result of wind incident thereon from the front end of said rotor.

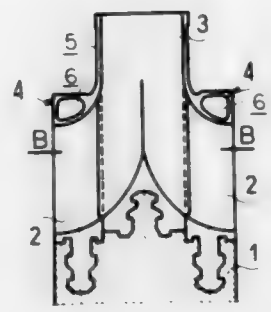


4,086,027

SHROUDED ROTOR BLADE ANNULUS FOR A CENTRIPETAL TURBINE STAGE

Wladyslaw Gundlach, Lodz; Jerzy Porochnicki, Czestochowa; Jerzy Prywer, Lodz; Boguslaw Karewicz, Lodz; Andrzej Potapczyk, Lodz, and Krzysztof Zielenow, Lodz, all of Poland, assignors to Politechnika Lodzka, Lodz and Zaklady Mechaniczne im. Gen. Karola Swierczewskiego "Zamech", Elblag, both of, Poland

Filed Apr. 4, 1975, Ser. No. 564,991
Claims priority, application Poland, Apr. 12, 1974, 170332
Int. Cl.[2] F01D *3/02*
U.S. Cl. 416—184 **2 Claims**



1. A shrouded rotor blade annulus structure for a centripetal double flow turbine stage, which comprises:

one row of radial blades;

two rows of axial blades disposed on opposite sides of the row of radial blocks; and

two segmental annular shrouds each covering the top of one

row of the axial blades and one side of the row of radial blades,

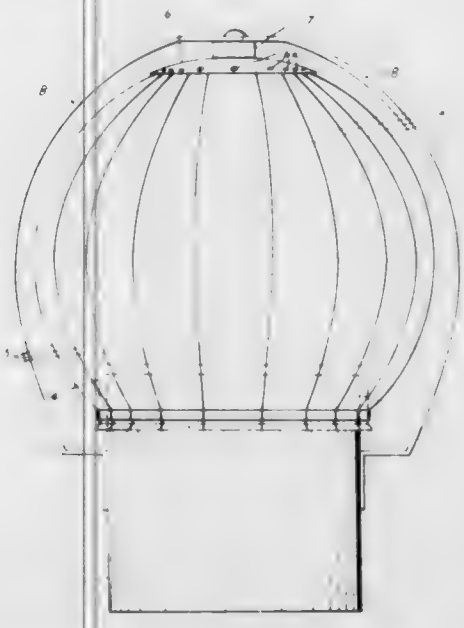
wherein the axial blades are integral with shroud segments comprising the two annular shrouds.

4,086,028

TURBINE VENTILATORS AND METHOD OF MANUFACTURE

John V. Felter, P.O. Box 7464, Houston, Tex. 77008

Filed Dec. 8, 1976, Ser. No. 748,418
Int. Cl.² F03D *3/06*
U.S. Cl. 416—227 A **3 Claims**



1. Rotary turbine ventilator, comprising a plurality of vertically disposed circularly spaced outwardly bowed vanes, an upper crown, a lower base ring, the upper ends of said vanes being connected equally spaced around the edge of said crown, the lower ends of said vanes being connected side by side around said base ring, bearing means supported above said crown and said crown being engaged therewith for rotation about a vertical axis, said vanes and said base ring being rotatable about said vertical axis with said crown, a cylindrical connection sleeve extending downward from within said base ring, said base ring being disposed concentrically spaced around said cylindrical connection sleeve, said lower ends of said vanes being arcuately formed and being disposed side by side in mutual engagements one with another and each against a lower edge portion of said base ring and said lower ends of said vanes and said lower edge portion of said base ring being bent inwardly and then conically divergent downwardly and the lowermost edge portion of said base ring being bent upwardly and inwardly against said downwardly divergent portions of said vane ends and firmly crimped thereagainst, whereby said vane ends are securely fixed to said base ring.

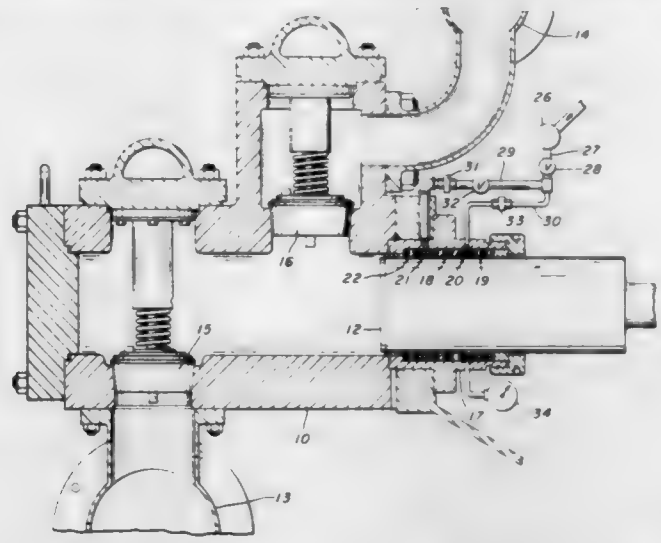
4,086,029

METHOD AND APPARATUS FOR FLUSHING THE PLUNGER OF A POSITIVE DISPLACEMENT PUMP

Robert M. Crane, Dallas, and Fletcher H. Redwine, Garland, both of Tex., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 6, 1976, Ser. No. 747,569
Int. Cl.² F01B *31/00;* F04B *39/00*
U.S. Cl. 417—53 **9 Claims**

1. In a pumping operation in which a suspension of particles is handled in a positive displacement pump, the plunger of which passes through sets of front and back packing rings as it reciprocates through suction and discharge strokes, an improved method of flushing particles from said plunger, said method comprising introducing a relatively large volume of flush liquid to said plunger at a location in front of said front set of packing rings, introducing a smaller volume of flush liquid at a location between said front and back sets of packing rings, initially maintaining the liquid introduced at the two locations at approximately the same pressure while maintaining the side of said back set of packing rings remote from said front set at a lower pressure, thus relying on said back set of packing rings



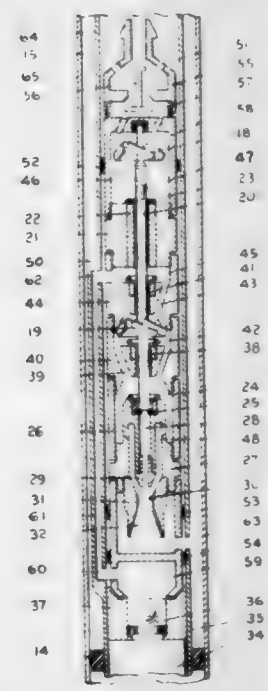
to provide a seal for said plunger, and when the packing rings of said back set wear and commence to leak, creating a differential in the pressure of the flush liquid introduced at the two locations and relying on said front set of packing rings to provide a seal.

4,086,030

FREE FLUID-OPERATED WELL TURBOPUMP

Ed B. David, Benton, Ark., assignor to EMC Energies, Inc., Mills, Wyo.

Division of Ser. No. 548,860, Feb. 10, 1975, Pat. No. 4,003,678.
This application Oct. 15, 1976, Ser. No. 732,672
Int. Cl.² F04B *23/04*
U.S. Cl. 417—88 **8 Claims**



1. In a fluid operated pumping system for use with an oil well having an outer tubular casing set in the well and an inner tubing within the casing radially spaced therefrom to define an annular passageway therebetween, a turbopump movable through said tubing from ground surface to an operating position at the lower end of said tubing, said turbopump comprising:

an upper driving turbine having a housing and an impeller therein, a lower driven pump having a pump impeller, and an axially disposed drive shaft connecting said impellers,

said drive shaft having a solid end portion passing upwardly through said turbine impeller and an open end tubular

portion passing from within said turbine housing downwardly through said pump impeller,

a production fluid inlet at the lower end of said pump,

driving fluid intake openings in said housing above said turbine impeller for delivering driving fluid thereto from said inner tubing,

a production fluid intake for conveying production fluid upwardly to said pump impeller from said inlet and a production fluid discharge channel extending downwardly from said pump impeller in communication with said annular passageway, and

a plurality of peripherally spaced openings through the wall of that portion of the tubular portion of said shaft located within said turbine housing,

said tubular portion of said shaft providing a segment of a spent fluid passageway communicating with said annular passageway.

4,086,031

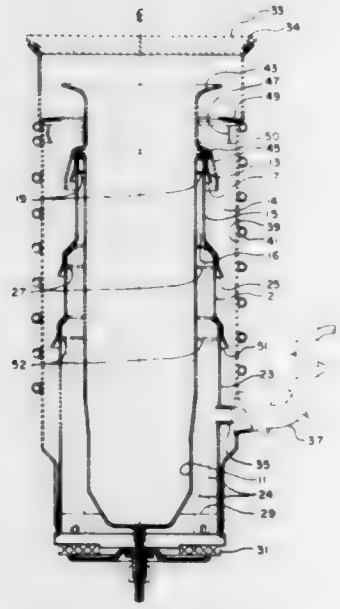
VAPOR DIFFUSION PUMP

Ned R. Kuypers, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 599,276, Jul. 25, 1975, abandoned. This application Dec. 6, 1976, Ser. No. 747,744

Int. Cl.[2] F04C *19/00*

U.S. Cl. 417—154 **23 Claims**



1. A vapor diffusion pump comprising:

a housing;

a reservoir of working fluid in said housing;

means forming a chamber in said housing, said chamber being partially immersed in said reservoir to provide thermal contact between said chamber and said working fluid;

a working vapor region substantially concentric with, surrounding, and in thermal communication with said chamber;

at least one vapor pumping region substantially concentric with and surrounding said working vapor region and separated from said working vapor region by at least one nozzle;

heating means for vaporizing working fluid from said reservoir to generate working vapor in said working vapor region; and

condensation means for condensing said working vapor, said condensation means including means for returning said working fluid to said reservoir.

4,086,032

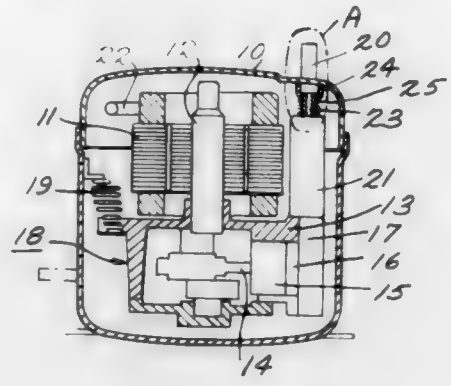
SEALED TYPE MOTOR-COMPRESSOR

Kazumitsu Nishioka, Inazawa, and Hiroshi Machida, Nagoya, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1976, Ser. No. 716,797

Int. Cl.[2] F04B *17/00*; F25B *39/04*; F04B *35/00*

U.S. Cl. 417—363 **3 Claims**



1. A motor-compressor for refrigerant gas having a sealed housing including a gas compressing means and motor means for driving said gas compressing means mounted in said housing, said housing having a gas inlet and conduit means for connecting said gas inlet to said gas compressing means while isolating gas passed through said gas inlet from said motor means, said conduit means including a first tube mounted in said housing, a second tube having one end slidably mounted on said first tube and the other end surrounding said gas inlet and spring means disposed to constantly urge said second tube toward said gas inlet.

4,086,033

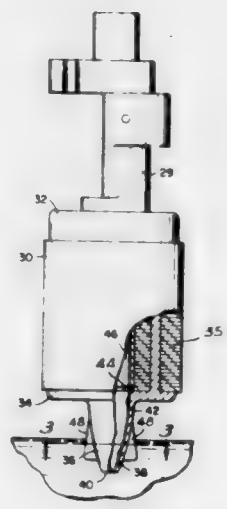
OIL PUMP FOR MOTOR COMPRESSOR

Alfred Stephan, Columbus, Ohio, assignor to White-Westinghouse Corporation, Pittsburgh, Pa.

Filed May 17, 1976, Ser. No. 686,889

Int. Cl.[2] F04B *17/00, 35/04, 39/14*

U.S. Cl. 417—368 **6 Claims**



1. A motor compressor having a housing enclosing a stationary stator and a rotor connected to a vertically-oriented motor shaft having an oil passage therethrough; centrifugal pump means for pumping oil to said oil passage in said shaft; said rotor having integrally formed opposed end rings sandwiching the rotor laminations therebetween; and

wherein the lowermost end ring includes said centrifugal pump means integrally formed therewith, said pump means depending from and supported by said lower most end ring substantially coaxially with said motor shaft and defining a tube having an oil passageway leading from the

distal end of said tube disposed in an oil reservoir to said oil passage of said shaft.

4,086,034

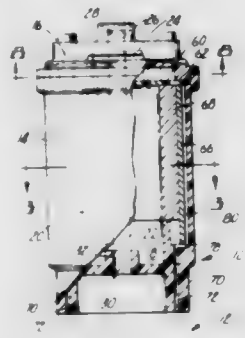
FLUID COOLED COMMUTATED ELECTRIC MOTOR DRIVING A PUMP

Stephen G. Hokky, North Olmsted, Ohio, assignor to Airborne Mfg. Co., Elyria, Ohio

Division of Ser. No. 552,174, Feb. 24, 1975, Pat. No. 3,982,146, which is a continuation-in-part of Ser. No. 341,539, Mar. 15, 1973, abandoned. This application Apr. 16, 1976, Ser. No. 677,775

Int. Cl.² F04B *35/04*; H02K *9/28*

U.S. Cl. 417—369 **5 Claims**



1. In an electric motor-pump combination, wherein the electric motor includes shaft means operating pump means from the end portion of said shaft means, and wherein said shaft means has a commutator on the opposite end portion which commutator cooperates with a pair of brushes, and wherein said motor includes a motor housing, the improvement comprising, a unitary molded cover structure formed of structural non-conducting bearing material, said cover material being molded to form a bearing structure for one end of said shaft and means to mount and guide said pair of brushes, said cover structure also including first and second sets of mounting means and reaction means, as least one of said means of each set being formed of low resistance current carrying material and extending externally of said cover structure, a pair of torsion springs each formed of a low resistance homogenous current carrying material, each torsion spring having first and second opposite end portions and a central coiled portion, the cetral coiled portion of each of the springs being wrappingly engaged around one of the mounting means, the first end portion of each of the springs engaging one of the reaction means, the second end portion of each of said springs engaging the end of one of the brushes opposite the end thereof engaging the commutator, each of said torsion springs acting as the sole current carrier to its respective brush, whereby a single spring acts both as a biasing element and sole current carrying element thereby providing brushes free of separate electrical connections, said cover structure being molded to form a fluid tight enclosure with said housing, and a closed channel structure defined at least in part by said motor housing extending from said pumping means and having openings terminating adjacent each of the brush means, whereby during the pumping operation a stream of pumped fluid is directed against the brush to cause a fluid flow at the brush-commutator interface.

4,086,035

BAILER PUMPS FOR OIL WELLS

Joseph Hart Klaeger, Jr.; Dale Edward Klaeger, and Robert Allen Klaeger, all of 1308 Shady La., Hondo, Tex. 78861

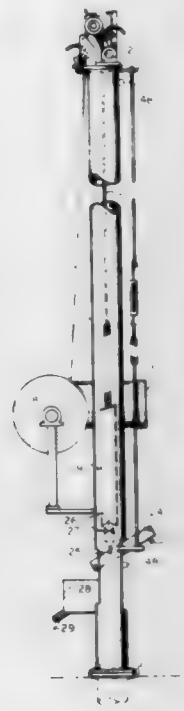
Filed Mar. 18, 1977, Ser. No. 779,180

Int. Cl.² F04B *17/00*

U.S. Cl. 417—410 **10 Claims**

1. A stripper bailer for oil wells comprising:

a. an elongated stan pipe having a top end and a well head end adapted to be secured to a well head,
b. a bailer mounted on said stan pipe,
c. a powered reel for propelling said bailer into and out of an oil well,
d. a cable wound on said reel and attached to said bailer,
e. a reversible motor operable engaging said reel for powering said reel,
f. a pivot arm tiltably mounted on said stan pipe,
g. a pulley rotatably mounted on said pivot arm, said pulley receiving said cable intermediate said reel and said bailer,



h. a first switch in association with said pivot arm for stopping and reversing said motor; and first switch operating responsive to the tilting of said pivot arm,
i. a first time delay means in operable association with said first switch causing a predetermined time delay when said motor is stopped,
j. dumping means for emptying said bailer at a well head, and
k. a wiring harness means interconnecting the electrical components.

4,086,036

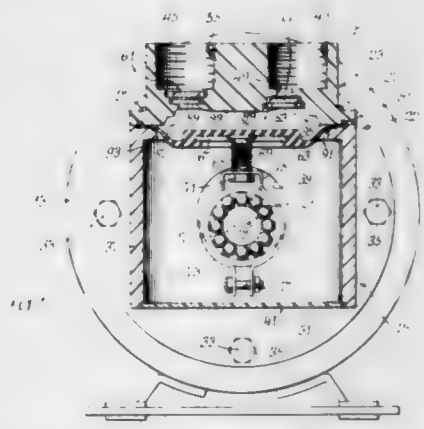
DIAPHRAGM PUMP

Loren M. Hagen, Chicago, and Ashwin H. Desai, Arlington Heights, both of Ill., assignors to Cole-Parmer Instrument Company, Chicago, Ill.

Filed May 17, 1976, Ser. No. 686,659

Int. Cl.² F04B *43/04*

U.S. Cl. 417—413 **13 Claims**



1. A fluid pump comprising a housing having an inlet for fluid, an outlet for fluid and a pumping chamber in communica-

tion with said inlet and outlet, inlet valve means, outlet valve means, a flexible diaphragm having an arcuate ridge formed therein, which diaphragm is clamped about its periphery between two separable sections of said housing and has one surface defining part of the boundary of said pumping chamber, said arcuate ridge being convex with respect to said pumping chamber, a connector extending from the central portion of the opposite surface of said diaphragm, means for attaching said housing to a rotary motor, and drive means for reciprocating said diaphragm to alternately draw fluid into the pumping chamber through said inlet valve means and then discharge the fluid through said outlet valve means, said drive means including an eccentric coupling for connection to the output shaft of the rotary motor plus linkage means joining said eccentric in driving relationship to said connector so that rotation of the motor shaft causes said diaphragm to be driven in a rocking, reciprocating movement, and one said housing section being formed with a curved surface portion which is a section of an annulus located on the pumping chamber side of said diaphragm and which has a radius of curvature such as to support said diaphragm during the period it is distended into the pumping chamber region and said other housing section being formed with a second curved surface portion which is a section of an annulus having a diameter substantially greater than the diameter of said first-mentioned annulus so that the regions of wear resulting from contact between each surface of said diaphragm and the respective supporting curved surface portions of said housing are radially spaced from each other.

4,086,037

DIAPHRAGM PUMP

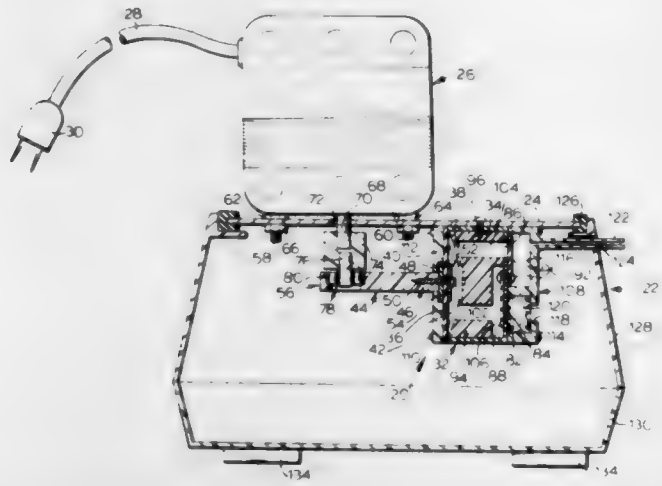
John M. Stewart, Thornhill, Canada, assignor to Sanitation Equipment Limited, Downsview, Canada

Filed Oct. 4, 1976, Ser. No. 729,061

Claims priority, application Canada, Dec. 23, 1975, 242435

Int. Cl.[2] F04B *43/04, 39/10*

U.S. Cl. 417—571 **3 Claims**



1. A diaphragm pump comprising:

a housing of hollow cylindrical shape which defines a cylindrical cavity having first and second ends, and which includes an end wall at said first end of said cavity, said second end being open, and said end wall of the housing being formed with an inlet opening and an outlet opening, both communicating with said cavity;

a flexible diaphragm extending across said second end of the cavity and defining a pump chamber at one side of the diaphragm, the diaphragm having a peripheral portion which is arranged in fluid-tight relationship with respect to the housing, the remainder of the diaphragm being deflectable between a position in which the diaphragm is generally flat and a position in which the diaphragm is of outwardly bowed convex configuration;

drive means for repeatedly moving the diaphragm between said generally flat position and said outwardly bowed position;

first valve means associated with said inlet opening in the end wall of the housing for controlling entry of fluid to said pump chamber;

second valve means associated with said outlet opening in the end wall of the housing for controlling delivery of fluid from said chamber; and,

a generally cylindrical insert disposed in said pump chamber and dimensioned to fit closely in the said chamber between said end wall and said diaphragm, said insert defining, adjacent said diaphragm, a concave end face of a shape which is generally complementary to the shape of the diaphragm in said outwardly bowed configuration, and which defines with the diaphragm an effective portion of the pump chamber which closely corresponds in volume to the volume swept by the diaphragm in moving between its said positions, the insert being formed with two passageways which communicate respectively with said inlet and outlet openings in the end wall of the pump housing, and both of which open into said end face of the insert, so that a fluid to be pumped is conducted to and from said effective portion of the pump chamber along said passageways in use.

4,086,038

ROTARY PISTON MACHINE OF TROCHOIDAL CONSTRUCTION

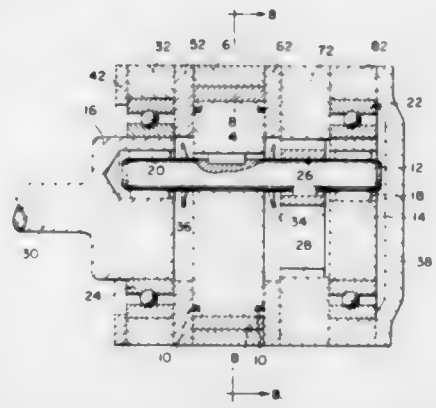
Jürgen Hans Wilhelm Lambrecht, Max-Ruttgers Str. 29, Irschenhausen, Germany (8026)

Filed Jun. 12, 1975, Ser. No. 586,223

Claims priority, application Germany, Dec. 6, 1974, 242832; Mar. 5, 1975, 251990

Int. Cl.[2] F01C *1/02, 21/02*

U.S. Cl. 418—60 **1 Claim**



1. In a rotary piston machine of trochoidal construction having a piston mounted on an eccentric shaft in a housing delimited on both sides by side walls, said piston being rotated by a follower means, one part of which is rigidly connected with the piston,

the improvement comprising eccentric disc means which balances said machine,

two bearing means which are eccentric with respect to each other and one of which bearing means is radially within the other,

eccentrically-rotatable shaft means positioned in said eccentric disc means and one of said bearing means, said piston and the part of said follower means rigidly connected therewith being positioned in said housing by said eccentrically-rotatable shaft means, said eccentric disc means being rotatably supported in the other of said bearing means,

and means on said eccentric disc means whereby drive or power takeoff of said machine may be effected.

4,086,039

ORBITAL MACHINE WITH COOPERATING LOBE AND RECESS GUIDE MEANS

John P. Ettridge, 14 Somers St., North Brighton, South Australia, Australia (5048)

Filed Oct. 29, 1976, Ser. No. 737,041
Claims priority, application Australia, Nov. 4, 1975, PC3835; Dec. 22, 1975, PC4363
Int. Cl.[2] F01C *1/02, 19/04, 21/06, 21/12*
U.S. Cl. 418—61 R
3 Claims



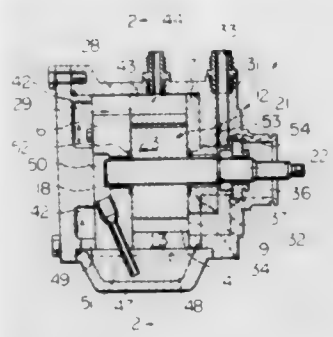
1. A rotary machine including a housing, a chamber within the housing, a shaft concentric with the chamber and having eccentrically mounted thereon a rotor, a plurality of vanes dividing the space between the rotor and inner wall of the chamber into working chambers and valve means to control flow of fluid through said working chambers, the rotor being guided to partake of an orbital movement within the chamber by a plurality of cooperating lobes and recesses on the rotor and the housing whereby the rotor is prevented from rotation while partaking of its orbital movement characterized in that the lobes are formed on a plate attached at one end of the rotor, and the recesses are formed in a porting side plate forming a side wall of the chamber, a port in said lobe cooperating with ports in said porting side plate to form the valve means.

4,086,040

ROTARY COMPRESSOR COMPRISING IMPROVED ROTOR LUBRICATION SYSTEM

Tsunenori Shibuya, and Hiroshi Kondo, both of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1976, Ser. No. 716,621
Claims priority, application Japan, Aug. 26, 1975, 50-118077[U]
Int. Cl.[2] F01C *21/04;* F04C *29/02*
U.S. Cl. 418—76
6 Claims



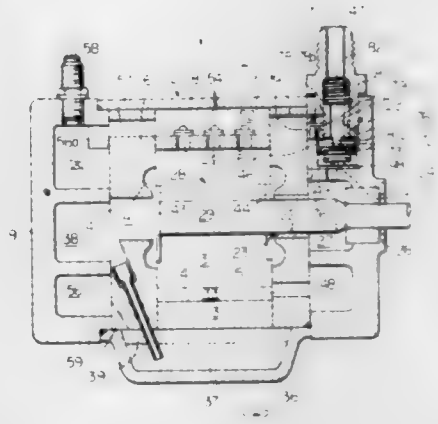
1. A rotary compressor comprising, in combination:
a housing having a cylinder formed with a bore and first and second end plates closing ends of the cylinder;
a fluid inlet passageway leading from a fluid inlet port into the bore;
an oil separation chamber being formed as an annular cavity in one of the end plates;
a first fluid outlet passageway leading from the bore into the oil separation chamber;
a second fluid outlet passageway leading from the oil separation chamber to a fluid outlet port, the first and second fluid outlet passageways being separated by a rib of the cylinder;
a rotor operatively disposed in the bore in such a manner as to compressively displace working fluid from the fluid inlet passageway to the first fluid outlet passageway;
an oil sump in communication with the oil separation chamber; and
an oil passageway leading from the oil reservoir to the fluid inlet passageway and communicating with the rotor in such a manner that oil is caused to flow through the oil passageway for lubrication of the rotor when a working fluid pressure in the oil separation chamber is greater than a working fluid pressure in the fluid inlet passageway;
the first and second fluid outlet passageways being formed as substantially parallel longitudinal passageways in the cylinder and opening perpendicularly into the oil separation chamber so that a working fluid flow path defined therethrough changes direction in the oil separation chamber to an extent great enough that oil entrained in working fluid flowing through the oil separation chamber is unable, due to an inertial force of the oil, to negotiate said change in direction, is separated from the working fluid and flows from the oil separation chamber into the oil reservoir.

4,086,041

ROTARY COMPRESSOR COMPRISING IMPROVED ROTOR LUBRICATION SYSTEM

Haruhiko Takada, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1976, Ser. No. 711,337
Claims priority, application Japan, Aug. 5, 1975, 50-108888[U]
Int. Cl.[2] F01C *21/04, 21/12;* F04B *49/02;* F04C *29/02*
U.S. Cl. 418—84
9 Claims



1. A rotary compressor comprising:
a housing formed with a bore;
a fluid inlet passageway leading to the bore and being formed with a fluid inlet port;
a fluid outlet passageway leading from the bore and being formed with a fluid outlet port;
a rotor operatively disposed in the bore in such a manner as to compressively displace fluid from the inlet passageway to the outlet passageway;
a lubricant reservoir in communicaton with the outlet passageway;
a lubricant passageway leading from the lubricant reservoir to the inlet passageway and communicating with the rotor in such a manner that lubricant is caused to flow through the lubricant passageway for lubrication of the rotor when a pressure in the outlet passageway is greater than a pressure in the inlet passageway;
a check valve provided to the inlet port and arranged to open the inlet port when the pressure in the inlet passageway is below a predetermined value and to block the inlet port when the pressure in the inlet passageway is above the predetermined value;

an equalizing passageway leading from the outlet passageway to the inlet passageway; and

an equalizing valve provided in the equalizing passageway and connected for unitary operation with the check valve, the equalizing valve being arranged to block the equalizing passageway when the pressure in the inlet passageway is below the predetermined value and to open the equalizing passageway when the pressure in the inlet passageway is above the predetermined value.

4,086,042

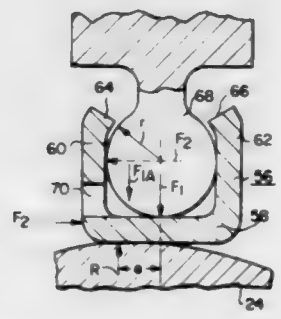
ROTARY COMPRESSOR AND VANE ASSEMBLY THEREFOR

Robert R. Young, Franklin Borough, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jun. 17, 1976, Ser. No. 697,099

Int. Cl.[2] F01C *19/04, 1/00;* F04C *27/00*

U.S. Cl. 418—139 **6 Claims**



1. In a rotary compressor;

a hollow housing;

a rotor in the housing having a changing curvature periphery presented to the spaces in said housing in which suction and compression take place as said rotor turns;

at least one generally radially movable vane assembly separating the spaces between the rotor periphery and the housing into a compression space and a suction space;

said vane assembly comprising a blade having a longitudinal edge of generally cylindrical-shape in transverse cross section, and a shoe carried in pivotal relation on said edge, said shoe having a socket-shaped recess within which said cylindrical-shaped edge is received and retained;

said housing includes slot means within which said vane assembly is radially movable, with a surface of said shoe bearing against said rotor periphery, the end of said vane assembly opposite said shoe being in communication with high side pressure developed by said compressor so that the force developed by said high side pressure urges said bearing surface of said shoe against said rotor periphery; and

said shoe includes vent opening means only in the face thereof facing the compression space in said compressor to reduce the moment tending to tilt said shoe around said cylindrical-shaped edge.

4,086,043

ROTOR WITH PLASTIC SHEATHING

Frank D. Howe, Painted Post, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 30, 1976, Ser. No. 755,456

Int. Cl.[2] F01C *21/08;* F03C *3/00;* F04C *15/00;* B29C *27/00*

U.S. Cl. 418—152 **7 Claims**

1. A rotor, for use in a rotary, positive-displacement fluid machine, comprising:

a rotor blank having a hub, and at least one radial tooth extending from said hub;

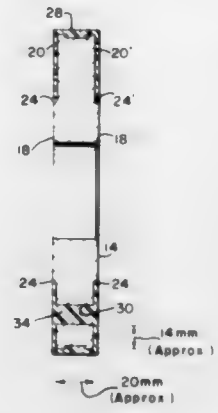
said hub having a given thickness;

said tooth having another thickness which is less than said given thickness;

said given and another thicknesses define in said blank, on opposite sides of said tooth, a pair of recessed lands; and

a sheathing of plastic, fixed on said lands, and therebetween in traverse of said blank, having surfaces which are substantially co-planar with surfaces of said hub; wherein

said blank is formed of a given material other than plastic having a prescribed coefficient of expansion;



said sheathing has a coefficient of expansion which is substantially equal to said prescribed coefficient of expansion;

said blank has a single, continuous groove formed in and fully along the outermost peripheral surface thereof;

said groove being of reentrant configuration, having a wider inner than outer dimension; and wherein

said sheathing further overlies said periphery, and is nestedly locked in said groove.

4,086,044

APPARATUS FOR THE MEASUREMENT OF THE WALL THICKNESS OF COATED ROD WITH CONSIDERATION OF ECCENTRICITY

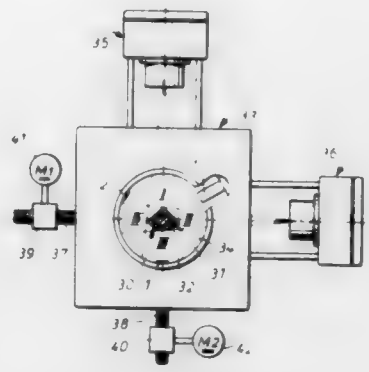
Harald Sikora, Griesborner Strasse 37, 2800 Bremen, Germany

Filed Apr. 20, 1976, Ser. No. 678,620

Claims priority, application Germany, Apr. 22, 1975, 2517709

Int. Cl.[2] B29F *3/10*

U.S. Cl. 425—113 **9 Claims**



1. Apparatus for ascertaining the concentricity of the core of an elongated cable with respect to its coating comprising:

a measuring head through which such a cable may extend;

a position measuring device mounted on said head for ascertaining a predetermined axial position of the core of the coated cable with respect to said head; and

means mounted on said head for establishing a predetermined condition of the lateral dimension of the coated cable with respect to the head indicative of concentricity when the core is in said predetermined position and for sensing deviations in said lateral dimensional condition as an indication of core-coating eccentricity.

4,086,045

APPARATUS FOR THE MANUFACTURE OF THIN-WALLED SHAPED ARTICLES OF THERMOPLASTIC MATERIAL

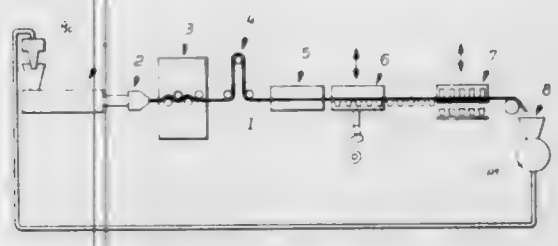
Alfons W. Thiel, Mainz, and Hans Hell, Wiesbaden, both of Germany, assignors to Bellaplast GmbH, Wiesbaden, Germany

Continuation-in-part of Ser. No. 408,083, Oct. 19, 1973, abandoned. This application Aug. 25, 1976, Ser. No. 717,750

Claims priority, application Germany, Oct. 25, 1972, 2252219; Dec. 19, 1972, 2262093; Jun. 4, 1973, 2328368; Sep. 6, 1973, 2344866

Int. Cl.[2] B29C *3/00;* B29D *7/02;* B29C *15/00*

U.S. Cl. 425—326.1 28 Claims



1. Apparatus for manufacturing thin-walled synthetic plastic articles which comprises extrusion means for forming a continuous hot plastic web of thermoplastic material at a predetermined high temperature, means for substantially immediately stabilizing said web to self supporting condition by cooling opposite surfaces of the web to provide therealong continuous outer supportive layers that are sufficiently deformable for shaping in subsequent shaping tool operation while the hot plastic material between said layers remains sufficiently plastic and fluid for redistribution between said layers during said tool operation, and means for advancing the stabilized web toward and into a thermal forming station in synchronism with shaping tools in said station adapted for forming articles in successive areas of said web during the period that said hot plastic material between the layers remains capable of redistribution between them.

4,086,046

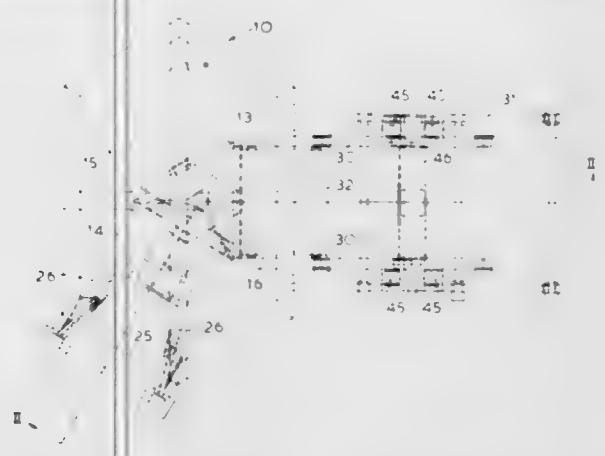
WAX MOULD APPARATUS

John Anthony Brown, Otley, and Leslie Raymond Wilkie, Bradford, both of England, assignors to Numol Corporation, Gastonia, N.C.

Filed Oct. 24, 1975, Ser. No. 625,602

Int. Cl.[2] B29C *5/00*

U.S. Cl. 425—361 11 Claims



1. Apparatus for molding articles from paraffin wax while imparting to the wax articles a stratified molecular structure comprising means for supplying molten paraffin wax, mold means operatively communicating with said wax supplying means for receiving and shaping molten paraffin wax, turntable means for mounting said mold means for rotation successively to a wax receiving station and to a wax heat station and to a wax article transfer station, chilling means in heat exchange relation with said mold means at said wax receiving station for transfer of heat from said mold means and from molten wax received there within, and heating means in heat exchange relation with said mold means at said wax heating station for transfer of heat to chilled mold means and solidified wax there within.

4,086,047

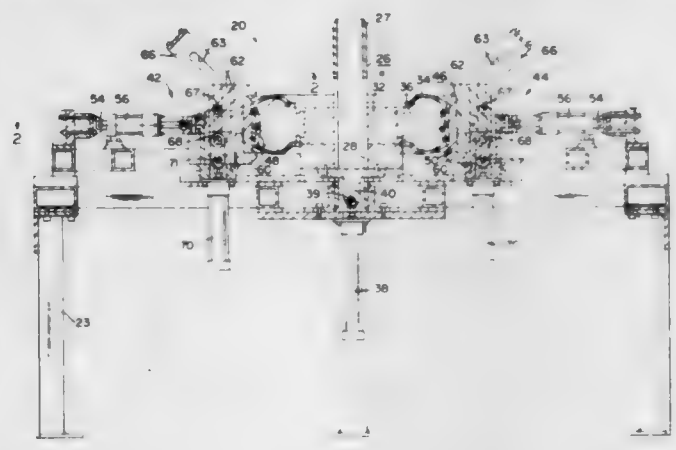
TREAD RING DISASSEMBLY AND REASSEMBLY APPARATUS

John Arthur Johnsen, Copley, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 19, 1977, Ser. No. 798,412

Int. Cl.[2] B29H *5/08, 17/00, 3/08;* B29F *1/00*

U.S. Cl. 425—450.1 4 Claims



1. A tread ring disassembly and reassembly apparatus including in combination a frame, a vertically extending guide member mounted on said frame and having upper and lower end portions, a support member movable between upper and lower positions and being guided in said movement by said guide member, first motive power means operable connected to said support member for moving same between said upper and lower positions, first and second jaw assemblies mounted by said frame and being movable between open and closed positions, said first and second jaw assemblies in a first position being spaced from each other a distance on the order of the diameter of a tread ring to be disassembled and reassembled, said first and second jaw assemblies being mounted for back and forth movement in a horizontal direction between said first position and a second position where said first and second jaw assemblies are spaced a greater distance apart, second motive power means for moving said first and second jaw assemblies back and forth between said first and second positions, each of said first and second jaw assemblies having a lower jaw and an upper jaw, each said lower jaw being fixedly secured to its respective assembly, jaw guide means adjacent each of said upper jaws and cooperating with said upper jaws to guide same through vertical and lateral movement with respect to a corresponding lower jaw and between upper and lower positions, and third motive power means connected to said upper jaws for moving the same between their said upper and lower positions.

4,086,048

SPARK IGNITED RECYCLING IGNITION SYSTEM WITH INTERLOCKING GAS VALVE CONTROL

Elmer A. Carlson, Agoura, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

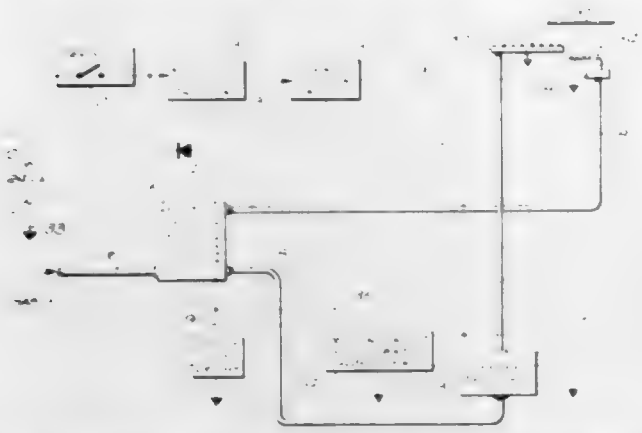
Continuation of Ser. No. 512,458, Oct. 7, 1974, abandoned. This application Apr. 2, 1976, Ser. No. 673,110

Int. Cl.[2] F23Q *9/08*

U.S. Cl. 431—46 2 Claims

1. A gas heating system utilizing an intermittent pilot, said system comprising: a source of electrical power; a grounded pilot burner; a main burner adjacent said pilot burner to be ignited thereby; a spark ignitor having first and second input leads connected from said source; a start switch connected in

series with one of said spark ignitor input leads, said second input lead being grounded, said spark ignitor having an electrode adjacent said pilot burner, and first and second output leads connected to said electrode and in a manner to permit said spark ignitor to establish a spark between said electrode over said pilot burner; a pilot solenoid valve actuable to admit gas to said pilot burner; a main solenoid valve connected to receive gas and to pass said gas to said main burner; first means responsive to actuation of said start switch to open said pilot valve and to establish said spark; a flame rod over said pilot



burner; and second means connected from said flame rod to cause said main valve to open and to cause said pilot valve to remain open when a flame is produced at said pilot burner and to allow said main valve to remain closed when no flame is so produced, said first means including timing means for closing said pilot valve should a predetermined time elapse after actuation of said start switch without pilot flame ignition, said second means including a circuit to direct the same electrical current through said pilot and main valve solenoids when a pilot flame is produced, an open in either solenoid winding causing both of said valves to close.

4,086,049

IGNITOR FOR STARTING FIRES

Bernard August Swanson, 11805 SE. 54th. Pl., Bellevue, Wash. 98006

Continuation-in-part of Ser. No. 651,606, Jan. 22, 1976, abandoned. This application Dec. 20, 1976, Ser. No. 752,558

Int. Cl.[2] F23Q *1/06*

U.S. Cl. 431—271 **6 Claims**



1. An igniter for starting fires comprising in combination:
a. a firing activating assembly;
b. a primer magazine assembly mounted next to said firing activating assembly;
c. a primer cap aligning assembly mounted next to said firing activating assembly and said primer magazine assembly;
d. said firing activating assembly comprising a housing containing a piston-cylinder adapted for displacement from an inactive position to a firing position through input of an associated fluid pressure into said housing;
e. said piston-cylinder containing an integrally mounted wall, with an opening in its center, dividing said piston-cylinder into a first and a second chamber;
f. said first chamber successively containing a slidably arranged hammer spring and a hammer means with a dead-ended opening facing toward said wall opening;
g. said second chamber provided with an aligning aperture and successively containing: a striker pin with a first portion having a diameter smaller than said wall opening and said hammer opening, a beveled expanding portion, a larger diameter second portion of a diameter smaller than said wall opening and a slanted mushroom-shaped head portion, respectively; a striker spring positioned between said wall and said mushroom head and a firing pin having a head portion abutting said mushroom head and a firing pin portion extending out of said piston-cylinder through said aligning aperture;
h. said primer magazine having a cap opening in direct alignment with said aligning aperture and adapted to receive said firing pin portion, said primer magazine containing a one-way rotatable disc carrying a plurality of associated primer caps and a flame exhaust nozzle in alignment with and opposite of said cap opening, and said rotatable disc having indent means near each of said primer caps; and
i. said primer aligning assembly containing a spring-loaded dog ratchet having a cam extending into said housing and a bias means extending in said magazine assembly in contact with said indent means, whereby upon displacement of said piston-cylinder into said firing position said cam is depressed and said dog ratchet moves said bias means for rotating said disc by said indent means so that an associated cap becomes aligned between said opening and said exhaust nozzle.

4,086,050

METHOD AND APPARATUS FOR GAS CIRCULATION IN A HEAT TREATING FURNACE

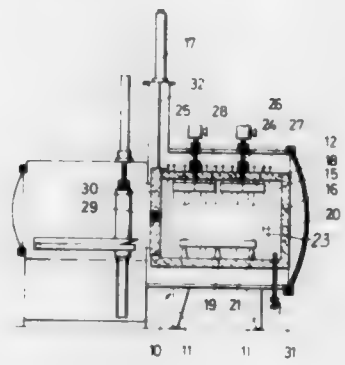
Cornelis Hendricus Luiten, and Ferdinand Limque, both of Nijmegen, Netherlands, assignors to Ipsen Industries International, Kleve, Germany

Filed Jan. 5, 1976, Ser. No. 646,502

Claims priority, application Germany, Jan. 15, 1975, 2501360

Int. Cl.[2] F27D *7/00*

U.S. Cl. 432—25 **11 Claims**

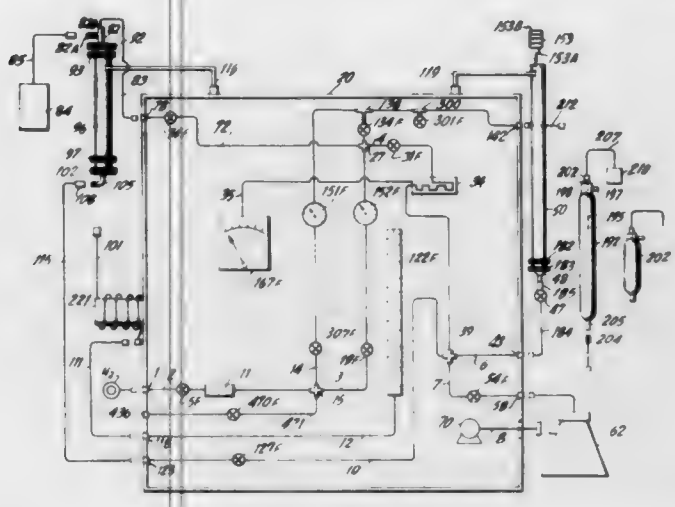


1. Method for thermo-chemical treatment of work pieces in a furnace operated at pressure, in particular vacuum, characterized by the steps of treating the charge, introducing the treating gas into the vacuum chamber containing the charge, causing the gas to become turbulent while avoiding a stable gas circulation, and varying the flow pattern and intensity of the gas circulation during the treatment of the charge.

4,086,051
SYSTEM FOR PREPARING PACKED COLUMNS AND COATED CAPILLARY TUBES USEFUL IN GAS CHROMATOGRAPHY

Srivas Rangachar Srinivas, 2850 Webb Ave., Apt. 5J, Bronx, N.Y. 10468

Continuation of Ser. No. 495,500, Aug. 7, 1974, abandoned. This application Apr. 29, 1976, Ser. No. 681,604
Int. Cl.[2] F27B *5/04;* B01D *15/08*
U.S. Cl. 432—198 **1 Claim**



1. A system useful for conditioning gas chromatographic columns and the like comprising in combination: oven means adapted for the removable fastening therein of a plurality of gas chromatographic columns to be conditioned, said oven means being adpated with suitable means for heating said columns to an elevated temperature, means for passing an inert gas through said columns while fastened within said oven means, means for varying gas flow rate through said columns associated with said means for passing inert gas, and means for measuring the back gas pressure, at a given gas flow rate, at the inlet of any one of said plurality of columns during conditioning thereof, said means for measuring the back gas pressure at a given gas flow rate comprising a gas flow meter in communication with the outlet of any one of said plurality of columns and a pressure measuring gauge in communication with the inlet of any one of said plurality of columns.

4,086,052
CERAMIC BURNER FOR COMBUSTION CHAMBER FOR HOT-BLAST STOVE

Walter Laux, Wiesbaden; Rudolf Hebel, Ginsheim/Gustavsburg, and Rolf Schneider, Nauheim, all of Germany, assignors to Didier-Werke AG, Wiesbaden, Germany

Filed Sep. 16, 1976, Ser. No. 723,936
Claims priority, application Germany, Sep. 20, 1975, 2541991
Int. Cl.[2] F23L *9/04*
U.S. Cl. 432—217 **17 Claims**

1. A burner, particularly for use in the combustion shaft of a hot-blast stove, said burner comprising:

a central burner duct for the supply of a first combustion component;

an outer annular duct, coaxial to said central burner duct, for the supply of a second combustion component;

means connecting said central burner duct and said outer annular duct for combining first and second combustion components flowing therethrough to form a component mixture;

a disk-shaped mixing element means, positioned centrally within said central burner duct at a position downstream in the direction of flow of said combustion components of said combining means, for retarding the flow of said component mixture in the downstream direction;

said mixing element means occupying a portion only of the cross-sectional area of said central burner duct, such that a first portion of said component mixture flows past said mixing element means around the periphery thereof; and

said mixing element means having extending therethrough, substantially in the direction of flow of said combustion components, a ring of separate passages such that a second portion of said component mixture flows through said

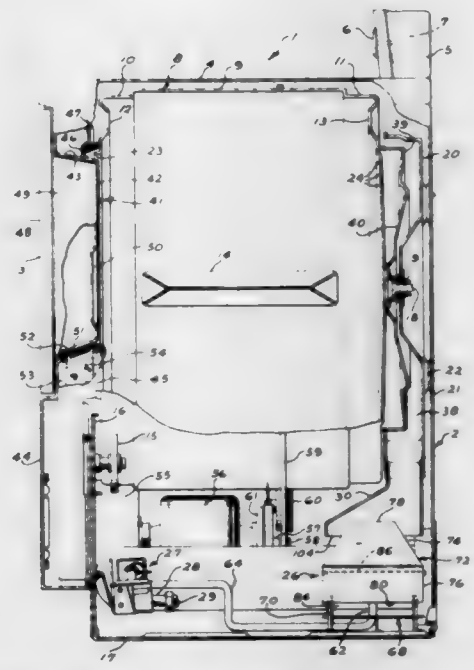


separate passages and mixes with said first portion of said component mixture.

4,086,053
CLOTHES DRYER GAS HEATER ASSEMBLY

Edward G. Sommer, Jr., Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 9, 1976, Ser. No. 721,760
Int. Cl.[2] F24H *1/00;* F26B *11/04*
U.S. Cl. 432—222 **10 Claims**



1. In a clothes dryer having a gas heater assembly for heating the air, the improvement comprising:

a. a gas control valve,

b. a gas nozzle in gas flow communication with the valve, said nozzle having an exit orifice,

c. a plate member spaced from the nozzle orifice, such that gas will impinge the plate member,

d. a combustion chamber having a truncated cone-shaped upper portion with downwardly diverging side walls, said chamber having an opening at the top and bottom thereof, said chamber surrounding and spaced outwardly of both the plate member and nozzle, said bottom opening arranged to allow air into the combustion chamber below the nozzle orifice for mixing with the gas exiting the nozzle orifice,

e. means to ignite the gas and air mixture after it impinges the plate member, and

f. a hood member over and spaced outwardly of the opening at the top of the combustion chamber to allow ambient air into the hood member for mixing with the heated air.

4,086,054

CONCENTRATED STORAGE-STABLE SOLUTIONS OF ALKYLBENZENESULFONATES OF BASIC DYES

Walter Seibert, Ludwigshafen; Guenther Riedel, Heidelberg-Wieblingen, and Kurt Mayer, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation-in-part of Ser. No. 482,136, Jun. 24, 1974, abandoned. This application Nov. 24, 1975, Ser. No. 634,455
Claims priority, application Germany, Jun. 27, 1973, 2332540
Int. Cl.[2] C09B *67/00;* D06P *1/62*
U.S. Cl. 8—89 R 7 Claims

1. A concentrated storage-stable dye salt solution in an organic solvent, said solution consisting essentially of an alkylbenzenesulfonate salt, having an alkyl chain of 8 to 18 carbon atoms, of a basic dye, dissolved in an organic solvent selected from the group consisting of C_1 to C_4 alkanols, benzyl alcohol, ethylene glycol, propylene glycol, ethylene diglycol, propylene diglycol, ethylene triglycol, propylene triglycol, the phenyl or C_1 to C_4 alkyl monoethers of said glycols, acetone, methyl ethyl ketone, cyclohexanone, toluene and xylene or mixtures of said solvents, said solution containing from 20 to 75 percent by weight of said dye salt, based on the solution.

4,086,055

SURFACE MODIFIED CONTINUOUS FILAMENT YARN AND METHOD OF PRODUCING SAME

Francis William Marco, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 4, 1976, Ser. No. 729,177
Int. Cl.[2] D06M *3/16, 5/00, 9/00*
U.S. Cl. 8—130.1 13 Claims



1. A method for modifying the surface of a continuous filament twisted yarn comprising stretching said yarn to provide an elongated yarn and simultaneously contacting said elongated yarn with an effective amount of a swelling agent for a period of time effective to substantially rupture fibers on the surface of said elongated yarn without affecting interior fibers of said yarn, quenching said swelling agent, and recovering a modified continuous filament yarn.

4,086,056

PROCESS FOR IMPREGNATION OF TIMBER

Arthur Neville Hanson, Tadcaster, England, assignor to Hickson's Timber Products Limited, Castleford, England

Filed Apr. 7, 1976, Ser. No. 674,683
Claims priority, application United Kingdom, Apr. 9, 1975, 14607/75
Int. Cl.[2] B27K *3/02, 3/10, 5/00*
U.S. Cl. 21—7 14 Claims

1. A process for the impregnation of at least one article comprised of timber with a predetermined amount of a treatment agent comprising the steps of:

positioning an article comprised of timber in a treatment chamber;

isolating the interior of the treatment chamber from the ambient atmosphere;

filling the treatment chamber with a treatment agent;

pressurizing the treatment agent in the treatment chamber to a predetermined level for a period not exceeding 3 minutes to rapidly force the predetermined amount of treatment agent into the article in a single pressurization step; and

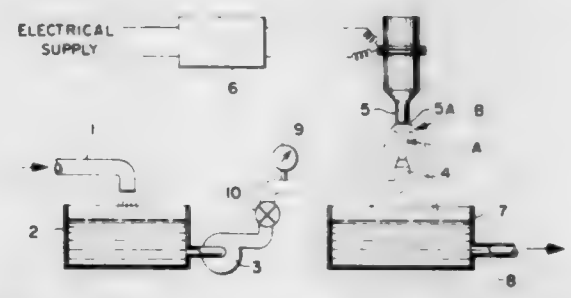
relieving the pressure of the treatment agent at the end of said single pressurization step and removing the article from the treatment chamber without substantial delay.

4,086,057

ULTRASONIC DISINFECTION SYSTEM

William Clinton Everett, 11745 Seventh Way, North (Apt. #7), St. Petersburg, Fla. 33702

Filed Jul. 28, 1976, Ser. No. 709,288
Int. Cl.[2] A61L *1/00;* B05B *17/06;* A23L *3/30*
U.S. Cl. 21—54 A 5 Claims



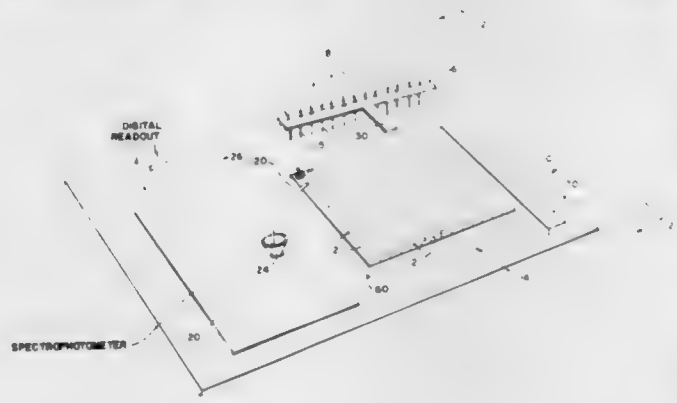
1. The method of disinfecting a liquid comprising the steps of continuously discharging a bacteria-containing liquid through a nozzle into the open atmosphere to produce a solid jet of such liquid; directing the liquid jet against an ultrasonically vibrating surface which transversely intercepts the entire cross-section of said jet to impart ultrasonic wave energy lengthwise into said jet; the velocity and cross-section area of said jet and the wave energy emanating from said surface being of such values that at least 400 joules/liter is imparted to the treated liquid.

4,086,058

ANALYTICAL SYSTEM, REAGENT DISPENSING AND SAMPLING APPARATUS AND METHOD

Betty Pendleton, 1226 S. 18th Ave., Birmingham, Ala. 35205

Continuation-in-part of Ser. No. 482,628, Jun. 24, 1974, abandoned. This application Jul. 12, 1976, Ser. No. 704,606
Int. Cl.[2] G01N *31/00*
U.S. Cl. 23—230 B 9 Claims



9. Method of improved analytical testing for medical purposes comprising arranging a series of tubes into rows forming a matrix each for receiving sera and reagent, applying a portion of the mixture within the tubes to a spectrophotometer for quantitation, recording the result of the quantitation, passing the resultant mixture to an ion exchanger and membrane filter for final disposition and neutralization.

4,086,059

METHOD FOR THE ANALYSIS OF THYROID HORMONES

Howard Willner, San Anselmo, and Vito J. Mangiardi, Point Richmond, both of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed May 16, 1975, Ser. No. 578,247
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230.3 6 Claims

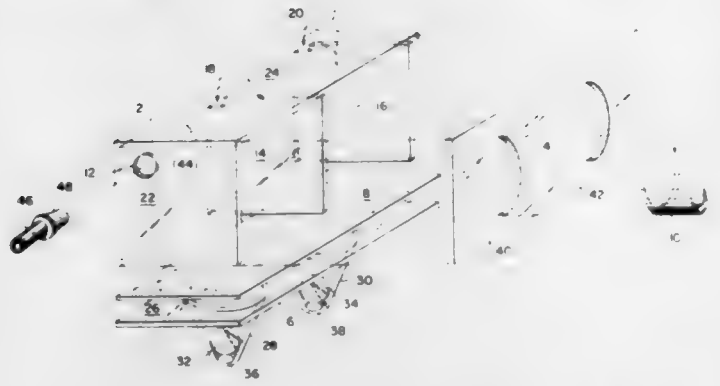
1. In a competitive binding procedure to determine the status of serum thyroid hormone in which a serum test solution is processed to separate the thyroid hormone from thyroid hormone binding protein prior to the competitive binding step, the improvement consisting essentially of adjusting the pH of the serum test solution to about 3 or lower essentially with an acid selected from the group consisting of hydrochloric acid, sulfuric acid, nitric acid, phosphoric acid, perchloric acid, formic acid and trichloracetic acid, and then admixing it directly with a solution containing exogenous thyroid hormone binding protein, radioactive isotope labelled thyroid hormone and buffer to execute said competitive binding step at a pH of about 8.6.

4,086,060

DISPOSABLE MANIPULATIVE LABORATORY DEVICE FOR TRANSFERRING BIOLOGICAL FLUIDS

William J. Hermann, Jr., Rockville, Md., assignor to Jocelyn Dickson, Potomac, Md., a part interest

Filed Oct. 22, 1976, Ser. No. 734,950
Int. Cl.[2] B65D *83/14;* G01N *1/00*
U.S. Cl. 23—259 36 Claims



1. A disposable manipulative laboratory device for transferring biological fluids and reagent mixtures from at least one primary container to an associated secondary container, comprising:

(A) an enclosure defining at least one compartment therein, said enclosure having a first surface with means adapted to receive an open end of at least one primary container for inlet flow communication from a primary container to a compartment, and;

(B) a second surface on said enclosure, said second surface including an outlet means operable for a selective outlet flow communication from said at least one compartment to an associated secondary container when said second surface is positioned substantially horizontal and above an open upper end of a secondary container, and;

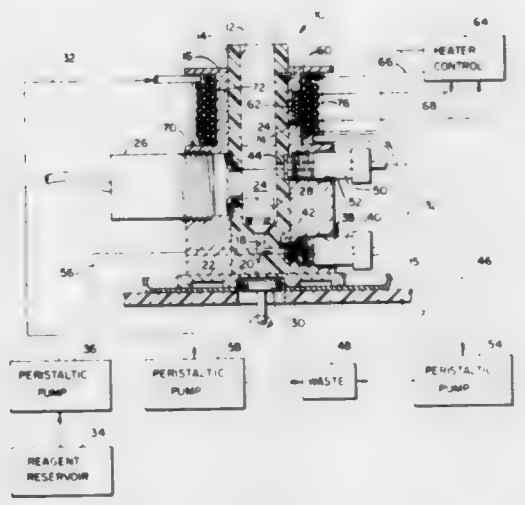
(C) means for delivering a selectively controlled volume of pressurized gas to said at least one compartment, whereby said pressurized gas is operable to transfer a selective volume of biological or reagent fluid, that has flowed into a compartment from its associated primary container, into an associated secondary container, wherein said outlet means further includes fluid valve means which is operable to close said outlet flow communication when all biological or reagent fluid within a compartment has been so transferred.

4,086,061

TEMPERATURE CONTROL SYSTEM FOR CHEMICAL REACTION CELL

Jack L. Hoffa, Brea, and Robert A. Ray, Fullerton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 28, 1977, Ser. No. 772,410
Int. Cl.[2] G01N *33/16, 1/14*
U.S. Cl. 23—259 5 Claims



1. In combination:

a reaction cell having a chamber for receiving components of a chemical reaction for reacting at a predetermined temperature;

an inlet passage communicating with said chamber;

a reaction component reservoir;

conduit means connected between said reservoir and said inlet passage for supplying said reaction component to said chamber;

heat exchange means including a heat exchange element on at least a portion of said reaction cell and in contact with at least a portion of said conduit means for exchanging heat with said chamber and any contents thereof and for exchanging heat with said portion of said conduit means and a quantity of reaction component therein, both said heat exchange element and said portion of said conduit means being disposed to surround said portion of said reaction cell; and

means for flowing said reaction component through said conduit means toward said chamber and operative to maintain said quantity of reaction component in said portion of said conduit means for a period sufficient for said heat exchange means to drive the temperature of said reaction component toward said predetermined temperature prior to supplying said reaction component to said chamber.

4,086,062

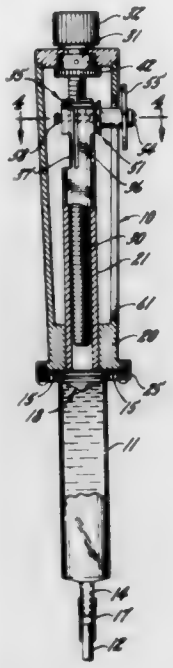
DIGITAL TITRATION DEVICE

Clifford C. Hach, Ames, Iowa, assignor to Hach Chemical Company, Ames, Iowa

Filed Feb. 23, 1977, Ser. No. 771,248
Int. Cl.[2] B01L *3/02;* B67D *5/22;* F16B *7/04*
U.S. Cl. 23—259 6 Claims

1. A liquid dispensing device for titration comprising, in combination, a frame, a plunger mounted for reciprocation in said frame from a retracted position to an extended position, a preloaded titration liquid containing cartridge having an open end sealed by a slidable piston cap and a nozzle at the opposite end, means for locking said open end of the liquid containing cartridge on said frame in a position wherein said cap receives said plunger whereby movement of the plunger from said retracted position toward said extended position expels liquid through said nozzle in said cartridge, a lead screw mounted for

rotation in said frame, means on said frame for measuring rotation of said screw, a nut for coupling said plunger to said



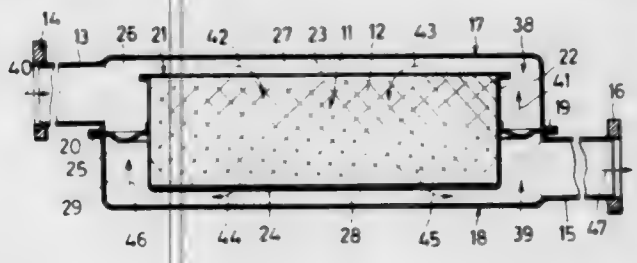
screw so that rotation of the screw reciprocates the plunger, and a control for selectively rotating said screw.

4,086,063

VERTICAL-FLOW CATALYTIC MUFFLER

Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Aug. 31, 1972, Ser. No. 285,355
Claims priority, application Italy, Aug. 31, 1971, 28068 A/71
Int. Cl.[2] B01J *8/02, 35/02;* F01N *1/14, 3/15*
U.S. Cl. 23—288 F **5 Claims**



1. A catalytic muffler inserted in an exhaust duct of an internal combustion engine of a motor vehicle, including

(a) an outer casing in the shape of a substantially flattened cylinder, having reduced height with respect to the diameter and having a substantially vertical axis, said casing being defined by an assembly of one each of upper and lower sheet metal half-shells connected to one another in a sealed tight manner along a line lying on the outer cylindrical surface and on a plane inclined with respect to the vertical axis, each half-shell being defined by only one piece of metal sheet and including an essentially planar wall of circular outline and a cylindrical side wall, of a height gradually decreasing and having a free edge lying on said inclined plane,

(b) a first gas inlet duct connected to the cylindrical side wall of the upper half-shell at the zone thereof of greatest height,

(c) a second gas discharge duct connected to the cylindrical side wall of the lower half-shell at the zone thereof of greatest height,

(d) a catalyst element proper, having also substantially the shape of a flattened cylinder, namely reduced height with respect to the diameter thereof, mounted in the interior of the outer casing and co-axial therewith, a side annular wall of the catalyst element being gas impervious, while upper and lower circular walls of the catalyst element are permeable to the gas, whereby the flow of the gases through the catalyst element takes place predominantly along a direction which is substantially parallel to the vertical axis of the catalyst element,

(e) a wall having inner and outer edges, said wall, having an annular shape and of corrugated metal sheet lying on the same inclined plane of the edges of said half-shells, the inner edge of said annular corrugated wall being connected to the side annular wall of the catalyst element, the outer edge of the corrugated annular wall being connected to the edges of said half-shells, (f) a chamber defined by the walls of the upper half-shell, the walls of the catalyst element and the annular corrugated wall, said chamber communicating with said inlet duct and serving as a manifold for conveying the gases towards the upper circular wall of the catalyst element, said chamber including an annular capacity positioned above said annular corrugated wall, said capacity having decreasing height, which is equal in every point to the height of the cylindrical side wall of the upper half-shell and further including a capacity positioned above the catalyst element and having a cylindrical flattened shape namely having a diameter like that of said catalyst element and height much lower than the diameter and

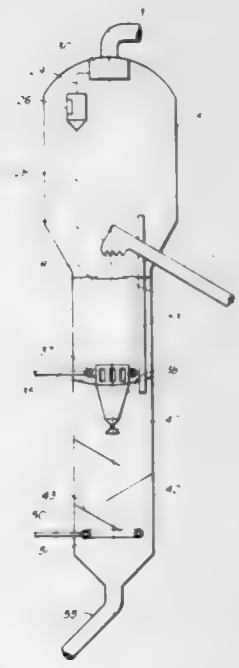
(g) a chamber defined by the walls of the lower half-shell, the walls of the catalyst element and the annular corrugated wall, said chamber communicating with the discharge duct and serving as a manifold for the gases coming out of the lower circular wall of the catalyst element, said chamber comprising an annular capacity positioned under the annular corrugated wall, said capacity having increasing height, which in every point is equal to the height of the cylindrical side wall of the lower half-shell, and further including a capacity positioned below the catalyst element and having a cylindrical flattened shape, namely having a diameter equal to that of the catalyst element, but of very reduced height with respect to the diameter.

4,086,064

APPARATUS FOR FLUIDIZED CATALYTIC CRACKING

John P. MacLean, Stafford, and John C. Strickland, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 6, 1976, Ser. No. 748,090
Int. Cl.[2] B01J *8/24*
U.S. Cl. 23—288 G **9 Claims**



1. In a fluidized catalytic cracking apparatus comprising vertical reactor vessel (**15**), wherein a riser conduit (**12**), having a discharge end (**100**), enters said reactor vessel (**15**) through a side wall thereof upwardly at an angle of about 30° to 45° to the vertical, wherein catalyst and hydrocarbon vapors flow upwardly through said riser conduit (**12**) and discharge

into said reactor vessel (15); an improved riser discharge head (11) comprising:

a. a body portion, connected to the discharge end (100) of said riser conduit (12);

b. foreward impingement plates (103 and 104), attached to said body portion, in an attitude normal to the flow of catalyst and hydrocarbon vapor from riser conduit discharge (100); and

c. means for directing hydrocarbon vapors and catalyst, after impingement upon said foreward impingement plate (103), substantially vertically downward into the interior of reactor vessel (15).

4,086,065

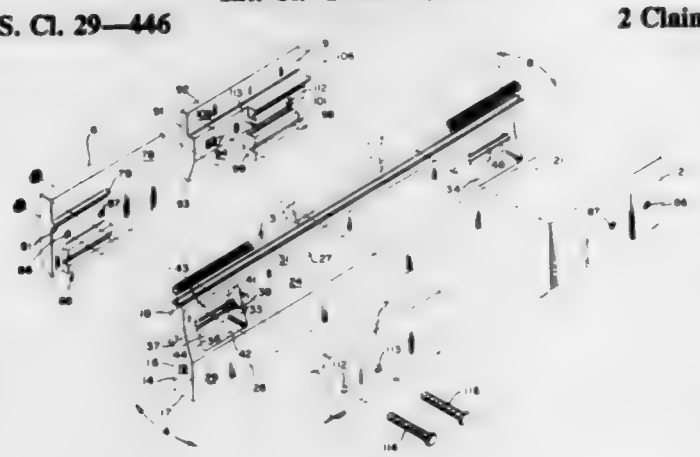
METHOD OF RIGIDIFYING WORK REST BLADE FOR CENTERLESS GRINDER

Van Q. Maxey, 17765 Casa La., Morgan Hill, Calif. 95037

Division of Ser. No. 611,651, Sep. 9, 1975. This application Jul. 29, 1977, Ser. No. 820,102

Int. Cl.[2] B23P *11/02*

U.S. Cl. 29—446 **2 Claims**



1. The method of rigidifying the work rest blade of a centerless grinder comprising the steps of:

(a) supporting the work rest blade on the crowned edge of an elongated support plate so that the longitudinal axis of the work rest blade extends in the same direction as the support plate;

(b) imposing a downward force on opposite ends of the work rest blade to make it conform to the crown of the supporting edge of the support plate; and

(c) simultaneously imposing rotary moments of force on opposite ends of said work rest blade acting in opposite directions whereby there is a tendency to twist the work rest blade to maintain said blade in said rigidified condition.

4,086,066

METHOD FOR PREVENTING MICROORGANISM INDUCED CORROSION OF HYDROCARBON LIQUID STORAGE TANKS

Arthur R. McDermott, Houston, Tex., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Feb. 22, 1977, Ser. No. 770,887

Int. Cl.[2] C10L *1/32*

U.S. Cl. 44—51 **6 Claims**

1. A method for preventing microorganism induced corrosion of a storage vessel which contains a small lower layer of water and a large upper layer of a hydrocarbon liquid by introducing a microorganism control chemical into the small lower layer of water which comprises:

(A) placing the microorganism control chemical inside a polyvinyl alcohol package;

(B) sealing the polyvinyl alcohol package;

(C) dropping the polyvinyl alcohol package into the storage vessel so that it can penetrate the large upper layer of hydrocarbon liquid and pass into the small lower layer of water; and,

(D) permitting the polyvinyl alcohol package to dissolve in the water thereby releasing the microorganism control chemical.

4,086,067

POROUS SINTERED ABRASIVE ARTICLES AND METHOD OF MANUFACTURE

John Folts Busch, and Stephen Morrison Freeman, both of Tiffin, Ohio, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 557,472, Mar. 12, 1975, abandoned. This application Mar. 29, 1976, Ser. No. 671,135

Int. Cl.[2] B24D *3/34*

U.S. Cl. 51—296 **16 Claims**

1. A porous sintered abrasive grain formed from a mixture of aluminous abrasive material and burn-out material, where said burn-out material may be selected from pieces of material such as paradichlorobenzene, crushed walnut shells, cork, plastic and mustard seeds, said burn-out material having a cross-section lying between about 20 and 80 percent of the grain cross-section and being present in the mixture in a volume percent between about 3.5 and 20.

7. An organic resin bonded grinding wheel comprising a plurality of the sintered aluminous abrasive grains of claim 1.

4,086,068

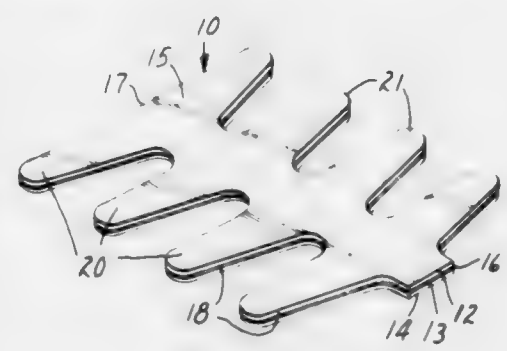
LENS GRINDING AND POLISHING LAP COVER AND METHOD OF MAKING SAME

David C. Hedin, Grant Township, Washington County,, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 8, 1977, Ser. No. 786,027

Int. Cl.[2] B24D *11/02*

U.S. Cl. 51—395 **16 Claims**



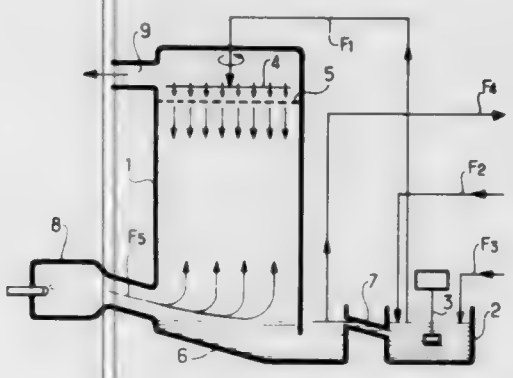
1. A lap cover for a curved surface lap for grinding lens blanks comprising a substrate sheet of flexible conformable material and a coating of adhesive on one side of the substrate for adhering the substrate to the curved lap surface, said lap cover having an elongate body portion having a longitudinal axis within said elongate body, a leading end edge and a terminal end edge and having a plurality of spaced integral elongate appendage portions projecting from the side edges of the body portion and no part of any appendage portion extends beyond said leading end edge, wherein the ends of the slots between said appendage portions define the side edges of the elongate body portion and said side edges do not cross said longitudinal axis, the shape of each of said elongate appendage portion being such that the appendage portions of an adhesively bonded lap cover do not tear away as the leading end of the body portion is stripped back toward the terminal end during removal.

4,086,069

METHOD FOR SIMULTANEOUSLY CONCENTRATING AND PURIFYING PHOSPHORIC ACID

Joseph Sergot, Croissy-sur-Seine, France, assignor to Prorea S.A., Levallois-Perret, France

Filed Feb. 9, 1976, Ser. No. 656,466
Claims priority, application France, Feb. 25, 1975, 75 05791
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—48 5 Claims



1. A method for simultaneously concentrating and purifying an aqueous phosphoric acid solution of fluorinated derivatives, consisting of effecting continuously the following operations:

(1) the aqueous phosphoric acid solution to be simultaneously concentrated and purified is introduced into an enclosure or tower;

(2) the aqueous phosphoric acid solution to be simultaneously concentrated and purified is brought into contact with a current of hot combustion gases in the enclosure or tower;

(3) phosphoric acid simultaneously concentrated and purified of the fluorinated derivatives is collected at the bottom of the enclosure or tower;

(4) water and the fluorinated resulting from the simultaneous concentration and purification of the aqueous phosphoric acid solution are removed substantially at the top of the enclosure or tower as are the combustion gases;

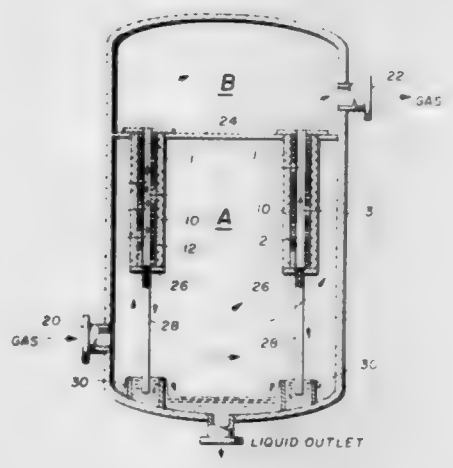
(5) wherein prior to introducing the aqueous phosphoric acid solution to be simultaneously concentrated and purified into the enclosure or tower, the aqueous phosphoric acid solution to be simultaneously concentrated and purified is formed by raw aqueous phosphoric acid solution being mixed with water and with a fraction of the concentrated and purified phosphoric acid collected at the base of the enclosure or tower, the balance of the simultaneously concentrated and purified collected phosphoric acid being removed from the enclosure or tower as product, wherein the ratio by weight of the amount of the raw aqueous phosphoric acid solution to be simultaneously concentrated and purified and the amount of the water mixed therewith is greater than 1.5 to 1, and wherein there is added from 7 to 17 parts by weight of the concentrated and collected purified phosphoric acid to the aqueous phosphoric acid solution being passed to the enclosure or tower to be simultaneously concentrated and purified per 1 part by weight of concentrated and collected purified phosphoric acid removed from the enclosure or tower as product.

4,086,070

FIBER BED SEPARATOR AND METHOD FOR SEPARATION OF AEROSOLS FROM GASES WITHOUT RE-ENTRAINMENT

Wesley B. Argo, Town & Country; Gilbert K. C. Chen, Manchester; Babur M. Kocatas, Clayton, and Steven A. Ziebold, Mehlville, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 642,921, Dec. 22, 1975, abandoned. This application Nov. 1, 1976, Ser. No. 737,291
Int. Cl.[2] B01D *46/02*
U.S. Cl. 55—97 21 Claims



1. In a process for removing aerosols of less than 3 microns from a moving gas stream in a fiber bed separator wherein said aerosol containing gas is caused to flow substantially horizontally through a substantially vertical non-matting bed of randomly distributed fibers having a mean diameter of at least about 5 microns and packed to a substantially uniform bed voidage of from about 85 to 98%, resulting in separation of a substantial proportion of the aerosol from the gas as a collected liquid phase, an improvement whereby re-entrainment of said liquid phase from the downstream surface of said fiber bed is substantially prevented, said improvement comprising:

(a) providing a second fiber bed in intimate fiber to fiber contact with said substantially vertical non-matting bed of randomly distributed fibers, hereinafter referred to as said first fiber bed, such that an interface is formed between said first and second fiber beds,

(b) causing said aerosol containing gas to flow through said first fiber bed under non-flooding conditions for the aerosol loading contained in said gas, said first fiber bed being selected such that the residual saturation of said first fiber bed against gas phase drag of the liquid phase is less than the residual saturation of said first fiber bed against gravity drainage of the liquid phase,

(c) continuing the substantially horizontal flow of said gas, now substantially free of aerosol particles, through said second fiber bed, said second fiber bed being a substantially vertical non-matting bed of randomly distributed fibers packed to a bed voidage of from about 85 to 99%, the mean fiber diameter and voidage of said second fiber bed being selected such that the residual saturation of said second fiber bed against gas phase drag of the liquid phase is greater than the residual saturation of said second fiber bed against gravity drainage of the liquid phase, and

(d) continuously draining the collected liquid phase from said interface between said first and second fiber beds such that the liquid drains by gravity flow through said second fiber bed or at said interface.

4,086,071

AIR FILTER ASSEMBLY

Charles L. Champlin, Rittman, Ohio, assignor to Packaging Corporation of America, Evanston, Ill.

Filed Aug. 9, 1976, Ser. No. 712,588
Int. Cl.[2] B01D *46/10*
U.S. Cl. 55—501 5 Claims



1. An air filter assembly comprising a compressible air previous multisided filter panel, and a frame in supporting engagement therewith; said frame being formed from a single blank of foldable sheet material and including a foraminous center section having one surface thereof in supporting face-to-face engagement with a surface of said filter panel, a marginal section delimiting said center section and having portions thereof corresponding to the multisides of said filter panel, and a plurality of elongated peripheral sections arranged in alternate sets and being foldably connected to the periphery of the marginal section, each peripheral section having a segment coacting with a portion of said marginal section to fixedly sandwich and compress therebetween and edge portion of said filter panel, said peripheral sections being foldably adjustable relative to one another from an inoperative position to an operative position, said peripheral sections, when in said inoperative position, having one alternate set of peripheral sections overlapping a second alternate set of peripheral sections and said sets assuming a collapsed substantially overlapping relation with respect to the filter panel compressed edge portions and, when said peripheral sections are adjusted to said operative position, said second alternate sets of peripheral sections having tab-like end portions automatically aligned with and inserted into adjacent openings formed in the ends of the adjacent said one alternate set of peripheral sections and effecting interlocking of said peripheral sections in corner-forming relation whereby a substantially continuous flange is formed projecting angularly away from a plane including said marginal section; the peripheral sections of each alternate set, when in operative position, projecting angularly from the marginal section towards said foraminous center section to form an acute included angle whereby an elongated edge of each peripheral section overlies in spaced relation an adjacent portion of the marginal section.

4,086,072

AIR SOURCE HEAT PUMP WITH MULTIPLE SLIDE ROTARY SCREW COMPRESSOR/EXPANDER

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 653,568, Jan. 29, 1976. This application Mar. 30, 1977, Ser. No. 782,675
Int. Cl.[2] F25B *27/00;* G05D *23/00*
U.S. Cl. 62—2 27 Claims

1. In an air source heat pump system including:

a helical screw rotary compressor including a suction port and a discharge port,

a helical screw rotary expander including a feed port and a discharge port,

means for mechanically connecting said expander to said compressor,

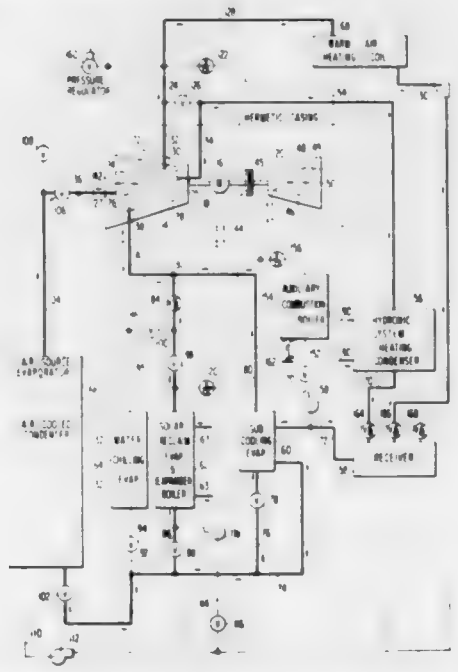
a first inside heat exchange coil for conditioning a building and the like,

a second outside heat exchange coil connecting an air source evaporator/air cooled condenser,

said compressor comprising a plurality of axially adjustable compressor slide valves including at least a capacity control slide valve for unloading the compressor, an injection slide valve including an injection port, and an ejection slide valve including an ejection port,

conduit means carrying refrigerant and forming a primary closed loop refrigeration circuit for connecting; at least said screw compressor and said first and second coils in series in that order,

the improvement wherein:



said system further includes a third heat exchange coil connected intermediate of said first and second coils with the outlet side of said third heat exchange coil being connected to the injection port of said injection slide valve,

and wherein said conduit means further comprises means connecting the outlet side of said third heat exchange coil additionally to the feed port of said expander, and means for connecting the discharge port of said expander to said first heat exchange coil, and selectively operated valve means within said conduit means connecting the outlet of said third heat exchange coil to said injection slide valve injection port for preventing refrigerant return flow from said third heat exchange coil to said compressor and forcing such refrigerant return flow to enter said expander feed port.

4,086,073

ELECTROLYTIC ION MIGRATION INTO GLASS

David Gordon Loukes, Prescot, England, assignor to Pilkington Brothers Limited, St. Helens, England

Filed Feb. 2, 1977, Ser. No. 764,959
Claims priority, application United Kingdom, Feb. 5, 1976, 4601/76
Int. Cl.[2] C03B *18/02;* C03C *21/00*
U.S. Cl. 65—30 E 20 Claims

1. A process for modifying the surface of glass while the glass is at a temperature at which it is susceptible to surface modification by electrolytic migration of ions, comprising:

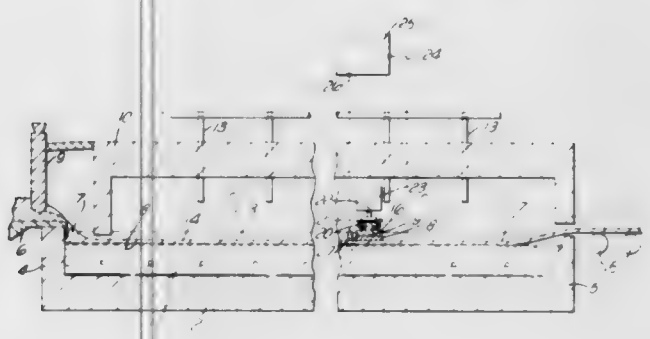
(a) maintaining a molten alloy body, comprising at least two metals which are to migrate into the glass in a predetermined ratio, in contact with the glass surface, at a location where the temperature is least 600° C, by means of a locating member having a locating face to which the molten body clings, which face comprises at least said two

metals in the same ratio in which said metals are to migrate into the glass from the molten body;

(b) electrolytically causing migration of ions of said at least two metals from the molten body into the glass in said predetermined ration by applying an electrical potential across the glass so as to produce an electric flux density of at least 270 coulombs per square meter of the glass surface; and

(c) replenishing the molten body by dissolving of said at least two metals into the molten body from said locating face.

20. A process for modifying the surface of glass while the glass is at a temperature at which it is susceptible to surface modification the migration of ions, comprising:



(a) maintaining a molten alloy body, comprising at least two metals which are to migrate into the glass in a predetermined ratio, in contact with the glass surface at a location where the temperature is at least 600° C by means of a locating member having a locating face to which the molten body clings, which face comprises at least said two metals in the same ratio in which said metals are to migrate into the glass from the molten body;

(b) regulating the concentration of oxygen in the molten body to cause migration of ions of said at least two metals from the molten body into the glass in said predetermined ratio; and

(c) replenishing the molten body by dissolving of said at least two metals into the molten body from said locating face.

4,086,074

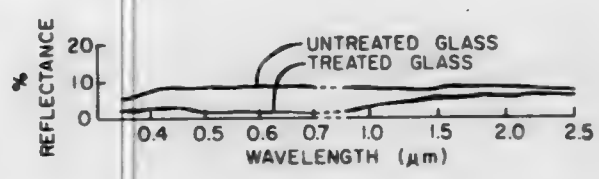
ANTIREFLECTIVE LAYERS ON PHASE SEPARATED GLASS

Michael Jay Minot, and Ugur Ortabasi, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 22, 1976, Ser. No. 651,416

Int. Cl.² C03C *15/00*

U.S. Cl. 65—31 **6 Claims**



1. A method of forming a porous antireflective surface layer on a glass article which comprises the steps of:

providing an article of phase-separable glass which, upon heat treatment, is capable of separating into at least two phases of different solubility,

heating the glass article to a temperature under the phase separation liquidus temperature, said temperature being sufficiently high and being applied for a sufficient duration of time to enhance phase separation in said glass; and thereafter

contacting said glass article with a treating solution for a time sufficient to leach from a surface layer of said article the most soluble of said phases, at least the least soluble of said phases remaining as a porous skeletonized layer which is less than 10,000A in thickness and which exhibits a gradient refractive index across the thickness of the larger.

4,086,075

METHOD OF MANUFACTURING AN ARTICLE CONTAINING AT LEAST ONE GLASS PART IN WHICH A METAL PART IS SEALED IN

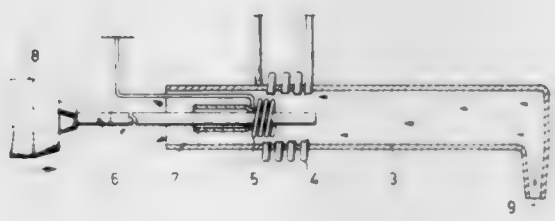
Tjepke Hendrik Ekkelboom, and Thomas Geeven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 594,029, Jul. 8, 1975, abandoned. This application Dec. 3, 1976, Ser. No. 747,349

Claims priority, application Netherlands, Jul. 12, 1974, 7409432

Int. Cl.² C03C *27/02*

U.S. Cl. 65—40 **7 Claims**



1. A method of manufacturing an article which includes at least one glass part in which a metal part is sealed which comprises: providing an elongated metal part; shaping a quantity of glass in the form of a tube which internally has about the same shape and cross-section as the metal part; slipping the glass tube onto the metal part and heating the resulting assembly by passing it through a high-frequency electric field, said heating step including providing only an open electrically conducting winding through which winding the assembly is passed, said heating step being performed in a non-oxidizing shielding gas.

4,086,076

TETRAHYDROFURANYL BROMOACETATES USED AS BIOCIDES

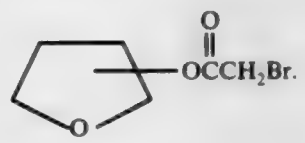
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 652,040, Jan. 26, 1976, abandoned, which is a division of Ser. No. 564,517, Apr. 2, 1975, Pat. No. 3,953,473. This application Mar. 31, 1977, Ser. No. 783,136

Int. Cl.² A01N *9/00, 9/28*

U.S. Cl. 71—67 **4 Claims**

1. The method of controlling bacteria, fungi and algae comprising applying to the habitat thereof a biocidally effective amount of a compound having the formula



4,086,077

COMBATING UNWANTED VEGETATION WITH 1,3,4-THIADIAZOLYLUREAS

William C. Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation of Ser. No. 29,671, Apr. 17, 1970, abandoned. This application Oct. 28, 1975, Ser. No. 626,587

Int. Cl.² A01N *9/12*

U.S. Cl. 71—90 **1 Claim**

1. The method of combating unwanted vegetation by applying to the locus of the vegetation an effective amount of 1,3-dimethyl-1-(5-tert.butyl-1,3,4-thiadiazol-2-yl)urea.

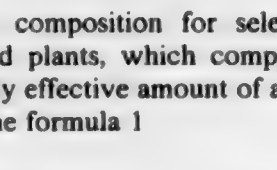
4,086,078

USE OF PYRIDYL PHTHALAMIC ACIDS AS PLANT GROWTH REGULANTS

Frederic G. Bollinger, and John J. D'Amico, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1976, Ser. No. 753,393
Int. Cl.[2] A01N *9/22*
U.S. Cl. 71—94 2 Claims

1. A method of regulating the growth of leguminous plants which comprises treating said plants with an effective non-lethal amount of a compound having the formula



wherein R is pyridyl or pyridyl substituted by halo or alkoxy having from one to four carbon atoms; R_1 is hydrogen, lower alkyl and agriculturally acceptable cations.

4,086,079

SULFIDES AND DERIVATIVES THEREOF AS ABSCISSION AGENTS

Geneva Gail Otten, Colerain Township, Hamilton County; Tom Conrad Rheinecker, Green Township, Hamilton County, and Ted Joe Logan, Colerain Township, Hamilton County, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 676,832, Apr. 14, 1976, abandoned. This application Jul. 30, 1976, Ser. No. 710,354
Int. Cl.[2] A01N *9/14*
U.S. Cl. 71—103 12 Claims

1. A method of inducing fruit abscission comprising applying to fruit bearing plants an effective amount of agent having the structural formula

RXR′

wherein R′ is selected from the group consisting of methyl and ethyl, wherein X is selected from the group consisting of sulfide, sulfoxide and sulfone; and R is alkyl or alkenyl having 10–12 carbon atoms when X is sulfide or sulfoxide and 8–14 carbon atoms when X is sulfone.

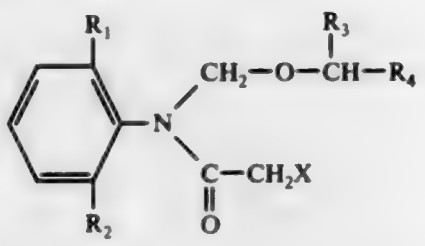
4,086,080

HALOGENO-ACETANILIDES AS HERBICIDES

Jean Claude Tournayre, Basel, and Christian Vogel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 284,203, Aug. 28, 1972, Pat. No. 4,025,554. This application Mar. 2, 1977, Ser. No. 773,589
Int. Cl.[2] A01N *9/20*
U.S. Cl. 71—118 14 Claims

1. A herbicidal composition for selectively combatting weeds in cultivated plants, which comprises as active substance a herbicidally effective amount of a substituted halogeno-acetanilide of the formula 1



(I)

wherein R_1 and R_2 each independently represents hydrogen or lower alkyl containing from 1 to 4 carbon atoms, R_3 represents hydrogen or the methyl group, R_4 represents cycloalkyl containing from 3 to 5 carbon atoms, and X represents chlorine or bromine, together with a suitable carrier therefor.

4,086,081

CONTROL OF SEDGES AND PERENNIAL GRASSY WEEDS WITH META-HALOSTYRENE DERIVATIVES

Keith C. Barrons, Holmes Beach, Fla.; Leonard L. Smith, Jr., Greenville, Miss., and Theodore W. Holmsen, Clayton, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 17, 1976, Ser. No. 751,631
Int. Cl.[2] A01N *9/32*
U.S. Cl. 71—126 14 Claims

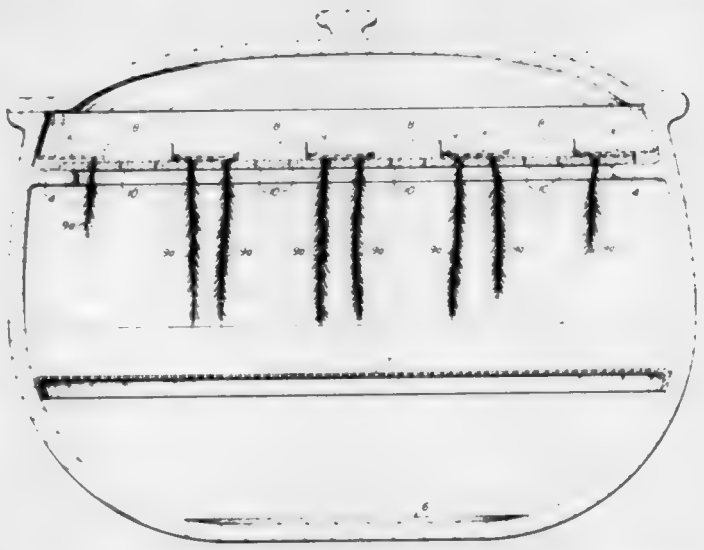
1. The method of preemergently controlling weeds selected from perennial grassy weeds and sedges in a field plot significantly infested therewith which comprises incorporating an α-(2,2,2-trichloroethyl)-meta-halostyrene selected from the group consisting of α-(2,2,2-trichloroethyl)-meta-chlorostyrene and α-(2,2,2-trichloroethyl)-meta-bromostyrene in the soil of said plot in a surface layer extending to a depth in the range of about ½ to about 6 inches and primarily above the underground stems and tubers of said perennial grassy weeds and sedges whereby emerging shoots of said weeds are intercepted by said halostyrene and in a herbicidally effective concentration within the layer in the range of about 0.25 to about 50 ppm.

4,086,082

COPPER CRYSTAL AND PROCESS

Shalom Mahalla, P.O. Box 11183, Phoenix, Ariz. 85017

Filed Apr. 16, 1976, Ser. No. 677,690
Int. Cl.[2] B22F *9/00*; C22B *15/12*
U.S. Cl. 75—.5 A 3 Claims



1. As a new article of manufacture, a crystal of copper which is

(a) macrocrystalline,
(b) unicrystalline,
(c) columnar,
(d) a single prime particle bounded by at least two sets of distinguishable (100) planes which are determined by the internal crystal structure, the crystal orientation being such that
(1) a (110) plane is perpendicular to the long axis of the crystal, and
(2) a (111) plane is perpendicular to the the smallest cross-section thereof,

said sets of planes defining a plurality of parallel, non-coplanar macroscopic facets, which microscopically are crystallographic step-growth surfaces.

2. A method for manufacturing crystals of a product metal, including the steps of:

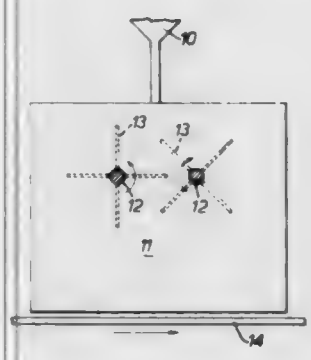
(a) providing an aqueous pregnant solution of a compound of said product metal in a crystallization zone;
(b) establishing and maintaining a concentration step-function of said product metal compound in said zone;

(c) contacting said solution with a reagent metal higher than said product metal in the EMF series, said reagent metal contacting said solution in the region of the lowest product metal compound concentration;
(d) continuously maintaining metal deposited
(e) removing the oxidized byproduct of the precipitation reaction from said solution;
the establishment and maintenance of said concentration step-function thereby inducing the formation of crystals of said product metal which are macrocrystalline, unicrystalline, and columnar.

4,086,083
RECOVERING MATERIAL

Anthony Dennis Michael, London; John Albert White, South Harrow, and Gerald Louis Griffin, Northolt, all of England, assignors to The Glacier Metal Company Limited, England

Filed Jan. 14, 1977, Ser. No. 759,567
Int. Cl.[2] C22B *25/06*
U.S. Cl. 75—64 **5 Claims**



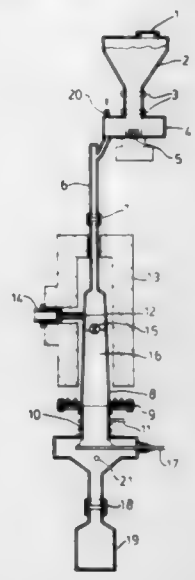
1. A method for recovering a tin-containing alloy layer from a multilayered material comprising in adjacent layers a steel layer, an intermediate aluminum foil layer and said tin-containing alloy layer which comprises;
heating said multilayered material to a temperature of at least the melting point of tin but below the melting point of said tin-containing alloy, for a time sufficient to allow the molten tin to penetrate said aluminum foil layer and to come into contact with said steel layer, but for insufficient time for aluminum and steel to alloy between said aluminum foil layer and said steel layer;
and thereafter subjecting said multilayered material in said heated state to repetitive mechanical shocks to effect separation of said steel layer from said aluminum foil layer.

4,086,084
REFINING OF METALS

Raymond Edward Oliver, Johannesburg, South Africa, and John Blunden Payne, London, England, assignors to Matthey Rustenburg Refiners (Pty) Ltd., Johannesburg, South Africa

Filed Mar. 18, 1975, Ser. No. 559,424
Claims priority, application United Kingdom, Mar. 21, 1974, 12597/74
Int. Cl.[2] C22B *11/00*
U.S. Cl. 75—118 R **11 Claims**

1. A process for refining a mineral concentrate which comprises a mixture of at least one precious metal selected from the group consisting of gold, ruthenium, rhodium, palladium, osmium, iridium and platinum; silver and a base metal which forms a volatile halide so as to separate the silver and base metal from the precious metal, said base metal being selected from the group consisting of Sb, Sn, Pb, Zn, Cu, Ni, Fe, As, Se and Te; said process comprising:
(a) contacting the mixture of base metal, silver and precious metal, any of which may be in metallic or chemically combined form, while said mixture is maintained in solid particulate form with a halogen-containing gas selected from the group consisting of hydrogen chloride, hydrogen bromide, chlorine and bromine at a temperature below the melting point of the mixture but which is sufficiently high for the base metal and silver to form their



halides and for the said halides substantially to volatilize from the said solid mixture, and
(b) removing the said volatilized halides from the solid precious metal which remains.

4,086,085
AUSTENITIC IRON ALLOYS

James A. McGurty, 101 J Colonial Dr., Reading, Pa. 19607

Continuation-in-part of Ser. No. 737,758, Nov. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 537,357, Dec. 30, 1974, abandoned. This application Apr. 18, 1977, Ser. No. 788,396
Int. Cl.[2] C22C *38/06*
U.S. Cl. 75—124 **8 Claims**

1. A high temperature yttrium-free, austenitic iron alloy which forms an aluminum oxide film which is protective of the base metal to 1700° F in air consisting essentially of 20.0 weight percent of nickel, 15.0 weight percent chromium, 4.5 weight percent of aluminum and the balance consisting essentially of iron.

4,086,086
CAST IRON

John Victor Dawson, Stratford-upon-Avon, England, and Michael John Lalich, Downington, Pa., assignors to British Cast Iron Research Association, Birmingham, England

Filed Feb. 3, 1977, Ser. No. 765,394
Claims priority, application United Kingdom, Feb. 10, 1976, 05083/76
Int. Cl.[2] C22C *33/08, 33/00*
U.S. Cl. 75—130 R **12 Claims**

1. A method of treating molten carbon-containing iron to produce a cast iron with a compacted graphite structure comprising adding to the molten iron in a single step a quantity of an alloy containing silicon, magnesium, titanium, calcium and a rare earth, the balance being iron.

4,086,087
PROCESS FOR THE PREPARATION OF POWDERED METAL PARTS

Lisa Marie Morris, 24608 Chancel, Mount Clemens, Mich. 48043

Filed Dec. 27, 1976, Ser. No. 754,185
Int. Cl.[2] B22F *3/00, 3/24*
U.S. Cl. 75—200 **12 Claims**

1. A process for producing powdered metal parts comprising the steps:

a. Preforming powdered metal parts by pressing and sintering into a desired shape;
b. Impregnating said preformed part with a liquid which is immiscible with a lubricant;
c. Contacting said impregnated metal part with a lubricant;
d. Sizing the lubricated powdered metal part; and
e. Washing said powdered metal part to remove said lubricant.

6. In a process for producing powdered metal parts wherein the powdered metal is preformed by pressing and sintering into a powdered metal part of a desired shape; contacted with a lubricant; and sized to a final shape, the improvement comprising:

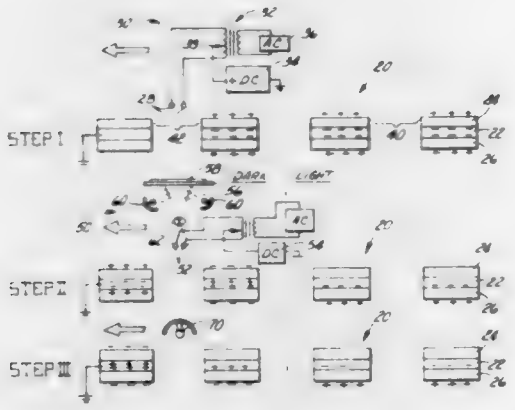
A. Prior to contacting said shaped powdered metal part with a lubricant, impregnating said part with a liquid immiscible with the lubricant; and
B. After final sizing of said part, washing said part to remove said lubricant.

4,086,088

IMAGING METHODS FOR USE WITH CHARGED PARTICLE MODULATOR DEVICE

Ival Lee Toepke, Newbury, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Mar. 25, 1976, Ser. No. 670,345
Int. Cl.[2] G03G *13/24*
U.S. Cl. 96—1 R **14 Claims**



1. The method of producing a charge distribution system corresponding to the graphic subject matter of a graphic original on a modulator structure formed by an electrically conductive screen sandwiched between a photoconductive top layer and an electrically insulating layer having a resistivity greater than 10^{15} ohm centimeters, said photoconductive layer when dark adapted having a blocking junction relative the conductive substrate blocking the passage of charge particles, comprising the steps of:

applying a uniform electrostatic charge of a first polarity to said photoconductive top layer;

applying the surface of said photoconductive top layer with DC charges of such a magnitude and oppositely poled to the charges of said first polarity simultaneous with the projection of a pattern of light and shadow produced from illuminating said graphic original producing dark and light exposed zones on said modulator rendering the photoconductive layer conductive in the light exposed zones and reversing the charges in the dark zones creating charge patterns on the photoconductive layer and on the insulating layer;

flood irradiation of the top photoconductive layer with electromagnetic radiation of the type to which the photoconductive layer is responsive;

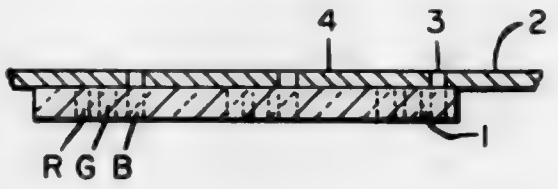
whereby said charge distribution system is created on the insulating layer comprised of charges of one polarity in the dark zones and oppositely poled charges in the light zones.

4,086,089

METHOD FOR PRODUCING TRI-COLOR SCREENS FOR TELEVISION PICTURE TUBES

Thomas Philip Seward, III, and Brent Merle Wedding, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 17, 1977, Ser. No. 778,383
Int. Cl.[2] G03C *5/04, 5/00, 7/00, 15/00*
U.S. Cl. 96—27 R **38 Claims**



1. A method for preparing a patterned, integrally-colored, transparent, tri-color glass screen for the face plate of a color television picture tube comprising the steps of:

(a) forming a glass body suitable as a face plate for a television picture tube or a glass body suitable for attachment to said face plate to form a composite body consisting essentially, in weight percent on the oxide basis as calculated from the batch, of about 10–20% Na_2O, 0.0005–0.3% Ag, 1–4% F, an amount of at least one halide selected from the group consisting of Cl, Br, and I at least sufficient to react stoichiometrically with the Ag, but not more than about 3%, and the remainder SiO_2;

(b) placing an appropriate electron shadow mask in contact with said glass body at a position to expose about one-third of the pattern area;

(c) subjecting said one-third of the pattern area to high energy or actinic radiation for a period of time sufficient to develop a latent image therein leading to the production of a first integral color therein selected from the group of red, green, and blue;

(d) moving the shadow mask and/or the glass body a distance equal to about one-third of the hole separation in said shadow mask;

(e) subjecting a second one-third of the pattern area to high energy or actinic radiation for a period of time sufficient to develop a latent image therein leading to the production of a second integral color therein selected from the group of red, green, and blue; which is different from the color produced by step (c)

(f) moving the shadow mask and/or the glass body another distance equal to about one-third of the hole separation in said shadow mask;

(g) subjecting a third one-third of the pattern area to high energy or actinic radiation for a period of time sufficient to develop a latent image therein leading to the production of a third integral color therein selected from the group of red, green, and blue; which is different from the colors produced by steps (c) and (e)

(h) heating said glass article to a temperature between about the transformation range of the glass and the softening point thereof for a sufficient length of time to cause nucleation and growth of microcrystals of alkali metal fluoride containing at least one silver halide selected from the group consisting of silver chloride, silver bromide, and silver iodide in the areas of said latent image;

(i) subjecting at least said previously-exposed portions of said glass body to high energy or actinic radiation while at least said portions are at a temperature between about 200°–410° C. for a sufficient length of time to cause metallic silver to be deposited as discrete colloidal particles less than about 200A in the smallest dimension, and/or deposited within said microcrystals, the silver-containing part of the microcrystal being less than about 200A in the smallest dimension, and/or deposited on the surface of said microcrystals, the portion of the microcrystal coated with silver being less than about 200A in the smallest dimension, said

microcrystals having a concentration of at least 0.005% by volume and causing the integral red, green, and blue coloration; and then

(j) cooling said glass body to ambient temperature.

23. A method for preparing a patterned, integrally-colored, transparent, tri-color glass screen for the face plate of a color television picture tube comprising the steps of:

(a) forming a glass body suitable as a face plate for a television picture tube or a glass body suitable for attachment to said face plate to form a composite body consisting essentially, in weight percent on the oxide basis as calculated from the batch, of about 10–20% Na_2O, 0.0005–0.3% Ag, 1–4% F, an amount of at least one halide selected from the group consisting of Cl, Br, and I at least sufficient to react stoichiometrically with the Ag, but not more than about 3%, and the remainder SiO_2;

(b) placing an electron shadow mask at an appropriate uniform distance from said glass body;

(c) directing collimated high energy or actinic radiation through said mask toward said glass body at the proper angle to expose about one-third of the pattern area for a period of time sufficient to develop a latent image therein leading to the production of a first integral color therein selected from the group of red, green, and blue;

(d) directing collimated high energy or actinic radiation through said mask toward said glass body at the proper angle to expose a second one-third of the pattern area for a period of time sufficient to develop a latent image therein leading to the production of a second integral color therein selected from the group of red, green, and blue; which is different from the color produced by step (c)

(e) directing collimated high energy or actinic radiation through said mask toward said glass body at the proper angle to expose a third one-third of the pattern area for a period of time sufficient to develop a latent image therein leading to the production of a third integral color therein selected from the group of red, green, and blue; which is different from that colors produced by steps (c) and (d)

(f) heating said glass body to a temperature between about the transformation range of the glass and the softening point thereof for a sufficient length of time to cause nucleation and growth of microcrystals of alkali metal fluoride containing at least one silver halide selected from the group consisting of silver chloride, silver bromide, and silver iodide in the areas of said latent image; (g) subjecting at least said previously-exposed portion of said glass body to high energy or actinic radiation;

(h) heating said glass body to a temperature between about the transformation range of the glass and the softening point thereof for a sufficient length of time to cause metallic silver to be deposited as discrete colloidal particles less than 200A in the smallest dimension, and/or deposited within said microcrystals, the silver-containing part of the microcrystal being less than about 200A in the smallest dimension, and/or deposited on the surface of said microcrystals, the portion of the microcrystal coated with silver being less than about 200A in the smallest dimension, said microcrystals having a concentration of at least 0.005% by volume and causing the integral red, green, and blue coloration, and then

(i) cooling said glass body to ambient temperature.

31. A method for preparing a patterned, integrally-colored, transparent, tri-color glass screen for the face plate of a color television picture tube, wherein said face plate has an overall green background, comprising the steps of:

(a) forming a glass body suitable as a face plate for a television picture tube or a glass body suitable for attachment to said face plate to form a composite body consisting essentially, in weight percent on the oxide basis as calculated from the batch, of about 10–20% Na_2O, 0.0005–0.3% Ag, 1–4% F, an amount of at least one halide selected from the group consisting of Cl, Br, and I at least sufficient to react stoichiometrically with the Ag, but not more than about 3%, and the remainder SiO_2;

(b) subjecting said glass body to high energy or actinic radiation for a period of time sufficient to develop a latent image therein leading to the production of an integral green color therein;

(c) placing an electron shadow mask at an appropriate uniform distance from said glass body;

(d) directing collimated high energy or actinic radiation through said mask toward said glass body at the proper angle to expose about one-third of the pattern area for a period of time sufficient to develop a latent image therein leading to the production of a first integral color therein selected from the group of red and blue;

(e) directing collimated high energy or actinic radiation through said mask toward said glass body at the proper angle to expose a second one-third of the pattern area for a period of time sufficient to develop a latent image therein leading to the production of a second integral color therein selected from the group of red and blue; which is different from the color produced by step (d)

(f) heating said glass body to a temperature between about the transformation range of the glass and the softening point thereof for a sufficient length of time to cause nucleation and growth of microcrystals of alkali metal fluoride containing at least one silver halide selected from the group consisting of silver chloride, silver bromide, and silver iodide in the areas of said latent image;

(g) subjecting said glass body to high energy or actinic radiation;

(h) heating said glass body to a temperature between about the transformation range of the glass and the softening point thereof for a sufficient length of time to cause metallic silver to be deposited as discrete colloidal particles less than 200A in the smallest dimension, and/or deposited within said microcrystals, the silver-containing part of the microcrystal being less than about 200A in the smallest dimension, and/or deposited on the surface of said microcrystals, the portion of the microcrystal coated with silver being less than about 200A in the smallest dimension, said microcrystals having a concentration of at least 0.005% by volume and causing the integral red, green, and blue coloration; and then

(i) cooling said glass body to ambient temperature.

4,086,090
FORMATION OF PATTERN USING ACRYLAMIDE-DIACETONEACRYLAMIDE COPOLYMER

Takahiro Kohashi; Motoo Akagi; Yoichi Oba, all of Hachioji; Saburo Nonogaki, Tokyo; Makoto Tanaka, Koganei; Tadao Kaneko, Tokyo, and Yoshifumi Tomita, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 484,321, Jun. 28, 1974, abandoned. This application Sep. 22, 1975, Ser. No. 615,529
Claims priority, application Japan, Jul. 25, 1973, 48-83172
Int. Cl.[2] G03C *5/00*
U.S. Cl. 96—35.1 **25 Claims**

1. A process for forming a pattern, which comprises the steps of:

a. preparing a photoresist layer consisting essentially of an acrylamide-diacetoneacrylamide copolymer and a water-soluble aromatic bisazide compound on a surface for the pattern, said layer having the reciprocity law failure property,

b. applying light to said photoresist layer by passing the light through a mask having said pattern to harden the photoresist layer at a surface area substantially equal to or smaller than that of apertures of said mask through which beams pass; said light being applied in the presence of an oxygen-containing gas, and with Schwartzschild's constant p being in the range of greater than 0 and smaller than 0.76, and

c. developing the light-applied photoresist layer to form the pattern having a surface area substantially equal to or smaller than that of apertures of said mask through which beams pass.

4,086,091

METHOD OF APPLYING AND CURING EPOXY COATING COMPOSITIONS USING DICARBONYL CHELATE OF GROUP IIIA-VA ELEMENT AND UV IRRADIATION

James A. Cella, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

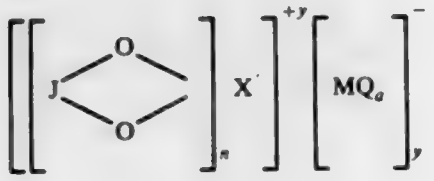
Filed May 20, 1977, Ser. No. 798,784
Int. Cl.[2] B05D *3/06*; C08G *59/70*
U.S. Cl. 96—36.2 **16 Claims**

1. A method for coating a substrate which comprises

(1) applying onto the substrate a composition comprising

(A) an epoxy resin polymerizable to a high molecular weight state selected from epoxy monomer, epoxy prepolymer, oxirane containing organic polymer and mixtures thereof, and

(B) an effective amount of a 1,3-dicarbonyl chelate of the formula,



where X is a main row element selected from Group IIIa, IVa and Va, J is a divalent organo radical having 3 to 42 carbon atoms, M is an element selected from Sb, As, P and B, and Cl, Q is halogen or oxygen, *n* is an integer equal to 2 or 3, y is an integer equal to 1 or 2, and *a* is an integer equal to 4 to 6 or the valence of M,

(2) subjecting the resulting treated substrate of (1) to ultraviolet radiation until a tack-free cured coating is obtained on said substrate.

4,086,092

PROCESS FOR MAKING PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATES INVOLVING SEQUENTIALLY COATING WITH POTASSIUM ZIRCONIUM FLUORIDE AND SODIUM SILICATE

Eugene Golda, Monsey, and Alan Leonard Wilkes, Brewster, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,216
Int. Cl.[2] G03C *1/94*
U.S. Cl. 96—86 R **9 Claims**

1. A method for preparing lithographic printing plates which comprises first coating at least one surface of a metal sheet substrate with an aqueous solution of potassium zirconium fluoride, subsequently treating the coated substrate with an aqueous solution of sodium silicate and then applying to the thus treated substrate a lithographically suitable photosensitive composition.

7. The method of claim 1 wherein the photosensitive composition contains a photosensitizing agent selected from the group consisting of aromatic diazo compounds, azidopyrenes, benzoquinone diazides, naphthoquinone diazides, polyacetals which depolymerize under ultraviolet radiation, polymonochloroacetaldehyde, polypropionaldehyde, poly-n-butyraldehyde, poly-cyano-acetaldehyde, poly-B-cyanopripionaldehyde, poly-cyano-pentaldehyde, polycycnovaleraldehyde, poly-n-butyraldehyde, poly-isobutyraldehyde, polyvaleraldehyde and polyheptaldehyde.

4,086,093

DRY PLANOGRAPHIC PRINTING PLATE

Yuh Ezumi, Kyoto; Masaharu Kobayashi; Takashi Kubota, and Yoichi Shimokawa, all of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 514,063, Oct. 11, 1974, abandoned.
This application Aug. 11, 1976, Ser. No. 713,576
Int. Cl.[2] G03G *1/68*
U.S. Cl. 96—86 P **14 Claims**

1. A negative acting presensitized dry planographic printing place comprising:

(a) a flexible base layer,

(b) a sparsely cross-linked linear diorganopolysiloxane layer overlying said base layer, and

(c) a photoadhesive layer overlying said diorganopolysiloxane layer, and in direct contact therewith comprising at least one photopolymerizable unsaturated compound having a boiling point above 100° C and a photoinitiator wherein at least one said photopolymerizable compound has at least one hydroxyl group and at least one acryloyl group or one methacryloyl group in the same molecule and the total concentration of the hydroxyl groups and the total concentration of the acryloyl or methacryloyl groups in the photoadhesive layer are each greater than 0.1 mmol/g.

14. A negative acting presensitized dry planographic printing plate comprising:

(a) a flexible base layer of polyethylene terephthalate,

(b) a halation prevention layer on said base layer and comprising a styrene-acrylic acid copolymer and a photoinitiator,

(c) a sparsely cross-linked linear diorganopolysiloxane layer overlying said styrene-acrylic acid copolymer layer,

(d) a photoadhesive layer overlying said diorganosiloxane layer consisting of a composition comprising

(1) an ethylacrylate-methylmethacrylate-acrylic acid copolymer,

(2) the addition product of 4 mols of glycidyl methacrylate with 1 mol xylylenediamine and ethyleneglycol diacrylate, said addition product containing hydroxyl groups and acryloyl or methacryloyl groups and

(3) a photoinitiator; the total concentration of the hydroxyl group and the total concentration of the acryloyl or methacryloyl groups in the photoadhesive layer each being greater than 0.1 mmol/g., and then,

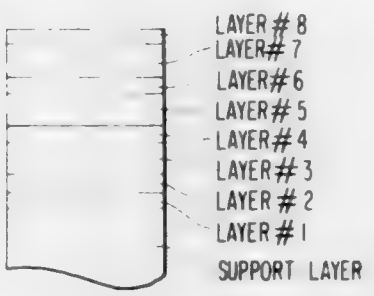
(e) a layer of diorganopolysiloxane capable of transmitting light having a wavelength from 300 to 400 mμ.

4,086,094

PHOTOGRAPHIC COUPLERS WITH N-HETEROCYCLIC DEVELOPMENT INHIBITING COUPLING-OFF GROUP

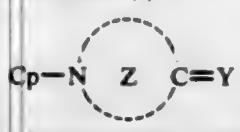
Keisuke Shiba; Takeshi Hirose; Kozo Inouye, and Akio Okumura, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 19, 1975, Ser. No. 588,556
Claims priority, application Japan, Jun. 20, 1974, 49-70669
Int. Cl.[2] G03C *1/40, 7/00, 5/54, 1/48*
U.S. Cl. 96—100 R **6 Claims**



1. In a light-sensitive silver halide photographic material

comprising a support and at least one silver halide emulsion layer the improvement which comprises at least one hydrophilic colloid layer which contains a color-forming coupler represented by the formula (I)



(I)

wherein Cp is a coupler moiety capable of coupling with an oxidation product of a color developing agent; Y is sulfur, selenium or tellurium; and Z is a nitrogen-containing moiety, which is incapable of exhibiting tautomerism prior to release from the coupler moiety and is released on coupling with the oxidation product of the color developing agent and a nitrogen atom of which is bonded to the coupling position of the Cp moiety, said nitrogen atom also being bonded to the C=Y moiety by a single bond.

4,086,095

COATING COMPOSITION

Gordon D. McLeod, Lenawee County, Mich., assignor to Mobile Oil Corporation, New York, N.Y.

and a continuation-in-part of Ser. No. 409,067, , and Ser. No. 284,099, , and Ser. No. 283,964, , and Ser. No. 107,578, , and Ser. No. 75,306, , said Ser. No. 409,067, and a continuation-in-part of Ser. No. 283,964, is a continuation-in-part of Ser. No. 107,578, Jan. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 75,306, Sep. 24, 1970, abandoned, said Ser. No. 284,099, is a continuation-in-part of Ser. No. 107,578, , and Ser. No. 75,306,. This application Jan. 21, 1975, Ser. No. 542,837

Int. Cl.[2] C09D *5/10*

U.S. Cl. 106—1.17 **16 Claims**

1. A coating composition comprising:

metallic zinc in particulate form;

a chromate composition selected from strontium chromate, calcium chromate, barium chromate lead chromate plus lead sulfate and a mixture of zinc chromate and zinc oxide or zinc hydroxide;

a polyol silicate; and

a liquid organic vehicle,

said coating composition containing between about 4% and about 95% by weight of said metallic zinc, between about 1% and about 80% by weight of said chromate composition, and between about 1.5% and about 70% by weight of said polyol silicate, said weight percentages being based on the coating composition without said liquid organic vehicle,

said polyol silicate being a solvent-soluble, polyol silicate ester-exchange reaction product of:

(1) an organic silicate consisting essentially of ortho or poly silicates having ester-exchangeable groups of 1 to 6 carbon atoms selected from the group consisting of alkyl, hydroxyalkyl, alkoxyalkyl, and hydroxyalkoxyalkyl, siloxanes thereof, and their mixtures; and

(2) a polyol which is ester-exchangeable with (1),

said polyol being selected from the group consisting of an aliphatic polyol and a mixture of a major amount of said aliphatic polyol and a minor amount of polyvinyl butyral, and

said polyol silicate reaction product being made by reacting (1) and (2) in amounts providing a ratio of about 0.15 to about 1.8 moles of hydroxyl groups of (2) per mole of ester-exchangeable group of (1).

4,086,096

COATING COMPOSITION

Gordon D. McLeod, Lenawee County, Mich., assignor to Mobile Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 542,837, Jan. 21, 1975, and Ser. No. 409,067, , and Ser. No. 284,099, , and Ser. No. 283,964, , and Ser. No. 107,578, , and Ser. No. 75,306, , said Ser. No. 409,067, is a continuation-in-part of Ser. No. 283,964, Aug. 28, 1972, Pat. No. 3,917,648, which is a continuation-in-part of Ser. No. 107,578, Jan. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 75,306, Sep. 24, 1970, abandoned, said Ser. No. 284,099, is a continuation-in-part of Ser. No. 107,578, , and Ser. No. 75,306,. This application Mar. 19, 1975, Ser. No. 559,750

Int. Cl.[2] C09D *5/10*

U.S. Cl. 106—1.17 **16 Claims**

1. A coating composition comprising:

metallic zinc in particulate form;

a corrosion inhibitive composition selected from the group consisting of a mixture of strontium chromate and zinc chloride, a mixture of strontium chromate, zinc chloride, and chromium oxide green; barium metaborate, zinc phosphate, calcium borosilicate, and a mixture of calcium carbonate and red lead;

a polyol silicate; and

a liquid organic vehicle, said coating composition containing between about 4 and about 95% by weight of said metallic zinc, between about 1% and about 80% by weight of said corrosion inhibitive composition and between about 1.5% and about 70% by weight of said polyol silicate, said weight percentages being based on the coating composition without said liquid organic vehicle,

said polyol silicate being a solvent-soluble, polyol silicate ester-exchange reaction product of:

(1) an organic silicate consisting essentially of ortho or poly silicates having ester-exchangeable groups of 1 to 6 carbon atoms selected from the group consisting of alkyl, hydroxyalkyl, alkoxyalkyl, and hydroxyalkoxyalkyl, siloxanes thereof, and their mixtures; and

(2) a polyol which is ester-exchangeable with (1), said polyol being selected from the group consisting of an aliphatic polyol and a mixture of a major amount of said aliphatic polyol and a minor amount of polyvinyl butyral, and said polyol silicate reaction product being made by reacting (1) and (2) in amounts providing about 0.15 to about 1.8 moles of hydroxyl groups of (2) per mole of ester exchangeable group of (1).

4,086,097

METHOD OF PREPARING INSULATING REFRACTORY PRODUCTS AND THE PRODUCT THEREOF

Henri Carbonnel, Antony, France, assignor to Groupement pour les Activites Atomiques et Avancees "GAAA" S.A., Le Plessis Robinson, France

Filed Dec. 24, 1975, Ser. No. 644,009

Claims priority, application France, Jan. 15, 1975, 75 01178; Nov. 21, 1975, 75 35690

Int. Cl.[2] C04B *7/32*

U.S. Cl. 106—64 **2 Claims**

1. Method for preparing an insulating isotropic refractory product resistant to thermal shock and resistant to the corrosive action of molten metal, having high porosity, having a high coefficient of thermal conductivity of the order of 0.1 K cal/m/° C/hour, a Young's modulus of the order of 20,000 kg/squ. cm, a high tensile strength of the order of 12 kg/squ. cm, constituted by refractory fibers dispersed in a cement, characterized in that said product is produced by the following sequential process operations:

dry dispersing a mixture consiting of calcium aluminate cement mix and refractory fibers composed of less than 15% silica content, the percentage of fibers in relation to the total weight of the dry mixture being at least equal to 60%,

forming concrete by adding water to the dry mixture and placing in a mold,

stripping the concrete from the mold after the beginning of the setting,

drying the concrete outside the mold at a temperature increase of 10° per hour up to 300° C with a prolonged heat stage of several hours at 100° and 300° C,

increasing the temperature of drying with the same 10° C per hour rate from 300° to 800° C, and

baking the concrete at 800° C in air to form a chemical bonding between the refractory fibers and the calcium aluminate of the cement.

2. Insulating isotropic refractory product having high porosity according to claim 1.

4,086,098

COMPOSITION OF MATTER COMPRISING CELLULAR AGGREGATE DISTRIBUTED IN A BINDER

Daniel Le Ruyet, Plaisir, France, and Daniel De Vos, Charleroi, Belgium, assignors to BFG Glassgroup, Paris, France

Filed Nov. 10, 1976, Ser. No. 740,675

Claims priority, application United Kingdom, Nov. 14, 1975, 47111/75; Sep. 24, 1976, 47111/76

Int. Cl.² C04B *7/02*

U.S. Cl. 106—97 **32 Claims**

1. A composition of matter comprising a cellular aggregate distributed in a hardenable or hardened binder or matrix material, characterised in that the aggregate comprises (1) a fine fraction of cellular glass beads of mesh sizes up to 3 mm, individually containing one or more interior cells with a maximum cross-sectional dimension at least 0.3 times the mesh size of the bead and having a non-cellular or micro-cellular surface skin, and (2) a fraction of coarse cellular glass beads of mesh sizes above 3 mm, individually having a multicellular core with a cell population per unit volume substantially higher than the population of said interior cells in said fine fraction beads and likewise having a non-cellular or micro-cellular surface skin, the ratio between the bulk volumes of the coarse fraction beads and the fine fraction beads being between 6:1 and 1:1, the volume of the combined fine and coarse fractions of beads being at least 50% of the dry volume of the composition.

4,086,099

METHOD OF PREPARING PLASTER

François Prudhon, Saint-Auban; Jean Fantino, Condrieu, and François Mounier, Champagne Au Mont D'Or, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jun. 30, 1975, Ser. No. 591,333

Claims priority, application France, Jun. 28, 1974, 74 22621

Int. Cl.² C04B *11/00*

U.S. Cl. 106—109 **9 Claims**

1. A process for preparing a plaster from gypsum comprising continuously flowing a fluid stream containing the gypsum in particulate or paste form axially through a cylindrical chamber for issuance as a linear stream therefrom into a vessel, continuously introducing a gaseous stream at elevated temperature into said chamber for continuous symmetrical flow in helical paths therethrough deflecting the helical paths of the gaseous stream into the linear stream issuing from the chamber to engage the linear stream which becomes entrained for continued travel as separated particles with the gaseous stream for removal of liquid and reaction to convert the gypsum component to plaster, and controlling the temperature of the hot gases for reaction at a temperature within the range of 160–190° C whereby a plaster is produced which is high in semi-hydrate content.

4,086,100

RUTILE-CONTAINING LUSTROUS PIGMENTS

Reiner Esselborn, and Horst Bernhard, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Continuation of Ser. No. 616,843, Sep. 25, 1975. This application Dec. 27, 1976, Ser. No. 754,698

Claims priority, application Germany, May 22, 1975, 2522572

Int. Cl.² C09C *3/06, 1/36*

U.S. Cl. 106—291 **16 Claims**

1. In a lustrous mica flake pigment wherein the mica flakes are coated with a plurality of metal oxide layers consisting essentially of alternating layers of TiO_2 and SnO_2 in which each rutile layer is roentogenographically free from the anatase form, the improvement wherein the metal oxide layers comprise the sequence rutile/SnO_2/rutile and the innermost layer is rutile and wherein the thickness of the innermost rutile layer is a maximum of about 25 nm.

4,086,101

PHOTOVOLTAIC CELLS

John Francis Jordan, and Curtis Magill Lampkin, both of El Paso, Tex., assignors to Photon Power, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 508,570, Sep. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 431,705, Jan. 8, 1974, Pat. No. 3,880,633. This application Nov. 14, 1975, Ser. No. 631,815

Int. Cl.² H01M *1/00;* B05D *5/12*

U.S. Cl. 136—89 CD **56 Claims**

1. A method of making a photovoltaic cell of the type having an insulating substrate, a first conductive layer, a second layer comprised of CdS, and a third layer forming a heterojunction with said second layer, comprising the step of forming at least a portion of said CdS layer with a composition comprising a cadmium salt, a sulphur containing compound, and an aluminum containing compound, the aluminum content of the composition being at least 10 molar percent of the total metal content of the composition.

4,086,102

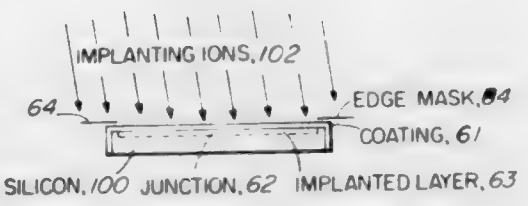
INEXPENSIVE SOLAR CELL AND METHOD THEREFOR

William J. King, 9 Putnam Rd., Reading, Mass. 01867

Filed Dec. 13, 1976, Ser. No. 749,776

Int. Cl.² H01L *31/06, 7/00*

U.S. Cl. 136—89 CC **16 Claims**



1. A solar cell comprising a semi-conductor device including a rectifying junction and having a front surface, electrically conductive members in contact with said surface, and a layer of hermetic material hermetically bonded to said front surface and to at least as much of the edge surfaces as is necessary to cover said junction, thereby protecting said junction, said material having an index of refraction and a thickness approximating theoretically calculated values for perfect antireflective [(AR)] coating.

5. Method of making a solar cell comprising the following steps in the order given:

(a) applying electrically conductive contacts on the front surface of a semiconductive substrate of given conductivity type;

(b) putting down in hermetic form upon said surface a thin layer of combined antireflective and protective material,

said layer having an index of refraction and thickness approximating theoretically calculated values for perfect antireflective coating;

(c) implanting ions of an impurity element of opposite conductivity type through said layer and into said surface of the substrate so as to produce a P-N junction therein;

(d) heating the substrate with its contacts at least to a temperature high enough so that radiation damage due to step (c) is substantially annealed and said contacts alloy with the substrate.

15. Method of making contacts to a semiconductor junction comprising applying masked aluminum upon one surface of an N-type substrate, implanting P-forming ions into said surface, putting down in hermetic form upon said surface a thin layer of Al_2O_3, and heat treating, the assembly.

16. Method of making a solar cell comprising applying conductive contacts on one surface of an *n*-type silicon substrate, coating said surface with a film of aluminum sufficiently thin to permit adequate light penetration, putting down in hermetic form upon said coating a thin layer of Al_2O_3, and heat treating the total structure at a temperature high enough to alloy said aluminum into said silicon substrate.

4,086,103

ACCELERATOR FOR PHOSPHATING SOLUTIONS

Kevin James Woods, 66 Heathmont Road, Heathmont, Victoria, Australia

Filed Aug. 3, 1976, Ser. No. 711,232
Claims priority, application Australia, Aug. 13, 1975, PC2786
Int. Cl.² C23F *7/08*
U.S. Cl. 148—6.15 R **6 Claims**

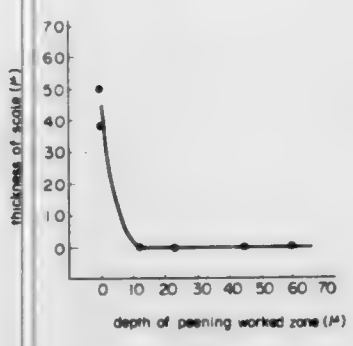
1. A method for accelerating the formation of a zinc or manganese phosphate coating on a metal substrate, which method comprises dissolving gaseous nitrogen peroxide in an acidic zinc or manganese phosphate coating solution and contacting the metal substrate with the solution so produced.

4,086,104

METHOD OF PREVENTING OXIDATION OF AUSTENITIC STAINLESS STEEL MATERIAL IN HIGH TEMPERATURE STEAM

Kazuhisa Kinoshita, Yokohama, and Naoki Masamune, Kawasaki, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1976, Ser. No. 704,105
Claims priority, application Japan, Jul. 14, 1975, 50-85261
Int. Cl.² C21D *7/06*
U.S. Cl. 148—12 E **6 Claims**



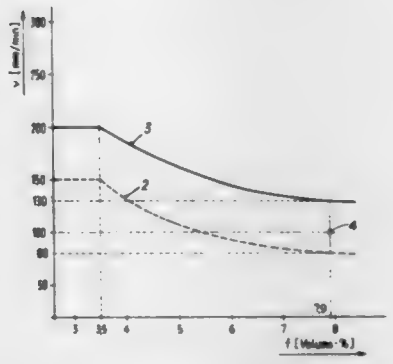
1. A method of preventing scale formation by surface oxidation of stabilized austenitic stainless steel material in high temperature dry steam, comprising subjecting the surface of a stabilized austenitic stainless steel material which will be contacted with high temperature dry steam to shot peening after the final heat treatment operation in the manufacturing process of said material or after the hot rolling of said material when said final heat treatment operation is eliminated by a hot finishing operation, the now, shot-peened stabilized austentitic stainless steel being usable in an atmosphere of high temperature dry steam and being substantially free from formation of scale.

4,086,105

METHOD OF PRODUCING FINE-GRAIN SHEET OR FINE-GRAIN PLATE OF AUSTENITIC STEELS

Max Mayrhofer, and Walter Taschner, both of Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Feb. 1, 1977, Ser. No. 764,552
Claims priority, application Austria, Feb. 18, 1976, 1141/76
Int. Cl.² C21D *7/13*
U.S. Cl. 148—12 R **8 Claims**



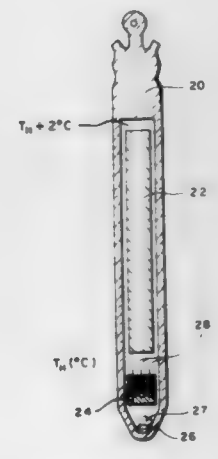
1. In a method of producing fine-grain sheet or fine-grain plate of austenitic steels, in particular fine-grain plate having a thickness exceeding 50 mm, by hot rolling rolling stock in a number of passes, the improvement which is characterised in that the mean velocity of the reduction in thickness (v in mm/min) achieved in a plurality of subsequent passes in dependence upon the ferrite content (f in %) of the steels, is chosen in a manner that up to a ferrite content of 3.5% the mean velocity of the reduction in thickness is more than 150 mm/min and at a ferrite content of more than 3.5% the mean velocity of the reduction in thickness is above a value given by the relationship $v = 3.8 f^2 - 60 f + 315$, the deformation carried out in this manner amounting to at least 30%.

4,086,106

HALOGEN-DOPED HG,CD,TE

Eric Shanks Johnson, and Joseph Lawrence Schmit, both of Minnetonka, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 6, 1977, Ser. No. 757,271
Int. Cl.² H01L *31/00*
U.S. Cl. 148—33 **16 Claims**

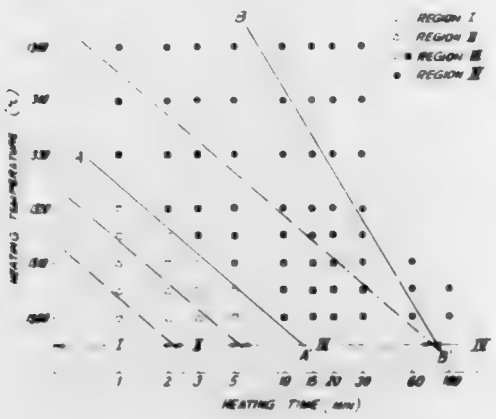


1. Mercury cadmium telluride having a quantity of a material comprising a halogen dispersed therein.

4,086,107
HEAT TREATMENT PROCESS OF HIGH-CARBON CHROMIUM-NICKEL HEAT-RESISTANT STAINLESS STEELS

Mitsuru Tanino, Tokyo; Hajime Komatsu, Kawasaki, and Susumu Takemura, Hikari, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 578,268, May 16, 1975, abandoned. This application Feb. 2, 1977, Ser. No. 764,846
Claims priority, application Japan, May 22, 1974, 49-56634
Int. Cl.[2] C21D *4/00*
U.S. Cl. 148—136 **2 Claims**

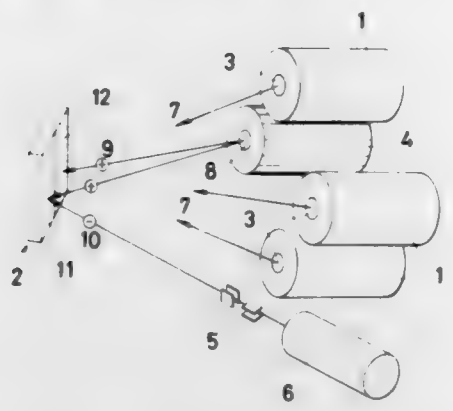


1. A heat treatment process for high-carbon chromium-nickel heat-resistant stainless steels to improve the creep rupture strength in a temperature range over about 800° C particularly at 1000° C, which comprises heating high-carbon chromium-nickel heat-resistant stainless steels consisting essentially of 0.2 – 1.5% C, 15 – 40% Cr, 10 – 50% Ni, Si not more than 5%, Mn not more than 15%, and the remainder being Fe and impurities for 1 to 60 minutes in a temperature range from 1300° C to 1350° C and then quenching the said steel at cooling rates higher than 200° C/min. in order to produce the eutectic carbide structure consisted of the matrix metal and carbide phase in which M_7C_3-type carbide is contained not less than 25% by weight of the total weight of carbides, that are present in the said eutectic carbide structure, at grain boundary triple points, along grain boundaries, and within grains.

4,086,108
SELECTIVE DOPING CRYSTAL GROWTH METHOD

Shunichi Gonda, Higashi-Murayama, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 28, 1977, Ser. No. 781,889
Claims priority, application Japan, Jun. 24, 1976, 51-73868
Int. Cl.[2] H01L *21/203, 21/363*
U.S. Cl. 148—175 **2 Claims**

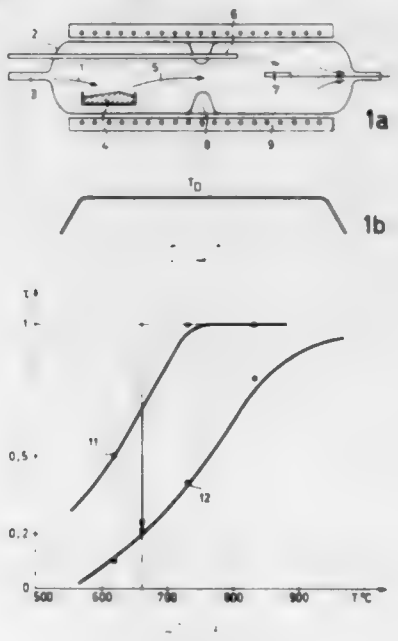


1. A selective doping crystal growth method comprising the steps of irradiating uniformly a surface of a substrate with molecular beams constituting of constituent elements of a crystal and ion beams constituting of atoms and/or molecules as dopant and simultaneously irradiating specific regions of said surface where the doping is unnecessary with electron beams to neutralize said ion beam directed to said regions with said electron beam.

4,086,109
METHOD FOR THE EPITAXIAL GROWTH OF III-V COMPOUNDS AT HOMOGENEOUS LOW TEMPERATURE UTILIZING A SINGLE FLAT TEMPERATURE ZONE

Jean-Philippe Hallais, Ablon sur Seine, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1977, Ser. No. 774,524
Claims priority, application France, Mar. 10, 1976, 76 06832
Int. Cl.[2] H01L *21/205, 29/20*
U.S. Cl. 148—175 **7 Claims**



1. A method for the epitaxial deposition of an AIII-BV compound on a monocrystalline substrate from the vapor phase comprising: in a single flat temperature zone, forming as a first gaseous phase a hydrogen free mixture of a halide of a BV element and a neutral gas, reacting said first gaseous phase with an AIII element in the liquid phase so as to form a second gaseous phase, said first and second gaseous phases being formed remote from said substrate, and then mixing said second gaseous phase with hydrogen in the immediate vicinity of said substrate to thereby deposit and epitaxial layer of said AIII-BV compound on said substrate.

4,086,110
PROPELLANT MADE WITH COCRYSTALS OF CYCLOTETRAMETHYLENETETRANITRAMINE AND AMMONIUM PERCHLORATE

Michael L. Levinthal, Brigham City, Utah, assignor to Thiokol Corporation, Newtown, Pa.

Filed Nov. 22, 1976, Ser. No. 744,075
Int. Cl.[2] C06B *45/10*
U.S. Cl. 149—19.4 **2 Claims**

1. A solid propellant for rockets, comprising the following, cured composition in parts by weight:

Cocrystals of cyclotetramethylenetetranitramine and ammonium perchlorate	40 – 80 parts
Aluminum powder	4 – 24 parts
Organic elastomer selected from polyurethane, carboxyl-terminated polybutadiene, and isophorone diisocyanate (molecular weights of about 500 – 6,000)	15 – 40 parts.

4,086,111
WOOD SPLITTER

Max L. Corey, P.O. Box 384, Silverdale, Wash. 98383

Filed Sep. 13, 1976, Ser. No. 722,383
Int. Cl.[2] B27L *7/00*
U.S. Cl. 144—193 A 18 Claims

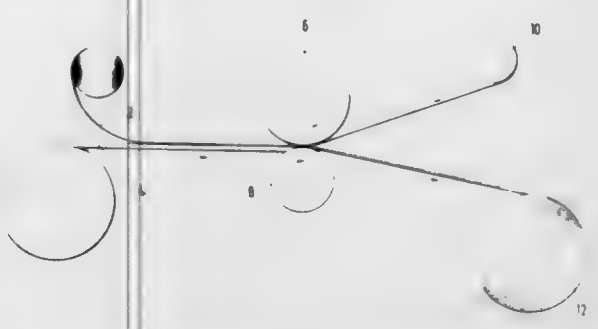


1. A wood splitter comprising:
a. a column having a first and second end;
b. a blade slidably attached to the column having its edge directed toward the second end of the column;
c. a pusher member attached to the second end of the column having a portion thereof movable along the column toward the blade edge;
d. means for moving the blade directly toward the pusher to contact one end of a piece of wood placed between the blade and the pusher while the opposite end of the piece of wood contacts the pusher member; and
e. means for forcefully moving the pusher member so that the portion that moves toward the blade causes the wood to move against the blade and split.

4,086,112
METHOD OF PRINTING FABRICS

Kenneth Porter, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 17, 1976, Ser. No. 687,325
Claims priority, application United Kingdom, Jan. 20, 1976, 2172/76; Jan. 26, 1976, 2887/76
Int. Cl.[2] B32B *31/20*
U.S. Cl. 156—73.1 7 Claims



1. A method of simultaneously dyeing and bonding a fabric comprising thermoplastic fibres, wherein a transfer sheet supporting an ink comprising a heat transferable dyestuff is contacted with said fabric, and the sheet and fabric are subjected to heat and pressure in spaced discrete areas such that the fabric becomes thermally bonded and the dyestuff is transferred from the transfer sheet to the fabric at least in areas corresponding to said discrete areas.

4,086,113
METHOD AND MEANS FOR REPAIRING DAMAGED VINYL SHEETS

Herman R. Cataffo, 21 St. James Pl., Brooklyn, N.Y. 11205, and Anthony J. De Meo, 2072 E. 17th St., Brooklyn, N.Y. 11229

Filed Aug. 11, 1976, Ser. No. 713,341
Int. Cl.[2] B32B *35/00*
U.S. Cl. 156—98 6 Claims

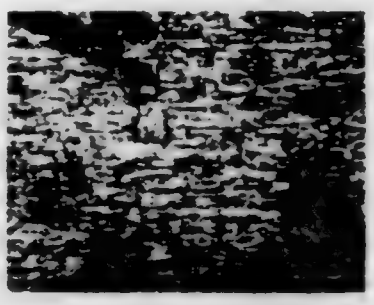


1. The method of repairing tears, burns, or like damage in vinyl or similar thermoplastic material which comprises the steps of providing a pre-cured thermoplastic patch having a heat softening property comparable to that of the material being repaired and comprising a stem portion for insertion into a void in the material to be repaired and a cover portion having a layer of backing cloth embedded therein for overlapping the undamaged material surrounding the void, excising the damaged area of the material to be repaired to provide a void having a cross sectional area corresponding to the cross sectional area of the stem portion of the pre-cured thermoplastic patch but less than that of said cover portion and the layer of backing cloth embedded therein, inserting the stem portion of the patch into the void provided in the material under repair with the cover portion of the patch and the layer of backing cloth embedded therein overlapping the undamaged material surrounding the void, and applying heat to the cover portion of the patch and the material being repaired to fuse the cover portion and the embedded layer of backing cloth into the material being repaired.

4,086,114
ALUMINUM SURFACE TREATMENT TO ENHANCE ADHESION IN A GIVEN DIRECTION

Kenneth N. Karol, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 580,642, May 27, 1975, abandoned, which is a continuation of Ser. No. 463,639, Apr. 24, 1974, abandoned, which is a division of Ser. No. 349,137, Apr. 9, 1973, Pat. No. 3,838,506. This application Jan. 21, 1977, Ser. No. 761,025
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—153 3 Claims



1. In a method of laminating an aluminum member to an electrically insulative substrate member, an improved method of preparing the aluminum surface which is to be bonded to the substrate surface in order to enhance adhesion and resist peel in a given direction, comprising the steps of:
subjecting said aluminum surface to a texturing treatment, with mechanical means, to form a substantially continuous pattern of oblong depressions in said surface, said oblong depressions having substantially vertical sides, with a depth in the range of .0001 to .0002 inch, for creating shear forces which are being opposite to forces tending to cause

peel and having major axes positioned in general alignment with said given direction of enhanced adhesion;
cleaning said texturized surface so as to remove all impurities, including aluminum oxide; and
covering said textured surface with a continuous coating of clear, unsealed anodize.

4,086,115

METHOD OF MAKING A HOCKEY STICK

Robert D. Sweet, Jr., 933 S. Juliana, Bedford, Pa. 15522, and Peter J. Monaghan, 1900 Hiller Rd., West Bloomfield, Mich. 48033

Filed Oct. 16, 1975, Ser. No. 622,877
Int. Cl.[2] A63B *59/00*
U.S. Cl. 156—178 **1 Claim**



1. A method of constructing a hockey stick comprising:
assembling four continuous fiberglass strips in such a manner as to form a rectangular cross sectionally shaped continuous hollow member defined by longitudinally extending opposing end walls and sidewalls;
placing two spaced bundles of rovings along each sidewall of said rectangular shape and one bundle of rovings along each end wall of said rectangular shape;
continuously pulling said fiberglass strips and said bundles of rovings through a heated die;
pressure impregnating said fiberglass strips and said rovings with a resin while said rovings and said fiberglass strips are being pulled through said heated die so as to form a hollow elongated member of even wall thickness;
severing shafts of predetermined length from said elongated member while continuing to pull said strips and bundles through said die;
forming a hockey stick blade with an integral rectangular shaped elongated tongue portion of a cross sectional size smaller than the interior cross section of said shaft;
providing an annular shoulder on said blade surrounding said tongue having a width equal to the width of the wall thickness of said shaft so as to blend smoothly therewith;
providing recesses on opposite sides of said blade adjacent said tongue portion, said recesses being defined in part by reinforcing flange portions which act to reinforce said blade and by a portion of said annular shoulder;
applying a layer of epoxy to said shaft interior and to said tongue portion; and
inserting said tongue portion into one end of said hockey stick.

4,086,116

CORRUGATED CARDBOARD SHEET AND METHOD FOR PRODUCING SAME

Takao Yazaki, and Kazuhide Hattori, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 519,311, Oct. 30, 1974, abandoned. This application Aug. 10, 1976, Ser. No. 713,172
Claims priority, application Japan, Oct. 30, 1973, 48-125027[U]; Jan. 30, 1974, 49-11773
Int. Cl.[2] B31F *1/22, 1/24*
U.S. Cl. 156—205 **23 Claims**



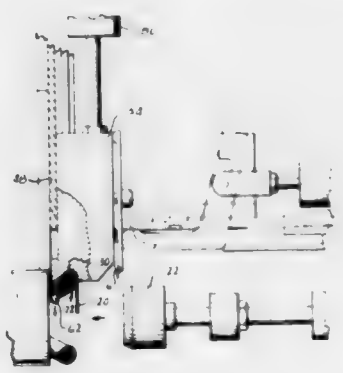
1. A method for producing corrugated cardboard sheets comprising a corrugated core sheet and a liner sheet wherein at least either of the core sheet or the liner sheet is constructed from paper, said method comprising
feeding and shaping a core sheet into the desired corrugated configuration,
extruding a continuous film of a molten thermoplastic polymer,
feeding the extruded continuous film of molten thermoplastic polymer through free space at a rate which is substantially equal to the production rate of the shaped core sheet,
applying as the adhesive said film of extruded continuous molten thermoplastic polymer to at least one side of the shaped core sheet as said shaped core sheet is fed, and
substantially simultaneously pressing in a bonding zone a liner sheet to said adhesive applied side of the shaped core sheet as said shaped core sheet is fed to bond said liner sheet and said core sheet by the interposition of said film of the molten thermoplastic polymer to form a corrugated sheet assembly.

4,086,117

TAPING MACHINE

Harold I. Pearsall, Centerville, Ohio, assignor to The Globe Tool and Engineering Company, Dayton, Ohio

Continuation of Ser. No. 638,435, Dec. 8, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 781,873
Int. Cl.[2] B31F *1/00*
U.S. Cl. 156—212 **20 Claims**



1. In an apparatus for wrapping tape about an article:
a tool member having an aperture;
a first clamping member comprising marginal portions of said aperture;
a tape press member slidably mounted on said tool member;

a second clamping member extended from said tape press member into said aperture;

means for moving said tool member and said tape press member to receive between said first and second clamping members a leading end portion of the tape from a direction extended along a first side of the article, to receive between said first and second clamping members a trailing end portion of the tape from a direction extended along a second side of the article, said second side being generally oppositely directed from said first side, and to press said leading end portion and said trailing end portion together.

11. In a method for wrapping tape about an article utilizing a taping apparatus having two clamping members and a tape ram:

advancing a leading end portion of the tape along one side of the article to a position between the clamping members;

moving the tape ram to engage a trailing end portion of the tape and to advance said trailing end portion along a second generally oppositely directed side of the article to a position between the clamping members; and

moving the clamping members to press together said leading end portion and said trailing end portion.

4,086,118

RIGID COMPOSITE ARTICLES AND A METHOD FOR THEIR MANUFACTURE

Frank Dewey, 1020 Market St., St. Joseph, Mich. 64505

Filed Oct. 4, 1976, Ser. No. 729,395

Int. Cl.[2] B32B *33/00, 27/40, 27/38, 13/02*

U.S. Cl. 156—246 **5 Claims**

1. A method for forming a rigid composite article comprising an outer impression-retaining thin surface layer and a relatively thick backing layer comprising (a) providing a master having coated on the surfaces therof a mold release material, (b) coating the surfaces of the master with a catalyzed liquid urethane resin. (c) curing said urethane resin to form a rigid surface layer having a thickness of from about 0.0675 inch to about 0.25 inch and a Shore durometer hardness of from about 65D to about 90D, (d) placing on the back surface of said rigid surface layer a relatively thick backing layer of a curable material, (e) curing said backing layer, and (f) recovering the rigid composite article so produced.

4,086,119

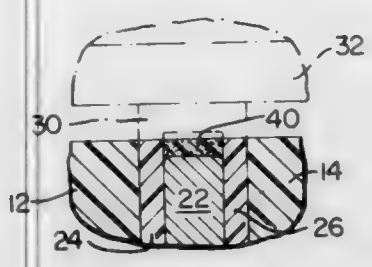
METHOD OF MAKING A BATTERY SEPARATOR

Camillo M. Vecchiotti, Ridgewood, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Sep. 24, 1976, Ser. No. 726,264

Int. Cl.[2] B29C *19/04;* B32B *31/00*

U.S. Cl. 156—273 **7 Claims**



1. A method of manufacturing a sleeve-like battery separator comprising the following steps:

placing two sheets of microporous plastic material in a spaced parallel relationship about a platen having first and second opposed sides and a transverse edge extending between said opposed sides,

maintaining said sheets of microporous plastic material in contact with the first and second opposed sides of said platen respectively such that corresponding side edges of said plastic sheets mutually extend beyond the transverse edge of said platen and define a pair of inner facing surfaces extending beyond said transverse edge of said platen,

disposing a strip of plastic material onto said transverse edge of said platen between said inner facing surfaces of said plastic sheets in such a manner that said strip extends beyond the corresponding side edges of said plastic sheets,

applying pressure to said strip of plastic material and to said plastic sheets to cause said strip of plastic material to be flush with said corresponding side edges of said plastic sheets,

adhering the side edge portions of said plastic strip to each one of said pair of inner facing surfaces, respectively, thus to form said sleeve-like battery separator.

4,086,120

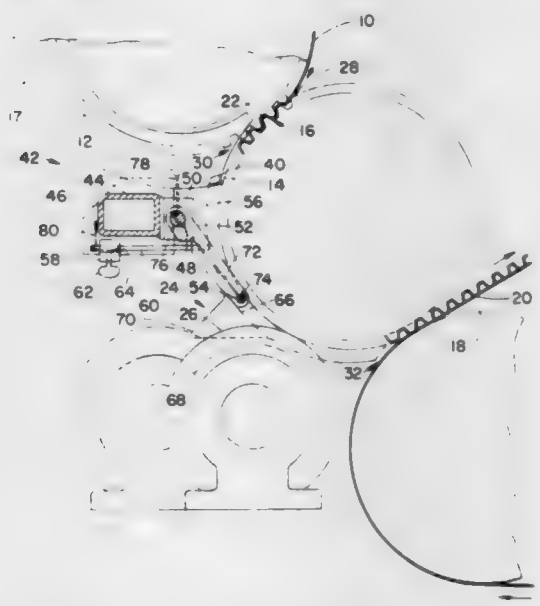
WEB GUIDES FOR CORRUGATOR MACHINES

James L. Cosby, Parkville, and Gordon L. Morgret, Baltimore, both of Md., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 596,407, Jul. 16, 1975. This application May 19, 1976, Ser. No. 687,906

Int. Cl.[2] B31F *1/00*

U.S. Cl. 156—473 **6 Claims**



1. An improved self-adjusting web guide structure for a corrugated web single-facer machine of the type including: cooperating upper and lower corrugator rolls between which a paper medium web is passed to form corrugations therein; adhesive roll means, movable toward and away from said lower corrugator roll, for applying adhesive to the flute tips of said corrugations as said web passes around said lower corrugator roll; and a pressure roll means for pressing a liner web against said flute tips having adhesive thereon, the improvement comprising:

a plurality of laterally-spaced guide means for continuously urging a corrugated portion of said medium web against said lower corrugator roll as said portion advances thereabout to pass between said lower corrugator roll and said pressure roll means,

a support means rigidly secured to said single-facer machine, said support means including a support shaft extending along the length of said support means,

an articulated means comprising a plurality of connecting links pivotally supported on said support shaft and pivotally connected to each of said guide means for providing exact alignment of an arcuate portion of said guide means with said lower corrugator roll and permitting substantially unrestricted movement of said guide means toward and away from aid lower corrugator roll,

biasing means connected to each of said articulated means for urging said guide means against said corrugated portion at a preselected pressure, said biasing means being yieldable to compensate for irregularities in said corru-

gated portion of said web to provide self-adjustment of said web guide structure, and

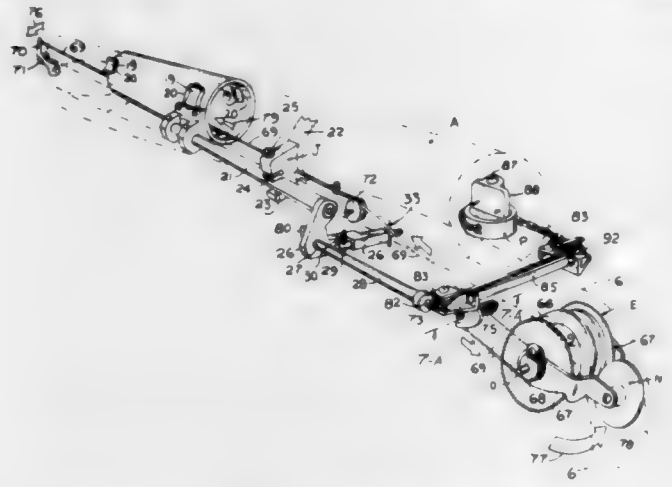
an adhesive applicator roll having a plurality of laterally spaced circumferential grooves in alignment with said guide means for receiving a portion of said guide means therein to enable said guide means to extend partially around said lower corrugator roll between it and said applicator roll when the latter roll is in adhesive applying engagement with said corrugated portion of said web, said guide means each include a trailing guide portion adapted to remain in said grooves when said applicator roll is moved to an inactive position out of engagement with said lower corrugator roll.

4,086,121

SELF-CONTAINED DRY WALL TAPER

Robert G. Ames, 2150 Forest View, Hillsborough, Calif. 94810

Filed Apr. 26, 1977, Ser. No. 791,068
Int. Cl.[2] B32B *31/00*; B44C *7/02*
U.S. Cl. 156—526 **4 Claims**



1. A self-contained dry wall taper comprising:

(a) a hollow elongated body containing mastic and having a nozzle at its foward end for delivering a layer of mastic onto a tape;

(b) tape feeding means for delivering tape adjacent to said nozzle for receiving a layer of mastic therefrom including:

(c) a sleeve slidable on said body from a neutral position thereon;

(d) a tape guide extending along said body;

(e) an arm operatively connected to said sleeve and rockably supporting a shaft;

(f) a track paralleling the line of movement of said sleeve on said body, said shaft having a radially extending flexible tip movable into contact with said track by said sleeve and being flexed by said track and travelling therealong as the sleeve is moved in the same direction, the flexing of the tip rocking said shaft about its axis;

(g) a tape penetrating pin extending radially from said shaft and underlying said tape guide, said pin being angularly disposed with respect to said tip so that when the tip is flexed by coming into contact with the track and causes said shaft to rock about its axis, said pin will be swung to penetrate the tape; and

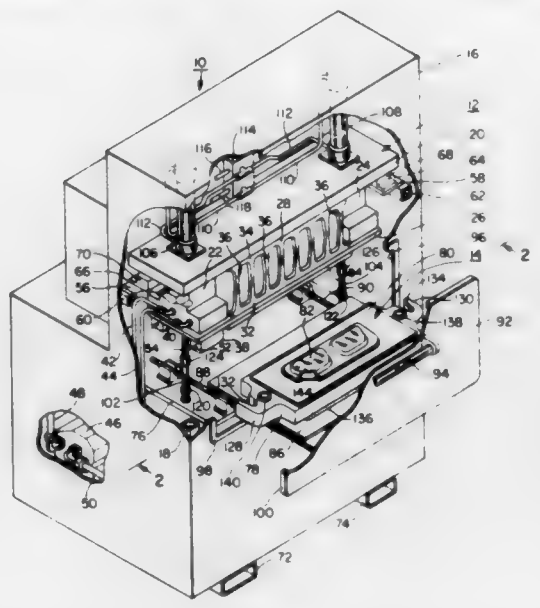
(h) whereby further movement of the sleeve and arm in the same direction will cause said pin to advance the tape along the guide and a return movement of the sleeve and arm will cause the tip to reverse its movement along said track and be flexed in the opposite direction and rock said shaft to disengage the pin from the tape so that the pin will ride clear of the tape on its return movement.

4,086,122

HYDROACOUSTIC WELDER

John V. Bouyoucos; Marvin J. Behnfeldt, and Roger L. Selsam, all of Rochester, N.Y., assignors to Hydroacoustics Inc., Rochester, N.Y.

Filed Dec. 17, 1976, Ser. No. 751,828
Int. Cl.[2] B06B *1/18*; B29C *27/08*
U.S. Cl. 156—556 **19 Claims**



1. Apparatus for vibratory welding of parts which comprises a platen upon which said parts are adapted to be disposed, a welding head, said platen and said welding head being movable with respect to each other to bring the interface of said parts into clamped relationship, said welding head comprising

(a) a seismic mass,

(b) at least one flexural member having substantial stiffness for vibratory motion, attached to said seismic mass,

(c) a first plate mounted by said flexural members to said mass for said vibratory movement with respect to said mass in the plane of said interface, said plate being disposed in engagement with one of said parts when said head and platen bring said parts into clamped relationship, and

(d) a hydroacoustic driver, mounted to said mass and having driven members slidably supported solely in said driver which driven members are coupled to said plate, for translating the flow of pressurized hydraulic fluid into high force vibratory motion of said driven member and said plate at a frequency which is approximately equal to the resonant frequency determined by the stiffness of said flexural member and the mass thereof and the mass of said plate and of the part in engagement therewith.

4,086,123

ZINC SULFIDE BASED PIGMENTS

Floyd A. Hummel, State College, and Charussri Sombuthawee, University Park, both of Pa., assignors to Ferro Corporation, Cleveland, Ohio

Filed Feb. 25, 1977, Ser. No. 772,287
Int. Cl.[2] C09C *1/04*
U.S. Cl. 106—293 **17 Claims**

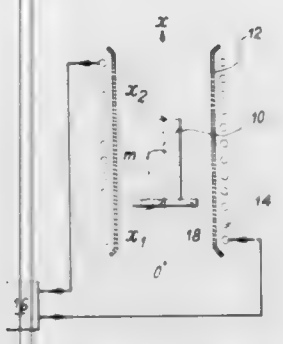
1. A pigment comprising a zinc sulfide host containing in solid solution at least a sufficient amount of a metal sulfide-containing dopant to alter the color of the zinc sulfide, said dopant being selected from the group consisting of lithium sulfide, calcium sulfide, gallium sulfide, lithium indium sulfide, lithium indium sulfide and copper indium sulfide, lithium indium sulfide and silver indium sulfide, lithium sulfide and chromium sulfide, indium sulfide and copper oxide, indium sulfide and lithium oxide, lithium sulfide and manganese sulfide and copper sulfide, and mixtures thereof.

4,086,124

METHOD OF POLARIZATION OF A FERROELECTRIC MATERIAL

Jean Claude Peuzin, Eybens, and Michel Tasson, Seyssinet Pariset, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 19, 1975, Ser. No. 578,678
Claims priority, application France, May 30, 1974, 74 18872
Int. Cl.[2] B01J *17/00*
U.S. Cl. 156—603 2 Claims



1. A method of polarizing a ferroelectric material which exhibits a Curie point at a temperature T_c, without applying an electric field thereto, comprising:

bringing a solid body of said material to a temperature above the Curie point T_c but below the temperature of fusion;

establishing and maintaining a temperature gradient in said material along a linear dimension of said body without bringing any part of said material to the temperature of fusion;

suppressing said temperature gradient by equalizing the temperature of the heated material as preparation for and prior to transition back through the Curie point T_c, and;

bringing said material back to a temperature below the Curie point T_c.

4,086,125

WOOD LAMINATION METHOD UTILIZING EMULSIFIED PHENOL-FORMALDEHYDE RESINS

Ramesh C. Vasishth, Delta, and Pitchaiya Chandramouli, Richmond, both of Canada, assignors to Cor Tech Research Ltd., Richmond, Canada

Division of Ser. No. 567,881, Apr. 14, 1975, Pat. No. 4,017,437.
This application Dec. 27, 1976, Ser. No. 754,616
Claims priority, application United Kingdom, Apr. 17, 1974, 16860/74
Int. Cl.[2] B29J *5/00*
U.S. Cl. 156—62.2 10 Claims

1. A method of forming a panel board, which comprises:

reacting formaldehyde and phenol at a mole ratio of formaldehyde to phenol greater than about 1.7:1 in an aqueous reaction medium in the presence of a metal carboxylate catalyst therefor to form a resin having a viscosity of about 1,000 to 40,000 cps at about 24° C,

adding to said resin at least one strong acid in a catalyzing amount for thermosetting said resin at elevated temperature to form a room temperature-stable acid-catalyzed and mobile thermosetting phenol-formaldehyde resin capable of rapid cure at elevated temperature,

emulsifying the latter resin to form a stable resin-in-water emulsion by dispersing the latter resin in water at a temperature below the curing temperature of the latter resin,

applying said emulsion to a plurality of panel board-forming elements to provide a substantially even distribution of resin over part of the surfaces of said elements,

assembling the coated elements,

heating said resin to above its curing temperature while maintaining said coated elements in said assembled condition to adhesively join said elements together by thermoset resins, and

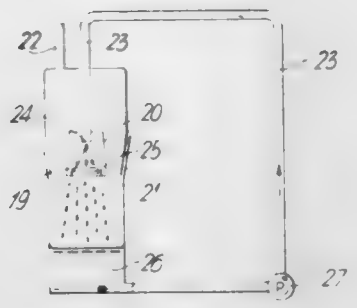
recovering a panel board.

4,086,126

PRODUCTION OF HIGH RADIANCE LIGHT EMITTING DIODES

Anthony John Springthorpe, Richmond, and Michael John Rider, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 27, 1977, Ser. No. 801,106
Int. Cl.[2] H01L *21/306*
U.S. Cl. 156—642 12 Claims



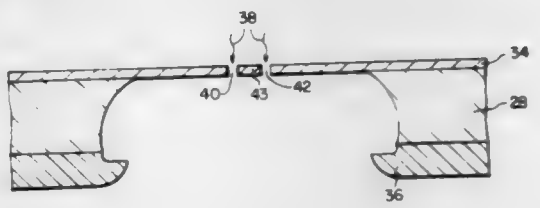
1. For a light emitting diode comprising a GaAs substrate and layers of differentially doped GaAlAs forming sequentially a first confining layer, an active layer and a second confining layer, to produce a p-n junction between said active layer and one of said confining layers, a method of selectively etching at least one hole through said substrate to said first confining layer, comprising ejecting an etchant based on an alkaline peroxide solution onto a masked surface of said substrate.

4,086,127

METHOD OF FABRICATING APERTURED DEPOSITION MASKS USED FOR FABRICATING THIN FILM TRANSISTORS

Michael W. Cresswell, Plum Borough, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 1, 1977, Ser. No. 812,086
Int. Cl.[2] C23F *1/02*
U.S. Cl. 156—643 4 Claims



1. A method of fabricating apertured deposition masks which are used in the fabrication of thin film deposited electronic components, wherein the apertured deposition mask has a plurality of closely spaced apertures therethrough with solid mask bridge portions between the spaced apertures, which bridge portion is of a predetermined dimension and wherein the apertured deposition mask comprises a core portion with a first metal layer provided on a relief side of the core, and a second metal layer provided on a defining side of the core which method comprises:

(a) selective photoresist delineation and etching of portions of the relief side metal layer and the core while leaving the defining side metal layer intact;

(b) directing a narrow width radiation beam upon closely spaced portions of the defining side metal layer, which portions are aligned over the etched portions of the core and the relief side metal layer, to selectively cut through the defining side metal layer providing the desired spaced apertures separated by the requisite bridge portion of defining side metal layer.

4,086,128

PROCESS FOR ROUGHENING SURFACE OF EPOXY RESIN

Akitoshi Sugio, Omiya; Yukiya Mazuda, Urawa; Toshihiko Kobayashi, Showamachi; Koichi Nakano, and Tsukasa Sawai, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 2, 1977, Ser. No. 773,437

Claims priority, application Japan, Mar. 4, 1976, 51-23599; Apr. 9, 1976, 51-40052

Int. Cl.[2] B29C *17/08;* C09K *13/04*

U.S. Cl. 156—668 **28 Claims**

1. A process for roughening a surface of epoxy resin, which comprises pretreating an epoxy resin with

(1) an organic solvent comprising at least one compound selected from the group consisting of:

(a) a compound represented by the general formula, R_1—OH, wherein R_1 is an alkyl group or furfuryl group,

(b) a compound represented by the general formula,

$$R_2—\underset{\underset{O}{\|}}{C}—R_3,$$

wherein R_2 is a hydrogen atom, or an alkyl group, R_3 is an alkyl group, an alkoxyl group, or a hydroxyl group, and when R_2 is a hydrogen atom, R_3 is an alkoxyl group or a hydroxyl group, and

(c) a compound represented by the general formula, CH_3—X, wherein X is a nitrile group, or a nitro group, or

(2) an organic solvent comprising:

(a) a compound represented by the general formula, R_1—OH, wherein R_1 has the same meaning as defined above, and

(d) at least one compound selected from the group consisting of fermamide and a polyhydric alcohol as a pretreating solution, and then etching the resulting pretreated epoxy resin with an etching solution containing hydrogen peroxide and sulfuric acid.

16. A process for roughening a surface of epoxy resin, which comprises pretreating an epoxy resin with an organic solvent comprising at least one compound selected from the group consisting of:

(a) a compound represented by the general formula, R_1—OH, wherein R_1 is an alkyl group or furfuryl group,

(b) a compound represented by the general formula,

$$R_2—\underset{\underset{O}{\|}}{C}—R_3,$$

wherein R_2 is a hydrogen atom, or an alkyl group, R_3 is an alkyl group, an alkoxyl group, or a hydroxyl group, and when R_2 is a hydrogen atom, R_3 is an alkoxyl group or a hydroxyl group, and

(c) a compound represented by the general formula, CH_3—X, wherein X is a nitrile group, or a nitro group as a pretreating solution, and then etching the resulting pretreated epoxy resin with an etching solution containing a persulfate and sulfuric acid.

4,086,129

PROCESS FOR CONTROLLING THE INTRINSIC VISCOSITY OF SULFITE PULP

Romeo John Conca; John Patrick Gray, both of Shelton, and Tod Hunter Sloan, Tumwater, all of Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 3, 1975, Ser. No. 628,328

Int. Cl.[2] G01N *21/20;* D21C *3/22, 7/12*

U.S. Cl. 162—49 **4 Claims**

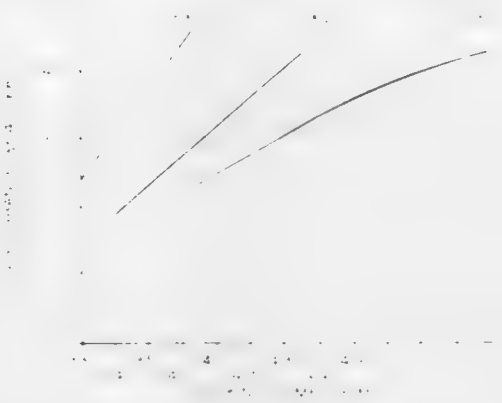
1. A process for the preparation of sulfite pulp of a given controlled intrinsic viscosity comprising

predetermining the rate of change in light absorbance in digestion cooking liquor required to obtain a given pulp intrinsic viscosity for a range of initial weight ratios of combined SO_2 to wood,

digesting particulate wood in the presence of sulfite cooking liquor,

measuring the rate of change in light absorbance in the cooking liquor as the digestion proceeds

comparing the thus measured rate of change of light absorbance with the predetermined rate of change of light absorbance for the given pulp intrinsic viscosity,



determining from said comparison the initial weight ratio of combined SO_2 to wood,

adjusting the time, temperature and pressure of the digestion operation to obtain the given controlled intrinsic viscosity at the aforesaid initial weight ratio of combined SO_2 to wood, and

terminating the digestion operation in accordance with the adjusted time, temperature and pressure.

4,086,130

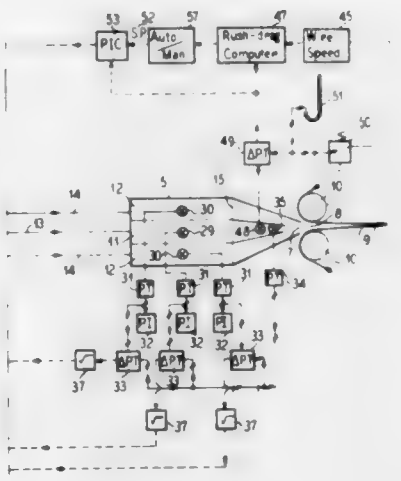
CONTROL SYSTEM AND METHOD FOR A MULTI-CHANNEL PAPER MACHINE DISTRIBUTOR

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Jul. 16, 1976, Ser. No. 705,828

Int. Cl.[2] D21F *1/06, 11/04*

U.S. Cl. 162—123 **14 Claims**



13. A control system in a multi-channel paper machine distributor of the type having therein a plurality of channels to which fibrous paper stocks are respectively supplied from different respective sources through separate ducts supplying the paper stocks to upstreams ends of the channels, and a perforated partition within the distributor spaced from said

upstream ends and through which the paper stocks pass from upstream portions of the channels into downstream portions of the channels which converge toward a slice opening which delivers the stocks from the plurality of channels in multi-ply relation to travelling forming means of a papermaking machine, and wherein there is a velocity differential between the stock flowing through the channels upstream from said partition in comparison with the stock flowing through said downstream portions of the channels comprising:

each of said ducts having a respective pump for driving the stock under controlled velocity into the channel into which the respective duct supplies stock, and each pump having a motor and a speed regulator for regulating the speed of the motor and thereby the velocity output of the pump;

each of said channels having a pressure transducer for monitoring the velocity of stock flowing through its upstream portion;

a separate pressure transmitter connected to each of the pressure transducers;

a separate differential pressure transmitter connected to each of said pressure transmitters;

a pressure transducer monitoring the pressure in the downstream portion of one of said channels adjacent to said slice opening and connected to a pressure transmitter which transmits signals to all of the differential pressure transmitters for comparison in said differential pressure transmitters;

separate means receiving signals from each of said differential pressure transmitters for effecting comparison of the stock velocities in said channels;

controlling means connected in controlling relation to the speed regulator of the motor of the pump which drives the stock in the duct supplying stock to another of said channels;

and means connected to the means receiving signals which is operatively connected to the pressure transducer which monitors the upstream portion of said one channel to generate a setpoint to said controlling means and thereby through the speed regulator connected thereto regulating the speed of the pump supplying stock to said another of said channels as a function of the speed of the pump supplying said one channel.

14. A method of controlling multi-channel paper machine distributor of the type having therein a plurality of channels to which fibrous paper stocks are respectively supplied from different respective sources through separate ducts supplying the paper stocks to upstream ends of the channels and a perforated partition within the distributor spaced from said upstream ends and through which the paper stocks pass from upstream portions of the channels into downstream portions of the channels which converge toward a slice opening which delivers the stocks from the plurality of channels in multi-ply relation to travelling forming means of a papermaking machine and wherein there is a velocity differential between the stock flowing through the channels upstream from said partition in comparison with the stock flowing through said downstream portions of the channels, comprising:

operating a respective pump in each of said ducts and thereby driving the stocks under controlled velocity into the respective channels to be supplied with stock from the ducts;

operating a separate motor to drive each of the pumps;

monitoring through a pressure transducer in each of the channels upstream from said perforated partition the velocity of stock flowing through the respective channels;

transmitting stock flow velocity information from each of the transducers to a separate pressure transmitter and from each of the pressure transmitters to a separate differential pressure transmitter;

monitoring through a downstream pressure transducer the pressure in the downstream portion of one of said channels adjacent to said slice opening and from a pressure transmitter connected to the downstream pressure transducer transmitting signals to all of the pressure differential transmitters and therein comparing any differences in pressure in said downstream portion of said one channel with the pressures in said upstream portions of the channels;

generating a setpoint pursuant to information received from the pressure transducer monitoring the upstream portion of said one channel;

and in response to said setpoint regulating the speed of the pump supplying stock to said another of said channels as a function of the speed of the pump supplying said one channel.

4,086,131

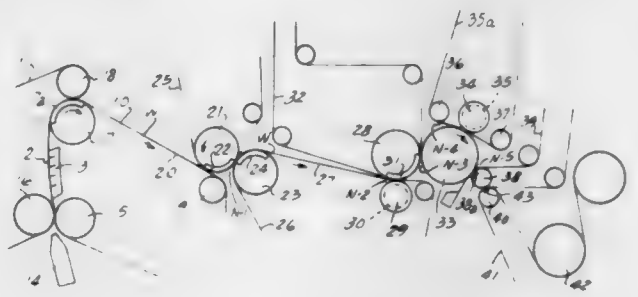
METHOD FOR PRESSING BAGASSE WEBS

Cornelius N. Rempel, and Merle G. Linkletter, both of Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed May 6, 1975, Ser. No. 574,878

Int. Cl.[2] D21F *3/04, 3/06*

U.S. Cl. 162—203 **4 Claims**



1. The method of forming a continuous web from a slurry of bagasse fibers comprising:

projecting a slice stream of bagasse slurry between a pair of looped traveling forming wires and draining water through the wires for forming a one-sided web;

lifting the formed web off one of the wires and substantially immediately passing the web through a first press nip sandwiched between a first upper press felt and a second lower press felt for pressing water uniformly from the web in both directions;

passing the web through a second press nip sandwiched between said second press felt and a third press felt and supporting the web from the one forming wire continuously through said first nip on the lower surface of the first felt, supporting the web on the second press felt from the first nip through the second nip;

laying the web on a plain roll after the second nip, supporting the web continuously on said third felt between the second nip and plain roll;

pressing the web against the plain roll in a third nip with the third nip formed between the third press felt and the plain roll;

maintaining the web on the plain roll after the third nip and passing the web against the plain roll in a fourth nip with a fourth press felt being outwardly of the web;

removing the web from the plain roll after the fourth nip for transfer to a dryer section;

applying a pressure in the first press nip in the range of 200 to 250 pounds per linear inch;

applying a pressure in the second nip in the range of from 300 to 350 pounds per linear inch;

applying a pressure in the third press nip in the range of 350 to 400 pounds per linear inch;

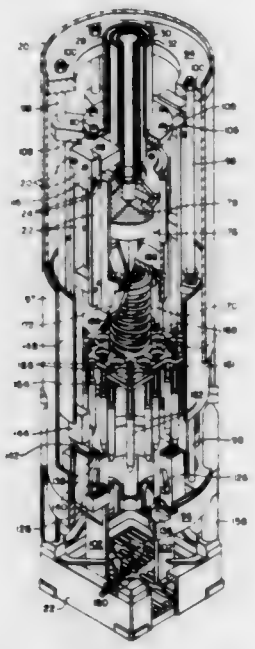
and applying a pressure in the fourth nip in excess of 500 pounds per linear inch.

4,086,132

COMBINED FUEL ASSEMBLY AND THIMBLE PLUG GRIPPER FOR A NUCLEAR REACTOR

Robert E. Meuschke, Penn Hills Township, Alleghany County, and Adelbert E. Satterlee, Plum Borough, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 13, 1976, Ser. No. 685,827
Int. Cl.[2] G21C *19/20, 7/08*
U.S. Cl. 176—30 18 Claims



1. Apparatus for loading and unloading a fuel assembly in the core of a nuclear reactor and for removing and inserting control rod guide thimble plugs in the fuel assembly during a reactor refueling operation comprising:

a gripper mast adapted for support by an overhead crane and arranged to be connected to a mast raising and lowering device thereon which effects vertical movement of said mast in a housing permanently mounted on said crane, said crane being horizontally movable on the top wall of a containment for said reactor and into a position wherein the mast is placed in alignment with a fuel assembly to be removed from said core;

said gripper mast comprising a cylinder approximately as long as a fuel assembly;

a first actuator on said mast;

means connecting said actuator to fuel assembly gripper fingers pivotally mounted in said mast at spaced intervals around the bottom thereof for selectively moving said fingers into and out of latching engagement with said fuel assembly;

said means connecting said actuator to the fuel assembly gripper fingers including axially movable bars having a pin on the end thereof which fits into a slot provided in each of said fingers so that when the actuator moves said bars downwardly, the pins ride in said slots and move the fingers into a fuel assembly nozzle latching position, while movement of the bars upwardly causes the fingers to move to an unlatching position;

a pair of spaced grooves on the upper surface of each of said fingers;

a movable sleeve in said mast;

locking keys mounted on said sleeve and respectively in a position above and in alignment with at least one of the grooves provided in each of said gripper fingers;

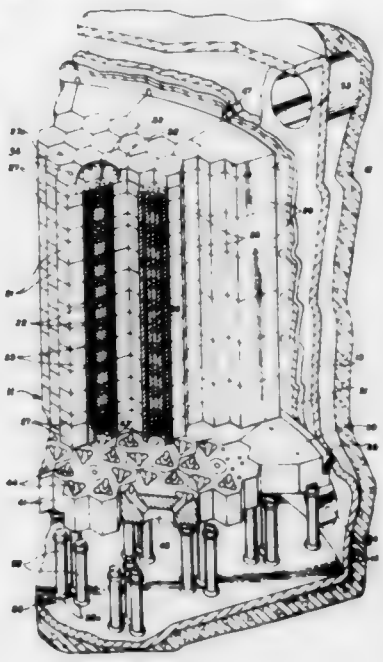
so that when said gripper fingers are in a latched position, the keys respectively engage the grooves on top said fingers which correspond to a latched position, and when the fingers are in an unlatched position, said keys engage the grooves corresponding to an unlatched position thereby respectively locking said fingers in either latched or unlatched positions.

4,086,133

NUCLEAR REACTOR CORE REFUELING METHOD

Paul Michael Anderson, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Sep. 7, 1976, Ser. No. 720,746
Int. Cl.[2] G21C *19/20, 3/30;* B66C *17/08*
U.S. Cl. 176—30 9 Claims



1. A method for refueling a nuclear reactor core inside a reactor vessel, said core having a plurality of regions each comprised of a plurality of substantially horizontal layers, each layer being comprised of a plurality of individual fuel elements with the corresponding fuel elements in respective layers forming substantially vertical columns extending transversely of the layers, and wherein the fuel elements in at least the lowermost layer thereof are spent, said method comprising, refueling the regions in sequence by, for each region, removing from the pressure vessel unspent fuel elements in at least one but not all of said columns to expose at least one but not all of the spent fuel elements therein, removing from the pressure vessel the exposed spent fuel elements, moving within the pressure vessel unspent fuel elements to other locations including the former locations of at least some of the previously removed spent and unspent fuel elements to expose additional spent fuel elements, removing from the pressure vessel the exposed additional spent fuel elements, placing the unspent fuel elements which were previously removed from the pressure vessel at other locations in the core, placing new unspent fuel elements in the pressure vessel in at least the uppermost layer of fuel elements, and repeating this sequence for the other regions to complete refueling the core.

4,086,134

METHOD FOR PREPARATION OF VACCINE AGAINST FELINE LEUKEMIA

William Fleming Hoggan Jarrett; James Oswald Jarrett, and Lindsay Joan Mackey, all of Glasgow, Scotland, assignors to University of Glasgow, Glasgow, Scotland

Continuation of Ser. No. 668,110, Mar. 18, 1976, which is a division of Ser. No. 505,625, Sep. 13, 1974, Pat. No. 3,966,907.
This application Feb. 22, 1977, Ser. No. 770,723
Claims priority, application United Kingdom, Sep. 18, 1973, 43642/73
Int. Cl.[2] A61K *39/12*
U.S. Cl. 195—1.2 1 Claim

1. A method for manufacturing a vaccine for the prevention of disease caused by feline leukemia virus which comprises culturing at least 10^7 feline lymphoblastoid cells chronically infected with FELV of low infectivity and thereby having viral associated antigen on their surface, inactivating said cells by chemical or physical irradiation or thermal means without destroying immunogenicity, and harvesting the cells.

4,086,135

PROCESS FOR STEPPING GRAIN AND PRODUCTS OBTAINED THEREFROM

Ramon Cairo Balana, and Antonio Montserrat Caixes, both of Barcelona, Spain, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Dec. 16, 1974, Ser. No. 533,393
Claims priority, application Spain, Dec. 14, 1973, 421.472
Int. Cl.[2] C12B *1/00*
U.S. Cl. 195—17 8 Claims

1. In the process of steeping grain in warm acidulated water at the beginning of the wet milling process for the separation and recovery of the various components of the grain, the improvement comprising adding an inoculum of a microorganism of the genus Lactobacillus to the warm acidulated water in which the grain is steeped.

4,086,136

PROCESS FOR PRODUCING A PEPTIDE USING A SERINE OR THIOL PROTEINASE

Yoshikazu Isowa; Muneki Ohmori, both of Tokyo; Hideaki Kurita, Sagamihara; Tetsuya Ichikawa, Sagamihara; Masanari Sato, Sagamihara, and Kaoru Mori, Sagamihara, all of Japan, assignors to (Zaidanhojin) Sagami Chemical Research Center, Tokyo, Japan

Filed Oct. 14, 1976, Ser. No. 732,543
Int. Cl.[2] C12D *13/06*
U.S. Cl. 195—29 10 Claims

1. A process for producing a peptide having the formula

X—A—B—Y

wherein

A and B are the same or different and represent an amino acid residue or a peptide residue;

X represents an amino protective group; and

Y represents a carboxyl protective group selected from the group consisting of tertiary alkoxy, and benzyloxy, benzylamino and benzhydrylamino which can be substituted with an inert substituent, which comprises:

reacting an acid component of an amino acid or peptide having N-terminal protective group or a salt thereof of the formula X-A-OH with an amino component of an amino acid or peptide having a C-terminal protective group or a salt thereof of the formula

H—B—Y

in the presence of a thiol proteinase or serine proteinase enzyme in an aqueous solution having a pH sufficient to maintain the enzyme activity of said thiol proteinase or serine proteinase.

4,086,137

PROCESS FOR THE PRODUCTION OF L-ARGININE BY FERMENTATION

Kiyoshi Nakayama, Sagamihara; Kazumi Araki, Machida, and Hajime Yoshida, Sagamihara, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1977, Ser. No. 766,630
Claims priority, application Japan, Feb. 18, 1976, 51-15737
Int. Cl.[2] C12D *13/06*
U.S. Cl. 195—29 9 Claims

1. A process for producing L-arginine which comprises culturing a mutant strain of microorganism derived from an L-arginine producing strain belonging to the genus Bacillus, said mutant having a nutritional requirement for at least one member of the group consisting of methionine, histidine, threonine, proline, isoleucine, lysine, adenine, guanine, uracil and precursors of uracil in a nutrient medium until L-arginine is formed in the culture liquor, and thereafter isolating said L-arginine therefrom.

4,086,138

PROCESS FOR PRODUCING GLUCOSE ISOMERASE

Ichiro Kojima; Hiroshi Sato, both of Yokohama, and Yasuo Fujiwara, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Japan

Filed Jan. 28, 1977, Ser. No. 763,540
Claims priority, application Japan, Feb. 3, 1976, 51-9962
Int. Cl.[2] C12D *13/10, 13/02;* C07G *7/02*
U.S. Cl. 195—65 8 Claims

1. A process for producing glucose isomerase which comprises cultivating Corynebacterium candidus under aerobic conditions in a culture medium containing carbon sources and nitrogen sources and separating the glucose isomerase-containing cells from the culture broth.

5. A process for producing glucose isomerase which comprises cultivating *Corynebacterium cerenus* under aerobic conditions in a culture medium containing carbon sources and nitrogen sources and separating the glucose isomerase-containing cells from the culture broth.

4,086,139

DIFFERENTIAL INACTIVATION OF AMYLASE IN AMYLASE-PROTEASE MIXTURES

Raymond D. Hoerle, Highland Park, Ill., assignor to GB Fermentation Industries Inc., Kingstree, S.C.

Filed Apr. 9, 1976, Ser. No. 675,385
Int. Cl.[2] C07G *7/02*
U.S. Cl. 195—66 R 19 Claims

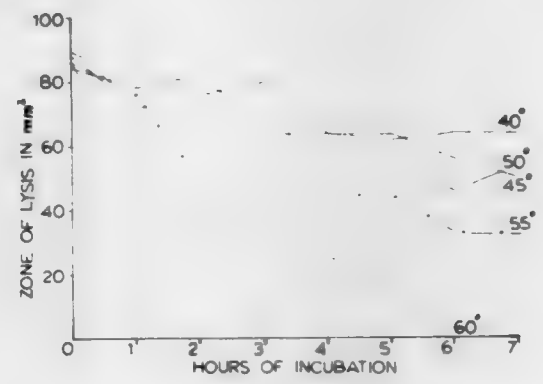
1. A method of selectively inactivating amylase in a mixture of protease and amylase, comprising contacting the mixture with an oxidizing agent selected from the group consisting of hypochlorite ions, chlorite ions and mixtures thereof in an amount effective to inactivate the amylase to a substantially greater degree than the protease.

4,086,140

PROCESS FOR ISOLATING FIBRINOLYTIC SUBSTANCES

John Burnham King, Sandown Lodge, Glebe Rd., Rondebosch, Cape, South Africa

Division of Ser. No. 628,006, Nov. 3, 1975, Pat. No. 4,039,658, which is a division of Ser. No. 347,254, Apr. 2, 1973, abandoned.
This application May 27, 1977, Ser. No. 801,348
Claims priority, application South Africa, Apr. 5, 1972, 72/2311
Int. Cl.[2] C07G *7/026*
U.S. Cl. 195—66 B 6 Claims



1. A process for isolating a proteinaceous fibrinolytic caseinolytic composition derived from mammalian bile having a molecular weight range of 5,000 to 50,000, characterized by the following properties:

(a) insolubility in aqueous ammonium sulfate,

(b) will dissolve fibrin but not active plasminogen, trypsinogen and chymotrypsinogen,

(c) at pH 7.4, will act as an anion,

(d) will inhibit platelet aggregation by collogen,

(e) insolubility in chloroform and in methanol,

which comprises adding to mammalian bile a precipitating

agent for protein, thereby precipitating said proteinaceous composition.

4,086,141

PROCESS FOR THE FERMENTATION PRODUCTION OF ERGOLINE DERIVATIVES

Eva Borowski; Klaus Braun, both of Radebeul; Klaus Breuel, Dresden; Christoph Dauth, Radebeul; Dieter Erge, Halle; Werner Grawert, Radebeul; Detlev Gröger, Halle; Liselotte Höhne, Dresden; Edda Knothe; Monika Müller, both of Radebeul; Gisela Nordmann, Dresden; Rudolf Schirutschke, Radebeul, and Klaus-Dieter Volzke, Dresden, all of Germany, assignors to VEB Arzneimittelwerk Dresden, Radebeul, Germany

Filed Nov. 8, 1976, Ser. No. 740,137
Int. Cl.² C12D *13/02*
U.S. Cl. 195—81 **22 Claims**

1. A method for obtaining ergoline derivatives by a fermentation process, the said derivatives including alkaloids and 9,10-dihydrogenated alkaloids of the ergotoxine group and including ergometrine, and

the said process comprising

growing conidiospores under saprophytic conditions from a strain of *Claviceps purpurea* (Fr.) Tul. deposited under number IMET PA 130 at the Institute for Microbiology and Experimental Therapy at Jena, German Democratic Republic, then employing these spores as inoculum in a submerged culture in a culture medium under aerobic conditions, and at the completion of the cultivation extracting the formed alkaloids from the filtrate or from the mycelium or directly from the culture medium, and if 9,10-dihydrogenated alkaloids are wanted then subjecting the recovered alkaloids to a 9,10-dihydrogenation.

4,086,142

DECARBOXYLATION OF ENDOGENOUS SERUM GLUTAMATE IN TRANSAMINASE ASSAYS

Charles Y. Huang, Potomac, Md., and William S. Stavropoulos, Carmel, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 6, 1976, Ser. No. 747,860
Int. Cl.² G01N *31/14*
U.S. Cl. 195—103.5 R **6 Claims**

1. In a colorimetric method for the determination of glutamic transaminase activity in biological fluids having endogenous glutamate present wherein the transaminase activity is determined by an assay for the amount of glutamate generated by an amino acid and α-oxoglutarate in the presence of the glutamic transaminase by measuring the absorbance of a color reaction product the improvement which comprises incubating prior to glutamate assay the biological fluid with an effective glutamate decarboxylating amount of a microbial glutamic acid decarboxylase at a pH of from about 4 to about 5 for a time sufficient to decarboxylate the endogenous glutamate in the biological fluid.

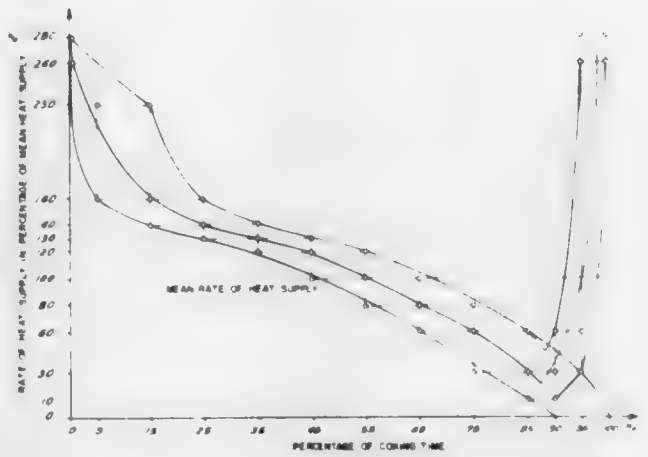
4,086,143

COKING METHOD AND ARRANGEMENT

Heinrich Echterhoff, Essen; Wolfgang Simonis, Gladbeck; Wolfgang Rohde, and Kurt-Gunther Beck, both of Essen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Continuation-in-part of Ser. No. 181,886, Sep. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 851,700, Aug. 20, 1969, abandoned. This application Jul. 22, 1976, Ser. No. 707,874
Claims priority, application Germany, Aug. 24, 1968, 1796063
Int. Cl.² C10B *47/00*
U.S. Cl. 201—41 **13 Claims**

1. In a process for coking coal in a coke oven chamber in which the heat required to carry out the coking operation is generated by combustion of gaseous fuels in flues in the walls of the said coke oven chamber and is supplied to the said coke oven chamber by conduction through the said walls, the improvement wherein the supply of heat to the said coke oven chamber is effected exclusively in accordance with a pre-established schedule expressed in percentages of a pre-established mean heat supply rate that is dependent upon the length of the



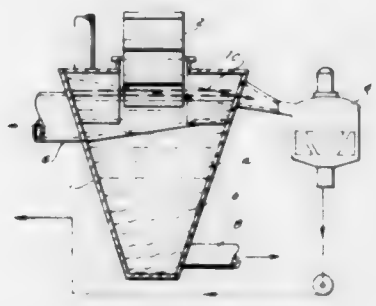
total period required to complete the said coking process, the said schedule providing for an initial coking period during which heat is supplied at a rate much higher than the said mean heat supply rate followed by a continuous gradual decrease of the rate of heat supply during the remainder of the coking period up to at least a final portion of the coking period.

4,086,144

PROCESS AND APPARATUS FOR THE SEPARATION OF FLOAT TARS IN THE TAR SEPARATOR OF A COKING INSTALLATION

Heinz Grulich, Gladbeck, and Ernst Otte, Essen, both of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Continuation-in-part of Ser. No. 632,360, Nov. 17, 1975, abandoned. This application Dec. 1, 1976, Ser. No. 746,326
Claims priority, application Germany, Nov. 16, 1974, 2454394
Int. Cl.² C10B *45/00, 57/00*
U.S. Cl. 201—41 **6 Claims**



1. A process for the separation of so-called float tar occurring in a tar separator where float tar, crude tar and ammonia-water layers are formed in the mass received for separation from the collector chamber of a coking installation, the said process comprising the steps of skimming the float tar consisting of a mixture of tar, coal dust, water and gas bubbles off the ammonia-water mixture flowing above the crude tar and passing the skimmed float tar to a comminuting and homogenizing zone and homogenizing and comminuting the float tar therein so as to convert it into a high viscosity tar which is then further processed either separately or together with the bulk of the crude tar.

4. An installation for the separation of float tar occurring in the tar separator of a coking plant where an ammonia water-crude tar mixture is received from a collector chamber of the coking plant, said installation comprising an open-top tar separator for receiving and separating said float tar and said ammonia-water mixture from said crude tar;

a channel in said tank separator normally floatingly supported on said ammonia-water mixture and extending across said tank separator;

skimming means in the form of a bucket wheel revolving in said tank separator for skimming the float tar from the ammonia-water mixture flowing in the tank separator and for passing the separated float tar into said channel; and

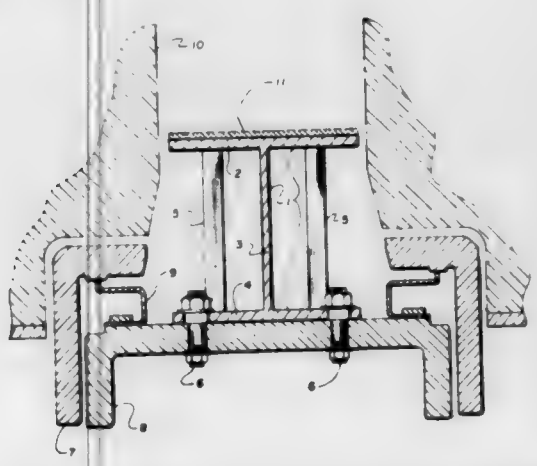
a comminution and homogenizing means provided at one end of said channel for receiving and processing said float tar, whereby a high viscosity tar is formed from said float tar by the comminution and homogenizing means which is then passed for further processing separately or together with the bulk of the crude tar.

4,086,145

COKE OVEN DOOR LINING

Joseph M. Muller, Edgeworth, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Mar. 14, 1977, Ser. No. 777,258
Int. Cl.[2] C10B *25/06*
U.S. Cl. 202—248 **9 Claims**



1. A vented metallic coke oven door lining assembly, connected to a coke oven door frame comprising:

a metallic, generally flat barrier for preventing coal and coke from piling against said coke oven door frame and thereby preventing coke oven gas from easily rising to the top of the coke oven, said barrier having a length sufficient to extend approximately from top to bottom of a coke oven interior, a width sufficient to extend approximately from one coke oven sidewall to the other, and spaced apart a sufficient distance from and generally parallel to said coke oven door to permit coke oven gases to rise essentially unimpeded upwardly between said barrier and said coke oven door for supporting and maintaining said barrier in position; said support means not essentially obstructing the space between the barrier and coke oven door so as to enable coke oven gases to pass essentially unimpeded upwardly through said space and to thereby lower the gas pressure in the oven interior at the coke oven door location and to reduce the tendency of coke oven gases to leak from the coke oven interior.

4,086,146

WATER TREATING PROCESS

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 631,344, Nov. 12, 1975, abandoned. This application Mar. 3, 1977, Ser. No. 774,097
Int. Cl.[2] C23F *11/10*; B01D *3/34*
U.S. Cl. 203—7 **3 Claims**

1. A process for inhibiting the deposition of scale onto the heat exchange surfaces in a seawater distillation plant which comprises adding to the liquid in the plant a composition consisting essentially of a copolymer of a member of the group consisting of maleic anhydride and maleic acid and a member of the group consisting of furan and salts thereof, the ratio of maleic component to furan in the reactant solution being 0.67 to 1.5; and the copolymer being present in a concentration of 0.1 to 15 parts per million.

4,086,147

POLYMERIZATION INHIBITOR FOR VINYL AROMATIC COMPOUNDS

James M. Watson, Big Spring, Tex., assignor to Cosden Technology, Inc., Big Spring, Tex.

Filed Dec. 10, 1976, Ser. No. 749,406
Int. Cl.[2] B01D *3/34*; C07D *7/18*
U.S. Cl. 203—9 **11 Claims**

1. A process for inhibiting the polymerization of a readily polymerizable vinyl aromatic compound during the distillation thereof at elevated temperatures of from about 150° to about 250° F. comprising:

a. distilling said vinyl aromatic compound at said elevated temperatures in the presence of an amount of m-nitro-p-cresol sufficient to substantially inhibit formation of vinyl aromatic polymer due to said elevated temperatures; and

b. recovering said vinylaromatic compound from said distillation step with a minimum loss due to the polymerization thereof at said elevated temperatures.

4,086,148

PROCESS OF MAKING ETCHED ALUMINUM SHEETS AND ELECTROLYTIC CAPACITORS FORMED THEREFROM

Michel Badia, Echirolles, France, assignor to Societe Anonyme de Traitement des Metaux et Alliages (SATMA), Goncelin, France

Filed Nov. 19, 1976, Ser. No. 743,128
Claims priority, application France, Dec. 8, 1975, 75 38228
Int. Cl.[2] C25D *11/04*; C25F *3/04*; H01G *9/00*; C22C *21/00*
U.S. Cl. 204—33 **1 Claim**

1. In a low voltage electrolylic capacitor formed of a cold-rolled electro-chemically etched, anodized sheet formed from a refined aluminum base alloy having an aluminum content of at least about 99.99% and including chromium, the improvement comprising said sheet having a final chromium content of between about 0.002% and about 0.2% and being formed by said cold-rolling and electro-chemical etching without intervening recrystallization annealing whereby said sheet imparts improved electrical and mechanical properties to the capacitor.

4,086,149

CATHODE ELECTROCATALYST

Aleksandrs Martinsons, Wadsworth, and Marilyn Crenshaw, Copley, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 4, 1976, Ser. No. 711,759
Int. Cl.[2] C25B *1/34, 11/04*
U.S. Cl. 204—59 R **3 Claims**

1. In a method of conducting electrolysis in an electrolytic cell having an anode in an anolyte compartment and a cathode in a catholyte compartment, which method comprises feeding an alkali metal chloride brine to the anode compartment, passing an electrical current from said anode to said cathode whereby to evolve chlorine at said anode and hydrogen at said cathode, the improvement wherein said cathode has a ferrous substrate with an electroconductive surface thereon, said electroconductive surface being prepared by the method comprising:

inserting the ferrous substrate into an electroless plating solution comprising:

a. a tungsten salt;

b. salts chosen from the group consisting of cobalt salts, nickel salts, and mixtures thereof;

c. a phosphorous containing reducing agent;

d. an acid complexing agent; and

e. a buffering agent;

electrolessly depositing a coating from said solution onto said substrate; and

subsequently electrolytically depositing from said electroless plating solution a coating of at least 3×10^{-5} equivalents per square centimeter of substrate from said solution onto said substrate as a cathode whereby to provide a coating on said substrate comprising tungsten, phosphorous, and a metal chosen from the group consisting of cobalt, nickel, and mixtures thereof.

4,086,150

CHROMATE REMOVAL BY PRECIPITATION

Bruno Kindl, Kingston, and Jennifer Geraldine Atkinson, Amherstview, both of Canada, assignors to Huron Chemicals Limited, Kingston, Canada

Filed Jun. 27, 1977, Ser. No. 810,544
Int. Cl.[2] C25B *1/26;* C01B *17/00*
U.S. Cl. 204—95 **16 Claims**

1. A method of removing chromate from aqueous alkali metal chlorate solutions which comprises:

adding to a chromate-containing aqueous solution of an alkali metal chlorate, at a temperature of about 40° to about 60° C, a water-soluble sulfide in an amount ranging from about 70 to about 200% of the stoichiometric value required to react with said chromate, said aqueous solution having an initial pH in the range of 7–8;

then adding to said solution a water-soluble ferrous salt in an amount ranging from about 30 to about 100% of the stoichiometric value required to react with said chromate, and adjusting the pH of the solution such that the final pH is in the range of about 1.8 to about 3.0, whereby said chromate is converted to an insoluble trivalent chromium-containing material and the sulfide is completely converted to elemental sulfur; and

separating said insoluble trivalent chromium-containing material from said solution.

4,086,151

CURABLE MIXTURES AND CURED RESINS MADE FROM LINEAR POLYMERS OF GLYCIDOL

Violete L. Stevens; Arthur R. Sexton, both of Midland, Mich., and Frederick P. Corson, Sudbury, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 715,586, Aug. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 444,078, Feb. 20, 1974, Pat. No. 4,014,854. This application Jun. 30, 1977, Ser. No. 811,514
Int. Cl.[2] C08F *2/46;* C08G *23/22*
U.S. Cl. 204—159.16 **13 Claims**

1. A curable mixture comprising: Component (a) a compound represented by the formula $R((R'O)_mX)_n$ wherein R is the residue left by removal of n active hydrogen atoms from an initiator compound, RH_n; each R′ independently is an alkylene radical selected from the group consisting of ethylene, trimethylene, tetramethylene, 1,2-butylene, 2,2-bis(halomethyl)-1,3-propylene, and groups of the formula

$$-CH_2\underset{|}{C}HCH_2A,$$

each A independently is H, Cl, Br or OX; each X independently is H or the acyl radical of a carboxylic acid with the proviso that at least one R′ is 3-hydroxyl-1,2-propylene and at least one is a group of the formula

$$-CH_2\underset{|}{C}HCH_2OX$$

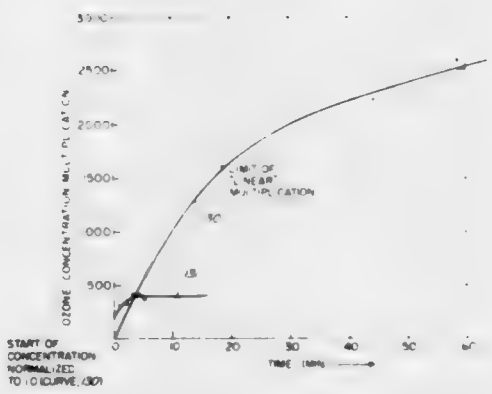
wherein X is the acyl radical of an α,β-unsaturated carboxylic acid; and m and n are integers such that the total number of R′O groups is at least 2, n being 1–8; and Component (b) a polyfunctional compound which is reactive with the primary hydroxyls or with the α,β-unsaturated portions of X in Component (a) and which upon reaction with Component (a) forms a cross-linked composition therewith wherein Component (b) is selected from the group consisting of polyisocyanates, polyisothiocyanates, polycarboxylic acids, polyoxiranes and poly(vinylic unsaturated) compounds.

4,086,152

OZONE CONCENTRATING

Stanley R. Rich, Eastman, N.H., and Theophanes G. Pantazelos, Framingham, Mass., assignors to RP Industries, Inc., Hudson, Mass.

Filed Apr. 18, 1977, Ser. No. 788,149
Int. Cl.[2] B01K *1/00;* C01B *13/11*
U.S. Cl. 204—176 **10 Claims**



1. A method of generating ozone in an oxygen-bearing gas to produce a concentration of ozone in said gas in excess of 10,000 parts per million, comprising the steps of providing a quantity of said gas in a confined path, treating said quantity essentially solely with negatively charged ions to generate ozone from a minor portion of said oxygen, and repeating said treatment of substantially all of said quantity of said gas a plurality of times to increase the concentration of said ozone substantially linearly with respect to energy consumption to a level in excess of 10,000 parts per million.

4,086,153

METHOD OF PRODUCING A COMPOSITE COATED STEEL SHEET

Keiji Ariga, Fuchu; Nobuyuki Tsutsui, and Katsumi Kanda, both of Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1976, Ser. No. 736,529
Claims priority, application Japan, Nov. 4, 1975, 50-121425
Int. Cl.[2] C25D *13/06, 13/10*
U.S. Cl. 204—181 R **10 Claims**

1. A method of producing a composite coated steel sheet which comprises electrolytically treating a steel sheet in a suspension solution consisting essentially of a water-soluble resin or a water-dispersible resin; a water-dispersible sol of a metal compound and an infusible organic polymer resin powder, removing the coated steel sheet from the suspension solution and then curing the coated steel sheet by heat treatment.

4,086,154

APPARATUS FOR DETERMINING STRESS IN AN ELECTRODEPOSIT

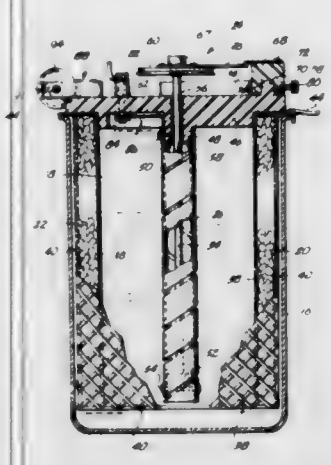
Harry C. Hicks, Puyallup, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 26, 1976, Ser. No. 708,401
Int. Cl.[2] G01L *1/00*
U.S. Cl. 204—195 R **9 Claims**

1. In a spiral contractometer for determining the stress within an electrodeposit wherein said spiral contractometer includes a spiral substrate suspendible in an electrolytic solution as the cathode of an electrodeposition cell, a first end of

said spiral substrate being rigidly affixed to a support plate positioned above the surface of said electrolytic solution, said spiral contractometer including a rod extending downwardly through the central opening of said spiral substrate with a first end of said rod securely attached to the second end of said spiral substrate, the second end of said rod projecting upwardly through an opening in said support plate, the improvement comprising:

a vernier dial indicator directly connected to said second



end of said rod projecting through said support plate, said vernier dial indicator including at least a segment of a disk having graduations along the curved periphery thereof and a graduated plate slidably mounted to said support plate, said graduated plate movable along the curved periphery of said disk and securable to said support plate in a selected orientation with said graduations of said disk, said rod supported solely by said attachment between said first end of said rod and said second end of said spiral substrate.

4,086,155

ELECTROLYZER WITH RELEASED GAS

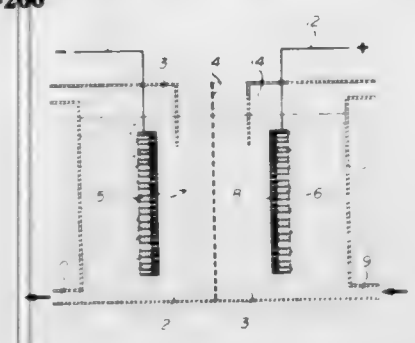
Pierre Jonville, Plan-les-Ouates, Switzerland, assignor to Battelle Memorial Institute, Geneva, Switzerland

Filed Apr. 21, 1976, Ser. No. 678,745

Claims priority, application Switzerland, Apr. 25, 1975, 5365/75

Int. Cl.² C25B *1/16, 1/26, 11/03, 11/10*

U.S. Cl. 204—266 **7 Claims**



1. An electrolyzer comprising at least one cathode and at least one anode disposed in an aqueous electrolyte bath, the electrodes each having at least one active surface directed substantially in facing relation to at least one active surface of the electrode of opposite polarity, at least one of said electrodes being permeable to the gas and being the source of a gas release at the time of operation of the electrolyzer, a distinct porous layer applied to and covering at least one portion of said active surface of said one electrode permeable to the gas, said porous layer being constituted by at least one refractory oxide which is electrically insulative and chemically inert with regard to the electrolyte and to the products formed at the time of electrolysis, at least in the range of normal operating temperature of the electrolyzer, said layer having a homogeneous distribution of pore sizes of an absolute value sufficient for the electrolyte to traverse this layer and impregnate the electrode, the mean value of the radii of the pores of the said insulating refractory oxide layer being at least as small as one-tenth of that of the pores of the electrode that it covers, said electrode and the said oxide layer cooperatively forming an element of selfsupporting structure, said oxide layer constituting a surface portion in contact with the electrolyte.

4,086,156

PITCH BONDED CARBON ELECTRODE

Ghazi Mourad Dickakian, Brussels, Belgium, assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 637,223, Dec. 3, 1975, abandoned. This application Apr. 18, 1977, Ser. No. 788,404

Claims priority, application United Kingdom, Dec. 13, 1974, 53926/74

Int. Cl.² C25C *7/02*; C10C *3/00, 3/06*

U.S. Cl. 204—294 **13 Claims**

1. A process for preparing chemical pitch which comprises stripping under reduced pressure steam cracker tar to obtain a pitch having an initial boiling point of between 350° C and 400° C at atmospheric pressure, heat soaking the pitch at 360° C to 420° C in the absence of air or oxygen at a pressure in the range of from sub-atmospheric to 4 atmospheres absolute and stripping under reduced pressure the soaked pitch to obtain a product having a minimum softening point (R and B) of 75° C.

11. Chemical pitch whenever prepared by a process claimed in claim **1**.

13. An electrode comprising coke and 26 to 32 wt.% based on the weight of coke of chemical pitch as claimed in claim **11**.

4,086,157

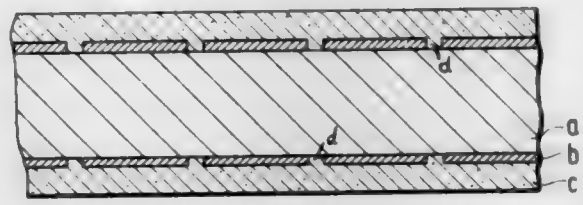
ELECTRODE FOR ELECTROCHEMICAL PROCESSES

Konrad Koziol, Rothenbach an der Pegnitz; Karl-Heinz Sieberer, Zirndorf uber Nurnberg, and Hans-Carl Rathjen, Rothenbach an der Pegnitz, all of Germany, assignors to C. Conradty, Germany

Continuation-in-part of Ser. No. 438,388, Jan. 31, 1974, abandoned, and a continuation-in-part of Ser. No. 234,846, Mar. 15, 1972, abandoned. This application Apr. 15, 1976, Ser. No. 677,083

Int. Cl.² C25B *11/10*

U.S. Cl. 204—290 F **15 Claims**



1. In an electrode for electrode processes and comprising a valve metal as a base member the improvement which comprises:

a. a base layer coated on said base member and comprising an electrically conductive chemical element having no substantial valve effect; and

b. a gas-tight and liquid-tight cover layer on said base layer and comprising:

1. a valve metal oxide selected from the group consisting of titanium dioxide and tantalum oxide;

2. a doping material to increase the electrical conductivity of said valve metal oxide and comprising, when titanium oxide is said valve metal oxide, an oxide selected from the oxides of niobium, tungsten, molybdenum, antimony, and tin and comprising, when tantalum oxide is said valve metal oxide, an oxide selected from the oxides of tungsten, molybdenum, antimony, and tin;

3. at least one of the oxides stable in an electrolysis medium selected from the oxides of barium, gallium, germanium, lead, bismuth, selenium, tellurium, copper,

cadmium, the rare earth elements, manganese, iron, cobalt, and nickel;

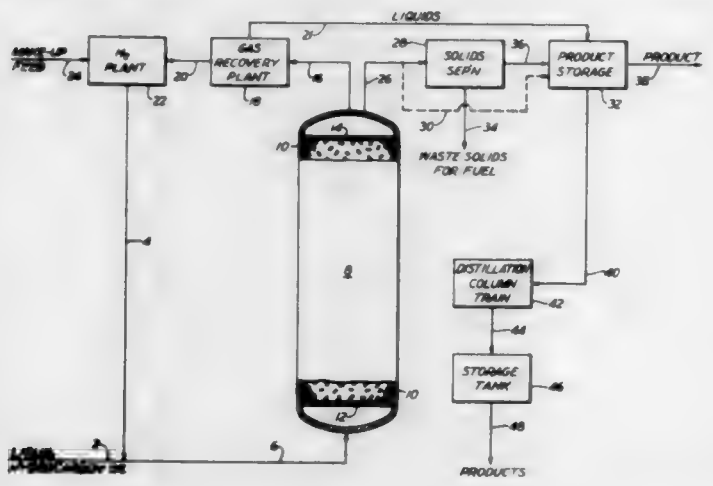
wherein the proportion of said doping material in said valve metal oxides is less than about 28 mol percent of the mixture and the proportion of said stable oxides in said cover layer is greater than about 50 mol percent.

4,086,158

PROCESS FOR UPGRADING SOLIDS-CONTAINING LIQUID HYDROCARBON OILS

Howard G. McIlvried, Pittsburgh, and Angelo A. Montagna, Monroeville, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 24, 1976, Ser. No. 726,146
Int. Cl.[2] C10G *23/02, 23/16*
U.S. Cl. 208—264 **14 Claims**



1. In a process wherein a solids-containing liquid hydrocarbon oil and hydrogen are contacted with a hydrogenation catalyst in a single stage to upgrade said liquid hydrocarbon oil the improvement which comprises passing said liquid hydrocarbon oil, together with said solids, and said hydrogen under hydrogenation conditions, which include a temperature of about 260° to about 480° C., a pressure of about 500 to about 10,000 pounds per square inch gauge, a weight hourly space velocity between about 0.25 to about 50 pounds of liquid hydrocarbon oil per pound of catalyst per hour and hydrogen in amounts between about 1000 to about 20,000 standard cubic feet per barrel of liquid hydrocarbon oil, while maintaining a Reynolds number, based on the hydrogen flow rate, greater than about 10, through the void spaces of a fixed catalyst bed composed of said hydrogenation catalyst under a flooded-bed type reaction system, the catalyst particles of said catalyst having a maximum wall thickness in the least thick portion thereof of about 1/32 to about ¼ inch, said catalyst bed having a reactor void volume of about 50 to about 90 volume percent, and thereafter removing solids from said treated hydrocarbon oil.

4,086,159

SOLVENT EXTRACTION OF AROMATIC HYDROCARBONS WITH ETHYLENE OXIDE POLYOL ADDUCTS

Clyde Edward Baxter, Angleton, and Arthur Emilio Gurgiolo, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 13, 1976, Ser. No. 722,847
Int. Cl.[2] C10G *21/16*
U.S. Cl. 208—333 **7 Claims**

1. A process for the separation of aromatic hydrocarbon compounds from mixtures containing both aromatic and non-aromatic hydrocarbon compounds which comprises:

(A) contacting a mixture containing both aromatic and non-aromatic hydrocarbon compounds with an ethoxylated alkane polyol solvent having at least three ethoxylated hydroxyl groups and a number average molecular weight range from about 250 to about 1100 to from an extract contained said solvent and the aromatics wherein said polyol is derived by ethoxylating an alkane polyol having 3-6 carbon atoms and 3-4 hydroxyl groups, and

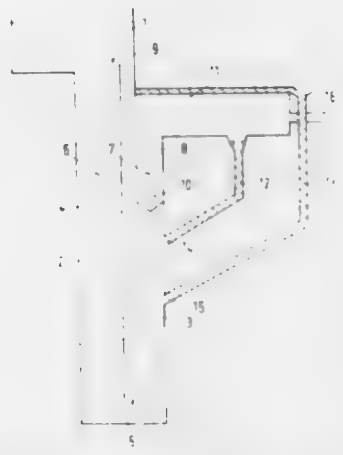
(B) separating said extract from the non-aromatic hydrocarbon compounds.

4,086,160

TREATMENT OF SOLIDS-LIQUID-GAS MIXTURES

Frank Cornelius Roesler, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jul. 8, 1976, Ser. No. 703,663
Claims priority, application United Kingdom, Jul. 10, 1975, 29058/75
Int. Cl.[2] C02C *1/06*
U.S. Cl. 210—7 **7 Claims**



1. A method of treating a waste water mixture containing solid particles and biologically degradable material in apparatus including a basin, a downcomer, a riser operatively communicating with the downcomer both through the basin and at the lower end of the downcomer, and a floatation chamber operatively connected to the riser and extending upwardly therefrom, said method comprising the steps of continuously circulating the mixture contained in the basin-downcomer-riser system down said downcomer, up said riser, and back down said downcomer until sufficient treatment of the biologically degradable material is achieved, and supplying oxygen-containing gas to said downcomer so that said gas flows co-currently with mixture flowing down said downcomer, and upwardly with said mixture in said riser, at least some of the oxygen-containing gas being dissolved in said mixture: separating a portion of the upwardly moving mixture in the riser with dissolved gas contained therein from the mixture moving upwardly in the riser, by diverting it into the floatation chamber, at a first vertical level of the riser; and gradually decreasing the hydrostatic pressure on said separated portion to release gas from solution to form gas bubbles attached to solid particles present in said separated mixture portion and thereby effectively separate the solid particles from the liquid in the separated mixture portion to produce a floated solids-enriched mixture, wherein the improvement comprises

hydrostatically feeding the floated solids-enriched mixture into the riser from the chamber at a second level, below said first level, the driving force for entry at the second level being provided by the lower relative density, as a result of its content of gas bubbles, of the mixture flowing upwardly in the riser.

4,086,161

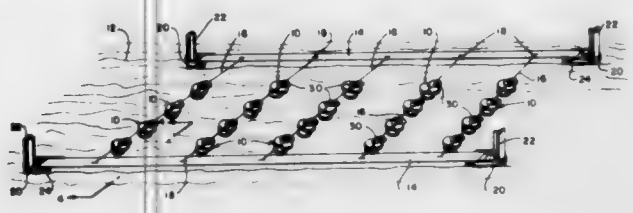
ECOLOGICAL SYSTEM AND METHOD

Robert Edward Burton, 222 Franklin, Willits, Calif. 95490

Filed Dec. 13, 1976, Ser. No. 750,121
Int. Cl.[2] C02C *5/10*
U.S. Cl. 210—13 **15 Claims**

1. In a process for maintaining the trophic balance between algae, algal feeders and the like, in an open body of water subject to eutrophication, the steps of isolating a profusion of

substantially individualized bark fibers by adhering the same to relatively flat flotation disc members forming self-contained flotation units of organic material having a specific density less than that of water, said step of adhering the fibers being carried out by applying an organic adhesive coating to said flotation disc members and bringing said bark fibers into contact with said coating, said bark fibers functioning as a means to attract and hold excessive nutrient deposition in the form of colloidal wastes, single-celled bacteria, cytoplankton and the like and aquatic algae produced thereby while at the same time providing a safe habitat for minute animal organisms capable of feeding thereon in the form of algae predators and feeders in the form of crustacea, rotifers, snails, zooplankton and the like, and dispersing said self-contained bark fiber flotation units in an upper zone of said body of water adjacent to and beneath the surface thereof and in the path of likely growth and movement of algae and algae nutrients, said upper zone for dispersal of said bark fiber units being sufficiently shallow in depth to be relatively rich in dissolved oxygen as respects lower zones of said body of water.



4,086,162

METHOD OF ADSORPTION BY ACTIVATED CHARCOAL IN A LOWER FLUIDIZED BED AND UPPER FIXED BED

Jacques Benzaria, 97, rue du Bas-Saut, 60230 Chambly, France

Continuation of Ser. No. 517,056, Oct. 22, 1974, abandoned.
This application Jun. 16, 1976, Ser. No. 696,261
Claims priority, application France, Oct. 22, 1973, 73 37630
Int. Cl.[2] B01D *35/00, 39/00*
U.S. Cl. 210—20 **4 Claims**



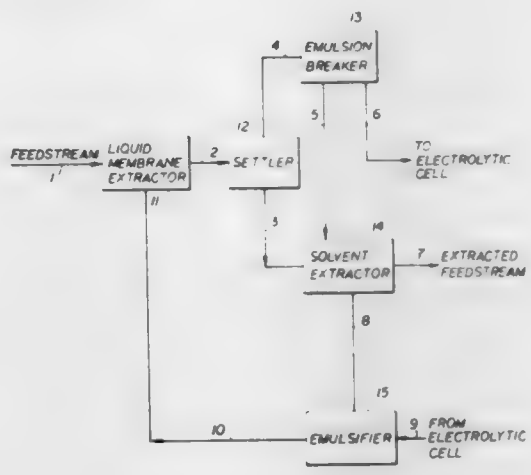
1. A process for adsorption of components of a fluid phase on beds of activated carbon comprising passing the fluid to be treated through a lower fluidized bed of activated carbon at a rate sufficient to create a fluidized bed, upwardly passing the fluid through a junction area and then upwardly through an upper fixed bed of activated carbon at a slower rate of speed in a ratio of not more than about 1:10 with respect to the rate of the lower bed, said difference in the rate of flow being used to maintain the lower bed in fluidized form and said upper bed in fixed form and said rate of flow being controlled by the ratio of the cross-section of the lower bed to the upper bed, said ratio being 1/4 to 1/10 and recovering the treated fluid.

4,086,163

METAL EXTRACTION BY COMBINED SOLVENT AND LM EXTRACTION

Robert P. Cahn, Millburn, and Norman N. Li, Edison, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Sep. 29, 1976, Ser. No. 727,845
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—22 D **16 Claims**



1. A process for removing a dissolved component from an aqueous feedstream comprising:

(a) contacting said feedstream with an emulsion having a continuous phase immiscible with the feedstream and permeable to said dissolved component, and a dispersed phase, for a period of time and at conditions sufficient for said emulsion to absorb a portion of said dissolved component ranging from 20 to 90 weight %;

(b) removing at least part of said emulsion from said feedstream which emulsion contains said portion of said dissolved component;

(c) demulsifying at least a portion of said removed emulsion into the continuous and dispersed phases;

(d) contacting the feedstream resultant from step (b) with a solvent immiscible with said feedstream and permeable to said dissolved component, said solvent comprising at least part of the continuous phase resultant from the demulsification step (c), whereby said solvent has a capacity to absorb a major amount of the remaining dissolved component.

4,086,164

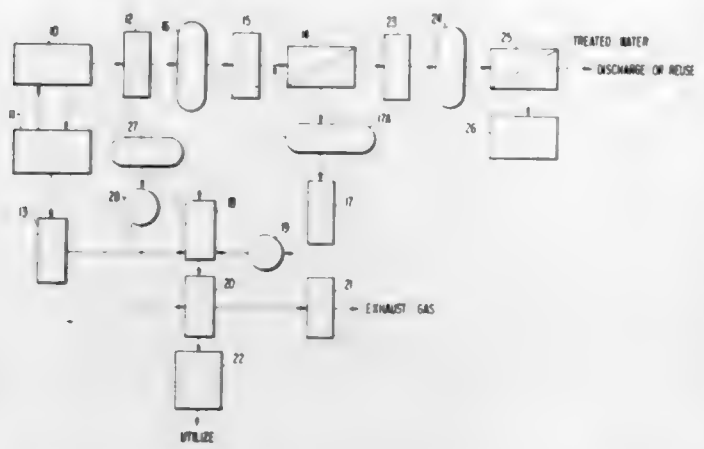
METHOD OF DISPOSING OF WASTE WATER CONTAINING EMULSIFIED OIL

Mitsuhiko Noda, and Kikuo Nomura, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 10, 1976, Ser. No. 665,480
Claims priority, application Japan, Mar. 10, 1975, 50-29208
Int. Cl.[2] C02C *5/04*
U.S. Cl. 210—46 **11 Claims**

1. A method of disposing of oil containing emulsified waste water from metal working processes which comprises concentrating an oil containing emulsified waste water, mixing the concentrate obtained at least with a filtration auxiliary which contains filtration dregs of solid foreign bodies resulting from the working of metals to form a substantially independently combustible mixture, and burning the resulting mixture, said

emulsified waste water remaining in an emulsified state after concentration, said filtration auxiliary comprising a substance



used in filtering solid foreign bodies from the oil when said emulsified oil is recycled in the metal working processes.

4,086,165

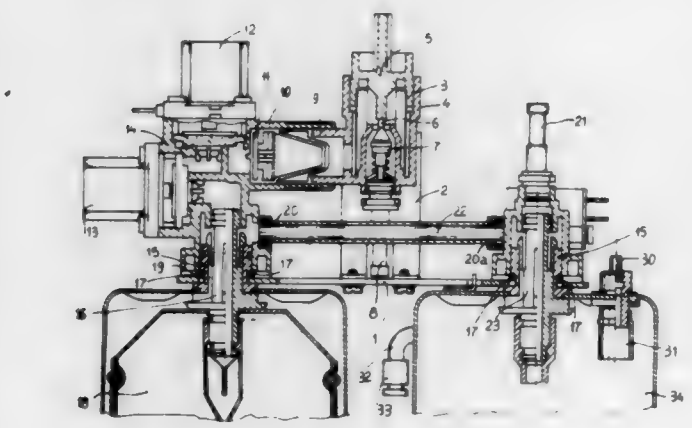
LIQUID-TREATMENT SYSTEM

Augusto Formenti, P.O. Box 4102, Johannesburg, South Africa

Continuation-in-part of Ser. No. 491,874, Jul. 25, 1974, abandoned. This application Dec. 8, 1976, Ser. No. 748,772

Int. Cl.[2] B01D *29/36*; C02B *1/16*

U.S. Cl. 210—104 **8 Claims**



1. A liquid-treatment system made of modular elements for treating liquids such as water comprising; a first tank having a liquid-treatment cartridge therein for treating all of a liquid received for treatment; a second tank constructed similarly to the first tank without a cartridge for receiving the liquid treated in said first tank; a modular liquid-control unit for controlling flow of liquid into said first tank to be treated and flow of liquid from said first tank to said second tank and outflow of treated liquid from said second tank comprising, two similar modular couplings symmetrically mounted and each removably connected to the interior of a corresponding one of said first tank and said second tank, a mounting element fixedly mounting said modular couplings relative to each other thereon for mounting and for removal of said liquid-control unit as an assembly with respect to the two tanks, mounting elements on said modular couplings for mounting thereof removably on the corresponding tanks, each modular coupling having two independent coaxial flow paths comprising an inner and an outer flow path, a removable connecting conduit connecting the outer flow paths of the modular couplings, a supply valve mounted on said mounting element connectable in use to a supply main for supplying liquid to be treated and having a valve element for turning on and off flow of liquid into said liquid-control unit, a flow-control device in series with said supply valve for controlling the flow of liquid from said supply valve at a substantially constant flow at a pressure tolerable by the liquid-treatment system in the presence of pressure variations in the supply main and for precluding water-hammering in the system, at least one electromagnetically-controlled valve closed when deenergized mounted on and upstream of the modular coupling mounted on said first tank and downstream of said flow-control device for supply of liquid therethrough to the inner flow path of said modular coupling on said first tank for flow through said liquid-treatment cartridge, a pair of similar microswitches on said fluid-control unit comprising a first microswitch for controlling application of an electrical signal to said electromagnetically-controlled valve for opening for allowing flow of liquid into said first tank in dependence upon the water level in said second tank to render said first microswitch effective to apply said signal when said liquid in said second tank is below said predetermined level; means for rendering the second of said microswitches effective to control the outflow of liquid from said second tank through the inner flow path of said second modular coupling; said second tank having one-way means above said predetermined level for venting it to the atmosphere; and one-way means on said second tank for allowing entry of filtered air thereinto as the level of said second tank varies downwardly.

4,086,166

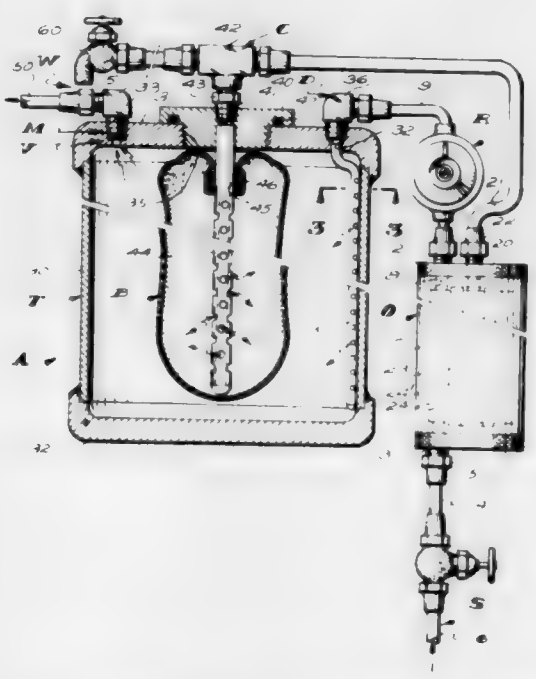
WATER FILTERING AND DISPENSING APPARATUS

Ernest Newell Martin, 1027 E. 5th St., Escondido, Calif. 92025

Continuation-in-part of Ser. No. 597,354, Jul. 21, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 781,682

Int. Cl.[2] B01D *31/00*

U.S. Cl. 210—134 **6 Claims**



1. A water filtering and dispensing apparatus comprising a filter device including a case, a filter pack within the case and defining upstream and downstream sides thereon and in the case, a service water inlet port and a brine outlet port in the upstream side of the case and a filtered water delivery port in the downstream side of the case, a water supply line connected with and between a high pressure service water system and the inlet port, an elongated brine line connected with and extending from the brine outlet port and an elongate filtered water delivery line connected with and extending from the delivery line downstream from said device, a holding tank with an upstream brine inlet opening, a downstream brine outlet opening spaced from the brine inlet opening and a filtered water transfer opening spaced from said brine inlet and outlet openings; the end of the brine line remote from the device is connected with the brine inlet opening, an inflatable filtered water receiving bladder within the tank with its interior communicating with the transfer opening, means connecting said transfer opening with the delivery line between the device and the dispensing valve, a waste line connected with and extending downstream from the brine outlet openings, a pressure regula-

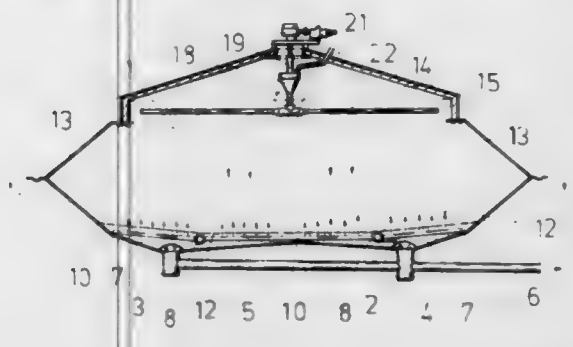
tor in the brine line between the device and the tank reducing the pressure on brine flowing into and through the tank below the pressure in service water system and in the delivery line when the dispensing valve is closed, flow control means downstream of the tank limiting the flow of brine into, through and from the tank to near the rate of flow of service water into the device and the corresponding rate of flow of brine and filtered water from the device when the dispensing valve is closed and at a rate below the rate of flow of brine into the tank and the rate of flow of filtered water from the apparatus when the dispensing valve is open and a normally open bladder actuated shut-off valve at the brine outlet opening and operated to close when the bladder is inflated in the tank by a predetermined full supply of filtered water whereby flow of service water into and filtered water and brine through and out of the apparatus is stopped until the dispensing valve is opened, said full supply of filtered water is depleted and said shut off valve is opened.

4,086,167

BIOFILTER

Esko Tapola; Matti Sten, and Onni Koistinen, all of Imatra, Finland, assignors to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Jan. 10, 1977, Ser. No. 758,199
Int. Cl.[2] C02C *5/10*
U.S. Cl. 210—150 **3 Claims**



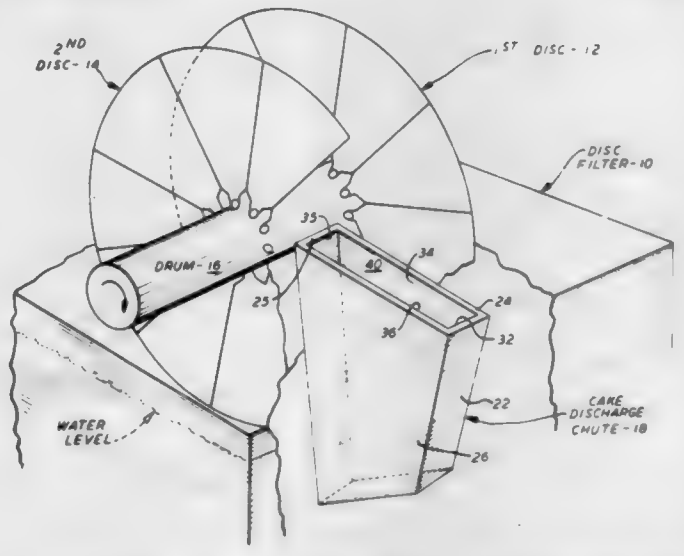
1. An improved biofilter for the treatment of waste water and gases comprising a depression formed in the ground, a layer of gravel permeable to both liquid and gas carried on the bottom of said depression, a bed of coniferous tree barking residue containing micro-organisms carried within said depression and supported on said layer of gravel for passing waste water to be treated therethrough, said bed of barking residue extending above the top of said depression in a heap having sloping side walls, a plurality of articles which minimally affect the micro-organism activity distributed within said bed of barking residue to reduce compactness thereof to render said bed of barking residue more permeable to liquid and gas so as to facilitate the passage of waste water therethrough, said articles being selected from the group consisting of pieces of plastic, pine cones, pieces of tree limbs with the bark thereof intact, and tubular pieces of paper roll cores, a plastic fabric lining said sloping side walls, a roof covering the top of said heap, means supported by said roof for uniformly distributing waste water to be treated upon said bed of barking residue, said distributing means including a spray pipe mounted in said roof for rotation in a substantially horizontal plane about a vertical axis of rotation, said spray pipe having a plurality of nozzles distributed therealong, a deflection plate associated with each nozzle, a tube having a plurality of holes therein connected with said spray tube to supply said waste water thereto, a feed cone surrounding a portion of said tube, and a pipe communicating with said feed cone for supplying waste material thereto for uniform distribution into said spray pipe, a pipe system of substantially radially extending perforated pipes embedded in said layer of gravel and located directly beneath said bed of barking residue for blowing gas containing oxygen against the flow of waste water through said bed, an exhaust valve carried by said roof by exhausting the gas blown by said pipe system which has passed through said bed of barking residue, a system of underdrain pipes located at the bottom of said depression below said pipe system embedded in said layer of gravel for collecting treated water which has traversed said bed of barking residue, and drain wells communicating with said underdrain pipes for draining said treated water.

4,086,168

DISC FILTER CHUTE LINER

Richard D. Moore, New Boston, N.H., assignor to Plastic Techniques, Inc., New Boston, N.H.

Filed Oct. 16, 1975, Ser. No. 622,870
Int. Cl.[2] B01D *33/22*
U.S. Cl. 210—330 **1 Claim**



1. A disc filter chute liner for lining a cake discharge chute, the cake discharge chute provided with a plurality of walls the open upper ends of which define a cake inlet and the open lower ends of which define a cake outlet and said walls having internal surfaces interconnecting said cake inlet and outlet and defining a passage through said cake discharge chute through which cake passes and said internal surfaces meeting in sharp corners and a portion of the cake passing through said cake discharge chute adhering to said internal surfaces of said walls and to said sharp corners, and said walls also provided with upper edges defining said cake inlet, comprising:

generally hollow liner means provided with a plurality of walls having open upper and lower ends and for being inserted in said cake discharge chute with said open upper and lower ends thereof being generally coincident with said cake inlet and outlet, respectively, of said cake discharge chute and with said walls thereof being disposed between said internal surfaces of said walls and said sharp corners of said cake discharge chute and said cake passing therethrough:

said liner means provided with a pair of opposed trapezoidally shaped side walls and a pair of opposed rectangularly shaped end walls, said side walls and end walls being formed integrally and provided with external surfaces having smooth external transitional corners therebetween and said external surfaces and external transitional corners being generally complementary in configuration to said internal surfaces and sharp corners of said walls of said cake discharge chute, and said side and end walls of said liner means provided with upper edges and lower edges;

said side and end walls of said liner means provided with internal surfaces having smooth transitional corners therebetween and which internal surfaces define a passage through said liner means through which said cake passes upon said liner means being inserted in said cake discharge chute;

said liner means made of a predetermined material providing said internal surfaces and said smooth internal transitional corners of said opposed side and end walls thereof with smooth and slick internal surfaces with respect to said cake and said smooth and slick internal surfaces and corners for preventing said cake from adhering thereto and

thereby also for preventing said cake from adhering to said internal surfaces and sharp corners of said walls of said cake discharge chute;

said liner means further provided with a plurality of generally trapezoidally shaped upper section portions formed integrally with each other and with said upper edges of said opposed side walls and one of said end walls and with a generally trapezoidally shaped upper portion of said other end wall, and said trapezoidally shaped upper sections being formed at a predetermined outwardly flaring angle with respect to said side walls and said one end wall and defining said open upper end of said liner means and for providing said liner means with a funnel-like upper portion for overhanging said upper edges of said side walls of said cake discharge chute and said funnel-like upper portion for facilitating the entrance of said cake into said liner means; and

one of said rectangularly shaped end walls of said liner means being smaller than the other rectangularly shaped end wall and said trapezoidally shaped side walls of said liner means being disposed such that said lower edges thereof are at an angle with respect to the horizontal thereby providing said liner means with a tapered lower portion defining said open lower end thereof and said tapered lower portion facilitating discharge of said cake from said liner means.

4,086,169

LAMELLA SEPARATOR FOR SEDIMENTING (GRAVITY SEPARATING)

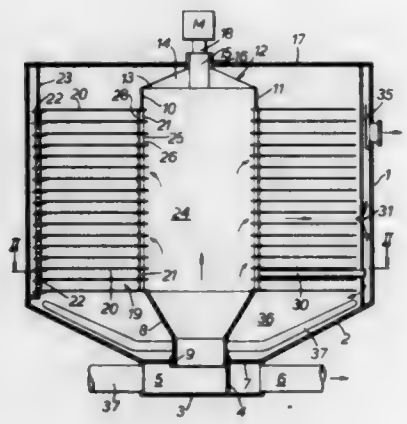
Hans Petter Skarheim, Hygge, and Torbjorn Damhaug, Oslo, both of Norway, assignors to Thune-Eureka A/S, Tranby, Norway

Filed Sep. 17, 1976, Ser. No. 724,219

Claims priority, application Norway, Sep. 18, 1975, 753186; Aug. 30, 1976, 762978

Int. Cl.² B01D *21/24*

U.S. Cl. 210—519 **14 Claims**



1. Lamella separator for sedimenting, characterized in that it comprises a lamella stack disposed on the vertical axis in a container, means mounting the lamella stack for rotation about its vertical axis in the container, said lamella stack havng horizontally-disposed, mutually spaced lamellae, and having a central through opening, at least one sludge-removing device for each lamella, a device for effecting a relative movement between each lamella and its associated sludge-removing device, an intake and an outlet in the container for the fluid to be treated, as well as an outlet in the container for the sludge that has been separaed out, and a radial wall in the annular space between the wall of the container and the lamella stack, in front of the scraper with regard to the direction of rotation of the lamellae.

4,086,170

PROCESS FOR PREPARING OVERBASED CALCIUM SULFONATES

Georges De Clippeleir, and André Vanderlinden, both of Brussels, Belgium, assignors to Labofina S. A., Brussels, Belgium

Continuation-in-part of Ser. No. 758,155, Jan. 10, 1977, abandoned. This application Feb. 1, 1977, Ser. No. 764,691

Claims priority, application Belgium, Oct. 8, 1976, 171325

Int. Cl.² C10M *1/40, 3/34, 5/22, 7/38*

U.S. Cl. 252—33 **12 Claims**

1. A process for preparing overbased calcium sulfonates having a high degree of alkalinity, which comprises the steps of:

(a) reacting a solution of at least one alkyl benzene sulfonic acid the alkyl group of which has an average molecular weight of about 250 to about 2000 in an organic solvent comprising a mineral oil with an excess of a calcium oxide, having a medium reactivity towards water, which is characterized by a total reaction time of about 8 to about 25 minutes and a ratio of temperature rise after 30 seconds of hydration to total temperature rise of about 15 to about 45%, to form a reaction mixture

(b) reacting said reaction mixture with gaseous carbon dioxide, and

(c) filtering said reaction mixture to obtain a concentrated oily solution containing overbased calcium sulfonate.

4,086,171

LUBRICATING COMPOSITION HAVING A SELECTIVELY SULFONATED AND HYDROGENATED BLOCK COPOLYMER VISCOSITY-INDEX IMPROVER

Donald L. Wood; Robert J. Moore, and Robert B. Rhodes, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 23, 1977, Ser. No. 799,901

Int. Cl.² C10M *1/40, 3/34, 5/22, 7/38*

U.S. Cl. 252—33 **10 Claims**

1. A lubricating composition comprising a major proportion of a lubricating oil and between about 0.1 and about 15.0 weight percent of a viscosity index improver having the general configuration A-B wherein:

a. each A is a sulfonated monoalkenyl arene polymer block having a number average molecular weight of between about 25,000 and about 55,000;

b. each B is a hydrogenated polymer block, said block B, prior to hydrogenation, being a conjugated diene block selected from the group consisting of butadiene blocks, isoprene blocks, and butadiene/isoprene blocks, at least 90 percent of the olefinic unsaturation of block B being reduced by hydrogenation of the block copolymer, said block B having a number average molecular weight between about 20,000 and about 150,000;

c. the weight ratio of block A to block B is between about 0.45:1 and about 0.8:1; and

d. the sulfur content of the block copolymer is more than about 0.1 percent by weight and less than 1.0 percent by weight.

5. A composition according to claim **1** wherein the polymer block A contains sulfonate radicals selected from the group consisting of —SO_3 alkaline earth metal, —SO_3H, —SO_3 alkali metal, —SO_3NH_4, and SO_3 amino.

4,086,172

LUBRICATING OIL ADDITIVE COMPOSITION

Warren Lowe, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 1, 1976, Ser. No. 672,806

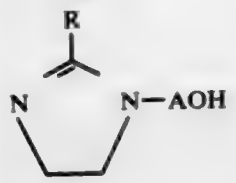
Int. Cl.² C09K *15/20;* C10M *1/12, 1/20, 1/34*

U.S. Cl. 252—47.5 **11 Claims**

1. An additive composition for use in crankcase lubricating oils comprising:

(1) an oil-soluble antioxidant selected from aromatic or alkyl

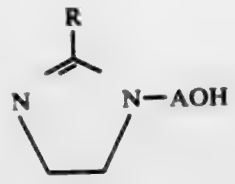
sulfides and polysulfides, sulfurized olefins, sulfurized carboxylic acid esters, and sulfurized esterolefins, and (2) an oil-soluble hydroxy amine of the formula:



wherein A is a C_2–C_{10} alkylene, and R is C_1–C_{30} alkyl.

3. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity and an antioxidant amount of the composition of claim 1.

11. A method for inhibiting the oxidation of a lubricating oil which comprises adding to said lubricating oil from 0.25 to 10 percent weight of (1) an oil-soluble antioxidant selected from aromatic or alkyl sulfides and polysulfides, sulfurized olefins, sulfurized carboxylic acid esters and sulfurized ester-olefins, and from 0.001 to 5% weight of (2) an oil-soluble hydroxy amine of the formula



wherein A is a C_2–C_{10} alkylene, and R is C_1–C_{30} alkyl.

4,086,173

LUBRICANT COMPOSITIONS CONTAINING MULTIFUNCTIONAL ADDITIVES

John C. Nnadi, Glassboro, and Margaret H. McIntyre, West Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 5, 1975, Ser. No. 584,241

Int. Cl.² C10M *1/32*

U.S. Cl. 252—51.5 A **16 Claims**

1. A lubricant composition containing a dispersancy improving and antirust amount of the acidic product obtained by reacting an alkenylsuccinic anhydride having from about 20 to about 500 carbon atoms in the alkenyl group with a member of the group consisting of (1) a bis-alkenyl succinimide, having up to 500 carbon atoms in the alkylene group, of an alkylene polyamide and (2) a glycol ester, amino glycol ester, imidoester, amidoester or oxazoline ester of an alkenylsuccinic anhydride having from about 20 to about 500 carbon atoms in the alkylene group.

4,086,174

COBALT MODIFIED ACICULAR γ FERRIC OXIDE AND PROCESS FOR PREPARING THE SAME

Leonard N. Bennetch, Bethlehem, Pa., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 648,670, Jan. 13, 1976, abandoned, which is a continuation of Ser. No. 467,459, May 6, 1974, abandoned. This application Jul. 12, 1977, Ser. No. 815,076

Int. Cl.² C01G *49/06;* G11B *5/70*

U.S. Cl. 252—62.56 **8 Claims**

1. Synthetic cobalt modified acicular gamma ferric oxide wherein the cobalt is present in an amount of at least about ¼ atomic percent cobalt, based on the iron content, which when incorporated with vinyl copolymer recording binder at a level of 75% by weight provides a polyethylene terephthalate based magnetic recording member which exhibits a magnetic stability coefficient of from about 4,000 to about 10,000.

3. A process for the manufacture of synthetic acicular gamma ferric oxide containing at least about ¼ atomic percent cobalt, based on the iron content, which when incorporated with recording binder at a level of 75% by weight provides a magnetic recording member which exhibits a magnetic stability coefficient of from about 4000 to about 10,000 comprising the steps of:

(a) introducing aqueous alkali into aqueous ferrous chloride containing from about 0.25 to 0.7 pound ferrous chloride per gallon, said alkali being added at the rate of from about 0.03 to 0.2 equivalents per minute per mole dissolved ferrous chloride while maintaining the temperature at about 60°–90° F.; continuing said addition until sufficient alkali has been added to precipitate from about 20 to 85% of the iron as ferrous hydroxide;

(b) introducing oxygen-containing gas into said aqueous mixture until the pH is between about 2.6 and 4.1 and the ferrous hydroxide precipitate is oxidized to the lepidocrocite form;

(c) adding water-soluble cobalt salt to the resulting lepidocrocite seed slurry in an amount equivalent to at least about 0.25 atomic percent cobalt based on the total iron introduced;

(d) maintaining said slurry at about 80°–160° F. and a pH between about 2.6 and 4.1 while simultaneously and continuously introducing alkali and oxygen-containing gas until the iron content is substantially completely precipitated in the form of lepidocrocite;

(e) and adding aqueous alkali while introducing oxygen-containing gas into said aqueous mixture at about 80°–160° F. to a pH between about 7 and 9.5 until substantially all of the cobalt ion has precipitated on the surface of said lepidocrocite;

(f) reducing in a reducing atmosphere said cobalt modified lepidocrocite to cobalt modified ferroso-ferric oxide at a temperature of from about 650° to 800° F., and subsequently oxidizing in an oxidizing atmosphere to cobalt modified acicular gamma ferric oxide.

4,086,175

ACTIVATED BLEACHING PROCESS AND COMPOSITIONS THEREFOR

Louis N. Kravetz, and Hans E. Kubitschek, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 656,456, Feb. 9, 1976, abandoned. This application Nov. 22, 1976, Ser. No. 743,729

Int. Cl.² C11D *7/56*

U.S. Cl. 252—99 **29 Claims**

1. A process for activating a peroxide-based bleach which comprises conjointly incorporating into an aqueous medium effective amounts of (a) a peroxide-based bleach, (b) a peroxide-activating amount of cyanamide or a Group IA or Group IIA metal cyanamide, (c) a magnesium compound and (d) a buffering agent to maintain the aqueous medium under alkaline conditions.

4,086,176

SOLUTIONS FOR CHEMICALLY POLISHING SURFACES OF COPPER AND ITS ALLOYS

Harry Ericson, Vastra Frolunda, and Carl Otto Fredriksson, Goteborg, both of Sweden, assignors to Nordnero AB, Kungalv, Sweden

Filed Dec. 8, 1975, Ser. No. 638,698

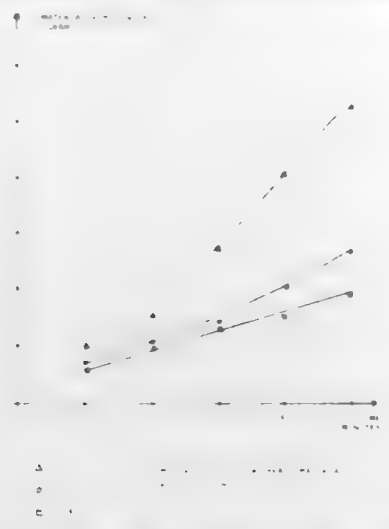
Claims priority, application Sweden, Dec. 13, 1974, 7415649

Int. Cl.² C23F *3/00;* C23G *1/06;* C09K *13/06;* C11D *7/08*

U.S. Cl. 252—100 **2 Claims**

1. A solution for chemically polishing surfaces of copper and its alloys which contains mono- and/or di-substituted alkali

metal salts of oxalic acid at a pH value of 3.0 – 5.0 in combination with hydrogen peroxide, at least one stabilizer to stabilize



the hydrogen peroxide, said stabilizer being selected from the group consisting of an aliphatic fatty amine of the formula

$$C_{18}H_{37}-N\begin{matrix}(C_2H_4O)_{12}H\\(C_2H_4O)_{12}H\end{matrix}$$

and benzotriazole, and at least one brightener consisting of 0.1 – 5.0 g/l sodium lignin sulphonate.

4,086,177

ACTIVATED BLEACHING PROCESS AND COMPOSITIONS THEREFOR

Hans E. Kubitschek, and Louis Kravetz, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 9, 1976, Ser. No. 656,457
Int. Cl.[2] C11D *7/54*
U.S. Cl. 252—102 **25 Claims**

1. A process for activating a peroxide-based bleach which comprises conjointly incorporating into an aqueous medium effective amounts of (a) a peroxide-based bleach, (b) a peroxide-activating amount of a Group IA or IIA metal cyanamide and (c) a buffering agent to maintain the aqueous medium under alkaline conditions.

9. A stable concentrated bleaching composition consisting essentially of a peroxide-based bleach and a peroxide-activating amount of a Group IA or IIA metal cyanamide as an activator therefore.

4,086,178

GLASS CLEANING FORMULATION

David Richard William Walker, Northwich, England, assignor to Rolls-Royce Motors Limited, Crewe, England

Filed May 27, 1975, Ser. No. 580,828
Claims priority, application United Kingdom, Aug. 6, 1974, 34529/74; Aug. 9, 1974, 35118/74
Int. Cl.[2] C11D *1/24, 1/83, 3/24*
U.S. Cl. 252—143 **12 Claims**

1. A stable glass cleaning fluid concentrate which, when diluted, does not attack rubber seals and surrounding paint while, in use, and is devoid of smearing and hazing of automobile windshields under night driving conditions, said concentrate consisting essentially of:

(a) an anionic surface active agent selected from the group consisting of:
  (i) an anionic sulphated alkyl phenoxy polyethoxy ethanol; and
  (ii) an anionic di-sodium salt of the half ester of sulphosuccinic acid;
(b) a fluorinated hydrocarbon surface active agent selected from the group consisting of:
  (i) an anionic fluorinated hydrocarbon surface active agent with the fluorinated hydrocarbon portion having a branched chain structure with aliphatic per-fluorocarbon groups at one end of the molecule;
  (ii) a non-ionic fluorinated hydrocarbon surface active agent with the fluorinated hydrocarbon portion exhibiting a branched structure and represented by the formula:

$$R_f(OCH_2CH_2)_nOR_f$$

wherein R_f is C_8F_{15}, $C_{10}F_{19}$ or $C_{12}F_{23}$ and n is 10–30;
  (iii) a non-ionic fluorinated hydrocarbon with a branched fluorinated hydrocarbon portion having the formula:

$$R_f(OCH_2CH_2)_mOR$$

wherein R is lower alkyl and m is 2–20; and
  (iv) an anionic fluorinated hydrocarbon surface active agent wherein the fluoronated hydrocarbon portion exhibits a straight chain structure and has aliphatic per-fluorocarbon groups at one end of the chain;
(c) citric acid or sodium citrate
(d) components (a), (b) and (c) blended together in an alcohol carrier

wherein the proportion, in parts by weight, of (a) to (b) is in the ratio of 3.5:1 to 13.7:1 and the ratio, in parts by weight, of component (c) to the over-all blend is about 1:3.365, the cleaning fluid concentrate having a surface tension range of about 20–25 dynes/cm and a pH of about 3.0–4.0.

4,086,179

IMPROVED CLEANING SOLVENT CONTAINING NON-AZEOTROPIC MIXTURES OF 1,1,1-TRICHLOROETHANE AND N-PROPANOL

Alvin F. Schneider, Edison, N.J., assignor to Alpha Metals, Inc., Jersey City, N.J.

Filed Dec. 10, 1976, Ser. No. 749,274
Int. Cl.[2] C23G *5/02*; C11D *7/50, 7/30*
U.S. Cl. 252—171 **2 Claims**

1. A cleaning composition for removing polar and non-polar contaminants from electronic equipment in vapor cleaning processes consisting essentially of a major amount of stabilized 1,1,1-trichloroethane and normal propanol, said normal propanol being present in an amount of about 4.0 weight percent such that such composition does not exhibit a flash point, and has a relatively narrow boiling range, said amount being less than the amount of said normal propanol in the azeotropic composition of said normal propanol with said 1,1,1-trichloroethane and such that said composition can be safely employed in said vapor cleaning processes.

2. A process for removing both polar and non-polar contaminants from electronic equipment which comprises contacting said electronic equipment with a solvent consisting essentially of a major amount of stabilized 1,1,1-trichloroethane and normal propanol, said normal propanol being present in an amount of about 4.0 weight percent such that said composition does not exhibit a flash point and has a relatively narrow boiling range, said amount being less than the amount of said normal propanol in the azeotropic composition of said normal propanol and said 1,1,1-trichloroethane, said contacting being carried out with said solvent at its boiling point so that said solvent is present in the vapor phase.

4,086,180

CONSTANT BOILING ADMIXTURES

William Milton Hutchinson, deceased, late of Bartlesville, Okla., and by Florence M. Hutchinson, executrix, Claremore, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 690,807, May 27, 1976, Pat. No. 4,039,465, which is a division of Ser. No. 602,353, Aug. 6, 1975, Pat. No. 4,024,086. This application Mar. 31, 1977, Ser. No. 783,244
Int. Cl.[2] C11D *7/50, 7/30*; C23G *5/02*
U.S. Cl. 252—171 **7 Claims**

1. A substantially constant boiling admixture of (A) 1,1-

difluoro-1,2-dichloroethane and (B) a member selected from the group consisting of methanol and ethanol.

4,086,181

CONTROL OF CORROSION AND SCALE IN CIRCULATING WATER SYSTEMS BY MEANS OF PARTIAL ESTERS OF POLYFUNCTIONAL ORGANIC ACIDS

Tzeng Jiueq Suen, New Canaan; Arthur James Begala, Jr., Fairfield, and Martin Grayson, Cos Cob, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 610,808, Sep. 5, 1975, Pat. No. 4,020,000, which is a division of Ser. No. 456,119, Mar. 29, 1974, Pat. No. 3,974,083. This application Feb. 14, 1977, Ser. No. 768,249

The portion of the term of this patent subsequent to Apr. 26, 1994, has been disclaimed.

Int. Cl.² C02B *5/06*

U.S. Cl. 252—180 **1 Claim**

1. An additive composition for inhibiting corrosion and scale on ferrous metal parts of a circulating water system by addition of said additive to said water in inhibiting amounts, said composition consisting essentially of a mixture of: a) the partial ester condensation product of an alcohol having the formula

$$R(O—CH_2CH_2)_mOH$$

wherein

R is hydrocarbon having 8 to 20 carbon atoms and *m* is 2 to 4, with an acid selected from citric, malic, tartaric, succinic, adipic, phthalic and maleic acids, wherein one carboxyl group in said acid is unesterified and; b) from more than one to about two parts by wt. of a light hydrocarbon oil or vegetable oil per part of said condensation product and sufficient amount of a surfactant for dispersing said oil in water.

4,086,182

RUST TRANSFORMING COMPOSITION

Erich Hengelhaupt, and Lothar Peier, both of Bern, Switzerland, assignors to Noverox AG., Zug, Switzerland

Filed Nov. 23, 1976, Ser. No. 744,426

Claims priority, application Switzerland, Nov. 27, 1975, 15407/75

Int. Cl.² C23F *7/00*

U.S. Cl. 252—182 **16 Claims**

1. A composition for converting a surface film of iron oxide on an iron body into a corrosion resistant film containing complexed compounds of iron, said composition comprising an aqueous dispersion or emulsion of a synthetic binding agent together with at least one polymeric esterification product of an aromatic oxycarboxylic acid having phenolic hydroxyl groups with a substance selected from the group consisting of acid anhydrides and substituted acid anhydrides.

4,086,183

HEAT STABLE COLORED CHEMILUMINESCENT COMPOSITIONS

Alfred F. Tatyrek, 27 Orchard Rd., Maplewood, N.J. 07040

Filed Jun. 24, 1976, Ser. No. 699,570

Int. Cl.² C09K *3/00*

U.S. Cl. 427—157 **23 Claims**

1. An improved process of generating visible light of yellow, orange, or red color from the blue-green visible light produced by the reaction of a tetraaminoethylene with oxygen wherein the improvement comprises first uniformly applying a fluorescent dye on a substrate and then uniformly applying the tetraaminoethylene on the substrate.

4,086,184

REACTIVATION OF DEACTIVATED HYDROCARBON CONVERSION CATALYST BY ULTRASONIC INSONATION

H. Clarke Henry, Sarnia, and Ramaswami Ranganathan, Saskatoon, both of Canada, assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed May 2, 1973, Ser. No. 356,570

Int. Cl.² B01J *29/38, 23/94, 23/96, 23/20*

U.S. Cl. 252—414 **21 Claims**

1. A method for reactivating a permanently deactivated hydrocarbon conversion catalyst which comprises:

(a) oxidizing the catalyst by exposing said catalyst to air at elevated temperatures; and (b) immersing said oxidized catalyst resulting from step (a) in a liquid medium which does not react with the catalyst and applying ultrasonic energy thereto.

20. In a hydrocracking process in which a petroleum feedstock is cracked in the presence of a catalyst on an amorphous silica/alumina support and said catalyst is regenerated by calcination, which catalyst is subject to permanent deactivation by deposits of carbonaceous material and metal oxide contaminants which cannot be removed by regeneration, the improvement which comprises reactivating the permanently deactivated catalyst by (a) oxidizing said carbonaceous material off the catalyst by exposing said catalyst to air at elevated temperatures and (b) immersing said oxidized catalyst resulting from step (a) in a liquid medium which does not react with the catalyst and agitating said medium by ultrasonic energy having a frequency of from about 18 to about 500 kHz.

4,086,185

PROCESS FOR ACTIVATING CATALYST FOR POLYMERIZATION OF PROPYLENE BEFORE POLYMERIZATION

Isoo Shirai, Chibashi; Takeshi Suzuki, and Tsutomu Takahashi, both of Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Mar. 11, 1976, Ser. No. 666,107

Claims priority, application Japan, Mar. 11, 1975, 50-29245

Int. Cl.² C08F *4/64*

U.S. Cl. 252—429 B **4 Claims**

1. The method which comprises

(I) forming a delta-type titanium trichloride composition by

(A) reacting a beta-type titanium trichloride containing $AlCl_3$, with

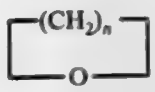
(B) a complexing agent selected from the group consisting of

(1) a dialkyl ether represented by the general formula R—O—R′ wherein R and R′ are each an alkyl group having 1 – 10 carbon atoms,

(2) a polyethylene glycol diakylether represented by the general formula $R—O—(CH_2CH_2O)_n—R'$ wherein R and R′ are each an alkyl group having 1 – 4 carbon atoms, and *n* is an integer of 1 – 4,

(3) a dialkyl thioether represented by the general formula R—S—R′ wherein R and R′ are each an alkyl having 1 – 10 carbon atoms,

(4) an alicylcic organic ether represented by the general formula



where *n* is an integer of 3–5, or

(5) an organic ester represented by the general formula RCOOR′, wherein R and R′ are each alkyl having 1 – 10 carbon atoms, or

(C) a complex compound consisting of said complexing agent and titanium tetrachloride, and

(D) grinding the resulting deltatype titanium chloride composition,

(II) forming a catalyst dispersion by mixing said ground delta-

type titanium trichloride composition with an alkyl aluminum chloride having the general formula R_nAlCl_{3-n}, wherein R is an alkyl having 1 – 4 carbon atoms and *n* is an integer of 1 – 2,

(III) activating said catalyst dispersion for the polymerization of propylene in advance of the polymerization which comprises contacting said catalyst dispersion, in an inert solvent, with propylene containing 1% or less by volume of hydrogen while said catalyst dispersion is maintained at 10° – 50° C, said propylene being fed into contact with said catalyst dispersion at a rate of 0.02 – 1.0 parts by weight per hour per part of delta-type -titanium trichloride composition and to such an extent that the amount of absorbed propylene is 0.5 – 5 times the weight of said delta-type titanium trichloride solution.

4,086,186

CRYSTALLINE ZEOLITE ZSM-34 AND METHOD OF PREPARING THE SAME

Mae K. Rubin, Bala Cynwyd, Pa.; Edward J. Rosinski, Pedricktown, and Charles J. Plank, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 4, 1976, Ser. No. 738,771
Int. Cl.² C01B *33/28*; B01J *29/06, 29/28*
U.S. Cl. 252—430 **12 Claims**

1. A crystalline aluminosilicate zeolite having a composition, as synthesized and in anhydrous form, in terms of mole ratios of oxides as follows:

$(0.5–1.3)R_2O$: $(0–0.15\ Na_2O)$: $(0.10–0.50)\ K_2O$: Al_2O_3 : $X\ SiO_2$

where R is the organic nitrogen-containing cation derived from choline and X is 8 to 50, said zeolite being characterized by:

(1) an X-ray powder diffraction pattern set forth in Table 1 of the specification; and

(2) the capability, after calcination at 1000° F for at least a time to remove the organic cation, of sorbing at least 9.5 weight percent of n-hexane at ambient temperature and a n-hexane pressure of 20 mm.

9. A method of preparing a crystalline aluminosilicate zeolite as defined in claim 1 which comprises preparing a mixture containing sodium oxide, potassium oxide, silica, alumina, a choline compound and water and having a composition in terms of mole ratios of oxides, falling within the following ranges:

SiO_2/Al_2O_3 — 10–70
OH^-/SiO_2 — .3–1.0
H_2O/OH^- — 20–100
K_2O/M_2O — 0.1–1.0
$R^+/R^+ + M^+$ — 0.1–0.8

where R^+ is choline and M is sodium + potassium; maintaining the mixture at a temperature of between about 80° and about 175° C until the crystals of said aluminosilicate zeolite are formed and separating and recovering said crystals.

4,086,187

ATTRITION RESISTANT ZEOLITIC CATALYST

John Lim, Anaheim, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Jun. 17, 1976, Ser. No. 696,889
Int. Cl.² B01J *29/06*
U.S. Cl. 252—455 Z **11 Claims**

1. A water slurry consisting essentially of a mixture of a zeolite of the faujasite type having a Na content, expressed as Na_2O_3, of less than about 5% by weight of the zeolite, a kaolin clay, alumina in the form of pseudoboehmite and ammonium polysilicate.

5. A spray-dried cracking catalyst produced by spray drying a water slurry of a mixture of a zeolite of the faujasite type having a Na content, expressed as Na_2O, of less than about 5% by weight of the zeolite, a kaolin clay, pseudoboehmite and ammonium polysilicate.

4,086,188

CATALYST FOR ALDOL CONDENSATIONS

Walter Thomas Reichle, Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 657,568, Feb. 12, 1976, abandoned. This application Nov. 29, 1976, Ser. No. 745,809
Int. Cl.² B01J *21/04, 21/10, 23/02, 23/04*
U.S. Cl. 252—463 **23 Claims**

1. Catalyst prepared by the steps of:

(a) interacting stoichiometric amounts of a water-soluble salt of a metal of Group II of the Deming Periodic Table and a water-soluble aluminum salt with a stoichiometric amount of an alkali metal or alkaline earth metal, water-soluble hydroxide in water to precipitate a water-insoluble slurry of mixed hydroxides, with the proviso that the ratio of gram atoms of Group II metal to aluminum metal is in the range of about 0.02 to about 0.3;

(b) washing the slurry from step (a) with water until substantially free of water-soluble salt;

(c) contacting the washed slurry from step (b) with a dilute aqueous solution of a lithium or a zinc salt at ambient temperature; and

(d) recovering and drying the product of step (c) at a temperature below about 400° C.

4,086,189

RESISTIVE ELEMENT HAVING VOLTAGE NON-LINEARITY AND METHOD OF MAKING SAME

Tetsuya Honda, Amagasaki; Kiyoshi Yagi, Takatsuki; Seiji Shibata, Kobe, and Kazuo Yamaguchi, Osaka, all of Japan, assignors to Otowa Electric Company, Ltd., Japan

Filed Sep. 10, 1976, Ser. No. 722,006
Claims priority, application Japan, Nov. 14, 1975, 50-137520
Int. Cl.² H01B *1/08*
U.S. Cl. 252—519 **3 Claims**

1. A resistive element having a high non-linearity and a low ΔV consisting essentially of a sintered body of zinc oxide and cobalt, strontium, barium, yttrium and magnesium in the proportions of 0.2 to 5.0 mol%, 0.2 to 2.0 mol%, 0.05 to 3.0 mol%, 0.05 to 10.0 mol% and 0.05 to 12.0 mol%, respectively, when calculated in the form of oxides, CoO, SrO, BaO, Y_2O_3 and MgO, respectively.

4,086,190

PROCESS FOR THE PRODUCTION OF SILICIC EPOXY POLYMERS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 678,196, Apr. 19, 1976, which is a continuation-in-part of Ser. No. 612,844, Sep. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned. This application Dec. 20, 1976, Ser. No. 752,425
Int. Cl.² C08F *283/12*
U.S. Cl. 260—2 S **15 Claims**

1. The process for the production of silicic epoxy polymers by the following steps:

(a) admixing 2 parts by weight of a silicoformic acid and hydrated silica mixture with 2 to 3 parts by weight of an organic epoxy compound having at least one epoxy group;

(b) mixing therewith a catalytic amount of a catalyst selected from the group consisting of Lewis acids, organic amine compounds and polyamine resins;

(c) agitating the mixture until the resulting chemical reaction is complete.

4,086,191

PARTICULATE EXPANDABLE STYRENE POLYMERS FOR THE MANUFACTURE OF FOAMS

Klaus Hinselmann, Mutterstadt; Klaus Penzien, Frankenthal; Rupert Schick, Ludwigshafen; Manfred Walter, Speyer; Heinz Weber, Gruenstadt, and Heinrich Wirth, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 2, 1975, Ser. No. 618,931

Claims priority, application Germany, Oct. 11, 1974, 2448476; Oct. 15, 1974, 2448956; Jan. 17, 1975, 2501680

Int. Cl.[2] C08J *9/20, 9/22*

U.S. Cl. 260—2.5 B 6 Claims

1. A process for the manufacture of expandable styrene polymers containing from 0.0001 to 0.2 percent by weight, based on the styrene polymer, of a nonhomogeneously distributed nucleating agent for expandable polystyrene which comprises: treating expandable polystyrene particles at a temperature above their softening point with organic bromine nucleating compounds which contain at least three bromine atoms per molecule bonded to an aliphatic or cycloaliphatic structure and limiting the time available for the diffusion of the bromine compound into the expandable polystyrene particles such that said bromine compound is only present in a thin peripheral zone of the particles whereas the interior of said particles is free from the bromine compound, and whereby after foaming the expandable polystyrene particles, said foamed particles show a coarse cellular structure of from about 4 to 7 cells/mm in the interior while the thin peripheral zone has a fine cellular structure which is from about 0.1 to 3 mm thick, said peripheral zone having a negligible thickness compared to the total cross-sectional area of the foamed particle.

4,086,192

OLEFIN POLYMER COMPOSITION HAVING REDUCED FLAME PROPAGATION CHARACTERISTICS

Charles F. Raley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 168,756, Aug. 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 53,332, Jul. 8, 1970, abandoned. This application Aug. 28, 1975, Ser. No. 608,593

Int. Cl.[2] C08J *9/10*

U.S. Cl. 260—2.5 FP 28 Claims

1. In an olefin polymer composition containing a halogenated organic moiety, the olefin polymer being selected from the group consisting of homopolymers and copolymers of aliphatic hydrocarbon monoolefins having no more than 12 carbon atoms, and substituted α-monoolefins wherein the substituent is carboxylic acid, alkyl or haloalkyl ester of carboxylic acid wherein alkyl or haloalkyl has from 1 to 12 carbon atoms or carboxylate having from 1 to 12 carbon atoms; the improvement which comprises the olefin polymer composition and elemental phosphorous having a specific gravity greater than 2.0 in an amount effective to reduce the propensity of the olefin polymer composition to propagate combustion after removal of a small scale ignition source provided that the atomic ratio of the phosphorus to halogen is from about 4:1 to about 1:6.

4,086,193

MICROPOROUS SHEETS AND A PROCESS FOR MAKING THEM

Artur Reischl, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 29, 1974, Ser. No. 501,575

Claims priority, application Germany, Sep. 7, 1973, 2345256

Int. Cl.[2] C08G *18/14*

U.S. Cl. 260—2.5 AY 14 Claims

1. A microporous sheet prepared by coagulation of a solution containing a non-ionic polyurethane in a polar solvent therefor mixed with an aqueous dispersion of a cationic polyurethane and an anionic polyurethane with a non-solvent for said non-ionic polyurethane.

2. A microporous sheet prepared by coagulation of a solution containing a non-ionic polyurethane in a polar solvent therefor mixed with an aqueous dispersion of either a cationic polyurethane or an anionic polyurethane with a non-solvent for the polyurethane, said aqueous dispersion being sedimenting and redispersible, having a particle size of 0.8 to 100 microns, and being insoluble in boiling dimethylformamide.

4,086,194

POLYURETHANE FOAM CONTAINING A FLAME RETARDANT

Siegfried Altscher, Monsey, and Jagadish C. Goswami, New City, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 492,562, Jul. 29, 1974, Pat. No. 3,939,227. This application Oct. 6, 1975, Ser. No. 619,769

Int. Cl.[2] C08J *9/00*

U.S. Cl. 260—2.5 AJ 6 Claims

1. A polyurethane foam containing an effective amount for flame retardancy of the foam formed therefrom of a compound of the formula

$$RP\text{—}(OCH_2CH[CH_2]_nOH)_2$$
(O above P; X above CH)

where n is an integer from 1 to 8, R is selected from the group consisting of C_1–C_{20} alkyl, aryl and halo-substituted C_1–C_{20} alkyl and aryl and X is halogen.

4,086,195

BITUMEN FILLED POLYESTER FOAMS

Walter R. Knox, Town & Country; James C. Hill, Chesterfield; Lawrence J. Hughes, St. Charles, and Paul W. Foerst, Florissant, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 2, 1977, Ser. No. 773,720

Int. Cl.[2] C08J *9/02*

U.S. Cl. 260—2.5 N 17 Claims

1. A process for the production of foamed polymeric material which comprises forming a solution of a bitumen having a softening point of at least about 80° C. in a cyclic diacid anhydride at a temperature above the softening point of the bitumen and initiating an exothermic reaction by mixing the solution with a monoterminal epoxide and a poly-terminal epoxide in the presence of a blowing agent; the ratio of total epoxy groups to cyclic diacid anhydride groups being from 1:1 to 2:1 and the epoxy-equivalent mole ratio of polyepoxide to monoepoxide being from 0.01 to 1.0: the temperature of the bitumen solution upon mixing being such that the blowing agent is activated and a foam is generated and such that the viscosity of the mixture is not so low that the gas generating the foam is able to escape from the mixture before the foam has solidified to such an extent that no foaming occurs; the amount of bitumen used being from about 70% to about 95% by weight of the total weight of the foamed polymeric material; and allowing the reaction to proceed, without cooling, until the exothermic reaction has ceased.

4,086,196

PARATHYROID HORMONE

Geoffrey William Tregear, Hawthorn, Australia, assignor to Armour Pharmaceutical Company, Phoenix, Ariz.

Filed Mar. 28, 1975, Ser. No. 563,173

Int. Cl.[2] C07C *103/52;* C08L *37/00*

U.S. Cl. 260—112.5 R 2 Claims

1. A synthetic polypeptide of the formula

H-X-Val-Ser-Glu-Ile-Gln-Leu-Met-His-Asn-Leu-Gly-Lys-

His-Leu-Asn-Ser-Met-Glu-Arg-Val-Glu-Trp-Leu-Arg-Lys-QOH

where
X is Ser or Ala and
Q is
-Lys-
-Lys-Leu-
-Lys-Leu-Gln-
-Lys-Leu-Gln-Asp-
-Lys-Leu-Gln-Asp-Val-
-Lys-Leu-Gln-Asp-Val-His-
-Lys-Leu-Gln-Asp-Val-His-Asn- or
-Lys-Leu-Gln-Asp-Val-His-Asn-Phe-.

4,086,197

HARDENERS FOR EPOXY RESINS

Claude Bouche, and Francois Lenclud, both of Mazingarbe, France, assignors to Societe Chimique des Charbonnages, Paris, France

Filed Jun. 21, 1976, Ser. No. 697,751
Claims priority, application France, Jun. 20, 1975, 75 19387
Int. Cl.[2] C08L *91/00*
U.S. Cl. 260—18 PN **14 Claims**

1. A hardener for an epoxy resin, comprising the product resulting from the elimination of at least one mole of water per acid equivalent from a mixture of:
90 to 60 parts of at least one unsaturated monomeric fatty acid having at least 12 carbon atoms,
10 to 40 parts of an acid having a molecular weight less than 200
20 to 80 parts of a tetraethylene pentamine, and
80 to 20 parts of isophorone diamine,
the relative proportions of all the acid products with respect to all the amine products being from 1 to 2 gram equivalents of acid function per gram molecule of amine.

4,086,198

COMPOSITION FOR HOT MELT-TYPE WHITE TRAFFIC PAINT

Kinya Mizui, Hiroshima, and Hiroshi Wakumoto, Yamaguchi, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jun. 7, 1973, Ser. No. 367,905
Claims priority, application Japan, Jun. 8, 1972, 47-57161
Int. Cl.[2] C08K *3/22*
U.S. Cl. 260—23.7 C **15 Claims**

1. A composition for a hot melt-type white traffic point comprising:
(A)(1) 100 parts by weight of an acid-modified hydrocarbon resin having an acid value of 0.10 to 15 obtained by an oxidation of a thermoplastic hydrocarbon resin in a liquid state or by a reaction of the thermoplastic hydrocarbon resin with an α,β-unsaturated carboxylic acid or anhydride thereof, said thermoplastic hydrocarbon resin being solid at room temperature having an average molecular weight of 500 to 3,000, a softening point of 60° to 150° C as determined by the ring ball method and a Gardner color of not greater than 10, as measured for 100% resin, or
(2) an esterified hydrocarbon resin obtained by the reaction of said acid-modified hydrocarbon resin with an alcohol, and
(B) 25 to 300 parts by weight of titanium dioxide.

4,086,199

LATICES OF POLYMER PARTICLES COMPRISING A CORE CONTAINING A VINYL POLYMER AND A PERIPHERY CONTAINING A POLYMER HAVING —CN GROUPS

Jean-Claude Daniel, Fontenay sous Bois, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Aug. 9, 1976, Ser. No. 713,055
Claims priority, application France, Aug. 22, 1975, 75 26057
Int. Cl.[2] C08L *9/04*
U.S. Cl. 260—29.7 UP **27 Claims**

1. Latices of polymer particles in aqueous dispersion having a uniform diameter within the range of 0.2 to 2 μm and comprising a core selected from the group consisting of a vinyl homopolymer, and a vinyl copolymer, and a periphery formed of a copolymer having —CN groups.

4,086,200

VINYLIDENE CHLORIDE POLYMER LATEX BASED CEMENT ADDITIVES

Lz F. Lamoria, and Robert D. Van Dell, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 15, 1977, Ser. No. 815,967
Int. Cl.[2] C08K *3/00*
U.S. Cl. 260—29.6 S **12 Claims**

1. A cement additive consisting essentially of (1) a vinylidene chloride polymer latex containing up to about 60 parts by weight of polymer solids, said vinylidene chloride polymer latex consists essentially of from about 35 to about 90 percent by weight of vinylidene chloride and from about 65 to about 10 percent by weight of at least one other interpolymerized material of the general formula:

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-X$$

wherein R is selected from the group consisting of hydrogen and the methyl group and X is selected from the group consisting of —CN, halogens of atomic numbers 9 to 35, and ester-forming groups, —COOY, wherein Y is selected from the group consisting of a primary alkyl group and a secondary alkyl group, each of the foregoing alkyl groups containing from 1 to b 18 carbon atoms; and, based on 100 parts of said latex polymer solids (2) from about 3 to about 10 parts by weight of a nonionic surfactnat; (3) from about 2.5 to about 10 parts by weight of a polyelectrolyte having a number average molecular weight of less than about 3000 and consisting essentially of 3 parts by weight of methyl mathacrylate and about 1 part by weight of a sulfo-ester of α-methylene carboxylic acid or its salt having the formula

$$R—CO_2—Q—SO_3M$$

wherein the radical R is selected from the group consisting of vinyl and α-substituted vinyl, and the radical —Q— is a divalent hydrocarbon radical having its valence bonds on a different carbon atom, and M is a cation, and (4) from about 0.1 to about 5 parts by weight of a polyorganosiloxane foam depressant.

4,086,201

STYRENE-BUTADIENE INTERPOLYMER LATEX BASED CEMENT ADDITIVES

James Peters; Robert D. VanDell; R. Douglas Eash, and Lz F. Lamoria, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 15, 1977, Ser. No. 816,052
Int. Cl.[2] C08K *3/00*
U.S. Cl. 260—29.7 S **14 Claims**

1. A cement additive consisting essentially of (1) a styrene-butadiene interpolymer latex, said latex containing up to about

60 parts by weight of interpolymer solids, and, based on 100 parts of said latex polymer solids; said styrene-butadiene interpolymer has a styrene to butadiene weight ratio of from about 30:70 to about 70:30; (2) from about 3 to about 10 parts by weight of a nonionic surfactant, (3) from about 0.3 to about 10 parts by weight of a polyelectrolyte having a number average molecular weight of less than about 3000 consisting essentially of about 3 parts by weight of methyl methacrylate and about 1 part by weight of a sulfoester of -methylene carboxylic acid or its salt having the formula

$$R—CO_2—Q—SO_3M$$

wherein the radical R is selected from the group consisting of vinyl and —-substituted vinyl, and the radical —Q— is a divalent hydrocarbon radical having its valence bonds on a different carbon atom, and M is a cation, and (4) from about 0.1 to about 5 parts by weight of a polyorganosiloxane foam depressant.

4,086,202

NON-AQUEOUS POLYMERIC DISPERSION AND MATTE COATINGS PRODUCED THEREFROM

Charles K. Beck, Mentor, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Jul. 30, 1976, Ser. No. 709,962

Int. Cl.[2] B32B *27/06, 27/30;* **C08K** *5/05, 5/06*

U.S. Cl. 260—33.2 R **8 Claims**

1. A non-aqueous dispersion, which has the property of drying to a uniform matte finish upon application to a surface, consisting essentially of a co-polymer of an alkyl methacrylate and an alkyl acrylate and an organic liquid having a hydrogen bonding index,δ, greater than 10, a dipole moment,μ, between 0.5 and 2.5, and a solubility parameter,δ, less than 8, said copolymer being the disperse phase and said organic liquid comprising a member selected from the group consisting of ethers and alcohols and constituting the continuous phase of the non-aqueous dispersion.

8. A non-pigmented matte coating produced by applying a dispersion according to claim 1 to a surface and allowing the dispersion to dry thereon.

4,086,203

FIBERS SIZED WITH POLYESTER AND POLYURETHANE PRECURSORS

Bryan Shaw; Valerie Lawton, and James McAinsh, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 304,952, Nov. 9, 1972, abandoned. This application Apr. 23, 1975, Ser. No. 570,747

Claims priority, application United Kingdom, Nov. 12, 1971, 52595/71

Int. Cl.[2] C08K *9/04*

U.S. Cl. 260—40 R **9 Claims**

1. A method of forming fiber reinforced composites comprising:

(1) coating a fiber with a size which comprises (a) a mixture of from 5–95% by weight of a polyurethane or precursors thereof having at least one polyfunctional compound containing groups reactive with isocyanate groups and at least one polyisocyanate together with (b) from 95–5% by weight of a cross-linked polyester resin precursor comprising:

(i) at least one ethylenically unsaturated polyester, and;

(ii) at least one ethylenically unsaturated monomer copolymerizable with said unsaturated polyester;

(2) partially or completely curing the size;

(3) mixing the sized fiber with curable resin;

(4) subjecting the mixture to a shaping operation during or after its preparation;

(5) curing the resin and any incompletely cured size.

4,086,204

NOVEL POLYTRIAZINE COMPOUNDS

Paolo Cassandrini, Bologna, and Antonio Tozzi, Sasso Marconi, both of Italy, assignors to Chimosa Chimica Organica S.p.A., Marconi, Italy

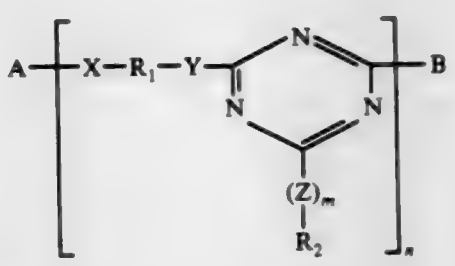
Filed Jun. 23, 1976, Ser. No. 699,162

Claims priority, application Italy, Dec. 4, 1975, 52527 A/75

Int. Cl.[2] C08K *5/00;* **C07D** *251/00, 251/54, 239/00*

U.S. Cl. 260—45.8 NT **28 Claims**

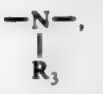
1. A compound having the formula (I):



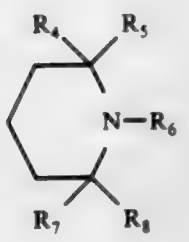
(I)

wherein

X, Y, Z, the same or different, is a member selected from —O—, —S—,



R_3 being a member selected from hydrogen, straight or branched chain C_1 to C_{18} alkyl, C_5 to C_{18} cycloalkyl, substituted or not substituted C_6 to C_{18} aryl, C_7 to C_{18} aralkyl, a piperidine radical of formula (II):



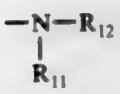
(II)

wherein

R_4, R_5, R_7, R_8, the same or different, are members selected from C_1 to C_6 alkyl, and R_6 is selected from H, O, C_1 to C_{18} straight or branched chain alkyl, C_2 to C_{18} alkenyl or alkynyl, C_7 to C_{18} aralkyl;

R_1 is selected from C_2 to C_{18} straight or branched chain alkylene, C_5 to C_{18} cycloalkylene, C_6 to C_{18} arylene, C_7 to C_{18} aralkylene;

R_2 is selected from hydrogen, chlorine, bromine, —OH, C_1 to C_{18} straight or branched chain alkyl, C_5 to C_{18} cycloalkyl, substituted or not substituted C_6 to C_{18} aryl, C_7 to C_{18} aralkyl, a piperidine radical of formula (II), a group



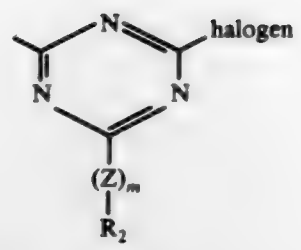
wherein

R_{11}, R_{12} are selected from hydrogen or C_1 to C_{12} alkyl, C_5 to C_{12} cycloalkyl, C_6 to C_{12} aryl, C_7 to C_{12} aralkyl;

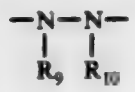
m is an integer from 0 to 1;

n is an integer from 2 to 200;

A, B are the terminal groups, A being H or



and B is halogen or $-X-R_1-YH$;
or where $-XR_1-Y-$ represent a bivalent heterocyclic group having 6 to 8 nitrogen atoms with X and y each representing a disubstituted nitrogen atom;
or where $-X-R_1-Y-$ represent a residue



in which R_9 and R_{10} are hydrogen, C_1 to C_{12} alkyl, C_5 to C_{12} cycloalkyl, C_6 to C_{12} aryl, or C_7 to C_{12} aralkyl;
with the proviso that at least one of the radicals $-X-R_1-Y-$ and $-(Z)_m-R_2$ contains a piperidine radical of formula (II).

14. A synthetic polymer of increased stability having incorporated with the polymer an amount of a compound according to claim 1 effective to increase the light stability of the polymer.

4,086,205

HYDROGEN PHOSPHONATES

Gail H. Birum, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

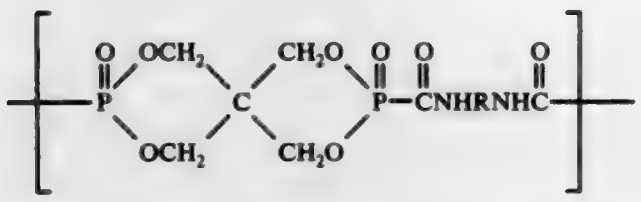
Filed Sep. 3, 1976, Ser. No. 720,324
Int. Cl.² C07F *9/38*; C08K *5/17, 5/18*
U.S. Cl. 260—45.8 R **9 Claims**

1. A cyclic phosphorus composition



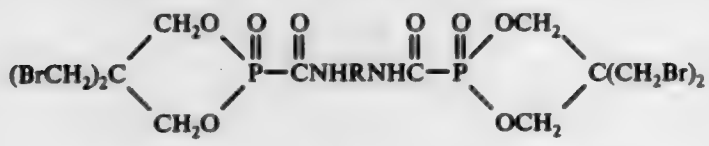
where R is selected from the group consisting of alkylene and alkyl substituted alkylenes of 2 to 20 carbon atoms, or is selected from the group consisting of arylene and alkyl substituted arylenes of 6 to 22 carbon atoms.

2. A cyclic phosphorus composition



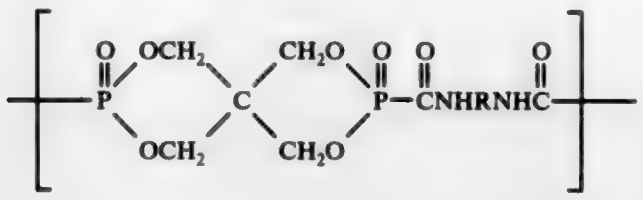
with —H and —NCO end groups, and having a degree of aggregation of 2 to 100, where R is selected from the group consisting of alkylene and alkyl substituted alkylenes of 2 to 20 carbon atoms, or is selected from the group consisting of arylene and alkyl substituted arylenes of 6 to 22 carbon atoms.

6. The combination of an organic polymer together with



where R is selected from the group consisting of alkylene and alkyl substituted alkylenes of 2 to 20 carbon atoms, or is selected from the group consisting of arylene and alkyl substituted arylenes of 6 to 22 carbon atoms.

7. The combination of an organic polymer together with



with —H and —NCO end groups, and having a degree of aggregation of 2 to 100,
where R is selected from the group consisting of alkylene and alkyl substituted alkylenes of 2 to 20 carbon atoms, or is selected from the group consisting of arylene and alkyl substituted arylenes of 6 to 22 carbon atoms.

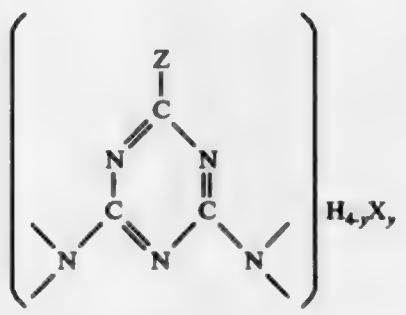
4,086,206

ORGANOPHOSPHORUS COMPOUNDS AND PROCESS FOR THE PRODUCTION THEREOF

Toranosuke Saito; Masakatu Kitani, both of Kobe; Kenshi Mori, Omuta, and Shinichi Izawa, Kawasaki, all of Japan, assignors to Sanko Kaihatsu Kagaku Kenkyosho, Osaka and Asahi-Dow Limited, Tokyo, both of, Japan

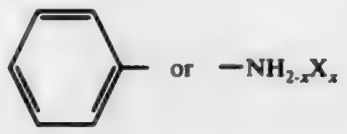
Filed Jul. 5, 1977, Ser. No. 812,943
Claims priority, application Japan, Jul. 5, 1976, 51-78874; Jun. 6, 1977, 52-65815
Int. Cl.² C07D *251/18, 251/54*; C08K *5/34*
U.S. Cl. 260—45.8 NT **12 Claims**

11. A flame retardant resin composition comprising a normally inflammable synthetic resin and a suitable amount of phosphorus-containing condensation products of Formula I

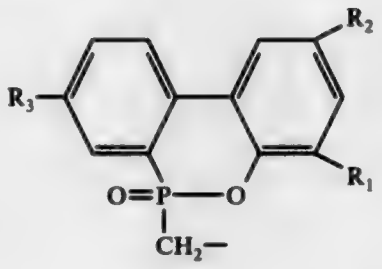


I

wherein Z represents radical



and X is radical



II

wherein R_1, R_2 and R_3 each is hydrogen, a halogen atom, an alkyl group of 1 to 8 carbon atoms, an aralkyl group, cyclohexyl or phenyl, *x* is 0, 1 or 2 and *y* is from 1 to 4.

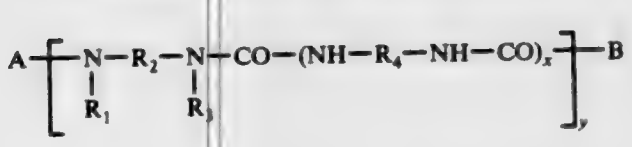
4,086,207

POLYUREA COMPOUNDS WHICH IMPROVE THE LIGHT STABILITY OF POLYMERS

Paolo Cassandrini, Bologna, and Antonio Tozzi, Sasso Marconi, both of Italy, assignors to Chimosa Chimica Organica S.p.A., Marconi, Italy

Filed Jun. 23, 1976, Ser. No. 699,161
Claims priority, application Italy, Nov. 18, 1975, 52254/75
Int. Cl.[2] C08K *5/34;* C08G *18/32;* C07D *211/98*
U.S. Cl. 260—45.8 N 23 Claims

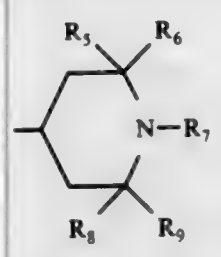
1. A compound which either (1) has the formula



(I)

wherein:

R_1 is a member selected from hydrogen, straight and branched alkyl having 1 to 18 carbon atoms, cycloalkyl having 5 to 18 carbon atoms, aryl and substituted aryl having 6 to 18 carbon atoms, aralkyl having 7 to 18 carbon atoms, a piperidine radial having the formula:



(II)

in which R_5, R_6, R_8 and R_9 are members individually selected from alkyl having 1 to 6 carbon atoms and R_7 is selected from hydrogen, oxygen, straight and branched chain alkyl having 1 to 18 carbon atoms, alkenyl and alkinyl having 2 to 18 carbon atoms, aralkyl having 7 to 18 carbon atoms;

R_2 is a member selected from straight and branched chain alkylene having 2 to 18 carbon atoms, cycloalkylene having 5 to 18 carbon atoms, arylene having 6 to 18 carbon atoms, aralkylene having 7 to 18 carbon atoms;

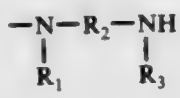
R_3 is a piperidine radical of formula (II);

R_4 is a member selected from straight and branched chain alkylene having 2 to 18 carbon atoms, cycloalkylene having 5 to 18 carbon atoms, arylene having 6 to 18 carbon atoms, aralkylene having 7 to 18 carbon atoms;

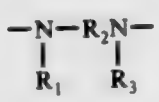
x is either 0 or 1;

y is an integer from 2 to 200;

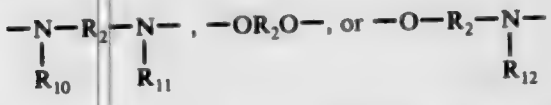
A and B each represents a terminal group wherein A is H and B is



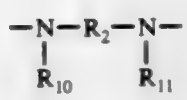
or (2) has the formula (I) in which a proportion of the y units and the terminal group B has the radical



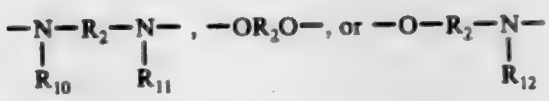
replaced by



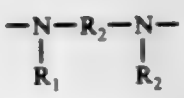
wherein R_{10}, R_{11} and R_{12} are hydrogen, alkyl having 1 to 18 carbon atoms, cycloalkyl having 5 to 18 carbon atoms, aryl having 6 to 18 carbon atoms, aralkyl having 7 to 18 carbon atoms, or R_{10} and R_{11} are linked together so that the group



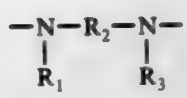
forms a heterocyclic ring having 6 to 8 inclusive members and which contains 2 nitrogen atoms; the proportion of y units with a replaced radical resulting from using in the reaction not over 2 moles of an amine or hydroxyl reactant containing the replacing radicals



per mole of the amine reactant containing the radical



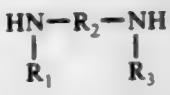
so that per one y unit containing a radical



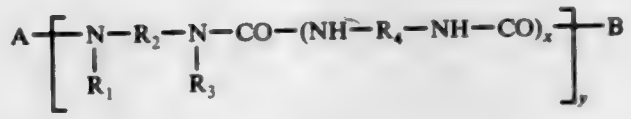
0 to 2 y units having said radical replaced are present.

14. A synthetic polymer composition of increased light stability having incorporated with the polymer an amount of a compound according to claim 1 effective to increase the light stability of the polymer.

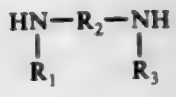
23. A method of preparing a compound according to claim 1 comprising reacting either a diamine having the formula



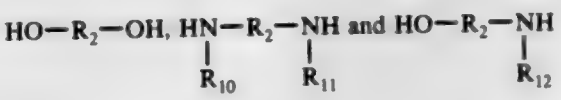
with a reactant selected from the group consisting of carbonyl chloride and $OCN—R_4—NCO$ in an inert solvent, in a molar ratio of diamine to said reactant ranging from 1:1 to 1.5:1 at a temperature sufficient to form the compound having the formula



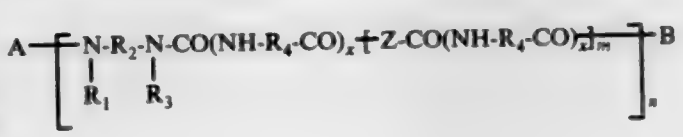
or employing a corresponding mixture of the diamine



with not over 2 moles per mole of said diamine of a compound selected from the group consisting of

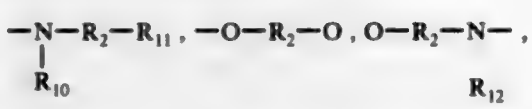


to form the compound



(III)

where Z represents a radical



m is a number from 0 to 2 and $n = y/(1+m)$.

4,086,208

FLAME RESISTANT POLYESTERS

Ken Murayama, and Takao Kashihara, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

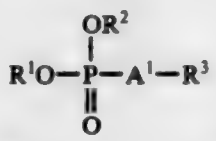
Filed Jan. 14, 1976, Ser. No. 648,975

Claims priority, application Japan, Jan. 17, 1975, 50-7072; May 16, 1975, 50-59061

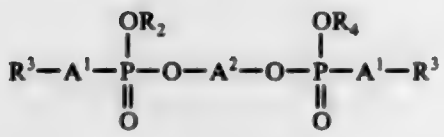
Int. Cl.[2] C08G *63/20, 79/04*

U.S. Cl. 260—47 C **9 Claims**

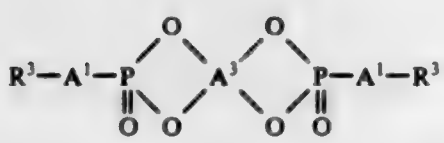
1. A flame resistant polyester comprising a polymer prepared by polymerizing an aromatic dicarboxylic acid or an ester-forming derivative thereof, a diol or an ester-forming derivative thereof, and at least one phosphorus compound selected from the group consisting of compounds having the formulae (I), (II), and (III):



(I)



(II)



(III)

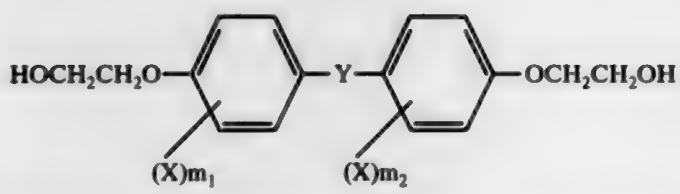
wherein R^1, R^2, and R^4 may be the same or different and represent hydrogen atoms or hydrocarbon groups having 1 to 18 carbon atoms which may contain at least one halogen atom, R^1 and R^2 being capable of forming a ring when taken together,

R^3 represents the ester-forming functional group —$COOR^5$, in which R^5 represents a hydrogen atom or a hydrocarbon group having 1 to 12 carbon atoms which may contain at least one hydroxyl group,

A^1 and A^2 may be the same or different and represent bivalent hydrocarbon groups having 1 to 12 carbon atoms which may contain at least one halogen atom, and

A^3 represents a quadrivalent hydrocarbon group having 5 or 6 carbon atoms, the content of phosphorus in the polymer being in a range of about 500 to about 50,000 ppm.

7. The flame resistant polyester as claimed in claim 1 wherein said diol or the ester-forming derivative thereof is, not exclusively, a glycol having the formula:



wherein X represents a halogen atom, Y represents a bivalent group selected from alkylene and alkylidene groups having 1 to 6 carbon atoms, —O—, —SO— and —SO_2—, and m_1 and m_2 are integers of 1 to 4, respectively.

4,086,209

NOVEL NITROGEN-CONTAINING AROMATIC POLYMERS AND PROCESS FOR THEIR PREPARATION

Shigeyoshi Hara, Hino; Masao Senoo, Ehime; Koh Mori, and Yutaka Taketani, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

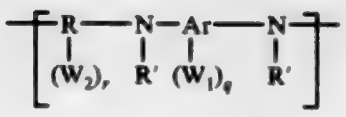
Filed Feb. 20, 1975, Ser. No. 551,311

Claims priority, application Japan, Feb. 21, 1974, 49-19883; May 17, 1974, 49-55148; May 20, 1974, 49-55627; May 23, 1974, 49-57292; May 24, 1974, 49-57792

Int. Cl.[2] C08G *65/34*

U.S. Cl. 260—49 **23 Claims**

1. A substantially linear nitrogen-containing aromatic polymer comprising (1) 40 to 100 mol%, based on its entire recurring units, of at least one recurring unit of the formula (I)



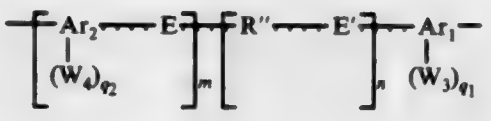
(I)

wherein

Ar is an aromatic group of 6 to 50 carbon atoms having a valence of $(2 + q)$ with the two



groups being bonded respectively to the nuclear carbon atoms of the aromatic ring Ar and represented by the formula (II)



(II)

wherein

Ar_1 is an aromatic ring group containing 6 to 20 carbon atoms and having a valence of $(q_1 + 2)$ or $(q_1 + 3)$;

Ar_2 is an aromatic ring group containing 6 to 20 carbon atoms and having a valence of $(q_2 + 2)$ or $(q_2 + 3)$;

W_3 and W_4 are identical or different and have the same definition as W_1 given below;

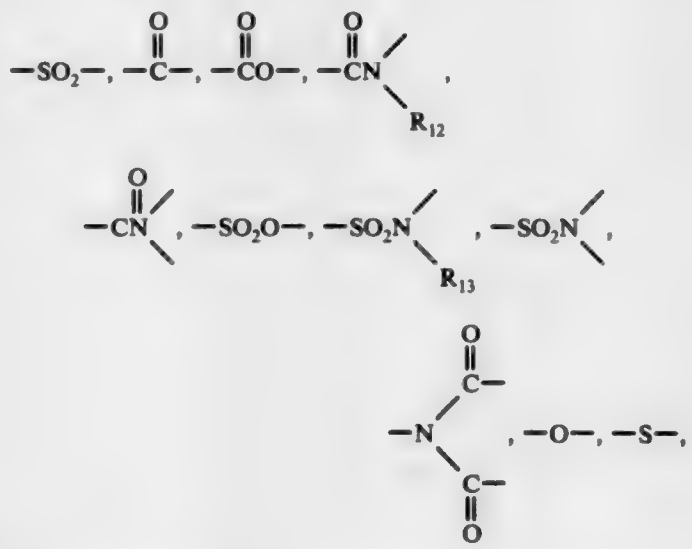
q_1 is an integer of 0 to 4;

q_2 is an integer of 0 to 4;

with the proviso that an average of $(q_1 + q_2 + r)$ is at least 0.2;

m and n are 0 or 1, and when m is 0, n is also 0; the symbol . . . represents the presence or absence of a bond;

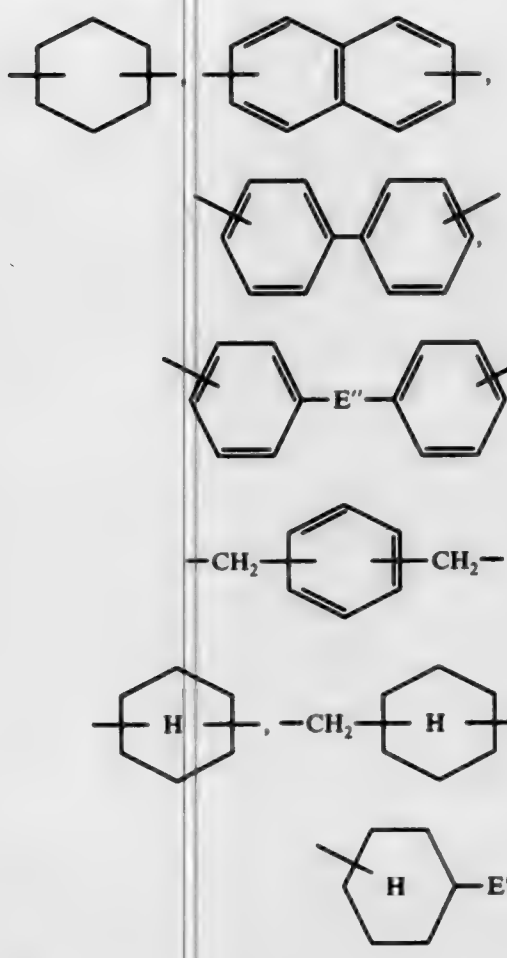
E and E′ are identical or different and each represent at least one non-aromatic bridging group selected from the group consisting of



and alkylene groups containing 1 to 6 carbon atoms,

R_{12} and R_{13} being identical or different and each representing a hydrogen atoms or an organic group containing 1 to 6 carbon atoms; and

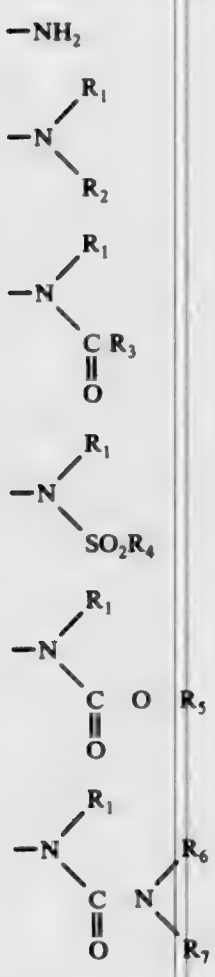
R'' represents alkylene of 2 to 15 carbon atoms or a member selected from the group consisting of



wherein

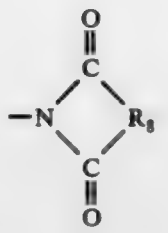
E'' is a non-aromatic bridging group having the same definition as E above;

W_1 and W_2 are identical or different and represent at least one group selected from the group consisting of



-continued

(g)



wherein

R_1, R_3, R_6 and R_7 are identical or different and represent a hydrogen atom or an organic group containing 1 to 20 carbon atoms which in principle has a valence of 1;

R_2 and R_5 represent an organic group containing 1 to 20 carbon atoms which in principle has a valence of 1;

R_4 represents a hydroxyl group or an organic group containing 1 to 20 carbon atoms which in principle has a valence of 1;

R_8 is a divalent organic group containing 1 to 20 carbon atoms; and

R_1 and R_2, R_1 and R_3, R_1 and R_4, R_1 and R_5, R_1 and R_6, R_6 and R_7, respectively, can be bonded to each other directly or through a hetero atom;

q is an integer of 0 to 4;

r is an integer of 0 to 4, with the proviso that an average of $(q + r)$ is at least 0.2;

R' is a hydrogen atom or monovalent or divalent hydrocarbon residue of 1 to 20 carbon atoms, and when R' is divalent, it is optionally bonded to R, or R' of one of the



linked to R' of the other

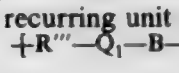


and

R is an organic group of 2 to 50 carbon atoms having a

(a) valence of $(2 + r)$, $(3 + r)$ or $(4 + r)$ according to the definition of R'; and

(b) (2) 0 to 60 mol% of the remaining recurring units being a recurring unit of the formula (III)



(III)

wherein

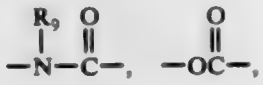
(c) B and R''' are identical or different and each represents the group (R) which is an organic group of 2 to 50 carbon atoms having a valence of $(2 + r')$, $(3 + r')$ or $(4 + r')$,

wherein

r' is an integer of 0 to 4, according to the definition of R', the group (R) being identical or different from R; and

(d) Q_1 and Q_2 are identical or different and are each selected from the group consisting of

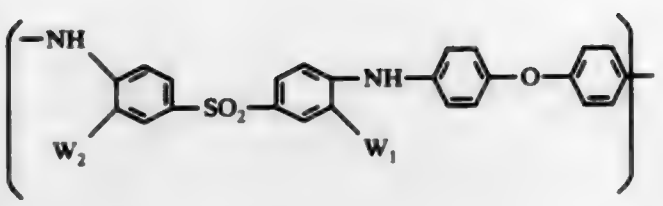
(e)



in which R_9, R_{10} and R_{11} are identical or different, and each represents a hydrogen atom, a monovalent or divalent hydrocarbon residue or a mere bond, and when these groups represent a divalent hydrocarbon residue or a bond, they can be

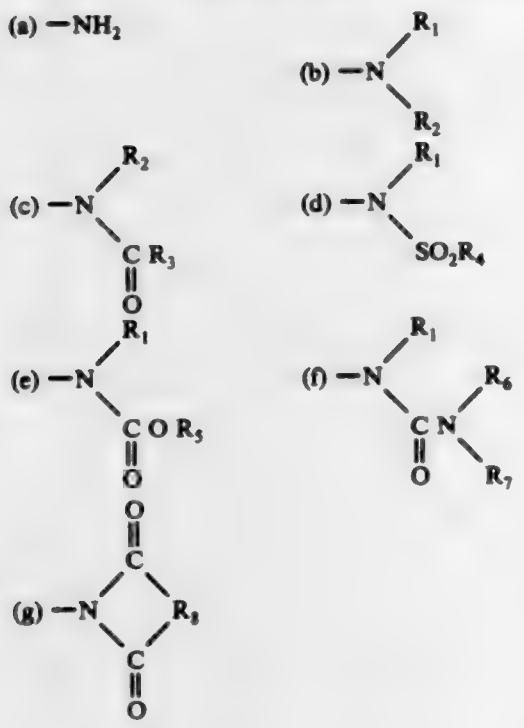
(f) bonded to R''' or B, or can be directly bonded to each other, and any of the above members may include an inert substituent.

15. A substantially linear primary amino containing aromtic polymer comprising (1) 40 to 100 mol%, based on its entire recurring units, of at least one recurring unit of the following formula



wherein

W_1 and W_2 are identical or different and represent at least one group selected from the group consisting of



wherein

R_1, R_3, R_6 and R_7 are identical or different and represent a hydrogen atom or an organic group containing 1 to 20 carbon atoms which in principle has a valence of 1;

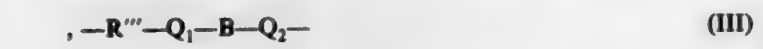
R_2 and R_5 represent an organic group containing 1 to 20 carbon atoms which in principle has a valence of 1;

R_4 represents a hydroxyl group or an organic group containing 1 to 20 carbon atoms which in principle has a valence of 1;

R_8 is a divalent organic group containing 1 to 20 carbon atoms; and

R_1 and R_2, R_1 and R_3, R_1 and R_4, R_1 and R_5, R_1 and R_6, R_6 and R_7, respectively, can be bonded to each other directly or through a hetero atom.; and

(2) 0 to 60 mol%, based on its entire recurring units, of at least one recurring unit of the formula (III)



(III)

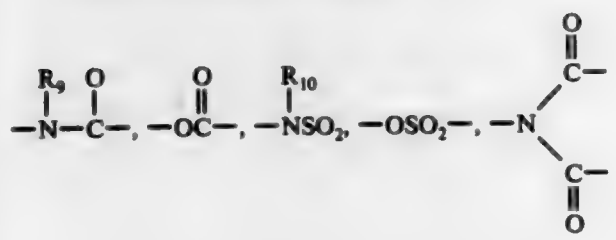
wherein

B and R''' are identical or different and each represent the group (R) which is an organic group of 2 to 50 carbon atoms having a valence of $(2 + r')$, $(3 + r')$ or $(4 + r')$,

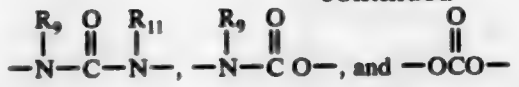
wherein

r' is an integer of 0 to 4, according to the definition of R', the group (R) being identical to or different from R' and

Q_1 and Q_2 are identical or different and are each selected from the group consisting of



(b-1)



in which R_9, R_{10} and R_{11} are identical or different, and each represents a hydrogen atom, a monovalent or divalent hydrocarbon residue or a mere bond, and when these groups represent a divalent hydrocarbon residue or a bond, they can be bonded to R''' or B, or can be directly bonded to each other, and any of the above members may include an inert substituent.

4,086,210

RADIATION SENSITIVE POLYMERIC O-NITROPHENYL ACETALS

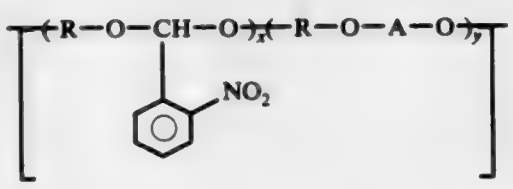
Constantine Chris Petropoulos, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 10, 1976, Ser. No. 684,696

Int. Cl.[2] C08G *4/00*

U.S. Cl. 260—67 R **16 Claims**

1. A radiation-sensitive linear polymer comprising recurring units of the structure



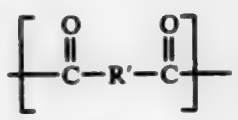
where

x ranges from 1 to 20 and

y is 0 or 1,

R is the divalent residue of an organic diol capable of forming a linear polyacetal with an aldehyde,

A is



where R' is arylene.

4,086,211

METHOD OF PRODUCING POLYURETHANE PRODUCTS HAVING AN IMPROVED FLEX CRACK RESISTANCE

Hideo Nakauchi; Toshiyuki Osaki, both of Higashi-Murayama; Kazuo Naito, and Sakae Inoue, both of Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Mar. 15, 1976, Ser. No. 667,069

Claims priority, application Japan, Mar. 14, 1975, 50-30214

Int. Cl.[2] C08G *18/82, 18/32*

U.S. Cl. 260—75 NA **7 Claims**

1. A method of producing a polyurethane product having improved flex-crack resistance, which comprises the steps of:

(1) curing a mixture of:

(a) an isocyanate terminated polyether type polyurethane prepolymer having a molecular weight 800–20,000 and

(b) a polyamine curative in an amount of 0.6–0.9 equivalent per isocyanate equivalent of said prepolymer,

(2) post-curing the reaction product from step (1), and

(3) subsequently heat treating the resultant article for 60–18,000 minutes under an atmosphere of a temperature of 80°–140° C and an absolute humidity of 5–80%.

4,086,212
POLY(ETHYLENE/ALKYLENE) TEREPHTHALATES WHICH CRYSTALLIZE RAPIDLY

Peter Bier; Rudolf Binsack, and Hugo Vernaleken, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 17, 1976, Ser. No. 658,816
Claims priority, application Germany, Feb. 22, 1975, 2507674
Int. Cl.² C08G *63/12*
U.S. Cl. 260—75 R **4 Claims**

1. A process for the production of thermoplastic terephthalic acid copolyesters which crystallize more rapidly than polyethylene terephthalate homopolymer comprising

(1) esterifying or transesterifying an acid component consisting of

(a) at least 90 mol % of terephthalic acid and dimethyl terephthalic acid ester, and

(b) up to 10 mol % of other aliphatic and aromatic dicarboxylic acids and acid esters with

(2) 1.05 to 2.04 equivalents of a diol component consisting of

(a) 90 to 99.5 mol % of ethylene glycol, and

(b) 10 to 0.5 mol % of 2,2-diethylpropane-1,3-diol at

(3) a temperature of between 150° and 250° C in the presence of esterification or transesterification catalysts, and

(4) polycondensing the initial reaction products at a temperature between 200 and 300° under reduced pressure in the presence of an esterification catalyst,

wherein the 2,2-diethylpropane-1,3-diol is added to the reaction mixture after substantially all of the acid component has been reacted to di(2-hydroxyethyl)ester.

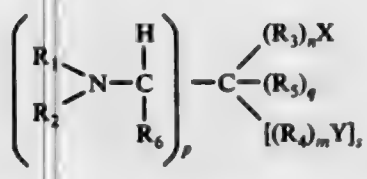
2. The product of the process of claim 1.

4,086,213
TERTIARY AMINO ACID AND TERTIARY AMINO ACID-NITRILE DELAYED ACTION CATALYST COMPOSITIONS

Ibrahim S. Bechara, Boothwyn; Philip J. Zaluska, Glen Riddle, and Rocco L. Mascioli, Media, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 26, 1976, Ser. No. 717,579
Int. Cl.² C08G *18/18*
U.S. Cl. 260—77.5 AB **11 Claims**

1. In a process for polymerizing a urethane forming composition comprising an organic polyisocyanate and a polyol, in the presence of an organometallic catalyst, the improvement which comprises including as a catalyst component an amino catalyst selected from the group consisting of a polyfunctional amino acid and an amine salt of a polyfunctional amino acid as represented by the formula:



wherein R_1 and R_2 are hydrogen atoms with only one being hydrogen at a time, alkyl and substituted alkyl groups having from 1 to 15 carbon atoms, or combined to form a piperidine, piperizine, morpholine, imidazole or imidazoline radical;

wherein R_3 and R_4 are alkylene groups having from 1 to 2 atoms, aralkylene with the alkylene portion having from 2 to 6 carbons, substituted alkylene and substituted aralkylene;

wherein R_5 is hydrogen, a lower alkyl group having from 1 to 6 carbon atoms, an alkenyl group having from 1 to 6 carbon atoms, an aryl group, a cyclic group and substituted derivatives thereof, or a keto alkyl group with the alkyl portion having from 1 to 6 carbon atoms;

wherein R_6 is hydrogen, or a radical selected from the group consisting of alkyl, phenyl, furfuryl, naphthyl, and substituted derivatives of such groups;

wherein X is a carboxylic acid group or a quaternary ammonium salt of an acid group;

wherein Y is a carboxylic acid group, nitrile group, or a quaternary ammonium salt of an acid group; and

wherein m, n and s independently are 0 or 1;

wherein q is 0 or 1;

wherein p independently is 1 or 2; and

wherein $p + q + s$ is 3.

4,086,214
PROCESS FOR PREPARING POLY(ε-CAPROLACTONE) POLYURETHANES

Charles Frederick Cardy, Luton, England, assignor to Interox Chemicals Ltd., London, England

Filed Jan. 19, 1976, Ser. No. 650,160
Claims priority, application United Kingdom, Feb. 10, 1975, 05603/75
Int. Cl.² C08G *18/42, 18/18, 18/22*
U.S. Cl. 260—77.5 AN **13 Claims**

1. A process for the preparation of urethane polymers by the reaction together of a diisocyanate, a poly (ε-caprolactone)diol having a molecular weight in the range of from 1000 to 3000 and a chain extender, which comprises the steps of:

(a) forming an isocyanate-rich quasi-prepolymer by reacting all of the diisocyanate with a part of the poly(ε-caprolactone)diol such that a major proportion of the isocyanate groups remain unreacted,

(b) forming an hydroxyl-rich prepolymer by reacting all of the chain extender and the remaining part of the poly(ε-caprolactone)diol with sufficient of the said quasi-prepolymer such that a major proportion of the hydroxyl groups remain unreacted, and

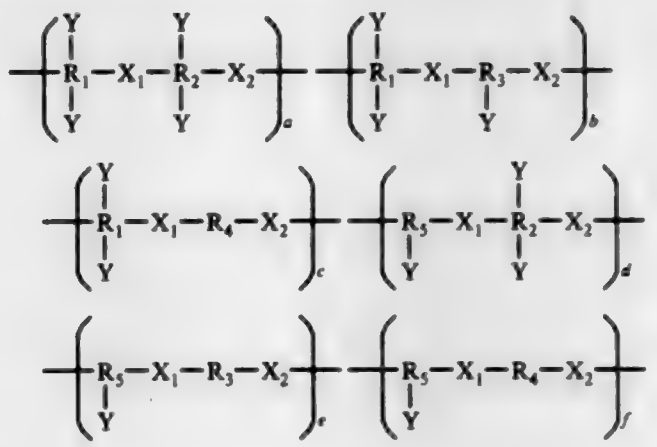
(c) mixing in the liquid phase the said quasi-prepolymer with the said hydroxyl-rich prepolymer and reacting the said quasi-prepolymer with the said hydroxyl-rich prepolymer to give a urethane polymer.

4,086,215
CROSSLINKED ORGANIC POLYAMIDE OR POLYHYDRAZINE PERMSELECTIVE POLYMERIC MEMBRANES

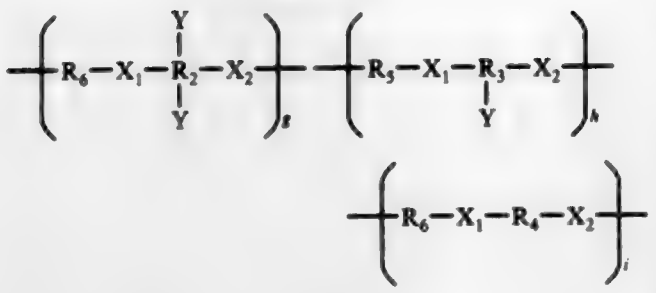
Masaru Kurihara; Soichi Tokizane; Tatsundo Tanaka; Masamitsu Tanimura, and Yoichi Shimokawa, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jan. 7, 1976, Ser. No. 647,138
Claims priority, application Japan, Jan. 8, 1975, 50-4459
Int. Cl.² C08G *69/48*
U.S. Cl. 260—78 R **22 Claims**

1. A permselective polymeric membrane consisting essentially of a synthetic organic polyamide or polyhydrazide represented by the following formula:



-continued



wherein

(a) *a, b, c, d, e, f, g, h* and *i* represent the molar fraction (%) of each component, each being larger than zero or equal to zero, and satisfying the following relations:

$$a + b + c + d + e + f + g + h + i = 100$$

$$a + b + c + d + e + f + g + h > 0$$

(b) R_1,R_2, R_3, R_4, R_5 and R_6 are members selected from the group consisting of carbocyclic aromatic, heterocyclic, and alicyclic groups having 4 to 30 carbon atoms,

(c) X_1 is a group selected from the class consisting of —NH-CO—, —CO— and —CONHNHCO—, wherein, in the case of —CO—, it is bonded directly to a nitrogen atom in the heterocycle in R_1, R_5 or R_6,

(d) X_2 is a group selected from the class consisting of —CONH—, and —CO—, and —CONHNHCO—, wherein, in the case of —CO—, it is bonded directly to a nitrogen atom in the heterocycle in R_1, R_5 or R_6,

(e) Y is a group selected from the class consisting of CO_2H and $—SO_3H$, and

(f) the polymer has a molecular weight high enough to provide a film, a solvent for the polymer, and an inorganic salt selected from the class consisting of LiCl, LiBr, $LiNO_3$, $CaCl_2$ and $MgCl_2$, the total number of cross-linked groups for divalent metal ions in the polymer repeating units being in the range of $7.0 \times 10^{-5} - 7.0 \times 10^{-3}$, the concentration of said ionic groups in the polymer, expressed as P.I., is in the range of $3.5 \times 10^{-4} - 1.4 \times 10^{-2}$, where P.I. represents the following ratio;

$$P.I. = \frac{\text{total number of ionic groups in a polymer repeating unit}}{\text{Molecular weight of the polymer repeating unit}}$$

said polyamide or polyhydrazide being ionically cross-linked with a salt of a metal selected from the class consisting of alkaline earth metals, transition metals, aluminum group metals and lead group metals.

4,086,216

GLYCOPROTEIN EXTRACTED FROM THE MUSHROOM PSALLIOTA XANTHODERMA AND ITS APPLICATION IN ANTI-VIRAL THERAPY

Roland-Yves Mauvernay, Riom; Henri-Jean Pourrat, and Jean-Louis Lamaison, both of Clermont-Ferrand, all of France, assignors to Centre Europeen de Recherches Mauvernay "C.E.R.M.", Riom, France

Filed Dec. 2, 1975, Ser. No. 636,941

Claims priority, application France, Dec. 2, 1974, 74 39329

Int. Cl.² C07G *7/00*

U.S. Cl. 260—112 R **2 Claims**

1. Process for obtaining a substance, possessing anti-viral properties useful in herpetiform diseases from Psalliota Xanthoderma which comprises subjecting the carpophores of Psalliota Xanthoderma to the successive steps of aqueous extraction, dialysis and finally lyophilization wherein

(a) the aqueous extraction is carried out by the addition of 10–40 parts water to previously lyophilised, ground and sieved fresh mushrooms, followed by mixing of the suspension for about 30 minutes at 35°–50° C and collection of the extraction fluid by filtration;

(b) the dialysis is carried on the filtrate from the aqueous extraction phase, previously adjusted to pH 6.5 to 7.0, for 60–70 hours at a temperature of about 10°–15° C; and

(c) the lyophilization is carried out by the freezing, at −60° C, of the dialysed solution followed by slow lyophilization for 60–70 hours.

4,086,217

CARCINOEMBRYONIC ANTIGENS

Hans John Hansen, Allendale, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 663,405, Mar. 3, 1976, abandoned, which is a division of Ser. No. 469,197, May 13, 1974, Pat. No. 3,956,258, which is a division of Ser. No. 252,700, May 12, 1972, Pat. No. 3,867,363, which is a continuation-in-part of Ser. No. 133,404, Apr. 12, 1971, Pat. No. 3,697,638, which is a continuation-in-part of Ser. No. 110,288, Jan. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 42,526, Jun. 1, 1970, abandoned. This application Feb. 18, 1977, Ser. No. 770,000

Int. Cl.² C07G *7/00*

U.S. Cl. 260—112 R **2 Claims**

1. A process of producing human carcinoembryonic antigen component A which comprises subjecting carcinoembryonic antigen material to chromatography on a mixed bed cellulose ion exchange column comprising microgranular diethylaminoethyl cellulose in the free base form having rod shaped particles, a capacity of 1.0 ± 0.1 meq./gm., a particle size distribution of about 20 μ to about 60 μ and a water regain of 2.3 to 2.8 gm./gm. dry exchanger, and a microgranular carboxymethyl cellulose with a capacity of 1.0 ± 0.1 meq./gm., having rod shaped particles, a particle size distribution of about 20 μ to about 60 μ and a water regain of 2.3 to 2.7 gm./gm. dry exchanger, and collecting the eluates resulting from eluting with ammonium acetate at pH 4 in 0.05 M sodium chloride followed by subjecting the resulting material to sequential chromatography on two different gel columns, the first of which is an agarose gel having about 6% by weight agarose and a particle size of from 40–210 microns and the second of which is a hydrophilic water-insoluble cross-linked dextran polymer gel and collecting and concentrating the eluates which have a spectrophotometric absorption peak wave length of 280 mμ and a molecular weight of about 200,000 to 500,000.

4,086,218

METHOD OF PRESERVING BLOOD PLASMA II

Edward Shanbrom, Santa Ana, and Robert C. Bishop, Los Angeles, both of Calif., assignors to Edward Shanbrom, Inc., Santa Ana, Calif.

Continuation of Ser. No. 567,371, Apr. 11, 1975, abandoned. This application May 16, 1977, Ser. No. 797,108

Int. Cl.² A23J *1/06*

U.S. Cl. 260—112 B **1 Claim**

1. The method of preserving blood plasma coagulation factors and other proteins during freezing and thawing of plasma for improving the recovery of coagulation proteins thereafter comprising the steps of:

(a) adding to whole, fresh blood plasma a preservative solution consisting essentially of heparin and polyethylene glycol to a concentration of from about 0.1 to about 25 grams of said polyol and from about 10 to about 2000 units of heparin per liter of plasma;

(b) thereafter freezing the blood plasma containing said preservative; and

(c) thereafter thawing the frozen blood plasma containing the preservative solution to recover therefrom plasma cryoprecipitate from which plasma proteins can be recovered in improved yield.

4,086,219

NONAPEPTIDES AND METHODS FOR THEIR PRODUCTION

Eugene Leroy Wittle, and Mildred Catherine Rebstock, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Continuation-in-part of Ser. No. 626,805, Oct. 29, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,785

Int. Cl.[2] C07C *103/52;* A61K *37/00*

U.S. Cl. 260—112.5 LH 9 Claims

1. A compound having the name

N^{α}-Benzyloxycarbonyl-L-leucyl-L-tryptophyl-L-seryl-L-tyrosyl-D-asparaginyl-L-leucyl-arginyl-L-prolyl-glycinamide

and salts thereof.

4,086,220

FRAGMENTS OF SECRETIN

James M. Schlatter, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Aug. 9, 1976, Ser. No. 713,210

Int. Cl.[2] C07C *103/52;* A61K *37/00*

U.S. Cl. 260—112.5 R 8 Claims

1. A compound of the formula

H—X—Ser—Asp—Gly—Thr—Phe—Thr—Ser—
1 2 3 4 5 6 7 8

Glu—Leu—Ser—Arg—Leu—Arg—Y—NH_2
9 10 11 12 13 14

wherein

X is His or His(DNP);

Y is selected from a group consisting of

Asp,

Asp-Ser,

Asp-Ser-Ala,

Asp-Ser-Ala-Arg, and

Asp-Ser-Ala-Arg-Leu;

and the stereochemical configuration of each of the optically active amino acid residues may independently be *D, L* or *DL*.

4,086,221

POLYPEPTIDES AND PROCESS FOR PRODUCING THE SAME

Shumpei Sakakibara, Suita; Tadanori Morikawa, Takatsuki; Eisuke Munekata, Toyonaka; Terutoshi Kimura, Takarazuka; Yasuo Nakagawa, Nishinomya, and Toshiharu Noda, Toyonaka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Japan

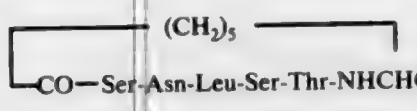
Filed May 3, 1976, Ser. No. 682,752

Claims priority, application Japan, May 1, 1975, 50-52064

Int. Cl.[2] C07C *103/52;* A61K *37/00*

U.S. Cl. 260—112.5 T 3 Claims

1. A polypeptide selected from the group consisting of a compound of the formula



$(CH_2)_5$

CO—Ser-Asn-Leu-Ser-Thr-NHCHCO—Val-Leu-Gly-Lys-Leu-Ser-Gln-Glu-Leu-His-Lys-Leu-Gln-Thr-Tyr-Pro-Arg-Thr-A_{25}-A_{26}-Gly-A_{28}-Gly-Thr-pro-HN_2

wherein A_{25} is Asp or Asn, A_{26} is Val or Thr and A_{28} is Ala or Ser,

and a pharmaceutically acceptable acid addition salt or complex thereof.

4,086,222

METHOD OF ISOLATING ALBUMIN FROM BLOOD PRODUCTS

Lars-Olof Edvard Lindquist; Jan Hakan Berglof, and John Malcolm Curling, all of Uppsala, Sweden, assignors to Pharmacia Fine Chemicals AB, Uppsala, Sweden

Filed Sep. 28, 1976, Ser. No. 727,611

Claims priority, application Sweden, Oct. 9, 1975, 75112953

Int. Cl.[2] B01D *15/08;* A2D *1/00*

U.S. Cl. 260—122 5 Claims

1. A method of isolating albumin from plasma products, wherein a plasma fraction containing albumin in a dissolved form and being essentially free from the coagulation factors I, II, VII, VIII, IX and X and also from the main part of IgG, is subjected to a two-step chromatographic separation in arbitrary sequence

(a) on an anion exchanger by means of an aqueous buffer of pH 4.5 – 4.9 and an ionic strength of 0.025 – 0.1, and

(b) on a cation exchanger by means of an aqueous buffer of pH 5.2 – 6.5 and an ionic strength of 0.1 – 0.05, the albumin rich fractions from the first chromatographic separation step being collected and subjected to the second chromatographic separation step, and the albumin rich fraction from the second chromatographic separation step being collected, desalted and worked-up, and wherein said ion exchangers consist of matrixes of hydrophilic organic polymers, which are water-insoluble but water-swellable and which are substituted with ion exchange groups.

4,086,223

ASYMMETRICAL 1:2-CHROMIUM COMPLEX AZO DYESTUFFS

Eginhard Steiner, Allschwil near Basel, and Fabio Beffa, Riehen near Basel, both of Switzerland, assignors to Ciba-Geigy AG, Switzerland

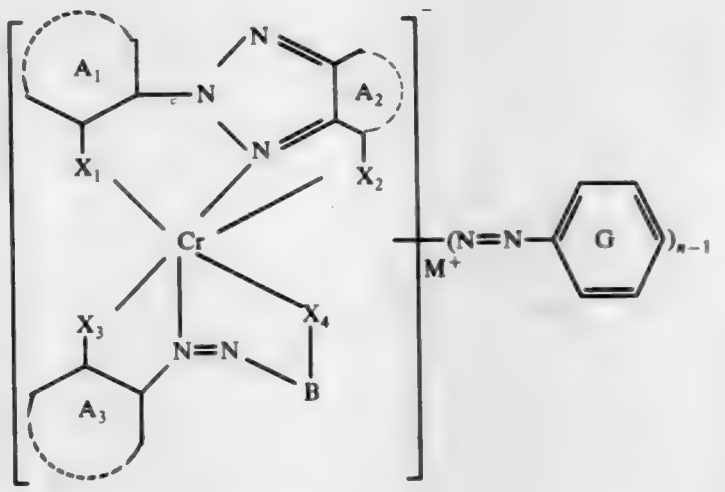
Continuation of Ser. No. 660,402, Feb. 23, 1976, abandoned, which is a continuation of Ser. No. 584,891, Jun. 9, 1975, abandoned, which is a continuation of Ser. No. 496,283, Aug. 8, 1974, abandoned, which is a continuation of Ser. No. 885,296, Dec. 15, 1969, abandoned. This application Feb. 9, 1977, Ser. No. 767,131

Claims priority, application Switzerland, Dec. 23, 1968, 19148/68

Int. Cl.[2] C09B *45/16, 45/26, 62/08, 62/24*

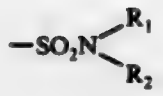
U.S. Cl. 260—151 9 Claims

1. A chromium-containing complex dyestuff of the formula:



wherein

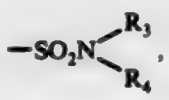
A_1 represents o-phenylene unsubstituted or substituted by halogen, nitro, lower alkyl, lower alkylsulphonyl, phenylsulphonyl, $—SO_3^-M^+$ or



wherein R_1 represents hydrogen, lower alkyl and R_2 represents hydrogen, lower alkyl or phenyl, or by a cellulosic fiber-reactive group, or o-naphthylene unsubstituted or substituted by $—SO_3^-M^+$,

A_2 represents unsubstituted o-phenylene or o-naphthylene unsubstituted or substituted by hydroxyl or $—SO_3^-M^+$, and

A_3 represents o-phenylene unsubstituted or substituted by halogen, nitro, lower alkyl, lower alkoxy, lower alkylsulphonyl, phenylsulphonyl, $—SO_3^-M^+$— or



wherein R_3 and R_4 independently of each other represent hydrogen or lower alkyl, or o-naphthylene unsubstituted or substituted by nitro, $—SO_3^-M^+$, or both,

B represents 1,2-naphthylene unsubstituted or substituted by halogen, phenylamino, $—COO^-M^+$, $—SO_3^-M^+$, N-lower-alkylsulphamoyl or N,N-di-lower-alkylsulphamoyl; 4-(1-phenyl-3-methyl-pyrazol-5-onyl), 4-(halogenphenyl-, 1-lower-alkyl-sulphonylphenyl- or 1-$SO_3^-M^+$-phenyl-3-methyl-pyrazol-5-onyl) or 4-(1-$SO_3^-M^+$-phenyl-3-methyl-5-amino-pyrazolyl),

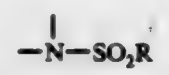
M^+ represents a colorless cation, and

n represents an integer from 1 to 3, and wherein ring G is unsubstituted or substituted by halogen, $—SO_3^-M^+$— or a sulphamoyl,

X_1 represents —O—,

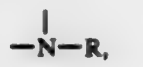
X_2 represents —O—, or —COO—,

X_3 represents —O—, —COO— or

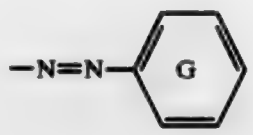


wherein R denotes lower alkyl or phenyl,

X_4 represents —O—, —NH— or

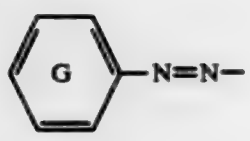


wherein R has the meaning given in the definition of X_3, and



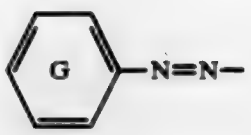
being linked to A_1, A_3 or both and the dyestuff molecule having, in all, from 0 to 3 $—SO_3^-M^+$ groups, and

wherein more than one



group is present it is not bound to the same ring A_1, A_3 or B

and when A_1, A_3 or B are unsubstituted or substituted o-phenylene, the



group is bound thereto in the para position with respect to the substituent participating in the chromium complex.

4,086,224

REDUCTION PROCESS FOR MAKING AZO COMPOUND

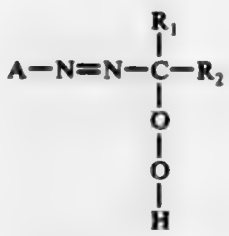
Ronald Edward MacLeay, Williamsville, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 526,641, Nov. 26, 1974, abandoned, and a continuation-in-part of Ser. No. 453,451, Mar. 21, 1974, abandoned. This application Mar. 8, 1976, Ser. No. 664,604

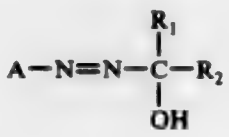
Int. Cl.[2] C07C *107/00, 107/02, 107/04*

U.S. Cl. 260—192 **5 Claims**

1. A process which comprises reacting an α-hydroperoxy azo compound of the formula:



at a temperature above −10° C. and below +35° C. and at a pH of 7 and above with a reducing agent selected from sodium sulfite; potassium iodide; triphenylphosphine; sodium borohydride; sodium thiosulfate; sodium and alcohol; lithium aluminum hydride; aluminum isopropoxide; and hydrogen in the presence of a catalyst selected from Raney nickel, platinum on carbon, platinum oxide and palladium on charcoal; thereby producing an α-hydroxyazo compound having the formula:



wherein in both of said formulae:

A is aryl of 6 to 14 carbons or $(R)_3C$; R is hydrogen; lower alkyl of 1 to 11 carbons; cycloalkyl, bicycloalkyl or tricycloalkyl of 3 to 12 carbons; aralkyl of 7 to 12 carbons; aryl of 6 to 14 carbons; provided that no more than one R is aryl, and the R's and C in $(R)_3C$ taken together form cycloalkyl, bicycloalkyl, or tricycloalkyl of 3 to 12 carbons;

R_1 is hydrogen; alkyl of 1 to 12 carbons; cycloalkyl, bicycloalkyl or tricycloalkyl of 3 to 12 carbons; aralkyl of 7 to 12 carbons;

R_2 is alkyl of 1 to 12 carbons; cycloalkyl, bicycloalkyl, or tricycloalkyl of 3 to 12 carbons; aralkyl of 7 to 12 carbons; aryl of 6 to 14 carbons; and R_1 and R_2 together form alkylene of 3 to 11 carbons.

4,086,225

RIFAMYCIN COMPOUNDS

Leonardo Marsili; Vittorio Rossetti, and Carmine Pasqualucci, all of Milan, Italy, assignors to Archifar Industrie Chimiche del Trentino S.p.A., Rovereto, Italy

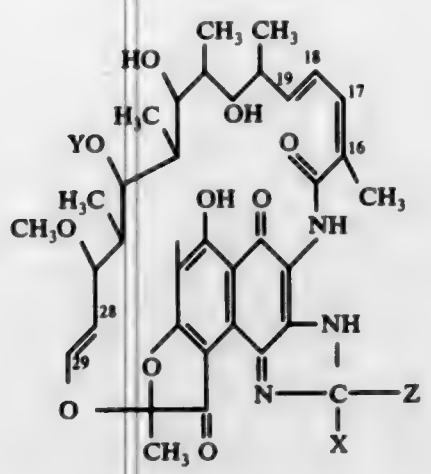
Filed Jun. 10, 1976, Ser. No. 694,589

Claims priority, application Italy, Jun. 13, 1975, 5174A/75

Int. Cl.[2] C07D *498/18*

U.S. Cl. 260—239.3 P **5 Claims**

1. A rifamycin compound having the formula



wherein X is alkyl having less than 5 carbon atoms; Y is —H or —$COCH_3$; Z is selected from the group consisting of alkyl having less than 5 carbon atoms, alkoxy-alkyl having less than 6 carbon atoms, hydroxy-alkyl having less than 4 carbon atoms, carboxy-alkyl having less than 5 carbon atoms, carbalkoxy-alkyl having less than 6 carbon atoms, halogen-alkyl having less than 4 carbon atoms, N,N-dialkylaminoalkyl having less than 6 carbon atoms, aryl hydrocarbon-alkyl having less than 10 carbon atoms and cycloalkyl having less than 7 carbon atoms; or X and Z, along with the C atom to which they are bonded, form a cyclic moiety selected from the group consisting of a hydrocarbon ring having less than 7 carbon atoms; a hydrocarbon ring having less than 7 carbon atoms which is substituted with at least one radical selected from the group consisting of alkyl having less than 4 carbon atoms, halogen and carbalkoxy having less than 4 carbon atoms; the piperidine ring; and the piperidine ring which is substituted with a radical selected from the group consisting of alkyl having less than 4 carbon atoms, aryl hydrocarbon-alkyl having less than 9 carbon atoms, carbalkoxy having less than 4 carbon atoms and alkanoyl having less than 5 carbon atoms;

16, 17, 18, 19-tetrahydroderivatives thereof; and

16, 17, 18, 19, 28, 29-hexahydroderivatives thereof.

4,086,226

PROCESS FOR THE SYNTHESIS OF THIOLCARBAMATES

Franco Gozzo, Saronno (Varese); Alfredo Rondanelli, and Giorgio Rossi, both of Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

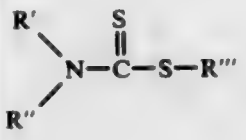
Filed Jan. 27, 1977, Ser. No. 763,135

Claims priority, application Italy, Jan. 28, 1976, 19673 A/76

Int. Cl.² C07C *153/09*; C07D *223/04*

U.S. Cl. 260—239 BF **9 Claims**

1. A process for preparing thiolcarbamates by desulphurization of dithiocarbamates of the formula



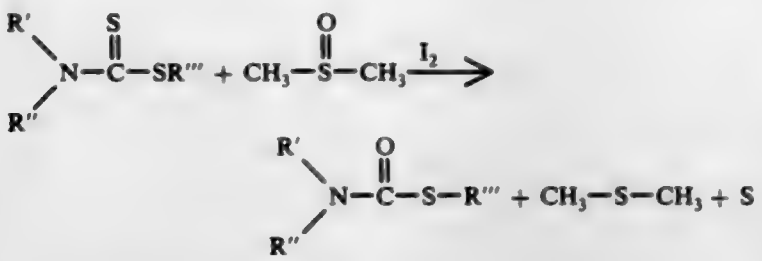
in which

R′ and R″, which may be the same or different, represent alkyls containing from 1 to 9 carbon atoms; halogenated alkyls containing from 1 to 9 carbon atoms; or, together, form an alkylene ring incorporating the N atom of the thiolcarbamate; and

R‴ is an alkyl containing from 1 to 9 carbon atoms; halogenated alkyl containing from 1 to 9 carbon atoms; phenyl; benzyl; substituted phenyl or substituted benzyl wherein the substituents are one or more substituents selected from the group consisting of alkyl, oxy-alkyl and halogen; said process comprising reacting said thiolcarbamates with dimethylsulphoxide, in the presence of iodine as catalyst

(I)

and at a temperature of from 50° to 200° C, according to the following reaction:



and recovering the thiolcarbamate formed from the reaction mixture.

4,086,227

NOVEL ANTI-DIARRHEAL 4-AZATRICYCLO[4.3.1.1^{3,8}] UNDECANE DERIVATIVES

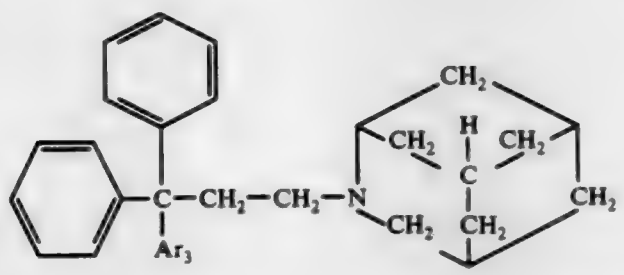
Gilbert W. Adelstein, Evanston; Esam Z. Dajani, Buffalo Grove, and Chung Hwai Yen, Skokie, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 733,503, Oct. 18, 1976, Pat. No. 4,057,549, which is a division of Ser. No. 568,439, Apr. 16, 1975, Pat. No. 3,998,832. This application Aug. 2, 1977, Ser. No. 821,067

Int. Cl.² C07D *223/00, 403/02*

U.S. Cl. 260—239 B **1 Claim**

1. A compound of the formula



and the pharmaceutically acceptable acid addition salts thereof wherein Ar_3 is phenyl or pyridyl.

4,086,228

PROCESS FOR PREPARING CYCLOTETRAMETHYLENETETRANITRAMINE

Irvine J. Solomon, Chicago, Ill., and Louis B. Silberman, Dover, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 22, 1976, Ser. No. 734,685

Int. Cl.² C07D *257/02*

U.S. Cl. 260—239 HM **7 Claims**

1. In the process of preparing cyclotetramethylenetetranitramine, which comprises reacting hexamine in an acetic acid-acetic anhydride medium with nitric acid-ammonium nitrate nitrating agent in two stages at a temperature between about 40° C and 45° C, characterized in the first reaction stage by the addition of all the hexamine and a minor amount of the nitrating agent and acetic anhydride to a heel consisting essentially of acetic acid-acetic anhydride mixture followed by an optional aging period, and in the second reaction stage by the addition of the remaining, major amount of the nitrating agent and acetic anhydride followed by an aging period, the improvement which comprises the step of incorporating therein

(a) before the addition of said reactants in said first reaction stage, or

(b) after the addition of said reactants in said first reaction stage but before the aging period in said first reaction stage a minor amount up to 0.5 mole of hexamine per mole of hexamine introduced with said nitrating agent.

4,086,229

DINITROSYLDIHALO COMPLEXES OF MOLYBDENUM OR TUNGSTEN

William B. Hughes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 18, 1976, Ser. No. 715,261
Int. Cl.[2] C07D *31/24;* C07F *11/00*
U.S. Cl. 260—270 D **33 Claims**

1. A process for the preparation of dinitrosyldihalo complexes of a metal selected from molybdenum and tungsten which comprises contacting (I) at least one oxytetrahalide of molybdenum or tungsten, (II) at least one alkali metal nitrite, (III) a reducing agent selected from elemental iron, borohydrides of sodium, potassium, rubidium, and cesium, and mixtures, (IV) at least one ligand-forming compound, and (V) at least one aprotic diluent, employing effective ratios of each material, and employing effective conditions of temperature, pressure, and time.

4,086,230

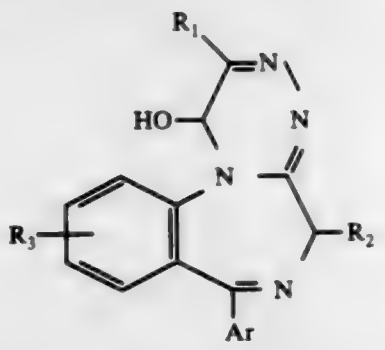
1,5-DIHYDRO-7-ARYL-AS-TRIAZINE[4,3,-α][1,4]BENZODIAZEPIN-1-OLS

Gerald N. Evenson, Cooper Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 9, 1977, Ser. No. 775,887
Int. Cl.[2] A61K *31/55;* C07D *405/06, 487/04*
U.S. Cl. 260—243.3 **10 Claims**

1. A compound of the formula IV:

IV



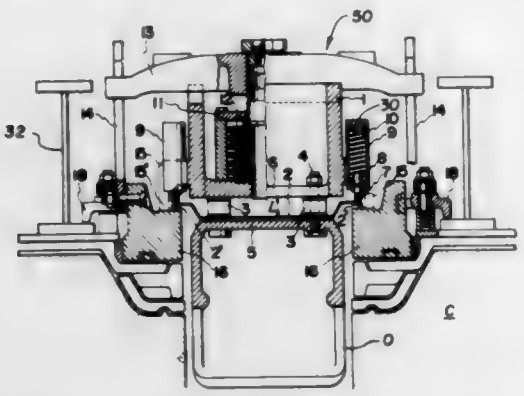
wherein R_1 is alkyl of 1 to 3 carbon atoms, inclusive; wherein R_2 is hydrogen, methyl or ethyl; wherein R_3 is hydrogen, fluoro, chloro, bromo, nitro or $-CF_3$; and wherein Ar is phenyl, o-chlorophenyl, o-fluorophenyl, 2,6-difluorophenyl, or 2-pyridyl, or the pharmacologically acceptable acid addition salts thereof.

4,086,231

COKE OVEN DOOR CONSTRUCTION

Takatoshi Ikio, 5-32, 1 chome, Senbo, Tobata-ku, Kitakyushu-shi, Japan

Filed Oct. 28, 1975, Ser. No. 626,326
Claims priority, application Japan, Oct. 31, 1974, 49-125996
Int. Cl.[2] C10B *25/16*
U.S. Cl. 202—248 **4 Claims**



1. A door for a coke oven having an oven opening with a receiving frame extending around the opening, comprising a door body having a front face facing the oven, a sealing plate secured to said door body front face and having an annular peripheral portion with an inturned flange directed inwardly toward the receiving frame, a plurality of spacer means between said sealing plate and said door body holding said sealing plate in spaced relationship to said door body and defining a vent space therebetween, a plurality of vent openings in said door body along the height thereof for venting said space along its complete height, biasing means biasing said flange against the receiving frame to seal the periphery of said plate to the coke oven receiving frame, and a support arm extending outwardly from each side of said body adjacent the upper and lower portions thereof and bearing against the receiving frame to adjust the position of the door body with respect to the frame, wherein said biasing means include a plurality of spring holders carried by said door body, a member movable in each spring holder and engageable with said flange on the exterior thereof, and a spring in each holder biasing said member against said flange.

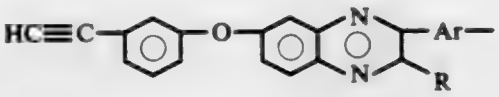
4,086,232

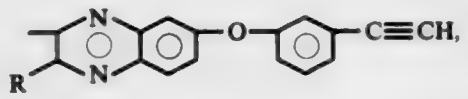
BIS-ETHYNYL HETEROCYCLIC COMPOSITIONS AND METHOD OF SYNTHESIS

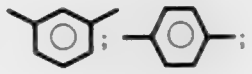
Robert F. Kovar, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 612,078, Sep. 10, 1975, Pat. No. 4,022,746.
This application Dec. 23, 1976, Ser. No. 754,042
Int. Cl.[2] C07D *241/42;* C08K *5/34*
U.S. Cl. 260—250 Q **6 Claims**

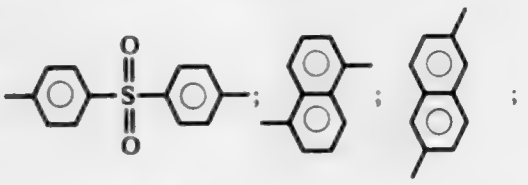
1. A bis-ethynyl quinoxaline compound having the following formula:

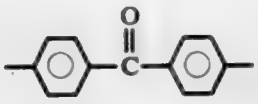


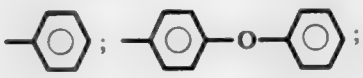


wherein Ar is  ;

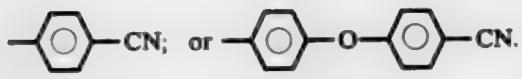
 ;

 ;

or  ; and R is hydrogen;

 ;

 ;

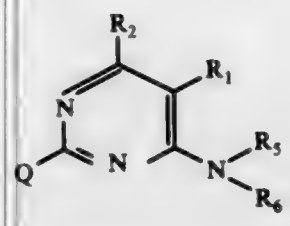
 .

4,086,233
4-(SUBSTITUTED-AMINO)-2-(PYRIDINYL) PYRIMIDINE DERIVATIVES

George Y. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 708,195, Jul. 23, 1976, Pat. No. 4,032,523. This application Feb. 3, 1977, Ser. No. 765,234
Int. Cl.[2] C07D *239/42*
U.S. Cl. 260—256.4 C 1 Claim

1. A compound of the formula



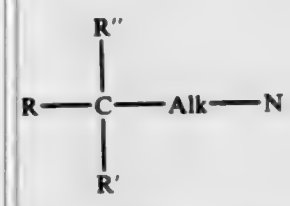
where Q is 4- or 3- or 2-pyridinyl or 4- or 3- or 2-pyridinyl having one or two lower-alkyl substituents or N-oxide thereof, R_1 is hydrogen, lower-alkyl or cyano, R_2 is hydrogen, loweralkyl, hydroxy or halo, R_5 is hydrogen, lower-alkyl or lower-hydroxyalkyl and R_6 is lower-alkyl or lower-hydroxyalkyl.

4,086,234
PROCESS FOR THE PREPARATION OF TERTIARY AMINES

Hugh Latimer Dryden, Jr., and Robert A. Erickson, both of Deerfield, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 7, 1975, Ser. No. 629,718
Int. Cl.[2] C07D *487/04, 295/14, 211/52*
U.S. Cl. 260—268 BC 10 Claims

1. A process for the preparation of tertiary amines of the general formual

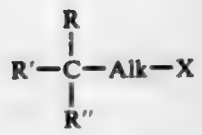


wherein Alk is a lower alkylene radical containing 2 to 6 carbon atoms; R is selected from the group consisting of lower alkyl containing 1 to 6 carbon atoms, phenyl, halophenyl, tolyl and pyridyl; R′ is selected from the group consisting of lower alkyl containing 1 to 6 carbon atoms, phenyl, halophenyl, tolyl, pyridyl, cyano, and hydrogen; R″ is selected from the group consisting of lower alkyl containing 1 to 6 carbon atoms, phenyl, halophenyl, tolyl, pyridyl and hydrogen; or R′ and R″ may together be a doubly bonded oxygen atom or both are alkoxy groups containing 1 to 6 carbon atoms or together are an ethylenedioxy or propylenedioxy group; and

is a cyclic secondary amine radical; which comprises contacting a cyclic secondary amine of the formula

wherein

is defined as hereinabove with a primary alkyl halide of the formula



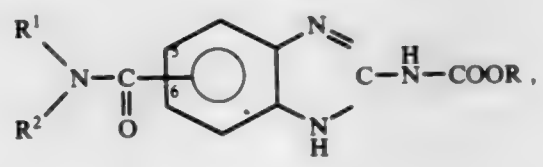
wherein X is a bromo, chloro or iodo atom; R′ is selected from the group consisting of lower alkyl containing 1 to 6 carbon atoms, phenyl, halophenyl, tolyl, pyridyl, cyano, hydrogen; R″ is selected from the group consisting of lower alkyl containing 1 to 6 carbon atoms, phenyl, halophenyl, tolyl, pyridyl and hydrogen; or R′ and R″ are both alkoxy groups containing 1 to 6 carbon atoms or together are a ethylenedioxy or propylenedioxy group; and Alk, and R are defined as hereinabove in a two phase aqueous medium in the presence of an inorganic base acid acceptor, optionally followed by hydrolysis of a ketal to afford the corresponding ketone.

4,086,235
5 (6)-BENZENE RING SUBSTITUTED BENZIMIDAZOLE-2-CARBAMATE DERIVATIVES HAVING ANTHELMINTIC ACTIVITY

Colin C. Beard, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

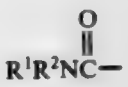
Filed Apr. 12, 1976, Ser. No. 676,443
Int. Cl.[2] A61K *31/415;* C07D *235/32*
U.S. Cl. 424—273 R 14 Claims

1. A compound selected from the group of compounds represented by the formula



(I)

wherein
R is a lower alkyl group having 1 to 4 carbon atoms;
R^1 is a lower alkenyl group of 3 to 6 carbon atoms having a single carbon to carbon double bond which is not on the α-carbon atom or lower alkynyl group of 3 to 6 carbon atoms having a single carbon to carbon triple bond which is not on the α-carbon atom;
R^2 is hydrogen, R^1, lower alkyl having 1 to 6 carbon atoms, cycloalkyl having 3 to 7 carbon atoms or phenyl; the



substitution being at the 5(6)-position; and the pharmaceutically acceptable salts thereof.

4. A compound chosen from the group consisting of 5(6)-(N,N-diethylcarbamoyl)-2-carbomethoxyaminobenzimidazole and the pharmaceutically acceptable salts thereof.

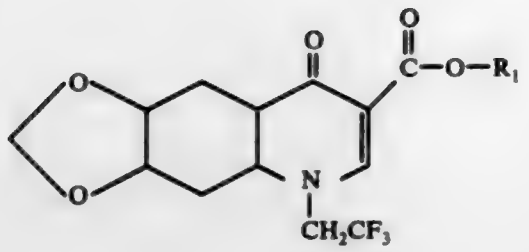
11. The method of controlling helminths in mammals which comprises administering an anthelmintically effective amount of a compound of claim 1.

4,086,236
6,7-METHYLENEDIOXY-1-(2,2,2-TRIFLUOROETHYL)-4(1H)-QUINOLONE-3-CARBOXYLIC ACID

Kyu Tai Lee, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 578,137, May 16, 1975, Pat. No. 4,036,962, which is a continuation-in-part of Ser. No. 496,851, Aug. 12, 1974, abandoned. This application Dec. 6, 1976, Ser. No. 747,732
Int. Cl.[2] C07D *491/04*
U.S. Cl. 260—287 AN 2 Claims

1. A compound of the formula



where

R_1 = H, alkyl of 1-3 carbons or a univalent cation: Na^+, K^+, NH_4^+, Li^+, $\frac{1}{2}Ca^{++}$, $\frac{1}{2}Mg^{++}$.

4,086,237

METHOD OF PREPARING 3-METHYL PYRIDINE

Gerhard Daum, Cologne, and Hermann Richtzenhain, Much-Schwellenbach, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf Bez. Cologne, Germany

Filed Apr. 28, 1976, Ser. No. 681,100

Claims priority, application Germany, May 2, 1975, 2519529

Int. Cl.[2] C07D *213/06*

U.S. Cl. 260—290 P **9 Claims**

1. Process for production of 3-methyl pyridine comprising contacting a material of the group of 2-methyl-1,5-diaminopentane and a mixture of 2-methyl-1,5-diaminopentane and 3-methyl piperidine with a dehydrogenation catalyst for the reaction at a temperature of 200°–400° C, the catalyst being palladium supported on a suitable support, the support containing the catalyst in amount of about 0.2 to 12% by weight.

4,086,238

1-THIADIAZOLYL-4-METHOXYMETHYL-5-HYDROXYIMIDAZOLIDINONES

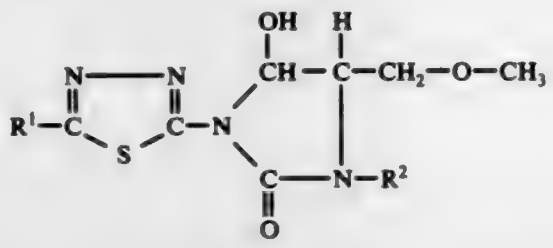
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 21, 1976, Ser. No. 698,248

Int. Cl.[2] C07D *417/04*

U.S. Cl. 260—306.8 D **9 Claims**

1. A compound of the formula



wherein R^1 is selected from the group consisting of lower alkyl, cycloalkyl of from 3 to 7 carbon atoms, lower alkenyl, lower alkylthio,, lower chloroalkyl, lower bromoalkyl, trifluoromethyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl and lower alkylsulfinyl, and R^2 is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, lower bromoalkyl and propargyl.

4,086,239

THIAZOLE BIS-PHOSPHATES AND PHOSPHONATES, INTERMEDIATES, AND INSECTICIDAL COMPOSITIONS AND METHODS

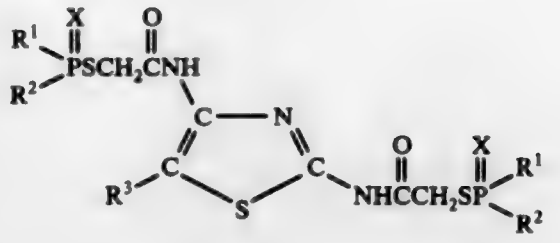
Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 1, 1977, Ser. No. 812,213

Int. Cl.[2] C07D *277/46*; A61K *31/425*

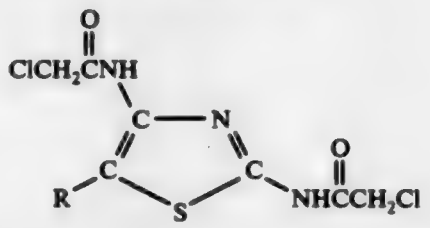
U.S. Cl. 260—306.8 R **45 Claims**

1. A compound having the formula



in which R^1 is selected from the group consisting of methoxy, ethoxy, and alkyl having from 1 to 10 carbon atoms; R^2 is alkoxy having from 1 to 10 carbon atoms; R^3 is hydrogen or phenyl; and X is oxygen or sulfur.

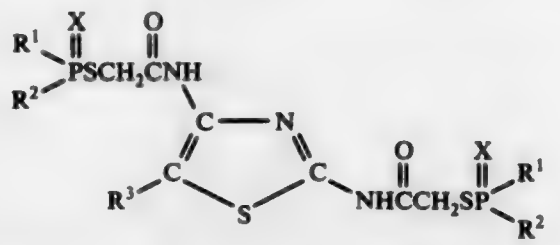
15. A compound having the formula



in which R is hydrogen or phenyl.

18. An insecticidally effective composition of matter comprising

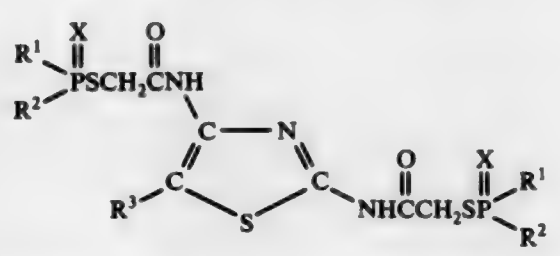
1. an insecticidally effective amount of a compound having the formula



in which R^1 is selected from the group consisting of methoxy, ethoxy, and alkyl having from 1 to 10 carbon atoms; R^2 is alkoxy having from 1 to 10 carbon atoms; R^3 is hydrogen or phenyl; and X is oxygen or sulfur; and

2. an inert diluent carrier.

32. A method of controlling insects comprising applying to said insects or to the habitat or feedstuffs of said insects an insecticidally effective amount of a compound having the formula



in which R^1 is selected from the group consisting of methoxy, ethoxy, and alkyl having from 1 to 10 carbon atoms; R^2 is alkoxy having from 1 to 10 carbon atoms; R^3 is hydrogen or phenyl; and X is oxygen or sulfur.

4,086,240

1-THIAZOLYL-5-PHENOXY AND PHENYLTHIOALKANOYLOXYIMIDAZOLIDINONES

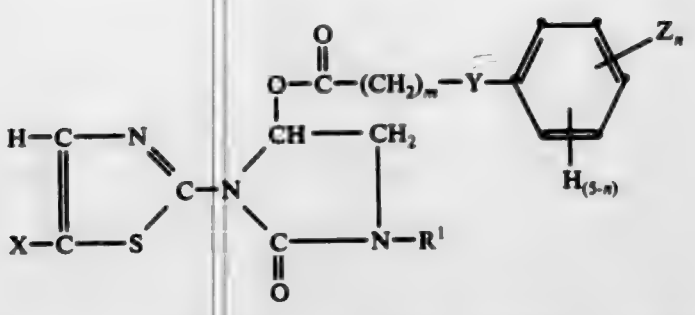
Chin Ching Wu, Libertyville, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 1, 1976, Ser. No. 691,928

Int. Cl.[2] C07D *417/04*

U.S. Cl. 260—306.8 R **9 Claims**

1. A compound of the formula



wherein X is selected from the group consisting of chlorine, bromine, fluorine and lower alkylsulfonyl; R^1 is selected from the group consisting of lower alkyl, lower alkenyl, lower haloalkyl and propargyl; m is an integer from 1 to 3; Y is selected from the group consisting of oxygen and sulfur; Z is selected from the group consisting of lower alkyl, lower alkenyl, chlorine, bromine, fluorine, lower haloalkyl, lower alkoxy, lower alkylthio, nitro and cyano; and n is an integer from 0 to 3.

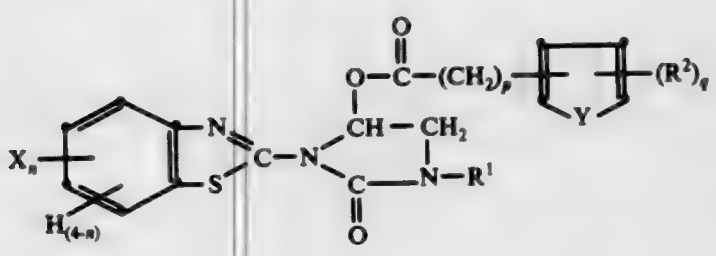
4,086,241

BENZOTHIAZOLYLIMIDAZOLIDINONE ESTERS OF FURYL AND THIENYL SUBSTITUTED ACIDS

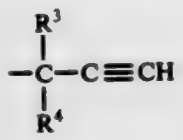
Chin Ching Wu, Libertyville, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 14, 1976, Ser. No. 695,341
Int. Cl.[2] C07D *417/04*
U.S. Cl. 260—306.8 D **9 Claims**

1. A compound of the formula



wherein X is selected from the group consisting of lower alkyl, lower haloalkyl, lower alkoxy, chlorine, bromine and iodine; *n* is an integer from 0 to 2; R^1 is selected from the group consisting of lower alkyl, lower alkenyl, lower haloalkyl and



wherein R^3 and R^4 are each selected from the group consisting of hydrogen and alkyl of up to 3 carbon atoms; *p* is an integer from 0 to 3; Y is oxygen or sulfur; R^2 is selected from the group consisting of lower alkyl, chlorine bromine and fluorine; and *q* is an integer from 0 to 2.

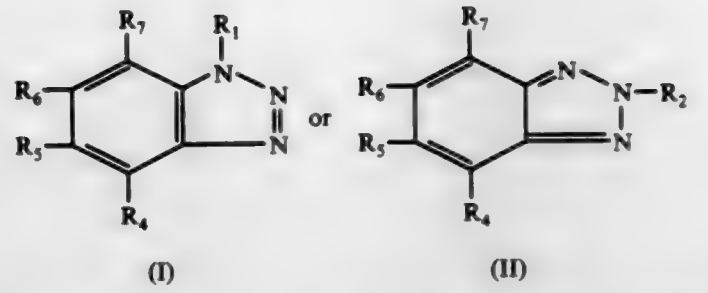
4,086,242

1H- AND 2H-BENZOTRIAZOLES

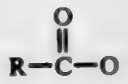
Robert Eugene Diehl, Lawrenceville, N.J., and Roger Vernon Kendall, Pasadena, Calif., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 490,526, Jul. 22, 1974, abandoned. This application Jan. 12, 1977, Ser. No. 761,098
Int. Cl.[2] C07D *249/18*
U.S. Cl. 260—308 B **16 Claims**

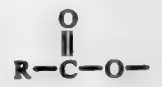
1. A compound of the formula:



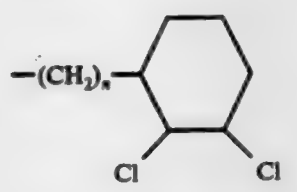
wherein R_1 and R_2 each independently represent a secondary alkyl C_3–C_7; tertiary alkyl C_4–C_7;



wherein R is C_1–C_2 alkyl; benzyl; cycloalkenyl C_3–C_8; —$(CH_2)_n$-cycloalkyl (C_3–C_8) optionally substituted with a hydroxy, alkoxy C_1–C_3, alkyl C_1–C_3 or



wherein R is C_1–C_2 alkyl and *n* is 0 or 1; cyclohexylone;



where *n* is 0 or 1; R_4 represents hydrogen, chlorine, cyano, methoxy or nitro; R_5 and R_6 are both hydrogen or both methyl; R_7 is hydrogen or nitro; with provisos that when R_4 is nitro, chloro, methoxy or cyano, then R_5, R_6 and R_7 are each hydrogen and when R_4 is hydrogen then R_7 is nitro and R_5 and R_6 are each methyl.

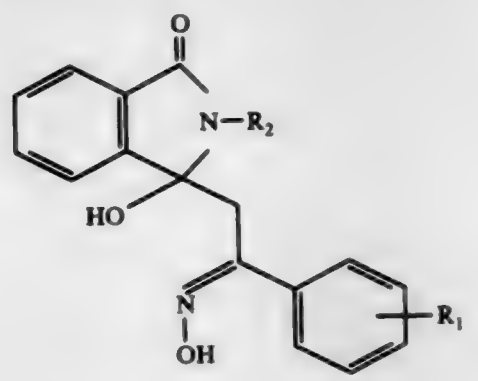
4,086,243

INTERMEDIATES IN THE PREPARATION OF ISOXAZOLYL BENZAMIDES

Jeffrey Nadelson, Lake Parsippany, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 549,934, Feb. 14, 1975, Pat. No. 3,987,179. This application Jul. 22, 1976, Ser. No. 707,681
Int. Cl.[2] C07D *209/36, 209/48*
U.S. Cl. 260—325 PH **1 Claim**

1. A compound of the formula



where

R_1 represents hydrogen, halo having an atomic weight of about 19 to 36, straight chain lower alkyl having 1 to 4 carbon atoms, straight chain lower alkoxy having 1 to 4 carbon atoms, or trifluoromethyl, and

R_2 represents straight chain lower alkyl.

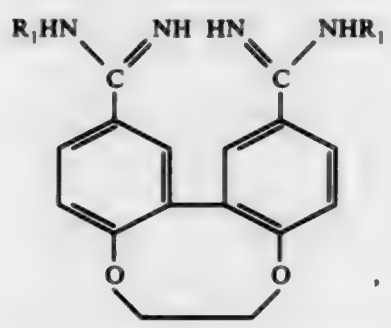
4,086,244

AMIDINES

Peter W. Sprague, Titusville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 10, 1976, Ser. No. 748,861
Int. Cl.[2] C07D *319/08*
U.S. Cl. 260—340.3 **6 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein R_1 is phenyl or phenyl substituted with one or two methoxy, halogen, or trifluoromethyl groups.

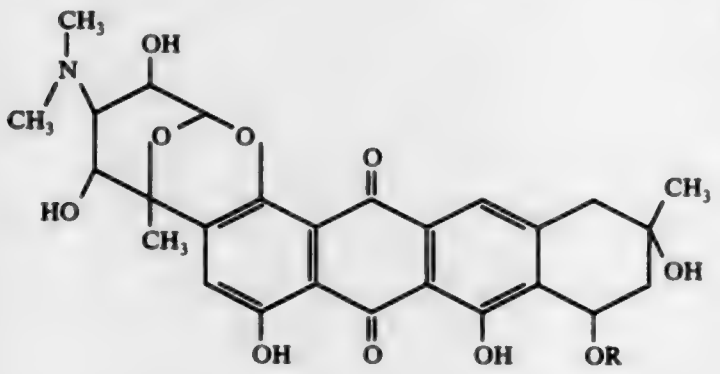
4,086,245

ANTIBIOTICS 7-O-ALKYLNOGAROLS

Paul F. Wiley, Kalamazoo, and David J. Houser, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 9, 1976, Ser. No. 748,716
Int. Cl.[2] C07D *319/08*
U.S. Cl. 260—340.3 **5 Claims**

1. 7-O-Alkylnogarol, a compound having the following structure:



IV

wherein R is alkyl of from 1 to 4 carbon atoms, inclusive, and isomeric forms thereof.

4,086,246

PROCESS FOR THE PREPARATION OF CARBAMATE DERIVATIVES

Geza Tóth; István Tóth, and Tibor Montay, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara, Budapest, Hungary

Filed Apr. 30, 1976, Ser. No. 682,033
Claims priority, application Hungary, May 6, 1975, CI 1572
Int. Cl.[2] C07D *317/24, 307/87*
U.S. Cl. 260—340.9 R **1 Claim**

1. In a process for the preparation of a compound selected from the group which consists of:

2-(1,3-dioxolane-2-yl)-phenyl-N-phenyl-carbamate;
2-(1,3-dioxolane-2-yl)-phenyl-N-methyl-carbamate;
2-(1,3-dioxolane-2-yl)-phenyl-N-3-chlorophenyl-carbamate;
2-(1,3-dioxolane-2-yl)-phenyl-N-cyclohexyl-carbamate;
2-(1,3-dioxolane-2-yl)-phenyl-N-3,4-dichlorophenyl-carbamate;
2-(1,3-dioxolane-2-yl)-phenyl-N-4-chlorophenyl-carbamate;
2,2-dimethyl-2,3-dihydro-benzofuran-7-yl-N-methyl-carbamate;
3-methyl-phenyl-N-methyl-carbamate;
2-chlorophenyl-N-methyl-carbamate; and
4-isopropylphenyl-N-methyl-carbamate

by reaction of phosgene with a phenol of the formula:

$$R^2—OH$$

and further by the reaction of a primary amine of the formula:

$$R^1—NH_2$$

wherein R^1 is selected from the group which consists of methyl, cyclohexyl, phenyl, 3-chlorophenyl, 4-chlorophenyl, and 3,4-dichlorophenyl; and R^2 is selected from the group which consists of 2-(1,3-dioxolane-2-yl)-phenyl, 3-methylphenyl, 2-chlorophenyl, 4-isopropylphenyl, and (2,3-dihydro-2,2-dimethyl-benzofuran-7-yl); the improvement which comprises reacting all three of the abovementioned reactants in a common water-immiscible organic solvent in the same reaction vessel at the same time in the presence of an acid binding agent and with about a 1:1 molar ratio of the phenol to the primary amine to yield the desired product.

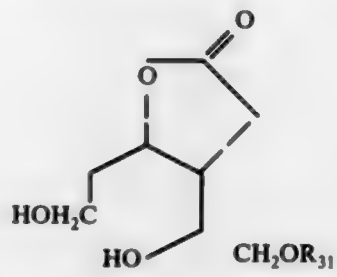
4,086,247

3-(1'-HYDROXY-2'-HYDROXYETHYL)-4,6-DIHYDROXYHEXANOIC ACID 4γ LACTONE DERIVATIVES

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 676,893, Apr. 14, 1976, Pat. No. 4,048,194.
This application May 12, 1977, Ser. No. 796,101
Int. Cl.[2] C07D *307/32*
U.S. Cl. 260—343.6 **2 Claims**

1. A thromboxane intermediate of the formula



wherein R_{31} is a hydroxy-hydrogen replacing group selected from the group consisting of R_9, R_{10}, and R_{34};
wherein R_9 is an acyl protecting group selected from the group consisting of
(a) benzoyl;
(b) benzoyl substituted with one to 5 alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 12 carbon atoms, inclusive, or nitro, with the proviso that not more than 2 substituents are other than alkyl, and that the total number of carbon atoms in the substituents does not exceed 10 carbon atoms, with the further proviso that the substituents are the same or different.
(c) benzoyl substituted with alkoxycarbonyl of 2 to 5 carbon atoms, inclusive;
(d) naphthoyl;
(e) naphthoyl substituted with one to 9, inclusive, alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 10 carbon atoms, inclusive, or nitro, with the proviso that not more than 2 substituents on either of the fused aromatic rings are other than alkyl and that the total number of carbon atoms in the substituents on either of the fused aromatic rings does not exceed 10 carbon atoms, with the further proviso that the various substituents are the same or different; and
(f) alkanoyl of 2 to 12 carbon atoms, inclusive; wherein R_{10} is a blocking group selected from the group consisting of
(a) tetrahydropyranyl;
(b) tetrahydrofuranyl; and
(c) a group of the formula

$$—C(OR_{11})(R_{12})\text{-}CH(R_{13})(R_{14}),$$

wherein R_{11} is alkyl of one to 18 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl or phenyl substituted with one to 3 alkyl of one to 4 carbon atoms, inclusive, wherein R_{12} and R_{13} are alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, or when R_{12} and R_{13} are taken together $-(CH_2)_a-$ or $-(CH_2)_b-O-(CH_2)_c$, wherein a is 3, 4, or 5, or b is one, 2, or 3, and c is one, 2, or 3, with the proviso that b plus c is 2, 3, or 4, with the further proviso that R_{12} and R_{13} may be the same or different, and wherein R_{14} is hydrogen or phenyl; wherein R_{34} is an arylmethyl hydroxy-hydrogen replacing group selected from the group consisting of

(a) benzyl,

(b) benzyl substituted by one to five alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive, with the further proviso that the various substituents are the same or different,

(c) benzhydryl,

(d) benzhydryl substituted by one to ten alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylakyl of 7 to 12 carbon atoms, inclusive,

(e) trityl, and

(f) trityl substituted by one to 15 alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive.

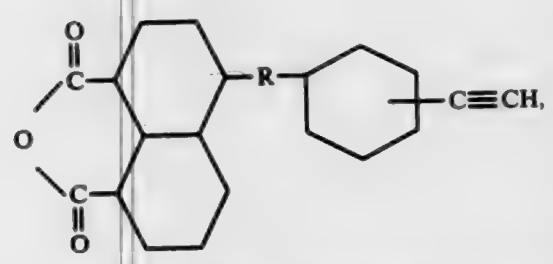
4,086,248

ETHYNYL-SUBSTITUTED AROMATIC ANHYDRIDES

Fred E. Arnold, Centerville, and Frederick L. Hedberg, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 15, 1976, Ser. No. 750,945
Int. Cl.² C07D *311/02, 217/24*
U.S. Cl. 260—345.2 **3 Claims**

1. An ethynyl-substituted aromatic 'peri' anhydride having the following formula:



wherein R is oxygen or sulfur and the ethynyl group is ortho, meta or para to R.

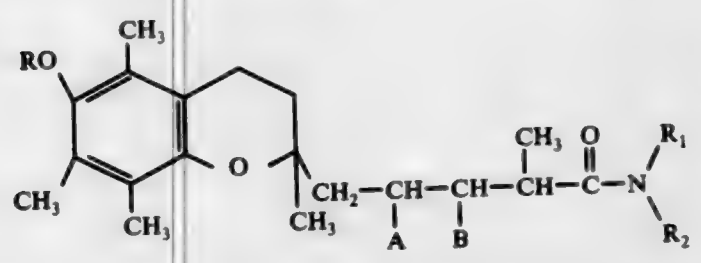
4,086,249

TETRAMETHYL CHROMANYL PENTANE AMIDE

Ka-Kong Chan, Stanhope, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 587,570, Jun. 17, 1975, Pat. No. 4,016,178. This application Dec. 8, 1976, Ser. No. 746,988
Int. Cl.² C07D *311/72*
U.S. Cl. 260—345.5 **4 Claims**

1. A compound of the formula:



wherein A and B are hydrogen or taken together form a carbon to carbon bond; R_1 and R_2 are lower alkyl; R is selected from the group consisting of benzyl, benzhydryl, trityl, t-butyl, tetrahydropyranyl, trimethylsilyl, dimethyl-tertiary-butylsilyl, alpha-loweralkoxyloweralkyl, and 4methyl-5,6-dihydro-2H-pyranyl.

4,086,250

MANUFACTURE OF BICYCLO[2,2,2]OCT-7-ENE 2,3,5,6-TETRACARBOXYLIC ACID DIANHYDRIDE

Heinz Nohe, Meckenheim, and Heinz Hannebaum, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 19, 1976, Ser. No. 743,516
Claims priority, application Germany, Dec. 9, 1975, 2555254
Int. Cl.² C07D *307/93*
U.S. Cl. 260—346.6 **7 Claims**

1. In a process for the manufacture of bicyclo[2,2,2]oct-7-ene-2,3,5,6-tetracarboxylic acid dianhydride by reacting 3,5-cyclohexadiene-1,2-trans-dicarboxylic acid with maleic anhydride in the presence of an anhydride of a low molecular weight alkanecarboxylic acid at from 50° to 150° C, wherein the 3,5-cyclohexadiene-1,2-trans-dicarboxylic acid is heated in the presence of the anhydride of the low molecular weight alkanecarboxylic acid to the reaction temperature and the maleic anhydride is then added, the improvement comprising: carrying out the heating of the 3,5-cyclohexadiene-1,2-trans-dicarboxylic acid and the anhydride of the low molecular weight alkanecarboxylic acid in the presence of from about 0.001 to 2 percent by weight based on the weight of the dicarboxylic acid of a water-soluble salt of an alkali metal, an alkaline earth metal, zinc, manganese or iron, in which salt the anion contains oxygen, and which salt is dissolved in the reaction mixture.

4,086,251

PROCESS FOR MANUFACTURING POLYALKENYL SUCCINIC ANHYDRIDES

John A. Cengel, Wheaton, and Imre Puskas, Glen Ellyn, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 548,382, Feb. 10, 1975, abandoned. This application Apr. 5, 1976, Ser. No. 673,707
The portion of the term of this patent subsequent to Dec. 16, 1992, has been disclaimed.
Int. Cl.² C07D *307/60*
U.S. Cl. 260—346.74 **9 Claims**

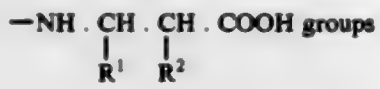
1. A process for preparing alkenyl-substituted anhydrides by reacting polymers of propene or butene characterized by a number average molecular weight in the range of 200 to 3000 with an intramolecular anhydride chosen from a group consisting of maleic anhydride, citraconic anhydride, itaconic anhydride, ethylmaleic anhydride or halomaleic anhydride, at a mole ratio of 0.8 to 10 of said anhydride to said polymer at a temperature from about 150° C. to about 300° C., which process comprises adding 5-200 ppm based on polymer of a tar and side product suppressing additive to a reaction zone so that the additive is present during the reaction between the polymer and the anhydride, distilling off and condensing unreacted anhydride from the reaction mixture, and returning at least a portion of the recovered anhydride for reaction with said polymer wherein said additive is selected from a group consisting of 1,3-dibromo-5,5-dialkyl substituted hydroantoin whose alkyl-substituents have a total of 2 to 21 carbon atoms, tetra bromomethane, bromotrichloromethane, acetyl bromide, bromoacetyl bromide, benzoyl bromide, N-bromo succinimide, dry hydrogen chloride, calcium bromide and N-bromoacetamide.

4,086,252
PROCESS FOR THE MANUFACTURE OF ANTHRAQUINONE COMPOUNDS

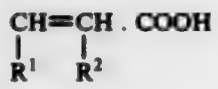
Trevor James Smith, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 8, 1976, Ser. No. 740,022
Claims priority, application United Kingdom, Dec. 10, 1975, 50646/75
Int. Cl.[2] C07C *49/68*; C09B *1/515*
U.S. Cl. 260—376 8 Claims

1. A process for the production of anthraquinone compounds which contain from 1 to 4



each of which is attached to a carbon atom in an α-position on the anthraquinone nucleus, wherein one of R^1 and R^2 is hydrogen, methyl or ethyl, and the other of R^1 and R^2 is hydrogen, which comprises reacting an anthraquinone compound containing from 1 to 4 primary amino groups each of which is attached to a carbon atom in an α-position on the anthraquinone nucleus with an alkenyl carboxylic acid of the formula



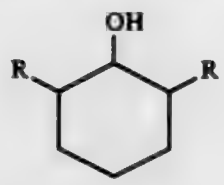
wherein R^1 and R^2 have the meanings stated, in sulphuric acid containing not more than 50% by weight of water, and in the presence of 10 to 100% be weight, which is an amount sufficient to suppress simultaneous production of sulfonate products, based on the weight of the aminoanthraquinone of boric acid, metaboric acid or boric oxide, at a temperature between 20° and 130° C.

4,086,253
3,3',5,5'-TETRA-SUBSTITUTED DIPHENOQUINONE FROM 2,6-DISUBSTITUTED PHENOL BY PHASE-TRANSFER CATALYSIS

Charles R. Hopper, and Larry D. Kershner, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 8, 1976, Ser. No. 703,481
Int. Cl.[2] C07C *45/16, 49/62*
U.S. Cl. 260—396 N 12 Claims

1. A process of preparing 3,3',5,5'-tetra-substituted diphenoquinone comprising contacting oxygen with a liquid 2,6-disubstituted phenol of the formula



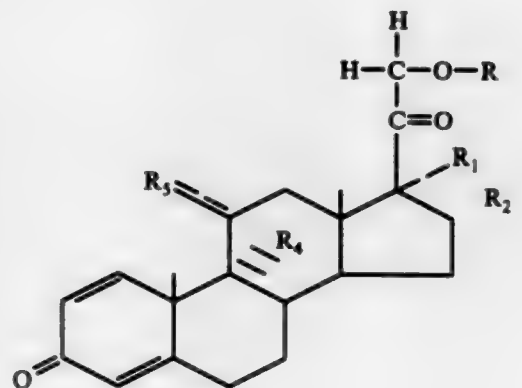
wherein each R is of 1 to about 18 carbon atoms and independently alkyl, alkoxy, aryl or aryloxy in the presence of aqueous strong base and a catalytic amount of an onium salt of the formula $R'R''R'''R^{IV}Q^{\oplus}A^{\ominus}$ wherein $Q^{\oplus}$ is a quaternized nitrogen or phosphorus atom, $A^{\ominus}$ is a neutralizing anion, and $R'—R^{IV}$ are hydrocarbyl groups of 1 to about 16 carbon atoms each with a combined minimum total of about 10 carbon atoms, or any two members of $R'—R^{IV}$ are joined to form a 5- or 6-membered heterocyclic compound, said compound having at least one quaternized nitrogen or phosphorus atom in the ring and said compound having an optional nonadjacent atom of nitrogen, oxygen or sulfur within the ring.

4,086,254
PHOTOCLEAVABLE STEROIDS

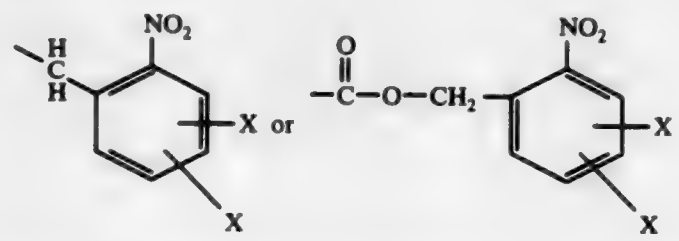
Wendell Wierenga, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 13, 1977, Ser. No. 787,167
Int. Cl.[2] C07J *5/00*
U.S. Cl. 260—397.45 7 Claims

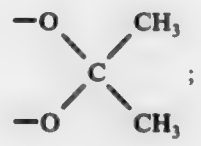
1. A compound of the formula:



wherein R is



X is H, methoxy, bromine, or chloro; R_1 is hydrogen or hydroxy, acyloxy wherein acyl is from 2–8 carbon atoms, inclusive; R_2 is hydrogen, hydroxy, methyl, fluoro, or chloro; and R_1 and R_2 taken together can be



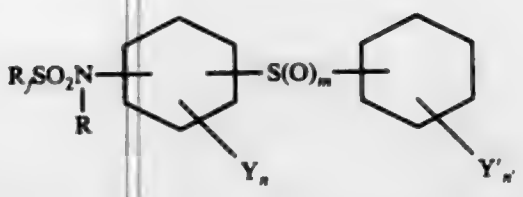
R_3 is hydrogen, methyl, chloro, or fluoro; R_4 is hydrogen, chloro or fluoro; R_5 is oxygen, β-hydroxy or β-chloro with the proviso that when R_5 is β-chloro R_4 is chloro.

4,086,255
PERFLUOROALKYLSULFONAMIDOARYL COMPOUNDS

George G. I. Moore, Birchwood, and Joseph Kenneth Harrington, Edina, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 460,883, Apr. 15, 1974, Pat. No. 4,005,141, which is a continuation-in-part of Ser. No. 268,661, Jul. 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 118,476, Feb. 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 28,148, Apr. 13, 1970, abandoned. This application Jan. 10, 1977, Ser. No. 757,883
Int. Cl.[2] C07C *143/75*
U.S. Cl. 260—397.6 16 Claims

1. A compound of the formula



wherein R_f is a lower perfluoroalkyl radical having one or two carbon atoms, R is cyano or



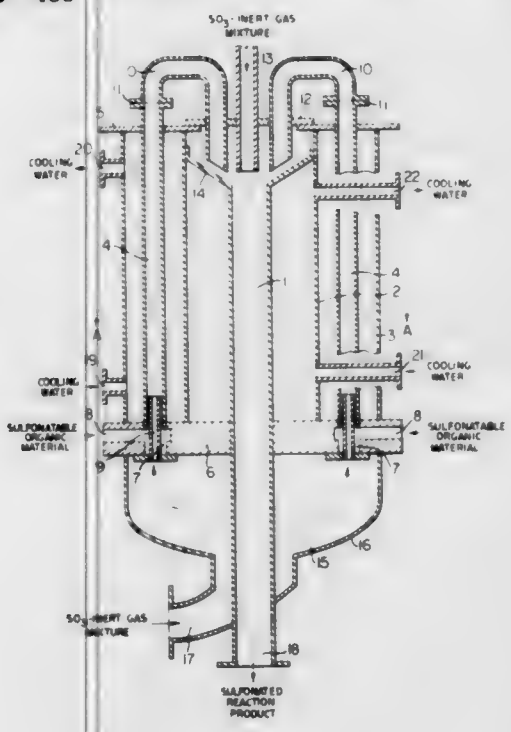
where R′ is alkyl, *m* is 0–2, Y is halogen, alkyl, alkoxy, cyano, nitro, amino, alkanamido, hydroxy, dialkylamino, alkoxycarbamoyl, alkylthio, alkylsulfonyl, alkanoyl, dialkylsulfamoyl or alkylsulfinyl, Y′ is fluorine, alkyl, alkoxy, cyano, nitro, amino, alkanamido, hydroxy, dialkylamino, alkoxycarbamoyl, alkylthio, alkylsulfonyl, alkanoyl, dialkylsulfamoyl or alkylsulfinyl and *n* and *n′* are independently 0–2, provided that the individual aliphatic groups appearing in the R, R′, Y and Y′ moieties contain from one to four carbon atoms each.

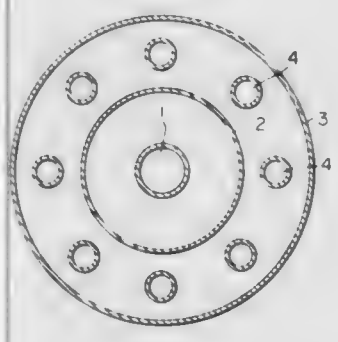
4,086,256

PROCESS FOR SULFONATION

Keiichi Tsuto; Kanji Majima, and Shigeyasu Imamura, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1976, Ser. No. 704,613
Claims priority, application Japan, Jul. 21, 1975, 50-89069
Int. Cl.[2] C08H *3/00*; C07C *151/02, 143/24*
U.S. Cl. 260—400 **5 Claims**





1. In a continuous gas-liquid reaction process for sulfating or sulfonating liquid organic reactant capable of being sulfated or sulfonated by reaction with gaseous sulfur trioxide, wherein said organic reactant is reacted with gaseous sulfur trioxide to obtain a corresponding sulfated or sulfonated reaction product, wherein said liquid organic reactant is a straight-chain or branched-chain alcohol having 8 to 20 carbon atoms or mixture thereof, the improvement which comprises simultaneously continuously flowing into each of a plurality of separate elongated vertical cylindrical first-stage reaction zones an outer annular stream consisting of said liquid organic reactant and an inner gaseous stream consisting of a mixture of about one to 20% by volume of sulfur trioxide and the balance a gaseous inert diluent, said outer stream being flowed vertically upwardly into the lower end of said first-stage reaction zone, said inner stream being flowed vertically upwardly into said lower end of said first-stage reaction zone, said inner and outer streams flowing in concurrent substantially parallel vertically upwardly directed flow into and through said first-stage reaction zone, said inner and outer streams flowing upwardly through said first-stage reaction zone in gas-liquid contact, said outer stream of liquid reactant forming a continuous thin annular upwardly rising outer liquid film of substantially uniform thickness on the wall of said first-stage reaction zone and extending the entire length thereof, said inner gaseous stream flowing inside of said liquid film upwardly through the entire length of said first-stage reaction zone and having a flow velocity in the range of from about 20 m./sec. to about 120 m./sec., said inner gaseous stream uniformly contacting said annular liquid film over its entire inner surface in said first-stage reaction zone to effect upward movement and mixing of said liquid film whereby the organic reactant and the gaseous sulfur trioxide are mixed and contacted with each other to effect the reaction, and externally cooling said first reaction zone to rapidly extract heat from the resultant reaction mixture as it passes upwardly through said first-stage reaction zone to prevent an excessive increase of the temperature of said reaction mixture in said first-stage reaction zone;

continuously removing said liquid streams and said gas streams from the upper ends of all said first-stage reaction zones and flowing all said streams into the upper end of a single elongated vertical second-stage reaction zone to form a single annular film of said liquid and a single stream of said gas, injecting into said gas from outside the system a second gaseous stream consisting of a mixture of about one to 20% by volume of sulfur trioxide and the balance a gaseous inert diluent, flowing said liquid and gas streams in concurrent substantially parallel vertically downwardly directed flow into and through said second-stage reaction zone, said streams flowing downwardly through said second-stage reaction zone in gas-liquid contact with said stream of liquid reactant forming a continuous thin annular downwardly flowing outer liquid film of substantially uniform thickness on the wall of said second-stage reaction zone and extending the entire length thereof, said gaseous streams flowing inside the liquid film downwardly through the entire length of said second-stage reaction zone and substantially uniformly contacting said annular liquid film whereby the liquid film and the gaseous sulfur trioxide are mixed and contacted with eachother to effect the reaction, and externally cooling said second reaction zone to rapidly extract heat from the resultant reaction mixture as it passes downwardly through said second-stage reaction zone to prevent an excessive increase of the temperature of said reaction mixture in said second-stage reaction zone;

the sum of the amounts of sulfur trioxide supplied to said first-stage reaction zones and said second-stage reaction zone being from 1.0 to 1.1 moles per one mole of said liquid organic reactant fed into said first-stage reaction zones and the amount of sulfur trioxide supplied to said first-stage reaction zones being selected so that the sulfonation or sulfation reaction is from 60 to 95% complete by the time the liquid streams and the gas streams enter said second-stage reaction zone;

separating the liquid phase from the gaseous phase after same have left the bottom of said second-stage reaction

zone and recovering the reaction product from the liquid phase.

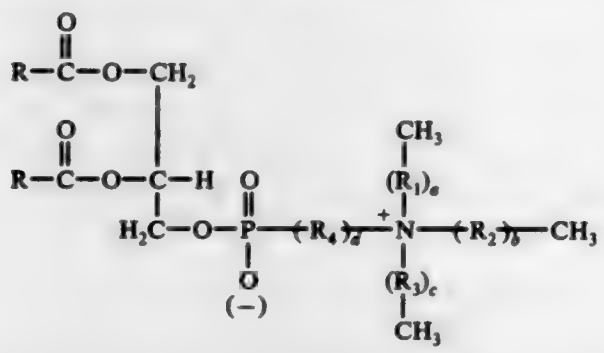
4,086,257

PHOSPHATIDYL QUATERNARY AMMONIUM COMPOUNDS

Barry D. Sears, 43 Bay State Rd., Boston, Mass. 02215

Filed Oct. 12, 1976, Ser. No. 731,132
Int. Cl.[2] A23J *7/00*; C07F *9/02*
U.S. Cl. 260—403 **11 Claims**

1. A synthetic phosphatidyl quaternary ammonium compound represented by the formula:



wherein R is a C_{14} to C_{20} hydrocarbon radical; *a*, *b* and *c* represent whole integers of from 0 to 3; *d* represents whole integers of from 1 to 5, except that in combination *a*, *b* and *c* cannot be zero and *d* cannot be two; and R_1, R_2, R_3 and R_4 are methylene radicals.

10. The compound of claim **1** selected from the group consisting of:

dioleoyl phosphatidyl-(methylethylene-N-triethyl)ammonium;
dipalmitoyl phosphatidyl-(ethylene-N-dimethylethyl)ammonium;
distearoyl phosphatidyl-(ethylene-N-dimethylethyl)ammonium;
oleoyl-palmitoyl phosphatidyl-(ethylene-N-dimethylethyl-)ammonium;
dimyristoyl phosphatidyl-(tetramethylene-N-dipropylmethyl)ammonium;
dipalmitcyl phosphatidyl-(trimethylene-N-trimethyl)ammonium;
egg phosphatidyl-(trimethylene-N-trimethyl)ammonium;
soybean phosphatidyl-(trimethylene-N-trimethyl)ammonium; and
dipalmitoyl phosphatidyl-(tetramethylene-N-trimethylene)ammonium.

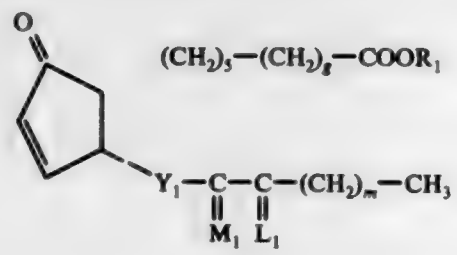
4,086,258

13,14-DIDEHYDRO-PGA$_1$ COMPOUNDS

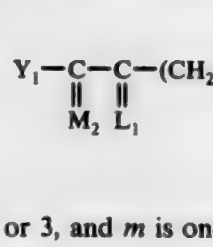
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 658,588, Feb. 17, 1976. This application Dec. 29, 1976, Ser. No. 755,338
Int. Cl.[2] C07C *171/00*
U.S. Cl. 260—408 **103 Claims**

1. A prostaglandin analog of the formula

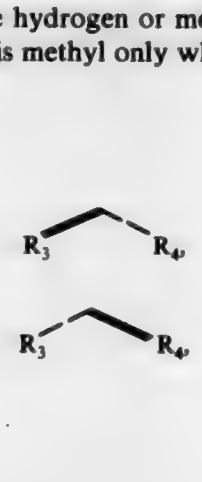


wherein Y_1 is -C≡C-;
wherein *g* is one, 2, or 3, and *m* is one to 5;
wherein M_1 is



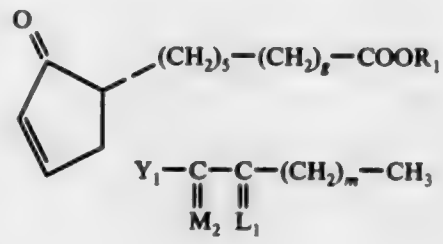
or

wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, phenyl, phenyl substituted with two or three chloro, or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

55. A prostaglandin analog of the formula

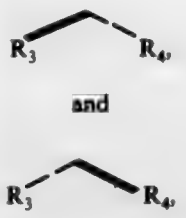


wherein Y_1 is -C≡C-;
wherein *g* is one, 2, or 3, and *m* is one to 5;
wherein M_2 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is

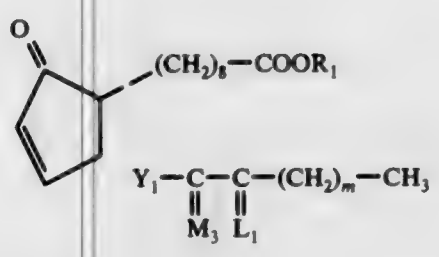
or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, phenyl, phenyl substituted with two or three chloro, or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

59. A prostaglandin analog of the formula

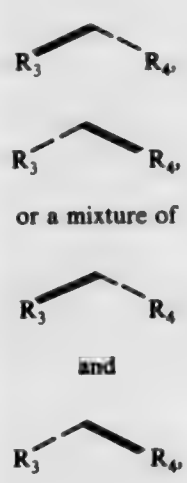


wherein Y_1 is -C≡C-;
wherein *m* is one to 5;
wherein M_3 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

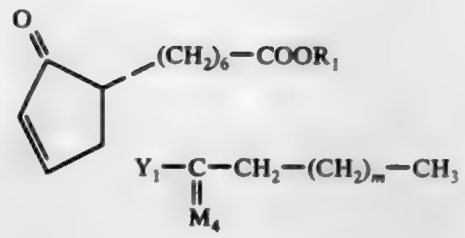
wherein L_1 is



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fuoro; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, phenyl, phenyl substituted with two or three chloro, or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

78. A prostaglandin analog of the formula



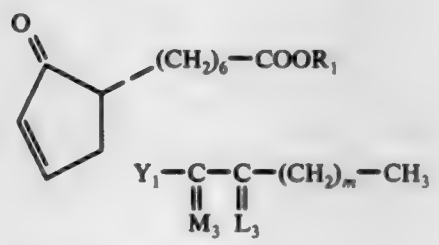
wherein Y_1 is —C≡C—;
wherein m is one to 5, inclusive;
wherein M_4 is



wherein one of R_5 and R_6 is methyl and the other of R_5 and R_6 is hydrogen; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, phenyl, phenyl substituted with two or three chloro, or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

85. A prostaglandin analog of the formula

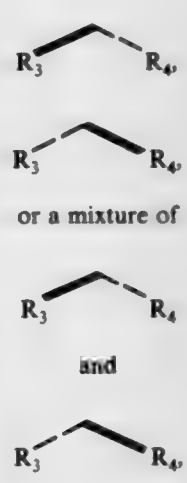


wherein Y_1 is —C≡C—;
wherein m is one to 5;
wherein M_3 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_3 is



wherein one of R_3 and R_4 is methyl or fluoro and the other of R_3 and R_4 is hydrogen, methyl, or fluoro, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, phenyl, phenyl substituted with two or three chloro, or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,086,259

CIS-13-PGD$_2$ COMPOUNDS

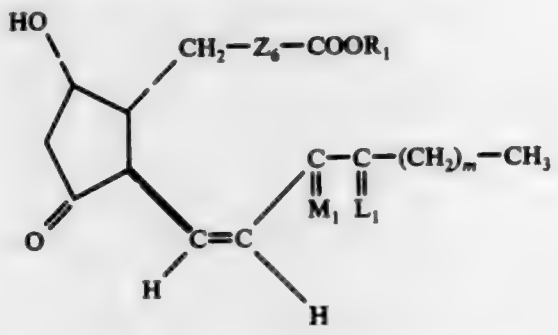
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 755,989

Int. Cl.[2] C07C *177/00*

U.S. Cl. 260—413 9 Claims

1. A prostaglandin analog of the formula



wherein *m* is one to 5, inclusive; wherein M_1 is



or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is





or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_6 is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,

(2) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—, or

(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,

wherein g is one, 2, or 3.

4,086,260

ALKOXYSILANE ESTER CLUSTER COMPOUNDS AND THEIR PREPARATION AND USE

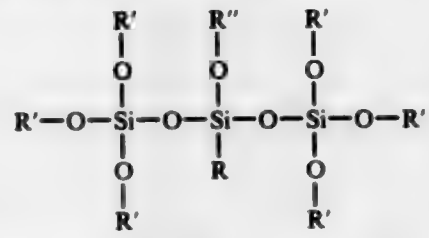
Karl O. Knollmueller, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 27, 1977, Ser. No. 791,359

Int. Cl.[2] C07F *7/04, 7/18*

U.S. Cl. 260—448.8 R 14 Claims

1. A compound having the formula:



wherein R is hydrogen, an alkyl, alkenyl, aryl or aralkyl group, and R″ and the R′ groups are independently selected from alkyl, alkenyl, aryl and aralkyl with the proviso that at least a majority of the R′ radicals are sterically hindered alkyl groups having at least 3 carbon atoms.

4,086,261

METHANATION OVER SYNTHETIC AMORPHOUS SILICAS

Thomas Owen Mitchell, Trenton, and Darrell Duayne Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 638,405, Dec. 8, 1975, Pat. No. 4,003,825, which is a division of Ser. No. 450,967, Mar. 14, 1974, Pat. No. 3,983,055. This application Nov. 4, 1976, Ser. No. 738,789

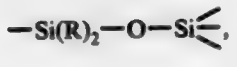
Int. Cl.[2] C07C *1/04*

U.S. Cl. 260—449 M 18 Claims

1. A process comprising (1) contacting a feedstock selected from the group consisting of carbon monoxide and carbon dioxide with a solid catalyst material in the presence of hydrogen and under process conditions including a temperature of from about 250° to about 700° C, a pressure of from about 1 atmosphere to about 150 atmospheres, a gas hourly space velocity, expressed at standard temperature and pressure, of from about 5,000 hr^{-1} to about 100,000 hr^{-1} and a hydrogen/-feedstock mole ratio of from about 1 to about 10 and (2) recovering a product containing methane, said solid catalyst material containing a synthetic amorphous solid prepared by the steps of hydrolyzing and polymerizing at a temperature of up to about 200° C in the presence of water a silane having the formula $R(Si)X_3$, wherein R is an organic radical selected from the group consisting of alkyl, cycloalkyl, aryl, alkenyl, cycloalkenyl and the said radicals hydroxy-substituted, halogen-substituted and amino-substituted, X is halogen, alkoxy of from 1 to 10 carbon atoms, aryloxy of from 1 to 20 carbon atoms, alkali metaloxy, alkaline earth metaloxy, carboxy or amino and (Si) is selected from the group consisting of



and



and calcining the polymerized product, said silane being admixed with a second component, R'_nMY_m, wherein R' is the same as R, Y is selected from the group consisting of the same groups as X and oxygen, M is selected from the group consisting of iron, nickel, cobalt, platinum, palladium, aluminium and mixtures thereof, *m* is any number greater than 0 and up to 8 and *n* is from 0 to any number less than 8.

4,086,262

CONVERSION OF SYNTHESIS GAS TO HYDROCARBON MIXTURES

Clarence D. Chang, Princeton; William H. Lang, Pennington, both of N.J., and Anthony J. Silvestri, Morrisville, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 724,485, Sep. 20, 1976, abandoned, and Ser. No. 463,711, Apr. 24, 1974, abandoned. This application Oct. 20, 1976, Ser. No. 733,982

Int. Cl.[2] C07C *1/04, 1/16*

U.S. Cl. 260—449.6 R **10 Claims**

1. A method for producing hydrocarbons, which comprises: contacting synthesis gas having a ratio of hydrogen-to-carbon oxides of from 0.2 to 6.0 with a heterogeneous catalyst at a temperature of from 500° F to 850° F and at a pressure of from 1 atmosphere to 1000 atmospheres, and at a volume hourly space velocity from 500 to 50,000 volumes of gas at standard temperature and pressure per volume of said heterogeneous catalyst said heterogeneous catalyst comprising an intimate mixture of an inorganic carbon monoxide reducing catalyst and a selective acidic crystalline aluminosilicate that has pore diameter greater than about 5 Angstroms; a silica-to-alumina ratio of at least 12; a constraint index within the range of 1 to 12; and, recovering hydrocarbons containing quantities of aromatic hydrocarbons.

4,086,263

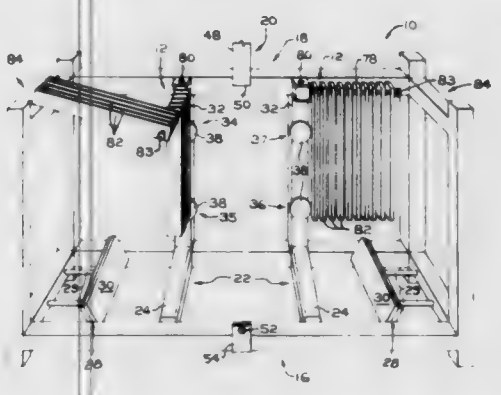
SHIPPING RACK HAVING SPACER STRIPS ATTACHED THERETO

James R. Rowley, Freeport, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 17, 1976, Ser. No. 742,381

Int. Cl.[2] B65D *85/48*

U.S. Cl. 206—454 **16 Claims**



1. In a rack for shipping sheets wherein the rack is of the type having a backwall secured to a base and a pair of runners mounted on the base for shipping the sheets in a generally vertical position with the edge portions of the sheets supported on the runners, the improvement comprising:

a plurality of elongated discrete spacer strips each having a first end and a second end, wherein the first end of each of said spacer strips is to be inserted between adjacent ones of the sheets to be shipped and extends substantially beyond the top edge of each sheet such that adjacent sheets are maintained in spaced relationships to one another;

a rigid rod;

means for mounting said rod on the backwall of the rack; with said rod extending over and spaced from the base of the rack a distance greater than the height of the sheets to be shipped; and

means mounting the second end of each of said spacer strips on said rod for movement toward and away from the base of the rack.

4,086,264

SELF SUPPORTED SKELETAL METAL CATALYSTS AND PROCESS FOR PRODUCING THEM

Clyde S. Brooks; Franklin D. Lemkey, both of Glastonbury, and Gerald S. Golden, Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 12, 1976, Ser. No. 741,830

Int. Cl.[2] B01J *21/04, 23/40, 23/74, 35/06*

U.S. Cl. 252—454 **8 Claims**

1. A metallic article having at least one catalytically active surface, comprising:

a. a directionally solidified substrate of substantially eutectic composition, having a microstructure which includes a metallic solid solution matrix and a plurality of single crystal intermetallic fibers, said fibers being oriented generally normal to the catalytic surface;

b. a plurality of porous metallic single crystal fibers of high surface area which protrude from the substrate, each of said fibers being an extension of an intermetallic fiber within the substrate, said porous fibers being comprised predominantly of at least one catalytically active metal.

4,086,265

PREPARATION OF CATECHOL DERIVATIVES

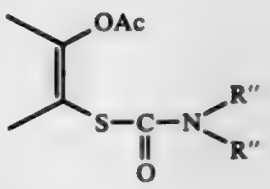
Raymond M. Dodson, Fridley, Minn., and Joseph B. Hanson, Wheaton, Ill., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Dec. 1, 1976, Ser. No. 746,254

Int. Cl.[2] C07C *153/09, 149/30, 67/08*

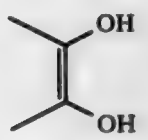
U.S. Cl. 260—455 A **15 Claims**

1. A method of preparing catechol derivatives containing the function:

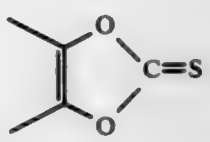


wherein R" is selected from the class consisting of hydrogen and lower alkyl groups, which method comprises:

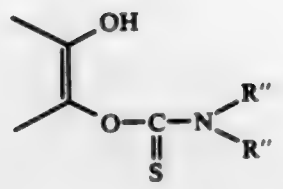
(A) reacting an aromatic compound containing the catechol function



with thiophosgene to produce a thione having the function



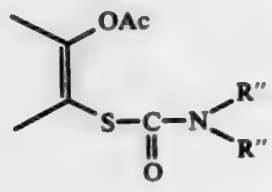
(B) ammonolyzing said thione by reacting with an agent selected from the class consisting of ammonia and lower alkyl amines to form a hydroxyaryl thionocarbamate having the function



wherein R″ is selected from the class consisting of hydrogen and lower alkyl groups,

(C) acetylating said thionocarbamate to form the corresponding acetoxyaryl thionocarbamate, and

(D) heating in the absence of air to about 200° to 260° C for about 20 minutes to 3 hours to rearrange said thionocarbamate to form the corresponding acetoxyaryl thiolcarbamate having the function



4,086,266

METHOD OF BACTERIALLY PURIFYING METHYL CYANOACRYLATE

Harold Corey, Teaneck, N.J., assignor to Population Research Incorporated, Clearwater, Fla.

Filed Apr. 6, 1977, Ser. No. 784,956

Int. Cl.² C07C *121/30*

U.S. Cl. 260—465.4 **9 Claims**

1. The method of providing a bacterially sterile monomer of an aliphatic cyanoacrylate comprising:

(a) preparing a substantially monomeric aliphatic cyanoacrylate that is greater than 99% pure monomer;

(b) providing a sterilized Teflon filter element having a pore size of about 0.20 micrometer;

(c) treating said Teflon filter element by vacuum heating to a temperature of about 100° C to desorb water and substantially all other volatile polymerization catalyst materials from the surface of the filter element; and,

(d) filtering said monomeric aliphatic cyanoacrylate through said Teflon filter element to remove all bacteria therefrom.

4,086,267

COBALT-CATALYZED OXIDATION OF C_3 TO C_7 SATURATED ALIPHATIC HYDROCARBONS TO OXYGENATED PRODUCTS INCLUDING ACETIC ACID

John Stanley Bartlett, Hull; Barry Hudson, Beverley, and John Pennington, Hull, all of England, assignors to BP Chemicals Limited, London, England

Filed Jul. 19, 1976, Ser. No. 706,197

Claims priority, application United Kingdom, Jul. 21, 1975, 30389/75; Sep. 17, 1975, 38180/75

Int. Cl.² C07C *45/02, 51/20, 67/00*

U.S. Cl. 560—241 **7 Claims**

1. In a continuous process for the production of oxygen-containing organic compounds including a substantial proportion of acetic acid by the oxidation of a saturated aliphatic hydrocarbon containing from 3 to 7 carbon atoms or a mixture thereof in a reaction zone with a molecular oxygen-containing gas in the presence of an essentially inert reaction medium and a soluble cobalt catalyst in an amount, calculated as cobalt, within the range from 0.1 to 10% by weight based on the weight of reaction medium, at a temperature in the range from 70° to 150° C and a pressure sufficient to maintain the reactants in the liquid phase, in which a substantially gas-free liquid is withdrawn from the base of said reaction zone and separated into a fraction containing the bulk of said oxygen-containing organic compounds and a fraction consisting of said essentially inert reaction medium with said cobalt catalyst dissolved therein, said latter fraction being recycled to said oxidation zone, the improvement which comprises introducing not less than 5 and not more than 90% of said cobalt catalyst into the reaction zone in the +3 oxidation state.

4,086,268

2-(2-AMINO-4-CHLOROPHENOXY)BENZYL ALCOHOL AND DIACETATE DERIVATIVE

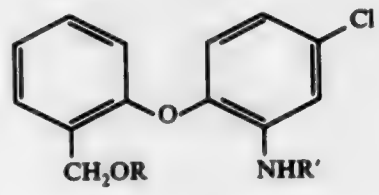
James Jiu, and Seth S. Mizuba, both of Morton Grove, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 638,711, Dec. 8, 1975, Pat. No. 3,997,401. This application Sep. 20, 1976, Ser. No. 724,510

Int. Cl.² C07C *93/14, 103/38*

U.S. Cl. 560—252 **3 Claims**

1. A compound of the formula



wherein R and R′ are both hydrogen atoms or acetyl radicals.

4,086,269

11-DEOXY-15-SUBSTITUTED PROSTAGLANDINS

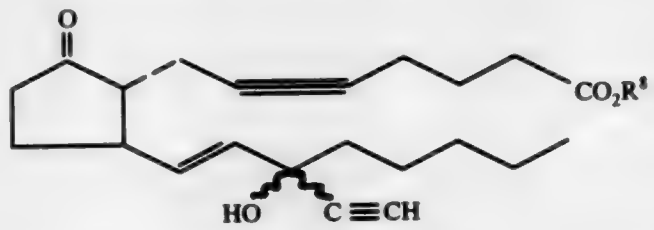
Donald P. Strike, St. Davids, and Wenling Kao, King of Prussia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 593,821, Jul. 7, 1975, Pat. No. 3,996,255, which is a continuation-in-part of Ser. No. 463,482, Apr. 24, 1974, abandoned. This application Aug. 16, 1976, Ser. No. 714,734

Int. Cl.² C07C *177/00*

U.S. Cl. 260—514 D **3 Claims**

1. A compound of the formula:



wherein R^8 is hydrogen, alkyl of from 1 to about 6 carbon atoms, alkali metal, or a pharmacologically acceptable cation derived from ammonia or a basic amine.

4,086,270

PROCESS FOR MAKING TEREPHTHALIC ACID

Raymond Wynkoop, and Allen W. Hancock, II, both of Media, Pa., assignors to Suntech, Inc., Wayne, Pa.

Filed Oct. 18, 1976, Ser. No. 733,617

Int. Cl.² C07C *51/08, 63/26*

U.S. Cl. 260—515 P **1 Claim**

1. A process for making terephthalic acid from terephthalonitrile in a distillation reactor system where enhanced ammonia removal is obtained which comprises the steps of:

(a) feeding an aqueous equilibrium hydrolysis solution of terephthalnoitrile to a reactive distillation column operated at a temperature between about 200° and about 260° C. at autogenous pressure, maintaining the molal concentration of aromatics in the aqueous liquid in said column sufficiently high to effect precipitation of dissolved terephthalic acid while subjecting the contents of said reactor to hydrolysis and distillation of ammonia,

(b) removing ammonia and water vapor from the top of said column,

(c) subjecting bottoms product in said column to further hydrolysis and distillation in a reboiler at a temperature of from about 200° to about 260° C. and returning vapors from the reboiler to the column,

(d) removing an aqueous solution of product terephthalic acid containing suspended terephthalic acid solids from the reboiler, and

(e) separating terephthalic acid product low in nitrogen impurities.

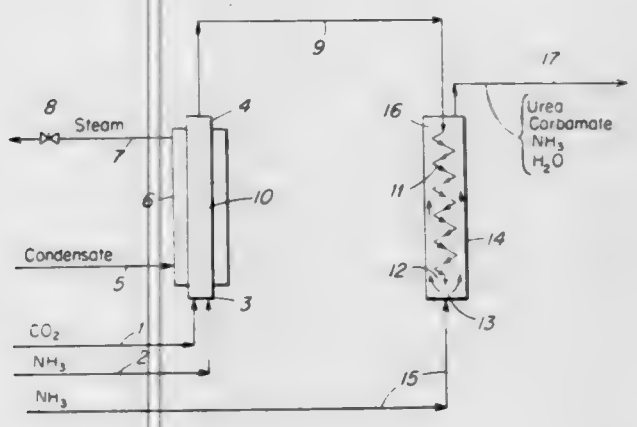
4,086,271
UREA SYNTHESIS WITH IMPROVED HEAT RECOVERY AND CONVERSION

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10021

Division of Ser. No. 190,519, Oct. 19, 1971, Pat. No. 3,952,055. This application Jan. 21, 1976, Ser. No. 650,973

Int. Cl.² C07C *126/00*

U.S. Cl. 260—555 A **5 Claims**



1. In a substantially exothermic urea synthesis system wherein fluid NH_3 and fluid CO_2 are contacted at elevated pressure and temperature to form a total urea synthesis mixture in a vertical cylindrical urea synthesis reactor to form urea, and heat is removed from said system,

the improvement which comprises

contacting from about 5 to less than about 100 mol percent of a fluid NH_3 reactor feed stream and a fluid CO_2 reactor feed stream at substantially reactor pressure in a heat exchanger external to the urea synthesis reactor to form ammoinum carbamate in said heat exchanger and simultaneously removing from said external heat exchanger heat of reaction evolved from reaction of NH_3 and CO_2 to form said ammonium carbamate, and

charging the resulting reaction mixture to a conduit positioned in said urea synthesis reactor in a counter current indirect heat exchange relation to a total urea synthesis mixture, defined below, contained in said reactor, wherein the NH_3 to CO_2 molar ratio inside said conduit is maintained at from about 2.2 to about 3.5 to 1, the inlet of said conduit being located at the upper section of said reactor and the outlet of said conduit being located in a bottom section of said reactor,

charging the remaining NH_3 reactor feed stream to the bottom section of the reactor proximate said outlet of said conduit, and

mixing said remaining NH_3 reactor feed stream charged to the bottom section of the reactor with a stream of said resulting mixture discharged from said outlet of said conduit to form a total urea synthesis mixture having a NH_3 to CO_2 molar ratio of from about 2.8 to about 7 to 1 and to maintain a substantially isothermal balance in said reactor.

4,086,272
PHENYL-ALKANOLAMINE, ALKYLAMINE AND ALPHA-AMINOALKYL KETONE DERIVATIVES AS HEART STIMULANTS

David A. Cox, Canterbury; Ian T. Barnish, Ramsgate, and Anthony G. Evans, Westgate-on-Sea, all of England, assignors to Pfizer Inc., New York, N.Y.

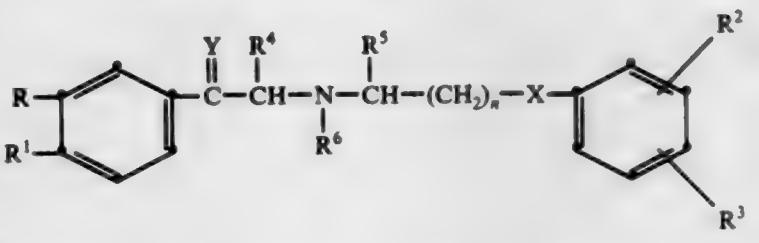
Division of Ser. No. 443,034, Feb. 15, 1974, Pat. No. 3,976,783, which is a division of Ser. No. 160,529, Jul. 7, 1971, Pat. No. 3,816,516. This application Jun. 2, 1976, Ser. No. 691,994

Claims priority, application United Kingdom, Jul. 18, 1970, 34931/70

Int. Cl.² C07C *103/29, 103/38;* A61K *31/165*

U.S. Cl. 260—559 D **12 Claims**

1. A compound of the formula:



wherein R and R^1 are each hydrogen or hydroxy with the proviso that at least one is hydroxy; R^2 is hydrogen, alkyl of from 1 to 4 carbon atoms or alkoxy of from 1 to 4 carbon atoms; R^3 is formamido, acetamido, propionamido or carbamoyl, any one of which may be separated from the phenyl ring by a methylene or ethylene group; R^4, R^5 and R^6 are each hydrogen or alkyl of from 1 to 4 carbon atoms; X is oxygen, sulfur, imino or a direct link; Y is hydrogen and hydroxy, two hydrogens or oxygen; *n* is 1 to 3 when X is other than a direct link and is 0 to 4 when X is a direct link; and the pharmaceutically-acceptable acid addition salts.

4,086,273
PROCESS FOR MAKING BETA-AMINOETHYL SULFIDES FROM ALIPHATIC MERCAPTANS AND 2-OXAZOLINES

Sandra Berazosky, and Mark E. Kaiser, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 14, 1976, Ser. No. 676,765

Int. Cl.² C07C *102/00, 85/00*

U.S. Cl. 260—561 S **15 Claims**

1. A process for making amides comprising reacting by contacting in liquid phase (a) an aliphatic mercaptan with (b) a 2-oxazoline in the presence of (c) a small but sufficient amount of at least one transition metal salt to catalyze the reaction between (a) and (b); said transition metal salt catalyst being a salt of a metal in groups 1*b*, 2*b*, 6*b*, 7*b*, and 8 and rows 4 and 5 of the Periodic Table of the Elements, inclusive, and is at least partially soluble in the reaction mixture.

4,086,274
N-(2-MERCAPTO-ETHYL)ALKANAMIDES FROM H_2S AND 2-H-2-OXAZOLINES OR 2-ALKYL-2-OXAZOLINES

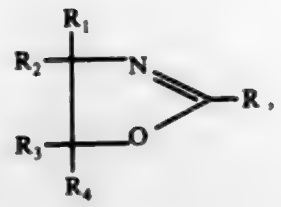
Mark E. Kaiser, and Peter W. Owen, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 589,322, Jun. 23, 1975, abandoned. This application Nov. 22, 1976, Ser. No. 743,888

Int. Cl.² C07C *102/00, 85/00*

U.S. Cl. 260—561 S **15 Claims**

1. A process of preparing a N-(2-mercaptoethyl)alkanamide comprising reacting by contacting under essentially anhydrous conditions (a) a 2-H-2-oxazoline or a 2-alkyl-2-oxazoline of the formula:



in which R is hydrogen or alkyl and R_1–R_4 are each independently hydrogen, lower alkyl, hydroxy-substituted lower alkyl or phenyl, with (b) hydrogen sulfide.

4,086,275

REDUCED COPPER CATALYST ON SUPPORT

Ken Matsuda, and William Austin Barber, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 636,289, Nov. 28, 1975, Pat. No. 4,040,980. This application Dec. 20, 1976, Ser. No. 752,384

Int. Cl.[2] C07C *103/08*; B01J *21/04*

U.S. Cl. 260—561 N **1 Claim**

1. A method of making acrylamide comprising the catalytic hydration of acrylonitrile in aqueous solution by contacting said solution under hydration reaction conditions with copper catalyst supported on a water insoluble, porous catalyst support prepared by:

(a) impregnating said catalyst support with a solution of cuprous compound dissolved in a solvent selected from acetonitrile and acrylonitrile, and

(b) evaporating the solvent from the support, leaving cuprous compound deposited on the support, and

(c) reducing the cuprous compound on the support to copper in situ by contacting the impregnated support with a reducing agent.

4,086,276

ISOMERIZATION OF CYCLOHEXANEBIS(METHYLAMINE) STEREOISOMERS

Walter A. Butte, Jr., West Chester, Pa., assignor to Suntech, Inc., Wayne, Pa.

Filed Mar. 25, 1977, Ser. No. 781,082

Int. Cl.[2] C07C *83/00*

U.S. Cl. 260—563 R **11 Claims**

1. A process for catalytically isomerizing a cyclohexane bis(methylamine) which comprises contacting said bis-amine with an alkali metal benzene compound at a temperature of from about 100° to about 200° C.

4,086,277

PROCESS FOR PREPARING DIARYLKETONES

Anatoli Onopchenko, Monroeville, and Johann G. Schulz, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 581,287, May 27, 1975, Pat. No. 4,022,838. This application Feb. 16, 1977, Ser. No. 769,039

The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.

Int. Cl.[2] C07C *45/02, 76/02*

U.S. Cl. 260—591 **9 Claims**

1. A process for converting a 1,1-diarylalkane selected from the group consisting of 1,1-di(para-tolyl) ethane and 1,1-bis(3,4-dimethylphenyl) ethane to the corresponding diarylketone without appreciably converting the alkyl substituents on the aryl radicals which comprises heating a mixture of said 1,1-diarylalkane, nitric acid and water, the nitric acid having a concentration of about one to about 40 percent, the molar amount of nitric acid, determined as 100 percent nitric acid relative to the molar amount of said 1,1-diarylalkane, being below about 1.5:1 but at least about 0.4:1, wherein the numerical product obtained by multiplying the concentration of nitric acid in said mixture with the ratio of the absolute mols of nitric acid to the mols of said 1,1-diarylalkane in said mixture is in the range of about 1.0 to 150, at a temperature of about 60° to about 200° C. for about one minute to about 24 hours, to obtain a reaction product containing an organic phase and an aqueous phase, separating said phases from each other, and then recovering said desired 1,1-diarylketone from said organic phase.

4,086,278

1-ALKENYL THIOETHERS

Allen Frederick Hirsch, Somerville, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Mar. 15, 1976, Ser. No. 666,818

Int. Cl.[2] A61K *31/10*; C07C *149/18, 149/20*

U.S. Cl. 260—609 R **4 Claims**

1. A compound of the formula:

$$\begin{array}{l} CH_2SCH{=}CH(CH_2)_mCH_3 \\ | \\ CHR \\ | \\ CH_2R_1 \end{array}$$

wherein R is hydroxy, halo, thiol, alkylthio, and alkoxy; R_1 is hydroxy, alkoxy, halo, thiol, and alkylthio; *m* is an integer from 0–17.

4,086,279

NONIONIC SURFACTANTS

William Keith Langdon, Grosse Ile, and Robert Bernard Login, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 547,788, Feb. 7, 1975, abandoned. This application Sep. 7, 1976, Ser. No. 720,952

Int. Cl.[2] C07C *43/02*

U.S. Cl. 260—615 B **2 Claims**

1. A nonionic surfactant material of the formula

$$Z{-}CH_2{-}CHZ{-}CH_2{-}(-OCH_2{-}CHZ{-}CH_2)_n{-}Z$$

where *n* is an integer from 2 to 29 and each Z is selected from the group consisting of OH and R and 4 to 25 percent of said Z's are R, where R is selected from the groups consisting of

(1) $-OCH_2-CHOH-CH_2-OR^1$, where R^1 is selected from the group consisting of

(a) the long-chain alkyl groups containing 6 to 20 carbon atoms, and

(b) the polyoxyalkylene glycol ether radicals of the formula $(CH_2\text{-}CHR^2\text{—}O\text{—})_p\text{—}R^3$, where R^2 is selected from the group consisting of hydrogen, methyl and ethyl, *p* is an integer of from 3 to 20, and R^3 is selected from the group consisting of alkyl radicals containing 1 to 6 carbon atoms, the average oxygen/carbon atom ratio of the radical $(CH_2\text{—}CHR^2\text{—}O)_p$ being not greater than 0.4, and

(2) a divalent radical having the structure $-O-(-CH_2-CHR^2-O-)_q-CH_2-CHOH-CH_2-O-$ in which *q* is an integer from 6 to 40 and R^2 is selected from the group consisting of hydrogen, methyl and ethyl, the average oxygen/carbon atom ratio of the radical $(-CH_2-CHR^2-O)_q$ being not greater than 0.4, each end of said divalent radical functioning as an R in a molecule of the formula $Z-CH_2-CHZ-CH_2-[OCH_2-CHZ-CH_2]_n-Z$.

4,086,280

PROCESS FOR THE PREPARATION OF CYCLOPROPYLCARINYL ALCOHOLS

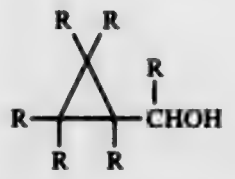
Donald John Peterson, Cincinnati, and Medford Dwight Robbins, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 586,456, Jun. 12, 1975, abandoned, which is a division of Ser. No. 390,156, Aug. 23, 1973, Pat. No. 3,959,324, which is a continuation-in-part of Ser. No. 247,641, Apr. 26, 1972, abandoned. This application Jun. 24, 1976, Ser. No. 699,404

Int. Cl.[2] C07C *29/00*

U.S. Cl. 260—617 R 5 Claims

1. A process for preparing cyclopropylcarbinyl alcohol of the formula



wherein each R is hydrogen, comprising admixing an organotin compound of the formula

$$(CR_2{=}CRCR_2CR_2)_xSnR_{4-x}^1$$

wherein x is an integer of from 1 to 4 and R^1 is an alkyl substituent, and R is hydrogen, with m-chloroperbenzoic acid and warming to form the corresponding epoxide and, thereafter reacting said epoxide with hydrogen chloride to produce said cyclopropylcarbinyl alcohol.

4,086,281

PROCESS FOR PRODUCING MONO-SUBSTITUTED ALKYLRESORCINOL ISOMERS

Samuel N. Holter, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 564,785, Apr. 3, 1975, abandoned. This application Oct. 14, 1976, Ser. No. 732,477

Int. Cl.[2] C07C *39/08*

U.S. Cl. 260—621 R 10 Claims

1. A process for producing simultaneously the mono-substituted 2-, 4-, and 5-alkylresorcinol isomers, to obtain predominantly the 5-alkylresorcinol isomer along with lesser amounts of the 2- and 4-alkylresorcinol isomer, comprising:

a. reacting an aliphatic alcohol having 1 to 3 carbon atoms selected from the group consisting of; methanol, ethanol, propanol and isopropanol and allyl alcohol and propargyl alcohol and halogenated and nitrated derivates thereof with resorcinol at a molar ratio in the range of greater than 1:1 to 3:1 in the vapor phase at a temperature in the range of about 350° C to around 415° C and in the presence of an acidic catalyst selected from the group consisting of acid activated clays, activated bauxite, alumina, silica-alumina and Friedel-Crafts catalyst under the pressure of at lest atmospheric pressure and for a reaction time until the quantity of 5-alkylresorcinol reaches a maximum whereby a mixture of mono-substituted alkylresorcinol isomers and some other alkylated hydroxy aromatic compounds and some unreacted resorcinol is produced; and

b. separating the mono-substituted 2-, 4-, and 5-alkylresorcinol isomers from the other alkylated compounds and unreacted resorcinol in the mixture to obtain predominantly 5-alkylresorcinol and lesser amounts of 2-alkylresorcinol and 4-alkylresorcinol.

4,086,282

PROCESS FOR PREPARATION OF 3,5-XYLENOL

Freddy Wattimena, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 29, 1976, Ser. No. 681,358

Int. Cl.[2] C07C *37/06*

U.S. Cl. 260—621 H 7 Claims

1. A process for the preparation of 3,5-xylenol from isophorone which comprises heating isophorone at a temperature of from about 450° to about 650° C in the presence of a homogeneous catalyst selected from the class consisting of a halogen having an atomic number of at least 17 and an organic compound containing said halogen, said halogen being selected from the class consisting of molecular chlorine, bromine and iodine and said organic compound being selected from the class consisting of haloalkanes of 1 to 6 carbon atoms allyl halides and phenyl halides.

4,086,283

PROCESS FOR PREPARING THYMOL

Wolfgang Biedermann; Horst Köller, both of Krefeld, and Karlfried Wedemeyer, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 2, 1976, Ser. No. 692,170

Claims priority, application Germany, Jun. 25, 1975, 2528303

Int. Cl.[2] C07C *39/06*

U.S. Cl. 260—626 T 5 Claims

1. In a process for the preparation of thymol by reacting m-cresol with propylene and/or compounds which eliminate propylene in the presence of an aluminum oxide catalyst the improvement comprising carrying out said process continuously and this in the presence of 10 to 1000 ppm of a nitrogen base selected from the group consisting of ammonia, hydrazine, alkyl, dialkyl or hydroxyalkyl amines having up to four carbon atoms in the alkyl group, cycloalkyl amines having 6–12 carbon atoms, benzylamine, aniline, dimethylaniline, pyridine, piperidine, and urea at temperatures of 200° to 400° C and at pressures up to about 100 bars.

4,086,284

ISOMERIZATION OF ENDO-TETRAHYDRODICYCLOPENTADIENE TO A MISSILE FUEL DILUENT

Abraham Schneider, Overbrook Hills; Richard E. Ware, Aston, and Edward J. Janoski, Havertown, all of Pa., assignors to Suntech, Inc., Wayne, Pa.

Filed Sep. 3, 1976, Ser. No. 720,307

Int. Cl.[2] C07C *1/00*

U.S. Cl. 260—666 PY 10 Claims

1. Process for isomerizing endo-tetrahydrodicyclopentadiene comprising:

(a) contacting endo-tetrahydrodicyclopentadiene with anhydrous aluminum trichloride wherein the mole ratio of aluminum trichloride to the tetrahydrodiene is in the range between from about 0.001 to about 0.75 and the temperature of the contacting is in the range between from about −20° C to about 90° C;

(b) continuing said contacting until at least 70% of the endo-tetrahydrodicyclopentadiene is isomerized to exo-tetrahydrodicyclopentadiene; and

(c) recovering resulting product.

4,086,285

TRICYCLO[6.2.1.0^{2,6}]UNDECA-2(6)-ENE AND PROCESS FOR HYDRIDE TRANSFER REDUCTION REARRANGEMENT OF SAME

Yoshiaki Inamoto, Wakayama; Kiyoshi Tsuchihashi, Kainan; Naotake Takaishi, Wakayama; Yoshiaki Fujikura, Wakayama, and Koji Aigami, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1976, Ser. No. 734,365
Claims priority, application Japan, Nov. 7, 1975, 50-133894
Int. Cl.^{2} C07C *13/28*
U.S. Cl. 260—666 PY 2 Claims

1. Tricyclo[6.2.1.0^{2,6}]undeca-2(6)-ene.

4,086,286

ISOMERIZATION OF TETRAHYDROPOLYCYCLOPENTADIENES TO A MISSILE FUEL ADDITIVE

Edward J. Janoski, Havertown; Abraham Schneider, Overbrook Hills, and Richard E. Ware, Aston, all of Pa., assignors to Suntech, Inc., Wayne, Pa.

Filed Sep. 3, 1976, Ser. No. 720,306
Int. Cl.^{2} C07C *1/00*
U.S. Cl. 260—666 PY 7 Claims

1. Process for the isomerization of tetrahydropolycyclopentadiene comprising:

(a) contacting a tetrahydropolycyclopentadiene mixture consisting of at least two of the following: endotetrahydrodicyclopentadiene, tetrahydrotricyclopentadiene, tetrahydrotetracyclopentadiene, and tetrahydropentacyclopentadiene; with anhydrous aluminum trichloride wherein the weight ratio of the amount of the aluminum trichloride to the tetrahydropolycyclopentadiene mixture ranges between from about 0.005 to about 0.75, and with anhydrous hydrogen chloride in an amount effective to accelerate the reaction and in the presence of a inert chlorinated paraffin solvent at a temperature in the range between from about −20° C to about 25° C;

(b) continuing the contacting unit isomerization of the mixture is sufficient to form a high density missile fuel or a high density missile fuel additive; and

(c) recovering the resulting high density missile fuel or a high density missile fuel additive.

4,086,287

SELECTIVE ETHYLATION OF MONO ALKYL BENZENES

Warren W. Kaeding, Westfield, and Lewis B. Young, Kendall Park, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 19, 1976, Ser. No. 706,981
Int. Cl.^{2} C07C *3/52*
U.S. Cl. 260—671 R 15 Claims

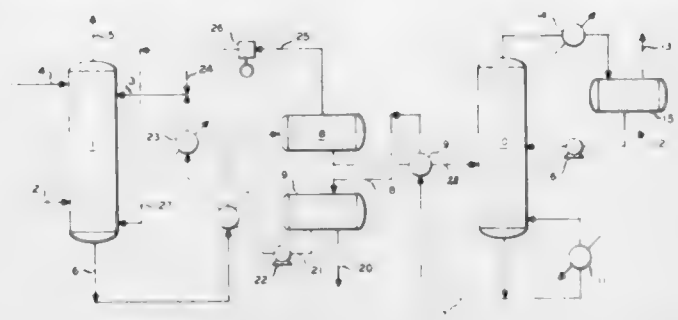
1. Process for effecting ethylation of a mono alkyl benzene wherein the alkyl substituent contains 1 or 2 carbon atoms which comprises contacting said mono alkyl benzene, under conversion conditions, with ethylene in the presence of a catalyst comprising a crystalline aluminosilicate zeolite, which zeolite is characterized by an activity, in terms of alpha value of between about 2 and about 5000, a xylene sorption capacity greater than 1 gram/100 grams of zeolite and an ortho xylene sorption time for 30 percent of said capacity of greater than 10 minutes, said sorption capacity and sorption time being measured at 120° C. and a xylene pressure of 4.5 ± 0.8 mm. of mercury, said crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12 to yield a resulting product in which the para ethyl derivative of said mono alkyl benzene is present in an amount greater than the thermodynamic equilibrium concentration thereof in the total dialkyl substituted benzenes produced.

4,086,288

ACETYLENES REMOVAL FROM OLEFIN STREAMS FOR ALKYLATION BY DIMETHYL FORMAMIDE ABSORPTION

Howard B. Irvin; Fred T. Sherk, and Alfred A. Hoffman, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 16, 1976, Ser. No. 714,934
Int. Cl.^{2} C07C *3/00, 11/00*
U.S. Cl. 260—671 R 4 Claims



1. A process for the removal of acetylenes from acetylene-containing gases comprising:

(a) extracting a gas containing an olefin selected from the group consisting of ethylene, propylene, butylene, and mixtures thereof and acetylenes with liquid dimethyl formamide in an extraction zone,

(b) injecting a liquid hydrocarbon selected from the group consisting of paraffinic hydrocarbons having 4–8 carbon atoms per molecule and containing at least one tertiary carbon atom per molecule and aromatic hydrocarbons having 6–10 carbon atoms per molecule into said extraction zone at a location above the feed inlet for the dimethyl formamide, and

(c) withdrawing a gaseous effluent stream from said extraction zone comprising said olefin and said hydrocarbon and being essentially acetylene-free and introducing at least a portion of said gaseous effluent into an alkylation zone and reacting said olefin and said hydrocarbon in the presence of an alkylation catalyst to form an alkylate in said alkylation zone.

4,086,289

MANUFACTURE OF XYLENES

Walter H. Seitzer, West Chester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Jul. 5, 1977, Ser. No. 813,158
Int. Cl.^{2} C07C *3/52*
U.S. Cl. 260—671 M 3 Claims

1. In the process of methylating toluene to obtain a mixture of xylenes relatively low in the meta-isomer and low in ethyl benzene content by contacting toluene with hydrogen and a carbon oxide-containing gas in the presence of a catalyst, the improvement of using as catalyst zinc chromite mixed with an alkali metal exchanged molecular sieve containing a stoichiometric excess of an alkali metal carbonate.

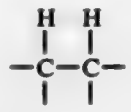
4,086,290

OXIDATIVE DEHYDROGENATION PROCESS

Robert S. Cichowski, San Luis Obispo, Calif., and Floyd E. Farha, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 542,006, Jan. 17, 1975, Pat. No. 3,993,591, which is a division of Ser. No. 264,932, Jun. 21, 1972, Pat. No. 3,870,764. This application Jun. 24, 1976, Ser. No. 699,729
Int. Cl.^{2} C07C *11/12*
U.S. Cl. 260—680 E 27 Claims

1. A process of oxidative dehydrogenation of at least one dehydrogenatable organic compound containing at least one



grouping which comprises contacting said dehydrogenatable organic compound under oxidative dehydrogenation conditions with molecular oxygen and a catalyst consisting essentially of (I) about 15 to 45 weight percent iron, (II) about 15 to 40 weight percent phosphorus, and (III) about 0.1 to 10 weight percent of a promoter which is boron, aluminum, indium, or thallium, and (IV) oxygen, wherein the weight percents are based on the total composition exclusive of support, if any.

4,086,291

METHOD OF PRODUCING A PAVING MASS AND A PAVING MASS PRODUCED BY THE METHOD

Assar Natanael Svensson, Ersmark, Sweden, assignor to Skega AB, Ersmark, Sweden

Continuation of Ser. No. 134,403, Apr. 15, 1971, abandoned. This application Apr. 14, 1976, Ser. No. 676,955

Int. Cl.[2] C08L *7/00*

U.S. Cl. 260—758 **3 Claims**

1. In the known method for producing a paving mass which contains macadam, rubber vulcanizate, a filling material and a binding material in the nature of asphalt, the improvement which comprises:

(a) heating the macadam to a temperature of 160° - 170° C,

(b) adding solid particles of rubber vulcanizate to said heated macadam, said particles having a dimension of between 1 and 8 mm measured in the direction of greatest particle dimension,

(c) mixing said heated macadam and said solid particles of rubber vulcanizate of step (b) together for a time sufficient for said rubber vulcanizate particles to adhere to said heated macadam,

(d) thereafter adding to the product of step (c) particles of rubber vulcanizate having a size less than 1 mm and effecting mixing thereof with the product of step (c), and

(e) mixing the product of step (d) with both a filling material and a binding material to thereby produce a paving mass.

4,086,292

SURFACE-COATING BINDERS

Fritz Erdmann Kempter, Mannheim; Heinrich Hartmann, and Herbert Spoor, both of Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 12, 1976, Ser. No. 713,786

Claims priority, application Germany, Sep. 19, 1975, 2541801

Int. Cl.[2] C08L *63/00*

U.S. Cl. 260—831 **12 Claims**

1. A surface-coating binder which is substantially free from epoxide groups and is obtained by reacting

(a) 15 to 80% by weight of Mannich bases obtained from

(a_1) condensed phenols,

(a_2) secondary amines which contain at least one hydroxyalkyl group and

(a_3) formaldehyde with

(B) 85 to 20% by weight of epoxy resins having an epoxide value of from 0.15 to 0.6, which are virtually free from free isocyanate groups, carry blocked isocyanate groups and are prepared by the reaction of hydroxy-containing epoxy resins with partially blocked diisocyanates.

4,086,293

LOW ENERGY-CURABLE HIGH SOLIDS COATING COMPOSITIONS

Oliver Wendell Smith, South Charleston, and Joseph Victor Koleske, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 26, 1976, Ser. No. 690,279

Int. Cl.[2] C08L *63/00*

U.S. Cl. 260—830 R **22 Claims**

1. A high solids coating composition comprising (I) from 20 to 60 weight percent of a polycaprolactone derivative and (II) from 80 to 50 weight percent of a polyepoxide; said percentages based on the combined weights of components (I) and (II); and wherein said component (I) comprises a water insoluble, carboxyl modified polycaprolactone adduct reaction product mixture produced by the reaction of (i) a polycaprolactone polyol and (ii) from 0.5 to 1 carboxylic acid anhydride equivalent for each hydroxyl equivalent present in said polycaprolactone polyol of an intramolecular anhydride of a polycarboxylic acid; and (III) a catalytic amount of catalyst sufficient to catalyze the reaction of the oxirane group with the carboxyl group.

4,086,294

POLYCAPROLACTONE-EPOXIDE ADDUCTS AND COATING COMPOSITIONS THEREOF

Joseph Victor Koleske, Charleston, and Oliver Wendell Smith, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 26, 1976, Ser. No. 690,283

Int. Cl.[2] C08G *63/76, 63/02;* C08L *67/04*

U.S. Cl. 260—834 **56 Claims**

1. A water insoluble polycaprolactone-epoxide adduct comprising the reaction product mixture of a polycaprolactone polyol, a diepoxide and an anhydride of a polycarboxylic acid, said water insoluble polycaprolactone-epoxide adduct reaction product mixture produced by a process selected from the group consisting of Route 1 or Route 2, wherein Route 1 comprises the steps of

(i) reacting a polycaprolactone polyol having at least two hydroxyl groups in the molecule, a hydroxyl number of from about 15 to about 600 and an average molecular weight of from 290 to about 6000 with a diepoxide to produce a water insoluble polycaprolactone-epoxide intermediate, and then

(ii) reacting the intermediate of (i) with an intramolecular anhydride of a polycarboxylic acid to produce said water insoluble polycaprolactone-epoxide adduct reaction product mixture,

and wherein Route 2 comprises the steps of

(i) reacting a polycaprolactone polyol having at least two hydroxyl groups in the molecule, a hydroxyl number of from about 15 to about 600 and an average molecular weight of from 290 to about 6000 with an intra-molecular anhydride of a polycarboxylic acid to produce a water insoluble polycaprolactone adduct intermediate, and then

(ii) reacting the intermediate of (i) with a diepoxide to produce said water insoluble polycaprolactone-epoxide adduct reaction product mixture and wherein there is used from 0.1 to about 0.5 anhydride equivalent for each unreacted hydroxyl equivalent or group initially present in the polycaprolactone polyol or formed in the polycaprolactone-epoxide adduct.

4,086,295

POLYAMIDE COMPOSITION

Taketoshi Mori; Susumu Goto; Asaichi Katsuragi, and Mutsuo Matsuki, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

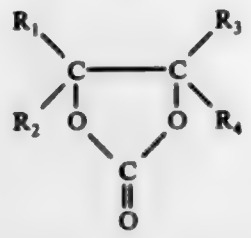
Filed Dec. 16, 1976, Ser. No. 751,925

Int. Cl.[2] C08L *77/00*

U.S. Cl. 260—857 L **17 Claims**

1. A high impact strength polyamide composition comprised

of 65–95 parts by weight of polyamide; 35–5 parts by weight of an ethylene series copolymer of ethylenic hydrocarbon and unsaturated carboxylic acid, wherein a part of the carboxyl groups on the acid has been converted into metal salts thereof; and 0.1–5 parts by weight of at least one compound selected from the group consisting of a monoepoxy compound and a carbonate compound of the formula:



wherein R_1, R_2, R_3 and $R_4$are the same or different and each stands for a hydrogen atom or an alkyl group per 100 parts by weight of total quantity of said polyamide and ethylene series copolymer.

4,086,296

BLENDS OF THERMOPLASTIC POLYMER WITH A MULTI-PHASE ACRYLIC COMPOSITE POLYMERS

Daniel T. Carty, Willingboro, N.J., and James A. Oline, Wyncote, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 299,492, Oct. 20, 1972, Pat. No. 3,859,384, which is a continuation-in-part of Ser. No. 108,177, Jan. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 55,979, Jul. 17, 1970, abandoned. This application Dec. 13, 1974, Ser. No. 532,350

The portion of the term of this patent subsequent to Jan. 7, 1992, has been disclaimed.

Int. Cl.[2] C08L *77/00*; C08F *15/00*

U.S. Cl. 260—857 G **12 Claims**

1. A composition comprising a blend of a thermoplastic polymer other than vinyl halide polymers with a multiphase acrylic composite polymer which is solid at room temperature and which comprises:

(A) about 50 to 90 weight percent of a first noncrosslinked phase of viscosity average molecular weight of about 7,500 to 50,000 polymerized from a first monomer emulsion of at least 25 weight percent of at least one alkyl acrylate wherein said alkyl group has 1 to 18 carbon atoms, and 0 to 75 percent of another copolymerizable ethylenically unsaturated monomer; and

(B) about 10 to 50 weight percent of a final, rigid thermoplastic phase polymerized in the presence of said first phase from an emulsion or solution of about 35 to 100 weight percent of at least one monomer which is a methacrylate, acrylate, styrene or substituted styrene, 0 to 65 weight percent of another acrylic monomer and 0 to 65 weight percent of another copolymerizable ethylenically unsaturated monomer, wherein the rigid thermoplastic phase has a viscosity average molecular weight of from about 400,000 to 5×10^6.

4,086,297

METHOD OF MAKING POLYMERIC COMPOSITIONS AND COMPOSITIONS THEREFOR

Nuno M. Rei, Peabody, and Nicholas J. Hill, Andover, both of Mass., assignors to Ventron Corporation, Beverly, Mass.

Continuation-in-part of Ser. No. 635,755, Nov. 28, 1975, abandoned. This application Oct. 29, 1976, Ser. No. 736,968

Int. Cl.[2] C08K *5/43, 5/39, 5/34, 5/53*

U.S. Cl. 260—859 PV **42 Claims**

38. A thermoplastic resin composition resistant to microbiological degradation comprising between about 0.5 and 5.0 weight percent of a composition comprising vinyl chloridfe-vinyl acetate copolymer and between 1 and 80 weight percent of a first microbiocide at a concentration of at least 20 times greater than the normal upper usage concentration of the microbiocide.

wherein said first composition is homogeneously dispersed in a second thermosplastic resin composition comprising a thermoplastic resin which is not a vinyl chloride-vinyl acetate copolymer.

4,086,298

BRANCHED BLOCK COPOLYMERS AND THEIR MANUFACTURE

Gerhard Fahrbach, Plankstadt; Karl Gerberding; Erhard Seiler, both of Ludwigshafen, and Dieter Stein, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 15, 1976, Ser. No. 732,890

Claims priority, application Germany, Nov. 8, 1975, 2550226

Int. Cl.[2] C08F *297/04*

U.S. Cl. 260—880 B **10 Claims**

1. Branched block copolymers of from 60 to 95 percent by weight of a monovinyl-aromatic compound and from 40 to 5 percent by weight of a conjugated diene of 4 to 8 carbon atoms, which have an average structure of the general formula

$$(A^1—B\rightarrow A^2)_n—X—(A^2\leftarrow B)_m$$

where A^1 and A^2 are non-elastomeric polymer segments based on the monovinyl-aromatic compound and the B's are elastomeric polymer segments based on the conjugated diene, n and m are numbers, m being equal to or greater than n and the sum of m and n being at least 3, and X is the radical of the polyfunctional coupling agent by means of which the linear polymer blocks ($A^1—B\rightarrow A^2$) and ($B\rightarrow A^2$), which form the branches, are chemically bonded to one another at the polymer segments A^2, with the provisos that the polymer segment or segments A^1 contains or contain from 50 to 80 percent by weight of the total monovinyl-aromatic compound of the branched block copolymer, as copolymerized units, the transition between the polymer segments A^1 and B is sharp and the transition between the polymer segments B and A^2 is gradual.

4,086,299

COPOLYMERS OF AN ALLYLAMINE GRAFTED ONTO AN UNSATURATED BENZOIN COPOLYMER

Mervyn Benjamin Jackson, West Brunswick, and Wolfgang Hermann Fritz Sasse, East Malvern, both of Australia, assignors to ICI Australia Limited, Melbourne and Commonwealth Scientific and Industrial Research Organization, Campbell, both of, Australia

Filed May 17, 1976, Ser. No. 687,323

Claims priority, application Australia, Jun. 4, 1975, 1877/75

Int. Cl.[2] C08L *31/02*

U.S. Cl. 260—885 **11 Claims**

1. A resin comprising a copolymer of an unsaturated benzoin or unsaturated benzoin alkyl ether and an ester of an unsaturated carboxylic acid, said copolymer having grafted onto it an allylamine and wherein the molar ratio of benzoin derivative to acid derivative is in the range 0.5:99.5 to 20:80.

4,086,300

ACRYLIC MODIFIERS FOR POLYCARBONAMIDES

Frederick H. Owens, Willingboro, N.J., and James S. Clovis, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 71,228, Sep. 10, 1970, Pat. No. 3,668,274. This application Dec. 13, 1971, Ser. No. 207,643

Int. Cl.[2] C08L *31/02*

U.S. Cl. 260—885 **9 Claims**

1. A multi-phase polymer for modifying polycarbonamides prepared by emulsion polymerization comprising (A) a first elastomeric phase having a glass temperature less than 25° C. and polymerized from monomers comprising a major amount of an alkyl acrylate, a polyunsaturated cross-linking monomer

having a plurality of addition polymerizable unsaturated groups, each of which participate in the polymerization reaction at about the same rate as one another, a graft-linking monomer having two or more addition polymerizable unsaturated reactive groups which participate in the polymerization reaction at substantially different rates, and (B) a final rigid phase having a glass temperature above 50° C. and containing amine-reactive carboxylic acid groups and polymerized from monomers comprising a major amount of an alkyl acrylate and a minor amount of a copolymerizable carboxylic acid.

4,086,301

HEAT-SEALABLE VULCANIZATES COMPRISING POLYOLEFIN RUBBER AND PROPYLENE POLYMER

Dieter Zerpner, Oer-Erkenschwick; Klaus Zur Nedden, Marl; Albert Frese, Marl, and Hans Datene, Marl, all of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed May 3, 1976, Ser. No. 682,402

Claims priority, application Germany, May 6, 1975, 2520035

Int. Cl.[2] C08L *23/16*

U.S. Cl. 260—897 A **9 Claims**

1. In a heat-sealable polyolefin elastomer vulcanizate comprising:

(a) a polyolefin elastomer selected from the group consisting of EP copolymers of ethylene with at least one of propylene and butene-1; and EPDM copolymers of ethylene and at least one of propylene and butene-1 with an unconjugated diene, and

(b) a cross-linking amount of an elastomer cross-linking agent, the improvement which comprises:

5–100 parts by weight, based on said polyolefin elastomer, of a propylene polymer uniformly admixed therewith prior to vulcanization which is selected from the group consisting of polypropylene and copolymers of propylene with up to 20% by weight of ethylene, butene-1 or hexene-1 which polymer has a heptane-extractable portion of 5–60%, and I-value measured according to DIN 53 728 of 100–600 cm^3/g, and a yield point measured according to DIN 53 735 of 10–30 N/mm^2.

4,086,302

PHOSPHOROAMIDATES

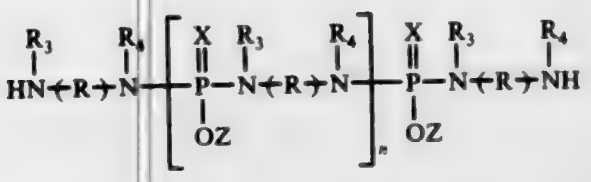
Albert W. Morgan, Collinsville, Ill.; Ignatius Schumacher, and William Vanderlinde, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 599,569, Jul. 28, 1975, abandoned, which is a division of Ser. No. 459,257, Apr. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 276,810, Jul. 31, 1972, abandoned. This application Sep. 29, 1976, Ser. No. 727,913

Int. Cl.[2] C07F *9/24, 9/65*

U.S. Cl. 260—926 **2 Claims**

1. A compound of the formula



wherein

R represents an alkylene group of 1 to 50 carbon atoms or an arylene group;

R_3 and R_4 individually represent an alkyl group of 1 to 10 carbon atoms;

X represents oxygen or sulfur;

Z represents the residue of a hydroxyl-containing moiety which will react with a phosphorus oxyhalide or phosphorus thiohalide, said residue containing no free hydroxyl groups; and

n represents an integer of from 1 to 40.

4,086,303

COPOLYCONDENSATION PRODUCTS OF β-HALOALKYL PHOSPHATES AND DIALKYL PHOSPHONATES

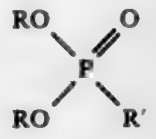
Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 783,995, Apr. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 558,862, Mar. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 410,583, Nov. 12, 1973, abandoned. This application Jul. 5, 1977, Ser. No. 811,972

Int. Cl.[2] C07F *9/40;* C08J *9/00;* C08K *5/53*

U.S. Cl. 260—928 **25 Claims**

1. A copolycondensation product of a β-haloalkyl phosphate having from 2 to 4 carbon atoms in the alkyl moiety and a dialkyl phosphonate of the formula



in which R′ is alkyl of from 1 to 20 carbon atoms, alkenyl of from 3 to 20 carbon atoms, or phenyl optionally substituted with alkyl of from 1 to 4 carbon atoms and/or halogen, and R is alkyl of from 1 to 4 carbon atoms, said product being obtained by heating the phosphate with the dialkyl phosphonate until at least about one molar equivalent of alkyl halide is evolved.

4,086,304

ORGANIC TRIPHOSPHITES HAVING IMPROVED HYDROLYTIC STABILITY AND A PROCESS FOR STABILIZING ORGANIC TRIPHOSPHITES

Ronald Eric Hutton, Southport, and David Frederic Watson Cross, Liverpool, both of England, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jun. 11, 1976, Ser. No. 695,112

Claims priority, application Netherlands, Jun. 12, 1975, 7506988

Int. Cl.[2] C07F *9/141, 9/15*

U.S. Cl. 260—989 **16 Claims**

1. A method of improving the hydrolytic stability of an organic triphosphite which comprises mixing the triphosphite with a stabilizing amount of a salt of a metal of Group I or II of the Periodic System and an organic acid having at least 8 carbon atoms.

4,086,305

HUMIDIFIER FOR RESPIRATORS HAVING A SEALED CONTAINER WATER SUPPLY TO A WATER STORAGE TANK

Günter Dobritz, Lubeck, Germany, assignor to Dragerwerk Aktiengesellschaft, Germany

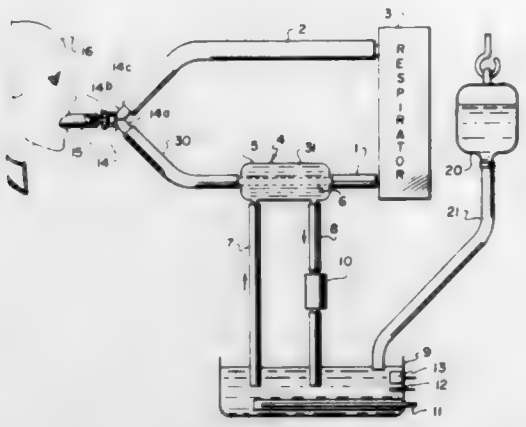
Filed Jun. 10, 1976, Ser. No. 694,605

Int. Cl.[2] B01F *3/04;* A61M *15/00*

U.S. Cl. 261—30 **1 Claim**

1. A humidifier for use with respirators, comprising a vessel having an inlet end connectable to an inhaling line and an outlet end spaced from said inlet end connectable to the user, means defining a passage between said inlet and said outlet having at least a portion with a wall defining an evaporation surface pervious to water vapor but impervious to water, means defining a water chamber in said vssel in contact with said evaporation surface, a water storage tank below said vessel, an inlet line and a return line for water depending from said vessel and extending downwardly from said water chamber into said water storage tank, means for circulating water from said storage tank to said water chamber through said inlet

line and into said water chamber and to said return line, a separate replaceable sealed water container located above said storage tank, for supplying water to said storage tank and a discharge conduit connected between said sealed water con-



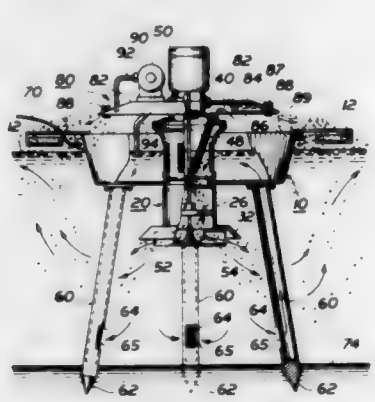
tainer and said water storage tank, an axially progressing screw rotatable in said passage and adjacent said evaporation surface and being rotatable by the flow of inhalation air between the convolutions thereof to direct the air outwardly into intimate contact with the surface.

4,086,306

CENTRIFUGAL PUMP

Kaneyasu Yoshinaga, 166-1, Ohaza Nobe, Tatebayashi City, Gunma Prefecture, Japan

Filed Feb. 16, 1977, Ser. No. 769,105
Claims priority, application Japan, Apr. 9, 1976, 51-44432[U]
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—93 **6 Claims**



1. A centrifugal pump adapted to be used in a culture pond comprising;

a. a flat-bottomed cup-like vessel including a large opening formed through a central portion of the bottom wall thereof and a plurality of smaller holes through a peripheral portion of said bottom wall;

b. a pair of floaters diametrically positioned around an upper periphery of said vessel;

c. a leg means downwardly extending from each small hole in the bottom wall, said leg means having a water intake port at the lower end portion thereof, said leg means forming an intake pipe for carrying water from said pond to said vessel and said leg means securing said vessel to said pond;

d. an inner hollow cylinder closed at its top end and centrally and rigidly mounted through the large central opening of the bottom wall of said vessel and including an upper cylindrical portion having a suction chamber and a lower cylindrical portion separated by a radially extending depression formed around the peripheral wall of said inner hollow cylinder wherein said suction chamber is positioned within said vessel, said lower cylindrical portion extends downwardly below said bottom wall and said depression is seated in said large central opening; and

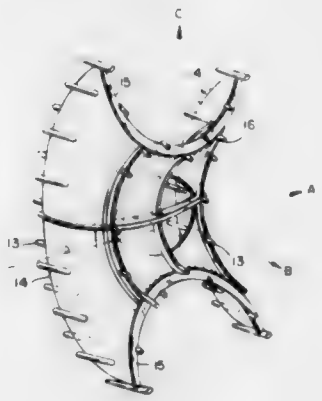
e. said inner hollow cylinder further including a plurality of uniformly spaced water intake slots formed around a peripheral wall of the suction chamber, a cover plate rigidly secured around the upper periphery of the upper cylindrical portion, said cover plate having a plurality of air-intake ports therethrough, an air suction pipe inserted into said suction chamber through one of the air-intake ports, the lower portion of said suction pipe being below the water level, a first hub axially provided within said cover plate and a second hub axially mounted on a plurality of radial spokes at the lower end portion of the lower cylindrical portion, an umbrella-shaped diffuser mounted around a lower periphery of the lower cylindrical portion, a drive shaft coupled to a motor shaft of an electric drive motor by a coupling passing through said first and second hubs, said drive shaft protruding beyond the lower cylindrical portion, and a centrifugal impeller rigidly secured to the lower end portion of said drive shaft such that a radial passageway is defined between the diffuser and the impeller.

4,086,307

TOWER PACKING SADDLE

Donald L. Glaspie, Dallas, Tex., assignor to Glitsch, Inc., Dallas, Tex.

Continuation of Ser. No. 691,127, May 28, 1976, abandoned, which is a continuation of Ser. No. 485,408, Jul. 3, 1974, abandoned. This application Jul. 14, 1977, Ser. No. 815,739
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—97 **6 Claims**

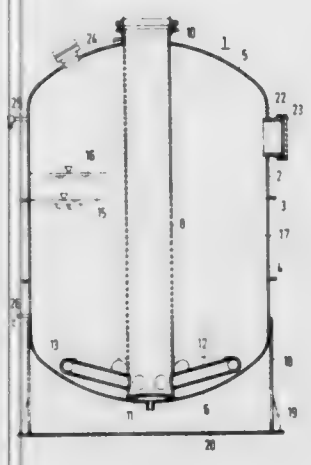


1. An improved saddle packing element having a general shape that is a segment of an inner portion of a hollow torus having at each of its ends a generally arcuate end edge face, said faces lying in a cross-sectional plane including a cross-sectional axis, parallel and coplanar marginal edges at the periphery of arcuate marginal edge portions lying in generally parallel planes relative to a transverse plane including a transverse axis of said body, a plurality of generally cylindrical drip points, a portion of said drip points being positioned along said marginal edge portions to project beyond said marginal edges with the sides of said drip points projecting laterally beyond the surface of said marginal edge portions, the remaining portion of said marginal drip points projecting from said end edge faces in a direction away from said marginal edges, and wherein the body has a hole located therein with the center of said hole lying equidistant from said coplanar marginal edges and equidistant from said end edge faces, a transverse rib extending between said arcuate end edges substantially through said transverse plane and a central rib lying substantially in said central plane said ribs intersecting at said transverse axis to form a cross member across said hole.

4,086,308
PRESSURIZED RELIEF TANK FOR STEAM

Wolfgang Jürgens; Jörg Nageler, both of Erlangen, Germany; Josef Lippitsch, and Julius Holzner, both of Graz, Austria, assignors to Siemens Aktiengesellschaft and Waagner-Biro Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 550,280, Feb. 18, 1975, abandoned.
This application Jan. 14, 1977, Ser. No. 759,395
Int. Cl.[2] G21C *15/18*
U.S. Cl. 261—124 10 Claims



1. A relief tank in combination with a pressurized-water reactor cooling system for receiving and condensing steam from a steam space of a pressurizer of said pressurized-water reactor cooling system, said tank being closed and pressure-resistant and having means for providing water therein up to a level forming a space above the water, the tank having means for filling said space with gas and having a top and a substantially cylindrical side wall and a bottom, a steam pipe extending pressure-tightly downwardly with said side wall and having a bottom end portion close to said bottom of said tank, said pipe having a top outside of the tank connected pressure-tightly with said steam space, said bottom end portion of said pipe connecting with a plurality of imperforate pipes pressure-tightly radiating from said bottom end portion and having outer ends, and a tubular annulus being in connection with said outer ends, said imperforate pipes radiating outward in such a manner that said imperforate pipes and tubular annulus substantially match the inside contour of said tank's bottom, said tubular annulus having an upper portion and uniformly distributed holes being formed in said upper portion.

4,086,309
METHOD FOR SEALING CRACKS AND CAVITIES IN DIFFERENT KINDS OF BUILDING CONSTRUCTIONS, SUCH AS BUILDING CONSTRUCTIONS IN ROCK, CONCRETE, BRICKWORK AND TIMBER

Claes Yngve Hjalmar Alberts, Bromma, Sweden, assignor to Stabilator AB, Bromma, Sweden

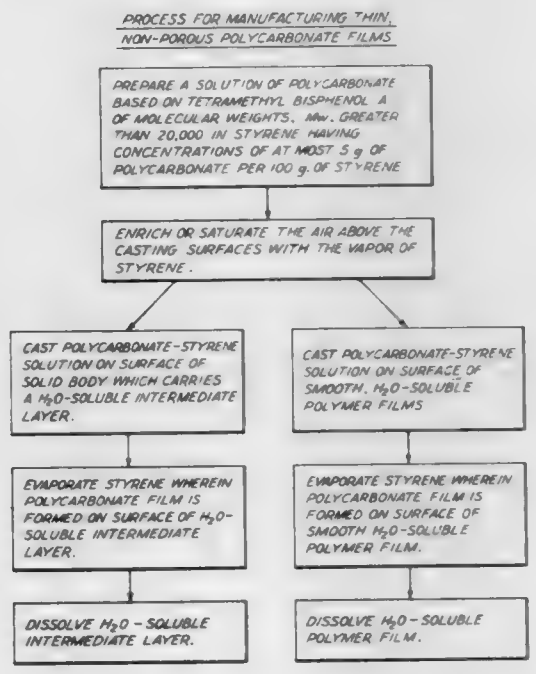
Filed Jun. 7, 1974, Ser. No. 477,264
Claims priority, application Sweden, Jun. 15, 1973, 7308458
Int. Cl.[2] E04B *1/16*
U.S. Cl. 264—35 1 Claim

1. A method for sealing water conveying cracks and cavities containing water therein in building constructions in rock, concrete, brickwork and timber which comprises drilling at least one hole into said building construction adjacent said water conveying crack or cavity and in communication therewith, sealing said hole in vacuum communication with a vacuum in source, maintaining a vacuum said hole for removing the water conveyed by said crack or cavity through said hole, applying a crack or cavity sealing material to said crack or cavity while maintaining said hole in communication with said vacuum source whereby said crack or cavity sealing material is drawn into crack or cavity and hardening said crack or cavity sealing material.

4,086,310
PROCESS FOR MANUFACTURING THIN, NON-POROUS GAS PERMEABLE POLYCARBONATE FILMS

Ludwig Bottenbruch; Günther Kämpf, both of Krefeld-Bockum; Volker Serini, and Hugo Vernaleken, both of Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 402,430, Oct. 1, 1973, Pat. No. 3,975,225.
This application Mar. 15, 1976, Ser. No. 666,557
Claims priority, application Germany, Oct. 5, 1972, 2248818
Int. Cl.[2] B29D *27/04*
U.S. Cl. 264—41 4 Claims



1. A process for manufacturing non-porous, gas permeable films having thicknesses less than 1 μm of polycarbonates from 2,2-bis-(3,5-dimethyl-4-hydroxyphenyl)-propane having molecular weights, M_w, greater than 20,000 comprising spreading solutions of the polycarbonates in styrene, said solutions having concentrations of at most 5 g of polycarbonate per 100 g of styrene, on the surface of smooth, water-soluble polymer films; evaporating the styrene, wherein the polycarbonate film is formed on the surface of the smooth water-soluble polymer film; and thereafter dissolving the water-soluble polymer film.

4,086,311
METHODS FOR INCREASING THE CRUSHABILITY CHARACTERISTICS OF CORES FOR CASTING ADVANCED SUPERALLOY MATERIALS

Irvin C. Huseby, Schenectady, and Frederic J. Klug, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 9, 1977, Ser. No. 775,760
Int. Cl.[2] C04B *35/64*
U.S. Cl. 264—43 10 Claims

1. A method for increasing the crushability characteristics of a ceramic article used as a core for casting metals including the process steps of:

(a) selecting a two-phase mixture which is one selected from the group consisting of $La_2O_3 \cdot 11Al_2O_3 + LaAlO_3$, $La_2O_3 \cdot 11Al_2O_3 + Al_2O_3$ and $MgAl_2O_4 + Al_2O_3$;

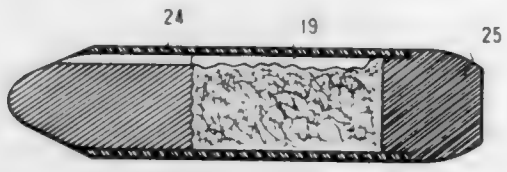
(b) forming an article to a predetermined configuration and a predetermined porosity content;

(c) subjecting the formed article to thermal shock to induce microcracks therein wherein the material therein exhibits a two-phase microstructure in which microcracks are initiated at a first interface of two different phases, extending across at least part of one of the phases toward a second interface.

4,086,312
WRITING PEN CORE HAVING AN INTEGRAL NIB AND INK RESERVOIR AND METHOD OF MANUFACTURE

Yoshio Midorikawa, Tokyo, Japan, assignor to Glasrock Products, Inc., Fairburn, Ga.

Filed Jul. 2, 1976, Ser. No. 702,067
Claims priority, application Japan, Apr. 8, 1976, 51-38709
Int. Cl.[2] D04H *1/64*
U.S. Cl. 264—46.6 5 Claims



1. A method for producing a writing pen core having an integral nib material and ink reservoir comprising:

(a) passing a plurality of fibers through a die to compress and form said fibers into a bundle, said die having an internal protrusion thereby forming a longitudinal channel along the length of the bundle;

(b) forming a plastic sheath around said fiber bundle; then

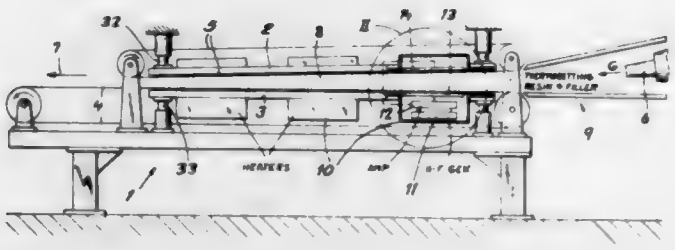
(c) impregnating a first portion of the length of said fiber bundle with a solution of a urethane prepolymer, leaving a second portion or length of said fiber bundle untreated; and

(d) allowing said resin in said first portion of said fiber bundle to set whereby the gases generated by volatization of the solvent and by the setting of the polymer form capillary passages in said first portion of said bundle, thus forming a nib material portion integral with said untreated second portion.

4,086,313
METHOD OF MAKING PRESSED BOARD

Heinrich Axer, Nettetal, and Gerd Roth, Kevelaer, both of Germany, assignors to G. Siempelkamp & Co., Krefeld, Germany

Division of Ser. No. 383,730, Jul. 30, 1973, Pat. No. 3,904,336. This application Dec. 13, 1974, Ser. No. 532,375
Claims priority, application Germany, Aug. 1, 1972, 2237755; Nov. 14, 1972, 2255712
Int. Cl.[2] B29D *7/14;* B29G *7/00;* B29J *5/00*
U.S. Cl. 264—70 5 Claims



1. In a method of making pressed boards, the steps comprising:

continuously blowing a mixture of filler particles coated with thermosetting resin into a space between converging perforated conveyor belts and compacting said particles in said space;

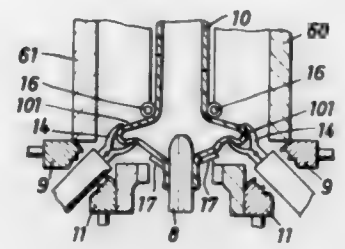
orienting said particles upon their entry into said space by vibrating said belts adjacent an entrance to said space; and

preheating a carrier gas, used for said blowing, sufficiently to partially cure said resin.

4,086,314
METHOD OF AND APPARATUS FOR THE PRODUCTION OF THERMOPLASTIC CONTAINERS

Dieter Lampart, Ettlingen, and Kalman Körmendi, Karlsruhe, both of Germany, assignors to Elbatainer Kunststoff- und Verpackungs-Gesellschaft mbH, Ettlingen, Baden, Germany

Filed Mar. 30, 1977, Ser. No. 782,850
Claims priority, application Germany, Mar. 31, 1976, 2613689
Int. Cl.[2] B29C *17/07*
U.S. Cl. 264—89 9 Claims



1. A process for producing a container comprising the steps of:

feeding a thermoplastic tubular parison downwardly into an open blow mold defining in a closed position a mold cavity having a shape of a container to be produced;

introducing a blowing mandrel into the lower end of said parison and spreading said lower end to form an elongated balloon-shaped bulge therein;

pressing upper and lower portions of said bulge together while continuing to feed said parison downwardly on at least one side of said parison to produce a lateral protuberance on said side;

gripping said protuberance and drawing same downwardly and outwardly between a pair of grip-shaping dies adapted to form a grip and opening around said grip in the wall of the parison;

closing said die on said protuberance;

closing said blow mold; and

introducing air through said mandrel to expand the parison in said cavity to the configuration thereof, thereby forming said container unitarily with a handgrip.

2. An apparatus for producing a container comprising:

a pair of mold halves closeable to define a mold cavity having the configuration of a container to be produced and separatable to form a gap between them, said mold cavity receiving a parison from above;

means above said mold halves for feeding said parison downwardly;

a blowing and spreading mandrel extending upwardly between said mold halves for engagement with the lower portion of said parison, whereby further advance of material of said parison toward said mandrel producing a bulge in the lower portion thereof;

a pair of rods and means displacing said rods to insert them into said gap above said lower portion with said rods flanking said parison, and displacing said rods downwardly to press upper portions of said bulge downwardly;

a pair of flat support members disposed below said rods for supporting said bulge on opposite sides of said parison, whereby said rods press said upper portions of said bulge toward said support members and produce lateral protuberances of said parison;

respective grippers operable to engage said protuberances;

means displacing said grippers downwardly and outwardly to draw said protuberances and outwardly;

respective pairs of grip-shaping die elements at the bottom of said cavity; and

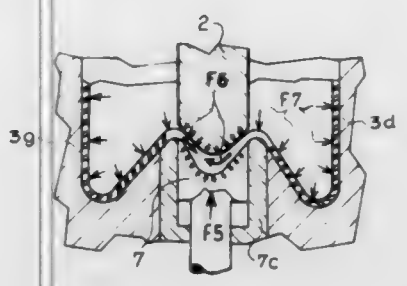
means displacing said elements into engagement with the outwardly and downwardly drawn protuberances for shaping the same into respective grips and grip openings.

4,086,315

PRODUCTION OF HOLLOW PLASTIC BODIES

Tadeusz Piotrowski, 21 rue Ampere, Lagny, Seine et Marne, France, assignor to Tadeusz Piotrowski and Societe Nouvelle du Plastique, both of, France

Filed Aug. 26, 1976, Ser. No. 718,083
Claims priority, application France, Aug. 27, 1975, 75 26375
Int. Cl.[2] B29C *17/07*
U.S. Cl. 264—97 5 Claims



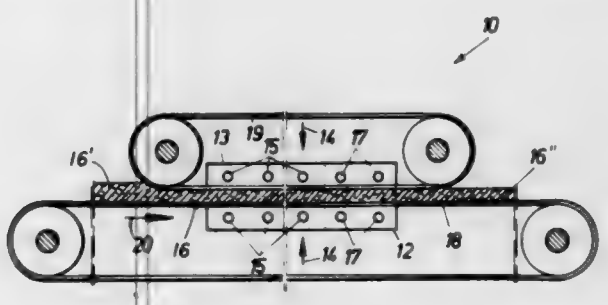
1. A process for the manufacture of a hollow plastic body, wherein a parison of plastic material is formed in a parison mold having a blow core and centering means for positioning the head of the core at one end of said parison mold and the parison is subsequently shaped into the hollow body within a blow mold having an axially displaceable bottom portion, which comprises positioning the blow core within said parison mold so that said core and said parison mold define a parison-forming cavity, with said centering means having at least one spacer element that extends through said cavity at said one end of said mold; injecting hot plastic material under pressure into the parison forming cavity and around said at least one spacer means whereby at least one hole extends through the parison of plastic material; removing the parison on said core from said parison mold; transferring the core and said parison into said blow mold; positioning the core closely adjacent to the bottom portion of said blow mold, with said at least one hole in the parison being located between said core and said bottom portion; effecting axial displacement of said bottom portion of said blow mold towards said core to close said at least one hole by extrusion of said plastic material; blowing the parison mold into said hollow body within said blow mold and then unmolding the hollow body from said blow mold.

4,086,316

PROCESS FOR THE MANUFACTURE OF FLAT SHEETS OR WEBS

Klaus Ahrweiler, Willich; Ferdinand Leifeld, Kempen; Kurt Quoos, Krefeld, and Eduard Finkenweg 18 Kusters, 415 Krefeld-Forstwald, all of Germany, assignors to Eduard Kusters, Krefeld, Germany

Continuation of Ser. No. 450,347, Mar. 12, 1974, abandoned. This application Dec. 22, 1975, Ser. No. 643,080
Int. Cl.[2] B29J *1/02*
U.S. Cl. 264—120 4 Claims



1. A process for manufacturing, from natural fibrous cellulose material which has been comminuted into individual fibers, a flat sheet selected from the group consisting of paper and cardboard, comprising:

(a) placing a substantially dry mass of this comminuted cellulose material upon a support;
(b) moistening said mass with an amount of water less than the moisture absorptive capacity of said mass;
(c) hot pressing said mass at a temperature above 100° C and at a pressure of 10–50 kg/cm/sq for a period of at least 1 second to form said mass into a flat sheet and cause said individual fibers to hydrogen bond;
(d) cooling said formed sheet while maintaining pressure thereon equal to or less than that in step (c), but sufficient to prevent the sudden release of steam formed in said mass during step (c), whereby said cooling condenses formed steam to release said formed sheet of steam pressure and thereby avoid ripping or splitting of said sheet upon subsequent release of said pressure;
(e) relieving said pressure from said flat fiber bonded cellulose sheet, and
(f) removing said bonded cellulose sheet from said support.

4,086,317

PROCESS FOR PRODUCTION OF A SYNTHETIC PAPER IMPROVED AGAINST DUSTING TROUBLE

Yoshio Miyabe, Ibaraki, Japan, assignor to Oji Yuka Goseishi Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 459,202, Apr. 8, 1974, abandoned. This application Jan. 6, 1976, Ser. No. 646,939
Int. Cl.[2] B32B *31/12;* B29D *7/24*
U.S. Cl. 264—134 10 Claims

1. In a process for producing a synthetic paper having an opaque paperlike layer on at least one surface thereof which comprises stretching in one axial direction a laminate sheet containing a surface layer of a resin having fine filler particles incorporated therein laminated on to at least one surface of a resinous substrate, said stretching operation causing the resin surface containing the fine filler particles to become opaque, the improvement which comprises (a) coating the surface of the layer containing filler particles therein with an aqueous dispersion of a dry-extensible, polymeric coating material to avoid dusting problems due to the filler particles coming off the surface of the resin layer, said coating material being selected from the group consisting of C_1–C_8 alkyl acrylate homopolymers or copolymers, ethylene vinyl acetate copolymers and polyethylene wax, the concentration of said coating material being in the range of 3 to 10% by weight of the aqueous dispersion and the amount of said dispersion applied being in the range of 0.3 to 1 g/m^2 on the basis of the coating material; (b) drying the coated sheet, and (c) subjecting the coated sheet to a transverse stretching operation, said steps (a) and (b) being carried out at the latest before the transverse stretching operation (c).

4,086,318

MOLDING PROCESS FOR A PLASTIC-COATED CERAMIC DECORATIVE PLUMBING FIXTURE

Louis A. Garasi, Canyon Country, and Ronald F. Hayes, Northridge, both of Calif., assignors to Gruber Systems, Inc., Valencia, Calif.

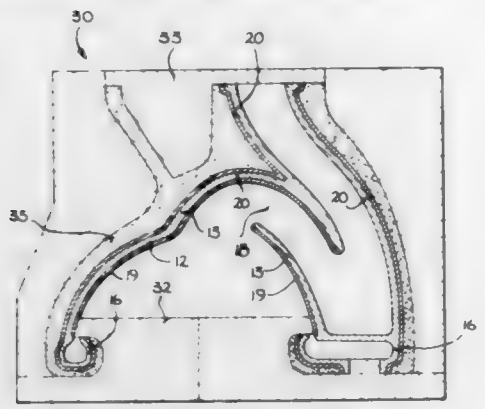
Filed Apr. 18, 1977, Ser. No. 788,547
Int. Cl.[2] B29C *5/00, 25/00;* B29G *7/00*
U.S. Cl. 264—135 2 Claims

1. A molding process adapted for the production of a plumbing fixture whose functional surfaces are resistant to erosion caused by moving water wherein a ceramic shell forms a liner having external surfaces and the functional surfaces of said plumbing fixture, said molding process comprising the steps of:
a. coating the external surfaces of said ceramic shell with a layer of resilient material;
b. suspending said ceramic shell upside down within a female mold member having internal surfaces so that the internal surfaces of said female mold member are slightly spaced from the external surfaces of said ceramic shell thereby leaving a gap between the internal surfaces of said female

mold member and the external surfaces of said ceramic shell;

c. filling said gap with a catalyzed polyester resin matrix mixed with a filler and pigments;

d. permitting said matrix to bond and to cure to the coated external surfaces of said ceramic shell; and



e. removing said female mold member thereby producing a plumbing fixture having an attractive exterior appearance which matches the color texture and the design of other plumbing fixtures to be used in the same room.

4,086,319

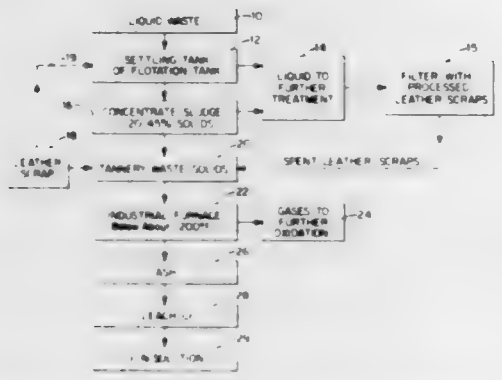
RECOVERY OF CHROMIUM FROM TANNERY WASTE

Bradford H. Jones, 85 Portsmouth Ave., Stratham, N.H. 03885

Continuation-in-part of Ser. No. 694,244, Jun. 9, 1976, abandoned. This application Nov. 8, 1976, Ser. No. 740,016

Int. Cl.[2] C01G *37/02, 37/14*

U.S. Cl. 423—53 **19 Claims**



1. The method of processing tannery waste solids containing trivalent chromium and organic material and recovering chromium therefrom, said method comprising:

(a) burning at least one ton per day of said waste in the combustion zone of an industrial furnace at a temperature [illegible]

4,086,320

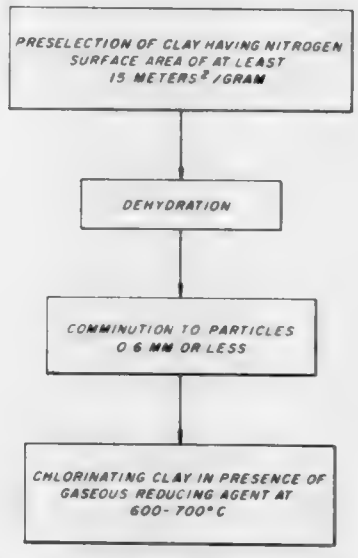
PRODUCTION OF ALUMINUM CHLORIDE FROM RAW MATERIALS CONTAINING ALUMINUM COMPOUNDS AND SILICON COMPOUNDS

Edward S. Martin, and David A. Wohleber, both of Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 23, 1977, Ser. No. 780,535

Int. Cl.[2] C01F *7/56, 7/58*

U.S. Cl. 423—135 **7 Claims**



1. An improved process for the selective production of aluminum chloride by the chlorination of a source material containing both aluminum compounds and silicon compounds while inhibiting production of silicon chloride which comprises:

a. selecting a source material which has a surface area of at least 15 meters[2] per gram;

b. comminuting the source material to a particle size of 90% by weight not greater than 0.6 millimeters;

c. dehydrating the comminuted source material by roasting it at a temperature of 600° to 900° C for a period of 10 minutes to 4 hours;

d. chlorinating the comminuted source material with a chlorinating agent in the presence of a gaseous reducing agent at a temperature of at least 600° C but less than 700° C; and

e. separating aluminum chloride from said chlorinated source material.

4,086,321

PRODUCING PURE IRON OXIDES

Carl A. Holley, 2500 Baldwick Rd., Pittsburgh, Pa. 15205, and Russell J. McKinnon, Pittsburgh, Pa., assignors to Carl A. Holley, Pittsburgh, Pa.

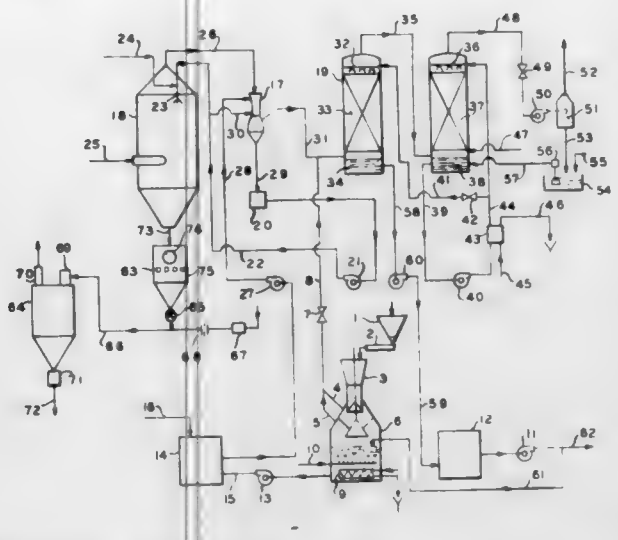
Filed Jun. 21, 1976, Ser. No. 697,958

Int. Cl.[2] C01G *49/02*

U.S. Cl. 423—150 **25 Claims**

1. The method of producing pure, fine, iron oxide comprising, dissolving iron oxide in dilute hydrochloric acid to form an aqueous iron chloride solution while ventilating gases formed thereby, conducting said solution through a scrubber-heat exchanger, reacting said solution in a reactor by spraying the concentrated solution together with oxygen, at about 2500°

changer where the sensible heat of the gases is given up to the incoming iron chloride solution and the remnant iron oxide



redissolved, and reintroducing said redissolved iron oxide into said reactor along with the new iron chloride solution.

4,086,322

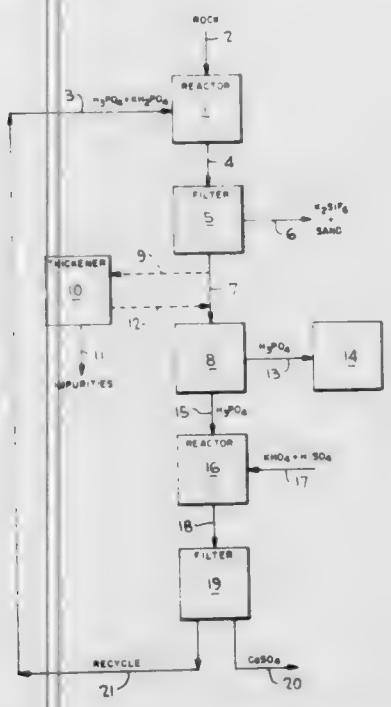
PRODUCTION OF FLUORIDE-FREE PHOSPHATES

Erhart K. Drechsel, Houston, Tex., assignor to Pennzoil Company, Shreveport, La.

Continuation-in-part of Ser. No. 512,877, Oct. 7, 1974, abandoned. This application Aug. 29, 1975, Ser. No. 608,973

Int. Cl.² C01B *25/16*

U.S. Cl. 423—158 **12 Claims**



1. A method for the treatment of phosphate rock to recover phosphoric acid essentially free of fluoride contamination and recover the fluorine values contained in said phosphate rock in useful form, said reaction being conducted in the substantial absence of fluoride gas evolution, the process comprising the steps of:

(a) reacting a fluoride-containing phosphate rock with a solution of phosphoric acid containing values of potassium ions as K_2O values, the K_2O values being provided by the presence of KH_2PO_4 in an acidulation reactor using a sufficient amount of phosphoric acid to solubilize said phosphate rock and form monocalcium phosphate in a

acidulation and convert said fluorides to solid potassium fluosilicates;

(b) solubilizing the monocalcium phosphate resulting from the reaction into the phosphoric acid solution;

(c) separating the insolubles contained in the hot solution of monocalcium phosphate in phosphoric acid at about the reaction temperature;

(d) cooling the resulting solution by a temperature difference of about 40° to 50° C. below said reaction temperature to precipitate a relatively pure potassium fluosilicate;

(e) separating and recovering the solid potassium fluosilicate precipitate; and

(f) recovering a solution of monocalcium phosphate in phosphoric acid substantially free from fluoride impurities.

4,086,323

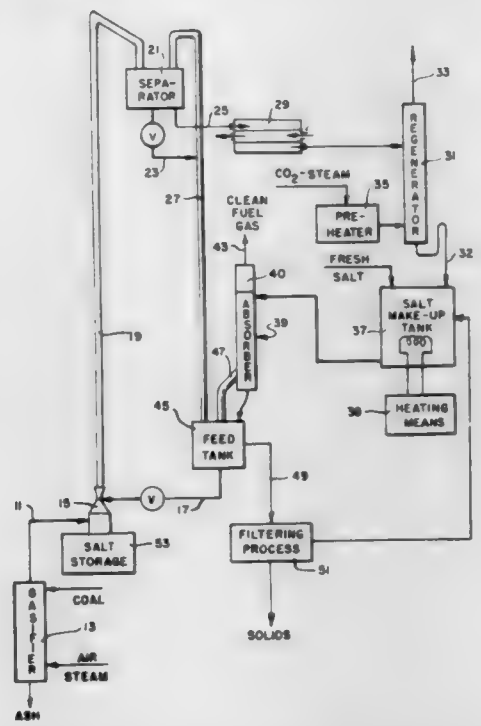
PROCESS FOR REMOVAL OF SULFUR COMPOUNDS FROM FUEL GASES

Raymond H. Moore, and Gary E. Stegen, both of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 21, 1977, Ser. No. 808,488

Int. Cl.² B01D *53/34*

U.S. Cl. 423—210.5 **10 Claims**



1. In a continuous process for extracting hydrogen sulfide from a fuel-gas stream wherein the gas stream is contacted with a flow of molten, metal-carbonate salt mixture to form metal sulfide and the salt mixture is subsequently regenerated to lower its metal sulfide concentration by contact with carbon dioxide and steam, the improvement following said fuel-gas and molten salt contact comprising:

separating said salt mixture from said fuel-gas stream and dividing said salt mixture into a major flow portion and a minor flow portion, each flow portion having a first concentration of metal sulfide;

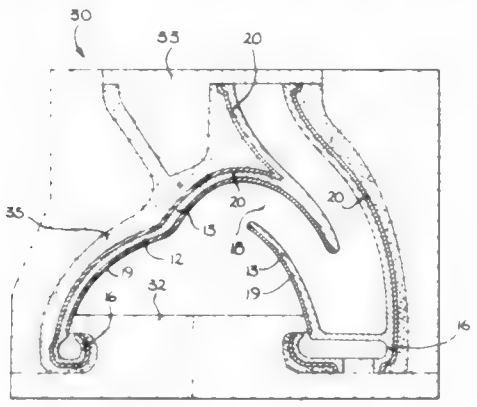
regenerating said minor flow portion of salt by contacting it with a gas flow of steam and carbon dioxide to enrich the gas flow in hydrogen sulfide and to deplete the minor flow portion of molten salt to a second concentration that is less than said first concentration of metal sulfide;

contacting said hydrogen sulfide enriched gas flow with said major flow portion of molten salt at said second concentration of metal sulfide

mold member and the external surfaces of said ceramic shell;

c. filling said gap with a catalyzed polyester resin matrix mixed with a filler and pigments;

d. permitting said matrix to bond and to cure to the coated external surfaces of said ceramic shell; and



e. removing said female mold member thereby producing a plumbing fixture having an attractive exterior appearance which matches the color texture and the design of other plumbing fixtures to be used in the same room.

4,086,319

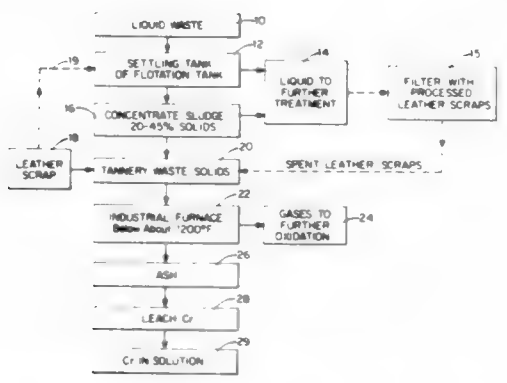
RECOVERY OF CHROMIUM FROM TANNERY WASTE

Bradford H. Jones, 85 Portsmouth Ave., Stratham, N.H. 03885

Continuation-in-part of Ser. No. 694,244, Jun. 9, 1976, abandoned. This application Nov. 8, 1976, Ser. No. 740,016

Int. Cl.[2] C01G *37/02, 37/14*

U.S. Cl. 423—53 **19 Claims**



1. The method of processing tannery waste solids containing trivalent chromium and organic material and recovering chromium therefrom, said method comprising:

(a) burning at least one ton per day of said waste in the combustion zone of an industrial furnace at a temperature below about 1200° F. in the presence of sufficient alkali to oxidize the majority of said chromium to hexavalent chromium in the furnace ash and to convert at least a portion of said organic material to gases;

(b) removing said gases from the combustion zone and subjecting them to further oxidation; and,

(c) removing said ash from the furnace and recovering said hexavalent chromium therefrom.

4,086,320

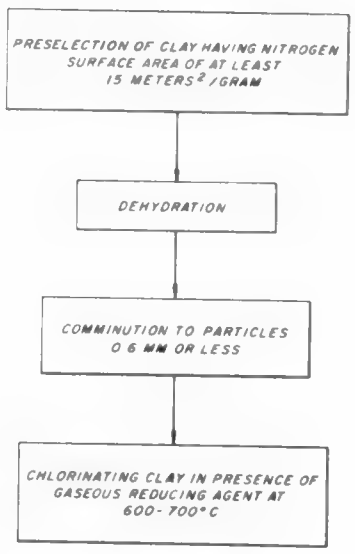
PRODUCTION OF ALUMINUM CHLORIDE FROM RAW MATERIALS CONTAINING ALUMINUM COMPOUNDS AND SILICON COMPOUNDS

Edward S. Martin, and David A. Wohleber, both of Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 23, 1977, Ser. No. 780,535

Int. Cl.[2] C01F *7/56, 7/58*

U.S. Cl. 423—135 **7 Claims**



1. An improved process for the selective production of aluminum chloride by the chlorination of a source material containing both aluminum compounds and silicon compounds while inhibiting production of silicon chloride which comprises:

a. selecting a source material which has a surface area of at least 15 meters[2] per gram;

b. comminuting the source material to a particle size of 90% by weight not greater than 0.6 millimeters;

c. dehydrating the comminuted source material by roasting it at a temperature of 600° to 900° C for a period of 10 minutes to 4 hours;

d. chlorinating the comminuted source material with a chlorinating agent in the presence of a gaseous reducing agent at a temperature of at least 600° C but less than 700° C; and

e. separating aluminum chloride from said chlorinated source material.

4,086,321

PRODUCING PURE IRON OXIDES

Carl A. Holley, 2500 Baldwick Rd., Pittsburgh, Pa. 15205, and Russell J. McKinnon, Pittsburgh, Pa., assignors to Carl A. Holley, Pittsburgh, Pa.

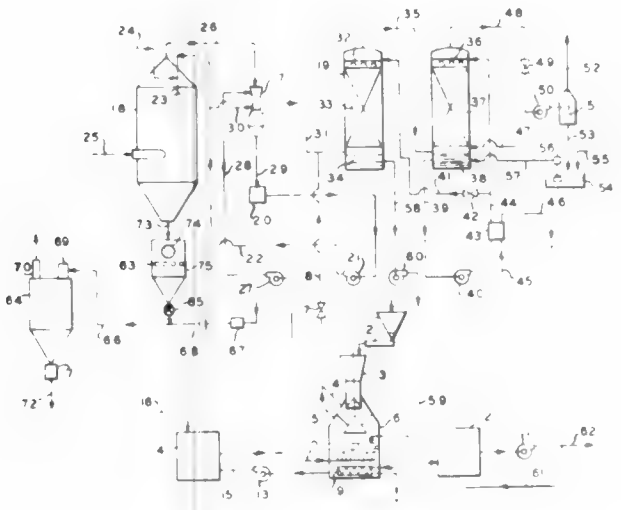
Filed Jun. 21, 1976, Ser. No. 697,958

Int. Cl.[2] C01G *49/02*

U.S. Cl. 423—150 **25 Claims**

1. The method of producing pure, fine, iron oxide comprising, dissolving iron oxide in dilute hydrochloric acid to form an aqueous iron chloride solution while ventilating gases formed thereby, conducting said solution through a scrubber-heat exchanger, reacting said solution in a reactor by spraying the concentrated solution together with oxygen, at about 2500° F into the top portion of a sufficiently heated reaction chamber to form iron chloride droplets of less than 50 microns in diame ter which, as they descend throughout the height of the reaction chamber, will decompose in the presence of the oxygen and water vapor to form iron oxide particles of the order of .7 micron size, which collect at the bottom of said reactor, and hydrogen chloride vapor together with remnant iron oxide and water vapor which are conducted to said scrubber-heat ex-

changer where the sensible heat of the gases is given up to the incoming iron chloride solution and the remnant iron oxide



redissolved, and reintroducing said redissolved iron oxide into said reactor along with the new iron chloride solution.

4,086,322

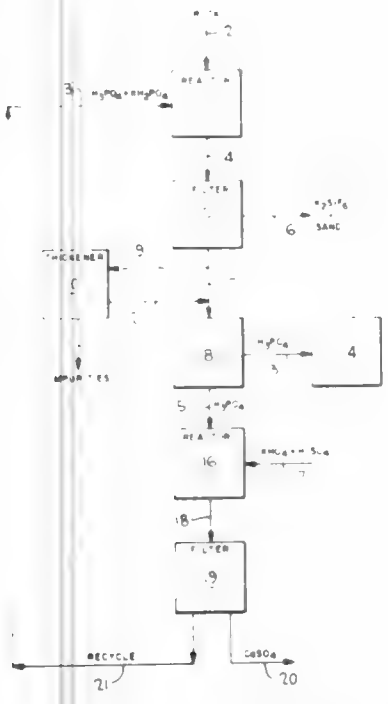
PRODUCTION OF FLUORIDE-FREE PHOSPHATES

Erhart K. Drechsel, Houston, Tex., assignor to Pennzoil Company, Shreveport, La.

Continuation-in-part of Ser. No. 512,877, Oct. 7, 1974, abandoned. This application Aug. 29, 1975, Ser. No. 608,973

Int. Cl.[2] C01B *25/16*

U.S. Cl. 423—158 **12 Claims**



1. A method for the treatment of phosphate rock to recover phosphoric acid essentially free of fluoride contamination and recover the fluorine values contained in said phosphate rock in useful form, said reaction being conducted in the substantial absence of fluoride gas evolution, the process comprising the steps of:

(a) reacting a fluoride-containing phosphate rock with a solution of phosphoric acid containing values of potassium ions as K_2O values, the K_2O values being provided by the presence of KH_2PO_4, in an acidulation reactor using a sufficient amount of phosphoric acid to acidulate said phosphate rock and form monocalcium phosphate at a temperature of about 90° to 100° C.; the amount of phosphoric acid used being sufficient to provide a molar ratio of P_2O_5 in the phosphoric acid to P_2O_5 in the rock in the range of about 6:1 to 15:1 respectively; and said phosphoric acid containing a sufficient amount of said KH_2PO_4 to react with fluorides liberated during said acidulation and convert said fluorides to solid potassium fluosilicates;

(b) solubilizing the monocalcium phosphate resulting from the reaction into the phosphoric acid solution;

(c) separating the insolubles contained in the hot solution of monocalcium phosphate in phosphoric acid at about the reaction temperature;

(d) cooling the resulting solution by a temperature difference of about 40° to 50° C. below said reaction temperature to precipitate a relatively pure potassium fluosilicate;

(e) separating and recovering the solid potassium fluosilicate precipitate; and

(f) recovering a solution of monocalcium phosphate in phosphoric acid substantially free from fluoride impurities.

4,086,323

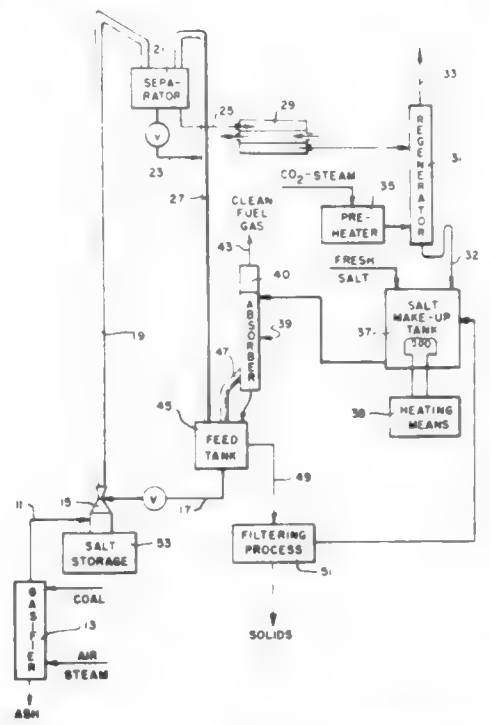
PROCESS FOR REMOVAL OF SULFUR COMPOUNDS FROM FUEL GASES

Raymond H. Moore, and Gary E. Stegen, both of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 21, 1977, Ser. No. 808,488

Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—210.5 **10 Claims**



1. In a continuous process for extracting hydrogen sulfide from a fuel-gas stream wherein the gas stream is contacted with a flow of molten, metal-carbonate salt mixture to form metal sulfide and the salt mixture is subsequently regenerated to lower its metal sulfide concentration by contact with carbon dioxide and steam, the improvement following said fuel-gas and molten salt contact comprising:

separating said salt mixture from said fuel-gas stream and dividing said salt mixture into a major flow portion and a minor flow portion, each flow portion having a first concentration of metal sulfide;

regenerating said minor flow portion of salt by contacting it with a gas flow of steam and carbon dioxide to enrich the gas flow in hydrogen sulfide and to deplete the minor flow portion of molten salt to a second concentration that is less than said first concentration of metal sulfide;

contacting said fuel-gas stream with said minor flow portion of molten salt at said second concentration of metal sulfide to further absorb hydrogen sulfide from said fuel gas stream; and

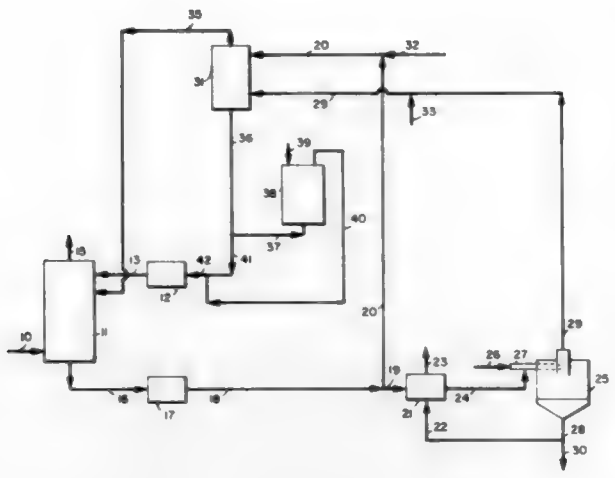
recombining said minor flow portion with said major flow portion of molten salt for contacting said fuel-gas stream with the combined flow of molten salt.

4,086,324

REMOVAL OF SULFUR AND NITROGEN OXIDES WITH AQUEOUS ABSORBENT

Albert B. Welty, Jr., 225 Watchung Fork, Westfield, N.J. 07090

Continuation-in-part of Ser. No. 291,385, Sep. 22, 1972, abandoned. This application Jan. 11, 1974, Ser. No. 432,434
Int. Cl.[2] C01B *21/00, 17/00*
U.S. Cl. 423—235 4 Claims



1. A method of separating sulfur oxides and nitrogen oxides from a gas stream containing the same comprising the step of contacting said gas stream with an aqueous solution comprising ammonium sulfite and ammonium thiosulfate such that the molar flow rate of ammonium sulfite, AS is at least equal to the value determined from the equation:

$$AS = 0.9A + 2B + 0.006Z + c(1.8A + 2B + 2.0y + 0.024Z + D)$$

where

A = molar flow rate of SO_2 in the influent flue gas stream;
B = molar flow rate of SO_3 in the influent flue gas stream;
c = is the molar ratio of ammonium sulfite to ammonium bisulfite desired in the effluent stream, generally between about 0.15 and 1.0;
D = molar flow rate of ammonium bisulfite in the influent scrubber solution;
Z = molar flow rate of oxygen in the influent flue gas stream; and
y = O_2 equivalent to molar flow rate of NO_x in the influent flue gas stream;

and the molar flow rate of ammonium thiosulfate, NT, is within the range determined with the following equation:

$$NT = X(1.0y + 0.012Z)$$

where

X is a number between 1.1 and 2.0; and
y and Z are as previously defined,

said contacting being accomplished at conditions such that sulfur dioxide reacts with ammonium sulfite to form ammonium bisulfite and nitrogen oxides react with ammonium thiosulfate.

4,086,325

PROCESS FOR DRYING SOLUTIONS CONTAINING BORIC ACID

Jean-Pierre Cordier, Braine-le-Comte, and Marc Vandorpe, Retie, both of Belgium, assignors to Belgonucleaire, S.A., Brussels, Belgium

Filed Feb. 14, 1977, Ser. No. 768,273
Claims priority, application Belgium, Feb. 13, 1976, 17207
Int. Cl.[2] C01B *15/12*
U.S. Cl. 423—280 4 Claims

1. A process for drying concentrates containing boric acid and/or borates by evaporation of these concentrates after addition of lime characterized in that the amount of lime is insufficient to convert all of the boric acid or borates to calcium borate and that an oxidizing agent is added to the concentrates wherein the oxidizing agent is employed in an amount sufficient to convert the boric acid or borates to perborate.

4,086,326

PROCESS FOR THE PRODUCTION OF ALKALI METAL CYANIDE SILICATE COMPOUNDS AND CYANIDE SILICATE COMPOUNDS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Filed May 31, 1977, Ser. No. 801,819
Int. Cl.[2] C01B *33/00*
U.S. Cl. 423—332 11 Claims

1. The method of preparing alkali metal cyanide silicate compounds by the following steps:

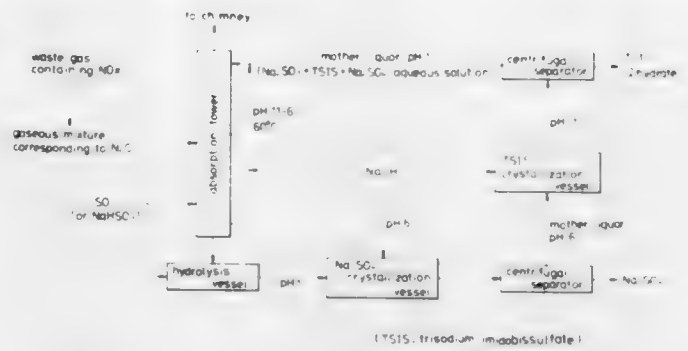
(a) mixing together in water about 1 part by weight of fine granular hydrated silica and 1 to 2 parts by weight of an alkali metal cyanide compound selected from the group consisting of sodium cyanide, potassium cyanide, lithium cyanide, cesium cyanide and mixtures thereof:
(b) evaporating the water, then heating the resulting mixture containing the alkali metal cyanide to 150° to 200° C while agitating for 5 to 30 minutes, thereby
(c) producing a brown granular mixture of alkali metal cyanide silicate ($RSiO_2CN$) and dialkali metal dicyanide silicate [$R_2SiO_2(CN)_2$], wherein R is sodium, potassium, lithium, cesium, and mixtures thereof.

4,086,327

PROCESS FOR REMOVING NITROGEN OXIDES FROM GASEOUS MIXTURES

Yukio Ito, Tokyo; Yosiro Yasumoto, Fuchu; Etsuro Masuda, Tokyo, and Hiroshi Suzuki, Mitaka, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. 12, 1976, Ser. No. 731,739
Claims priority, application Japan, Oct. 17, 1975, 50-124433
Int. Cl.[2] C01B *21/00, 21/10*
U.S. Cl. 423—385 6 Claims



1. A process for removing nitrogen oxides from gaseous mixtures and which comprises the steps of (1) contacting gaseous mixtures containing nitrogen oxides with an aqueous absorption solution containing sodium sulfite, trisodium imidobissulfate and sodium sulfate while adjusting the pH of the solution to 6 – 11 with sodium hydroxide or sodium carbonate such that nitrogen oxides are absorbed; (2) simultaneously with or subsequent to (1), contacting said aqueous solution with sulfur dioxide or sodium hydrogensulfite to produce disodium imidobissulfate and sodium hydrogensulfate; (3) adding sodium hydroxide to the reaction solution formed in (2) to precipitate sodium sulfate 10 hydrate, firstly, and trisodium imidobissulfate 12 hydrate, secondly; (4) separating the sodium sulfate 10 hydrate and trisodium imidobissulfate 12 hydrate from the mixture formed in (3) to produce a mother liquor; and (5) recycling the mother liquor for use as the absorption solution for nitrogen oxides.

4,086,328

PRODUCTION OF CHLORINE DIOXIDE FROM BUFFERED REACTION MEDIA

Richard Swindells, Caledon, Canada, assignor to Erco Industries Limited, Islington, Canada

Filed Feb. 22, 1977, Ser. No. 770,361

Claims priority, application United Kingdom, Mar. 19, 1976, 11124/76

Int. Cl.[2] C01B *11/02, 7/04;* C01D *3/04*

U.S. Cl. 423—478 4 Claims

1. In a method of producing chlorine dioxide, which comprises:

a. establishing in a reaction zone an aqueous reaction medium containing dissolved quantities of sodium chlorate, sodium chloride and hydrochloric acid, said aqueous reaction medium being substantially saturated with sodium chloride,

b. continuously feeding hydrochloric acid or hydrogen chloride to said aqueous reaction medium,

c. continuously maintaining said reaction medium at its boiling point at the absolute pressure thereon at a temperature below that above which substantial decomposition of chlorine dioxide occurs,

d. continuously maintaining said reaction zone under a subatmospheric pressure sufficient to maintain said reaction medium at its boiling point,

e. continuously generating chlorine dioxide, chlorine and sodium chloride in said reaction medium,

f. continuously removing from said reaction zone a gaseous mixture of chlorine dioxide, chlorine and steam wherein the volume ratio of steam to chlorine dioxide is greater than that below which substantial decomposition of chlorine dioxide occurs,

g. continuously depositing said generated sodium chloride from said reaction medium in said reaction zone,

h. removing said deposited sodium chloride from said reaction zone, and

i. continuously maintaining the volume of liquid in said reaction zone substantially constant,

the improvement wherein

j. said aqueous reaction medium contains at least one buffering anion selected from the group consisting of divalent and multivalent inorganic anionic species which is introduced to said aqueous reaction medium as a water-soluble salt thereof, and

k. the actual hydrogen ion concentration in said reaction medium is maintained in the range of about 0.05 to about 0.03 normal.

4,086,329

INTEGRATED CHLORINE DIOXIDE PRODUCING SYSTEM

Gerald Cowley, Mississauga; Richard Swindells, Caledon, and Mark Kostanecki, Toronto, all of Canada, assignors to Erco Industries Limited, Islington, Canada

Continuation-in-part of Ser. No. 634,137, Nov. 21, 1975, abandoned. This application Apr. 14, 1977, Ser. No. 787,320

Claims priority, application United Kingdom, Dec. 13, 1974, 53899/74

Int. Cl.[2] C01B *11/02, 7/04;* C01D *5/00*

U.S. Cl. 423—478 11 Claims

1. A method for the steady state continuous production of chlorine dioxide from an acid aqueous reaction medium by reduction of chlorate ions with chloride ions, which comprises:

(a) establishing an aqueous acid reaction medium containing hydrogen ions, chlorate ions, chloride ions, sodium ions and sulphate ions in a reaction zone capable of forming chloride dioxide and chlorine and having a total acid normality of between about 2 and about 4.8 normal,

(b) maintaining said reaction zone under a subatmospheric pressure, maintaining said reaction medium at its boiling point at an elevated temperature below that above which substantial decomposition of chlorine dioxide occurs,

(c) continuously generating chloride dioxide and chlorine from said aqueous reaction medium in accordance with the equations:

$$ClO_3^- + Cl^- + 2H^+ \rightarrow ClO_2 + \tfrac{1}{2}Cl_2 + H_2O \quad (1)$$

$$ClO_3^- + 5Cl^- + 6H^+ \rightarrow 3Cl_2 + 3H_2O \quad (2)$$

the proportion of chlorate ions converted to chlorine dioxide in accordance with equation (1) being designated the efficiency (E) of the chlorine dioxide and chlorine generating reaction, said efficiency being less than 1.00,

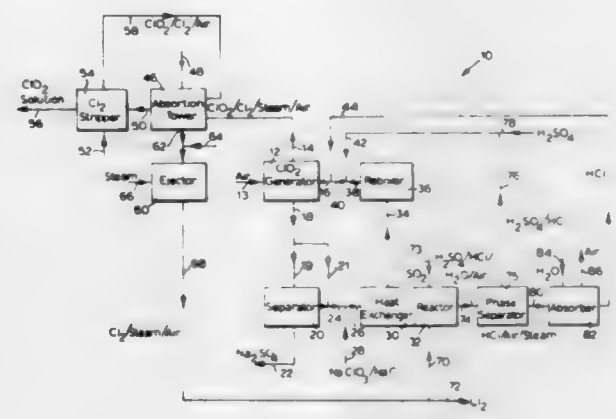
(d) continuously feeding to said reaction medium hydrogen ions in a quantity of $(6-4E/E)$ moles per mole of chlorine dioxide formed and chlorine ions in a quantity of $(5-4E/E)$ moles per mole of chlorine dioxide formed,

(e) continuously feeding to said reaction medium sodium chlorate in a quantity of $(1/E)$ moles per mole of chlorine dioxide formed in sulphate ions in a quantity of $(1/2E)$ moles per mole of chlorine dioxide formed,

(f) continuously evaporating water from said reaction medium to form in said reaction zone with said generated chlorine dioxide and chlorine in gaseous mixture of chlorine dioxide, chlorine and water vapour,

(g) continuously depositing from said aqueous reaction medium $(1/2E)$ moles of anhydrous neutral sodium sulphate per mole of chlorine dioxide formed,

(h) continuously removing said gaseous mixture from said



reaction zone, continuously condensing the water vapour of said removed gaseous mixture, continuously forming an aqueous solution of substantially all the chlorine dioxide content of said gaseous mixture and additionally optionally containing a minor proportion of the chlorine content of said gaseous mixture,

(i) continuously recovering said aqueous solution of chlorine dioxide,

(j) reacting sulphur dioxide and water with chlorine including at least part of substantially all the remainder in said gaseous mixture not dissolved in said aqueous chlorine dioxide solution to form hydrochloric acid and sulphuric acid in just sufficient quantity to provide $(1/2E)$ moles of sulphate ion in said sulphuric acid,

(k) continuously forwarding said hydrochloric acid and sulphuric acid formed in the latter reaction to said reaction medium to provide part only of both said fed hydrogen ions and chloride ions and all of said fed sulphate ions,

(l) continuously supplementing the hydrogen ion and chloride ion quantities of said forwarded stream to provide said feed of hydrogen ions of $(6-4E/E)$ moles per mole of chlorine dioxide formed and said feed of chloride ions of $(5-4E/E)$ moles per mole of chlorine dioxide formed, and

(m) removing said deposited anhydrous neutral sodium sulphate from said reaction zone.

4,086,330

LABELLED PHOSPHOLIPID SPHERES FOR ORGAN VISUALIZATION

Abram Petkau, Pinawa, and Stanley Daniel Pleskach, Beausejour, both of Canada, assignors to The Atomic Energy of Canada Limited, Ottawa, Canada

Division of Ser. No. 539,134, Jan. 7, 1975, Pat. No. 3,992,513. This application May 12, 1976, Ser. No. 685,587
Int. Cl.[2] A61K *29/00, 43/00*
U.S. Cl. 424—1 8 Claims

1. A kit for the preparation of medical scanning agents labelled with short-lived radioisotope ^{99m}Tc for use in conjunction with a source of radioisotope yielding pertechnetate anion which comprises as components:

1. an aqueous colloidal dispersion of phospholipid material having a predetermined particle size so as to localize at preselected organs after injection;
2. a concentrated reducing agent for obtaining ^{99m}Tc in multivalent cationic form from $^{99m}TcO_4^-$; and
3. a buffering agent; and means to keep said components separate from one another until use.

4,086,331

GELATIN-BASED COMPOSITIONS AND A METHOD FOR THE GENERATION OF STABILIZED FOAMS THEREFROM

Peter Neumann, Haifa, Israel, assignor to Technion Research and Development Foundation Ltd., Haifa, Israel

Filed Jun. 17, 1976, Ser. No. 697,258
Claims priority, application Israel, Jan. 7, 1975, 74615
Int. Cl.[2] A61L *9/04;* B01J *13/00*
U.S. Cl. 424—45 15 Claims

1. A composition suitable for use in medicine and agriculture for the treating of burns or the coating of plants by the application thereto of a stable gelatin-based foam, comprising

an aqueous solution of 0.1 to 3% by weight of gelatin; 0.01 to 0.2% by weight of an anionic surface active agent; an amount sufficient to stabilize said gelatin-based foam up to 1% by weight of a water soluble ferrous salt; and an amount sufficient of glutaraldehyde to maintain said composition in liquid state even after prolonged storage at low temperatures; said composition being non-toxic.

8. A composition in accordance with claim 1, wherein said glutaraldehyde is present in an amount of 0.01 to 0.4% by weight.

9. A medicinal composition in accordance with claim 8, wherein said composition further contains an amount sufficient, to enhance evaporation of the water from said aqueous solution, of a water-miscible organic solvent selected from the group consisting of methanol, ethanol, n-propanol and isopropanol; and a bacterialcidal-effective amount of a bacteriacide.

10. An aerosol package for a generating gelatin-based foam for medical application comprising an aerosol container formulated with a suitable propellant and containing the composition of claim 9.

4,086,332

DOXYCYCLINE COMPOSITIONS

William W. Armstrong, Mill Neck, N.Y., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 646,295, Jan. 2, 1976, Pat. No. 4,018,889. This application Dec. 7, 1976, Ser. No. 748,600
The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.
Int. Cl.[2] A61K *31/79, 31/65*
U.S. Cl. 424—80 8 Claims

1. A doxycycline composition comprising an aqueous solution of from about 1 to 25% by weight of an antibiotic compound selected from the group consisting of doxycycline and the pharmaceutically acceptable acid addition salts thereof, from about 1.8 to 2.2 molar proportions based on said antibiotic of a pharmaceutically acceptable magnesium compound soluble in said solution, and from about 10 to 70% by weight of 2-pyrrolidone, said composition having a pH value in the range of from about 3 to 7.5.

4,086,333

METHOD OF ELIMINATING SEXUAL EXCITANTS FROM THE DISCHARGE OF A FEMALE ANIMAL IN ESTRUS

Claudia Bredwell, 15 W. 72nd St., New York, N.Y. 10023

Continuation-in-part of Ser. No. 646,442, Jan. 5, 1976, abandoned. This application Jan. 27, 1976, Ser. No. 652,931
Int. Cl.[2] A61K *9/02, 31/20, 31/22, 33/40*
U.S. Cl. 424—130 14 Claims

1. A method of eliminating sexual excitants emitted by a female animal in estrus, comprising the step of topically treating with an effective amount of a compound incorporating stabilized chlorine dioxide that region of said animal where said excitant is present, said compound being selected from the group consisting of those formed by the reaction of chlorine dioxide with sodium carbonate peroxide and chlorine dioxide with sodium perborate.

4,086,334

COMPOSITION AND METHOD FOR THE TREATMENT OF DISORDERS OF CALCIUM METABOLISM

Manfred Schmidt-Dunker, Düsseldorf, and Matthias Potokar, Heiligenhaus, both of Germany, assignors to Henkel Kommanditgesellschaft Auf Aktien, Düsseldorf-Holthausen, Germany

Filed Nov. 29, 1976, Ser. No. 745,838
Claims priority, application Germany, Dec. 1, 1975, 2553963; Dec. 1, 1975, 2553962; Dec. 1, 1975, 2553964
Int. Cl.[2] A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 28 Claims

1. A composition for inhibiting pathological solubilization of bone calcium in mammals, comprising (A) a water-soluble calcitonin and (B) a water-soluble pharmaceutically acceptable organic adjuvant compound effective against Paget's disease, said compound containing at least two acidic groups separated by not more than two carbon atoms, and being selected from the group consisting of cyclohexanehexacarboxylic acid, azacycloheptane-2,2-diphosphonic acid,2,7-dioxo-2-hydroxy-3-amino-3-phosphono-1,2-azaphosphacycloheptane, 3-amino-1-hydroxypropane-1,1-diphosphonic acid, phosphono-1,2-ethanedicarboxylic acid, 2-phosphono-2,3-propanedicarboxylic acid, 2-phosphonobutane-1,2,4-tricarboxylic acid, and the water-soluble salts thereof, the ratio of (A) to (B) being between 1:10 and 10:1, if the amount of (A) is expressed in MRC units and the amount of (B) in mg.

4,086,335

PHARMACEUTICAL TABLETS CONTAINING CHITIN AS A DISINTEGRANT

Frank N. Bruscato, 2209 Fannie St., and August G. Danti, 2211 Ann St., both of Monroe, La. 71201

Filed Oct. 29, 1975, Ser. No. 626,988
Int. Cl.[2] A61K *31/70, 47/00*
U.S. Cl. 424—180 2 Claims

1. A method of causing a pharmaceutical tablet to disintegrate upon being administered to an animal, which comprises administering to the animal a tablet fabricated from a mixture containing a pharmaceutically-active ingredient and a disintegratingly-effective amount of chitin.

4,086,336
PHOSPHONOTHIOUREIDE ANTHELMINTICS

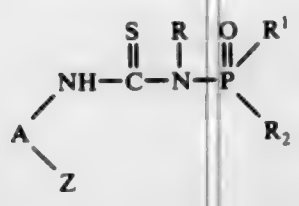
Ronald P. Owen, Warminster; George A. Miller, Glenside, both of Pa., and Charles M. Schneider, Cullowhee, N.C., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 354,630, Apr. 25, 1973, abandoned, which is a continuation-in-part of Ser. No. 259,423, May 26, 1972, abandoned. This application Aug. 24, 1976, Ser. No. 717,411

Int. Cl.[2] C07F *9/22*; A01N *9/36*

U.S. Cl. 424—204 **38 Claims**

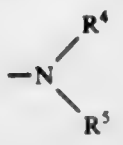
1. A compound of the formula:



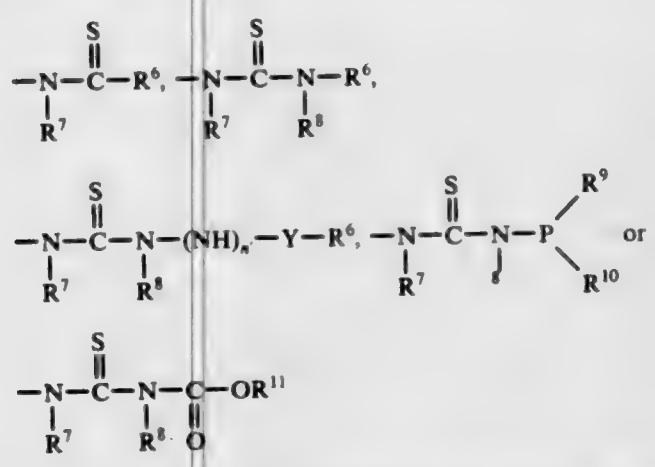
wherein A is a divalent arylene group optionally substituted with halo, cyano, thiocyano, carboxy, nitro, dialkylamino, vicinal alkylene, or a radical of the formula:

$R^3(X)_n$

wherein R^3 is an aliphatic group of from 1 to 18 carbon atoms, optionally substituted aryl, X is oxo, thio, sulfinyl, sulfonyl, or carbonyl and n is an integer of 0 to 1 with the proviso that when X is oxo and *n* is 1, R^3 is methyl; R is hydrogen, (C_1–C_{10}) alkyl, (C_1–C_{10}) haloalkyl, (C_3–C_6) cycloalkyl, (C_2–C_{11}) alkoxyalkyl, (C_1–C_{10}) cyanoalkyl, (C_3–C_6) alkenyl, (C_3–C_6) haloalkenyl, (C_3–C_6) alkynyl, (C_3–C_6) haloalkynyl, optionally substituted aralkyl of from 7 to 11 carbon atoms or optionally substituted (C_6–C_{10}) aryl; R^1 is R′, OR′, N(R′)$_2$ or SR′ R^2 is OR′, N(R′)$_2$ or SR′ wherein R′ is an aliphatic group of from 1 to 18 carbon atoms or optionally substituted aryl; Z is a group of the formula:



wherein R^4 and R^5 are hydrogen atoms or aliphatic groups of from 1 to 18 carbon atoms, Z is also —N=CHR^6;



wherein R^6 is an aliphatic group of from 1 to 18 carbon atoms, optionally substituted aryl containing from 6 to 10 nuclear carbon atoms, R^7 and R^8 are independently hydrogen, (C_1–C_{10}) alkyl, (C_1–C_{10}) haloalkyl, (C_3–C_6) cycloalkyl, (C_2–C_{11}) alkoxyalkyl, (C_1–C_{10}) cyanoalkyl, (C_3–C_6) alkenyl, (C_3–C_6) haloalkenyl, (C_3–C_6) alkynyl, (C_3–C_6) haloalkynyl, optionally substituted aralkyl of from 7 to 11 carbon atoms, optionally substituted (C_6–C_{10}) aryl; R^9 is R″, OR″, N(R″)$_2$ or SR″ and R^{10} is R″, N(R″)$_2$ or SR″ wherein R″ is an aliphatic group of from 1 to 18 carbon atoms or optionally substituted aryl containing from 6 to 10 nuclear carbon atoms provided that R^9 and R^{10} are not simultaneosly R″; R^{11} is an aliphatic group of from 1 to 18 carbon atoms or optionally substituted aromatic group containing from 6 to 10 carbpn atoms in the aromatic ring; *n*′ is an integer of 0 to 1; Y is carbonyl, sulfinyl or sulfonyl and the pharmaceutically acceptable metal salts, acid salts and metal salt complexes thereof.

13. An anthelmintic composition for oral administration comprising an effective amount of the compound of claim 1 and a pharmaceutically acceptable carrier.

27. The method for combatting a helminth infection in a host animal which comprises administering an effective amount of the compound of claim 1.

4,086,337
O,S-DIALKYL O(S)-SULFONYLOXY(THIO)PHENYL PHOSPHOROTHIOLATES AND PHOSPHORODI(TRI)THIOATES

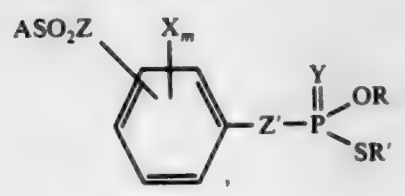
William S. Hurt, Collegeville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 16, 1976, Ser. No. 696,470

Int. Cl.[2] C07C *143/48*; A01N *9/36*

U.S. Cl. 424—215 **15 Claims**

1. A compound of the formula:



wherein

R is a (C_1–C_4) alkyl group;

R′ is a (C_3–C_6) alkyl group;

Y is an oxygen or sulfur atom;

Z is an oxygen or sulfur atom;

Z′ is an oxygen or sulfur atom, provided that Z and Z′ are not simultaneously oxygen atoms;

X is a halogen atom, a (C_1–C_5) alkyl group, or a (C_1–C_5) alkoxy group;

m is an integer from 0 to 3; and

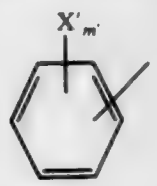
A is

a. a (C_1–C_6) alkyl group optionally substituted with up to three halogen atoms;

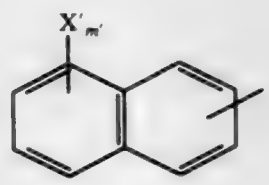
b. a (C_5–C_6) cycloalkyl group;

c. a (C_7–C_{11}) aralkyl group, the aryl portion of which is optionally substituted with up to three substituents selected from the group consisting of halogen, nitro, (C_1–C_5) alkyl and (C_1–C_5) alkoxy; or

d. an aryl group of the formula:



or



wherein

X′ is a nitro group, a halogen atom, a (C_1–C_5) alkyl group, or a (C_1–C_5) alkoxy group; and

m′ is an integer from 0 to 3.

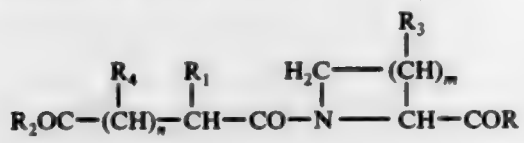
4,086,338

N-CARBOXYALKANOYL DERIVATIVES OF AZETIDINE-2-CARBOXYLIC ACID

David W. Cushman, West Windsor, and Miguel Angel Ondetti, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 657,793, Feb. 13, 1976, Pat. No. 4,052,511.
This application Feb. 11, 1977, Ser. No. 767,708
Int. Cl.[2] C07D *205/04;* A61K *31/395, 31/40;* C07D *207/16*
U.S. Cl. 424—244 19 Claims

1. A compound of the formula



wherein

R is hydroxy, amino or lower alkoxy;

R_1 and R_4 each is hydrogen, lower alkyl or phenyl-lower alkyl;

R_2 is hydroxy, amino, hydroxyamino or lower alkoxy;

R_3 is hydrogen, hydroxy or lower alkyl;

m is 1;

n is 0, 1 or 2

and salts thereof.

19. A method for reducing blood pressure by inhibiting the conversion of angiotensin I to angiotensin II which comprises administering to a mammal suffering from hypertension a composition comprising about 10 to 500 mg. of a compound of claim 1 and a pharmaceutically acceptable vehicle therefor.

4,086,339

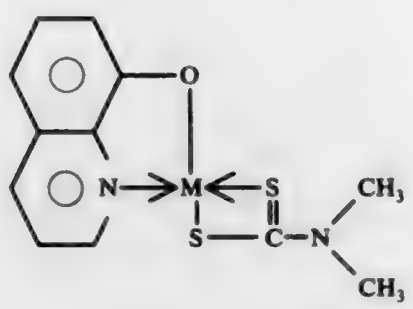
METAL COMPLEXES OF ANTIMICROBIC EFFECT

György Matolcsy; Barna Bordás, both of Budapest; György Bokor, Miskolc; Zsolt Dombay, Miskolc; Zoltán Pintér, Miskolc; Erzsébet Gregar, née Tóth, Miskolc; Julianna Dudás, née Sz. Kiss, Miskolc; Emiliá Nagy, née Gera, Sajobabony, and István Fodor, Miskolc, all of Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary

Filed Dec. 9, 1975, Ser. No. 639,100
Claims priority, application Hungary, Dec. 11, 1974, EA 140
Int. Cl.[2] A01N *9/22;* C07D *215/00*
U.S. Cl. 424—245 8 Claims

1. A compound selected from the group consisting of metal complexes of the formula I

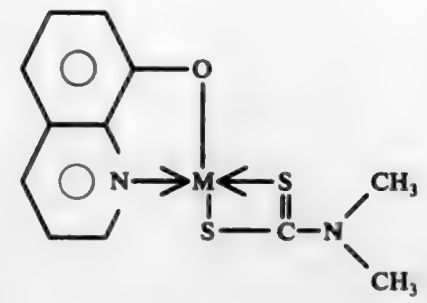
(I)



wherein M is a divalent metal atom, and mixtures thereof.

3. A composition for inhibiting growth of a microorganism selected from the group consisting of fungi and bacteria comprising (a) an amount sufficient to inhibit the growth of said organism of a compound selected from the group consisting of metal complexes of the formula I

(I)



wherein M is a divalent metal atom, and mixtures thereof and (b) a carrier therefor.

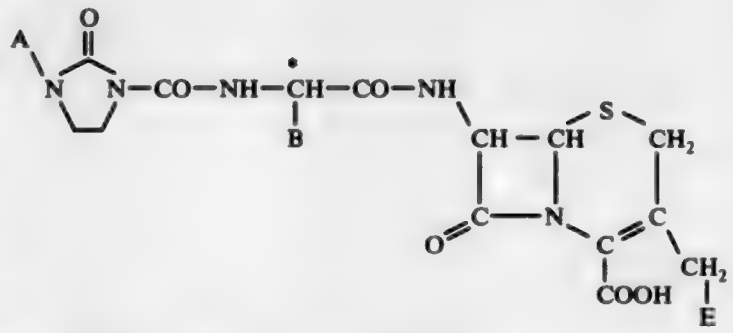
4,086,340

CEPHALOSPORINS AND THEIR PRODUCTION

Wilfried Schröck; Hans-Bodo Konig; Michael Preiss; Karl Georg Metzger, all of Wuppertal, and Michael Walkowiak, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 590,794, Jun. 27, 1975, which is a continuation-in-part of Ser. No. 548,347, Feb. 10, 1975, abandoned. This application May 12, 1976, Ser. No. 685,706
Claims priority, application Germany, Feb. 18, 1974, 2407715
Int. Cl.[2] A61K *31/545;* C07D *501/34*
U.S. Cl. 424—246 20 Claims

1. A compound selected from the group consisting of a cephalosporin derivative of the formula:



the nontoxic salts thereof and the hydrates thereof wherein the carbon atom designated • constitutes a center of chirality;

E is hydrogen; hydroxy; or acetoxy;

B is phenyl; methylphenyl; chlorophenyl; hydroxyphenyl; or cyclohexa-1,4-dien-1-yl; and

A is phenyl or naphthyl unsubstituted or substituted by one to five substituents selected from the group consisting of halo, cyano, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, and alkylsulfamyl of 1 to 4 carbon atoms.

14. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially-effective amount of a compound of claim 1 in combination with a pharmaceutically acceptable nontoxic, inert diluent or carrier.

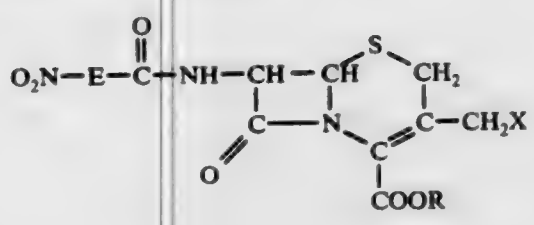
15. A method of treating bacterial infections in humans and animals which comprises administering to such human or animal an antibacterially-effective amount of a compound of claim 1.

4,086,341
CEPHALOSPORIN DERIVATIVES

Wolfgang Krohn, Leverkusen; Karl Georg Metzger; Michael Preiss, both of Wuppertal, and Michael Walkowiak, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 602,969, Aug. 8, 1975, Pat. No. 4,012,518. This application Jul. 22, 1976, Ser. No. 707,853
Claims priority, application Germany, Aug. 22, 1974, 2440268
Int. Cl.[2] C07D *501/20;* A61K *31/545*
U.S. Cl. 424—246 13 Claims

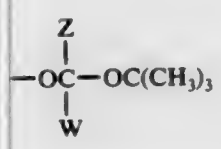
1. A compound selected from the group consisting of a nitro-β-lactam of the formula:



wherein

O_2N—E is nitroalkyl of 1 to 6 carbon atoms;

R is hydrogen or



in which each of Z and W is independently hydrogen or lower alkyl; and X is hydrogen, hydroxy, acetoxy, carbamoyl,

and the pharmaceutically acceptable salts of said lactams in which R is hydrogen.

9. A pharmaceutical composition comprising an antibacterially effective amount of a compound according to claim 1 in combination with a pharmaceutical carrier.

4,086,342
6-(1-PIPERAZINYL)MORPHANTHRIDINE AS A SLEEP INDUCING OR PROLONGING AGENT

Horst Kleinlogel, Hinterkappelen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 653,971, Jan. 30, 1976, abandoned. This application Feb. 18, 1977, Ser. No. 770,218
Claims priority, application Switzerland, Feb. 5, 1975, 1395/75
Int. Cl.[2] A61K *31/495*
U.S. Cl. 424—250 10 Claims

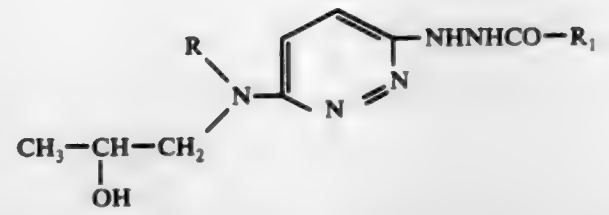
1. A method for inducing, or prolonging sleep in animals, which comprises administering a sleep inducing, or prolonging effective amount of the compound 6-(1-piperazinyl)morphantridine to an animal in need of such treatment.

4,086,343
ACYLATED HYDRAZINOPYRIDAZINE ANTIHYPERTENSIVES

Luciano Dorigotti, and Francesco Parravicini, both of Milan, Italy, assignors to I.S.F. SpA, Milan, Italy

Filed Jun. 7, 1977, Ser. No. 804,272
Claims priority, application Italy, Jun. 11, 1976, 24177/76
Int. Cl.[2] C07D *237/20;* A61K *31/50*
U.S. Cl. 424—250 10 Claims

1. A hydrazinopyridazine compound of the formula:



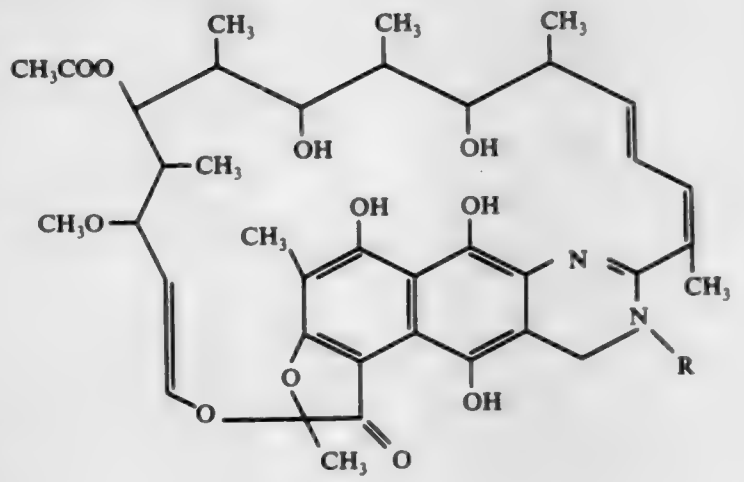
wherein R is an alkyl radical containing from 1 to 4 carbon atoms or an alkyl radical having from 1 to 4 carbon atoms substituted iwith a hydroxy group and R_1 is a hydrogen atom, an alkyl radical containing from 1 to 4 carbon atoms, a phenyl or 3-pyridyl group and their non-toxic pharmaceutically acceptable salts with inorganic or organic acids.

4,086,344
N,15-DIDEHYDRO-15-DEOXO-3,15-EPI(METHANO(ALKYLIMINO))RIFAMYCINS AND ANTIMICROBIAL COMPOSITIONS AND METHODS EMPLOYING THEM

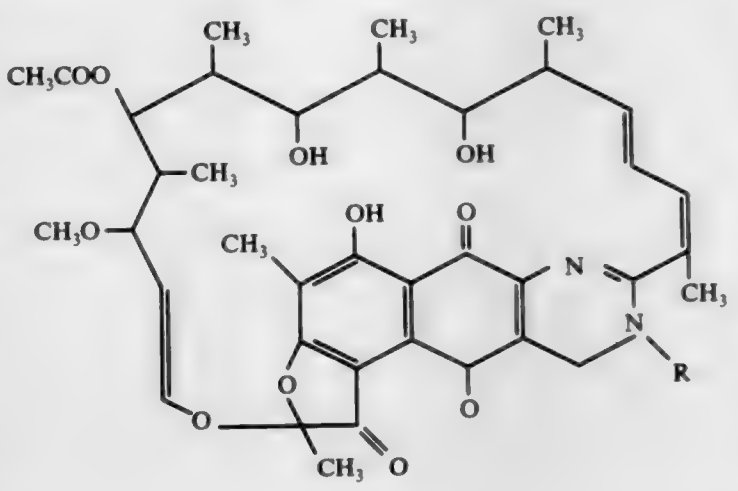
James R. McCarthy, and Jimmie L. Moore, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 13, 1976, Ser. No. 722,455
Int. Cl.[2] A61K *31/505*
U.S. Cl. 424—251 6 Claims

1. A compound which, in the hydroquinone form, is represented by the formula



and, in the quinone form, is represented by the formula



wherein R represents H, CH_3 or n-propyl.

5. An antimicrobial method wherein an antimicrobially-effective amount of a compound as claimed in claim 1 is applied to a microorganism or to the habitat of said microorganism.

6. An antimicrobial composition comprising an antimicro-

bial amount of a compound as claimed in claim 1 in combination with a pharmaceutical carrier.

4,086,345

PRODUCT AND METHOD FOR COMBATTING SWINE DYSENTERY

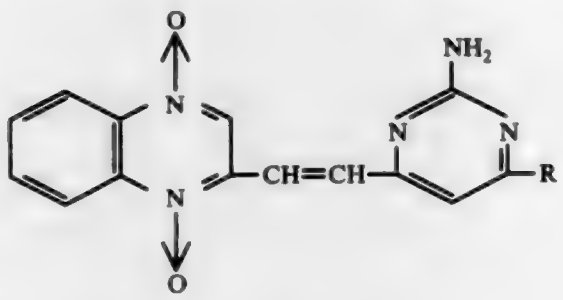
Aldo Garzia, Lodi (Milan), Italy, and Robert D. Williams, Terre Haute, Ind., assignors to Istituto Chemioterapico Italiano, Italy

Continuation-in-part of Ser. No. 672,089, Mar. 31, 1976, abandoned. This application Feb. 28, 1977, Ser. No. 772,863

Int. Cl.[2] A61K *31/505*

U.S. Cl. 424—251 **23 Claims**

1. A method of combatting swine dysentery comprising the prophylactic or therapeutic administration to the animal of an effective amount of a compound represented by the formula:



where R is hydrogen or lower alkyl.

4,086,346

PREPARATION OF MELT-SPRAYED SPHERICAL PHENACETIN GRANULES

Ernst Böcker; Wolfgang Kracht; Roland Rupp, all of Leverkusen; Erhard Schellmann, Cologne; Viktor Trescher, and Martin Ullrich, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 564,168, Apr. 1, 1975, abandoned, and Ser. No. 564,169, Apr. 1, 1975, abandoned. This application Sep. 7, 1976, Ser. No. 720,650

Claims priority, application Germany, Apr. 6, 1974, 2416903; Apr. 6, 1974, 2416904

Int. Cl.[2] A61K *9/16, 31/52, 31/165*

U.S. Cl. 424—253 **15 Claims**

1. A process for preparing melt-sprayed spherical phenacetin granules which comprises passing crystalline phenacetin through a melting device having heated surfaces maintained at temperatures of from 150 to 300° C at such a rate that the total residence time of the molten phenacetin in the melting device does not exceed 20 minutes and the average residence time does not exceed 10 minutes, and atomizing the melted phenacetin thus produced.

6. Substantially spherical melt-sprayed granules consisting essentially of pure phenacetin produced in accordance with the process of claim 1.

4,086,347

9-[3-(4-PHENOXYMETHYLPIPERIDINO)-PROPYL]-ADE-NINES

Walter-Gunar Friebe, Darmstadt; Max Thiel, Mannheim, both of Germany; Kurt Stach, deceased, late of Mannheim-Waldhof, Germany; by Werner Plattner, administrator, Linz, Austria; Otto-Henning Wilhelms, Heddesheim, Germany; Erika von Müllendorff, Karlsruhe, Germany, and Gisbert Sponer, Hemsbach, Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

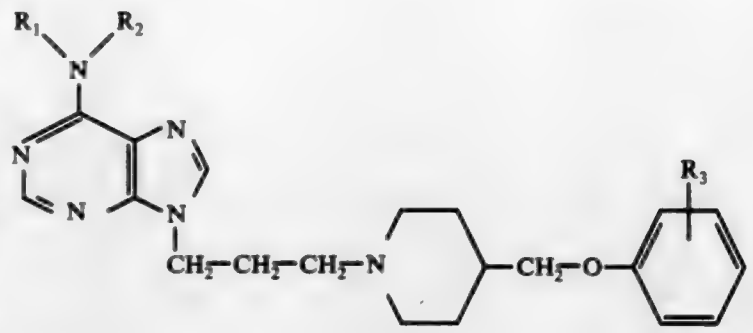
Filed Nov. 2, 1976, Ser. No. 737,507

Claims priority, application Germany, Nov. 7, 1975, 2550000

Int. Cl.[2] A61K *31/52;* **C07D** *473/34*

U.S. Cl. 424—253 **13 Claims**

1. A 9-[3-(4-phenoxymethylpiperidino)-propyl]-adenine of the formula



wherein

R_1 is hydrogen or alkyl of up to 6 carbon atoms,

R_2 is hydrogen, alkyl of up to 6 carbon atoms optionally mono-substituted by hydroxyl, or cycloalkyl of up to 6 carbon atoms, or

R_1 and R_2 together with the nitrogen atom to which they are attached constitute tetramethyleneimino, pentamethyleneimino or hexamethyleneimino, and

R_3 is hydrogen, halogen alkyl of up to 6 carbon atoms or alkoxy of up to 4 carbon atoms, in the form of the free base or a salt thereof with a pharmacologically compatible acid.

8. A composition comprising an anti-allergic, anti-inflammatory, anti-oedematous and anti-hypertensive effective amount of an adenine according to claim 1, in admixture with a pharmacologically compatible diluent.

4,086,348

NAPHTHYRIDINE DERIVATIVES

Claude Cotrel, Paris; Cornel Crisan, Sceaux; Claude Jeanmart, Brunoy, and Andre Leger, Paris, all of France, assignors to Rhone-Poulenc Industries, Paris, France

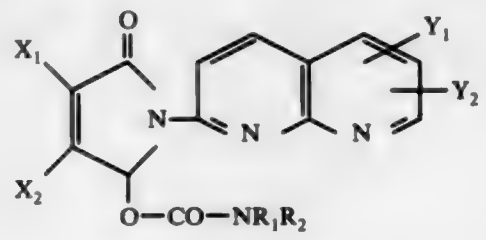
Filed Apr. 5, 1976, Ser. No. 673,868

Claims priority, application France, Apr. 7, 1975, 75 10756

Int. Cl.[2] A61K *31/435;* **C07D** *471/04*

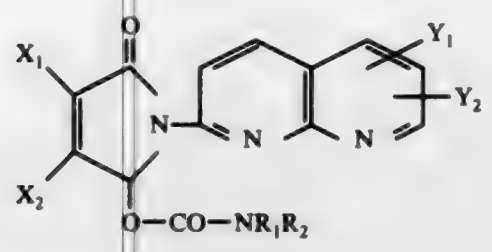
U.S. Cl. 424—256 **29 Claims**

1. A heterocyclic compound of the formula:



wherein the pyrroline ring and the symbols X_1 and X_2 together form an isoindoline nucleus or an isoindoline nucleus substituted by one or two atoms or radicals selected from halogen, alkyl of 1 through 4 carbon atoms, alkoxy of 1 through 4 carbon atoms, nitro and trifluoromethyl; the symbols Y_1 and Y_2 each represent hydrogen, halogen, alkyl of 1 through 4 carbon atoms, or alkoxy of 1 through 4 carbon atoms, and the symbols R_1 and R_2 each represent hydrogen; alkyl of 1 through 12 carbon atoms; alkyl of 1 through 12 carbon atoms substituted by a member of the class consisting of hydroxy, alkoxy of 1 through 4 carbon atoms, amino, monoalkylamino of which the alkyl radical has 1 through 4 carbon atoms, dialkylamino of which each alkyl radical has 1 through 4 carbon atoms or the alkyl radicals together with the nitrogen atom to which they are attached form a saturated five- or six-membered heterocyclic ring, and alkoxycarbonyl of which the alkoxy radical has 1 through 4 carbon atoms; alkenyl of 3 or 4 carbon atoms; alkynyl of 3 or 4 carbon atoms; or cycloalkyl of 3 through 6 carbon atoms, and when appropriate non-toxic pharmaceutically acceptable acid addition salts thereof.

27. A heterocyclic compound of the formula:



wherein the pyrroline ring and the symbols X_1 and X_2 together form an isoindoline nucleus or an isoindoline nucleus substituted by one or two atoms or radicals selected from halogen, alkyl of 1 through 4 carbon atoms, alkoxy of 1 through 4 carbon atoms, nitro and trifluoromethyl; the symbols Y_1 and Y_2 each represent hydrogen, halogen, alkyl of 1 through 4 carbon atoms, or alkoxy of 1 through 4 carbon atoms, and the symbols R_1 and R_2 each represent hydrogen; alkyl of 1 through 12 carbon atoms; alkyl of 1 through 12 carbon atoms substituted by a member of the class consisting of hydroxy, alkoxy of 1 through 4 carbon atoms, amino, monoalkylamino of which the alkyl radical has 1 through 4 carbon atoms, dialkylamino of which each alkyl radical has 1 through 4 carbon atoms or the alkyl radicals together with the nitrogen atom to which they are attached form a saturated five- or six-membered heterocyclic ring, and alkoxycarbonyl of which the alkoxy radical has 1 through 4 carbon atoms; alkenyl of 3 or 4 carbon atoms; alkynyl of 3 or 4 carbon atoms; or cycloalkyl of 3 through 6 carbon atoms, or R_1 and R_2 together with the nitrogen atom to which they are attached form a piperidino or pyrrolidino ring, and when appropriate non-toxic pharmaceutically acceptable acid addition salts thereof."

4,086,349

QUINOLOPYRAN-4-ONE-2-CARBOXYLIC ACID DERIVATIVES AND SALTS THEREOF AS NOVEL COMPOUNDS AND AS MEDICINES FOR TREATMENT OF ALLERGIC ASTHMA

Yasuhiro Morinaka, and Kazuo Takahashi, both of Ibaraki, Japan, assignors to Mitsubishi Yuka Pharmaceutical Co., Ltd., Japan

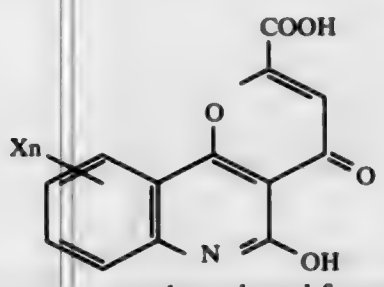
Filed Jul. 29, 1976, Ser. No. 709,779

Claims priority, application Japan, Jul. 30, 1975, 50-92939; Mar. 5, 1976, 51-23792

Int. Cl.[2] A61K *31/47*; C07D *491/04*

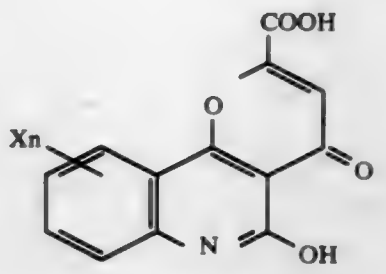
U.S. Cl. 424—258 **40 Claims**

1. A quinolopyran-4-one-2-carboxylic acid of the formula



wherein X designates a member selected from the group consisting of non-tertiary alkyl groups having 1 to 5 carbon atoms, alkoxy groups having 1 to 5 carbon atoms, a halogen atom, aryl-substituted alkoxy groups having 7 to 10 total carbon atoms wherein aryl is phenyl, tolyl or xylyl, alkoxycarbonyl groups having 2 to 6 total carbon atoms, phenyl, tolyl and xylyl and *n* is 1 or 2 thereof.

23. A medicinal composition for treatment of allergic asthma comprising an amount effective for treatment of allergic asthma of a member selected from the group consisting of quinolopyran-4-one-2-carboxylic acids of the formula



wherein X designates a member selected from the group consisting of non-tertiary alkyl groups having 1 to 5 carbon atoms, alkoxy groups having 1 to 5 carbon atoms, a halogen atom, aryl-substituted alkoxy groups having 7 to 10 total carbon atoms, alkoxycarbonyl groups having 2 to 6 total carbon atoms, and aryl groups having 6 to 10 carbon atoms, and *n* is 1 or 2, X being the same group or different groups in the case where *n* is 2, and salts of said derivatives; and a pharmaceutically acceptable carrier.

4,086,350

PHARMACEUTICAL COMPOSITIONS AND METHOD OF PRODUCING ANTI-PSYCHOTIC ACTIVITY WITHOUT EXTRAPYRAMIDAL SYMPTOMS

Charles Leon Zirkle, Berwyn, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 521,216, Nov. 6, 1974, abandoned. This application Feb. 5, 1976, Ser. No. 655,587

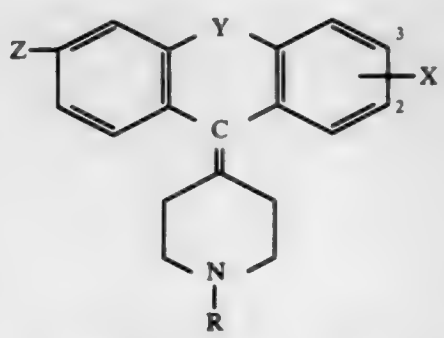
Claims priority, application South Africa, Oct. 16, 1975, 75/6550

Int. Cl.[2] A61K *31/445*; C07D *405/04, 409/04*

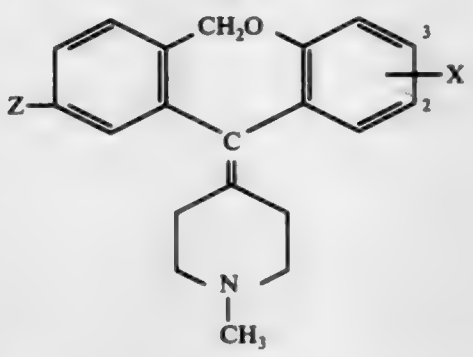
U.S. Cl. 424—267 **17 Claims**

1. A compound represented by one of the formulas:

FORMULA I



FORMULA II



wherein, for formula I:

when Y represents oxygen, X is 2-fluoro, Z is 6-chloro and R is methyl;

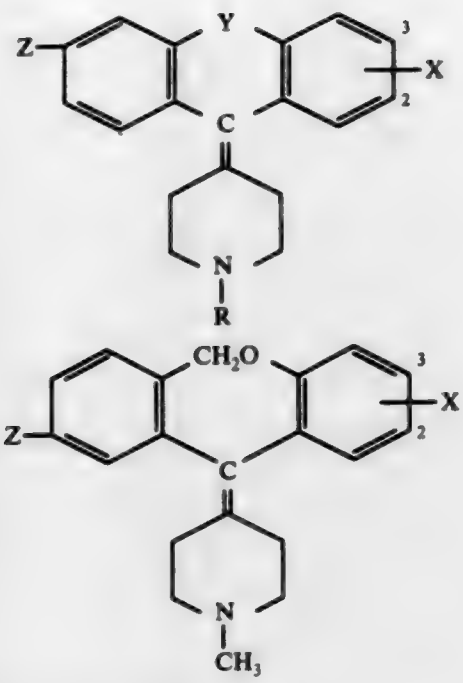
when Y represents sulfur, X is 2-cyano, Z is hydrogen and R is methyl; and

for formula II:

when X is hydrogen, Z is 9-chloro, or a nontoxic pharmaceutically acceptable acid addition salt thereof.

10. A method of producing antipsychotic activity without extrapyramidal symptoms which comprises administering internally to an animal in need of such activity a therapeutically effective amount of a compound represented by one of the formulas:

FORMULA I



FORMULA II

wherein, for formula I:

when Y represents oxygen, X is 2-chloro, Z is hydrogen and R is methyl;

when Y represents sulfur, X is 2-cyano, Z is hydrogen and R is methyl;

when Y represents oxygen, X is 2-fluoro, Z is 6-chloro and R is methyl;

for formula II:

when X is hydrogen, Z is 9-chloro, or a nontoxic pharmaceutically acceptable acid addition salt thereof.

4,086,352

CERTAIN 6-ARYLOXY-2-OXO-1-AZA-4-THIA-SPIRO[4,5]DECANES

Roland Yves Mauvernay, Riom; Norbert Busch, La Tourette; Jacques Moleyre, Menetrol; Jacques Simond, Chamalieres, and André Monteil, Gerzat, all of France, assignors to Centre Europeen de Recherches Mauvernay, Riom, France

Division of Ser. No. 616,357, Sep. 24, 1975, Pat. No. 4,000,292. This application Aug. 25, 1970, Ser. No. 717,716

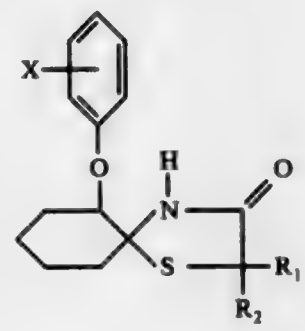
Claims priority, application France, Sep. 27, 1974, 74 32777; Aug. 4, 1975, 75 24296

Int. Cl.² A61K *31/425;* C07D *277/14*

U.S. Cl. 424—270 **6 Claims**

1. A compound of the formula

(I)



in which

R_1 is hydrogen or methyl,

R_2 is hydrogen, methyl or phenyl, and

X is hydrogen, a halogen atom or methyl.

5. A central nervous system stimulating composition, which comprises, as active ingredient, an amount of a compound as defined in claim 1 sufficient to stimulate the central nervous system, in combination with a pharmaceutically acceptable vehicle.

6. A method for stimulating the central nervous system which comprises administering to the patient an amount of a compound as described in claim 1 sufficient to stimulate the central nervous system.

4,086,351

1,2,4-TRIAZOLE-CONTAINING COMPOUNDS AND THEIR USE AS PESTICIDES

Sugavanam Balasubramanyan, Wokingham, and Margaret Claire Shephard, Maidenhead, both of England, assignors to Imperial Chemical Industries Limited, London, England

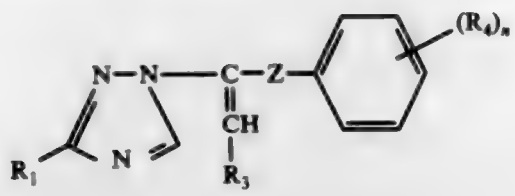
Filed Oct. 5, 1976, Ser. No. 729,864

Claims priority, application United Kingdom, Oct. 9, 1975, 41449/75; Aug. 20, 1976, 34836/76

Int. Cl.² A01N *9/00;* A61K *31/41;* C09B *23/00*

U.S. Cl. 424—269 **11 Claims**

1. A compound of formula:



wherein R_1 is hydrogen, or nitro; R_3 is alkyl or R_3 is furyl, thienyl or phenyl optionally substituted with halogen, acyloxy, cyano, hydroxy, nitro, alkoxy or unsubstituted or halo-substituted alkyl; R_4 is hydrogen, halogen, nitro, phenyl, alkoxy or unsubstituted or halo-substituted alkyl; *n* is 1, 2 or 3; and Z is C = O, or a fungicidal salt of such a compound.

7. A method of combating fungal diseases in a plant, the method consisting essentially of the step of applying to the plant, to seed of the plant or to the locus of the plant or seed, a fungicidally effective amount of a compound or salt as claimed in claim 1.

4,086,353

CERTAIN AZOLINYLAMINO (AZOLIDINYLIMINO) INDAZOLES

Peter Neumann, Bern, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Nov. 26, 1976, Ser. No. 745,303

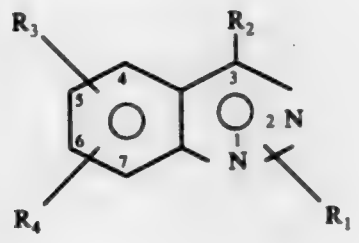
Claims priority, application Switzerland, Dec. 3, 1975, 15716/75; Jul. 20, 1976, 9279/76; Dec. 22, 1975, 16645/75; Jul. 21, 1976, 9312/76

Int. Cl.² C07D *417/12;* A61K *31/425, 31/42;* C07D *413/12*

U.S. Cl. 424—272 **105 Claims**

1. A compound of formula I,

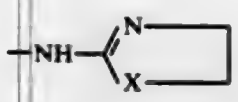
I



wherein

R_1 is hydrogen, or alkyl of 1 to 4 carbon atoms, in position 1 or 2 of the indazole nucleus,

R_2 is hydrogen, halogen, trifluoromethyl, hydroxy or alkyl, alkylthio or alkoxy of 1 to 4 carbon atoms, or a group of formula II,



II

wherein X is oxygen or sulphur, R_3 is hydrogen, halogen, trifluoromethyl, hydroxy or alkyl, alkylthio or alkoxy of 1 to 4 carbon atoms, and

R_4 is hydrogen or a group of formula II, as defined above,

with the proviso that one of R_2 and R_4 is a group of formula II and the other of R_2 and R_4 is other than a group of formula II,

in free base form or in pharmaceutically acceptable acid addition salt form.

2. A pharmaceutical composition useful as an antihypertensive or a myotonolytic comprising an antihypertensive or a myotonolytic effective amount of a compound of claim 1 in association with a pharmaceutical carrier or diluent.

3. A method of treating spastic conditions, or relaxing muscles, or hypertonia which comprises administering a myotonolytic or antihypertensive effective amount of a compound of claim 1 to an mammal in need of such treatment.

4,086,354

NOVEL ANTI-HYPERTENSIVE COMPOSITIONS

Alexander Scriabine, Ambler, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 657,825, Feb. 13, 1976, Pat. No. 4,055,645. This application Feb. 8, 1977, Ser. No. 766,635

Int. Cl.[2] A61K *31/415, 31/195*

U.S. Cl. 424—273 R **6 Claims**

1. A pharmaceutical composition for treating hypertension comprising

(a) a hypotensive agent selected from trimethaphan camsylate, clonidine and pharmaceutically acceptable salts thereof and

(b) racemic mixture or L-isomer of a hydrazino phenyl propionic acid decarboxylase inhibitor, in an effective amount.

4,086,355

NOVEL DISPIRODECANES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS

Michel Vincent, Bagneux; Georges Remond, Versailles, and Jean-Claude Poignant, Bures sur Yvette, all of France, assignors to Science Union et Cie., Societe Francaise de Recherche Medicale, Suresnes, France

Filed Jan. 19, 1976, Ser. No. 649,943

Claims priority, application United Kingdom, Jan. 24, 1975, 3251/75

Int. Cl.[2] C07D *487/10;* A61K *31/40*

U.S. Cl. 424—274 **10 Claims**

1. 3-aza-dispirodecane-2,4-diones of the formula I:



I

in which

n is zero or an integer of from 1 to 3,

R is hydrogen, a lower alkyl having from 1 to 6 carbon atoms, a monosubstituted lower alkyl radical wherein the substituent is a member selected from the group consisting of hydroxy, lower alkoxy and dilower alkyl amino; a cyclohexyl; an aryl lower alkyl wherein the aryl radical is a member selected from the group consisting of phenyl, methoxyphenyl, trifluoromethylphenyl and chlorophenyl, and lower alkenyl having 2 to 6 carbon atoms.

4,086,356

FUNGICIDAL-N-(3-HALO-2,6-DINITRO-4-TRIFLUOROMETHYLPHENYL)-PYRROLIDONES

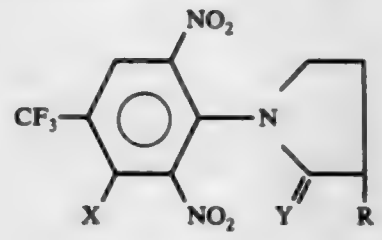
Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Feb. 7, 1977, Ser. No. 765,904

Int. Cl.[2] A61K *31/40;* C07D *207/24, 207/26*

U.S. Cl. 424—274 **11 Claims**

1. N-(3-halo-2,6-dinitro-4-trifluoromethylphenyl)pyrrolidones having the formula:



where

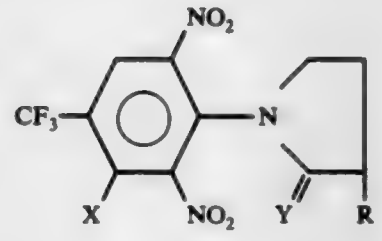
X is a halogen,

Y is oxygen or sulfur, and

R is H or lower alkyl, of up to 4 carbon atoms.

11. A fungicidal composition of matter comprising:

(a) a fungicidally effective amount of a N-(3-halo-2,6-dinitro-4-trifluoromethylphenyl)-pyrrolidone having the formula:



where

X is a halogen,

Y is oxygen or sulfur, and

R is H or lower alkyl, of up to 4 carbon atoms and

(b) an inert carrier.

4,086,357

AMIDE DERIVATIVES

Michael Stewart Large, and Leslie Harold Smith, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 26, 1976, Ser. No. 745,163

Claims priority, application United Kingdom, Dec. 5, 1975, 50038/75

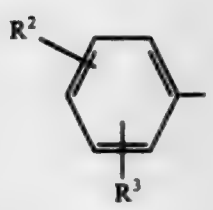
Int. Cl.[2] A61K *31/34, 31/38;* C07D *307/54, 333/24*

U.S. Cl. 424—275 **9 Claims**

1. An ethanolamine derivative selected from the group consisting of a compound of the formula:

$$R—CHOH.CH_2NH—A—CO—NR^{20}—Y—R^1$$

wherein A is alkylene of up to 12 carbon atoms, wherein R is aryl of the formula:



wherein R^{20} is hydrogen or alkyl of up to 6 carbon atoms, Y is a direct link, alkylene of up to 6 carbon atoms or alkyleneoxy of from 2 to 6 carbon atoms, and R^1 is furyl or thienyl; wherein R^2 and R^3, which may be the same or different, each is hydrogen, halogen, amino, nitro or cyano, alkyl, hydroxyalkyl, cy-

cloalkyl, alkenyl, alkynyl, alkoxy, alkylthio, cycloalkoxy, alkenyloxy, alkynyloxy or alkanoyl each of up to 6 carbon atoms, or aryl, aryloxy or dialkylamino each of up to 12 carbon atoms; or wherein R^2 and R^3 together form trimethylene, tetramethylene, 1-oxotetramethylene, propenylene, but-2-enylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl, 5-oxo-5,6,7,8-tetrahydronaphthyl, indenyl, 5,8-dihydronaphthyl or naphthyl; and a non-toxic, pharmaceutically-acceptable acid-addition salt thereof.

8. A method for the treatment or prophylaxis of heart diseases and hypertension in a warm-blooded animal which comprises administering to said animal an effective amount of at least one compound claimed in claim 1.

4,086,358

PURIFICATION OF UTERO-EVACUANT EXTRACTS FROM PLANT SUBSTANCES

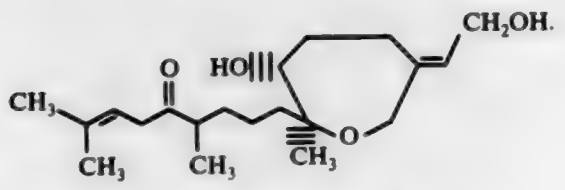
Michael P. Wachter, Bloomsbury, and Ramesh Maganlal Kanojia, Somerville, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation-in-part of Ser. No. 547,415, Feb. 6, 1975, abandoned. This application Apr. 2, 1976, Ser. No. 672,918

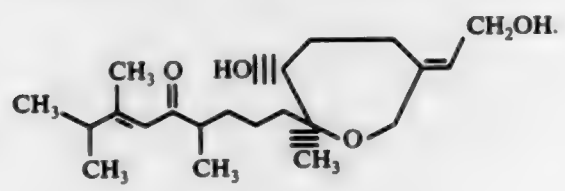
Int. Cl.² A61K *31/335;* C07D *325/00*

U.S. Cl. 424—278 **8 Claims**

1. A compound of the formula in purified form



2. A compound of the formula in purified form



3. A method of inducing uterine contractions which comprises administering to a female animal an effective amount of the compound of claim 1.

8. A method of treating disorders of the central nervous system in mammals which comprises administering an effective amount of a compound of claim 1.

4,086,359

DERIVATIVES OF PLEUROMUTILIN AND COMPOSITIONS

Friedrich Dürsch, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 618,087, Sep. 30, 1975, abandoned. This application Jul. 30, 1976, Ser. No. 709,983

Int. Cl.² A01N *9/24;* C07C *143/12*

U.S. Cl. 424—299 **9 Claims**

1. 14-Deoxy-14-[(2-diethylaminoethyl)mercaptoacetoxy]-mutilin neutral fumarate.

7. A method for treating bacterial infections in animals which comprises administering orally or parenterally to an animal with a bacterial infection about 1 to 50 mg./kg. of 14-deoxy-14-[(2-diethylaminoethyl)mercaptoacetoxy]mutilin neutral fumarate in a physiologically acceptable vehicle therefor.

4,086,360

PHENYL THIOL CARBANILIDE DERIVATIVES, METHOD FOR THE PREPARATION THEREOF AND USE THEREOF AS FUNGICIDE FOR AGRICULTURE

Taizo Nakagawa, Ageo; Kaoru Ohmori, Okegawa; Yutaka Watanabe, Saitama; Iwao Tejima, Ageo; Shuichi Ishida, Omiya; Toshiyuki Suzuki, and Osamu Yamada, both of Ageo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

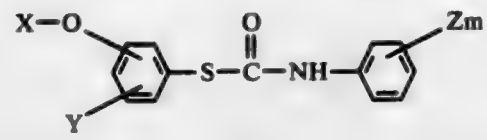
Filed Jun. 1, 1976, Ser. No. 691,602

Claims priority, application Japan, Jun. 11, 1975, 50-70304

Int. Cl.² A01N *9/12;* C07C *155/02*

U.S. Cl. 424—300 **6 Claims**

1. A compound represented by the formula



where X represents a lower alkylsulfonyl, a lower alkoxycarbonyl, a N-lower alkylcarbamoyl, a lower alkylcarbonyl or an 0,0-di lower alkyl thiophosphonyl, Y represents hydrogen, chlorine, bromine or a lower alkyl, Z represents hydrogen fluorine, chlorine, bromine, a lower alkyl, a lower alkoxy or trifluoromethyl and *m* represents 1 or 2.

4,086,361

AMINOETHYL OXIMES HAVING ANTI-DEPRESSIVE ACTIVITY

Hendricus Bernardus Antonius Welle, Utrecht, and Volkert Claassen, Weesp, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

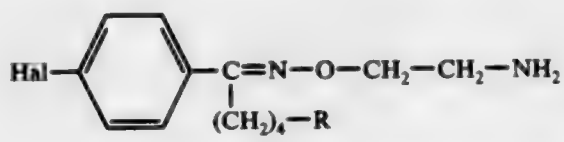
Filed Mar. 19, 1976, Ser. No. 668,479

Claims priority, application Netherlands, Mar. 20, 1975, 7503312

Int. Cl.² A61K *31/15, 31/275;* C07C *121/78, 131/00*

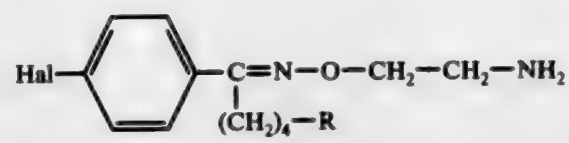
U.S. Cl. 424—304 **13 Claims**

1. Compounds of the formula



and salts thereof formed with pharmaceutically acceptable acids, in which formula R is an ethoxy-, methoxymethyl-, ethoxymethyl-, methoxyethoxy, cyano- or cyanomethyl group when Hal is a chlorine atom, and R is a cyano-, methoxy- or methoxy-ethoxy group when Hal is a bromine atom.

12. A pharmaceutical composition comprising an antidepressively effective amount of a compound of the formula



wherein R and Hal are defined as in claim 1 or a salt thereof formed with a pharmaceutically acceptable acid and a pharmaceutically acceptable carrier therefor.

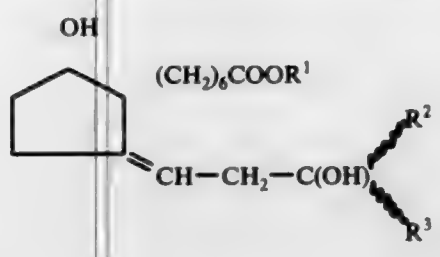
4,086,362

PROSTENOIC ACID DERIVATIVES

Manfred Baumgarth; Hans-Eckart Radunz; Dieter Orth; Reinhard Lissner; Hans-Joachim Enenkel, all of Darmstadt, Germany, and Filippus Johannes Zeelen, Heesch, Netherlands, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Nov. 24, 1975, Ser. No. 634,349
Claims priority, application Germany, Nov. 27, 1974, 2455976
Int. Cl.[2] C07C *177/00;* A61K *31/19, 31/215*
U.S. Cl. 424—305 52 Claims

1. A prostenoic acid derivative of the formula



wherein,

R^1 is H or alkyl of 1 to 4 carbon atoms;

R^2 is alkyl of 5 to 9 carbon atoms;

R^3 is H or alkyl of 1 to 5 carbon atoms; and physiologically acceptable salts thereof.

4,086,363

TREATMENT OF ASTHMA

Peter P. Cervoni, New Rochelle, and Peter S. Wolf, Port Chester, both of N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed Mar. 16, 1977, Ser. No. 778,042
Int. Cl.[2] A61K *31/135*
U.S. Cl. 424—330 2 Claims

1. A method of treating asthmatic symptoms in a human in need of said treatment which comprises administering to said human an effective amount of p-hydroxy-N-(1-methyl-3-phenylpropyl)-nor-ephedrine or a pharmaceutically acceptable, non-toxic acid addition salt thereof.

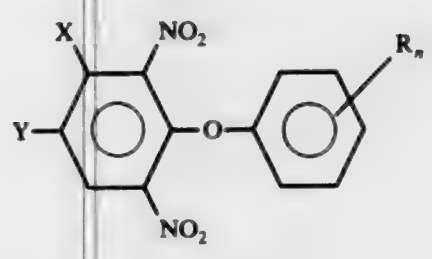
4,086,364

FUNGICIDAL 2,6-DINITRODIPHENYLETHERS

Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Nov. 19, 1976, Ser. No. 743,279
Int. Cl.[2] A61K *31/04;* C07C *43/28*
U.S. Cl. 424—340 19 Claims

1. Fungicidal 2,6-dinitrodiphenylethers having the formula:



where

X is halogen,

Y is methyl or trifluoromethyl,

R is halogen or methyl, and

n is 0–3.

4,086,365

METHOD OF FEEDING LAYING HENS

David C. Snetsinger, and Ray A. Zimmerman, both of St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Oct. 26, 1976, Ser. No. 735,711
Int. Cl.[2] A23K *1/00*
U.S. Cl. 426—2 20 Claims

1. A method of feeding laying hens wherein nutrient reserves of said hens are reduced and replenished by the efficient utilization of dietary nutrients to promote the formulation of egg protein, which comprises:

feeding a first ration with an effective amount of crude protein and nutritionally balancing amounts of vitamins and minerals for an effective amount of time to reduce the hens' nutrient reserves without reducing their performance, and

feeding a second ration with an effective amount of crude protein and nutritionally balancing amounts of vitamins and minerals for an effective amount of time to replenish the hens' nutrient reserves to produce optimum egg production.

4,086,366

PRODUCTION OF VODKA

Sergei Fedorovich Antonov, ulitsa A. Tolstogo 18, kv. 34, Moscow; Pavel Firsovich Krasheninin, Krasnoarmeisky bulvar 14, kv. 5, Uglich Yaroslavskoi oblasti; Vyacheslav Mikhailovich Bogdanov, ulitsa Rustaveli 19, kv. 130, Moscow; Andrei Georgievich Khramtsov, ulitsa Lenina 399, kv. 14, Stavropol, and Gennady Efimovich Eremin, ulitsa Instrumentalnaya 10, kv. 32, Uglich Yaroslavskoi oblasti, all of U.S.S.R.

Filed May 19, 1976, Ser. No. 688,031
Int. Cl.[2] C12C *11/08*
U.S. Cl. 426—14 7 Claims

1. A process for the production of vodka from whey which comprises fermenting for a period of 48–72 hours pasteurized whey cooled to a temperature of 28° to 30° C with 15–20% by weight of at least one of the yeasts *Candida psuedotropicalis var. lactosa* 85, *Torulopsis sphaerica* "SK" and *Torulopsis sphaerica* "IIA", thereby forming a mash containing ethanol and products of proteolysis, recovering said ethanol and products of proteolysis from the resulting mash, rectifying the ethanol and purifying it from said products of proteolysis, diluting the purified ethanol to an ethanol content of 30 to 45% by weight by mixing the purified ethanol with deproteinized whey containing a maximum of 0.05% protein by weight.

4,086,367

FRUIT FLAVORED COMPOSITION

Salvatore F. Ziccarelli, Downers Grove, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Continuation-in-part of Ser. No. 338,523, Mar. 6, 1973, Pat. No. 3,843,808. This application Sep. 26, 1974, Ser. No. 509,633
Int. Cl.[2] A23L *1/00, 1/06;* A23D *5/00;* A23C *21/00*
U.S. Cl. 426—98 12 Claims

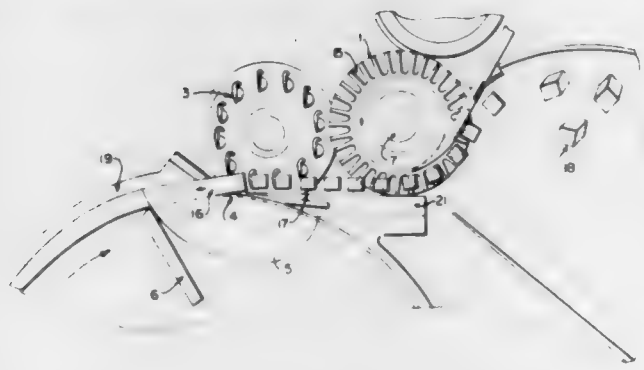
1. A fruit-flavored, shelf-stable and self-preserving composition comprising 10 to 70% fruit flavors and 30 to 50% finely divided fat particles having an average particle size not greater than 0.5 millimeter, said fat having a melting point in the range of from 90° to 125° F and said fat particles being substantially coated with a fat enrobing agent wherein at least a part of the fat enrobing agent is dried yeast and whey and wherein the enrobing agent which prevents coalescing of the fat particles by preventing fat-to-fat contact of the fat particles constitutes from 1.0% to 20% of the composition and said composition has a moisture content of no more than 5% by weight.

4,086,368

METHOD FOR PREPARING AND TREATING VEGETABLE SEGMENTS

Roy E. Bosley; Paul T. Mann, both of Caldwell; Gary D. Decoteau, Nampa, all of Id., Kert F. Ivie, Franklin, Mass., and Elden D. Winslow, Caldwell, Id., assignors to J. R. Simplot, Boise, Id.

Continuation-in-part of Ser. No. 569,960, Apr. 21, 1975, abandoned. This application Sep. 16, 1976, Ser. No. 723,845
Int. Cl.[2] B26D *9/00;* A23B *7/03*
U.S. Cl. 426—464 8 Claims



1. In the production of at least partially dehydrated vegetable segments of improved physical character for reconstitution, the improvement which comprises:

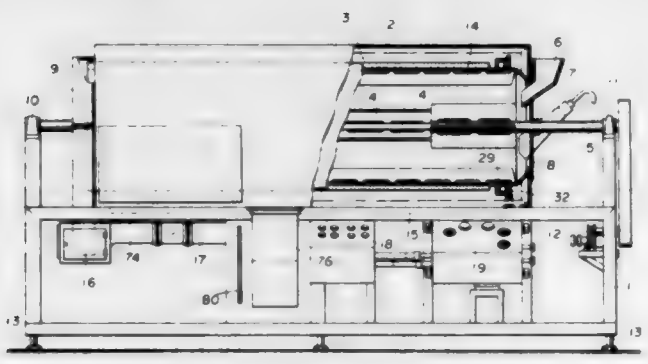
1. providing a machine having means for cutting elongated vegetable strips into segments and separate means for perforating said segments;
2. simultaneously by using said cutting means cutting elongated vegetable strips into segments and at the same time, by using said perforating means, making a plurality of holes in each of said segments, said holes extending from ½ to all the way through said segments, the volume of the resulting holes being in the range of 0.5 to 50% of the volume of each segment and;
3. thereafter blanching the vegetable segments and subsequently dehydrating the blanched segments to less than about 75% moisture content on a dry weight basis.

4,086,369

PROCESS FOR FREEZING COOKED RICE

Fumio Mutoh, Tokyo; Hiroshi Koizumi, Sagamiwara; Jun Yamasaki, Tokyo, and Toshifumi Ando, Ninomiya, all of Japan, assignors to Japan Oxygen Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 608,605, Aug. 28, 1975, abandoned. This application Nov. 16, 1976, Ser. No. 742,301
Claims priority, application Japan, May 21, 1975, 50-60562
Int. Cl.[2] A23L *3/36;* F25D *25/02*
U.S. Cl. 426—519 4 Claims



1. A process for freezing cooked rice, by the use of a rotary drum having an inlet at one end and an outlet at the other end, comprising the steps of:

(a) jetting sufficient liquid refrigerant for freezing of boiled rice downwardly through said inlet of said rotary drum into said rotary drum in the vicinity of the inlet;
(b) feeding said boiled rice in a continuous manner through said inlet downwardly into said rotary drum, for allowing said boiled rice to be frozen by said refrigerant;
(c) carrying the boiled rice upwardly by mechanical means which rotates the drum while rotating the rotary drum at a circumferential speed within the range 0.4 – 0.9 m/s, and such that the rice falls onto rotary blades axially rotating in the rotary drum at a circumferential speed of about 3 – 10 m/s, and also onto the drum surface;
(d) while the boiled rice is in progress of freezing, imparting impact by said rotary blades to that portion of the boiled rice which falls onto the blades to separate grains of the boiled rice from one another into a scattered state;
(e) carrying the boiled rice grains from said inlet towards said outlet of the rotary drum, by the rotation of the rotary drum and as a result of inclination of the axis of rotation of the rotary drum downwardly with respect to the horizontal in the direction towards the drum outlet, discharging the separated boiled rice grains in a scattered state through said outlet, and simultaneously discharging the refrigerant from the drum through said outlet.

4,086,370

TOPPING FOR FROZEN DESSERTS AND METHOD OF MANUFACTURE

Dale F. Olds, Dublin; Arnold M. Allan, San Francisco, and Charles H. Warren, South San Francisco, all of Calif., assignors to Patent Technology, Inc., San Francisco, Calif.

Filed Feb. 3, 1977, Ser. No. 767,291
Int. Cl.[2] A23G *9/24*
U.S. Cl. 426—613 11 Claims

1. An edible coating composition which is a homogeneous blend that is fluid at room temperature and which hardens as a brittle edible shell when applied to a frozen dessert consisting of from 44 to 53% refined edible oil that is substantially entirely liquid at 70° F., from 28 to 38% sugar, from 0 to 9% milk solids, from 4 to 10% corn syrup solids, from 1.8 to 2.4% hard crystallized emulsifier selected from the group consisting of monoglycerides, diglycerides and mixtures thereof, from 0.5 to 1.2% moisture, and the remainder flavoring additives.

4,086,371

METHOD FOR MANUFACTURING CRYSTALLINE CONFECTIONERY FOOD PRODUCTS

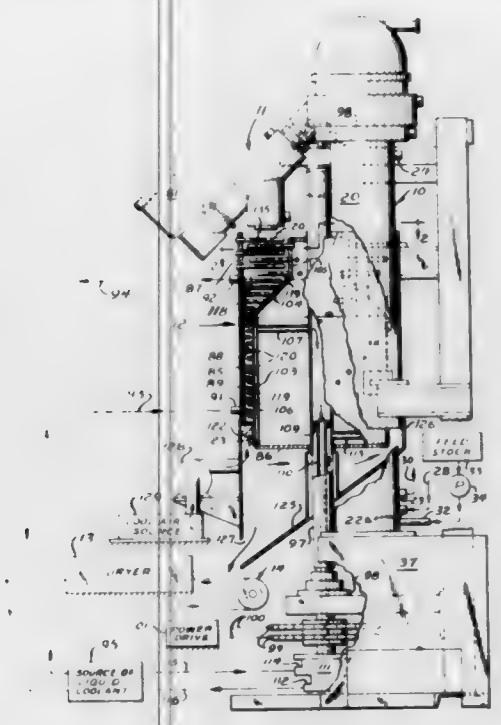
Bernard W. Minifie, Bristol, England, and Ted S. Czyzewski, Bloomingdale, Ill., assignors to Dover Corporation, New York, N.Y.

Filed Feb. 24, 1976, Ser. No. 660,846
Int. Cl.[2] A23G *3/00, 1/00*
U.S. Cl. 426—658 8 Claims

1. A process of preparing a crystalline product from a liquid feed stock material comprising sugar, milk solids and a significant amount of moisture and utilizing a vertical evaporator having heated walls terminating at a top opening, said process comprising the steps of:

condensing said feed stock material to a readily crystallizable material by continuously introducing said feed stock material into the bottom of said evaporator and heating said material in said evaporator such that upon reaching said top opening it has a temperature of between about 121.1° C. and about 126.67° C. and a moisture content of between about 4% and 6%;
mechanically pushing said readily crystallizable material

away from said top opening to a given location spaced from said evaporator; and



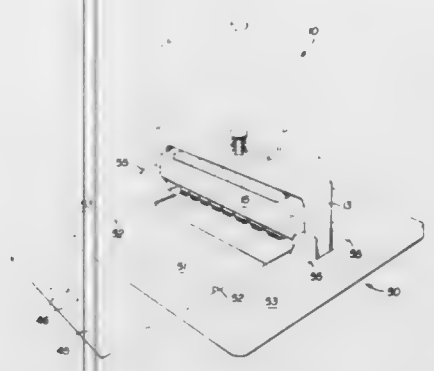
at said given location kneading said material removed from the evaporator while it crystallizes.

4,086,372

METHOD FOR APPLYING AN ORGANIC LIQUID SAMPLE

Tipton L. Golias, and David G. Mayes, both of Beaumont, Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Division of Ser. No. 620,736, Oct. 8, 1975, abandoned. This application Apr. 12, 1976, Ser. No. 676,182
Int. Cl.² A76B *19/00*
U.S. Cl. 427—2 **4 Claims**



1. A method of transferring uniform samples of blood or the like onto an absorbent sample support comprising the steps of:

filling a reservoir with a relatively massive sample;

superimposing over said reservoir a sample carrier wettable by the sample and to which the sample is adherent by surface tension;

said sample carrier including an elongated bar resiliently biased away from said reservoir and having a slot therethrough and at least one applicator element freely suspended from said bar and through said slot;

linearly moving said bar so that said applicator element moves solely under the influence of gravity to immerse the applicator element into the sample to adhere the sample to the applicator element;

withdrawing the applicator element from the reservoir by said resilient bias moving said bar with the sample adhered to the applicator element by surface tension; and

contacting said applicator element with an absorbent sample support to break the surface tension between the sample and the applicator element to deposit the sample onto the sample support.

4,086,373

PROTECTIVE POLYMERIC COATING FOR GLASS SUBSTRATE

John W. Tobias, Perrysburg, and Lynn J. Taylor, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 2, 1975, Ser. No. 564,254
Int. Cl.² B05D *3/06*
U.S. Cl. 427—44 **10 Claims**

1. A process for forming a protective film on the surface of a glass substrate which comprises;

applying a polymeric crosslinkable coating composition to the glass substrate surface, the coating composition comprising 90 to 99.99% by weight of at least one rubbery thermoplastic organic polymer having an ultimate elongation of at least 100% and being solid at ambient temperature and 10 to 0.01% by weight of at least one organic photosensitizer,

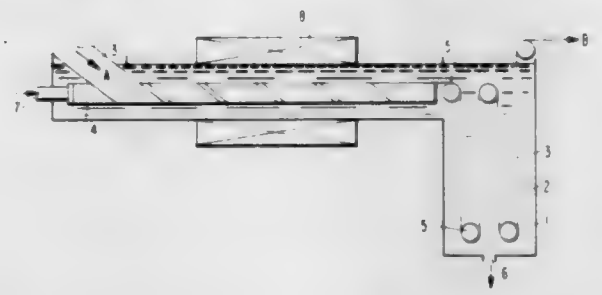
and applying radiant energy to the polymeric composition in situ on the substrate surface so as to crosslink the composition and form a protective polymeric film having a thickness sufficient to resist shattering of the glass substrate.

4,086,374

PRODUCTION OF MAGNETIC RECORDING MATERIAL

Masaaki Suzuki; Ryuji Shirahata; Masashi Aonuma, and Tatsuji Kitamoto, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 26, 1976, Ser. No. 680,418
Int. Cl.² H01F *10/00*
U.S. Cl. 427—48 **14 Claims**



1. In a plating process for producing a magnetic recording material which comprises a ferromagnetic thin metal layer on a web and having uniaxial anisotropy applied in any desired direction by passing said web through a liquid plating solution to deposit said layer on said web while applying a magnetic field to said web during at least a portion of said plating process, the improvement comprising the steps of:

conveying said web through said magnetic field in a helical path along the length of a conveying pipe immersed in said liquid plating solution, said pipe containing a plurality of orifices,

introducing said liquid plating solution into one end of said pipe, and

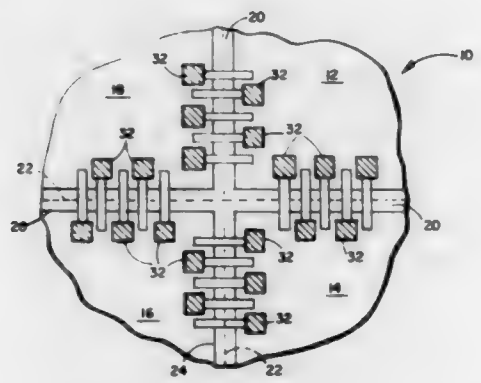
ejecting said liquid plating solution from inside said pipe through said orifices and against the adjacent surface of said web in said magnetic field with sufficient force to float said web out of contact with said pipe.

4,086,375

BATCH PROCESS PROVIDING BEAM LEADS FOR MICROELECTRONIC DEVICES HAVING METALLIZED CONTACT PADS

Theodore J. LaChapelle, Jr., Orange; John R. Davis, Costa Mesa, and James J. Licari, Whittier, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 7, 1975, Ser. No. 629,736
Int. Cl.[2] B05D *5/12*; H01L *21/00*
U.S. Cl. 427—90 12 Claims



1. A method of forming beam leads for a plurality of electronic devices fabricated on a wafer, the electronic devices having contact pads of a metal, said method comprising:

depositing a relatively thin layer of a removable release material on said wafer wherein said removable release material is susceptible to etching by etchants which do not react significantly with said metal;

selectively masking and etching said relatively thin layer of a removable release material to remove said release material from said contact pads;

depositing a relatively thick layer of said metal on said relatively thin layer of a removable release material and on said contact pads;

selectively masking and etching said relatively thick layer of said metal to form interdigitated beam leads for said electronic devices; and

removing the remainder of said removable release material from said wafer.

4,086,376

POLYPHENYLENE SULPHIDE APPLICATIONS

Glyndwr John Davies, London, England, assignor to The Glacier Metal Company Limited, Wembley, England

Filed Aug. 25, 1975, Ser. No. 607,501
Claims priority, application United Kingdom, Sep. 18, 1974, 40700/74
Int. Cl.[2] B05D *1/24, 3/02*
U.S. Cl. 427—185 8 Claims

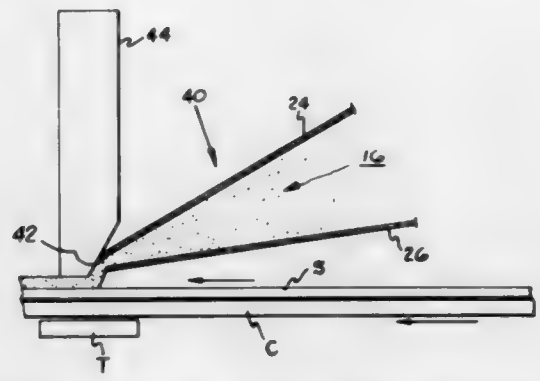
1. A method of applying a bearing lining at least 0.005 inch thick of polyarylene sulphide to a bearing backing, which comprises applying to said backing a powder composition consisting of at least 80% by weight of uncured polyarylene sulphide together with at least 10% by weight of precured polyarylene sulphide, said precured polyarylene sulphide having been cured by being heated in air for 2 hours at at least 400° C and is in the form of particles with sizes in the range 53–211 microns, and then heating and curing the uncured polyarylene sulphide of the coating by heating to a temperature of at least 380° C.

4,086,377

PROCESS FOR APPLYING FOAM MATERIAL

Henry J. Barchi, Yardley, Pa., assignor to Congoleum Corporation, Kearny, N.J.

Division of Ser. No. 639,035, Dec. 9, 1975. This application Nov. 22, 1976, Ser. No. 744,011
Int. Cl.[2] B05D *3/02, 3/12*
U.S. Cl. 427—358 10 Claims



1. A process for spreading foam material relatively free of undesirable air bubbles, blisters, or blotches, in the form of large or irregular spots or blemishes, and substantially uniformly in thickness across the full width of continuously advancing sheet material comprising: supplying foam material having a predetermined density of from about 17 pounds per cubic foot to about 22 pounds per cubic foot to a chamber which does not increase in cross-sectional area and does, at least in part, gradually and constantly decrease uniformly at a steady rate to form a delivery nozzle; filling said chamber substantially completely with said foam material at said predetermined density; pumping said foam material forwardly within said chamber under a relatively low amount of pressure which does not exceed about five pounds per square inch gauge and wherein the pressure drop from the point of entry into said chamber to the point of exit therefrom does not exceed about five pounds per square inch gauge; maintaining the predetermined density of said foam material in said chamber substantially constant from point of entry thereto to point of exit therefrom; delivering said foam material from said chamber and spreading the same substantially uniformly in thickness and relatively free of undesirable air bubbles, blisters, and blotches, in the form of irregular spots or blemishes, across the full width of continuously advancing sheet material; and regulating and controlling the amount and the thickness of said foam material being spread on said continuously advancing sheet material, said regulating and controlling taking place immediately following said delivery of said foam material.

4,086,378

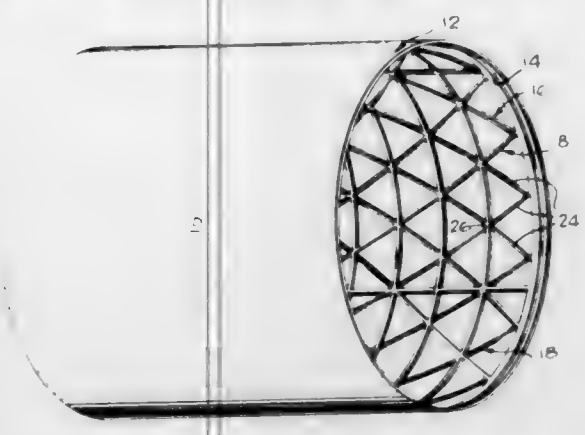
STIFFENED COMPOSITE STRUCTURAL MEMBER AND METHOD OF FABRICATION

Clifford Y. Kam; Vernon L. Freeman, both of Huntington Beach, and Allen P. Penton, Costa Mesa, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Feb. 20, 1975, Ser. No. 551,269
Int. Cl.[2] B32B *3/00*
U.S. Cl. 428—36 32 Claims

1. A process for producing a stiffened structural member which comprises molding a stiffening member formed of a composite of reinforcing fibers and polymeric binder to a partially cured stage, said stiffening member comprised of interconnected webs forming a grid pattern, producing a composite structural member formed of partially cured polymer-impregnated fiber, heat forming said partially cured composite stiffening member to a contour matching the contour of said structural member, said heat forming taking place without any substantial further curing of said composite stiffening member, assembling said composite stiffening member in contact with said composite structural member, and finally curing simultaneously said composite stiffening member and said composite

structural member of said assembly to integrally bond said stiffening member to said structural member, and including introducing an elastomer into the spaces of said grid pattern



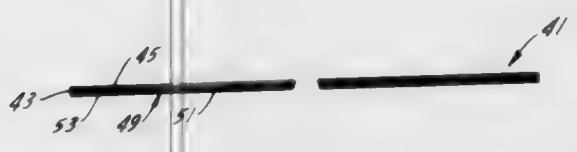
following molding thereof and prior to heat forming, said elastomer maintaining said partially cured composite stiffening member stabilized during said heat forming and final curing steps, and removing said elastomer after final curing.

4,086,379

MULTI-LAYERED LAMINATES

Lyman J. Brown, La Grange, Ill., assignor to Bates Printing Specialties, Inc., Cicero, Ill.

Filed Aug. 5, 1976, Ser. No. 711,727
Int. Cl.[2] B44C *1/16*
U.S. Cl. 428—40 **2 Claims**



1. A multi-layered item including:
a first sheet of paper,
a hot melt adhesive film releasably adhered to said first sheet of paper on a side thereof,
indicia located on an outwardly facing side of said hot melt adhesive,
a second sheet of paper releasably secured to the opposite side of said first sheet of paper by a pressure sensitive adhesive,
said pressure sensitive adhesive being applied so as to remain with said second sheet of paper when said sheets of paper are separated in order that said second sheet of paper may be adhered to other objects, and
indicia applied to the outwardly facing side of said second sheet of paper with said indicia applied to said second sheet of paper being substantially identical to said indicia located on the outwardly facing side of said hot melt adhesive.

4,086,380

GRANULAR DISC JOINTS FOR LENGTHWISE GRAPHITIZATION

Leslie Harrisville Juel, Lewiston, N.Y.; Louis Arpad Joo', Johnson City, and Kenneth Wayne Tucker, Elizabethton, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Nov. 4, 1976, Ser. No. 738,671
Int. Cl.[2] B32B *3/02*
U.S. Cl. 428—65 **6 Claims**

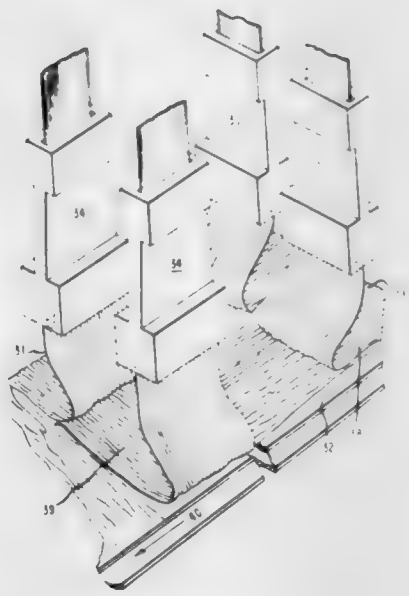
1. A planar disc shaped conductive spacer of about 0.25 to 1 inch thickness adapted to be inserted between the ends of coaxially placed carbon columns during resistance heating of the columns up to and including graphitizing temperatures, said spacer having an external shape equal to the shape of said columns joined thereby, said spacer being a cured mixture of about 50 to 85 volume percent of a carbon particle phase selected from the group consisting of metallurgical coke, graphitized petroleum coke, natural graphite, graphite scrap and mixtures thereof, dispersed in an organic binder phase selected from the group consisting of latex resin, plasticized thermoplastic resin and rubber cement, the final product being flexible and compressible and having sufficient structural integrity to be handled.

4,086,381

NONWOVEN POLYPROPYLENE FABRIC AND PROCESS

David Alan Cheshire; Samir Costandi Debbas, both of Hendersonville; Richard Thomas Eger, Madison, all of Tenn.; Ken Stephen Schermacher, Greenville, S.C., and Paul Thomas Twohig, Charlottesville, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 30, 1977, Ser. No. 782,961
Int. Cl.[2] B32B *5/12*
U.S. Cl. 428—113 **9 Claims**



1. A bonded, nonwoven sheet of continuous, isotactic polypropylene filaments having a breaking strength of at least 7 grams, said sheet consisting essentially of filaments and binder; said sheet having (a) a non-selvage portion in which filaments are interconnected at a multiplicity of points throughout said portion by bonds, the average bond strength for bonds having a strength greater than 0.1 gram being at least 0.9 gram and less than the fiber breaking strength, the bond strength distribution of said bonds having a variance of at least 4, the number of said bonds being such that the product of the number of bonds per cubic centimeter and the average bond strength is greater than 5×10^4 g/cm^3, and this product divided by the fiber breaking strength being less than 9×10^3 /cm^3 and (b) a selvage having an average bond strength which is from about 15–400% greater than the average bond strength of the non-selvage portion of said sheet.

4,086,382

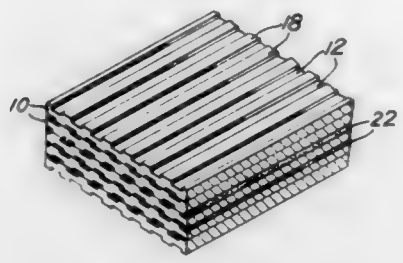
METHOD OF PRODUCING FIRE RESISTANT WOOD PRODUCTS AND PRODUCT THEREOF

Clifford C. Hites, Walkerton, Ind., assignor to American Door Company of Michigan, Inc., Walkerton, Ind.

Filed Jan. 5, 1977, Ser. No. 756,757
Int. Cl.[2] B32B *3/30, 3/00*
U.S. Cl. 428—168 **11 Claims**

1. In a process of making a fire resistant wood product, the steps of
assembling in stacked relation a plurality of thin strips of hard wood each having a plurality of indentations of a depth of 25% to 50% of the thickness of the strip in at least one face thereof in substantially uniformly and close spaced relation after coating of the surfaces and filling the

indentations of each strip which confronts another strip in the stack with a cement in which an inert non-flammable filler material has been substantially uniformly distributed in an amount from 30% to 40% by weight of the total weight of the cement, and



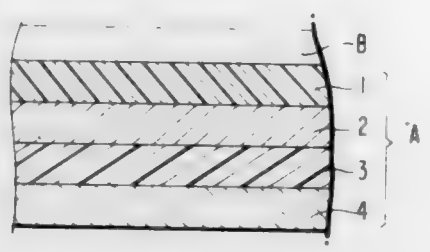
subjecting said stack of strips to heat and pressure for a period of time sufficient to set said cement and bond the strips of the stack in selected thickness.

4,086,383

SUPPORTS FOR PHOTOGRAPHIC PRINTING PAPER

Susumu Yamano, and Jyunichi Yasuda, both of Tokyo, Japan, assignors to Oji Yuka Synthetic Paper Sales Co., Ltd., Tokyo, Japan

Filed May 19, 1977, Ser. No. 798,540
Claims priority, application Japan, May 20, 1976, 51-57260
Int. Cl.[2] B32B *3/00, 5/02*
U.S. Cl. 428—174 **5 Claims**



1. A support for a photographic printing paper comprising
a. a polyolefin synthetic resin layer containing a white inorganic filler;
b. an opaque layer of a synthetic paper or a synthetic resin film;
c. a synthetic resin layer having a greater stiffness than the polyolefin synthetic resin layer (a); and
d. a layer of a synthetic paper or a synthetic resin film on which writing is possible; in this order, wherein the relative thickness of the polyolefin synthetic resin layer (a) is about 20% or less of the total thickness of the support and the relative thickness of the synthetic resin layer (c) having a greater stiffness than the polyolefin synthetic resin layer (a) is about 15% or higher of the total thickness of the support.

4,086,384

REFORCED PAPER-MICROFOAM SHEET PACKAGING MATERIAL

Herbert B. Adelman, Wilmington, Del., and Jack Goodman, Springfield, Pa., assignors to The Crowell Corporation, Newport, Del.

Filed Jul. 13, 1976, Ser. No. 704,980
Int. Cl.[2] B32B *7/02*
U.S. Cl. 428—213 **5 Claims**

1. A laminated sheet material comprising a relatively thin layer of paper material, a relatively thicker layer of a sealed cell microfoam polymer, a layer of strong adhesive material completely bonding the microfoam and paper layers together, and a layer of fiberglass strands inserted between the paper and microfoam layers and imbedded in the adhesive whereby an extremely strong tear-resistant and tear-stopping laminate is provided having an extremely smooth and protective microfoam surface which is capable of protecting extremely fine finishes.



4,086,385

FLAME RETARDED TEXTILES VIA DEPOSITION OF POLYMERS FROM OLIGOMERIC VINYLPHOSPHONATE AND POLYAMINO COMPOUNDS

Stanley P. Rowland, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 5, 1975, Ser. No. 629,478
Int. Cl.[2] C09D *5/18*; C09K *3/28*
U.S. Cl. 428—272 **11 Claims**

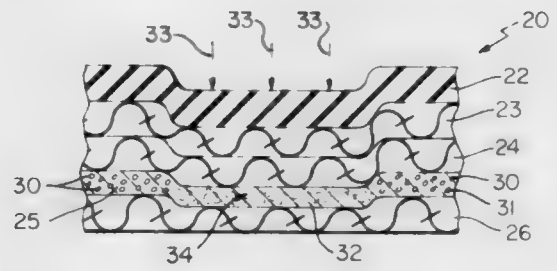
1. A process for imparting flame retardance to cellulosic textiles, the process comprising:
(a) impregnating a cellulosic textile with an aqueous solution containing an oligomeric vinylphosphonate and a polyamino compound selected from the group consisting of a polyethylenamine and a polyethylenimine, and
(b) curing the combination of reagents so as to effect interaction with one another in situ on said textile and yield a stable, insoluble, flame retardant finish.

4,086,386

SMASH-RECOVERABLE PRINTING BLANKET

Andrew J. Gaworowski, Waynesville, and John C. Duckett, Clyde, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Oct. 12, 1976, Ser. No. 731,490
Int. Cl.[2] B32B *5/18*
U.S. Cl. 428—307 **10 Claims**



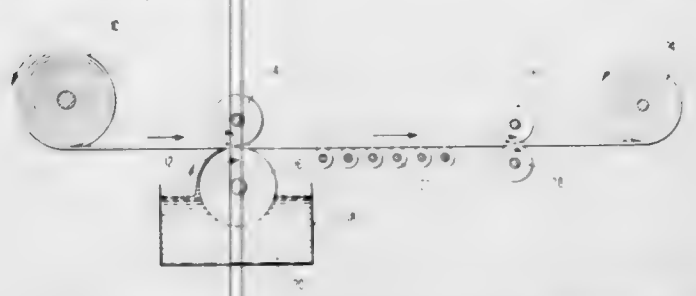
1. A smash-recoverable printing blanket having a substantially uniform thickness, said blanket comprising, a plurality of layers including at least one layer which swells upon being contacted by a liquid, and a plurality of microcapsules disposed within said blanket with said microcapsules containing said liquid, said microcapsules being ruptured upon smashing said blanket to thereby release said liquid contained therewithin against said one layer causing swelling thereof and restoring said adjacent layers substantially to their original positions prior to said smashing and define said uniform thickness.

4,086,387

HOT COMPRESSED FABRIC CONDITIONING PRODUCT

Rocco P. Triolo, 2512 Parke Lane, Broomall, Pa. 19008.

Filed Sep. 3, 1976, Ser. No. 720,269
Int. Cl.[2] B05D *5/00, 3/12*
U.S. Cl. 428—311 14 Claims



1. In the method of manufacturing a heat-activatable fabric conditioning product comprising impregnating an absorbent substrate having a thickness of at least 0.05 centimeters with at least about 2 ounces per square yard of absorbent substrate of a liquid fabric conditioner, solidifying the fabric conditioner and passing the absorbent substrate having the solidified fabric conditioner impregnated therein through a nip formed by two rollers having a gap between rollers preset to reduce the thickness of the absorbent substrate to about 70% or less than 70% of its original thickness as it passes through the nip, the improvement which comprises;

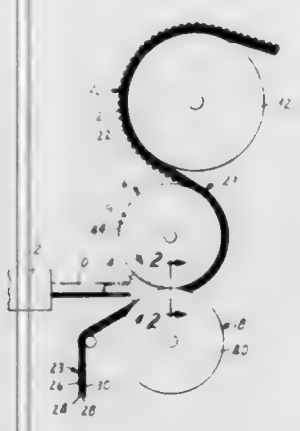
maintaining the rollers at an elevated temperature equal to or greater than the initial melting point of the fabric conditioner impregnated in the substrate.

4,086,388

RUBBERY CUSHION HAVING PRESSURE-SENSITIVE ADHESIVE LAYER

James N. Brown, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 16, 1977, Ser. No. 769,233
Int. Cl.[2] B32B *3/26*
U.S. Cl. 428—315 10 Claims



1. An article of manufacture comprising

(a) a rubbery cushion comprising a thermoplastic elastomer composition including 2–200 parts of a plasticizing oil per 100 parts by weight of the elastomer,

(b) a chemically-interfacially-bonded dual-layer film 0.02 to 0.4 mm in thickness, one layer of which is a polyolefin which is fused to the rubbery cushion, the other layer of which is an oriented polyester polymer, and

(c) a pressure-sensitive adhesive layer adhered to the polyester polymer.

10. An article as defined in claim 1 wherein the pressure-sensitive adhesive layer incorporates a foam.

4,086,389

COATING COMPOSITION COMPRISING CRYSTALLINE CELLULOSE AND A COATED ELECTRODE FOR ARC WELDING PRODUCED THEREWITH

Takashi Tanigaki; Takeshi Koshio, both of Yokohama, and Yoshikazu Tanaka, Sagamihara, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 13, 1976, Ser. No. 676,403
Claims priority, application Japan, Apr. 23, 1975, 50/48645; Apr. 5, 1976, 51/37946
Int. Cl.[2] B05D *5/12;* B23K *35/365;* H05B *7/07*
U.S. Cl. 428—385 2 Claims

1. A coated electrode for arc welding comprising a steel core wire and a coating on said steel core, said coating comprising 3 to 30% of fibrous mineral, 2 to 12% of crystalline cellulose, with the balance being at least one of a slag forming agent, an arc stabilizing agent, a deoxidizing agent and an alloying agent.

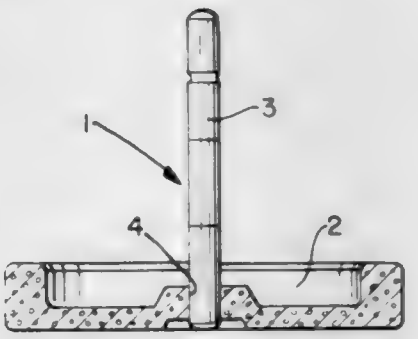
2. A coated electrode according to claim 1, in which the coating further comprises at least one of Ni, Cr and Mo in an amount not more than 30% for Ni, not more than 10% for each of Cr and Mo and in an amount not more than 30% for the total of Ni, Cr and Mo.

4,086,390

FLYWHEEL FOR RECORDING AND OR REPRODUCING APPARATUS

Seishu Mitani, Kyoto; Tsuneo Kudo, Hachiouji; Minoru Mitani, Kyoto, and Shuichi Saido, Hasuda, all of Japan, assignors to Japan Powder Metallurgy Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1976, Ser. No. 724,377
Int. Cl.[2] B22F *5/00*
U.S. Cl. 428—550 1 Claim



1. A flywheel assembly used for recording and reproducing devices, characterized in that said assembly comprises a flywheel and a capstan force-fitted therein, said capstan being formed of an iron casting, said flywheel comprising a pressed and sintered mixture of powders consisting of iron powder, graphite powder, zinc stearate powder and sulfur powder, particles of said iron powder being bonded to adjacent iron powder particles at limited points on their surfaces to form voids therebetween, said voids being distributed uniformly throughout the flywheel.

4,086,391

ALUMINA FORMING COATINGS CONTAINING HAFNIUM FOR HIGH TEMPERATURE APPLICATIONS

Charles Stanley Giggins, Jr., Simsbury, and Bernard Henry Kear, Madison, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 589,654, Jun. 23, 1975, Pat. No. 3,993,454.
This application Sep. 1, 1976, Ser. No. 719,874
Int. Cl.[2] B32B *15/18*
U.S. Cl. 428—679 3 Claims

1. A method of protecting superalloy articles from oxidation/corrosion at elevated temperatures which comprises:

applying a layer of material to the surface of the article, said material having a thickness of from 0.001 to 0.010 inches

and consisting essentially of from about 10 to about 45 percent chromium, from about 6 to about 25 percent aluminum, from about 0.5 to about 3 percent hafnium, balance chosen from the group consisting of nickel, cobalt, and mixtures thereof.

4,086,392

METHOD FOR REDUCING THE FLOAT CURRENT OF MAINTENANCE-FREE BATTERY

George W. Mao, St. Paul, and Purushothama Rao, Burnsville, both of Minn., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jan. 26, 1977, Ser. No. 762,568
Int. Cl.[2] H01M *10/44*
U.S. Cl. 429—50 15 Claims

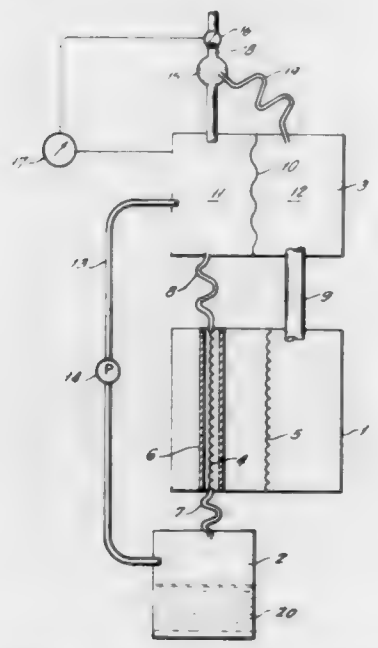
1. A method of reducing the gassing current during constant voltage overcharge in a maintenance-free battery comprising a sealed battery container except for venting means having a plurality of cells each including a plurality of positive and negative electrodes disposed therein comprising a grid structure having a layer of active material attached thereto and an electrolyte contained in the cells which comprises adding an additive consisting of zinc or a zinc compound to said electrolyte in an amount sufficient to decrease the gassing current during constant voltage overcharge, the amount of zinc corresponding to that provided by from about 0.1 to about 0.3% zinc sulfate, based upon the weight of the electrolyte, and at least the grid structure for the negative electrode consists of a lead alloy.

4,086,393

GAS PHASE FREE LIQUID CHLORINE ELECTROCHEMICAL SYSTEMS

Thomas G. Hart, Royal Oak, Mich., assignor to Energy Development Associates, Madison Heights, Mich.

Filed Nov. 24, 1976, Ser. No. 744,712
Int. Cl.[2] H01M *2/38*
U.S. Cl. 429—51 9 Claims



1. In the method of operating an electrochemical cell comprising a housing containing at least two electrodes by imposing an electric current across the electrodes and wherein chlorine is generated at at least one electrode, the improvement which comprises filling the housing with sufficient electrolyte such that the autogenous pressure is at least equal to that sufficient to liquify the chlorine as it is generated, and such that there is no space available for gas accumulation, before imposing said current, and causing said electrolyte to move thereby preventing liquid chlorine accumulation at the electrodes.

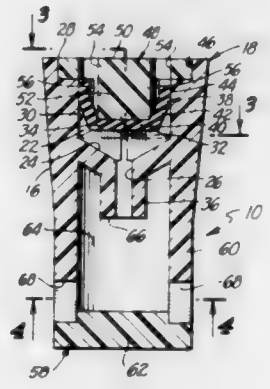
6. An electrochemical cell comprising a housing, at least two electrodes within said housing, a cation permselective membrane separating one of said electrodes so as to define a chlorine electrode compartment containing said separated electrode, a first electrolyte reservoir having flexible walls connected to said chlorine electrode compartment by a first conduit, a second electrolyte reservoir having flexible walls connected to said chlorine electrode compartment at a point spaced apart from said first conduit by a second conduit, and means to cause electrolyte to move between said first and second reservoirs and through said chlorine electrode compartment comprising means to vary the pressure on the outside of the flexible walls of said first reservoir relative to the pressure on the outside of the flexible walls of said second reservoir.

4,086,394

COMBINATION OF A BATTERY AND VENT STRUCTURE

Hugo W. Tesch, Villa Park, Calif., assignor to Elpower Corporation, Santa Ana, Calif.

Filed Sep. 23, 1976, Ser. No. 725,971
Int. Cl.[2] H01M *2/12*
U.S. Cl. 429—54 6 Claims



1. In the combination of a battery including a housing, and a vent for allowing the escape of gas from the interior of said housing, said vent being located adjacent to the top of said housing, the improvement which comprises:

said vent including a receptacle, a valve element and a retainer,

said receptacle being formed of a rigid material so as to include an internal cavity having a sloping bottom surrounded by an internal peripheral surface which extends upwardly from the periphery of said bottom, an open top, an opening extending through the lowermost part of said bottom downwardly through the bottom of said receptacle, a plurality of ribs extending upwardly from said bottom, said ribs being radially positioned on said bottom so as not to interfere with drainage into said opening and having their tops located within a common plane,

said valve element being formed of a resilient, elastomeric material so as to have a bottom wall and a peripheral wall attached to the periphery of said bottom wall so as to extend upwardly from said bottom wall,

said valve element being located within said cavity with said bottom wall of said valve element being positioned against said upper surfaces of said ribs, and with said peripheral wall extending upwardly from said bottom wall into resilient engagement with said peripheral surface,

said retainer including a holder for attaching said retainer to said receptacle so that said retainer extends generally above said valve element and across said cavity, a holding member attached to said holder and extending downwardly from said holder into engagement with substantially all of said bottom wall of said valve element so as to hold said bottom wall of said valve element in position against said ribs, and at least one vent opening extending through said holder,

said holding member being shaped so as to permit said peripheral wall to be flexed inwardly away from said peripheral surface in response to internal gas pressure within said

housing so as to permit gas to move from around said valve element through said vent opening.

4,086,395

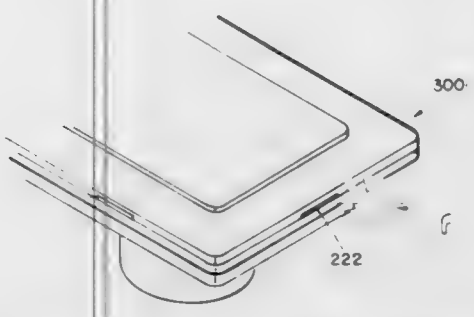
MULTI-SLIT SELF-SEALING IGNITION-ARRESTER BATTERY VENT

Joseph Irvin Heiser, Wyomissing Hills, and Edgar Martin Erb, Lancaster, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 593,546, Jul. 7, 1975, abandoned. This application Nov. 24, 1976, Ser. No. 744,647

Int. Cl.² H01M 2/12

U.S. Cl. 429—88 **5 Claims**



1. A battery vent for use on an electric storage battery to sealingly engage one or more openings of said battery and to vent battery gases to the atmosphere, comprising:

means for providing fluid communication between said battery and the atmosphere, said means comprising a plurality of slit means for preventing the transmission of ignition from the atmosphere through said slit means, each of said slit means being defined in at least one exterior surface of said vent, and having a width of about 0.004 to 0.005 inches.

4,086,396

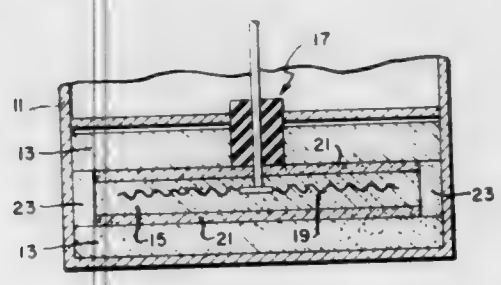
ELECTROCHEMICAL CELL WITH POWDERED ELECTRICALLY INSULATIVE MATERIAL AS A SEPARATOR

James P. Mathers, Downers Grove; Theodore W. Olszanski, Justice, and Carl W. Boquist, Chicago, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 23, 1977, Ser. No. 771,131

Int. Cl.² H01M 4/36

U.S. Cl. 429—103 **9 Claims**



1. In a high-temperature secondary electrochemical cell having a positive electrode including a sulfide of a metal selected from the group consisting of iron sulfides, nickel sulfide, cobalt sulfide, and copper sulfide, a negative electrode including an alloy of lithium and an electrically insulated, porous separator between said electrodes, the improvement wherein said porous separator comprises a layer of discrete particles of electrically insulative and refractory material in mixture with particles of electrolytic salt composition that is molten at cell operating temperatures between 300° and 600° C, said electrically insulative and refractory materials being selected from the group consisting of boron nitride, magnesium oxide, calcium oxide, yttria, lithium aluminate, silicon nitride, aluminum nitride, and mixtures thereof.

5. An electrode structure adapted for use in a high-temperature secondary electrochemical cell opposite to a second electrode of opposite polarity; said electrode structure comprises a first layer of particulate active material including sulfide of a metal selected from the group consisting of iron sulfides, cobalt sulfide, nickel sulfide, and copper sulfide, and a solid electrolytic salt selected from the group consisting of alkali metal halides, the alkaline earth metal halides and mixtures thereof; and a second layer of refractory, electrically insulative, particles selected from the group consisting of boron nitride, magnesium oxide, calcium oxide, yttria, lithium aluminate, silicon nitride, aluminum nitride and mixtures thereof mixed with particles of said electrolytic salt, said first and second layers being compacted together to form an integral electrode structure with the electrolytic salt as a binder wherein the electrolytic salt is made molten at the operating temperature of the electrochemical cell to form a porous electrode reactant layer and an electrically insulative layer.

4,086,397

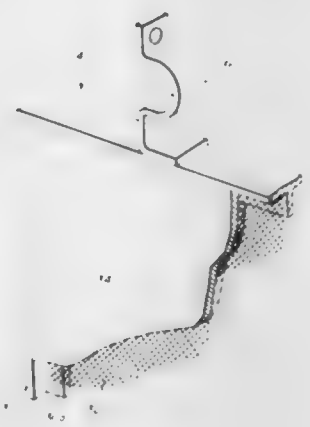
ELECTROCHEMICAL CELL AND CATHODE FOR SAME

Franz Goebel, Ashland, and Nikola Marincic, Winchester, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 31, 1977, Ser. No. 763,845

Int. Cl.² H01M 4/96

U.S. Cl. 429—105 **5 Claims**



1. A self-supporting cathode structure for use in an electrochemical cell comprising:

a rigid, electrically conductive, T-shaped frame member;

an electrically conductive generally planar substrate having a plurality of interstice-defining members and affixed about its periphery to the leg of the T-shaped frame member; and

an aggregate of discrete, porous carbon conglomerates impressed on the interstice-defining members of the substrate from opposite sides of the substrate and being in mutual physical and electrical contact through the interstices, a network of electrolyte-conducting channels extending throughout the resulting porous carbon structure;

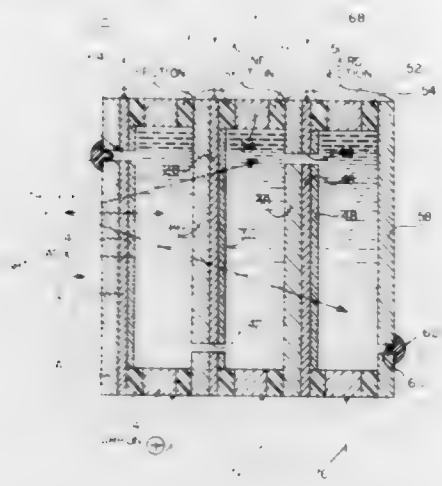
the interstice-defining member of the substrate electrically contacting the interior of the porous carbon structure throughout the porous carbon structure to function as a current collector for the cathode.

4,086,398

MULTI-COMPARTMENT PHOTOGALVANIC CELL

Donald K. Cartmell, Belvidere, and Horst Witzke, Princeton, both of N.J., assignors to Optel Corporation, Princeton, N.J. and Grumman Aerospace Corporation, Bethpage, N.Y., part interest to each

Filed Nov. 11, 1976, Ser. No. 740,874
Int. Cl.[2] H01M 6/30, 6/36
U.S. Cl. 429—111 11 Claims



1. A multi-compartment photogalvanic cell having a plurality of aligned communicating sections, each comprising:

an electrode;

a counterelectrode spaced from the electrode;

an electrolyte means contained between the electrode and counterelectrode for enabling photogalvanic operation of the cell; and

means formed between the sections for permitting flow of the electrolyte between the sections;

said cell comprising:

transparent electrode means in an outermost section for receiving

light irradiation, and

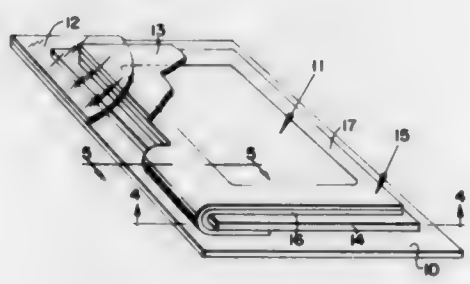
conductor means connected to the electrodes and counterelectrodes of each section for connecting said sections in parallel, and for drawing electrical power from the cell in response to irradiation by light received by said transparent electrode means.

4,086,399

LAMINAR BATTERIES

Albert L. Hyland, Wayland, and Robert G. Keene, Southborough, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 30, 1977, Ser. No. 782,836
Int. Cl.[2] H01M 2/00, 6/12
U.S. Cl. 429—122 2 Claims



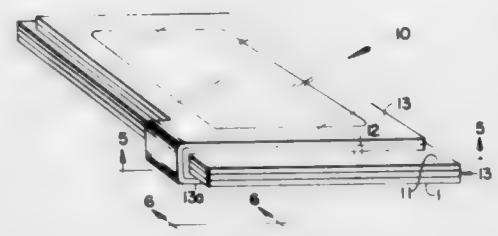
2. In a flat laminar battery of the kind in which one terminal has a flap that is folded over to permit access thereto on the same side of said battery as the other terminal, said flap being insulated from said other terminal by an insulating sheet comprising paper, the improvement wherein said flap covers only a minor portion of the length of the edge of the battery around which said flap is folded, thereby increasing the opportunity to inspect the battery for leakage and to allow the evaporation of any leakage that may occur.

4,086,400

CARRIER WEB FOR LAMINAR BATTERIES

Albert L. Hyland, Wayland, and Victor Mitchnick, Framingham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 30, 1977, Ser. No. 782,837
Int. Cl.[2] H01M 2/00, 6/12
U.S. Cl. 429—122 6 Claims



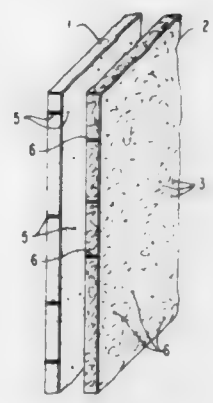
1. In a thin flat laminar battery of the kind having first and second end terminals, a portion of said first end terminal being folded around one edge of said battery to be accessible on the same side as said second end terminal, the improvement which comprises an insulating sheet between the superposed portions of the end terminals, said superposed portions consisting of said folded-around portion of said first end terminal and the confronting portion of said second end terminal, said insulating sheet consisting of a laminate comprising paper, a barrier layer of liquid impermeable insulating material on said paper, and a layer of adhesive on said insulating material and adhering said insulating sheet to said second end terminal.

4,086,401

ELECTRIC STORAGE BATTERY SEPARATOR

Erik G. Sundberg, Nol, Sweden, and Hans Steig, Soest, Germany, assignors to Aktiebolaget Tudor, Sundbyberg, Sweden

Filed Dec. 17, 1975, Ser. No. 641,756
Int. Cl.[2] H01M 2/14
U.S. Cl. 429—145 2 Claims



1. A composite, multi-layer separator effective to minimize formation of dendrites between electrodes of electric storage batteries, said separator comprising at least two thin, contacting, discrete, porous, non-laminated membranes comprising a material having a random distribution of pin holes capable of permitting formation of dendrites if used in a single layer as a separator at least one of said membranes being microporous and having an average pore size less than about 10 microns and said pin holes having a diameter larger than the desired pore size in said membranes,

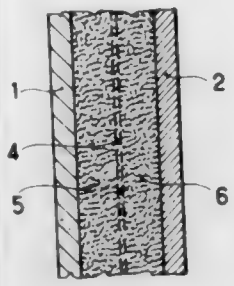
each of said membranes singly being incapable of use as a separator but being capable of such use as a single layer separator in the absence of said pin holes.

4,086,402

LITHIUM ELECTRIC CELL

Georges Feuillade, Arpajon, France, assignor to Compagnie Generale d'Electricite S.A., Paris Cedex, France

Filed Mar. 15, 1977, Ser. No. 777,801
Claims priority, application France, Mar. 19, 1976, 76 0805
Int. Cl.[2] H01M 6/14
U.S. Cl. 429—190 24 Claims



1. An electric cell comprising a lithium negative electrode, electrolytes including a non-aqueous solvent, a positive electrode made of a material which, during discharge, releases an anion capable of reacting with lithium to form a compound which is insoluble in the electrolyte and a membrane of an anionic exchanger material interposed in the electrolyte between the electrodes thereby defining a cathode compartment and an anode compartment, containing different electrolytes wherein the electrolyte in the cathode compartment includes at least one salt of predominantly anionic conductivity dissolved in the non-aqueous solvent and the electrolyte in the anode compartment includes at least one salt of predominantly cationic conductivity dissolved in the non-aqueous solvent.

4,086,403

ALKALI METAL/NIOBIUM TRISELENIDE CELL HAVING A DIOXOLANE-BASED ELECTROLYTE

M. Stanley Whittingham, Fanwood, and Gerald H. Newman, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Nov. 26, 1976, Ser. No. 744,973
Int. Cl.[2] H01M 6/14
U.S. Cl. 429—194 12 Claims

1. An electric current-producing cell, comprising:
(a) an alkali metal-containing anode;
(b) a cathode having as its cathode-active material, one or more trichalcogenides of the formula:

MZ_n

wherein M is niobium, wherein Z is selenium, and wherein n is a numerical value between about 2.5 and 3.5; and
(c) a non-aqueous electrolyte comprising at least one ionic alkali metal salt dissolved in a dioxolane solvent.

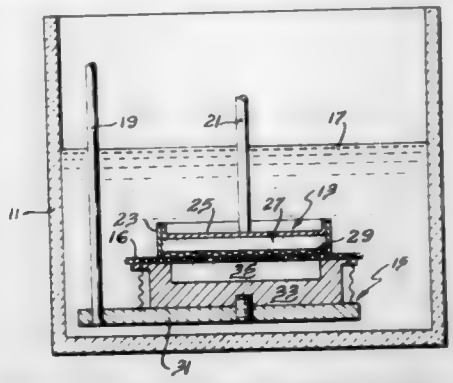
4,086,404

ELECTRODE INCLUDING POROUS PARTICLES WITH EMBEDDED ACTIVE MATERIAL FOR USE IN A SECONDARY ELECTROCHEMICAL CELL

Donald R. Vissers, Naperville; Paul A. Nelson, Wheaton; Thomas D. Kaun, Lisle, and Zygmunt Tomczuk, Palos Hills, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 652,696, Jan. 27, 1976, Pat. No. 4,048,715.
This application Apr. 7, 1977, Ser. No. 785,639
Int. Cl.[2] H01M 4/36
U.S. Cl. 429—220 6 Claims

1. An electrode for use in a secondary electrochemical cell comprising a porous substrate of electrically conductive material having a void volume impregnable by molten electrolyte and having solid particles including active material loosely distributed within the void volume of said substrate as separate and distinct particles, the improvement wherein said solid particles comprise porous carbonaceous particles of cured thermosetting material having embedded therein particles of electrode active material selected from the group of transition



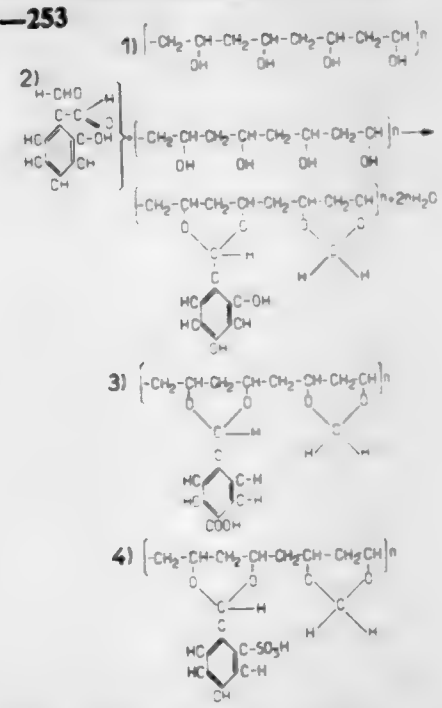
metal sulfides consisting of the sulfides of iron, cobalt, nickel and copper.

4,086,405

BATTERY CONTAINING AN ALKALINE ELECTROLYTE

Robert Gadessaud, Massy, France, assignor to Compagnie Generale d'Electricite S.A., Paris, France

Filed Dec. 18, 1972, Ser. No. 316,199
Claims priority, application France, Dec. 16, 1971, 71.45268; Aug. 4, 1972, 72.28255; Aug. 10, 1972, 72.28943; Feb. 18, 1972, 72.05561; Aug. 8, 1972, 72.28595; Aug. 10, 1972, 72.28944
Int. Cl.[2] H01M 2/14, 2/16
U.S. Cl. 429—253 4 Claims



1. An alkaline battery having a zinc electrode or cadmium-nickel electrodes, said battery containing within a container an electrolyte, a negative electrode and a positive electrode separated by a separator consisting of a membrane permeable to said electrolyte and impermeable to the ions emitted by said negative electrode and also to gaseous oxygen, thus creating two compartments communicating solely by way of this membrane, said battery being characterized in that the separator comprises a partially reticulated polyvinyl acetal produced by the action of dimethylolurea and an aromatic aldehyde comprising a hydroxyl radical on polyvinyl alcohol.

4,086,406

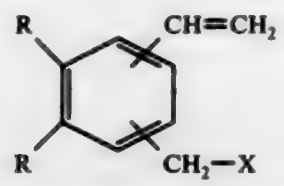
COUPLING LITHIUM-INITIATED POLYMER WITH A VINYLHALOMETHYLARENE

William J. Trepka, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 22, 1975, Ser. No. 642,881
Int. Cl.[2] C08F 8/04, 8/26
U.S. Cl. 526—25 10 Claims

1. A process for producing polymer of at least one monomer selected from the group consisting of conjugated dienes and vinylarenes by contacting said at least one monomer under polymerization conditions with an organolithium, the improvement comprising:

introducing at the conclusion of the resulting polymerization 0.6 to 1.4 equivalents based on the amount of metal in the polymer of a vinylhalomethylarene having the formula



wherein X is selected from chlorine, bromine, or iodine, with the halogenated alkyl group $-CH_2X$ being alternatively meta or para to the vinyl group,

the R's being the same or different, and being selected from the group consisting of hydrogen, methyl and ethyl or being linked together to comprise a 4-carbon atom chain, and

recovering the resulting coupled polymer.

4,086,407

FLUORO COMPOUND PREPARATION

George B. Fozzard, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 330,736, Feb. 8, 1973, Pat. No. 3,996,299. This application Aug. 2, 1976, Ser. No. 711,031

Int. Cl.[2] C08F *14/18, 14/22*

U.S. Cl. 526—75 **4 Claims**

1. The process of polymerization which comprises:

(a) cyclodimerizing hexafluoropropylene and ethylene under dimerizing conditions at a temperature in the range of 200° C. to 600° C., thereby producing the codimer 1-trifluoromethyl-1,2,2-trifluorocyclobutane,

(b) cracking said codimer 1-trifluoromethyl-1,2,2-trifluorocyclobutane under cracking conditions, thereby producing an admixture of 2,3,3-tetrafluoropropylene and vinylidene fluoride, and

(c) polymerizing said 2,3,3-tetrafluoropropylene, said vinylidene fluoride, or copolymerizing both together under polymerization conditions, thereby producing a polymer.

4,086,408

ETHYLENE POLYMERIZATION WITH SILANE MODIFIED CATALYST

Frederick John Karol, Bellemead, N.J., and Chi-Sung Wu, Beaconsfield, Canada, assignors to Union Carbide Corporation, New York, N.Y.

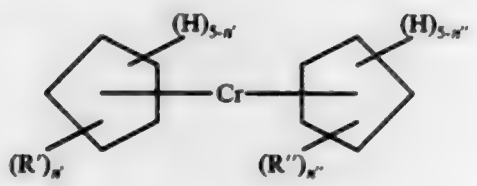
Division of Ser. No. 426,559, Dec. 20, 1973, which is a continuation-in-part of Ser. No. 156,187, Jun. 24, 1971, abandoned. This application May 19, 1976, Ser. No. 687,943

Int. Cl.[2] C08F *4/02, 10/02*

U.S. Cl. 526—130 **20 Claims**

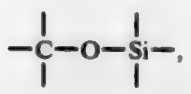
1. In a process for polymerizing a monomer charge comprising ethylene by contacting said charge with activated inorganic oxide supported bis(cyclopentadienyl) chromium [II] catalyst

wherein said inorganic oxide is selected from the group consisting of silica, alumina, thoria, zirconia and mixtures thereof, and the bis(cyclopentadienyl) chromium [II] compound has the structure



wherein n' and n'' are each integers of 0 to 5, inclusive, and R′ and R″ are each C_1 to C_{20}, inclusive, hydrocarbon radicals,

the improvement which comprises modifying said catalyst prior to said contact with said monomer charge by contacting said catalyst with, per mol of the organochromium compound, 0.01 to 20 mols of at least one modifying compound having in its structure at least one moiety of the formula



said modifying compound being devoid of OH, SH, NH_2, COOH, halogen, alkoxy and aryloxy radicals in such amounts as would poison the polymerization system under the prevailing reaction conditions, and

said modifying with said modifying compound providing a modified catalyst with which, in comparison to the use of the unmodified catalyst in said polymerization process, polymers of improved impact strength are prepared.

4,086,409

ETHYLENE POLYMERIZATION WITH SILOXANE MODIFIED CATALYST

Frederick John Karol, Bellemead, N.J., and Chi-Sung Wu, Beaconsfield, Canada, assignors to Union Carbide Corporation, New York, N.Y.

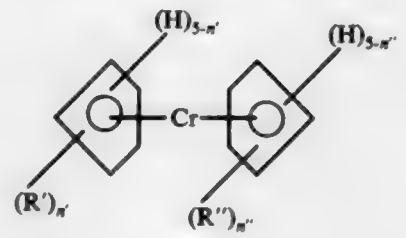
Division of Ser. No. 426,559, Dec. 20, 1973, which is a continuation-in-part of Ser. No. 156,187, Jun. 24, 1971, abandoned. This application May 19, 1976, Ser. No. 687,944

Int. Cl.[2] C08F *4/02, 10/02*

U.S. Cl. 526—130 **25 Claims**

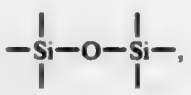
1. In a process for polymerizing a monomer charge comprising ethylene by contacting said charge with activated inorganic oxide supported bis(cyclopentadienyl) chromium [II] catalyst

wherein said inorganic oxide is selected from the group consisting of silica, alumina, thoria, zirconia and mixtures thereof, and the bis(cyclopentadienyl) chromium [II] compound has the structure



wherein n' and n'' are each integers of 0 to 5, inclusive, and R′ and R″ are each C_1 to C_{20}, inclusive, hydrocarbon radicals,

the improvement which comprises modifying said catalyst prior to said contact with said monomer charge by contacting said catalyst with, per mol of the organochromium compound, 0.01 to 20 mols of at least one modifying compound having in its structure at least one moiety of the formula



said modifying compound being devoid of OH, SH, NH_2, COOH, halogen, alkoxy and aryloxy radicals in such amounts as would poison the polymerization system under the prevailing reaction conditions, and

said modifying with said modifying compound providing a modified catalyst with which, in comparison to the use of the unmodified catalyst in said polymerization process, polymers of improved impact strength are prepared.

4,086,410

THERMOPLASTIC MOLDING COMPOSITION COMPRISING A TERPOLYMER OF α-METHYLSTYRENE, METHYL METHACRYLATE AND N-VINYL-2-PYRROLIDONE

Il H. Song, Lombard, Ill., assignor to The Richardson Company, Des Plaines, Ill.

Filed May 10, 1976, Ser. No. 684,792
Int. Cl.² C08F *26/10*
U.S. Cl. 526—264 6 Claims

1. A transparent, high heat thermoplastic molding composition having improved melt flow characteristics, comprising a terpolymer having a weight ratio of from about 20 to 50 parts α-methylstyrene, about 79 to 40 parts methyl methacrylate, and about 1 to 10 parts N-vinyl-2-pyrrolidone.

4,086,411

METHOD OF REMOVING VINYL CHLORIDE MONOMER FROM A VINYL CHLORIDE POLYMER

Mineo Nagano, and Koji Tanaka, both of Yokkaichi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Dec. 9, 1975, Ser. No. 639,051
Claims priority, application Japan, Dec. 13, 1974, 49-142449
Int. Cl.² C08F *6/00*
U.S. Cl. 528—480 4 Claims

1. A method of removing vinyl chloride monomer which remains in a homopolymers or copolymers of vinyl chloride, which comprises irradiating said polymer of vinyl chloride with high energy electromagnetic radiation, having a frequency of 10–100 MHz, to excite said vinyl chloride monomer in said polymer thereby removing said vinyl chloride monomer.

4,086,412

METHOD FOR REMOVING A VINYL HALIDE FROM POLYVINYL HALIDE-CONTAINING SLURRY

Gary R. Johnson, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jan. 19, 1976, Ser. No. 650,207
Int. Cl.² C08F *6/24, 6/16, 6/10*
U.S. Cl. 528—499 3 Claims

1. A process for removing unreacted vinyl halide from a water-polyvinyl halide slurry wherein the process consists essentially of

(a) adding water-polyvinyl halide slurry, containing unreacted vinyl halide, to a column extractor vessel at a position near one end of said vessel

(b) adding hot water, at a temperature of about 65° to about 121° C., to said column extractor vessel at a position near the other end of said vessel

(c) removing hot water containing unreacted vinyl halide from the column extractor vessel at a position near the end of the vessel opposite to the end of entry of said hot water,

(d) removing polyvinyl halide from the column extractor vessel at a position near the end of the vessel opposite to the end of entry of said polyvinyl halide,

(e) said process being characterized further in that the amount of hot water is at least 1 volume per unit volume of water-polyvinyl halide slurry.

4,086,413

PURIFICATION OF COPOLYMERS CONTAINING CROTONIC ACID

Joachim Stedefeder, Lampertheim; Ingo H. Dorn, Dannstadt-Schauernheim; Horst Kuhn, Otterstadt; Walter Kastenhuber, Hoeningen, and Wolfgang Linke, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 2, 1977, Ser. No. 792,729
Claims priority, application Germany, May 20, 1976, 2622463
Int. Cl.² C08J *11/00*
U.S. Cl. 528—499 2 Claims

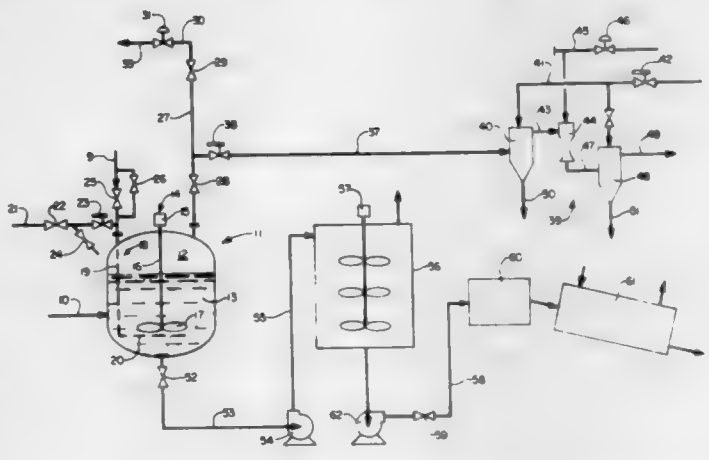
1. A process for purifying copolymers, containing crotonic acid as copolymerized monomer units, to remove unconverted monomeric crotonic acid and concomitant odorous materials, the copolymers being in the form of particles suspended in water and having a glass transition temperature of $<30°$ C when saturated with water, by washing the copolymers with water, wherein the polymers are extracted with fully desalinated water at from 50° to 120° C and from 1 to 4 bars, the extraction being carried out in a cylindrical extraction vessel which has a height/diameter ratio of >1, the water of extraction is introduced at the bottom and removed at the top and the system is stirred, the ratio of the flow energy to the energy of stirring being from 1:4 to 4:1 and the total energy acting on the system being such that the particles just remain suspended.

4,086,414

STEAM STRIPPING POLYVINYL CHLORIDE RESINS

Edwin D. Hornbaker; Adam Nugent, Jr., and Cecil P. Loechelt, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 498,546, Aug. 19, 1974, abandoned. This application Jan. 15, 1976, Ser. No. 649,428
Int. Cl.² C08F *6/10*
U.S. Cl. 528—500 8 Claims



1. In the method of treating particles of a polyvinyl chloride resin prepared by a suspension process, which resin particles have a susceptibility to a degradation in thermal stability and an increase in bulk density upon prolonged heating and where the particles are contained in an aqueous medium wherein the resin particles and aqueous medium have been subjected to a flashing step to remove a major portion of the unreacted vinyl chloride monomer therefrom, the improvement for further reducing the vinyl chloride monomer content of the resin particles comprising:

a. placing the resin particles and aqueous medium alone in a closed vessel and agitating the resin particles in the aqueous medium;

b. directly heating the aqueous suspension of the resin particles by injecting steam herein for a period of time between about 5 minutes and 45 minutes to raise the temperature of the suspension in a range of from about 180° F to about 240° F while simultaneously removing from the vessel a vapor phase containing vinyl chloride monomer and the aqueous medium;

c. terminating the heating step;

d. cooling the suspension to a temperature of about 120° F to about 170° F in less than about 1 hour by applying a sufficient vacuum to the vessel to cause vaporization of a portion of said aqueous medium to remove at least about 80% of the vinyl chloride monomer remaining in the resin particles after the completion of step (b); and

e. whereby treated polyvinyl chloride resin particles are produced having a vinyl chloride monomer content less than about 340 ppm (dry resin basis) and a thermal stability and bulk density not significantly different from the resin particles prior to treating.

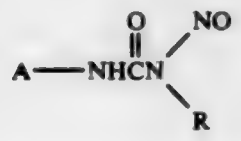
4,086,415

NITROSOUREA DERIVATIVES OF GLYCOSIDES

Tetsuo Suami, No. 5-8, 3-chome, Nakamachi, Musashino-shi, Tokyo, Japan; Tomoya Machinami, Shiraoka, and Takashi Hisamatsu, Yokohama, both of Japan, assignors to Tetsuo Suami, Musashino, Japan

Filed Jul. 30, 1975, Ser. No. 600,206
Claims priority, application Japan, Aug. 8, 1974, 49-90266
Int. Cl.[2] C07H *11/02*
U.S. Cl. 536—22 7 Claims

1. Nitrosourea of the formula:



wherein A represents a glycosyl selected from the group consisting of maltosyl, glucosyl, mannosyl, galactosyl, xylosyl, and lactosyl and R represents a halo-substituted lower alkyl.

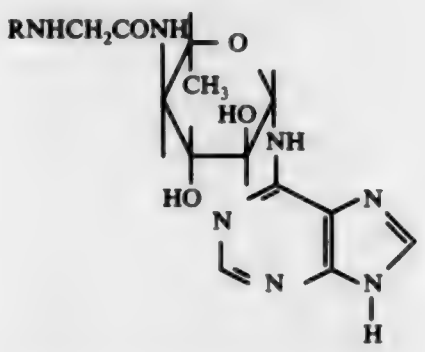
4,086,416

SEPTACIDIN ANALOGS

Edward M. Acton, Menlo Park, and Kenneth J. Ryan, Sunnyvale, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed May 17, 1977, Ser. No. 797,591
Int. Cl.[2] C07H *19/16*
U.S. Cl. 536—24 3 Claims

1. A compound having the structure



where R is an alkanoyl radical of from 12 to 16 carbon atoms.

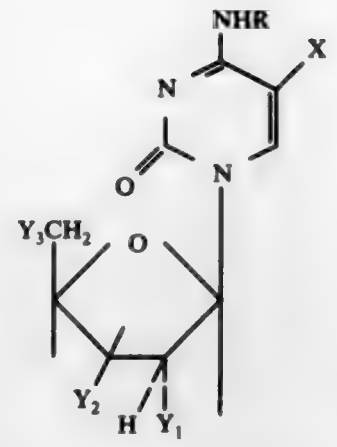
4,086,417

CYTIDINE NUCLEOTIDE DERIVATIVES

Torao Ishida; Minoru Akiyama, both of Fuji; Yoshio Sakurai, Mitaka, and Shigeru Tsukagoshi, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 15, 1975, Ser. No. 622,794
Claims priority, application Japan, Oct. 15, 1974, 49-117664; Nov. 27, 1974, 49-135574
Int. Cl.[2] C07H *19/10*
U.S. Cl. 536—29 25 Claims

1. A nucleotide derivative represented by the general formula



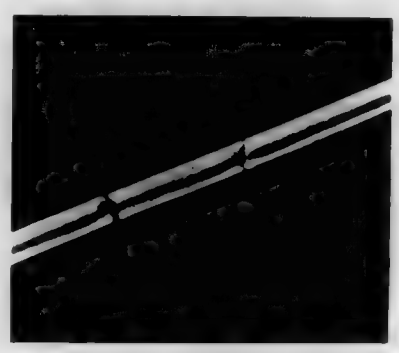
wherein R represents an acyl group having 14 to 22 carbon atoms and having an aliphatic acyl moiety; X represents a hydrogen atom, a halogen atom, an alkyl group having 1 to 4 carbon atoms, or a trifluoromethyl group; and one of Y_1 and Y_3, or both Y_1 and Y_3, or both Y_2 and Y_3 in case of ribosyl; and one of Y_1 and Y_3, or both Y_1 and Y_2 or both Y_2 and Y_3 in case of arabinosyl, represent a phosphate, a pyrophosphate, a triphosphate, or a salt thereof, the balance of Y_1, Y_2 and Y_3 representing a hydroxyl group, wherein said salt is a pharmaceutically acceptable salt.

4,086,418

PROCESS FOR PRODUCING A REGENERATED HOLLOW CELLULOSIC FIBER

Albin Frank Turbak, Convent Station; Richard Benjamin Hammer, Morris Plains; Norman A. Portnoy, Hopatcong, all of N.J., and Arthur C. West, St. Paul, Minn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 27, 1976, Ser. No. 662,134
Int. Cl.[2] C08B *16/00*
U.S. Cl. 536—30 8 Claims



1. A process for producing a regenerated hollow cellulosic fiber comprising nitrosating cellulose with a nitrosating agent selected from the group consisting of an oxide of nitrogen and nitrosyl chloride and dissolving the cellulose in an aprotic solvent selected from the group consisting of a dialkylacylamide and dimethylsulfoxide and regenerating the dissolved cellulose by contacting the cellulosic solution with a regenerant, said regenerant being n-octanol where the solvent is a dialkylacylamide and n-hexanol where the solvent is dimethylsulfoxide.

4,086,419

PREPARATION OF STARCH SULFATE ESTERS

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 24, 1976, Ser. No. 660,911
Int. Cl.[2] C08B *31/02*
U.S. Cl. 536—107 8 Claims

1. A process for preparing sulfate esters of starch comprising the steps of:

a. reacting a starch having free reactive hydroxyl groups

with a fluorosulfate reagent selected from the group consisting of ammonium fluorosulfate and alkali metal fluorosulfates, wherein the amount of the reagent employed is 1 to 125%, based on the weight of dry starch, and the reaction is carried out in an aqueous medium at a pH of 11.2 to 13.0 and at a temperature of about 30° to 90° C. for a period of from 0.2 to 24 hours; and

b. isolating the resultant starch sulfate ester.

4,086,420

THIOPRENE OR FURAN DERIVATIVES AND PROCESS FOR PREPARATION THEREOF

Genichi Tsuchihashi, Tama, and Katsuyuki Ogura, Sagamihara, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

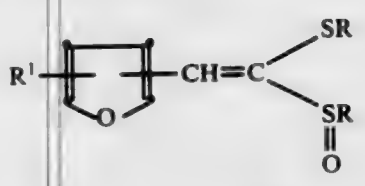
Division of Ser. No. 651,112, Jan. 21, 1976, Pat. No. 4,051,151. This application Apr. 22, 1977, Ser. No. 790,132

Claims priority, application Japan, Jan. 23, 1975, 50-9297; Jan. 27, 1975, 50-10520; Feb. 3, 1975, 50-13389; Nov. 25, 1975, 50-140294

Int. Cl.² C07D *307/26*

U.S. Cl. 542—413 **6 Claims**

1. A compound of the formula



wherein R^1 represents a member selected from the group of hydrogen and alkyl and R represents a member selected from the group of (1) alkyl, (2) substituted alkyl wherein the substituent is halogen, hydroxy or alkoxy, (3) phenyl, and (4) substituted phenyl wherein the substituent is alkyl, alkoxy, aryl, nitro or halogen.

4,086,421

SUBSTITUTED ISOXAZOLO PYRIDINONES

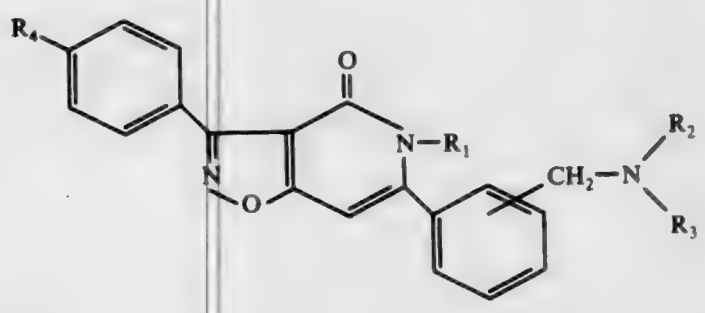
Jeffrey Nadelson, Denville, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 705,702, Jul. 15, 1976, Pat. No. 4,049,813. This application Jun. 13, 1977, Ser. No. 805,881

Int. Cl.² C07D *491/04*

U.S. Cl. 544—127 **4 Claims**

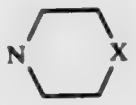
1. A compound of the formula



where

R_1 represents straight chain lower alkyl, and

R_2 and R_3 together with N represent



where

X is O or N—CH_3, and

R_4 is hydrogen, halo having an atomic weight of about 19 to 36 or lower alkoxy, or a pharmaceutically acceptable salt thereof.

4,086,422

CARBAMOYLALKYLUREIDO CEPHALOSPORINS

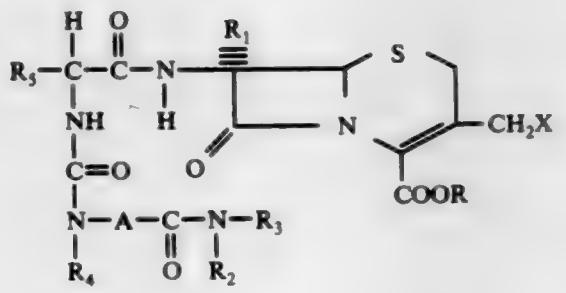
Hermann Breuer, and Uwe Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 16, 1976, Ser. No. 714,420

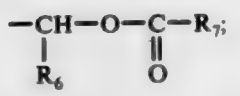
Int. Cl.² C07D *501/38*

U.S. Cl. 544—21 **19 Claims**

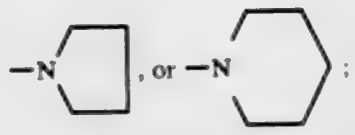
1. A compound of the formula



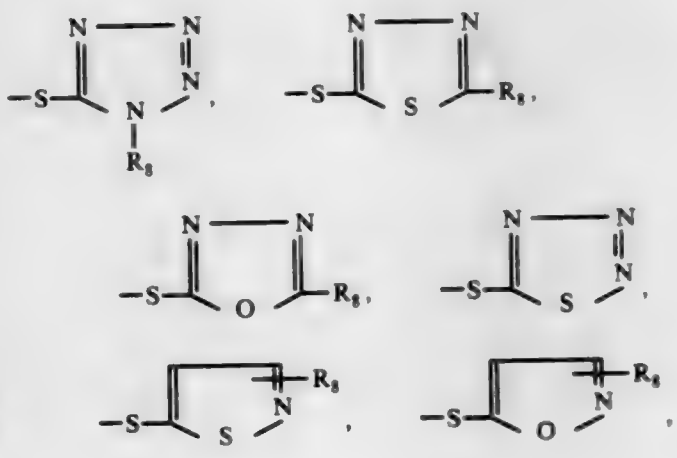
wherein R is hydrogen, lower alkyl, phenyl-lower alkyl, diphenyl-lower alkyl, tri(lower alkyl)silyl, trihaloethyl, an alkali metal ion, an alkaline earth metal ion, dibenzylamine, N,N-dibenzylethylenediamine, methylamine, triethylamine, N-ethylpiperidine, or



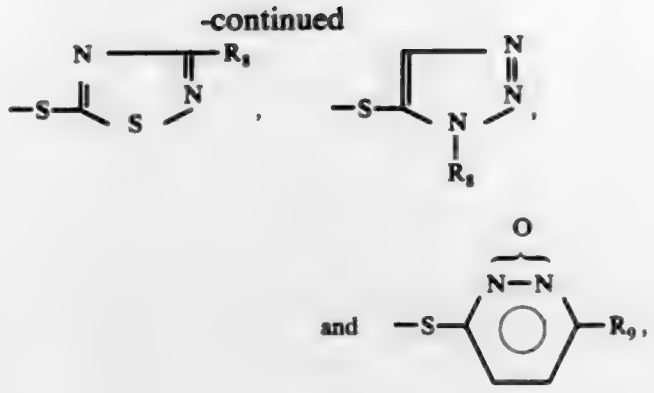
R_1 is in the α-configuration and is hydrogen or methoxy; R_2 and R_3 are independently selected from hydrogen and straight chain alkyl of 1 to 4 carbons, or R_2 is hydrogen and R_3 is branched chain alkyl of 3 to 4 carbons, phenyl, benzyl or phenethyl, or R_2 and R_3 taken together with the N atom to which they are attached form



R_4 is hydrogen or lower alkyl; A is straight or branched chain alkylene of 1 to 6 carbons; R_5 is hydrogen, lower alkyl, cycloalkyl of 3 to 7 carbons, cycloalkenyl of 3 to 7 carbons, cycloalkadienyl of 6 or 7 carbons, phenyl, phenyl-lower alkyl, substituted phenyl or phenyl-lower alkyl wherein said phenyl substituent is one or two members selected from the group consisting of halogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, and hydroxy, or a monosubstituted or unsubstituted heterocyclic selected from the group consisting of 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 3-pyridyl, and 4-pyridyl wherein said heterocyclic substituent is attached at an available carbon atom and is halogen or lower alkyl of 1 to 4 carbons; R_6 is hydrogen or lower alkyl; R_7 is lower alkyl; and X is a heterothio group selected from the group consisting of



-continued



wherein R_8 is hydrogen or lower alkyl of 1 to 4 carbons and R_9 is hydrogen, lower alkyl of 1 to 4 carbons, methoxy, hydroxy, or halogen.

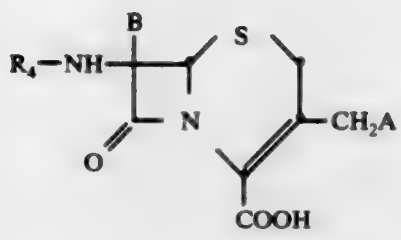
4,086,423

PROCESS FOR CEPHEM SYNTHESIS

Raymond A. Firestone, Fanwood; Ronald W. Ratcliffe, N. Plainfield, and Burton G. Christensen, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 406,000, Oct. 12, 1973, abandoned.
This application Oct. 21, 1975, Ser. No. 624,369
Int. Cl.[2] C07D *501/08*
U.S. Cl. 544—21 **2 Claims**

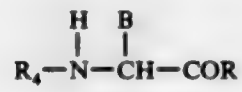
1. A process of producing useful cephalosporin antibiotics of the formula:



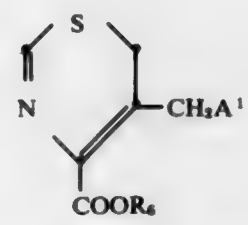
wherein B is H, CH_3, OCH_3 or SR′ wherein R′ is lower alkyl of 1–6 carbon atoms or phenyl;

R_4 is the acyl group of a carboxylic acylating agent capable of acylating the 7-amino group of a cephalosporin;

A is hydrogen, azido, halo, cyano, pyridinium, methylpyridinium, halopyridinium, carbamoylpyridiminium, N-hydroxymethylcarbamoylpyridinium, (N-carbomethoxycarbamoyl)pyridinium, (N-cyanocarbamoyl)pyridinium, (carboxymethyl)pyridinium, (hydroxymethyl)pyridinium, (trifluoromethyl)pyridinium, quinolinium, picolinium, lutidinium, hydroxy, carbamoyloxy, N-loweralkyl carbamoyloxy, N,N-di-loweralkyl carbamoyloxy, a heterocyclic tertiary amine wherein the heterocycle is 5- or 6-membered and contains one or more nitrogen, oxygen or sulfur atoms, amino, aminomethyl, acetamidomethyl, carbamoylaminomethyl, 5-cyano-triazol-1-ylmethyl, 4-methoxycarbonyltriazol-1-ylmethyl, mercapto, alkylthio of 1–6 carbon atoms, lower alkanoyloxy, benzoyloxy, (p-chlorobenzoyl)oxy, (p-methylbenzoyl)oxy, furoyloxy, tosyloxy, 1-naphthoyloxy, or a 5-membered monocyclic heterocyclic thio radical having 1–4 nitrogen, oxygen or sulfur atoms; which comprises the cycloaddition of a glycine derivative of the formula



wherein R_4 and B have the same meaning as above and R is OH, halogen, O—$COOR_6$, or trifluoromethanesulfonate, CN, N_3 or $OCOCF_3$; with a thiazine derivative of the formula:



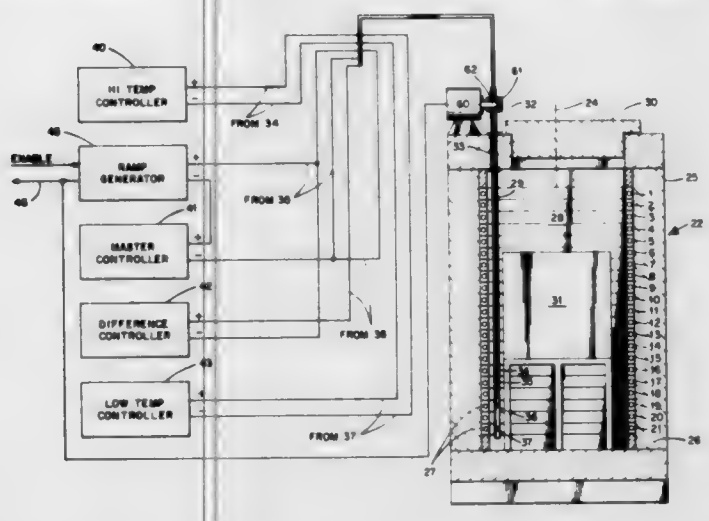
wherein A′ is hydrogen, azido, halo, cyano, pyridinium, methylpyridinium, halopyridinium, carbamoylpyridinium, N-hydroxymethylcarbamoylpyridinium, (N-carbomethoxycarbamoyl)pyridinium, (N-cyanocarbamoyl)pyridinium, (carboxymethyl)pyridinium, (hydroxymethyl)pyridinium, (trifluoromethyl)pyridinium, quinolinium, picolinium, lutidinium, protected hydroxy wherein the protecting group is removable by mild aqueous hydrolysis or by hydrogenation, carbamoyloxy, N-loweralkyl carbamoyloxy, N,N-di- loweralkyl carbamoyloxy, a heterocyclic tertiary amine wherein the heterocycle is 5-or 6-membered and contains one or more nitrogen, oxygen or sulfur atoms, protected amino, aminomethyl, acetamidomethyl, carbamoylaminomethyl, N,N-dimethylaminomethyl, N-(2-chloroethyl)aminomethyl, 5-cyano-triazol-1-ylmethyl, 4-methoxycarbamoyltriazol-1-ylmethyl, protected mercapto wherein the protecting group is removable by mild aqueous hydrolysis or by hydrogenation, alkylthio of 1–6 carbon atoms, lower alkanoyloxy, benzoyloxy, (p-chlorobenzoyl)oxy, (p-methylbenzoyl)oxy, furoyloxy, tosyloxy, p-tolylsulfonylthio, 1-naphthoyloxy or a 5-membered monocyclic heterocyclic thio radical having 1–4 nitrogen, oxygen or sulfur atoms;

R_6 is a carboxy protecting group wherein the protecting group is removable without disruption of the β-lactam group of the cephalosporin molecule; followed by removal of any protecting group at the A′ or R_6 position.

4,086,424
DYNAMIC GRADIENT FURNACE AND METHOD

Robert H. Mellen, Sr., P.O. Box 535, New London, N.H. 03257

Filed Mar. 31, 1977, Ser. No. 783,269
Int. Cl.[2] B01J *17/08*
U.S. Cl. 13—24 10 Claims



1. A dynamic gradient furnace in which the isotherm is movable under control comprising:

(a) A furnace enclosing a heating chamber;

(b) a plurality of individually controllable heating zones encircling said chamber in stacked sequence;

(c) a plurality of temperature control means each connected to control at least one of said zones;

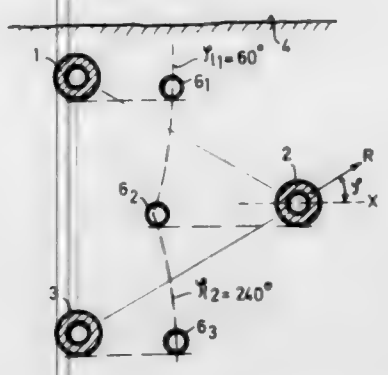
(d) transfer means for transferring said control means between zones; and

(e) ramp function means for effecting a change in temperature control of at least one of said temperature control means at a predetermined rate after transfer of said control means between zones.

4,086,425
THREE-PHASE CABLE SYSTEM WITH COMPENSATION OF LONGITUDINAL VOLTAGES INDUCED IN ACCOMPANYING RETURN-FLOW PIPES FOR COOLING WATER

Heinrich Brakelmann, Kamp-Kintfort, Germany, assignor to Felten & Guilleaume Carlswerk AG, Cologne, Germany

Filed Apr. 13, 1977, Ser. No. 787,071
Claims priority, application Germany, Apr. 14, 1976, 2616368
Int. Cl.[2] H01B *7/34*
U.S. Cl. 174—15 C 7 Claims

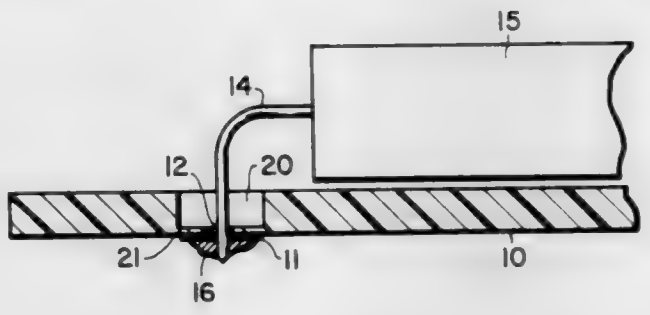


1. A three-phase cable system comprising, in combination, three single-conductor cables of the internally water-cooled type; and three return-flow pipes each associated with a respective one of the three cables for returning cooling water, the three return-flow pips being so disposed relative to the three cables that substantially no net longitudinal voltages are induced in the three return-flow pipes.

4,086,426
STRESS RELIEVED PRINTED WIRING BOARD

Thomas A. Knappenberger, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 1, 1976, Ser. No. 701,833
Int. Cl.[2] H05K *1/08*
U.S. Cl. 174—68.5 4 Claims



1. A stress relieved printed wiring board comprising:

(a) a board of dielectric material with two major surfaces;

(b) printed electrical circuitry affixed to one major surface of said board with at least one mounting pad formed therein for connecting a lead of a component thereto;

(c) said board having defined therethrough a hole approximately centered in said mounting pad and having a diameter slightly greater than the diameter of a connecting lead to be received therein; and

(d) said board further having defined therein a second hole substantially coaxial with said first hole with a cross-sectional area larger than the area of said mounting pad bearing against the one major surface, the second hole extending partially through said board from the major surface opposite said mounting pad toward the major surface having said mounting pad thereon to reduce the thickness of said board contiguous with said mounting pad for relieving stress caused by thermal cycling and dynamic environments.

4,086,427
COMMON SHIELD-TERMINATING CONNECTION IN SHIELDED WIRE BUNDLE

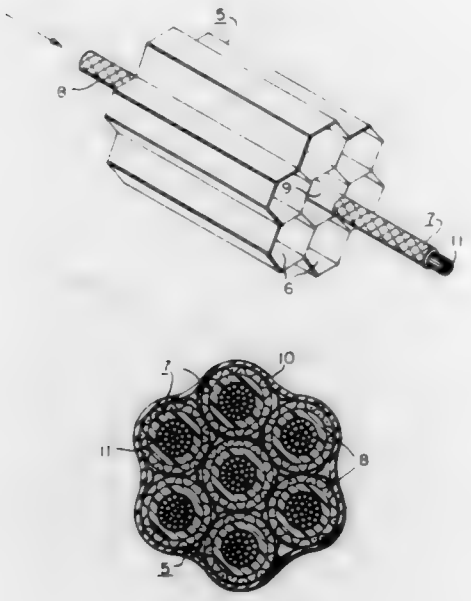
Anthony T. Nasuta, Jr., and James W. Walsh, both of Baltimore, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jun. 8, 1976, Ser. No. 693,985
Int. Cl.[2] H01R *5/02, 5/10*
U.S. Cl. 174—88 C 6 Claims

1. A wire assembly comprising:

a plurality of wires having electrical shields on their exteriors, and

a conductive honeycomb member having cells through which said wires pass,



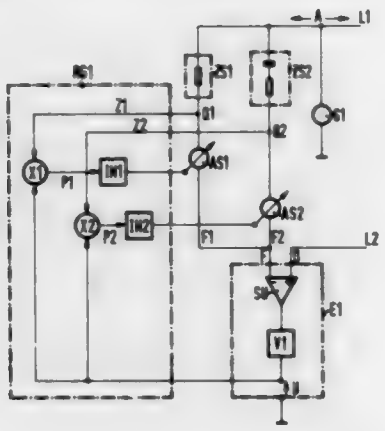
said honeycomb member being compacted around said electrical shields in electrical contact therewith.

4,086,428

CIRCUIT ARRANGEMENT FOR THE AUTOMATIC ADJUSTMENT OF A TWO-WIRE FULL DUPLEX DATA TRANSMISSION SYSTEM

Adolf Haass, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 4, 1977, Ser. No. 793,532
Claims priority, application Germany, May 4, 1976, 2619712
Int. Cl.[2] H04L *5/14*
U.S. Cl. 178—60 **4 Claims**



1. In a full duplex data transmission system having subscriber stations interconnected by two wire lines, each subscriber station having a transmitter and a receiver, a circuit arrangement in each said subscriber station for automatically adjusting the value of current conducted from the transmitter in a given station to receive therein relative to the value of a received current transmitted from another of said stations, the circuit arrangement comprising:

balancing circuit means coupling current from said transmitter in the given station to the receiver therein, said balancing circuit comprising a plurality of branch circuits for dividing said transmitter current into a plurality of sub-currents, said sub-currents being recombined prior to coupling to said receiver, each said branch circuit being a series combination of a voltage responsive current adjusting means and a timing circuit,

comparison means for receiving said transmitter current as supplied from said balancing circuit means and said received current and for producing an output voltage having a value proportional to the difference between the values of said transmitter current and said received current, and

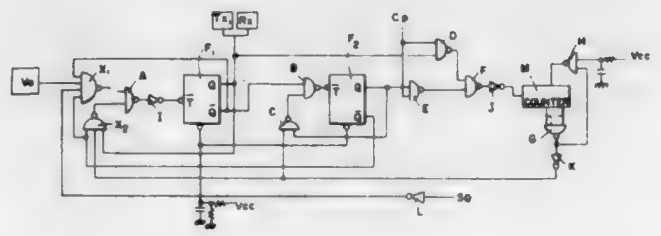
regulating circuit means for producing, responsive to said comparison means output voltage, regulating voltages coupled, respectively, to said current adjusting means for controlling the values of said sub-currents.

4,086,429

SYNCHRONIZING SYSTEM FOR USE IN TELECOMMUNICATION

Katsutaka Kotezawa; Toshimi Onodera; Setsuo Hayashi, and Fujio Shimanuki, all of Funabashi, Japan, assignors to Chiba Communications Industries, Inc., Japan

Filed Jul. 6, 1976, Ser. No. 702,455
Int. Cl.[2] H04L *7/00*
U.S. Cl. 178—69.1 **11 Claims**



11. In a synchronizing circuit for use in a time division telecommunication system having a calling station and a called station, each station having a transmitter means and receiver means, said synchronizing circuit comprising first detecting means for providing a first control signal indicating the receipt of an electrical signal representing an aural signal from said called station, second detecting means for providing a second control signal indicating the transmission of an electrical signal representing an aural signal by said calling station, bistable means for controlling the operation of said transmitter means and said receiver means, said bistable means being normally maintained in a first state for disabling said transmitter means and enabling said receiver means, enabling means responsive to said second control signal and in the absence of said first control signal to operate said bistable means to a second state for enabling said transmitter means and simultaneously disabling said receiver means, timer means responsive to said bistable means being operated to said second state for controlling said enabling means to cause said bistable means to be operated from said second state to said first state at the end of a first predetermined period of time for disabling said transmitter means and enabling said receiver means, and inhibit means responsive to said bistable means and said timer means for inhibiting said enabling means to prevent said bistable means from being operated to said second state for a second predetermined period of time after the end of said first period of time, thereby maintaining said transmitter means disabled and said receiver means enabled during said second period of time.

4,086,430

DETECTION CIRCUITRY

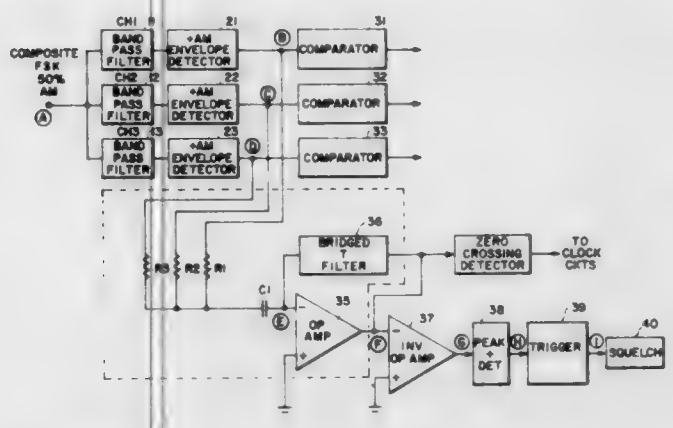
Kenneth Harvey Brown, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 14, 1975, Ser. No. 631,807
Int. Cl.[2] H04L *15/24;* H04B *1/10*
U.S. Cl. 178—88 **3 Claims**

1. Detention circuitry for detecting an incoming composite signal of the type, such as Frequency Shift Keying 50% amplitude modulation (FSK 50% AM) or FSK-PCM (pulse code modulation) return-to-zero signal, comprising a plurality of channels for separating the composite signal and forming amplitude envelope signals the corresponding constituent signals forming the composite signal,

means connected to said plurality of channels for summing and differentiating the envelope signals and filtering the summed and differentiated envelope signals into a bandpass filtered signal that is a composite of an AC and differentiated DC components,

output means for generating an output signal upon detection of a required input signal thereto having an amplitude



which exceeds a predetermined value and a predetermind polarity, and means interposed between said output means and said summing, differentiating and filtering means for setting the polarity of the DC component of the bandpass filtered signal so that the DC component is the same polarity as that of the required input signal of said output means for hastening the speed of the output means in sensing the start of the incoming composite signal.

4,086,431
COMPRESSION SYSTEM

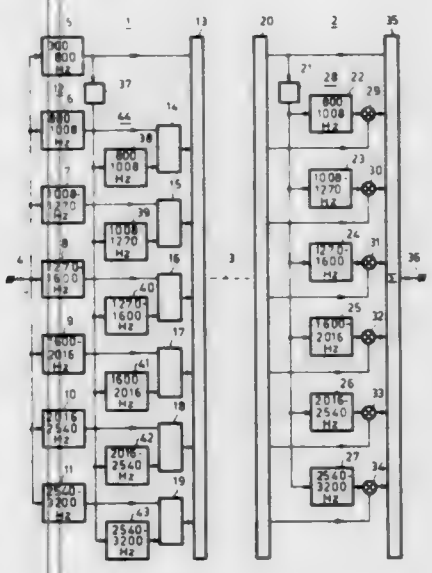
Nico Valentinus Franssen; Karel Elbert Kuijk, both of Eindhoven, and Johannes Willem Siebelink, Arnhem, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 5, 1977, Ser. No. 757,297

Claims priority, application Netherlands, Jan. 30, 1976, 7600932

Int. Cl.² G10L *1/00*

U.S. Cl. 179—1 SA **6 Claims**



1. A transmitter vocoder for transmitting speech signals comprising, means for receiving and dividing the speech signals into a band of low-frequency components and a band of high-frequency components, means for deriving from the band of high-frequency components of the speech signal a plurality of control signals with reduced bandwidth which are representative of a corresponding number of sub-bands of the band of high-frequency components of the speech signal, means for producing corresponding bands of high frequency components from the band of low frequency components, and means for transmitting the band of low-frequency components of the speech signal and the control signals, the means for deriving the control signals with reduced bandwidth from each sub-band comprising a device means for determining the ratio between the energy in the sub-band of the band of high-frequency components of the speech signal and the energy in the corresponding sub-band of said band of high-frequency components which is produced from the band of low-frequency components of the speech signal.

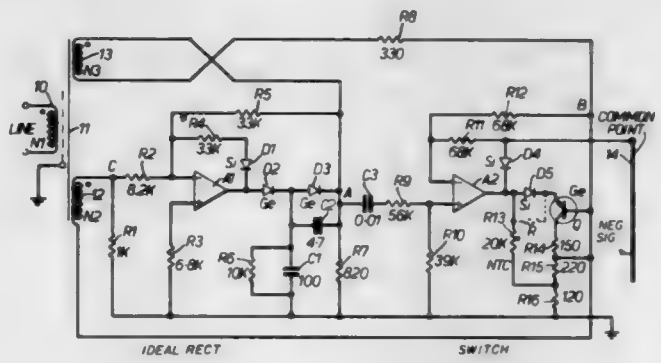
4,086,432
SWITCHING CIRCUIT USEFUL IN TELEPHONE CONFERENCE SYSTEMS

Ralph Archibald Jones, London, England, assignor to The Post Office, London, England

Filed Dec. 13, 1976, Ser. No. 749,780

Int. Cl.² H04M *3/56;* **H02M** *7/00;* **H03F** *1/36*

U.S. Cl. 179—1 CN **11 Claims**



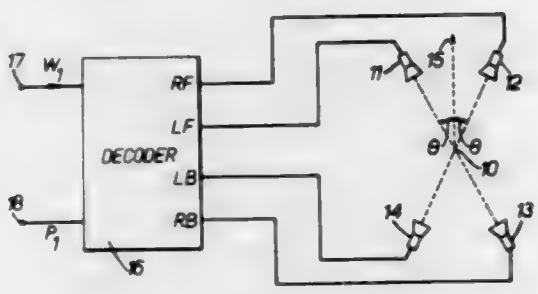
1. A switching circuit including an inverting d.c. amplifier with first and second resistive negative feedback paths having first and second resistors connected in series respectively with first and second unilaterally conducting devices connected in opposite polarity to the output of the amplifier, a first signal source and a second signal utilisation circuit connected to the electrode of the first unilaterally conducting device remote from the output of the amplifier and a second signal source and a first signal utilisation circuit connected to the electrode of the second unilaterally conducting device remote from the output of the amplifier, whereby only an input signal of polarity such as to cause the first unilaterally conducting device not to conduct can be applied from the first signal source to the first signal utilisation circuit and only an input signal of polarity such as to cause the second unilaterally conducting device not to conduct can be applied from the second signal source to the second signal utilisation circuit.

5. A telephone conference amplifier having a plurality of channels, each channel including means for receiving an input signal and producing therefrom a unidirectional polarity signal, switch means including an inverting d.c. amplifier with first and second resistive negative feedback paths having first and second resistors connected in series respectively with first and second unilaterally conducting devices connected in opposite polarity to the output of the amplifier, means for applying the unidirectional polarity signal from the producing means to the electrode of the first unilaterally conducting device remote from the output of the amplifier, the polarity of the first unilaterally conducting device being such that the unidirectional polarity signal does not cause it to conduct, means connecting the electrode of the second unilaterally conducting device remote from the output of the amplifier to a point common to all of the channels and means connected to a point on the first resistive negative feedback path to derive therefrom, in response to a unidirectional polarity signal from the common point, a unidirectional polarity signal of the same polarity as that applied to the electrode of the first unilaterally conducting device and to produce therefrom a symmetrically polarised output signal.

4,086,433
SOUND REPRODUCTION SYSTEM WITH NON-SQUARE LOUDSPEAKER LAY-OUT

Michael Anthony Gerzon, Oxford, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 560,865, Mar. 21, 1975, Pat. No. 3,997,725. This application Nov. 4, 1976, Ser. No. 738,734
Claims priority, application United Kingdom, Mar. 26, 1974, 13292/74
The portion of the term of this patent subsequent to Dec. 14, 1993, has been disclaimed.
Int. Cl.[2] H04R *5/00*
U.S. Cl. 179—1 GQ **8 Claims**



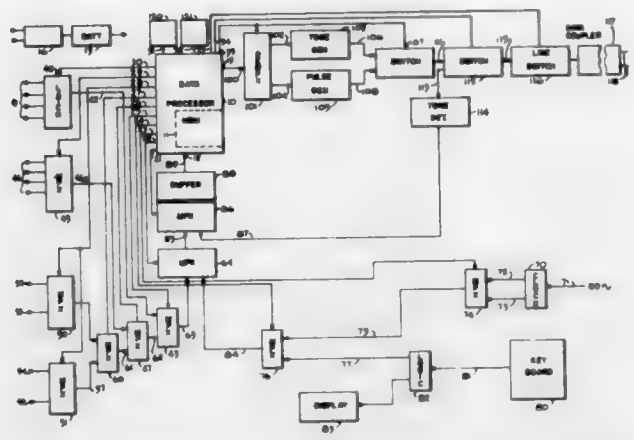
1. A decoder for a sound reproduction system having four loudspeakers surrounding a listening area each located on one of the diagonals of a non-square rectangle between the point of intersection of said diagonals and a respective corner of said rectangle, said decoder comprising input means for receiving at least two input signals comprising complex linear combinations of pressure signal components and velocity signal components representative of the pressure and of velocity at a listening position and signal processing means for producing first and second difference signal components from said velocity signal components, said first difference signal components being dependent on the required difference in signal strength between the sum of the signals for a first adjacent pair of said loudspeakers and the sum of the signals for a second adjacent pair comprising the other two loudspeakers and said second difference signal components being dependent on the required difference in signal strength between the sum of the signals for a third adjacent pair of loudspeakers comprising one loudspeaker from each of said first and second adjacent pairs and the sum of the signals for a fourth adjacent pair of loudspeakers comprising the other loudspeaker from each of said first and second adjacent pairs of loudspeakers, said decoder further comprising layout control means for applying first and second gains to said first and second difference signal components, the ratio between the first and second gains being substantially equal to the ratio between the sine of half the angle between the diagonals on which said first pair of loudspeakers are located and the sine of half the angle between the diagonals on which said third pair of loudspeakers are located, and output means responsive to said layout control means and said pressure signal components for producing a responsive output signal for each loudspeaker.

4,086,434
REMOTE CONDITION REPORTING SYSTEM

Quinto M. Bocchi, Minneapolis, Minn., assignor to Leo P. Christiansen, St. Paul, Minn., a part interest

Filed Sep. 7, 1976, Ser. No. 721,319
Int. Cl.[2] H04M *11/04*
U.S. Cl. 179—2 AM **11 Claims**

1. A remote condition reporting unit, comprising a microprocessor including memory operatively associated therewith, mean connected to said microprocessor for receiving signals indicative of a condition to be reported, means connected to said microprocessor for generating signals for initiating a telephone connection and for transmitting data thereover, and calendar clock means connected to said microprocessor for supplying time signals indicative of date and time of day thereto, said microprocessor including circuit means operable at a predetermined time for initiating a call to a central report-

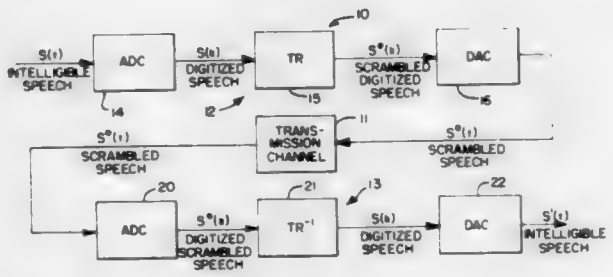


ing station and for transmitting data thereto corresponding to said signals indicative of said condition to be reported.

4,086,435
METHOD OF AND MEANS FOR SCRAMBLING AND DESCRAMBLING SPEECH AT AUDIO FREQUENCIES

Daniel Graupe, Fort Collins, Colo., and G. Donald Causey, Chevy Chase, Md., assignors to Biosystems Research Group II, Chevy Chase, Md.

Filed Sep. 17, 1976, Ser. No. 724,170
Int. Cl.[2] H04L *9/02*
U.S. Cl. 179—1.5 R **18 Claims**



1. A method for processing an input audio-frequency signal which is to be transmitted through a communication channel comprising

(a) scrambling the input signal by:

(1) performing an *n*-level digitization of the input signal for obtaining a digitized signal;

(2) transforming levels of the digitized signal to other levels using a pre-selected *n*-bit transformation code for obtaining a scrambled digitized signal; and

(3) converting the scrambled digitized signal into analog form to obtain a scrambled analog signal;

(b) transmitting the scrambled analog signal through the channel; and

(c) decrambling the transmitted scrambled analog signal by:

(1) performing an *n*-level digitization of the transmitted scrambled analog signal for obtaining a digitized transmitted signal;

(2) inversely transforming the levels of the digitized transmitted signal using the inverse of the pre-selected *n*-bit transformation code used in step (a)(2) for obtaining an unscrambled digitized signal; and

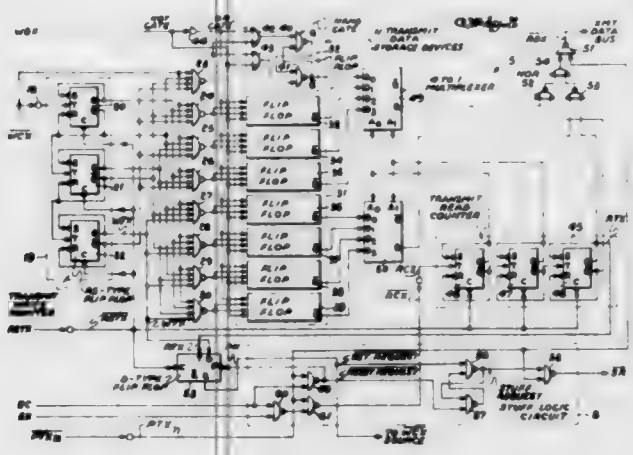
(3) converting the unscrambled digitized signal into analog form for obtaining a representation of the input audio-frequency signal.

4,086,436

TRANSMIT AND RECEIVE DIGITAL DATA CHANNEL ELASTIC STORE

Stuart Barry Cohen, Nutley; James Monroe Clark, Cedar Grove, and Arthur Howard Magnus, Succasunna, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation of Ser. No. 541,558, Jan. 16, 1975, abandoned. This application Aug. 4, 1976, Ser. No. 711,766
Int. Cl.[2] H04J *3/04*
U.S. Cl. 179—15 AF 27 Claims



1. A transmit and receive digital data elastic store comprising:

a transmit digital data elastic store including

a first input for a plurality of N-bit data streams to be transmitted, each of said data streams to be transmitted having first different bit rates, where N is an integer greater than one;

a first complementing means coupled to said first input to complement said plurality of N-bit data streams to be transmitted;

first N storage means coupled in parallel to said first input and said first complementing means;

first means coupled to each of said first N storage means and under control of a transmit write clock signal having a first given rate to steer each of the bits of said plurality of N-bit data streams to be transmitted into an appropriate different one of said first N storage means; and

second means coupled to said first N storage means and under control of a transmit read clock signal having a second given rate to steer each of the bits stored in said first N storage means to a transmit data bus at a first predetermined constant bit rate;

a receive digital data elastic store including

a second input for a plurality of received N-bit data streams, each of said plurality of received data streams having a second predetermined constant bit rate;

a second complementing means coupled to said second input to complement said plurality of received N-bit data streams;

second N storage means coupled in parallel to said second input and said second complementing means;

third means coupled to each of said second N storage means and under control of a receive write clock signal having a third given rate to steer each of the bits of said plurality of N-bit received data streams into an appropriate different one of said second N storage means; and

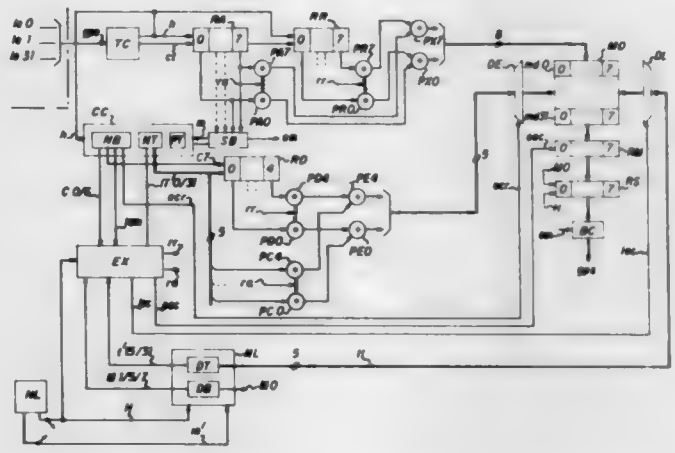
fourth means coupled to said second N storage means and under control of a receive read clock signal having a fourth given rate to steer each of the bits stored in said second N storage means to a receive data bus at second different bit rates corresponding to said first different bit rates.

4,086,437

RESYNCHRONIZING CIRCUIT FOR TDM SYSTEM

Michel André Robert Henrion, Boulogne, and André Lucien Coudray, Rueil-Malmaison, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 27, 1976, Ser. No. 726,719
Claims priority, application France, Sep. 29, 1975, 75 29725
Int. Cl.[2] H04J *3/06*
U.S. Cl. 179—15 AF 5 Claims



1. A synchronizing circuit for use in an exchange of a time division multiplex system, and in which a series of plural bit words is received by said exchange during successive time frames comprising a time slot for each word with each bit being received serially during a time element of a time slot and with each word being received at the clock rate of a distant office from which the series of words is transmitted, each word being forwarded within said exchange at a local clock rate of the same duration and extent as the clock rate of the distant office, said circuit including: a plurality of shift registers in cascade for receiving words from said office with each register capable of storing one word at a time, a multiple stage memory for storing therein in successive time slots, the words of a frame based on said distance clock rate, means in said exchange responsive to a signal for controlling storage of a word in said memory received from said shift registers, means responsive to a read signal during a preselected time element for reading a word from said memory, means for comparing a signal derived from said storage signal against said read signal, means responsive to a condition in which said derived signal coincides with a read signal for shifting said read signal to a time element spaced in time from the preselected time interval, and bistable means for causing reading of words from one or the other of said shift registers for storage in said memory dependent on the direction of said shifting.

4,086,438

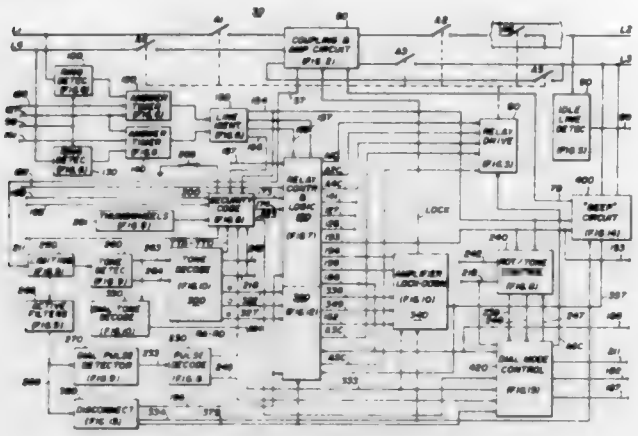
AUTOMATIC INTERCONNECTION SYSTEM

Daniel W. Kahn, and Thomas A. Skidmore, both of Highland Park, Ill., assignors to Teletech Corporation, Highland Park, Ill.

Filed Mar. 7, 1977, Ser. No. 775,263
Int. Cl.[2] H04M *3/54*
U.S. Cl. 179—18 BE 45 Claims

1. An automatic interconnection system for use at a telephone subscriber station served by first and second subscriber lines each connected to a telephone system central office, said interconnection system comprising line interconnection means coupled to the first and second lines and operable for seizing and releasing the lines and establishing interconnections therebetween, access means coupled to the first line and to said line interconnection means and responsive to access signals on the first line for causing said line interconnection means to seize the first and second lines and establish an interconnection therebetween, and reset means coupled to the second line and to said line interconnection means and responsive to reset

signals on the second line for causing said line interconnection means to release only the first line and then to re-seize the first line and reestablish the interconnection between the first and second lines.

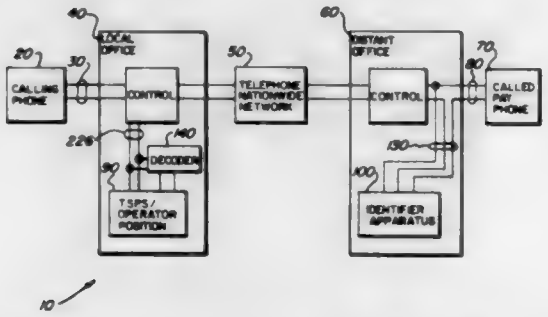


4,086,439

CLASS OF LINE IDENTIFIER APPARATUS AND METHOD THEREFOR

Sandra Rae Vowles, 1300 Utica, Denver, Colo. 80204; Michael Alan Jacobs, 1090 S. Parker Rd., Denver, Colo. 80231, and Amos Ray Jackson, 2887 McClelland St., Salt Lake City, Utah 84106

Filed Dec. 17, 1976, Ser. No. 751,490
Int. Cl.² H04M *5/18*
U.S. Cl. 179—27 DA **16 Claims**



1. In a telephone system having a calling phone, a called phone, an operator position, means responsive to collect call origination signals generated by said calling phone for interconnecting a communication path between said calling phone and said operator position, and means cooperative with said interconnecting means and said operator position for connecting said called phone to said communication path, an improvement to said system comprising means responsive to an answer signal from said called phone for extending a unique signal over said communication path to said operator position when said called phone is unauthorized to receive a collect call.

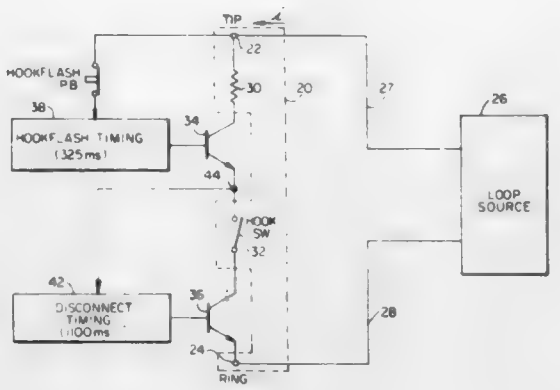
4,086,440

TELEPHONE SET WITH LOOP CURRENT INTERRUPTION TIMING CONTROL

Robert J. Hurle, Madison, Conn., assignor to Chestel, Inc., Chester, Conn.

Filed Apr. 12, 1977, Ser. No. 786,847
Int. Cl.² H04M *1/00*
U.S. Cl. 179—81 R **12 Claims**

8. The combination comprising a telephone set having an equivalent network resistance and a hook switch including at least one set of contacts which is open when said telephone is in an on-hook condition and which is closed when said telephone set is in an off-hook condition, said telephone set also having tip and ring terminals for connecting said telephone set in a loop circuit, a hook flash push button, a series electrical circuit between said tip terminal and said ring terminal which series circuit includes said set of contacts of said hook switch and said equivalent resistance of said telephone set in series with one another, and means responsive to operation of said hook flash push button for opening said series circuit for a time interval of predetermined duration.

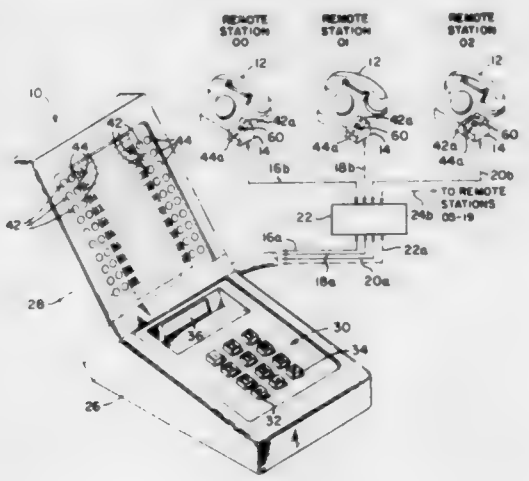


4,086,441

MESSAGE-WAITING AND DO-NOT-DISTURB COMMUNICATIONS SYSTEM

Richard J. Ullakko, Kirkland, and Gerald L. Edwards, Seattle, both of Wash., assignors to Tone Commander Systems, Inc., Redmond, Wash.

Filed Jan. 14, 1977, Ser. No. 759,359
Int. Cl.² H04M *3/42*
U.S. Cl. 179—84 C **26 Claims**



21. A telephone module for a telephone message-waiting and do-not-disturb communication system, said module comprising: mounting means for mounting said module on a telephone set; first visual indicator means for indicating message-waiting; second visual indicator means for indicating the status of do-not-disturb indicator means spaced therefrom; and switch means for alternatively controlling said first and second visual indicator means.

4,086,442

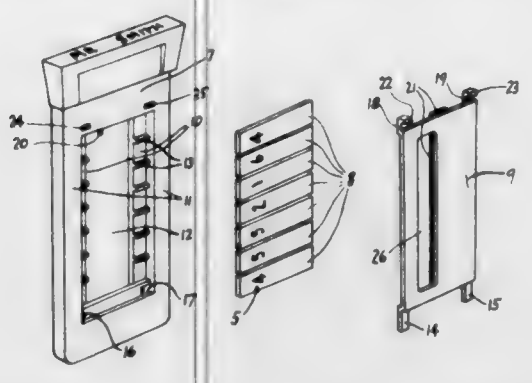
REPERTORY DIALLERS

Bryan W. Rickard, 19667 Valley View Dr., Topanga, Calif. 90290

Filed Apr. 28, 1976, Ser. No. 681,076
Int. Cl.² H04M *1/45*
U.S. Cl. 179—90 CS **20 Claims**

1. Card repertory dialler in which each digit of a telephone number is represented on a card by a number-block, each said number-block being capable of individual motion relative to said card, in order to change the telephone number represented by the card as a whole; and in which said cards include restraining means whereby said relative motion may be prevented, in order that the telephone number represented by the card should not change; and identifying means to automatically provide, as a result of moving the number-blocks to

represent a particular telephone number, a visual representation of the numerals comprising such telephone number in their correct sequence; and in which said number-blocks include coding means whereby the digit represented by said number-



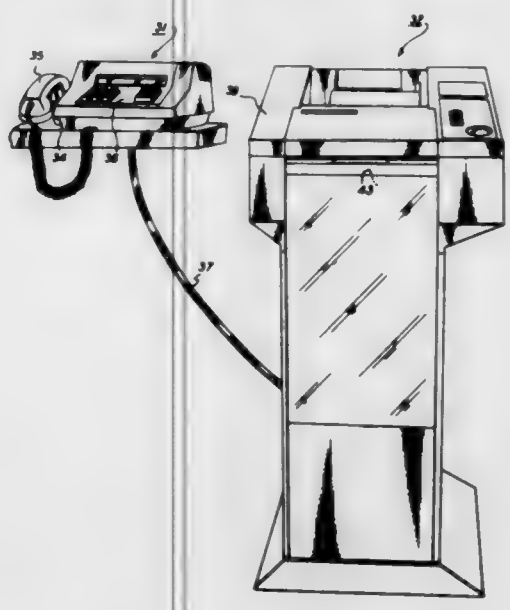
block is expressed in a form suitable for sensing for the purpose of subsequent automatic transmission to the telephone exchange; and which includes sensing means for the accomplishment of said sensing, and transmission means for the accomplishment of said transmission.

4,086,443

AUTOMATIC DIALER WITH A PROGRAMMABLE PAUSE

Michael L. Gorham, Plano, Tex., and Roger F. Norian, Norwalk, Conn., assignors to Xerox Corporation, Stamford, Conn.

Filed May 3, 1977, Ser. No. 793,452
Int. Cl.[2] H04M *1/45*
U.S. Cl. 179—90 BD **5 Claims**



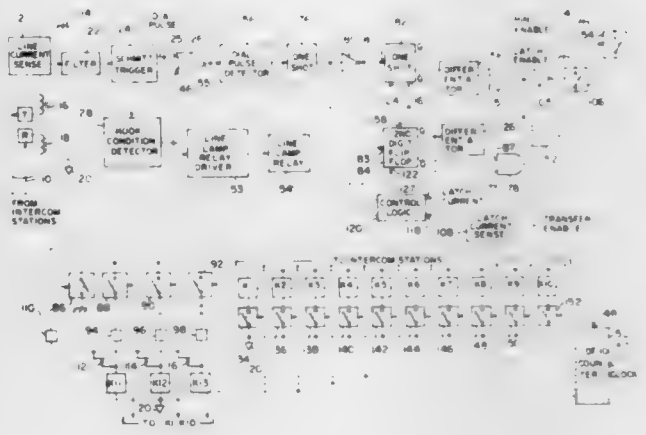
1. In an automatic telephone dialer for placing outgoing telephone calls from a terminal having a raster input scanner for sequentially scanning address cards bearing mark sense indicia identifing telephone numbers to which respective ones of said calls are to be placed; said address cards having a common, distinctive recognition code; the improvement comprising means for interrupting the scanning of successive ones of said address cards for a predetermined period of time in response to the scanning of a supplemented recognition code containing said distinctive code.

4,086,444

DIAL PULSE KEY TELEPHONE INTERCOM SYSTEM

Maurice I. Smith, Woodinville, and Victor M. DePinto, Bellevue, both of Wash., assignors to Tone Commander Systems, Inc., Redmond, Wash.

Filed Nov. 4, 1976, Ser. No. 738,859
Int. Cl.[2] H04M *1/72*
U.S. Cl. 179—99 **10 Claims**



1. A pulse selective key telephone communication system, comprising: line current sensing means connected with an intercom circuit operatively associated with a group of subscriber stations, each having a dial telephone and intercom use indicator means, said line current sensing means being operative to sense signals transmitted via the intercom circuit from a calling station when off-hook; resettable pulse counter means for decoding decimal station address information in the form of dial pulse signals; resettable access means operatively associated with said pulse counter means for accessing a called station having a corresponding station address in order to produce a call indication thereat; reset means for resetting said pulse counter means and said access means upon completion of call indication; indicator control means for operating said intercom use indicator means; and a hook condition detector circuit including;

a gate having at least two inputs and an output, one input connected with said line current sensing means to receive signals therefrom, and means connected between the output and the second input for maintaining a predetermined input signal level at the second input commencing after receipt at the first input of a signal sensed by said line current sensing means as the calling station assumes off-hook status, and terminating after receipt at the first input of a signal sensed by said line current sensing means as the calling station resumes on-hook status, said predetermined input signal level being sufficient to cause said gate to present a first constant level output signal while said predetermined input signal level is maintained at the second input,

said pulse counter means being operatively associated with the gate output such that it will be enabled to decode station address information only while said first constant level output signal is present at the gate output, and will be reset when said gate presents a second constant level output signal different from said first constant level output signal upon termination of said predetermined input signal level in the event the calling station resumes on-hook status before being reset by said reset means,

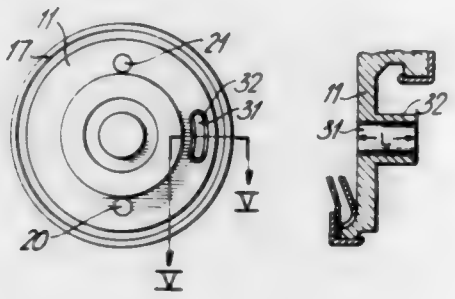
said access means being operatively associated with the gate output such that it will be reset along with said pulse counter means in the event the calling station resumes on-hook status before being reset by said reset means,

said indicator control means being operatively associated with the gate output such that it will be enabled to operate said intercom use indicator means only while said first constant level output signal is present at the gate output.

4,086,445
TELEPHONE HANDSET TRANSMITTER WITH IMPROVED OUTPUT RESPONSE

Ronald Charles Robinson, London, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jan. 21, 1977, Ser. No. 761,275
Int. Cl.[2] H04R 1/28
U.S. Cl. 179—121 R **4 Claims**



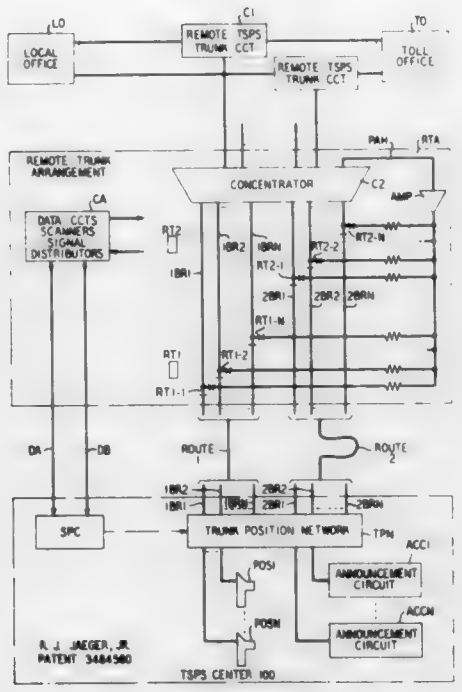
1. A telephone handset transmitter comprising:
a frame;
a diaphragm extending over one side of said frame and spaced therefrom, the periphery of said diaphragm connected to the periphery of the frame to define a first air chamber, between said diaphragm and said frame;
a cup-shaped member extending over the other side of the frame and having a peripheral portion extending towards the frame and connected to the periphery of the frame to define a second air chamber, between said cup-shaped member and said frame;
said diaphragm and said cup-shaped member forming an enclosure, said frame extending across said enclosure;
at least one aperture in said frame and interconnecting said first and second air chambers;
a perforated member extending over said at least one aperture;
a slot in said frame and interconnecting said first and second air chambers, said slot unobstructed at both ends, a tube surrounding said slot and extending from at least one side of said frame, said tube having a length/area ratio within predetermined limits, the length being the axial length of the tube plus slot thickness and the area being the area of the aperture in a plane normal to the axis of the tube;
the total acoustic resistance of said at least one aperture and said slot being less than about 20 ohms and more than zero.

4,086,446
EMERGENCY ANNOUNCEMENT SYSTEM

Robert Marvin Taylor, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 11, 1977, Ser. No. 767,685
Int. Cl.[2] H04M 3/08
U.S. Cl. 179—27 G **7 Claims**

1. In combination,
base and remote locations interconnected by first and second groups of trunks,
means at the remote location for connecting one trunk in said first group concurrently to each of a plurality of trunks in said second group, and

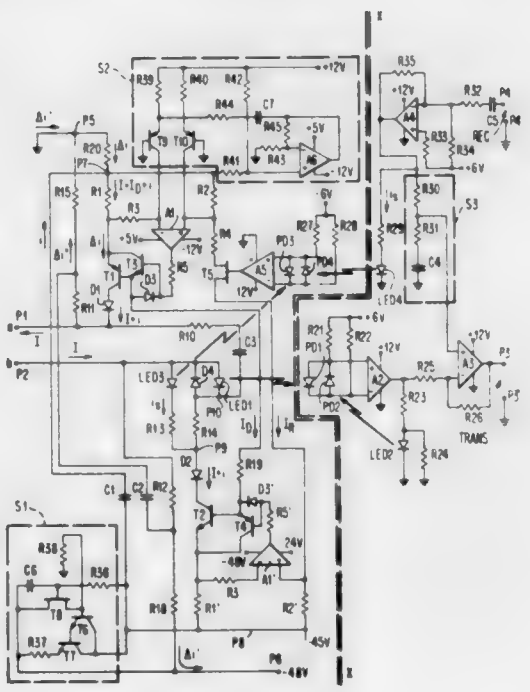


means at the base location for applying an announcement to said one trunk in said first group.

4,086,447
ELECTRONIC HYBRID CIRCUIT FOR CONNECTING A TWO-WIRE LINE TO SWITCHING SYSTEM

Hans Rudolf Schindler, Langnau, and Peter Vettiger, Thalwil, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 16, 1977, Ser. No. 769,247
Claims priority, application Switzerland, Mar. 2, 1976, 2548/76
Int. Cl.[2] H04B 1/58
U.S. Cl. 179—170 NC **11 Claims**



1. In a communications network having a plurality of audio devices, a four wire switching network at a central location and a two-wire line connecting each audio device with said central location, a hybrid circuit for each two-wire line to connect said line to the four wires of said switching network, said hybrid circuit including a pair of regulated current sources providing a positive current to the one and a negative current

to the other wire of said two-wire line, and said hybrid circuit further comprising:

a single control current generating circuit common to said pair of regulated current sources,

a current control means in each current source and responsive to a voltage furnished at an associated output of said control current generating circuit, said voltage being proportional to said common control current to control the current in its associated current source to be a constant multiple of said common control current,

a first optocoupler device connected with its light-generating means to an output port of said switching network for receiving audio signals and connected with its light-responsive means to the input of an active element in said control current generating circuit, to enable generation of a common control current consisting of a direct current and a superimposed audio signal current, and

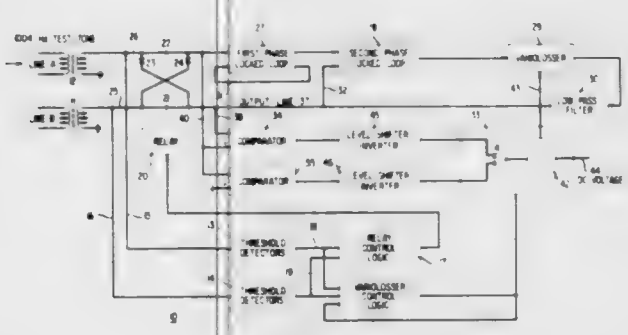
a second optocoupler device connected with its light-generating means to said two-wire line for receiving audio signals and connected with its light-responsive means to an input port of said switching network.

4,086,448

LOOP-AROUND TEST CIRCUIT FOR TELECOMMUNICATIONS LINES

Ronald Edward Anglikowski, Bayville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 18, 1977, Ser. No. 788,545
Int. Cl.[2] H04B *3/46*
U.S. Cl. 179—175.3 R **6 Claims**



6. A loop-around telephone circuit comprising:

an input and an output;

means for interchangeably connecting said circuit to a first and a second telephone line without metallically connecting said lines; and

means for receiving a tone signal on a one of said lines, for replicating same in frequency, phase and amplitude and for applying said replicated signal to the other of said lines.

4,086,449

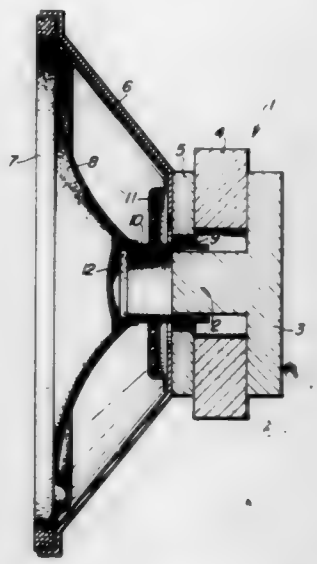
LOUDSPEAKER WITH BURNING RESISTANT DIAPHRAGM

Kazuro Takano, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation-in-part of Ser. No. 576,380, May 12, 1975, abandoned. This application Nov. 5, 1976, Ser. No. 739,141
Claims priority, application Japan, May 14, 1974, 49-54239
Int. Cl.[2] H04R *7/00*; G10K *13/00*; C09K *3/28*
U.S. Cl. 179—181 R **1 Claim**

1. In a loudspeaker with a diaphragm made of pulp fibers, the improvement comprising

using as said pulp fibers, pulp fibers that have been deposited with about 30 to about 40% by weight of a mixture consisting of highly condensed water-insoluble ammonium polyphosphate having been chemically condensed by the addition of about 2 to about 3% by weight of polyethyleneimine and having been further mixed with about 5 to



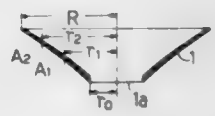
about 6% by weight of a neoprene series rubber latex, all percentages by weight based on said pulp fibers.

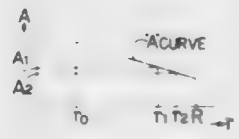
4,086,450

VARIABLE THICKNESS CONE FOR A DYNAMIC SPEAKER AND QUALITY CONTROL INSPECTION METHOD THEREFOR

Kenzo Inoue, 22, Kitatanda, Yofu-cho, Tokai-shi, Aichi-ken, Japan

Filed Nov. 9, 1976, Ser. No. 740,292
Claims priority, application Japan, Jun. 25, 1976, 51-075894
Int. Cl.[2] H04R *7/12*
U.S. Cl. 179—181 R **3 Claims.**





1. A convex cone of truncated conical form for use in a dynamic speaker having a number of integrally formed radial ribs thereon, extending from the throat portion toward the peripheral portion thereof, said cone being characterized by the relationship

$A_1 > A_2$ so long as $r_1 < r_2$, where A_1 and A_2 are the cross sectional areas of said cone when said cone is cut parallel to the axis of said cone at radii r_1 and r_2 respectively.

3. A method of inspecting the manufacture of a substantially convex truncated conical form for a dynamic speaker, which method comprises the following comparison as an inspection process:

(a) cutting said cone parallel to the axis of said cone in 2 places, distances r_1 and r_2 from the axis of said cone, r_1 being less than r_2;

(b) rejecting the manufactured cone if the cross sectional areas A_1, produced by cutting said cone in step (a) at r_1, is less than or equal to A_2, the cross sectional area produced by cutting said cone is step (a) at r_2;

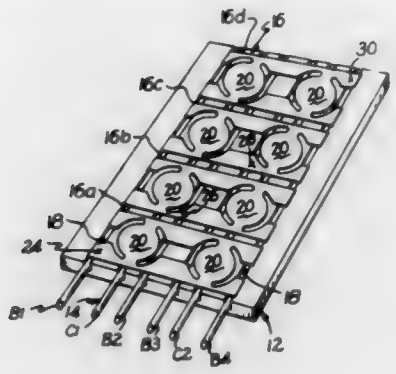
(c) accepting the manufactured cone if the cross sectional area A_1 is greater than A_2.

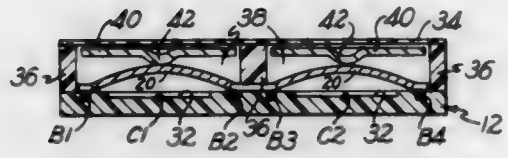
4,086,451

KEYBOARD APPARATUS

Henry J. Boulanger, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 6, 1976, Ser. No. 747,655
Int. Cl.[2] H01H *13/70*
U.S. Cl. 200—5 A **12 Claims**





1. Keyboard apparatus having a plurality of switching stations comprising a substrate having a top surface, a plurality of spaced stationary electrical contacts disposed on the substrate, a plurality of snap-acting electrically conductive disc elements disposed on the substrate overlying the stationary contacts, each disc element disposed at a switching station, each disc element adapted to move into and out of engagement with a stationary contact, means to connect the disc elements and the contacts to an electrical source, a thin cover having a flat top surface mounted on the substrate overlying the top surface and spaced therefrom, the cover having indicia to identify the location of the switching stations, and tactile feedback means disposed intermediate each disc and the flat cover, the tactile feedback means comprising a separate rigid plate like member for each switching station having a protrusion extending therefrom, the protrusion generally aligned with and extends toward the center of a respective snap acting disc whereby upon depression of the cover at a switching station by an operator's finger the feel of the sudden snapping of the disc from an unactuated position in which the disc element is out of engagement with any stationary contact to an actuated position in which the disc element is in engagement with a stationary contact is transmitted to the operator's finger.

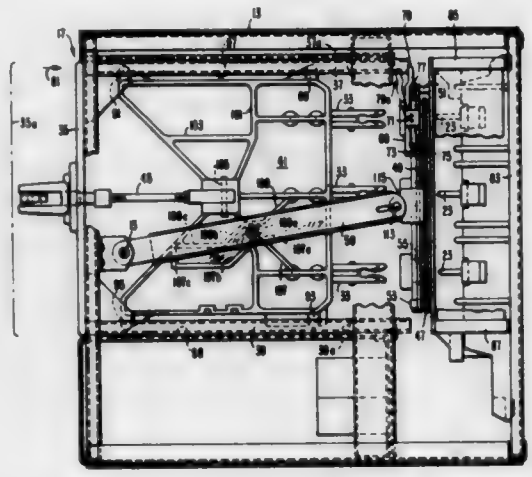
4,086,452

ISOLATING SWITCH SHUTTER ASSEMBLY FOR HIGH VOLTAGE MOTOR STARTER

James D. Collins, Elma, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 2, 1976, Ser. No. 672,897
Int. Cl.[2] H01H *9/22*
U.S. Cl. 200—50 AA **4 Claims**

1. A switching apparatus comprising a cabinet housing having a rear panel, first and second electrical terminal contact assemblies mounted in spaced locations on the interior surface of the rear panel, electrical conductor means for providing a circuit between the first and second terminal contact assemblies and comprising a movable contact member, the isolating switch structure comprising track means, said structure being movable between retracted and advanced positions of the rear panel, a carriage mounted on the track means and movable between retracted and advanced positions of the rear panel and comprising a cam, the movable contact member being mounted on the carriage and movable by the carriage between open and closed positions with the first terminal contact assembly corresponding to the retracted and advanced positions of the carriage, manual means including handle means connected to the carriage for moving the carriage between the retracted and advanced positions, a safety shutter between the movable contact member and said first terminal-contact assembly when the carriage is in the open contact position, operating means



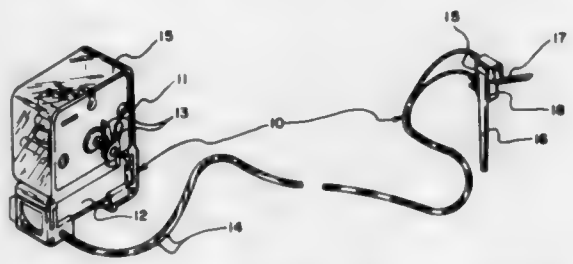
for moving the safety shutter to a retracted position when the carriage moves to the closed contact position, the operating means comprising a shutter lever pivotally mounted at one end at a fixed location and connected at the other end to the safety shutter, a cam follower on the lever, the cam comprising a pair of spaced lineal camming surfaces disposed on opposite sides of the cam follower and extending at an angle inclined to the direction of movement of the carriage.

4,086,453

GAME TRACKING DEVICE

Joseph R. Bresan, P.O. Box 8611, Greenboro, N.C. 27410

Filed Oct. 20, 1976, Ser. No. 733,992
Int. Cl.[2] H01H *3/02, 35/00*
U.S. Cl. 200—52 R **7 Claims**



1. A tracking device to determine the time of the day when an animal first comes to a staked-out location comprising:

(a) a timing means powered by connection through an electrical circuit to a portable power source;

(b) a pair of lead wires connected to a break in the electrical circuit between the power source and the timing means;

(c) a pressure switch electrically connected to the two lead wires capable of completing and interrupting the circuit between the power source and the timing means; and

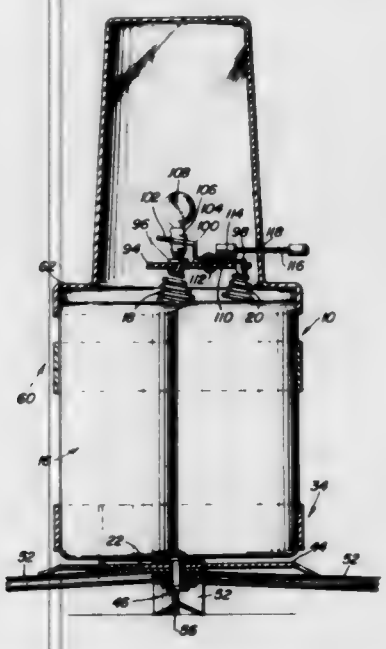
(d) a tidbit holding means for holding tidbit very appetizing to the animal and being connected to the pressure switch such that when the tidbit is placed on or removed from the tidbit holding means, that placement or removal controls the on-off position of the switch and changes the running of the time means to the opposite mode.

4,086,454

BATTERY SUPPORTED LIGHT WITH CIRCUIT MAKER AND BREAKER HAVING TERMINALS AND MOUNTING PLATE DIRECTLY MOUNTED TO BATTERY COIL SPRING ELECTRODES

Otto J. Bluhm, 118 Adolph St., Wausau, Wis. 54401

Division of Ser. No. 487,253, Jul. 10, 1974, Pat. No. 3,980,989.
This application Jun. 22, 1976, Ser. No. 698,687
Int. Cl.[2] H01H *1/00*; F21L *7/00*; F21V *23/04*; H01R *13/00*
U.S. Cl. 200—60 7 Claims



1. In combination with a storage battery of the type including a pair of generally parallel, spaced and outwardly projecting contact terminal defining resilient coil springs, a terminal mount assembly comprising a body of dielectric material for disposition outwardly of and supported from the outer ends of said springs, a pair of spaced terminal ends supported from and projecting outwardly from said body, the spacing between said terminal ends being slightly different than the spacing between the free ends of said springs with said free ends being slightly displaced relative to each other to match the spacing between said terminal ends and the latter removably telescoped into the free ends of said springs to thus support said terminal ends and the body, from which said terminal ends are supported, solely from said springs and thus from said battery.

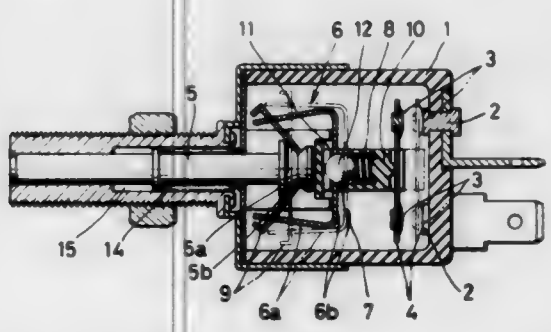
3. The combination of claim 1 wherein said body comprises a panel member disposed generally normal to said coil springs, said terminal ends comprising end extensions of terminal members secured through said panel member.

4,086,455

SNAP ACTION TYPE OF ELECTRIC SWITCH

Fumitaka Takahashi, Mizohata, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1977, Ser. No. 783,445
Claims priority, application Japan, Apr. 7, 1976, 51-42029
Int. Cl.[2] H01H *15/18*
U.S. Cl. 200—76 7 Claims



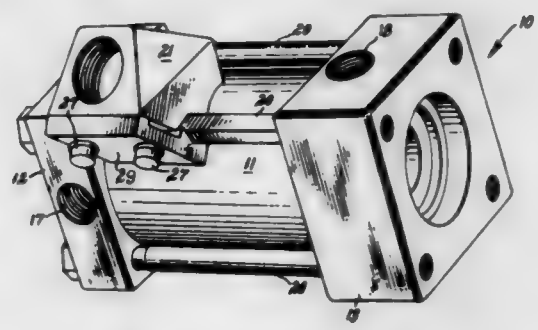
1. A snap action type of electric switch comprising: a housing; a contact plate having a movable contact facing a stationary contact in said housing and being free to move back and forth; an intermediate snap spring; a switching rod extending at the back of said snap spring and being free to move back and forth; said contact plate being connected through said intermediate snap spring to said switching rod; auxiliary spring means urging said contact plate in a forward direction; said contact plate having a play space in forward and rearward directions in relation to said snap spring and being urged in forward direction by said auxiliary spring means.

4,086,456

MOUNTING FOR MAGNETIC SWITCH

Kendall Frederick Bone, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Oct. 4, 1976, Ser. No. 729,297
Int. Cl.[2] H01H *35/38*
U.S. Cl. 200—82 E 9 Claims



1. In a cylinder assembly for use in a fluid pressure system, said cylinder assembly having a cylinder body, a head secured to each end of the cylinder body, a piston axially movable within the body in accordance to fluid pressure applied through one of the heads and a magnetic switch for detecting relative position between the piston and cylinder body wherein the improvement comprises:

a tie rod securing a fluid seal between the heads and the cylinder body extending between the heads on each end of the cylinder in juxtapositional relationship to said cylinder body, said tie rod having a non-circular cross-section of varying diametral dimension;

a first gripping surface upon the magnetic switch, said first gripping surface engaging said tie rod to intimately position the switch with respect to the cylinder;

a fastening plate having a second gripping surface engaging the tie rod and positioned thereon such that the cross-sectional dimension of the tie rod between the gripping surfaces is at a relative minimum;

means for selectively reducing the distance between the gripping surfaces and simultaneously compressing the tie rod with the gripping surfaces.

4,086,457

FLOAT SWITCH SIGNALLING TWO DIFFERENT LIQUID LEVELS

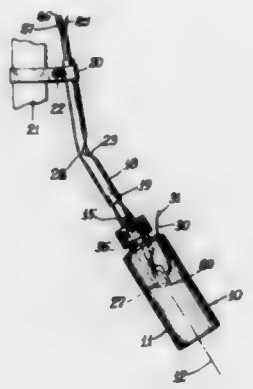
Karl O. Niedermeyer, 17WO68 North St., Bensenville, Ill. 60106

Filed Dec. 16, 1976, Ser. No. 751,117
Int. Cl.[2] H01H *35/18*
U.S. Cl. 200—84 R 10 Claims

1. In a float switch apparatus for use with a body of liquid having an exposed surface, which apparatus includes a float having an end and defining an axis intersecting said end, means for mounting said float and attached to said end so that, when the float is at said surface, the inclination of the float axis varies as the level of said surface varies, and electrical circuit means including a mercury switch secured to the float and positioned at a given angle with respect to said axis whereby an electrical circuit formed by said circuit means changes condition between open and closed at a given inclination of the float, the further improvement wherein:

said electrical circuit means including a second electrical

circuit having a second mercury switch therein, said second mercury switch being secured to said float and positioned at another angle with respect to said axis to change



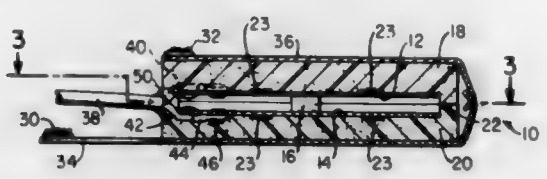
the condition of said second electrical circuit between open and closed at an inclination of said float different than said given inclination at which the condition of the first mentioned electrical circuit changes.

4,086,458

ELECTRICAL SWITCH FOR USE BY THE DISABLED

Herbert C. Dickey, South Natick, Mass., assignor to The Ealing Corporation, South Natick, Mass.

Filed Sep. 2, 1976, Ser. No. 719,929
Int. Cl.[2] H01H *3/02*
U.S. Cl. 200—85 R **17 Claims**



1. An electrical switch, comprising:
(a) housing means defining an aperture, said housing means being made of a bendable material which incorporates air spaces positioned, configured and dimensioned to allow said housing means to be compressed to a smaller size;
(b) a resilient contacting assembly positioned within said aperture, said resilient contacting assembly comprising:
(i) a pair of planar electrically conducting contacting members at least one of which is flexible; and
(ii) compressible means for maintaining said pair of members in spaced relationship to each other in such a position that application of a force to said housing means results in deflecting said housing means and coupling said force to said flexible contacting member, flexing said flexible contacting member and bringing the contacting members into contact with each other; and
(c) electrical conductor means having at least two electrically conducting elements, each of said elements being electrically connected to one of said electrically conducting contacting members.

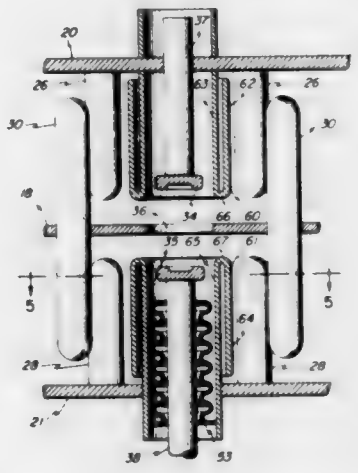
4,086,459

ROD ARRAY VACUUM SWITCH FOR HIGH VOLTAGE OPERATION

Joseph A. Rich, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 11, 1977, Ser. No. 776,641
Int. Cl.[2] H01H *33/66*
U.S. Cl. 200—144 B **8 Claims**

1. A vacuum switch having two separate arcing stages in cascade, comprising:
a hermetically sealed, evacuated envelope having first and second base plates at opposite ends of said envelope and a central base plate disposed in said envelope to partition said envelope into first and second regions, each of said base plates being parallel to each other;
first and second primary arc-electrode assemblies supported by said first and second respective base plates, disposed in said first and second regions, respectively, each of said primary arc-electrode assemblies comprising a spaced circular array of rod electrodes oriented normal to the plane of said base plates and having smooth arcing surfaces, said first and second primary arc electrode assemblies being substantially aligned longitudinally with each other;
an intermediate arc-electrode assembly supported by said central base plate and comprising a spaced circular array of rod electrodes oriented normal to said central base plate and having smooth arcing surfaces, the electrodes of said intermediate arc-electrode assembly extending into said



first and second regions in an interdigitated alternating sequence with said primary electrodes disposed in said first and second regions in an interdigitated alternating sequence with said primary electrodes disposed in said first and second regions, respectively; and
first and second butt contacts for conducting normal steady-state current situated centrally within the respective circular arrays of rod electrodes, said first butt contact being situated entirely within said first region and mechanically and electrically coupled to said first base plate, said second butt contact being electrically coupled to said second base plate and longitudinally movable through a central aperture in said central base plate so as to be entirely within said first region when contacting said first butt contact and retractable entirely into said second region when said first and second butt contacts are parted upon occurrence of a current overload condition.

4,086,460

CIRCUIT BREAKER HAVING IMPROVED LINE STRAP CONSTRUCTION

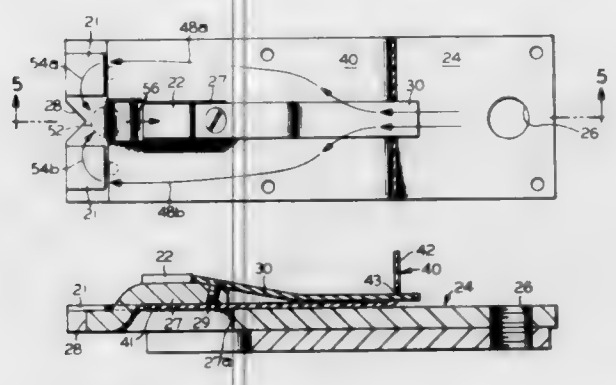
Stephen F. Gillette, Rocky Hill, Conn., assignor to General Electric Company, New York, N.Y.

Filed Mar. 17, 1977, Ser. No. 778,814
Int. Cl.[2] H01H *33/12*
U.S. Cl. 200—146 R **10 Claims**

1. A circuit breaker comprising, in combination:
A. at least one longitudinally elongated planar, conductive strap having a first end and a second end adapted for external electrical circuit connection;
B. a pair of stationary main contacts mounted on the upper surface of said strap adjacent its first end in transversely aligned, spaced apart relation;
C. means forming an opening in said strap adjacent its first end;
D. a rigid conductive member joined at one end to said strap along a transversal edge of said opening located intermediate said main contacts for cantilevered extension in spaced relation to said strap toward its second end;

E. a stationary arcing contact mounted on the upper surface of said conductive member;

F. a contact assembly including a pair of movable main contacts and a movable arcing contact movable into and



out of engagement with said stationary main and arcing contacts; and

G. an arc chute positioned over said strap in proximity with said movable and stationary arcing contacts.

4,086,461

HIGH-VOLTAGE CIRCUIT-INTERRUPTERS

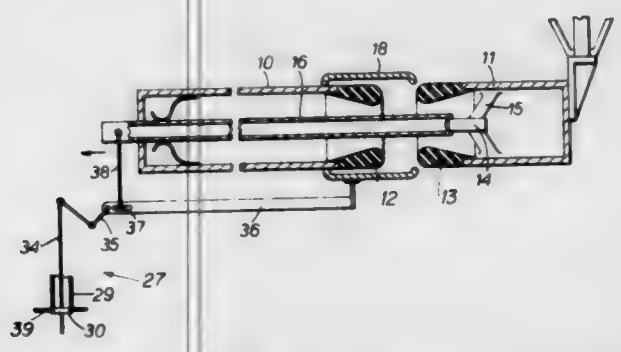
Stanislaw Mieczyslaw Gonek, Newcastle-upon-Tyne, England, assignor to Reyrolle Parsons Limited, Newcastle-upon-Tyne, England

Filed Sep. 30, 1975, Ser. No. 618,249

Claims priority, application United Kingdom, Oct. 1, 1974, 42654/74; Jan. 31, 1975, 4317/75

Int. Cl.² H01H *33/80*

U.S. Cl. 200—148 R **17 Claims**



1. A high-voltage circuit-interrupter having a contact arrangement for operation within an enclosure containing an insulating fluid medium, the interrupter comprising a pair of tubular fixed contacts having adjacent ends spaced apart, and each fixed contact including a bore containing a rooting electrode in electrical connection with the fixed contact, and at least one of the rooting electrodes being movable within its fixed contact to engage with and disengage from the other rooting electrode, and an external movable bridging contact which retractibly engages and electrically bridges the spaced adjacent ends of the fixed contacts, circuit-breaker operating means for moving the bridging contact clear of the end of one of the fixed contacts and for introducing a jet stream of the insulating medium at higher pressure than that in the interiors of the fixed contacts through the gap between the ends of the fixed contacts and into the interiors thereof, the spaced adjacent end of each of the tubular fixed contacts includes an arc-resistant insulating nozzle having an internal bore diverging in a direction downstream of the jet stream and away from the end of the respective fixed contact, and the circuit-breaker operating means operating at least one movable rooting electrode to separate the rooting electrodes so that the jet stream of the higher-pressure medium is directed at an arc drawn between the separated rooting electrodes.

4,086,462

INDUCTION HEATING SYSTEM FOR THE CONTINUOUS FLOW HEATING OF WORKPIECES

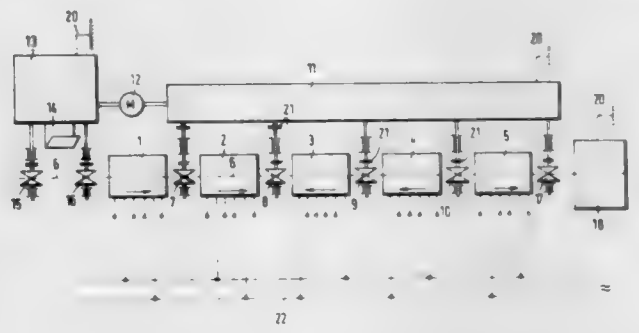
Friedrich Scheffler, and Ernst Stangl, both of Remscheid, Germany, assignors to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany

Filed Aug. 20, 1976, Ser. No. 716,354

Claims priority, application Germany, Sep. 3, 1975, 2539083

Int. Cl.² H05B *5/06*

U.S. Cl. 219—10.71 **4 Claims**



1. An induction heating system for heating in continuous passage of workpieces provided with a longitudinal axis, comprising:

means for transporting said workpieces successively along a path in the direction of their longitudinal axis;

a plurality of induction coils successively encompassing the workpieces along said path which can be supplied with alternating currents from at least one source of current;

means preceding said induction coils in the path of said workpieces for feeding the workpieces to said path; and

means following said coils for removing the workpieces from said path, and means for supplying the individual induction coils with AC currents so that the differences of the electric potential, measured in the longitudinal direction of the strand and induced by their alternating fields in a plurality of workpieces resting without gaps on the continuous path of transportation between the beginning of the first induction coil and the end of the last induction coil is substantially zero.

4,086,463

FLUX-CORED WIRE

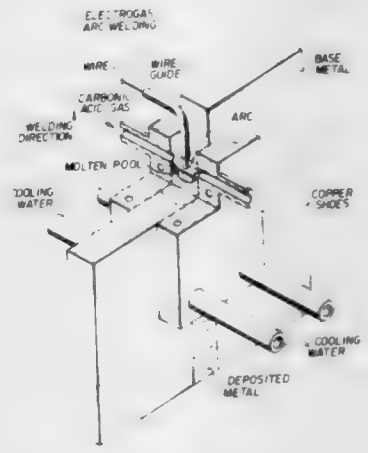
Jimpei Omori, Nishinomiya; Mitsuo Kono, Kodaira; Torataro Takeuchi, Chigasaki, and Noboru Oikawa, Yokohama, all of Japan, assignors to Tsukishima Kikai Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 413,633, Nov. 7, 1973, abandoned. This application Jan. 26, 1976, Ser. No. 652,158

Claims priority, application Japan, Nov. 13, 1972, 47.113604

Int. Cl.² B23K *35/30*

U.S. Cl. 219—145.22 **5 Claims**



1. A flux-cored wire for automatic electrogas vertical arc welding of austenitic stainless steel comprising:

a sheath of steel hoop made of material selected from a

group of materials consisting of mild steel and stainless steel; and

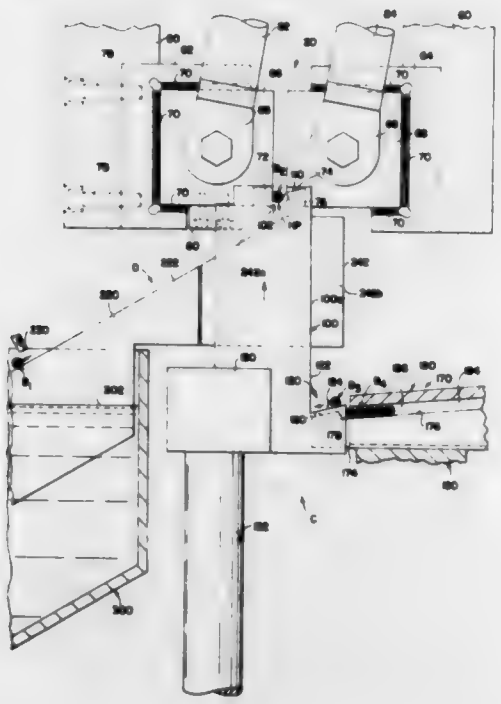
a flux provided internally within said sheath said flux containing from substantially 5% to substantially 20% CaF_2, from substantially 1% to substantially 20% Fe—Si, from substantially 1% to substantially 5% SiO_2, from substantially 1% to substantially 6% $CaCO_3$, from substantially 10% to substantially 70% Cr, from substantially 5% to substantially 40% Ni, from substantially 0% to substantially 70% Fe and from substantially 1% to substantially 20% Mn by weight.

4,086,464

RESISTANCE HEATING DEVICE WITH IMPROVED WORKPIECE FEEDING MECHANISM

Paul L. Day, Parma, and George M. Mucha, Parma Heights, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Jul. 20, 1976, Ser. No. 706,852
Int. Cl.[2] C21D *9/62*
U.S. Cl. 219—156 **14 Claims**



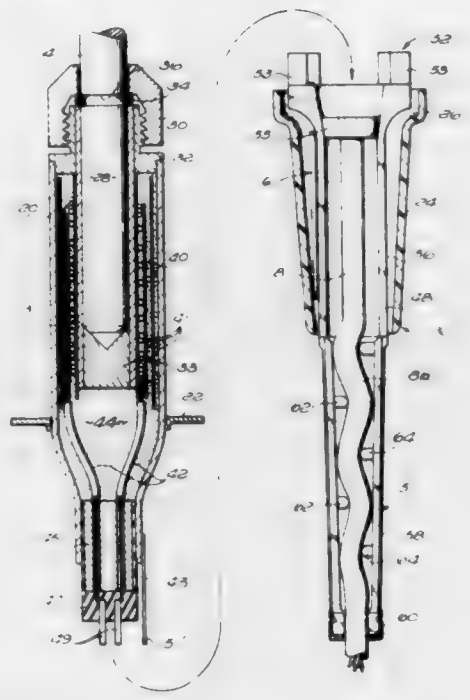
1. In a device for resistance heating of an elongated, generally cylindrical metal workpiece preparatory to quench hardening, said workpiece having a central, elongated axis and axially spaced first and second ends, said device including first and second axially spaced electrode means for directing electrical current through said workpiece and between said spaced ends as said workpiece is supported in a selected, generally horizontal heating position with said central axis extending in a selected direction, and means for delivering a succession of said workpieces to said selected heating position, the improvement comprising: said workpiece delivering means including conveying means for conveying a succession of said workpieces to a loading position spaced from said heating position and with the central axis of a workpiece in said loading position being generally parallel to said selected direction; a transfer element having first and second separate nest means for supporting a workpiece with its axis generally parallel to said selected direction, said second nest means being spaced horizontally from said loading position; means for moving said transfer element between a first location with a workpiece in said first nest means being in said heating position and a second location with said first nest means being spaced from said heating position; means for shifting one of said workpieces from said loading position onto said second nest means as said transfer element moves toward said first location; and, means for transferring a workpiece from said second nest means to said first nest means upon movement of said transfer element from said first location toward said second location.

4,086,465

ELECTRIC SOLDERING IRON

Joseph A. Sylvester, San Dimas, Calif., assignor to Solder Removal Co., Covina, Calif.

Filed Jan. 2, 1976, Ser. No. 646,313
Int. Cl.[2] H05B *3/06*; B23K *3/04*; H01R *13/58*
U.S. Cl. 219—236 **6 Claims**



1. An electric soldering iron comprising:

a front end assembly having a tip at one end defining a working surface, a fastening structure at the opposed end of said assembly including a radial flange and means defining a central opening at said opposed end into said front end assembly, said front end assembly further including electric heating means for heating said tip;

electrical conductors connected to said heating means and passing outwardly from the opposed end of said front end assembly through said central opening;

a pair of elongated unitary handle members mated together in side-by-side facing relationship to define a central passage of serpentine shape;

a flexible power cord connected to said conductors passing out of said front end assembly through said central opening, said power cord extending through said serpentine passage and being held against movement thereby;

means fixing said handle members to the opposed end of said front end assembly with said handle members in abutment with said radial flange; and

a longitudinally slidable tubular collar disposed on and surrounding said pair of mated handle members immediately adjacent said radial flange, said collar having a plurality of radially spaced apart internal ridges engaged with the outer surface of said mated handle members for holding said members in mated relationship and spacing said collar therefrom whereby to provide open spaces between said collar and said mated handle members.

4,086,466

AUTOMATIC HEATER CONTROLLER

Ronald S. Scharlack, 121 Colbourne Crescent, Brookline, Mass. 02146

Filed Apr. 30, 1976, Ser. No. 682,128
Int. Cl.[2] H05B *1/02*
U.S. Cl. 219—494 **28 Claims**

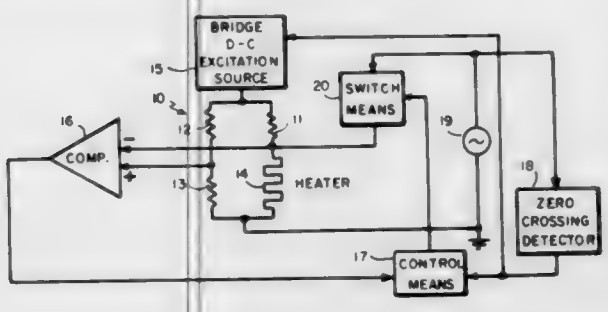
1. A system for controlling the temperature of a heater apparatus having a heater element therein, the electrical resistance of said heater element determining the temperature of said apparatus, said system comprising

means for providing a heater voltage for said heater element;

means responsive to said heater voltage for detecting zero crossings thereof;

means responsive to said zero crossing detecting means for providing sensing excitation voltage at or near said zero crossings;

circuit means including said heater element and responsive to said sensing excitation voltage for sensing the excitation voltage at said heater element and for providing a reference voltage;



means for comparing said excitation voltage at said heater element and said reference voltage for producing an output representing the polarity of the difference therebetween; and

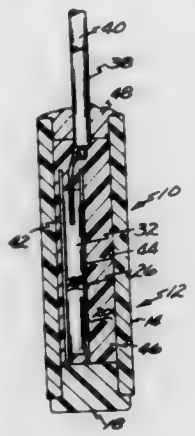
control means responsive to said zero-crossing detecting means and to the output from said comparing means for controlling the application of said heater voltage to said heater element at or near said zero crossings.

4,086,467

ELECTRONIC HEATER FOR HIGH VOLTAGE APPLICATIONS

John L. Grant, Halifax, Morocco, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 19, 1976, Ser. No. 706,652
Int. Cl.² H05B *3/02;* **H01C** *7/02*
U.S. Cl. 219—544 **8 Claims**



1. A self-regulating heater comprising:

a housing;

a heater assembly within said housing, said heater assembly incorporating a heating means constituted by a self-heating positive temperature coefficient resistor element having low initial resistance which increases abruptly as its temperature rises above a given level, said element of generally parallelpiped shape having a first or thickness dimension less than a second or width dimension yielding two parallel face surfaces of larger area than two parallel edge surfaces, said two parallel edge surfaces each having a layer of electrically conductive material applied thereto forming an ohmic contact surface thereon which is electrically spaced from the other layer by the heater material therebetween, said assembly further incorporating a pair of heat sink plates of thermally conductive material secured to said face surfaces; and

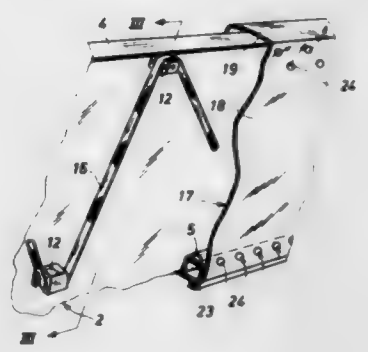
terminal means connected to respective edge surfaces and extending from said housing for supplying electrical power to said element.

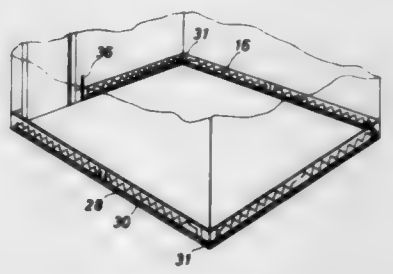
4,086,468

BASEBOARD ELECTRIC HEATING APPARATUS

Erik Christian Vilhelm Keldmann, Acasievej 5, 4490 Jerslev, Denmark

Filed Jul. 17, 1975, Ser. No. 596,805
Claims priority, application Denmark, Jul. 23, 1974, 3959/74
Int. Cl.² H05B *1/00;* **F24H** *3/00, 9/10;* **F24D** *13/02*
U.S. Cl. 219—377 **1 Claim**





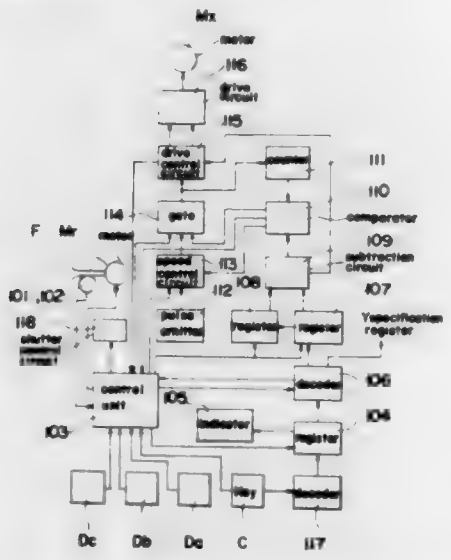
1. A baseboard electric heating apparatus of the type which is adapted to be mounted at the floor along the walls in a room which is to be heated and to constitute a baseboard along the walls of the room, said apparatus including a plurality of elongated apparatus sections, each apparatus section comprising a box-shaped housing in which an electric heating element is mounted, each apparatus section having air inlet and air outlet openings for the flow of air therethrough by convection and the exposed outer surface of each apparatus section defining a heat radiating surface whereby heat from the heating element can be delivered to the room partly by radiation from the exposed surface and partly by convection via air circulating through the apparatus section, said plurality of apparatus sections being interconnected end-to-end and being mounted at the floor as a baseboard along all of the walls of the room to be heated whereby the heating apparatus surrounds the space to be heated, connecting means interconnecting said heating elements of the respective sections in such a way that power can be fed to the heating elements from one end of the interconnected array of apparatus sections, said plurality of apparatus sections so constructed that approximately 65–75 percent of the heat therefrom is delivered by radiation and approximately 25–35 percent is delivered by convection, said individual apparatus sections comprising a rectangular inner part having a plane, in mounted position vertical, main portion and an upper and lower flange portion projecting away from the wall in the room, said inner part carrying eye-like members for supporting said heating element in said housing and supporting and distance members which are adapted to mount the main portion at a predetermined distance from the wall of the room and to engage mounting means on the wall of the room, and further, an outer part consisting of a plane main portion of the same shape as the main portion of the inner part and having upper and lower flange portions projecting towards the main portion of said inner part and which extend over and under the flange portion of the inner part, respectively, and have bent rim portions engaging the rear side of the inner part, at the top and the bottom of the main portion of the outer part, horizontal rows of air holes being provided to form said air inlet and air outlet openings.

4,086,469

MICROFICHE READER CONTROL MEANS

Shiro Toriumi, Machida, and Hiroshi Endo, Fuchu, both of Japan, assignors to Minolta Camera K.K., Osaka, Japan

Continuation-in-part of Ser. No. 624,577, Oct. 21, 1975, abandoned. This application Jul. 19, 1976, Ser. No. 706,562
Claims priority, application Japan, Nov. 2, 1974, 49-126864
Int. Cl.[2] G06M *3/02*; G03B *23/08*
U.S. Cl. 235—92 MP **4 Claims**



1. In a microfiche reader apparatus in which a microfiche having number of frames so positioned to have one of the frames at a projecting position is moved therefrom to bring a designated frame to the projecting position for viewing of an enlarged image on a screen, said apparatus comprising a microfiche supporting means for supporting the microfiche thereon and being movable in the directions of first and second axes at right angles to each other, a control means for moving said supporting means supporting the microfiche with said one of the frame at the projecting position to bring the designated frame to the projecting position, said control means including a key means for specifying the particular frame of the microfiche by a series of numbers, said microfiche having a plurality of frames in rows and columns perpendicular to each other with each of the frames numbered in series, a clock pulse means for supplying a number of pulses equal to the number of the designated frame specified by said key means, a first counter for receiving and counting the pulses from said clock pulse means and a pulse subtractor associated with said first counter for subtracting one pulse supplied by said clock pulse means so that the number of pulses counted by said first counter is one less than the number of pulses supplied by said clock pulse means, a second counter associated with said first counter for being incremented by one every time a particular number of pulses is counted by said first counter, and means determining number of frames to be moved in the directions of said first and second axes by comparing the outputs from said first and second counters with the position of said supporting means for moving said supporting means to bring the designated frame to the projecting position.

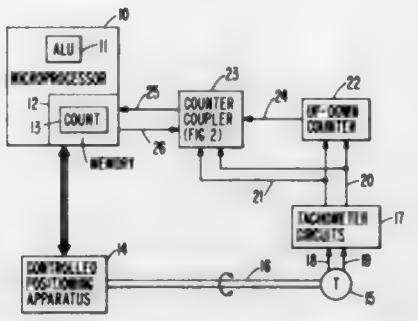
4,086,470

HARDWARE-SOFTWARE COUNTING

William Henry Ashbee, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,766
Int. Cl.[2] G06M *3/14*; H03K *21/10*
U.S. Cl. 235—92 DP **8 Claims**

1. A hardware-software counter comprising a hardware counter for counting lower significant bits, a carry-borrow circuit responsive to a higher order bit position of said counter and including cancel means responsive to successively received carry and borrow signals to cancel a respectively represented carry and borrow, memory means in the carry-borrow circuit separately memorizing a received carry or borrow, means responsive to said memory means to deactivate said cancel means, and a microprocessor including an adder for counting higher significant bits and means in said microproces-



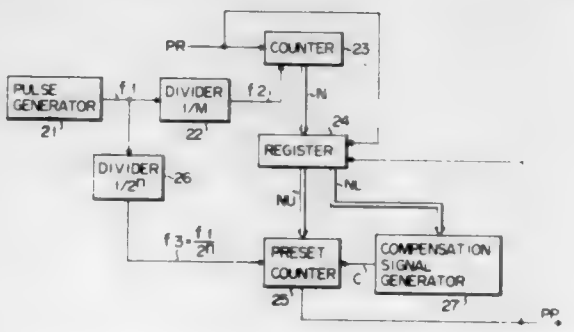
sor for sensing said memory means in said carry-borrow circuit for determining whether a "1" is to be added to said higher significant bits.

4,086,471

PULSE TRAIN CONVERTER

Yukiharu Takahashi, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 6, 1977, Ser. No. 785,114
Claims priority, application Japan, Apr. 7, 1976, 51-38896
Int. Cl.[2] H03K *21/36*
U.S. Cl. 235—92 DM **5 Claims**



1. A pulse train converter for converting a first pulse train into a second pulse train having a frequency higher than that of the first pulse train, comprising:

a pulse generator for generating pulses having a specified frequency;

a frequency divider for dividing the output frequency of the pulse generator by $(M/2^n)$, where n denotes an integer and M denotes the number of parts into which the time period of the pulses contained in said first pulse train is divided by the pulses contained in said second pulse train;

a counter which is reset upon receipt of each pulse of said first pulse train and starts to count the output pulses supplied from said frequency divider,

a register for storing the count of said counter upon receipt of each pulse of said first pulse train;

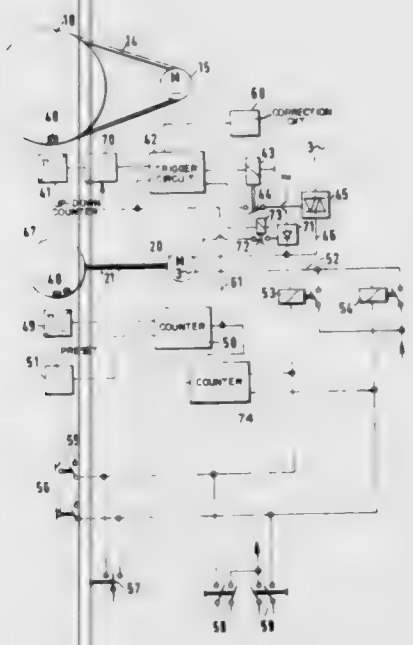
a pulse delivering means which receives only the remaining higher order bits except lower order n bits of the count stored in said register as a reference value and which delivers pulses constituting said second pulse train each time the number of pulses it receives from said pulse generator equals the reference value; and

a compensation means for compensating said reference value in accordance with the count value represented by said lower order n bits supplied from said register.

4,086,472
APPARATUS FOR CONTROLLING THE LAYING OF STRIP MATERIAL

Harald Sikora, Bremen, Germany, assignor to Harald Sikora Sikora Industrieelektronik, Bremen, Germany

Filed Jun. 1, 1976, Ser. No. 691,584
Claims priority, application Germany, Jun. 3, 1975, 2524411
Int. Cl.[2] G06M *3/02*; B65H *57/28*
U.S. Cl. 235—92 DN 12 Claims



1. Apparatus for controlling for the laying of strip material on a rotating drum having a laying guide, the guide and drum being relatively moveable with respect to each other in a direction parallel to the axis of the drum, the movable one of the guide or drum having a movement continuing inertia, said apparatus comprising:

rotary alternating current induction motor drive means operatively associated with one of said drum and guide for providing movement between the two;

first indicator means for indicating the rotation of the drum;

control means connected to said drive means, said control means being coupled to, and operable by, said first indicator means for energizing said drive means to provide the relative movement responsive to rotation of the drum;

second indicator means for indicating relative movement of the drum and guide and for providing a digital feedback signal proportional to the amount of such movement;

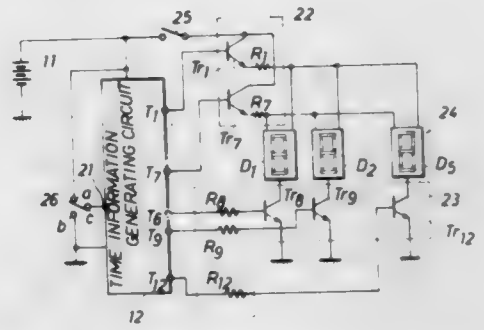
preset means providing a digital reference signal corresponding to a desired incremental amount of such movement; and

digital signal counter means coupled to said preset means for receiving and storing said digital reference signal, said digital signal counter means being coupled to said second indicator means for receiving and ascertaining the magnitude of said feedback signal, said digital counter comparing said reference and feedback signals and being coupled to said control means for deenergizing said drive means when the magnitude of said feedback signal attains that of the reference signal, said digital signal counter means storing digital feedback signals resulting from the inertial movement of the movable one of the drum and guide for altering a subsequent comparison of the reference and feedback signals in accordance with the stored signals.

4,086,473
DISPLAY DEVICE FOR ELECTRONIC APPARATUS

Shigeki Kumagai, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1977, Ser. No. 767,114
Claims priority, application Japan, Feb. 10, 1976, 51-13553
Int. Cl.[2] H03K *21/22*
U.S. Cl. 235—92 EA 6 Claims

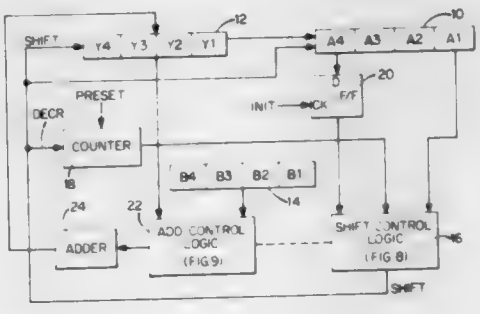


1. A display device for electronic apparatus comprising a display information generating circuit which comprises a time display information generating circuit including an oscillator, a frequency divider for frequency dividing an oscillation frequency of the oscillator, a counter circuit for counting output pulses of the frequency divider according to time units, a multiplexer for receiving outputs of the counter and generating binary time information, a decoder for generating segment drive signals and digit generating circuit for generating digit drive signals responsive to the binary time information generated by said multiplexer, blanking signal generating means for selectively generating blanking signals; a gate circuit having a plurality of first input terminals for receiving the segment drive signals of said decoder and digit drive signals of said digit generating circuit, second input terminals for receiving a blanking signal of said blanking signal generating means, and output terminals corresponding to said segment drive signals and said digit drive signals, and adapted to block both the drive signals when said blanking signal is received; a first amplifier circuit for amplifying the segment drive signals from the output terminals of the gate circuit; a second amplifier circuit for amplifying the digit drive signals from the output terminals of the gate circuit; and a dynamic drive type display unit comprising a plurality of display sections each constructed of a plurality of display segments adapted to receive amplified segment drive signals of the first amplifier circuit, said plurality of display sections being adapted to receive amplified digit drive signals from the second amplifier circuit.

4,086,474
MULTIPLICATION TECHNIQUE IN A DATA PROCESSING SYSTEM

Virendra S. Negi, Pepperell, and Ming T. Miu, Chelmsford, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 30, 1976, Ser. No. 728,093
Int. Cl.[2] G06F *7/54*
U.S. Cl. 364—757 20 Claims



1. Apparatus for multiplying a first number times a second number comprising:

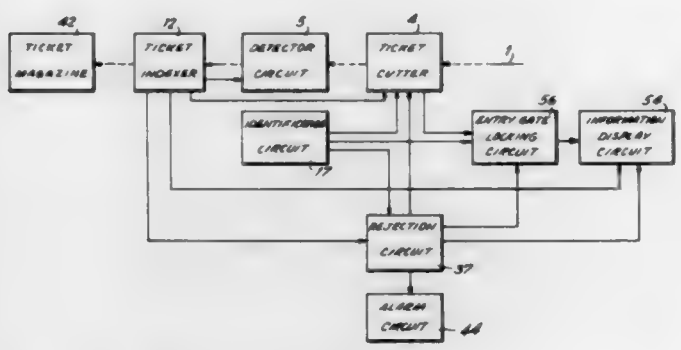
A. a first register for storing said first number, said first register having a predetermined bit position;
B. a second register;
C. means for shifting by bit the contents of said first register and said second register with the contents of said second register coupled to be shifted into said first register;
D. means, responsive to a predetermined condition, for loading said second number into said second register; and
E. enabling means, responsive to the sign of said first number and the state of a bit in said predetermined position of said first register, for either
(1) enabling said means for shifting the contents of said second register and the contents of said first register, and loading the sign of said second number into a predetermined position of said second register, or
(2) enabling said means for shifting the contents of said second register and the contents of said first register, loading the sign of said second number into said predetermined position of said second register, and adding said second number to the contents of said second register.

4,086,475

TICKET TAKING SYSTEM

William M. Churchill, 220-15 43rd Ave., Bayside, N.Y. 11361

Filed Aug. 31, 1976, Ser. No. 719,250
Int. Cl.[2] G06K *5/00*; G08G *1/14*
U.S. Cl. 235—419 **8 Claims**



1. A ticket taking system, comprising
a severable ticket-type entry item for admission to an event attended by a plurality of people, said entry item having a magnetic code indication;
detecting means for detecting the magnetic code indication of the entry item and for producing an input electric signal varying in accordance with said magnetic code indication;
identifying means having a variable predetermined code electric signal recorded therein, said identifying means being electrically connected to the detecting means and comparing the input and code signals and producing an acceptance signal when said signals are the same and a rejection signal when said signals are different;
severing means electrically connected to the identifying means for severing the entry item to provide a stub part for the holder thereof and a record part for recorded entry data on said entry item when the identifying means produces an acceptance signal; and
rejecting means electrically connected to the identifying means and to the severing means for preventing severance of the entry item and for returning the entire entry item when the identifying means produces a rejection signal.

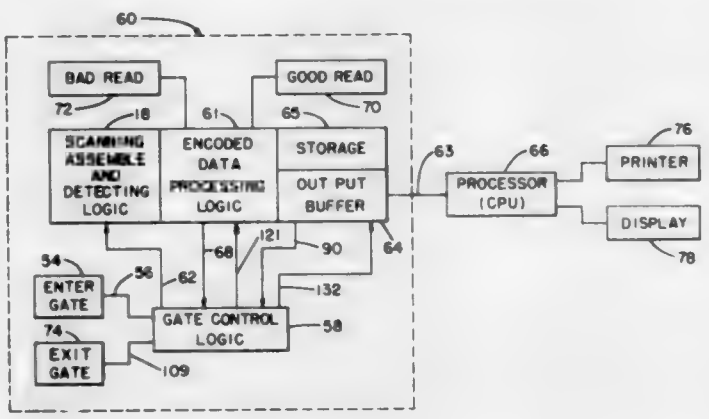
4,086,476

CONTROL CIRCUIT FOR A CODE READING DEVICE

Ronald J. King, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 29, 1976, Ser. No. 709,741
Int. Cl.[2] G06K *7/10*; G08C *9/06*
U.S. Cl. 235—462 **16 Claims**

1. A system for controlling the operation of a code reading device for reading data encoded indicia on a record member upon movement of the record member past the reading device, said system comprising:
(a) a first detecting means positioned upstream of the code reading device for generating a first signal upon detecting the presence of a record member, said first signal initiating the operation of said code reading device;
(b) means responsive to the operation of the reading device for generating a second signal indicating the validity of the indicia read by the code reading device;



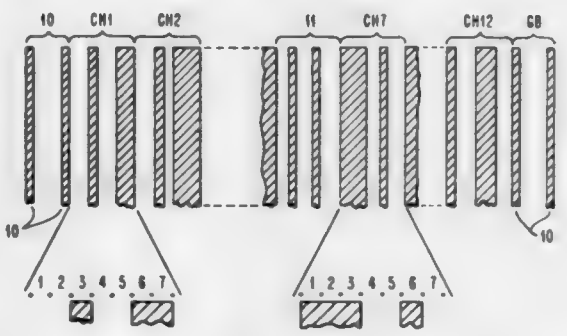
(c) a second detecting means positioned downstream of the code reading device for generating a third signal upon detecting the presence of a record member;
(d) and logic means responsive to said first, second and third signals for determining the validity of said read operation including means actuated by said first signal for disabling said logic means after a predetermined time has elapsed thereby limiting the time said second and third signals are to be used in determining the validity of said read operation.

4,086,477

DECODING METHOD AND CIRCUIT

Robert Lewis Cowardin, Cary, and George Joseph Laurer, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1977, Ser. No. 809,966
Int. Cl.[2] G06K *7/10, 9/04*
U.S. Cl. 235—464 **7 Claims**



4. A decoder for decoding pulse-like electric signals which are an analog of an optically bar coded label and produced when the label is scanned by a scanner comprising:
first circuit means responsive to the pulse-like electric signals which are an analog of the optically bar coded label for providing a plurality of gating signals each of which is a different function of selected transitions in the said pulse-like signals;
second circuit means for generating and providing a plurality of pulse-like signal trains each at different frequencies;
third circuit means responsive to said first and second circuit means for counting selected pulses included in the pulse trains under control of the said gates;
fourth circuit means for comparing in a predetermined sequence the counts attained under control of the said gates to determine the relative magnitude of the compared counts and for providing a first output signal when the

relative magnitude of the compared counts have one relationship and second output signal when the relative magnitudes of the compared counts have an opposite relationship; and,

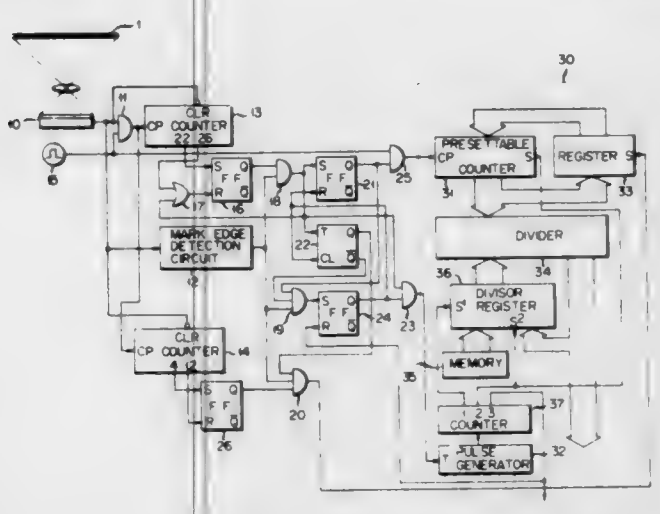
decoder means responsive to the said first and second output signals from the said fourth circuit means for providing a binary coded output indicative of the information represented in the pulse-like signal which is an analog of the optical bar coded label.

4,086,478

MARK POSITION DETECTING APPARATUS

Michiaki Okano, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 14, 1976, Ser. No. 750,370
Claims priority, application Japan, Dec. 15, 1975, 50-149326
Int. Cl.[2] G06K *7/10*
U.S. Cl. 235—466 **9 Claims**



1. A mark position detecting apparatus comprising a pattern signal generating circuit for producing a pattern signal corresponding to a pattern region upon scanning of the pattern region which includes first and second reference marks and a mark region arranged between the first and second reference marks and divided into a plurality of mark columns having the same width at least one of which contains a mark; first means for detecting the length of the mark region from the pattern signal; second means for detecting the distance between one end of the mark region to the mark; and the third means for dividing the count data from said first means which represents the length of the mark region by the number of the mark columns thereby to generate a count data which represents the mark column width and for dividing the count data from said second means which represents the distance between said end of the mark region and the mark by the count data which represents the mark column width thereby to generate a count data which represents the position of the mark column containing the mark.

4,086,479

REMOVABLE LAMP DEVICE

John W. Andrew, 695 SW. Rustic Cir., Stuart, Fla. 33494

Filed Nov. 2, 1976, Ser. No. 738,093
Int. Cl.[2] B60Q *1/30;* **F21V** *21/08;* **H01R** *13/54*
U.S. Cl. 362—432 **5 Claims**

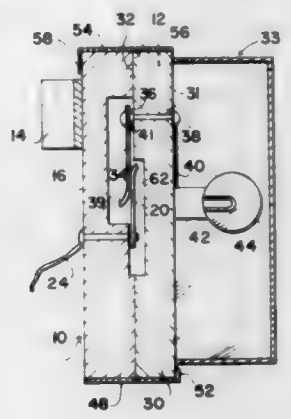
1. A removable lamp device for use on a vehicle having a lamp circuit such as a boat trailer or the like, said device comprising:

a. a base having a first planar surface and including means for mounting the base to the vehicle with the first planar surface facing outwardly therefrom, a plurality of first substantially planar resilient slide contacts each connectable to one conductor from the vehicle lamp circuit and means connecting the contacts to said base to position the first contacts in a plane parallel to and spaced from said first planar surface;

b. a lamp holder having a second planar surface and comprising a plurality of second substantially planar resilient slide contacts, means connecting the second contacts to said second surface to dispose same in a plane parallel thereto and spaced therefrom wherein the second slide contacts are slidably engagable with said first slide contacts and a lamp assembly connected to said holder opposite said first surface and having lamp wires each connected to one second contact;

c. means disposed on said base and said holder for releasably connecting the two upon engagement of the first and second slide contacts; and

d. wherein the slide contacts are rectangular and the means



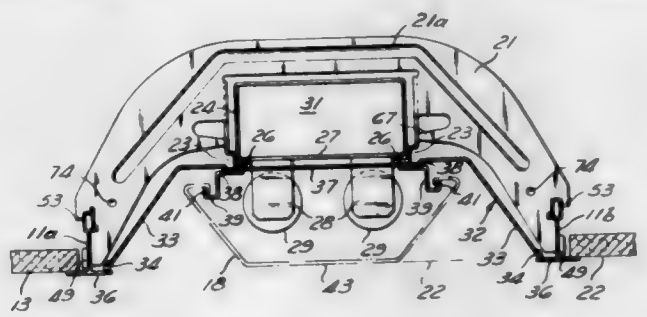
connecting each contact to its respective surface includes a post having one end through one end of the contact and a spacing member between the contact and its associated surface, wherein the vehicle lamp circuit conductors and the lamp wires are each connected to the other end pf the posts, the other end of each contact being arced outwardly from its associated surface, and wherein the base and the holder have substantially rectangular cross sections and wherein the means releasably connecting same comprise a first L-shaped member connected along a portion of the base corresponding to the bottom thereof when mounted with the leg of the L-shaped member extending upwardly, and a second L-shaped member connected along a portion of the holder corresponding to the top thereof with the leg of the second L-shaped member extending downwardly.

4,086,480

SUSPENSION CEILING AND RECESSED LIGHTING SYSTEM

Albert H. Lahm, Lorain, Ohio, assignor to Donn Products, Inc., Westlake, Ohio

Filed Sep. 24, 1976, Ser. No. 726,160
Int. Cl.[2] F21S *00/00*
U.S. Cl. 362—148 **20 Claims**



1. A recessed lighting system comprising a planar grid defining an elongated lighting opening, said grid including parallel runs of inverted tee members along opposite sides of said opening providing flanges extending inwardly along opposite sides of said opening, a plurality of arched bridging members

extending across said opening and locked at their ends to said tee members of said runs, said bridging members operating to maintain a predetermined spacing between said runs, an elongated channel supported by said bridging member above the plane of said grid and providing support for lights and a raceway for wiring, and an elongated unitary reflector extending across said opening and providing opposite edges extending over and resting on said flanges and covering said raceway, said parallel runs along opposite sides of said opening providing the framing of said lighting fixture and in cooperation with said reflector providing the finished enclosure of the sides of said lighting system.

4,086,481

VEHICLE LAMPS

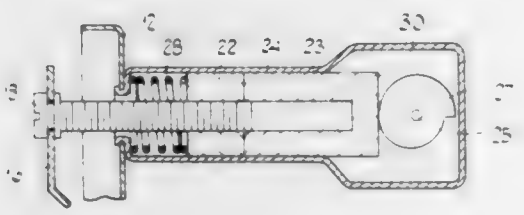
Jeremy Mark Jenkinson, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 618,160, Sep. 30, 1975, abandoned. This application Feb. 18, 1977, Ser. No. 769,961

Claims priority, application United Kingdom, Oct. 16, 1974, 44791/74

Int. Cl.[2] B60Q *1/06*

U.S. Cl. 362—428 **1 Claim**



1. A lamp comprising:

a support member for securing to a vehicle;

a lamp unit; and

securing means for adjustably securing said lamp unit to said support member, said securing means comprising a nut and screw assembly for providing a fine adjustment of said lamp unit relative to said support member, a rotatable cam means, carried by said support member and bearing against a part of said assembly, for providing a coarse adjustment of said lamp unit relative to said support member and for adjustably preventing movement of said lamp unit towards said support member, and resilient means for urging said part of said assembly away from said support member and for urging said lamp unit towards said support member.

4,086,482

NONCONDUCTIVE LIGHT GUARD

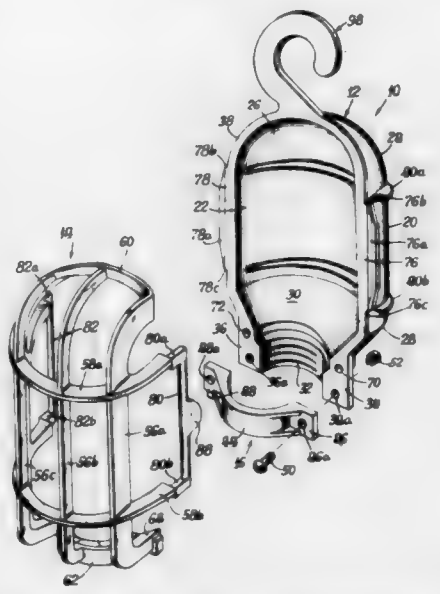
Duane E. Torgerson, Oswego, Ill., assignor to Belden Corporation, Geneva, Ill.

Filed Sep. 27, 1976, Ser. No. 726,992

Int. Cl.[2] F21V *15/00, 21/00*

U.S. Cl. 362—376 **11 Claims**

1. A light guard comprising a shield member having a concave interior surface, a cage member separate from said shield member but cooperable therewith to define a light bulb receiving chamber therebetween, one of said shield and cage members having substantially identically shaped lateral edges each of which has a retaining flange formed thereon, the other of said shield and cage members defining lateral edges each of which has latching rod means formed thereon adapted for lateral spreading therebetween sufficiently to facilitate snap-action attachment to said retaining flanges for releasably securing said shield and cage members in attached relation to define said bulb receiving chamber, and means for releasably attaching at least one of said shield and cage members to a light socket holder independent of the other of said shield and cage members so that said shield and cage members may be attached



to and detached from each other independently of said light socket holder attaching means.

4,086,483

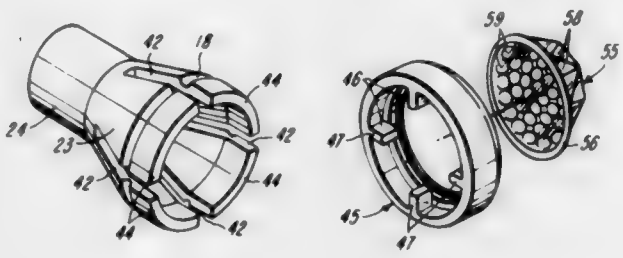
DEVICE FOR INSTALLING WITHIN A PANEL OPENING FOR SUPPORTING AN ELECTRICAL COMPONENT OR THE LIKE

Robert F. Freund, Dayton, and Wayne Sturgeon, Xenia, both of Ohio, assignors to Freund Precision, Inc., Dayton, Ohio

Filed Dec. 9, 1976, Ser. No. 748,949

Int. Cl.[2] B60Q *3/04*; F21V *17/00*

U.S. Cl. 362—311 **13 Claims**



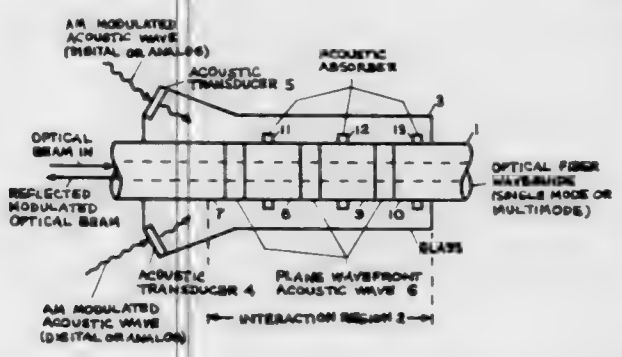
1. In a device adapted to be installed within an opening in a panel for supporting an electrical component or the like, said device including a hollow housing adapted to extend through the opening, said housing having an annular forward end portion projecting forwardly of the panel and an annular rearward end portion projecting rearwardly from the panel, means defining a peripherally extending external groove within said housing between said forward and rearward end portions for receiving the panel, means defining a slot within said housing and extending rearwardly through said forward end portion and interrupting said groove, said slot providing for partially collapsing said forward end portion of said housing or inserting said housing into the opening until the panel seats within said groove, the improvement comprising a retaining member mounted on said forward end portion of said housing and including an annular portion surrounding said forward end portion and covering said slot, a rib projecting inwardly from said annular portion of said retaining member into said slot, and said rib is effective to prevent collapsing of said forward end portion of said housing after said groove receives the panel and to effect a positive locking of said housing to the panel.

4,086,484

OPTICAL AMPLITUDE MODULATION MODULATOR

Peter Dennis Steensma, Midland Park, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jul. 14, 1976, Ser. No. 705,217
Int. Cl.[2] H04B *9/00*
U.S. Cl. 250—199 **19 Claims**



1. An amplitude modulation modulator for at least one optical beam comprising:

an optical fiber waveguide transmitting said optical beam therealong; and

an amplitude modulation modulated acoustic wave coupled to a selected region of said waveguide along its length to modulate at least one transmission characteristic of said waveguide in said selected region by said amplitude modulation of said modulated acoustic wave to impart said amplitude modulation of said modulated acoustic wave to said optical beam;

said selected region including

a plurality of shorter regions in a series relationship with each other, and

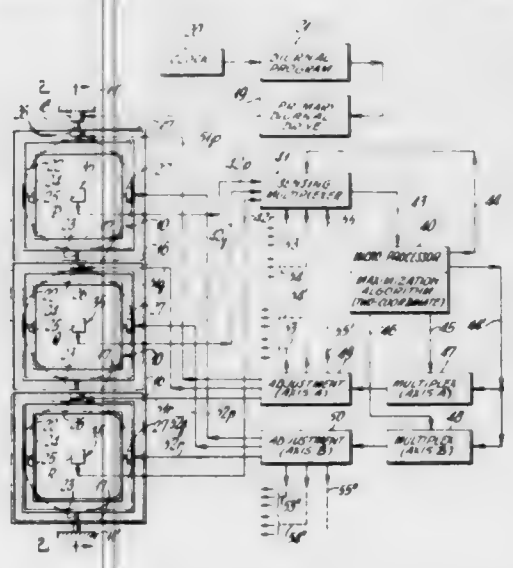
an acoustic absorber disposed between adjacent ones of said plurality of shorter regions.

4,086,485

SOLAR-RADIATION COLLECTION APPARATUS WITH TRACKING CIRCUITRY

Roy Kaplow, Newton, and Robert I. Frank, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 26, 1976, Ser. No. 690,093
Int. Cl.[2] G01J *1/20*
U.S. Cl. 250—203 R **10 Claims**



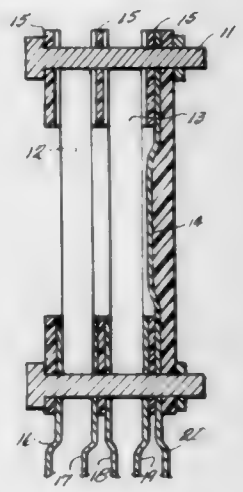
1. Solar-radiation collection apparatus, comprising frame structure adapted for fixed mounting, a first gimbal frame pivotally mounted to said fixed frame structure and predicted-drive means for imparting predicted diurnal rotation to said gimbal frame with respect to said fixed frame, a plurality of spaced radiation-collecting optical systems each having a two-axis gimbal suspension with respect to a different spaced location on said first gimbal frame, separate correctional-drive means associated with each of the axes of each of said two-axis gimbal suspensions, a radiationresponsive cell independently carried by each gimbal suspension and aligned with the optical axis of the collecting system associated therewith, microprocessor means for evaluating the output of a given cell and for generating two-component output signals for correctional application to the respective correctional drive means of said given cell, whereby to use the output of the given cell to correctionally drive its gimbal system in approach to optimal alignment with the sun, first multiplexing means sequentially and periodically associating the respective cell outputs with said microprocessor means, and second multiplexing means sequentially and periodically associating with the output signals of said microprocessor means the separate correctional-drive means for the gimbal suspensions of the respective cells.

4,086,486

ONE DIMENSIONAL PHOTON-COUNTING DETECTOR ARRAY

Richard Lee Bybee, 955 McIntire, Boulder, Colo. 80303, and John G. Timothy, 85 E. India Row, Boston, Mass. 02110

Filed Jun. 8, 1976, Ser. No. 693,954
Int. Cl.[2] H01J *39/12*
U.S. Cl. 250—207 **5 Claims**



1. A one-dimensional photon-counting detector for operation at extreme ultraviolet and soft X-ray wavelengths comprising at least one microchannel array plate configured to minimize ion feedback, an anode array comprising a plurality of separate anode elements disposed in a plane parallel and adjacent to but spaced a predetermined distance on the order of 25 μm from the innermost face of said at least one microchannel array plate, amplifier and discriminator means connected to each anode element for developing output pulses indicative of a charge packet accumulated by the anode element, integration means for accumulating a count representative of the number of output pulses from each anode element during a selected predetermined time interval, and data readout means for reading out the count of output pulses for each anode element.

4,086,487

COPLANAR DYNODE ELECTRON MULTIPLIER

Charles Bruce Johnson, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Sep. 30, 1976, Ser. No. 728,493
Int. Cl.[2] H01J *39/12*
U.S. Cl. 250—207 **38 Claims**

1. A coplanar dynode electron multiplier comprising:

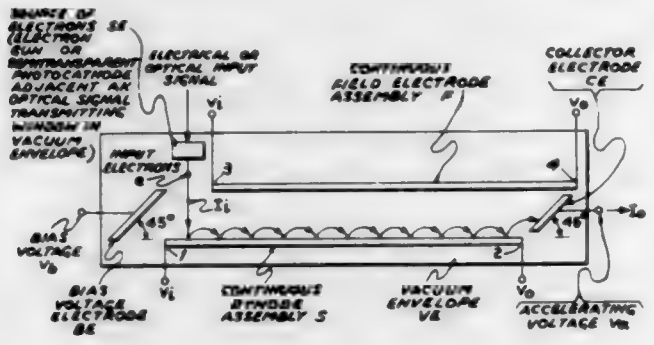
a vacuum envelope having a longitudinal axis;

a dynode assembly having a given length disposed in said envelope in a first plane disposed parallel to and in a transverse spaced relation in one direction from said axis, said dynode assembly having an input end and an output end, said dynode assembly receiving input electrons adja-

cent said input end thereof, said input electrons having an input current with a magnitude directly proportional to the magnitude of an input signal;

a field electrode assembly having said given length disposed in said envelope in a second plane disposed parallel to and in a transverse spaced relation in the other direction from said axis, said field electrode assembly having an input end adjacent said input end of said dynode assembly and an output end adjacent said output end of said field electrode assembly, said field electrode assembly being shifted along said axis with respect to said dynode assembly such that said output end of said field electrode assembly extends beyond said output end of said dynode assembly a given amount;

a first operating voltage coupled to both said dynode assembly and field electrode assembly adjacent said input end of both of said assemblies;



a second operating voltage coupled to both said dynode assembly and said field electrode assembly adjacent said output end of both of said assemblies, said second operating voltage having a second given value greater and more positive than said first given value;

a bias voltage electrode having a bias voltage coupled thereto disposed in said envelope spaced longitudinally from said input end of both of said assemblies at a given angle with respect to said first and second planes; and

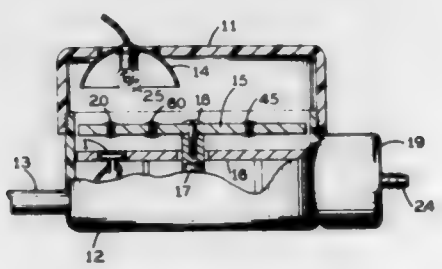
a collector electrode having an accelerating voltage coupled thereto disposed in said envelope adjacent said output end of both of said assemblies at said given angle with respect to said first and second planes, said collector electrode providing a multiplied output current for said multiplier, said output current being directly proportional to an amplified version of said input signal.

4,086,488

DIGITAL PRESSURE GAUGE SYSTEM

James J. Hill, North Miami, Fla., assignor to General Medical Appliance Research Corporation, Miami, Fla.

Filed Oct. 18, 1976, Ser. No. 733,284
Int. Cl.² G01D 5/34
U.S. Cl. 250—231 P **9 Claims**



1. In a pressure gauge system comprising pressure gauge having:

a gauge body with a gas pressure inlet;

a cover on said gauge body;

a rotary shaft in said gauge body extending at one end toward said cover;

and pressure responsive means in said gauge body for rotating said shaft proportional to the gas pressure at said inlet; the improvement which comprises:

an encoder disc fastened to the shaft at said end and extending substantially perpendicular thereto, said disc carrying a plurality of discrete light transmitting elements at different positions radially and circumferentially of the disc;

a lamp positioned inside said cover on the opposite side of said disc from said shaft and operatively arranged to shine light through at least one of said light transmitting elements on the disc;

a stator plate fixedly mounted inside said gauge body on the opposite side of said disc from said lamp, said stator plate extending substantially parallel to said disc and passing said shaft rotatably;

a plurality of photosensors mounted on said stator plate for selective registration individually with corresponding light transmitting elements on the disc in different rotational positions of the disc;

numerical display means for displaying a three digit decimal number;

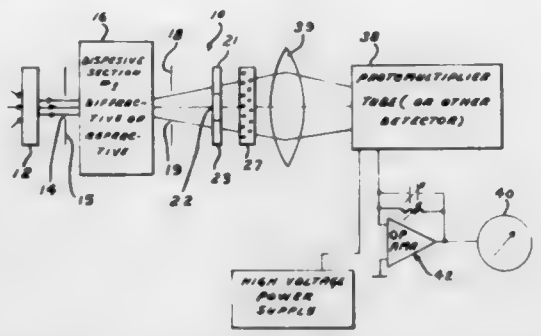
and circuit means operatively connected between said photosensors and said numerical display means for converting the optically sensed rotational position of the shaft into the two most significant digits of the displayed three digit number.

4,086,489

ULTRA VIOLET RADIATION PERSONNEL HAZARD METER

Harley V. Piltingsrud, 3431 Whitfield Ave., Cincinnati, Ohio 45220

Filed Feb. 4, 1977, Ser. No. 765,712
Int. Cl.² G01J 1/42
U.S. Cl. 250—372 **5 Claims**



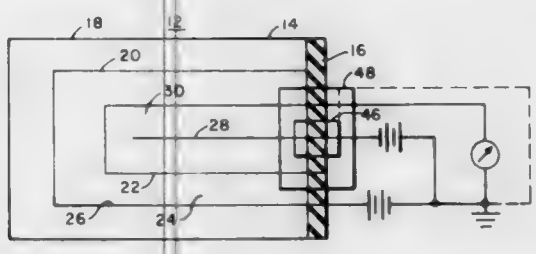
1. An ultraviolet radiation monitoring system, comprising: a diffuser positioned in radiation energy receiving relation to an ultraviolet radiation source; means positioned adjacent said diffuser for limiting light from the diffuser to a predetermined path; means in said light path for spatially dispersing the light as a function of wavelength, a plurality of light interference filters, in the output of said light spatially dispersing means; a mask between said light dispersing means and said interference filters for passing only a predetermined wavelength band of radiation to said interference filters; said light interference filters each having certain predetermined bandpass characteristics; each of said light interference filters being positioned to receive certain predetermined wavelengths corresponding to the band pass characteristics of the filters; a photodetector in energy receiving relation to said bandpass interference filters; means positioned between said interference filters and said photodetector to selectively adjust the transfer function of the various radiation wavelength bands to desired values; means connected to the output of said photodetector for indicating the ultraviolet radiation corresponding to the desired wavelengths.

4,086,490

WIDE RANGE NEUTRON DETECTION SYSTEM

William H. Todt, Sr., Elmira Heights, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 7, 1976, Ser. No. 703,156
Int. Cl.[2] G01T *1/18, 3/00*
U.S. Cl. 250—385 7 Claims



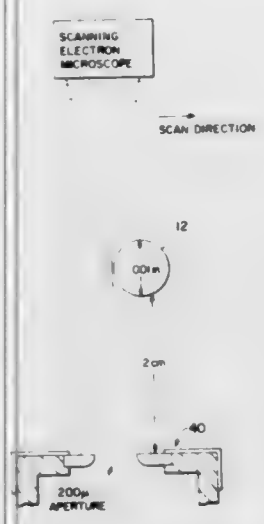
1. A wide range neutron detection system which is operable over the neutron flux range of 1 to 10^{10} neutrons per square centimeter per second in which a fission type ionization chamber neutron detector is gamma compensated and includes means for minimizing the effects of alpha signals generated in the detector, and means for operating the neutron detector in the pulse counting mode for low neutron flux levels and in the direct current mode for high neutron flux levels.

4,086,491

DIRECT MEASUREMENT OF THE ELECTRON BEAM OF A SCANNING ELECTRON MICROSCOPE

William H. Vaughan, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 4, 1977, Ser. No. 771,715
Int. Cl.[2] G01N *27/00*
U.S. Cl. 250—397 17 Claims



1. Apparatus for obtaining a relative measurement of the electron beam diameter of a scanning electron microscope comprising:

current source means for generating electrical current;

heated wire means connected to said current source means, for acting as a knife edge to cause a change in the current density of said electron beam as it is scanned across said knife edge;

support means for supporting said heated wire means;

electron collector means for receiving said electron beam after it has passed said knife edge; and

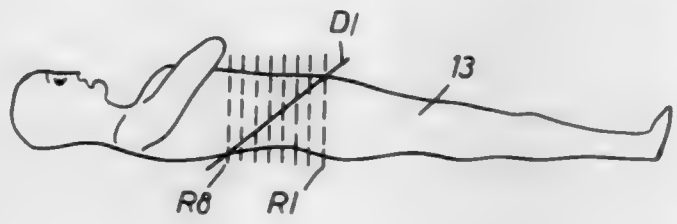
display means receiving the output of said electron collector for utilizing said received changing current density of said electron beam to display a relative measurement of said electron beam diameter.

4,086,492

DISPLAY APPARATUS FOR USE IN RADIOGRAPHY

James Alec Lodge, Maidenhead, and John James Jarrett, Chalfont St. Peter, both of England, assignors to EMI Limited, England

Filed Jan. 7, 1977, Ser. No. 757,507
Claims priority, application United Kingdom, Jan. 21, 1976, 2264/76
Int. Cl.[2] A61B *6/02;* H05G *1/30*
U.S. Cl. 250—416 TV 6 Claims



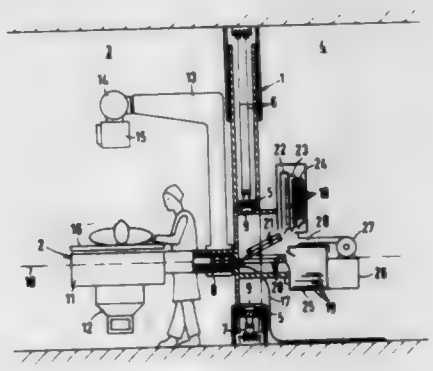
1. A display processing apparatus, for cooperating with X-ray apparatus providing data signals representing the distribution of absorption of x-radiation in each of a plurality of substantially parallel spaced planar sections of a body, the data signals for each section forming a frame of one or more fields of scanned lines; the display processing apparatus including storage means for storing the data signals of each frame, means for deriving from the storage means data signals forming a composite frame, of one or more fields of scanned lines, representing the distribution of the absorption of the radiation in a further planar section intersecting at least some of the first mentioned sections, said composite frame being formed from lines or parts of lines relating to parts of the body in the intersected first mentioned sections and within a predetermined distance of the plane of the further section, a source of one or both of line or frame frequency saw-tooth waveforms and switch control means, responsive to said one or both of line or frame frequency sawtooth waveforms, providing switching pulses each suitable for causing the means for deriving to derive data from a different frame or line in a predetermined sequence.

4,086,493

X-RAY EXAMINATION APPARATUS

Guenter Krumrey, Weisendorf, and Wilhelm Stöeckl, Fuerth-Sack, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 10, 1977, Ser. No. 776,264
Claims priority, application Germany, Mar. 26, 1976, 2612987
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—468 5 Claims



1. In an X-ray examination apparatus having at least one magazine for unpacked and unexposed X-ray film material, means for transporting the film from the magazine to an exposure station, said means for transporting including a housing, said magazine and the housing for the means for transporting being sealed so as to be impervious to light, the improvement comprising means for regulating the humidity of the air in the

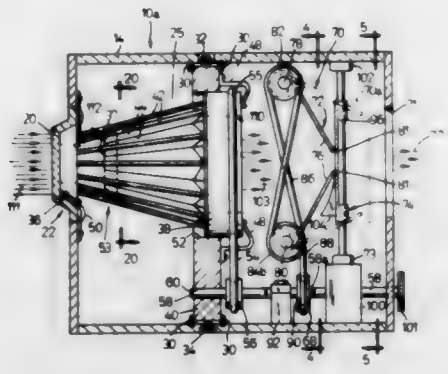
means for transporting, said means including a blower having a connection to said housing.

4,086,494

RADIATION COLLIMATOR FOR USE WITH HIGH ENERGY RADIATION BEAMS

Stephen P. Malak, 1720 N. Prospect Ave., Milwaukee, Wis. 53202

Filed Dec. 17, 1976, Ser. No. 751,700
Int. Cl.[2] G21F *5/04*
U.S. Cl. 250—505 **30 Claims**



8. A radiation collimator for collimating a beam of radiation, comprising:

a housing having passage means permitting passage of a beam of radiation directed toward the housing;

support means mounted in the housing to intercept the beam of radiation and defining a support space permitting passage of the beam of radiation therethrough;

a plurality of support rods mounted on the support means and within the support space and about the beam of radiation passing through the collimator;

a first set of longitudinally extending leaves of radiation absorbing material, one each secured to a portion of one of the support rods, the leaves being in close overlapping relation to effectively define a first hollow cone about the beam of radiation; and

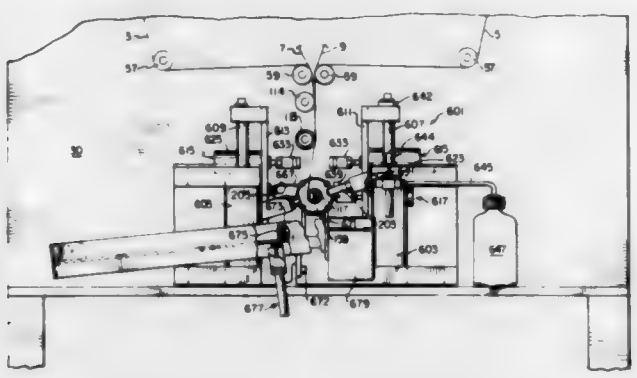
a second set of longitudinally extending leaves of radiation absorbing material, one each secured to a remaining portion of one of each of the support rods, the leaves being in close overlapping relation to effectively define a second hollow cone about the radiation beam.

4,086,495

AUTOMATIC CAPACITOR WINDING MACHINE

Fredric S. Miller, Wayne, N.J., assignor to Universal Manufacturing Corporation, Bridgeport, Conn.

Division of Ser. No. 562,011, Mar. 25, 1975, Pat. No. 4,020,727.
This application Jan. 11, 1977, Ser. No. 758,531
Int. Cl.[2] G01N *21/30*
U.S. Cl. 250—561 **4 Claims**



1. A photoelectric device for sensing when an object which travels a predefined path and which crosses a line a plurality of times is at a first point of crossing on the path which is nearest a first end of said line comprising:

a light detector having a relatively narrow angle of light acceptance located proximate said first end of said line and responsive to light impinging thereon; and

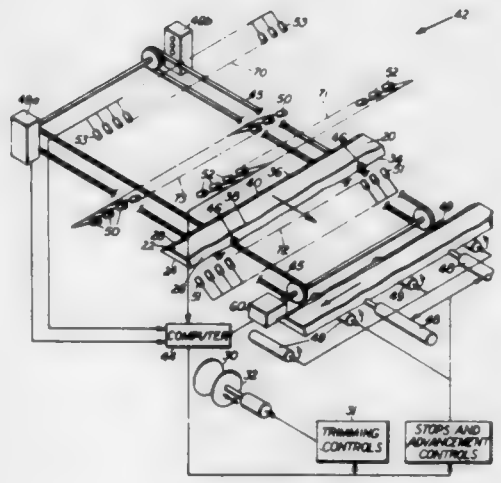
a light source proximate the second end of said line for transmitting a beam of light, which is wider at a point of corssing on the path which is further from said first end of the line than said first point of crossing than the widest portion of the object, along said line, whereby said object prevents said beam from impinging on the detector only when said object is at said first point of crossing on the path closest to said first end of said line.

4,086,496

METHOD FOR OPTICALLY MEASURING A CANT TO LOCATE THE NARROWEST FLAT SIDE AND ITS BOUNDARIES AND MANUFACTURING LUMBER THEREFROM

Larry R. Berry, Roseburg, Oreg., assignor to Sun Studs, Inc., Roseburg, Oreg.

Filed Mar. 18, 1977, Ser. No. 778,860
Int. Cl.[2] G01N *21/30*
U.S. Cl. 250—561 **7 Claims**



5. A method for determining the configuration of an elongate cant, of the type having top and bottom substantially flat, mutually parallel surfaces separated by longitudinal wanes and having a generally trapezoidal cross section, said method comprising:

(a) placing said cant upon a supporting surface with either one of the flat surfaces thereof resting upon said supporting surface;

(b) projecting a first plurality of light beams, spaced longitudinally with respect to said cant, through said supporting surface at a first acute angle with respect to said supporting surface which is less than any acute angle formed by one of said longitudinal wanes of said cant with respect to said supporting surface;

(c) projecting a second plurality of light beams spaced longitudinally with respect to said cant in alignment with said first plurality of light beams, through said supporting surface at a second acute angle with respect to said supporting surface, said second acute angle facing oppositely to said first acute angle and being less than any acute angle formed by the second one of said longitudinal wanes of said cant with respect to said supporting surface;

(d) effecting relative motion between said cant and said first and second plurality of light beams respectively in a direction transverse to said longitudinal wanes so that the longitudinal boundaries of said respective flat surfaces

sequentially interrupt and then restore each light beam of said first and second plurality of beams;

(e) detecting the amounts of said relative motion corresponding to said respective interruptions and restorations of each light beam of said first and second plurality of light beam; and

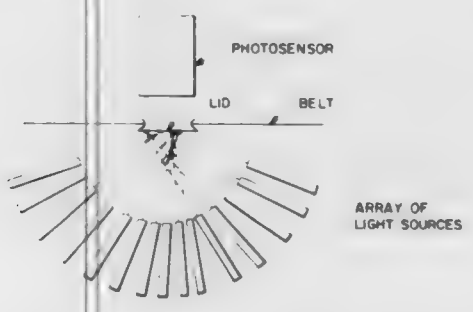
(f) determining the width and boundary locations of the narrowest width portion of said flat surfaces from said amounts of relative motion detected.

4,086,497

SYSTEM FOR INSPECTING CAN LIDS FOR THROUGH THE LID FLAWS

Russell Murray, Laurel, Md., assignor to Columbia Research Corporation, Gaithersburg, Md.

Filed Apr. 15, 1976, Ser. No. 677,471
Int. Cl.[2] G01N *21/32*
U.S. Cl. 250—562 **12 Claims**



1. A method for detecting light passing flaws within discrete elements, normally opaque to light, characterized by a sampling technique which enhances the signal to noise ratio by generating a composite signal from discrete samplings, comprising the steps of:

(A) conveying a normally opaque element to a point between a visible spectrum light source and a photosensitive means; and,

(B) impinging a visible spectrum light beam from said light source onto said normally opaque element at said point and simultaneously energizing said photosensitive means on the other side of said normally opaque element; and,

(C) generating a first discrete sample signal, in said photosensitive means, in response to said light impingement wherein the amplitude of said first signal is a direct function of the cross-sectional area of a light passing flaw; and

(D) generating at least one additional discrete sample signal, in said photosensitive means, in response to said light impingement wherein the amplitude of each additional signal is the same direct function of the cross-sectional area of said light passing flaw; and,

(E) amplifying and then storing the wave forms of said first and at least one additional discrete sample signals; and

(F) additively summing the wave forms of each of said stored signals to produce a composite signal which represents the addition of the amplitudes of each of said stored signals whereby only the amplitudes representing said light passing flaw in each sample signal will be constantly additive in said composite signal; and

(G) outputting said composite signal as the enhanced representation of a light passing flaw in said normally opaque element.

4,086,498

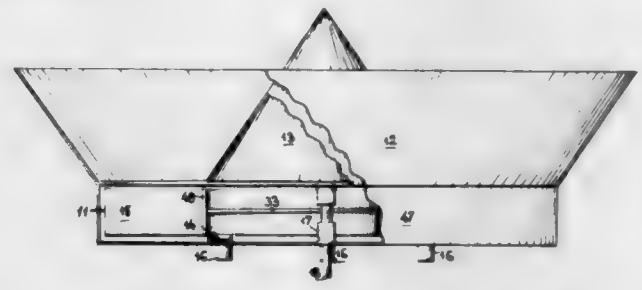
WIND POWERED ROTARY ELECTRIC GENERATOR

Joseph Szoeke, 57 Portland Pl., Yonkers, N.Y. 10703

Filed Apr. 25, 1975, Ser. No. 571,732
Int. Cl.[2] H02P *9/00*
U.S. Cl. 290—55 **5 Claims**

1. A wind powered rotary electric generator, comprised of a rotor having a plurality of vanes and a back planar base ring comprising a tapping means mounted on a shaft provided with an axial movement,

a wind deflecting means consisting of a conical shaped core wind deflector, its base circumference encompasing the inner circumference of said vanes and a peripheral wind deflector encircling said rotor at its outer peripheral circumference,



a plurality of generators, each comprising a cylindrical shaped tapping head adapted to be driven by said base ring tapping means and an electrical generator, attached to a mounting means through a spring biased generator holding means, and,

operating means, to engage and disengage said electrical generating means and said tapping by reciprocating movement of said rotor and tapping means.

4,086,499

STABLE ELECTRETS OF STYRENE-TYPE POLYMERS

Anupama Mishra, Guelph, Canada, assignor to Uniroyal Ltd., Canada

Filed Nov. 26, 1976, Ser. No. 745,256
Int. Cl.[2] H01B *3/44*
U.S. Cl. 307—88 ET **9 Claims**

8. A charged electret consisting of an electrostatically polarized, resinous, thermoplastic emulsion-polymerized styrene-type polymer selected from the group consisting of

(i) homopolymers of styrene, vinyltoluene or t-butylstyrene, and

(ii) copolymers of at least two of the said monomers,

said polymer having a volume resistivity of at least 10^{16} ohm-cm, and a glass transition temperature above 50° C., and containing not more than 1% by weight of electron-donor impurities and not more than 0.5% by weight of electron-acceptor impurities, said electret being characterized by the ability to retain at least 75% of its original charge upon exposure to a temperature of 50° C at a relative humidity of 100% for 100 days.

9. A method of making the electret of claim 8 comprising sandwiching the said styrene-type polymer between two glass plates and applying a DC voltage of about 20 to 60 KV for 1 to 5 minutes.

4,086,500

ADDRESS DECODER

Yasoji Suzuki, Kanagawa, and Ochii Kiyofumi, Koganeishi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Dec. 6, 1976, Ser. No. 747,975
Claims priority, application Japan, Dec. 5, 1975, 50-143908
Int. Cl.[2] G11C *8/00*; H03K *19/08, 19/20, 17/04*
U.S. Cl. 307—270 **5 Claims**

1. An address decoder comprising:

a chip enable signal line;

a complementary chip enable signal line;

a common precharge node;

a decoder output node;

a first power source;

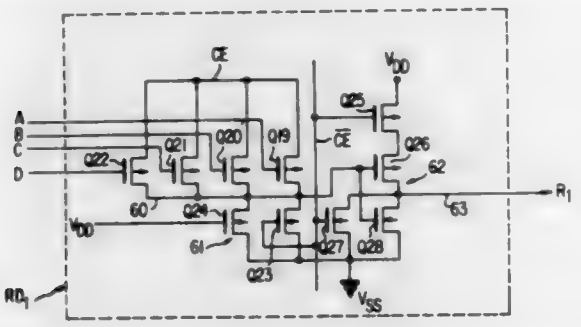
a second power source;

a plurality of switching MOS transistors each having a first conductivity type and a decoder input, the channels of

which are connected in parallel between the chip enable signal line and the common precharge node;

first and second MOS transistors having a second conductivity type and connected between the common precharge node and the first power source in parallel, the first MOS transistor being for use as a load transistor and the gate electrode of the second MOS transistor being connected to the complementary chip enable signal line for precharging the common precharge node;

third and fourth MOS transistors having the first conductivity type and connected between the second power source



and the decoder output node in series, the gate electrode of the third transistor being connected to the complementary chip enable line, the gate electrode of the fourth MOS transistor being connected to the common precharge node; and

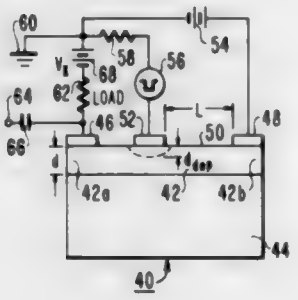
fifth and sixth MOS transistors having the second conductivity type and connected between the decoder output node and the first power source in parallel, the gate electrode of the fifth MOS transistor being connected to the complementary chip enable signal line and the gate electrode of the sixth MOS transistor being connected to the common precharge node.

4,086,501

PLANAR TRANSFERRED ELECTRON LOGIC DEVICE WITH IMPROVED BIASING MEANS

Lakshminarasimha Chainulu Upadhyayula, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1976, Ser. No. 750,400
Int. Cl.[2] H01L *27/04*; H03K *3/26*
U.S. Cl. 307—299 R **4 Claims**



1. In a semiconductor planar transferred electron device of the type having predetermined levels of trigger sensitivity and stability and comprising a substrate of substantially insulating material, a relatively thin layer of a semiconductor material which exhibits a differential negative resistance through the transferred electron effect characterized by a transfer of electrons from a high to a low mobility sub-band and the formation of domains upon the application of an electric field above threshold, spaced anode and cathode terminals engaging said semiconductor layer, a gate terminal on said semiconductor layer, means for applying across said anode and cathode terminals a first potential having a magnitude below said threshold value, said first potential creating a reverse bias on said gate terminal, means for applying an input trigger signal of a predetermined magnitude and polarity to said gate terminal, said input trigger signal increasing the electric field of said first potential to exceed said threshold value causing thereby the formation of said domains, a load resistor serially connected to said cathode terminal to provide a device output pulse having the same polarity as said input trigger signal, wherein the improvement comprises:

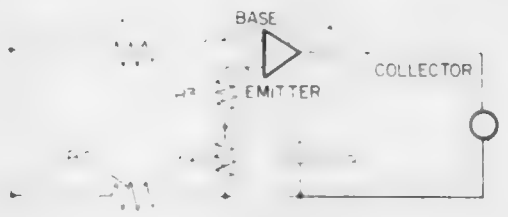
means for biasing said cathode terminal to reduce the magnitude of said reverse bias on said gate terminal thereby reducing the magnitude of said input trigger signal and enhancing the trigger sensitivity and stability of said device, said reduced input trigger signal being sufficient to combine with said first potential to form said domains.

4,086,502

SENSING CIRCUIT

Leslie J. Toth, Toledo, Ohio, assignor to Botelco, Toledo, Ohio

Filed Nov. 11, 1976, Ser. No. 740,867
Int. Cl.[2] H03K *17/00*
U.S. Cl. 307—308 **9 Claims**



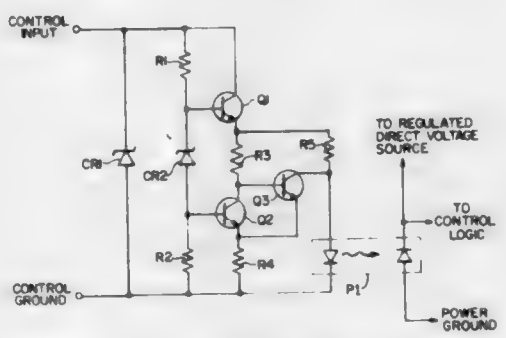
1. Sensing and actuating means for actuating an electrically-operated device when receiving a signal of a given magnitude from a variable sensor, said sensing and actuating means comprising an electrically-operated device, a source of DC power, a first conductor connecting one side of said source to the sensor, a first resistor connected in series between said source and said sensor, a silicon transistor, a second conductor connecting the other side of said source and the emitter of said transistor, a second resistor connected in series between said source and the emitter of said transistor, a third resistor connected to said first conductor and said second conductor across said source, a third conductor connecting said sensor and the base of said transistor, a fourth conductor connecting the collector of said transistor and said electrically-operated device, and a fifth conductor connecting said electrically-operated device and said one side of said source.

4,086,503

CONTROL CIRCUIT INITIATING CONDUCTION OF AN OPTO-ISOLATOR UNIT

David A. Fox, Shawnee Township, Allen County, and Otto L. Apfelbeck, Fort Shawnee, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jun. 21, 1976, Ser. No. 698,253
Int. Cl.[2] H03K *5/20, 5/08*
U.S. Cl. 307—363 **3 Claims**



1. An electronic control circuit comprising:

a pair of input terminals for receiving a voltage signal;

means responsive to voltage to produce a given response;

means for keeping said voltage signal at said input terminals from appearing across said voltage responsive means unless said voltage signal is at least of a predetermined

magnitude, said means comprising a voltage limiting device arranged to prevent application of said voltage, below said predetermined magnitude, to said responsive means, and said voltage limiting device causing current produced by said signal to flow in a first path shunting said responsive means so long as said signal is below said predetermined magnitude and said voltage limiting device becoming conductive and causing current produced by said signal to flow in a second path to said responsive means when said signal is at least of said predetermined magnitude; and

means for maintaining said voltage responsive means at a substantially constant current flow when said voltage signal is at least of said predetermined magnitude.

4,086,504

DISTRIBUTED DATA ACQUISITION

George D. Ezell; Marvin L. Murphy, Jr., both of Dallas, and Paul D. Davis, Jr., Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 29, 1973, Ser. No. 410,938
Int. Cl.[2] G01V *1/22*
U.S. Cl. 340—15.5 TS **7 Claims**



1. In data gathering operations the combination of:

data acquisition units at each of a plurality of source stations in an area,

a master station spaced from said units,

a slave station spaced from said units and from said master station,

means to transmit from said master station spread spectrum channel sync pulses,

means at all said unit to receive and compress said sync pulses,

means responsive to compressed pulses to initiate generation of a sample pulse train having a true first bit,

means at said slave station responsive to said sync pulses to store a time lapse signal representative of time lapse between receipt at said slave station of one said sync pulse from said master station and said true bit from said data acquisition unit, and

means at said slave station responsive to a predetermined sync pulse from said master station to transmit to said master station said time delay signal.

4,086,505

ELECTROMAGNETIC SYSTEM

James A. McDonald, 27208 Walker, Warren, Mich. 48092

Filed Aug. 11, 1975, Ser. No. 603,596
Int. Cl.[2] H02K *7/02*
U.S. Cl. 310—74 **1 Claim**

1. An electromagnetic motor comprising:

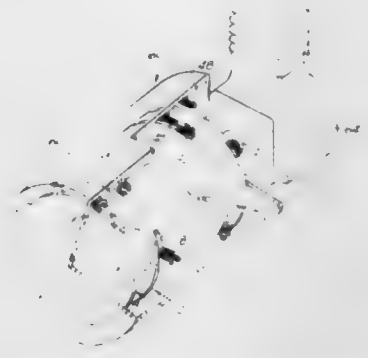
a first flywheel mounted on a shaft for rotation about an axis;

a plurality of armatures spaced at 90° intervals, each armature being of a material having magnetic properties, said armatures being attached to the periphery of said flywheel and rotatable therewith, each of said armatures having a cylindrically shaped mid-section and conically shaped end sections, the apexes of which point in opposite directions;

a plurality of stationary coils radially spaced from said rotating flywheel and through which an electric current is passed for generating a magnetic field to attract said armatures toward said coils to rotate said flywheel, said coils being of a horseshoe shape having an interior section opening to said flywheel, said armatures being complementarily shaped to said coil interiors such that said armatures may pass through the center of said coil interiors;

a plurality of support arms, each arm having one end attached to said flywheel periphery and extending radially outward therefrom with an opposite end attached to one of said armatures, said arms being sized to maintain said armatures in a radially spaced relationship with said flywheel such that said armatures may pass through said coils without said flywheel engaging said coils;

a second flywheel axially spaced from said first flywheel and mounted for rotation on said shaft on an axis common to the axis of rotation of said first flywheel and rotatable with said first flywheel;



a plurality of second armatures, each second armature being of a material having magnetic properties, said armatures being of a semi-circular shape and attached to the periphery of said flywheel and rotatable therewith, to open portion of said semi-circular shaped armatures facing radially outward;

a plurality of second stationary coils radially spaced from said rotating flywheel and through which an electric current is passed for generating a magnetic field to attract said second armatures toward said second coils to rotate said second flywheel, said second coils being of a cylindrical shape having an exterior surface shape complementary to the interior shape of said semi-circularly shaped second coils such that said second coils may pass through the center of said semi-circularly shaped armatures; and

an electric motor coupled to said shaft for rotating said flywheels to a predetermined velocity, the action of the magnetic fields generated by said coils on said armatures maintaining said flywheels at said predetermined velocity.

4,086,506

CONTRA-ROTATING HOMOPOLAR MOTOR-GENERATOR FOR ENERGY STORAGE AND RETURN

Robert L. Kustom, Palos Heights, and Robert B. Wehrle, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 5, 1976, Ser. No. 711,903
Int. Cl.[2] H02K *7/02*
U.S. Cl. 310—74 **4 Claims**

1. An apparatus for receiving electrical energy, storing the energy as rotational mechanical energy, and delivering the stored energy to a load as electrical energy, the apparatus comprising:

a. a plurality of electrically conducting nested coaxial concentric cylindrical shells;

b. a plurality of electrically insulating cylindrical shells

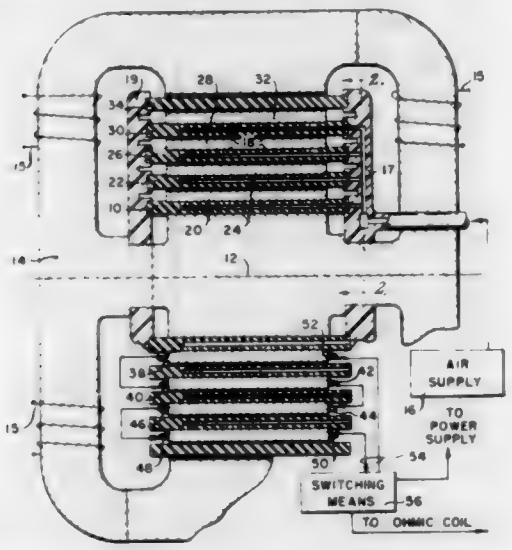
coaxial and concentric with each other and with the conducting shells and disposed to insulate the conducting shells from each other;

c. an electromagnet disposed to produce a magnetic flux that is directed radially through the conducting shells;

d. a plurality of air bearings disposed to support the conducting shells in rotation about an axis;

e. an air supply connected to the air bearings to supply air flow therethrough;

f. a plurality of spokes connected to the electromagnet and to the insulating cylindrical shells to maintain the insulating shells in fixed irrotational engagement;



g. a plurality of brushes connected to the conducting shells at edges thereof to create a series electric circuit therethrough that carries electric current in opposite axial directions in adjacent conducting shells;

h. a first terminal connected to one of the brushes that is connected to an innermost conducting shell; and

i. a second terminal connected to one of the brushes that is connected to an outermost conducting shell to form a series circuit through the conducting shells and brushes to the first terminal, whereby electrical energy that is supplied to the first and second terminals is stored as rotational mechanical energy in the conducting cylinders for delivery as electrical energy to a load.

4,086,507

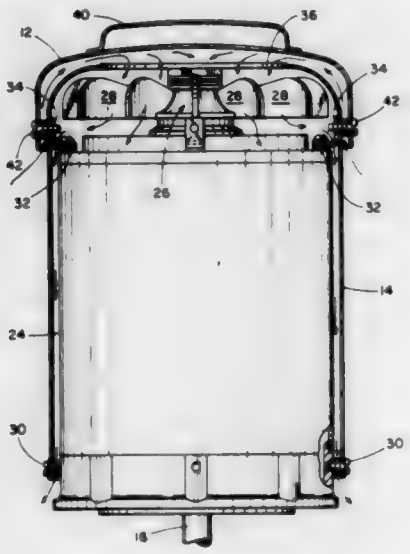
OUTDOOR MOTOR ENCLOSURE

Murray C. Roland, Scottsbluff, and Edward M. Norum, Gering, both of Nebr., assignors to Lockwood Corporation, Gering, Nebr.

Continuation of Ser. No. 546,510, Feb. 3, 1975, abandoned. This application Aug. 13, 1976, Ser. No. 714,185

Int. Cl.[2] H02K *5/00*

U.S. Cl. 310—88 **7 Claims**



1. An attachment to a vertically disposed, sealed electric motor unit of the outdoor type for protecting the motor unit from rain, said motor unit including a generally cylindrical housing surrounding a motor and further including a cooling fan mounted external to the housing for rotation with the drive shaft of the motor to thereby force a flow of cooling air along the outer surface of said housing, said attachment comprising:

a. a generally cylindrical moisture shield circumferentially disposed about said housing and said fan, said shield being of a cross-sectional dimension slightly greater than that of said housing to thereby define a first passage for said flow of cooling air, said shield having lower and upper end openings to define respectively exhaust and intake openings for said passage, the upper end opening being of a cross-section of a dimension reduced from that of said housing and being defined adjacent said cooling fan;

b. means for securing said shield directly to said housing wherein the housing is primarily the only support for said shield;

c. a rain canopy having a first portion circumscribing at least a portion of said shield and having a second portion disposed transversely of said drive shaft and slightly removed from said upper end opening for covering said upper end opening, said first and second portions being spaced from said shield to provide an air inlet passage to said upper end opening, whereby during operation of said motor unit the fan draws outside air upwardly through said air inlet passage, downwardly through said upper end opening, through said first passage, and through said lower end opening along said outer surface while protecting said motor unit from rain; and

d. means for securing said canopy directly to said shield wherein the shield is primarily the only support for said canopy.

4,086,508

CAN FOR USE IN CANNED MOTOR

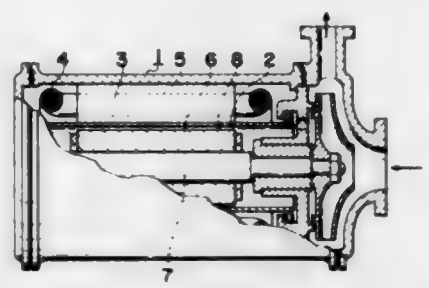
Katashi Masumoto; Ei-ichi Furubayashi, and Wahei Inoue, all of Tokyo, Japan, assignors to The Director National Research Institute for Metals and Kabushiki Kaisha Maekawa Seisakusho, both of Tokyo, Japan

Continuation of Ser. No. 590,381, Jun. 25, 1975, abandoned. This application Aug. 15, 1977, Ser. No. 824,715

Claims priority, application Japan, Jun. 29, 1974, 49-73804

Int. Cl.[2] H02K *5/10*

U.S. Cl. 310—86 **8 Claims**



1. A can for use in a canned motor wherein a cylindrical can body made of soft magnetic metal plate having a crystalline structure which is arranged to have the magnetically hard direction of the plate oriented to the circumferential direction of said cylindrical can body, said circumferential direction being perpendicular to the stator slots of said motor, said crystalline structure being such that: when the material of said metal plate has a body centered cubic crystal structure, a direction different by more than 35° from the direction of the crystal axis **<001>** is in parallel to said circumferential direction of said cylindrical can body; when said metal plate has a face centered cubic structure, a direction different by more than 35° from the direction of the crystal axis **<111>** is in parallel to said circumferential direction of said cylindrical can body; and when said metal plate has a hexagonal closepacked structure, a direction different by more than 60° from the

direction of the crystal axis <00.1> is in parallel to said circumferential direction.

4,086,509

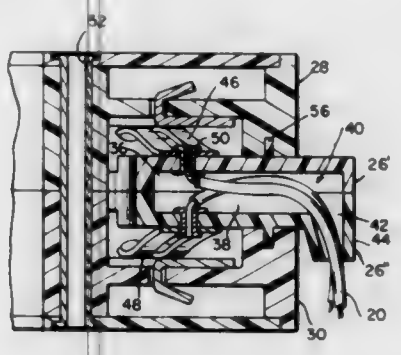
SANDWICHED SLIP RING ASSEMBLY

Harry G. Manson, Princeton, Ind., assignor to Hansen Manufacturing Company Inc., Westbury, N.Y.

Filed Sep. 3, 1976, Ser. No. 720,152

Int. Cl.[2] H01R *39/10*

U.S. Cl. 310—232 **6 Claims**



1. A slip ring assembly comprising:
a. a pair of annular rotatable disks of electrically insulative material, each of said disks having a central opening extending completely through its thickness aligned with the central opening of the other,
b. a stationary annular disk of electrically insulative material sandwiched between said pair of rotating disks, said stationary disk having a central opening extending completely through its thickness aligned with the central openings of said rotatable disks, said aligned openings in said disks being capable of accommodating a shaft,
c. a closed annular chamber between said rotatable disks,
d. cooperating electrically conductive resilient brushes and electrically conductive contact rings carried by said stationary and rotatable disks, said brushes and rings being located entirely within said closed annular chamber, and
e. electrical leads electrically connected to said brushes and rings, said leads extending to the exterior of said disks.

4,086,510

FLAT MINIATURE DYNAMOELECTRIC MACHINE

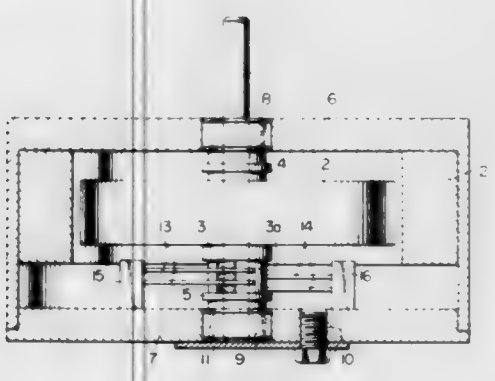
Seizo Watanabe, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Toyko, Japan

Filed Jun. 25, 1976, Ser. No. 699,616

Claims priority, application Japan, Jun. 26, 1975, 50-90682; Oct. 30, 1975, 50-148087; Nov. 21, 1975, 50-158323; Nov. 27, 1975, 50-160603; Nov. 28, 1975, 50-160673; Nov. 28, 1975, 50-160674; Dec. 8, 1975, 50-166059; Dec. 16, 1975, 50-170347; Nov. 21, 1975, 50-139904

Int. Cl.[2] H02K *13/00*

U.S. Cl. 310—242 **12 Claims**



1. A flat miniature dynamoelectric machine comprising a flat rotor having a coreless coil, a commutator integrally carrying the rotor and having an exposed portion for sliding contact, a shaft fixedly carrying the rotor and the commutator thereon, a housing including bearing means which rotatably carries the shaft, one end of the shaft projecting externally of the housing, a magnet disposed within the housing so as to establish a magnetic field for cooperation with the rotor, conductive brushes disposed within the housing for sliding contact with the exposed portion of the commutator, and a thrust bearing plate mounted on the housing for resilient abutment against the other end of the shaft, said conductive brushes comprising a Z-shaped support member of a resilient metallic material having one end fixedly mounted on the machine and having the other end defining a fork-like shape having a pair of prongs, and conducting members fixedly mounted on the respective prongs for sliding contact with the commutator.

4,086,511

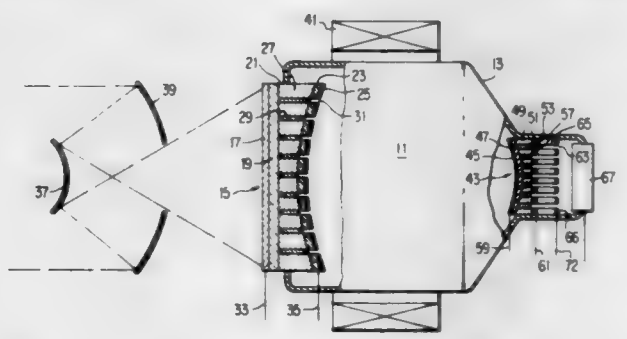
MILLIMETER IMAGING DEVICE

Charles M. Redman, Las Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 25, 1977, Ser. No. 781,255

Int. Cl.[2] H01J *39/18, 31/50*

U.S. Cl. 313—101 **10 Claims**



1. A millimeter wave imaging device comprising:
field emission means responsive to application of an external electric field thereto for emitting a carrier wave of electrons;
modulating means connected to the field emission means and responsive to absorption of power from an input radiation image for modulating the carrier wave of electrons to convert the input radiation image to an electron image;
storage means spaced from the field emission means for detecting and temporarily storing the electron image;
accelerating means for directing the emitted electron carrier wave onto the storage means;
amplifier means connected to the storage means for amplifying the stored electron image; and
display means disposed at the output of the amplifier means for displaying the amplified electron image.

4,086,512

CAMERA TUBE EMPLOYING SILICON-CHALCOGENIDE TARGET WITH HETEROJUNCTION

Jan Dieleman, and Arthur Marie Eugene Hoeberechts, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 515,454, Oct. 17, 1974, abandoned. This application Mar. 17, 1976, Ser. No. 667,908

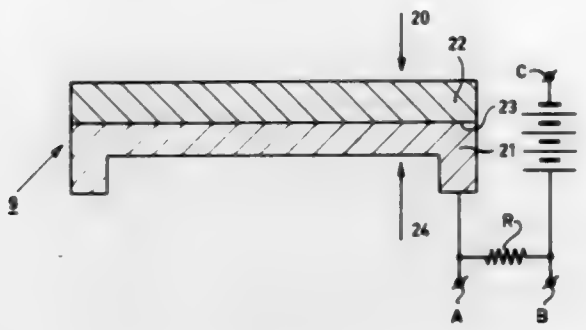
Claims priority, application Netherlands, Oct. 27, 1973, 7314803

Int. Cl.[2] H01J *29/45, 31/38*

U.S. Cl. 313—366 **4 Claims**

1. A camera tube comprising an electron beam source, a target to be scanned by an electron beam emerging from said source, said target comprising a radiation-receiving silicon layer and a chalcogen-containing layer having substantially instrinsic conductivity which forms a hetero junction with the

silicon layer on the side thereof scanned by the electron beam, said chalcogen-containing layer further comprises germanium



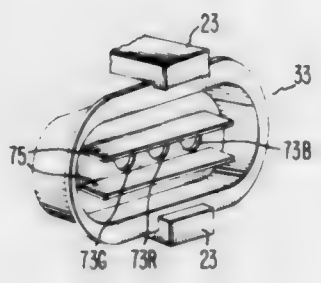
in an atomic ratio to the chalcogen component lying between 1:1 and 1:2.

4,086,513

PLURAL GUN CATHODE RAY TUBE HAVING PARALLEL PLATES ADJACENT GRID APERTURES

John Evans, Jr., deceased, late of Lancaster, Pa. (by Frances Mae Evans, executrix), assignor to RCA Corporation, New York, N.Y.

Filed Mar. 3, 1975, Ser. No. 554,610
Int. Cl.[2] H01J *29/50, 29/56*
U.S. Cl. 313—414 **6 Claims**



1. In a cathode-ray tube including an evacuated envelope comprising a faceplate and a neck connected by a funnel, a color phosphor screen on the inner surface of said faceplate, a multiapertured color selection electrode spaced from said screen, and electron gun means mounted in said neck for generating and directing a plurality of electron beams along paths through said electrode to said screen, said gun means including a plurality of cathodes and a plurality of grids spaced between said cathodes and said selection electrode, each of said grids having a plurality of apertures therein corresponding to the number of electron beams, and two of said grids forming a plurality of focusing fields corresponding to the number of electron beams, the improvement comprising,

at least one of said grids forming a plurality of focusing fields having attached parallel flat plates positioned on opposite sides of its apertures on its screen side, said plates being positioned to distort said plurality of focusing fields

to form a noncircular electron beam.

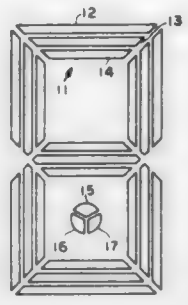
4,086,514

VARIABLE COLOR DISPLAY DEVICE

Karel Havel, P.O. Box 66, Station M, Toronto, Ontario, Canada (M6S 4T2)

Continuation-in-part of Ser. No. 613,265, Sep. 15, 1975, abandoned, which is a division of Ser. No. 424,069, Dec. 12, 1973, abandoned. This application Sep. 23, 1976, Ser. No. 725,789
Int. Cl.[2] G08B *5/36;* **H01L** *33/00*
U.S. Cl. 313—500 **3 Claims**

1. A variable color display device comprising a plurality of display areas, each said display area including three light emitting areas for emitting light signals of respectively different colors, each said light emitting area having a plurality of branches interleaved with like branches of the other light emitting areas to cause the light signals of different colors emitted therefrom to be substantially superimposed upon one





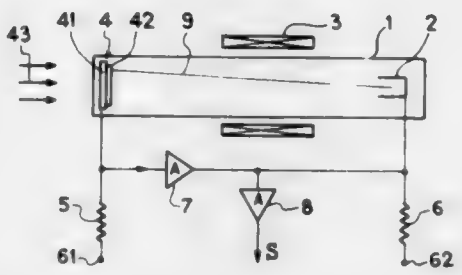
another to mix said colors without the need for an optical coupling element.

4,086,515

NON-DESTRUCTIVE READ-OUT DEVICE

Lucien Guyot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 22, 1975, Ser. No. 598,054
Claims priority, application France, Jul. 26, 1974, 74 26061
Int. Cl.[2] H01J *31/26*
U.S. Cl. 315—10 **12 Claims**



1. A non-destructive electrical read-out device for image read-out, comprising within an evacuated envelope:

means for emitting an electron beam located at a first end of said envelope;

a target located at a second end of the envelope and placed at a bias voltage, on to which said image is projected, thus locally modifying the potential distribution;

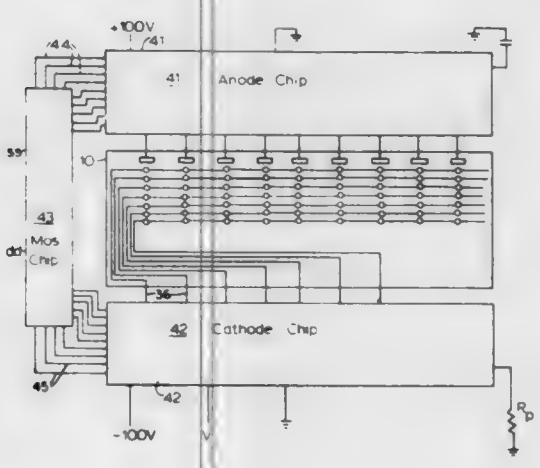
means for deflecting the electron beam and producing scanning of said target by said beam, and for furnishing a read-out signal which is a function of said potential distribution; said device further comprising means for reducing the quantity of electrons deposited by said electron beam on said target, by an amount which is a function of said read-out signal, said function being proportional to approximately $1/n$ of the quantity of electrons needed to restore said potential distribution to its unmodified condition.

4,086,516

INTEGRATED CIRCUIT SYSTEM FOR OPERATING DISPLAY PANELS

James A. Ogle, Neshanic Station, and James Y. Lee, Kendall Park, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 22, 1976, Ser. No. 743,969
Int. Cl.[2] H05B *41/02*
U.S. Cl. 315—169 R **6 Claims**



1. A system for operating a gas-filled multiple-position display panel, said panel having a plurality of groups of glow cathode elements and an anode associated with each group, corresponding cathodes of the different groups being interconnected by a single common conductor, there thus being a single common conductor for each cathode element in each of said groups, said system comprising

a plurality of cathode circuits, each cathode circuit including a connection to one of said common conductors, each circuit including a connection to a source of input cathode selecting signals and active circuit means responsive thereto,

an anode circuit bus,

a plurality of anode circuits, each anode circuit including (1) a first current flow path between said anode circuit bus and an anode in said display device, (2) a second current flow path between said anode circuit bus and a current source, and (3) means for receiving input anode energizing signals coupled to said second path, said first path including an active circuit element which couples the potential of said anode circuit bus to an anode, and

an auxiliary circuit coupled between said anode bus and all of said cathode circuits and providing an auxiliary current flow path for said cathode circuits during the re-ionization time for the cathode elements in said display panel, said auxiliary circuit including means for generating anode operating potential, as current flows therethrough, and for applying said anode operating potential to said anode circuit bus.

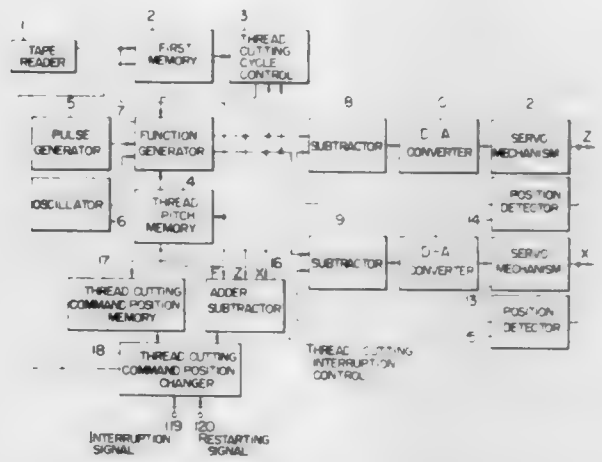
4,086,517

SYSTEM FOR CONTROLLING NUMERICALLY CONTROLLED MACHINE TOOL USED FOR CUTTING THREADS

Hiromi Yamaki, and Hiroaki Arai, both of Nagoya, Japan, assignors to Okuma Machinery Works Ltd., Nagoya, Japan

Filed Apr. 6, 1976, Ser. No. 674,097
Int. Cl.[2] G05B *19/24*
U.S. Cl. 318—39 **14 Claims**

1. A system for controlling the operation of a numerically controlled machine tool adapted for cutting a thread on a workpiece comprising means for reading various input information for instructing the cutting of the thread; first memory means for storing the input information; thread cutting cycle control means for controlling the thread cutting cycle according to the output of said first memory means; thread pitch memory means for storing the thread pitch information read by said reading means; pulse generating means for generating a pulse signal proportional to the rotation of the spindle of the tool; and function generating means for generating function outputs in response to the application of the outputs of said



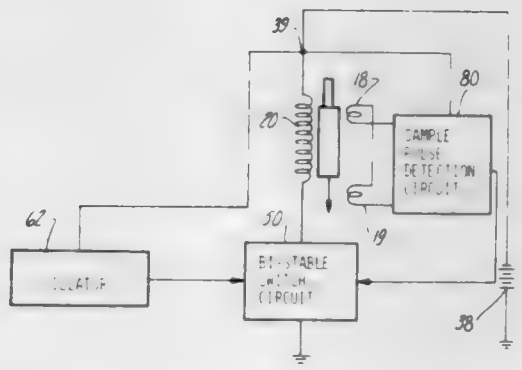
thread cutting cycle control means, said thread pitch memory means and said pulse generating means to thereby control a servo mechanism for feeding the tool in directions normal to each other, said control system comprising thread interruption control means for effecting a "pull-up motion of the tool".

4,086,518

ON DEMAND FLUID PUMP

John Robert Wilkinson, Dearborn, Mich., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Jul. 29, 1976, Ser. No. 709,636
Int. Cl.[2] H02K *33/00*
U.S. Cl. 318—127 **3 Claims**



1. An on-demand fluid pump comprising:

an electromechanical pump having a magnetically permeable piston reciprocally movable between a start position and an end position, relilient means for urging said piston to move from said start position to said end position in a variable period of time, said variable period being a function of pump load, a solenoid coil for retracting said piston from said end position to said start position in response to a current flow having a determinable duration, and sensing means generating an induced output signal in response to a current flow in said solenoid coil, said output signal having a value indicative of the position of said piston;

oscillator means for sequentially generating sample signals at predetermined intervals, said sample signals applied to said solenoid coil produce a current flow in said solenoid coil for a period of time substantially shorter than said minimum duration, and said predetermined intervals are longer than said minimum duration and substantially shorter than said variable period of time;

detection means for generating a retract signal in response to an induced output signal generated by said sensing means in response to the current flow in the solenoid coil produced by said sample signals and having a value indicative of the piston being at said end position;

bi-stable means in circuit relationship with said solenoid coil for initiating a current flow through said solenoid coil in response to a retract signal and for terminating the current flow through said solenoid coil in response to the next sequential sample signal; and

a source providing electrical power to said solenoid, said oscillator means, detector means and said bi-stable means.

4,086,519

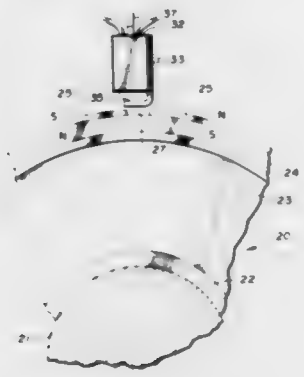
HALL EFFECT SHAFT ANGLE POSITION ENCODER

Erland K. Persson, Minneapolis, Minn., assignor to Electro-Craft Corporation, Hopkins, Minn.

Filed Feb. 25, 1977, Ser. No. 772,029

Int. Cl.[2] H02K *29/00*

U.S. Cl. 318—254 **19 Claims**



12. A Hall effect shaft angle commutating mechanism for use with a rotatable electrical device, comprising:

a. a pair of magnetic elements independent of any magnetic rotor of the electrical device, said magnetic elements having serially alternating polarities of magnetic north and south and being arranged in two consecutive circular strips;

b. a Hall effect sensor mounted in spaced and confronting relation, with one each of said pair of magnetic element circular strips for sensing said alternating polarities of magnetic north and south and producing output signals representative thereof;

c. rotor means including a shaft having said pair of magnetic element circular strips secured thereto for rotating said magnetic elements past said Hall effect sensor;

d. and operational amplifier means connected to said Hall effect sensors for amplifying the output signals thereof.

4,086,520

SPEED AND PHASE CONTROL SYSTEM

Kazuo Hashizaki, and Ryusuke Moriya, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

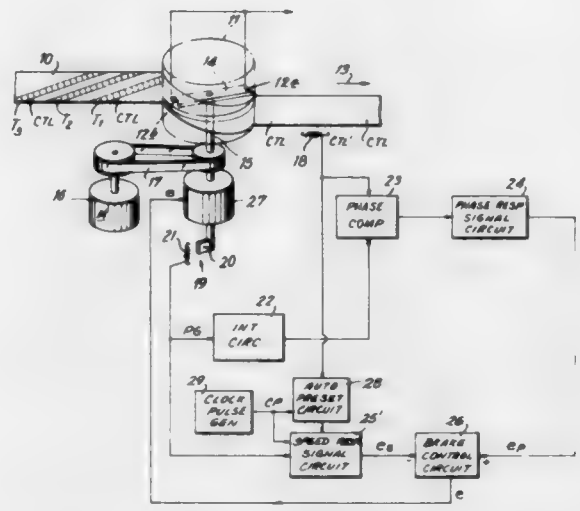
Continuation-in-part of Ser. No. 509,828, Sep. 27, 1974, abandoned. This application Feb. 19, 1976, Ser. No. 659,363

Claims priority, application Japan, Oct. 1, 1973, 48-110338

Int. Cl.[2] H02P *5/16*

U.S. Cl. 318—269 **6 Claims**

1. In an apparatus for reproducing information signals recorded in successive parallel tracks on a record medium along with respective control signals recorded on the record medium in predetermined positional relationship to said tracks, and in which the apparatus includes rotary transducer means for scanning said tracks in succession so as to reproduce the information signals recorded therein as the record medium is advanced, and fixed transducer means for reproducing said control signals with a repetition rate that is dependent on the speed of advancement of the record medium: a speed and phase control system for said rotary transducer means comprising rotational speed detector means for producing pulse signals representative of the rotational position of said rotary transducer means and having a repetition rate that is a function of the rotational speed of said rotary transducer means; phase comparison means for producing a phase responsive signal having a voltage level that is varied in response to changes in the relative timing of said reproduced control signals and said pulse signals; means for producing a speed responsive signal including a source of clock pulses, counting means for counting said clock pulses for time intervals determined by said repetition rate of said pulse signals from the rotational speed detector means, means for converting the count of said counting means, at the end of each of said time intervals, to a corresponding voltage level of said speed responsive signal, and means for establishing the initial count of said counting means



at the commencement of each of said time intervals in dependence on said repetition rate of said reproduced control signals so that the voltage level of said speed responsive signal is varied in response to changes in said repetition rate of the pulse signals only when said changes occur without corresponding changes in said repetition rate of the reproduced control signals; and means for controlling the rotation of said rotary transducer means in response to the voltage levels of said phase responsive signal and said speed responsive signal.

4,086,521

DIGITAL SYSTEM FOR STABILIZING THE SPEED OF A CLOCKWORK MOTOR

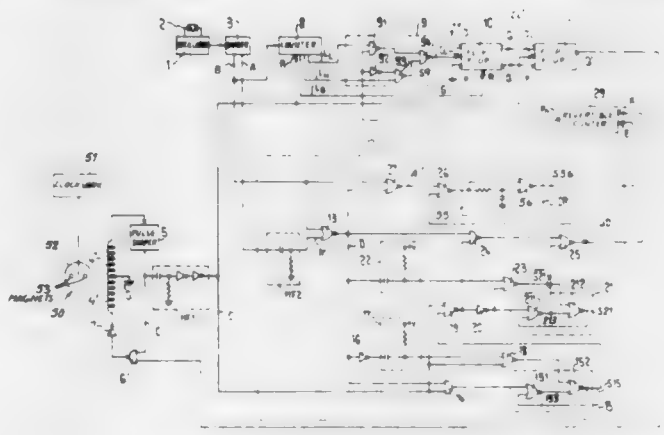
Roger Bühler, Le Locle, Switzerland, and Christian Faivre, Morteau, France, assignors to Les Fabriques d'Assortiments Reunies, Le Locle, Switzerland

Filed May 14, 1976, Ser. No. 686,524

Claims priority, application Switzerland, May 16, 1975, 6376/75

Int. Cl.[2] G05B *5/00;* H02P *5/00*

U.S. Cl. 318—307 **10 Claims**



1. A speed-stabilizing system for a motor driving a load, comprising:

an energizing circuit for said motor;

a source of monitoring pulses coupled with said motor, said monitoring pulses having a cadence proportional to the actual motor speed;

a generator of reference pulses of fixed frequency corresponding to a preselected motor speed in a range between

a predetermined lower speed limit and a predetermined higher speed limit, said generator further producing a series of timing pulses at a cadence equaling a predetermined multiple of said fixed frequency;

phase-comparison means connected to said source and to said generator for emitting a first phasing signal upon said monitoring pulses recurring at a rate higher than that of said reference pulses and emitting a second phasing signal upon said monitoring pulses recurring at a rate lower than that of said reference pulses;

pulse-counting means connected to said generator for stepping by said timing pulses and connected to said source for resetting by said monitoring pulses, said pulse-counting means producing a reading indicative of the magnitude of the actual motor speed relative to said range;

supply means for delivering recurrent driving pulses to said energizing circuit for accelerating the motor;

inhibiting means in series with said energizing circuit for selectively blocking passage of said driving pulses; and

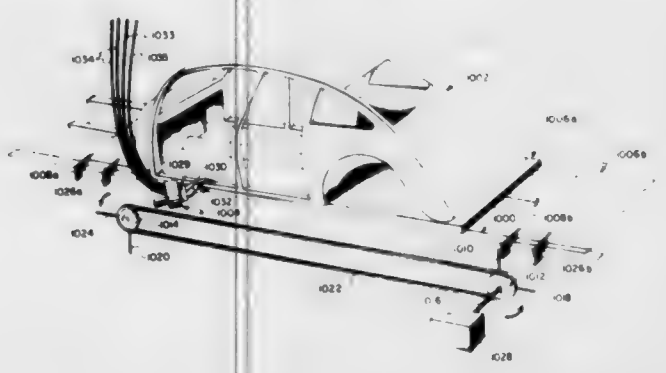
logical circuitry connected to said inhibiting means and jointly controlled by said pulse-counting means and said phase-comparison means for suppressing said driving pulses in response to a reading corresponding to motor speeds above said upper limit and in the presence of said first phasing signal in response to a reading corresponding to motor speeds within said range, said logical circuitry allowing delivery of said driving pulses in response to a reading corresponding to motor speeds below said lower limit and in the presence of said second phasing signal in response to a reading corresponding to motor speeds within said range.

4,086,522

COMPUTER ASSISTED TEACHING ARRANGEMENT FOR CONVEYOR LINE OPERATION

Joseph F. Engelberger; Maurice J. Dunne, both of Newtown, and William Perzley, Weston, all of Conn., assignors to Unimation, Inc., Danbury, Conn.

Filed Sep. 8, 1976, Ser. No. 721,805
Int. Cl.[2] B25J *9/00*
U.S. Cl. 318—568 **92 Claims**



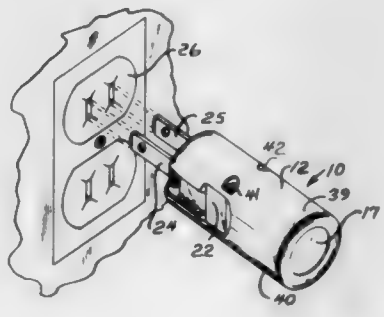
1. In a programmable manipulator, the combination of, a manipulator arm movable in a plurality of axes, a continuously moving conveyor positioned adjacent said programmed manipulator, memory storage means having stored therein a plurality of digital command signals at least some of which correspond to the program step position to which said arm is to be moved, one of said plurality of digital command signals including a digital representation of said conveyor position, one of said command signals for at least one program step including a continuous path mode signal, encoder means for each of said axes and said moving conveyor operative to develop position signals corresponding to the actual position of said arm in said plurality of axes and the actual position of said moving conveyor, address means for causing said stored command signals to appear at the output of said memory means in a predetermined sequence, means operative in the absence of said continuous path mode signal for moving said arm to the position represented by said stored command signals, means responsive to said continuous path mode signal for developing a digital signal equal to the difference between a command signal for a program step which includes said continuous path mode signal and the preceding command signal, means for dividing said difference signal into a predetermined number of increments according to said stored digital command signals at a program step which includes said continuous path mode signal, means for producing a series of artificial interpolation command signals equal in number to said predetermined number of increments which differ from said preceding command signals by said increments, means utilizing said artificial interpolation command signals to move said arm in a substantially continuous path, means for detecting the occurrence of a predetermined state of equality between said conveyor positional signal and said artificial conveyor command signal, and means responsive to said detecting means for developing an advance signal operative to control said dividing means to generate said predetermined number of increments.

4,086,523

RECHARGEABLE BATTERY

Koji Izumi, Nagano, Japan, assignor to Izumi Products Company, Elk Grove Village, Ill.

Filed Jan. 17, 1977, Ser. No. 760,117
Int. Cl.[2] H01M *10/46*
U.S. Cl. 320—2 **12 Claims**



1. In a rechargeable battery having cell means for storage of electrical energy, housing means enclosing said cell means, rectifier means within said housing means, and a pair of output terminals exposed to outwardly of said housing for delivering electrical energy from said cell means, the improvement comprising:

a pair of prongs arranged for electrical connection to a female power supply receptacle;

means for movably mounting said prongs at opposite sides of one of said terminals to extend selectively in a first disposition straddling one end of said housing and a second disposition projecting from said one end in parallel spaced relationship to be received in said female power receptacle with said one terminal effectively shielded from inadvertent contact by said housing and projecting prongs; and

circuit means selectively interconnecting said cell means, rectifier means, terminals, and prongs including switch means for electrically connecting said prongs to said rectifier means and cell means to permit recharging of said cell means from the female power supply receptacle only when said prongs are disposed in said second disposition.

4,086,524

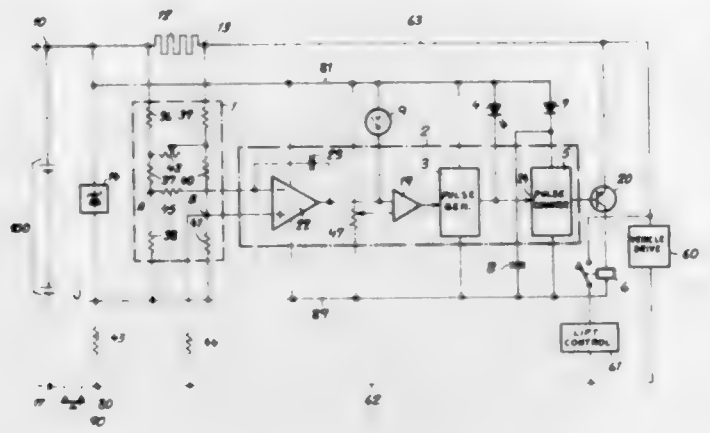
CHARGE MONITOR FOR ELECTRIC BATTERY

Manfred Kremer, Hamburg, Germany, assignor to Still GmbH (vormals SE-Fahrzeugwerke GmbH), Hamburg, Germany

Division of Ser. No. 618,922, Oct. 2, 1975, Pat. No. 3,997,888.
This application Sep. 9, 1976, Ser. No. 722,064
Claims priority, application Germany, Oct. 2, 1974, 2446958
Int. Cl.[2] H02J *7/00*
U.S. Cl. 320—33 **4 Claims**

1. A method of monitoring the state of charge of an electric battery supplying current to a load connected across its termi-

nals, comprising the steps of simultaneously measuring the terminal voltage and the load current of the battery, deriving from the values so measured a resultant test parameter, comparing said test parameter with a predetermined threshold designating the transition from a normal range indicative of a state of effective charge to an off-normal range indicative of a



state of approaching depletion, generating counting pulses during periods in which said test parameter falls into said off-normal range, storing the resulting pulse counts during intervals of return to said normal range, and switching off at least a significant part of said load upon the cumulative pulse count reaching a predetermined magnitude.

4,086,525

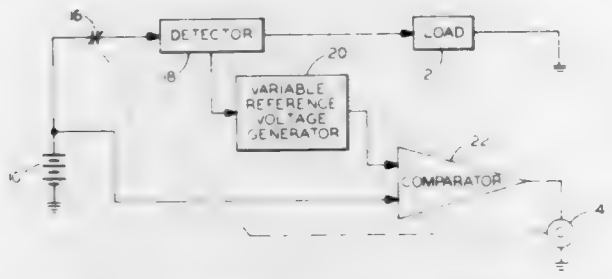
CIRCUIT FOR PREVENTING OVERDISCHARGE OF A BATTERY

Ole N. Ibsen, Bloomington, and Thomas E. Anderson, Normal, both of Ill., assignors to General Electric Company, New York, N.Y.

Filed Dec. 28, 1976, Ser. No. 755,103

Int. Cl.² H02J 7/00

U.S. Cl. 320—33 **5 Claims**



1. A circuit for preventing overdischarge of a rechargeable lead acid storage battery comprising:

(a) a direct current sensor for sensing the rate of discharge of said battery;

(b) means responsive to said direct current sensor for generating a reference voltage which varies inversely with the sensed rate of discharge of said battery, said reference voltage generating means further comprising:

(i) an analog inverting amplifier having an input terminal and an output terminal, said input terminal being electrically coupled to said direct current sensor; and

(ii) first and second resistors each having one end electrically connected together to form an output of said reference voltage generating means, another end of said first resistor being electrically connected to the output terminal of said analog inverting amplifier, and another end of said second resistor being electrically connected to a fixed reference voltage source;

(c) means for comparing the actual voltage of said battery with the generated reference voltage for producing a triggering signal when the generated reference voltage is at least equal to the actual voltage of said battery; and

(d) means responsive to the triggering signal for disconnecting said battery from a load.

4,086,526

METHOD OF AND A POWER SWITCHING DEVICE FOR REGULATING THE ELECTRICAL POWER DELIVERED TO A CONSUMER IN AN A.C. NETWORK

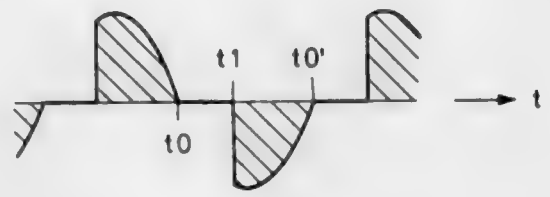
Hans-Dieter Grüdelbach, Plon, Germany, assignor to Poul Hahn Evers, Pura, Switzerland

Filed Mar. 1, 1977, Ser. No. 773,279

Claims priority, application Switzerland, Sep. 9, 1976, 11447/76

Int. Cl.² G05F 1/44

U.S. Cl. 323—34 **9 Claims**



1. In a method of regulating electrical power supplied via a current path to at least one consumer in an A.C. network which involves setting desired current flow angle using a power switching device connected in the current path to the consumer, the improvement comprising providing as the switching device at least two transistors, connected in parallel and mutually decoupled, connecting collector-emitter leads of said transistors in the current path to the consumer, switching the transistors alternately at a switching frequency higher than the line frequency in such manner that the time intervals of their ON states overlap cutting the switching device ON at the beginning of each half wave of A.C. line voltage, at least approximately at a phase angle of 0°, and cutting the power switching device OFF at a phase angle corresponding to the desired current flow angle; whereby the alternate connection of the transistors takes place in each half period of the A.C. line voltage beginning at its start and lasting until the desired current flow angle is reached.

4,086,527

METHOD AND APPARATUS FOR MONETARY ARTICLES AUTHENTIFICATION

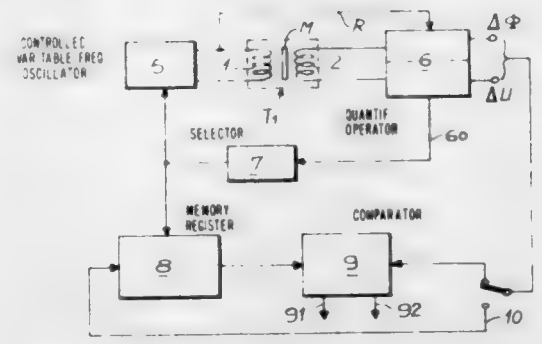
Robert G. Cadot, Saint-Peray, France, assignor to Crouzet, Paris, France

Filed Mar. 24, 1976, Ser. No. 669,759

Claims priority, application France, Mar. 25, 1975, 75 09572

Int. Cl.² G01R 33/00

U.S. Cl. 324—233 **5 Claims**



1. An authentication method for standardized objects, such as in particular monetary articles, in which an object to be authenticated is introduced into the field located between an emitter and a receiver delivering at least an alternative physical quantity, whose quantitative alteration produced by the presence of said object in said field is measured, the result being compared with a reference value pre-stored in a memory and distinctive of the object to authenticate, whereby, within a tolerance approximation, an authentication criterion is de-

ducted, method characterised by the fact that said alteration is measured at different frequencies, that corresponding alterations are successively measured and then simultaneously compared with said respective reference quantities.

4,086,528

CAPACITIVE TRANSDUCERS

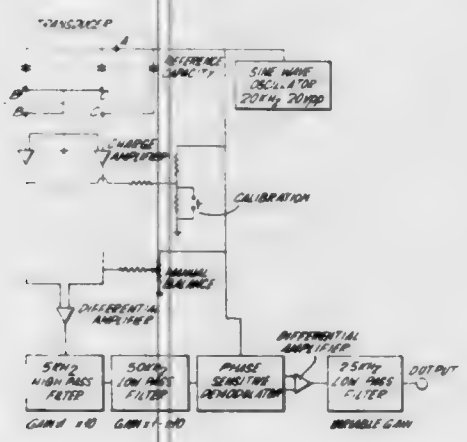
Hyman Walton, Beckermet, England, assignor to United Kingdom Atomic Energy Authority, England

Filed Sep. 7, 1976, Ser. No. 720,822

Claims priority, application United Kingdom, Sep. 17, 1975, 38191/75; Oct. 16, 1975, 42546/75

Int. Cl.[2] G01R *27/26*

U.S. Cl. 324—61 R **11 Claims**



1. Apparatus for determining a linear quantity, which apparatus comprises a capacitative transducer having members adapted to form at least one capacitance variable in accordance with changes in said quantity; a capacitor of substantially constant capacitance with respect to said changes; two charge amplifiers; means connecting the capacitative transducer to one of the charge amplifiers and the constant capacitor to the other charge amplifier in two separate arms of a four terminal network having four arms, the charge amplifiers having connections such that the input impedances of the charge amplifiers form the other two arms of the network; means for applying an alternating current carrier input signal to the transducer and the constant capacitor, and receiving means for receiving the output from both charge amplifiers and providing an output signal related to the value of said quantity.

4,086,529

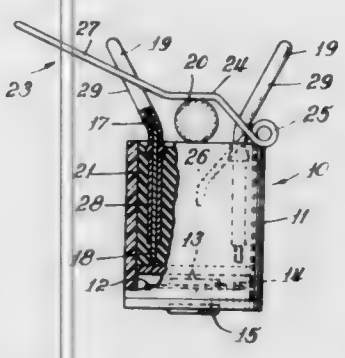
FAULT INDICATOR AND MEANS FOR RESETTING THE SAME

Edmund O. Schweitzer, Jr., 1002 Dundee Rd., Northbrook, Ill. 60062

Filed Jul. 26, 1976, Ser. No. 708,549

Int. Cl.[2] G01R *19/16, 1/20*

U.S. Cl. 324—127 **17 Claims**



1. A fault indicator responsive to the occurrence of an alternating fault current of predetermined minimum amplitude in a conductor and means for resetting the same, comprising in combination:

a generally cylindrical housing;

a target mounted at one end of said housing for rotation in a plane generally perpendicular to the axis of said housing between a fault indicating position and a reset position, at least a portion of said target being visible from the exterior of said housing to indicate the position of said target;

a target permanent magnet having diametrically opposed magnetic poles of like gender mounted for rotation with said target;

a stationary permanent magnet of high coercive force disposed in magnetic communication with said target magnet, and having magnetic poles arranged for biasing said target magnet to position said target in said fault indicating position;

a pair of pole pieces extending longitudinally in generally parallel-spaced relationship within said housing from said one end of said housing to the other end thereof, each of said pole pieces being formed of a magnetizable material of low coercive force subject to being demagnetized upon occurrence of a current in the conductor in excess of said predetermined minimum level, said pole piece each including an end portion projecting from said other end of said housing and defining therewith means for receiving the conductor, the other ends of said pole pieces being disposed in magnetic communication with opposing poles of said target magnet;

and reset means comprising a receptacle dimensioned for telescopic engagement with said housing and including winding coaxially disposed therein for magnetic communication with said pole pieces when said housing is seated in said receptacle for magnetizing said pole pieces whereby said other ends thereof bias said target magnet to position said target in said reset position.

4,086,530

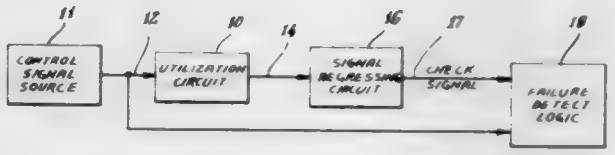
DETECTION CIRCUIT FOR MONITORING THE FAILURE OF A SYSTEM TO RESPOND IN A PLANNED MANNER TO AN INPUTTED CONTROL SIGNAL

Vincent G. Coppola, North Branford; Flavio M. Manduley, Seymour, and Daniel F. Dlugos, Huntington, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Nov. 11, 1975, Ser. No. 631,167

Int. Cl.[2] G01R *31/02, 31/28*

U.S. Cl. 324—133 **5 Claims**



1. A detection circuit for monitoring the failure of a system to respond in a planned manner to an inputted control signal, comprising:

a control signal source for providing a control signal to the system being monitored;

a signal phasing circuit connected to the output of said system being monitored for producing a check signal which changes in phase with said control signal, when said system is operating normally, and

failure detect logic means coupled to said control signal source and said signal phasing circuit for respectively receiving said control signal and said check signal and operating upon these signals to indicate a failure in said system, said logic means including:

A. inverter means for producing an inverted control signal and an inverted check signal;

B. comparing means for receiving the control signal, the check signal, and the inverted signals for comparing: first, the check signal with the inverted control signal; and second, the control signal with the inverted check signal; and
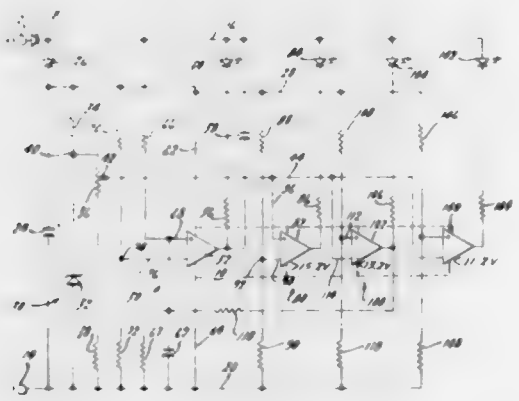
C. indicating means connected to said comparing means for generating a failure-indicating signal when both of the first and second comparisons are equal.

4,086,531

ELECTRICAL SYSTEM TEST APPARATUS

Donald R. Bernier, Lake Orion, Mich., assignor to Compunetics, Incorporated, Troy, Mich.

Filed Apr. 26, 1976, Ser. No. 680,484
Int. Cl.[2] G01R *31/02, 19/16*
U.S. Cl. 324—158 MG **29 Claims**



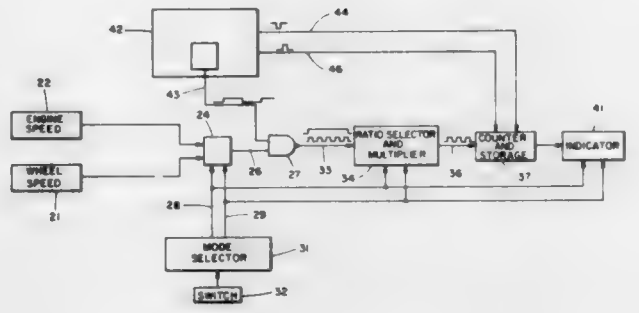
1. In a test system for testing and analyzing an electrical system including an alternator assembly, a battery charged by the alternator assembly and connected thereto, and a regulator connected to the alternator assembly for controlling the charging of the battery, the alternator assembly including an alternator and a rectifier circuit whereby an output voltage is provided having a d-c voltage with a superimposed a-c ripple, the output voltage being provided at an output terminal on the alternator and an electrical ground, said system comprising a plurality of indicator circuits for indicating the condition of at least two of the alternator, rectifier circuit, regulator and/or battery, an input circuit means connected between the alternator assembly and the plurality of indicator circuits for providing an unfiltered voltage having an magnitude varying in accordance with the variations in magnitude of the d-c voltage and the a-c ripple, said input circuit means comprising only a single pair of lead conductors with one of said conductors adapted to be connected to the output terminal of the alternator and the other adapted to be connected to the electrical ground whereby said unfiltered voltage is provided by said pair of conductors without altering the alternator assembly, said input circuit means also providing a filtered voltage derived from said unfiltered voltage from said single pair of conductors and having a generally uniform magnitude varying in accordance with the magnitude of the output voltage, said input circuit means also providing a source of a reference voltage derived from said unfiltered voltage from said single pair of conductors and having a preselected magnitude less than and independent of the magnitude of the output voltage, said reference voltage being interconnected with at least some of said indicator circuits, one of said indicator circuits being connected to receive said unfiltered voltage and said filtered voltage for comparing said filtered voltage and said unfiltered voltage and providing an output indication when the magnitude of said filtered voltage and the magnitude of said unfiltered voltage including its a-c ripple bear a preselected relationship, one to the other, the remainder of said plurality of indicator circuits being connected as comparator circuits, one input to said remainder of said indicator circuits being connected to sense a preselected percentage of said filtered voltage and comparing that preselected percentage to said reference voltage, each of said remaining indicator circuits providing an output indication when said percentage bears a preselected relationship to said reference voltage to indicate selected faults in the alternator, regulator and/or the battery.

4,086,532

SPEED RESPONSIVE AND INDICATING SYSTEM

Howard A. Aronson, Lincolnwood, and San Chi Chung, Lombard, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Feb. 11, 1976, Ser. No. 657,040
Int. Cl.[2] G01P *3/48*
U.S. Cl. 324—166 **21 Claims**



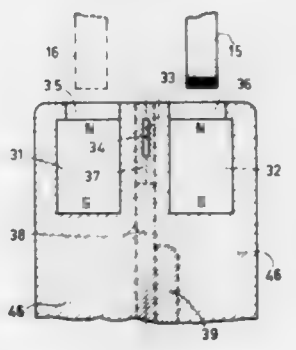
1. A system for measuring and indicating the speeds of a plurality of moving members, comprising sensor means for each member adapted to respond to the speed of said member for generating an output having a characteristic that is a function of said speed of said member, multiplier means operable in a plurality of different modes, each of said modes being associated with the speed of one of said members, adjustable mode selector means for routing the output of one of said sensor means to said multiplier means, and said multiplier means being operable to multiply said characteristic by a different preselected ratio in each of said modes, indicator means connected to said multiplier and indicating said multiplied characteristic, said adjustable mode selector means being further connected to set said multiplier for operation in one of said modes, and said multiplier means including manually adjustable ratio selector means for coding said multiplier means to multiply said characteristic by a preselected ratio.

4,086,533

HALL EFFECT APPARATUS FOR DETERMINING THE ANGULAR POSITION OF A ROTATING PART

Jean-Pierre Ricouard, Suresnes, and Bruno Schorter, Morsang, Orge, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 8, 1976, Ser. No. 740,004
Claims priority, application France, Nov. 12, 1975, 75 34439
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—208 **7 Claims**



1. A device for detecting the specific angular positions of a rotating part comprising, a Hall-effect crystal, a fixed magnetic circuit for exciting the Hall-effect crystal which circuit includes two identical permanent magnets which are disposed at a small distance from and substantially parallel to each other and having adjacent poles of like magnetic polarity situated in proximity to the Hall-effect crystal to apply a magnetic excitation field thereto, said fixed magnetic circuit having an axis of symmetry along which the crystal is disposed, said rotating

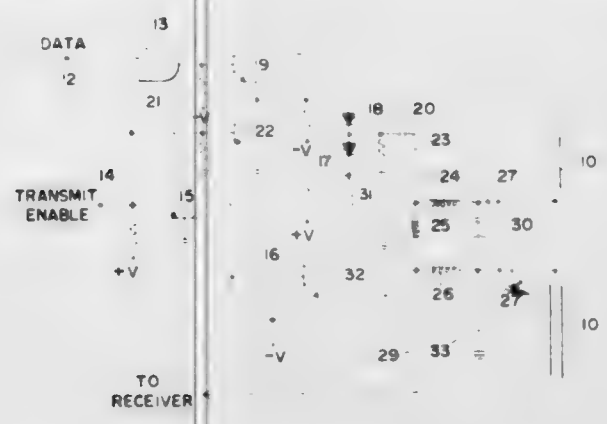
part including first and second soft-magnetic elements respectively located on opposite sides of said axis of symmetry and each having a leading end and a trailing end defined by the direction of travel of the rotating part, said first and second soft magnetic elements being relatively displaced so that the trailing end of one soft magnetic element coincides with the leading end of the other soft magnetic element and movement of the rotating part causes said first and second soft magnetic elements to successively and alternately pass in the proximity of said adjacent poles, a first soft-magnetic element which passes one of the magnets near its said adjacent pole being immediately followed by a second soft-magnetic element which passes the other magnet near its said adjacent pole to cause a reversal in the direction of the active component of the magnetic excitation field whereby the Hall-effect cyrstal responds by reversing the polarity of an output signal generated therein.

4,086,534

CIRCUIT FOR WIRE TRANSMISSION OF HIGH FREQUENCY DATA COMMUNICATION PULSE SIGNALS

Gerald R. Olson, Forest Lake Township, Minn., assignor to Network Systems Corporation, Brooklyn Center, Minn.

Filed Feb. 14, 1977, Ser. No. 768,226
Int. Cl.[2] H04B *1/38*
U.S. Cl. 325—15 **8 Claims**



1. Circuitry for use in wire transmission of high frequency data communication pulse signals comprising: first and second lengths of identical coaxial cable; a delay line network connecting adjacent ends of said first and second coaxial cable lengths, said delay line network comprising inductance having a value which combines with distributed capacitance to substantially equal the characteristic impedance of the coaxial cable at the frequency of the data signal; conducting means connected to said delay line network for carrying data signals on the coaxial cable to a receiver; and electrical circuit means connected to said delay line network for selectively feeding transmitted data pulse signals to the coaxial cable.

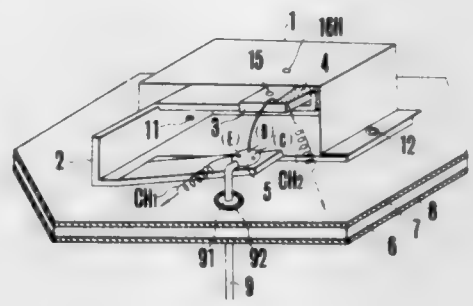
4,086,535

MICROWAVE OSCILLATOR

Toshiji Shibata, Toride, and Shinji Fujiwara, Moriya, both of Japan, assignors to Meisei Electric Co. Ltd., Tokyo, Japan

Filed Jun. 2, 1976, Ser. No. 692,045
Claims priority, application Japan, Jun. 6, 1975, 50-68312
Int. Cl.[2] H04B *1/04*
U.S. Cl. 325—128 **18 Claims**

9. A microwave oscillator, comprising a resonance circuit, an active element, other circuit member and a base plate having two sides characterized in that the resonance circuit is a three dimensional body, that an active element is mounted outside of the resonance circuit on a prolonged part integrally connected with the resonance circuit, that said element includes a signal output electrode, that an antenna element is connected to the electrode and projects from one side of the base plate in such a manner that the antenna element stands up on the other side of the base plate, and that a conductor for forming a part of the antenna effectively extends over the other



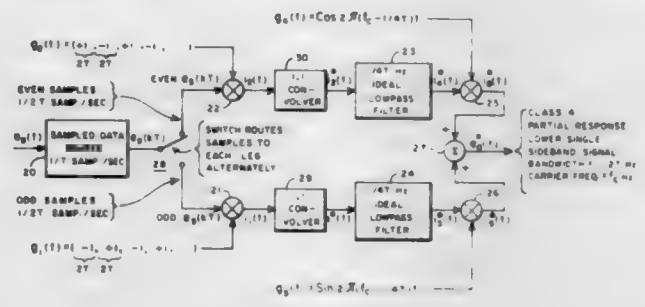
surface of the base plate, on which other surface the antenna element is projecting.

4,086,536

SINGLE SIDEBAND TRANSMITTER APPARATUS

William F. Acker, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 24, 1975, Ser. No. 589,953
Int. Cl.[2] H04B *1/68;* H03C *1/52*
U.S. Cl. 325—137 **34 Claims**



1. A single sideband transmitter for frequency translating an input signal, providing by an input signal source, having a frequency content, in a frequency domain representation thereof, occurring between second and third reference frequencies each of which occurs on a side of a first reference frequency where said third reference frequency exceeds said second reference frequency, a first bandwidth comprising those frequencies which occur between said second reference frequency and said third reference frequency, said transmitter comprising:

a first translating means to receive said input signal from said input signal source, said first translating means being capable of translating said input signal in frequency, in an amount equal to a first frequency shift, by effective multiplication of said input signal with a periodic first translating signal from a first translating signal source to thereby provide a first intermediate signal, said first frequency shift being sufficient to provide a replica of said frequency content between a first selected frequency and a second selected frequency where said second selected frequency is less than said third reference frequency but exceeds said first selected frequency;

a second translating means to also receive said input signal from said input signal source, said second translating means being capable of translating said input signal in frequency, in an amount equal to a second frequency shift, by effective multiplication of said input signal with a periodic second translating signal from a second translating signal source to thereby provide a second intermediate signal;

a first filtering means to receive said first intermediate signal, said first filtering means having as its impulse response a first filter impulse response, repeated twice in time and summed, of a filter capable of filtering said first intermediate signal about said first reference frequency to substantially remove frequencies therein which occur approxi-

mately beyond said second selected frequency , said first filtering means filtering said first intermediate signal to provide a third intermediate signal;

a second filtering means to receive said second intermediate signal, said second filtering means having as its impulse response a second filter impulse response, repeated twice in time and summed, of a filter capable of filtering said second intermediate signal about said first reference frequency to substantially remove frequencies therein which occur approximately beyond said second selected frequency , said second filtering means filtering said second intermediate signal to provide a fourth intermediate signal;

a third translating means to receive said third intermediate signal, said third translating means for translating said third intermediate signal in frequency, in an amount equal to a third frequency shift, by effective multiplication of said third intermediate signal with a periodic third translating signal from a third translating signal source to thereby provide a fifth intermediate signal, said third frequency shift differing from said first frequency shift;

a fourth translating means to receive said fourth intermediate signal, said fourth translating means for translating said fourth intermediate signal in frequency, in an amount equal to a fourth frequency shift, by effective multiplication of said fourth intermediate signal with a periodic fourth translating signal from a fourth translating signal source to thereby provide a sixth intermediate signal; and

a summing means to receive said fifth and sixth intermediate signals, said summing means being capable of combining said fifth and sixth intermediate signals to form a combined signal serving as a first transmitter output signal.

4,086,537

TIME DIVISION MULTIPLEX COMMUNICATION RECEIVING APPARATUS

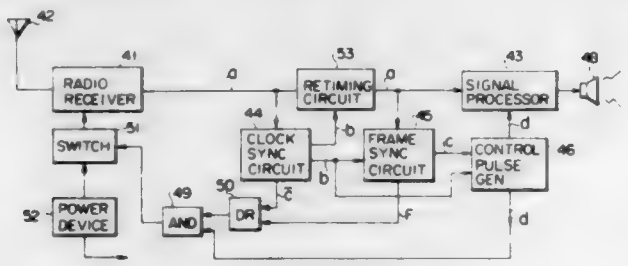
Shigeru Asakawa, Fujisawa; Fumio Sugiyama, Yokohama; Akio Gotoh, and Shigenori Okamoto, both of Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Tokyo Shibaura Electric Co., Ltd., Kawasaki, both of, Japan

Filed Jan. 26, 1976, Ser. No. 652,237

Claims priority, application Japan, Jan. 24, 1975, 50-10342

Int. Cl.[2] H04J *3/08*

U.S. Cl. 325—478 **15 Claims**



1. A time-division multiplex communication receiving apparatus for identifying the subscriber's individual code among a plurality of subscriber's individual codes which are arranged sequentially in time series fashion in a time-division multiplex signal from a key station, said apparatus comprising a receiving section for receiving a time-divisional multiplex signal having clock signal components and frame signal components; a signal processing means for extracting, in synchronization with the clock signal components of said multiplex signal, the subscriber's individual code from a predetermined time zone of said multiplex signal; a first synchronization means to be synchronized with the clock signal components of said multiplex signal; a second synchronization means to be synchronized with the frame signal components of said multiplex signal; a classifying means for classifying the receiving condition of said receiving section in accordance with the combination of the synchronization states of said first and second synchronization means; a control pulse generating means which connected to said processing means for generating, when driven by an output signal from said first and second synchronization means, a control pulse which designates a predetermined period corresponding to the output signals of said synchronization means; and a switching means for controlling, in response to an output signal from said classifying means, a power supply to said receiving section during the period designated by the control signal.

4,086,538

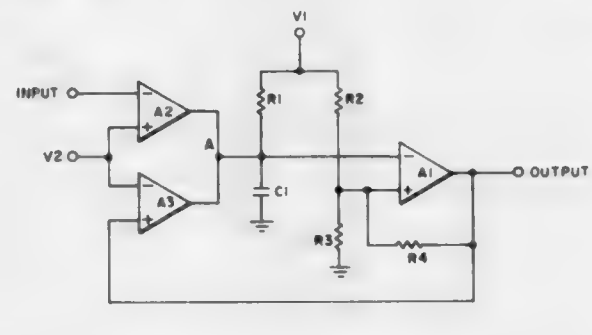
GATED PULSE GENERATOR

Donald S. Foreman, Fridley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 29, 1975, Ser. No. 644,670

Int. Cl.[2] H03K *5/20*

U.S. Cl. 328—112 **3 Claims**



1. A gated pulse generator comprising: first switching means comprising an amplifier having an output terminal, an inverting input terminal, and a non-inverting input terminal with the output terminal switching from a first output state to a second output state when a signal at the inverting input terminal reaches a first threshold level; capacitor means connected to the inverting input terminal of the first switching means; second switching means comprising an amplifier having an output terminal, an inverting input terminal, and a non-inverting output terminal; third switching means comprising an amplifier having an output terminal, an inverting input terminal, and a non-inverting input terminal; said output terminals of said second and said third switching means connected to the capacitor means for controlling the charging of the capacitor means as a function of an input signal; a reference potential applied to the non-inverting input terminal of the second switching means and the inverting input terminal of the third switching means; said input signal being applied to the inverting input terminal of the second switching means; and the output terminal of the first switching means being connected to the non-inverting input terminal of the third switching means for causing the first switching means to switch between said output states, whereby an output pulse is provided.

4,086,539

FIRST-ORDER PHASE-LOCK LOOP

Donald E. Gustafson, Lexington, and Jason L. Speyer, Winchester, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

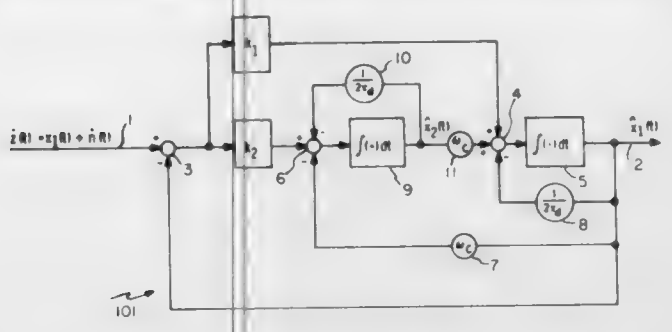
Filed Aug. 11, 1972, Ser. No. 280,026

Int. Cl.[2] H03B *3/06*

U.S. Cl. 328—155 **5 Claims**

1. A first-order phase-lock loop that comprises, in combination: a first summer to receive an input which contains a signal corrupted by noise; a first gain element connected to receive as input thereto the output of the first summer; a second summer connected to receive as an input thereto the output of said first gain element; a first integrator connected to receive as input thereto the output of the second summer and to provide an output which is the estimate of the signal, the output of the first integrator being fed back negatively as one input to each of the first and second summers and as one negative input to a third summer, a first system parameter means connected in the feedback loop between the first integrator and the third sum-

mer; a second system parameter means connected in the feedback loop between the first integrator and the second summer; and a second integrator connected to receive as input thereto



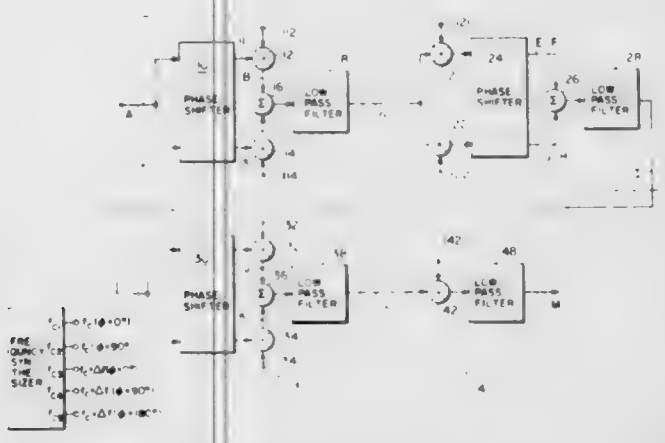
the output of the third summer and to provide an output which is fed back to the third summer through a third system parameter means and as an input to the second summer through a fourth system parameter means.

4,086,540

TRANSLATING FILTER

Arthur D. Delagrange, Sykesville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1977, Ser. No. 767,020
Int. Cl.[2] H03B *1/04*; H04B *15/00*
U.S. Cl. 328—167 **22 Claims**



1. An electronic filter network of the type having a single cutoff frequency, Δf, comprising:

in a first stage adapted for receiving a noisey incurrent signal having a spectrum of interest with a greatest frequency component, f_{MAX}, a circuit, comprising:

phase differencing means for providing at a pair of parallel channels quadrature phases of the components of said incurrent signal spectrum;

a pair of modulators each driven by a different quadrature phase of a carrier signal of frequency f_c, each coupled in series with a different one of said parallel channels and providing as an output, respectively the spectrum conveyed by its channel modulated at the frequency of the carrier signal, whereby the leading quadrature phase of said incurrent signal is modulated by the lagging quadrature phase of said carrier signal;

a summing amplifier coupled to receive the output of each of said pair of modulators; and,

a low-pass filter having a low-pass cutoff frequency greater than $f_c + f_{MAX}$ and less than the first harmonic of f_c, for delivering as the product of the first stage a spectrum formed of the components of the response of said summing amplifier having frequencies less than the low-pass cutoff frequency;

in a second stage receiving quadrature phases of an incremented carrier signal of frequency $f_c + \Delta f$, a circuit, comprising:

a pair of modulators adapted to receive the product of said first stage, each driven by a different quadrature phase of said incremented carrier signal, and each delivering as an intermediate output the spectrum of the product of the first stage modulated at the frequency of said incremented carrier signal;

phase differencing means for providing through different channels of a pair of parallel channels, in response to reception of the intermediate output of each of said modulators quadrature phases of the component frequencies of the intermediate output,

whereby the component frequencies of that intermediate output modulated by the incremented carrier signal having a quadrature phase closest to an integer multiple of one-half π are advanced in phase by ninety degrees with respect to the same frequency components of the other intermediate output;

a summing amplifier coupled as a junction between said pair of parallel channels, for providing a single output spectrum; and,

a low-pass filter having a low-pass cutoff frequency less than f_c but greater than Δf, for delivering as the product of the second stage a spectrum formed of the components of the response of said summing amplifier having frequencies less than the low-pass cutoff frequency;

in a third stage receiving the same quadrature phases of said incremented carrier signal of frequency $f_c + \Delta f$, as those quadrature phases received by said second stage, a circuit, comprising:

phase differencing means for providing at a pair of parallel channels quadrature phases of the components of the product of said second stage;

a pair of modulators each driven by a different quadrature phase of said incremented carrier signal, each coupled in series with a different one of said parallel channels and providing as an output, respectively the spectrum conveyed by its channel modulated at the frequency of the incremented carrier signal whereby the leading quadrature phase of said intermediate output is modulated by that incremented carrier signal having a quadrature phase closest to an integer multiple of one-half π with respect to the quadrature phase of the other carrier signal;

a summing amplifier coupled to receive the output of each of said pair of modulators; and,

a low-pass filter having a low-pass cutoff frequency greater than $f_c + f_{MAX}$ and less than the first harmonic of $f_c + \Delta f$, for delivering as the product of the third stage a spectrum formed of the components of the response of said summing amplifier having frequencies less than the low-pass cutoff frequency;

in a fourth stage receiving a carrier signal of frequency f_c, a circuit, comprising:

a modulator adapted to receive the product of said third stage and driven by said carrier signal to deliver as an intermediate output the spectrum of the product of said third stage modulated at the frequency of said carrier signal; and,

a low-pass filter having a low-pass cutoff frequency less than f_c but greater than Δf, coupled to recieve the response of said modulator.

4,086,541

TIME DIVISION MULTIPLEXING AMPLIFIER

Kazuo Katou, Ibaraki; Takashi Sase, and Ikuho Horinaka, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 13, 1976, Ser. No. 749,805
Int. Cl.[2] H03F *1/14*
U.S. Cl. 330—51 **9 Claims**

1. A time division multiplexing amplifier for receiving a differential-mode signal involving a common-mode voltage and producing an amplified differential-mode signal, comprising:

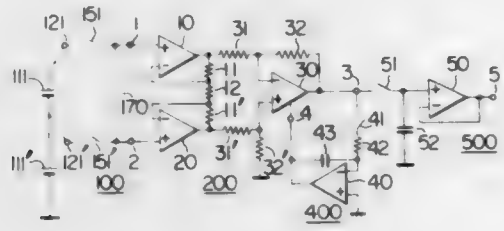
a first terminal and a second input terminal to which said differential-mode signal from an external differential-mode signal source is applied;

an output terminal;

differential amplifier means including at least one differential amplifier and having a first input and a second input, an output connected to said output terminal, and an offset signal control terminal;

a pair of first switching means, said first and second inputs being connected to said first and second terminals through one of said first switching means, respectively;

second switching means, connected between said first and second inputs of the differential amplifier means, for short-



circuiting said first and second inputs and applying said common-mode voltage to said first and second inputs during a predetermined period of time when one of said first switching means is closed prior to amplification of said differential signal; and

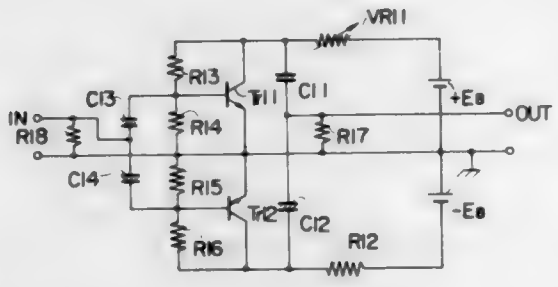
first sample holding means, connected between said output and offset signal control terminal of said differential amplifier means, for adjusting to zero an offset voltage produced by said differential amplifier means when said common-mode voltage is applied to said first and second inputs.

4,086,542

COMPLEMENTARY PUSH-PULL AMPLIFIER

Shingo Kamiya, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 10, 1977, Ser. No. 767,484
Claims priority, application Japan, Feb. 12, 1976, 51-14087[U]
Int. Cl.[2] H03F *3/183*
U.S. Cl. 330—268 11 Claims



1. A complementary push-pull amplifier circuit comprising:

a pair of complementary transistors each including base, collector and emitter and connected in push-pull relation;

an input circuit connected to the base of each of said pair of transistors;

an output circuit connected to the collector of each of said pair of transistors;

means for supplying a voltage to said pair of transistors;

a resistance connected in series with the collector circuit of said transistors for dropping down a large part of the supply voltage and applying a small part of said supply voltage across said transistors; and

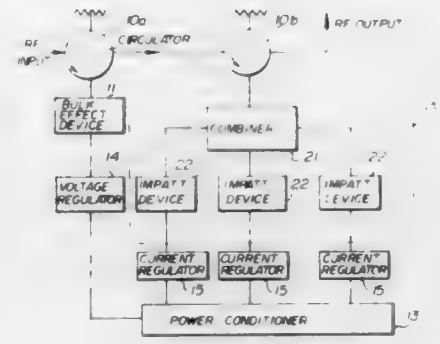
bias voltage circuit means connected to the electrodes of each transistor for dividing the voltage between the collector and the emitter of the transistor and establishing the base bias voltage between the base and the emitter of the transistor by said divided voltage, whereby the idling current through said transistors is substantially stabilized against changes in external conditions.

4,086,543

TRAVELLING WAVE HYBRID JUNCTION AMPLIFIER

Jan Nigrin, Edmonton, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Jul. 21, 1976, Ser. No. 707,199
Int. Cl.[2] H03F *3/60*
U.S. Cl. 330—287 5 Claims



1. A microwave travelling wave hybrid junction amplifier comprising:

(a) a microwave hybrid junction having four ports one of which acts as an input-output port for the amplifier,

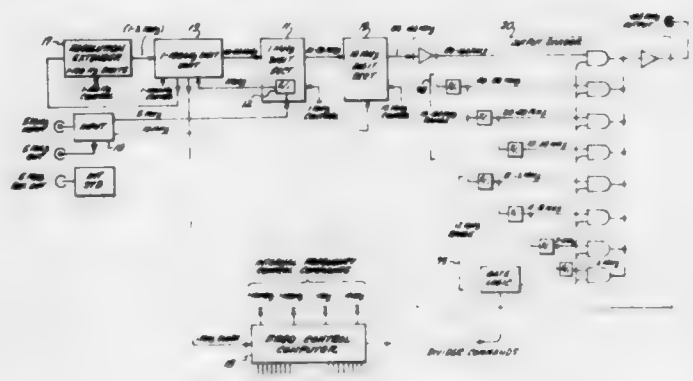
(b) negative conductance elements acting as reflection type amplifiers connected to and terminating the other three ports such that RF energy applied to the input-output port is multiply reflected and amplified while passing through the hybrid by the negative conductance elements to emerge as amplified RF energy from the input output port.

4,086,544

FREQUENCY SYNTHESIZER USING PHASE LOCKED LOOPS

Raymond L. Fried, Lynnwood, Wash., assignor to John Fluke Mfg. Co., Inc., Mountlake Terrace, Wash.

Filed Jun. 12, 1972, Ser. No. 262,076
Int. Cl.[2] H03B *19/00*
U.S. Cl. 331—1 A 13 Claims



1. A frequency synthesizing system, comprising:

frequency synthesizing means operative to produce an adjustable intermediate frequency;

frequency dividing means connected to receive the intermediate frequency and to divide it by an adjustable division factor to produce an output frequency;

setting means operable to set up a desired value of the output frequency; and

control means connected to the setting means to respond to the value of the output frequency set up thereby and also connected to the synthesizing means and the dividing means to control the values of the said intermediate frequency and of the division factor in dependence on the value of the output frequency set up, such that the value of intermediate frequency produces, when divided by the

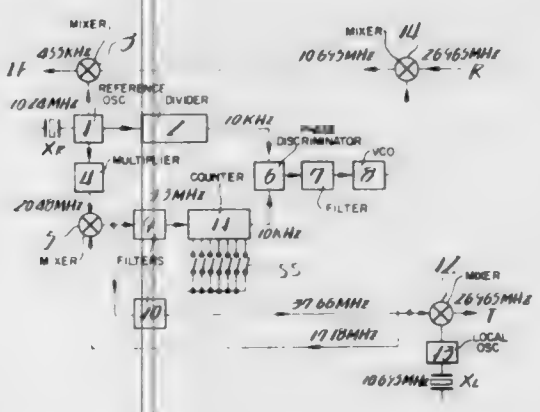
division factor of the dividing means, the desired output frequency.

4,086,545

PHASE LOCKED LOOP TYPE TRANSMITTER RECEIVER

Toshihiko Teshirogi, Machida, Japan, assignor to Cybernet Electronic Corporation, Kawasaki, Japan

Filed Mar. 14, 1977, Ser. No. 777,360
Claims priority, application Japan, Apr. 7, 1976, 51-39048
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—16 **2 Claims**



1. A phase locked loop type transmitter-receiver comprising:
a reference oscillator for generating a first frequency signal;
a fixed frequency divider connected to the reference oscillator;
a phase discriminator connected to the fixed frequency divider;
a low-pass filter connected to the phase discriminator;
a voltage controlled oscillator connected to the low-pass filter for generating a second frequency signal;
mixer means connected to the reference oscillator and to the voltage controlled oscillator for mixing the first and second frequencies to synthesize sum and difference signals therof;
a programmable counter connected between the mixer means and the phase discriminator for dividing the sum signal synthesized by the mixer means;
a transmitting side mixer connected to the mixer means to receive the sum signal synthesized by the mixer means for synthesizing a carrier wave for transmission; and
a receiving side mixer connected to the mixer means to receive the sum signal synthesized by the mixer means for synthesizing a local oscillation frequency for reception.

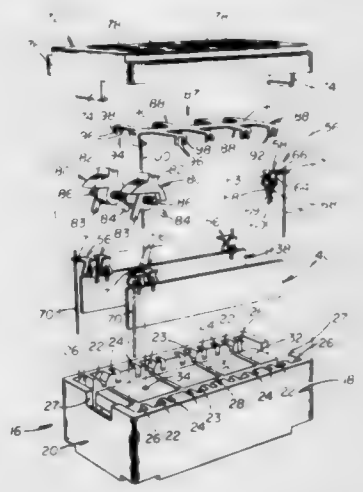
4,086,546

UNIVERSAL ATTENUATOR

William W. Fulp; Jack G. Nance, both of Winston-Salem; James L. Owens, Clemmons, and Theodore W. Robbins, Winston-Salem, all of N.C., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,402
Int. Cl.[2] H01P *1/22*
U.S. Cl. 333—81 R **17 Claims**

14. An attenuator for producing attenuation in transmission lines comprising:
a first support member having a plurality of channels formed therein;
a second support member which is assembled with the first support member;
a plurality of circuit substrate devices, each of which is positioned and supported in a respective channel in the first support member, and each of which has attenuating circuits formed thereon, the attenuating circuits of each circuit substrate device being selectively connectable for producing attenuation of variable preselected magnitudes in the respective transmission line;
a plurality of electrical connectors for providing selective coupling in the attenuating circuits of the circuit substrate devices;
a plurality of actuators mounted for movement on the first support member and positionable in at least first and second positions; and
a plurality of conductive shorting bar assemblies with each assembly including a pair of integrally formed shorting bars, each shorting bar assembly mechanically coupled to a corresponding one of the actuators with the pair of shorting bars of each assembly for electrically coupling



selected portions of a selected attenuating circuit on a respective one of the circuit substrate devices when the corresponding actuator is in the first position, and for electrically coupling selected portions of the selected attenuating circuit to a selected one of the plurality of electrical connectors when the actuator is in the second position so that upon selected movement of one of the plurality of actuators, the attenuating circuits of the corresponding circuit substrate devices are selectively connected to provide selected magnitudes of attenuation to the respective transmission lines.

4,086,547

SWITCHABLE ATTENUATOR

Jack G. Nance, Winston-Salem; James L. Owens, Clemmons, and Theodore W. Robbins, Winston-Salem, all of N.C., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,397
Int. Cl.[2] H01P *1/22*
U.S. Cl. 333—81 R **11 Claims**



11. An attenuator for providing attenuation in an external circuit comprising:
a substrate having circuits formed thereon for establishing predetermined amounts of attenuation in the external circuit;
a housing having openings formed therein;

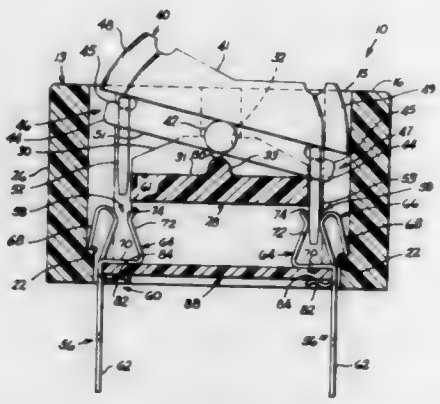
a partition formed in the housing;
a plurality of rocker arms mounted for movement on the partition and having upper portions thereof extending through the openings in the housing;
a plurality of pairs of conductive shorting bars with one bar of each of the pairs of bars mounted to a respective end of each rocker arm for coupling selected circuits on the substrate; and
a plurality of pairs of electrical connectors, one pair for each of the shorting bars, mounted on the housing on opposite sides of the partition;
each of the plurality of electrical connectors including first and second side fingers and a central finger aligned with a space between the first and second side fingers and cooperating therewith to receive a respective one of the conductive shorting bars;
each of the plurality of electrical connectors including a third projecting finger formed on an intermediate portion of the connector which cooperates with portions of the first and second side fingers to receive and retain the substrate in a position adjacent the housing and provide connections to the circuits on the substrate, and thereby provide a connection between the substrate and the shorting bar so that upon the selective movement of the rocker arms selected circuits on the substrate are coupled to establish predetermined amounts of attenuation;
each of the plurality of electrical connectors including a conductive stem selected ones of which provide connections between the substrate and the external circuit so that the predetermined amounts of attenuation established by the substrate are provided to the external circuit.

4,086,548

SWITCHABLE ATTENUATOR ASSEMBLY AND METHOD OF ASSEMBLING SAME

Theodore W. Robbins, and Raymond O. Terry, Jr., both of Winston-Salem, N.C., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,396
Int. Cl.[2] H01P *1/22*; H01H *19/00, 1/42, 11/00*
U.S. Cl. 333—81 R **20 Claims**



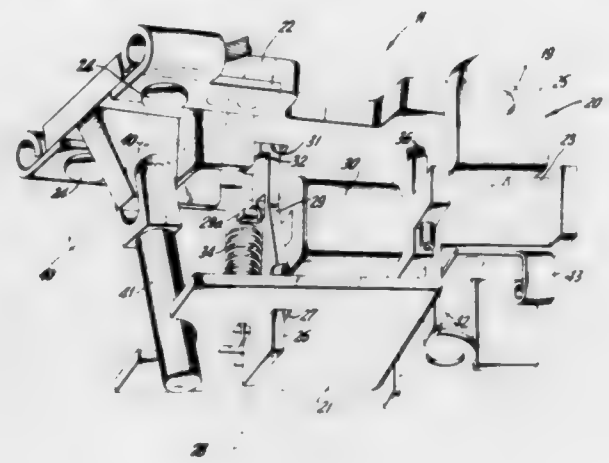
1. An attenuator for providing attenuation to an external circuit comprising:
circuit means having circuits formed thereon for establishing attenuation in the external circuit;
a cover having an opening formed therein;
a support member aligned with and coupled to the cover;
means, captured for movement between the cover and the support member and having portions extending into the opening in the cover and other portions adjacent to the circuit means, for coupling selected circuits on the circuit means;
a plurality of connector means;
each of the plurality of connector means having a first portion electrically securable to the circuit means for providing connections to the circuits on the circuit means;
each of the plurality of connector means having second portions aligned to receive portions of the coupling means for providing connections between the circuit means and the coupling means so that, upon selected movement of the coupling means to engage the second portion of selected ones of the plurality of connector means, selected circuits on the circuit means are coupled to establish predetermined amounts of attenuation; and
each of the plurality of connector means having a third portion selected ones of which are electrically securable to the external circuit for providing connections between the circuit means and the external circuit so that the predetermined amounts of attenuation established in the circuit means are provided to the external circuit.

4,086,549

CIRCUIT INTERRUPTER RELAY

Thomas S. Slater, Port Washington, and Harald B. Jadatz, Deer Park, both of N.Y., assignors to Slater Electric Inc., Glen Cove, N.Y.

Filed Apr. 28, 1976, Ser. No. 680,922
Int. Cl.[2] H01H *83/02*
U.S. Cl. 335—18 **25 Claims**



1. Circuit interrupter apparatus comprising:
a housing;
at least one stationary electrical contact fixedly mounted in said housing;
conductor means for coupling each said stationary contact to one of a source of electrical current and an electrical load;
a movable member pivotally mounted in said housing;
at least one first electrical contact mounted to said movable member, said first contact positioned on said movable member for mating engagement with said stationary contact;
conductor means for coupling each said first contact to the other of said current source and load;
an actuating member slidably and pivotally mounted in said housing and adapted for releasably engaging said movable member to bring said first and stationary contracts into mating engagement;
first biasing means coupled between said movable member and said housing adapted to resist mating of said first and stationary contacts;
second biasing means coupled between said actuating member and said housing and adapted to achieve said mating of said first and stationary contacts when said actuating member is engaged with said movable member;
release means suitably positioned in said housing near said actuating member for causing engagement between said actuating member and said movable member to be released, said release means coupled to sensing means adapted to detect predetermined circuit conditions for activiating said release means upon detecting the predetermined conditions, such that, when said sensing means detect the predetermined circuit conditions, said sensing means activates said release means for disengages said actuating and movable members to disengage the mated

first and stationary contacts, and, when re-mating is desired, said actuating member is manually translated by an operator while said second biasing means urges said actuating member to rotate into engagement with said movable member, and, after said actuating member has engaged said movable member, mating of said contacts is effected only when the actuating member has been released by said operator, said second biasing means causing, through the actuating member, said first and stationary contacts to mate.

4,086,550

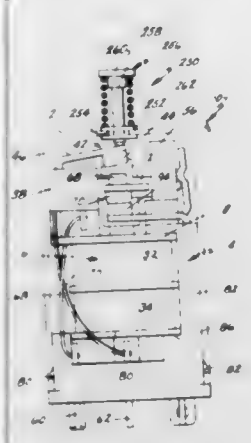
RELAY

Gary L. Conner, Cedar Springs, Mich., assignor to U.S. Engineering Corporation, Grand Rapids, Mich.

Filed Oct. 15, 1976, Ser. No. 732,918

Int. Cl.[2] H01H *45/02*

U.S. Cl. 335—132 **20 Claims**



1. A modular constructed, solenoid actuated relay, comprising:

a terminal and solenoid module including a molded, plastic member defining a bobbin portion, a fixed upper relay terminal molded integral with said member and a solenoid winding supported on said bobbin portion;

a terminal and connector module snap-locked to said terminal and solenoid module, said terminal and connector module including a molded plastic member and a fixed lower relay terminal molded integral with said member;

a center terminal subassembly positioned between said upper and lower terminals and including a molded plastic carrier plate and a center terminal molded integral with said plate; and

a plunger subassembly connected to said carrier plate and including a core positioned within said bobbin portion of said terminal and solenoid module.

4,086,551

SHUNT POSITIONING DEVICE

Leonard S. Smith, Minneapolis, Minn., assignor to Century Mfg. Co., Minneapolis, Minn.

Filed Jun. 24, 1977, Ser. No. 809,544

Int. Cl.[2] H01F *21/06*

U.S. Cl. 336—45 **5 Claims**

1. A shunt positioning and locking means for a welding apparatus having in combination

a core having a primary and a secondary coil mounted therein in spaced relation,

shunt holding means moveably disposed between said coils,

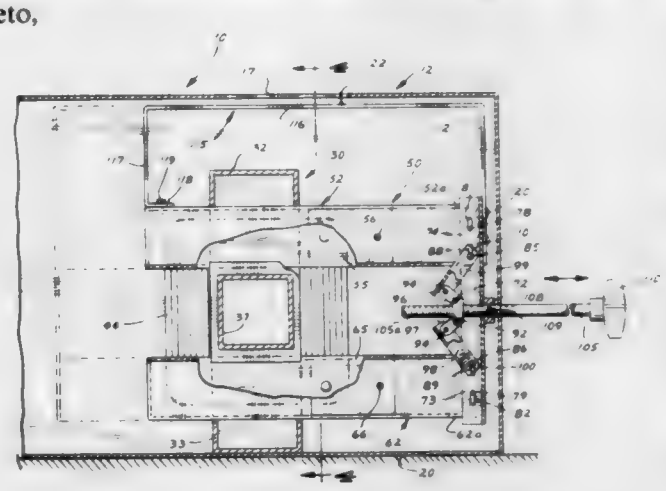
means formed by said core supporting said shunt holding means,

said shunt holding means comprising a pair of spaced frame members,

an elongated connecting member at one end of said frame members,

means moveably connecting said spaced frame members to said connecting member for movement of said frame members relative to said connecting member in directions toward or away from each other,

a rod disposed through said connecting member spaced between said frame members having axial movement normal to the plane of said connecting member relative thereto,



means linking said rod with each of said frame members moving said frame members toward and away from each other by axial movement of said rod and

said second mentioned means comprising surface portions opposed to each of the adjacent and to each of the remote sides of said frame members and each of said frame members having small clearance between their respective opposed surface portions.

4,086,552

HIGH-VOLTAGE TRANSFORMER COMPRISING A FOIL WINDING

Albertus Bernardus Antonius Baggermans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

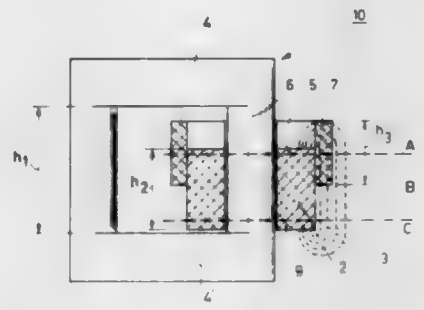
Continuation of Ser. No. 623,315, Oct. 17, 1975, abandoned.

This application Feb. 24, 1977, Ser. No. 771,695

Claims priority, application Netherlands, Oct. 21, 1974, 7413744

Int. Cl.[2] H01F *21/04*

U.S. Cl. 336—119 **2 Claims**



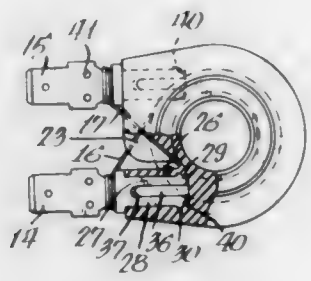
1. A high-voltage television line transformer tunable to a selected harmonic frequency of an input signal having a given frequency comprising, a ferromagnetic core including two yokes, two legs disposed between said yokes, at least one low-voltage foil winding disposed on one of the legs and adapted to receive said input signal, said foil winding having when energized substantially parallel magnetic field lines at its side and curved magnetic field lines at its end, and means for enabling tuning of said transformer to said selected frequency including a one high-voltage winding slidably disposed on the low-voltage winding, and wherein the length of the leg whereon the low-voltage winding and the high-voltage winding are disposed being substantially larger than the width of the foil winding and being less than the sum of the widths of the foil and high-voltage windings, thereby enabling the high-voltage winding to selectively engage the parallel and curved field lines.

4,086,553

COIL ASSEMBLY STRUCTURE

William F. Robandt, St. Joseph; Roger J. Cartier, Benton Harbor, and Sandy C. Gay, St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 13, 1977, Ser. No. 806,292
Int. Cl.[2] H01F *15/10*
U.S. Cl. 336—192 3 Claims



1. In a coil assembly structure having a bobbin about which a wire coil is adapted to be wound, the improvement comprising:

means defining a recess in fixed association with said bobbin, said recess being defined by opposed sidewalls, and an elongated, outwardly extending spreader element disposed in said recess intermediate said sidewalls and having substantially parallel side edges defining a substantially constant transverse extent of the spreader element along substantially its entire length, said spreader element extending a major portion of the depth of said recess; and

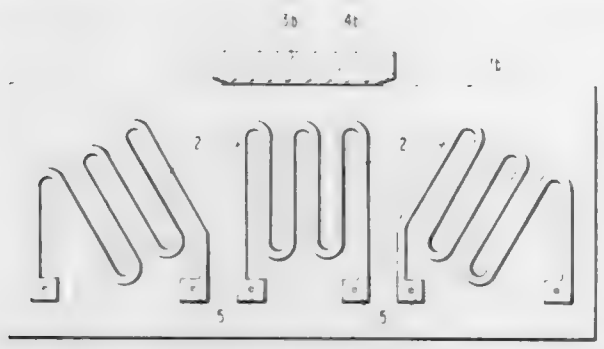
a terminal having inner end portions defining spaced coplanar flat locking portions straddling said spreader element and having inner edges slidably engaging said parallel side edges of the spreader element in said recess and having transversely outwardly projecting biting means projecting into said sidewalls, said locking portions being maintained substantially a preselected distance transversely apart by said spreader element to retain said biting means in said sidewalls at all positions substantially the length of said spreader element.

4,086,554

STRAIN GAUGE

Wolfgang Sieder, Waiblingen-Beinstein, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Nov. 10, 1976, Ser. No. 740,668
Claims priority, application Germany, Nov. 12, 1975, 2550669
Int. Cl.[2] G01L *1/22*
U.S. Cl. 338—2 6 Claims



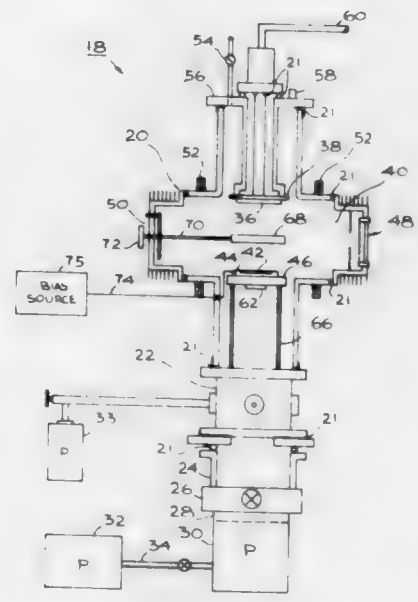
1. A strain gauge adapted to be adhesively mounted on a place to be tested, which includes a main carrier means and a measuring grid means having connecting ends for the connection thereto of measuring lines, characterized in that an extension of the carrier means is provided along one edge of the strain gauge, said extension being readily detachably connected with the main carrier means by a perforation.

4,086,555

PHOTOCONDUCTIVE SENSOR

Esther Krikorian, Claremont, and Michael J. Crisp, Placentia, both of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed May 27, 1976, Ser. No. 690,463
Int. Cl.[2] H01L *31/08*
U.S. Cl. 338—15 15 Claims



1. An improved PbSnTe sputtered unannealed sensor having photoconductive response exceeding those of intrinsic PbSnTe sensors, said sensor comprising in combination:

(a) a monocrystalline heat resistant substrate; and

(b) a thin sputtered unannealed monocrystalline film on said substrate and having the formula $Pb_{1-x}Sn_xTe$ where x is in the range from 0.0 to about 0.3, said film having a cutoff wavelength between about 6μm and about 15μm.

4,086,556

HUMIDITY SENSITIVE CERAMIC RESISTOR

Tsuneharu Nitta, Katano; Ziro Terada, Yao, and Shigeru Hayakawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 2, 1976, Ser. No. 720,078
Claims priority, application Japan, Sep. 18, 1975, 50-113320; Sep. 30, 1975, 50-118368; Sep. 30, 1975, 50-118369; Sep. 30, 1975, 50-118370; Sep. 30, 1975, 50-118371
Int. Cl.[2] H01L *7/00*
U.S. Cl. 338—35 30 Claims



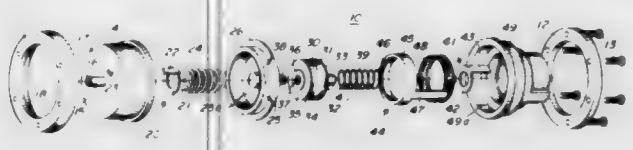
19. A humidity sensitive ceramic resistor comprising a ceramic plate having a conducting electrode secured to a surface thereof, said ceramic plate consisting essentially of, as solid ingredients, 60 to 99 mole percent of at least one main component having spinel-type cubic symmetry selected from the group consisting of $MgCr_2O_4$, $FeCr_2O_4$, $NiCr_2O_4$, $CoCr_2O_4$, $MnCr_2O_4$, $CuCr_2O_4$, Mg_2TiO_4, Mg_2SnO_4, and 1 to 40 mole percent of at least one additional metal oxide selected from the group consisting of SnO_2, ZrO_2 and HfO_2.

4,086,557

VARIABLE RESISTANCE PRESSURE TRANSDUCER

Kenneth Warren Padgitt, Arlington Heights, and Stanley Marion Kujawski, Lombard, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1976, Ser. No. 683,976
Int. Cl.[2] H01L *10/10*
U.S. Cl. 338—42 **20 Claims**



1. An improved variable resistance device adaptable for use in a pressure transducer, said device comprising:

housing means for said variable resistance device;

at least one resistive element helically wound about a central axis, said resistive element having first and second end portions;

first and second electrical contacts electrically coupled to said first and second end portions of said resistive element, respectively;

at least one circular ring shaped electrical contact means positioned with its axis substantially coincident with said central axis, said ring contact means located between said first and second end portions and having a circular circumferential surface around said axis for electrically contacting said resistive element;

spring bias means for positioning one of said resistive element and said ring contact means along said central axis with respect to said housing means, the other one of said resistive element and said ring contact means being fixed with respect to said housing means;

said one of said resistive element and said ring contact means positioned by said spring bias means being directly linearly slideable with respect to said housing means in directions parallel to said central axis, and said ring contact means being positioned for electrically contacting said resistive element with its circumferential surface during relative movement of said ring contact means with respect to said resistive element in directions parallel to said central axis,

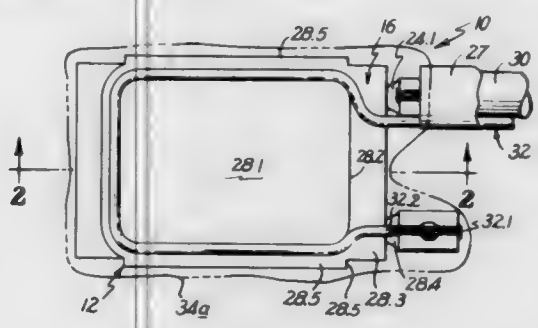
whereby the relative movement results in continuously moving the effective contact point of the ring contact means helically along the surface of the helical resistive element, therefore providing a high resolution, wide resistance range, variable resistance device usable with a linear actuation movement.

4,086,558

MOTOR PROTECTOR AND SYSTEM

Radi Pejouhy, Marshfield, and Joseph L. McMorrow, West Bridgewater, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 9, 1976, Ser. No. 656,459
Int. Cl.[2] H01H *37/52*
U.S. Cl. 337—102 **10 Claims**



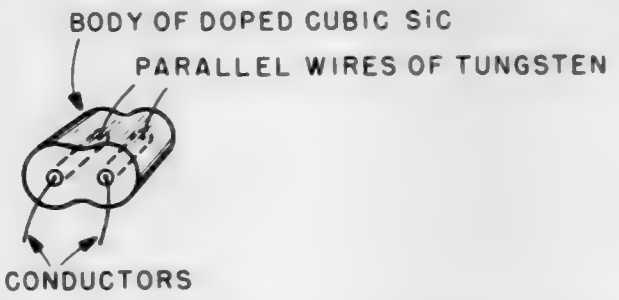
1. A motor protector comprising a metal housing, a first contact mounted within the housing, a complementary contact, a thermally responsive bimetallic element mounted within the housing for moving the complementary contact along a selected axis to engage and disengage the first contact in response to changes in temperature of the thermally responsive element, and electrical resistance heater coil means mounted externally of the housing in heat-transfer relation thereto for heating the thermally-responsive element to a sufficient temperature to disengage the complementary contact from the first contact, said heater coil means being oriented so that the axis of the magnetic field established by current flow in the heater coil means is substantially coincident with said axis of movement of the complementary contact.

4,086,559

ELECTRIC RESISTOR BASED ON SILICON CARBIDE HAVING A NEGATIVE TEMPERATURE COEFFICIENT

Wilhelmus Franciscus Knippenberg; Gerrit Verspui, and Siegfried Hendrik Hagen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 504,912, Sep. 11, 1974, abandoned. This application Sep. 22, 1975, Ser. No. 615,695
Claims priority, application Netherlands, Sep. 14, 1973, 7312740
Int. Cl.[2] H01C *7/04*
U.S. Cl. 338—22 R **8 Claims**



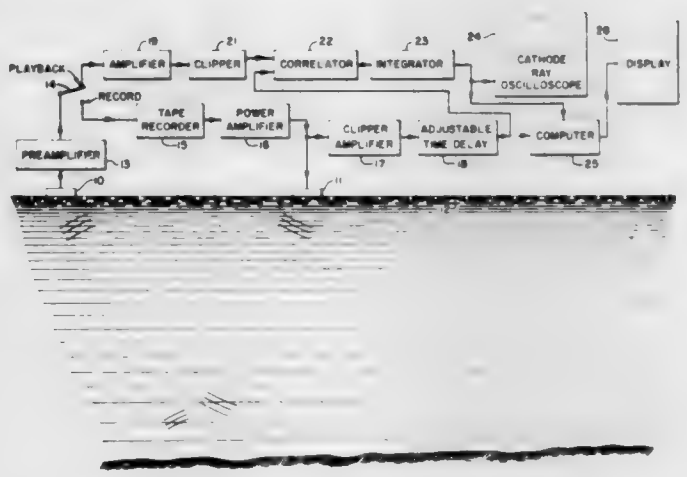
1. An electric resistor having a resistance body consisting of p-type doped pyrolytic polycrystalline cubic silicon carbide.

4,086,560

SECRET DEPTH SOUNDER

Thomas F. Johnston, Silver Spring, and Aaron Z. Robinson, Hyattsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 3, 1959, Ser. No. 804,053
Int. Cl.[2] G01S *9/66*
U.S. Cl. 340—3 R **6 Claims**



1. The method of measuring depth of a body of water comprising the steps of recording the natural ambient noises at the location where the depth is to be measured, projecting the recorded noises back into the surrounding body of water, receiving the reflection of said projected recorded noises, and

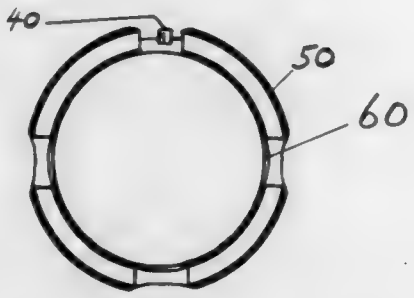
correlating the reflected noises with the projected recorded noises delayed in time.

4,086,561

MARINE SEISMOGRAPH CABLE BALANCING

Douglas William Wooddy, Jr., 134 Lafitte Dr., Waveland, Mich. 39576

Filed Jun. 17, 1976, Ser. No. 697,011
Int. Cl.[2] G01V *1/38*
U.S. Cl. 340—7 PC **4 Claims**



1. A cable weight for installation upon the exterior of a geophysical cable, comprising:

a plurality of weights of small size relative to the cross section of the geophysical cable, encased in and supported by an elongated section of heat shrinkable tubing; and

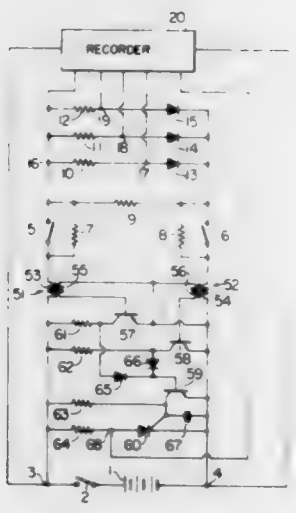
a fastenable band or strap inserted through said tubing section for securing said relatively small weights to the exterior or said geophysical cable, said cable weight being thereby relatively easy to fasten to and remove from said cable.

4,086,562

APPARATUS FOR RECORDING ERRONEOUS OPERATIONS OF PASSENGER PROTECTING APPARATUS FOR MOTOR VEHICLES

Akira Hasegawa, Katsuta, Japan, assignor to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of, Japan

Filed Feb. 12, 1976, Ser. No. 657,597
Claims priority, application Japan, Feb. 17, 1975, 50-18822
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—52 H **13 Claims**



1. In a control circuit for confiningly protecting a passenger of a motor vehicle in the event of the collision thereof comprising at least an inflatable cushion provided for protecting the passenger from injury in the event of the collision of the motor vehicle, at least one actuating means having first and second terminals, for actuating said inflatable cushion, a d.c. current source having an anode and a cathode, and a collision force detector means for sensing said collision to connect said actuating means to said d.c. current source to thereby actuate said actuating means upon collision of the motor vehicle, the improvement residing in an apparatus for recording an erroneous operation of said control circuit, which improvement comprises

an actuation detection circuit for producing an actuation detection signal representing the actuation of said actuating means by detecting a state in which a first terminal of an actuating means is at a potential substantially equal to the potential of the anode of said d.c. current source and at the same time a second terminal of an actuating means is at a potential substantially equal to the potential of the cathode of said d.c. current source,

a collision detection circuit for detecting the collision of the motor vehicle in response to the actuation of said collision force detector means and storing the occurrence of the collision as a collision signal, and

a recorder adapted to be driven only when said actuation detection signal is produced by said actuation detection circuit and said collision signal is not stored in said collision detection circuit, whereby the erroneous operation of said actuating means is recorded when no collision actually occurs, and wherein

said collision force detector means is composed of first and second collision force detecting switches each having first and second terminals, said first terminals being connected, respectively, to the anode and cathode of said d.c. current source,

said actuation detecting circuit is composed of first and second voltage divider resistors respectively connected in parallel to said first and second collision force detecting switches, a third voltage divider resistor connected between the second terminals of said first and second collision force detecting switches, and a plurality of diodes each having cathode connected in common to a junction between said second collision force detecting switch and said third voltage divider resistor and each having an anode connected to the first terminal of a respective actuating means, the second terminal of which is connected in common to a junction between said first collision force detecting switch and said third voltage divider resistor, and

said recorder is composed of a determining circuit for monitoring a plurality of monitor points formed by the junction between said actuating means and said first collision force detecting switch as well as anode-side junctions of said diodes, respectively, and serving to detect that at least one of said monitor points has a potential greater than a first predetermined reference potential and that at least another one of said monitor points has a potential lower than a second predetermined reference potential, a recording means, and a driving circuit adapted to be actuated by the output of said determining circuit to thereby drive said recording means.

4,086,563

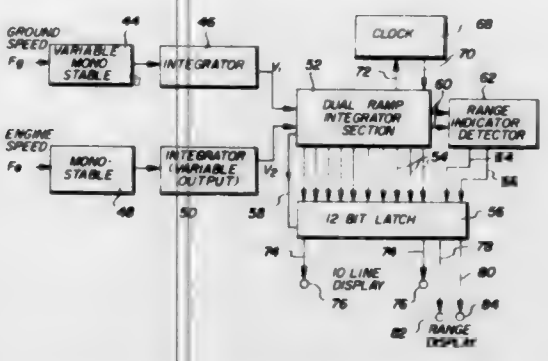
WHEEL SLIPPAGE MONITOR

Wesley J. Bachman, Mount Zion, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Filed Jul. 10, 1975, Ser. No. 594,599
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—52 B **17 Claims**

1. A monitor for determining wheel slip for a wheeled vehicle having an engine and at least one driving wheel and being driven by the engine over the ground comprising means providing an electrical signal related to the speed of said engine, means providing an electrical signal related to the ground speed of said vehicle, means connected with both of said signal

providing means and including dual ramp integrator means for comparing said signals and providing an electrical output



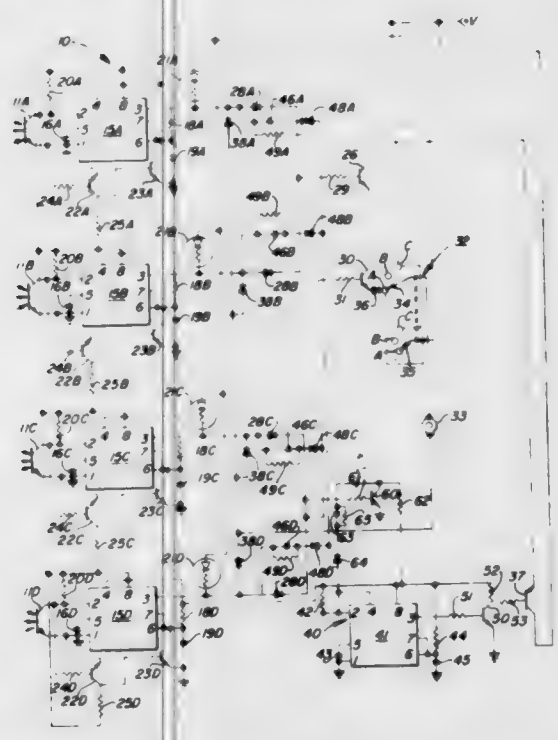
according thereto, and perceptual means connected to and operated by said electrical output.

4,086,564

ELECTRONIC ALARM CIRCUITRY

William Eugene Claxton, Mogadore, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 27, 1975, Ser. No. 581,392
Int. Cl.[2] B60C *23/02*
U.S. Cl. 340—58 **21 Claims**



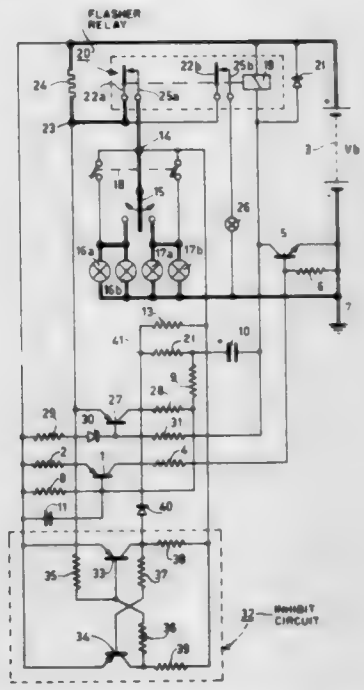
1. Apparatus for indicating an abnormal condition in a rotatable member comprising, sensing means capable of providing periodic signals indicative of a normal condition of the rotatable member, the absence of said periodic signals being indicative of an abnormal condition of the rotatable member, timing means receiving said periodic signals to provide a first output signal indicative of a normal condition of the rotatable member as long as said periodic signals are received within a predetermined time period and recognizing the absence of said periodic signals to provide a second output signal indicative of an abnormal condition of the rotatable member, and indicator means receiving said first and second output signals of said timing means and indicating the abnormal condition upon the occurrence of a said second output signal.

4,086,565

AUTOMOTIVE ELECTRONIC FLASHER UNIT

Bruno Schorter, Morsang, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1976, Ser. No. 720,808
Claims priority, application France, Sep. 16, 1975, 75 28355
Int. Cl.[2] B60Q *1/38*
U.S. Cl. 340—81 R **11 Claims**



1. An automatic electronic flasher unit for vehicle direction indicator lamps comprising, a terminal for supplying DC operating voltage to the flasher unit, a switch connected in circuit to selectively operate the indicator lamps, an electromagnetic relay having at least one set of contacts connected in circuit with said switch and said indicator lamps to the DC supply terminal so as to intermittently supply a current to selected ones of the indicator lamps upon operation of said switch, an astable multivibrator including at least one transistor for controlling the flashing frequency of the indicator lamps, first means connecting the astable multivibrator to the relay to control the relay operation, a resistor having a low resistance value connected between the supply terminal and one contact of the relay, a bistable multivibrator including first and second cross-coupled transistors connected as an inhibit circuit so as to inhibit operation of the astable multivibrator, a frequency changer transistor having an input electrode and an output electrode, second means connecting the end of said resistor which is connected to the one relay contact to the base of the first transistor of the bistable multivibrator and to the input electrode of said frequency changer transistor, a timing network including a capacitor and coupled to the one transistor of the astable multivibrator to control its operating frequency, and means for coupling an output terminal of the bistable multivibrator and the output electrode of the frequency changer transistor to said timing network.

4,086,566

ERROR DETECTOR FOR MODIFIED DUOBINARY SIGNALS

Adam Lender, Palo Alto, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

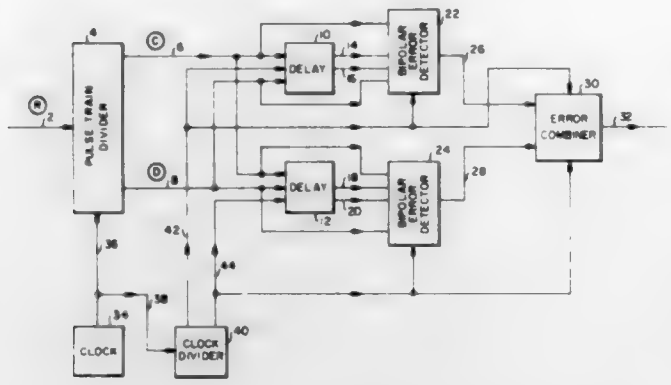
Filed Nov. 15, 1976, Ser. No. 742,168
Int. Cl.[2] G06F *11/00*
U.S. Cl. 340—146.1 AB **8 Claims**

1. An error detector for detecting errors in a modified duobinary pulse train, which comprises:

means for converting the modified duobinary pulse train into a first unipolar pulse train representing the positive pulses at a first output, and a second unipolar pulse train representing the negative pulses at a second output;

delay means for providing a first delayed representation of

the first and second unipolar pulse trains for only the odd bit times, and a second delayed representation of the first and second unipolar pulse trains for only the even bit times; and



logic means operatively connected to said delay means and to said converting means for detecting coincidences of occurrence of successive pulses in the first or second pulse trains only for the even or odd bit times.

4,086,567

HANDWRITING VERIFICATION SYSTEM USING LANDMARKS

Hewitt David Crane, Portola Valley, and Daniel Errol Wolf, Menlo Park, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Aug. 20, 1976, Ser. No. 716,344
Int. Cl.[2] G06K 9/00
U.S. Cl. 340—146.3 SY **10 Claims**



1. In a system wherein a template signature, which is produced, is to be correlated with a subsequently produced specimen signature, and both said signatures have natural landmarks, occurring therealong as they are being produced, the method of segmenting and normalizing the lengths of the signatures between landmarks comprising:

for said template signature;

generating a plurality of trains of signals, as said template signature is being produced, each train representing a different parameter of said template signature,

sampling each train of signals to provide a train of sample signals,

detecting each of the natural landmarks in said template signature, as it is being produced and producing a landmark signal for each,

adding the number of landmark signals to produce a landmark total,

separating each of the trains of sample signals in response to landmark signals, into segments, each segment comprising the sample signals generated between landmark signals,

counting the number of sample signals in each segment, to provide a total number of sample signals for each segment,

for said specimen signature,

generating a plurality of trains of signals, each train representing a different parameter of said specimen signature but corresponding to a parameter of said template signature,

sampling each train of signals to provide a train of sample signals,

detecting each of the natural landmarks in said specimen signature, as it is being written and producing a landmark signal for each,

adding the number of landmark signals to produce a landmark total,

separating each of the trains of sample signals in response to landmark signals, into segments, each segment comprising the signals generated between landmark signals,

comparing the template signature landmark total with the specimen signature landmark total and producing a true signal if they are alike,

in response to said true signal, for each identical parameter of said specimen and template signature,

deriving from each entire segment of each said specimen signature signal train substantially the same number of sample signals as the total number of sample signals for each corresponding segment of a corresponding template sample signal train, and

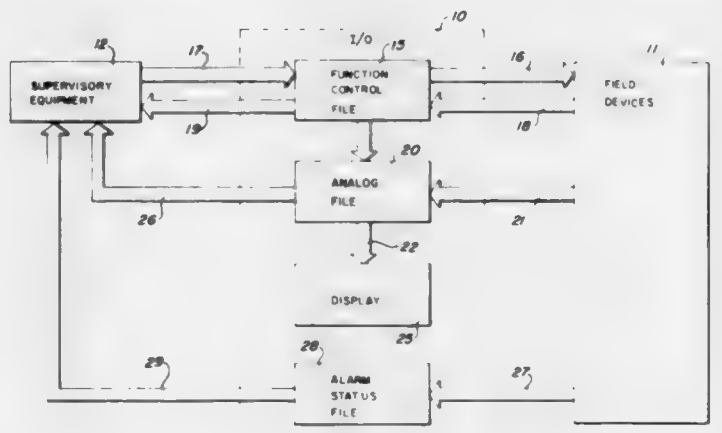
correlating said segments of said template signature signal trains containing samples with corresponding segments of said specimen signature signal trains which contain the same number of sample signals.

4,086,568

MODULAR I/O EQUIPMENT FOR CONTROLLING FIELD DEVICES DIRECTLY OR AS AN INTERFACE

Fred S. Watts, Jr., Denver, and Lynn Loren Beecher, Arvada, both of Colo., assignors to Public Service Company of Colorado, Denver, Colo.

Filed Apr. 7, 1975, Ser. No. 565,461
Int. Cl.[2] H04Q 9/00
U.S. Cl. 340—147 R **22 Claims**



1. Apparatus for selectably actuating one or more of a plurality of subsets of devices comprising:

a function module including a source of electrical power, an enabling signal output terminal, switching means for producing an output signal, and

a plurality of control modules each including linking circuit means having normally coupled input and output terminals adapted for connection in serial circuit relation with other said control module linking circuit means and said function modules enabling signal output terminal, each said control module further having means selectably actuable in the presence of said enabling signal at said input terminal, power diversion means responsive to operation of said selectably actuable means for disconnecting said linking circuit means output terminal from said input terminal, said power diversion means including means for connecting said electrical power source to a respective subset of the plurality of devices, whereby operation of said selectably actuable means disables any other said

control module having said linking circuit means thereof coupled downstream in said serial circuit relation from said function module enabling signal output terminal.

4,086,569

COMMUNICATION SYSTEMS

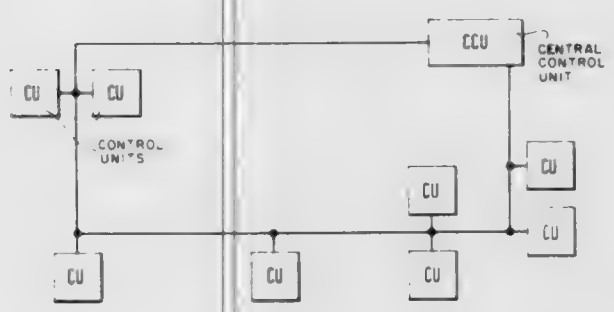
Brian Edward Pitches, and Robert Malcolm Stuart Murray, both of Edinburgh, Scotland, assignors to Ferranti Limited, Hollinwood, England

Filed Aug. 27, 1976, Ser. No. 718,335

Claims priority, application United Kingdom, Aug. 30, 1975, 358571/75

Int. Cl.[2] H04Q *11/00*

U.S. Cl. 340—167 R **12 Claims**



1. A communication system for providing communication between a central control unit and a plurality of controlled units over a single communication channel linking all of the units which includes, at the central control unit, clock generator means operable to generate a periodic signal, timing means for generating a repetitive sequence of time intervals each of which is allocated for communication between the central control unit and a different one of the controlled units only during half-cycles of the periodic signal of one polarity, a control word generator operable to generate a number of control words, control means operable to transmit a selected control word to the designated controlled unit during part only of each time interval allocated to that controlled unit, data receiving means for receiving data from a controlled unit during half-cycles of the periodic signal of the opposite polarity, and display means for displaying such received data; and at each controlled unit, a control word generator operable to generate a number of control words different from those generated in the central control unit, control means responsive to a control word received from the central control unit during the time interval allocated to that controlled unit to transmit an appropriate control word to the central control unit during another part of each said time interval, register means for storing data generated at the controlled unit, and data transmitting means for transmitting said data to the central control unit during half-cycles of the periodic signal of said opposite polarity on receipt of an appropriate control word from the cental control unit.

4,086,570

CONTROLLED DC CURRENT SUPPLY DEVICE WITH OPEN CIRCUIT DETECTING MEANS

Yutaka Wakasa, and Hisayuki Uchiike, both of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Apr. 8, 1976, Ser. No. 674,915

Claims priority, application Japan, Apr. 21, 1975, 50-48451

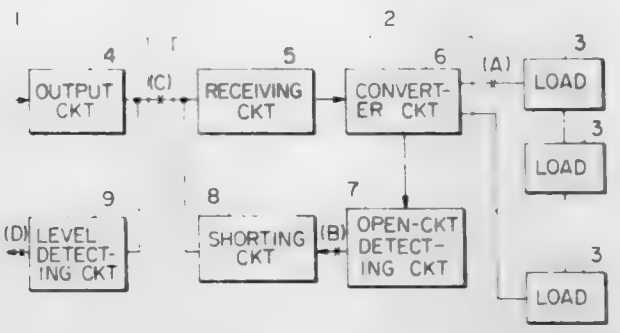
Int. Cl.[2] H04Q *9/16*

U.S. Cl. 340—172 **5 Claims**

1. In a control system of the type comprising controller means for providing a control signal on a signal line, and DC output means for converting the control signal on the signal line into a DC current output signal for supply to a current loop including one or more load devices, the improvement which comprises:

open-circuit detecting means for detecting an open circuit condition in the load current loop;

shorting means in the DC output means for shorting the signal line in response to detection of an open-circuit by the open circuit detecting means; and



level detecting means for detecting the shorting of the signal line;

whereby an indication of an open-circuited load condition may be supplied back to the controller means without use of an added signal carrying line.

4,086,571

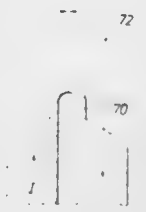
MAGNETIC BUBBLE DOMAIN GENERATOR AND ANNIHILATOR

David Carl Bullock, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 499,823, Aug. 23, 1974, Pat. No. 4,040,019. This application Feb. 24, 1977, Ser. No. 771,702

Int. Cl.[2] G11C *19/08*

U.S. Cl. 365—36 **5 Claims**



1. A magnetic memory, comprising

a magnetic garnet epitaxial layer,

the upper surface portion of said magnetic layer having a pattern formed therein defined by regions of two different types,

the first of said regions including at least one row of contiguous regions,

the second of said regions being ion-implanted regions, the edges of which adjacent to said first regions form rails to which magnetic domains adhere and along which the magnetic domains may be propagated,

means operably coupled to said magnetic garnet layer for controllably positioning magnetic domains with respect to said row, said means including dc field bias means,

a conducting loop in contact with one of said regions included in said row, and

means connected to said conducting loop for generating a current therethrough, a current pulse reducing said dc bias field below a predetermined value generating a domain and a current pulse raising said dc bias field above a predetermined value annihilating a domain within said conducting loop.

4,086,572

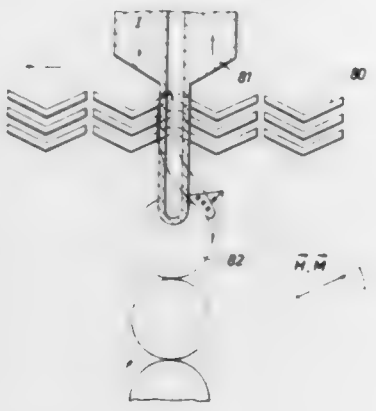
MAGNETIC BUBBLE DOMAIN REPLICATOR

David Carl Bullock, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 499,823, Aug. 23, 1974. This application Feb. 23, 1977, Ser. No. 771,293

Int. Cl.[2] G11C *19/08*

U.S. Cl. 365—12 **5 Claims**



1. A magnetic memory, comprising

a non-magnetic substrate,

a magnetic garnet epitaxial film secured to said substrate,

the upper surface portion of said magnetic film having a pattern formed therein defined by regions of two different types,

the first of said regions including at least one row of contiguous regions,

the second of said regions being ion-implanted regions, the edges of which adjacent to said first regions form rails to which magnetic domains adhere and along which the magnetic domains may be propagated,

a Permalloy propagation path aligned transversely with respect to said row, said Permalloy propagation path including a plurality of separate Permalloy elements,

means coupled to said substrate for controllably positioning magnetic domains with respect to said row and said Permalloy propagation path, said means including dc field bias means,

a conducting loop in contact with one of said regions included in said row, the sides of said loop also respectively in contact with consecutive Permalloy elements of said Permalloy propagation path, and

means connected to said conducting loop for generating a current therethrough, a current pulse reducing said dc bias field below a predetermined value when a domain is within said conducting loop causing domain replication.

4,086,573

ALARM CONTROL DEVICE

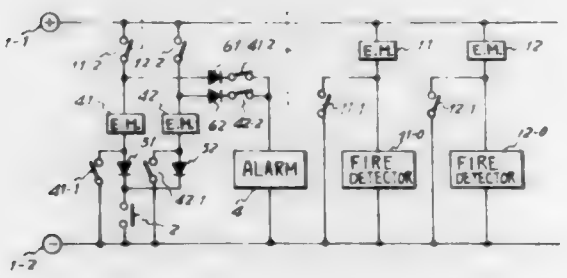
Isao Sasaki, Tokyo, Japan, assignor to Nittan Company, Japan

Filed Oct. 31, 1975, Ser. No. 627,609

Claims priority, application Japan, Nov. 20, 1974, 49-139562[U]; Nov. 20, 1974, 49-139563[U]

Int. Cl.[2] G08B *23/00*

U.S. Cl. 340—213 R **3 Claims**



1. An alarm control device comprising a plurality of detecting means connected between two terminals of an energy source for detecting emergency conditions, each of said detecting means including first switching means actuated by said detecting means and having self-holding means, second switching means interconnected with said first switching means and including both selfholding means and alarm actuating circuit means interconnected with one of said terminals, a connection between said alarm actuating circuit means and said first switching means to connect said alarm actuating circuit to the other of said terminals upon actuation of said first switching means, an alarm connected in common with each of said alarm actuating circuit means of said second switching means and said one of said terminals, said alarm being actuated upon actuation of said first switching means through said alarm actuating circuit means of said second switching means, common switching means interconnected with each of said second switching means and operable to temporarily actuate each of second switching means associated with an actuated detector whereby each of said second switching means remains in the actuated condition until deactivation of its associated first switching means, each of said second switching means upon activation preventing continued sounding of the alarm produced by its associated detector.

4,086,574

FIRE DETECTION SYSTEM

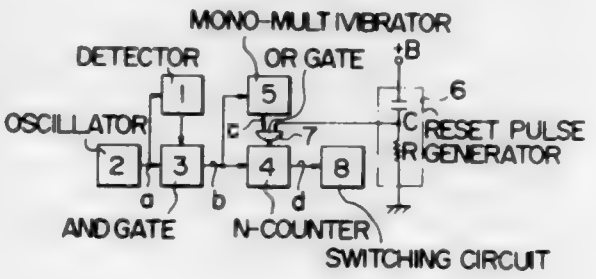
Atsushi Miyabe, Yokohama, Japan, assignor to Hochiki Corporation, Japan

Filed Jul. 22, 1976, Ser. No. 707,608

Claims priority, application Japan, Jul. 25, 1975, 50-90057

Int. Cl.[2] G08B *17/00*

U.S. Cl. 340—227 R **4 Claims**



1. A fire detecting system comprising:

a fire-detection means for production of an output upon detection of a fire;

an oscillator means for supplying a series of oscillator pulse signals;

an AND circuit means having a first input connected to said fire-detection means and a second input connected to said oscillator for producing an alarm pulse when both of said fire-detection means output and said oscillator pulse signal are present;

a counting means having an input connected to said AND circuit means, for receiving said alarm pulses and producing an output after receiving a predetermined number of said alarm pulses;

an observation time control means responsive to said oscillator means and coupled to said counting means for generating an observation time of predetermined length starting upon generation of an oscillator pulse by said oscillator means and resetting said counting means at the end of said observation time; and

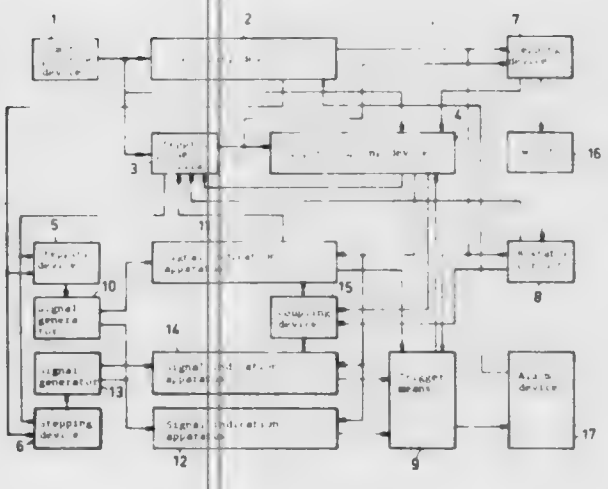
a fire warning means connected to said counting means for generating fire warning upon receipt of the output from said counting means.

4,086,575

APPARATUS FOR THE OPTIONAL DETECTION OF THE MOVEMENT OF ANY INDIVIDUAL OR ANY OPTIONAL PAIR OF OBJECTS

Sten-Åke Rydborn, Olaus Kloxhultsvagen 21, Almhult, Sweden

Filed Oct. 16, 1975, Ser. No. 623,200
Claims priority, application Sweden, Dec. 2, 1974, 7415050
Int. Cl.[2] B65H *63/00;* G08B *21/00*
U.S. Cl. 340—259 12 Claims



1. Apparatus for detecting whether one object selected from a number of objects is in motion, while no other object of said number of objects is in motion, or whether a set of objects selected from a number of sets of objects, each having two or more objects, is in motion, while no other set is in motion, said apparatus comprising:

a plurality of signal generating means, one signal generating means uniquely associated with each object to be detected, each signal generating means generating an electric signal in response to detection of movement of its associated object, said plurality of signal generating means being grouped in a plurality of groups, each group including a plurality of signal generating means;

a plurality of stepping means, one stepping means uniquely associated with each group of signal generating means, each stepping means capable of being stepped through a plurality of positions in each of which the stepping means is electrically connected to a unique one of the signal generating means in the associated group;

means for stepping said plurality of stepping means through the plurality of positions;

a plurality of indicating means, one indicating means uniquely coupled to each of said groups of signal generating means; and

a further indicating means coupled to every group of signal generating means;
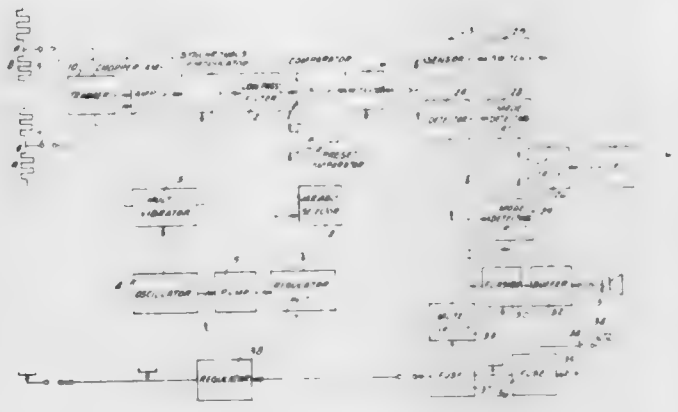
each stepping means including means electrically connecting the signal generating means of the position to which the stepping means is stepped to the associated one of said plurality of indicating means, for indicating generation of an electric signal by the signal generating means upon detection of movement of its associated object, and electrically connecting other signal generating means in the associated group to said further indicating means, for indicating generation of an electric signal by one of said other signal generating means upon detection of movement of the associated object.

4,086,576

AXLE LOAD MONITORING SYSTEMS

Alan Jebb, Keston; James George Arthur Rees, Bromley, and Raymond Lawrence, Maidstone, all of England, assignors to C. L. Instruments Limited, England

Filed Nov. 20, 1975, Ser. No. 633,958
Claims priority, application United Kingdom, Nov. 27, 1974, 51263/74
Int. Cl.[2] G08B *21/00;* B60R *27/00*
U.S. Cl. 340—272 25 Claims



1. A load monitoring system for a road vehicle, said system comprising at least one load monitoring device for mounting on an axle of the vehicle so as to measure the deflection of the axle when under load, at least one pair of strain gauge elements forming each load monitoring device, the strain gauge elements of each pair being arranged to measure strain in different directions, an amplifier connected to said at least one load monitoring device and adapted to emit a signal dependent upon the load, a comparator circuit connected to the amplifier and an alarm, the comparator circuit being arranged to activate the alarm should the signal received from the amplifier exceed a predetermined value.

4,086,577

GUARD MONITOR SYSTEM

Henry J. Elgersma, 4631 Northview NE., Grand Rapids, Mich. 49505

Filed Jul. 14, 1975, Ser. No. 595,558
Int. Cl.[2] G07C *1/20*
U.S. Cl. 340—306 17 Claims



1. A guard tour system including a plurality of guard stations and a central control coupled to said guard stations for receiving and recording signals indicating the actuation of switch means at each of the guard stations by a guard on tour said system comprising:

a plurality of guard station switch means for guard stations to be actuated by a guard at a station; and

a control system including first switch means for responding to activation of one of said plurality of guard station switch means and for sequencing to another of said plurality of guard station switch means in response to activation of one of said plurality of guard station switch means;
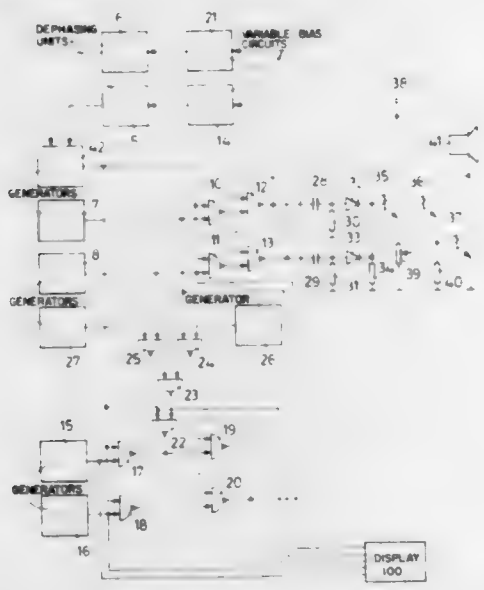
means for sequentially coupling said first switch means to each of said switch means associated with the guard stations; power supply means coupled to said first switch means; a control switch and biasing delay means coupled to said control switch for actuating said control switch; said biasing delay means sequentially coupled to and uncoupled from said control switch by said first switch means so said control switch is momentarily actuated to close by the actuation of said first switch means; recording means; means coupling said recording means to said control switch for recording each of the actuations of said control switch; and means for deactuating said biasing delay means permitting successive momentary actuation of said control switch when a guard actuates a different guard station means.

4,086,578

ELECTRONIC CIRCUITS FOR THE GENERATION OF SPECIAL EFFECTS IN THE VISUALIZATION SYSTEM OF SYMBOLS ON A KINESCOPE ESPECIALLY FOR TELEVISION GAMES

Dino Masili, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed Jun. 20, 1975, Ser. No. 588,779
Claims priority, application Italy, Jul. 23, 1974, 45731/74
Int. Cl.[2] G08B *5/36*
U.S. Cl. 340—324 AD **5 Claims**



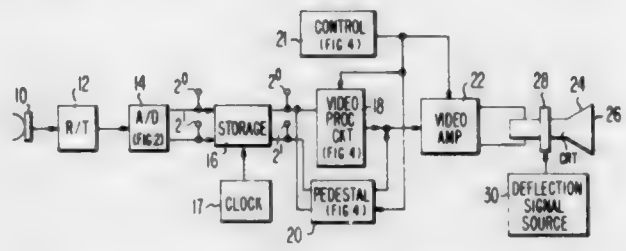
1. An electronic circuit for the generation of special effects in the symbol display systems on a picture tube, especially for television games, comprising first means generating a video signal adapted to be displayed on the picture tube screen as a first symbol the position of which is variable in the horizontal and vertical direction by means of respective phase shifting devices, second and third means generating respective video signals representing a second and a third symbol the position of which on the screen is variable in the vertical direction, first means for detecting the coincidence between the signals of said first and said second or third symbol and associated to said horizontal phase shifting device for inverting the direction of horizontal displacement of said first symbol in response to said coincidence, fourth and fifth means for generating respective video signals representative of a fourth and a fifth symbol having a fixed position on the screen, and a second means for detecting the coincidence between the signals of said first and said fourth or fifth symbol and associated to said vertical phase shifting unit for inverting the direction of the vertical displacement of the first symbol aforesaid, characterized in that it comprises in addition further means for generating a signal representing a portion of said second and third symbol, said further generating means being associated to the output of said first, second and third generating means as well as to said second detecting means, this latter being adapted to produce through said vertical phase shifting device a control signal for the reversal of the vertical displacement of said first symbol in response to the coincidence of said signal representative of the first symbol and of said signal representative of said portion of the second or the third symbol.

4,086,579

VIDEO DIGITAL DISPLAY DEVICE WITH ANALOG INPUT

Finis Claude Easter, Canoga Park, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 10, 1976, Ser. No. 721,980
Int. Cl.[2] G06K *15/20;* **H03K** *13/02*
U.S. Cl. 340—324 AD **13 Claims**



1. An analog-to-digital converter responsive to an input signal from an input signal source which, as a function of time, varies over a range of values for producing time spaced discrete output signals in accordance with the value of said input signal within said range comprising in combination:

a sole input amplifying device having an input terminal coupled to receive said input signal and an output terminal;

a plurality, X, of resistive potential divider networks dividing by different factors, each having a pair of input terminals and an output terminal, one input terminal of which is coupled to said output terminal of said amplifying device; the other input terminal of which is coupled to a common source of potential; and

a like plurality, X, of transistor means each having a principal conductive path between first and second electrodes, the conductivity of which is controlled responsive to potential appearing between said first electrode and a control electrode, said first electrode being connected to an output terminal of a respective one of said potential divider networks, said control electrodes being connected to a common source of potential, signals at said respective second electrodes being representative of different ranges within said range of values.

6. A video display device including a display screen responsive to an input signal at various values for correspondingly displaying related levels of brightness on related portions of the screen and which screen includes at least a portion which is dark comprising in combination:

means normally setting said input signal to a value corresponding to a screen level below the threshold of visibility;

means responsive to said input signal being at a value corresponding to any level of brightness on said screen for producing a first signal which will cause said screen to rise to the threshold of visibility;

means responsive to said input signal being at a value corresponding to any level of brightness on said screen for producing a second signal which when additively mixed with said first signal causes said screen to exhibit a brightness level which level is a function of the value of said input signal;

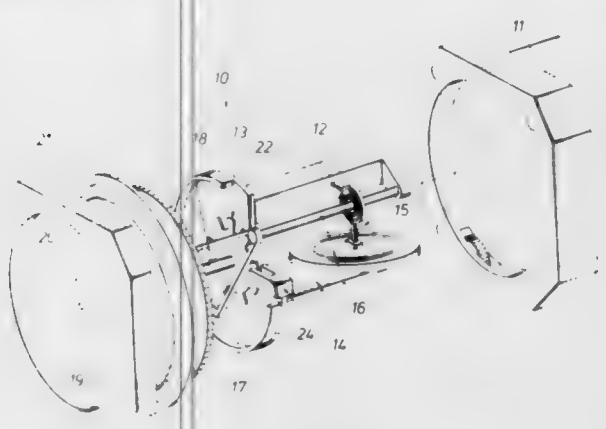
additive mixing means responsive to said first and second signals for summing said signals and for applying the summed signal to said display screen for causing appropriate portions of said screen to exhibit various levels of brightness only when an input signal corresponding to some brightness level is present, other portions of said screen being dark.

4,086,580

DIGITAL ALTITUDE ENCODER

Rondon L. Schroeder, 1717 S. Topeka, Wichita, Kans. 67211

Filed Dec. 18, 1975, Ser. No. 641,992
Int. Cl.[2] G01D *5/34;* **H03K** *13/02*
U.S. Cl. 340—347 P **13 Claims**



1. An altitude encoder for providing a digital output representative of altitude, comprising

an altimeter responsive to atmospheric pressure for rotating a shaft in correlation with the measured atmospheric pressure,

first signal generating means cooperating with the shaft for producing first and second signals having a relative time of occurrence dependent on the direction of rotation of the shaft,

switch means presettable to a predetermined position representative of a preselected function of altitude, and

counting and code conversion means connected to the switch means for presetting the counting and code conversion means to a predetermined digital count representative of a preselected pressure altitude, the counting and code conversion means receiving the first and second signals and in response to the relative time of occurrence of the first and second signals increasing or decreasing the predetermined digital count preset in the counting and code conversion means in response to changes in altitude, and converting the digital count signals to a parallel digital code acceptable for transmission of aeronautical altitude information.

4,086,581

EXPOSURE CONTROL APPARATUS

Fumio Ito; Tadashi Ito, both of Yokohama; Yukio Mashimo, Tokyo; Nobuaki Sakurada, Yokohama, and Nobuhiko Shinoda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1975, Ser. No. 584,297
Claims priority, application Japan, Jun. 10, 1974, 49-65823
Int. Cl.[2] G03B *7/08*
U.S. Cl. 354—23 D **5 Claims**



1. An exposure control apparatus comprising:

(a) light measuring means which measures brightness information of an object and provides a digital signal proportional thereto as an output;

(b) shutter speed setting means which provides a digital signal proportional to the shutter speed information as an output;

(c) diaphragm means which provides a diaphragm aperture for obtaining a correct exposure corresponding to the input signals of the light measuring means and the shutter speed setting means;

(d) diaphragm control signal forming means which is responsive to the diaphragm means and provides a digital signal corresponding to the diaphragm aperture provided by the diaphragm means;

(e) computing means which receives the photographic information of the light measuring means and shutter speed setting means;

(f) shutter control means which is connected to the shutter speed setting means and controls the shutter opening time in correspondence to the output of the shutter speed setting means;

(g) comparing means which compares the digital output values of the diaphragm control signal forming means and the computing means and generates a signal when the output values coincide; and

(h) arresting means which is operatively connected to the diaphragm means, the diaphragm control signal forming means and the comparing means, and stops the output of the diaphragm control signal forming means by the output signal of the comparing means to determine the opening position of the diaphragm means.

4,086,582

EXPOSURE CONTROL DEVICE FOR A CAMERA

Takehiko Kiyohara, Zama; Tokuichi Tsunekawa, Yokohama; Mutsunobu Yazaki, Yokohama; Noriaki Sanada, Yokohama; Tetsuya Taguchi, Kawasaki, and Zenzo Nakamura, Urawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1976, Ser. No. 711,968
Claims priority, application Japan, Aug. 8, 1975, 50/96488
Int. Cl.[2] G03B *15/05*
U.S. Cl. 354—33 **5 Claims**



1. An exposure control device of a camera comprising:

light measuring means to measure object brightness and for generating an electric signal corresponding to an object brightness;

level signal generation means for generating an electrical signal with a preset level;

comparison means to compare the signal output of said light measuring means and the signal output of the level signal generation means, wherein said comparison means provides an electrical signal when the difference between said signal output values reaches a prescribed value;

flash emitting means for making flash light emission;

flash action preparation means for making flash action preparation of said flash light emitting means, wherein said preparation means starts the light emission preparation by the output signal of said comparison means and generates an electrical signal upon completion of the light emission preparation;

exposure time control means, which has a first time forming means being normally operable and a second time forming

means becoming operable by the signal output of said flash action preparation means, wherein said first time forming means conducts such exposure time control as corresponding to the signal output of the light measuring means while the second time forming means conducts exposure time control with a predetermined time, and

a shutter having its opening time controlled by one out of the first time forming means and the second time forming means, wherein said shutter is activated in an association with the release action, whereby flashing action of the flash light emitting means is made.

4,086,583

LIGHT SOURCE AND EXPOSURE CONTROL DEVICE FOR ENDOSCOPIC PHOTOGRAPHY

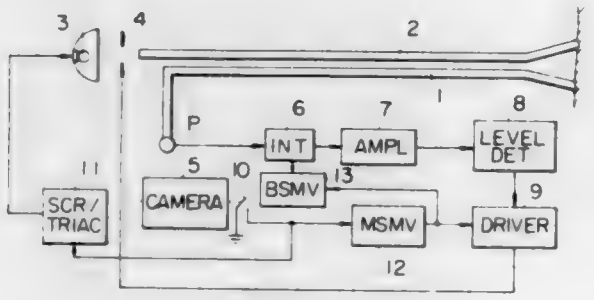
Nagashige Takahashi, No. 4-1, Nishi-machi, Kokubunji-shi, Tokyo, Japan

Filed Mar. 22, 1977, Ser. No. 780,158

Claims priority, application Japan, Mar. 24, 1976, 51-35604[U]

Int. Cl.[2] G03B *29/00*; A61B *1/06*

U.S. Cl. 354—62 **6 Claims**



1. In an endoscopic photography system including a light source, an endoscope, a side shutter disposed between the light source and a light inlet of said endoscope, a camera disposed adjacent a light outlet of said endoscope, a photosensitive element disposed adjacent said light outlet, circuit means for integrating the output of the photo-sensitive element, and circuit means for detecting when the integration value reaches a predetermined level, an improved side shutter and automatic exposure control system characterized by:

(a) means for closing the side shutter and increasing the intensity of the light source in synchronization with the camera release and before the camera shutter is opened, and

(b) delay means responsive to the camera release for opening the side shutter and enabling the integrating circuit means when the light source intensity has reached a stable, maximum value.

4,086,584

EXPOSURE RANGE CHANGEOVER CIRCUIT FOR MOTOR DRIVEN PHOTOGRAPHIC CAMERA

Susumu Kozuki, Yokohama; Toshikazu Ichiyanagi, Tokyo; Yoshiaki Watanabe, Fujisawa; Takashi Uchiyama, Yokohama, and Akio Sunouchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1976, Ser. No. 712,798

Claims priority, application Japan, Aug. 9, 1975, 50/96910

Int. Cl.[2] G03B *7/08, 1/18*

U.S. Cl. 354—38 **20 Claims**

1. A motor driven photographic camera having an automatically operated exposure mode selection switching circuit comprising in combination:

(A) a camera body having:

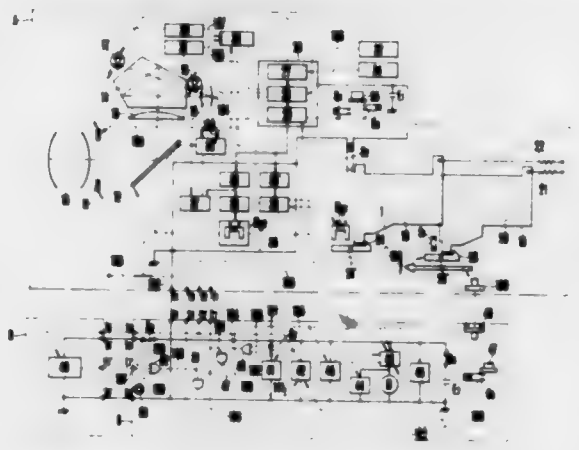
(a) a light measuring circuit for producing an output corresponding to the level of brightness of a scene being photographed; and

(b) an exposure control circuit receptive of the output of said light measuring circuit and selectively operating in either of a shutter preselection automatic exposure mode and a diaphragm preselection automatic exposure mode; and

(B) a motor drive circuit regulating at least the film winding operation of said camera, said circuit having:

(a) an electric motor for controlling at least the film winding operation;

(b) a motor drive control circuit connected to said motor and having at least two selective functions of driving said motor for a number of cycles of operation at a predetermined frequency for each actuation of the trigger to result in the corresponding number of succes-



sive frame exposures and of driving said motor for only one cycle of operation for each actuation of the trigger to result in a single frame exposure;

(c) motor function selecting means connected to said motor drive control circuit to select either of the continuous exposure function and the single exposure function; and

(d) exposure mode changeover means connected in said exposure control circuit and responsive to the actuation of said function selecting means upon selection of the continuous exposure function to automatically switch said exposure control circuit to the shutter preselection automatic exposure mode.

4,086,585

SYSTEM AND CAMERA FOR CONTROLLING DEPTH OF FIELD IN THREE-DIMENSIONAL PHOTOGRAPHY

Allen Kwok Wah Lo, and Jerry Curtis Nims, both of Dunwoody, Ga., assignors to Dimensional Development Corporation, Atlanta, Ga.

Filed Dec. 27, 1976, Ser. No. 754,739

Int. Cl.[2] G03B *35/08*

U.S. Cl. 354—115 **9 Claims**

1. A system for producing stereoscopic pictures in general photography, comprising:

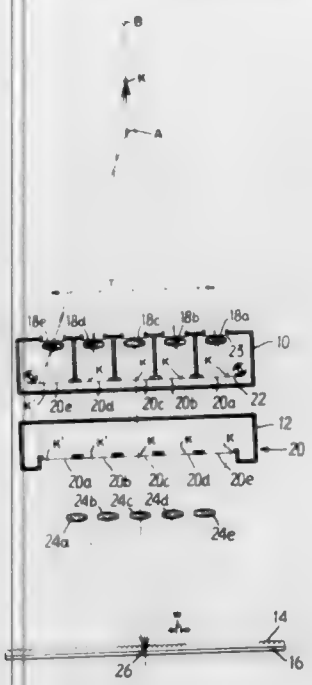
a camera for recording a plurality N of two-dimensional views of an object field, said camera including a corresponding plurality N of lenses aligned in a straight path with their optical axes substantially in parallel and the spacing between the optical axes of the two endmost lenses being within the range determined by $cF(N-1)/f$;

means for projecting respective ones of the two-dimensional views from a corresponding plurality N of aligned, spaced projecting lens locations, with the projected image from each two-dimensional view of a selected object in the object field in substantial registry with a predetermined reference point;

a lenticular screen of lenticule width w positioned opposite said projecting lens locations; and

a photosensitive surface positioned adjacent the rear surface of said lenticular screen, where c is within the range of from substantially 1.0 to substantially 5.0 where w is greater than 5 mils and is within the range of from substan-

tially 1.0 to substantially 10.0 where w is 5 mils or less, f is an f-number at least as high as the highest f-number provided by the lenses, and F is the effective focal length of the lenses.

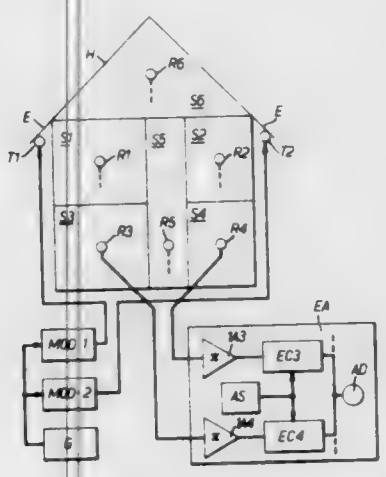


4,086,586

CLOSED SPACE INTEGRITY

Ernst Spirig, Movenstrasse 37, CH-8640 Rapperswil, Switzerland

Filed Aug. 2, 1976, Ser. No. 710,656
Int. Cl.[2] G08B *13/16*
U.S. Cl. 340—258 B **7 Claims**



1. In closed space integrity supervision equipment for supervising the integrity of a space enclosed by sonically attenuating enclosure means, said equipment including ultrasonic transducers of which one is energized to transmit ultrasonic energy and another is arranged to develop an electric signal as a function of the intensity of received ultrasonic energy, one of said ultrasonic transducers being disposed within said space and the other of said ultrasonic transducers outside said space, whereby ultrasonic energy transmitted between said transducers is attenuated in passing through said enclosure means, and signal processing means responsive to predetermined increase in said electric signal to yield an output signal as a function of a breach in the integrity of said space; the improvement wherein said signal processing means includes:

(a) variable gain amplifier means coupled with said receiving transducer for amplifying said electric signal, thereby to produce an amplified signal;

(b) a threshold device coupled with said variable gain amplifier means for producing from said amplified signal said output signal in response to a received signal in excess of a predetermined amplitide; and

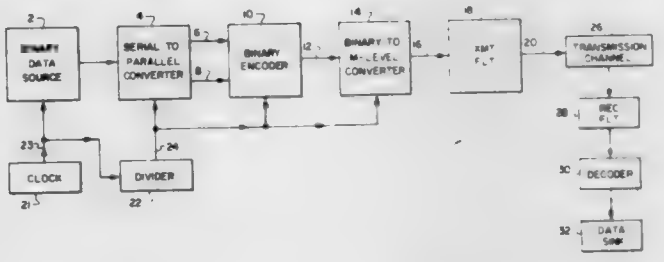
(c) air sensor means responsive to a physical characteristic of the ambient air for producing a gain-control signal, and means coupling said gain control signal with said amplifier means to control the gain thereof, thereby to compensate for variations in sonic transmission resulting from changes in said air characteristic.

4,086,587

APPARATUS AND METHOD FOR GENERATING A HIGH-ACCURACY 7-LEVEL CORRELATIVE SIGNAL

Adam Lender, Palo Alto, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 28, 1977, Ser. No. 772,797
Int. Cl.[2] H04L *3/00*
U.S. Cl. 340—347 DD **10 Claims**



1. Apparatus for generating a 7-level correlative signal from a serial binary input signal comprising:

means for changing said serial binary signal into two parallel binary bit streams, each at one-half the bit rate of the serial binary signal;

means for encoding the two parallel binary bit streams to obtain correlation between a present digit and the second digit back from said present digit;

means for digitally converting the encoded signal into a 7-level digital signal; and

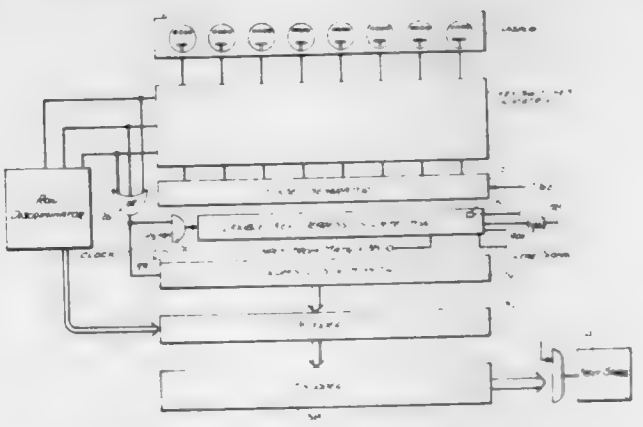
means for transforming said 7-level digital signal into a band-limited correlative 7-level analog signal related on a one-to-one basis to the binary input signal.

4,086,588

SIGNAL GENERATOR

Tsuyoshi Kawanabe, Yokohama, and Minoru Machida, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 365,212, May 30, 1973. This application May 12, 1975, Ser. No. 576,269
Claims priority, application Japan, Jun. 2, 1972, 47-54948; Jun. 22, 1972, 47-73907
Int. Cl.[2] G06F *3/02*; G08C *25/00*
U.S. Cl. 340—365 S **16 Claims**



9. A data input device comprising:

(a) a plurality of key switches arranged in a matrix configuration, said matrix being provided with at least one row line and a plurality of column lines, wherein said switches

are connected respectively at each of the intersections between one row line and one column line;

(b) pulse generator means for distributing pulse signals to each of said column lines in succession during a predetermined time interval, said pulse generator means including a first register consisting of a plurality of memory elements each having an output connected to a respective one of said column lines, and means for differentiating the condition of at least one of said memory elements from the condition of the remaining memory elements;

(c) means for supplying information signals to be displayed, and a display unit having a plurality of display elements connected to said outputs of said pulse generator means wherein said pulses energize said elements to provide display representations in response to the information signals applied thereto;

(d) column line discriminator means operable in response to actuation of one of said key switches for identifying the column lines to which said actuated key switch is connected, said column line discriminator means comprising a second register and means for coupling the signal from said pulse generator means through the operated one of said key switches to said second register, wherein said second register includes a plurality of memory elements for storing the signal coupled thereto;

(e) row line discriminator means having a plurality of memory elements for identifying a row line on which the signal is developed when any one of said key switches coupled to said row line is depressed; and

(f) means for decoding outputs from said row and column line discriminator means to identify which one of said key switches is depressed in accordance with the combination of output signals from said second register of said column line discriminator means and output signals from said memory elements of said row line discriminator means.

4,086,589

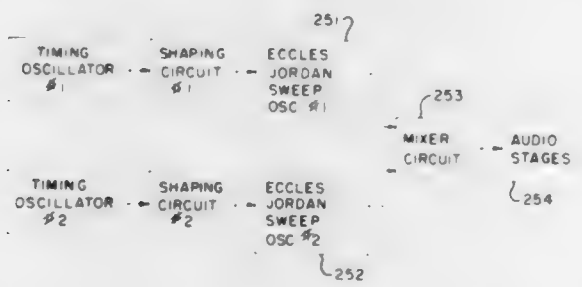
AUDIBLE ELECTRONIC WARNING SYSTEM

Richard F. Cieslak, Algonquin, and John V. Balding, Palatine, both of Ill., assignors to Industrial Electronics Service Co., Schaumburg, Ill.

Division of Ser. No. 664,434, Mar. 8, 1976, Pat. No. 4,075,625, which is a continuation-in-part of Ser. No. 550,219, Feb. 18, 1975, Pat. No. 3,981,007, which is a continuation-in-part of Ser. No. 377,644, Jul. 9, 1973, Pat. No. 3,889,256. This application Mar. 10, 1977, Ser. No. 776,184

Int. Cl.[2] H04Q *3/10*

U.S. Cl. 340—384 E **8 Claims**



1. An electronic siren system including a first timing oscillator and a shaping network, a second timing oscillator and a shaping network, a mixing means, and first and second sweep oscillators, said first and second timing oscillators and shaping networks directing their respective outputs to the respective first and second sweep oscillators, and said sweep oscillators directing their outputs to said mixing means, said mixing means combining the audio outputs from the respective sweep oscillators and delivering the combined output to an audio stage.

4,086,590

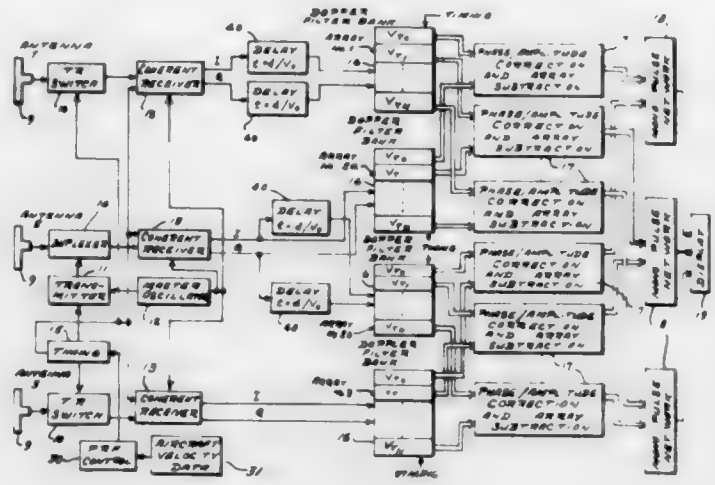
METHOD AND APPARATUS FOR IMPROVING THE SLOWLY MOVING TARGET DETECTION CAPABILITY OF AN AMTI SYNTHETIC APERTURE RADAR

William B. Goggins, Jr., Locke Mills, Me., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 563,009, Mar. 27, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 761,507

Int. Cl.[2] G01S *9/02*

U.S. Cl. 343—5 CM **7 Claims**



1. The method of detecting slowly moving targers with a pulsed AMTI synthetic aperture radar system having multiple receiving antenna elements comprising the steps of

positioning said receiving antenna elements at equal separation distance d along the flight velocity vector V_o of the AMTI radar bearing aircraft,

controlling the PRF of said radar to maintain an interpulse period T of d/V_o, and

differencing the outputs of the synthetic aperture processing circuits of adjacent pairs of receiving antenna elements.

4,086,591

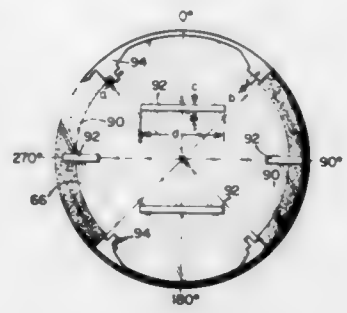
SMALL APERTURE ANTENNA

Kazimierz Siwiak, Waltham, Mass., and Robert L. Moran, Rand, Colo., assignors to Raytheon Company, Lexington, Mass.

Filed Sep. 28, 1976, Ser. No. 728,109

Int. Cl.[2] H01Q *1/42, 17/00*

U.S. Cl. 343—18 A **6 Claims**



1. A device for reducing the backlobe radiation from a small aperture antenna wherein such radiation is caused by radio frequency currents excited on the edge of said antenna, such device comprising:

(a) a radome attached to the edge of the antenna and completely enclosing the radiating end of said antenna;

(b) means, mounted to the radome, for absorbing a portion of the radio frequency currents;

(c) means, disposed on the surface of the radome, for suppressing a portion of the energy radiated from the edge of the antenna; and,

(d) means, mounted to said radome, for reflecting a portion

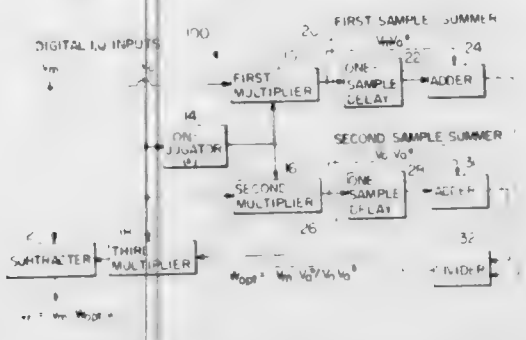
of the radio frequency energy radiated from the antenna back to the edge of said antenna.

4,086,592

DIGITAL SIDELOBE CANCELLER

Bernard L. Lewis, Oxon Hill, and Frank F. Kretschmer, Jr., Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 22, 1977, Ser. No. 818,180
Int. Cl.[2] G01S *9/42*; H04B *1/12*
U.S. Cl. 343—100 LE **6 Claims**



1. A digital open-loop canceller receiving a digital complex main input and a digital complex auxiliary input which may have correlated signal components comprising:

conjugator means for receiving and conjugating a said digital complex auxiliary signal;

first multiplier means for receiving and multiplying said digital complex main input and the output of said conjugator;

second multiplier means for receiving and multiplying said digital complex auxiliary input and the output of said conjugator;

first sample summer means for receiving and summing N sample outputs of said first multiplier means, where N is an integer greater than one;

second sample summer means for receiving and summing N sample outputs of said second multiplier means where N is an integer greater than one;

divider means for receiving and dividing the outputs of said first and second sample summer means to produce an output which is a weight;

third multiplier means for receiving and multiplying said digital auxiliary signal and the output of said divider means; and

subtracter means for receiving and subtracting said digital complex main signal and said third multiplier output to produce an output signal in which said correlated signal components have been cancelled.

4,086,593

AM REMOVAL AND PHASELOCK RECEIVER

Richard D. Chelikowsky, Cedar Rapids, and Kenneth R. Stinson, Hiawatha, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 9, 1976, Ser. No. 675,372
Int. Cl.[2] G01S *1/44*
U.S. Cl. 343—106 R **3 Claims**

1. A phaselock VOR receiver including:

(a) one or more frequency converter means each producing an intermediate frequency (IF) signal,

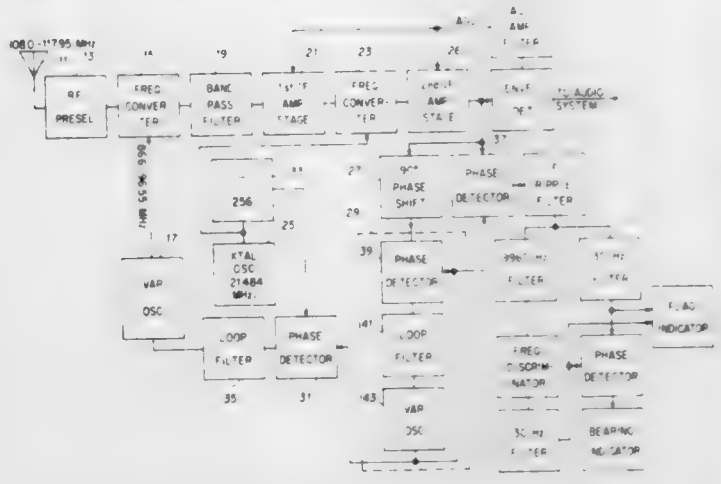
(b) receiving one said IF signal, IF bandpass filter means whose center corresponds nominally to the impressed IF,

(c) means for providing, subsequent to said IF filtering, synchronous amplitude demodulation of one of said IF signals,

(d) means for removing, subsequent to said IF filtering, amplitude modulation (AM) from one of said IF signals, said AM removal means comprising (i) a first phase detector means receiving IF signal at one input, (ii) a first loop filter means for low-pass filtering said first phase detector means output signal, (iii) a first variable oscillator means, controllable by said first loop filter means output signal, for supplying a variable frequency signal to a second input of said first phase detector means,

(e) means for supplying a fixed frequency signal,

(f) second phase detector means receiving at separate inputs, said fixed frequency signal, and said signal from said first variable oscillator means,



(g) second loop filter means for low-pass filtering said second phase detector means output signal, and

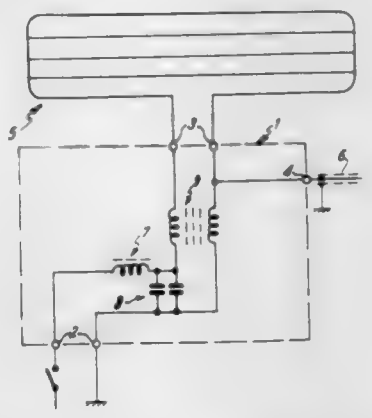
(h) second variable oscillator means, controllable by said second phase detector means output signal, for supplying a variable frequency signal to a frequency converter means preceding said IF filter means.

4,086,594

ELECTRICAL SIGNAL SEPARATING DEVICE FOR COMBINED WINDSHIELD ANTENNA AND HEATER GRID

Barbara Ewa Kropielnicki, and Jerzy Jacek Kropielnicki, both of Knutsford, England, assignors to B.S.H. Electronics (Manchester) Limited, Manchester, England

Filed Sep. 13, 1976, Ser. No. 722,625
Claims priority, application United Kingdom, Nov. 21, 1975, 47902/75
Int. Cl.[2] H01Q *1/02*
U.S. Cl. 343—704 **13 Claims**



1. An electrical signal separating device for separating a radio signal from the resistance heating element of an electrically heated window, comprising: an electrical circuit having input terminals for connection to a motor vehicle d.c. power supply, power output terminals for connection to the heating elements, and a radio signal output terminal for connection to the aerial circuit of a radio receiver for feeding radio signals picked up by the heating element to the receiver; said circuit further including a blocking circuit for blocking passage of said radio signals to the power supply, wherein the blocking circuit comprises a bifilar coil formed by two wires wound on a common core and defining two concentric coils, the coils being interposed respectively between the said input terminals and

power output terminals and being mutually coupled and arranged so as to provide high impedance paths for in-phase fluctuating currents at said power output terminals but low resistance paths for currents flowing through said circuit from the d.c. power supply, said resistance heating element acting as a conductive sheet to radio signals, whereby the bifilar coil effectively blocks the radio frequency signals, while passing the current from the d.c. power supply to the heating element.

4,086,595

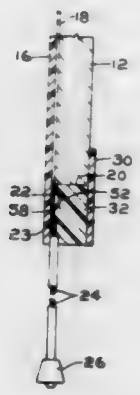
BILAYER WINDSHIELD WITH EMBEDDED ANTENNA

Joseph P. Cherenko, Valencia, and Hugh E. Shaw, Jr., New Kensington, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 400,765, Sep. 26, 1973, abandoned. This application Sep. 30, 1974, Ser. No. 510,830

Int. Cl.[2] H01Q *1/28*

U.S. Cl. 343—713 **4 Claims**



1. A transparent antenna windshield comprising one sheet of glass, a preformed sheet of thermoplastic polyurethane laminated to the inner surface of said glass sheet, and an antenna consisting essentially of elongated electroconductive wire embedded in said polyurethane sheet and adapted for coupling to a radio for use as an antenna circuit element, wherein said windshield is a bilayer windshield having a single sheet of glass disposed outward of said preformed sheet of thermoplastic polyurethane, and said embedded electroconductive element is located within the thickness of said preformed sheet in closer relation to said inner surface of said one sheet of glass than said other major surface of said preformed sheet.

4,086,596

WHIP ANTENNA ASSEMBLY AND METHOD OF MANUFACTURE

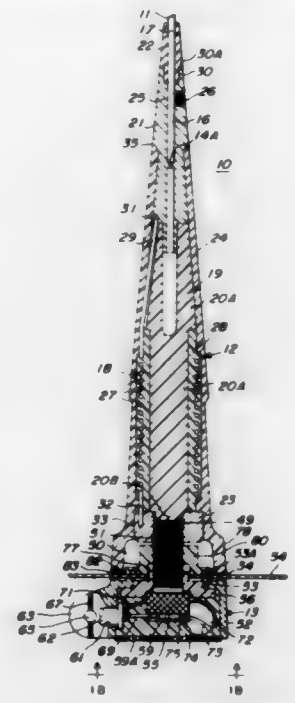
Robert C. Gauss; Hemant T. Sathe, and Lynn D. Wills, all of Schaumburg, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 22, 1976, Ser. No. 669,001

Int. Cl.[2] H01Q *1/32, 9/18*

U.S. Cl. 343—715 **4 Claims**

1. The method of forming an antenna for a predetermined frequency band comprising the steps of providing an accurate whip member of predetermined length, providing a loading coil having a predetermined number of turns, a predetermined diameter of turns, and a predetermined diameter of wire, interiorly molding said turns against the interior screw surface of a mold whose threads have the same diameters, pitch and groove diameter as the corresponding dimensions of said coil and forming for the length of said coil a hollow molded cylinder whose interior diameter is less than the interior diameter of said turns, providing an electrically insulating supporting member interiorly of said hollow molded cylinder and said coil and exteriorly thereof at one end, providing an interconnecting metal member between one end of said whip member and said electrically insulating supporting member exteriorly of said coil, overmolding the assembly of said loading coil, the hollow molded cylinder, the electrically insulating supporting member exteriorly of said coil and the adjacent portion of said interconnecting metal member and attaching said whip member to said metal member.



4,086,597

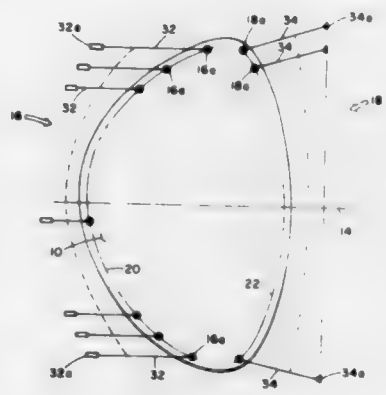
CONTINUOUS LINE SCANNING TECHNIQUE AND MEANS FOR BEAM PORT ANTENNAS

Allen I. Sinsky; Paul C. Wang, and Robert E. Willey, all of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 20, 1976, Ser. No. 752,657

Int. Cl.[2] H01Q *19/06*

U.S. Cl. 343—754 **4 Claims**



1. A radar antenna system including radiating means for scanning radiated energy comprising a parallel plate wave conducting lens having a plurality of individually excitable input means located along the focal arc of said lens for supplying energy to said lens and wherein a plurality of contiguous input means is to be excited simultaneously and a plurality of output means for extracting energy, said output means being connected to said radiating means, and wherein exciting the kth of said input means results in a first radiated beam at an angle of θ_k and exciting the $k + 1^{st}$ of said input means results in a radiated beam at an angle of θ_{k+1}, means for scanning said beam in I steps between θ_k and θ_{k+1} comprising means for exciting a plurality of contiguous output means and weighting the exciting power in accordance with weights W_{ki} where:

$$W_{ki} = \frac{\cos [Z_i + (k-1)\pi]}{\left[1 - \left(\frac{2[Z_i + (k-1)\pi]}{\pi}\right)^2\right]}$$

where: $Z_i = -\frac{K\pi}{2} + i\frac{\pi}{I}$

and

$i = 0, 1, 2, \ldots (I\text{-}1)$

$k = 1, 2 \ldots K$, K being the maximum number of input means to be excited simultaneously.

4,086,598

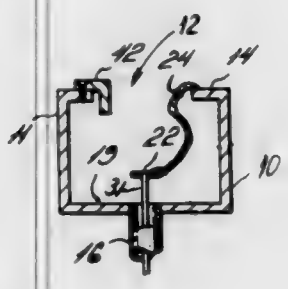
BROADBAND OMNIDIRECTIONAL SLOT ANTENNA WITH AN ELECTRICAL STRAP CONNECTOR

Richard D. Bogner, 4 Hunters La., Roslyn, N.Y. 11576

Filed Dec. 2, 1976, Ser. No. 746,857

Int. Cl.[2] H01Q 3/26

U.S. Cl. 343—768 **7 Claims**



1. A broadband omnidirectional slot antenna consisting of an electrically conductive tube at least λ long, extending along a major axis, having a girth in the range λ/2 to λ and a slot of a length approximately λ/2 to λ and a width in the range λ/16 to 3 λ/16 extending through the tube wall parallel to the major axis; a two conductor transmission line for coupling energy from a signal source to the said slot antenna, one of said conductors connected to the inner wall of the said tube opposite the said slot; a conductive strap having one end thereof connected to one edge of the slot with λ/8 of the middle of the slot along the tube axis and the other end thereof connected to the other of said conductors, said strap having a dimension along the major axis, for most of the length of the strap, in the range greater than λ/16, and less than λ/4, and of length at least 1½ times the direct distance between the said connection point to the transmission line and the said slot edge.

4,086,599

DISH ANTENNA WITH ADJUSTABLE AND COLLAPSIBLE SUPPORT

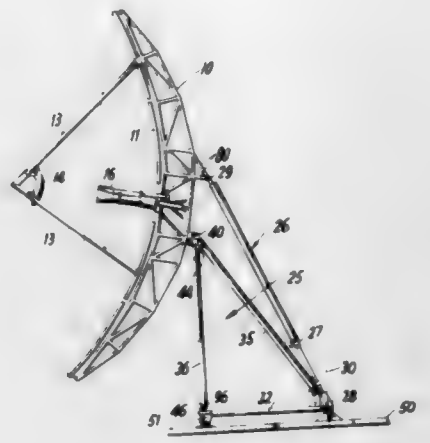
Paul Guisbert VanderLinden, Jr., and James Elwyn Crutcher, both of Kilgore, Tex., assignors to Radio Mechanical Structures, Inc., Kilgore, Tex.

Filed Apr. 19, 1976, Ser. No. 678,048

Int. Cl.[2] H01Q 1/08

U.S. Cl. 343—881 **2 Claims**

1. In combination in an antenna, a reflector having first and second horizontally spaced junction means at its rear surface defining an antenna elevation axis therebetween and elevation implementing pivot means vertically spaced from said elevation axis, fixed azimuth axis defining bearing and junction means, first and second translating junction means, multi-element rigid truss means interconnecting said first and second horizontally spaced junction means, said first and second translating junction means and said azimuth axis defining bearing and junction means, and means connecting said azimuth bearing and junction means with said elevation axis implementing pivot means, further comprising foundation means having said first azimuth axis defining bearing and junction means affixed thereto and which is in relative translation contact with said first and second translating junction means, said first and second translating junction means having a fixed radius with respect to said bearing and junction means, a plurality of spaced attaching point means affixed to said foundation means at a radius different than the radius between said first and



second translating junction means and said bearing and junction means, and cable means attaching said truss means to at least two of said attaching point means.

4,086,600

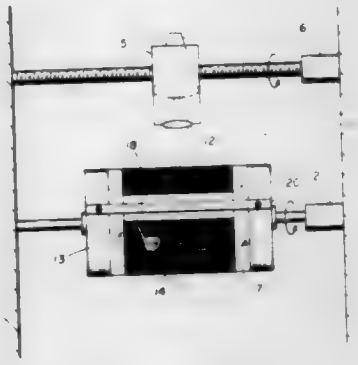
METHOD FOR PRODUCING HALF-TONE, VARIABLE-DENSITY SEISMIC TRACE RECORDINGS

Carroll D. McClure, and John D. Hodge, Jr., both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 15, 1976, Ser. No. 705,724

Int. Cl.[2] G01D 9/28

U.S. Cl. 346—1 **4 Claims**



1. A method of producing a seismic color section having selected parameters of the seismic traces recorded in different colors, comprising the steps of:

(a) selecting a first seismic parameter from the recorded seismic signals and applying said parameter sequentially by trace to a variable-brightness display to intensity modulate the brightness of said display,

(b) screening the light emanating from said display,

(c) recording said screened light whereby the images of said first seismic parameter are broken into a plurality of dots so as to produce a first half-tone, variable-density recording,

(d) repeating steps (a)-(c) for each of a plurality of selected parameters of said seismic signals to produce a plurality of half-tone, variable-density recordings,

(e) producing a different color photographic recording from each of said plurality of half-tone, variable-density recordings, the hue of each color being proportional to the value of the selected seismic parameter, and

(f) producing a color composite of said plurality of different color photographic recordings, whereby each selected parameter is uniquely represented by a different color.

4,086,601

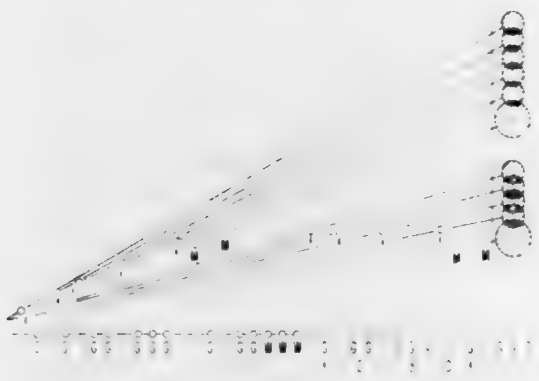
SEQUENTIAL INK JET PRINTING SYSTEM WITH VARIABLE NUMBER OF GUARD DROPS

Gary L. Fillmore, Boulder, Colo.; James D. Hill, Lexington; William F. Robinson, Versailles, both of Ky., and Thomas H. Williams, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 671,780, Mar. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 587,464, Jun. 19, 1975, abandoned. This application May 24, 1976, Ser. No. 686,421

Int. Cl.[2] G01D *15/18*

U.S. Cl. 346—75 **11 Claims**



1. Ink jet printing apparatus having means for generating and directing ink drops toward a record medium for printing on a selective basis, comprising:

means for grouping said drops in drop printing sequences to form characters on said record medium; and

drop control means for producing in each drop printing sequence a sequence of print drops and guard drops wherein a variable number of guard drops is interposed between successive pairs of print drops.

4,086,602

PRINTING VIDEO SIGNAL INFORMATION USING INK DROPS

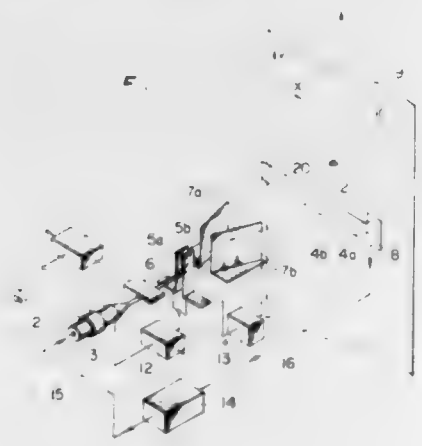
Takahiro Yamada, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 24, 1976, Ser. No. 660,783

Claims priority, application Japan, Feb. 26, 1975, 50-22817

Int. Cl.[2] G01D *15/18*

U.S. Cl. 346—75 **6 Claims**



1. In an apparatus for printing video signal information using ink drops, wherein ink under pressure is supplied to a nozzle which is vibrated by a transducer driven from a high-frequency power source to produce a stream of ink which separates into individual ink drops directed toward a recording medium, the improvement comprising means responsive to a video signal for applying a charge of selected magnitude and polarity to the ink drops as they are formed from said stream, first deflecting means responsive to a control signal for selectively deflecting said ink stream before separation in a first axial direction, second deflecting means for deflecting said ink drops in a second axial direction transverse to said first axial direction, and waste catcher means disposed in the path of any ink drop not subject to deflection by said first deflecting means for intercepting such ink drops, wherein said waste catcher means extends over a full deflection width in said second axial direction in order to capture all ink drops which are not deflected in said first axial direction, said waste catcher means further including a portion extending a predetermined distance in said first axial direction in order to intercept any ink drops which are deflected in said first axial direction but are unnecessary to recording.

4,086,603

ELECTRICAL DRIVING CIRCUIT OF CAMERA

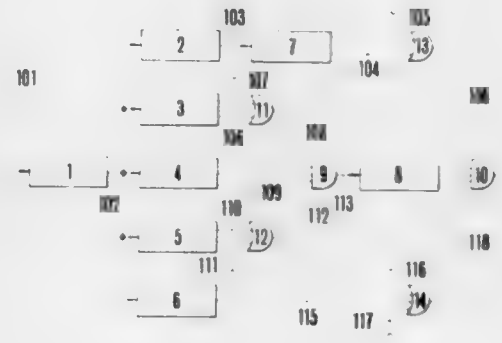
Susumu Kozuki; Takashi Uchiyama; Tadashi Ito, all of Yokohama; Tomonori Iwashita, Fuchu; Masanori Uchidoi, Yokohama, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1975, Ser. No. 635,323

Claims priority, application Japan, Nov. 27, 1974, 49-136845

Int. Cl.[2] G03B *17/42*

U.S. Cl. 354—204 **14 Claims**



1. An electrical driving circuit for repeating a shutter release operation of a camera operated with an electric flash device and at least a shutter charge operation by a film winding up means comprising:

a. a release period control means for producing a first signal for controlling said shutter release with a certain determined period, said means also controlling the shutter release with the determined period by means of the first signal;

b. a film winding up signal producing means for detecting the operational state of the above mentioned film winding means, said signal producing means producing a second signal when the film winding up means reaches a certain determined operational state;

c. a ready signal producing means for producing a third signal when the electric flash device is ready for operation; and

d. a shutter release control means for detecting said first, second and third signals so as to prohibit the shutter release by means of the first and second signals when the third signal has not been produced before the first and second signals are produced.

4,086,604

SELECTIVE CLOSURE OF CAMERA VIEWFINDER AND CAMERA INCORPORATING SAME

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1976, Ser. No. 720,047

Int. Cl.[2] G03B *13/02*

U.S. Cl. 354—219 **10 Claims**

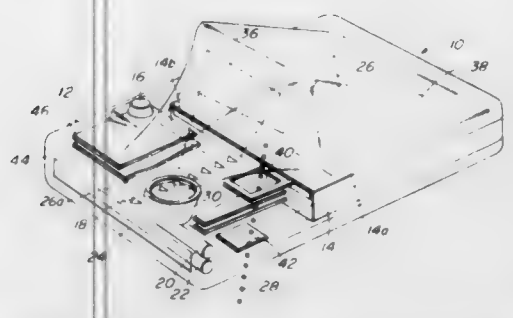
1. A photographic camera employing separate film units and having a viewfinder apparatus and a means for advancing a photosensitive film unit along a given film path which crosses

the optical viewfinder path, said viewfinder apparatus comprising:

means for defining said viewfinder path;

a viewfinder capping member;

means for mounting said capping member for movement between a first position wherein said capping member is in unblocking relation to said viewfinder path to permit



scene viewing and a second position wherein said capping member blocks said viewfinder path from passing light to an advancing film unit;

actuatable means for transferring said capping member between its said first and second positions; and

means for retaining said capping member in its said second position irrespective of operation of said transferring means.

4,086,605

DIAPHRAGM DEVICE

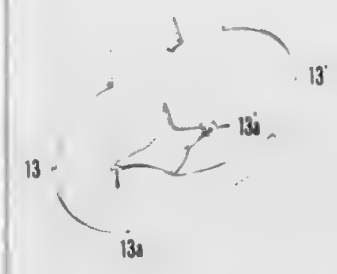
Kazuo Ishikawa; Keiichi Sakaguchi, both of Yokohama; Tomoshi Takigawa, Machida; Noritsugu Hirata, Yokohama; Akira Tajima, Kawasaki, and Sadahiko Tsuji, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1976, Ser. No. 696,548

Claims priority, application Japan, Jun. 20, 1975, 50-76129

Int. Cl.[2] G03B *17/38*

U.S. Cl. 354—270 **12 Claims**



1. A diaphragm device to regulate the amount of light passing therethrough, comprising:

at least two light intercepting blades which respectively have openings to allow light to pass therethrough and define one diaphragm aperture to regulate an amount of light passing therethrough by having each of said openings mutually cooperate, said blades being arranged in an overlapping relationship to each other with a certain space therebetween to avoid contact with each other and operating to vary a diaphragm aperture to regulate the amount of light passing therethrough by being relatively shifted while maintaining said space therebetween, at least one of said blades having an opening part formed in a manner protruding to a side facing to the other of said blades for defining said diaphragm aperture with a small diameter at a position closer to the other of said blades, said opening part being formed in correspondence to a particular portion of the opening of said at least one blade to define a diaphragm aperture with a small diameter.

4,086,606

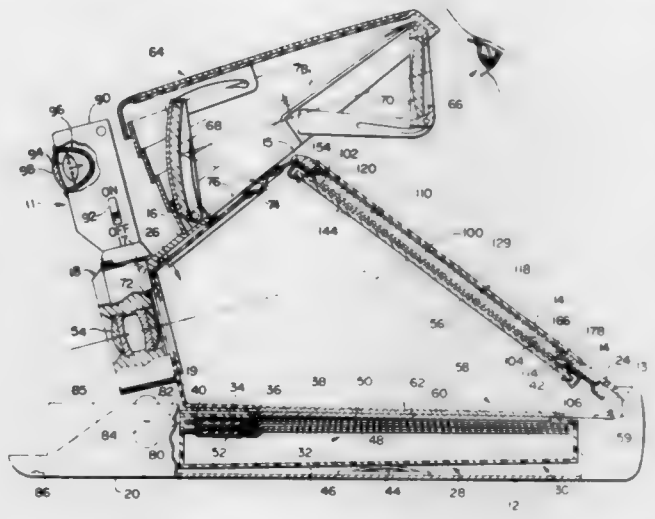
STROBE CAMERA WITH FLAT CAPACITOR

Patrick L. Finelli, Sudbury, and Richard Paglia, Carlisle, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 19, 1976, Ser. No. 733,768

Int. Cl.[2] G03B *17/02*

U.S. Cl. 354—288 **21 Claims**



1. A photographic camera adapted for use with an electronic flash tube and comprising:

a substantially thin flat capacitor for selectively energizing the flash tube;

a substantially planar housing section having an opening therein of sufficient dimension to accommodate therewithin a major surface of said capacitor to facilitate the removable insertion of said capacitor through said opening;

a substantially planar wall section for selectively closing said opening when said capacitor is disposed inwardly of said opening with one of its major external surfaces disposed in immediate coplanar adjacency to said wall section; and

means disposed in immediate coplanar adjacency to the other major external wall surface of said capacitor for cooperating with said planar wall section to restrain any widthwise expansion of said capacitor tending to occur during extended usage of said capacitor without initially imposing any compressive forces on said capacitor tending to alter the electrical characteristics of said capacitor wherein said capacitor is of a generally thin flat rectangular configuration and said wall section has a flat planar, generally rectangular, underlying major surface from which depend two spaced apart substantially parallel tracks disposed on the underside of said major surface of said wall section, said tracks respectively accommodating sliding receipt with two opposed parallel edges of said capacitor so as to retain said one major external surface of said capacitor in immediate coplanar adjacency to said rectangular major surface of said wall section.

4,086,607

X-RAY FILM PROCESSOR

Mathias Müller, Bietigheim, Germany, assignor to Durr - Dental KG., Germany

Filed Dec. 19, 1974, Ser. No. 534,686

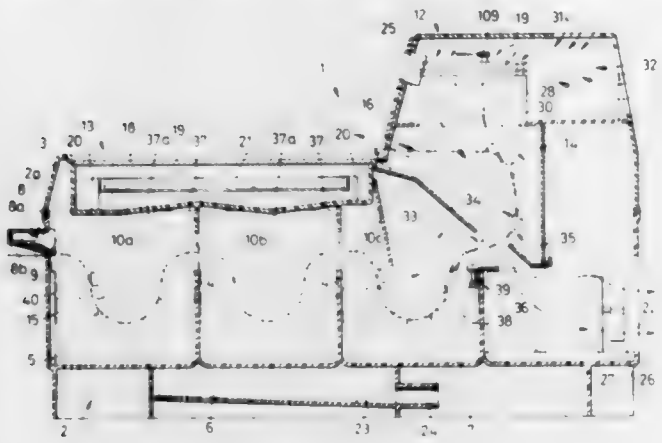
Claims priority, application Germany, Dec. 20, 1973, 7345185[U]

Int. Cl.[2] G03D *13/00;* **F26B** *13/00*

U.S. Cl. 354—299 **14 Claims**

1. An X-ray film processor, comprising a plurality of processing stations for the wet development of X-ray films, said processing stations being arranged within a casing and being followed by a drying station for drying the processed films and transport means for transporting said films through said processing stations and said drying station from a film loading point to a film discharge point, said casing having a bottom,

sides, ends and a top, with the individual processing stations in said casing, to wit a developing station, a fixing station and a rinsing station separated within said casing by partitions which with said bottom, sides and ends define tanks for developing, fixing and rinsing liquids respectively, said partitions extending up above the liquid level in said tanks, said transport means transporting said film up over said partitions in transporting said film from one tank to the next, said top of said casing



having separators extending down from the top above said partitions, the lower edges of said separators being spaced from the upper edges of the respective partitions, and inclined dripping surfaces on the underside of said top of said casing, said dripping surfaces being inclined downwardly from said separators, said separators and inclined dripping surfaces being formed in such a manner as to cause any condensate precipatated onto said underside of said top of said casing to be returned to the tank of the respective processing station.

4,086,608

LIGHT EMITTING DIODE

Arthur R. Clawson, and Herman H. Wieder, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 28, 1975, Ser. No. 636,233
Int. Cl.² H01L *33/00*
U.S. Cl. 357—17 **1 Claim**



1. A light emitting diode capable of emitting light in the infrared portion of the spectrum and at room temperature comprising:

(a) an N doped InP substrate,

(b) an N doped epitaxial layer of $InAs_xP_{1-x}$ deposed on said substrate, said N doped epitaxial layer having a first surface in contact with said substrate and a second surface opposite said first surface with x ranging in value from 0.04 at said first surface to 0.05 at said second surface and said substrate and said N doped layer having lattice constants with a mismatch of less than 0.7%,

(c) a P doped epitaxial layer of $InAs_xP_{1-x}$ deposed on said N doped layer with x having a value of 0.05 said N doped layer and said P doped layer having substantially identical lattice constants, and

(d) a conductive ohmic contact material on the surface of said P doped layer,

(e) a conductive ohmic contact material on the exterior surface of said substrate,

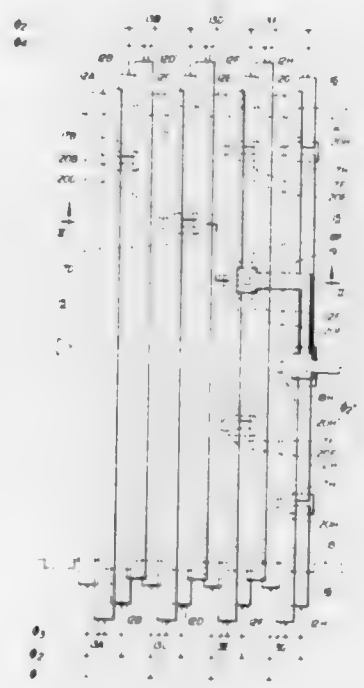
(f) whereby at room temperature and with a voltage applied across said ohmic contacts that ranges from 0.9 to 1.1 volts, said diode will emit light in the range from 0.92 to 1.1μm.

4,086,609

DOUBLE SPLIT-ELECTRODE FOR CHARGE TRANSFER DEVICE

Thomas George Foxall, Carp; Abd-El-Fattah Ali Ibrahim, and Lester Porter Sellars, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 20, 1976, Ser. No. 752,116
Int. Cl.² H01L *29/78;* G11C *19/28;* H03H *7/28*
U.S. Cl. 357—24 **5 Claims**



1. In a charge transfer device for transversal filters and the like, comprising:

a storage body;

a dielectric layer disposed over the body;

an input for mobile charges into the body;

a plurality of interleaved storage electrodes and transfer gates, disposed over the dielectric layer for controlling the sequential transfer of mobile charges from the input along a channel in said body in response to clock voltages applied thereto;

the improvement comprising:

at least some of the alternate ones of said storage electrodes being split along the direcion of charge transfer into three segments;

means for connecting one set of end segments together and for connecting the other set of end segments together for differential sensing; and

means for connecting the centre segments for non-sensing whereby the total capacity of the differentially sensed end segments is reduced.

4,086,610

HIGH RELIABILITY EPI-BASE RADIATION HARDENED POWER TRANSISTOR

Lowell E. Clark, and Jack L. Saltich, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Illinois

Filed Jun. 28, 1974, Ser. No. 484,025
Int. Cl.² H01L *29/72*
U.S. Cl. 357—34 **3 Claims**

1. A high-voltage silicon transistor for use in radiation environments exceeding $3 \times 10^{14}\,cm^{-2}$ fast neutron fluence, comprising:

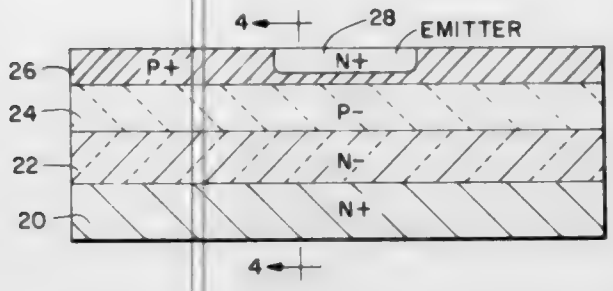
a heavily doped substrate of a first conductivity type having an upper surface,

a collector region of said first conductivity type disposed on said substrate,

a first base region opposite said first conductivity type over said collector region having a net doping density less than the doping density in said collector region and having a thickness exceeding 2 microns,

a second base region of opposite said first conductivity type

over said first base region and having a net doping density greater and a thickness less than those of said first base region so that the total doping of both bases is between 2



$\times 10^{12}$ and 2×10^{13} impurity atoms per square centimeter, and,

an emitter formed over said second base region.

4,086,611

STATIC INDUCTION TYPE THYRISTOR

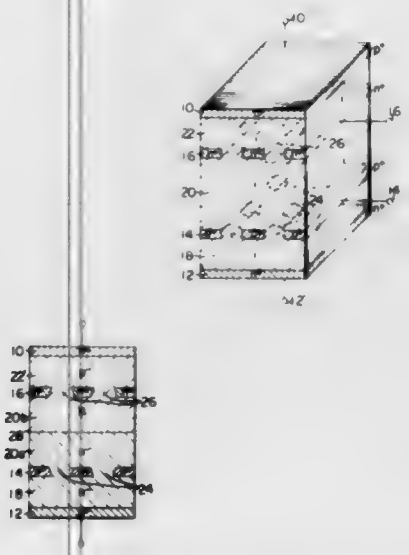
Jun-ichi Nishizawa; Kentaro Nakamura, both of Sendai, and Takashi Kitsuregawa, Nishinomiya, all of Japan, assignors to Semiconductor Research Foundation and Mitsubishi Denki Kabushiki Kaisha, both of, Japan

Filed Oct. 19, 1976, Ser. No. 733,930

Claims priority, application Japan, Oct. 20, 1975, 50-126111; Oct. 20, 1975, 50-126113

Int. Cl.[2] H01L *29/74*

U.S. Cl. 357—38 **17 Claims**



1. A static induction type thyristor comprising : a first semiconductor region composed of a selected one of an intrinsic semiconductive material and a semiconductive material of a predetermined conductivity having a low impurity concentration, a second semiconductor region of a predetermined type conducticity disposed adjacent to said first semiconductor region, a third semiconductor region defining a gate region having a conductivity type opposite that of said first semiconductor region and disposed within said first semiconductor region so that those portions of said first semiconductor region located on both sides of said third semiconductor region are continuous to each other through limited portions thereof passing through said third semiconductor region, said first and said third semiconductor regions having relative impurity atom concentrations effective to form charge depletion regions when no electrical signal is applied to said third semiconductor region and which prevents injection of charge carriers through said limited portions of said first semiconductor region passing through said third semiconductor region wherein the thyristor is in a blocking state, and said first and said third semiconductor regions having relative impurity atom concentrations such that electrically forward biasing said third semiconductor region effectuates sufficient reduction of said depletion regions that a sufficient quantity of charge carriers may be injected through said limited portions of said first semiconductor region passing through said third semiconductor region that said first semiconductor region exhibits a negative resistance characteristic and the thyristor rapidly switches from the blocking state to a conductive state, a first electrode disposed in ohmic contact with said first semiconductor region, a second electrode disposed in ohmic contact with said second semiconductor region, and a third electrode disposed in ohmic contact with said third semiconductor region.

4,086,612

THYRISTOR

Peter Voss, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

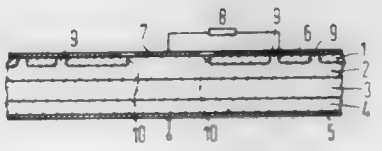
Continuation of Ser. No. 478,809, Jun. 12, 1974, abandoned.

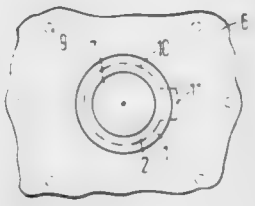
This application Mar. 10, 1976, Ser. No. 665,654

Claims priority, application Germany, Jun. 12, 1973, 2329872

Int. Cl.[2] H01L *29/74*

U.S. Cl. 357—38 **3 Claims**





1. A thyristor comprising:

A. a semiconductor body having opposed first and second surfaces and first, second, third and fourth zones of alternating conductivity type extending through the body from the first surface to the second surface with PN junctions formed between adjacent zones, said first and second zones being emitter and base zones, respectively, and having said PN junction therebetween adjoining said first surface;

B. a first emitter electrode affixed to said first surface at said emitter zone;

C. a second electrode affixed to said first surface at said base zone; and

D. at least one shunt extending between said emitter and second electrodes through said semiconductor body at said first surface, each of said at least one shunt consisting of a projection in said base zone extending to adjoining said emitter electrode, and providing an electrically conductive path of a given resistance between said electrodes at said first surface uninterrupted by said PN junction between said emitter and base zones.

4,086,613

SEMICONDUCTOR DEVICE HAVING A PASSIVATED SURFACE AND METHOD OF MANUFACTURING THE DEVICE

Jean-Pierre Henri Biet, Caen, and Sio Dhat Laou, Herouville St-Clair, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1976, Ser. No. 748,697

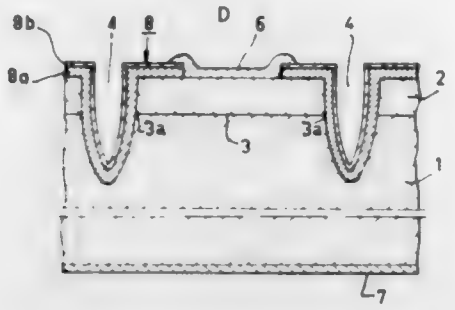
Claims priority, application France, Dec. 19, 1975, 75 39046

Int. Cl.[2] H01L *29/34, 27/12, 29/06, 29/04*

U.S. Cl. 357—54 **12 Claims**

1. A semiconductor device comprising a semiconductor body portion of a first conductivity type having a semiconductor region of the opposite type forming with said body portion a p-n junction which intersects the surface of the body portion,

and a passivating combined layer on said body portion surface and at least at the area of said p-n junction, said combined layer comprising a first semiconductor layer portion said body por-



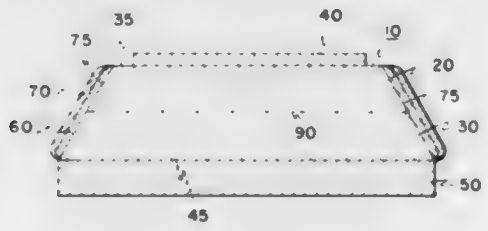
tion surface and having a resistivity of at least 10^{10} ohm.cm and a second semiconductor layer portion on said first layer portion and having a resistivity of at most 10^{8} ohm.cm.

4,086,614

COATING FOR PASSIVATING A SEMICONDUCTOR DEVICE

Fritz Scheidel, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 24, 1975, Ser. No. 625,614
Claims priority, application Germany, Nov. 4, 1974, 2452289
Int. Cl.² H01L *29/34*
U.S. Cl. 357—54 **4 Claims**



1. A semiconductor device comprising a body of silicon semiconductor material, said body of silicon semiconductor material comprising major opposed flat parallel surfaces, a peripheral edge surface extending between said major opposed surfaces, at least two zones of opposite conductivity type, a PN junction at the interface between said two zones, said PN junction emerging at said peripheral edge surface; a coating for passivating said peripheral edge surface, said coating comprising an inner layer of SiO_2 of a predetermined thickness containing from about 0% to about 2%, by weight, of Al_2O_3, said inner SiO_2 layer being disposed on said peripheral edge surface and covering said PN junction, an outer layer of SiO_2 of a predetermined thickness containing from about 1% to about 8%, by weight, of Al_2O_3, said outer SiO_2 layer being disposed on said inner SiO_2 layer, said inner SiO_2 layer containing a lesser percentage by weight of Al_2O_3 than said outer SiO_2 layer, whereby said outer SiO_2 layer contains negative charges and said inner SiO_2 layer contains positive charges.

4,086,615

METHOD AND APPARATUS FOR THE GAMMA CORRECTION OF VIDEO SIGNALS

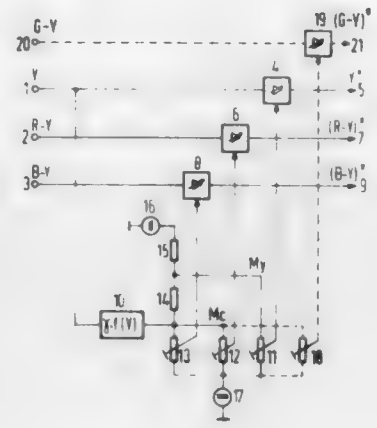
Michael Koubek, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 25, 1976, Ser. No. 670,410
Claims priority, application Germany, Apr. 9, 1975, 2515479
Int. Cl.² H04N *9/53*
U.S. Cl. 358—32 **7 Claims**

1. A method for the gamma correction of video signals in which the luminance signal and at least one signal containing an item of color information are multiplicatively corrected in the signal transmission path, comprising the steps of:

generating a luminance control signal as a function of the luminance signal;

generating a color difference control signal as a function of the luminance signal;



amplifying the luminance signal and controlling the amplification with the luminance control signal; and

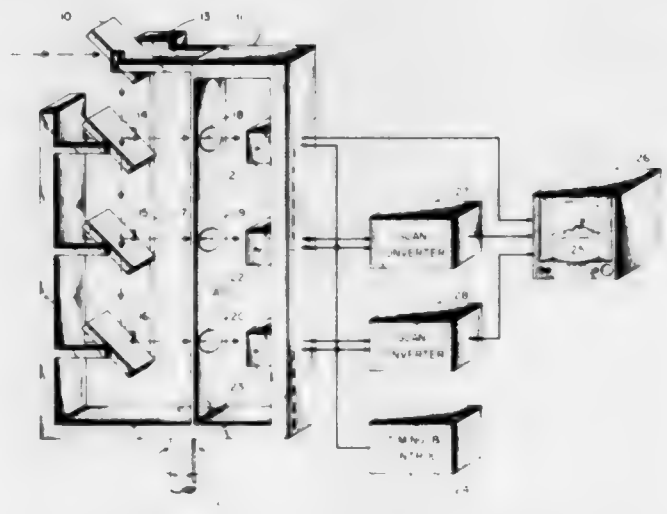
amplifying at least two separate color difference signals and controlling the amplifications thereof as functions of the color difference control signal.

4,086,616

ALL-WEATHER MULTI-SPECTRAL IMAGING SYSTEM

Paul S. Catano, San Diego, and William E. Richards, El Cajon, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 23, 1976, Ser. No. 753,952
Int. Cl.² H04N *1/46*
U.S. Cl. 358—81 **6 Claims**



1. An all weather maximum resolution system for visually presenting a multi-color composite image of plural selected spectral ranges of energy received from a common field of view comprising:

optical means controllably directed to receive energy from any desired field of view within 360° rotation in azimuth and substantially 90° in elevation;

first, second, and third means synchronously operative and aligned with said optical meas for simultaneously producing first, second, and third images of said desired field of view;

a first sensor responsive to energy components of sad first image within the visible range for producing a first set of electrical signals commensurate therewith;

a second sensor responsive to energy components of said second image within the middle infrared range for producing a second set of electrical signals commensurate therewith;

a thrid sensor responsive to energy components of said third

image within the far infrared range for producing a third set of electrical signals commensurate therewith;

a multi-color cathode ray tube for producing images in three different primary colors and connected to receive said first, second, and third sets of electrical signals for generating a multi-color composite image of said desired field of view in accordance with the multiple discrete selected spectral ranges of energy simultaneously detected in said field of view.

4,086,617

VIDEO DISC PLAYER MECHANISM CONTROL SYSTEM

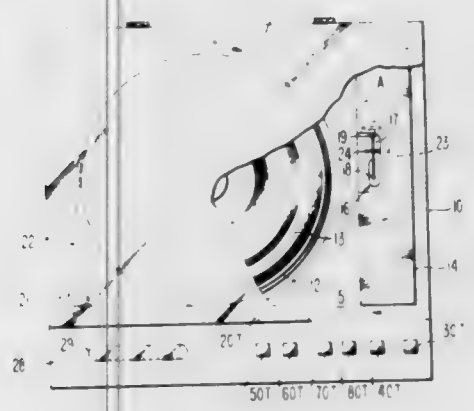
Alfred Lynn Baker, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 5, 1977, Ser. No. 756,833

Claims priority, application United Kingdom, Jan. 5, 1976, 00207/76

Int. Cl.[2] H04N *5/76*; G11B *17/06*

U.S. Cl. 358—128 **22 Claims**



1. In a disc record player, including a rotatable turntable for supporting a disc record; a motor for supplying rotational drive for said turntable when supplied with an energizing alternating current; a stylus arm for supporting at one end thereof a pickup stylus; a housing for said stylus arm; a carriage secured to said housing and subject to a translational movement providing motion of said housing between a rest position remote from said turntable and playback positions over said turntable; and a power supply for developing an operating potential between a pair of output terminals when energized with alternating current; a player control system including, in combination:

a power switch completing a first current path, for supplying an energizing alternating current to said power supply, only when switched to an "on" position;

a play initiating switch subject to manual actuation; and

a rest switch, subject to switching from a first switch position to a second switch position, when actuation of said play initiating switch coincides with housing occupancy of said rest position;

said rest switch, when in said second switch position, (a) completing a second current path for supplying energizing alternating current to said motor, and (b), in cooperation with said power switch, completing a third current path for supplying energizing alternating current to said power supply when said power switch is in an "off" position;

said rest switch responding to a return of said housing to said rest position from positions removed therefrom by switching from said second switch position to said first switch position in which said second and third current paths are disrupted.

4,086,618

PROCESS AND CIRCUIT ARRANGEMENT FOR CONTOUR CORRECTION OF THE LUMINANCE SIGNAL IN A TELEVISION CAMERA

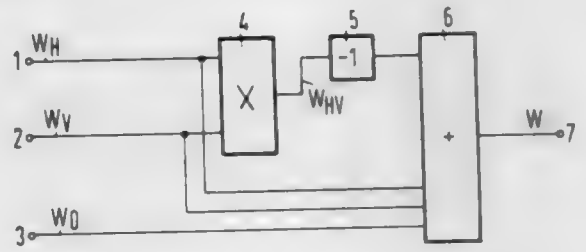
Michael Koubek, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 13, 1976, Ser. No. 676,619

Claims priority, application Germany, Apr. 24, 1975, 2518328

Int. Cl.[2] H04N *5/14*

U.S. Cl. 358—166 **5 Claims**



1. A circuit arrangement for contour correction of the luminance signal in a television camera, comprising an adder, means for feeding a relatively poorly defined luminance signal to said adder, means for feeding a horizontal contour signal to said adder for increasing the vertical resolution of the luminance signal, means for feeding a vertical contour signal to said adder for increasing the horizontal resolution of the luminance signal, signal multiplying means for deriving an additional contour signal which is the multiple of said horizontal and vertical contour signals, a signal inverter, means for feeding said additional derived contour signal through said signal inverter to said adder, said adder having an output terminal from which the combined signals may be taken.

4,086,619

SPECIAL IMAGE EFFECT PRODUCING APPARATUS

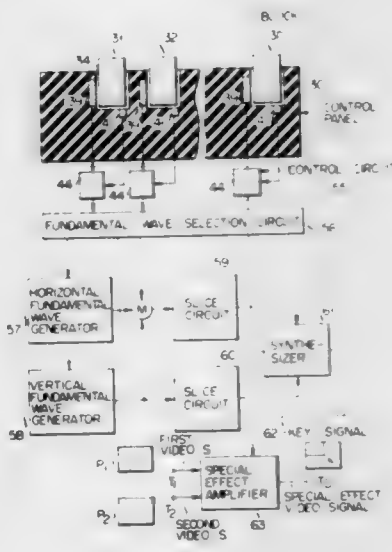
Kazuhiko Miyake, and Bunkichi Yamada, both of Kawasaki, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 25, 1977, Ser. No. 781,516

Claims priority, application Japan, Mar. 31, 1976, 51-34410

Int. Cl.[2] H04N *5/22*; G11C *11/02*

U.S. Cl. 358—183 **7 Claims**



1. A special image effect producing apparatus comprising:

blocks each having a pattern for indicating a kind of special image effects, and at least a first and second discriminating regions, said first region including first information for a first special image effect, said second region including second information for a second special image effect, and both special image effects corresponding to said pattern;

a control panel onto which said blocks are mounted;

detecting means for detecting a desired discriminating information from said first or second discriminating region and for producing a code signal corresponding to the detected discriminating information; and,

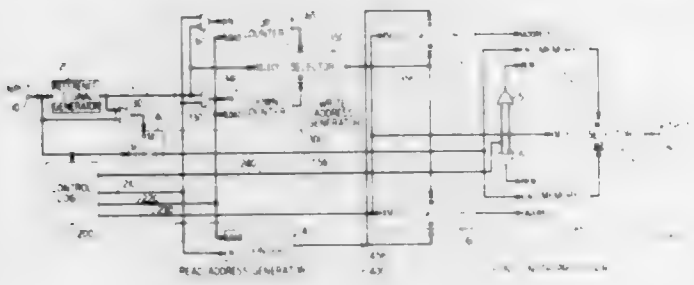
circuit means, upon receipt of said code signal, to produce the special image effect corresponding to said code signal.

4,086,620

PROCESSOR FOR INCREASING THE RUN-LENGTH OF FACSIMILE DATA

Edward George Bowen, Lawrence Harbor; Frank William Mounts, Colts Neck, and Arun Narayan Netravali, Matawan, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 21, 1976, Ser. No. 734,387
Int. Cl.[2] H04N 7/12
U.S. Cl. 358—260 **10 Claims**



1. Apparatus for increasing the run-length of a first digital signal comprising

an input terminal adapted to receive said first signal,

means for providing a measure of said first signal,

means for supplying a reference signal,

means responsive to said reference signal for permuting said signal measure, said permuting means including

means responsive to a first state of said reference signal for ordering a first element of said signal measure in a first manner, and

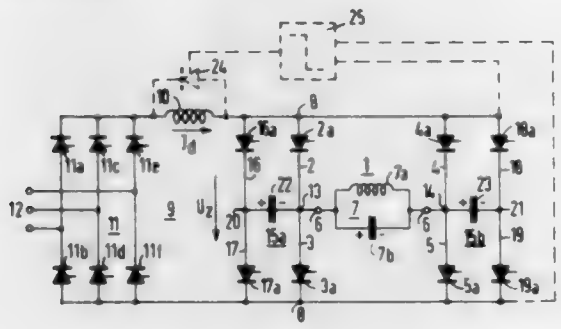
means for extending said permuted signal measure to an output terminal.

4,086,621

CYCLOCONVERTER AND METHOD FOR ITS OPERATION

Lovro Vukasovic, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sep. 8, 1976, Ser. No. 721,490
Claims priority, application Germany, Sep. 18, 1975, 2541722
Int. Cl.[2] H02M 5/45
U.S. Cl. 363—37 **1 Claim**



1. A method of operating a cycloconverter, the cycloconverter being adapted for use with a load comprising a parallel resonant circuit and for use with an intermediate DC link supplied by an AC voltage source and including a smoothing choke and a controlled rectifier, the cycloconverter including:

an inverter circuit comprising a bridge circuit having output terminals adapted to be connected to said load and input terminals adapted to be connected to said DC link, said bridge circuit including:

first and second bridge branches having a first common terminal therebetween; each of said first and second bridge branches including a controllable thyristor;

third and fourth bridge branches having a second common terminal therebetween, each said third and fourth bridge branches including a controllable thyristor;

an auxiliary commutating device including:

first and second converter branches having a third common terminal therebetween and connected in parallel with said first and second bridge branches, each said converter branches including a controllable thyristor poled in the same direction as the thyristors of said bridge branches;

third and fourth converter branches having a fourth common terminal therebetween and connected in parallel with said third and fourth bridge branches, each said third and fourth converter, branches including a thyristor poled in the direction of the thyristors of said bridge branches;

and first and second commutation capacitors; said first commutation capacitor being connected to said first and third common main terminals and said second commutation capacitor being connected to said second and fourth common main terminals;

the method including a start-up phase comprising:

firing thyristors of diagonal converter branches and maintaining the fired converter thyristors in conduction until the voltage on each commutating capacitor reaches a predetermined magnitude;

thereafter, firing thyristors of diagonal bridge branches of the inverter and maintaining the fired inverter thyristors in conduction until a constant current of predetermined magnitude flows;

controlling the rectifier so as to maintain the constant current constant throughout the succeeding steps;

firing thyristors of the converter branches which are next in succession to be brought into conduction;

after a predetermined time interval determined by the voltage of predetermined magnitude and said constant current, firing the thyristors of the bridge branches next in succession to be brought into conduction;

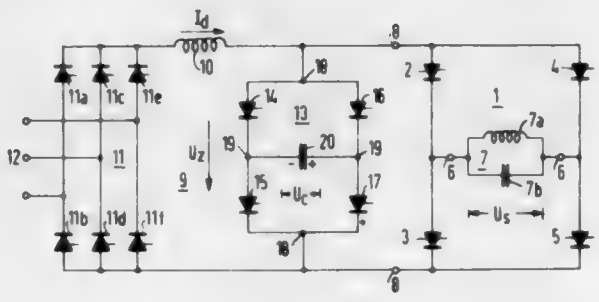
and repeating the immediately preceding two steps in succession prior to each said resonantcircuit voltage makes a zero crossing until said resonant circuit voltage reaches a predetermined magnitude.

4,086,622

FREQUENCY CONVERTER AND METHOD OF OPERATING SAME

Lovro Vukasovic, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sep. 9, 1976, Ser. No. 721,694
Claims priority, application Germany, Sep. 18, 1975, 2541700
Int. Cl.[2] H02M 5/45
U.S. Cl. 363—37 **1 Claim**



1. A method, for operating a frequency converter comprising an inverter having thyristors in a bridge circuit, the output terminals of which are connected to a parallel resonant circuit and the input terminals of which are connected to an a-c volt-

age source through an intermediate d-c link containing a smoothing choke and a controlled rectifier with the input terminals of the inverter bridged by an auxiliary commutating arrangement comprising only a bridge circuit of thyristors the a-c outputs of which are coupled only across a capacitor including, during the start-up phase, firing thyristors of corresponding diagonal bridge arms of the inverter and of the auxiliary commutating device prior to every zero crossing of the resonant circuit voltage and, after the conclusion of the start-up phase, firing only thyristors of diagonal bridge arms of the inverter while the thyristors of the auxiliary commutating arrangement remain unfired, comprising the steps of:

(a) firing the thyristors in two diagonal bridge arms of the auxiliary commutating arrangement at the start of the operation and maintaining said thyristors conducting until the voltage at the capacitor of the auxiliary commutating arrangement has reached a first predetermined magnitude;

(b) firing the thyristors in two diagonal bridge arms of the inverter when said voltage magnitude is reached and maintaining conduction until a current of predetermined magnitude flows;

(c) maintaining said current constant during the entire start-up phase by controlling the rectifier;

(d) after said current magnitude is reached, firing the thyristors of bridge arms of the auxiliary commutating arrangement that conduct next;

(e) after a constant time delay firing the thyristors of bridge arms of the inverter that conduct next, said time delay depending on the voltage and the current of predetermined magnitude;

(f) subsequently, prior to every zero crossing of the resonant circuit voltage firing the thyristors of bridge arms of the auxiliary commutating arrangement and, delayed by said constant time delay, firing the corresponding thyristors of the inverter; and

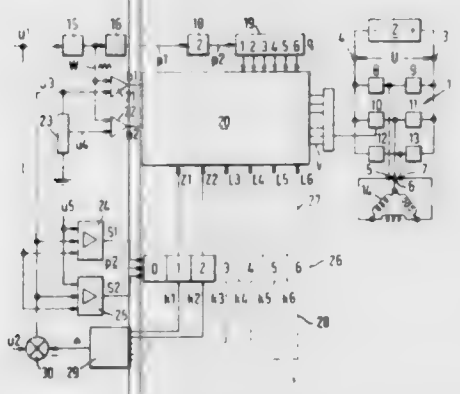
(g) continuing this switching cycle until a resonant circuit voltage of second predetermined magnitude which is sufficient for direct communication is reached.

4,086,623

METHOD AND APPARATUS FOR CONTROLLING AN INVERTED RECTIFIER

Arne Jensen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Dec. 1, 1976, Ser. No. 746,491
Claims priority, application Germany, Dec. 3, 1975, 2554259
Int. Cl.² H02M *7/515*
U.S. Cl. 363—41 **15 Claims**



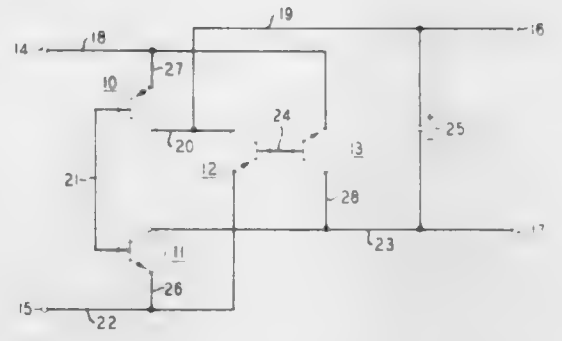
1. A method of controlling an inverted rectifier with constant DC supply voltage and adjustable frequence and amplitude of the fundamental oscillation of the output voltage, comprising the steps of forming at least part of the phase voltage by width-modulated impulses, increasing the voltage-time area of the impulse series to eliminate an inadequate impulse spacing, and partially compensating the increase in the voltage-time area by reducing the widths of at least some of the remaining impulses, said increase in voltage-time area being characterized by a switching-over from modulated to unmodulated operation in at least one first predetermined section and the reduction in impulse widths is carried out in at least one second predetermined section.

4,086,624

CURRENT TO VOLTAGE CONVERTER

Phillip Edward Fraley, Reading, Pa., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Jun. 15, 1977, Ser. No. 806,959
Int. Cl.² H02M *7/00*
U.S. Cl. 363—127 **7 Claims**



1. A circuit for converting a current of either polarity at first and second inputs to a fixed voltage of a single polarity across first and second outputs comprising:

a first pair of transistors with a first transistor having its emitter electrically coupled to the first input and its collector electrically coupled to the first output and a second transistor with its collector electrically coupled to the second output and its emitter electrically coupled to the second input, the bases of said first and second transistors being electrically coupled; and

a second pair of transistors with a third transistor having its emitter electrically coupled to the second input and its collector electrically coupled to the first output and a fourth transistor with its emitter electrically coupled to the first input and its collector electrically coupled to the second output, the bases of said fourth and fifth transistors being electrically coupled.

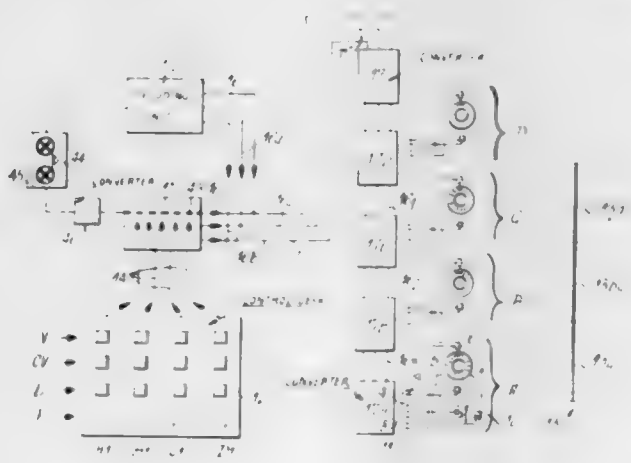
said pairs being coupled so that a different pair is conductive for either of the two polarities of the current at the inputs.

4,086,625

PROCESS FOR REPEATING CONTROL OF WORKING OPERATIONS OF SEVERAL MACHINES

Pierre Georges Garnier; Bruno Gaullier, and Gérard Michel Jeanroy, all of Paris, France, assignors to Auvitec, Paris, France

Filed Jul. 16, 1976, Ser. No. 705,942
Claims priority, application France, Jul. 17, 1975, 75 22441
Int. Cl.² H04C *9/02*
U.S. Cl. 364—104 **31 Claims**



1. Apparatus for the control of working operations of a

plurality of machines from binary code commands, the apparatus comprising at least one binary-analog convertor located on every machine, each binary-analog convertor including serially connected input detectors in a number equal to the number in binary code of the functions to be executed by the corresponding machine, cables each comprising at least one conductor to connect together the binary-analog converters of all the machines, so that all the input detectors are serially connected, at least one system for generating and transmitting successive words in binary code which define series successive commands and each of the words containing a number of bit positions corresponding to the number of the input detectors, means to input step by step each bit into the successive detectors so that every detector is brought, at the end of each word, in a state depending on the corresponding bit of the word, and means to convert the state of each input detector into a control command of an operation of the machine.

4,086,626

MICROPROCESSOR SYSTEM

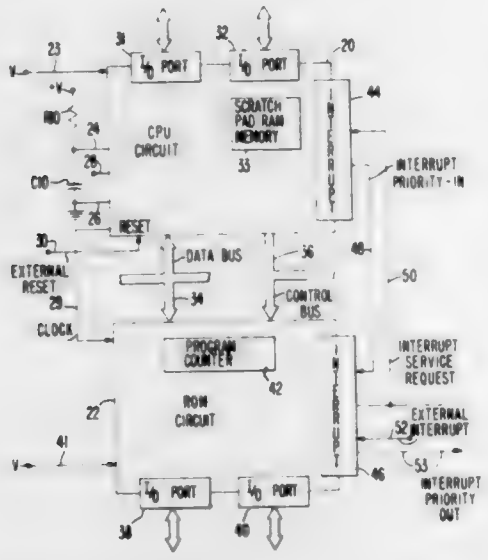
David H. Chung, Palo Alto, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Division of Ser. No. 512,753, Oct. 7, 1974, Pat. No. 3,984,813. This application Jun. 7, 1976, Ser. No. 693,811

The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.

Int. Cl.[2] G06F *13/00*

U.S. Cl. 364—200 **12 Claims**



1. A microprocessor system comprising a first large scale integration circuit forming a central processing unit, and a second large scale integration circuit forming a memory circuit;

(a) said central processing unit comprising

(1) means for transferring data;

(2) at least one input/output port means coupled to said means for transferring data for entering data into and dispatching data from said system;

(3) means for storing instruction codes to by executed by said system and having input terminals coupled to said means for transferring data;

(4) first decoding means for supplying first control signals to said central processing unit and second control signals to said memory circuit, said first and second control signals being derived by said first decoding means in accordance with instruction codes stored in said means for storing;

(5) means for performing arithmetic computations coupled to said means for transferring data;

(6) means for accumulating results of said means for performing arithmetic computations being coupled between input and output terminals of said means for performing;

(7) random access memory means coupled between input and output terminals of said means for performing arithmetic computations for storing results of said means for performing;

(8) gating means coupling said output terminals of said means for performing arithmetic computations with said means for transferring data;

(9) means for transmitting said instruction codes from said means for storing to one or more of said first decoding means, said means for performing arithmetic computations, and said random access memory means;

(10) means coupling said first control signals from said first decoding means to said input/output port means, said means for storing instruction codes, said means for performing arithmetic computations, said means for accumulating, said random access memory means, said means for transmitting, and said gating means, whereby operation of said central processing unit is controlled by said first control signals in accordance with said instruction codes;

(11) clock circuit means for providing a system clocking signal of a first frequency in response to a first state of one of said first control signals from said first decoding means and a second frequency in response to a second state of said one of said first control signals, whereby the speed of operation of said system is controlled in accordance with the instruction codes; and,

(b) said memory circuit comprising

(1) storage means for storing a multiplicity of the instruction codes for said system;

(2) second decoding means for receiving said second control signals from said first decoding means in said central processing unit and for generating third control signals in accordance with said second control signals to control operation of said memory circuit;

(3) means for addressing said storage means in response to said third control signals and retrieving selected codes from said storage means in response to said second control signals from said first decoding means in said central processing unit; and,

(4) means for transferring said retrieved instruction codes to said means for storing instruction codes.

4,086,627

INTERRUPT SYSTEM FOR MICROPROCESSOR SYSTEM

Thomas H. Bennett; Earl F. Carlow, both of Scottsdale; Edward C. Hepworth, Apache Junction, all of Ariz.; Wilbur L. Mathys, Norristown, Pa.; William D. Mensch, Jr., Norristown, Pa.; Rodney H. Orgill, Norristown, Pa.; Charles I. Peddle, Norristown, Pa., and Michael F. Wiles, Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 519,149, Oct. 30, 1974. This application Sep. 17, 1975, Ser. No. 614,110

Int. Cl.[2] G06F *9/18*

U.S. Cl. 364—200 **6 Claims**

1. A digital data processing system comprising:

a peripheral device;

a data bus;

memory means coupled to said data bus for storing instructions;

processor means coupled to said data bus for executing instructions stored in said memory means;

adaptor means coupled between said data bus and said peripheral device for transferring data between said data bus and said peripheral device;

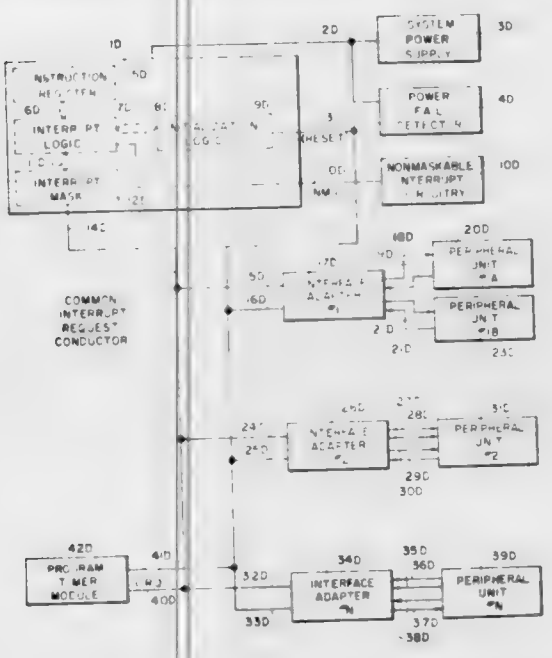
a first interrupt conductor coupled to said peripheral device and to said adaptor means;

a second interrupt conductor coupled to said processor means and to said adaptor means;

said processor means including first interrupt means coupled to said second interrupt conductor for effecting addressing of a certain location in said memory means in response to a first interrupt signal on said second interrupt conductor;

said adaptor means including

(a) second interrupt means coupled to said first interrupt conductor, to said data bus, and to said second interrupt conductor for producing said first interrupt signal in response to a second interrupt signal produced on said first interrupt conductor by said peripheral device; and



(b) status means responsive to said second interrupt signal coupling said data bus to said second interrupt means for storing information indicative of the occurrence of said second interrupt signal and transferring said information to said processor means via said data bus.

4,086,628

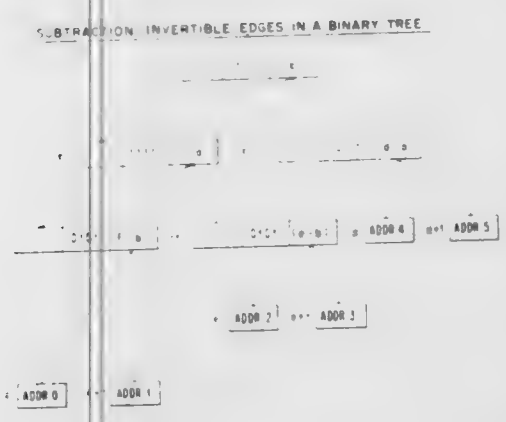
DIRECTORY GENERATION SYSTEM HAVING EFFICIENCY INCREASE WITH SORTED INPUT

Luther Jay Woodrum, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 197,415, Nov. 10, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 415,090

Int. Cl.[2] G06F *7/22, 7/10*

U.S. Cl. 364—200 **4 Claims**



1. A system using a computer machine for constructing therein a directory entity having stored sub-groups interconnected into a tree structure which may be used to look-up items called object identifiers, the object identifiers being machine-inputted as sets of digitized electrical signals to be represented in, but not included in, said directory entity, said directory entity formed of inner vertex sub-groups and end-of-path sink sub-groups, each inner vertex sub-group including a connector item and an index-position item, the connector addressing a successor-pair sub-group which contains other inner vertex or sink sub-groups, and the index position item in each inner vertex sub-group identifying a particular digit position in an object identifier, said system comprising

means for allocating a storage part of an electrically inscribable storage medium, said storage part being available to receive a pair of sub-groups in said directory entity, said storage part having at least two portions for receiving respective sub-groups,

means for registering in a first register device an address item received from the allocating means for locating said storage part in said machine,

means for comparing a currently inputted object identifier and a last inputted object identifier to identify their highest-order digit position having unequal digits, a new index position item recorded as the value of the highest order digit position,

means for sensing the stored state in the inputted object identifier at the highest order digit position located by said comparing means,

means for tracing a backpath in said directory entity beginning with a sink sub-group last inserted into said directory entity,

means for locating in said backpath a first existing vertex sub-group having an index position item less than the new index position item provided by said comparing means,

means for moving the first existing vertex sub-group found by said locating means into a first portion of the allocated storage part which now contains a displaced inner vertex sub-group,

means for inserting into a second portion of the allocated storage part an address item for locating said object identifier in response to operation by said sensing means, the second portion now containing a new sink sub-group,

and means for inscribing the new index position item provided by said comparing means and said address item provided by said registering means into the location found for said first existing vertex sub-group by said locating means, said address item being a new connector for the new inner vertex sub-group now contained in the directory entity.

4,086,629

HIERARCHICAL DATA STORE WITH LOOK-AHEAD ACTION

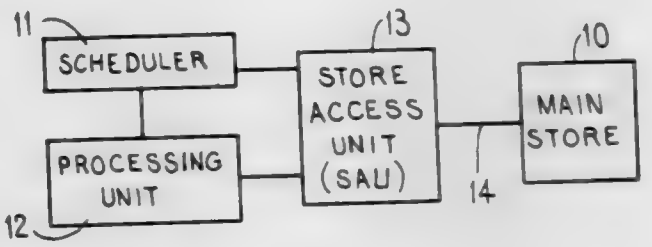
Peter Leo Lawrence Desyllas, Wilmslow Park; John Austin Jones, Stockport, and Brian John Procter, Hyde, all of England, assignors to International Computers Limited, London, England

Filed Jun. 28, 1976, Ser. No. 700,720

Claims priority, application United Kingdom, Jul. 9, 1975, 28800/75

Int. Cl.[2] G06F *13/00*

U.S. Cl. 364—200 **5 Claims**



1. A data storage system comprising a main store, a slave store of smaller size but faster access time than the main store, means responsive to a set of store access commands for accessing data items from the slave store, each said store access command having a store access address associated with it, and look-ahead logic comprising:

a. means responsive to one of a sub-set of said store access commands to generate an increment signal,

b. means for adding said increment signal to said store access address to produce a look-ahead address, and

c. means for applying the look-ahead address to the main store to access a data item from the main store for writing into the slave store.

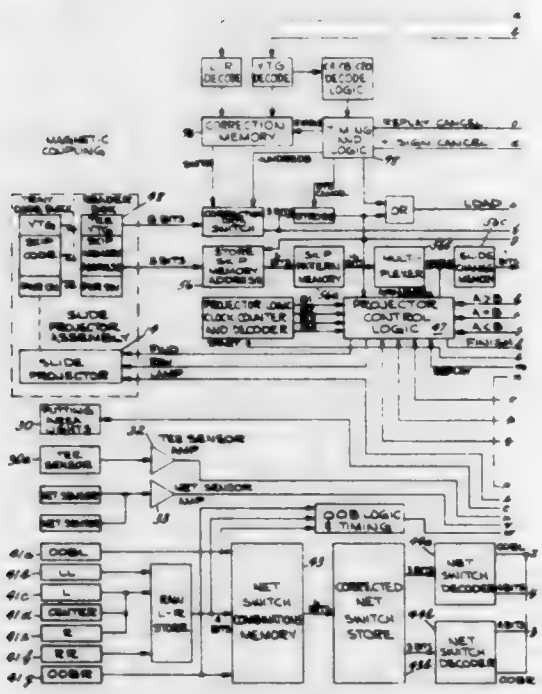
4,086,630
COMPUTER TYPE GOLF GAME HAVING VISIBLE FAIRWAY DISPLAY

Maxmilian Richard Speiser, 245 W. 104th St., New York, N.Y. 10025; Don Eng, 50 Bayard St., New York, N.Y. 10013, and Gerry Dun Sawyer, 509 W. 112th St., New York, N.Y. 10025

Continuation-in-part of Ser. No. 492,751, Jul. 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 383,885, Jul. 30, 1973, abandoned. This application Jan. 19, 1976, Ser. No. 650,126

Int. Cl.[2] **A63B** *67/02, 69/36;* **G06F** *15/20*

U.S. Cl. 364—410 **4 Claims**



1. In a computer-type golf game including sensing means for determining the time of flight of a ball between a tee off point and a point on a screen, and computer means for determining the theoretical flight distance of said ball based upon elapsed time, means for projecting a series of images of a golf course under control of said computer means, and a simulated ball image projector under control of said computer, for casting a ball image in superimposed relation upon said screen, the improvement comprising: means sensing the point of impact of said ball with respect to the central axis of said screen, said projector having image storage means for selectively projecting images corresponding to views facing a pin on a golf green corresponding to predetermined points at varying coordinate distances from said pin, said images being successively selected for projection for a subsequent stroke on the basis of distances attained, and the degree of lateral displacement of an immediately preceding stroke, first signal means for indicating the presence of a stroke overshooting the pin of a hole, and second signal means indicating degrees of lateral displacement of a lay of the ball on either side of the fairway; whereby a single set of generally centrally oriented projected images may be employed for the successive display of view for each hole.

4,086,631
HEMATOCRIT MEASUREMENT IN AN AUTOMATIC HEMATOLOGY ANALYZER

Howard Andrew Vick, Pearland, Tex., assignor to Hycel, Inc., Houston, Tex. and Hycel, Inc., Houston, Tex.

Division of Ser. No. 535,495, Dec. 23, 1974, Pat. No. 4,052,596. This application Dec. 20, 1976, Ser. No. 752,015

Int. Cl.[2] **G01N** *15/08;* **G06M** *11/04*

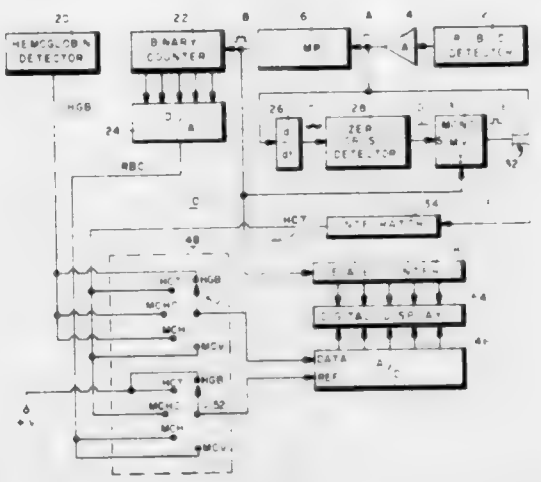
U.S. Cl. 364—416 **5 Claims**

1. In a blood cell analyzer in which a cell signal is provided in response to the detection of blood cells in a precise volume of blood, said cell signal including a plurality of pulses, with each pulse representing the detection of one cell and with the magnitude of each pulse relating to the size of each detected cells, hematocrit measuring means for providing a voltage relating to the hematocrit of the blood comprising:

integration means for summing signals applied thereto;

controlled switching means for coupling said pulses to integration means; and

detecting means for detecting the maximum of magnitude of each pulse of said cell signal and for producing a gate signal indicative of said detected maximum magnitude and



having a fixed, preselected width which is narrow compared to a typical pulse width, said detecting means being coupled to said controlled switching means for rendering said controlled switching means conductive in response to said gate signal, whereby said integrator is incremented by a voltage indicative of a peak portion of each pulse and the voltage stored in said integration means at the completion of said cell signal comprises the voltage relating to the hematocrit of the blood.

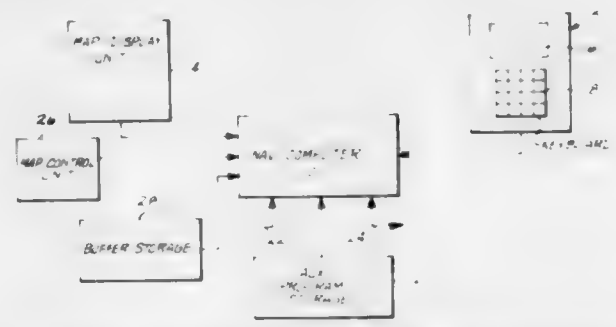
4,086,632
AREA NAVIGATION SYSTEM INCLUDING A MAP DISPLAY UNIT FOR ESTABLISHING AND MODIFYING NAVIGATION ROUTES

Richard O. Lions, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 27, 1976, Ser. No. 726,633

Int. Cl.[2] **G06F** *15/50*

U.S. Cl. 364—444 **12 Claims**



1. In an area navigation system wherein a desired navigation route including at least one guidance path between selected geographic points is stored within storage means of an area navigation computer, the improvement comprising a map display unit for providing a cartographic display of navigation information relative to said desired navigation route, said map display unit having data entry means for entering navigation information to said area navigation computer, said data entry means including:

cursor means positionable on said cartographic display for selecting a geographic point within the geographic region depicted by said cartographic display;

first and second switch means, said first switch means for supplying a signal representative of the positional coordinates of a geographic location selected with said cursor means when said geographic location is to be eliminated

from a previously established desired navigation route, said second switch means for supplying a signal representative of the positional coordinates of the geographic location selected by said cursor when said geographic location is to be added to a previously established desired navigation route, said first and second switch means supplying said signals to said computer for the calculation of guidance paths between said selected geographic locations;

buffer storage means for storing the guidance paths calculated by said computer in response to said signal supplied by said first and second switch means as a tentative navigation route;

means for displaying said tentative navigation route on said map display unit, said tentative navigation route being displayed as a visible pattern discernible from said previously established desired navigation route; and

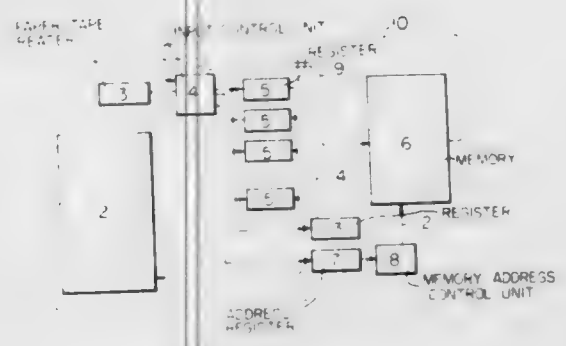
third switch means for transferring said tentative navigation route from said buffer storage means to said computer storage means for replacing said previously desired navigation route with said tentative navigation route.

4,086,633

NUMERICAL CONTROL SYSTEM WITH PROGRAM ACCESS FUNCTION

Hajimu Kishi; Tetsuo Ohkubo, and Noriyuki Koikawa, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1976, Ser. No. 694,933
Claims priority, application Japan, Jun. 24, 1975, 50-76436
Int. Cl.[2] G05B *19/28*
U.S. Cl. 364—474 **3 Claims**



1. A numerical control system for controlling a machine tool in accordance with command data including at least one repeat-data to be repeatedly executed, comprising

a machine tool control section;

input means for receiving said command data;

a memory for storing said repeat-data;

means for decoding a first command code (G25), a second command code (G26), and a third command code (G24) respectively from said command data;

means for decoding a fourth command code (L) from said command data and storing following numerical value thereof which represents an initial address for said repeat-data in said memory;

means for decoding a fifth command code (P) from said command data and storing following numerical value thereof which represents the number of repetition of said repeat-data and which is counted-down at every decoding moments of said second command code (G26);

means for executing storing operation in which said repeat-data applied to said input means is stored in said memory corresponding to said address signal when said first command code (G25) is decoded, and maintaining said storing operation until said second command code (G26) is decoded, and;

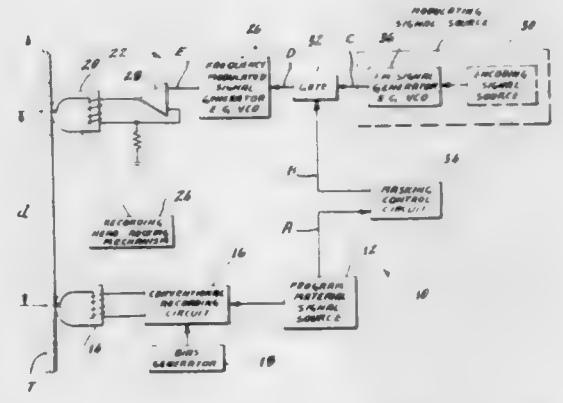
means for executing reading operation in which said repeat-data stored in said memory is read out corresponding to said address signal and is fed to said machine tool control section when said third command code (G24) is decoded, and repeating said reading operation until said numerical value which represents the number of repetition is nulled.

4,086,634

METHOD AND APPARATUS FOR PREPARING RECORDED PROGRAM MATERIAL TO PREVENT UNAUTHORIZED DUPLICATION BY MAGNETIC TAPE RECORDING

Emory G. Cook, Wilton, Conn., assignor to Cook Laboratories, Inc., Norwalk, Conn.

Filed Jul. 30, 1975, Ser. No. 600,455
Int. Cl.[2] G11B *15/04, 5/02*
U.S. Cl. 360—60 **26 Claims**



1. A method for preparing recorded audible program material which does not interfere with normal playback of the material but which renders detectable any unauthorized copies of the audible program material upon a magnetic recording tape which are made by magnetic tape recording with conventional high frequency bias, said method comprising:

recording the audible program material for providing a predetermined information passband of frequencies of such recorded material;

generating a high frequency modulated signal which varies in a predetermined manner over a selected spectrum of frequencies lying just above and outside of said information passband of frequencies; and

recording the modulated signal together with the audible program material;

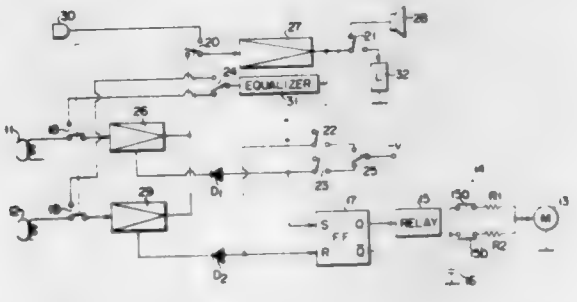
whereby copying of the recorded audible program material onto magnetic tape will produce on the tape copy detectable interference signals between the modulated signal and the conventional recording bias signal.

4,086,635

RECORDING AND REPRODUCING APPARATUS WITH TAPE SEED DEPENDENT ON HEAD SELECTION

Sinichi Saitou, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1975, Ser. No. 645,440
Int. Cl.[2] G11B *15/10, 15/44, 19/18*
U.S. Cl. 360—73 **4 Claims**



1. A recording and reproducing apparatus comprising a plurality of recording and reproducing heads arranged for a corresponding number of recording tracks; a recording speed setting means including a switch for manually setting a record-

ing speed specified for each of said tracks, said recording speed setting means including a flip-flop circuit, a first means for setting said flip-flop circuit when said recording speed setting means set a first recording speed, a second means for resetting said flip-flop circuit when said recording speed setting means set a second recording speed, and a speed control circuit for driving a recording medium at said frst or second recording speed in accordance with outputs of said flip-flop circuit; and a reproducing speed setting means including means for supplying a reproduction signal produced from a first one of said plurality of recording and reproducing heads to a set terminal of said flip-flop circuit and for supplying a reproduction signal produced from a second one of said plurality of recording and reproducing heads to a reset terminal of said flip-flop circuit.

4,086,636

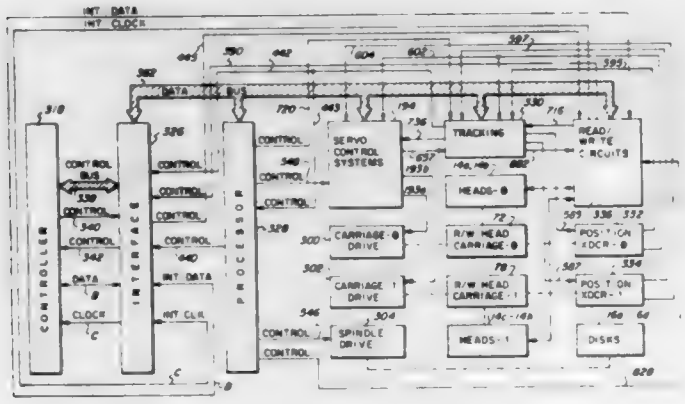
RESTORE METHOD AND APPARATUS FOR DISK DRIVE

Stipe Cizmic, San Mateo; Wayne L. Edwards, Jr., Mountain View; James O. Jacques, Tracy; Douglas K. Mahon, Boulder Creek, and Leonard R. Shenfield, Santa Clara, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 28, 1977, Ser. No. 772,698

Int. Cl.[2] G11B *21/02, 21/08, 5/55*

U.S. Cl. 360—75 **11 Claims**



1. In a disk drive comprising at least one recording disk rotatable about its axis, said disk having a recording surface divided into a plurality of data-field tracks onto which data may be recorded and a plurality of guard-band tracks onto which data may not be recorded, an electromagnetic read/-write head for recording data onto and reading data from said data-field tracks, a head carriage assembly to which said head is mounted, and means for moving said head carriage assembly and thus said head in reciprocal movements relative to the axis of rotation of said disk whereby said head can be positioned over any one of said data-field and guard-band tracks; a method for restoring the head from a position between the data field track located closest to the axis of rotation of said disk and the data field track located furthest from said axis of rotation, to a position over said data field track located furthest from said axis of rotation, said method comprising the steps of:

(a) prerecording a first predetermined code on each data field track and a second predetermined code on each guard-band track;

(b) moving the head in a direction away from the axis of rotation of the disk at a predetermined velocity;

(c) reading and detecting the code stored on each track as the head is moved thereover;

(d) stopping the head over a track when the code read and detected therefrom is said second predetermined code; and

(e) moving the head in a direction toward the axis of rotation of the disk and stopping the head over the data-field track located furthest from said axis of rotation.

4,086,637

METHOD AND APPARATUS FOR LOADING FLEXIBLE MAGNETIC RECORDING DISCS TO TRANSDUCING HEADS

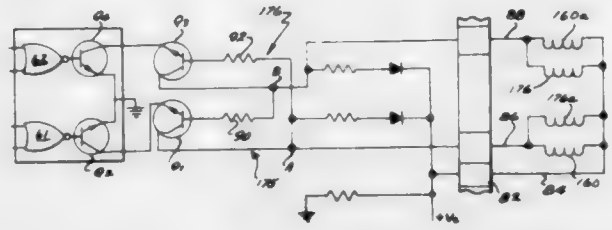
Jan Hendrik Helbers, Ann Arbor, Mich., assignor to Sycor, Inc., Ann Arbor, Mich.

Division of Ser. No. 529,489, Dec. 4, 1974, Pat. No. 3,975,774.

This application Mar. 19, 1976, Ser. No. 668,409

Int. Cl.[2] G11B *21/22, 5/54, 15/60*

U.S. Cl. 360—105 **8 Claims**



1. In a recorder/reproducer device using a thin, flexible magnetic disc as the recording media, the improvement comprising: a pair of magnetic heads for recording or reproducing operation on opposite sides of said disc, and means mounting said heads on opposite sides of said disc; means for moving said disc and a selected one of the heads in said pair thereof relative to and independently of the other head in said pair, to bring the disc and the selected one head closely adjacent one another and into transducing relation; said means for moving including a selectively operable actuator means for each of said heads producing movement of that head; and means for controlling said means for moving to preclude operation of the actuator means which would produce movement to bring the disc and said other head into transducing relation at the same time as the disc and said selected one head are in said transducing relation.

4,086,638

DEVICE FOR FITTING A MAGNETIC HEAD OF A TAPE RECORDER

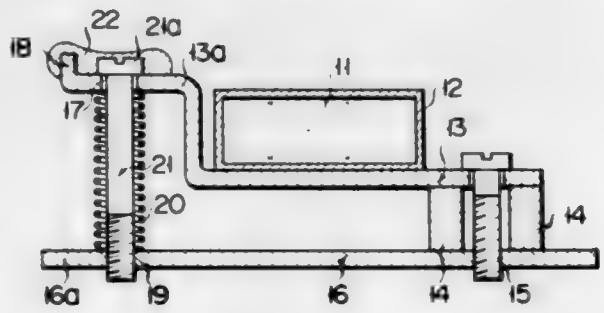
Shoichi Saito, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 17, 1977, Ser. No. 797,688

Claims priority, application Japan, May 17, 1976, 51-62406[U]

Int. Cl.[2] G11B *5/56, 21/24*

U.S. Cl. 360—109 **7 Claims**



1. An adjustable mount for mounting a magnetic head of a tape recorder, to a panel of the tape recorder comprising a head base fixed on the panel of the tape recorder; a head fixing plate supporting the magnetic head; support means mounting one end of the head fixing plate above the head base; an azimuth adjustment screw having one end supported by the head base and the other end extended through the other end of the head fixing plate; urging means resiliently biasing said other end of the head fixing plate in the vertical direction away from the head base; rotating means disposed at the other end of the azimuth adjustment screw so as to cooperate, when turned, with the azimuth adjustment screw to move the head fixing plate vertically against the urging means; a projection integrally formed with the other end of the head fixing plate, said

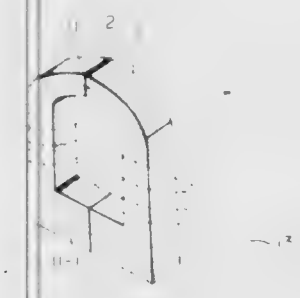
projection extending out of the plane of said other end of the head fixing plate; and a bonding agent fixing the rotating means integrally with the projection to prevent the rotating means from being turned.

4,086,639

MAGNETIC HEAD WHICH MINIMIZES THE EFFECT OF MINUTE VARIATIONS IN THE HEAD GAP

Naohiko Toshimitsu, Chichibu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, both of, Japan

Filed Sep. 27, 1976, Ser. No. 726,751
Claims priority, application Japan, Sep. 29, 1975, 50-117522
Int. Cl.[2] G11B *5/16, 5/20, 5/22*
U.S. Cl. 360—126
4 Claims



1. A magnetic head comprising:
core halves including a highly permeable material of a DC specific permeability ranging from 8000 to 50,000, said core halves abutting on each other to establish a ring-shaped closed magnetic circuit therethrough and a gap of 1 μm to 2.5 μm in width therebetween; and
coils wound on said core halves;
said core halves having a thickness such that a permeability drop starting frequency determined by core loss of the highly permeable material is from 10 Hz to 200 Hz, thereby minimizing influence on frequency characteristics of the head due to variations in width of the gap.

4,086,640

PARTITIONABLE PORTABLE FLEXIBLE DISK PACK

Herbert Underwood Ragle, Thousand Oaks, and Dean L. DeMoss, Camarillo, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 4, 1976, Ser. No. 711,647
Int. Cl.[2] G11B *23/02, 25/04*
U.S. Cl. 360—133
6 Claims

1. A portable partitionable pack of flexible disks comprising:
a plurality of like flexible recording disks, the disks being formed and arranged in a concentric stack so that the stack is "partitionable end-wise" rather than from the side;
each said disk of said stack having a central bore for engaging disk pack rotation means and an encoded arrangement of "partition apertures" provided about at least part of a common arcuate segment relatively concentric with the disk center;
the disks being attached together adjacent this central bore and being formed and stacked so that these segments register and so that predetermined, superposed apertures of different disks lie in registry to thereby generate at least one set of "blind deflection bores" extending through the stack from one end thereof, each such bore in a set terminating at a respective different disk in the stack, so as to accommodate the selective partitioning deflection of said respective disk in cooperation with "end-wise partition



means" adapted to be selectively thrust along any such bore which has been registered with it.

4,086,641

PARTITIONABLE PORTABLE FLEXIBLE DISK PACK

Herbert Underwood Ragle, Thousand Oaks, and Dean DeMoss, Camarillo, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 711,647, Aug. 4, 1976. This application Feb. 7, 1977, Ser. No. 766,288
Int. Cl.[2] G11B *23/02, 25/04*
U.S. Cl. 360—133
19 Claims



1. A portable partitionable disk pack comprising:
a plurality of like flexible recording disks, the disks being formed and arranged in a concentric stack so that the stack is "partitionable end-wise" rather than from the side;
each said disk of said stack having a central bore for engaging disk pack rotation means and a common circumferential pattern of partition-apertures provided about at least part of a common arcuate segment relatively concentric with the disk center;
the disks being attached together adjacent this central bore and being formed and stacked in relative angular-misregistration so that predetermined, superposed apertures of different disks lie in registry to thereby generate at least one set of "blind deflection bores" extending through the stack from one end thereof, each such bore in a set terminating at a respective different disk in the stack, so as to

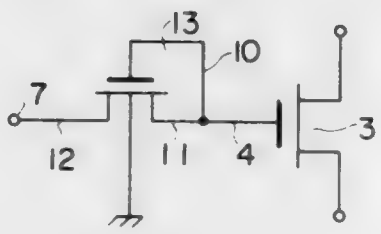
accommodate the selective partitioning deflection of said respective disk in cooperation with "end-wise partition means" adapted to be selectively thrust along any such bore which has been registered with it.

4,086,642

PROTECTIVE CIRCUIT AND DEVICE FOR METAL-OXIDE-SEMICONDUCTOR FIELD EFFECT TRANSISTOR AND METHOD FOR FABRICATING THE DEVICE

Isao Yoshida; Ryoichi Hori, both of Tokyo; Hiroo Masuda; Osamu Minato, both of Kokubunji; Jun Etoh, Hino, and Masaaki Nakai, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 13, 1976, Ser. No. 648,714
Claims priority, application Japan, Jan. 16, 1975, 50-6264
Int. Cl.[2] H02H *9/04*
U.S. Cl. 361—91 **4 Claims**



1. A protective circuit for a metal-oxide-semiconductor field effect transistor comprising:

an input terminal to which input signals are applied; and

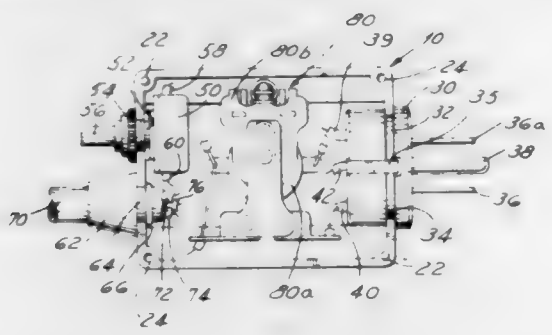
a depletion-type metal-oxide-semiconductor field effect transistor the gate and source of which are connected to each other, the source of which is connected to the gate of the transistor to be protected, and the drain of which is coupled to said input terminal.

4,086,643

COMBINATION PLUG AND POWER CUT-OFF UNIT

David A. Jacobs, Brighton, Mich., assignor to JDS Products, Inc., Pontiac, Mich.

Filed Apr. 5, 1976, Ser. No. 673,397
Int. Cl.[2] H02H *3/24*
U.S. Cl. 361—92 **6 Claims**



1. A combination plug and power cut-off unit for safety control of power operated devices which comprises:

(a) an elongate shell housing,

(b) a male plug body having electrical contact prongs and provided with an annular recess to receive peripheral portions of an opening in the end of said shell to mechanically lock said plug body in said shell with the prongs outstanding,

(c) a power line retainer at the other end of said shell to mount the end of a power line to carry electrical current to an electrically operated device,

(d) a manually operated push-button type, normally open, switch mounted at said other end of said shell having a push-button outstanding from said shell, and

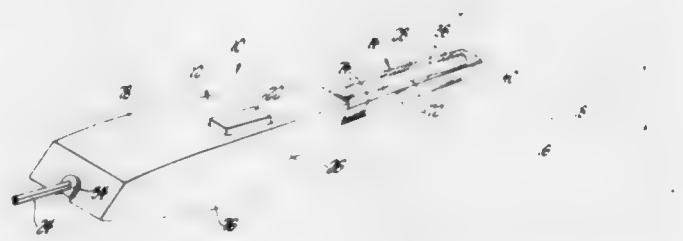
(e) a relay coil and contacts within said shell to provide a holding circuit around said manually operated switch when power is present in a line into which said prongs are plugged.

4,086,644

MAGNETIC TAPE SENSING HEAD DEMAGNETIZER

Richard C. Horian, 1740 Strickland Dr., Bloomfield Hills, Mich. 48013, and James G. Horian, 7340 Indiana, Dearborn, Mich. 48126

Filed Jun. 14, 1977, Ser. No. 806,416
Int. Cl.[2] H01F *13/00*
U.S. Cl. 361—149 **6 Claims**



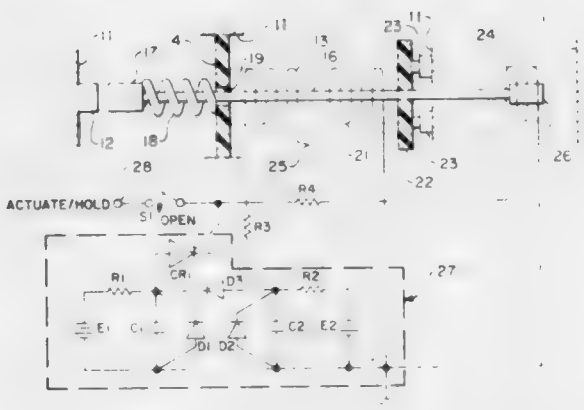
1. A magnetic tape sensing head demagnetizer comprising: a housing having a hollow handle portion and a clear plastic probe portion projecting outwardly from the handle portion; a coil in the handle portion of the housing; a metallic core having an inner end received by the coil and an outer probe end extending outwardly from the handle portion of the housing within the probe portion thereof such that an AC voltage applied to the coil generates a pulsating flux in the probe end of the core for demagnetizing a tape sensing head; a bulb mounted within the handle portion of the housing to shine light outwardly through the probe portion thereof in order to illuminate the tape sensing head and the surrounding area during the demagnetizing and means to selectively apply an AC voltage to said coil and said bulb.

4,086,645

REPULSION COIL ACTUATOR FOR HIGH SPEED HIGH POWER CIRCUITS

Joseph G. Gorman, Murrysville; John M. Hicks, Verona, and Francis Alan Holmes, Monroeville, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 18, 1977, Ser. No. 769,941
Int. Cl.[2] H01H *47/22*
U.S. Cl. 361—155 **13 Claims**



7. Apparatus for rapid separation of high voltage contacts, comprising

a framework,

a first repulsion coil mounted on said framework,

a second repulsion coil,

said first and second repulsion coils having substantially

colinear axes and producing a repulsion force therebetween when electrically energized,

a moving member attached to said second repulsion coil and disposed for linear motion in the direction of said colinear axes, a static electrical contact on said framework,

a moving electrical contact on said moving member disposed to contact said static electrical contact in the absence of said repulsion force,

a two stage power supply providing a high initial energy transfer rate and a lower sustaining energy transfer rate, said first and second repulsion coils being connected to said two stage power supply,

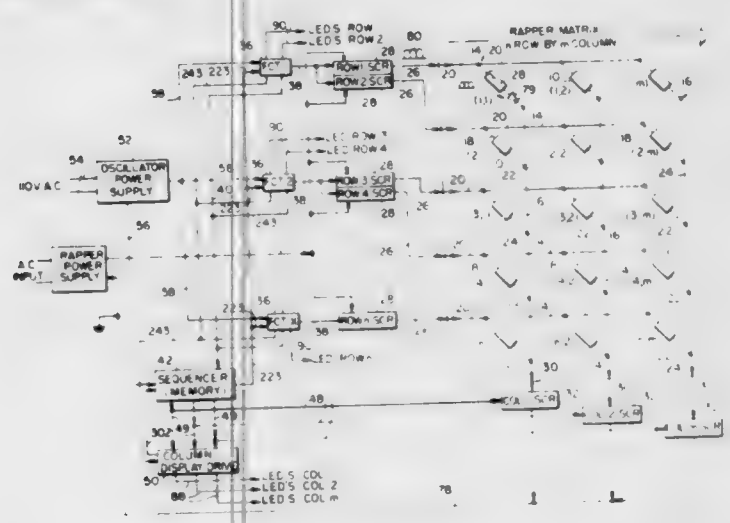
whereby said static and moving contacts are quickly separated by transfer of said high initial energy to said first and second repulsion coils and moved apart a predetermined distance by transfer of said lower sustaining energy to said first and second repulsion coils.

4,086,646

SYSTEM FOR THE CONTROL OF RAPPERS IN AN ELECTROSTATIC PRECIPITATOR

Philip M. Lanese, Belle Mead, N.J., assignor to Belco Pollution Control Corporation, Parsippany, N.J.

Filed Dec. 30, 1976, Ser. No. 755,520
Int. Cl.² H01H 47/32
U.S. Cl. 361—166 **10 Claims**



1. A system for controlling rapping of electrostatic precipitators in which the rappers comprise solenoids the coils of which are arranged in a matrix of rows and columns having corresponding wire circuits for conducting energizing current to each coil comprising

an oscillator power supply providing timing pulse signals of uniform duration for controlling the time rectified A.C. pulses may be applied to each row of rappers;

a plurality of field cycle time circuits connected to said oscillator for controlling the round trip time of each row of rappers, the time each rapper in each row is energized and the current supplied to each rapper during energization;

means for checking each of said solenoids for short circuit and grounding prior to energization;

a sequencer circuit connected to said oscillator and said field cycle time circuits to provide a memory for the system,

row controlled rectifier circuit each being connected to a field cycle time circuit and a corresponding rapper solenoid row wire circuit, and adapted to allow rectified A.C. pulses to be applied to a corresponding rapper solenoid row wire circuit; and

column controlled rectifiers each connected to said sequencer circuit and a corresponding rapper solenoid column wire circuit, whereby

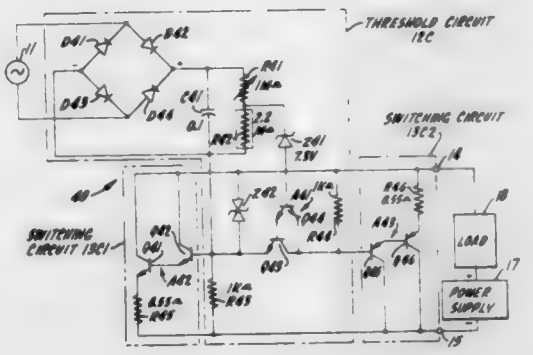
the rectified A.C. pulses are conducted by said wires to said rapper solenoids such that the solenoids in each row are operated in sequence, one at a time only.

4,086,647

AMPLITUDE RESPONSIVE SPEED SWITCH CONTROL

Melvin A. Lace, Prospect Heights, Ill., assignor to Synchro-Start Products, Inc., Skokie, Ill.

Filed Oct. 15, 1976, Ser. No. 732,773
Int. Cl.² H02P 5/00
U.S. Cl. 361—239 **5 Claims**



1. A two-terminal speed switch control actuated in response to changes in the speed of a rotary shaft above and below a threshold speed, comprising:

a multi-pole sub-fractional permanent magnet AC generator, connectable to a rotary shaft, for generating an initial AC signal having an amplitude which varies in accordance with changes in the speed of the shaft;

threshold circuit means, connected to the generator, for developing a DC switch actuation signal whenever the amplitude of the initial AC signal exceeds a given threshold amplitude indicative of a critical shaft speed, the threshold circuit means comprising a full wave rectifier coupled to a first switching amplifier, the output of the first amplifier comprising the DC switch actuation signal;

and a solid-state switching circuit, having two switch terminals connectable in series with an external DC power supply in an operating circuit for a controlled load, for switching the controlled load into and out of its operating circuit in response to the presence or absence of the switch actuation signal, the switching circuit comprising a second switching amplifier having an actuation input connected to the output stage of the first switching amplifier;

the first switching amplifier being maintained non-conductive whenever the output from the rectifier is below a given threshold amplitude and being driven fully conductive whenever the rectifier output exceeds that threshold amplitude;

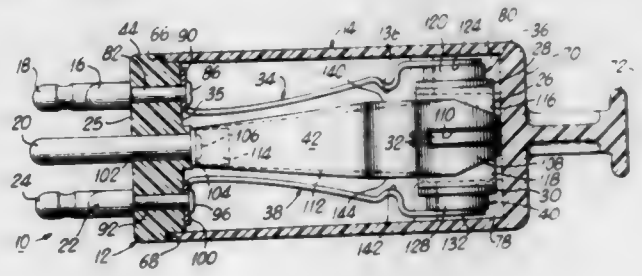
each switching amplifier having its output stage connected across the switch terminals so that the external power supply affords a power source for both amplifiers without requiring any additional connection terminals.

4,086,648

PROTECTOR MODULE

William Hines, Arlington Heights; Eric A. Scheithauer, Chicago, and Casimir Cwirzen, Arlington Heights, all of Ill., assignors to Cook Electric Company, Morton Grove, Ill.

Filed Nov. 1, 1976, Ser. No. 737,326
Int. Cl.² H02H 3/22
U.S. Cl. 361—124 **20 Claims**



1. A protector module for protecting a circuit from high

voltages or surge currents on said circuit, said module comprising:

an insulating base,

terminal means on said base to be coupled to said circuit to be protected,

ground terminal means extending from said base to be coupled to ground potential,

an arrester having a ground electrode and at least one line electrode,

at least one line contact means coupled to said terminal means and extending from said terminal means toward said line electrode, said line contact means having a first contact surface disposed intermediate said terminal means and said line electrode,

a ground clip assembly coupled to and extending between said ground terminal means and said ground electrode such that said arrester is maintained in spaced relationship to said base, said ground clip assembly having a second contact surface disposed intermediate said ground terminal means and said ground electrode and adjacent to said first contact surface, and

a fusible element having a positioning means extending therefrom to engage said line electrode to position said fusible element between said line contact means and said line electrode so as to normally maintain said first contact surface spaced apart from said second contact surface and coupling said line contact means to said line electrode, said first and second contact surfaces making contact whenever said fusible element is not held in position between said line contact means and said line electrode by said positioning means.

4,086,649

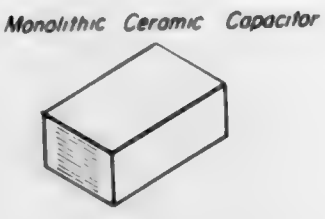
CERAMIC CAPACITOR MADE FROM FIRING SMALL BARIUM TITANATE PARTICLES

R. C. Frederick Hanold, III, Greenville, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 536,620, Dec. 26, 1974, abandoned. This application Sep. 13, 1976, Ser. No. 722,628

Int. Cl.[2] H01G *4/12*

U.S. Cl. 361—321 **4 Claims**



1. A high dielectric constant ceramic capacitor having a dielectric constant (K) of at least 10,000 at 25° C, said capacitor comprising in combination a dielectric ceramic body having a predominantly tetragonal crystal structure formed by the firing of ceramic particles at a temperature in the range of about 1250° to 1400° C substantially all of said particles being not larger than 650 A prior to firing, at least 70% by weight of said particles being barium titanate and from about 1 to 30% by weight of said particles being ceramic modifier material in solid solution with barium titanate; and electrodes formed in said body in capacitive relationship.

4,086,650

CORONA CHARGING DEVICE

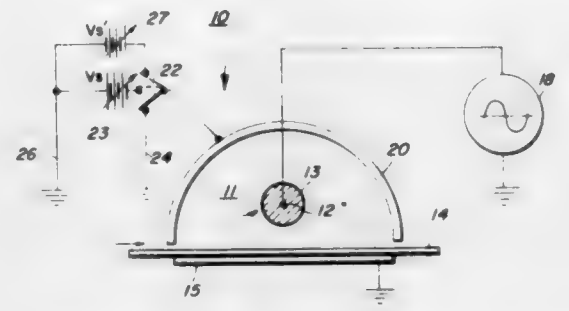
Thomas G. Davis, Pittsford, and George J. Safford, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 595,656, Jul. 14, 1975, abandoned. This application Dec. 8, 1976, Ser. No. 748,805

Int. Cl.[2] H05F *3/04*

U.S. Cl. 361—229 **28 Claims**

1. In combination, a charge collecting surface, said surface carried on with a conductive substrate held at a reference potential, a corona discharge member positioned above said surface, said member comprising a thin wire, coated at least in the discharge area with a dielectric material, means for coupling a corona generating a.c. voltage intermediate said sub-



strate and said wire, a conductive shield adjacent said wire and first biasing means for holding said shield at a potential different than said reference potential, said dielectric material having a thickness sufficient to prevent the flow of a net d.c. current though said wire.

4,086,651

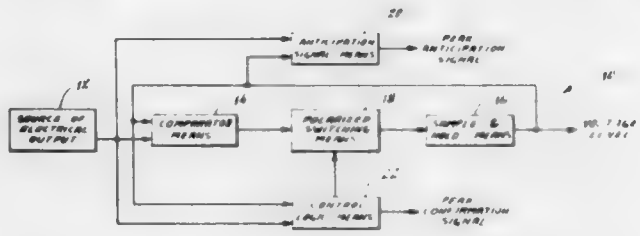
ELECTRICAL OUTPUT PEAK DETECTING APPARATUS

Andrew Redvers Muir, High Wycombe, England, and Joseph Anthony Vergato, Monroe, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 29, 1976, Ser. No. 700,915

Int. Cl.[2] G06F *15/20;* **H03K** *5/20;* **G01J** *3/28*

U.S. Cl. 364—487 **9 Claims**



1. Circuitry for generating an anticipation signal and a confirmation signal relative to peak amplitudes of a varying electrical output, comprising:

sample and hold means for storing a voltage level;

means for differentially comparing the electrical output with said voltage level;

switching means for polarizing and connecting the output of said comparator means to the input of said sample and hold means;

means for deriving the anticipation signal when a differential exists between said voltage level and the electrical output; and

logic means for controlling said polarized switching means in accordance with slope polarity thresholds of the electrical output relative to said voltage level and deriving the confirmation signal at said thresholds.

4,086,652

METHOD AND APPARATUS FOR ANALYZING A TIME-DEPENDENT PHENOMENON

Arlan Warren Mantz, Acton, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.

Filed Jan. 19, 1977, Ser. No. 760,701

Int. Cl.[2] G01V *1/28;* **G01B** *9/02*

U.S. Cl. 364—525 **13 Claims**

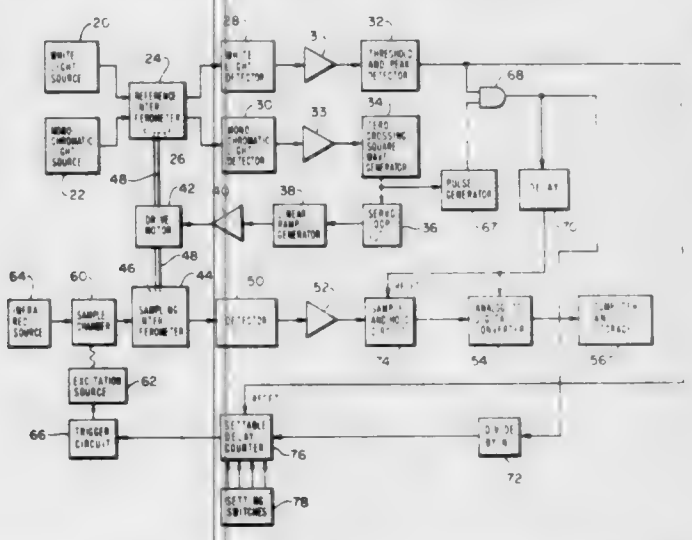
1. A system for resolving a data sequence derived from a time-varying signal-generating phenomenon, said system comprising, in combination:

means for repetitively initiating said phenomenon;

means for detecting signals derived from said phenomenon during the course thereof;

means for repetitively convolving said signals with a transformation;

means for establishing the temporal relation between initiation of said phenomenon and convolution of said signals so that the repetitive convolution produces an ordered set of first interferograms in which the sequence of the phenomenon and the convolution is temporally shifted in successive increments with respect to one another;



means for selecting from each interferogram of said set, a data moiety corresponding to a temporal resolution element occurring at a fixed position in time following said initiation during the course of said interferogram; and

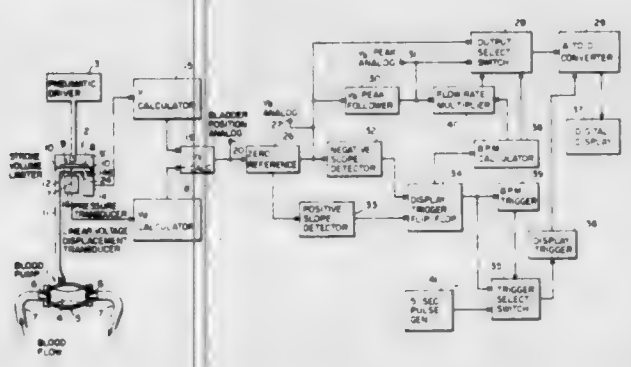
means for combining in a sequence according to the order of said set each of said data moieties so as to synthesize a second interferogram representing the convolution with said transformation of the signals from said phenomenon only at said fixed time position.

4,086,653

PNEUMATIC PUMP MONITOR

David B. Gernes, Watertown, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Jan. 9, 1976, Ser. No. 647,841
Int. Cl.[2] G01F *1/00*
U.S. Cl. 364—564 **10 Claims**



1. A device for monitoring the operation of a blood pump, said blood pump having a flexible bladder enclosed by a rigid housing and confining therebetween a closed system of gas, said closed system being adapted to undergo repetitive pressurizations resulting from known and repetitive volumetric compressive displacements for repeatedly volumetrically collapsing said bladder, said monitoring device comprising:

means for receiving a first signal, said first signal being variable as a function of the pressure internal of said closed system;

analog electronic means responsive to said first signal from said first receiving means for substantially continuously generating a second signal functionally related to the loss of volume of said closed system produced by each said repetitive pressurization;

means for generating a third signal varying as a function of said known volumetric compressive displacement; and

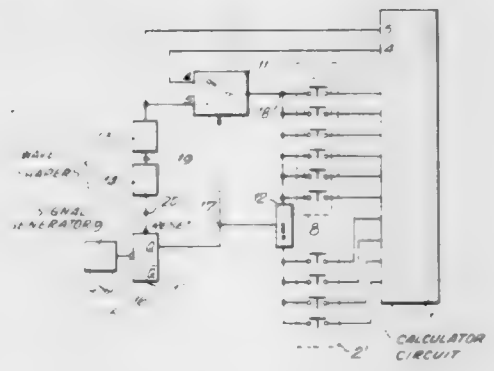
second analog electronic means for subtracting said second signal from said third signal for substantially continuously generating a fourth signal functionally related to the volumetric position of said bladder.

4,086,654

ELECTRONIC TIMEPIECE CALCULATOR

Kazuo Ido, and Mitsuaki Maruyama, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 522,085, Nov. 7, 1974, Pat. No. 4,041,295. This application Feb. 10, 1977, Ser. No. 767,272
Int. Cl.[2] G06F *7/48, 15/02;* G04B *19/30*
U.S. Cl. 364—705 **4 Claims**



1. An electronic digital display wristwatch comprising timekeeping circuit means for producing timekeeping signals and calculator circuit means for producing calculating signals, digital display means for displaying one of actual time in response to said timekeeping signals being applied thereto, said display means being further adapted to display calculation information in response to said calculating signals being applied thereto, a plurality of input means adapted to supply to said calculator circuit means data signals representative of numerical information and function signals representative of operating functions to effect processing of said numerical information supplied by said data signals, said calculating circuit means including a function input and a numerical information input, each said input means including a manually operable switch, ten such switches being provided, one for each number of numerical information from 0 to 9 to be applied to the calculator circuit means, control circuit means disposed intermediate each of said manually operable switches and said respective numerical information and function inputs of said calculator circuit means, and one manually operable mode selection switch coupled to said control circuit means for disposing said control circuit means in one of a first numerical input mode and second function performing mode, said control circuit means being adapted to selectively couple either said ten manually operable input switches to said numerical information input of said calculator circuit means when said control circuit means is in a first numerical input mode or at least four of said ten manually operable input switches to said function input of said calculator circuit means in response to said mode selection switch disposing said control circuit means in said second function performing mode, whereby said at least four manually operable switches apply function signals representative of addition, subtraction, multiplication and division to said calculator circuit means to perform said respective functions when said control circuit means is disposed in said second function performing mode, said ten manually operable switches being provided with at least a first terminal, said manually operable switches coupled to said calculator circuit means when said control circuit means is in said second function performing mode having the respective first terminals connected in a first common connection, the balance of said manually operable switches having their respective first terminals connected in a second common connection, said control circuit means including a first electronic switch means interme-

diate said first and second common connection and a second electronic switch means intermediate said first common connection and said calculator circuit means, said first electronic switch means being closed when said control circuit means is in said first numerical input mode and being open when said circuit means is in said second function performing mode, said second electronic switch means coupling said first common connection to said numerical information input of said calculator circuit means when said control circuit means is in said first numerical input mode and to said function input when said control circuit means is in said second function performing mode.

4,086,655

COMBINATION TIMEPIECE AND CALCULATOR INCLUDING SLIDABLE KEYBOARD MEANS

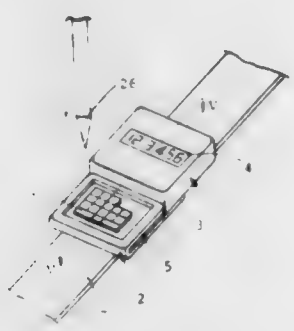
Akira Tanimoto, Kashihara, and Kosuke Nishimura, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 22, 1976, Ser. No. 753,198

Claims priority, application Japan, Dec. 22, 1975, 50-173814[U]

Int. Cl.[2] **G06F** *7/38, 15/02;* **G04B** *37/12*

U.S. Cl. 364—705 **7 Claims**



1. In a combined calculator and timepiece having a main housing, a digital display module in said housing, a timekeeping circuit for driving said display means in a timekeeping mode and a calculator circuit for driving said display means in a calculating mode, the improvement comprising:

a keyboard receiving section in said housing;

a keyboard means mounted in said receiving section for relative movement with said housing between a fully exposed position out of said receiving section and a concealed position in said receiving section; and

mode selector means responsive to the position of said keyboard means to place said combined calculator and timepiece in said timekeeping and calculating modes in said concealed and exposed positions, respectively.

4,086,656

ANALOG-TO-DIGITAL INTEGRATING APPARATUS WITH PULSE DENSITY CONVERSION PRIOR TO ACCUMULATION

James L. Brown, Toddville, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 21, 1976, Ser. No. 734,689

Int. Cl.[2] **G06G** *7/18;* **H03K** *13/20*

U.S. Cl. 364—733 **2 Claims**

1. Integrator apparatus comprising, in combination:

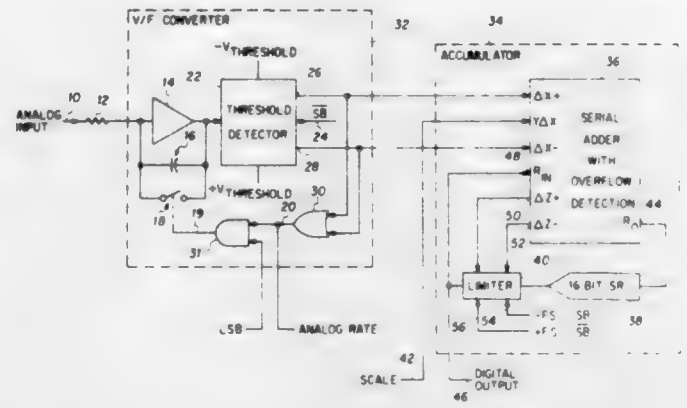
conversion means, including input means and output means, for providing, at said output means, n outputs/second-/volt of analog signal applied to said input means; and

digital accumulator means, including control means connected to said output means of said conversion means, signal input means and digital word output means, for algebraically summing digital words with an accumulated digital value in accordance with the polarity of the analog signal upon receipt of signal at said control means and supplying the result at said digital word output means;

said accumulator means including:

storage means for use in circulating the accumulated digital words;

adder means, including overflow means, for summing the circulated digital word with the input word upon receipt of a control signal and providing an output at said over-



flow means when the capacity of said adder is exceeded; and

limiter means connected to said overflow means, for converting the circulated word to a limit word whenever an overflow output signal is generated.

4,086,657

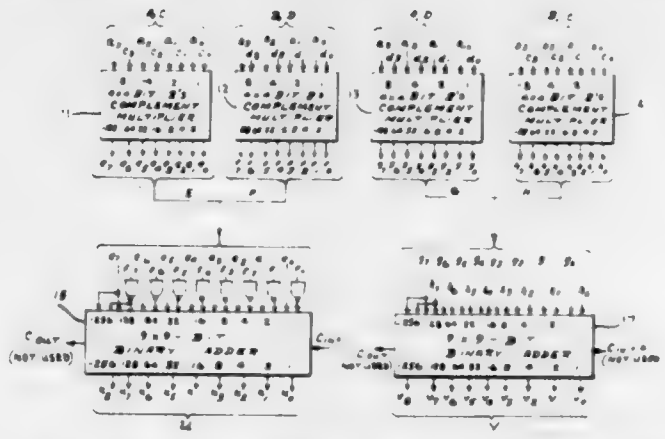
FIVE-STAGE FOUR-BIT COMPLEX MULTIPLIER

James R. Gaskill, Jr., Pacific Palisades, and Lawrence R. Weill, Seal Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 18, 1976, Ser. No. 715,581

Int. Cl.[2] **G06F** *7/52*

U.S. Cl. 364—757 **9 Claims**



1. A 2's complement system for multiplying two complex numbers with each input being one of said two complex numbers with each having a real and imaginary term and the system generating a complex product as a pair of real and imaginary terms, comprising:

a. a pair of real and a pair of imaginary 4×4 bit 2's complement multipliers with the multipliers having as inputs said two complex numbers and having output bits with the pair of real multipliers providing two most significant bits;

b. a first subtractor section fed by each of the six least significant bits of each of the outputs of the pair of real multipliers generating the six least significant bits of the real term of the complex product with the first subtractor section also generating a carry bit;

c. a second subtractor section fed by the two most significant bits of each of the pair of real multipliers and fed by a carry bit generated by the first subtractor section generating the three most significant bits of the real term of the complex product;

d. a first adder section fed by the first six least significant output bits of each of the pair of imaginary multipliers

generating the six least significant bits of the imaginary term of the complex product and a carry bit;

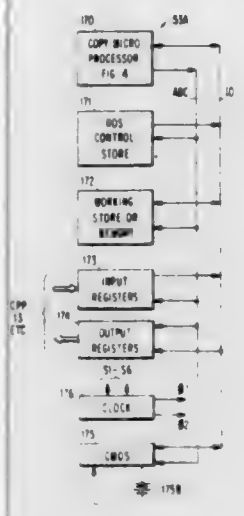
e. a second adder section fed by the two most significant bits of each of the imaginary multipliers and fed by a carry bit generated by the first adder section generating the three most significant bits of the imaginary term of the complex product.

4,086,658

INPUT/OUTPUT AND DIAGNOSTIC ARRANGEMENTS FOR PROGRAMMABLE MACHINE CONTROLLERS HAVING MULTIPROGRAMMING CAPABILITIES

David Ernest Finlay, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,451
Int. Cl.[2] G06F *13/00*
U.S. Cl. 364—900 **14 Claims**



1. A data processing apparatus including a data processing unit having a given memory address space identified by an address field having a plurality of bits,

a control memory connected to said data processing unit for receiving said plurality of bits and having registers addressable within a portion of said address space,

a read/write memory connected to said data processing unit for receiving said plurality of bits and having registers addressable in a second portion of said address space, said read/write memory being divided into address zones requiring switching action by the data processing unit to address memory registers in various zones and a plurality of input/output registers connected to said data processing unit to be addressed thereby by said plurality of bits for being addressable in said memory address space common to predetermined ones of said address zones.

4,086,659

CONTROL SYSTEM FOR DISK DRIVE

Stipe Cizmic, San Mateo; Wayne L. Edwards, Jr., Mountain View; David L. Griffith, Pleasanton; Martin O. Halfhill, San Jose; James O. Jacques, Tracy; Leonard R. Shenfield, Santa Clara, and Ronald W. Votaw, Morgan, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 28, 1977, Ser. No. 773,102
Int. Cl.[2] G11B *17/00*; G06F *13/08*
U.S. Cl. 364—900 **18 Claims**

1. A disk drive comprising:

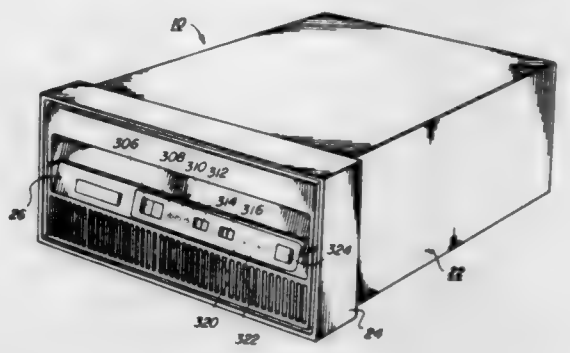
a housing having a door through which a cartridge including a recording disk therein may be inserted;

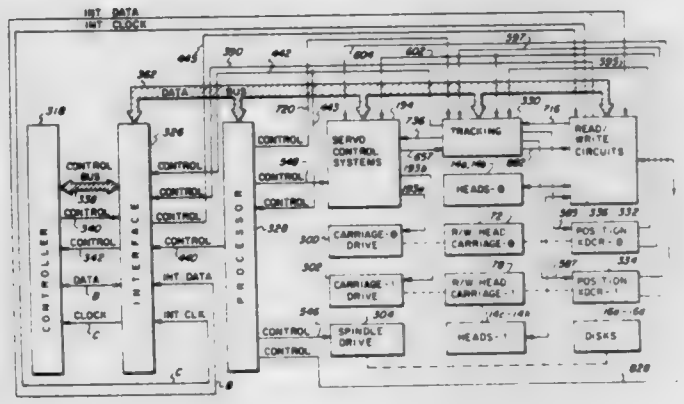
a spindle drive assembly mounted in said housing and responsive to a first set of instructions for rotating the recording disk of a disk cartridge loaded into said housing through said door and onto said spindle drive assembly;

an actuator mounted in said housing and capable of controlled reciprocal movements relative to the axis of rotation of said spindle drive assembly;

a head carriage assembly mounted in said housing to said actuator and including at least one electromagnetic read/write head thereon for reading data from and writing data onto tracks of the recording disk of a cartridge loaded onto said spindle drive assembly;

servo control apparatus mounted in said housing and responsive to a second set of instructions for controlling the speed and direction of the reciprocal movements of said actuator;





read/write apparatus mounted in said housing and responsive to a third set of instructions for controlling the reading and writing of data by said electromagnetic head; and

programmed data processing means mounted in said housing and connected to said spindle drive assembly, said servo control apparatus and said read/write apparatus for generating said first, second and third sets of instructions under program control.

4,086,660

AUTOMATIC FORMAT CONTROL FOR TEXT PRINTING SYSTEM

Michael Eudell McBride, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1976, Ser. No. 680,562
Int. Cl.[2] G06F *3/12*
U.S. Cl. 364—900 **2 Claims**

1. An automatic format control for a text printing system having a keyboard, a text buffer for storing a page of text and format information keyed on said keyboard, a printer control, segmented media for storing text and format information, a reader/recorder for reading text and format information from said media and said text buffer and for causing text and format information to be recorded on said media and stored in said text buffer, and

means for causing said printer control to be set upon keying format information on said keyboard; wherein the improvement comprises:

a format buffer; and

means for causing format information representative of said printer control setting to be stored in said format buffer



upon recording text and format information on one of said media from said text buffer.

4,086,661

CYLINDRICAL MAGNETIC DOMAIN ELEMENT

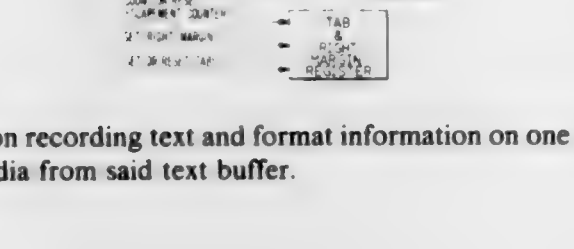
Shunsuke Matsuyama, Tokyo; Junichi Tanahashi, Yamato; Kenso Imamura, Yokohama, and Teiji Majima, Komae, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 7, 1975, Ser. No. 556,402

Claims priority, application Japan, Mar. 14, 1974, 49-29387; May 9, 1974, 49-51499

Int. Cl.[2] G11C *19/08*

U.S. Cl. 365—39 **8 Claims**



3. A cylindrical magnetic domain element comprising a magnetic sheet material having a first surface; and a multi-layered propagation pattern on said first surface; said multi-layered propagation pattern comprising a first layer of permalloy propagation pattern segments having uniaxial magnetic anisotropy, a second layer of permalloy propagation pattern segments having uniaxial magnetic anisotropy and a layer of non-magnetic material separating said first and second layers.

4,086,662

MEMORY SYSTEM WITH READ/WRITE CONTROL LINES

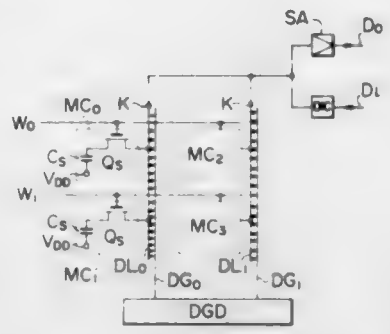
Kiyoo Itoh, Higashikurume, Japan, assignor to Hitachi, Ltd., Japan

Filed Aug. 11, 1976, Ser. No. 713,580

Claims priority, application Japan, Nov. 7, 1975, 50-133078; Jan. 26, 1976, 51-6669

Int. Cl.[2] G11C *7/00, 11/24*

U.S. Cl. 365—189 **7 Claims**



1. A memory system comprising a plurality of word lines arranged in parallel in a predetermined direction and to which signals are selectively applied, a plurality of information lines arranged in parallel to traverse said word lines, a plurality of memory cells connected at the intersections of said word lines and said information lines, a plurality of control lines arranged in parallel and disposed adjacently to respective information lines to provide field interaction therewith and to which signals are selectively applied for reading out on the corresponding information line only the information stored in a selected memory cell arranged at the intersection of a selected control line and a word line to which signals are applied, and a sense amplifier having at least one input terminal to which said information lines are connected in common.

4,086,663

MIXING APPARATUS AND METHOD

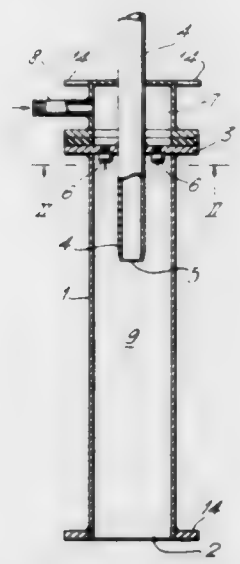
Peter Croft, Ilkley, England, assignor to Allied Colloids Limited, Bradford,, England

Filed Jun. 15, 1976, Ser. No. 696,172

Claims priority, application United Kingdom, Jun. 21, 1975, 26465/75

Int. Cl.[2] B01F *15/02*

U.S. Cl. 366—154 **11 Claims**



1. A device comprising a duct open at a first end, a solid inlet for feeding particulate solids entrained in a stream of gas centrally into the duct at or near its second end with a direction of flow generally towards the first end, a plurality of sprays arranged around said solid inlet for spraying liquid into the duct as a spray of mist particles that substantially fills the width of the duct and that travels generally towards the first end and means for injecting said solids through said solids inlet into the duct with a swirling action.

DESIGN PATENTS

GRANTED APRIL 25, 1978

ERRATA

For CLASS	See PATENT NO.
D10–119	247,785

Gl
s

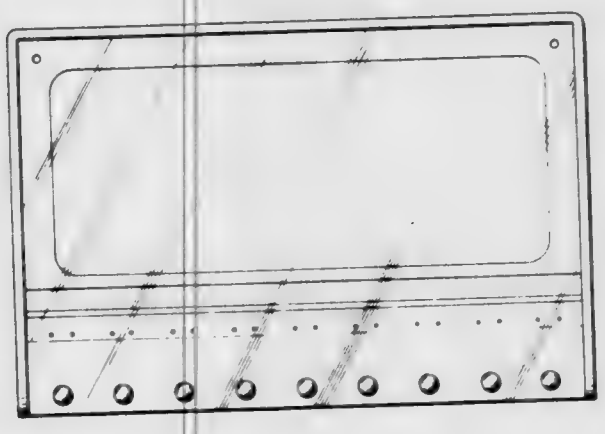
U.

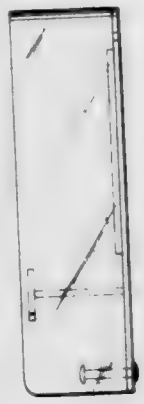
DESIGNS

APRIL 25, 1978

247,761
JEWELRY CADDY
Gladys Albert, Bayside, N.Y., assignor to Gladys Albert, Bayside, N.Y.
Filed Jun. 7, 1976, Ser. No. 693,275
Term of patent 7 years
Int. Cl. D6—*04*

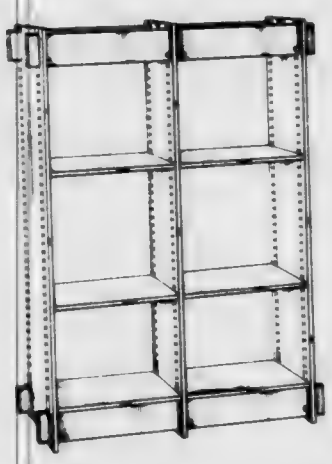
U.S. Cl. D6—132





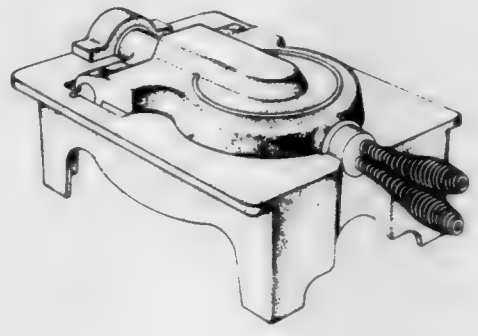
247,762
SHELF UNIT OR SIMILAR ARTICLE
Kleber Lenoir, Montreal, Canada, assignor to R. S. Furniture Inc., Montreal, Canada
Filed Feb. 26, 1976, Ser. No. 661,759
Claims priority, application Canada, Oct. 20, 1975, 201075
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—186



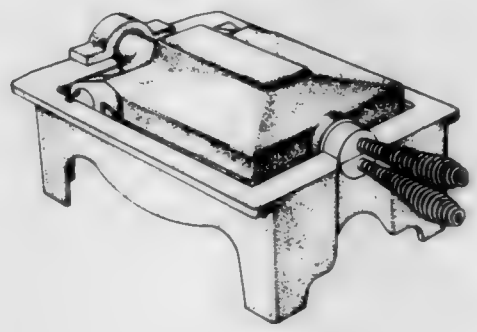
247,763
WAFFLE BAKER
Fred S. Carbon, 105 Days Ave., Buchanan, Mich. 49107
Filed May 12, 1976, Ser. No. 685,937
Term of patent 14 years
Int. Cl. D7—*02*

U.S. Cl. D7—87



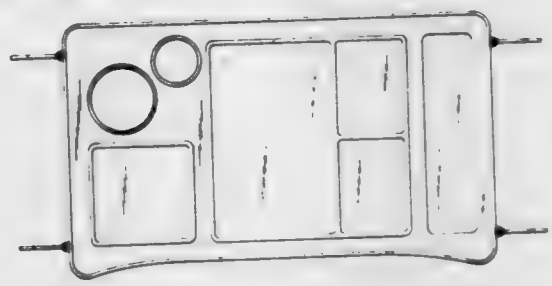
247,764
WAFFLE BAKER
Fred S. Carbon, 105 Days Ave., Buchanan, Mich. 49107
Division of Ser. No. 685,937, May 12, 1976. This application Aug. 5, 1977, Ser. No. 821,980
Term of patent 14 years
Int. Cl. D7—*02*

U.S. Cl. D7—87

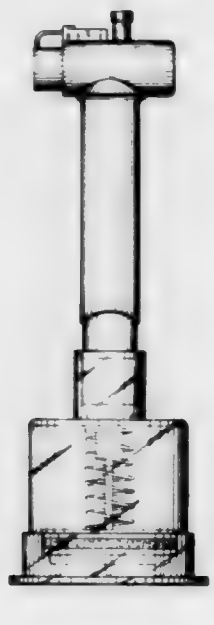


247,765
FOOD SERVICE TRAY
Dorothy Pariente, New York, N.Y., assignor to Dorothy Pariente, New York, N.Y.
Filed Jul. 2, 1976, Ser. No. 702,197
Term of patent 14 years
Int. Cl. D7—*99*

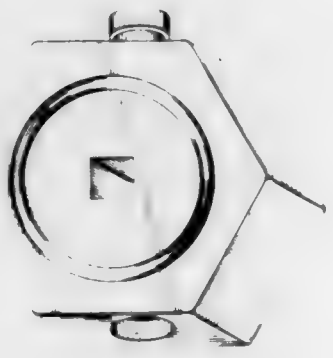
U.S. Cl. D7—38



247,766
SELF CLEANING DESOLDERING TOOL COMBINATION OR THE LIKE
William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 95969
Filed May 13, 1976, Ser. No. 686,230
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



247,767
PLASTIC BOTTLE
Charles Sagona, 1209 Canterbury Rd., Clearwater, Fla. 33516
Filed Mar. 24, 1976, Ser. No. 669,904
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—130



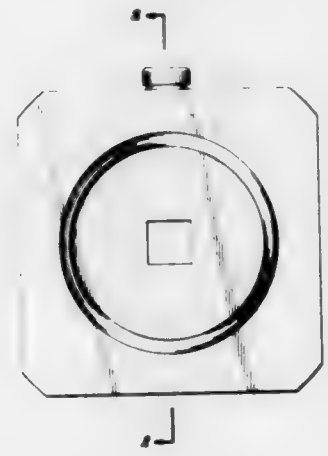
247,768
PLASTIC BOTTLE
Charles Sagona, 1209 Canterbury Rd., Clearwater, Fla. 33516
Filed Mar. 24, 1976, Ser. No. 669,905
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—130



247,769
PLASTIC BOTTLE
Charles Sagona, 1209 Canterbury Rd., Clearwater, Fla. 33516
Filed Apr. 9, 1976, Ser. No. 675,549
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—156



247,770
PLASTIC BOTTLE
Charles Sagona, 1209 Canterbury Rd., Clearwater, Fla. 33516
Filed Apr. 9, 1976, Ser. No. 675,548
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168



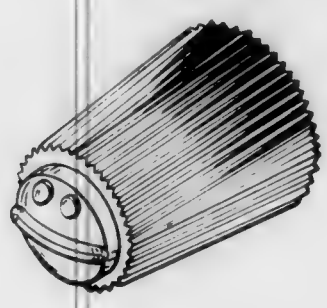
247,771
DISPLAY CARD FOR EARRINGS OR THE LIKE
Paul Moskowitz, Brooklyn, N.Y., assignor to Kim Craftsmen, Ltd., New York, N.Y.
Filed Aug. 6, 1976, Ser. No. 712,266
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—191



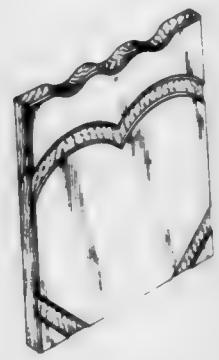
247,772
CAN
Edward William Sexton, Jr., 990 Massachusetts Ave., Arlington, Mass. 02174
Filed Sep. 27, 1976, Ser. No. 726,439
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—218



247,773
DISPENSER CAP
Silas Charles Topham, 665 E. 1500 South, Orem, Utah 84057, and Ariel R. Davis, 3476 Fleetwood Dr., Salt Lake City, Utah 84110
Filed Sep. 10, 1976, Ser. No. 721,932
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—278



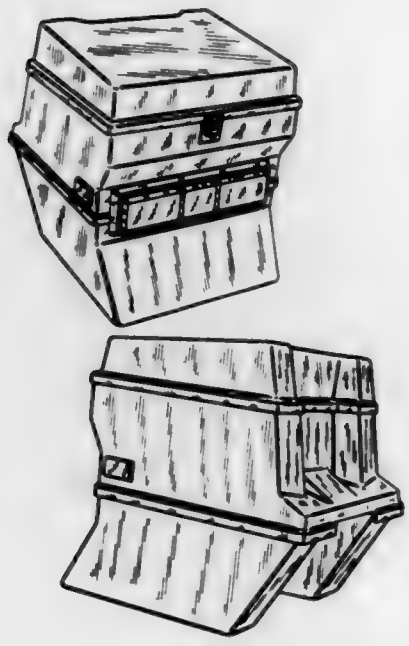
247,774
WALL PLAQUE
Keith A. Underwood, 919 S. High St., Urbana, Ohio 43078
Filed Mar. 22, 1976, Ser. No. 669,178
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—132



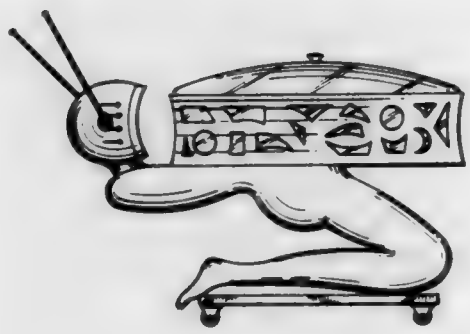
247,775
MOTOR CYCLE SIDE PANNIER
Leonard Watson-O'Hara, Manchester, England, assignor to Screenflow Accessories Limited, Bolton, England
Filed Nov. 16, 1976, Ser. No. 742,504
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



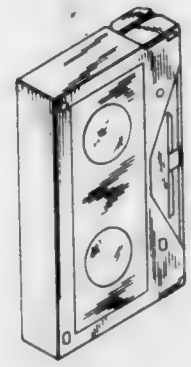
247,776
CYCLE SADDLEBOX
Ralph Kramer, 2628 Powhattan Pkwy., Toledo, Ohio 43606
Filed May 16, 1977, Ser. No. 797,584
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



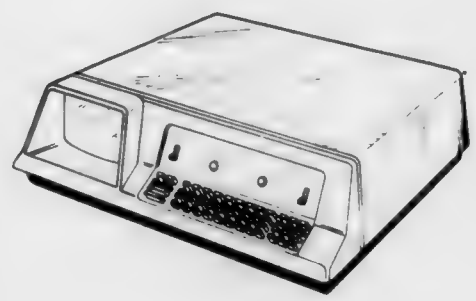
247,777
HOUSING FOR AUDIO-VISUAL ENTERTAINMENT SYSTEM OR SIMILAR ARTICLE
Donald Roberson, 3312 Cedarbrook, Cleveland Hts., Ohio 44118
Filed Aug. 16, 1976, Ser. No. 714,643
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—1



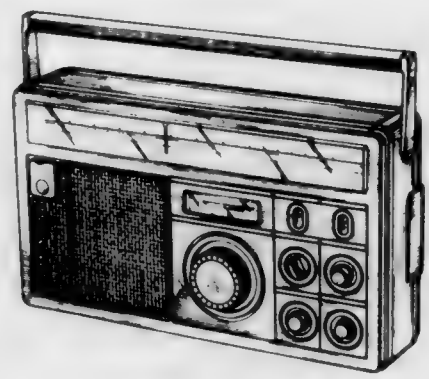
247,778
TAPE CASSETTE CASE
Daizi Nagatomo, Yohohama, Japan, assignor to Sony Corporation
Filed Mar. 9, 1976, Ser. No. 663,122
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—11



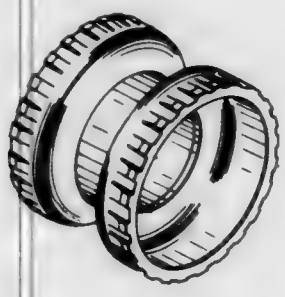
247,779
DESK TOP COMPUTER
Richard G. Barnich, Grand Blanc, and Gary D. Johnson, Brighton, both of Mich., assignors to Process Computer Systems, Inc., Mich.
Filed Aug. 9, 1976, Ser. No. 712,525
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45



247,780
PORTABLE RADIO
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Feb. 4, 1976, Ser. No. 655,193
Claims priority, application Japan, Aug. 9, 1975, 50-32735
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



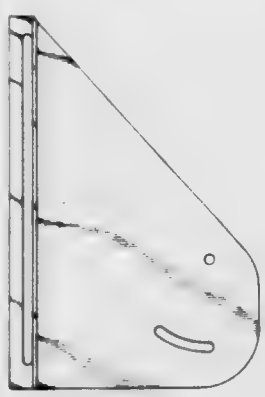
247,781
OUTER RACE FOR BALL BEARING
Edward DiLoreto, Downey, Calif., assignor to Yale Engineering Company, Downey, Calif.
Filed Aug. 2, 1976, Ser. No. 710,510
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—143



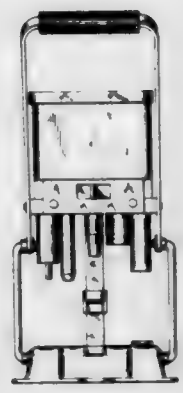
247,782
LENS CAP RETAINER
Armond Blumberg, 312 A Plochman La., Woodstock, N.Y. 12498
Filed Nov. 29, 1976, Ser. No. 745,961
Term of patent 7 years
Int. Cl. D16—*99*
U.S. Cl. D16—50



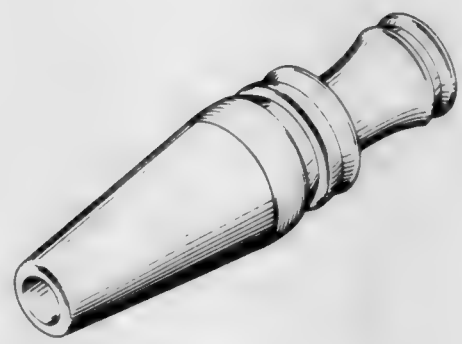
247,783
MOUNTING PLATE FOR ARCHERY BOW SIGHTS
Gerald I. Killian, 16016 SE. 82nd Dr., Clackamas, Oreg. 97015
Filed Mar. 25, 1976, Ser. No. 670,394
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—5



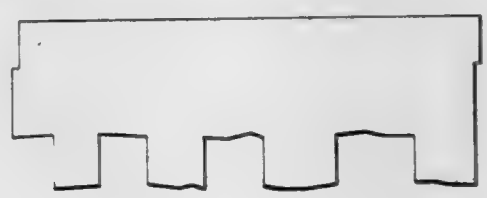
247,784
SHOTGUN SHELL LOADING PRESS
Richard J. Lee, R.R. 2, Hartford, Wis. 53027
Filed Feb. 23, 1976, Ser. No. 660,488
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—99



247,785
GAME CALL
Robert D. Ehrich, 435 Edgewater Dr., Mishawaka, Ind. 46544
Filed Sep. 30, 1976, Ser. No. 728,390
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—119



247,786
ROOFING SHINGLE
David N. Flood, Clearwater, Fla., assignor to The Celotex Corporation, Tampa, Fla.
Filed Mar. 31, 1976, Ser. No. 672,347
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



247,787
LIGHTER

Robert James Weir, London, England, assignor to Alfred Dunhill Limited, London, England

Filed Nov. 1, 1976, Ser. No. 737,583

Claims priority, application United Kingdom, Jul. 2, 1976, 976328/76

Term of patent 14 years

Int. Cl. D27—*05*

U.S. Cl. D27—36



247,788
HAIR SPRAY SHIELD FOR ATTACHMENT TO SPRAY CANS

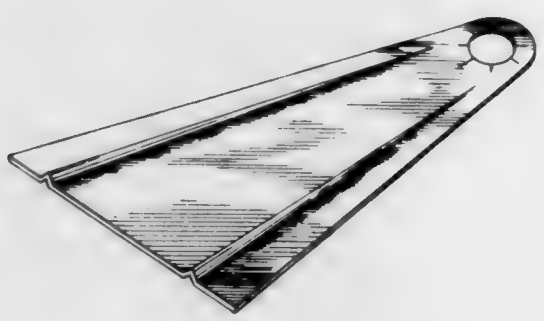
George S. Bernyk, 2501 W. Redondo Beach Blvd., Gardena, Calif. 90249

Filed Feb. 26, 1976, Ser. No. 661,706

Term of patent 14 years

Int. Cl. D28—*03*

U.S. Cl. D28—9



247,789
EXERCISER

Marcel Belkir, 1701 York Ave., Apt. 25-C, New York, N.Y. 10028

Filed Sep. 24, 1976, Ser. No. 726,251

Term of patent 14 years

Int. Cl. D21—*02*; D34—*5 A*

U.S. Cl. D34—5 K



247,790
COMBINED GOLF BALL MARKER AND DIVOT REPLACEMENT TOOL

Albert P. Jackson, 6521 Washington St., Des Moines, Iowa 50311

Filed Oct. 26, 1976, Ser. No. 735,530

Term of patent 14 years

Int. Cl. D21—*02*

U.S. Cl. D34—5 CB



247,791
GOLF PUTTING HEAD

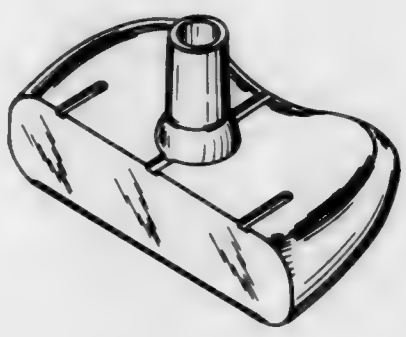
Salvatore Monteleone, 18275 Parthenia St., Northridge, Calif. 91324

Filed Nov. 8, 1976, Ser. No. 739,560

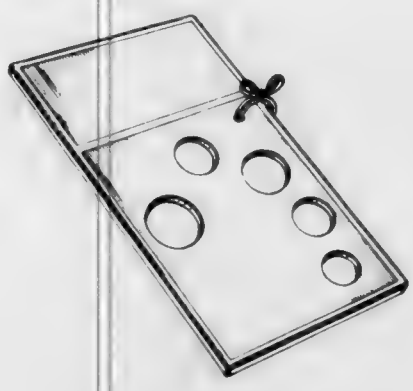
Term of patent 14 years

Int. Cl. D21—*02*

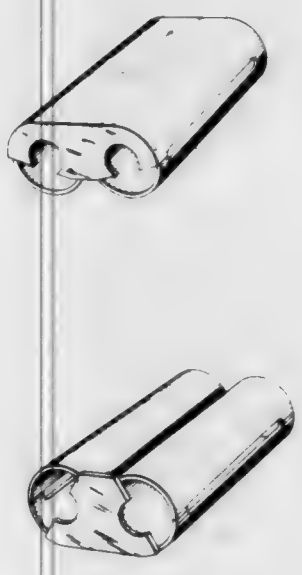
U.S. Cl. D34—5 GH



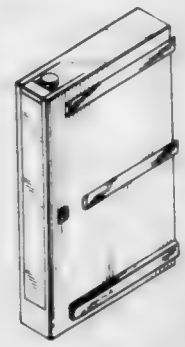
247,792
NOVELTY DIGIT COUNTER
Edward G. Matay, 1231 E. Jackson St., Joliet, Ill. 60432
Filed May 5, 1976, Ser. No. 684,261
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



247,793
COIN CONTAINER
Peter A. McCarthy, 106 Athens Ave., South Amboy, N.J. 08879
Filed Aug. 23, 1976, Ser. No. 716,880
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D52—4 R



247,794
TAPE CASSETTE CASE
Keizaburo Tazawa, Tokyo; Shinichiro Takahashi, Yokohama, and Kishio Ikeda, Tokyo, all of Japan, assignors to Sony Corporation
Filed Jan. 26, 1976, Ser. No. 648,863
Claims priority, application Japan, Jul. 14, 1975, 50-29230
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



247,795
PUSH SYMBOL FOR GLASS DOOR OR THE LIKE
Jack Darrell, 1646 Old Spanish Trail, Houston, Tex. 77054
Filed Mar. 16, 1977, Ser. No. 778,274
Term of patent 14 years
Int. Cl. D20—*03;* D8—*99*
U.S. Cl. D96—12 C



A. C

ACE

Ack
ap
Acte
tu
Ada
m
Add

Ade
T
C
Ade
S
d
Adi

Adv

AE

Age

Ahr
u
o
Aib

Aig

Aid
Air
Air
Ais
Aiz

Ak

Al
Al
Al
Al

A
A
A
A

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF APRIL, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. O. Smith Corporation: *See—*
Hartzell, Herschell H.; and Mullaney, Norbert F., 4,085,831, Cl. 188-210.000.

ACF Industries, Incorporated: *See—*
Harting, Gary L.; Sutter, Robert F.; and Malo, Lowell L., 4,085,683, Cl. 105-424.000.

Acker, William F., to Honeywell Inc. Single sideband transmitter apparatus. 4,086,536, Cl. 325-137.000.

Acton, Edward M.; and Ryan, Kenneth J., to Stanford Research Institute. Septacidin analogs. 4,086,416, Cl. 536-24.000.

Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,085,647, Cl. 84-1.240.

Addressograph Multigraph Corporation: *See—*
Beck, Charles K., 4,086,202, Cl. 260-33.20R.
Toepke, Ival Lee, 4,086,088, Cl. 96-1.00R.

Adelman, Herbert B.; and Goodman, Jack, to Crowell Corporation, The. Reforced paper-microfoam sheet packaging material. 4,086,384, Cl. 428-213.000.

Adelstein, Gilbert W.; Dajani, Esam Z.; and Yen, Chung Hwai, to G. D. Searle & Co. Novel anti-diarrheal 4-azatricyclo[4.3.1.$1^{3,8}$] undecane derivatives. 4,086,227, Cl. 260-239.00B.

Adidas Fabrique de Chaussures de Sport: *See—*
Hemmer, Lorenz, 4,085,526, Cl. 36-59.00R.

Advanced Circuit Technology, Inc.: *See—*
Ostman, Barry I.; and Roberts, Joseph A., 4,085,502, Cl. 29-629.000.

AEG-Elotherm G.m.b.H.: *See—*
Scheffler, Friedrich; and Stangl, Ernst, 4,086,462, Cl. 219-10.710.

Agency of Industrial Science & Technology: *See—*
Gonda, Shunichi, 4,086,108, Cl. 148-175.000.
Ito, Yukio; Yasumoto, Yosiro; Masuda, Etsuro; and Suzuki, Hiroshi, 4,086,327, Cl. 423-385.000.

Ahrweiler, Klaus; Leifeld, Ferdinand; Quoos, Kurt; and Kusters, Eduard Finkenweg 18, to Eduard Kusters. Process for the manufacture of flat sheets or webs. 4,086,316, Cl. 264-120.000.

Aiba, Masahiko: *See—*
Takano, Rikuo; Ohta, Yutaka; Sumitomo, Yuji; Shimazawa, Yoichi; and Aiba, Masahiko, 4,085,837, Cl. 197-133.00R.

Aigami, Koji: *See—*
Inamoto, Yoshiaki; Tsuchihashi, Kiyoshi; Takaishi, Naotake; Fujikura, Yoshiaki; and Aigami, Koji, 4,086,285, Cl. 260-666.0PY.

Aioi Seiki Kabushiki Kaisha: *See—*
Yonezawa, Keitaro, 4,085,669, Cl. 100-53.000.

Air Products and Chemicals, Inc.: *See—*
Bechara, Ibrahim S.; Zaluska, Philip J.; and Mascioli, Rocco L., 4,086,213, Cl. 260-77.5AB.

Airborne Mfg. Co.: *See—*
Hokky, Stephen G., 4,086,034, Cl. 417-369.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Nakane, Mototaka; and Terada, Takami, 4,085,969, Cl. 297-367.000.

Aizawa, Hideo: *See—*
Amagai, Susumu; Kawai, Shizuya; Kan, Hiroyasu; and Aizawa, Hideo, 4,085,816, Cl. 180-64.00A.

Akagi, Motoo: *See—*
Kohashi, Takahiro; Akagi, Motoo; Oba, Yoichi; Nonogaki, Saburo; Tanaka, Makoto; Kaneko, Tadao; and Tomita, Yoshifumi, 4,086,090, Cl. 96-35.100.

Akashi, Goro: *See—*
Suzuki, Osamu; Oishi, Kengo; Akashi, Goro; and Sega, Kenji, 4,085,907, Cl. 242-199.000.

Akiyama, Minoru: *See—*
Ishida, Torao; Akiyama, Minoru; Sakurai, Yoshio; and Tsukagoshi, Shigeru, 4,086,417, Cl. 536-29.000.

Aktiebolaget Tudor: *See—*
Sundberg, Erik G.; and Steig, Hans, 4,086,401, Cl. 429-145.000.

Akzona Incorporated: *See—*
Hutton, Ronald Eric; and Cross, David Frederic Watson, 4,086,304, Cl. 260-989.000.

Alberts, Claes Yngve Hjalmar, to Stabilator AB. Method for sealing cracks and cavities in different kinds of building constructions, such as building constructions in rock, concrete, brickwork and timber. 4,086,309, Cl. 264-35.000.

Albrecht, Raymond E., to H. H. Robertson Company. Metal cellular decking section and method of fabricating the same. 4,085,558, Cl. 52-451.000.

Alenares, Santiago S. Elastic support for the veins of the foot. 4,085,745, Cl. 128-165.000.

Alewitz, Sam, to Perfection Corporation. Gas riser apparatus and method. 4,085,950, Cl. 285-45.000.

Alexandrovich, George, Sr.: *See—*
Post, Herman D.; Perper, Edward; and Alexandrovich, George, Sr., 4,085,926, Cl. 269-295.000.

Alfa Romeo S.p.A.: *See—*
Garcea, Giampaolo, 4,086,063, Cl. 23-288.00F.

Allan, Arnold M.: *See—*
Olds, Dale F.; Allan, Arnold M.; and Warren, Charles H., 4,086,370, Cl. 426-613.000.

Allen, William P., Jr., to Lockheed Corporation. Method for measuring physiological parameter. 4,085,740, Cl. 128-2.05R.

Allied Colloids Limited: *See—*
Croft, Peter, 4,086,663, Cl. 366-154.000.

Allis-Chalmers Corporation: *See—*
Kreitzberg, Ernest A., 4,085,834, Cl. 192-87.130.

Alpha-Debon Industries, Inc.: *See—*
Dorsch, Robert; and Leach, Daryl, 4,085,896, Cl. 239-504.000.

Alpha Metals, Inc.: *See—*
Schneider, Alvin F., 4,086,179, Cl. 252-171.000.

Altair Tool & Engineering Inc.: *See—*
McCardell, Willard B., 4,085,989, Cl. 339-59.00M.

Altscher, Siegfried; and Goswami, Jagadish C., to Stauffer Chemical Company. Polyurethane foam containing a flame retardant. 4,086,194, Cl. 260-2.5AJ.

Aluminum Company of America: *See—*
Martin, Edward S.; and Wohleber, David A., 4,086,320, Cl. 423-135.000.

Amagai, Susumu; Kawai, Shizuya; Kan, Hiroyasu; and Aizawa, Hideo, to Nissan Motor Co., Ltd. Heat shield for an exhaust tail pipe. 4,085,816, Cl. 180-64.00A.

Amerace Corporation: *See—*
Vecchiotti, Camillo M., 4,086,119, Cl. 156-273.000.

American Cyanamid Company: *See—*
Diehl, Robert Eugene; and Kendall, Roger Vernon, 4,086,242, Cl. 260-308.00B.
Matsuda, Ken; and Barber, William Austin, 4,086,275, Cl. 260-561.00N.
Suen, Tzeng Jiueq; Begala, Arthur James, Jr.; and Grayson, Martin, 4,086,181, Cl. 252-180.000.

American Door Company of Michigan, Inc.: *See—*
Hites, Clifford C., 4,086,382, Cl. 428-168.000.

American Filtrona Corporation: *See—*
Holden, Herbert K.; and Mansfield, Peter W., 4,085,663, Cl. 93-1.00C.

American Home Products Corporation: *See—*
Strike, Donald P.; and Kao, Wenling, 4,086,269, Cl. 260-514.00D.

American Optical Corporation: *See—*
Prunier, Louis, 4,085,553, Cl. 51-216.0LP.
Sullivan, Philip J., 4,085,919, Cl. 249-134.000.

American Sunroof Manufacturing Company: *See—*
Schlapp, Albert, 4,085,965, Cl. 296-137.00F.

Ames, Robert G. Self-contained dry wall taper. 4,086,121, Cl. 156-526.000.

AMP Incorporated: *See—*
Kautz, Stephan Douglas, 4,085,995, Cl. 339-97.00R.
Volinskie, Robert, 4,085,994, Cl. 339-95.00R.

Andax Pty. Ltd.: *See—*
Anson, George; and Liberts, John, 4,085,701, Cl. 118-57.000.

Anderson, Charles H. Flue and chimney cleaners. 4,085,477, Cl. 15-243.000.

Anderson, Leroy E.; Schmidt, Michael P.; and Weaver, William W., to Manufacturers Systems, Inc. Method of making corrugated flexible metal tubing. 4,085,604, Cl. 72-50.000.

Anderson, Paul Michael, to General Atomic Company. Nuclear reactor core refueling method. 4,086,133, Cl. 176-30.000.

Anderson, Robert K.: *See—*
Thompson, Leo M.; Anderson, Robert K.; Kocher, Lawrence H.; and Jackel, John W., 4,085,865, Cl. 222-1.000.

Anderson, Robert L.: *See—*
Kaufman, Arnold S.; and Anderson, Robert L., 4,085,735, Cl. 126-299.00E.

Anderson, Thomas E.: *See—*
Ibsen, Ole N.; and Anderson, Thomas E., 4,086,525, Cl. 320-33.000.

Ando, Hiromi, to Tokico Ltd. Vacuum booster. 4,085,656, Cl. 91-376.00R.

Ando, Toshifumi: *See—*
Mutoh, Fumio; Koizumi, Hiroshi; Yamasaki, Jun; and Ando, Toshifumi, 4,086,369, Cl. 426-519.000.

Andrew, John W. Removable lamp device. 4,086,479, Cl. 362-432.000.

Anglikowski, Ronald Edward, to Bell Telephone Laboratories, Incorporated. Loop-around test circuit for telecommunications lines. 4,086,448, Cl. 179-175.30R.

Anson, George; and Liberts, John, to Andax Pty. Ltd. Apparatus for wax impregnation. 4,085,701, Cl. 118-57.000.

Antonov, Sergei Fedorovich; Krasheninin, Pavel Firsovich; Bogdanov, Vyacheslav Mikhailovich; Khramtsov, Andrei Georgievich; and

Eremin, Gennady Efimovich. Production of vodka. 4,086,366, Cl. 426-14.000.

Aonuma, Masashi: *See—*
Suzuki, Masaaki; Shirahata, Ryuji; Aonuma, Masashi; and Kitamoto, Tatsuji, 4,086,374, Cl. 427-48.000.

Apfelbeck, Otto L.: *See—*
Fox, David A.; and Apfelbeck, Otto L., 4,086,503, Cl. 307-363.000.

Arai, Hiroaki: *See—*
Yamaki, Hiromi; and Arai, Hiroaki, 4,086,517, Cl. 318-39.000.

Araki, Kazumi: *See—*
Nakayama, Kiyoshi; Araki, Kazumi; and Yoshida, Hajime, 4,086,137, Cl. 195-29.000.

Archer, John Richard: *See—*
Bottoms, Harry Simister; and Archer, John Richard, 4,085,830, Cl. 188-196.00D.

Archifar Industrie Chimiche del Trentino S.p.A.: *See—*
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, 4,086,225, Cl. 260-239.30P.

Argo, Wesley B.; Chen, Gilbert K. C.; Kocatas, Babur M.; and Ziebold, Steven A., to Monsanto Company. Fiber bed separator and method for separation of aerosols from gases without re-entrainment. 4,086,070, Cl. 55-97.000.

Ariga, Keiji; Tsutsui, Nobuyuki; and Kanda, Katsumi, to Toyo Kohan Co., Ltd. Method of producing a composite coated steel sheet. 4,086,153, Cl. 204-181.00R.

Armour Pharmaceutical Company: *See—*
Tregear, Geoffrey William, 4,086,196, Cl. 260-112.50R.

Armstrong, William W., to Pfizer Inc. Doxycycline compositions. 4,086,332, Cl. 424-80.000.

Arnold, Fred E.; and Hedberg, Frederick L., to United States of America, Air Force. Ethynyl-substituted aromatic anhydrides. 4,086,248, Cl. 260-345.200.

Arnold, Fred E.: *See—*
Kovar, Robert F.; and Arnold, Fred E., 4,086,232, Cl. 260-250.00Q.

Aronoff, Edward I.; McLay, William J.; and Mitchell, Robert E., to Knit-Fin Machinery Ltd. Apparatus for treating tubular fabrics. 4,085,484, Cl. 26-84.000.

Aronson, Howard A.; and Chung, San Chi, to Stewart-Warner Corporation. Speed responsive and indicating system. 4,086,532, Cl. 324-166.000.

Arora, Sardari L., to Haffmann-La Roche Inc. Field effect light shutter employing low temperature nematic liquid crystals. 4,086,002, Cl. 350-350.000.

Asahi-Dow Limited: *See—*
Saito, Toranosuke; Kitani, Masakatu; Mori, Kenshi; and Izawa, Shinichi, 4,086,206, Cl. 260-45.8NT.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Ishida, Torao; Akiyama, Minoru; Sakurai, Yoshio; and Tsukagoshi, Shigeru, 4,086,417, Cl. 536-29.000.
Mori, Taketoshi; Goto, Susumu; Katsuragi, Asaichi; and Matsuki, Mutsuo, 4,086,295, Cl. 260-857.00L.

Asakawa, Shigeru; Sugiyama, Fumio; Gotoh, Akio; and Okamoto, Shigenori, to Nippon Telegraph & Telephone Public Corporation; and Tokyo Shibaura Electric Co., Ltd. Time division multiplex communication receiving apparatus. 4,086,537, Cl. 325-478.000.

Asao, Yasuzi; and Ogata, Yasuhiro, to Fuji Photo Film Co., Ltd. Recording sheets. 4,085,949, Cl. 282-27.500.

ASEA AB: *See—*
Burstrom, Martin; Larker, Hans; and Nilsson, Jan, 4,085,605, Cl. 72-54.000.

Ashbee, William Henry, to International Business Machines Corporation. Hardware-software counting. 4,086,470, Cl. 235-92.0DP.

Ashdown, Ronald Arthur, to Foster Wheeler Energy Corporation. Steam boilers. 4,085,708, Cl. 122-7.00B.

Astrand, Sven Ingvar. Propellers with retractable blades. 4,086,025, Cl. 416-142.000.

Atkinson, Jennifer Geraldine: *See—*
Kindl, Bruno; and Atkinson, Jennifer Geraldine, 4,086,150, Cl. 204-95.000.

Atlas Copco Aktiebolag: *See—*
Norr, Ulf Einar Sigvard, 4,085,768, Cl. 137-102.000.

Atomic Energy of Canada Limited, The: *See—*
Petkau, Abram; and Pleskach, Stanley Daniel, 4,086,330, Cl. 424-1.000.

Aubert, Georges. Grave digging machine. 4,085,531, Cl. 37-190.000.

Audio-Sine, Inc.: *See—*
Honebrink, Erik N.; and Myntti, Jon N., 4,086,005, Cl. 352-133.000.

Austin Powder Company: *See—*
Calder, Brooke J., Jr.; Belock, Robert J.; and Prescott, Roger N., 4,085,676, Cl. 102-23.000.

Auvitec: *See—*
Garnier, Pierre Georges; Gaullier, Bruno; and Jeanroy, Gerard Michel, 4,086,625, Cl. 364-104.000.

Avco Corporation: *See—*
Joray, Marvin L.; Heckley, Warner M.; and Gunyou, Lyman J., 4,085,570, Cl. 56-2.000.

Axer, Heinrich; and Roth, Gerd, to G. Siempelkamp & Co. Method of making pressed board. 4,086,313, Cl. 264-70.000.

Ayer, George Edward, to Bunker Ramo Corporation. Method and apparatus for connecting multi-conductor cables. 4,085,992, Cl. 339-91.00R.

B J Manufacturing Company, Inc.: *See—*
Neier, Benjamin Ray, 4,085,869, Cl. 222-271.000.

B.S.H. Electronics (Manchester) Limited: *See—*
Kropielnicki, Barbara Ewa; and Kropielnicki, Jerzy Jacek, 4,086,594, Cl. 343-704.000.

Bachman, Wesley J., to Dickey-john Corporation. Wheel slippage monitor. 4,086,563, Cl. 340-52.00B.

Badia, Michel, to Societe Anonyme de Traitement des Metaux et Alliages (SATMA). Process of making etched aluminum sheets and electrolytic capacitors formed therefrom. 4,086,148, Cl. 204-33.000.

Baggermans, Albertus Bernardus Antonius, to U.S. Philips Corporation. High-voltage transformer comprising a foil winding. 4,086,552, Cl. 336-119.000.

Bailes, Thomas Alan; and Taylor, Eric. Squeegee apparatus. 4,085,478, Cl. 15-245.000.

Bailey, John M., to Caterpillar Tractor Co. Distributor type fuel pump. 4,085,722, Cl. 123-139.0AL.

Bailey, Richard John, to GKN Transmissions Limited. Liquid cooled clutches. 4,085,835, Cl. 192-113.0AB.

Baker, Alfred Lynn, to RCA Corporation. Video disc player mechanism control system. 4,086,617, Cl. 358-128.000.

Baker, Don R., to Stauffer Chemical Company. Tetrahydrofuranyl bromoacetates used as biocides. 4,086,076, Cl. 71-67.000.

Baker, William G.; Gisbrecht, James H.; and Luszcz, Edward T., to Northrop Corporation. Dual mode optical seeker for guided missile control. 4,085,910, Cl. 244-3.160.

Balana, Ramon Cairo; and Caixes, Antonio Montserrat, to CPC International Inc. Process for stepping grain and products obtained therefrom. 4,086,135, Cl. 195-17.000.

Balasubramanyan, Sugavanam; and Shephard, Margaret Claire, to Imperial Chemical Industries Limited. 1,2,4-Triazole-containing compounds and their use as pesticides. 4,086,351, Cl. 424-269.000.

Balding, John V.: *See—*
Cieslak, Richard F.; and Balding, John V., 4,086,589, Cl. 340-384.00E.

Baranov, Sergei Vasilievich: *See—*
Deribas, Andrei Andreevich; Demchuk, Alexandr Fedorovich; Braunshtein, Rudolf Aronovich; Bochkarev, Boris Nikolaevich; Viktorov, Vladimir Borisovich; Karkishko, Gennady Semenovich; Baranov, Sergei Vasilievich; Prakhov, Alexandr Ivanovich; Kasatkin, Vladimir Semenovich; and Rozhkov, Alexandr Timofeevich, 4,085,883, Cl. 228-2.500.

Barber, Gerald L. Transportation system. 4,085,681, Cl. 104-23.0FS.

Barber, William Austin: *See—*
Matsuda, Ken; and Barber, William Austin, 4,086,275, Cl. 260-561.00N.

Barch, Herbert W.; and Bohy, August G., to PPG Industries, Inc. Method for producing slubby yarn. 4,085,487, Cl. 28-252.000.

Barchi, Henry J., to Congoleum Corporation. Process for applying foam material. 4,086,377, Cl. 427-358.000.

Barnard, Edwin Ralph. Heat distribution system. 4,085,543, Cl. 47-2.000.

Barnett, David Lee: *See—*
Dahl, John Conlan; and Barnett, David Lee, 4,085,906, Cl. 242-192.000.

Barney, Rodney L. Tool for removal and replacement of caster springs. 4,085,479, Cl. 16-45.000.

Barnish, Ian T.: *See—*
Cox, David A.; Barnish, Ian T.; and Evans, Anthony G., 4,086,272, Cl. 260-559.00D.

Baron, George B., to Marion Power Shovel Co., Inc. Pitch stop assembly for power shovels. 4,085,854, Cl. 214-138.00R.

Barrons, Keith C.; Smith, Leonard L., Jr.; and Holmsen, Theodore W., to Dow Chemical Company, The. Control of sedges and perennial grassy weeds with meta-halostyrene derivatives. 4,086,081, Cl. 71-126.000.

Bartlett, John Stanley; Hudson, Barry; and Pennington, John, to BP Chemicals Limited. Cobalt-catalyzed oxidation of C_3 to C_7 saturated aliphatic hydrocarbons to oxygenated products including acetic acid. 4,086,267, Cl. 560-241.000.

BASF Aktiengesellschaft: *See—*
Fahrbach, Gerhard; Gerberding, Karl; Seiler, Erhard; and Stein, Dieter, 4,086,298, Cl. 260-880.00B.
Hinselmann, Klaus; Penzien, Klaus; Schick, Rupert; Walter, Manfred; Weber, Heinz; and Wirth, Heinrich, 4,086,191, Cl. 260-2.50B.
Kempter, Fritz Erdmann; Hartmann, Heinrich; and Spoor, Herbert, 4,086,292, Cl. 260-831.000.
Nohe, Heinz; and Hannebaum, Heinz, 4,086,250, Cl. 260-346.600.
Seibert, Walter; Riedel, Guenther; and Mayer, Kurt, 4,086,054, Cl. 8-89.00R.
Stedefeder, Joachim; Dorn, Ingo H.; Kuhn, Horst; Kastenhuber, Walter; and Linke, Wolfgang, 4,086,413, Cl. 528-499.000.

BASF Wyandotte Corporation: *See—*
Langdon, William Keith; and Login, Robert Bernard, 4,086,279, Cl. 260-615.00B.

Bates Printing Specialties, Inc.: *See—*
Brown, Lyman J., 4,086,379, Cl. 428-40.000.

Battelle Memorial Institute: *See—*
Jonville, Pierre, 4,086,155, Cl. 204-266.000.

Baumann, Hans D. Anticavitation and low noise means for rotary valves. 4,085,774, Cl. 137-625.300.

Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, to Merck Patent Gesellschaft mit beschrankter Haftung. Prostenoic acid derivatives. 4,086,362, Cl. 424-305.000.

Baxter, Clyde Edward; and Gurgiolo, Arthur Emilio, to Dow Chemical Company, The. Solvent extraction of aromatic hydrocarbons with ethylene oxide polyol adducts. 4,086,159, Cl. 208-333.000.

Bayer Aktiengesellschaft: *See*—
Biedermann, Wolfgang; Koller, Horst; and Wedemeyer, Karlfried, 4,086,283, Cl. 260-626.00T.
Bier, Peter; Binsack, Rudolf; and Vernaleken, Hugo, 4,086,212, Cl. 260-75.00R.
Bocker, Ernst; Kracht, Wolfgang; Rupp, Roland; Schellmann, Erhard; Trescher, Viktor; and Ullrich, Martin, 4,086,346, Cl. 424-253.000.
Bottenbruch, Ludwig; Kampf, Gunther; Serini, Volker; and Vernaleken, Hugo, 4,086,310, Cl. 264-41.000.
Krohn, Wolfgang; Metzger, Karl Georg; Preiss, Michael; and Walkowiak, Michael, 4,086,341, Cl. 424-246.000.
Reischl, Artur, 4,086,193, Cl. 260-2.5AY.
Schrock, Wilfried; Konig, Hans-Bodo; Preiss, Michael; Metzger, Karl Georg; and Walkowiak, Michael, 4,086,340, Cl. 424-246.000.

Bean, James H., Jr. Election game apparatus and method of playing same. 4,085,938, Cl. 273-279.000.

Beard, Colin C., to Syntex (U.S.A.) Inc. 5 (6)-Benzene ring substituted benzimidazole-2-carbamate derivatives having anthelmintic activity. 4,086,235, Cl. 424-273.00R.

Beatrice Foods Co.: *See*—
Hellwig, Oskar Alexander, 4,085,602, Cl. 70-456.00B.
Ziccarelli, Salvatore F., 4,086,367, Cl. 426-98.000.

Bechara, Ibrahim S.; Zaluska, Philip J.; and Mascioli, Rocco L., to Air Products and Chemicals, Inc. Tertiary amino acid and tertiary amino acid-nitrile delayed action catalyst compositions. 4,086,213, Cl. 260-77.5AB.

Bechtel International Corporation: *See*—
Serpas, Luis B.; Small, Sam W.; and Ellers, Frederick S., 4,085,781, Cl. 141-1.000.

Beck, Charles K., to Addressograph Multigraph Corporation. Non-aqueous polymeric dispersion and matte coatings produced therefrom. 4,086,202, Cl. 260-33.20R.

Beck, Kurt-Gunther: *See*—
Echterhoff, Heinrich; Simonis, Wolfgang; Rohde, Wolfgang; and Beck, Kurt-Gunther, 4,086,143, Cl. 201-41.000.

Beck, Robert; Morello, Herbert J.; and Richardson, Jack M., to Diebold, Incorporated. Remote envelope depository construction. 4,085,687, Cl. 109-24.100.

Beck, Robert E., to Container Corporation of America. Garment hanger box. 4,085,842, Cl. 206-289.000.

Beck, William P.; Carr, Francis L.; and Gronwick, Jerry P., to Sunbeam Corporation. Electric dry shaver with adjustable long hair trimmer. 4,085,503, Cl. 30-34.100.

Beckman Instruments, Inc.: *See*—
Hoffa, Jack L.; and Ray, Robert A., 4,086,061, Cl. 23-259.000.
Sharples, Thomas D., 4,085,952, Cl. 251-298.000.

Beecher, Lynn Loren: *See*—
Watts, Fred S., Jr.; and Beecher, Lynn Loren, 4,086,568. Cl. 340-147.00R.

Beffa, Fabio: *See*—
Steiner, Eginhard; and Beffa, Fabio, 4,086,223, Cl. 260-151.000.

Begala, Arthur James, Jr.: *See*—
Suen, Tzeng Jiueq; Begala, Arthur James, Jr.; and Grayson, Martin, 4,086,181, Cl. 252-180.000.

Behnfeldt, Marvin J.: *See*—
Bouyoucos, John V.; Behnfeldt, Marvin J.; and Selsam, Roger L., 4,086,122, Cl. 156-556.000.

Belco Pollution Control Corporation: *See*—
Lanese, Philip M., 4,086,646, Cl. 361-166.000.

Belden Corporation: *See*—
Torgerson, Duane E., 4,086,482, Cl. 362-376.000.

Belgonucleaire, S.A.: *See*—
Cordier, Jean-Pierre; and Vandorpe, Marc, 4,086,325, Cl. 423-280.000.

Bell & Howell Company: *See*—
Cox, Arthur; and Linke, Walter R., 4,086,000, Cl. 350-54.000.

Bell, Leo A.; and Peterson, Norbert C., to Martin-Decker Company. Apparatus for compensating for the heaving of a floating drilling platform for connection with apparatus for measuring the rate of penetration of pipe run into an offshore well. 4,085,509, Cl. 33-134.00R.

Bell Telephone Laboratories, Incorporated: *See*—
Anglikowski, Ronald Edward, 4,086,448, Cl. 179-175.30R.
Bowen, Edward George; Mounts, Frank William; and Netravali, Arun Narayan, 4,086,620, Cl. 358-260.000.
Fraley, Phillip Edward, 4,086,624, Cl. 363-127.000.
Taylor, Robert Marvin, 4,086,446, Cl. 179-27.00G.

Bellaplast GmbH: *See*—
Thiel, Alfons W.; Martini, Hans; Wolf, Peter; and Runkel, Albert, 4,085,517, Cl. 34-21.000.
Thiel, Alfons W.; and Hell, Hans, 4,086,045, Cl. 425-326.100.

Bellerose, Gerard D. Cannon plug wrench. 4,085,631, Cl. 81-3.00R.

Belock, Robert J.: *See*—
Calder, Brooke J., Jr.; Belock, Robert J.; and Prescott, Roger N., 4,085,676, Cl. 102-23.000.

Beloit Corporation: *See*—
Justus, Edgar J., 4,086,130, Cl. 162-123.000.
Rempel, Cornelius N.; and Linkletter, Merle G., 4,086,131, Cl. 162-203.000.

Bendix Corporation, The: *See*—
Kestermeier, William J., 4,085,827, Cl. 188-1.00A.
Ritsema, Irving Ray; and Turak, John Lewallen, 4,085,826, Cl. 188-1.00A.
Sinsky, Allen I.; Wang, Paul C.; and Willey, Robert E., 4,086,597, Cl. 343-754.000.

Bennetch, Leonard N., to Pfizer Inc. Cobalt modified acicular γ ferric oxide and process for preparing the same. 4,086,174, Cl. 252-62.560.

Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., to Motorola, Inc. Interrupt system for microprocessor system. 4,086,627, Cl. 364-200.000.

Benteler-Werke Aktiengesellschaft Werk Neuhaus: *See*—
Hanert, Eckehard; and Ehlen, Anton, 4,085,488, Cl. 29-33.00G.

Benzaria, Jacques. Method of adsorption by activated charcoal in a lower fluidized bed and upper fixed bed. 4,086,162, Cl. 210-20.000.

Berazosky, Sandra; and Kaiser, Mark E., to Dow Chemical Company, The. Process for making beta-aminoethyl sulfides from aliphatic mercaptans and 2-oxazolines. 4,086,273, Cl. 260-561.00S.

Berg, Christoph: *See*—
Knothe, Erich; Berg, Christoph; and Stadler, Eberhard, 4,085,811, Cl. 177-210.0EM.

Berglof, Jan Hakan: *See*—
Lindquist, Lars-Olof Edvard; Berglof, Jan Hakan; and Curling, John Malcolm, 4,086,222, Cl. 260-122.000.

Bergwerksverband GmbH: *See*—
Echterhoff, Heinrich; Simonis, Wolfgang; Rohde, Wolfgang; and Beck, Kurt-Gunther, 4,086,143, Cl. 201-41.000.
Grulich, Heinz; and Otte, Ernst, 4,086,144, Cl. 201-41.000.

Bernardo, Richard Gregory. Reinforcing means for roll-up shutter. 4,085,788, Cl. 160-133.000.

Bernhard, Horst: *See*—
Esselborn, Reiner; and Bernhard, Horst, 4,086,100, Cl. 106-291.000.

Bernier, Donald R., to Compunetics, Incorporated. Electrical system test apparatus. 4,086,531, Cl. 324-158.0MG.

Berry, Larry R., to Sun Studs, Inc. Method for optically measuring a cant to locate the narrowest flat side and its boundaries and manufacturing lumber therefrom. 4,086,496, Cl. 250-561.000.

BFG Glassgroup: *See*—
Le Ruyet, Daniel; and De Vos, Daniel, 4,086,098, Cl. 106-97.000.

Bicht, John Richard; and Warner, Peter Stuart, to Lucas Industries Limited. Vehicle suspension system. 4,085,945, Cl. 280-106.50R.

Biedermann, Wolfgang; Koller, Horst; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for preparing thymol. 4,086,283, Cl. 260-626.00T.

Bier, Peter; Binsack, Rudolf; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Poly(ethylene/alkylene) terephthalates which crystallize rapidly. 4,086,212, Cl. 260-75.00R.

Biet, Jean-Pierre Henri; and Laou, Sio Dhat, to U.S. Philips Corporation. Semiconductor device having a passivated surface and method of manufacturing the device. 4,086,613, Cl. 357-54.000.

Biggar, Frank M., Jr.: *See*—
Biggar, Frank M., III, 4,085,674, Cl. 101-248.000.

Biggar, Frank M., III, to Biggar, Frank M., Jr. Registration unit for printing or collating apparatus. 4,085,674, Cl. 101-248.000.

Bilkvist, Ib Bentzen, to Dundee Cement Company. Aerating barge unloading system. 4,085,975, Cl. 302-23.000.

Bindari, Ahmed El. Double contact locking mechanism. 4,085,600, Cl. 70-39.000.

Binsack, Rudolf: *See*—
Bier, Peter; Binsack, Rudolf; and Vernaleken, Hugo, 4,086,212, Cl. 260-75.00R.

Bio-Rad Laboratories, Inc.: *See*—
Willner, Howard; and Mangiardi, Vito J., 4,086,059, Cl. 23-230.300.

Biosystems Research Group II: *See*—
Graupe, Daniel; and Causey, G. Donald, 4,086,435, Cl. 179-1.50R.

Birmingham, Thomas F. Bread slicing and storage container. 4,085,642, Cl. 83-764.000.

Birum, Gail H., to Monsanto Company. Hydrogen phosphonates. 4,086,205, Cl. 260-45.80R.

Bishop, Robert C.: *See*—
Shanbrom, Edward; and Bishop, Robert C., 4,086,218, Cl. 260-112.00B.

Bissell, Lawrence E. Continuous flow, evaporative-type thermal energy recovery apparatus and method for thermal energy recovery. 4,085,591, Cl. 60-674.000.

Blair, Robert Lynn. Bath oil injection device for shower bath. 4,085,868, Cl. 222-193.000.

Blake, Gordon William. Plant supporting, moving and watering apparatus. 4,085,544, Cl. 47-39.000.

Blenner, Henry E.: *See*—
Marshall, Bruce H.; and Blenner, Henry E., 4,085,991, Cl. 339-75.00P.

Block Engineering, Inc.: *See*—
Mantz, Arlan Warren, 4,086,652, Cl. 364-525.000.

Block, Jacob, to W. R. Grace & Co. Water treating process. 4,086,146, Cl. 203-7.000.

Blount, David H. Process for the production of silicic epoxy polymers. 4,086,190, Cl. 260-2.00S.

Blount, David H. Process for the production of alkali metal cyanide silicate compounds and cyanide silicate compounds. 4,086,326, Cl. 423-332.000.

Bluhm, Otto J. Battery supported light with circuit maker and breaker having terminals and mounting plate directly mounted to battery coil spring electrodes. 4,086,454, Cl. 200-60.000.

Bocchi, Quinto M., to Christiansen, Leo P., a part interest. Remote condition reporting system. 4,086,434, Cl. 179-2.0AM.

Bochkarev, Boris Nikolaevich: *See*—
Deribas, Andrei Andreevich; Demchuk, Alexandr Fedorovich; Braunshtein, Rudolf Aronovich; Bochkarev, Boris Nikolaevich;

Viktorov, Vladimir Borisovich; Karkishko, Gennady Semenovich; Baranov, Sergei Vasilievich; Prakhov, Alexandr Ivanovich; Kasatkin, Vladimir Semenovich; and Rozhkov, Alexandr Timofeevich, 4,085,883, Cl. 228-2.500.

Bocker, Ernst; Kracht, Wolfgang; Rupp, Roland; Schellmann, Erhard; Trescher, Viktor; and Ullrich, Martin, to Bayer Aktiengesellschaft. Preparation of melt-sprayed spherical phenacetin granules. 4,086,346, Cl. 424-253.000.

Bod, Dennis Lee; and Skutley, Kale Franklin, to Boeing Company, The. Lumber cutting measurement apparatus and method. 4,085,512, Cl. 33-293.000.

Boedecker, Steven M.: *See—*
Patel, Bhupendra C.; and Boedecker, Steven M., 4,085,616, Cl. 73-215.000.

Boehringer Mannheim GmbH: *See—*
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Wilhelms, Otto-Henning; von Mullendorff, Erika; and Sponer, Gisbert, 4,086,347, Cl. 424-253.000.

Boeing Company, The: *See—*
Bod, Dennis Lee; and Skutley, Kale Franklin, 4,085,512, Cl. 33-293.000.
Hainsworth, William Alfred, 4,085,997, Cl. 339-255.00P.
Hicks, Harry C., 4,086,154, Cl. 204-195.00R.
Klees, Garry W., 4,085,583, Cl. 60-204.000.
Lions, Richard O., 4,086,632, Cl. 364-444.000.

Bogdanov, Vyacheslav Mikhailovich: *See—*
Antonov, Sergei Fedorovich; Krasheninin, Pavel Firsovich; Bogdanov, Vyacheslav Mikhailovich; Khramtsov, Andrei Georgievich; and Eremin, Gennady Efimovich, 4,086,366, Cl. 426-14.000.

Bogner, Richard D. Broadband omnidirectional slot antenna with an electrical strap connector. 4,086,598, Cl. 343-768.000.

Bohy, August G.: *See—*
Barch, Herbert W.; and Bohy, August G., 4,085,487, Cl. 28-252.000.

Bokor, Gyorgy: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Bokor, Gyorgy; Dombay, Zsolt; Pinter, Zoltan; Gregar, Erzsebet, nee Toth; Dudas, Julianna, nee Sz. Kiss; Nagy, Emilia, nee Gera; and Fodor, Istvan, 4,086,339, Cl. 424-245.000.

Bolin, Philip C., to Westinghouse Electric Corporation. Gas-insulated transmission line with closed particle trap. 4,085,807, Cl. 174-14.00R.

Bollinger, Frederic G.; and D'Amico, John J., to Monsanto Company. Use of pyridyl phthalamic acids as plant growth regulants. 4,086,078, Cl. 71-94.000.

Bone, Kendall Frederick, to Cincinnati Milacron Inc. Mounting for magnetic switch. 4,086,456, Cl. 200-82.00E.

Boothe, Leland Harman. Grinding apparatus. 4,085,899, Cl. 241-247.000.

Boquist, Carl W.: *See—*
Mathers, James P.; Olszanski, Theodore W.; and Boquist, Carl W., 4,086,396, Cl. 429-103.000.

Bordas, Barna: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Bokor, Gyorgy; Dombay, Zsolt; Pinter, Zoltan; Gregar, Erzsebet, nee Toth; Dudas, Julianna, nee Sz. Kiss; Nagy, Emilia, nee Gera; and Fodor, Istvan, 4,086,339, Cl. 424-245.000.

Bordow, Richard A. Device and technique for minimizing risk of contamination by blood sample. 4,085,737, Cl. 128-2.00F.

Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, to VEB Arzneimittelwerk Dresden. Process for the fermentation production of ergoline derivatives. 4,086,141, Cl. 195-81.000.

Bosley, Roy E.; Mann, Paul T.; Decoteau, Gary D.; Ivie, Kert F.; and Winslow, Elden D., to Simplot, J. R. Method for preparing and treating vegetable segments. 4,086,368, Cl. 426-464.000.

Bosshold, Barry L. Eyedropper bottle attachment. 4,085,750, Cl. 128-233.000.

Botelco: *See—*
Toth, Leslie J., 4,086,502, Cl. 307-308.000.

Bottenbruch, Ludwig; Kampf, Gunther; Serini, Volker; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Process for manufacturing thin, non-porous gas permeable polycarbonate films. 4,086,310, Cl. 264-41.000.

Bottoms, Harry Simister; and Archer, John Richard, to Girling Limited. Automatic slack adjusters for vehicle brakes. 4,085,830, Cl. 188-196.00D.

Bottoms, Harry Simister: *See—*
Davidson, Charles Patrick Duncan; and Bottoms, Harry Simister, 4,085,814, Cl. 180-33.00C.

Bouche, Claude; and Lenclud, Francois, to Societe Chimique des Charbonnages. Hardeners for epoxy resins. 4,086,197, Cl. 260-18.0PN.

Boulanger, Henry J., to Texas Instruments Incorporated. Keyboard apparatus. 4,086,451, Cl. 200-5.00A.

Bourns, Inc.: *See—*
Weigl, James; and Lichte, Leo James, 4,085,766, Cl. 137-88.000.

Bousaid, Issam S.; Brown, Alfred; and Norman, Thomas W., to Texaco Inc. Oil recovery process by in situ emulsification. 4,085,799, Cl. 166-272.000.

Bouyoucos, John V.; Behnfeldt, Marvin J.; and Selsam, Roger L., to Hydroacoustics Inc. Hydroacoustic welder. 4,086,122, Cl. 156-556.000.

Bowen, Edward George; Mounts, Frank William; and Netravali, Arun Narayan, to Bell Telephone Laboratories, Incorporated. Processor for increasing the run-length of facsimile data. 4,086,620, Cl. 358-260.000.

Bowles, Vernon O. Roof-mountable chamber and conduit device for solar heat collecting apparatus. 4,085,733, Cl. 126-271.000.

Boyer, Emanual F. Syringe injector. 4,085,748, Cl. 128-215.000.

BP Chemicals Limited: *See—*
Bartlett, John Stanley; Hudson, Barry; and Pennington, John, 4,086,267, Cl. 560-241.000.

Brakelmann, Heinrich, to Felten & Guilleaume Carlswerk AG. Three-phase cable system with compensation of longitudinal voltages induced in accompanying return-flow pipes for cooling water. 4,086,425, Cl. 174-15.00C.

Brandon, Ralph E.; Ring, Michael; and Redner, Raymond, III., to International Paper Company. Process and device for forming non-woven fabrics. 4,085,485, Cl. 28-104.000.

Branson, Charles D.; and Demi, Roy C., to Robertshaw Controls Company. Fuel control system and control device therefor or the like. 4,085,891, Cl. 236-15.00A.

Brantley, Haskew H., Jr. Picture hanger. 4,085,917, Cl. 248-489.000.

Braun, Anton. Free piston engine with opposed cylinders. 4,085,711, Cl. 123-46.00B.

Braun, Klaus: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.

Braunshtein, Rudolf Aronovich: *See—*
Deribas, Andrei Andreevich; Demchuk, Alexandr Fedorovich; Braunshtein, Rudolf Aronovich; Bochkarev, Boris Nikolaevich; Viktorov, Vladimir Borisovich; Karkishko, Gennady Semenovich; Baranov, Sergei Vasilievich; Prakhov, Alexandr Ivanovich; Kasatkin, Vladimir Semenovich; and Rozhkov, Alexandr Timofeevich, 4,085,883, Cl. 228-2.500.

Bredwell, Claudia. Method of eliminating sexual excitants from the discharge of a female animal in estrus. 4,086,333, Cl. 424-130.000.

Breisch, John H., to Midland-Ross Corporation. Gas powered motor and system. 4,085,589, Cl. 60-626.000.

Bresan, Joseph R. Game tracking device. 4,086,453, Cl. 200-52.00R.

Breuel, Klaus: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.

Breuer, Hermann; and Treuner, Uwe, to E. R. Squibb & Sons, Inc. Carbamoylalkylureido cephalosporins. 4,086,422, Cl. 544-21.000.

Bridgestone Tire Company Limited: *See—*
Nakauchi, Hideo; Osaki, Toshiyuki; Naito, Kazuo; and Inque, Sakae, 4,086,211, Cl. 260-75.0NA.

British Cast Iron Research Association: *See—*
Dawson, John Victor; and Lalich, Michael John, 4,086,086, Cl. 75-130.00R.

British Steel Corporation: *See—*
Malkani, Dalip T.; and Middlemiss, Andrew, 4,085,496, Cl. 29-527.200.

Brooks, Clyde S.; Lemkey, Franklin D.; and Golden, Gerald S., to United Technologies Corporation. Self supported skeletal metal catalysts and process for producing them. 4,086,264, Cl. 252-454.000.

Brown, Alfred: *See—*
Bousaid, Issam S.; Brown, Alfred; and Norman, Thomas W., 4,085,799, Cl. 166-272.000.

Brown, Clifford K. Shoulder strap guard. 4,085,465, Cl. 2-271.000.

Brown, Jack: *See—*
Coughenour, Donald Jay; and Brown, Jack, 4,085,691, Cl. 112-158.00E.

Brown, James L., to Rockwell International Corporation. Analog-to-digital integrating apparatus with pulse density conversion prior to accumulation. 4,086,656, Cl. 364-733.000.

Brown, James N., to Minnesota Mining and Manufacturing Company. Rubbery cushion having pressure-sensitive adhesive layer. 4,086,388, Cl. 428-315.000.

Brown, John Anthony; and Wilkie, Leslie Raymond, to Numol Corporation. Wax mould apparatus. 4,086,046, Cl. 425-361.000.

Brown, Johnny Milton: *See—*
Edwards, Joseph Franklin; Brown, Johnny Milton; Christian, James Vernon; and Elkins, Clayton, 4,085,976, Cl. 302-25.000.

Brown, Kenneth Harvey, to Motorola, Inc. Detection circuitry. 4,086,430, Cl. 178-88.000.

Brown, Lyman J., to Bates Printing Specialties, Inc. Multi-layered laminates. 4,086,379, Cl. 428-40.000.

Brown, Manuel D. Tool box mount for pickup truck. 4,085,961, Cl. 296-37.600.

Bruder, Werner: *See—*
Holzapfel, Immanuel; and Bruder, Werner, 4,085,579, Cl. 60-39.040.

Bruel, Alain. Self-adjusting beating device for a grape harvesting machine. 4,085,572, Cl. 56-330.000.

Brunswick Corporation: *See—*
Hawkins, Russell Olson; and Mallatt, James Francis, 4,085,860, Cl. 220-89.00B.

Bruscato, Frank N.; and Danti, August G. Pharmaceutical tablets containing chitin as a disintegrant. 4,086,335, Cl. 424-180.000.

Buckell, Raymond Albert. Hose fitting. 4,085,876, Cl. 224-45.00R.

Buckley, William H.; and Ryland, Garnett, II, to United States of

America, Navy. Rotational energy absorbing coupling. 4,086,012, Cl. 403-2.000.

Buhler, Roger; and Faivre, Christian, to Les Fabriques d'Assortiments Reunies. Digital system for stabilizing the speed of a clockwork motor. 4,086,521, Cl. 318-307.000.

Bullerdieck, Heinz H. Safety seat for vehicles. 4,085,963, Cl. 296-65.00A.

Bullock, David Carl, to Texas Instruments Incorporated. Magnetic bubble domain generator and annihilator. 4,086,571, Cl. 365-36.000.

Bullock, David Carl, to Texas Instruments Incorporated. Magnetic bubble domain replicator. 4,086,572, Cl. 365-12.000.

Bunker Ramo Corporation: *See—*
Ayer, George Edward, 4,085,992, Cl. 339-91.00R.
Nijman, John Peter; and Tompkins, Terence Neville, 4,085,497, Cl. 29-566.300.

Bunyan, Thomas Walter: *See—*
Wilkinson, Samuel Clifford Walter; Sweett, Ronald Sydney; and Bunyan, Thomas Walter, 4,085,941, Cl. 277-3.000.

Burdett, John C.: *See—*
Van Boven, Donald G.; Burdett, John C.; and Vales, Richard J., 4,085,726, Cl. 126-110.00R.

Burgess, Keith D.: *See—*
Webb, George; and Burgess, Keith D., 4,085,679, Cl. 102-70.00R.

Burr Oak Tool & Gauge Company: *See—*
Franks, Lawrence A.; and Eldridge, Eugene E., 4,085,608, Cl. 72-297.000.

Burrage, Benjamin Stuart. Urinary drainage bag. 4,085,755, Cl. 128-295.000.

Burroughs Corporation: *See—*
Ogle, James A.; and Lee, James Y., 4,086,516, Cl. 315-169.00R.
Ragle, Herbert Underwood; and DeMoss, Dean L., 4,086,640, Cl. 360-133.000.
Ragle, Herbert Underwood; and DeMoss, Dean, 4,086,641, Cl. 360-133.000.

Burstrom, Martin; Larker, Hans; and Nilsson, Jan, to ASEA AB. Method and apparatus for plastic deformation at high ambient pressure. 4,085,605, Cl. 72-54.000.

Burton, Robert Edward. Ecological system and method. 4,086,161, Cl. 210-13.000.

Busch, John Folts; and Freeman, Stephen Morrison, to International Telephone and Telegraph Corporation. Porous sintered abrasive articles and method of manufacture. 4,086,067, Cl. 51-296.000.

Busch, Norbert: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; Simond, Jacques; and Monteil, Andre, 4,086,352, Cl. 424-270.000.

Butler, Roger Moore, to Exxon Production Research Company. Method for oil recovery using a horizontal well with indirect heating. 4,085,803, Cl. 166-303.000.

Butte, Walter A., Jr., to Suntech, Inc. Isomerization of cyclohexanebis(-methylamine) stereoisomers. 4,086,276, Cl. 260-563.00R.

Bybee, Richard Lee; and Timothy, John G. One dimensional photon-counting detector array. 4,086,486, Cl. 250-207.000.

Bye-Jorgensen, Jorgen Steen 4,; Larsen, Gunnar Valdemar Hartvig; and Vermehren, Poul Henrik. Centrifuge for draining off sewage sludge. 4,085,887, Cl. 233-7.000.

Bylo, John J. Logistical support of offshore drilling facilities. 4,085,695, Cl. 114-260.000.

C. L. Instruments Limited: *See—*
Jebb, Alan; Rees, James George Arthur; and Lawrence, Raymond, 4,086,576, Cl. 340-272.000.

C. R. Reichel Engineering Co. Inc.: *See—*
Travis, Sigmund D., 4,085,943, Cl. 279-1.00K.

Cadot, Robert G., to Crouzet. Method and apparatus for monetary articles authentification. 4,086,527, Cl. 324-233.000.

Cahn, Robert P.; and Li, Norman N., to Exxon Research & Engineering Co. Metal extraction by combined solvent and LM extraction. 4,086,163, Cl. 210-22.00D.

Cairns, James L. Sealed connector with barriers to contact bridging. 4,085,993, Cl. 339-94.00M.

Caixes, Antonio Montserrat: *See—*
Balana, Ramon Cairo; and Caixes, Antonio Montserrat, 4,086,135, Cl. 195-17.000.

Calder, Brooke J., Jr.; Belock, Robert J.; and Prescott, Roger N., to Austin Powder Company. Elongated flexible detonating device. 4,085,676, Cl. 102-23.000.

Cameron, Robert W., to Timken Company, The. Double row bearing assembly with tapered roller bearings. 4,085,984, Cl. 308-207.00A.

Campbell, Louis; and Keshock, Edward G. Record carrier. 4,085,875, Cl. 224-45.00K.

Campbell Soup Company: *See—*
Egee, Walter W.; and Cramer, Clarence W., 4,085,563, Cl. 53-59.00R.

Canadian Patents & Development Limited: *See—*
Nigrin, Jan, 4,086,543, Cl. 330-287.000.

Canale, James. Colostomy bag pad. 4,085,752, Cl. 128-283.000.

Canon Denshi Kabushiki Kaisha: *See—*
Toshimitsu, Naohiko, 4,086,639, Cl. 360-126.000.

Canon Kabushiki Kaisha: *See—*
Ishikawa, Kazuo; Sakaguchi, Keiichi; Takigawa, Tomoshi; Hirata, Noritsugu; Tajima, Akira; and Tsuji, Sadahiko, 4,086,605, Cl. 354-270.000.
Ito, Fumio; Ito, Tadashi; Mashimo, Yukio; Sakurada, Nobuaki; and Shinoda, Nobuhiko, 4,086,581, Cl. 354-23.00D.
Kawanabe, Tsuyoshi; and Machida, Minoru, 4,086,588, Cl. 340-365.00S.
Kiyohara, Takehiko; Tsunekawa, Tokuichi; Yazaki, Mutsunobu; Sanada, Noriaki; Taguchi, Tetsuya; and Nakamura, Zenzo, 4,086,582, Cl. 354-33.000.
Kozuki, Susumu; Ichiyanagi, Toshikazu; Watanabe, Yoshiaki; Uchiyama, Takashi; and Sunouchi, Akio, 4,086,584, Cl. 354-38.000.
Kozuki, Susumu; Uchiyama, Takashi; Ito, Tadashi; Iwashita, Tomonori; Uchidoi, Masanori; and Mashimo, Yukio, 4,086,603, Cl. 354-204.000.
Toshimitsu, Naohiko, 4,086,639, Cl. 360-126.000.

Capriotti, Alfred J.; and Lazzaretti, Louis G., to United States Steel Corporation. Continuous caster-alignment apparatus. 4,085,513, Cl. 33-286.000.

Caputo, William R.; and De Lorenzi, John J., to Westinghouse Electric Corporation. Elevator system. 4,085,823, Cl. 187-29.00R.

Caravito, Vito A., to Goodyear Tire & Rubber Company, The. Integrally built and cured tire and wheel assembly. 4,085,786, Cl. 152-158.000.

Carbonnel, Henri, to Groupement pour les Activites Atomiques et Avancees "GAAA" S.A. Method of preparing insulating refractory products and the product thereof. 4,086,097, Cl. 106-64.000.

Carding Specialists Co. Limited: *See—*
Varga, John Maximilian Jules, 4,085,977, Cl. 302-28.000.

Cardy, Charles Frederick, to Interox Chemicals Ltd. Process for preparing poly(ε-caprolactone) polyurethanes. 4,086,214, Cl. 260-77.5AN.

Carl Still Recklinghausen, Firma: *See—*
Teschner, Wolfgang; and von Massow, Hans-Jurgen, 4,085,852, Cl. 214-17.00R.

Carlow, Earl F.: *See—*
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,086,627, Cl. 364-200.000.

Carlson, Elmer A., to International Telephone and Telegraph Corporation. Spark ignited recycling ignition system with interlocking gas valve control. 4,086,048, Cl. 431-46.000.

Carlson, Harold W. Vaccine and medicament dispensing system. 4,085,782, Cl. 141-1.000.

Carr, Francis L.: *See—*
Beck, William P.; Carr, Francis L.; and Gronwick, Jerry P., 4,085,503, Cl. 30-34.100.

Cartier, Roger J.: *See—*
Robandt, William F.; Cartier, Roger J.; and Gay, Sandy C., 4,086,553, Cl. 336-192.000.

Cartmell, Donald K.; and Witzke, Horst, to Optel Corporation; and Grumman Aerospace Corporation, part interest to each. Multi-compartment photogalvanic cell. 4,086,398, Cl. 429-111.000.

Carty, Daniel T.; and Oline, James A., to Rohm and Haas Company. Blends of thermoplastic polymer with a multi-phase acrylic composite polymers. 4,086,296, Cl. 260-857.00G.

Caruel, Jacques Emile Jules; and Stora, Guy Daniel, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Gas-turbine combustor having an air-cooled shield-plate protecting its end closure dome. 4,085,581, Cl. 60-39.660.

Cassandrini, Paolo; and Tozzi, Antonio, to Chimosa Chimica Organica S.p.A. Novel polytriazine compounds. 4,086,204, Cl. 260-45.8NT.

Cassandrini, Paolo; and Tozzi, Antonio, to Chimosa Chimica Organica S.p.A. Polyurea compounds which improve the light stability of polymers. 4,086,207, Cl. 260-45.80N.

Castiglia, Ignatius F., to Lenox Hill Brace Shop, Inc. Ankle wrap. 4,085,746, Cl. 128-166.000.

Castiglia, Ignatius F., to Lenox Hill Brace Shop. Weight-redistribution orthopedic appliance. 4,085,758, Cl. 128-589.000.

Cataffo, Herman R.; and De Meo, Anthony J. Method and means for repairing damaged vinyl sheets. 4,086,113, Cl. 156-98.000.

Catano, Paul S.; and Richards, William E., to United States of America, Navy. All-weather multi-spectral imaging system. 4,086,616, Cl. 358-81.000.

Caterpillar Tractor Co.: *See—*
Bailey, John M., 4,085,722, Cl. 123-139.0AL.
Miller, Lindell L., 4,085,815, Cl. 180-54.00R.
Papasideris, Stamos I., 4,085,833, Cl. 192-4.00B.
Waudoit, Claude A., 4,085.920, Cl. 251-57.000.

Causey, G. Donald: *See—*
Graupe, Daniel; and Causey, G. Donald, 4,086,435, Cl. 179-1.50R.

Cella, James A., to General Electric Company. Method of applying and curing epoxy coating compositions using dicarbonyl chelate of group III*a*–V*a* element and UV irradiation. 4,086,091, Cl. 96-36.200.

Cengel, John A.; and Puskas, Imre, to Standard Oil Company (Indiana). Process for manufacturing polyalkenyl succinic anhydrides. 4,086,251, Cl. 260-346.740.

Centre Europeen de Recherches Mauvernay: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; Simond, Jacques; and Monteil, Andre, 4,086,352, Cl. 424-270.000.

Centre Europeen de Recherches Mauvernay "C.E.R.M.": *See—*
Mauvernay, Roland-Yves; Pourrat, Henri-Jean; and Lamaison, Jean-Louis, 4,086,216, Cl. 260-112.00R.

Century Mfg. Co.: *See—*
Smith, Leonard S., 4,086,551, Cl. 336-45.000.

Cerny, Louis F. Ladder leveler. 4,085,820, Cl. 182-204.000.

Cervoni, Peter P.; and Wolf, Peter S., to USV Pharmaceutical Corporation. Treatment of asthma. 4,086,363, Cl. 424-330.000.

CHA Industries: *See—*
Mahl, Gunard O. B., 4,085,699, Cl. 118-500.000.

Chadwick, Duane G. Method of producing egg cooking indicator. 4,085,493, Cl. 29-455.00R.
Chahroudi, Day, to Energy Materials, Inc. Transparent thermal insulating system. 4,085,999, Cl. 350-1.100.
Chambers, Alan F., to Nylite Skate Company of Canada Ltd. Composite skate assembly. 4,085,944, Cl. 280-11.120.
Chambron, Edmond, to Compagnie Generale de Radiologie. Method and apparatus for controlling the movement of fluid to and from a syringe. 4,085,749, Cl. 128-215.000.
Champlin, Charles L., to Packaging Corporation of America. Air filter assembly. 4,086,071, Cl. 55-501.000.
Chan, Ka-Kong; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Tetramethyl chromanyl pentane amide. 4,086,249, Cl. 260-345.500.
Chandramouli, Pitchaiya: *See*—
Vasishth, Ramesh C.; and Chandramouli, Pitchaiya, 4,086,125, Cl. 156-62.200.
Chang, Chen-Kun. Device for preventing collision of trains. 4,085,913, Cl. 246-63.00A.
Chang, Clarence D.; Lang, William H.; and Silvestri, Anthony J., to Mobil Oil Corporation. Conversion of synthesis gas to hydrocarbon mixtures. 4,086,262, Cl. 260-449.60R.
Charron, Gerard. Meat tendering machine. 4,085,482, Cl. 17-26.000.
Chelikowsky, Richard D.; and Stinson, Kenneth R., to Rockwell International Corporation. AM removal and phaselock receiver. 4,086,593, Cl. 343-106.00R.
Chemische Werke Huls Aktiengesellschaft: *See*—
Zerpner, Dieter; Nedden, Klaus Zur; Frese, Albert; and Datene, Hans, 4,086,301; Cl. 260-897.00A.
Chen, Di; and Koepke, Barry G., to Honeywell Inc. Planar optical waveguide. 4,086,001, Cl. 350-96.140.
Chen, Gilbert K. C.: *See*—
Argo, Wesley B.; Chen, Gilbert K. C.; Kocatas, Babur M.; and Ziebold, Steven A., 4,086,070, Cl. 55-97.000.
Cherenko, Joseph P.; and Shaw, Hugh E., Jr., to PPG Industries, Inc. Bilayer windshield with embedded antenna. 4,086,595, Cl. 343-713.000.
Cheshire, David Alan; Debbas, Samir Costandi; Eger, Richard Thomas; Schermacher, Ken Stephen; and Twohig, Paul Thomas, to Du Pont de Nemours, E. I., and Company. Nonwoven polypropylene fabric and process. 4,086,381, Cl. 428-113.000.
Chestel, Inc.: *See*—
Hurle, Robert J., 4,086,440, Cl. 179-81.00R.
Chevron Research Company: *See*—
Lowe, Warren, 4,086,172, Cl. 252-47.500.
Chiba Communications Industries, Inc.: *See*—
Kotezawa, Katsutaka; Onodera, Toshimi; Hayashi, Setsuo; and Shimanuki, Fujio, 4,086,429, Cl. 178-69.100.
Chimosa Chimica Organica S.p.A.: *See*—
Cassandrini, Paolo; and Tozzi, Antonio, 4,086,204, Cl. 260-45.8NT.
Cassandrini, Paolo; and Tozzi, Antonio, 4,086,207, Cl. 260-45.80N.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara: *See*—
Toth, Geza; Toth, Istvan; and Montay, Tibor, 4,086,246, Cl. 260-340.90R.
Chippewa Paper Products Company: *See*—
Klein, Sheldon D., 4,085,970, Cl. 297-440.000.
Chisso Corporation: *See*—
Shirai, Isoo; Suzuki, Takeshi; and Takahashi, Tsutomu, 4,086,185, Cl. 252-429.00B.
Chris-Marin I Malmo AB: *See*—
Christensson, Nils Artur, 4,085,649, Cl. 85-1.00T.
Christensen, Burton G.: *See*—
Firestone, Raymond A.; Ratcliffe, Ronald W.; and Christensen, Burton G., 4,086,423, Cl. 544-21.000.
Christensson, Nils Artur, to Chris-Marin I Malmo AB. Bolt assembly. 4,085,649, Cl. 85-1.00T.
Christian, James Vernon: *See*—
Edwards, Joseph Franklin; Brown, Johnny Milton; Christian, James Vernon; and Elkins, Clayton, 4,085,976, Cl. 302-25.000.
Christiansen, Leo P.: *See*—
Bocchi, Quinto M., 4,086,434, Cl. 179-2.0AM.
Christianson, Neil B. Attic exhaust system. 4,085,667, Cl. 98-43.00R.
Chung, David H., to Fairchild Camera and Instrument Corporation. Microprocessor system. 4,086,626, Cl. 364-200.000.
Chung, San Chi: *See*—
Aronson, Howard A.; and Chung, San Chi, 4,086,532, Cl. 324-166.000.
Churchill, William M. Ticket taking system. 4,086,475, Cl. 235-419.000.
Churchward, Roy Alexander. Golf club. 4,085,934, Cl. 273-171.000.
Ciba-Geigy AG: *See*—
Steiner, Eginhard; and Beffa, Fabio, 4,086,223, Cl. 260-151.000.
Ciba-Geigy Corporation: *See*—
Tournayre, Jean Claude; and Vogel, Christian, 4,086,080, Cl. 71-118.000.
Cichowski, Robert S.; and Farha, Floyd E., Jr., to Phillips Petroleum Company. Oxidative dehydrogenation process. 4,086,290, Cl. 260-680.00E.
Cieslak, Richard F.; and Balding, John V., to Industrial Electronics Service Co. Audible electronic warning system. 4,086,589, Cl. 340-384.00E.
Cincinnati Milacron Inc.: *See*—
Bone, Kendall Frederick, 4,086,456, Cl. 200-82.00E.
Citizen Watch Co. Ltd.: *See*—
Natori, Minoru, 4,085,577, Cl. 58-23.00D.
Cizmic, Stipe; Edwards, Wayne L., Jr.; Jacques, James O.; Mahon, Douglas K.; and Shenfield, Leonard R., to Xerox Corporation. Restore method and apparatus for disk drive. 4,086,636, Cl. 360-75.000.
Cizmic, Stipe; Edwards, Wayne L., Jr.; Griffith, David L.; Halfhill, Martin O.; Jacques, James O.; Shenfield, Leonard R.; and Votaw, Ronald W., to Xerox Corporation. Control system for disk drive. 4,086,659, Cl. 364-900.000.
Claassen, Volkert: *See*—
Welle, Hendricus Bernardus Antonius; and Claassen, Volkert, 4,086,361, Cl. 424-304.000.
Clark, James Monroe: *See*—
Cohen, Stuart Barry; Clark, James Monroe; and Magnus, Arthur Howard, 4,086,436, Cl. 179-15.0AF.
Clark, Lowell E.; and Saltich, Jack L., to Motorola, Inc. High reliability epi-base radiation hardened power transistor. 4,086,610, Cl. 357-34.000.
Clawson, Arthur R.; and Wieder, Herman H., to United States of America, Navy. Light emitting diode. 4,086,608, Cl. 357-17.000.
Claxton, William Eugene, to Firestone Tire & Rubber Company, The. Electronic alarm circuitry. 4,086,564, Cl. 340-58.000.
Clayton & Lambert Manufacturing Company: *See*—
Lambert, Charles F., Jr., 4,085,520, Cl. 34-79.000.
Clovis, James S.: *See*—
Owens, Frederick H.; and Clovis, James S., 4,086,300, Cl. 260-885.000.
CMB Colonia Management-und Beratungsgesellschaft mbH & Co. K.G.: *See*—
Fricke, Jobst; and Geiseler, Wolfgang, 4,085,648, Cl. 84-1.240.
Cohen, Stuart Barry; Clark, James Monroe; and Magnus, Arthur Howard, to International Telephone and Telegraph Corporation. Transmit and receive digital data channel elastic store. 4,086,436, Cl. 179-15.0AF.
Cole-Parmer Instrument Company: *See*—
Hagen, Loren M.; and Desai, Ashwin H., 4,086,036, Cl. 417-413.000.
Collins, Henry R., Jr., to Collins Products Company. Composite sampling system and rotatable sampling valve therefor. 4,085,618, Cl. 73-422.0TC.
Collins, James D., to Westinghouse Electric Corporation. Isolating switch shutter assembly for high voltage motor starter. 4,086,452, Cl. 200-50.0AA.
Collins Products Company: *See*—
Collins, Henry R., Jr., 4,085,618, Cl. 73-422.0TC.
Columbia Research Corporation: *See*—
Murray, Russell, 4,086,497, Cl. 250-562.000.
Commissariat a l'Energie Atomique: *See*—
Peuzin, Jean Claude; and Tasson, Michel, 4,086,124, Cl. 156-603.000.
Commonwealth Scientific and Industrial Research Organization: *See*—
Jackson, Mervyn Benjamin; and Sasse, Wolfgang Hermann Fritz, 4,086,299, Cl. 260-885.000.
Compagnie Generale de Radiologie: *See*—
Chambron, Edmond, 4,085,749, Cl. 128-215.000.
Compagnie Generale d'Electricite S.A.: *See*—
Feuillade, Georges, 4,086,402, Cl. 429-190.000.
Gadessaud, Robert, 4,086,405, Cl. 429-253.000.
Compair Industrial Limited: *See*—
Poole, Eric John, 4,086,019, Cl. 415-18.000.
Compunetics, Incorporated: *See*—
Bernier, Donald R., 4,086,531, Cl. 324-158.0MG.
Conca, Romeo John; Gray, John Patrick; and Sloan, Tod Hunter, to International Telephone and Telegraph Corporation. Process for controlling the intrinsic viscosity of sulfite pulp. 4,086,129, Cl. 162-49.000.
Concept Development Institute, Inc.: *See*—
Morgan, Burton D., 4,086,023, Cl. 416-132.00B.
Congoleum Corporation: *See*—
Barchi, Henry J., 4,086,377, Cl. 427-358.000.
Conner, Gary L., to U.S. Engineering Corporation. Relay. 4,086,550, Cl. 335-132.000.
Conradty, C.: *See*—
Koziol, Konrad; Sieberer, Karl-Heinz; and Rathjen, Hans-Carl, 4,086,157, Cl. 204-290.00F.
Consaul, James William; and Jadwin, Thomas Arthur, to Eastman Kodak Company. Offset prevention during fixing. 4,085,702, Cl. 118-60.000.
Container Corporation of America: *See*—
Beck, Robert E., 4,085,842, Cl. 206-289.000.
Continental Oil Company: *See*—
Johnson, Gary R., 4,086,412, Cl. 528-499.000.
Sifferman, Thomas R.; and Sparlin, Derry D., 4,085,801, Cl. 166-295.000.
Sifferman, Thomas R.; and Sparlin, Derry D., 4,085,802, Cl. 166-295.000.
Cook Electric Company: *See*—
Hines, William; Scheithauer, Eric A.; and Cwirzen, Casimir, 4,086,648, Cl. 361-124.000.
Cook, Emory G., to Cook Laboratories, Inc. Method and apparatus for preparing recorded program material to prevent unauthorized duplication by magnetic tape recording. 4,086,634, Cl. 360-60.000.
Cook Laboratories, Inc.: *See*—
Cook, Emory G., 4,086,634, Cl. 360-60.000.
Cooper, Charles Simpson: *See*—
Lawson, John B.; Cooper, Charles Simpson; and Vail, Alfred Slocum, 4,085,547, Cl. 51-47.000.

Cooperativa Central dos Produtores de Acucar E Alcool do Estado de Sao Paulo: *See*—
Da Silva, Wilson Marcelo, 4,085,545, Cl. 47-58.000.

Coppola, Vincent G.; Manduley, Flavio M.; and Dlugos, Daniel F., to Pitney-Bowes, Inc. Detection circuit for monitoring the failure of a system to respond in a planned manner to an inputted control signal. 4,086,530, Cl. 324-133.000.

Cor Tech Research Ltd.: *See*—
Vasishth, Ramesh C.; and Chandramouli, Pitchaiya, 4,086,125, Cl. 156-62.200.

Cordier, Jean-Pierre; and Vandorpe, Marc, to Belgonucleaire, S.A. Process for drying solutions containing boric acid. 4,086,325, Cl. 423-280.000.

Corey, Harold, to Population Research Incorporated. Method of bacterially purifying methyl cyanoacrylate. 4,086,266, Cl. 260-465.400.

Corey, Max L. Wood splitter. 4,086,111, Cl. 144-193.00A.

Corning Glass Works: *See*—
Minot, Michael Jay; and Ortabasi, Ugur, 4,086,074, Cl. 65-31.000.
Seward, Thomas Philip, III; and Wedding, Brent Merle, 4,086,089, Cl. 96-27.00R.

Corson, Frederick P.: *See*—
Stevens, Violete L.; Sexton, Arthur R.; and Corson, Frederick P., 4,086,151, Cl. 204-159.160.

Cosby, James L.; and Morgret, Gordon L., to Koppers Company, Inc. Web guides for corrugator machines. 4,086,120, Cl. 156-473.000.

Cosden Technology, Inc.: *See*—
Watson, James M., 4,086,147, Cl. 203-9.000.

Cotrel, Claude; Crisan, Cornel; Jeanmart, Claude; and Leger, Andre, to Rhone-Poulenc Industries. Naphthyridine derivatives. 4,086,348, Cl. 424-256.000.

Coudray, Andre Lucien: *See*—
Henrion, Michel Andre Robert; and Coudray, Andre Lucien, 4,086,437, Cl. 179-15.0AF.

Coughenour, Donald Jay; and Brown, Jack, to Singer Company, The. Sewing machine with programmable memory. 4,085,691, Cl. 112-158.00E.

Council, Malcolm N., to Otis Engineering Corporation. Well tubing handling system. 4,085,796, Cl. 166-77.500.

Cowardin, Robert Lewis; and Laurer, George Joseph, to International Business Machines Corporation. Decoding method and circuit. 4,086,477, Cl. 235-464.000.

Cowley, Gerald; Swindells, Richard; and Kostanecki, Mark, to Erco Industries Limited. Integrated chlorine dioxide producing system. 4,086,329, Cl. 423-478.000.

Cox, Arthur; and Linke, Walter R., to Bell & Howell Company. Viewfinder optics with zero power doublet. 4,086,000, Cl. 350-54.000.

Cox, David A.; Barnish, Ian T.; and Evans, Anthony G., to Pfizer Inc. Phenyl-alkanolamine, alkylamine and alpha-aminoalkyl ketone derivatives as heart stimulants. 4,086,272, Cl. 260-559.00D.

CPC International Inc.: *See*—
Balana, Ramon Cairo; and Caixes, Antonio Montserrat, 4,086,135, Cl. 195-17.000.

Cramer, Clarence W.: *See*—
Egee, Walter W.; and Cramer, Clarence W., 4,085,563, Cl. 53-59.00R.

Crane, Hewitt David; and Wolf, Daniel Errol, to Stanford Research Institute. Handwriting verification system using landmarks. 4,086,567, Cl. 340-146.3SY.

Crane Packing Limited: *See*—
Wilkinson, Samuel Clifford Walter; Sweett, Ronald Sydney; and Bunyan, Thomas Walter, 4,085,941, Cl. 277-3.000.

Crane, Robert M.; and Redwine, Fletcher H., to United States Steel Corporation. Method and apparatus for flushing the plunger of a positive displacement pump. 4,086,029, Cl. 417-53.000.

Crawford, Duncan J.: *See*—
Lisiecki, Robert E.; Crawford, Duncan J.; and Wise, Daniel J., 4,085,885, Cl. 229-17.00R.

Crawford, Lynn D., to Genevieve I. Hanscom, Robert M. Magnuson & Lois J. Thomson, Trustees of the Estate of Roy M. Magnuson. Apparatus for conveying and turning articles. 4,085,839, Cl. 198-410.000.

Crenshaw, Marilyn: *See*—
Martinsons, Aleksandrs; and Crenshaw, Marilyn, 4,086,149, Cl. 204-59.00R.

Cresswell, Michael W., to Westinghouse Electric Corporation. Method of fabricating apertured deposition masks used for fabricating thin film transistors. 4,086,127, Cl. 156-643.000.

Crisan, Cornel: *See*—
Cotrel, Claude; Crisan, Cornel; Jeanmart, Claude; and Leger, Andre, 4,086,348, Cl. 424-256.000.

Crisp, Michael J.: *See*—
Krikorian, Esther; and Crisp, Michael J., 4,086,555, Cl. 338-15.000.

Croft, Peter, to Allied Colloids Limited. Mixing apparatus and method. 4,086,663, Cl. 366-154.000.

Cross, David Frederic Watson: *See*—
Hutton, Ronald Eric; and Cross, David Frederic Watson, 4,086,304, Cl. 260-989.000.

Crouzet: *See*—
Cadot, Robert G., 4,086,527, Cl. 324-233.000.

Crowe, Norman P.; and Lohse, Joseph M., to Multifold-International, Inc. Machine for stacking and casing articles. 4,085,566, Cl. 53-124.00D.

Crowell Corporation, The: *See*—
Adelman, Herbert B.; and Goodman, Jack, 4,086,384, Cl. 428-213.000.

Crutcher, James Elwyn: *See*—
VanderLinden, Paul Guisbert, Jr.; and Crutcher, James Elwyn, 4,086,599, Cl. 343-881.000.

Curling, John Malcolm: *See*—
Lindquist, Lars-Olof Edvard; Berglof, Jan Hakan; and Curling, John Malcolm, 4,086,222, Cl. 260-122.000.

Curran, John R.; Sgourakes, George E.; and Richardson, David A., to Foxboro Company, The. Vortex flow meter transducer. 4,085,614, Cl. 73-194.0VS.

Currie, David W. Spring-hook device for scoring in a target type game. 4,085,933, Cl. 273-95.00R.

Currie, George Daniel, to Environmental Research Institute of Michigan. Method for fabrication of integrated optical circuits. 4,085,501, Cl. 29-593.000.

Curry, Byron V.; and Walton, Michael G. Adjustable spray device. 4,085,895, Cl. 239-276.000.

Curtiss-Wright Corporation: *See*—
Myers, David M.; and Lamping, Harold D., 4,085,712, Cl. 123-205.000.

Cushman, David W.; and Ondetti, Miguel Angel, to E. R. Squibb & Sons, Inc. N-carboxyalkanoyl derivatives of azetidine-2-carboxylic acid. 4,086,338, Cl. 424-244.000.

Cwirzen, Casimir: *See*—
Hines, William; Scheithauer, Eric A.; and Cwirzen, Casimir, 4,086,648, Cl. 361-124.000.

Cybernet Electronic Corporation: *See*—
Teshirogi, Toshihiko, 4,086,545, Cl. 331-16.000.

Czyzewski, Ted S.: *See*—
Minifie, Bernard W.; and Czyzewski, Ted S., 4,086,371, Cl. 426-658.000.

Dadak, Zdenek; Janda, Jaroslav; and Kakac, Karel, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Arrangement for the control of weft introduced into looms. 4,085,777, Cl. 139-370.200.

Dahl, John Conlan; and Barnett, David Lee, to Three Phoenix Company. Magnetic tape cartridge transport. 4,085,906, Cl. 242-192.000.

Dahlem, Werner, to Rheinstahl AG. Shield tubbing for longwalls. 4,085,592, Cl. 61-45.00D.

Daicel Ltd.: *See*—
Toyoshima, Iwao; Ishii, Kunio; Sawada, Hideo; Kawamoto, Junji; and Yokota, Hiromu, 4,085,760, Cl. 131-268.000.

Daimler-Benz Aktiengesellschaft: *See*—
Holzapfel, Immanuel; and Bruder, Werner, 4,085,579, Cl. 60-39.040.
Schaal, Christian, 4,085,718, Cl. 123-119.00A.
Sieder, Wolfgang, 4,086,554, Cl. 338-2.000.
Weisshappel, Helmut; Klie, Wolfgang; and Fischer, Wolfgang, 4,085,956, Cl. 293-86.000.
Weisshappel, Helmut; Klie, Wolfgang; and Fischer, Wolfgang, 4,085,956, Cl. 293-86.000.
Willmann, Karl; and Saufferer, Helmut, 4,085,717, Cl. 123-119.00E.

Dajani, Esam Z.: *See*—
Adelstein, Gilbert W.; Dajani, Esam Z.; and Yen, Chung Hwai, 4,086,227, Cl. 260-239.00B.

Dalton, Robert E. Continuously energized electrostatic coating voltage block. 4,085,892, Cl. 239-15.000.

Damhaug, Torbjorn: *See*—
Skarheim, Hans Petter; and Damhaug, Torbjorn, 4,086,169, Cl. 210-519.000.

D'Amico, John J.: *See*—
Bollinger, Frederic G.; and D'Amico, John J., 4,086,078, Cl. 71-94.000.

Danfoss A/S: *See*—
Jensen, Arne, 4,086,623, Cl. 363-41.000.

Daniel, Jean-Claude, to Rhone-Poulenc Industries. Latices of polymer particles comprising a core containing a vinyl polymer and a periphery containing a polymer having —CN groups. 4,086,199, Cl. 260-29.7UP.

Danti, August G.: *See*—
Bruscato, Frank N.; and Danti, August G., 4,086,335, Cl. 424-180.000.

D'Antonio, Alfred: *See*—
Putnam, Roger L., Jr.; Provost, Richard H.; and D'Antonio, Alfred, 4,085,567, Cl. 53-225.000.

Darden, Donald R. Alignment device. 4,085,515, Cl. 33-377.000.

Da Silva, Wilson Marcelo, to Cooperativa Central dos Produtores de Acucar E Alcool do Estado de Sao Paulo. Device for the extraction of sugar cane gemmas destined to thermotherapic treatment for the control of the blight of sugar cane stumps left after cutting. 4,085,545, Cl. 47-58.000.

Datene, Hans: *See*—
Zerpner, Dieter; Nedden, Klaus Zur; Frese, Albert; and Datene, Hans, 4,086,301, Cl. 260-897.00A.

Daum, Gerhard; and Richtzenhain, Hermann, to Dynamit Nobel Aktiengesellschaft. Method of preparing 3-methyl pyridine. 4,086,237, Cl. 260-290.00P.

Dauth, Christoph: *See*—
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.

David, Ed B., to EMC Energies, Inc. Free fluid-operated well turbopump. 4,086,030, Cl. 417-88.000.

Davidson, Charles Patrick Duncan; and Bottoms, Harry Simister, to Lucas Industries Limited. Motorized bicycle. 4,085,814, Cl. 180-33.00C.

Davies, Glyndwr John, to Glacier Metal Company Limited, The. Polyphenylene sulphide applications. 4,086,376, Cl. 427-185.000.
Davis, John R.: *See—*
LaChapelle, Theodore J., Jr.; Davis, John R.; and Licari, James J., 4,086,375, Cl. 427-90.000.
Davis, Paul D., Jr.: *See—*
Ezell, George D.; Murphy, Marvin L., Jr.; and Davis, Paul D., Jr., 4,086,504, Cl. 340-15.5TS.
Davis, Thomas G.; and Safford, George J., to Xerox Corporation. Corona charging device. 4,086,650, Cl. 361-229.000.
Dawson, John Victor; and Lalich, Michael John, to British Cast Iron Research Association. Cast iron. 4,086,086, Cl. 75-130.00R.
Day, Paul L.; and Mucha, George M., to Park-Ohio Industries, Inc. Resistance heating device with improved workpiece feeding mechanism. 4,086,464, Cl. 219-156.000.
Dayco Corporation: *See—*
Gaworowski, Andrew J.; and Duckett, John C., 4,086,386, Cl. 428-307.000.
Debbas, Samir Costandi: *See—*
Cheshire, David Alan; Debbas, Samir Costandi; Eger, Richard Thomas; Schermacher, Ken Stephen; and Twohig, Paul Thomas, 4,086,381, Cl. 428-113.000.
DeCaro, Robert E.: *See—*
Shapiro, Haskell; and DeCaro, Robert E., 4,085,619, Cl. 73-462.000.
De Clippeleir, Georges; and Vanderlinden, Andre, to Labofina S. A. Process for preparing overbased calcium sulfonates. 4,086,170, Cl. 252-33.000.
Decoteau, Gary D.: *See—*
Bosley, Roy E.; Mann, Paul T.; Decoteau, Gary D.; Ivie, Kert F.; and Winslow, Elden D., 4,086,368, Cl. 426-464.000.
Degraeve, Frans: *See—*
Mortier, Frans H.; and Degraeve, Frans, 4,085,571, Cl. 56-208.000.
Delagrange, Arthur D., to United States of America, Navy. Translating filter. 4,086,540, Cl. 328-167.000.
Delery, Marc, to Trappeur, S. A. Ski-boot. 4,085,528, Cl. 36-121.000.
De Lorenzi, John J.: *See—*
Caputo, William R.; and De Lorenzi, John J., 4,085,823, Cl. 187-29.00R.
Demchuk, Alexandr Fedorovich: *See—*
Deribas, Andrei Andreevich; Demchuk, Alexandr Fedorovich; Braunshtein, Rudolf Aronovich; Bochkarev, Boris Nikolaevich; Viktorov, Vladimir Borisovich; Karkishko, Gennady Semenovich; Baranov, Sergei Vasilievich; Prakhov, Alexandr Ivanovich; Kasatkin, Vladimir Semenovich; and Rozhkov, Alexandr Timofeevich, 4,085,883, Cl. 228-2.500.
De Meo, Anthony J.: *See—*
Cataffo, Herman R.; and De Meo, Anthony J., 4,086,113, Cl. 156-98.000.
Demi, Roy C.: *See—*
Branson, Charles D.; and Demi, Roy C., 4,085,891, Cl. 236-15.00A.
DeMoss, Dean: *See—*
Ragle, Herbert Underwood; and DeMoss, Dean, 4,086,641, Cl. 360-133.000.
DeMoss, Dean L.: *See—*
Ragle, Herbert Underwood; and DeMoss, Dean L., 4,086,640, Cl. 360-133.000.
Dentsply Research & Development Corporation: *See—*
Spencer, Bruce J., 4,085,967, Cl. 297-115.000.
DePinto, Victor M.: *See—*
Smith, Maurice I.; and DePinto, Victor M., 4,086,444, Cl. 179-99.000.
Deribas, Andrei Andreevich; Demchuk, Alexandr Fedorovich; Braunshtein, Rudolf Aronovich; Bochkarev, Boris Nikolaevich; Viktorov, Vladimir Borisovich; Karkishko, Gennady Semenovich; Baranov, Sergei Vasilievich; Prakhov, Alexandr Ivanovich; Kasatkin, Vladimir Semenovich; and Rozhkov, Alexandr Timofeevich. Installation for explosive treatment of materials. 4,085,883, Cl. 228-2.500.
Derrick, H. William, Jr., to Derrick Manufacturing Corporation. Flow divider. 4,085,776, Cl. 137-561.00A.
Derrick Manufacturing Corporation: *See—*
Derrick, H. William, Jr., 4,085,776, Cl. 137-561.00A.
Desai, Ashwin H.: *See—*
Hagen, Loren M.; and Desai, Ashwin H., 4,086,036, Cl. 417-413.000.
Desyllas, Peter Leo Lawrence; Jones, John Austin; and Procter, Brian John, to International Computers Limited. Hierarchical data store with look-ahead action. 4,086,629, Cl. 364-200.000.
Deutsch, Leslie J.: *See—*
Deutsch, Ralph; and Deutsch, Leslie J., 4,085,644, Cl. 84-1.010.
Deutsch, Ralph; and Deutsch, Leslie J., to Deutsch Research Laboratories, Ltd. Polyphonic tone synthesizer. 4,085,644, Cl. 84-1.010.
Deutsch Research Laboratories, Ltd.: *See—*
Deutsch, Ralph; and Deutsch, Leslie J., 4,085,644, Cl. 84-1.010.
Deverin, Jacques Alain, to Societe Suisse pour l'Industrie Horlogere Management Services, S.A. Monocrystalline display device with storage effect for an electronic timepiece. 4,085,576, Cl. 58-23.00R.
De Vos, Daniel: *See—*
Le Ruyet, Daniel; and De Vos, Daniel, 4,086,098, Cl. 106-97.000.
Dewey, Frank. Rigid composite articles and a method for their manufacture. 4,086,118, Cl. 156-246.000.
Diaferia, Henry V.: *See—*
DiMatteo, Paul L.; and Diaferia, Henry V., 4,085,471, Cl. 5-90.000.
Dickakian, Ghazi Mourad, to Exxon Research & Engineering Co. Pitch bonded carbon electrode. 4,086,156, Cl. 204-294.000.
Dickey, Herbert C., to Ealing Corporation, The. Electrical switch for use by the disabled. 4,086,458, Cl. 200-85.00R.
Dickey-john Corporation: *See—*
Bachman, Wesley J., 4,086,563, Cl. 340-52.00B.
Steffen, David Eugene, 4,085,862, Cl. 221-8.000.
Dickson, Jocelyn: *See—*
Hermann, William J., Jr., 4,086,060, Cl. 23-259.000.
Didier-Werke AG: *See—*
Laux, Walter; Hebel, Rudolf; and Schneider, Rolf, 4,086,052, Cl. 432-217.000.
Diebold, Incorporated: *See—*
Beck, Robert; Morello, Herbert J.; and Richardson, Jack M., 4,085,687, Cl. 109-24.100.
Diehl, Robert Eugene; and Kendall, Roger Vernon, to American Cyanamid Company. 1H- and 2H-Benzotriazoles. 4,086,242, Cl. 260-308.00B.
Dieleman, Jan; and Hoeberechts, Arthur Marie Eugene, to U.S. Philips Corporation. Camera tube employing silicon chalcogenide target with heterojunction. 4,086,512, Cl. 313-366.000.
Diesel Kiki Co., Ltd.: *See—*
Shibuya, Tsunenori; and Kondo, Hiroshi, 4,086,040, Cl. 418-76.000.
Takada, Haruhiko, 4,086,041, Cl. 418-84.000.
Dilo, Richard, to Rontex America, Inc. Method of producing needled, non-woven tubing. 4,085,486, Cl. 28-110.000.
DiMatteo, Paul L.; and Diaferia, Henry V., to Dynell Electronics Corporation. Invalid bed arrangement. 4,085,471, Cl. 5-90.000.
DiMatteo, Paul L., to Dynell Electronics Corporation. Invalid bed arrangement. 4,085,472, Cl. 5-90.000.
Dimensional Development Corporation: *See—*
Wah Lo, Allen Kwok; and Nims, Jerry Curtis, 4,086,585, Cl. 354-115.000.
Dimick, Royal H. Fifth wheel trailer home with folding forward section. 4,085,959, Cl. 296-23.0MC.
Director National Research Institute for Metals, The: *See—*
Masumoto, Katashi; Furubayashi, Ei-ichi; and Inoue, Wahei, 4,086,508, Cl. 310-86.000.
Djordjevic, Ilija; Jaenke, Hans-Jurgen; Ritter, Ernst; and Staudt, Heinrich, to Robert Bosch GmbH. Fuel regulator for internal combustion engines with injection system. 4,085,724, Cl. 123-140.0MC.
Dlugos, Daniel F.: *See—*
Coppola, Vincent G.; Manduley, Flavio M.; and Dlugos, Daniel F., 4,086,530, Cl. 324-133.000.
Dobritz, Gunter, to Dragerwerk Aktiengesellschaft. Humidifier for respirators having a sealed container water supply to a water storage tank. 4,086,305, Cl. 261-30.000.
Dodge, Larry H., to Sherwood Medical Industries Inc. Drainage apparatus. 4,085,751, Cl. 128-275.000.
Dodson, Raymond M.; and Hanson, Joseph B., to University of Minnesota, The Regents of the. Preparation of catechol derivatives. 4,086,265, Cl. 260-455.00A.
Dombay, Zsolt: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Bokor, Gyorgy; Dombay, Zsolt; Pinter, Zoltan; Gregar, Erzsebet, nee Toth; Dudas, Julianna, nee Sz. Kiss; Nagy, Emilia, nee Gera; and Fodor, Istvan, 4,086,339, Cl. 424-245.000.
Donn Products, Inc.: *See—*
Lahm, Albert H., 4,086,480, Cl. 362-148.000.
Dorigotti, Luciano; and Parravicini, Francesco, to I.S.F. SpA. Acylated hydrazinopyridazine antihypertensives. 4,086,343, Cl. 424-250.000.
Dorn, Ingo H.: *See—*
Stedefeder, Joachim; Dorn, Ingo H.; Kuhn, Horst; Kastenhuber, Walter; and Linke, Wolfgang, 4,086,413, Cl. 528-499.000.
Dorr-Oliver Incorporated: *See—*
Jukkola, Walfred Wilhelm; and Svencer, Richard Ernest, 4,085,516, Cl. 34-10.000.
Dorsch, Robert; and Leach, Daryl, to Alpha-Debon Industries, Inc. Apparatus and spray head for fluid dispersion. 4,085,896, Cl. 239-504.000.
Douglas, Lawrence M., to Polaroid Corporation. Selective closure of camera viewfinder and camera incorporating same. 4,086,604, Cl. 354-219.000.
Dover Corporation: *See—*
Minifie, Bernard W.; and Czyzewski, Ted S., 4,086,371, Cl. 426-658.000.
Dow Chemical Company, The: *See—*
Barrons, Keith C.; Smith, Leonard L., Jr.; and Holmsen, Theodore W., 4,086,081, Cl. 71-126.000.
Baxter, Clyde Edward; and Gurgiolo, Arthur Emilio, 4,086,159, Cl. 208-333.000.
Berazosky, Sandra; and Kaiser, Mark E., 4,086,273, Cl. 260-561.00S.
Hopper, Charles R.; and Kershner, Larry D., 4,086,253, Cl. 260-396.00N.
Huang, Charles Y.; and Stavropoulos, William S., 4,086,142, Cl. 195-103.50R.
Kaiser, Mark E.; and Owen, Peter W., 4,086,274, Cl. 260-561.00S.
Lamoria, Lz F.; and Van Dell, Robert D., 4,086,200, Cl. 260-29.60S.
McCarthy, James R.; and Moore, Jimmie L., 4,086,344, Cl. 424-251.000.
Peters, James; VanDell, Robert D.; Eash, R. Douglas; and Lamoria, Lz F., 4,086,201, Cl. 260-29.70S.
Raley, Charles F., Jr., 4,086,192, Cl. 260-2.5FP.
Stevens, Violete L.; Sexton, Arthur R.; and Corson, Frederick P., 4,086,151, Cl. 204-159.160.

Doyle, William C., Jr., to Gulf Research & Development Company. Combating unwanted vegetation with 1,3,4-thiadiazolylureas. 4,086,077, Cl. 71-90.000.
Dragerwerk Aktiengesellschaft: *See*—
Dobritz, Gunter, 4,086,305, Cl. 261-30.000.
Drechsel, Erhart K., to Pennzoil Company. Production of fluoride-free phosphates. 4,086,322, Cl. 423-158.000.
Dryden, Hugh Latimer, Jr., and Erickson, Robert A., to G. D. Searle & Co. Process for the preparation of tertiary amines. 4,086,234, Cl. 260-268.0BC.
Du Pont of Canada Ltd.: *See*—
Kuhnemann, Klaus Dieter, 4,085,903, Cl. 242-43.100.
Duckett, John C.: *See*—
Gaworowski, Andrew J.; and Duckett, John C., 4,086,386, Cl. 428-307.000.
Dudas, Julianna, nee Sz. Kiss: *See*—
Matolcsy, Gyorgy; Bordas, Barna; Bokor, Gyorgy; Dombay, Zsolt; Pinter, Zoltan; Gregar, Erzsebet, nee Toth; Dudas, Julianna, nee Sz. Kiss; Nagy, Emilia, nee Gera; and Fodor, Istvan, 4,086,339, Cl. 424-245.000.
Duncan, Ernest R. Teaching machine. 4,085,523, Cl. 35-9.00A.
Dunchock, Richard S. Storage container. 4,085,844, Cl. 206-335.000.
Dundee Cement Company: *See*—
Bilkvist, Ib Bentzen, 4,085,975, Cl. 302-23.000.
Dunham-Bush, Inc.: *See*—
Shaw, David N., 4,086,072, Cl. 62-2.000.
Dunlap, Thomas F.: *See*—
Reams, Lowell A.; and Dunlap, Thomas F., 4,085,588, Cl. 60-517.000.
Dunne, Maurice J.: *See*—
Engelberger, Joseph F.; Dunne, Maurice J.; and Perzley, William, 4,086,522, Cl. 318-568.000.
Du Pont de Nemours, E. I., and Company: *See*—
Cheshire, David Alan; Debbas, Samir Costandi; Eger, Richard Thomas; Schermacher, Ken Stephen; and Twohig, Paul Thomas, 4,086,381, Cl. 428-113.000.
Jackson, Harold L.; and Mader, Frederick W., 4,085,518, Cl. 34-37.000.
Lee, Kyu Tai, 4,086,236, Cl. 260-287.0AN.
Durley, Benton A., III. Ultrasonic humidifiers, atomizers and the like. 4,085,893, Cl. 239-102.000.
Durr - Dental KG.: *See*—
Muller, Mathias, 4,086,607, Cl. 354-299.000.
Dursch, Friedrich, to E. R. Squibb & Sons, Inc. Derivatives of pleuromutilin and compositions. 4,086,359, Cl. 424-299.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Daum, Gerhard; and Richtzenhain, Hermann, 4,086,237, Cl. 260-290.00P.
Dynell Electronics Corporation: *See*—
DiMatteo, Paul L.; and Diaferia, Henry V., 4,085,471, Cl. 5-90.000.
DiMatteo, Paul L., 4,085,472, Cl. 5-90.000.
E. R. Squibb & Sons, Inc.: *See*—
Breuer, Hermann; and Treuner, Uwe, 4,086,422, Cl. 544-21.000.
Cushman, David W.; and Ondetti, Miguel Angel, 4,086,338, Cl. 424-244.000.
Dursch, Friedrich, 4,086,359, Cl. 424-299.000.
Sprague, Peter W., 4,086,244, Cl. 260-340.300.
Ealing Corporation, The: *See*—
Dickey, Herbert C., 4,086,458, Cl. 200-85.00R.
Eash, R. Douglas: *See*—
Peters, James; VanDell, Robert D.; Eash, R. Douglas; and Lamoria, Lz F., 4,086,201, Cl. 260-29.70S.
East, George F.; and Hallum, Charles E., to Ford Motor Company. Combined warm gas fin and reaction control servo. 4,085,909, Cl. 244-3.210.
Easter, Finis Claude, to RCA Corporation. Video digital display device with analog input. 4,086,579, Cl. 340-324.0AD.
Eastman Kodak Company: *See*—
Consaul, James William; and Jadwin, Thomas Arthur, 4,085,702, Cl. 118-60.000.
Petropoulos, Constantine Chris, 4,086,210, Cl. 260-67.00R.
Ebara Manufacturing Co., Ltd.: *See*—
Saito, Shozo; and Inoue, Naoyuki, 4,085,595, Cl. 62-476.000.
Ebbeson, Bengt Ebbe Oscar: *See*—
Svensson, Sven Arne; and Ebbeson, Bengt Ebbe Oscar, 4,085,968, Cl. 297-243.000.
Eberle, William J., to General Battery Corporation. Method of casting lead alloy automotive battery parts. 4,085,792, Cl. 164-72.000.
Echterhoff, Heinrich; Simonis, Wolfgang; Rohde, Wolfgang; and Beck, Kurt-Gunther, to Bergwerksverband GmbH. Coking method and arrangement. 4,086,143, Cl. 201-41.000.
Eckstein, Werner Willi Gustav; and Schweinsberg, Dieter Klaus-Jurgen, to Eichner Organisation KG. Data carrier holder. 4,085,534, Cl. 40-124.200.
Eduard Kusters: *See*—
Ahrweiler, Klaus; Leifeld, Ferdinand; Quoos, Kurt; and Kusters, Eduard Finkenweg 18, 4,086,316, Cl. 264-120.000.
Edward Shanbrom, Inc.: *See*—
Shanbrom, Edward; and Bishop, Robert C., 4,086,218, Cl. 260-112.00B.
Edwards, Gerald L.: *See*—
Ullakko, Richard J.; and Edwards, Gerald L., 4,086,441, Cl. 179-84.00C.
Edwards, Joseph Franklin; Brown, Johnny Milton; Christian, James Vernon; and Elkins, Clayton, to General Shale Products Corporation. Pulverulent material metering and delivery system and method. 4,085,976, Cl. 302-25.000.
Edwards, Wayne L., Jr.: *See*—
Cizmic, Stipe; Edwards, Wayne L., Jr.; Jacques, James O.; Mahon, Douglas K.; and Shenfield, Leonard R., 4,086,636, Cl. 360-75.000.
Cizmic, Stipe; Edwards, Wayne L., Jr.; Griffith, David L.; Halfhill, Martin O.; Jacques, James O.; Shenfield, Leonard R.; and Votaw, Ronald W., 4,086,659, Cl. 364-900.000.
Egee, Walter W.; and Cramer, Clarence W., to Campbell Soup Company. Cookie dispensing apparatus. 4,085,563, Cl. 53-59.00R.
Eger, Richard Thomas: *See*—
Cheshire, David Alan; Debbas, Samir Costandi; Eger, Richard Thomas; Schermacher, Ken Stephen; and Twohig, Paul Thomas, 4,086,381, Cl. 428-113.000.
Ehlen, Anton: *See*—
Hanert, Eckehard; and Ehlen, Anton, 4,085,488, Cl. 29-33.00G.
Eichner Organisation KG: *See*—
Eckstein, Werner Willi Gustav; and Schweinsberg, Dieter Klaus-Jurgen, 4,085,534, Cl. 40-124.200.
Schweinsberg, Dieter Klaus-Jurgen, 4,085,535, Cl. 40-124.200.
Eisenhauer, Rudolf: *See*—
Jacubasch, Dieter; Eisenhauer, Rudolf; Greifenberg, Juergen; and Goebel, Rolf-Dieter, 4,085,898, Cl. 241-175.000.
Ekkelboom, Tjepke Hendrik; and Geeven, Thomas, to U.S. Philips Corporation. Method of manufacturing an article containing at least one glass part in which a metal part is sealed in. 4,086,075, Cl. 65-40.000.
Eklund, Urban, to Kockums Automation AB. Method and machine for band sawing. 4,085,636, Cl. 83-56.000.
Elbatainer Kunststoff- und Verpackungs-Gesellschaft mbH: *See*—
Lampart, Dieter; and Kormendi, Kalman, 4,086,314, Cl. 264-89.000.
Eldridge, Eugene E.: *See*—
Franks, Lawrence A.; and Eldridge, Eugene E., 4,085,608, Cl. 72-297.000.
Electric Power Research Institute, Inc.: *See*—
Gorman, Joseph G.; Hicks, John M.; and Holmes, Francis Alan, 4,086,645, Cl. 361-155.000.
Electro-Craft Corporation: *See*—
Persson, Erland K., 4,086,519, Cl. 318-254.000.
Elgersma, Henry J. Guard monitor system. 4,086,577, Cl. 340-306.000.
Eli Lilly and Company: *See*—
Gland, Thomas M.; and Frederickson, Robert C. A., 4,085,705, Cl. 119-17.000.
Eliasson, Sonja Margareta Isabella. Crash moderation system for roads, highways, railways, airfields and harbors. 4,086,015, Cl. 404-6.000.
Elkins, Clayton: *See*—
Edwards, Joseph Franklin; Brown, Johnny Milton; Christian, James Vernon; and Elkins, Clayton, 4,085,976, Cl. 302-25.000.
Ellers, Frederick S.: *See*—
Serpas, Luis B.; Small, Sam W.; and Ellers, Frederick S., 4,085,781, Cl. 141-1.000.
Elpower Corporation: *See*—
Tesch, Hugo W., 4,086,394, Cl. 429-54.000.
EMC Energies, Inc.: *See*—
David, Ed B., 4,086,030, Cl. 417-88.000.
EMI Limited: *See*—
Lodge, James Alec; and Jarrett, John James, 4,086,492, Cl. 250-416.0TV.
Emmert, Reinhold, to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig. Tape recorder control unit. 4,085,908, Cl. 242-201.000.
Endo, Hiroshi: *See*—
Toriumi, Shiro; and Endo, Hiroshi, 4,086,469, Cl. 235-92.0MP.
Enenkel, Hans-Joachim: *See*—
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, 4,086,362, Cl. 424-305.000.
Energy Development Associates: *See*—
Hart, Thomas G., 4,086,393, Cl. 429-51.000.
Energy Materials, Inc.: *See*—
Chahroudi, Day, 4,085,999, Cl. 350-1.100.
Eng, Don: *See*—
Speiser, Maxmilian Richard; Eng, Don; and Sawyer, Gerry Dun, 4,086,630, Cl. 364-410.000.
Engelberger, Joseph F.; Dunne, Maurice J.; and Perzley, William, to Unimation, Inc. Computer assisted teaching arrangement for conveyor line operation. 4,086,522, Cl. 318-568.000.
Engels, Walter; and Willbanks, Charles E., to Milliken Research Corporation. Apparatus for sculpturing pile fabrics. 4,085,700, Cl. 118-37.000.
Engle, Charles J.; and Runnels, John H., to Phillips Petroleum Company. Plugging earth strata. 4,085,800, Cl. 166-288.000.
Enso-Gutzeit Osakeyhtio: *See*—
Tapola, Esko; Sten, Matti; and Koistinen, Onni, 4,086,167, Cl. 210-150.000.
Environmental Research Institute of Michigan: *See*—
Currie, George Daniel, 4,085,501, Cl. 29-593.000.
Erb, Edgar Martin: *See*—
Heiser, Joseph Irvin; and Erb, Edgar Martin, 4,086,395, Cl. 429-88.000.
Erco Industries Limited: *See*—
Cowley, Gerald; Swindells, Richard; and Kostanecki, Mark, 4,086,329, Cl. 423-478.000.
Swindells, Richard, 4,086,328, Cl. 423-478.000.

Eremin, Gennady Efimovich: *See—*
Antonov, Sergei Fedorovich; Krasheninin, Pavel Firsovich; Bogdanov, Vyacheslav Mikhailovich; Khramtsov, Andrei Georgievich; and Eremin, Gennady Efimovich, 4,086,366, Cl. 426-14.000.

Erge, Dieter: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.

Erickson, Robert A.: *See—*
Dryden, Hugh Latimer, Jr.; and Erickson, Robert A., 4,086,234, Cl. 260-268.0BC.

Ericson, Harry; and Fredriksson, Carl Otto, to Nordnero AB. Solutions for chemically polishing surfaces of copper and its alloys. 4,086,176, Cl. 252-100.000.

Erwin, Curtis L., Jr. Compensated fuel measuring system for engines. 4,085,610, Cl. 73-113.000.

Espander, John C., to Honeywell Inc. Thermostat. 4,085,843, Cl. 206-328.000.

Esselborn, Reiner; and Bernhard, Horst, to Merck Patent Gesellschaft mit beschrankter Haftung. Rutile-containing lustrous pigments. 4,086,100, Cl. 106-291.000.

Eszakmagyarorszagi Vegyimuvek: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Bokor, Gyorgy; Dombay, Zsolt; Pinter, Zoltan; Gregar, Erzsebet, nee Toth; Dudas, Julianna, nee Sz. Kiss; Nagy, Emilia, nee Gera; and Fodor, Istvan, 4,086,339, Cl. 424-245.000.

Etablissements Vape: *See—*
Vanotti, Guy, 4,085,652, Cl. 85-83.000.

Ethyl Corporation: *See—*
Hornbaker, Edwin D.; Nugent, Adam, Jr.; and Loechelt, Cecil P., 4,086,414, Cl. 528-500.000.

Etoh, Jun: *See—*
Yoshida, Isao; Hori, Ryoichi; Masuda, Hiroo; Minato, Osamu; Etoh, Jun; and Nakai, Masaaki, 4,086,642, Cl. 361-91.000.

Etoh, Motoaki, to Fuji Jukogyo Kabushiki Kaisha. Fuel supply system for multi-fuel internal combustion engines. 4,085,720, Cl. 123-127.000.

Ettridge, John P. Orbital machine with cooperating lobe and recess guide means. 4,086,039, Cl. 418-61.00R.

Evans, Anthony G.: *See—*
Cox, David A.; Barnish, Ian T.; and Evans, Anthony G., 4,086,272, Cl. 260-559.00D.

Evans, Frances Mae, executrix: *See—*
Evans, John, Jr., deceased, 4,086,513, Cl. 313-414.000.

Evans, John, Jr., deceased (by Evans, Frances Mae, executrix), to RCA Corporation. Plural gun cathode ray tube having parallel plates adjacent grid apertures. 4,086,513, Cl. 313-414.000.

Evans Products Company: *See—*
Stone, Thomas G., 4,085,685, Cl. 105-498.000.

Evans, Virginia Sunner. Combined animal weaning, watering and feeding dishes. 4,085,706, Cl. 119-61.000.

Evenson, Gerald N., to Upjohn Company, The. 1,5-Dihydro-7-aryl-as-triazine[4,3,-α][1,4]benzodiazepin-1-ols. 4,086,230, Cl. 260-243.300.

Everett, William Clinton. Ultrasonic disinfection system. 4,086,057, Cl. 21-54.00A.

Ewald, Alfred. Device for producing aesthetic effects. 4,085,533, Cl. 40-406.000.

Ex-Cell-O Corporation: *See—*
Lisiecki, Robert E.; Crawford, Duncan J.; and Wise, Daniel J., 4,085,885, Cl. 229-17.00R.

Exxon Production Research Company: *See—*
Butler, Roger Moore, 4,085,803, Cl. 166-303.000.

Exxon Research & Engineering Co.: *See—*
Cahn, Robert P.; and Li, Norman N., 4,086,163, Cl. 210-22.00D.
Dickakian, Ghazi Mourad, 4,086,156, Cl. 204-294.000.
Henry, H. Clarke; and Ranganathan, Ramaswami, 4,086,184, Cl. 252-414.000.
Moss, Gerald, 4,085,707, Cl. 122-4.00D.
Vardi, Joseph; and Kittler, Milton J., 4,085,721, Cl. 123-136.000.
Whittingham, M. Stanley; and Newman, Gerald H., 4,086,403, Cl. 429-194.000.

Ezell, George D.; Murphy, Marvin L., Jr.; and Davis, Paul D., Jr., to Texas Instruments Incorporated. Distributed data acquisition. 4,086,504, Cl. 340-15.5TS.

Ezumi, Yuh; Kobayashi, Masaharu; Kubota, Takashi; and Shimokawa, Yoichi, to Toray Industries, Inc. Dry planographic printing plate. 4,086,093, Cl. 96-86.00P.

Facet Enterprises, Inc.: *See—*
Wilkinson, John Robert, 4,086,518, Cl. 318-127.000.

Fahrbach, Gerhard; Gerberding, Karl; Seiler, Erhard; and Stein, Dieter, to BASF Aktiengesellschaft. Branched block copolymers and their manufacture. 4,086,298, Cl. 260-880.00B.

Fairchild Camera and Instrument Corporation: *See—*
Chung, David H., 4,086,626, Cl. 364-200.000.

Faivre, Christian: *See—*
Buhler, Roger; and Faivre, Christian, 4,086,521, Cl. 318-307.000.

Fancher, Llewellyn W., to Stauffer Chemical Company. Thiazole bis-phosphates and phosphonates, intermediates, and insecticidal compositions and methods. 4,086,239, Cl. 260-306.80R.

Fantino, Jean: *See—*
Prudhon, Francois; Fantino, Jean; and Mounier, Francois, 4,086,099, Cl. 106-109.000.

Farfaglia, Silvio T., to Phillips Petroleum Company. Universal mandrel for container forming apparatus. 4,085,664, Cl. 93-44.10R.

Farha, Floyd E., Jr.: *See—*
Cichowski, Robert S.; and Farha, Floyd E., Jr., 4,086,290, Cl. 260-680.00E.

Farwell, Paul E. Dolly apparatus. 4,085,953, Cl. 254-10.00C.

Fechillas, Michael R.: *See—*
Ness, Irving Stanley; and Fechillas, Michael R., 4,085,754, Cl. 128-287.000.

Federhen, Ernst: *See—*
Weisgerber, Willi; and Federhen, Ernst, 4,085,930, Cl. 271-204.000.

Fekl, Werner, to J. Pfrimmer & Co. Graduated container. 4,085,866, Cl. 222-158.000.

Felten & Guilleaume Carlswerk AG: *See—*
Brakelmann, Heinrich, 4,086,425, Cl. 174-15.00C.

Felter, John V. Turbine ventilators and method of manufacture. 4,086,028, Cl. 416-227.00A.

Ferranti Limited: *See—*
Pitches, Brian Edward; and Murray, Robert Malcolm Stuart, 4,086,569, Cl. 340-167.00R.

Ferro Corporation: *See—*
Hummel, Floyd A.; and Sombuthawee, Charussri, 4,086,123, Cl. 106-293.000.

Feuillade, Georges, to Compagnie Generale d'Electricite S.A. Lithium electric cell. 4,086,402, Cl. 429-190.000.

Fifer, James T. Apparatus for cutting lumber to variable clear lengths. 4,085,638, Cl. 83-71.000.

Fillmore, Gary L.; Hill, James D.; Robinson, William F.; and Williams, Thomas H., to International Business Machines Corporation. Sequential ink jet printing system with variable number of guard drops. 4,086,601, Cl. 346-75.000.

Filtrol Corporation: *See—*
Lim, John; and Stamires, Dennis, 4,086,187, Cl. 252-455.00Z.

Finelli, Patrick L.; and Paglia, Richard, to Polaroid Corporation. Strobe camera with flat capacitor. 4,086,606, Cl. 354-288.000.

Finlay, David Ernest, to International Business Machines Corporation. Input/output and diagnostic arrangements for programmable machine controllers having multiprogramming capabilities. 4,086,658, Cl. 364-900.000.

Finn, Lawrence R.; McCartan, Daniel A.; and Schmandt, Gary M., to Owens-Corning Fiberglas Corporation. Apparatus for packing compressible fibrous batts. 4,085,562, Cl. 53-59.00R.

Firestone, Raymond A.; Ratcliffe, Ronald W.; and Christensen, Burton G., to Merck & Co., Inc. Process for cephem synthesis. 4,086,423, Cl. 544-21.000.

Firestone Tire & Rubber Company, The: *See—*
Claxton, William Eugene, 4,086,564, Cl. 340-58.000.
Johnsen, John Arthur, 4,086,047, Cl. 425-450.100.

Fischer, Don G.; and Holland, Harold, to Square D Company. Padlock adapter assembly. 4,085,599, Cl. 70-14.000.

Fischer, Wolfgang: *See—*
Weisshappel, Helmut; Klie, Wolfgang; and Fischer, Wolfgang, 4,085,956, Cl. 293-86.000.

Fish, Herbert L. Impact tool and handle assembly therefor. 4,085,784, Cl. 145-29.00R.

Fisher, Howard M.; and Montgomery, Harry T., to Pennsylvania Engineering Corporation. Cooling assembly for metallurgical vessels. 4,085,924, Cl. 266-241.000.

Flottweg-Werk Dr. Georg Bruckmayer GmbH & Co. KG: *See—*
Jager, Ernst Adolf, 4,085,888, Cl. 233-7.000.

Flynn, Jean Louis. Hinge security stud. 4,085,650, Cl. 85-41.000.

FMC Corporation: *See—*
Mughannam, Adil A., 4,085,668, Cl. 99-483.000.

Focke, Heinz, to Focke & Pfuhl. Method and apparatus for making tray-type packets. 4,085,564, Cl. 53-32.000.

Focke, Heinz; and Liedtke, Kurt, to Focke & Pfuhl. Foldable blanks for making packets for rod-shaped articles. 4,085,568, Cl. 53-234.000.

Focke & Pfuhl: *See—*
Focke, Heinz, 4,085,564, Cl. 53-32.000.
Focke, Heinz; and Liedtke, Kurt, 4,085,568, Cl. 53-234.000.

Fodor, Istvan: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Bokor, Gyorgy; Dombay, Zsolt; Pinter, Zoltan; Gregar, Erzsebet, nee Toth; Dudas, Julianna, nee Sz. Kiss; Nagy, Emilia, nee Gera; and Fodor, Istvan, 4,086,339, Cl. 424-245.000.

Foerst, Paul W.: *See—*
Knox, Walter R.; Hill, James C.; Hughes, Lawrence J.; and Foerst, Paul W., 4,086,195, Cl. 260-2.50N.

Fogarollo, Pier Paolo, to LAMES Societa per Azioni. Electric window regulator for motor vehicles with means for manual emergency operation. 4,085,629, Cl. 74-625.000.

Foo, Kenneth, to Gottlieb, Theodore. Sling for tennis racket. 4,085,872, Cl. 224-5.00D.

Ford Motor Company: *See—*
East, George F.; and Hallum, Charles E., 4,085,909, Cl. 244-3.210.
Hamburg, Douglas R.; and Giardini, Dante S., 4,085,719, Cl. 123-122.00E.
Reams, Lowell A.; and Dunlap, Thomas F., 4,085,588, Cl. 60-517.000.

Foreman, Donald S., to Honeywell Inc. Gated pulse generator. 4,086,538, Cl. 328-112.000.

Formenti, Augusto. Liquid-treatment system. 4,086,165, Cl. 210-104.000.

Foster Wheeler Energy Corporation: *See—*
Ashdown, Ronald Arthur, 4,085,708, Cl. 122-7.00B.

Fox, David A.; and Apfelbeck, Otto L., to Westinghouse Electric Corporation. Control circuit initiating conduction of an opto-isolator unit. 4,086,503, Cl. 307-363.000.

Foxall, Thomas George; Ibrahim, Abd-El-Fattah Ali; and Sellars, Lester Porter, to Northern Telecom Limited. Double split-electrode for charge transfer device. 4,086,609, Cl. 357-24.000.

Foxboro Company, The: *See—*
Curran, John R.; Sgourakes, George E.; and Richardson, David A., 4,085,614, Cl. 73-194.0VS.

Fozzard, George B., to Phillips Petroleum Company. Fluoro compound preparation. 4,086,407, Cl. 526-75.000.

Fraley, Phillip Edward, to Bell Telephone Laboratories Incorporated. Current to voltage converter. 4,086,624, Cl. 363-127.000.

Frank, Robert I.: *See—*
Kaplow, Roy; and Frank, Robert I., 4,086,485, Cl. 250-203.00R.

Franklin, Dwaine R. Deck platform extension for boats. 4,085,473, Cl. 9-1.700.

Franks, Lawrence A.; and Eldridge, Eugene E., to Burr Oak Tool & Gauge Company. Return elbow and crossover bender. 4,085,608, Cl. 72-297.000.

Franssen, Nico Valentinus; Kuijk, Karel Elbert; and Siebelink, Johannes Willem, to U.S. Philips Corporation. Compression system. 4,086,431, Cl. 179-1.0SA.

Frazier, Stephen E., to Rush-Hampton Industries. Animal litter. 4,085,704, Cl. 119-1.000.

Frederickson, Robert C. A.: *See—*
Gland, Thomas M.; and Frederickson, Robert C. A., 4,085,705, Cl. 119-17.000.

Fredriksson, Carl Otto: *See—*
Ericson, Harry; and Fredriksson, Carl Otto, 4,086,176, Cl. 252-100.000.

Freedman Seating Company, The: *See—*
Wahls, Robert A., 4,085,962, Cl. 296-65.00R.

Freeman, Christopher, and Moritz, Robert Rudolph, to Rolls-Royce Limited. Gas turbine engine with improved compressor casing for permitting higher air flow and pressure ratios before surge. 4,086,022, Cl. 415-119.000.

Freeman, Stephen Morrison: *See—*
Busch, John Folts; and Freeman, Stephen Morrison, 4,086,067, Cl. 51-296.000.

Freeman, Vernon L.: *See—*
Kam, Clifford Y.; Freeman, Vernon L.; and Penton, Allen P., 4,086,378, Cl. 428-36.000.

Frese, Albert: *See—*
Zerpner, Dieter; Nedden, Klaus Zur; Frese, Albert; and Datene, Hans, 4,086,301, Cl. 260-897.00A.

Freund Precision, Inc.: *See—*
Freund, Robert F.; and Sturgeon, Wayne, 4,086,483, Cl. 362-311.000.

Freund, Robert F.; and Sturgeon, Wayne, to Freund Precision, Inc. Device for installing within a panel opening for supporting an electrical component or the like. 4,086,483, Cl. 362-311.000.

Fricke, Jobst; and Geiseler, Wolfgang, to CMB Colonia Management- und Beratungsgesellschaft mbH & Co. K.G. Electronic sound synthesis. 4,085,648, Cl. 84-1.240.

Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; by Plattner, Werner, administrator; Wilhelms, Otto-Henning; von Mullendorff, Erika; and Sponer, Gisbert, to Boehringer Mannheim GmbH. 9[3-(4-Phenoxymethylpiperidino)-propyl]-adenines. 4,086,347, Cl. 424-253.000.

Fried, Raymond L., to John Fluke Mfg. Co., Inc. Frequency synthesizer using phase locked loops. 4,086,544, Cl. 331-1.00A.

Frommlet, Hubert: *See—*
Weiland, Emil; Schwarz, Alois; Mautz, Karl-Heinz; and Frommlet, Hubert, 4,086,024, Cl. 416-140.000.

Fruehauf Corporation: *See—*
Ringe, Stephen J., 4,085,966, Cl. 296-146.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Etoh, Motoaki, 4,085,720, Cl. 123-127.000.

Fuji Photo Film Co., Ltd.: *See—*
Asao, Yasuzi; and Ogata, Yasuhiro, 4,085,949, Cl. 282-27.500.
Shiba, Keisuke; Hirose, Takeshi; Inouye, Kozo; and Okumura, Akio, 4,086,094, Cl. 96-100.00R.
Suzuki, Masaaki; Shirahata, Ryuji; Aonuma, Masashi; and Kitamoto, Tatsuji, 4,086,374, Cl. 427-48.000.
Suzuki, Osamu; Oishi, Kengo; Akashi, Goro; and Sega, Kenji, 4,085,907, Cl. 242-199.000.

Fujikawa, Kaoru: *See—*
Osujyo, Masahide; Yamanishi, Isamu; Inamori, Akio; Fujikawa, Kaoru; Wakabayashi, Noboru; Ikegami, Seiichi; Okada, Makoto; and Katayama, Morimitsu, 4,085,806, Cl. 172-9.000.

Fujikura, Yoshiaki: *See—*
Inamoto, Yoshiaki; Tsuchihashi, Kiyoshi; Takaishi, Naotake; Fujikura, Yoshiaki; and Aigami, Koji, 4,086,285, Cl. 260-666.0PY.

Fujita, Masayuki: *See—*
Kubo, Sueki; Toso, Katsuya; and Fujita, Masayuki, 4,085,894, Cl. 239-121.000.

Fujitsu Limited: *See—*
Matsuyama, Shunsuke; Tanahashi, Junichi; Imamura, Kenso; and Majima, Teiji, 4,086,661, Cl. 365-39.000.

Fujiwara, Shinji: *See—*
Shibata, Toshiji; and Fujiwara, Shinji, 4,086,535, Cl. 325-128.000.

Fujiwara, Yasuo: *See—*
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,086,138, Cl. 195-65.000.

Fulp, William W.; Nance, Jack G.; Owens, James L.; and Robbins, Theodore W., to Western Electric Company, Inc. Universal attenuator. 4,086,546, Cl. 333-81.00R.

Furubayashi, Ei-ichi: *See—*
Masumoto, Katashi; Furubayashi, Ei-ichi; and Inoue, Wahei, 4,086,508, Cl. 310-86.000.

Furukawa, Wataru: *See—*
Yoshida, Mitsuo; Furukawa, Wataru; Yamaguchi, Takashi; and Sasaki, Kazuo, 4,085,942, Cl. 277-30.000.

Furuto, Takashi, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for shearing wire, rod, or the like. 4,085,640, Cl. 83-198.000.

G. D. Searle & Co.: *See—*
Adelstein, Gilbert W.; Dajani, Esam Z.; and Yen, Chung Hwai, 4,086,227, Cl. 260-239.00B.
Dryden, Hugh Latimer, Jr.; and Erickson, Robert A., 4,086,234, Cl. 260-268.0BC.
Jiu, James; and Mizuba, Seth S., 4,086,268, Cl. 560-252.000.
Schlatter, James M., 4,086,220, Cl. 260-112.50R.

G. D. Societa per Azioni: *See—*
Seragnoli, Enzo, 4,085,569, Cl. 53-389.000.
Seragnoli, Enzo, 4,085,759, Cl. 131-25.000.

G. Siempelkamp & Co.: *See—*
Axer, Heinrich; and Roth, Gerd, 4,086,313, Cl. 264-70.000.

Gaasenbeek, Johannes Leonardus. All-terrain vehicle. 4,085,697, Cl. 115-1.00R.

Gadessaud, Robert, to Compagnie Generale d'Electricite S.A. Battery containing an alkaline electrolyte. 4,086,405, Cl. 429-253.000.

GAF Corporation: *See—*
Schneider, Louis; and Graham, David E., 4,086,356, Cl. 424-274.000.
Schneider, Louis; and Graham, David E., 4,086,364, Cl. 424-340.000.

Gaines, Donald Raymond; and Jelenic, Bronco Felex, deceased (by Jelenic, Ronald B., administrator), to Gulf & Western Manufacturing Company. Multi-chambered foam energy absorber. 4,085,832, Cl. 188-268.000.

Gallo, Charles F., Jr.; Hammond, Thomas J.; and Rees, James D., to Xerox Corporation. Illumination system utilizing two opposing DC lamps with an optimum barrel-shaped slit. 4,086,010, Cl. 355-70.000.

Gamble, Dennis H., to Westinghouse Electric Corporation. Bus duct plug-in ground stab. 4,085,988, Cl. 339-14.00R.

Garasi, Louis A.; and Hayes, Ronald F., to Gruber Systems, Inc. Molding process for a plastic-coated ceramic decorative plumbing fixture. 4,086,318, Cl. 264-135.000.

Garcea, Giampaolo, to Alfa Romeo S.p.A. Vertical-flow catalytic muffler. 4,086,063, Cl. 23-288.00F.

Garlinghouse, Leslie H.: *See—*
Garlinghouse, Ronald E., 4,085,587, Cl. 60-403.000.

Garlinghouse, Ronald E., to Garlinghouse, Leslie H. Fail safe liquid power device. 4,085,587, Cl. 60-403.000.

Garnier, Pierre Georges; Gaullier, Bruno; and Jeanroy, Gerard Michel, to Auvitec. Process for repeating control of working operations of several machines. 4,086,625, Cl. 364-104.000.

Garzia, Aldo; and Williams, Robert D., to Istituto Chemioterapico Italiano. Product and method for combatting swine dysentery. 4,086,345, Cl. 424-251.000.

Gaskill, James R., Jr.; and Weill, Lawrence R., to United States of America, Air Force. Five-stage four-bit complex multiplier. 4,086,657, Cl. 364-757.000.

Gates, Albert George Ronald; and Maynard, Michael, to Gestetner Limited. Torque limiting used screen take-up assembly and drive 4,085,671, Cl. 101-128.100.

Gaudette, Robert. Flue liner handling device. 4,085,958, Cl. 294-97.000.

Gaullier, Bruno: *See—*
Garnier, Pierre Georges; Gaullier, Bruno; and Jeanroy, Gerard Michel, 4,086,625, Cl. 364-104.000.

Gauss, Robert C.; Sathe, Hemant T.; and Wills, Lynn D., to Motorola, Inc. Whip antenna assembly and method of manufacture. 4,086,596, Cl. 343-715.000.

Gavin, John J., to General Electric Company. Dynamoelectric machine mounting assembly. 4,085,914, Cl. 248-19.000.

Gaworowski, Andrew J.; and Duckett, John C., to Dayco Corporation. Smash-recoverable printing blanket. 4,086,386, Cl. 428-307.000.

Gay, Sandy C.: *See—*
Robandt, William F.; Cartier, Roger J.; and Gay, Sandy C., 4,086,553, Cl. 336-192.000.

GB Fermentation Industries Inc.: *See—*
Hoerle, Raymond D., 4,086,139, Cl. 195-66.00R.

Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Lanfermann, Willy; Henrich, Friedhelm; and Oberste-Beulmann, Klaus, 4,085,974, Cl. 299-53.000.

Geeven, Thomas: *See—*
Ekkelboom, Tjepke Hendrik; and Geeven, Thomas, 4,086,075, Cl. 65-40.000.

Geiseler, Wolfgang: *See—*
Fricke, Jobst; and Geiseler, Wolfgang, 4,085,648, Cl. 84-1.240.

Gellert, Dale Albert, to Procter & Gamble Company, The. Disposable diaper with integral disposal bag. 4,085,753, Cl. 128-284.000.

General Atomic Company: *See—*
Anderson, Paul Michael, 4,086,133, Cl. 176-30.000.

General Battery Corporation: *See—*
Eberle, William J., 4,085,792, Cl. 164-72.000.
Heiser, Joseph Irvin; and Erb, Edgar Martin, 4,086,395, Cl. 429-88.000.

General Dynamics Corporation: *See—*
Krikorian, Esther; and Crisp, Michael J., 4,086,555, Cl. 338-15.000.

General Electric Company: *See—*
Cella, James A., 4,086,091, Cl. 96-36.200.
Gavin, John J., 4,085,914, Cl. 248-19.000.

Gillette, Stephen F., 4,086,460, Cl. 200-146.00R.
Haefner, Kenneth B.; and Ringwall, Carl G., 4,085,615, Cl. 73-194.00B.
Huseby, Irvin C.; and Klug, Frederic J., 4,086,311, Cl. 264-43.000.
Ibsen, Ole N.; and Anderson, Thomas E., 4,086,525, Cl. 320-33.000.
Kydd, Paul H., 4,085,578, Cl. 60-39.020.
Rich, Joseph A., 4,086,459, Cl. 200-144.00B.
Sommer, Edward G., Jr., 4,086,053, Cl. 432-222.000.
Tassie, Douglas Pray; and Pustell, Robert A., 4,085,653, Cl. 89-7.000.
Ziemba, Richard Thomas, 4,085,680, Cl. 102-70.20R.

General Medical Appliance Research Corporation: *See—*
Hill, James J., 4,086,488, Cl. 250-231.00P.

General Shale Products Corporation: *See—*
Edwards, Joseph Franklin; Brown, Johnny Milton; Christian, James Vernon; and Elkins, Clayton, 4,085,976, Cl. 302-25.000.

Genevieve I. Hanscom, Robert M. Magnuson & Lois J. Thomson, Trustees of the Estate of Roy M. Magnuson: *See—*
Crawford, Lynn D., 4,085,839, Cl. 198-410.000.

George, Clifford L.: *See—*
Smith, Craig A.; and George, Clifford L., 4,086,007, Cl. 355-3.00R.

Gerberding, Karl: *See—*
Fahrbach, Gerhard; Gerberding, Karl; Seiler, Erhard; and Stein, Dieter, 4,086,298, Cl. 260-880.00B.

Gernes, David B., to Thermo Electron Corporation. Pneumatic pump monitor. 4,086,653, Cl. 364-564.000.

Gerry Wind Assoc. Color Labs.: *See—*
Gewirtz, William, 4,086,009, Cl. 355-30.000.

Gerstenmeier, Jurgen: *See—*
Leiber, Heinz; Gerstenmeier, Jurgen; and Klotz, Hermann, 4,085,979, Cl. 303-92.000.

Gerzon, Michael Anthony, to National Research Development Corporation. Sound reproduction system with non-square loudspeaker lay-out. 4,086,433, Cl. 179-1.0GQ.

Gestetner Limited: *See—*
Gates, Albert George Ronald; and Maynard, Michael, 4,085,671, Cl. 101-128.100.

Gewirtz, William, to Gerry Wind Assoc. Color Labs. Photographic enlarging equipment and method. 4,086,009, Cl. 355-30.000.

Ghosh, Sambhunath; and Klass, Donald L., to Institute of Gas Technology. Situ mining of fossil fuel containing inorganic matrices. 4,085,972, Cl. 299-7.000.

Giardini, Dante S.: *See—*
Hamburg, Douglas R.; and Giardini, Dante S., 4,085,719, Cl. 123-122.00E.

Gibbs, James Whitman, to Gibbs-Ryder Materials Handling Systems, Inc. Reverse flow valve for pneumatic systems. 4,085,767, Cl. 137-102.000.

Gibbs, Norman S. Solar heaters. 4,085,734, Cl. 126-271.000.

Gibbs-Ryder Materials Handling Systems, Inc.: *See—*
Gibbs, James Whitman, 4,085,767, Cl. 137-102.000.

Giggins, Charles Stanley, Jr.; and Kear, Bernard Henry, to United Technologies Corporation. Alumina forming coatings containing hafnium for high temperature applications. 4,086,391, Cl. 428-679.000.

Gill, George Herbert. Method for using geothermal energy. 4,085,795, Cl. 165-45.000.

Gillette, Stephen F., to General Electric Company. Circuit breaker having improved line strap construction. 4,086,460, Cl. 200-146.00R.

Gillpatrick, Sherman R. Air circulating heater for fireplaces. 4,085,727, Cl. 126-121.000.

Giordano, John A.: *See—*
Mahaffy, Reid A.; Psota, Joseph M.; and Giordano, John A., 4,085,565, Cl. 53-112.00A.

Girling Limited: *See—*
Bottoms, Harry Simister; and Archer, John Richard, 4,085,830, Cl. 188-196.00D.

Gisbrecht, James H.: *See—*
Baker, William G.; Gisbrecht, James H.; and Luszcz, Edward T., 4,085,910, Cl. 244-3.160.

GKN Transmissions Limited: *See—*
Bailey, Richard John, 4,085,835, Cl. 192-113.0AB.

Glacier Metal Company Limited, The: *See—*
Davies, Glyndwr John, 4,086,376, Cl. 427-185.000.
Michael, Anthony Dennis; White, John Albert; and Griffin, Gerald Louis, 4,086,083, Cl. 75-64.000.

Gland, Thomas M.; and Frederickson, Robert C. A., to Eli Lilly and Company. Animal cage. 4,085,705, Cl. 119-17.000.

Glaspie, Donald L., to Glitsch, Inc. Tower packing saddle. 4,086,307, Cl. 261-97.000.

Glasrock Products, Inc.: *See—*
Midorikawa, Yoshio, 4,086,312, Cl. 264-46.600.

Glitsch, Inc.: *See—*
Glaspie, Donald L., 4,086,307, Cl. 261-97.000.

Globe Tool and Engineering Company, The: *See—*
Pearsall, Harold I., 4,086,117, Cl. 156-212.000.

Glory Kogyo Kabushiki Kaisha: *See—*
Nobuhiro, Iizuka, 4,085,879, Cl. 225-93.000.

Glowacki, Frank J. Painting shield. 4,085,703, Cl. 118-504.000.

Goebel, Franz; and Marincic, Nikola, to GTE Laboratories Incorporated. Electrochemical cell and cathode for same. 4,086,397, Cl. 429-105.000.

Goebel, Rolf-Dieter: *See—*
Jacubasch, Dieter; Eisenhauer, Rudolf; Greifenberg, Juergen; and Goebel, Rolf-Dieter, 4,085,898, Cl. 241-175.000.

Goeke, Alfons, to Th. Kieserling & Albrecht. Cutting tool. 4,086,016, Cl. 407-114.000.

Goggins, William B., Jr., to United States of America, Air Force. Method and apparatus for improving the slowly moving target detection capability of an AMTI synthetic aperture radar. 4,086,590, Cl. 343-5.0CM.

Golda, Eugene; and Wilkes, Alan Leonard, to Polychrome Corporation. Process for making photosensitive lithographic printing plates involving sequentially coating with potassium zirconium fluoride and sodium silicate. 4,086,092, Cl. 96-86.00R.

Golden, Gerald S.: *See—*
Brooks, Clyde S.; Lemkey, Franklin D.; and Golden, Gerald S., 4,086,264, Cl. 252-454.000.

Goldstein, Sidney: *See—*
Scrivo, Leonard; and Goldstein, Sidney, 4,086,004, Cl. 351-158.000.

Golias, Tipton L.; and Mayes, David G., to Helena Laboratories Corporation. Method for applying an organic liquid sample. 4,086,372, Cl. 427-2.000.

Gonda, Shunichi, to Agency of Industrial Science & Technology. Selective doping crystal growth method. 4,086,108, Cl. 148-175.000.

Gonek, Stanislaw Mieczyslaw, to Reyrolle Parsons Limited. High-voltage circuit-interrupters. 4,086,461, Cl. 200-148.00R.

Goodfellow, John William; O'Connor, John Joseph; and Shrive, Nigel Graham, to National Research Development Corporation. Prosthetic joint device. 4,085,466, Cl. 3-1.910.

Goodman, Jack: *See—*
Adelman, Herbert B.; and Goodman, Jack, 4,086,384, Cl. 428-213.000.

Goodyear Tire & Rubber Company, The: *See—*
Caravito, Vito A., 4,085,786, Cl. 152-158.000.

Gordon, Roger G., to Safe Rack, Inc. Newspaper vending machine. 4,085,864, Cl. 221-155.000.

Gorham, Michael L.; and Norian, Roger F., to Xerox Corporation. Automatic dialer with a programmable pause. 4,086,443, Cl. 179-90.0BD.

Gorman, Joseph G.; Hicks, John M.; and Holmes, Francis Alan, to Electric Power Research Institute, Inc. Repulsion coil actuator for high speed high power circuits. 4,086,645, Cl. 361-155.000.

Goswami, Jagadish C.: *See—*
Altscher, Siegfried; and Goswami, Jagadish C., 4,086,194, Cl. 260-2.5AJ.

Goto, Susumu: *See—*
Mori, Taketoshi; Goto, Susumu; Katsuragi, Asaichi; and Matsuki, Mutsuo, 4,086,295, Cl. 260-857.00L.

Gotoh, Akio: *See—*
Asakawa, Shigeru; Sugiyama, Fumio; Gotoh, Akio; and Okamoto, Shigenori, 4,086,537, Cl. 325-478.000.

Gottlieb, Theodore: *See—*
Foo, Kenneth, 4,085,872, Cl. 224-5.00D.

Gould Godart B.V.: *See—*
Rotgans, Gerrit Jacob, 4,085,741, Cl. 128-2.080.

Gould Inc.: *See—*
Mao, George W.; and Rao, Purushothama, 4,086,392, Cl. 429-50.000.

Gozzo, Franco; Rondanelli, Alfredo; and Rossi, Giorgio, to Montedison S.p.A. Process for the synthesis of thiolcarbamates. 4,086,226, Cl. 260-239.0BF.

Graber, Joseph V. Automobile bicycle carrier. 4,085,874, Cl. 224-29.00R.

Graham, David E.: *See—*
Schneider, Louis; and Graham, David E., 4,086,356, Cl. 424-274.000.
Schneider, Louis; and Graham, David E., 4,086,364, Cl. 424-340.000.

Graham, Robert, to Newalls Insulation Company Limited. Apparatus for manufacture of insulation products. 4,085,548, Cl. 51-103.0WH.

Graham, Robert, to Newalls Insulation Company Limited. Apparatus for abrasively treating insulation products. 4,085,550, Cl. 51-145.00T.

Grant, John L., to Texas Instruments Incorporated. Electronic heater for high voltage applications. 4,086,467, Cl. 219-544.000.

Grapha-Holding AG: *See—*
Muller, Hans, 4,085,927, Cl. 270-54.000.

Graphic Arts Packaging Corporation: *See—*
Matsuyama, Glen, 4,085,841, Cl. 206-45.150.

Graupe, Daniel; and Causey, G. Donald, to Biosystems Research Group II. Method of and means for scrambling and descrambling speech at audio frequencies. 4,086,435, Cl. 179-1.50R.

Grawert, Werner: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.

Gray, John Patrick: *See—*
Conca, Romeo John; Gray, John Patrick; and Sloan, Tod Hunter, 4,086,129, Cl. 162-49.000.

Grayson, Martin: *See—*
Suen, Tzeng Jiueq; Begala, Arthur James, Jr.; and Grayson, Martin, 4,086,181, Cl. 252-180.000.

Great Lakes Carbon Corporation: *See—*
Juel, Leslie Harrisville; Joo', Louis Arpad; and Tucker, Kenneth Wayne, 4,086,380, Cl. 428-65.000.

Greenlaw, Robert K.: *See—*
Lewis, David Warren; and Greenlaw, Robert K., 4,085,744, Cl. 128-69.000.

Gregar, Erzsebet, nee Toth: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Bokor, Gyorgy; Dombay, Zsolt; Pinter, Zoltan; Gregar, Erzsebet, nee Toth; Dudas, Julianna, nee Sz. Kiss; Nagy, Emilia, nee Gera; and Fodor, Istvan, 4,086,339, Cl. 424-245.000.

Greifenberg, Juergen: *See—*
Jacubasch, Dieter; Eisenhauer, Rudolf; Greifenberg, Juergen; and Goebel, Rolf-Dieter, 4,085,898, Cl. 241-175.000.

Griffin, Gerald Louis: *See—*
Michael, Anthony Dennis; White, John Albert; and Griffin, Gerald Louis, 4,086,083, Cl. 75-64.000.

Griffith, David L.: *See—*
Cizmic, Stipe; Edwards, Wayne L., Jr.; Griffith, David L.; Halfhill, Martin O.; Jacques, James O.; Shenfield, Leonard R.; and Votaw, Ronald W., 4,086,659, Cl. 364-900.000.

Griffith, Glen, to Nippon Gakki Seizo Kabushiki Kaisha. Truncated decay system. 4,085,643, Cl. 84-1.010.

Groger, Detlev: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.

Gronwick, Jerry P.: *See—*
Beck, William P.; Carr, Francis L.; and Gronwick, Jerry P., 4,085,503, Cl. 30-34.100.

Grosart, John. Inking device. 4,085,672, Cl. 101-169.000.

Groupement pour les Activites Atomiques et Avancees "GAAA" S.A.: *See—*
Carbonnel, Henri, 4,086,097, Cl. 106-64.000.

Grozdanov, Petko Kostadinov: *See—*
Samokovliski, David Albert; Grozdanov, Petko Kostadinov; Nemechek, Alfred Emmerich; Punchev, Simeon Georgiev; and Petrov, Peter Dimitrov, 4,085,880, Cl. 226-90.000.

Gruber Systems, Inc.: *See—*
Garasi, Louis A.; and Hayes, Ronald F., 4,086,318, Cl. 264-135.000.

Grudelbach, Hans-Dieter, to Poul Hahn Evers. Method of and a power switching device for regulating the electrical power delivered to a consumer in an A.C. network. 4,086,526, Cl. 323-34.000.

Grulich, Heinz; and Otte, Ernst, to Bergwerksverband GmbH. Process and apparatus for the separation of float tars in the tar separator of a coking installation. 4,086,144, Cl. 201-41.000.

Grumman Aerospace Corporation: *See—*
Cartmell, Donald K.; and Witzke, Horst, 4,086,398, Cl. 429-111.000.
Nahodyl, Richard J., 4,085,911, Cl. 244-12.400.

Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig: *See—*
Emmert, Reinhold, 4,085,908, Cl. 242-201.000.

Grunewald, Ernst, to Hobart Corporation. Drain filter for a dishwashing machine. 4,085,761, Cl. 134-104.000.

Grunzweig & Hartmann und Glasfaser AG: *See—*
Wittmoser, Adalbert, 4,085,790, Cl. 164-7.000.

Gryctko, Carl E.; Michetti, Anthony B.; and McGinnis, Peter J., to I-T-E Imperial Corporation. Electrical operator for circuit breakers. 4,085,622, Cl. 74-53.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Lender, Adam, 4,086,566, Cl. 340-146.1AB.
Lender, Adam, 4,086,587, Cl. 340-347.0DD.

GTE Laboratories Incorporated: *See—*
Goebel, Franz; and Marincic, Nikola, 4,086,397, Cl. 429-105.000.

GTE Sylvania, Incorporated: *See—*
Jayne, Max Leroy, 4,085,990, Cl. 339-74.00R.

Gulf Research & Development Company: *See—*
Doyle, William C., Jr., 4,086,077, Cl. 71-90.000.
McIlvried, Howard G.; and Montagna, Angelo A., 4,086,158, Cl. 208-264.000.
Onopchenko, Anatoli; and Schulz, Johann G., 4,086,277, Cl. 260-591.000.

Gulf & Western Manufacturing Company: *See—*
Gaines, Donald Raymond; and Jelenic, Bronco Felex, deceased, 4,085,832, Cl. 188-268.000.

Gundlach, Wladyslaw; Porochnicki, Jerzy; Prywer, Jerzy; Karewicz, Boguslaw; Potapczyk, Andrzej; and Zielenow, Krzysztof, to Politechnika Lodzka; and Zaklady Mechaniczne im. Gen. Karola Swierczewskiego "Zamech". Shrouded rotor blade annulus for a centripetal turbine stage. 4,086,027, Cl. 416-184.000.

Gunyou, Lyman J.: *See—*
Joray, Marvin L.; Heckley, Warner M.; and Gunyou, Lyman J., 4,085,570, Cl. 56-2.000.

Gurgiolo, Arthur Emilio: *See—*
Baxter, Clyde Edward; and Gurgiolo, Arthur Emilio, 4,086,159, Cl. 208-333.000.

Gustafson, Donald E.; and Speyer, Jason L., to Massachusetts Institute of Technology. First-order phase-lock loop. 4,086,539, Cl. 328-155.000.

Guyer, Reynolds W.: *See—*
Hanson, Steven P., 4,085,539, Cl. 46-1.00C.

Guyot, Lucien, to Thomson-CSF. Non-destructive read-out device. 4,086,515, Cl. 315-10.000.

Gyongyosi, Josef. Twin template cam tracker. 4,085,508, Cl. 33-27.00K.

H. H. Robertson Company: *See—*
Albrecht, Raymond E., 4,085,558, Cl. 52-451.000.

Haass, Adolf, to Siemens Aktiengesellschaft. Circuit arrangement for the automatic adjustment of a two-wire full duplex data transmission system. 4,086,428, Cl. 178-60.000.

Hach Chemical Company: *See—*
Hach, Clifford C., 4,086,062, Cl. 23-259.000.

Hach, Clifford C., to Hach Chemical Company. Digital titration device. 4,086,062, Cl. 23-259.000.

Hadaway, Bernard Milton, to Repco Research Proprietary Limited. Traversing mechanism. 4,085,621, Cl. 74-37.000.

Haefner, Kenneth B.; and Ringwall, Carl G., to General Electric Company. Linear flowmeter. 4,085,615, Cl. 73-194.00B.

Haffmann-La Roche Inc.: *See—*
Arora, Sardari L., 4,086,002, Cl. 350-350.000.

Hagen, Loren M.; and Desai, Ashwin H., to Cole-Parmer Instrument Company. Diaphragm pump. 4,086,036, Cl. 417-413.000.

Hagen, Siegfried Hendrik: *See—*
Knippenberg, Wilhelmus Franciscus; Verspui, Gerrit; and Hagen, Siegfried Hendrik, 4,086,559, Cl. 338-22.00R.

Hager, Robert J.; Johnson, Eric S.; Scott, M. Walter; and Stelzer, Ernest L., to Honeywell Inc. Ohmic contacts to p-type mercury cadmium telluride. 4,085,500, Cl. 29-589.000.

Hahn, William F.; Nigro, Joseph P.; and Wallitsch, Frank, Jr., to Pennsylvania Crusher Corporation. Crusher-dryer and method of crushing. 4,085,897, Cl. 241-18.000.

Hainsworth, William Alfred, to Boeing Company, The. Anodize clamp. 4,085,997, Cl. 339-255.00P.

Halfhill, Martin O.: *See—*
Cizmic, Stipe; Edwards, Wayne L., Jr.; Griffith, David L.; Halfhill, Martin O.; Jacques, James O.; Shenfield, Leonard R.; and Votaw, Ronald W., 4,086,659, Cl. 364-900.000.

Hallais, Jean-Philippe, to U.S. Philips Corporation. Method for the epitaxial growth of III-V compounds at homogeneous low temperature utilizing a single flat temperature zone. 4,086,109, Cl. 148-175.000.

Hallar, James O. Liquid supply system for gardens. 4,085,546, Cl. 47-59.000.

Hallum, Charles E.: *See—*
East, George F.; and Hallum, Charles E., 4,085,909, Cl. 244-3.210.

Hamano, Nubuo, to Tomy Kogyo Co., Inc. Amusement device featuring variable lighting effects. 4,085,932, Cl. 272-8.00P.

Hamburg, Douglas R.; and Giardini, Dante S., to Ford Motor Company. Vapor pressure regulator for a vaporized liquid fuel system. 4,085,719, Cl. 123-122.00E.

Hammer, Richard Benjamin: *See—*
Turbak, Albin Frank; Hammer, Richard Benjamin; Portnoy, Norman A.; and West, Arthur C., 4,086,418, Cl. 536-30.000.

Hammond, Thomas J.: *See—*
Gallo, Charles F., Jr.; Hammond, Thomas J.; and Rees, James D., 4,086,010, Cl. 355-70.000.

Hanaki, Yoshimaro: *See—*
Kimura, Toshihiro; Hanaki, Yoshimaro; and Nomura, Humio, 4,085,890, Cl. 235-419.000.

Hancock, Allen W., II: *See—*
Wynkoop, Raymond; and Hancock, Allen W., II, 4,086,270, Cl. 260-515.00P.

Hanert, Eckehard; and Ehlen, Anton, to Benteler-Werke Aktiengesellschaft Werk Neuhaus. Method and apparatus for winding and forming cooling coils. 4,085,488, Cl. 29-33.00G.

Hannebaum, Heinz: *See—*
Nohe, Heinz; and Hannebaum, Heinz, 4,086,250, Cl. 260-346.600.

Hanold, R. C. Frederick, III, to Union Carbide Corporation. Ceramic capacitor made from firing small barium titanate particles. 4,086,649, Cl. 361-321.000.

Hansen, Hans John, to Hoffmann-La Roche Inc. Carcinoembryonic antigens. 4,086,217, Cl. 260-112.00R.

Hansen Manufacturing Company Inc.: *See—*
Manson, Harry G., 4,086,509, Cl. 310-232.000.

Hanson, Arthur Neville, to Hickson's Timber Products Limited. Process for impregnation of timber. 4,086,056, Cl. 21-7.000.

Hanson, Joseph B.: *See—*
Dodson, Raymond M.; and Hanson, Joseph B., 4,086,265, Cl. 260-455.00A.

Hanson, Steven P., to Guyer, Reynolds W. Platform toy. 4,085,539, Cl. 46-1.00C.

Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, to Teijin Limited. Novel nitrogen-containing aromatic polymers and process for their preparation. 4,086,209, Cl. 260-49.000.

Harald Sikora Sikora Industrieelektronik: *See—*
Sikora, Harald, 4,086,472, Cl. 235-92.0DN.

Harrington, Joseph Kenneth: *See—*
Moore, George G. I.; and Harrington, Joseph Kenneth, 4,086,255, Cl. 260-397.600.

Hart, Thomas G., to Energy Development Associates. Gas phase free liquid chlorine electrochemical systems. 4,086,393, Cl. 429-51.000.

Harting, Gary L.; Sutter, Robert F.; and Malo, Lowell L., to ACF Industries, Incorporated. Plastic closure for nailable steel flooring panels. 4,085,683, Cl. 105-424.000.

Hartmann, Heinrich: *See—*
Kempter, Fritz Erdmann; Hartmann, Heinrich; and Spoor, Herbert, 4,086,292, Cl. 260-831.000.

Hartzell, Herschell H.; and Mullaney, Norbert F., to A. O. Smith Corporation. Rod guard for bottom brake rod. 4,085,831, Cl. 188-210.000.

Harvey Hubbell Incorporated: *See—*
Neuroth, David H., 4,085,521, Cl. 34-89.000.

Hasegawa, Akira, to Hitachi, Ltd.; and Nissan Motor Co., Ltd. Apparatus for recording erroneous operations of passenger protecting apparatus for motor vehicles. 4,086,562, Cl. 340-52.00H.

Hashizaki, Kazuo; and Moriya, Ryusuke, to Sony Corporation. Speed and phase control system. 4,086,520, Cl. 318-269.000.
Hattori, Kazuhide: *See—*
Yazaki, Takao; and Hattori, Kazuhide, 4,086,116, Cl. 156-205.000.
Hattori, Tadashi; Nishida, Minoru; and Ueno, Yoshiki, to Nippon Soken, Inc. Electronic ignition timing adjusting system for internal combustion engine. 4,085,714, Cl. 123-117.00R.
Hauser, Oscar G.; and Ruckdeschel, Frederick R., to Xerox Corporation. Purging system for a development apparatus. 4,086,006, Cl. 355-3.0DD.
Hausfeld, Brian A., to United States of America, Air Force. Wall and nozzle assembly for colloidal core reactor. 4,085,582, Cl. 60-203.000.
Havel, Karel. Variable color display device. 4,086,514, Cl. 313-500.000.
Hawkins, Royal R.; and Kuntz, Leland E., to Honeywell Inc. Earth working machine with elevation control for tool thereof. 4,085,805, Cl. 172-4.500.
Hawkins, Russell Olson; and Mallatt, James Francis, to Brunswick Corporation. Thermal protection system for filament wound pressure vessels. 4,085,860, Cl. 220-89.00B.
Hayakawa, Shigeru: *See—*
Nitta, Tsuneharu; Terada, Ziro; and Hayakawa, Shigeru, 4,086,556, Cl. 338-35.000.
Hayashi, Setsuo: *See—*
Kotezawa, Katsutaka; Onodera, Toshimi; Hayashi, Setsuo; and Shimanuki, Fujio, 4,086,429, Cl. 178-69.100.
Hayashi, Torahiko. Bakery flexible belt carrying plate. 4,085,840, Cl. 198-472.000
Hayes, Ronald F.: *See—*
Garasi, Louis A.; and Hayes, Ronald F., 4,086,318, Cl. 264-135.000.
Hebel, Rudolf: *See—*
Laux, Walter; Hebel, Rudolf; and Schneider, Rolf, 4,086,052, Cl. 432-217.000.
Hebert, Napoleon R. Method of erecting forms for a concrete form. 4,085,495, Cl. 29-469.000.
Heckley, Warner M.: *See—*
Joray, Marvin L.; Heckley, Warner M.; and Gunyou, Lyman J., 4,085,570, Cl. 56-2.000.
Hedberg, Frederick L.: *See—*
Arnold, Fred E.; and Hedberg, Frederick L., 4,086,248, Cl. 260-345.200.
Hedin, David C., to Minnesota Mining and Manufacturing Company. Lens grinding and polishing lap cover and method of making same. 4,086,068, Cl. 51-395.000.
Hehn, Bruce. Embroidery hoops. 4,085,532, Cl. 38-102.200.
Heincker, William R., to United States of America, Air Force. Kinetic energy, impact-separated, follow-through ungula penetrator. 4,085,678, Cl. 102-52.000.
Heiser, Joseph Irvin; and Erb, Edgar Martin, to General Battery Corporation. Multi-slit self-sealing ignition-arrester battery vent. 4,086,395, Cl. 429-88.000.
Helbers, Jan Hendrik, to Sycor, Inc. Method and apparatus for loading flexible magnetic recording discs to transducing heads. 4,086,637, Cl. 360-105.000.
Helena Laboratories Corporation: *See—*
Golias, Tipton L.; and Mayes, David G., 4,086,372, Cl. 427-2.000.
Hell, Hans: *See—*
Thiel, Alfons W.; and Hell, Hans, 4,086,045, Cl. 425-326.100.
Heller, Peter Van Nest. Dispensing containers and holder. 4,085,867, Cl. 222-181.000.
Hellwig, Oskar Alexander, to Beatrice Foods Co. Key case head. 4,085,602, Cl. 70-456.00B.
Heltzel, Carl J. Single load cell weigh hopper system. 4,085,850, Cl. 214-2.000.
Hemmer, Lorenz, to Adidas Fabrique de Chaussures de Sport. Sole for athletic shoe. 4,085,526, Cl. 36-59.00R.
Hengelhaupt, Erich; and Peier, Lothar, to Noverox AG. Rust transforming composition. 4,086,182, Cl. 252-182.000.
Henkel Kommanditgesellschaft Auf Aktien: *See—*
Schmidt-Dunker, Manfred; and Potokar, Matthias, 4,086,334, Cl. 424-177.000.
Henrich, Friedhelm: *See—*
Lanfermann, Willy; Henrich, Friedhelm; and Oberste-Beulmann, Klaus, 4,085,974, Cl. 299-53.000.
Henrion, Michel Andre Robert; and Coudray, Andre Lucien, to International Standard Electric Corporation. Resynchronizing circuit for TDM system. 4,086,437, Cl. 179-15.0AF.
Henry, H. Clarke; and Ranganathan, Ramaswami, to Exxon Research & Engineering Co. Reactivation of deactivated hydrocarbon conversion catalyst by ultrasonic insonation. 4,086,184, Cl. 252-414.000.
Hepworth, Edward C.: *See—*
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,086,627, Cl. 364-200.000.
Hermann, William J., Jr., to Dickson, Jocelyn, a part interest. Disposable manipulative laboratory device for transferring biological fluids. 4,086,060, Cl. 23-259.000.
Hewlett-Packard Company: *See—*
Kuypers, Ned R., 4,086,031, Cl. 417-154.000.
Hicks, Harry C., to Boeing Company, The. Apparatus for determining stress in an electrodeposit. 4,086,154, Cl. 204-195.00R.
Hicks, John M.: *See—*
Gorman, Joseph G.; Hicks, John M.; and Holmes, Francis Alan, 4,086,645, Cl. 361-155.000.
Hickson's Timber Products Limited: *See—*
Hanson, Arthur Neville, 4,086,056, Cl. 21-7.000.
Hildebrand, George M. Paint tray carrier. 4,085,877, Cl. 224-48.00R.
Hill, James C.: *See—*
Knox, Walter R.; Hill, James C.; Hughes, Lawrence J.; and Foerst, Paul W., 4,086,195, Cl. 260-2.50N.
Hill, James D.: *See—*
Fillmore, Gary L.; Hill, James D.; Robinson, William F.; and Williams, Thomas H., 4,086,601, Cl. 346-75.000.
Hill, James J., to General Medical Appliance Research Corporation. Digital pressure gauge system. 4,086,488, Cl. 250-231.00P.
Hill, Nicholas J.: *See—*
Rei, Nuno M.; and Hill, Nicholas J., 4,086,297, Cl. 260-859.0PV.
Hines, Charles E.; and Stransky, John L., to Outboard Marine Corporation. Bumper device for a vehicle. 4,085,957, Cl. 293-88.000.
Hines, William; Scheithauer, Eric A.; and Cwirzen, Casimir, to Cook Electric Company. Protector module. 4,086,648, Cl. 361-124.000.
Hinselmann, Klaus; Penzien, Klaus; Schick, Rupert; Walter, Manfred; Weber, Heinz; and Wirth, Heinrich, to BASF Aktiengesellschaft. Particulate expandable styrene polymers for the manufacture of foams. 4,086,191, Cl. 260-2.50B.
Hirata, Noritsugu: *See—*
Ishikawa, Kazuo; Sakaguchi, Keiichi; Takigawa, Tomoshi; Hirata, Noritsugu; Tajima, Akira; and Tsuji, Sadahiko, 4,086,605, Cl. 354-270.000.
Hirose, Takeshi: *See—*
Shiba, Keisuke; Hirose, Takeshi; Inouye, Kozo; and Okumura, Akio, 4,086,094, Cl. 96-100.00R.
Hirsch, Allen Frederick, to Ortho Pharmaceutical Corporation. 1-alkenyl thioethers. 4,086,278, Cl. 260-609.00R.
Hisamatsu, Takashi: *See—*
Suami, Tetsuo; Machinami, Tomoya; and Hisamatsu, Takashi, 4,086,415, Cl. 536-22.000.
Hitachi, Ltd.: *See—*
Hasegawa, Akira, 4,086,562, Cl. 340-52.00H.
Itoh, Kiyoo, 4,086,662, Cl. 365-189.000.
Katou, Kazuo; Sase, Takashi; and Horinaka, Ikuho, 4,086,541, Cl. 330-51.000.
Kohashi, Takahiro; Akagi, Motoo; Oba, Yoichi; Nonogaki, Saburo; Tanaka, Makoto; Kaneko, Tadao; and Tomita, Yoshifumi, 4,086,090, Cl. 96-35.100.
Miyamoto, Seigo; Takezoe, Kazuo; Yahagi, Hayao; and Sugimoto, Shigeo, 4,085,596, Cl. 62-476.000.
Tanabe, Seiichi; and Ito, Syoji, 4,086,020, Cl. 415-106.000.
Yamada, Takahiro, 4,086,602, Cl. 346-75.000.
Yoshida, Isao; Hori, Ryoichi; Masuda, Hiroo; Minato, Osamu; Etoh, Jun; and Nakai, Masaaki, 4,086,642, Cl. 361-91.000.
Hites, Clifford C., to American Door Company of Michigan, Inc. Method of producing fire resistant wood products and product thereof. 4,086,382, Cl. 428-168.000.
Hobart Corporation: *See—*
Grunewald, Ernst, 4,085,761, Cl. 134-104.000.
Hochiki Corporation: *See—*
Miyabe, Atsushi, 4,086,574, Cl. 340-227.00R.
Hodge, John D., Jr.: *See—*
McClure, Carroll D.; and Hodge, John D., Jr., 4,086,600, Cl. 346-1.000.
Hodges, Lee R. Lens polishing machine. 4,085,549, Cl. 51-119.000.
Hoeberechts, Arthur Marie Eugene: *See—*
Dieleman, Jan; and Hoeberechts, Arthur Marie Eugene, 4,086,512, Cl. 313-366.000.
Hoechst Aktiengesellschaft: *See—*
Stroszynski, Joachim, 4,085,522, Cl. 34-156.000.
Hoerle, Raymond D., to GB Fermentation Industries Inc. Differential inactivation of amylase in amylase-protease mixtures. 4,086,139, Cl. 195-66.00R.
Hoffa, Jack L.; and Ray, Robert A., to Beckman Instruments, Inc. Temperature control system for chemical reaction cell. 4,086,061, Cl. 23-259.000.
Hoffman, Alfred A., Jr.: *See—*
Irvin, Howard B.; Sherk, Fred T.; and Hoffman, Alfred A., Jr., 4,086,288, Cl. 260-671.00R.
Hoffmann-La Roche Inc.: *See—*
Chan, Ka-Kong; and Saucy, Gabriel, 4,086,249, Cl. 260-345.500.
Hansen, Hans John, 4,086,217, Cl. 260-112.00R.
Hogan, Jesse M.; and Hogan, Violet L., to Kap-Key, Inc. Screw cap opener. 4,085,632, Cl. 81-3.30R.
Hogan, Violet L.: *See—*
Hogan, Jesse M.; and Hogan, Violet L., 4,085,632, Cl. 81-3.30R.
Hogenett, Helmut Johann; and Veithen, Valentin Raimund. Paper supply box. 4,085,884, Cl. 229-17.00S.
Hohne, Liselotte: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.
Hokky, Stephen G., to Airborne Mfg. Co. Fluid cooled commutated electric motor driving a pump. 4,086,034, Cl. 417-369.000.
Holden, Herbert K.; and Mansfield, Peter W., to American Filtrona Corporation. Crimper assembly. 4,085,663, Cl. 93-1.00C.
Holland, Harold: *See—*
Fischer, Don G.; and Holland, Harold, 4,085,599, Cl. 70-14.000.
Holleis, Gunter: *See—*
Scheinecker, Alois; Koller, Karl; and Holleis, Gunter, 4,085,793, Cl. 164-436.000.
Holley, Carl A.; and McKinnon, Russell J., to Holley, Carl A. Producing pure iron oxides. 4,086,321, Cl. 423-150.000.

Holley, John Ernest Foster, to Lever Brothers Company. Liquid dispensing means. 4,085,780, Cl. 141-1.000.
Holmes, Francis Alan: *See—*
Gorman, Joseph G.; Hicks, John M.; and Holmes, Francis Alan, 4,086,645, Cl. 361-155.000.
Holmsen, Theodore W.: *See—*
Barrons, Keith C.; Smith, Leonard L., Jr.; and Holmsen, Theodore W., 4,086,081, Cl. 71-126.000.
Holter, Samuel N., to Koppers Company, Inc. Process for producing mono-substituted alkylresorcinol isomers. 4,086,281, Cl. 260-621.00R.
Holzapfel, Immanuel; and Bruder, Werner, to Daimler-Benz Aktiengesellschaft. Method and apparatus for improving exhaust gases of a gas turbine installation. 4,085,579, Cl. 60-39.040.
Holzner, Julius: *See—*
Jurgens, Wolfgang; Nageler, Jorg; Lippitsch, Josef; and Holzner, Julius, 4,086,308, Cl. 261-124.000.
Hombak Maschinenfabrik KG: *See—*
Sybertz, Hans; and Riedl, Reinhold, 4,085,494, Cl. 29-468.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Otaka, Syoichi, 4,085,715, Cl. 123-117.00A.
Takahashi, Fumitaka, 4,086,455, Cl. 200-76.000.
Honda, Tetsuya; Yagi, Kiyoshi; Shibata, Seiji; and Yamaguchi, Kazuo, to Otowa Electric Company, Ltd. Resistive element having voltage non-linearity and method of making same. 4,086,189, Cl. 252-519.000.
Honebrink, Erik N.; and Myntti, Jon N., to Audio-Sine, Inc. Audio-visual programmer. 4,086,005, Cl. 352-133.000.
Honeywell Inc.: *See—*
Acker, William F., 4,086,536, Cl. 325-137.000.
Chen, Di; and Koenke, Barry G., 4,086,001, Cl. 350-96.140.
Espander, John C., 4,085,843, Cl. 206-328.000.
Foreman, Donald S., 4,086,538, Cl. 328-112.000.
Hager, Robert J.; Johnson, Eric S.; Scott, M. Walter; and Stelzer, Ernest L., 4,085,500, Cl. 29-589.000.
Hawkins, Royal R.; and Kuntz, Leland E., 4,085,805, Cl. 172-4.500.
Johnson, Eric Shanks; and Schmit, Joseph Lawrence, 4,086,106, Cl. 148-33.000
Schmidt, Roger N., 4,085,729, Cl. 126-270.000.
Severson, Asbjorn M.; and Sampson, Richard L., 4,085,730, Cl. 126-270.000.
Honeywell Information Systems Inc.: *See—*
Negi, Virendra S.; and Miu, Ming T., 4,086,474, Cl. 364-757.000.
Hoot, Eric F., to Raymond Lee Organization Inc., The, a part interest. Inflatable cooler container. 4,085,785, Cl. 150-.500.
Hopper, Charles R.; and Kershner, Larry D., to Dow Chemical Company, The. 3,3',5,5'-Tetra-substituted diphenoquinone from 2,6-disubstituted phenol by phase-transfer catalysis. 4,086,253, Cl. 260-396.00N.
Hori, Ryoichi: *See—*
Yoshida, Isao; Hori, Ryoichi; Masuda, Hiroo; Minato, Osamu; Etoh, Jun; and Nakai, Masaaki, 4,086,642, Cl. 361-91.000.
Horian, James G.: *See—*
Horian, Richard C.; and Horian, James G., 4,086,644, Cl. 361-149.000.
Horian, Richard C.; and Horian, James G. Magnetic tape sensing head demagnetizer. 4,086,644, Cl. 361-149.000.
Horinaka, Ikuho: *See—*
Katou, Kazuo; Sase, Takashi; and Horinaka, Ikuho, 4,086,541, Cl. 330-51.000.
Horine, James H.; Watts, Lowell K.; Wininger, Hershel R.; Kelley, Dale; and Sears, Charles L., to Irvin Industries, Inc. Work tool stand. 4,085,552, Cl. 51-166.00R.
Hornbaker, Edwin D.; Nugent, Adam, Jr.; and Loechelt, Cecil P., to Ethyl Corporation. Steam stripping polyvinyl chloride resins. 4,086,414, Cl. 528-500.000.
Hoshimi, Susumu, to Sony Corporation. Phonograph record player. 4,085,940, Cl. 274-15.00R.
Hosoda, Masao: *See—*
Yoshikawa, Naohiro; Sato, Sadaharu; Matsubara, Masanori; and Hosoda, Masao, 4,085,675, Cl. 101-269.000.
Houser, David J.: *See—*
Wiley, Paul F.; and Houser, David J., 4,086,245, Cl. 260-340.300.
Howe, Frank D., to Ingersoll-Rand Company. Rotor with plastic sheathing. 4,086,043, Cl. 418-152.000.
Huang, Charles Y.; and Stavropoulos, William S., to Dow Chemical Company, The. Decarboxylation of endogenous serum glutamate in transaminase assays. 4,086,142, Cl. 195-103.50R.
Hudson, Barry: *See—*
Bartlett, John Stanley; Hudson, Barry; and Pennington, John, 4,086,267, Cl. 560-241.000.
Hudson Pulp & Paper Corporation: *See—*
Young, Buck R., 4,085,851, Cl. 214-10.50R.
Hugh J. McLaughlin & Son, Inc.: *See—*
Schenk, Bernard H., 4,085,937, Cl. 273-218.000.
Hughes, Lawrence J.: *See—*
Knox, Walter R.; Hill, James C.; Hughes, Lawrence J.; and Foerst, Paul W., 4,086,195, Cl. 260-2.50N.
Hughes, William B., to Phillips Petroleum Company. Dinitrosyldihalo complexes of molybdenum or tungsten. 4,086,229, Cl. 260-270.00D.
Hummel, Floyd A.; and Sombuthawee, Charussri, to Ferro Corporation. Zinc sulfide based pigments. 4,086,123, Cl. 106-293.000.
Hunter, Edwin J., to Toro Company, The. Angularity sensor means for center pivot irrigation system. 4,085,771, Cl. 137-344.000.
Hurle, Robert J., to Chestel, Inc. Telephone set with loop current interruption timing control. 4,086,440, Cl. 179-81.00R.
Huron Chemicals Limited: *See—*
Kindl, Bruno; and Atkinson, Jennifer Geraldine, 4,086,150, Cl. 204-95.000.
Hurt, William S., to Rohm and Haas Company. O,S-dialkyl O(S)-sulfonyloxy(thio)phenyl phosphorothiolates and phosphorodi(tri)thioates. 4,086,337, Cl. 424-215.000.
Huseby, Irvin C.; and Klug, Frederic J., to General Electric Company. Methods for increasing the crushability characteristics of cores for casting advanced superalloy materials. 4,086,311, Cl. 264-43.000.
Hutchinson, Florence M., executrix: *See—*
Hutchinson, William Milton, deceased; and Hutchinson, Florence M., executrix, 4,086,180, Cl. 252-171.000.
Hutchinson, William Milton, deceased; and by Hutchinson, Florence M., executrix, to Phillips Petroleum Company. Constant boiling admixtures. 4,086,180, Cl. 252-171.000.
Hutto, Ernest L.; and Tovey, Charles A. Vehicle insect protection apparatus. 4,085,964, Cl. 296-91.000.
Hutton, Ronald Eric; and Cross, David Frederic Watson, to Akzona Incorporated. Organic triphosphites having improved hydrolytic stability and a process for stabilizing organic triphosphites. 4,086,304, Cl. 260-989.000.
Hycel, Inc.: *See—*
Vick, Howard Andrew, 4,086,631, Cl. 364-416.000.
Vick, Howard Andrew, 4,086,631, Cl. 364-416.000.
Hydroacoustics Inc.: *See—*
Bouyoucos, John V.; Behnfeldt, Marvin J.; and Selsam, Roger L., 4,086,122, Cl. 156-556.000.
Hyland, Albert L.; and Keene, Robert G., to Polaroid Corporation. Laminar batteries. 4,086,399, Cl. 429-122.000.
Hyland, Albert L.; and Mitchnick, Victor, to Polaroid Corporation. Carrier web for laminar batteries. 4,086,400, Cl. 429-122.000.
Hysom, Ervin E. Method and apparatus for heating a liquid using solar energy. 4,085,732, Cl. 126-271.000.
I.S.F. SpA: *See—*
Dorigotti, Luciano; and Parravicini, Francesco, 4,086,343, Cl. 424-250.000.
I-T-E Imperial Corporation: *See—*
Gryctko, Carl E.; Michetti, Anthony B.; and McGinnis, Peter J., 4,085,622, Cl. 74-53.000.
Ibrahim, Abd-El-Fattah Ali: *See—*
Foxall, Thomas George; Ibrahim, Abd-El-Fattah Ali; and Sellars, Lester Porter, 4,086,609, Cl. 357-24.000.
Ibsen, Ole N.; and Anderson, Thomas E., to General Electric Company. Circuit for preventing overdischarge of a battery. 4,086,525, Cl. 320-33.000.
Ichikawa, Tetsuya: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,086,136, Cl. 195-29.000.
Ichiyanagi, Toshikazu: *See—*
Kozuki, Susumu; Ichiyanagi, Toshikazu; Watanabe, Yoshiaki; Uchiyama, Takashi; and Sunouchi, Akio, 4,086,584, Cl. 354-38.000.
ICI Australia Limited: *See—*
Jackson, Mervyn Benjamin; and Sasse, Wolfgang Hermann Fritz, 4,086,299, Cl. 260-885.000.
Ido, Kazuo; and Maruyama, Mitsuaki, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece calculator. 4,086,654, Cl. 364-705.000.
Ikegami, Seiichi: *See—*
Osujyo, Masahide; Yamanishi, Isamu; Inamori, Akio; Fujikawa, Kaoru; Wakabayashi, Noboru; Ikegami, Seiichi; Okada, Makoto; and Katayama, Morimitsu, 4,085,806, Cl. 172-9.000.
Ikio, Takatoshi. Coke oven door construction. 4,086,231, Cl. 202-248.000.
Illinois Tool Works Inc.: *See—*
Koscik, Richard A., 4,085,651, Cl. 85-72.000.
Ilukowicz, Robert J., to Preco Industries, Ltd. Hog slat reinforcing bar support. 4,085,559, Cl. 52-687.000.
Imamura, Kenso: *See—*
Matsuyama, Shunsuke; Tanahashi, Junichi; Imamura, Kenso; and Majima, Teiji, 4,086,661, Cl. 365-39.000.
Imamura, Shigeyasu: *See—*
Tsuto, Keiichi; Majima, Kanji; and Imamura, Shigeyasu, 4,086,256, Cl. 260-400.000.
Imperial Chemical Industries Limited: *See—*
Balasubramanyan, Sugavanam; and Shephard, Margaret Claire, 4,086,351, Cl. 424-269.000.
Large, Michael Stewart; and Smith, Leslie Harold, 4,086,357, Cl. 424-275.000.
Porter, Kenneth, 4,086,112, Cl. 156-73.100.
Roesler, Frank Cornelius, 4,086,160, Cl. 210-7.000.
Shaw, Bryan; Lawton, Valerie; and McAinsh, James, 4,086,203, Cl. 260-40.00R.
Smith, Trevor James, 4,086,252, Cl. 260-376.000.
Inamori, Akio: *See—*
Osujyo, Masahide; Yamanishi, Isamu; Inamori, Akio; Fujikawa, Kaoru; Wakabayashi, Noboru; Ikegami, Seiichi; Okada, Makoto; and Katayama, Morimitsu, 4,085,806, Cl. 172-9.000.
Inamoto, Yoshiaki; Tsuchihashi, Kiyoshi; Takaishi, Naotake; Fujikura, Yoshiaki; and Aigami, Koji, to Kao Soap Co., Ltd. Tricyclo[6.2.1.$0^{2,6}$]undeca-2(6)-ene and process for hydride transfer reduction rearrangement of same. 4,086,285, Cl. 260-666.0PY.
Industrial Electronics Service Co.: *See—*
Cieslak, Richard F.; and Balding, John V., 4,086,589, Cl. 340-384.00E.

Industrie A. Zanussi S.p.A.: *See—*
Masili, Dino, 4,086,578, Cl. 340-324.0AD.
Industrie Pirelli S.p.A.: *See—*
Maiocchi, Luigi, 4,085,787, Cl. 152-362.00R.
Ingersoll-Rand Company: *See—*
Howe, Frank D., 4,086,043, Cl. 418-152.000.
Inoue, Kenzo. Variable thickness cone for a dynamic speaker and quality control inspection method therefor. 4,086,450, Cl. 179-181.00R.
Inoue, Kunihiro: *See—*
Kouchi, Akihiko; Otake, Tsutomu; Takeshita, Hiroshi; and Inoue, Kunihiro, 4,086,003, Cl. 350-357.000.
Inoue, Naoyuki: *See—*
Saito, Shozo; and Inoue, Naoyuki, 4,085,595, Cl. 62-476.000.
Inoue, Wahei: *See—*
Masumoto, Katashi; Furubayashi, Ei-ichi; and Inoue, Wahei, 4,086,508, Cl. 310-86.000.
Inouye, Kozo: *See—*
Shiba, Keisuke; Hirose, Takeshi; Inouye, Kozo; and Okumura, Akio, 4,086,094, Cl. 96-100.00R.
Inque, Sakae: *See—*
Nakauchi, Hideo; Osaki, Toshiyuki; Naito, Kazuo; and Inque, Sakae, 4,086,211, Cl. 260-75.0NA.
Institute of Gas Technology: *See—*
Ghosh, Sambhunath; and Klass, Donald L., 4,085,972, Cl. 299-7.000.
Institute po Zavaryavane: *See—*
Samokovliski, David Albert; Grozdanov, Petko Kostadinov; Nemechek, Alfred Emmerich; Punchev, Simeon Georgiev; and Petrov, Peter Dimitrov, 4,085,880, Cl. 226-90.000.
International Business Machines Corporation: *See—*
Ashbee, William Henry, 4,086,470, Cl. 235-92.0DP.
Cowardin, Robert Lewis; and Laurer, George Joseph, 4,086,477, Cl. 235-464.000.
Fillmore, Gary L.; Hill, James D.; Robinson, William F.; and Williams, Thomas H., 4,086,601, Cl. 346-75.000.
Finlay, David Ernest, 4,086,658, Cl. 364-900.000.
Karol, Kenneth N., 4,086,114, Cl. 156-153.000.
McBride, Michael Eudell, 4,086,660, Cl. 364-900.000.
Rideout, Vincent L., 4,085,498, Cl. 29-571.000.
Schindler, Hans Rudolf; and Vettiger, Peter, 4,086,447, Cl. 179-170.0NC.
Woodrum, Luther Jay, 4,086,628, Cl. 364-200.000.
International Computers Limited: *See—*
Desyllas, Peter Leo Lawrence; Jones, John Austin; and Procter, Brian John, 4,086,629, Cl. 364-200.000.
International Lead Zinc Research Organization, Inc.: *See—*
Kaiser, Willard D., 4,085,791, Cl. 164-55.000.
International Paper Company: *See—*
Brandon, Ralph E.; Ring, Michael; and Redner, Raymond, III., 4,085,485, Cl. 28-104.000.
International Standard Electric Corporation: *See—*
Henrion, Michel Andre Robert; and Coudray, Andre Lucien, 4,086,437, Cl. 179-15.0AF.
International Telephone and Telegraph Corporation: *See—*
Busch, John Folts; and Freeman, Stephen Morrison, 4,086,067, Cl. 51-296.000.
Carlson, Elmer A., 4,086,048, Cl. 431-46.000.
Cohen, Stuart Barry; Clark, James Monroe; and Magnus, Arthur Howard, 4,086,436, Cl. 179-15.0AF.
Conca, Romeo John; Gray, John Patrick; and Sloan, Tod Hunter, 4,086,129, Cl. 162-49.000.
Johnson, Charles Bruce, 4,086,487, Cl. 250-207.000.
Koslo, Robert C., 4,085,996, Cl. 339-159.00C.
Steensma, Peter Dennis, 4,086,484, Cl. 250-199.000.
Turbak, Albin Frank; Hammer, Richard Benjamin; Portnoy, Norman A.; and West, Arthur C., 4,086,418, Cl. 536-30.000.
Interox Chemicals Ltd.: *See—*
Cardy, Charles Frederick, 4,086,214, Cl. 260-77.5AN.
Ipsen Industries International: *See—*
Luiten, Cornelis Hendricus; and Limque, Ferdinand, 4,086,050, Cl. 432-25.000.
Irvin, Howard B.; Sherk, Fred T.; and Hoffman, Alfred A., Jr., to Phillips Petroleum Company. Acetylenes removal from olefin streams for alkylation by dimethyl formamide absorption. 4,086,288, Cl. 260-671.00R.
Irvin Industries, Inc.: *See—*
Horine, James H.; Watts, Lowell K.; Wininger, Hershel R.; Kelley, Dale; and Sears, Charles L., 4,085,552, Cl. 51-166.00R.
Ishida, Shuichi: *See—*
Nakagawa, Taizo; Ohmori, Kaoru; Watanabe, Yutaka; Tejima, Iwao; Ishida, Shuichi; Suzuki, Toshiyuki; and Yamada, Osamu, 4,086,360, Cl. 424-300.000.
Ishida, Torao; Akiyama, Minoru; Sakurai, Yoshio; and Tsukagoshi, Shigeru, to Asahi Kasei Kogyo Kabushiki Kaisha. Cytidine nucleotide derivatives. 4,086,417, Cl. 536-29.000.
Ishihara, Takeshi: *See—*
Kuninobu, Shigeo; and Ishihara, Takeshi, 4,085,499, Cl. 29-571.000.
Ishii, Kunio: *See—*
Toyoshima, Iwao; Ishii, Kunio; Sawada, Hideo; Kawamoto, Junji; and Yokota, Hiromu, 4,085,760, Cl. 131-268.000.
Ishikawa, Kazuo; Sakaguchi, Keiichi; Takigawa, Tomoshi; Hirata, Noritsugu; Tajima, Akira; and Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Diaphragm device. 4,086,605, Cl. 354-270.000.
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, to (Zaidanhojin) Sagami Chemical Research Center. Process for producing a peptide using a serine or thiol proteinase. 4,086,136, Cl. 195-29.000.
Istituto Chemioterapico Italiano: *See—*
Garzia, Aldo; and Williams, Robert D., 4,086,345, Cl. 424-251.000.
Itagaki, Hideaki: *See—*
Kamikura, Shigeo; Itagaki, Hideaki; Kagaya, Yutaka; and Kawaoka, Ryoiti, 4,085,597, Cl. 66-75.200.
Ito, Fumio; Ito, Tadashi; Mashimo, Yukio; Sakurada, Nobuaki; and Shinoda, Nobuhiko, to Canon Kabushiki Kaisha. Exposure control apparatus. 4,086,581, Cl. 354-23.00D.
Ito, Kunihiro, to Kawasaki Jukogyo Kabushiki Kaisha. Flying shear machine for cutting traveling stock. 4,085,641, Cl. 83-328.000.
Ito, Syoji: *See—*
Tanabe, Seiichi; and Ito, Syoji, 4,086,020, Cl. 415-106.000.
Ito, Tadashi: *See—*
Ito, Fumio; Ito, Tadashi; Mashimo, Yukio; Sakurada, Nobuaki; and Shinoda, Nobuhiko, 4,086,581, Cl. 354-23.00D.
Kozuki, Susumu; Uchiyama, Takashi; Ito, Tadashi; Iwashita, Tomonori; Uchidoi, Masanori; and Mashimo, Yukio, 4,086,603, Cl. 354-204.000.
Ito, Yukio; Yasumoto, Yosiro; Masuda, Etsuro; and Suzuki, Hiroshi, to Agency of Industrial Science & Technology. Process for removing nitrogen oxides from gaseous mixtures. 4,086,327, Cl. 423-385.000.
Itoh, Kiyoo, to Hitachi, Ltd. Memory system with read/write control lines. 4,086,662, Cl. 365-189.000.
Ivie, Kert F.: *See—*
Bosley, Roy E.; Mann, Paul T.; Decoteau, Gary D.; Ivie, Kert F.; and Winslow, Elden D., 4,086,368, Cl. 426-464.000.
Iwashita, Tomonori: *See—*
Kozuki, Susumu; Uchiyama, Takashi; Ito, Tadashi; Iwashita, Tomonori; Uchidoi, Masanori; and Mashimo, Yukio, 4,086,603, Cl. 354-204.000.
Izawa, Shinichi: *See—*
Saito, Toranosuke; Kitani, Masakatu; Mori, Kenshi; and Izawa, Shinichi, 4,086,206, Cl. 260-45.8NT.
Izumi, Koji, to Izumi Products Company. Rechargeable battery. 4,086,523, Cl. 320-2.000.
Izumi Products Company: *See—*
Izumi, Koji, 4,086,523, Cl. 320-2.000.
J. J. Mason Limited: *See—*
Mason, John James, 4,085,935, Cl. 273-185.00D.
J. Pfrimmer & Co.: *See—*
Fekl, Werner, 4,085,866, Cl. 222-158.000.
Jablin, Richard. Machinery locating device. 4,085,849, Cl. 214-1.0BB.
Jacalone, Richard P., to Olinkraft, Inc. Pallet box pack. 4,085,847, Cl. 206-600.000.
Jackel, John W.: *See—*
Thompson, Leo M.; Anderson, Robert K.; Kocher, Lawrence H.; and Jackel, John W., 4,085,865, Cl. 222-1.000.
Jackson, Amos Ray: *See—*
Vowles, Sandra Rae; Jacobs, Michael Alan; and Jackson, Amos Ray, 4,086,439, Cl. 179-27.0DA.
Jackson, Harold L.; and Mader, Frederick W., to Du Pont de Nemours, E. I., and Company. Drying of water-wet solid materials. 4,085,518, Cl. 34-37.000.
Jackson, Jimmy; and Roquemore, William D. Sprinkler adjustor and escutcheon applicator tool. 4,085,633, Cl. 81-111.000.
Jackson, Mervyn Benjamin; and Sasse, Wolfgang Hermann Fritz, to ICI Australia Limited; and Commonwealth Scientific and Industrial Research Organization. Copolymers of an allylamine grafted onto an unsaturated benzoin copolymer. 4,086,299, Cl. 260-885.000.
Jacobs, David A., to JDS Products, Inc. Combination plug and power cut-off unit. 4,086,643, Cl. 361-92.000.
Jacobs, Michael Alan: *See—*
Vowles, Sandra Rae; Jacobs, Michael Alan; and Jackson, Amos Ray, 4,086,439, Cl. 179-27.0DA.
Jacoby, Charles H., to Occidental Minerals Corporation. Energy conserving mining system and method. 4,085,971, Cl. 299-4.000.
Jacques, James O.: *See—*
Cizmic, Stipe; Edwards, Wayne L., Jr.; Jacques, James O.; Mahon, Douglas K.; and Shenfield, Leonard R., 4,086,636, Cl. 360-75.000.
Cizmic, Stipe; Edwards, Wayne L., Jr.; Griffith, David L.; Halfhill, Martin O.; Jacques, James O.; Shenfield, Leonard R.; and Votaw, Ronald W., 4,086,659, Cl. 364-900.000.
Jacubasch, Dieter; Eisenhauer, Rudolf; Greifenberg, Juergen; and Goebel, Rolf-Dieter, to Klockner-Humboldt-Deutz AG. Apparatus for comminution of welding electrode jackets. 4,085,898, Cl. 241-175.000.
Jadatz, Harald B.: *See—*
Slater, Thomas S.; and Jadatz, Harald B., 4,086,549, Cl. 335-18.000.
Jadwin, Thomas Arthur: *See—*
Consaul, James William; and Jadwin, Thomas Arthur, 4,085,702, Cl. 118-60.000.
Jaenke, Hans-Jurgen: *See—*
Djordjevic, Ilija; Jaenke, Hans-Jurgen; Ritter, Ernst; and Staudt, Heinrich, 4,085,724, Cl. 123-140.0MC.
Jager, Ernst Adolf, to Flottweg-Werk Dr. Georg Bruckmayer GmbH & Co. KG. Process and apparatus for the treatment of suspensions. 4,085,888, Cl. 233-7.000.
Jalaguier, Jean-Pierre, to Societe Nationale Industrielle Aerospatiale. Quick locking and unlocking connector. 4,086,014, Cl. 403-317.000.
Janda, Jaroslav: *See—*
Dadak, Zdenek; Janda, Jaroslav; and Kakac, Karel, 4,085,777, Cl. 139-370.200.
Jankowski, Tadeusz R. Fishing lure. 4,085,538, Cl. 43-17.600.

Janome Sewing Machine Co. Ltd.: *See—*
Yoshikawa, Naohiro; Sato, Sadaharu; Matsubara, Masanori; and Hosoda, Masao, 4,085,675, Cl. 101-269.000.

Janoski, Edward J.; Schneider, Abraham; and Ware, Richard E., to Suntech, Inc. Isomerization of tetrahydropolycyclopentadienes to a missile fuel additive. 4,086,286, Cl. 260-666.0PY.

Janoski, Edward J.: *See—*
Schneider, Abraham; Ware, Richard E.; and Janoski, Edward J., 4,086,284, Cl. 260-666.0PY.

Japan Oxygen Co., Ltd.: *See—*
Mutoh, Fumio; Koizumi, Hiroshi; Yamasaki, Jun; and Ando, Toshifumi, 4,086,369, Cl. 426-519.000.

Japan Powder Metallurgy Co., Ltd.: *See—*
Mitani, Seishu; Kudo, Tsuneo; Mitani, Minoru; and Saido, Shuichi, 4,086,390, Cl. 428-550.000.

Jarrett, James Oswald: *See—*
Jarrett, William Fleming Hoggan; Jarrett, James Oswald; and Mackey, Lindsay Joan, 4,086,134, Cl. 195-1.200.

Jarrett, John James: *See—*
Lodge, James Alec; and Jarrett, John James, 4,086,492, Cl. 250-416.0TV.

Jarrett, William Fleming Hoggan; Jarrett, James Oswald; and Mackey, Lindsay Joan, to University of Glasgow. Method for preparation of vaccine against feline leukemia. 4,086,134, Cl. 195-1.200.

Jayne, Max Leroy, to GTE Sylvania, Incorporated. Longitudinally actuated zero force connector. 4,085,990, Cl. 339-74.00R.

JDS Products, Inc.: *See—*
Jacobs, David A., 4,086,643, Cl. 361-92.000.

Jeanmart, Claude: *See—*
Cotrel, Claude; Crisan, Cornel; Jeanmart, Claude; and Leger, Andre, 4,086,348, Cl. 424-256.000.

Jeanroy, Gerard Michel: *See—*
Garnier, Pierre Georges; Gaullier, Bruno; and Jeanroy, Gerard Michel, 4,086,625, Cl. 364-104.000.

Jebb, Alan; Rees, James George Arthur; and Lawrence, Raymond, to C. L. Instruments Limited. Axle load monitoring systems. 4,086,576, Cl. 340-272.000.

Jelenic, Bronco Felex, deceased: *See—*
Gaines, Donald Raymond; and Jelenic, Bronco Felex, deceased, 4,085,832, Cl. 188-268.000.

Jelenic, Ronald B., administrator: *See—*
Gaines, Donald Raymond; and Jelenic, Bronco Felex, deceased, 4,085,832, Cl. 188-268.000.

Jenkinson, Jeremy Mark, to Lucas Industries Limited. Vehicle lamps. 4,086,481, Cl. 362-428.000.

Jensen, Arne, to Danfoss A/S. Method and apparatus for controlling an inverted rectifier. 4,086,623, Cl. 363-41.000

Jernstrom, Hans Ebbe Ingevar; and Long, Thomas Lee. Mechanical toy athlete. 4,085,540, Cl. 46-119.000.

Jiu, James; and Mizuba, Seth S., to G. D. Searle & Co. 2-(2-Amino-4-chlorophenoxy)benzyl alcohol and diacetate derivative. 4,086,268, Cl. 560-252.000.

John Fluke Mfg. Co., Inc.: *See—*
Fried, Raymond L., 4,086,544, Cl. 331-1.00A.

Johnsen, John Arthur, to Firestone Tire & Rubber Company, The. Tread ring disassembly and reassembly apparatus. 4,086,047, Cl. 425-450.100.

Johnson, Carl B., to Pontiac Furniture Industries, Inc. Swivel thrust bearing. 4,085,983, Cl. 308-134.100.

Johnson, Charles Bruce, to International Telephone and Telegraph Corporation. Coplanar dynode electron multiplier. 4,086,487, Cl. 250-207.000.

Johnson, Eric S.: *See—*
Hager, Robert J.; Johnson, Eric S.; Scott, M. Walter; and Stelzer, Ernest L., 4,085,500, Cl. 29-589.000.

Johnson, Eric Shanks; and Schmit, Joseph Lawrence, to Honeywell Inc. Halogen-doped Hg,Cd,Te. 4,086,106, Cl. 148-33.000.

Johnson, Gary R., to Continental Oil Company. Method for removing a vinyl halide from polyvinyl halide-containing slurry. 4,086,412, Cl. 528-499.000.

Johnson & Johnson: *See—*
Ness, Irving Stanley; and Fechillas, Michael R., 4,085,754, Cl. 128-287.000.
Perfect, Alan J., 4,085,845, Cl. 206-564.000.

Johnson, Ralph S. Map vending machine. 4,085,863, Cl. 221-20.000.

Johnston, Thomas F.; and Robinson, Aaron Z., to United States of America, Navy. Secret depth sounder. 4,086,560, Cl. 340-3.00R.

Jones, Bradford H. Recovery of chromium from tannery waste. 4,086,319, Cl. 423-53.000.

Jones, Charles A. Process and apparatus for loosening bark from logs. 4,085,783, Cl. 144-208.00R.

Jones, John Austin: *See—*
Desyllas, Peter Leo Lawrence; Jones, John Austin; and Procter, Brian John, 4,086,629, Cl. 364-200.000.

Jones & Laughlin Steel Corporation: *See—*
Muller, Joseph M., 4,086,145, Cl. 202-248.000.

Jones, Ralph Archibald, to Post Office, The. Switching circuit useful in telephone conference systems. 4,086,432, Cl. 179-1.0CN.

Jones, Roy A.; and Mabry, Marshall W., to United States of America, Air Force. Barrier system for dual-pulse rocket motor. 4,085,584, Cl. 60-250.000.

Jonville, Pierre, to Battelle Memorial Institute. Electrolyzer with released gas. 4,086,155, Cl. 204-266.000.

Joo', Louis Arpad: *See—*
Juel, Leslie Harrisville; Joo', Louis Arpad; and Tucker, Kenneth Wayne, 4,086,380, Cl. 428-65.000.

Joray, Marvin L.; Heckley, Warner M.; and Gunyou, Lyman J., to Avco Corporation. Forage harvester and attachment therefor. 4,085,570, Cl. 56-2.000.

Jordan, John Francis; and Lampkin, Curtis Magill, to Photon Power, Inc. Photovoltaic cells. 4,086,101, Cl. 136-89.0CD.

Joschko, Gunter; and Schriefl, Karl-Ekkehard, to TED Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec. Reworking of a playback or recording member guide body. 4,085,939, Cl. 274-1.00R.

Joubert, Jerauld D., to Steiger Tractor Inc. Throttle control for articulated tractor with multiple power plants. 4,085,813, Cl. 180-14.00A.

Juel, Leslie Harrisville; Joo', Louis Arpad; and Tucker, Kenneth Wayne, to Great Lakes Carbon Corporation. Granular disc joints for lengthwise graphitization. 4,086,380, Cl. 428-65.000.

Jukkola, Walfred Wilhelm; and Svencer, Richard Ernest, to Dorr-Oliver Incorporated. Fluidized bed drying process for porous materials. 4,085,516, Cl. 34-10.000.

Jung, Werner. Protective devices for threaded drive shafts. 4,085,625, Cl. 74-89.220.

Jurgens, Wolfgang; Nageler, Jorg; Lippitsch, Josef; and Holzner, Julius, to Siemens Aktiengesellschaft; and Waagner-Biro Aktiengesellschaft. Pressurized relief tank for steam. 4,086,308, Cl. 261-124.000.

Justus, Edgar J., to Beloit Corporation. Control system and method for a multi-channel paper machine distributor. 4,086,130, Cl. 162-123.000.

K. & V. Sorensen Engineering Limited: *See—*
Sorensen, Keld Torben Schneider, 4,085,658, Cl. 91-461.000.

Kabel-und Metallwerke Gutehoffnungshutte AG.: *See—*
Muller, Kurt, 4,085,607, Cl. 72-77.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Tanaka, Kojiro, 4,085,575, Cl. 58-4.00A.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Furuto, Takashi, 4,085,640, Cl. 83-198.000.
Yoshinouchi, Sumio; and Tanaka, Hiroki, 4,085,660, Cl. 92-119.000.

Kabushiki Kaisha Maekawa Seisakusho: *See—*
Masumoto, Katashi; Furubayashi, Ei-ichi; and Inoue, Wahei, 4,086,508, Cl. 310-86.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Ido, Kazuo; and Maruyama, Mitsuaki, 4,086,654, Cl. 364-705.000.
Kouchi, Akihiko; Otake, Tsutomu; Takeshita, Hiroshi; and Inoue, Kunihiro, 4,086,003, Cl. 350-357.000.

Kabushiki Kaisha Yamamoto Suiatsu Kogyosho: *See—*
Yoshida, Mitsuo; Furukawa, Wataru; Yamaguchi, Takashi; and Sasaki, Kazuo, 4,085,942, Cl. 277-30.000.

Kaeding, Warren W.; and Young, Lewis B., to Mobil Oil Corporation. Selective ethylation of mono alkyl benzenes. 4,086,287, Cl. 260-671.00R.

Kagaya, Yutaka: *See—*
Kamikura, Shigeo; Itagaki, Hideaki; Kagaya, Yutaka; and Kawaoka, Ryoiti, 4,085,597, Cl. 66-75.200.

Kahn, Daniel W.; and Skidmore, Thomas A., to Teletech Corporation. Automatic interconnection system. 4,086,438, Cl. 179-18.0BE.

Kaiser, Mark E.; and Owen, Peter W., to Dow Chemical Company, The. N-(2-mercapto-ethyl)alkanamides from H_2S and 2-H-2-oxazolines or 2-alkyl-2-oxazolines. 4,086,274, Cl. 260-561.00S.

Kaiser, Mark E.: *See—*
Berazosky, Sandra; and Kaiser, Mark E., 4,086,273, Cl. 260-561.00S.

Kaiser, Willard D., to International Lead Zinc Research Organization, Inc. Method of pore-free die casting. 4,085,791, Cl. 164-55.000.

Kajino, Jirou; and Ohara, Naoyuki, to Matsushita Electric Industrial Co., Ltd. Device for detecting rotational speed of a tape reel. 4,085,698, Cl. 116-114.00J.

Kakac, Karel: *See—*
Dadak, Zdenek; Janda, Jaroslav; and Kakac, Karel, 4,085,777, Cl. 139-370.200.

Kam, Clifford Y.; Freeman, Vernon L.; and Penton, Allen P., to McDonnell Douglas Corporation. Stiffened composite structural member and method of fabrication. 4,086,378, Cl. 428-36.000.

Kamikura, Shigeo; Itagaki, Hideaki; Kagaya, Yutaka; and Kawaoka, Ryoiti, to Silver Seiko Co., Ltd. Knitting machine coupled with the program reading device. 4,085,597, Cl. 66-75.200.

Kamiya, Shingo, to Nippon Gakki Seizo Kabushiki Kaisha. Complementary push-pull amplifier. 4,086,542, Cl. 330-268.000.

Kampf, Gunther: *See—*
Bottenbruch, Ludwig; Kampf, Gunther; Serini, Volker; and Vernaleken, Hugo, 4,086,310, Cl. 264-41.000.

Kan, Hiroyasu: *See—*
Amagai, Susumu; Kawai, Shizuya; Kan, Hiroyasu; and Aizawa, Hideo, 4,085,816, Cl. 180-64.00A.

Kanda, Katsumi: *See—*
Ariga, Keiji; Tsutsui, Nobuyuki; and Kanda, Katsumi, 4,086,153, Cl. 204-181.00R.

Kaneko, Tadao: *See—*
Kohashi, Takahiro; Akagi, Motoo; Oba, Yoichi; Nonogaki, Saburo; Tanaka, Makoto; Kaneko, Tadao; and Tomita, Yoshifumi, 4,086,090, Cl. 96-35.100.

Kanojia, Ramesh Maganlal: *See—*
Wachter, Michael P.; and Kanojia, Ramesh Maganlal, 4,086,358, Cl. 424-278.000.

Kao Soap Co., Ltd.: *See—*
Inamoto, Yoshiaki; Tsuchihashi, Kiyoshi; Takaishi, Naotake; Fujikura, Yoshiaki; and Aigami, Koji, 4,086,285, Cl. 260-666.0PY.
Tsuto, Keiichi; Majima, Kanji; and Imamura, Shigeyasu, 4,086,256, Cl. 260-400.000.

Kao, Wenling: *See—*
Strike, Donald P.; and Kao, Wenling, 4,086,269, Cl. 260-514.00D.

Kap-Key, Inc.: *See—*
Hogan, Jesse M.; and Hogan, Violet L., 4,085,632, Cl. 81-3.30R.

Kaplow, Roy; and Frank, Robert I., to Massachusetts Institute of Technology. Solar-radiation collection apparatus with tracking circuitry. 4,086,485, Cl. 250-203.00R.

Karewicz, Boguslaw: *See—*
Gundlach, Wladyslaw; Porochnicki, Jerzy; Prywer, Jerzy; Karewicz, Boguslaw; Potapczyk, Andrzej; and Zielenow, Krzysztof, 4,086,027, Cl. 416-184.000.

Karkishko, Gennady Semenovich: *See—*
Deribas, Andrei Andreevich; Demchuk, Alexandr Fedorovich; Braunshtein, Rudolf Aronovich; Bochkarev, Boris Nikolaevich; Viktorov, Vladimir Borisovich; Karkishko, Gennady Semenovich; Baranov, Sergei Vasilievich; Prakhov, Alexandr Ivanovich; Kasatkin, Vladimir Semenovich; and Rozhkov, Alexandr Timofeevich, 4,085,883, Cl. 228-2.500.

Karl Lautenschlager, KG: *See—*
Lautenschlager, Karl, 4,085,481, Cl. 16-159.000.

Karol, Frederick John; and Wu, Chi-Sung, to Union Carbide Corporation. Ethylene polymerization with silane modified catalyst. 4,086,408, Cl. 526-130.000.

Karol, Frederick John; and Wu, Chi-Sung, to Union Carbide Corporation. Ethylene polymerization with siloxane modified catalyst. 4,086,409, Cl. 526-130.000.

Karol, Kenneth N., to International Business Machines Corporation. Aluminum surface treatment to enhance adhesion in a given direction. 4,086,114, Cl. 156-153.000.

Kartridg Pak Company, The: *See—*
Wells, Roy E., 4,085,779, Cl. 140-93.00A.
Wright, Donald R., 4,085,778, Cl. 140-93.00A.

Kasatkin, Vladimir Semenovich: *See—*
Deribas, Andrei Andreevich; Demchuk, Alexandr Fedorovich; Braunshtein, Rudolf Aronovich; Bochkarev, Boris Nikolaevich; Viktorov, Vladimir Borisovich; Karkishko, Gennady Semenovich; Baranov, Sergei Vasilievich; Prakhov, Alexandr Ivanovich; Kasatkin, Vladimir Semenovich; and Rozhkov, Alexandr Timofeevich, 4,085,883, Cl. 228-2.500.

Kashihara, Takao: *See—*
Murayama, Ken; and Kashihara, Takao, 4,086,208, Cl. 260-47.00C.

Kast, Philip J.; and Schmitt, James F., to Madison-Kipp Corporation Lubrication system. 4,085,821, Cl. 184-15.00A.

Kastenhuber, Walter: *See—*
Stedefeder, Joachim; Dorn, Ingo H.; Kuhn, Horst; Kastenhuber, Walter; and Linke, Wolfgang, 4,086,413, Cl. 528-499.000.

Katayama, Morimitsu: *See—*
Osujyo, Masahide; Yamanishi, Isamu; Inamori, Akio; Fujikawa, Kaoru; Wakabayashi, Noboru; Ikegami, Seiichi; Okada, Makoto; and Katayama, Morimitsu, 4,085,806, Cl. 172-9.000.

Katou, Kazuo; Sase, Takashi; and Horinaka, Ikuho, to Hitachi, Ltd. Time division multiplexing amplifier. 4,086,541, Cl. 330-51.000.

Katsuragi, Asaichi: *See—*
Mori, Taketoshi; Goto, Susumu; Katsuragi, Asaichi; and Matsuki, Mutsuo, 4,086,295, Cl. 260-857.00L.

Kaufman, Arnold S.; and Anderson, Robert L., to National Food Service Equipment Fabricators, Inc. Air ventilation and washing system. 4,085,735, Cl. 126-299.00E.

Kaun, Thomas D.: *See—*
Vissers, Donald R.; Nelson, Paul A.; Kaun, Thomas D.; and Tomczuk, Zygmunt, 4,086,404, Cl. 429-220.000.

Kautz, Stephan Douglas, to AMP Incorporated. Electrical terminal. 4,085,995, Cl. 339-97.00R.

Kawai, Shizuya: *See—*
Amagai, Susumu; Kawai, Shizuya; Kan, Hiroyasu; and Aizawa, Hideo, 4,085,816, Cl. 180-64.00A.

Kawamoto, Junji: *See—*
Toyoshima, Iwao; Ishii, Kunio; Sawada, Hideo; Kawamoto, Junji; and Yokota, Hiromu, 4,085,760, Cl. 131-268.000.

Kawanabe, Tsuyoshi; and Machida, Minoru, to Canon Kabushiki Kaisha. Signal generator. 4,086,588, Cl. 340-365.00S.

Kawaoka, Ryoiti: *See—*
Kamikura, Shigeo; Itagaki, Hideaki; Kagaya, Yutaka; and Kawaoka, Ryoiti, 4,085,597, Cl. 66-75.200.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Ito, Kunihiro, 4,085,641, Cl. 83-328.000.

Kear, Bernard Henry: *See—*
Giggins, Charles Stanley, Jr.; and Kear, Bernard Henry, 4,086,391, Cl. 428-679.000.

Keene, Robert G.: *See—*
Hyland, Albert L.; and Keene, Robert G., 4,086,399, Cl. 429-122.000.

Keldmann, Erik Christian Vilhelm. Baseboard electric heating apparatus. 4,086,468, Cl. 219-377.000.

Kelley, Dale: *See—*
Horine, James H.; Watts, Lowell K.; Wininger, Hershel R.; Kelley, Dale; and Sears, Charles L., 4,085,552, Cl. 51-166.00R.

Kelly, John H., to Steel Company of Canada, Limited, The. Drop-weight sample tester. 4,085,609, Cl. 73-101.000.

Kempter, Fritz Erdmann; Hartmann, Heinrich; and Spoor, Herbert, to BASF Aktiengesellschaft. Surface-coating binders. 4,086,292, Cl. 260-831.000.

Kendall Company, The: *See—*
Patel, Bhupendra C.; and Boedecker, Steven M., 4,085,616, Cl. 73-215.000.

Kendall, Roger Vernon: *See—*
Diehl, Robert Eugene; and Kendall, Roger Vernon, 4,086,242, Cl. 260-308.00B.

Kershner, Larry D.: *See—*
Hopper, Charles R.; and Kershner, Larry D., 4,086,253, Cl. 260-396.00N.

Kershner, Seymour. Fibrous filter incinerator. 4,085,689, Cl. 110-252.000.

Kervagoret, Gilbert, to Societe Anonyme D.B.A. Power steering mechanism. 4,085,657, Cl. 91-380.000.

Kervagoret, Gilbert, to Societe Anonyme D.B.A. Power steering device. 4,085,817, Cl. 180-132.000.

Keshock, Edward G.: *See—*
Campbell, Louis; and Keshock, Edward G., 4,085,875, Cl. 224-45.00K.

Kestermeier, William J., to Bendix Corporation, The. Disc brake wear indicator. 4,085,827, Cl. 188-1.00A.

Khramtsov, Andrei Georgievich: *See—*
Antonov, Sergei Fedorovich; Krasheninin, Pavel Firsovich; Bogdanov, Vyacheslav Mikhailovich; Khramtsov, Andrei Georgievich; and Eremin, Gennady Efimovich, 4,086,366, Cl. 426-14.000.

Kimura, Terutoshi: *See—*
Sakakibara, Shumpei; Morikawa, Tadanori; Munekata, Eisuke; Kimura, Terutoshi; Nakagawa, Yasuo; and Noda, Toshiharu, 4,086,221, Cl. 260-112.50T.

Kimura, Toshihiro; Hanaki, Yoshimaro; and Nomura, Humio, to Okuma Machinery Works Ltd. Position detecting system. 4,085,890, Cl. 235-419.000.

Kindl, Bruno; and Atkinson, Jennifer Geraldine, to Huron Chemicals Limited. Chromate removal by precipitation. 4,086,150, Cl. 204-96.000.

King, John Burnham. Process for isolating fibrinolytic substances. 4,086,140, Cl. 195-66.00B.

King, Ronald J., to NCR Corporation. Control circuit for a code reading device. 4,086,476, Cl. 235-462.000.

King, William J. Inexpensive solar cell and method therefor. 4,086,102, Cl. 136-89.0CC.

Kinoshita, Kazuhisa; and Masamune, Naoki, to Nippon Kokan Kabushiki Kaisha. Method of preventing oxidation of austenitic stainless steel material in high temperature steam. 4,086,104, Cl. 148-12.00E.

Kirschke, John A. Deflection device for measuring the interior of a conduit. 4,085,510, Cl. 33-178.00F.

Kishi, Hajimu; Ohkubo, Tetsuo; and Koikawa, Noriyuki, to Oki Electric Industry Co., Ltd. Numerical control system with program access function. 4,086,633, Cl. 364-474.000

Kitamoto, Tatsuji: *See—*
Suzuki, Masaaki; Shirahata, Ryuji; Aonuma, Masashi; and Kitamoto, Tatsuji, 4,086,374, Cl. 427-48.000.

Kitani, Masakatu: *See—*
Saito, Toranosuke; Kitani, Masakatu; Mori, Kenshi; and Izawa, Shinichi, 4,086,206, Cl. 260-45.8NT.

Kitazawa Shoji Kabushiki Kaisha: *See—*
Nomura, Chifuru, 4,085,624, Cl. 74-89.150.

Kitsuregawa, Takashi: *See—*
Nishizawa, Jun-ichi; Nakamura, Kentaro; and Kitsuregawa, Takashi, 4,086,611, Cl. 357-38.000.

Kittler, Milton J.: *See—*
Vardi, Joseph; and Kittler, Milton J., 4,085,721, Cl. 123-136.000.

Kiyofumi, Ochii: *See—*
Suzuki, Yasoji; and Kiyofumi, Ochii, 4,086,500, Cl. 307-270.000.

Kiyohara, Takehiko; Tsunekawa, Tokuichi; Yazaki, Mutsunobu; Sanada, Noriaki; Taguchi, Tetsuya; and Nakamura, Zenzo, to Canon Kabushiki Kaisha. Exposure control device for a camera. 4,086,582, Cl. 354-33.000.

Klaeger, Dale Edward: *See—*
Klaeger, Joseph Hart, Jr.; Klaeger, Dale Edward; and Klaeger, Robert Allen, 4,086,035, Cl. 417-410.000.

Klaeger, Joseph Hart, Jr.; Klaeger, Dale Edward; and Klaeger, Robert Allen. Bailer pumps for oil wells. 4,086,035, Cl. 417-410.000.

Klaeger, Robert Allen: *See—*
Klaeger, Joseph Hart, Jr.; Klaeger, Dale Edward; and Klaeger, Robert Allen, 4,086,035, Cl. 417-410.000.

Klass, Donald L.: *See—*
Ghosh, Sambhunath; and Klass, Donald L., 4,085,972, Cl. 299-7.000.

Klees, Garry W., to Boeing Company, The. Method for selectively switching motive fluid supply to an aft turbine of a multicycle engine. 4,085,583, Cl. 60-204.000.

Klein, Sheldon D., to Chippewa Paper Products Company. Paperboard chair of unitary construction. 4,085,970, Cl. 297-440.000.

Kleinlogel, Horst, to Sandoz Ltd. 6-(1-Piperazinyl)morphanthridine as a sleep inducing or prolonging agent. 4,086,342, Cl. 424-250.000.

Klie, Wolfgang: *See—*
Weisshappel, Helmut; Klie, Wolfgang; and Fischer, Wolfgang, 4,085,956, Cl. 293-86.000.

Kling, Miguel. Self-driving and self-locking device for traversing channels and elongated structures. 4,085,808, Cl. 175-94.000.

Klockner-Humboldt-Deutz AG: *See—*
Jacubasch, Dieter; Eisenhauer, Rudolf; Greifenberg, Juergen; and Goebel, Rolf-Dieter, 4,085,898, Cl. 241-175.000.

Klotz, Hermann: *See—*
Leiber, Heinz; Gerstenmeier, Jurgen; and Klotz, Hermann, 4,085,979, Cl. 303-92.000.

Klug, Frederic J.: *See—*
Huseby, Irvin C.; and Klug, Frederic J., 4,086,311, Cl. 264-43.000.

Knappenberger, Thomas A., to Motorola Inc. Stress relieved printed wiring board. 4,086,426, Cl. 174-68.500.

Knippenberg, Wilhelmus Franciscus; Verspui, Gerrit; and Hagen,

Siegfried Hendrik, to U.S. Philips Corporation. Electric resistor based on silicon carbide having a negative temperature coefficient. 4,086,559, Cl. 338-22.00R.

Knit-Fin Machinery Ltd.: *See—*
Aronoff, Edward I.; McLay, William J.; and Mitchell, Robert E., 4,085,484, Cl. 26-84.000.

Knollmueller, Karl O., to Olin Corporation. Alkoxysilane ester cluster compounds and their preparation and use. 4,086,260, Cl. 260-448.80R.

Knothe, Edda: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.

Knothe, Erich; Berg, Christoph; and Stadler, Eberhard, to Sartorius-Werke GmbH und. vorm. Goettinger Praezisionswaagenfabrik GmbH. Electromagnetically compensating beamless dynamometer or weighing device. 4,085,811, Cl. 177-210.0EM.

Knox, Walter R.; Hill, James C.; Hughes, Lawrence J.; and Foerst, Paul W., to Monsanto Company. Bitumen filled polyester foams. 4,086,195, Cl. 260-2.50N.

Kobayashi, Masaharu: *See—*
Ezumi, Yuh; Kobayashi, Masaharu; Kubota, Takashi; and Shimokawa, Yoichi, 4,086,093, Cl. 96-86.00P.

Kobayashi, Toshihiko: *See—*
Sugio, Akitoshi; Masuda, Yukiya; Kobayashi, Toshihiko; Nakano, Koichi; and Sawai, Tsukasa, 4,086,128, Cl. 156-668.000.

Kocatas, Babur M.: *See—*
Argo, Wesley B.; Chen, Gilbert K. C.; Kocatas, Babur M.; and Ziebold, Steven A., 4,086,070, Cl. 55-97.000.

Kocher, Lawrence H.: *See—*
Thompson, Leo M.; Anderson, Robert K.; Kocher, Lawrence H.; and Jackel, John W., 4,085,865, Cl. 222-1.000.

Kockums Automation AB: *See—*
Eklund, Urban, 4,085,636, Cl. 83-56.000.

Kodera, Katsuji. Automatic disease-detecting treatment apparatus for the spine. 4,085,738, Cl. 128-2.00N.

Koepke, Barry G.: *See—*
Chen, Di; and Koepke, Barry G., 4,086,001, Cl. 350-96.140.

Koh-I-Noor Rapidograph, Inc.: *See—*
Kuparinen, Lasse, 4,086,011, Cl. 401-258.000.

Kohashi, Takahiro; Akagi, Motoo; Oba, Yoichi; Nonogaki, Saburo; Tanaka, Makoto; Kaneko, Tadao; and Tomita, Yoshifumi, to Hitachi, Ltd. Formation of pattern using acrylamide-diacetoneacrylamide copolymer. 4,086,090, Cl. 96-35.100.

Koikawa, Noriyuki: *See—*
Kishi, Hajimu; Ohkubo, Tetsuo; and Koikawa, Noriyuki, 4,086,633, Cl. 364-474.000.

Koistinen, Onni: *See—*
Tapola, Esko; Sten, Matti; and Koistinen, Onni, 4,086,167, Cl. 210-150.000.

Koizumi, Hiroshi: *See—*
Mutoh, Fumio; Koizumi, Hiroshi; Yamasaki, Jun; and Ando, Toshifumi, 4,086,369, Cl. 426-519.000.

Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, to Nippon Oil Company, Ltd. Process for producing glucose isomerase. 4,086,138, Cl. 195-65.000.

Koleske, Joseph Victor; and Smith, Oliver Wendell, to Union Carbide Corporation. Polycaprolactone-epoxide adducts and coating compositions thereof. 4,086,294, Cl. 260-834.000.

Koleske, Joseph Victor: *See—*
Smith, Oliver Wendell; and Koleske, Joseph Victor, 4,086,293, Cl. 260-830.00R.

Koller, Horst: *See—*
Biedermann, Wolfgang; Koller, Horst; and Wedemeyer, Karlfried, 4,086,283, Cl. 260-626.00T.

Koller, Karl: *See—*
Scheinecker, Alois; Koller, Karl; and Holleis, Gunter, 4,085,793, Cl. 164-436.000.

Komatsu, Hajime: *See—*
Tanino, Mitsuru; Komatsu, Hajime; and Takemura, Susumu, 4,086,107, Cl. 148-136.000.

Kondo, Hiroshi: *See—*
Shibuya, Tsunenori; and Kondo, Hiroshi, 4,086,040, Cl. 418-76.000.

Konig, Hans-Bodo: *See—*
Schrock, Wilfried; Konig, Hans-Bodo; Preiss, Michael; Metzger, Karl Georg; and Walkowiak, Michael, 4,086,340, Cl. 424-246.000.

Kono, Mitsuo: *See—*
Omori, Jimpei; Kono, Mitsuo; Takeuchi, Torataro; and Oikawa, Noboru, 4,086,463, Cl. 219-145.220.

Koppers Company, Inc.: *See—*
Cosby, James L.; and Morgret, Gordon L., 4,086,120, Cl. 156-473.000.
Holter, Samuel N., 4,086,281, Cl. 260-621.00R.

Kormendi, Kalman: *See—*
Lampart, Dieter; and Kormendi, Kalman, 4,086,314, Cl. 264-89.000.

Koscik, Richard A., to Illinois Tool Works Inc. Plastic fastener. 4,085,651, Cl. 85-72.000.

Koshio, Takeshi: *See—*
Tanigaki, Takashi; Koshio, Takeshi; and Tanaka, Yoshikazu, 4,086,389, Cl. 428-385.000.

Koslo, Robert C., to International Telephone and Telegraph Corporation. Cubical three-conductor electrical tap. 4,085,996, Cl. 339-159.00C.

Kostanecki, Mark: *See—*
Cowley, Gerald; Swindells, Richard; and Kostanecki, Mark, 4,086,329, Cl. 423-478.000.

Kotezawa, Katsutaka; Onodera, Toshimi; Hayashi, Setsuo; and Shimanuki, Fujio, to Chiba Communications Industries, Inc. Synchronizing system for use in telecommunication. 4,086,429, Cl. 178-69.100.

Koubek, Michael, to Siemens Aktiengesellschaft. Method and apparatus for the gamma correction of video signals. 4,086,615, Cl. 358-32.000.

Koubek, Michael, to Siemens Aktiengesellschaft. Process and circuit arrangement for contour correction of the luminance signal in a television camera. 4,086,618, Cl. 358-166.000.

Kouchi, Akihiko; Otake, Tsutomu; Takeshita, Hiroshi; and Inoue, Kunihiro, to Kabushiki Kaisha Suwa Seikosha. Electrochromic display cell. 4,086,003, Cl. 350-357.000.

Kovac, Joseph L. Telescopic sight gun mount. 4,085,511, Cl. 33-250.000.

Kovar, Robert F.; and Arnold, Fred E., to United States of America, Air Force. Bis-ethynyl heterocyclic compositions and method of synthesis. 4,086,232, Cl. 260-250.00Q.

Koziol, Konrad; Sieberer, Karl-Heinz; and Rathjen, Hans-Carl, to Conradty, C. Electrode for electrochemical processes. 4,086,157, Cl. 204-290.00F.

Kozuki, Susumu; Ichiyanagi, Toshikazu; Watanabe, Yoshiaki; Uchiyama, Takashi; and Sunouchi, Akio, to Canon Kabushiki Kaisha. Exposure range changeover circuit for motor driven photographic camera. 4,086,584, Cl. 354-38.000.

Kozuki, Susumu; Uchiyama, Takashi; Ito, Tadashi; Iwashita, Tomonori; Uchidoi, Masanori; and Mashimo, Yukio, to Canon Kabushiki Kaisha. Electrical driving circuit of camera. 4,086,603, Cl. 354-204.000.

Kracht, Wolfgang: *See—*
Bocker, Ernst; Kracht, Wolfgang; Rupp, Roland; Schellmann, Erhard; Trescher, Viktor; and Ullrich, Martin, 4,086,346, Cl. 424-253.000.

Krasheninin, Pavel Firsovich: *See—*
Antonov, Sergei Fedorovich; Krasheninin, Pavel Firsovich; Bogdanov, Vyacheslav Mikhailovich; Khramtsov, Andrei Georgievich; and Eremin, Gennady Efimovich, 4,086,366, Cl. 426-14.000.

Kravetz, Louis: *See—*
Kubitschek, Hans E.; and Kravetz, Louis, 4,086,177, Cl. 252-102.000.

Kravetz, Louis N.; and Kubitschek, Hans E., to Shell Oil Company. Activated bleaching process and compositions therefor. 4,086,175, Cl. 252-99.000.

Kreitzberg, Ernest A., to Allis-Chalmers Corporation. Valve assembly for power shift transmission. 4,085,834, Cl. 192-87.130.

Kremer, Manfred, to Still GmbH (vormals SE-Fahrzeugwerke GmbH). Charge monitor for electric battery. 4,086,524, Cl. 320-33.000.

Krenzer, John, to Velsicol Chemical Corporation. 1-Thiadiazolyl-4-methoxymethyl-5-hydroxyimidazolidinones. 4,086,238, Cl. 260-306.80D.

Krenzer, John: *See—*
Wu, Chin Ching; and Krenzer, John, 4,086,240, Cl. 260-306.80R.
Wu, Chin Ching; and Krenzer, John, 4,086,241, Cl. 260-306.80D.

Kretschmer, Frank F., Jr.: *See—*
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., 4,086,592, Cl. 343-100.0LE.

Krikorian, Esther; and Crisp, Michael J., to General Dynamics Corporation. Photoconductive sensor. 4,086,555, Cl. 338-15.000.

Krohn, Wolfgang; Metzger, Karl Georg; Preiss, Michael; and Walkowiak, Michael, to Bayer Aktiengesellschaft. Cephalosporin derivatives. 4,086,341, Cl. 424-246.000.

Kromm, David C.; and Znamirowski, Henry, to Roper Corporation. Decorative drapery rod assembly. 4,085,480, Cl. 16-94.00D.

Kropielnicki, Barbara Ewa; and Kropielnicki, Jerzy Jacek, to B.S.H. Electronics (Manchester) Limited. Electrical signal separating device for combined windshield antenna and heater grid. 4,086,594, Cl. 343-704.000.

Kropielnicki, Jerzy Jacek: *See—*
Kropielnicki, Barbara Ewa; and Kropielnicki, Jerzy Jacek, 4,086,594, Cl. 343-704.000.

Krumrey, Guenter; and Stoeckl, Wilhelm, to Siemens Aktiengesellschaft. X-ray examination apparatus. 4,086,493, Cl. 250-468.000.

Krupp, Leon B. Wheel chair converter. 4,085,946, Cl. 280-289.0WC.

Kubitschek, Hans E.; and Kravetz, Louis, to Shell Oil Company. Activated bleaching process and compositions therefor. 4,086,177, Cl. 252-102.000.

Kubitschek, Hans E.: *See—*
Kravetz, Louis N.; and Kubitschek, Hans E., 4,086,175, Cl. 252-99.000.

Kubo, Sueki; Toso, Katsuya; and Fujita, Masayuki, to Kurosaki Refractories Co., Ltd. Apparatus for automatically repairing the lining of a furnace. 4,085,894, Cl. 239-121.000.

Kubota, Junjiro: *See—*
Tuchiya, Keiji; Kubota, Junjiro; Takahashi, Katuo; and Suzuki, Etsuo, 4,085,929, Cl. 271-122.000.

Kubota, Takashi: *See—*
Ezumi, Yuh; Kobayashi, Masaharu; Kubota, Takashi; and Shimokawa, Yoichi, 4,086,093, Cl. 96-86.00P.

Kubota Tekko Kabushiki Kaisha: *See—*
Osujyo, Masahide; Yamanishi, Isamu; Inamori, Akio; Fujikawa, Kaoru; Wakabayashi, Noboru; Ikegami, Seiichi; Okada, Makoto; and Katayama, Morimitsu, 4,085,806, Cl. 172-9.000.

Kudo, Tsuneo: *See—*
Mitani, Seishu; Kudo, Tsuneo; Mitani, Minoru; and Saido, Shuichi, 4,086,390, Cl. 428-550.000.
Kuechler, Irvin R., to Vent-Cair, Inc. Grease-hood apparatus. 4,085,736, Cl. 126-299.00D.
Kuhn, Horst: *See—*
Stedefeder, Joachim; Dorn, Ingo H.; Kuhn, Horst; Kastenhuber, Walter; and Linke, Wolfgang, 4,086,413, Cl. 528-499.000.
Kuhnemann, Klaus Dieter, to Du Pont of Canada Ltd. Yarn winding apparatus. 4,085,903, Cl. 242-43.100.
Kuijk, Karel Elbert: *See—*
Franssen, Nico Valentinus; Kuijk, Karel Elbert; and Siebelink, Johannes Willem, 4,086,431, Cl. 179-1.0SA.
Kujawski, Stanley Marion: *See—*
Padgitt, Kenneth Warren; and Kujawski, Stanley Marion, 4,086,557, Cl. 338-42.000.
Kumagai, Shigeki, to Tokyo Shibaura Electric Co., Ltd. Display device for electronic apparatus. 4,086,473, Cl. 235-92.0EA.
Kuninobu, Shigeo; and Ishihara, Takeshi, to Matsushita Electric Industrial Co., Ltd. Method of making a MOS-type semiconductor device. 4,085,499, Cl. 29-571.000.
Kuntz, Leland E.: *See—*
Hawkins, Royal R.; and Kuntz, Leland E., 4,085,805, Cl. 172-4.500.
Kuparinen, Lasse, to Koh-I-Noor Rapidograph, Inc. Sealing gasket for a capillary pen cover. 4,086,011, Cl. 401-258.000.
Kurihara, Masaru; Tokizane, Soichi; Tanaka, Tatsundo; Tanimura, Masamitsu; and Shimokawa, Yoichi, to Toray Industries, Inc. Cross-linked organic polyamide or polyhydrazine permselective polymeric membranes. 4,086,215, Cl. 260-78.00R.
Kurita, Hideaki: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,086,136, Cl. 195-29.000.
Kurosaki Refractories Co., Ltd.: *See—*
Kubo, Sueki; Toso, Katsuya; and Fujita, Masayuki, 4,085,894, Cl. 239-121.000.
Kusters, Eduard Finkenweg 18: *See—*
Ahrweiler, Klaus; Leifeld, Ferdinand; Quoos, Kurt; and Kusters, Eduard Finkenweg 18, 4,086,316, Cl. 264-120.000.
Kustom, Robert L.; and Wehrle, Robert B., to United States of America, Energy. Contra-rotating homopolar motor-generator for energy storage and return. 4,086,506, Cl. 310-74.000.
Kuypers, Ned R., to Hewlett-Packard Company. Vapor diffusion pump. 4,086,031, Cl. 417-154.000.
Kuzelka, John: *See—*
Steiner, Robert J.; and Kuzelka, John, 4,085,789, Cl. 160-135.000.
Kydd, Paul H., to General Electric Company. Production of water gas as a load leveling approach for coal gasification power plants. 4,085,578, Cl. 60-39.020.
Kyowa Hakko Kogyo Co., Ltd.: *See—*
Nakayama, Kiyoshi; Araki, Kazumi; and Yoshida, Hajime, 4,086,137, Cl. 195-29.000.
Labofina S. A.: *See—*
De Clippeleir, Georges; and Vanderlinden, Andre, 4,086,170, Cl. 252-33.000.
Lace, Melvin A., to Synchro-Start Products, Inc. Amplitude responsive speed switch control. 4,086,647, Cl. 361-239.000.
LaChapelle, Theodore J., Jr.; Davis, John R.; and Licari, James J., to Rockwell International Corporation. Batch process providing beam leads for microelectronic devices having metallized contact pads. 4,086,375, Cl. 427-90.000.
Laeis-Werke AG.: *See—*
Tresser, Dietfried, 4,085,489, Cl. 29-110.000.
Lahm, Albert H., to Donn Products, Inc. Suspension ceiling and recessed lighting system. 4,086,480, Cl. 362-148.000.
Lalich, Michael John: *See—*
Dawson, John Victor; and Lalich, Michael John, 4,086,086, Cl. 75-130.00R.
Lamaison, Jean-Louis: *See—*
Mauvernay, Roland-Yves; Pourrat, Henri-Jean; and Lamaison, Jean-Louis, 4,086,216, Cl. 260-112.00R.
Lambert, Charles F., Jr., to Clayton & Lambert Manufacturing Company. Anti-pollution grain drying apparatus. 4,085,520, Cl. 34-79.000.
Lambrecht, Jurgen Hans Wilhelm. Rotary piston machine of trochoidal construction. 4,086,038, Cl. 418-60.000.
LAMES Societa per Azioni: *See—*
Fogarollo, Pier Paolo, 4,085,629, Cl. 74-625.000.
Lamoria, Lz F.; and Van Dell, Robert D., to Dow Chemical Company, The. Vinylidene chloride polymer latex based cement additives. 4,086,200, Cl. 260-29.60S.
Lamoria, Lz F.: *See—*
Peters, James; VanDell, Robert D.; Eash, R. Douglas; and Lamoria, Lz F., 4,086,201, Cl. 260-29.70S.
Lampart, Dieter; and Kormendi, Kalman, to Elbatainer Kunststoff- und Verpackungs-Gesellschaft mbH. Method of and apparatus for the production of thermoplastic containers. 4,086,314, Cl. 264-89.000.
Lamping, Harold D.: *See—*
Myers, David M.; and Lamping, Harold D., 4,085,712, Cl. 123-205.000.
Lampkin, Curtis Magill: *See—*
Jordan, John Francis; and Lampkin, Curtis Magill, 4,086,101, Cl. 136-89.0CD.
Landry, Ronald L. Back hoe ripper-trencher converter. 4,085,530, Cl. 37-98.000.
Lanese, Philip M., to Belco Pollution Control Corporation. System for the control of rappers in an electrostatic precipitator. 4,086,646, Cl. 361-166.000.
Lanfermann, Willy; Henrich, Friedhelm; and Oberste-Beulmann, Klaus, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H. Drum cutter. 4,085,974, Cl. 299-53.000.
Lang, William H.: *See—*
Chang, Clarence D.; Lang, William H.; and Silvestri, Anthony J., 4,086,262, Cl. 260-449.60R.
Langberg, Edwin. Fast response thermometer. 4,085,617, Cl. 73-362.0CP.
Langdon, William Keith; and Login, Robert Bernard, to BASF Wyandotte Corporation. Nonionic surfactants. 4,086,279, Cl. 260-615.00B.
Laou, Sio Dhat: *See—*
Biet, Jean-Pierre Henri; and Laou, Sio Dhat, 4,086,613, Cl. 357-54.000.
Large, Michael Stewart; and Smith, Leslie Harold, to Imperial Chemical Industries Limited. Amide derivatives. 4,086,357, Cl. 424-275.000.
Larker, Hans: *See—*
Burstrom, Martin; Larker, Hans; and Nilsson, Jan, 4,085,605, Cl. 72-54.000.
Larsen, Gunnar, to Stal-Laval Turbin AB. Steam power plant with fluidized bed heat source for superheater and method of producing superheated steam. 4,085,593, Cl. 60-676.000.
Larsen, Gunnar Valdemar Hartvig: *See—*
Bye-Jorgensen, Jorgen Steen 4,; Larsen, Gunnar Valdemar Hartvig; and Vermehren, Poul Henrik, 4,085,887, Cl. 233-7.000.
LaSalle Machine Tool, Inc.: *See—*
Sattler, Robert I., 4,085,634, Cl. 82-19.000.
Laurer, George Joseph: *See—*
Cowardin, Robert Lewis; and Laurer, George Joseph, 4,086,477, Cl. 235-464.000.
Lautenschlager, Karl, to Karl Lautenschlager, KG. Hammer-set housing for furniture hinges. 4,085,481, Cl. 16-159.000.
Laux, Walter; Hebel, Rudolf; and Schneider, Rolf, to Didier-Werke AG. Ceramic burner for combustion chamber for hot-blast stove. 4,086,052, Cl. 432-217.000.
Lawrence, Raymond: *See—*
Jebb, Alan; Rees, James George Arthur; and Lawrence, Raymond, 4,086,576, Cl. 340-272.000.
Lawson-Hemphill Inc.: *See—*
Lawson, John B.; Cooper, Charles Simpson; and Vail, Alfred Slocum, 4,085,547, Cl. 51-47.000.
Lawson, John B.; Cooper, Charles Simpson; and Vail, Alfred Slocum, to Lawson-Hemphill Inc. Skate sharpener. 4,085,547, Cl. 51-47.000.
Lawton, Valerie: *See—*
Shaw, Bryan; Lawton, Valerie; and McAinsh, James, 4,086,203, Cl. 260-40.00R.
Lazzaretti, Louis G.: *See—*
Capriotti, Alfred J.; and Lazzaretti, Louis G., 4,085,513, Cl. 33-286.000.
Leach, Daryl: *See—*
Dorsch, Robert; and Leach, Daryl, 4,085,896, Cl. 239-504.000.
Lee, Arnold St. Jacques, to Milstein Medical Research Foundation, Inc. Infusion pumps and dosage control means therefor. 4,085,747, Cl. 128-214.00F.
Lee, James Y.: *See—*
Ogle, James A.; and Lee, James Y., 4,086,516, Cl. 315-169.00R.
Lee, Kyu Tai, to Du Pont de Nemours, E. I., and Company. 6,7-Methylenedioxy-1-(2,2,2-trifluoroethyl)-4(1H)-quinolone-3-carboxylic acid. 4,086,236, Cl. 260-287.0AN.
Leger, Andre: *See—*
Cotrel, Claude; Crisan, Cornel; Jeanmart, Claude; and Leger, Andre, 4,086,348. Cl. 424-256.000.
Lehn, F. Heinrich; and Schmitter, Hans-Jurgen. Appliance for taking dental impressions and method and apparatus for making the same. 4,085,507, Cl. 32-17.000.
Leiber, Heinz; Gerstenmeier, Jurgen; and Klotz, Hermann, to Teldix GmbH. Testing arrangement for antilocking control system with two identical antilocking control units. 4,085,979, Cl. 303-92.000.
Leifeld, Ferdinand: *See—*
Ahrweiler, Klaus; Leifeld, Ferdinand; Quoos, Kurt; and Kusters, Eduard Finkenweg 18, 4,086,316, Cl. 264-120.000.
Lemkey, Franklin D.: *See—*
Brooks, Clyde S.; Lemkey, Franklin D.; and Golden, Gerald S., 4,086,264, Cl. 252-454.000.
Lenclud, Francois: *See—*
Bouche, Claude; and Lenclud, Francois, 4,086,197, Cl. 260-18.0PN.
Lender, Adam, to GTE Automatic Electric Laboratories Incorporated. Error detector for modified duobinary signals. 4,086,566, Cl. 340-146.1AB.
Lender, Adam, to GTE Automatic Electric Laboratories Incorporated. Apparatus and method for generating a high-accuracy 7-level correlative signal. 4,086,587, Cl. 340-347.0DD.
Lenox Hill Brace Shop: *See—*
Castiglia, Ignatius F., 4,085,758, Cl. 128-589.000.
Lenox Hill Brace Shop, Inc.: *See—*
Castiglia, Ignatius F., 4,085,746, Cl. 128-166.000.
Le Ruyet, Daniel; and De Vos, Daniel, to BFG Glassgroup. Composition of matter comprising cellular aggregate distributed in a binder. 4,086,098, Cl. 106-97.000.
Les Fabriques d'Assortiments Reunies: *See—*
Buhler, Roger; and Faivre, Christian, 4,086,521, Cl. 318-307.000.
Lesher, George Y.; and Singh, Baldev, to Sterling Drug Inc. 4-(Substituted-amino)-2-(pyridinyl) pyrimidine derivatives. 4,086,233, Cl. 260-256.40C.

Lever Brothers Company: *See—*
Holley, John Ernest Foster, 4,085,780, Cl. 141-1.000.
Levinthal, Michael L., to Thiokol Corporation. Propellant made with cocrystals of cyclotetramethylenetetranitramine and ammonium perchlorate. 4,086,110, Cl. 149-19.400.
Lew, Isaih. Locking device for dental prostheses. 4,085,506, Cl. 32-2.000.
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., to United States of America, Navy. Digital sidelobe canceller. 4,086,592, Cl. 343-100.0LE.
Lewis, David Warren; and Greenlaw, Robert K. Spinal column prostheses orthoses. 4,085,744, Cl. 128-69.000.
Li, Norman N.: *See—*
Cahn, Robert P.; and Li, Norman N., 4,086,163, Cl. 210-22.00D.
Liberts, John: *See—*
Anson, George; and Liberts, John, 4,085,701, Cl. 118-57.000.
Licari, James J.: *See—*
LaChapelle, Theodore J., Jr.; Davis, John R.; and Licari, James J., 4,086,375, Cl. 427-90.000.
Lichte, Leo James: *See—*
Weigl, James; and Lichte, Leo James, 4,085,766, Cl. 137-88.000.
Liedtke, Kurt: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,085,568, Cl. 53-234.000.
Lim, John; and Stamires, Dennis, to Filtrol Corporation. Attrition resistant zeolitic catalyst. 4,086,187, Cl. 252-455.00Z.
Limque, Ferdinand: *See—*
Luiten, Cornelis Hendricus; and Limque, Ferdinand, 4,086,050, Cl. 432-25.000.
Lindbald, Oskar Lennart. Blocking device preferably for reel-type safety belts for vehicles. 4,085,905, Cl. 242-107.40A.
Lindquist, Lars-Olof Edvard; Berglof, Jan Hakan; and Curling, John Malcolm, to Pharmacia Fine Chemicals AB. Method of isolating albumin from blood products. 4,086,222, Cl. 260-122.000.
Lingl Corporation: *See—*
Lingl, Hans, Sr., 4,085,635, Cl. 83-13.000.
Lingl, Hans, Sr., to Lingl Corporation. Wire brick cutter. 4,085,635, Cl. 83-13.000.
Linke, Walter R.: *See—*
Cox, Arthur; and Linke, Walter R., 4,086,000, Cl. 350-54.000.
Linke, Wolfgang: *See—*
Stedefeder, Joachim; Dorn, Ingo H.; Kuhn, Horst; Kastenhuber, Walter; and Linke, Wolfgang, 4,086,413, Cl. 528-499.000.
Linkletter, Merle G.: *See—*
Rempel, Cornelius N.; and Linkletter, Merle G., 4,086,131, Cl. 162-203.000.
Lions, Richard O., to Boeing Company, The. Area navigation system including a map display unit for establishing and modifying navigation routes. 4,086,632, Cl. 364-444.000.
Lippitsch, Josef: *See—*
Jurgens, Wolfgang; Nageler, Jorg; Lippitsch, Josef; and Holzner, Julius, 4,086,308, Cl. 261-124.000.
Lisiecki, Robert E.; Crawford, Duncan J.; and Wise, Daniel J., to Ex-Cell-O Corporation. Liquid proof flat top container with thumb notch release means. 4,085,885, Cl. 229-17.00R.
Lissner, Reinhard: *See—*
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, 4,086,362, Cl. 424-305.000.
Ljung, Bo Hans Gunnar, to Singer Company, The. Seal free liquid bearing. 4,085,982, Cl. 308-76.000.
Lockheed Corporation: *See—*
Allen, William P., Jr., 4,085,740, Cl. 128-2.05R.
Lockwood Corporation: *See—*
Roland, Murray C.; and Norum, Edward M., 4,086,507, Cl. 310-88.000.
Lodge, James Alec; and Jarrett, John James, to EMI Limited. Display apparatus for use in radiography. 4,086,492, Cl. 250-416.0TV.
Loechelt, Cecil P.: *See—*
Hornbaker, Edwin D.; Nugent, Adam, Jr.; and Loechelt, Cecil P., 4,086,414, Cl. 528-500.000.
Logan, Ted Joe: *See—*
Otten, Geneva Gail; Rheinecker, Tom Conrad; and Logan, Ted Joe, 4,086,079, Cl. 71-103.000.
Login, Robert Bernard: *See—*
Langdon, William Keith; and Login, Robert Bernard, 4,086,279, Cl. 260-615.00B.
Lohse, Joseph M.: *See—*
Crowe, Norman P.; and Lohse, Joseph M., 4,085,566, Cl. 53-124.00D.
Long, Thomas Lee: *See—*
Jernstrom, Hans Ebbe Ingevar; and Long, Thomas Lee, 4,085,540, Cl. 46-119.000.
Looker, Robert: *See—*
McLennan, Richard Earl; and Looker, Robert, 4,085,684, Cl. 105-482.000.
Losee, Jon R., to United States of America, Navy. Elliptical flywheel apparatus. 4,085,627, Cl. 74-574.000.
Loukes, David Gordon, to Pilkington Brothers Limited. Electrolytic ion migration into glass. 4,086,073, Cl. 65-30.00E.
Lovell, Robert; and Stott, John K. Reconditionable drill bit assembly. 4,085,809, Cl. 175-410.000.
Lowe, Warren, to Chevron Research Company. Lubricating oil additive composition. 4,086,172, Cl. 252-47.500.
Lucas Industries Limited: *See—*
Bicht, John Richard; and Warner, Peter Stuart, 4,085,945, Cl. 280-106.50R.
Davidson, Charles Patrick Duncan; and Bottoms, Harry Simister, 4,085,814, Cl. 180-33.00C.
Jenkinson, Jeremy Mark, 4,086,481, Cl. 362-428.000.
Lugosi, Robert, to Westinghouse Electric Corporation. Hydrostatic extrusion apparatus for producing hollow elongated bodies of rectangular cross section. 4,085,606, Cl. 72-60.000.
Luigi Franchi S.p.A.: *See—*
Panigoni, Giannantonio, 4,085,654, Cl. 89-191.00A.
Luiten, Cornelis Hendricus; and Limque, Ferdinand, to Ipsen Industries International. Method and apparatus for gas circulation in a heat treating furnace. 4,086,050, Cl. 432-25.000.
Luszcz, Edward T.: *See—*
Baker, William G.; Gisbrecht, James H.; and Luszcz, Edward T., 4,085,910, Cl. 244-3.160.
Mabry, Marshall W.: *See—*
Jones, Roy A.; and Mabry, Marshall W., 4,085,584, Cl. 60-250.000.
Machida, Hiroshi: *See—*
Nishioka, Kazumitsu; and Machida, Hiroshi, 4,086,032, Cl. 417-363.000.
Machida, Minoru: *See—*
Kawanabe, Tsuyoshi; and Machida, Minoru, 4,086,588, Cl. 340-365.00S.
Machinami, Tomoya: *See—*
Suami, Tetsuo; Machinami, Tomoya; and Hisamatsu, Takashi, 4,086,415, Cl. 536-22.000.
Mackey, Lindsay Joan: *See—*
Jarrett, William Fleming Hoggan; Jarrett, James Oswald; and Mackey, Lindsay Joan, 4,086,134, Cl. 195-1.200.
MacLean, John P.; and Strickland, John C., to Texaco Inc. Apparatus for fluidized catalytic cracking. 4,086,064, Cl. 23-288.00G.
MacLeay, Ronald Edward, to Pennwalt Corporation. Reduction process for making azo compound. 4,086,224, Cl. 260-192.000.
Mader, Frederick W.: *See—*
Jackson, Harold L.; and Mader, Frederick W., 4,085,518, Cl. 34-37.000.
Madison-Kipp Corporation: *See—*
Kast, Philip J.; and Schmitt, James F., 4,085,821, Cl. 184-15.00A.
Magnus, Arthur Howard: *See—*
Cohen, Stuart Barry; Clark, James Monroe; and Magnus, Arthur Howard, 4,086,436, Cl. 179-15.0AF.
Mahaffy & Harder Engineering Co.: *See—*
Mahaffy, Reid A.; Psota, Joseph M.; and Giordano, John A., 4,085,565, Cl. 53-112.00A.
Mahaffy, Reid A.; Psota, Joseph M.; and Giordano, John A., to Mahaffy & Harder Engineering Co. Packaging apparatus for forming specially shaped packages. 4,085,565, Cl. 53-112.00A.
Mahalla, Shalom. Copper crystal and process. 4,086,082, Cl. 75-.50A.
Mahl, Gunard O. B., to CHA Industries. Mounting for arms of a thin-film apparatus. 4,085,699, Cl. 118-500.000.
Mahon, Douglas K.: *See—*
Cizmic, Stipe; Edwards, Wayne L., Jr.; Jacques, James O.; Mahon, Douglas K.; and Shenfield, Leonard R., 4,086,636, Cl. 360-75.000.
Maiocchi, Luigi, to Industrie Pirelli S.p.A. Pneumatic tire for a vehicle having a radial carcass and improved beads. 4,085,787, Cl. 152-362.00R.
Majima, Kanji: *See—*
Tsuto, Keiichi; Majima, Kanji; and Imamura, Shigeyasu, 4,086,256, Cl. 260-400.000.
Majima, Teiji: *See—*
Matsuyama, Shunsuke; Tanahashi, Junichi; Imamura, Kenso; and Majima, Teiji, 4,086,661, Cl. 365-39.000.
Major, Emery: *See—*
Rainin, Edgar A.; and Major, Emery, 4,085,467, Cl. 3-13.000.
Malak, Stephen P. Radiation collimator for use with high energy radiation beams. 4,086,494, Cl. 250-505.000.
Malkani, Dalip T.; and Middlemiss, Andrew, to British Steel Corporation. Manufacture of metallic strip. 4,085,496, Cl. 29-527.200.
Mallatt, James Francis: *See—* .
Hawkins, Russell Olson; and Mallatt, James Francis, 4,085,860, Cl. 220-89.00B.
Malo, Lowell L.: *See—*
Harting, Gary L.; Sutter, Robert F.; and Malo, Lowell L., 4,085,683, Cl. 105-424.000.
Manduley, Flavio M.: *See—*
Coppola, Vincent G.; Manduley, Flavio M.; and Dlugos, Daniel F., 4,086,530, Cl. 324-133.000.
Mangiardi, Vito J.: *See—*
Willner, Howard; and Mangiardi, Vito J., 4,086,059, Cl. 23-230.300.
Mann, Harald. Multi-storied building. 4,085,555, Cl. 52-169.600.
Mann, Paul T.: *See—*
Bosley, Roy E.; Mann, Paul T.; Decoteau, Gary D.; Ivie, Kert F.; and Winslow, Elden D., 4,086,368, Cl. 426-464.000.
Mansfield, Peter W.: *See—*
Holden, Herbert K.; and Mansfield, Peter W., 4,085,663, Cl. 93-1.00C.
Manson, Harry G., to Hansen Manufacturing Company Inc. Sandwiched slip ring assembly. 4,086,509, Cl. 310-232.000.
Mantz, Arlan Warren, to Block Engineering, Inc. Method and apparatus for analyzing a time-dependent phenomenon. 4,086,652, Cl. 364-525.000.
Manufacturers Systems, Inc.: *See—*
Anderson, Leroy E.; Schmidt, Michael P.; and Weaver, William W., 4,085,604, Cl. 72-50.000.
Mao, George W.; and Rao, Purushothama, to Gould Inc. Method for

reducing the float current of maintenance-free battery. 4,086,392, Cl. 429-50.000.
Mapp, Calvin R. Illuminated hoop toy. 4,085,541, Cl. 46-228.000.
Marcinkiewicz, Michael John. Hand loaded shot shell. 4,085,677, Cl. 102-42.00R.
Marcio', Pietro, to Sant' Andrea Novara Officine Meccaniche e Fonderie S.p.A. Bobbin-changing device with automatic means for severing the thread or strip. 4,085,900, Cl. 242-18.0DD.
Marco, Francis William, to Milliken Research Corporation. Surface modified continuous filament yarn and method of producing same. 4,086,055, Cl. 8-130.100.
Marconi, Joseph. Blanking die and holder construction for punch presses. 4,085,639, Cl. 83-157.000.
Marincic, Nikola: *See*—
Goebel, Franz; and Marincic, Nikola, 4,086,397, Cl. 429-105.000.
Marion Power Shovel Co., Inc.: *See*—
Baron, George B., 4,085,854, Cl. 214-138.00R.
Markakis, Michael J., to SCM Corporation. Rotary magnetic storage medium for typewriters. 4,085,836, Cl. 197-19.000.
Marsh, Preston. Farm crop pick-up apparatus. 4,085,573, Cl. 56-364.000.
Marshall, Bruce H.; and Blenner, Henry E. Electrical socket. 4,085,991, Cl. 339-75.00P.
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, to Archifar Industrie Chimiche del Trentino S.p.A. Rifamycin compounds. 4,086,225, Cl. 260-239.30P.
Martin-Decker Company: *See*—
Bell, Leo A.; and Peterson, Norbert C., 4,085,509, Cl. 33-134.00R.
Martin, Edward S.; and Wohleber, David A., to Aluminum Company of America. Production of aluminum chloride from raw materials containing aluminum compounds and silicon compounds. 4,086,320, Cl. 423-135.000.
Martin, Ernest Newell. Water filtering and dispensing apparatus. 4,086,166, Cl. 210-134.000.
Martin, Harold G.: *See*—
Robinson, William J.; and Martin, Harold G., 4,085,812, Cl. 180-6.480.
Martini, Hans: *See*—
Thiel, Alfons W.; Martini, Hans; Wolf, Peter; and Runkel, Albert, 4,085,517, Cl. 34-21.000.
Martinsons, Aleksandrs; and Crenshaw, Marilyn, to PPG Industries, Inc. Cathode electrocatalyst. 4,086,149, Cl. 204-59.00R.
Maruyama, Mitsuaki: *See*—
Ido, Kazuo; and Maruyama, Mitsuaki, 4,086,654, Cl. 364-705.000.
Masamune, Naoki: *See*—
Kinoshita, Kazuhisa; and Masamune, Naoki, 4,086,104, Cl. 148-12.00E.
Mascioli, Rocco L.: *See*—
Bechara, Ibrahim S.; Zaluska, Philip J.; and Mascioli, Rocco L., 4,086,213, Cl. 260-77.5AB.
Mashimo, Yukio: *See*—
Ito, Fumio; Ito, Tadashi; Mashimo, Yukio; Sakurada, Nobuaki; and Shinoda, Nobuhiko, 4,086,581, Cl. 354-23.00D.
Kozuki, Susumu; Uchiyama, Takashi; Ito, Tadashi; Iwashita, Tomonori; Uchidoi, Masanori; and Mashimo, Yukio, 4,086,603, Cl. 354-204.000.
Masika, Nicholas. Drying device. 4,085,519, Cl. 34-104.000.
Masili, Dino, to Industrie A. Zanussi S.p.A. Electronic circuits for the generation of special effects in the visualization system of symbols on a kinescope especially for television games. 4,086,578, Cl. 340-324.0AD.
Mason, John James, to J. J. Mason Limited. Amusement device. 4,085,935, Cl. 273-185.00D.
Massachusetts Institute of Technology: *See*—
Gustafson, Donald E.; and Speyer, Jason L., 4,086,539, Cl. 328-155.000.
Kaplow, Roy; and Frank, Robert I., 4,086,485, Cl. 250-203.00R.
Massey-Ferguson Inc.: *See*—
Worback, David L., 4,085,855, Cl. 214-138.00D.
Masuda, Etsuro: *See*—
Ito, Yukio; Yasumoto, Yosiro; Masuda, Etsuro; and Suzuki, Hiroshi, 4,086,327, Cl. 423-385.000.
Masuda, Hiroo: *See*—
Yoshida, Isao; Hori, Ryoichi; Masuda, Hiroo; Minato, Osamu; Etoh, Jun; and Nakai, Masaaki, 4,086,642, Cl. 361-91.000.
Masuda, Yukiya: *See*—
Sugio, Akitoshi; Masuda, Yukiya; Kobayashi, Toshihiko; Nakano, Koichi; and Sawai, Tsukasa, 4,086,128, Cl. 156-668.000.
Masumoto, Katashi; Furubayashi, Ei-ichi; and Inoue, Wahei, to Director National Research Institute for Metals, The; and Kabushiki Kaisha Maekawa Seisakusho. Can for use in canned motor. 4,086,508, Cl. 310-86.000.
Mathers, James P.; Olszanski, Theodore W.; and Boquist, Carl W., to United States of America, Energy. Electrochemical cell with powdered electrically insulative material as a separator. 4,086,396, Cl. 429-103.000.
Mathwig, Richard G. Solar energy heat exchanger and method for making same. 4,085,491, Cl. 29-157.3AH.
Mathys, Wilbur L.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,086,627, Cl. 364-200.000.
Matolcsy, Gyorgy; Bordas, Barna; Bokor, Gyorgy; Dombay, Zsolt; Pinter, Zoltan; Gregar, Erzsebet, nee Toth; Dudas, Julianna, nee Sz. Kiss; Nagy, Emilia, nee Gera; and Fodor, Istvan, to Eszakmagyarorszagi Vegyimuvek. Metal complexes of antimicrobic effect. 4,086,339, Cl. 424-245.000.
Matsubara, Masanori: *See*—
Yoshikawa, Naohiro; Sato, Sadaharu; Matsubara, Masanori; and Hosoda, Masao, 4,085,675, Cl. 101-269.000.
Matsuda, Ken; and Barber, William Austin, to American Cyanamid Company. Reduced copper catalyst on support. 4,086,275, Cl. 260-561.00N.
Matsuki, Mutsuo: *See*—
Mori, Taketoshi; Goto, Susumu; Katsuragi, Asaichi; and Matsuki, Mutsuo, 4,086,295, Cl. 260-857.00L.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kajino, Jirou; and Ohara, Naoyuki, 4,085,698, Cl. 116-114.00J.
Kuninobu, Shigeo; and Ishihara, Takeshi, 4,085,499, Cl. 29-571.000.
Nitta, Tsuneharu; Terada, Ziro; and Hayakawa, Shigeru, 4,086,556, Cl. 338-35.000.
Takano, Kazuro, 4,086,449, Cl. 179-181.00R.
Ueda, Yasukiyo; Mori, Keiichi; and Mori, Keijiro, 4,085,921, Cl. 251-129.000.
Matsuyama, Glen, to Graphic Arts Packaging Corporation. Carton assembly. 4,085,841, Cl. 206-45.150.
Matsuyama, Shunsuke; Tanahashi, Junichi; Imamura, Kenso; and Majima, Teiji, to Fujitsu Limited. Cylindrical magnetic domain element. 4,086,661, Cl. 365-39.000.
Matthey Rustenburg Refiners (Pty) Ltd.: *See*—
Oliver, Raymond Edward; and Payne, John Blunden, 4,086,084, Cl. 75-118.00R.
Mautz, Karl-Heinz: *See*—
Weiland, Emil; Schwarz, Alois; Mautz, Karl-Heinz; and Frommlet, Hubert, 4,086,024, Cl. 416-140.000.
Mauvernay, Roland-Yves; Pourrat, Henri-Jean; and Lamaison, Jean-Louis, to Centre Europeen de Recherches Mauvernay "C.E.R.M.". Glycoprotein extracted from the mushroom psalliota xanthoderma and its application in anti-viral therapy. 4,086,216, Cl. 260-112.00R.
Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; Simond, Jacques; and Monteil, Andre, to Centre Europeen de Recherches Mauvernay. Certain 6-aryloxy-2-oxo-1-aza-4-thia-spiro[4,5]decanes. 4,086,352, Cl. 424-270.000.
Mavrovic, Ivo. Urea synthesis with improved heat recovery and conversion. 4,086,271, Cl. 260-555.00A.
Maxey, Van Q. Method of rigidifying work rest blade for centerless grinder. 4,086,065, Cl. 29-446.000.
Mayer, Kurt: *See*—
Seibert, Walter; Riedel, Guenther; and Mayer, Kurt, 4,086,054, Cl. 8-89.00R.
Mayer, Robert, to Suntech, Inc. Control system for cooling tower fans. 4,085,594, Cl. 62-171.000.
Mayes, David G.: *See*—
Golias, Tipton L.; and Mayes, David G., 4,086,372, Cl. 427-2.000.
Mayhew, Donald J.: *See*—
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., 4,085,490, Cl. 29-156.600.
Maynard, Michael: *See*—
Gates, Albert George Ronald; and Maynard, Michael, 4,085,671, Cl. 101-128.100.
Mayrhofer, Max; and Taschner, Walter, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Method of producing fine-grain sheet or fine-grain plate of austenitic steels. 4,086,105, Cl. 148-12.00R.
McAinsh, James: *See*—
Shaw, Bryan; Lawton, Valerie; and McAinsh, James, 4,086,203, Cl. 260-40.00R.
McBride, Michael Eudell, to International Business Machines Corporation. Automatic format control for text printing system. 4,086,660, Cl. 364-900.000.
McCardell, Willard B., to Altair Tool & Engineering Inc. Connector block and terminal assembly. 4,085,989, Cl. 339-59.00M.
McCartan, Daniel A.: *See*—
Finn, Lawrence R.; McCartan, Daniel A.; and Schmandt, Gary M., 4,085,562, Cl. 53-59.00R.
McCarthy, James R.; and Moore, Jimmie L., to Dow Chemical Company, The. N,15-Didehydro-15-deoxo-3,15-epi(methano(alkylimino))rifamycins and antimicrobial compositions and methods employing them. 4,086,344, Cl. 424-251.000.
McClosky, Robert B., to Wrap-ade Machine Company, Inc. Apparatus and method of forming covers for flexible commodity-containing packages. 4,085,560, Cl. 53-27.000.
McClure, Carroll D.; and Hodge, John D., Jr., to Mobil Oil Corporation. Method for producing half-tone, variable-density seismic trace recordings. 4,086,600, Cl. 346-1.000.
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., to Ramsey Corporation. Method of making a rolled metal piston ring. 4,085,490, Cl. 29-156.600.
McDermid, Terry: *See*—
Sherman, Clarence A., 4,085,960, Cl. 296-28.00C.
McDermott, Arthur R., to Nalco Chemical Company. Method for preventing microorganism induced corrosion of hydrocarbon liquid storage tanks. 4,086,066, Cl. 44-51.000.
McDonald, James A. Electromagnetic system. 4,086,505, Cl. 310-74.000.
McDonnell Douglas Corporation: *See*—
Kam, Clifford Y.; Freeman, Vernon L.; and Penton, Allen P., 4,086,378, Cl. 428-36.000.
McElroy, Arthur H. Polyethylene internal bead remover. 4,085,505, Cl. 30-278.000.

McElroy, James A., to McElroy, James A. Portable cable reel drive. 4,085,904, Cl. 242-54.00R.
McGinnis, Peter J.: *See*—
Gryctko, Carl E.; Michetti, Anthony B.; and McGinnis, Peter J., 4,085,622, Cl. 74-53.000.
McGurty, James A. Austenitic iron alloys. 4,086,085, Cl. 75-124.000.
McIlvried, Howard G.; and Montagna, Angelo A., to Gulf Research & Development Company. Process for upgrading solids-containing liquid hydrocarbon oils. 4,086,158, Cl. 208-264.000.
McIntyre, Margaret H.: *See*—
Nnadi, John C.; and McIntyre, Margaret H., 4,086,173, Cl. 252-51.50A.
McKinnon, Russell J.: *See*—
Holley, Carl A.; and McKinnon, Russell J., 4,086,321, Cl. 423-150.000.
McLain, Philippe Hardy-The; and Shepherd, Bob Gene, to Shakespeare Company. Apparatus for automatically anchoring, twisting and winding filament, or the like, onto a spool. 4,085,574, Cl. 57-68.000.
McLay, William J.: *See*—
Aronoff, Edward I.; McLay, William J.; and Mitchell, Robert E., 4,085,484, Cl. 26-84.000.
McLennan, Richard Earl; and Looker, Robert, to Satron, Inc. Quick disconnect tie-down anchor. 4,085,684, Cl. 105-482.000.
McLeod, Gordon D., to Mobile Oil Corporation. Coating composition. 4,086,095, Cl. 106-1.170.
McLeod, Gordon D., to Mobile Oil Corporation. Coating composition. 4,086,096, Cl. 106-1.170.
McMorrow, Joseph L.: *See*—
Pejouhy, Radi; and McMorrow, Joseph L., 4,086,558, Cl. 337-102.000.
McWhorter, Edward Milton. Intra-articulate reciprocating engine system. 4,085,628, Cl. 74-579.00E.
Meisei Electric Co. Ltd.: *See*—
Shibata, Toshiji; and Fujiwara, Shinji, 4,086,535, Cl. 325-128.000.
Meldau, Robert F.: *See*—
Trantham, Joseph C.; and Meldau, Robert F., 4,085,797, Cl. 166-245.000.
Mellen, Robert H., Sr. Dynamic gradient furnace and method. 4,086,424, Cl. 13-24.000.
Mensch, William D., Jr.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,086,627, Cl. 364-200.000.
Merck & Co., Inc.: *See*—
Firestone, Raymond A.; Ratcliffe, Ronald W.; and Christensen, Burton G., 4,086,423, Cl. 544-21.000.
Scriabine, Alexander, 4,086,354, Cl. 424-273.00R.
Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, 4,086,362, Cl. 424-305.000.
Esselborn, Reiner; and Bernhard, Horst, 4,086,100, Cl. 106-291.000.
Merrifield, Fred C. Snowshoe. 4,085,529, Cl. 36-125.000.
Mesenbrink, Michael V. Forced air room heater for Franklin stove. 4,085,725, Cl. 126-110.00B.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Weiland, Emil; Schwarz, Alois; Mautz, Karl-Heinz; and Frommlet, Hubert, 4,086,024, Cl. 416-140.000.
Metzger, Karl Georg: *See*—
Krohn, Wolfgang; Metzger, Karl Georg; Preiss, Michael; and Walkowiak, Michael, 4,086,341, Cl. 424-246.000.
Schrock, Wilfried; Konig, Hans-Bodo; Preiss, Michael; Metzger, Karl Georg; and Walkowiak, Michael, 4,086,340, Cl. 424-246.000.
Meuschke, Robert E.; and Satterlee, Adelbert E., to Westinghouse Electric Corporation. Combined fuel assembly and thimble plug gripper for a nuclear reactor. 4,086,132, Cl. 176-30.000.
Meyer, Edward D.: *See*—
Schriever, William W., 4,085,661, Cl. 92-170.000.
Meyer, Jerome W., to Singer Company, The. Simulated digital radar system with earth curvature and atmospheric effects. 4,085,524, Cl. 35-10.400.
Michael, Anthony Dennis; White, John Albert; and Griffin, Gerald Louis, to Glacier Metal Company Limited, The. Recovering material. 4,086,083, Cl. 75-64.000.
Michaels, Walter L., to Plainville Special Tool, Inc. Apparatus for cutting scrap strip. 4,085,637, Cl. 83-69.000.
Michetti, Anthony B.: *See*—
Gryctko, Carl E.; Michetti, Anthony B.; and McGinnis, Peter J., 4,085,622, Cl. 74-53.000.
Middlemiss, Andrew: *See*—
Malkani, Dalip T.; and Middlemiss, Andrew, 4,085,496, Cl. 29-527.200.
Midland-Ross Corporation: *See*—
Breisch, John H., 4,085,589, Cl. 60-626.000.
Midorikawa, Yoshio, to Glasrock Products, Inc. Writing pen core having an integral nib and ink reservoir and method of manufacture. 4,086,312, Cl. 264-46.600.
Miksitz, Frank J. Orbital plate feeder. 4,085,871, Cl. 222-404.000.
Miller, Elgin J. Coupling mechanism. 4,086,013, Cl. 403-292.000.
Miller, Fredric S., to Universal Manufacturing Corporation. Automatic capacitor winding machine. 4,086,495, Cl. 250-561.000.
Miller, George A.: *See*—
Owen, Ronald P.; Miller, George A.; and Schneider, Charles M., 4,086,336, Cl. 424-204.000.
Miller, Lindell L., to Caterpillar Tractor Co. Vehicle component assembly. 4,085,815, Cl. 180-54.00R.
Miller Western Corporation: *See*—
Weisgerber, Willi; and Federhen, Ernst, 4,085,930, Cl. 271-204.000.
Milliken Research Corporation: *See*—
Engels, Walter; and Willbanks, Charles E., 4,085,700, Cl. 118-37.000.
Marco, Francis William, 4,086,055, Cl. 8-130.100.
Mills, Brian: *See*—
Smith, Clive Richard; and Mills, Brian, 4,085,688, Cl. 110-238.000.
Milstein Medical Research Foundation, Inc.: *See*—
Lee, Arnold St. Jacques, 4,085,747, Cl. 128-214.00F.
Minami, Hidehiro, to Nissan Motor Co., Ltd. Internal combustion engine with air-fuel ratio control device. 4,085,716, Cl. 123-119.0EC.
Minato, Osamu: *See*—
Yoshida, Isao; Hori, Ryoichi; Masuda, Hiroo; Minato, Osamu; Etoh, Jun; and Nakai, Masaaki, 4,086,642, Cl. 361-91.000.
Minifie, Bernard W.; and Czyzewski, Ted S., to Dover Corporation. Method for manufacturing crystalline confectionery food products. 4,086,371, Cl. 426-658.000.
Minnesota Mining and Manufacturing Company: *See*—
Brown, James N., 4,086,388, Cl. 428-315.000.
Hedin, David C., 4,086,068, Cl. 51-395.000.
Moore, George G. I.; and Harrington, Joseph Kenneth, 4,086,255, Cl. 260-397.600.
Pierce, James N., 4,085,838, Cl. 197-181.000.
Minolta Camera K.K.: *See*—
Toriumi, Shiro; and Endo, Hiroshi, 4,086,469, Cl. 235-92.0MP.
Minot, Michael Jay; and Ortabasi, Ugur, to Corning Glass Works. Antireflective layers on phase separated glass. 4,086,074, Cl. 65-31.000.
Minton, Clarence W. Ring saw for circular knitting machine. 4,085,598, Cl. 66-145.00R.
Mishra, Anupama, to Uniroyal Ltd. Stable electrets of styrene-type polymers. 4,086,499, Cl. 307-88.0ET.
Mitamura, Isao, to Tomy Kogyo Co., Inc. Sonic responsive toy vehicle steering system. 4,085,542, Cl. 46-256.000.
Mitani, Minoru: *See*—
Mitani, Seishu; Kudo, Tsuneo; Mitani, Minoru; and Saido, Shuichi, 4,086,390, Cl. 428-550.000.
Mitani, Seishu; Kudo, Tsuneo; Mitani, Minoru; and Saido, Shuichi, to Japan Powder Metallurgy Co., Ltd. Flywheel for recording and or reproducing apparatus. 4,086,390, Cl. 428-550.000.
Mitchell, Robert E.: *See*—
Aronoff, Edward I.; McLay, William J.; and Mitchell, Robert E., 4,085,484, Cl. 26-84.000.
Mitchell, Thomas Owen; and Whitehurst, Darrell Duayne, to Mobil Oil Corporation. Methanation over synthetic amorphous silicas. 4,086,261, Cl. 260-449.00M.
Mitchnick, Victor: *See*—
Hyland, Albert L.; and Mitchnick, Victor, 4,086,400, Cl. 429-122.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Nishizawa, Jun-ichi; Nakamura, Kentaro; and Kitsuregawa, Takashi, 4,086,611, Cl. 357-38.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Sugio, Akitoshi; Masuda, Yukiya; Kobayashi, Toshihiko; Nakano, Koichi; and Sawai, Tsukasa, 4,086,128, Cl. 156-668.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Nishioka, Kazumitsu; and Machida, Hiroshi, 4,086,032, Cl. 417-363.000.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Yazaki, Takao; and Hattori, Kazuhide, 4,086,116, Cl. 156-205.000.
Mitsubishi Yuka Pharmaceutical Co., Ltd.: *See*—
Morinaka, Yasuhiro; and Takahashi, Kazuo, 4,086,349, Cl. 424-258.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Mizui, Kinya; and Wakumoto, Hiroshi, 4,086,198, Cl. 260-23.70C.
Miu, Ming T.: *See*—
Negi, Virendra S.; and Miu, Ming T., 4,086,474, Cl. 364-757.000.
Miyabe, Atsushi, to Hochiki Corporation. Fire detection system. 4,086,574, Cl. 340-227.00R.
Miyabe, Yoshio, to Oji Yuka Goseishi Kabushiki Kaisha. Process for production of a synthetic paper improved against dusting trouble. 4,086,317, Cl. 264-134.000.
Miyake, Kazuhiko; and Yamada, Bunkichi, to Tokyo Shibaura Electric Co., Ltd. Special image effect producing apparatus. 4,086,619, Cl. 358-183.000.
Miyamoto, Seigo; Takezoe, Kazuo; Yahagi, Hayao; and Sugimoto, Shigeo, to Hitachi, Ltd. Absorption refrigerator of double effect type. 4,085,596, Cl. 62-476.000.
Mizuba, Seth S.: *See*—
Jiu, James; and Mizuba, Seth S., 4,086,268, Cl. 560-252.000.
Mizui, Kinya; and Wakumoto, Hiroshi, to Mitsui Petrochemical Industries, Ltd. Composition for hot melt-type white traffic paint. 4,086,198, Cl. 260-23.70C.
Mobil Oil Corporation: *See*—
Chang, Clarence D.; Lang, William H.; and Silvestri, Anthony J., 4,086,262, Cl. 260-449.60R.
Kaeding, Warren W.; and Young, Lewis B., 4,086,287, Cl. 260-671.00R.
McClure, Carroll D.; and Hodge, John D., Jr., 4,086,600, Cl. 346-1.000.

Mitchell, Thomas Owen; and Whitehurst, Darrell Duayne, 4,086,261, Cl. 260-449.00M.
Nnadi, John C.; and McIntyre, Margaret H., 4,086,173, Cl. 252-51.50A.
Osborn, Paul V., 4,085,822, Cl. 186-1.00A.
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., 4,086,186, Cl. 252-430.000.

Mobile Oil Corporation: *See—*
McLeod, Gordon D., 4,086,095, Cl. 106-1.170.
McLeod, Gordon D., 4,086,096, Cl. 106-1.170.

Mochizuki, Hiroshi: *See—*
Tanaka, Eizi; Ohashi, Michihiro; and Mochizuki, Hiroshi, 4,085,723, Cl. 123-139.0AW.

Moleyre, Jacques: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; Simond, Jacques; and Monteil, Andre, 4,086,352, Cl. 424-270.000.

Monaghan, Peter J.: *See—*
Sweet, Robert D., Jr.; and Monaghan, Peter J., 4,086,115, Cl. 156-178.000.

Monsanto Company: *See—*
Argo, Wesley B.; Chen, Gilbert K. C.; Kocatas, Babur M.; and Ziebold, Steven A., 4,086,070, Cl. 55-97.000.
Birum, Gail H., 4,086,205, Cl. 260-45.80R.
Bollinger, Frederic G.; and D'Amico, John J., 4,086,078, Cl. 71-94.000.
Knox, Walter R.; Hill, James C.; Hughes, Lawrence J.; and Foerst, Paul W., 4,086,195, Cl. 260-2.50N.
Morgan, Albert W.; Schumacher, Ignatius; and Vanderlinde, William, 4,086,302, Cl. 260-926.000.

Montagna, Angelo A.: *See—*
McIlvried, Howard G.; and Montagna, Angelo A., 4,086,158, Cl. 208-264.000.

Montay, Tibor: *See—*
Toth, Geza; Toth, Istvan; and Montay, Tibor, 4,086,246, Cl. 260-340.90R.

Montedison S.p.A.: *See—*
Gozzo, Franco; Rondanelli, Alfredo; and Rossi, Giorgio, 4,086,226, Cl. 260-239.0BF.

Monteil, Andre: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; Simond, Jacques; and Monteil, Andre, 4,086,352, Cl. 424-270.000.

Montgomery, Harry T.: *See—*
Fisher, Howard M.; and Montgomery, Harry T., 4,085,924, Cl. 266-241.000.

Moore, George G. I.; and Harrington, Joseph Kenneth, to Minnesota Mining and Manufacturing Company. Perfluoroalkylsulfonamidoaryl compounds. 4,086,255, Cl. 260-397.600.

Moore, Jimmie L.: *See—*
McCarthy, James R.; and Moore, Jimmie L., 4,086,344, Cl. 424-251.000.

Moore, Raymond H.; and Stegen, Gary E., to United States of America, Energy. Process for removal of sulfur compounds from fuel gases. 4,086,323, Cl. 423-210.500.

Moore, Richard D., to Plastic Techniques, Inc. Disc filter chute liner. 4,086,168, Cl. 210-330.000.

Moore, Robert J.: *See—*
Wood, Donald L.; Moore, Robert J.; and Rhodes, Robert B., 4,086,171, Cl. 252-33.000.

Moran, Robert L.: *See—*
Siwiak, Kazimierz; and Moran, Robert L., 4,086,591, Cl. 343-18.00A.

Moreau, Marc, to Trefimetaux. Method and apparatus for continuously measuring the annealing level on wires or strips. 4,085,922, Cl. 266-90.000.

Morello, Herbert J.: *See—*
Beck, Robert; Morello, Herbert J.; and Richardson, Jack M., 4,085,687, Cl. 109-24.100.

Morgan, Albert W.; Schumacher, Ignatius; and Vanderlinde, William, to Monsanto Company. Phosphoroamidates. 4,086,302, Cl. 260-926.000.

Morgan, Burton D., to Concept Development Institute, Inc. Windmill. 4,086,023, Cl. 416-132.00B.

Morgret, Gordon L.: *See—*
Cosby, James L.; and Morgret, Gordon L., 4,086,120, Cl. 156-473.000.

Mori, Kaoru: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,086,136, Cl. 195-29.000.

Mori, Keiichi: *See—*
Ueda, Yasukiyo; Mori, Keiichi; and Mori, Keijiro, 4,085,921, Cl. 251-129.000.

Mori, Keijiro: *See—*
Ueda, Yasukiyo; Mori, Keiichi; and Mori, Keijiro, 4,085,921, Cl. 251-129.000.

Mori, Kenshi: *See—*
Saito, Toranosuke; Kitani, Masakatu; Mori, Kenshi; and Izawa, Shinichi, 4,086,206, Cl. 260-45.8NT.

Mori, Koh: *See—*
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, 4,086,209, Cl. 260-49.000.

Mori, Taketoshi; Goto, Susumu; Katsuragi, Asaichi; and Matsuki, Mutsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyamide composition. 4,086,295, Cl. 260-857.00L.

Morikawa, Tadanori: *See—*
Sakakibara, Shumpei; Morikawa, Tadanori; Munekata, Eisuke; Kimura, Terutoshi; Nakagawa, Yasuo; and Noda, Toshiharu, 4,086,221, Cl. 260-112.50T.

Morinaka, Yasuhiro; and Takahashi, Kazuo, to Mitsubishi Yuka Pharmaceutical Co., Ltd. Quinolopyran-4-one-2-carboxylic acid derivatives and salts thereof as novel compounds and as medicines for treatment of allergic asthma. 4,086,349, Cl. 424-258.000.

Moritz, Robert Rudolph: *See—*
Freeman, Christopher; and Moritz, Robert Rudolph, 4,086,022, Cl. 415-119.000.

Moriya, Ryusuke: *See—*
Hashizaki, Kazuo; and Moriya, Ryusuke, 4,086,520, Cl. 318-269.000.

Morris, James B. N., to Wonder Products Company. Hydril-type connector. 4,085,951, Cl. 285-334.000.

Morris, Lisa Marie. Process for the preparation of powdered metal parts. 4,086,087, Cl. 75-200.000.

Mortier, Frans H.; and Degraeve, Frans, to Sperry Rand Corporation. Resilient mounting for agricultural machinery attachment. 4,085,571, Cl. 56-208.000.

Morton, Douglas Ross, Jr., to Upjohn Company, The. Cis-13-PGD_2 compounds. 4,086,259, Cl. 260-413.000.

Moss, Gerald, to Exxon Research & Engineering Co. Combustion or part-combustion in fluidized beds. 4,085,707, Cl. 122-4.00D.

Moss, Theron V., to South Eastern Cordage Company. Mop constructions and method of making same. 4,085,476, Cl. 15-229.00A.

Motorola, Inc.: *See—*
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,086,627, Cl. 364-200.000.
Brown, Kenneth Harvey, 4,086,430, Cl. 178-88.000.
Clark, Lowell E.; and Saltich, Jack L., 4,086,610, Cl. 357-34.000.
Gauss, Robert C.; Sathe, Hemant T.; and Wills, Lynn D., 4,086,596, Cl. 343-715.000.
Knappenberger, Thomas A., 4,086,426, Cl. 174-68.500.
Padgitt, Kenneth Warren; and Kujawski, Stanley Marion, 4,086,557, Cl. 338-42.000.
Ryon, Donald Carroll, 4,085,645, Cl. 84-1.010.

Mounier, Francois: *See—*
Prudhon, Francois; Fantino, Jean; and Mounier, Francois, 4,086,099, Cl. 106-109.000.

Mounts, Frank William: *See—*
Bowen, Edward George; Mounts, Frank William; and Netravali, Arun Narayan, 4,086,620, Cl. 358-260.000.

Mucha, George M.: *See—*
Day, Paul L.; and Mucha, George M., 4,086,464, Cl. 219-156.000.

Mueller, Karl, to Xerox Corporation. Method and apparatus for fuser assembly cooling in an electrostatographic machine. 4,085,794, Cl. 165-1.000.

Mughannam, Adil A., to FMC Corporation. Heat exchange apparatus for products in containers. 4,085,668, Cl. 99-483.000.

Muir, Andrew Redvers; and Vergato, Joseph Anthony, to Perkin-Elmer Corporation, The. Electrical output peak detecting apparatus. 4,086,651, Cl. 364-487.000.

Mulhern, Mary M., executrix: *See—*
Nessler, Charles A., deceased; and Mulhern, Mary M., executrix, 4,086,017, Cl. 408-89.000.

Mullaney, Norbert F.: *See—*
Hartzell, Herschell H.; and Mullaney, Norbert F., 4,085,831, Cl. 188-210.000.

Muller, Hans, to Grapha-Holding AG. Apparatus for gathering folded sheets in bookbinding machines. 4,085,927, Cl. 270-54.000.

Muller, Joseph M., to Jones & Laughlin Steel Corporation. Coke oven door lining. 4,086,145, Cl. 202-248.000.

Muller, Kurt, to Kabel-und Metallwerke Gutehoffnungshutte AG. Helically corrugating tubes. 4,085,607, Cl. 72-77.000.

Muller, Mathias, to Durr - Dental KG. X-ray film processor. 4,086,607, Cl. 354-299.000.

Muller, Monika: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.

Multifold-International, Inc.: *See—*
Crowe, Norman P.; and Lohse, Joseph M., 4,085,566, Cl. 53-124.00D.

Munekata, Eisuke: *See—*
Sakakibara, Shumpei; Morikawa, Tadanori; Munekata, Eisuke; Kimura, Terutoshi; Nakagawa, Yasuo; and Noda, Toshiharu, 4,086,221, Cl. 260-112.50T.

Murayama, Ken; and Kashihara, Takao, to Toyo Boseki Kabushiki Kaisha. Flame resistant polyesters. 4,086,208, Cl. 260-47.00C.

Murphy, Herbert R. Apparatus for interiorly cleaning lengths of pipe. 4,085,474, Cl. 15-104.10R.

Murphy, Marvin L., Jr.: *See—*
Ezell, George D.; Murphy, Marvin L., Jr.; and Davis, Paul D., Jr., 4,086,504, Cl. 340-15.5TS.

Murray, Robert Malcolm Stuart: *See—*
Pitches, Brian Edward; and Murray, Robert Malcolm Stuart, 4,086,569, Cl. 340-167.00R.

Murray, Russell, to Columbia Research Corporation. System for inspecting can lids for through the lid flaws. 4,086,497, Cl. 250-562.000.

Mutoh, Fumio; Koizumi, Hiroshi; Yamasaki, Jun; and Ando, Toshifumi,

to Japan Oxygen Co., Ltd. Process for freezing cooked rice. 4,086,369, Cl. 426-519.000.
Myers, David M.; and Lamping, Harold D., to Curtiss-Wright Corporation. Rotary engine with pilot and main fuel nozzles downstream of top center. 4,085,712, Cl. 123-205.000.
Myntti, Jon N.: *See*—
Honebrink, Erik N.; and Myntti, Jon N., 4,086,005, Cl. 352-133.000.
Nadelson, Jeffrey, to Sandoz, Inc. Intermediates in the preparation of isoxazolyl benzamides. 4,086,243, Cl. 260-325.0PH.
Nadelson, Jeffrey, to Sandoz, Inc. Substituted isoxazolo pyridinones. 4,086,421, Cl. 544-127.000.
Nagano, Mineo; and Tanaka, Koji, to Toyo Soda Manufacturing Co., Ltd. Method of removing vinyl chloride monomer from a vinyl chloride polymer. 4,086,411, Cl. 528-480.000.
Nageler, Jorg: *See*—
Jurgens, Wolfgang; Nageler, Jorg; Lippitsch, Josef; and Holzner, Julius, 4,086,308, Cl. 261-124.000.
Nagy, Emilia, nee Gera: *See*—
Matolcsy, Gyorgy; Bordas, Barna; Bokor, Gyorgy; Dombay, Zsolt; Pinter, Zoltan; Gregar, Erzsebet, nee Toth; Dudas, Julianna, nee Sz. Kiss; Nagy, Emilia, nee Gera; and Fodor, Istvan, 4,086,339, Cl. 424-245.000.
Nagy, Janos. Multi-bladed knife. 4,085,504, Cl. 30-123.000.
Nahodyl, Richard J., to Grumman Aerospace Corporation. Vertical takeoff and landing aircraft. 4,085,911, Cl. 244-12.400.
Naito, Kazuo: *See*—
Nakauchi, Hideo; Osaki, Toshiyuki; Naito, Kazuo; and Inque, Sakae, 4,086,211, Cl. 260-75.0NA.
Nakagawa, Taizo; Ohmori, Kaoru; Watanabe, Yutaka; Tejima, Iwao; Ishida, Shuichi; Suzuki, Toshiyuki; and Yamada, Osamu, to Nippon Kayaku Kabushiki Kaisha. Phenyl thiol carbanilide derivatives, method for the preparation thereof and use thereof as fungicide for agriculture. 4,086,360, Cl. 424-300.000.
Nakagawa, Yasuo: *See*—
Sakakibara, Shumpei; Morikawa, Tadanori; Munekata, Eisuke; Kimura, Terutoshi; Nakagawa, Yasuo; and Noda, Toshiharu, 4,086,221, Cl. 260-112.50T.
Nakai, Masaaki: *See*—
Yoshida, Isao; Hori, Ryoichi; Masuda, Hiroo; Minato, Osamu; Etoh, Jun; and Nakai, Masaaki, 4,086,642, Cl. 361-91.000.
Nakamura, Kentaro: *See*—
Nishizawa, Jun-ichi; Nakamura, Kentaro; and Kitsuregawa, Takashi, 4,086,611, Cl. 357-38.000.
Nakamura, Zenzo: *See*—
Kiyohara, Takehiko; Tsunekawa, Tokuichi; Yazaki, Mutsunobu; Sanada, Noriaki; Taguchi, Tetsuya; and Nakamura, Zenzo, 4,086,582, Cl. 354-33.000.
Nakane, Mototaka; and Terada, Takami, to Aisin Seiki Kabushiki Kaisha. Hinge fitting for adjustable back rests of vehicle seats. 4,085,969, Cl. 297-367.000.
Nakano, Koichi: *See*—
Sugio, Akitoshi; Masuda, Yukiya; Kobayashi, Toshihiko; Nakano, Koichi; and Sawai, Tsukasa, 4,086,128, Cl. 156-668.000.
Nakauchi, Hideo; Osaki, Toshiyuki; Naito, Kazuo; and Inque, Sakae, to Bridgestone Tire Company Limited. Method of producing polyurethane products having an improved flex crack resistance. 4,086,211, Cl. 260-75.0NA.
Nakayama, Kiyoshi; Araki, Kazumi; and Yoshida, Hajime, to Kyowa Hakko Kogyo Co., Ltd. Process for the production of L-arginine by fermentation. 4,086,137, Cl. 195-29.000.
Nalco Chemical Company: *See*—
McDermott, Arthur R., 4,086,066, Cl. 44-51.000.
Nance, Jack G.; Owens, James L.; and Robbins, Theodore W., to Western Electric Company, Inc. Switchable attenuator. 4,086,547, Cl. 333-81.00R.
Nance, Jack G.: *See*—
Fulp, William W.; Nance, Jack G.; Owens, James L.; and Robbins, Theodore W., 4,086,546, Cl. 333-81.00R.
Nasuta, Anthony T., Jr.; and Walsh, James W., to Westinghouse Electric Corporation. Common shield-terminating connection in shielded wire bundle. 4,086,427, Cl. 174-88.00C.
National Food Service Equipment Fabricators, Inc.: *See*—
Kaufman, Arnold S.; and Anderson, Robert L., 4,085,735, Cl. 126-299.00E.
National Research Development Corporation: *See*—
Gerzon, Michael Anthony, 4,086,433, Cl. 179-1.0GQ.
Goodfellow, John William; O'Connor, John Joseph; and Shrive, Nigel Graham, 4,085,466, Cl. 3-1.910.
National Starch and Chemical Corporation: *See*—
Tessler, Martin M., 4,086,419, Cl. 536-107.000.
Natori, Minoru, to Citizen Watch Co. Ltd. Electronic timepiece. 4,085,577, Cl. 58-23.00D.
Naturin-Werk Becker & Co.: *See*—
Winkler, Bruno, 4,085,483, Cl. 17-42.000.
Naumann, Klaus. Electronic musical instrument. 4,085,646, Cl. 84-1.090.
Nausedas, Joseph Anthony, to Union Carbide Corporation. Dispenser-cutter for tacky fabric materials. 4,085,878, Cl. 225-19.000.
NCR Corporation: *See*—
King, Ronald J., 4,086,476, Cl. 235-462.000.
Nedden, Klaus Zur: *See*—
Zerpner, Dieter; Nedden, Klaus Zur; Frese, Albert; and Datene, Hans, 4,086,301, Cl. 260-897.00A.
Negi, Virendra S.; and Miu, Ming T., to Honeywell Information Systems Inc. Multiplication technique in a data processing system. 4,086,474, Cl. 364-757.000.
Neier, Benjamin Ray, to B J Manufacturing Company, Inc. Lever-operated feed dispenser. 4,085,869, Cl. 222-271.000.
Nelson, Kris L., to Texas Instruments Incorporated. Pressure relief valve. 4,085,765, Cl. 137-68.00R.
Nelson, Norman A., to Upjohn Company, The. 3-(1'-Hydroxy-2'-hydroxyethyl)-4,6-dihydroxyhexanoic acid 4γ lactone derivatives. 4,086,247, Cl. 260-343.600.
Nelson, Paul A.: *See*—
Vissers, Donald R.; Nelson, Paul A.; Kaun, Thomas D.; and Tomczuk, Zygmunt, 4,086,404, Cl. 429-220.000.
Nelson, Robert C.; and Toney, David, to New River Manufacturing Company, Inc. Vehicle shock absorbing articulated jointed suspension. 4,085,682, Cl. 105-157.00R.
Nemechek, Alfred Emmerich: *See*—
Samokovliski, David Albert; Grozdanov, Petko Kostadinov; Nemechek, Alfred Emmerich; Punchev, Simeon Georgiev; and Petrov, Peter Dimitrov, 4,085,880, Cl. 226-90.000.
Ness, Irving Stanley; and Fechillas, Michael R., to Johnson & Johnson. Disposable diaper inner facing. 4,085,754, Cl. 128-287.000.
Nessler, Charles A., deceased; and by Mulhern, Mary M., executrix. Device for locating piano hammers for drilling. 4,086,017, Cl. 408-89.000.
Netravali, Arun Narayan: *See*—
Bowen, Edward George; Mounts, Frank William; and Netravali, Arun Narayan, 4,086,620, Cl. 358-260.000.
Network Systems Corporation: *See*—
Olson, Gerald R., 4,086,534, Cl. 325-15.000.
Neumann, Peter, to Technion Research and Development Foundation Ltd. Gelatin-based compositions and a method for the generation of stabilized foams therefrom. 4,086,331, Cl. 424-45.000.
Neumann, Peter, to Sandoz Ltd. Certain azolinylamino (azolidinylimino) indazoles. 4,086,353, Cl. 424-272.000.
Neuroth, David H., to Harvey Hubbell Incorporated. Air-steam interface in continuous vulcanization process for allowing accurate optical measurements. 4,085,521, Cl. 34-89.000.
New River Manufacturing Company, Inc.: *See*—
Nelson, Robert C.; and Toney, David, 4,085,682, Cl. 105-157.00R.
Newalls Insulation Company Limited: *See*—
Graham, Robert, 4,085,548, Cl. 51-103.0WH.
Graham, Robert, 4,085,550, Cl. 51-145.00T.
Newman, Gerald H.: *See*—
Whittingham, M. Stanley; and Newman, Gerald H., 4,086,403, Cl. 429-194.000.
Niedermeyer, Karl O. Float switch signalling two different liquid levels. 4,086,457, Cl. 200-84.00R.
Nieuwenhoven, Hendricus Jacobus Cornelis: *See*—
van der Lely, Cornelis; and Nieuwenhoven, Hendricus Jacobus Cornelis, 4,085,853, Cl. 214-77.00R.
NIFCO Inc.: *See*—
Yuda, Takuo, 4,085,623, Cl. 74-89.150.
Nigrin, Jan, to Canadian Patents & Development Limited. Travelling wave hybrid junction amplifier. 4,086,543, Cl. 330-287.000.
Nigro, Joseph P.: *See*—
Hahn, William F.; Nigro, Joseph P.; and Wallitsch, Frank, Jr., 4,085,897, Cl. 241-18.000.
Nihon Valqua Kogyo Kabushiki Kaisha: *See*—
Yoshida, Mitsuo; Furukawa, Wataru; Yamaguchi, Takashi; and Sasaki, Kazuo, 4,085,942, Cl. 277-30.000.
Nijman, John Peter; and Tompkins, Terence Neville, to Bunker Ramo Corporation. Termination apparatus for electrical connectors. 4,085,497, Cl. 29-566.300.
Nilsson, Jan: *See*—
Burstrom, Martin; Larker, Hans; and Nilsson, Jan, 4,085,605, Cl. 72-54.000.
Nims, Jerry Curtis: *See*—
Wah Lo, Allen Kwok; and Nims, Jerry Curtis, 4,086,585, Cl. 354-115.000.
Nippon Electric Co., Ltd.: *See*—
Tuchiya, Keiji; Kubota, Junjiro; Takahashi, Katuo; and Suzuki, Etsuo, 4,085,929, Cl. 271-122.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Adachi, Takeshi, 4,085,647, Cl. 84-1.240.
Griffith, Glen, 4,085,643, Cl. 84-1.010.
Kamiya, Shingo, 4,086,542, Cl. 330-268.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
Nakagawa, Taizo; Ohmori, Kaoru; Watanabe, Yutaka; Tejima, Iwao; Ishida, Shuichi; Suzuki, Toshiyuki; and Yamada, Osamu, 4,086,360, Cl. 424-300.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Kinoshita, Kazuhisa; and Masamune, Naoki, 4,086,104, Cl. 148-12.00E.
Nippon Oil Company, Ltd.: *See*—
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,086,138, Cl. 195-65.000.
Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Nishida, Minoru; and Ueno, Yoshiki, 4,085,714, Cl. 123-117.00R.
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,085,713, Cl. 123-75.00B.
Tanaka, Eizi; Ohashi, Michihiro; and Mochizuki, Hiroshi, 4,085,723, Cl. 123-139.0AW.
Nippon Steel Corporation: *See*—
Tanigaki, Takashi; Koshio, Takeshi; and Tanaka, Yoshikazu, 4,086,389, Cl. 428-385.000.
Tanino, Mitsuru; Komatsu, Hajime; and Takemura, Susumu, 4,086,107, Cl. 148-136.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Asakawa, Shigeru; Sugiyama, Fumio; Gotoh, Akio; and Okamoto, Shigenori, 4,086,537, Cl. 325-478.000.
Takano, Rikuo; Ohta, Yutaka; Sumitomo, Yuji; Shimazawa, Yoichi; and Aiba, Masahiko, 4,085,837, Cl. 197-133.00R.

Nishida, Minoru: *See—*
Hattori, Tadashi; Nishida, Minoru; and Ueno, Yoshiki, 4,085,714, Cl. 123-117.00R.

Nishimura, Kosuke: *See—*
Tanimoto, Akira; and Nishimura, Kosuke, 4,086,655, Cl. 364-705.000.

Nishioka, Kazumitsu; and Machida, Hiroshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Sealed type motor-compressor. 4,086,032, Cl. 417-363.000.

Nishioka, Masato, to Procter & Gamble Company, The. Reclosable twin-Z-fold dispensing valve construction for a liquid containing film pouch. 4,085,886, Cl. 229-62.500.

Nishizawa, Jun-ichi; Nakamura, Kentaro; and Kitsuregawa, Takashi, to Semiconductor Research Foundation; and Mitsubishi Denki Kabushiki Kaisha. Static induction type thyristor. 4,086,611, Cl. 357-38.000.

Nissan Motor Co., Ltd.: *See—*
Amagai, Susumu; Kawai, Shizuya; Kan, Hiroyasu; and Aizawa, Hideo, 4,085,816, Cl 180-64.00A.
Hasegawa, Akira, 4,086,562, Cl. 340-52.00H.
Minami, Hidehiro, 4,085,716, Cl. 123-119.0EC.
Shimizu, Kazuaki, 4,085,829, Cl. 188-72.500.

Nitta, Tsuneharu; Terada, Ziro; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Humidity sensitive ceramic resistor. 4,086,556, Cl. 338-35.000.

Nittan Company: *See—*
Sasaki, Isao, 4,086,573, Cl. 340-213.00R.

Nnadi, John C.; and McIntyre, Margaret H., to Mobil Oil Corporation. Lubricant compositions containing multifunctional additives. 4,086,173, Cl. 252-51.50A.

Nobuhiro, Iizuka, to Glory Kogyo Kabushiki Kaisha. Paper supplying device in coin wrapping apparatus. 4,085,879, Cl. 225-93.000.

Noda, Mitsuhiko; and Nomura, Kikuo, to Sumitomo Electric Industries, Ltd. Method of disposing of waste water containing emulsified oil. 4,086,164, Cl. 210-46.000.

Noda, Toshiharu: *See—*
Sakakibara, Shumpei; Morikawa, Tadanori; Munekata, Eisuke; Kimura, Terutoshi; Nakagawa, Yasuo; and Noda, Toshiharu, 4,086,221, Cl. 260-112.50T.

Nogami, Tomoyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicular hydraulic brake apparatus. 4,085,978, Cl. 303-6.00C.

Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, to Nippon Soken, Inc. Torch ignition internal combustion engine. 4,085,713, Cl. 123-75.00B.

Nohe, Heinz; and Hannebaum, Heinz, to BASF Aktiengesellschaft. Manufacture of bicyclo[2,2,2]oct-7-ene 2,3,5,6-tetracarboxylic acid dianhydride. 4,086,250, Cl. 260-346.600.

Nomura, Chifuru, to Kitazawa Shoji Kabushiki Kaisha. Electrically driven actuator. 4,085,624, Cl. 74-89.150.

Nomura, Humio: *See—*
Kimura, Toshihiro; Hanaki, Yoshimaro; and Nomura, Humio, 4,085,890, Cl. 235-419.000.

Nomura, Kikuo: *See—*
Noda, Mitsuhiko; and Nomura, Kikuo, 4,086,164, Cl. 210-46.000.

Nomura, Yoshihisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Warning device for friction pad in disk brake. 4,085,824, Cl. 188-1.00A.

Nonogaki, Saburo: *See—*
Kohashi, Takahiro; Akagi, Motoo; Oba, Yoichi; Nonogaki, Saburo; Tanaka, Makoto; Kaneko, Tadao; and Tomita, Yoshifumi, 4,086,090, Cl. 96-35.100.

Nordmann, Gisela: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.

Nordnero AB: *See—*
Ericson, Harry; and Fredriksson, Carl Otto, 4,086,176, Cl. 252-100.000.

Norian, Roger F.: *See—*
Gorham, Michael L.; and Norian, Roger F., 4,086,443, Cl. 179-90.0BD.

Norman, Thomas W.: *See—*
Bousaid, Issam S.; Brown, Alfred; and Norman, Thomas W., 4,085,799, Cl. 166-272.000.

Norr, Ulf Einar Sigvard, to Atlas Copco Aktiebolag. Pressure fluid impulse converter. 4,085,768, Cl. 137-102.000.

Northern Telecom Limited: *See—*
Foxall, Thomas George; Ibrahim, Abd-El-Fattah Ali; and Sellars, Lester Porter, 4,086,609, Cl. 357-24.000.
Robinson, Ronald Charles, 4,086,445, Cl. 179-121.00R.
Springthorpe, Anthony John; and Rider, Michael John, 4,086,126, Cl. 156-642.000.

Northrop Corporation: *See—*
Baker, William G.; Gisbrecht, James H.; and Luszcz, Edward T., 4,085,910, Cl. 244-3.160.

Norum, Edward M.: *See—*
Roland, Murray C.; and Norum, Edward M., 4,086,507, Cl. 310-88.000.

Noverox AG.: *See—*
Hengelhaupt, Erich; and Peier, Lothar, 4,086,182, Cl. 252-182.000.

Nugent, Adam, Jr.: *See—*
Hornbaker, Edwin D.; Nugent, Adam, Jr.; and Loechelt, Cecil P., 4,086,414, Cl. 528-500.000.

Numol Corporation: *See—*
Brown, John Anthony; and Wilkie, Leslie Raymond, 4,086,046, Cl. 425-361.000.

Nylite Skate Company of Canada Ltd.: *See—*
Chambers, Alan F., 4,085,944, Cl. 280-11.120.

Oba, Yoichi: *See—*
Kohashi, Takahiro; Akagi, Motoo; Oba, Yoichi; Nonogaki, Saburo; Tanaka, Makoto; Kaneko, Tadao; and Tomita, Yoshifumi, 4,086,090, Cl. 96-35.100.

Oberste-Beulmann, Klaus: *See—*
Lanfermann, Willy; Henrich, Friedhelm; and Oberste-Beulmann, Klaus, 4,085,974, Cl. 299-53.000.

O'Brian, Edward D.; and Plachy, William M. Folding, rigid, tent-like structure. 4,085,762, Cl. 135-4.00R.

Occidental Minerals Corporation: *See—*
Jacoby, Charles H., 4,085,971, Cl. 299-4.000.

Oce-van der Grinten, N.V.: *See—*
Winthaegen, Leon M. W.; and Vola, Mathias J. J. M., 4,086,008, Cl. 355-7.000.

O'Connor, John Joseph: *See—*
Goodfellow, John William; O'Connor, John Joseph; and Shrive, Nigel Graham, 4,085,466, Cl. 3-1.910.

Ogata, Yasuhiro: *See—*
Asao, Yasuzi; and Ogata, Yasuhiro, 4,085,949, Cl. 282-27.500.

Ogle, James A.; and Lee, James Y., to Burroughs Corporation. Integrated circuit system for operating display panels. 4,086,516, Cl. 315-169.00R.

Ogura, Katsuyuki: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 4,086,420, Cl. 542-413.000.

Ohara, Naoyuki: *See—*
Kajino, Jirou; and Ohara, Naoyuki, 4,085,698, Cl. 116-114.00J.

Ohashi, Michihiro: *See—*
Tanaka, Eizi; Ohashi, Michihiro; and Mochizuki, Hiroshi, 4,085,723, Cl. 123-139.0AW.

Ohkubo, Tetsuo: *See—*
Kishi, Hajimu; Ohkubo, Tetsuo; and Koikawa, Noriyuki, 4,086,633, Cl. 364-474.000.

Ohmori, Kaoru: *See—*
Nakagawa, Taizo; Ohmori, Kaoru; Watanabe, Yutaka; Tejima, Iwao; Ishida, Shuichi; Suzuki, Toshiyuki; and Yamada, Osamu, 4,086,360, Cl. 424-300.000.

Ohmori, Muneki: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,086,136, Cl. 195-29.000.

Ohnstad, Rudy. Platform attachment for a ladder. 4,085,819, Cl. 182-121.000.

Ohta, Yutaka: *See—*
Takano, Rikuo; Ohta, Yutaka; Sumitomo, Yuji; Shimazawa, Yoichi; and Aiba, Masahiko, 4,085,837, Cl. 197-133.00R.

Oikawa, Noboru: *See—*
Omori, Jimpei; Kono, Mitsuo; Takeuchi, Torataro; and Oikawa, Noboru, 4,086,463, Cl. 219-145.220.

Oishi, Kengo: *See—*
Suzuki, Osamu; Oishi, Kengo; Akashi, Goro; and Sega, Kenji, 4,085,907, Cl. 242-199.000.

Oji Yuka Goseishi Kabushiki Kaisha: *See—*
Miyabe, Yoshio, 4,086,317, Cl. 264-134.000.

Oji Yuka Synthetic Paper Sales Co., Ltd.: *See—*
Yamano, Susumu; and Yasuda, Jyunichi, 4,086,383, Cl. 428-174.000.

Okada, Makoto: *See—*
Osujyo, Masahide; Yamanishi, Isamu; Inamori, Akio; Fujikawa, Kaoru; Wakabayashi, Noboru; Ikegami, Seiichi; Okada, Makoto; and Katayama, Morimitsu, 4,085,806, Cl. 172-9.000.

Okada, Takeshi. Endoscope equipped with a film cassette. 4,085,742, Cl. 128-4.000.

Okamoto, Shigenori: *See—*
Asakawa, Shigeru; Sugiyama, Fumio; Gotoh, Akio; and Okamoto, Shigenori, 4,086,537, Cl. 325-478.000.

Okano, Michiaki, to Tokyo Shibaura Electric Co., Ltd. Mark position detecting apparatus. 4,086,478, Cl. 235-466.000.

Oki Electric Industry Co., Ltd.: *See—*
Kishi, Hajimu; Ohkubo, Tetsuo; and Koikawa, Noriyuki, 4,086,633, Cl. 364-474.000.

Okuma Machinery Works Ltd.: *See—*
Kimura, Toshihiro; Hanaki, Yoshimaro; and Nomura, Humio, 4,085,890, Cl. 235-419.000.
Yamaki, Hiromi; and Arai, Hiroaki, 4,086,517, Cl. 318-39.000.

Okumura, Akio: *See—*
Shiba, Keisuke; Hirose, Takeshi; Inouye, Kozo; and Okumura, Akio, 4,086,094, Cl. 96-100.00R.

Olds, Dale F.; Allan, Arnold M.; and Warren, Charles H., to Patent Technology, Inc. Topping for frozen desserts and method of manufacture. 4,086,370, Cl. 426-613.000.

Olin Corporation: *See—*
Knollmueller, Karl O., 4,086,260, Cl. 260-448.80R.

Oline, James A.: *See—*
Carty, Daniel T.; and Oline, James A., 4,086,296, Cl. 260-857.00G.

Olinkraft, Inc.: *See—*
Jacalone, Richard P., 4,085,847, Cl. 206-600.000.

Oliver, Raymond Edward; and Payne, John Blunden, to Matthey

Rustenburg Refiners (Pty) Ltd. Refining of metals. 4,086,084, Cl. 75-118.00R.
Olson, Gerald R., to Network Systems Corporation. Circuit for wire transmission of high frequency data communication pulse signals. 4,086,534, Cl. 325-15.000.
Olson, Lawrence P. Control for reciprocating pumps or the like. 4,085,655, Cl. 91-307.000.
Olszanski, Theodore W.: *See—*
Mathers, James P.; Olszanski, Theodore W.; and Boquist, Carl W., 4,086,396, Cl. 429-103.000.
Olympus Optical Co., Ltd.: *See—*
Saito, Shoichi, 4,086,638, Cl. 360-109.000.
Saitou, Sinichi, 4,086,635, Cl. 360-73.000.
Watanabe, Seizo, 4,086,510, Cl. 310-242.000.
Omori, Jimpei; Kono, Mitsuo; Takeuchi, Torataro; and Oikawa, Noboru, to Tsukishima Kikai Co., Ltd. Flux-cored wire. 4,086,463, Cl. 219-145.220.
Ondetti, Miguel Angel: *See—*
Cushman, David W.; and Ondetti, Miguel Angel, 4,086,338, Cl. 424-244.000.
Onodera, Toshimi: *See—*
Kotezawa, Katsutaka; Onodera, Toshimi; Hayashi, Setsuo; and Shimanuki, Fujio, 4,086,429, Cl. 178-69.100.
Onopchenko, Anatoli; and Schulz, Johann G., to Gulf Research & Development Company. Process for preparing diarylketones. 4,086,277, Cl. 260-591.000.
Opelika Manufacturing Corporation: *See—*
Simonoff, Ely, 4,085,464, Cl. 2-158.000.
Optel Corporation: *See—*
Cartmell, Donald K.; and Witzke, Horst, 4,086,398, Cl. 429-111.000.
Orgill, Rodney H.: *See—*
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,086,627, Cl. 364-200.000.
Origoverken I Halmstad AB: *See—*
Svensson, Sven Arne; and Ebbeson, Bengt Ebbe Oscar, 4,085,968, Cl. 297-243.000.
Ortabasi, Ugur: *See—*
Minot, Michael Jay; and Ortabasi, Ugur, 4,086,074, Cl. 65-31.000.
Orth, Dieter: *See—*
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, 4,086,362, Cl. 424-305.000.
Ortho Pharmaceutical Corporation: *See—*
Hirsch, Allen Frederick, 4,086,278, Cl. 260-609.00R.
Wachter, Michael P.; and Kanojia, Ramesh Maganlal, 4,086,358, Cl. 424-278.000.
Osaki, Toshiyuki: *See—*
Nakauchi, Hideo; Osaki, Toshiyuki; Naito, Kazuo; and Inque, Sakae, 4,086,211, Cl. 260-75.0NA.
Osborn, Paul V., to Mobil Oil Corporation. Bag assembly and method and apparatus for loading individual bags. 4,085,822, Cl. 186-1.00A.
Ostman, Barry I.; and Roberts, Joseph A., to Advanced Circuit Technology, Inc. Jumper cable. 4,085,502, Cl. 29-629.000.
Osujyo, Masahide; Yamanishi, Isamu; Inamori, Akio; Fujikawa, Kaoru; Wakabayashi, Noboru; Ikegami, Seiichi; Okada, Makoto; and Katayama, Morimitsu, to Kubota Tekko Kabushiki Kaisha. Hydraulic control system for tractor. 4,085,806, Cl. 172-9.000.
Otaka, Syoichi, to Honda Giken Kogyo Kabushiki Kaisha. Ignition timing control system. 4,085,715, Cl. 123-117.00A.
Otake, Tsutomu: *See—*
Kouchi, Akihiko; Otake, Tsutomu; Takeshita, Hiroshi; and Inoue, Kunihiro, 4,086,003, Cl. 350-357.000.
Otis Engineering Corporation: *See—*
Council, Malcolm N., 4,085,796, Cl. 166-77.500.
Otowa Electric Company, Ltd.: *See—*
Honda, Tetsuya; Yagi, Kiyoshi; Shibata, Seiji; and Yamaguchi, Kazuo, 4,086,189, Cl. 252-519.000.
Ott, William F.: *See—*
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., 4,085,490, Cl. 29-156.600.
Ottaviano, Gary W., to Ranpak Corporation. Method of making and using cushioning dunnage material. 4,085,662, Cl. 93-1.0WZ.
Otte, Ernst: *See—*
Grulich, Heinz; and Otte, Ernst, 4,086,144, Cl. 201-41.000.
Otten, Geneva Gail; Rheinecker, Tom Conrad; and Logan, Ted Joe, to Procter & Gamble Company, The. Sulfides and derivatives thereof as abscission agents. 4,086,079, Cl. 71-103.000.
Outboard Marine Corporation: *See—*
Hines, Charles E.; and Stransky, John L., 4,085,957, Cl. 293-88.000.
Overkott, Franz Josef: *See—*
Peddinghaus, Carl Ullrich; and Overkott, Franz Josef, 4,085,925, Cl. 267-64.00R.
Owen, Peter W.: *See—*
Kaiser, Mark E.; and Owen, Peter W., 4,086,274, Cl. 260-561.00S.
Owen, Ronald P.; Miller, George A.; and Schneider, Charles M., to Rohm and Haas Company. Phosphonothioureide anthelmintics. 4,086,336, Cl. 424-204.000.
Owens-Corning Fiberglas Corporation: *See—*
Finn, Lawrence R.; McCartan, Daniel A.; and Schmandt, Gary M., 4,085,562, Cl. 53-59.00R.
Roberson, Cletis L., 4,085,881, Cl. 226-95.000.
Sanders, James E., 4,085,901, Cl. 242-18.00G.
Owens, Frederick H.; and Clovis, James S., to Rohm and Haas Company. Acrylic modifiers for polycarbonamides. 4,086,300, Cl. 260-885.000.
Owens-Illinois, Inc.: *See—*
Tobias, John W.; and Taylor, Lynn J., 4,086,373, Cl. 427-44.000.
Owens, James L., to Western Electric Company, Inc. Dual clip connector. 4,085,998, Cl. 339-258.00P.
Owens, James L.: *See—*
Fulp, William W.; Nance, Jack G.; Owens, James L.; and Robbins, Theodore W., 4,086,546, Cl. 333-81.00R.
Nance, Jack G.; Owens, James L.; and Robbins, Theodore W., 4,086,547, Cl. 333-81.00R.
Oyama, Mitsuhiro: *See—*
Soeda, Katsuji; Sakuma, Fumio; and Oyama, Mitsuhiro, 4,085,692, Cl. 112-275.000.
Package Machinery Company: *See—*
Putnam, Roger L., Jr.; Provost, Richard H.; and D'Antonio, Alfred, 4,085,567, Cl. 53-225.000.
Packaging Corporation of America: *See—*
Champlin, Charles L., 4,086,071, Cl. 55-501.000.
Padgitt, Kenneth Warren; and Kujawski, Stanley Marion, to Motorola, Inc. Variable resistance pressure transducer. 4,086,557, Cl. 338-42.000.
Page, John S., Jr. Well tubing anchor with automatic slip release. 4,085,804, Cl. 166-315.000.
Paglia, Richard: *See—*
Finelli, Patrick L.; and Paglia, Richard, 4,086,606, Cl. 354-288.000.
Panigoni, Giannantonio, to Luigi Franchi S.p.A. Gas-operated device for activating the reloading mechanism of a gas-operated automatic rifle. 4,085,654, Cl. 89-191.00A.
Pantazelos, Theophanes G.: *See—*
Rich, Stanley R.; and Pantazelos, Theophanes G., 4,086,152, Cl. 204-176.000.
Papajewski, Reinhold, to Singer Company, The. Needle jogging mechanisms. 4,085,690, Cl. 112-158.00R.
Papasideris, Stamos I., to Caterpillar Tractor Co. Hydrostatic transmission control. 4,085,833, Cl. 192-4.00B.
Park-Ohio Industries, Inc.: *See—*
Day, Paul L.; and Mucha, George M., 4,086,464, Cl. 219-156.000.
Parke, Davis & Company: *See—*
Wittle, Eugene Leroy; and Rebstock, Mildred Catherine, 4,086,219, Cl. 260-112.5LH.
Parravicini, Francesco: *See—*
Dorigotti, Luciano; and Parravicini, Francesco, 4,086,343, Cl. 424-250.000.
Pasqualucci, Carmine: *See—*
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, 4,086,225, Cl. 260-239.30P.
Patel, Bhupendra C.; and Boedecker, Steven M., to Kendall Company, The. Liquid measuring and collection device. 4,085,616, Cl. 73-215.000.
Patent Technology, Inc.: *See—*
Olds, Dale F.; Allan, Arnold M.; and Warren, Charles H., 4,086,370, Cl. 426-613.000.
Patterson, Roy M. Practice golf club with means for holding and releasing ball. 4,085,936, Cl. 273-186.00A.
Paxton, Stephen J., to Paxton, Stephen J., Trust. Adjustable automobile vent. 4,085,665, Cl. 98-2.120.
Paxton, Stephen J., Trust: *See—*
Paxton, Stephen J., 4,085,665, Cl. 98-2.120.
Payne, John Blunden: *See—*
Oliver, Raymond Edward; and Payne, John Blunden, 4,086,084, Cl. 75-118.00R.
Payne, John C. Ocean floor surficial dredging apparatus. 4,085,973, Cl. 299-8.000.
Pearsall, Harold I., to Globe Tool and Engineering Company, The. Taping machine. 4,086,117, Cl. 156-212.000.
Peddinghaus, Carl Ullrich; and Overkott, Franz Josef, to Peddinghaus, Carl Ullrich. Hydro-pneumatic shock absorber. 4,085,925, Cl. 267-64.00R.
Peddle, Charles I.: *See—*
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,086,627, Cl. 364-200.000.
Pedersen, Jorgen Gammelgaard. Releasable locking device. 4,085,916, Cl. 248-188.000.
Peier, Lothar: *See—*
Hengelhaupt, Erich; and Peier, Lothar, 4,086,182, Cl. 252-182.000.
Pejouhy, Radi; and McMorrow, Joseph L., to Texas Instruments Incorporated. Motor protector and system. 4,086,558, Cl. 337-102.000.
Pendleton, Betty. Analytical system, reagent dispensing and sampling apparatus and method. 4,086,058, Cl. 23-230.00B.
Pennington, John: *See—*
Bartlett, John Stanley; Hudson, Barry; and Pennington, John, 4,086,267, Cl. 560-241.000.
Pennsylvania Crusher Corporation: *See—*
Hahn, William F.; Nigro, Joseph P.; and Wallitsch, Frank, Jr., 4,085,897, Cl. 241-18.000.
Pennsylvania Engineering Corporation: *See—*
Fisher, Howard M.; and Montgomery, Harry T., 4,085,924, Cl. 266-241.000.
Pennwalt Corporation: *See—*
MacLeay, Ronald Edward, 4,086,224, Cl. 260-192.000.
Pennzoil Company: *See—*
Drechsel, Erhart K., 4,086,322, Cl. 423-158.000.

Penton, Allen P.: *See—*
Kam, Clifford Y.; Freeman, Vernon L.; and Penton, Allen P., 4,086,378, Cl. 428-36.000.

Penzien, Klaus: *See—*
Hinselmann, Klaus; Penzien, Klaus; Schick, Rupert; Walter, Manfred; Weber, Heinz; and Wirth, Heinrich, 4,086,191, Cl. 260-2.50B.

Perfect, Alan J., to Johnson & Johnson. Container and utility tray. 4,085,845, Cl. 206-564.000.

Perfection Corporation: *See—*
Alewitz, Sam, 4,085,950, Cl. 285-45.000.

Perkin-Elmer Corporation, The: *See—*
Muir, Andrew Redvers; and Vergato, Joseph Anthony, 4,086,651, Cl. 364-487.000.

Perper, Edward: *See—*
Post, Herman D.; Perper, Edward; and Alexandrovich, George, Sr., 4,085,926, Cl. 269-295.000.

Persson, Erland K., to Electro-Craft Corporation. Hall effect shaft angle position encoder. 4,086,519, Cl. 318-254.000.

Perzley, William: *See—*
Engelberger, Joseph F.; Dunne, Maurice J.; and Perzley, William, 4,086,522, Cl. 318-568.000.

Peters, James; VanDell, Robert D.; Eash, R. Douglas; and Lamoria, Lz F., to Dow Chemical Company, The. Styrene-butadiene interpolymer latex based cement additives. 4,086,201, Cl. 260-29.70S.

Peterson, Donald John; and Robbins, Medford Dwight, to Procter & Gamble Company, The. Process for the preparation of cyclopropylcarinyl alcohols. 4,086,280, Cl. 260-617.00R.

Peterson, Norbert C.: *See—*
Bell, Leo A.; and Peterson, Norbert C., 4,085,509, Cl. 33-134.00R.

Petkau, Abram; and Pleskach, Stanley Daniel, to Atomic Energy of Canada Limited, The. Labelled phospholipid spheres for organ visualization. 4,086,330, Cl. 424-1.000.

Petron, Roman L. Car-top boat loader. 4,085,859, Cl. 214-450.000.

Petropoulos, Constantine Chris, to Eastman Kodak Company. Radiation sensitive polymeric o-nitrophenyl acetals. 4,086,210, Cl. 260-67.00R.

Petrov, Peter Dimitrov: *See—*
Samokovliski, David Albert; Grozdanov, Petko Kostadinov; Nemechek, Alfred Emmerich; Punchev, Simeon Georgiev; and Petrov, Peter Dimitrov, 4,085,880, Cl. 226-90.000.

Petursson, Sigurdur G. Waste control with replaceable cable. 4,085,469, Cl. 4-199.000.

Peuzin, Jean Claude; and Tasson, Michel, to Commissariat a l'Energie Atomique. Method of polarization of a ferroelectric material. 4,086,124, Cl. 156-603.000.

Pevsner, Paul H. Miniature balloon catheter method and apparatus. 4,085,757, Cl. 128-325.

Pfizer Inc.: *See—*
Armstrong, William W., 4,086,332, Cl. 424-80.000.
Bennetch, Leonard N., 4,086,174, Cl. 252-62.560.
Cox, David A.; Barnish, Ian T.; and Evans, Anthony G., 4,086,272, Cl. 260-559.00D.

Pharmacia Fine Chemicals AB: *See—*
Lindquist, Lars-Olof Edvard; Berglof, Jan Hakan; and Curling, John Malcolm, 4,086,222, Cl. 260-122.000.

Phillips Petroleum Company: *See—*
Cichowski, Robert S.; and Farha, Floyd E., Jr., 4,086,290, Cl. 260-680.00E.
Engle, Charles J.; and Runnels, John H., 4,085,800, Cl. 166-288.000.
Farfaglia, Silvio T., 4,085,664, Cl. 93-44.10R.
Fozzard, George B., 4,086,407, Cl. 526-75.000.
Hughes, William B., 4,086,229, Cl. 260-270.00D.
Hutchinson, William Milton, deceased; and Hutchinson, Florence M., executrix, 4,086,180, Cl. 252-171.000.
Irvin, Howard B.; Sherk, Fred T.; and Hoffman, Alfred A., Jr., 4,086,288, Cl. 260-671.00R.
Trantham, Joseph C.; and Meldau, Robert F., 4,085,797, Cl. 166-245.000.
Trepka, William J., 4,086,406, Cl. 526-25.000.

Photon Power, Inc.: *See—*
Jordan, John Francis; and Lampkin, Curtis Magill, 4,086,101, Cl. 136-89.0CD.

Pierce, James N., to Minnesota Mining and Manufacturing Company. Type correction article employing adhesives. 4,085,838, Cl. 197-181.000.

Pilkington Brothers Limited: *See—*
Loukes, David Gordon, 4,086,073, Cl. 65-30.00E.

Piltingsrud, Harley V. Ultra violet radiation personnel hazard meter. 4,086,489, Cl. 250-372.000.

Pinter, Zoltan: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Bokor, Gyorgy; Dombay, Zsolt; Pinter, Zoltan; Gregar, Erzsebet, nee Toth; Dudas, Julianna, nee Sz. Kiss; Nagy, Emilia, nee Gera; and Fodor, Istvan, 4,086,339, Cl. 424-245.000.

Piotrowski, Tadeusz, to Piotrowski, Tadeusz; and Societe Nouvelle du Plastique. Production of hollow plastic bodies. 4,086,315, Cl. 264-97.000.

Pitches, Brian Edward; and Murray, Robert Malcolm Stuart, to Ferranti Limited. Communication systems. 4,086,569, Cl. 340-167.00R.

Pitney-Bowes, Inc.: *See—*
Coppola, Vincent G.; Manduley, Flavio M.; and Dlugos, Daniel F., 4,086,530, Cl. 324-133.000.

Plachy, William M.: *See—*
O'Brian, Edward D.; and Plachy, William M., 4,085,762, Cl. 135-4.00R.

Plainville Special Tool, Inc.: *See—*
Michaels, Walter L., 4,085,637, Cl. 83-69.000.

Plank, Charles J.: *See—*
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., 4,086,186, Cl. 252-430.000.

Plastic Techniques, Inc.: *See—*
Moore, Richard D., 4,086,168, Cl. 210-330.000.

Plattner, Werner, administrator: *See—*
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Wilhelms, Otto-Henning; von Mullendorff, Erika; and Sponer, Gisbert, 4,086,347, Cl. 424-253.000.

Pleskach, Stanley Daniel: *See—*
Petkau, Abram; and Pleskach, Stanley Daniel, 4,086,330, Cl. 424-1.000.

Poignant, Jean-Claude: *See—*
Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, 4,086,355, Cl. 424-274.000.

Polaroid Corporation: *See—*
Douglas, Lawrence M., 4,086,604, Cl. 354-219.000.
Finelli, Patrick L.; and Paglia, Richard, 4,086,606, Cl. 354-288.000.
Hyland, Albert L.; and Keene, Robert G., 4,086,399, Cl. 429-122.000.
Hyland, Albert L.; and Mitchnick, Victor, 4,086,400, Cl. 429-122.000.

Politechnika Lodzka: *See—*
Gundlach, Wladyslaw; Porochnicki, Jerzy; Prywer, Jerzy; Karewicz, Boguslaw; Potapczyk, Andrzej; and Zielenow, Krzysztof, 4,086,027, Cl. 416-184.000.

Polychrome Corporation: *See—*
Golda, Eugene; and Wilkes, Alan Leonard, 4,086,092, Cl. 96-86.00R.

Pontiac Furniture Industries, Inc.: *See—*
Johnson, Carl B., 4,085,983, Cl. 308-134.100.

Poole, Eric John, to Compair Industrial Limited. Transmission means for centrifugal compressors. 4,086,019, Cl. 415-18.000.

Poole, William. Check digit numbering mechanisms. 4,085,670, Cl. 101-76.000.

Population Research Incorporated: *See—*
Corey, Harold, 4,086,266, Cl. 260-465.400.

Porochnicki, Jerzy: *See—*
Gundlach, Wladyslaw; Porochnicki, Jerzy; Prywer, Jerzy; Karewicz, Boguslaw; Potapczyk, Andrzej; and Zielenow, Krzysztof, 4,086,027, Cl. 416-184.000.

Porter, Kenneth, to Imperial Chemical Industries Limited. Method of printing fabrics. 4,086,112, Cl. 156-73.100.

Portnoy, Norman A.: *See—*
Turbak, Albin Frank; Hammer, Richard Benjamin; Portnoy, Norman A.; and West, Arthur C., 4,086,418, Cl. 536-30.000.

Post, Herman D.; Perper, Edward; and Alexandrovich, George, Sr., to Robins Industries Corporation. Tape splicer. 4,085,926, Cl. 269-295.000.

Post Office, The: *See—*
Jones, Ralph Archibald, 4,086,432, Cl. 179-1.0CN.

Potapczyk, Andrzej: *See—*
Gundlach, Wladyslaw; Porochnicki, Jerzy; Prywer, Jerzy; Karewicz, Boguslaw; Potapczyk, Andrzej; and Zielenow, Krzysztof, 4,086,027, Cl. 416-184.000.

Potokar, Matthias: *See—*
Schmidt-Dunker, Manfred; and Potokar, Matthias, 4,086,334, Cl. 424-177.000.

Poul Hahn Evers: *See—*
Grudelbach, Hans-Dieter, 4,086,526, Cl. 323-34.000.

Pourrat, Henri-Jean: *See—*
Mauvernay, Roland-Yves; Pourrat, Henri-Jean; and Lamaison, Jean-Louis, 4,086,216, Cl. 260-112.00R.

Powell, James R.; and Salzano, Francis J., to United States of America, Energy. Hydride compressor. 4,085,590, Cl. 60-673.000.

PPG Industries, Inc.: *See—*
Barch, Herbert W.; and Bohy, August G., 4,085,487, Cl. 28-252.000.
Cherenko, Joseph P.; and Shaw, Hugh E., Jr., 4,086,595, Cl. 343-713.000.
Martinsons, Aleksandrs; and Crenshaw, Marilyn, 4,086,149, Cl. 204-59.00R.
Rowley, James R., 4,086,263, Cl. 206-454.000.

Prakhov, Alexandr Ivanovich: *See—*
Deribas, Andrei Andreevich; Demchuk, Alexandr Fedorovich; Braunshtein, Rudolf Aronovich; Bochkarev, Boris Nikolaevich; Viktorov, Vladimir Borisovich; Karkishko, Gennady Semenovich; Baranov, Sergei Vasilievich; Prakhov, Alexandr Ivanovich; Kasatkin, Vladimir Semenovich; and Rozhkov, Alexandr Timofeevich, 4,085,883, Cl. 228-2.500.

Prasse, Herbert F.: *See—*
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., 4,085,490, Cl. 29-156.600.

Preco Industries, Ltd.: *See—*
Ilukowicz, Robert J., 4,085,559, Cl. 52-687.000.

Preiss, Michael: *See—*
Krohn, Wolfgang; Metzger, Karl Georg; Preiss, Michael; and Walkowiak, Michael, 4,086,341, Cl. 424-246.000.
Schrock, Wilfried; Konig, Hans-Bodo; Preiss, Michael; Metzger, Karl Georg; and Walkowiak, Michael, 4,086,340, Cl. 424-246.000.

Prescott, Roger N.: *See—*
Calder, Brooke J., Jr.; Belock, Robert J.; and Prescott, Roger N., 4,085,676, Cl. 102-23.000.

Procter, Brian John: *See—*
Desyllas, Peter Leo Lawrence; Jones, John Austin; and Procter, Brian John, 4,086,629, Cl. 364-200.000.

Procter & Gamble Company, The: *See—*
Gellert, Dale Albert, 4,085,753, Cl. 128-284.000.
Nishioka, Masato, 4,085,886, Cl. 229-62.500.
Otten, Geneva Gail; Rheinecker, Tom Conrad; and Logan, Ted Joe, 4,086,079, Cl. 71-103.000.
Peterson, Donald John; and Robbins, Medford Dwight, 4,086,280, Cl. 260-617.00R.

Prorea S.A.: *See—*
Sergot, Joseph, 4,086,069, Cl. 55-48.000.

Provost, Richard H.: *See—*
Putnam, Roger L., Jr.; Provost, Richard H.; and D'Antonio, Alfred, 4,085,567, Cl. 53-225.000.

Prudhon, Francois; Fantino, Jean; and Mounier, Francois, to Rhone-Poulenc Industries. Method of preparing plaster. 4,086,099, Cl. 106-109.000.

Prunier, Louis, to American Optical Corporation. Lens surfacing adaptor. 4,085,553, Cl. 51-216.0LP.

Prywer, Jerzy: *See—*
Gundlach, Wladyslaw; Porochnicki, Jerzy; Prywer, Jerzy; Karewicz, Boguslaw; Potapczyk, Andrzej; and Zielenow, Krzysztof, 4,086,027, Cl. 416-184.000.

Psota, Joseph M.: *See—*
Mahaffy, Reid A.; Psota, Joseph M.; and Giordano, John A., 4,085,565, Cl. 53-112.00A.

Public Service Company of Colorado: *See—*
Watts, Fred S., Jr.; and Beecher, Lynn Loren, 4,086,568, Cl. 340-147.00R.

Punchev, Simeon Georgiev: *See—*
Samokovliski, David Albert; Grozdanov, Petko Kostadinov; Nemechek, Alfred Emmerich; Punchev, Simeon Georgiev; and Petrov, Peter Dimitrov, 4,085,880, Cl. 226-90.000.

Puskas, Imre: *See—*
Cengel, John A.; and Puskas, Imre, 4,086,251, Cl. 260-346.740.

Pustell, Robert A.: *See—*
Tassie, Douglas Pray; and Pustell, Robert A., 4,085,653, Cl. 89-7.000.

Putnam, Roger L., Jr.; Provost, Richard H.; and D'Antonio, Alfred, to Package Machinery Company. High speed wrapping machine with rotary folder. 4,085,567, Cl. 53-225.000.

Q-S Oxygen Processes, Inc.: *See—*
Queneau, Paul E.; and Schuhmann, Reinhardt, Jr., 4,085,923, Cl. 266-215.000.

Queneau, Paul E.; and Schuhmann, Reinhardt, Jr., to Q-S Oxygen Processes, Inc. Apparatus for a metallurgical process using oxygen. 4,085,923, Cl. 266-215.000.

Quoos, Kurt: *See—*
Ahrweiler, Klaus; Leifeld, Ferdinand; Quoos, Kurt; and Kusters, Eduard Finkenweg 18, 4,086,316, Cl. 264-120.000.

Radio Mechanical Structures, Inc.: *See—*
VanderLinden, Paul Guisbert, Jr.; and Crutcher, James Elwyn, 4,086,599, Cl. 343-881.000.

Radunz, Hans-Eckart: *See—*
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, 4,086,362, Cl. 424-305.000.

Ragle, Herbert Underwood; and DeMoss, Dean L., to Burroughs Corporation. Partitionable portable flexible disk pack. 4,086,640, Cl. 360-133.000.

Ragle, Herbert Underwood; and DeMoss, Dean, to Burroughs Corporation. Partitionable portable flexible disk pack. 4,086,641, Cl. 360-133.000.

Raidl, John H., Jr. Apparatus for protecting a gas pressure system from over pressure. 4,085,764, Cl. 137-68.00R.

Rainin, Edgar A.; and Major, Emery. Intraocular lens. 4,085,467, Cl. 3-13.000.

Raley, Charles F., Jr., to Dow Chemical Company, The. Olefin polymer composition having reduced flame propagation characteristics. 4,086,192, Cl. 260-2.5FP.

Ralston Purina Company: *See—*
Snetsinger, David C.; and Zimmerman, Ray A., 4,086,365, Cl. 426-2.000.

Ramsey Corporation: *See—*
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., 4,085,490, Cl. 29-156.600.

Ranganathan, Ramaswami: *See—*
Henry, H. Clarke; and Ranganathan, Ramaswami, 4,086,184, Cl. 252-414.000.

Ranpak Corporation: *See—*
Ottaviano, Gary W., 4,085,662, Cl. 93-1.0WZ.

Rao, Purushothama: *See—*
Mao, George W.; and Rao, Purushothama, 4,086,392, Cl. 429-50.000.

Ratcliffe, Ronald W.: *See—*
Firestone, Raymond A.; Ratcliffe, Ronald W.; and Christensen, Burton G., 4,086,423, Cl. 544-21.000.

Rathert, Horst: *See—*
Schilling, Karl; and Rathert, Horst, 4,085,694, Cl. 114-163.000.

Rathjen, Hans-Carl: *See—*
Koziol, Konrad; Sieberer, Karl-Heinz; and Rathjen, Hans-Carl, 4,086,157, Cl. 204-290.00F.

Ray, Robert A.: *See—*
Hoffa, Jack L.; and Ray, Robert A., 4,086,061, Cl. 23-259.000.

Raymond Lee Organization Inc., The: *See—*
Hoot, Eric F., 4,085,785, Cl. 150-.500.

Raytheon Company: *See—*
Siwiak, Kazimierz; and Moran, Robert L., 4,086,591, Cl. 343-18.00A.

RCA Corporation: *See—*
Baker, Alfred Lynn, 4,086,617, Cl. 358-128.000.
Easter, Finis Claude, 4,086,579, Cl. 340-324.0AD.
Evans, John, Jr., deceased, 4,086,513, Cl. 313-414.000.
Upadhyayula, Lakshminarasimha Chainulu, 4,086,501, Cl. 307-299.00R.

Reams, Lowell A.; and Dunlap, Thomas F., to Ford Motor Company. Concentric crossflow recuperator for stirling engine. 4,085,588, Cl. 60-517.000.

Rebstock, Mildred Catherine: *See—*
Wittle, Eugene Leroy; and Rebstock, Mildred Catherine, 4,086,219, Cl. 260-112.5LH.

Redman, Charles M., to United States of America, Army. Millimeter imaging device. 4,086,511, Cl. 313-101.000.

Redner, Raymond, III.: *See—*
Brandon, Ralph E.; Ring, Michael; and Redner, Raymond, III., 4,085,485, Cl. 28-104.000.

Redwine, Fletcher H.: *See—*
Crane, Robert M.; and Redwine, Fletcher H., 4,086,029, Cl. 417-53.000.

Rees, James D.: *See—*
Gallo, Charles F., Jr.; Hammond, Thomas J.; and Rees, James D., 4,086,010, Cl. 355-70.000.

Rees, James George Arthur: *See—*
Jebb, Alan; Rees, James George Arthur; and Lawrence, Raymond, 4,086,576, Cl. 340-272.000.

Rei, Nuno M.; and Hill, Nicholas J., to Ventron Corporation. Method of making polymeric compositions and compositions therefor. 4,086,297, Cl. 260-859.0PV.

Reichle, Walter Thomas, to Union Carbide Corporation. Catalyst for aldol condensations. 4,086,188, Cl. 252-463.000.

Reischl, Artur, to Bayer Aktiengesellschaft. Microporous sheets and a process for making them. 4,086,193, Cl. 260-2.5AY.

Remond, Georges: *See—*
Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, 4,086,355, Cl. 424-274.000.

Rempel, Cornelius N.; and Linkletter, Merle G., to Beloit Corporation. Method for pressing bagasse webs. 4,086,131, Cl. 162-203.000.

Repco Research Proprietary Limited: *See—*
Hadaway, Bernard Milton, 4,085,621, Cl. 74-37.000.

Reyrolle Parsons Limited: *See—*
Gonek, Stanislaw Mieczyslaw, 4,086,461, Cl. 200-148.00R.

Rheinecker, Tom Conrad: *See—*
Otten, Geneva Gail; Rheinecker, Tom Conrad; and Logan, Ted Joe, 4,086,079, Cl. 71-103.000.

Rheinstahl AG: *See—*
Dahlem, Werner, 4,085,592, Cl. 61-45.00D.

Rhodes, Robert B.: *See—*
Wood, Donald L.; Moore, Robert J.; and Rhodes, Robert B., 4,086,171, Cl. 252-33.000.

Rhone-Poulenc Industries: *See—*
Cotrel, Claude; Crisan, Cornel; Jeanmart, Claude; and Leger, Andre, 4,086,348, Cl. 424-256.000.
Daniel, Jean-Claude, 4,086,199, Cl. 260-29.7UP.
Prudhon, Francois; Fantino, Jean; and Mounier, Francois, 4,086,099, Cl. 106-109.000.

Rich, Joseph A., to General Electric Company. Rod array vacuum switch for high voltage operation. 4,086,459, Cl. 200-144.00B.

Rich, Stanley R.; and Pantazelos, Theophanes G., to RP Industries, Inc. Ozone concentrating. 4,086,152, Cl. 204-176.000.

Richard, Joseph D. Thermal energy flowmeter. 4,085,613, Cl. 73-193.00R.

Richards, Fred F. Two handed momentary actuator. 4,085,626, Cl. 74-110.000.

Richards, William E.: *See—*
Catano, Paul S.; and Richards, William E., 4,086,616, Cl. 358-81.000.

Richardson Company, The: *See—*
Song, Il H., 4,086,410, Cl. 526-264.000.

Richardson, David A.: *See—*
Curran, John R.; Sgourakes, George E.; and Richardson, David A., 4,085,614, Cl. 73-194.0VS.

Richardson, Jack M.: *See—*
Beck, Robert; Morello, Herbert J.; and Richardson, Jack M., 4,085,687, Cl. 109-24.100.

Richtzenhain, Hermann: *See—*
Daum, Gerhard; and Richtzenhain, Hermann, 4,086,237, Cl. 260-290.00P.

Rickard, Bryan W. Repertory diallers. 4,086,442, Cl. 179-90.0CS.

Ricouard, Jean-Pierre; and Schorter, Bruno, to U.S. Philips Corporation. Hall effect apparatus for determining the angular position of a rotating part. 4,086,533, Cl. 324-208.000.

Rideout, Vincent L., to International Business Machines Corporation. Fabrication of integrated circuits containing enhancement-mode FETs and depletion-mode FETs with two layers of polycrystalline silicon utilizing five basic pattern delineating steps. 4,085,498, Cl. 29-571.000.

Rider, Michael John: *See—*
Springthorpe, Anthony John; and Rider, Michael John, 4,086,126, Cl. 156-642.000.

Riedel, Guenther: *See—*
Seibert, Walter; Riedel, Guenther; and Mayer, Kurt, 4,086,054, Cl. 8-89.00R.

Riedl, Reinhold: *See—*
Sybertz, Hans; and Riedl, Reinhold, 4,085,494, Cl. 29-468.000.
Riggs, Donnie E. Athletic shoe. 4,085,527, Cl. 36-114.000.
Ring, Michael: *See—*
Brandon, Ralph E.; Ring, Michael; and Redner, Raymond, III., 4,085,485, Cl. 28-104.000.
Ringe, Stephen J., to Fruehauf Corporation. Door header construction. 4,085,966, Cl. 296-146.000.
Ringwall, Carl G.: *See—*
Haefner, Kenneth B.; and Ringwall, Carl G., 4,085,615, Cl. 73-194.00B.
Rite Autotronics Corporation: *See—*
Schwartz, Edwin L., 4,085,611, Cl. 73-115.000.
Ritsema, Irving Ray; and Turak, John Lewallen, to Bendix Corporation, The. Brake wear indicator. 4,085,826, Cl. 188-1.00A.
Ritter, Ernst: *See—*
Djordjevic, Ilija; Jaenke, Hans-Jurgen; Ritter, Ernst; and Staudt, Heinrich, 4,085,724, Cl. 123-140.0MC.
Robandt, William F.; Cartier, Roger J.; and Gay, Sandy C., to Whirlpool Corporation. Coil assembly structure. 4,086,553, Cl. 336-192.000.
Robbins, Medford Dwight: *See—*
Peterson, Donald John; and Robbins, Medford Dwight, 4,086,280, Cl. 260-617.00R.
Robbins, Theodore W.; and Terry, Raymond O., Jr., to Western Electric Company, Inc. Switchable attenuator assembly and method of assembling same. 4,086,548, Cl. 333-81.00R.
Robbins, Theodore W.: *See—*
Fulp, William W.; Nance, Jack G.; Owens, James L.; and Robbins, Theodore W., 4,086,546, Cl. 333-81.00R.
Nance, Jack G.; Owens, James L.; and Robbins, Theodore W., 4,086,547, Cl. 333-81.00R.
Roberson, Cletis L., to Owens-Corning Fiberglas Corporation. Apparatus for advancing a linear fibrous element. 4,085,881, Cl. 226-95.000.
Robert Bosch GmbH: *See—*
Djordjevic, Ilija; Jaenke, Hans-Jurgen; Ritter, Ernst; and Staudt, Heinrich, 4,085,724, Cl. 123-140.0MC.
Roberts, George. Ventilated toilet device. 4,085,470, Cl. 4-213.000.
Roberts, James L.: *See—*
Robinson, William R.; and Roberts, James L., 4,086,018, Cl. 408-226.000.
Roberts, Joseph A.: *See—*
Ostman, Barry I.; and Roberts, Joseph A., 4,085,502, Cl. 29-629.000.
Robertshaw Controls Company: *See—*
Branson, Charles D.; and Demi, Roy C., 4,085,891, Cl. 236-15.00A.
Steele, Everett T., Jr., 4,085,775, Cl. 137-625.500.
Robins Industries Corporation: *See—*
Post, Herman D.; Perper, Edward; and Alexandrovich, George, Sr., 4,085,926, Cl. 269-295.000.
Robinson, Aaron Z.: *See—*
Johnston, Thomas F.; and Robinson, Aaron Z., 4,086,560, Cl. 340-3.00R.
Robinson, Ronald Charles, to Northern Telecom Limited. Telephone handset transmitter with improved output response. 4,086,445, Cl. 179-121.00R.
Robinson Tool Company: *See—*
Robinson, William R.; and Roberts, James L., 4,086,018, Cl. 408-226.000.
Robinson, William F.: *See—*
Fillmore, Gary L.; Hill, James D.; Robinson, William F.; and Williams, Thomas H., 4,086,601, Cl. 346-75.000.
Robinson, William J.; and Martin, Harold G., to Sundstrand Corporation. Actuator system for dual path transmission. 4,085,812, Cl. 180-6.480.
Robinson, William R.; and Roberts, James L., to Robinson Tool Company. Deburring tool. 4,086,018, Cl. 408-226.000.
Rockwell International Corporation: *See—*
Brown, James L., 4,086,656, Cl. 364-733.000.
Chelikowsky, Richard D.; and Stinson, Kenneth R., 4,086,593, Cl. 343-106.00R.
LaChapelle, Theodore J., Jr.; Davis, John R.; and Licari, James J., 4,086,375, Cl. 427-90.000.
Scarborough, William M., 4,085,825, Cl. 188-1.00B.
Roesler, Frank Cornelius, to Imperial Chemical Industries Limited. Treatment of solids-liquid-gas mixtures. 4,086,160, Cl. 210-7.000.
Roger, Harry. Valve assembly. 4,085,772, Cl. 137-464.000.
Rohde, Wolfgang: *See—*
Echterhoff, Heinrich; Simonis, Wolfgang; Rohde, Wolfgang; and Beck, Kurt-Gunther, 4,086,143, Cl. 201-41.000.
Rohm and Haas Company: *See—*
Carty, Daniel T.; and Oline, James A., 4,086,296, Cl. 260-857.00G.
Hurt, William S., 4,086,337, Cl. 424-215.000.
Owen, Ronald P.; Miller, George A.; and Schneider, Charles M., 4,086,336, Cl. 424-204.000.
Owens, Frederick H.; and Clovis, James S., 4,086,300, Cl. 260-885.000.
Roland, Murray C.; and Norum, Edward M., to Lockwood Corporation. Outdoor motor enclosure. 4,086,507, Cl. 310-88.000.
Rolls-Royce Limited: *See—*
Freeman, Christopher; and Moritz, Robert Rudolph, 4,086,022, Cl. 415-119.000.
Slattery, Sidney Edward, 4,085,580, Cl. 60-39.650.
Rolls-Royce Motors Limited: *See—*
Walker, David Richard William, 4,086,178, Cl. 252-143.000.
Rondanelli, Alfredo: *See—*
Gozzo, Franco; Rondanelli, Alfredo; and Rossi, Giorgio, 4,086,226, Cl. 260-239.0BF.
Rontex America, Inc.: *See—*
Dilo, Richard, 4,085,486, Cl. 28-110.000.
Roper Corporation: *See—*
Kromm, David C.; and Znamirowski, Henry, 4,085,480, Cl. 16-94.00D.
Roquemore, William D.: *See—*
Jackson, Jimmy; and Roquemore, William D., 4,085,633, Cl. 81-111.000.
Rosinski, Edward J.: *See—*
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., 4,086,186, Cl. 252-430.000.
Rossetti, Vittorio: *See—*
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, 4,086,225, Cl. 260-239.30P.
Rossi, Giorgio: *See—*
Gozzo, Franco; Rondanelli, Alfredo; and Rossi, Giorgio, 4,086,226, Cl. 260-239.0BF.
Rotgans, Gerrit Jacob, to Gould Godart B.V. Apparatus for effecting plethysmography. 4,085,741, Cl. 128-2.080.
Roth, Gerd: *See—*
Axer, Heinrich; and Roth, Gerd, 4,086,313, Cl. 264-70.000.
Rowland, Stanley P., to United States of America, Agriculture. Flame retarded textiles via deposition of polymers from oligomeric vinylphosphonate and polyamino compounds. 4,086,385, Cl. 428-272.000.
Rowley, James R., to PPG Industries, Inc. Shipping rack having spacer strips attached thereto. 4,086,263, Cl. 206-454.000.
Royal Industries, Inc.: *See—*
Shapiro, Haskell; and DeCaro, Robert E., 4,085,619, Cl. 73-462.000.
Rozhkov, Alexandr Timofeevich: *See—*
Deribas, Andrei Andreevich; Demchuk, Alexandr Fedorovich; Braunshtein, Rudolf Aronovich; Bochkarev, Boris Nikolaevich; Viktorov, Vladimir Borisovich; Karkishko, Gennady Semenovich; Baranov, Sergei Vasilievich; Prakhov, Alexandr Ivanovich; Kasatkin, Vladimir Semenovich; and Rozhkov, Alexandr Timofeevich, 4,085,883, Cl. 228-2.500.
RP Industries, Inc.: *See—*
Rich, Stanley R.; and Pantazelos, Theophanes G., 4,086,152, Cl. 204-176.000.
Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., to Mobil Oil Corporation. Crystalline zeolite ZSM-34 and method of preparing the same. 4,086,186, Cl. 252-430.000.
Ruckdeschel, Frederick R.: *See—*
Hauser, Oscar G.; and Ruckdeschel, Frederick R., 4,086,006, Cl. 355-3.0DD.
Ruff, Stanley L. Insulating drink-through closure lids for potable open-top containers. 4,085,861, Cl. 220-90.400.
Rundell, Herbert A., to Texaco Inc. Heavy duty torque coupling. 4,085,612, Cl. 73-136.00A.
Runkel, Albert: *See—*
Thiel, Alfons W.; Martini, Hans; Wolf, Peter; and Runkel, Albert, 4,085,517, Cl. 34-21.000.
Runnels, John H.: *See—*
Engle, Charles J.; and Runnels, John H., 4,085,800, Cl. 166-288.000.
Rupp, Roland: *See—*
Bocker, Ernst; Kracht, Wolfgang; Rupp, Roland; Schellmann, Erhard; Trescher, Viktor; and Ullrich, Martin, 4,086,346, Cl. 424-253.000.
Rush-Hampton Industries: *See—*
Frazier, Stephen E., 4,085,704, Cl. 119-1.000.
Ryan, Kenneth J.: *See—*
Acton, Edward M.; and Ryan, Kenneth J., 4,086,416, Cl. 536-24.000.
Rydborn, Sten-Ake. Apparatus for the optional detection of the movement of any individual or any optional pair of objects. 4,086,575, Cl. 340-259.000.
Ryland, Garnett, II: *See—*
Buckley, William H.; and Ryland, Garnett, II, 4,086,012, Cl. 403-2.000.
Ryon, Donald Carroll, to Motorola, Inc. Instantly retunable tone generator for an electronic musical instrument. 4,085,645, Cl. 84-1.010.
Safe Rack, Inc.: *See—*
Gordon, Roger G., 4,085,864, Cl. 221-155.000.
Safford, George J.: *See—*
Davis, Thomas G.; and Safford, George J., 4,086,650, Cl. 361-229.000.
Sagami Chemical Research Center: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 4,086,420, Cl. 542-413.000.
Saido, Shuichi: *See—*
Mitani, Seishu; Kudo, Tsuneo; Mitani, Minoru; and Saido, Shuichi, 4,086,390, Cl. 428-550.000.
Saito, Shoichi, to Olympus Optical Co., Ltd. Device for fitting a magnetic head of a tape recorder. 4,086,638, Cl. 360-109.000.
Saito, Shozo; and Inoue, Naoyuki, to Ebara Manufacturing Co., Ltd. Double effect absorption refrigerating system. 4,085,595, Cl. 62-476.000.
Saito, Toranosuke; Kitani, Masakatu; Mori, Kenshi; and Izawa, Shinichi, to Sanko Kaihatsu Kagaku Kenkyosho; and Asahi-Dow Limited. Organophosphorus compounds and process for the production thereof. 4,086,206, Cl. 260-45.8NT.
Saitou, Sinichi, to Olympus Optical Co., Ltd. Recording and reproducing apparatus with tape seed dependent on head selection. 4,086,635, Cl. 360-73.000.

Sakaguchi, Keiichi: *See*—
Ishikawa, Kazuo; Sakaguchi, Keiichi; Takigawa, Tomoshi; Hirata, Noritsugu; Tajima, Akira; and Tsuji, Sadahiko, 4,086,605, Cl. 354-270.000.
Sakakibara, Shumpei; Morikawa, Tadanori; Munekata, Eisuke; Kimura, Terutoshi; Nakagawa, Yasuo; and Noda, Toshiharu, to Toyo Jozo Kabushiki Kaisha. Polypeptides and process for producing the same. 4,086,221, Cl. 260-112.50T.
Sakuma, Fumio: *See*—
Soeda, Katsuji; Sakuma, Fumio; and Oyama, Mitsuhiro, 4,085,692, Cl. 112-275.000.
Sakurada, Nobuaki: *See*—
Ito, Fumio; Ito, Tadashi; Mashimo, Yukio; Sakurada, Nobuaki; and Shinoda, Nobuhiko, 4,086,581, Cl. 354-23.00D.
Sakurai, Yoshio: *See*—
Ishida, Torao; Akiyama, Minoru; Sakurai, Yoshio; and Tsukagoshi, Shigeru, 4,086,417, Cl. 536-29.000.
Salle, Donald A. Pen shaking device. 4,085,955, Cl. 366-212.000.
Saltich, Jack L.: *See*—
Clark, Lowell E.; and Saltich, Jack L., 4,086,610, Cl. 357-34.000.
Salzano, Francis J.: *See*—
Powell, James R.; and Salzano, Francis J., 4,085,590, Cl. 60-673.000.
Samokovliski, David Albert; Grozdanov, Petko Kostadinov; Nemechek, Alfred Emmerich; Punchev, Simeon Georgiev; and Petrov, Peter Dimitrov, to Institute po Zavaryavane. Device for planetary electrode wire-feeding having automatic adjusting means for the pushing force exerted on the electrode wire. 4,085,880, Cl. 226-90.000.
Sampson, Richard L.: *See*—
Severson, Asbjorn M.; and Sampson, Richard L., 4,085,730, Cl. 126-270.000.
Sams, Marvin W. Electroencephalograph cap and electrode harness. 4,085,739, Cl. 128-2.10B.
Sanada, Noriaki: *See*—
Kiyohara, Takehiko; Tsunekawa, Tokuichi; Yazaki, Mutsunobu; Sanada, Noriaki; Taguchi, Tetsuya; and Nakamura, Zenzo, 4,086,582, Cl. 354-33.000.
Sanders, James E., to Owens-Corning Fiberglas Corporation. Apparatus for packaging linear material. 4,085,901, Cl. 242-18.00G.
Sandoz, Inc.: *See*—
Nadelson, Jeffrey, 4,086,243, Cl. 260-325.0PH.
Nadelson, Jeffrey, 4,086,421, Cl. 544-127.000.
Sandoz Ltd.: *See*—
Kleinlogel, Horst, 4,086,342, Cl. 424-250.000.
Neumann, Peter, 4,086,353, Cl. 424-272.000.
Sanitation Equipment Limited: *See*—
Stewart, John M., 4,086,037, Cl. 417-571.000.
Sanko Kaihatsu Kagaku Kenkyosho: *See*—
Saito, Toranosuke; Kitani, Masakatu; Mori, Kenshi; and Izawa, Shinichi, 4,086,206, Cl. 260-45.8NT.
Sant' Andrea Novara Officine Meccaniche e Fonderie S.p.A.: *See*—
Marcio", Pietro, 4,085,900, Cl. 242-18.0DD.
Sargent Industries, Inc.: *See*—
Smith, Fred T., 4,085,857, Cl. 214-302.000.
Smith, Fred T., 4,085,858, Cl. 214-303.000.
Sartorius-Werke GmbH und. vorm. Goettinger Praezisionswaagenfabrik GmbH: *See*—
Knothe, Erich; Berg, Christoph; and Stadler, Eberhard, 4,085,811, Cl. 177-210.0EM.
Sarver, John J. Rearwardly controlled snow skis. 4,085,947, Cl. 280-607.000.
Sasaki, Isao, to Nittan Company. Alarm control device. 4,086,573, Cl. 340-213.00R.
Sasaki, Kazuo: *See*—
Yoshida, Mitsuo; Furukawa, Wataru; Yamaguchi, Takashi; and Sasaki, Kazuo, 4,085,942, Cl. 277-30.000.
Sase, Takashi: *See*—
Katou, Kazuo; Sase, Takashi; and Horinaka, Ikuho, 4,086,541, Cl. 330-51.000.
Sasse, Wolfgang Hermann Fritz: *See*—
Jackson, Mervyn Benjamin; and Sasse, Wolfgang Hermann Fritz, 4,086,299, Cl. 260-885.000.
Sathe, Hemant T.: *See*—
Gauss, Robert C.; Sathe, Hemant T.; and Wills, Lynn D., 4,086,596, Cl. 343-715.000.
Sato, Hiroshi: *See*—
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,086,138, Cl. 195-65.000.
Sato, Masanari: *See*—
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,086,136, Cl. 195-29.000.
Sato, Sadaharu: *See*—
Yoshikawa, Naohiro; Sato, Sadaharu; Matsubara, Masanori; and Hosoda, Masao, 4,085,675, Cl. 101-269.000.
Satron, Inc.: *See*—
McLennan, Richard Earl; and Looker, Robert, 4,085,684, Cl. 105-482.000.
Satterlee, Adelbert E.: *See*—
Meuschke, Robert E.; and Satteriee, Adelbert E., 4,086,132, Cl. 176-30.000.
Sattler, Robert I., to LaSalle Machine Tool, Inc. Cam and cam follower assembly. 4,085,634, Cl. 82-19.000.
Saucy, Gabriel: *See*—
Chan, Ka-Kong; and Saucy, Gabriel, 4,086,249, Cl. 260-345.500.
Sauder, Kenneth D. Nonpickable lock. 4,085,601, Cl. 70-364.00R.
Saufferer, Helmut: *See*—
Willmann, Karl; and Saufferer, Helmut, 4,085,717, Cl. 123-119.00E.
Savarimuthu, Sundar. Hydraulic engine piston. 4,085,710, Cl. 123-19.000.
Sawada, Hideo: *See*—
Toyoshima, Iwao; Ishii, Kunio; Sawada, Hideo; Kawamoto, Junji; and Yokota, Hiromu, 4,085,760, Cl. 131-268.000.
Sawai, Tsukasa: *See*—
Sugio, Akitoshi; Masuda, Yukiya; Kobayashi, Toshihiko; Nakano, Koichi; and Sawai, Tsukasa, 4,086,128, Cl. 156-668.000.
Sawyer, Gerry Dun: *See*—
Speiser, Maxmilian Richard; Eng, Don; and Sawyer, Gerry Dun, 4,086,630, Cl. 364-410.000.
Scarborough, William M., to Rockwell International Corporation. Vibratory system isolation and flexure pivot. 4,085,825, Cl. 188-1.00B.
Schaal, Christian, to Daimler-Benz Aktiengesellschaft. Exhaust gas return system for auto-igniting internal combustion engines. 4,085,718, Cl. 123-119.00A.
Scharlack, Ronald S. Automatic heater controller. 4,086,466, Cl. 219-494.000.
Scheffler, Friedrich; and Stangl, Ernst, to AEG-Elotherm G.m.b.H. Induction heating system for the continuous flow heating of workpieces. 4,086,462, Cl. 219-10.710.
Scheidel, Fritz, to Siemens Aktiengesellschaft. Coating for passivating a semiconductor device. 4,086,614, Cl. 357-54.000.
Scheinecker, Alois; Koller, Karl; and Holleis, Gunter, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Plate mould having two tiltably adjustable end walls. 4,085,793, Cl. 164-436.000.
Scheithauer, Eric A.: *See*—
Hines, William; Scheithauer, Eric A.; and Cwirzen, Casimir, 4,086,648, Cl. 361-124.000.
Schellmann, Erhard: *See*—
Bocker, Ernst; Kracht, Wolfgang; Rupp, Roland; Schellmann, Erhard; Trescher, Viktor; and Ullrich, Martin, 4,086,346, Cl. 424-253.000.
Schenk, Bernard H., to Hugh J. McLaughlin & Son, Inc. Composition for a floater golf ball and the floater golf ball made therefrom. 4,085,937, Cl. 273-218.000.
Schermacher, Ken Stephen: *See*—
Cheshire, David Alan; Debbas, Samir Costandi; Eger, Richard Thomas; Schermacher, Ken Stephen; and Twohig, Paul Thomas, 4,086,381, Cl. 428-113.000.
Schick, Rupert: *See*—
Hinselmann, Klaus; Penzien, Klaus; Schick, Rupert; Walter, Manfred; Weber, Heinz; and Wirth, Heinrich, 4,086,191, Cl. 260-2.50B.
Schilling, Karl; and Rathert, Horst, to Werftunion G.m.b.H. & Co. Dual rudder assembly. 4,085,694, Cl. 114-163.000.
Schindler, Hans Rudolf; and Vettiger, Peter, to International Business Machines Corporation. Electronic hybrid circuit for connecting a two-wire line to switching system. 4,086,447, Cl. 179-170.0NC.
Schirutschke, Rudolf: *See*—
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.
Schlapp, Albert, to American Sunroof Manufacturing Company. Sliding roofs for automobiles. 4,085,965, Cl. 296-137.00F.
Schlatter, James M., to G. D. Searle & Co. Fragments of secretin. 4,086,220, Cl. 260-112.50R.
Schlumberger Technology Corporation: *See*—
Schweitzer, Jeffrey S.; and Tapphorn, Ralph M., 4,085,798, Cl. 166-252.000.
Schmandt, Gary M.: *See*—
Finn, Lawrence R.; McCartan, Daniel A.; and Schmandt, Gary M., 4,085,562, Cl. 53-59.00R.
Schmidt-Dunker, Manfred; and Potokar, Matthias, to Henkel Kommanditgesellschaft Auf Aktien. Composition and method for the treatment of disorders of calcium metabolism. 4,086,334, Cl. 424-177.000.
Schmidt, Michael P.: *See*—
Anderson, Leroy E.; Schmidt, Michael P.; and Weaver, William W., 4,085,604, Cl. 72-50.000.
Schmidt, Roger N., to Honeywell Inc. Solar air heater. 4,085,729, Cl. 126-270.000.
Schmit, Joseph Lawrence: *See*—
Johnson, Eric Shanks; and Schmit, Joseph Lawrence, 4,086,106, Cl. 148-33.000.
Schmitt, James F.: *See*—
Kast, Philip J.; and Schmitt, James F., 4,085,821, Cl. 184-15.00A.
Schmitter, Hans-Jurgen: *See*—
Lehn, F. Heinrich; and Schmitter, Hans-Jurgen, 4,085,507, Cl. 32-17.000.
Schneider, Abraham; Ware, Richard E.; and Janoski, Edward J., to Suntech, Inc. Isomerization of endo-tetrahydrodicyclopentadiene to a missile fuel diluent. 4,086,284, Cl. 260-666.0PY.
Schneider, Abraham: *See*—
Janoski, Edward J.; Schneider, Abraham; and Ware, Richard E., 4,086,286, Cl. 260-666.0PY.
Schneider, Alvin F., to Alpha Metals, Inc. Improved cleaning solvent containing non-azeotropic mixtures of 1,1,1-trichloroethane and n-propanol. 4,086,179, Cl. 252-171.000.

Schneider, Charles M.: *See—*
Owen, Ronald P.; Miller, George A.; and Schneider, Charles M., 4,086,336, Cl. 424-204.000.
Schneider, Louis; and Graham, David E., to GAF Corporation. Fungicidal-N-(3-halo-2,6-dinitro-4-trifluoromethylphenyl)-pyrrolidones. 4,086,356, Cl. 424-274.000.
Schneider, Louis; and Graham, David E., to GAF Corporation. Fungicidal 2,6-dinitrodiphenylethers. 4,086,364, Cl. 424-340.000.
Schneider, Rolf: *See—*
Laux, Walter; Hebel, Rudolf; and Schneider, Rolf, 4,086,052, Cl. 432-217.000.
Schorter, Bruno, to U.S. Philips Corporation. Automotive electronic flasher unit. 4,086,565, Cl. 340-81.00R.
Schorter, Bruno: *See—*
Ricouard, Jean-Pierre; and Schorter, Bruno, 4,086,533, Cl. 324-208.000.
Schriefl, Karl-Ekkehard: *See—*
Joschko, Gunter; and Schriefl, Karl-Ekkehard, 4,085,939, Cl. 274-1.00R.
Schriever, William W., to Meyer, Edward D. Double wedge-lock cylinder head. 4,085,661, Cl. 92-170.000.
Schrock, Wilfried; Konig, Hans-Bodo; Preiss, Michael; Metzger, Karl Georg; and Walkowiak, Michael, to Bayer Aktiengesellschaft. Cephalosporins and their production. 4,086,340, Cl. 424-246.000.
Schroeder, Rondon L. Digital altitude encoder. 4,086,580, Cl. 340-347.00P.
Schuhmann, Reinhardt, Jr.: *See—*
Queneau, Paul E.; and Schuhmann, Reinhardt, Jr., 4,085,923, Cl. 266-215.000.
Schulz, Johann G.: *See—*
Onopchenko, Anatoli; and Schulz, Johann G., 4,086,277, Cl. 260-591.000.
Schumacher, Ignatius: *See—*
Morgan, Aibert W.; Schumacher, Ignatius; and Vanderlinde, William, 4,086,302, Cl. 260-926.000.
Schwartz, Edwin L., to Rite Autotronics Corporation. Recording compression testing meter. 4,085,611, Cl. 73-115.000.
Schwarz, Alois: *See—*
Weiland, Emil; Schwarz, Alois; Mautz, Karl-Heinz; and Frommlet, Hubert, 4,086,024, Cl. 416-140.000.
Schweinsberg, Dieter Klaus-Jurgen, to Eichner Organisation KG. Data carrier holder. 4,085,535, Cl. 40-124.200.
Schweinsberg, Dieter Klaus-Jurgen: *See—*
Eckstein, Werner Willi Gustav; and Schweinsberg, Dieter Klaus-Jurgen, 4,085,534, Cl. 40-124.200.
Schweitzer, Edmund O., Jr. Fault indicator and means for resetting the same. 4,086,529, Cl. 324-127.000.
Schweitzer, Jeffrey S.; and Tapphorn, Ralph M., to Schlumberger Technology Corporation. Method for investigating the front profile during flooding of formations. 4,085,798, Cl. 166-252.000.
Schweitzer, Judith J. Knapsack with integral storage and carrying pouch. 4,085,873, Cl. 224-8.00R.
Science Union et Cie., Societe Francaise de Recherche Medicale: *See—*
Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, 4,086,355, Cl. 424-274.000.
SCM Corporation: *See—*
Markakis, Michael J., 4,085,836, Cl. 197-19.000.
Scott, M. Walter: *See—*
Hager, Robert J.; Johnson, Eric S.; Scott, M. Walter; and Stelzer, Ernest L., 4,085,500, Cl. 29-589.000.
Scriabine, Alexander, to Merck & Co., Inc. Novel anti-hypertensive compositions. 4,086,354, Cl. 424-273.00R.
Scrivo, Leonard; and Goldstein, Sidney, to Vicon Products Corporation. Eye glasses. 4,086,004, Cl. 351-158.000.
Sears, Barry D. Phosphatidyl quaternary ammonium compounds. 4,086,257, Cl. 260-403.000.
Sears, Charles L.: *See—*
Horine, James H.; Watts, Lowell K.; Wininger, Hershel R.; Kelley, Dale; and Sears, Charles L., 4,085,552, Cl. 51-166.00R.
Sega, Kenji: *See—*
Suzuki, Osamu; Oishi, Kengo; Akashi, Goro; and Sega, Kenji, 4,085,907, Cl. 242-199.000.
Seibert, Walter; Riedel, Guenther; and Mayer, Kurt, to BASF Aktiengesellschaft. Concentrated storage-stable solutions of alkylbenzenesulfonates of basic dyes. 4,086,054, Cl. 8-89.00R.
Seiderman, Abe. Cushioned toilet seat assembly. 4,085,468, Cl. 4-237.000.
Seiford, Robert R. Mechanical locking device for a longitudinally split bottom dump barge. 4,085,693, Cl. 114-29.000.
Seiko-Seiki Kabushiki Kaisha: *See—*
Sugita, Terumitsu, 4,085,554, Cl. 51-325.000.
Seiler, Erhard: *See—*
Fahrbach, Gerhard; Gerberding, Karl; Seiler, Erhard; and Stein, Dieter, 4,086,298, Cl. 260-880.00B.
Seitzer, Walter H., to Sun Oil Company of Pennsylvania. Manufacture of xylenes. 4,086,289, Cl. 260-671.00M.
Sellars, Lester Porter: *See—*
Foxall, Thomas George; Ibrahim, Abd-El-Fattah Ali; and Sellars, Lester Porter, 4,086,609, Cl. 357-24.000.
Selsam, Roger L.: *See—*
Bouyoucos, John V.; Behnfeldt, Marvin J.; and Selsam, Roger L., 4,086,122, Cl. 156-556.000.
Semiconductor Research Foundation: *See—*
Nishizawa, Jun-ichi; Nakamura, Kentaro; and Kitsuregawa, Takashi, 4,086,611, Cl. 357-38.000.
Senoo, Masao: *See—*
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, 4,086,209, Cl. 260-49.000.
Seragnoli, Enzo, to G. D. Societa per Azioni. Device for preparing pieces of wrapping material for use as the inner wrap in hinge lid cigarette packs. 4,085,569, Cl. 53-389.000.
Seragnoli, Enzo, to G. D. Societa Per Azioni. Automatic apparatus for transferring cigarette containers from devices arranged to fill such containers to hopper loading mechanisms in packaging machines for forming packets of cigarettes. 4,085,759, Cl. 131-25.000.
Sergot, Joseph, to Prorea S.A. Method for simultaneously concentrating and purifying phosphoric acid. 4,086,069, Cl. 55-48.000.
Serini, Volker: *See—*
Bottenbruch, Ludwig; Kampf, Gunther; Serini, Volker; and Vernaleken, Hugo, 4,086,310, Cl. 264-41.000.
Serpas, Luis B.; Small, Sam W.; and Ellers, Frederick S., to Bechtel International Corporation. Materials delivery system for offshore terminal and the like. 4,085,781, Cl. 141-1.000.
Severson, Asbjorn M.; and Sampson, Richard L., to Honeywell Inc. Solar air heater. 4,085,730, Cl. 126-270.000.
Seward, Thomas Philip, III; and Wedding, Brent Merle, to Corning Glass Works. Method for producing tri-color screens for television picture tubes. 4,086,089, Cl. 96-27.00R.
Sexton, Arthur R.: *See—*
Stevens, Violete L.; Sexton, Arthur R.; and Corson, Frederick P., 4,086,151, Cl. 204-159.160.
Sgourakes, George E.: *See—*
Curran, John R.; Sgourakes, George E.; and Richardson, David A., 4,085,614, Cl. 73-194.0VS.
Shakespeare Company: *See—*
McLain, Philippe Hardy-The; and Shepherd, Bob Gene, 4,085,574, Cl. 57-68.000.
Shanbrom, Edward; and Bishop, Robert C., to Edward Shanbrom, Inc. Method of preserving blood plasma II. 4,086,218, Cl. 260-112.00B.
Shapiro, Haskell; and DeCaro, Robert E., to Royal Industries, Inc. Electronic balancer for vehicle wheels. 4,085,619, Cl. 73-462.000.
Sharp Kabushiki Kaisha: *See—*
Takano, Rikuo; Ohta, Yutaka; Sumitomo, Yuji; Shimazawa, Yoichi; and Aiba, Masahiko, 4,085,837, Cl. 197-133.00R.
Tanimoto, Akira; and Nishimura, Kosuke, 4,086,655, Cl. 364-705.000.
Sharpe, Thomas H. Impaction/induction jet engine. 4,085,585, Cl. 60-262.000.
Sharples, Thomas D., to Beckman Instruments, Inc. Flexible stem valve. 4,085,952, Cl. 251-298.000.
Shaw, Bryan; Lawton, Valerie; and McAinsh, James, to Imperial Chemical Industries Limited. Fibers sized with polyester and polyurethane precursors. 4,086,203, Cl. 260-40.00R.
Shaw, David N., to Dunham-Bush, Inc. Air source heat pump with multiple slide rotary screw compressor/expander. 4,086,072, Cl. 62-2.000.
Shaw, Hugh E., Jr.: *See—*
Cherenko, Joseph P.; and Shaw, Hugh E., Jr., 4,086,595, Cl. 343-713.000.
Shell Oil Company: *See—*
Kravetz, Louis N.; and Kubitschek, Hans E., 4,086,175, Cl. 252-99.000.
Kubitschek, Hans E.; and Kravetz, Louis, 4,086,177, Cl. 252-102.000.
Wattimena, Freddy, 4,086,282, Cl. 260-621.00H.
Wood, Donald L.; Moore, Robert J.; and Rhodes, Robert B., 4,086,171, Cl. 252-33.000.
Shenfield, Leonard R.: *See—*
Cizmic, Stipe; Edwards, Wayne L., Jr.; Jacques, James O.; Mahon, Douglas K.; and Shenfield, Leonard R., 4,086,636, Cl. 360-75.000.
Cizmic, Stipe; Edwards, Wayne L., Jr.; Griffith, David L.; Halfhill, Martin O.; Jacques, James O.; Shenfield, Leonard R.; and Votaw, Ronald W., 4,086,659, Cl. 364-900.000.
Shephard, Margaret Claire: *See—*
Balasubramanyan, Sugavanam; and Shephard, Margaret Claire, 4,086,351, Cl. 424-269.000.
Shepherd, Bob Gene: *See—*
McLain, Philippe Hardy-The; and Shepherd, Bob Gene, 4,085,574, Cl. 57-68.000.
Sherk, Fred T.: *See—*
Irvin, Howard B.; Sherk, Fred T.; and Hoffman, Alfred A., Jr., 4,086,288, Cl. 260-671.00R.
Sherman, Clarence A., to McDermid, Terry. Tilting cab latch mechanism. 4,085,960, Cl. 296-28.00C.
Sherwood Medical Industries Inc.: *See—*
Dodge, Larry H., 4,085,751, Cl. 128-275.000.
Shiba, Keisuke; Hirose, Takeshi; Inouye, Kozo; and Okumura, Akio, to Fuji Photo Film Co., Ltd. Photographic couplers with N-heterocyclic development inhibiting coupling-off group. 4,086,094, Cl. 96-100.00R.
Shibata, Norio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Secondary air supply system for internal combustion engines. 4,085,586, Cl. 60-277.000.
Shibata, Seiji: *See—*
Honda, Tetsuya; Yagi, Kiyoshi; Shibata, Seiji; and Yamaguchi, Kazuo, 4,086,189, Cl. 252-519.000.
Shibata, Toshiji; and Fujiwara, Shinji, to Meisei Electric Co. Ltd. Microwave oscillator. 4,086,535, Cl. 325-128.000.
Shibuya, Tsunenori; and Kondo, Hiroshi, to Diesel Kiki Co., Ltd.

Rotary compressor comprising improved rotor lubrication system. 4,086,040, Cl. 418-76.000.

Shimanuki, Fujio: *See*—
Kotezawa, Katsutaka; Onodera, Toshimi; Hayashi, Setsuo; and Shimanuki, Fujio, 4,086,429, Cl. 178-69.100.

Shimazawa, Yoichi: *See*—
Takano, Rikuo; Ohta, Yutaka; Sumitomo, Yuji; Shimazawa, Yoichi; and Aiba, Masahiko, 4,085,837, Cl. 197-133.00R.

Shimizu, Kazuaki, to Nissan Motor Co., Ltd. Disc brake. 4,085,829, Cl. 188-72.500.

Shimokawa, Yoichi: *See*—
Ezumi, Yuh; Kobayashi, Masaharu; Kubota, Takashi; and Shimokawa, Yoichi, 4,086,093, Cl. 96-86.00P.
Kurihara, Masaru; Tokizane, Soichi; Tanaka, Tatsundo; Tanimura, Masamitsu; and Shimokawa, Yoichi, 4,086,215, Cl. 260-78.00R.

Shinoda, Nobuhiko: *See*—
Ito, Fumio; Ito, Tadashi; Mashimo, Yukio; Sakurada, Nobuaki; and Shinoda, Nobuhiko, 4,086,581, Cl. 354-23.00D.

Shirahata, Ryuji: *See*—
Suzuki, Masaaki; Shirahata, Ryuji; Aonuma, Masashi; and Kitamoto, Tatsuji, 4,086,374, Cl. 427-48.000.

Shirai, Isoo; Suzuki, Takeshi; and Takahashi, Tsutomu, to Chisso Corporation. Process for activating catalyst for polymerization of propylene before polymerization. 4,086,185, Cl. 252-429.00B.

Shorter, Myron L., Jr. Utility chase for floating units. 4,085,696, Cl. 114-266.000.

Shrive, Nigel Graham: *See*—
Goodfellow, John William; O'Connor, John Joseph; and Shrive, Nigel Graham, 4,085,466, Cl. 3-1.910.

Siebelink, Johannes Willem: *See*—
Franssen, Nico Valentinus; Kuijk, Karel Elbert; and Siebelink, Johannes Willem, 4,086,431, Cl. 179-1.0SA.

Sieberer, Karl-Heinz: *See*—
Koziol, Konrad; Sieberer, Karl-Heinz; and Rathjen, Hans-Carl, 4,086,157, Cl. 204-290.00F.

Sieder, Wolfgang, to Daimler-Benz Aktiengesellschaft. Strain gauge. 4,086,554, Cl. 338-2.000.

Siemens Aktiengesellschaft: *See*—
Haass, Adolf, 4,086,428, Cl. 178-60.000.
Jurgens, Wolfgang; Nageler, Jorg; Lippitsch, Josef; and Holzner, Julius, 4,086,308, Cl. 261-124.000.
Koubek, Michael, 4,086,615, Cl. 358-32.000.
Koubek, Michael, 4,086,618, Cl. 358-166.000.
Krumrey, Guenter; and Stoeckl, Wilhelm, 4,086,493, Cl. 250-468.000.
Scheidel, Fritz, 4,086,614, Cl. 357-54.000.
Voss, Peter, 4,086,612, Cl. 357-38.000.
Vukasovic, Lovro, 4,086,621, Cl. 363-37.000.
Vukasovic, Lovro, 4,086,622, Cl. 363-37.000.

Sifferman, Thomas R.; and Sparlin, Derry D., to Continental Oil Company. Control of incompetent formations with thickened acid-settable resin compositions. 4,085,801, Cl. 166-295.000.

Sifferman, Thomas R.; and Sparlin, Derry D., to Continental Oil Company. Use of thickened oil for sand control processes. 4,085,802, Cl. 166-295.000.

Sikora, Harald. Apparatus for the measurement of the wall thickness of coated rod with consideration of eccentricity. 4,086,044, Cl. 425-113.000.

Sikora, Harald, to Harald Sikora Sikora Industrieelektronik. Apparatus for controlling the laying of strip material. 4,086,472, Cl. 235-92.0DN.

Silberman, Louis B.: *See*—
Solomon, Irvine J.; and Silberman, Louis B., 4,086,228, Cl. 260-239.0HM.

Silver, Louis J. Scouring device. 4,085,475, Cl. 15-209.00D.

Silver Seiko Co., Ltd.: *See*—
Kamikura, Shigeo; Itagaki, Hideaki; Kagaya, Yutaka; and Kawaoka, Ryoiti, 4,085,597, Cl. 66-75.200.

Silvestri, Anthony J.: *See*—
Chang, Clarence D.; Lang, William H.; and Silvestri, Anthony J., 4,086,262, Cl. 260-449.60R.

Simond, Jacques: *See*—
Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; Simond, Jacques; and Monteil, Andre, 4,086,352, Cl. 424-270.000.

Simonis, Wolfgang: *See*—
Echterhoff, Heinrich; Simonis, Wolfgang; Rohde, Wolfgang; and Beck, Kurt-Gunther, 4,086,143, Cl. 201-41.000.

Simonoff, Ely; to Opelika Manufacturing Corporation. Double oven mitt. 4,085,464, Cl. 2-158.000.

Simplot, J. R.: *See*—
Bosley, Roy E.; Mann, Paul T.; Decoteau, Gary D.; Ivie, Kert F.; and Winslow, Elden D., 4,086,368, Cl. 426-464.000.

Singer Company, The: *See*—
Coughenour, Donald Jay; and Brown, Jack, 4,085,691, Cl. 112-158.00E.
Ljung, Bo Hans Gunnar, 4,085,982, Cl. 308-76.000.
Meyer, Jerome W., 4,085,524, Cl. 35-10.400.
Papajewski, Reinhold, 4,085,690, Cl. 112-158.00R.

Singh, Baldev: *See*—
Lesher, George Y.; and Singh, Baldev, 4,086,233, Cl. 260-256.40C.

Sinsky, Allen I.; Wang, Paul C.; and Willey, Robert E., to Bendix Corporation, The. Continuous line scanning technique and means for beam port antennas. 4,086,597, Cl. 343-754.000.

Siwiak, Kazimierz; and Moran, Robert L., to Raytheon Company. Small aperture antenna. 4,086,591, Cl. 343-18.00A.

Skarheim, Hans Petter; and Damhaug, Torbjorn, to Thune-Eureka A/S. Lamella separator for sedimenting (gravity separating). 4,086,169, Cl. 210-519.000.

Skega AB: *See*—
Svensson, Assar Natanael, 4,086,291, Cl. 260-758.000.

Skidmore, Thomas A.: *See*—
Kahn, Daniel W.; and Skidmore, Thomas A., 4,086,438, Cl. 179-18.0BE.

Skutley, Kale Franklin: *See*—
Bod, Dennis Lee; and Skutley, Kale Franklin, 4,085,512, Cl. 33-293.000.

Slater Electric Inc.: *See*—
Slater, Thomas S.; and Jadatz, Harald B., 4,086,549, Cl. 335-18.000.

Slater, Saul I. Convertible airship. 4,085,912, Cl. 244-25.000.

Slater, Thomas S.; and Jadatz, Harald B., to Slater Electric Inc. Circuit interrupter relay. 4,086,549, Cl. 335-18.000.

Slattery, Sidney Edward, to Rolls-Royce Limited. Combustion chambers for gas turbine engines. 4,085,580, Cl. 60-39.650.

Sloan, Tod Hunter: *See*—
Conca, Romeo John; Gray, John Patrick; and Sloan, Tod Hunter, 4,086,129, Cl. 162-49.000.

Small, Sam W.: *See*—
Serpas, Luis B.; Small, Sam W.; and Ellers, Frederick S., 4,085,781, Cl. 141-1.000.

Smith, Clive Richard; and Mills, Brian. Treatment of effluent. 4,085,688, Cl. 110-238.000.

Smith, Craig A.; and George, Clifford L., to Xerox Corporation. Dual purpose document and copy sheet feed cassette. 4,086,007, Cl. 355-3.00R.

Smith, Fred T., to Sargent Industries, Inc. Front end loader with improved apparatus for operating the lifting arms. 4,085,857, Cl. 214-302.000.

Smith, Fred T., to Sargent Industries, Inc. Front end loader with improved apparatus for lifting the lifting arms and opening and closing the doors. 4,085,858, Cl. 214-303.000.

Smith, Herman W., to Upjohn Company, The. 13,14-Didehydro-PGA$_1$ compounds. 4,086,258, Cl. 260-408.000.

Smith, Leonard L., Jr.: *See*—
Barrons, Keith C.; Smith, Leonard L., Jr.; and Holmsen, Theodore W., 4,086,081, Cl. 71-126.000.

Smith, Leonard S., to Century Mfg. Co. Shunt positioning device. 4,086,551, Cl. 336-45.000.

Smith, Leslie Harold: *See*—
Large, Michael Stewart; and Smith, Leslie Harold, 4,086,357, Cl. 424-275.000.

Smith, Maurice I.; and DePinto, Victor M., to Tone Commander Systems, Inc. Dial pulse key telephone intercom system. 4,086,444, Cl. 179-99.000.

Smith, Oliver Wendell; and Koleske, Joseph Victor, to Union Carbide Corporation. Low energy-curable high solids coating compositions. 4,086,293, Cl. 260-830.00R.

Smith, Oliver Wendell: *See*—
Koleske, Joseph Victor; and Smith, Oliver Wendell, 4,086,294, Cl. 260-834.000.

Smith, Trevor James, to Imperial Chemical Industries Limited. Process for the manufacture of anthraquinone compounds. 4,086,252, Cl. 260-376.000.

SmithKline Corporation: *See*—
Zirkle, Charles Leon, 4,086,350, Cl. 424-267.000.

Snetsinger, David C.; and Zimmerman, Ray A., to Ralston Purina Company. Method of feeding laying hens. 4,086,365, Cl. 426-2.000.

Societe Anonyme D.B.A.: *See*—
Kervagoret, Gilbert, 4,085,657, Cl. 91-380.000.
Kervagoret, Gilbert, 4,085,817, Cl. 180-132.000.
Thioux, Alain, 4,085,828, Cl. 188-71.600.

Societe Anonyme de Traitement des Metaux et Alliages (SATMA): *See*—
Badia, Michel, 4,086,148, Cl. 204-33.000.

Societe Chimique des Charbonnages: *See*—
Bouche, Claude; and Lenclud, Francois, 4,086,197, Cl. 260-18.0PN.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See*—
Caruel, Jacques Emile Jules; and Stora, Guy Daniel, 4,085,581, Cl. 60-39.660.

Societe Nationale Industrielle Aerospatiale: *See*—
Jalaguier, Jean-Pierre, 4,086,014, Cl. 403-317.000.

Societe Nouvelle du Plastique: *See*—
Piotrowski, Tadeusz, 4,086,315, Cl. 264-97.000.

Societe Suisse pour l'Industrie Horlogere Management Services, S.A.: *See*—
Deverin, Jacques Alain, 4,085,576, Cl. 58-23.00R.

Soeda, Katsuji; Sakuma, Fumio; and Oyama, Mitsuhiro, to Yamamoto Electric Industrial Co., Ltd. Motor control apparatus for electrically-driven sewing machine. 4,085,692, Cl. 112-275.000.

Solder Removal Co.: *See*—
Sylvester, Joseph A., 4,086,465, Cl. 219-236.000.

Solomon, Irvine J.; and Silberman, Louis B., to United States of America, Army. Process for preparing cyclotetramethylenetetranitramine. 4,086,228, Cl. 260-239.0HM.

Sombuthawee, Charussri: *See*—
Hummel, Floyd A.; and Sombuthawee, Charussri, 4,086,123, Cl. 106-293.000.

Sommer, Edward G., Jr., to General Electric Company. Clothes dryer gas heater assembly. 4,086,053, Cl. 432-222.000.

Song, Il H., to Richardson Company, The. Thermoplastic molding composition comprising a terpolymer of α-methylstyrene, methyl methacrylate and N-vinyl-2-pyrrolidone. 4,086,410, Cl. 526-264.000.

Song, Jong Shik: *See—*
Song, Kyong Jin; Song, Yong Shik; Song, Jong Shik; and Song, Jung Shik, 4,085,915, Cl. 248-187.000.
Song, Jung Shik: *See—*
Song, Kyong Jin; Song, Yong Shik; Song, Jong Shik; and Song, Jung Shik, 4,085,915, Cl. 248-187.000.
Song, Kyong Jin; Song, Yong Shik; Song, Jong Shik; and Song, Jung Shik. Coupling device for equipping a camera onto the tripod. 4,085,915, Cl. 248-187.000.
Song, Yong Shik: *See—*
Song, Kyong Jin; Song, Yong Shik; Song, Jong Shik; and Song, Jung Shik, 4,085,915, Cl. 248-187.000.
Sonneville, Roger Paul. Device for anchoring fixing means in a concrete element. 4,085,556, Cl. 52-223.00R.
Sony Corporation: *See—*
Hashizaki, Kazuo; and Moriya, Ryusuke, 4,086,520, Cl. 318-269.000.
Hoshimi, Susumu, 4,085,940, Cl. 274-15.00R.
Sorensen, Keld Torben Schneider, to K. & V. Sorensen Engineering Limited. Operating means. 4,085,658, Cl. 91-461.000.
South Eastern Cordage Company: *See—*
Moss, Theron V., 4,085,476, Cl. 15-229.00A.
South Warwickshire Packaging Services Limited: *See—*
Williams, John, 4,085,846, Cl. 206-600.000.
Sparlin, Derry D.: *See—*
Sifferman, Thomas R.; and Sparlin, Derry D., 4,085,801, Cl. 166-295.000.
Sifferman, Thomas R.; and Sparlin, Derry D., 4,085,802, Cl. 166-295.000.
Speiser, Maxmilian Richard; Eng, Don; and Sawyer, Gerry Dun. Computer type golf game having visible fairway display. 4,086,630, Cl. 364-410.000.
Spencer, Bruce J., to Dentsply Research & Development Corporation. Operatory stool with clutch for rest member. 4,085,967, Cl. 297-115.000.
Sperry Rand Corporation: *See—*
Mortier, Frans H.; and Degraeve, Frans, 4,085,571, Cl. 56-208.000.
Speyer, Jason L.: *See—*
Gustafson, Donald E.; and Speyer, Jason L., 4,086,539, Cl. 328-155.000.
Spirig, Ernst. Closed space integrity. 4,086,586, Cl. 340-258.00B.
Sponer, Gisbert: *See—*
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Wilhelms, Otto-Henning; von Mullendorff, Erika; and Sponer, Gisbert, 4,086,347, Cl. 424-253.000.
Spoor, Herbert: *See—*
Kempter, Fritz Erdmann; Hartmann, Heinrich; and Spoor, Herbert, 4,086,292, Cl. 260-831.000.
Sprague, Peter W., to E. R. Squibb & Sons, Inc. Amidines. 4,086,244, Cl. 260-340.300.
Springthorpe, Anthony John; and Rider, Michael John, to Northern Telecom Limited. Production of high radiance light emitting diodes. 4,086,126, Cl. 156-642.000.
Square D Company: *See—*
Fischer, Don G.; and Holland, Harold, 4,085,599, Cl. 70-14.000.
Srinivas, Srivas Rangachar. System for preparing packed columns and coated capillary tubes useful in gas chromatography. 4,086,051, Cl. 432-198.000.
Stabilator AB: *See—*
Alberts, Claes Yngve Hjalmar, 4,086,309, Cl. 264-35.000.
Stach, Kurt, deceased: *See—*
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Wilhelms, Otto-Henning; von Mullendorff, Erika; and Sponer, Gisbert, 4,086,347, Cl. 424-253.000.
Stadler, Eberhard: *See—*
Knothe, Erich; Berg, Christoph; and Stadler, Eberhard, 4,085,811, Cl. 177-210.0EM.
Stal-Laval Turbin AB: *See—*
Larsen, Gunnar, 4,085,593, Cl. 60-676.000.
Stenfors, Svante Bengt Gosta, 4,086,021, Cl. 415-115.000.
Stamires, Dennis: *See—*
Lim, John; and Stamires, Dennis, 4,086,187, Cl. 252-455.00Z.
Stamper, Robert. Nailing tool. 4,085,882, Cl. 227-110.000.
Standard Oil Company (Indiana): *See—*
Cengel, John A.; and Puskas, Imre, 4,086,251, Cl. 260-346.740.
Stanford Research Institute: *See—*
Acton, Edward M.; and Ryan, Kenneth J., 4,086,416, Cl. 536-24.000.
Crane, Hewitt David; and Wolf, Daniel Errol, 4,086,567, Cl. 340-146.3SY.
Stange, Ronald R., to Tools for Bending, Inc. Bending and straightening mechanism for mine roof bolts. 4,085,492, Cl. 29-431.000.
Stangl, Ernst: *See—*
Scheffler, Friedrich; and Stangl, Ernst, 4,086,462, Cl. 219-10.710.
Staudt, Heinrich: *See—*
Djordjevic, Ilija; Jaenke, Hans-Jurgen; Ritter, Ernst; and Staudt, Heinrich, 4,085,724, Cl. 123-140.0MC.
Stauffer Chemical Company: *See—*
Altscher, Siegfried; and Goswami, Jagadish C., 4,086,194, Cl. 260-2.5AJ.
Baker, Don R., 4,086,076, Cl. 71-67.000.
Fancher, Llewellyn W., 4,086,239, Cl. 260-306.80R.
Weil, Edward D., 4,086,303, Cl. 260-928.000.
Stavropoulos, William S.: *See—*
Huang, Charles Y.; and Stavropoulos, William S., 4,086,142, Cl. 195-103.50R.
Stedefeder, Joachim; Dorn, Ingo H.; Kuhn, Horst; Kastenhuber, Walter; and Linke, Wolfgang, to BASF Aktiengesellschaft. Purification of copolymers containing crotonic acid. 4,086,413, Cl. 528-499.000.
Steel Company of Canada, Limited, The: *See—*
Kelly, John H., 4,085,609, Cl. 73-101.000.
Steele, Everett T., Jr., to Robertshaw Controls Company. Three port valve construction and method of making the same. 4,085,775, Cl. 137-625.500.
Steensma, Peter Dennis, to International Telephone and Telegraph Corporation. Optical amplitude modulation modulator. 4,086,484, Cl. 250-199.000.
Stefanoff, Boris T. Parallel wall indicator. 4,085,514, Cl. 33-343.000.
Steffen, David Eugene, to Dickey-john Corporation. Automatically controlled seed planter. 4,085,862, Cl. 221-8.000.
Stegen, Gary E.: *See—*
Moore, Raymond H.; and Stegen, Gary E., 4,086,323, Cl. 423-210.500.
Steig, Hans: *See—*
Sundberg, Erik G.; and Steig, Hans, 4,086,401, Cl. 429-145.000.
Steiger Tractor Inc.: *See—*
Joubert, Jerauld D., 4,085,813, Cl. 180-14.00A.
Steimel, Richard. Centrifuge having separable centrifuge vessel. 4,085,889, Cl. 233-20.00R.
Stein, Dieter: *See—*
Fahrbach, Gerhard; Gerberding, Karl; Seiler, Erhard; and Stein, Dieter, 4,086,298, Cl. 260-880.00B.
Steiner, Eginhard; and Beffa, Fabio, to Ciba-Geigy AG. Asymmetrical 1:2-chromium complex azo dyestuffs. 4,086,223, Cl. 260-151.000.
Steiner Industries, Inc.: *See—*
Steiner, Robert J.; and Kuzelka, John, 4,085,789, Cl. 160-135.000.
Steiner, Robert J.; and Kuzelka, John, to Steiner Industries, Inc. Modular welding screen apparatus. 4,085,789, Cl. 160-135.000.
Stelzer, Ernest L.: *See—*
Hager, Robert J.; Johnson, Eric S.; Scott, M. Walter; and Stelzer, Ernest L., 4,085,500, Cl. 29-589.000.
Sten, Matti: *See—*
Tapola, Esko; Sten, Matti; and Koistinen, Onni, 4,086,167, Cl. 210-150.000.
Stenfors, Svante Bengt Gosta, to Stal-Laval Turbin AB. Cooled guide vane. 4,086,021, Cl. 415-115.000.
Stephan, Alfred, to White-Westinghouse Corporation. Oil pump for motor compressor. 4,086,033, Cl. 417-368.000.
Sterling Drug Inc.: *See—*
Lesher, George Y.; and Singh, Baldev, 4,086,233, Cl. 260-256.40C.
Stevens, Violete L.; Sexton, Arthur R.; and Corson, Frederick P., to Dow Chemical Company, The. Curable mixtures and cured resins made from linear polymers of glycidol. 4,086,151, Cl. 204-159.160.
Stewart, John M., to Sanitation Equipment Limited. Diaphragm pump. 4,086,037, Cl. 417-571.000.
Stewart-Warner Corporation: *See—*
Aronson, Howard A.; and Chung, San Chi, 4,086,532, Cl. 324-166.000.
Still GmbH (vormals SE-Fahrzeugwerke GmbH): *See—*
Kremer, Manfred, 4,086,524, Cl. 320-33.000.
Stinson, Kenneth R.: *See—*
Chelikowsky, Richard D.; and Stinson, Kenneth R., 4,086,593, Cl. 343-106.00R.
Stoeckl, Wilhelm: *See—*
Krumrey, Guenter; and Stoeckl, Wilhelm, 4,086,493, Cl. 250-468.000.
Stone, Thomas G., to Evans Products Company. End fitting. 4,085,685, Cl. 105-498.000.
Stora, Guy Daniel: *See—*
Caruel, Jacques Emile Jules; and Stora, Guy Daniel, 4,085,581, Cl. 60-39.660.
Stott, John K.: *See—*
Lovell, Robert; and Stott, John K., 4,085,809, Cl. 175-410.000.
Stransky, John L.: *See—*
Hines, Charles E.; and Stransky, John L., 4,085,957, Cl. 293-88.000.
Strickland, John C.: *See—*
MacLean, John P.; and Strickland, John C., 4,086,064, Cl. 23-288.00G.
Strike, Donald P.; and Kao, Wenling, to American Home Products Corporation. 11-Deoxy-15-substituted prostaglandins. 4,086,269, Cl. 260-514.00D.
Stroszynski, Joachim, to Hoechst Aktiengesellschaft. Method and apparatus for freely suspending moving webs of material. 4,085,522, Cl. 34-156.000.
Stunkel, Barry A. Control device for power tools. 4,085,659, Cl. 92-8.000.
Sturgeon, Wayne: *See—*
Freund, Robert F.; and Sturgeon, Wayne, 4,086,483, Cl. 362-311.000.
Suami, Tetsuo; Machinami, Tomoya; and Hisamatsu, Takashi, to Suami, Tetsuo. Nitrosourea derivatives of glycosides. 4,086,415, Cl. 536-22.000.
Suen, Tzeng Jiueq; Begala, Arthur James, Jr.; and Grayson, Martin, to American Cyanamid Company. Control of corrosion and scale in circulating water systems by means of partial esters of polyfunctional organic acids. 4,086,181, Cl. 252-180.000.
Sugimoto, Shigeo: *See—*
Miyamoto, Seigo; Takezoe, Kazuo; Yahagi, Hayao; and Sugimoto, Shigeo, 4,085,596, Cl. 62-476.000.
Sugio, Akitoshi; Masuda, Yukiya; Kobayashi, Toshihiko; Nakano, Koichi; and Sawai, Tsukasa, to Mitsubishi Gas Chemical Company, Inc. Process for roughening surface of epoxy resin. 4,086,128, Cl. 156-668.000.

Sugita, Terumitsu, to Seiko-Seiki Kabushiki Kaisha. Method to dress a grinding wheel. 4,085,554, Cl. 51-325.000.

Sugiyama, Fumio: *See—*
Asakawa, Shigeru; Sugiyama, Fumio; Gotoh, Akio; and Okamoto, Shigenori, 4,086,537, Cl. 325-478.000.

Sullivan, Philip J., to American Optical Corporation. Lens-casting cell. 4,085,919, Cl. 249-134.000.

Sumitomo Electric Industries, Ltd.: *See—*
Noda, Mitsuhiko; and Nomura, Kikuo, 4,086,164, Cl. 210-46.000.

Sumitomo Kinzoku Kogyo Kabushiki Kaisha: *See—*
Yoshida, Mitsuo; Furukawa, Wataru; Yamaguchi, Takashi; and Sasaki, Kazuo, 4,085,942, Cl. 277-30.000.

Sumitomo, Yuji: *See—*
Takano, Rikuo; Ohta, Yutaka; Sumitomo, Yuji; Shimazawa, Yoichi; and Aiba, Masahiko, 4,085,837, Cl. 197-133.00R.

Sumiyoshi, Masaharu: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,085,713, Cl. 123-75.00B.

Sun Oil Company of Pennsylvania: *See—*
Seitzer, Walter H., 4,086,289, Cl. 260-671.00M.

Sun Studs, Inc.: *See—*
Berry, Larry R., 4,086,496, Cl. 250-561.000.

Sunbeam Corporation: *See—*
Beck, William P.; Carr, Francis L.; and Gronwick, Jerry P., 4,085,503, Cl. 30-34.100.

Sundberg, Erik G.; and Steig, Hans, to Aktiebolaget Tudor. Electric storage battery separator. 4,086,401, Cl. 429-145.000.

Sundstrand Corporation: *See—*
Robinson, William J.; and Martin, Harold G., 4,085,812, Cl. 180-6.480.

Sunouchi, Akio: *See—*
Kozuki, Susumu; Ichiyanagi, Toshikazu; Watanabe, Yoshiaki; Uchiyama, Takashi; and Sunouchi, Akio, 4,086,584, Cl. 354-38.000.

Suntech, Inc.: *See—*
Butte, Walter A., Jr., 4,086,276, Cl. 260-563.00R.
Janoski, Edward J.; Schneider, Abraham; and Ware, Richard E., 4,086,286, Cl. 260-666.0PY.
Mayer, Robert, 4,085,594, Cl. 62-171.000.
Schneider, Abraham; Ware, Richard E.; and Janoski, Edward J., 4,086,284, Cl. 260-666.0PY.
Wynkoop, Raymond, and Hancock, Allen W., II, 4,086,270, Cl. 260-515.00P.

Sussman, Arthur. Folding system with photoelectric detection means. 4,085,928, Cl. 270-61.00R.

Sutter, Robert F.: *See—*
Harting, Gary L.; Sutter, Robert F.; and Malo, Lowell L., 4,085,683, Cl. 105-424.000.

Suzuki, Etsuo: *See—*
Tuchiya, Keiji; Kubota, Junjiro; Takahashi, Katuo; and Suzuki, Etsuo, 4,085,929, Cl. 271-122.000.

Suzuki, Hiroshi: *See—*
Ito, Yukio; Yasumoto, Yosiro; Masuda, Etsuro; and Suzuki, Hiroshi, 4,086,327, Cl. 423-385.000.

Suzuki, Masaaki; Shirahata, Ryuji; Aonuma, Masashi; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Production of magnetic recording material. 4,086,374, Cl. 427-48.000.

Suzuki, Osamu; Oishi, Kengo; Akashi, Goro; and Sega, Kenji, to Fuji Photo Film Co., Ltd. Magnetic tape magazine. 4,085,907, Cl. 242-199.000.

Suzuki, Takeshi: *See—*
Shirai, Isoo; Suzuki, Takeshi; and Takahashi, Tsutomu, 4,086,185, Cl. 252-429.00B.

Suzuki, Toshiyuki: *See—*
Nakagawa, Taizo; Ohmori, Kaoru; Watanabe, Yutaka; Tejima, Iwao; Ishida, Shuichi; Suzuki, Toshiyuki; and Yamada, Osamu, 4,086,360, Cl. 424-300.000.

Suzuki, Yasoji; and Kiyofumi, Ochii, to Tokyo Shibaura Electric Co., Ltd. Address decoder. 4,086,500, Cl. 307-270.000.

Svencer, Richard Ernest: *See—*
Jukkola, Walfred Wilhelm; and Svencer, Richard Ernest, 4,085,516, Cl. 34-10.000.

Svensson, Assar Natanael, to Skega AB. Method of producing a paving mass and a paving mass produced by the method. 4,086,291, Cl. 260-758.000.

Svensson, Sven Arne; and Ebbeson, Bengt Ebbe Oscar, to Origoverken I Halmstad AB. Bicycle chair for children. 4,085,968, Cl. 297-243.000.

Swager, William E. Plastic ladder and safety device. 4,085,818, Cl. 182-47.000.

Swanson, Bernard August. Ignitor for starting fires. 4,086,049, Cl. 431-271.000.

Sweet, Robert D., Jr.; and Monaghan, Peter J. Method of making a hockey stick. 4,086,115, Cl. 156-178.000.

Sweett, Ronald Sydney: *See—*
Wilkinson, Samuel Clifford Walter; Sweett, Ronald Sydney; and Bunyan, Thomas Walter, 4,085,941, Cl. 277-3.000.

Swindells, Richard, to Erco Industries Limited. Production of chlorine dioxide from buffered reaction media. 4,086,328, Cl. 423-478.000.

Swindells, Richard: *See—*
Cowley, Gerald; Swindells, Richard; and Kostanecki, Mark, 4,086,329, Cl. 423-478.000.

Sybertz, Hans; and Riedl, Reinhold, to Hombak Maschinenfabrik KG. Method of and apparatus for positioning blades of a wood-chipping cutter drum. 4,085,494, Cl. 29-468.000.

Sycor, Inc.: *See—*
Helbers, Jan Hendrik, 4,086,637, Cl. 360-105.000.

Sylvester, Joseph A., to Solder Removal Co. Electric soldering iron. 4,086,465, Cl. 219-236.000.

Synchro-Start Products, Inc.: *See—*
Lace, Melvin A., 4,086,647, Cl. 361-239.000.

Syntex (U.S.A.) Inc.: *See—*
Beard, Colin C., 4,086,235, Cl. 424-273.00R.

Szeluga, Ludwick; and Voegelin, Howard J., to Veeder Industries Inc. Document actuated interlock mechanism. 4,085,931, Cl. 271-265.000.

Szoeke, Joseph. Wind powered rotary electric generator. 4,086,498, Cl. 290-55.000.

Taguchi, Tetsuya: *See—*
Kiyohara, Takehiko; Tsunekawa, Tokuichi; Yazaki, Mutsunobu; Sanada, Noriaki; Taguchi, Tetsuya; and Nakamura, Zenzo, 4,086,582, Cl. 354-33.000.

Tajima, Akira: *See—*
Ishikawa, Kazuo; Sakaguchi, Keiichi; Takigawa, Tomoshi; Hirata, Noritsugu; Tajima, Akira; and Tsuji, Sadahiko, 4,086,605, Cl. 354-270.000.

Takada, Haruhiko, to Diesel Kiki Co., Ltd. Rotary compressor comprising improved rotor lubrication system. 4,086,041, Cl. 418-84.000.

Takahashi, Fumitaka, to Honda Giken Kogyo Kabushiki Kaisha. Snap action type of electric switch. 4,086,455, Cl. 200-76.000.

Takahashi, Katuo: *See—*
Tuchiya, Keiji; Kubota, Junjiro; Takahashi, Katuo; and Suzuki, Etsuo, 4,085,929, Cl. 271-122.000.

Takahashi, Kazuo: *See—*
Morinaka, Yasuhiro; and Takahashi, Kazuo, 4,086,349, Cl. 424-258.000.

Takahashi, Nagashige. Light source and exposure control device for endoscopic photography. 4,086,583, Cl. 354-62.000.

Takahashi, Tsutomu: *See—*
Shirai, Isoo; Suzuki, Takeshi; and Takahashi, Tsutomu, 4,086,185, Cl. 252-429.00B.

Takahashi, Yukiharu, to Tokyo Shibaura Electric Co., Ltd. Pulse train converter. 4,086,471, Cl. 235-92.0DM.

Takaishi, Naotake: *See—*
Inamoto, Yoshiaki; Tsuchihashi, Kiyoshi; Takaishi, Naotake; Fujikura, Yoshiaki; and Aigami, Koji, 4,086,285, Cl. 260-666.0PY.

Takano, Kazuro, to Matsushita Electric Industrial Co., Ltd. Loudspeaker with burning resistant diaphragm. 4,086,449, Cl. 179-181.00R.

Takano, Rikuo; Ohta, Yutaka; Sumitomo, Yuji; Shimazawa, Yoichi; and Aiba, Masahiko, to Nippon Telegraph and Telephone Public Corporation; and Sharp Kabushiki Kaisha. Vertical tabulation control for high speed printer. 4,085,837, Cl. 197-133.00R.

Takemura, Susumu: *See—*
Tanino, Mitsuru; Komatsu, Hajime; and Takemura, Susumu, 4,086,107, Cl. 148-136.000.

Takenaka, Hideo. Track roller device. 4,085,981, Cl. 308-20.000.

Takeshita, Hiroshi: *See—*
Kouchi, Akihiko; Otake, Tsutomu; Takeshita, Hiroshi; and Inoue, Kunihiro, 4,086,003, Cl. 350-357.000.

Taketani, Yutaka: *See—*
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, 4,086,209, Cl. 260-49.000.

Takeuchi, Torataro: *See—*
Omori, Jimpei; Kono, Mitsuo; Takeuchi, Torataro; and Oikawa, Noboru, 4,086,463, Cl. 219-145.220.

Takezoe, Kazuo: *See—*
Miyamoto, Seigo; Takezoe, Kazuo; Yahagi, Hayao; and Sugimoto, Shigeo, 4,085,596, Cl. 62-476.000.

Takigawa, Tomoshi: *See—*
Ishikawa, Kazuo; Sakaguchi, Keiichi; Takigawa, Tomoshi; Hirata, Noritsugu; Tajima, Akira; and Tsuji, Sadahiko, 4,086,605, Cl. 354-270.000.

Tamanini, Robert J. Windmill with radial vanes. 4,086,026, Cl. 416-176.000.

Tanabe, Seiichi; and Ito, Syoji, to Hitachi, Ltd. Hydraulic machine. 4,086,020, Cl. 415-106.000.

Tanahashi, Junichi: *See—*
Matsuyama, Shunsuke; Tanahashi, Junichi; Imamura, Kenso; and Majima, Teiji, 4,086,661, Cl. 365-39.000.

Tanaka, Akio, to Tokyo Shibaura Electric Co., Ltd. Pressure-electric transducers. 4,085,620, Cl. 73-727.000.

Tanaka, Eizi; Ohashi, Michihiro; and Mochizuki, Hiroshi, to Nippon Soken, Inc. Fuel control system for internal combustion engine. 4,085,723, Cl. 123-139.0AW.

Tanaka, Hiroki: *See—*
Yoshinouchi, Sumio; and Tanaka, Hiroki, 4,085,660, Cl. 92-119.000.

Tanaka, Koji: *See—*
Nagano, Mineo; and Tanaka, Koji, 4,086,411, Cl. 528-480.000.

Tanaka, Kojiro, to Kabushiki Kaisha Daini Seikosha. Digital electronic timepiece. 4,085,575, Cl. 58-4.00A.

Tanaka, Makoto: *See—*
Kohashi, Takahiro; Akagi, Motoo; Oba, Yoichi; Nonogaki, Saburo; Tanaka, Makoto; Kaneko, Tadao; and Tomita, Yoshifumi, 4,086,090, Cl. 96-35.100.

Tanaka, Taro: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,085,713, Cl. 123-75.00B.

Tanaka, Tatsundo: *See—*
Kurihara, Masaru; Tokizane, Soichi; Tanaka, Tatsundo; Tanimura, Masamitsu; and Shimokawa, Yoichi, 4,086,215, Cl. 260-78.00R.

Tanaka, Yoshikazu: *See—*
Tanigaki, Takashi; Koshio, Takeshi; and Tanaka, Yoshikazu, 4,086,389, Cl. 428-385.000.

Tanaka, Yukiyasu: *See*—
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,085,713, Cl. 123-75.00B.
Tangri, Kuldip Chand. Hydrogen fuel system for a vehicle. 4,085,709, Cl. 123-1.00A.
Tanigaki, Takashi; Koshio, Takeshi; and Tanaka, Yoshikazu, to Nippon Steel Corporation. Coating composition comprising crystalline cellulose and a coated electrode for arc welding produced therewith. 4,086,389, Cl. 428-385.000.
Tanimoto, Akira; and Nishimura, Kosuke, to Sharp Kabushiki Kaisha. Combination timepiece and calculator including slidable keyboard means. 4,086,655, Cl. 364-705.000.
Tanimura, Masamitsu: *See*—
Kurihara, Masaru; Tokizane, Soichi; Tanaka, Tatsundo; Tanimura, Masamitsu; and Shimokawa, Yoichi, 4,086,215, Cl. 260-78.00R.
Tanino, Mitsuru; Komatsu, Hajime; and Takemura, Susumu, to Nippon Steel Corporation. Heat treatment process of high-carbon chromium-nickel heat-resistant stainless steels. 4,086,107, Cl. 148-136.000.
Tapola, Esko; Sten, Matti; and Koistinen, Onni, to Enso-Gutzeit Osakeyhtio. Biofilter. 4,086,167, Cl. 210-150.000.
Tapphorn, Ralph M.: *See*—
Schweitzer, Jeffrey S.; and Tapphorn, Ralph M., 4,085,798, Cl. 166-252.000.
Taschner, Walter: *See*—
Mayrhofer, Max; and Taschner, Walter, 4,086,105, Cl. 148-12.00R.
Tassie, Douglas Pray; and Pustell, Robert A., to General Electric Company. Ignition device. 4,085,653, Cl. 89-7.000.
Tasson, Michel: *See*—
Peuzin, Jean Claude; and Tasson, Michel, 4,086,124, Cl. 156-603.000.
Tatyrek, Alfred F. Heat stable colored chemiluminescent compositions. 4,086,183, Cl. 427-157.000.
Taub Family Trust U/A Sept. 1, 1967: *See*—
Taub, Ronald H., 4,085,986, Cl. 312-236.000.
Taub, Ronald H., to Taub Family Trust U/A Sept. 1, 1967. Auxiliary refrigerated display case. 4,085,986, Cl. 312-236.000.
Taylor, Eric: *See*—
Bailes, Thomas Alan; and Taylor, Eric, 4,085,478, Cl. 15-245.000.
Taylor, Lynn J.: *See*—
Tobias, John W.; and Taylor, Lynn J., 4,086,373, Cl. 427-44.000.
Taylor, Robert Marvin, to Bell Telephone Laboratories, Incorporated. Emergency announcement system. 4,086,446, Cl. 179-27.00G.
Technion Research and Development Foundation Ltd.: *See*—
Neumann, Peter, 4,086,331, Cl. 424-45.000.
TED Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec: *See*—
Joschko, Gunter; and Schriefl, Karl-Ekkehard, 4,085,939, Cl. 274-1.00R.
Teijin Limited: *See*—
Hara, Shigeyoshi; Senoo, Masao; Mori, Koh; and Taketani, Yutaka, 4,086,209, Cl. 260-49.000.
Tejima, Iwao: *See*—
Nakagawa, Taizo; Ohmori, Kaoru; Watanabe, Yutaka; Tejima, Iwao; Ishida, Shuichi; Suzuki, Toshiyuki; and Yamada, Osamu, 4,086,360, Cl. 424-300.000.
Teldix GmbH: *See*—
Leiber, Heinz; Gerstenmeier, Jurgen; and Klotz, Hermann, 4,085,979, Cl. 303-92.000.
Teletech Corporation: *See*—
Kahn, Daniel W.; and Skidmore, Thomas A., 4,086,438, Cl. 179-18.0BE.
Temco Products, Inc.: *See*—
Thomas, Morton I., 4,085,763, Cl. 135-69.000.
Terada, Takami: *See*—
Nakane, Mototaka; and Terada, Takami, 4,085,969, Cl. 297-367.000.
Terada, Ziro: *See*—
Nitta, Tsuneharu; Terada, Ziro; and Hayakawa, Shigeru, 4,086,556, Cl. 338-35.000.
Ternes, William A. Roof-top observation center for automobiles. 4,085,666, Cl. 98-2.140.
Terry, Raymond O., Jr.: *See*—
Robbins, Theodore W.; and Terry, Raymond O., Jr., 4,086,548, Cl. 333-81.00R.
Tesch, Hugo W., to Elpower Corporation. Combination of a battery and vent structure. 4,086,394, Cl. 429-54.000.
Teschner, Wolfgang; and von Massow, Hans-Jurgen, to Carl Still Recklinghausen, Firma. Method and apparatus for determining the covering of a coke wharf with quenched coke. 4,085,852, Cl. 214-17.00R.
Teshirogi, Toshihiko, to Cybernet Electronic Corporation. Phase locked loop type transmitter receiver. 4,086,545, Cl. 331-16.000.
Tessler, Martin M., to National Starch and Chemical Corporation. Preparation of starch sulfate esters. 4,086,419, Cl. 536-107.000.
Texaco Inc.: *See*—
Bousaid, Issam S.; Brown, Alfred; and Norman, Thomas W., 4,085,799, Cl. 166-272.000.
MacLean, John P.; and Strickland, John C., 4,086,064, Cl. 23-288.00G.
Rundell, Herbert A., 4,085,612, Cl. 73-136.00A.
Texas Instruments Incorporated: *See*—
Boulanger, Henry J., 4,086,451, Cl. 200-5.00A.
Bullock, David Carl, 4,086,571, Cl. 365-36.000.
Bullock, David Carl, 4,086,572, Cl. 365-12.000.
Ezell, George D.; Murphy, Marvin L., Jr.; and Davis, Paul D., Jr., 4,086,504, Cl. 340-15.5TS.
Grant, John L., 4,086,467, Cl. 219-544.000.
Nelson, Kris L., 4,085,765, Cl. 137-68.00R.
Pejouhy, Radi; and McMorrow, Joseph L., 4,086,558, Cl. 337-102.000.
Textron Inc.: *See*—
Thompson, Leo M.; Anderson, Robert K.; Kocher, Lawrence H.; and Jackel, John W., 4,085,865, Cl. 222-1.000.
Th. Kieserling & Albrecht: *See*—
Goeke, Alfons, 4,086,016, Cl. 407-114.000.
Tharp, James A., to Tharp, James A. Raised access floor system. 4,085,557, Cl. 52-263.000.
Thermo Electron Corporation: *See*—
Gernes, David B., 4,086,653, Cl. 364-564.000.
Thiel, Alfons W.; Martini, Hans; Wolf, Peter; and Runkel, Albert, to Bellaplast GmbH. Article treatment apparatus. 4,085,517, Cl. 34-21.000.
Thiel, Alfons W.; and Hell, Hans, to Bellaplast GmbH. Apparatus for the manufacture of thin-walled shaped articles of thermoplastic material. 4,086,045, Cl. 425-326.100.
Thiel, Max: *See*—
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Wilhelms, Otto-Henning; von Mullendorff, Erika; and Sponer, Gisbert, 4,086,347, Cl. 424-253.000.
Thiokol Corporation: *See*—
Levinthal, Michael L., 4,086,110, Cl. 149-19.400.
Thioux, Alain, to Societe Anonyme D.B.A. Disc brake and heat shield for the same. 4,085,828, Cl. 188-71.600.
Thomas, Morton I., to Temco Products, Inc. Quad cane. 4,085,763, Cl. 135-69.000.
Thompson, Leo M.; Anderson, Robert K.; Kocher, Lawrence H.; and Jackel, John W., to Textron Inc. Elastomeric bladder for positive expulsion tank. 4,085,865, Cl. 222-1.000.
Thompson, Omer A. Slat assembly for chain link fence. 4,085,954, Cl. 256-34.000.
Thomson-CSF: *See*—
Guyot, Lucien, 4,086,515, Cl. 315-10.000.
Three Phoenix Company: *See*—
Dahl, John Conlan; and Barnett, David Lee, 4,085,906, Cl. 242-192.000.
Thune-Eureka A/S: *See*—
Skarheim, Hans Petter; and Damhaug, Torbjorn, 4,086,169, Cl. 210-519.000.
Timken Company, The: *See*—
Cameron, Robert W., 4,085,984, Cl. 308-207.00A.
Timothy, John G.: *See*—
Bybee, Richard Lee; and Timothy, John G., 4,086,486, Cl. 250-207.000.
Tinney, Lyle D. Water heater overflow pan. 4,085,773, Cl. 137-571.000.
Tobias, John W.; and Taylor, Lynn J., to Owens-Illinois, Inc. Protective polymeric coating for glass substrate. 4,086,373, Cl. 427-44.000.
Todd, Harry V. Fishing lure retriever. 4,085,537, Cl. 43-17.200.
Todt, William H., Sr., to Westinghouse Electric Corporation. Wide range neutron detection system. 4,086,490, Cl. 250-385.000.
Toepke, Ival Lee, to Addressograph Multigraph Corporation. Imaging methods for use with charged particle modulator device. 4,086,088, Cl. 96-1.00R.
Tokico Ltd.: *See*—
Ando, Hiromi, 4,085,656, Cl. 91-376.00R.
Tokizane, Soichi: *See*—
Kurihara, Masaru; Tokizane, Soichi; Tanaka, Tatsundo; Tanimura, Masamitsu; and Shimokawa, Yoichi, 4,086,215, Cl. 260-78.00R.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Asakawa, Shigeru; Sugiyama, Fumio; Gotoh, Akio; and Okamoto, Shigenori, 4,086,537, Cl. 325-478.000.
Kumagai, Shigeki, 4,086,473, Cl. 235-92.0EA.
Miyake, Kazuhiko; and Yamada, Bunkichi, 4,086,619, Cl. 358-183.000.
Okano, Michiaki, 4,086,478, Cl. 235-466.000.
Suzuki, Yasoji; and Kiyofumi, Ochii, 4,086,500, Cl. 307-270.000.
Takahashi, Yukiharu, 4,086,471, Cl. 235-92.0DM.
Tanaka, Akio, 4,085,620, Cl. 73-727.000.
Tomchak, Sigfrid A. Solar energy heater. 4,085,728, Cl. 126-270.000.
Tomczuk, Zygmunt: *See*—
Vissers, Donald R.; Nelson, Paul A.; Kaun, Thomas D.; and Tomczuk, Zygmunt, 4,086,404, Cl. 429-220.000.
Tomita, Yoshifumi: *See*—
Kohashi, Takahiro; Akagi, Motoo; Oba, Yoichi; Nonogaki, Saburo; Tanaka, Makoto; Kaneko, Tadao; and Tomita, Yoshifumi, 4,086,090, Cl. 96-35.100.
Tompkins, Terence Neville: *See*—
Nijman, John Peter; and Tompkins, Terence Neville, 4,085,497, Cl. 29-566.300.
Tomy Kogyo Co., Inc.: *See*—
Hamano, Nubuo, 4,085,932, Cl. 272-8.00P.
Mitamura, Isao, 4,085,542, Cl. 46-256.000.
Tone Commander Systems, Inc.: *See*—
Smith, Maurice I.; and DePinto, Victor M., 4,086,444, Cl. 179-99.000.
Ullakko, Richard J.; and Edwards, Gerald L., 4,086,441, Cl. 179-84.00C.
Toney, David: *See*—
Nelson, Robert C.; and Toney, David, 4,085,682, Cl. 105-157.00R.
Tools for Bending, Inc.: *See*—
Stange, Ronald R., 4,085,492, Cl. 29-431.000.
Toray Industries, Inc.: *See*—
Ezumi, Yuh; Kobayashi, Masaharu; Kubota, Takashi; and Shimokawa, Yoichi, 4,086,093, Cl. 96-86.00P.

Kurihara, Masaru; Tokizane, Soichi; Tanaka, Tatsundo; Tanimura, Masamitsu; and Shimokawa, Yoichi, 4,086,215, Cl. 260-78.00R.
Torgerson, Duane E., to Belden Corporation. Nonconductive light guard. 4,086,482, Cl. 362-376.000.
Toriumi, Shiro; and Endo, Hiroshi, to Minolta Camera K.K. Microfiche reader control means. 4,086,469, Cl. 235-92.0MP.
Toro Company, The: *See*—
Hunter, Edwin J., 4,085,771, Cl. 137-344.000.
Toshimitsu, Naohiko, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Magnetic head which minimizes the effect of minute variations in the head gap. 4,086,639, Cl. 360-126.000.
Toso, Katsuya: *See*—
Kubo, Sueki; Toso, Katsuya; and Fujita, Masayuki, 4,085,894, Cl. 239-121.000.
Toth, Geza; Toth, Istvan; and Montay, Tibor, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara. Process for the preparation of carbamate derivatives. 4,086,246, Cl. 260-340.90R.
Toth, Istvan: *See*—
Toth, Geza; Toth, Istvan; and Montay, Tibor, 4,086,246, Cl. 260-340.90R.
Toth, Leslie J., to Botelco. Sensing circuit. 4,086,502, Cl. 307-308.000.
Tournayre, Jean Claude; and Vogel, Christian, to Ciba-Geigy Corporation. Halogeno-acetanilides as herbicides. 4,086,080, Cl. 71-118.000.
Tovey, Charles A.: *See*—
Hutto, Ernest L.; and Tovey, Charles A., 4,085,964, Cl. 296-91.000.
Toyo Boseki Kabushiki Kaisha: *See*—
Murayama, Ken; and Kashihara, Takao, 4,086,208, Cl. 260-47.00C.
Toyo Jozo Kabushiki Kaisha: *See*—
Sakakibara, Shumpei; Morikawa, Tadanori; Munekata, Eisuke; Kimura, Terutoshi; Nakagawa, Yasuo; and Noda, Toshiharu, 4,086,221, Cl. 260-112.50T.
Toyo Kohan Co., Ltd.: *See*—
Ariga, Keiji; Tsutsui, Nobuyuki; and Kanda, Katsumi, 4,086,153, Cl. 204-181.00R.
Toyo Soda Manufacturing Co., Ltd.: *See*—
Nagano, Mineo; and Tanaka, Koji, 4,086,411, Cl. 528-480.000.
Toyoshima, Iwao; Ishii, Kunio; Sawada, Hideo; Kawamoto, Junji; and Yokota, Hiromu, to Daicel Ltd. Tobacco filter. 4,085,760, Cl. 131-268.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Nogami, Tomoyuki, 4,085,978, Cl. 303-6.00C.
Nomura, Yoshihisa, 4,085,824, Cl. 188-1.00A.
Shibata, Norio, 4,085,586, Cl. 60-277.000.
Tozzi, Antonio: *See*—
Cassandrini, Paolo; and Tozzi, Antonio, 4,086,204, Cl. 260-45.8NT.
Cassandrini, Paolo; and Tozzi, Antonio, 4,086,207, Cl. 260-45.80N.
Trantham, Joseph C.; and Meldau, Robert F., to Phillips Petroleum Company. Progressive displacement of residual water past shut-in wells preparatory to tertiary oil recovery. 4,085,797, Cl. 166-245.000.
Trappeur, S. A.: *See*—
Delery, Marc, 4,085,528, Cl. 36-121.000.
Traut, Earl W. Toothed rolling contact devices. 4,085,980, Cl. 308-205.000.
Travis, Sigmund D., to C. R. Reichel Engineering Co. Inc. Self ejecting drill chuck key. 4,085,943, Cl. 279-1.00K.
Trefimetaux: *See*—
Moreau, Marc, 4,085,922, Cl. 266-90.000.
Tregear, Geoffrey William, to Armour Pharmaceutical Company. Parathyroid hormone. 4,086,196, Cl. 260-112.50R.
Trepka, William J., to Phillips Petroleum Company. Coupling lithium-initiated polymer with a vinylhalomethylarene. 4,086,406, Cl. 526-25.000.
Trescher, Viktor: *See*—
Bocker, Ernst; Kracht, Wolfgang; Rupp, Roland; Schellmann, Erhard; Trescher, Viktor; and Ullrich, Martin, 4,086,346, Cl. 424-253.000.
Tresser, Dietfried, to Laeis-Werke AG. Process for fabricating hollow races or wheels provided at their lateral ends with axle stumps in which process substantially no chips are produced; and races and wheels manufactured in accordance with this process. 4,085,489, Cl. 29-110.000.
Treuner, Uwe: *See*—
Breuer, Hermann; and Treuner, Uwe, 4,086,422, Cl. 544-21.000.
Triolo, Rocco P. Hot compressed fabric conditioning product. 4,086,387, Cl. 428-311.000.
Tsuchihashi, Genichi; and Ogura, Katsuyuki, to Sagami Chemical Research Center. Thioprene or furan derivatives and process for preparation thereof. 4,086,420, Cl. 542-413.000.
Tsuchihashi, Kiyoshi: *See*—
Inamoto, Yoshiaki; Tsuchihashi, Kiyoshi; Takaishi, Naotake; Fujikura, Yoshiaki; and Aigami, Koji, 4,086,285, Cl. 260-666.0PY.
Tsuge, Kenji. Holder device for suspending articles such as paper and the like. 4,085,848, Cl. 211-45.000.
Tsuji, Sadahiko: *See*—
Ishikawa, Kazuo; Sakaguchi, Keiichi; Takigawa, Tomoshi; Hirata, Noritsugu; Tajima, Akira; and Tsuji, Sadahiko, 4,086,605, Cl. 354-270.000.
Tsukagoshi, Shigeru: *See*—
Ishida, Torao; Akiyama, Minoru; Sakurai, Yoshio; and Tsukagoshi, Shigeru, 4,086,417, Cl. 536-29.000.
Tsukishima Kikai Co., Ltd.: *See*—
Omori, Jimpei; Kono, Mitsuo; Takeuchi, Torataro; and Oikawa, Noboru, 4,086,463, Cl. 219-145.220.
Tsunekawa, Tokuichi: *See*—
Kiyohara, Takehiko; Tsunekawa, Tokuichi; Yazaki, Mutsunobu; Sanada, Noriaki; Taguchi, Tetsuya; and Nakamura, Zenzo, 4,086,582, Cl. 354-33.000.
Tsuto, Keiichi; Majima, Kanji; and Imamura, Shigeyasu, to Kao Soap Co., Ltd. Process for sulfonation. 4,086,256, Cl. 260-400.000.
Tsutsui, Nobuyuki: *See*—
Ariga, Keiji; Tsutsui, Nobuyuki; and Kanda, Katsumi, 4,086,153, Cl. 204-181.00R.
Tuchiya, Keiji; Kubota, Junjiro; Takahashi, Katuo; and Suzuki, Etsuo, to Nippon Electric Co., Ltd. Paper feeder including auxiliary belts for improving paper feeding. 4,085,929, Cl. 271-122.000.
Tucker, Kenneth Wayne: *See*—
Juel, Leslie Harrisville; Joo', Louis Arpad; and Tucker, Kenneth Wayne, 4,086,380, Cl. 428-65.000.
Turak, John Lewallen: *See*—
Ritsema, Irving Ray; and Turak, John Lewallen, 4,085,826, Cl. 188-1.00A.
Turbak, Albin Frank; Hammer, Richard Benjamin; Portnoy, Norman A.; and West, Arthur C., to International Telephone and Telegraph Corporation. Process for producing a regenerated hollow cellulosic fiber. 4,086,418, Cl. 536-30.000.
Turner, Elton W.: *See*—
Turner, Raymond R.; Turner, Elton W.; Turner, Jerry; and Winkler, Robert J., 4,085,686, Cl. 108-25.000.
Turner, Jerry: *See*—
Turner, Raymond R.; Turner, Elton W.; Turner, Jerry; and Winkler, Robert J., 4,085,686, Cl. 108-25.000.
Turner, Raymond R.; Turner, Elton W.; Turner, Jerry; and Winkler, Robert J. Collapsible fishing stool. 4,085,686, Cl. 108-25.000.
Turner, William Stanley, to York Trailer Company Limited. Vehicle suspension. 4,085,948, Cl. 280-682.000.
Twohig, Paul Thomas: *See*—
Cheshire, David Alan; Debbas, Samir Costandi; Eger, Richard Thomas; Schermacher, Ken Stephen; and Twohig, Paul Thomas, 4,086,381, Cl. 428-113.000.
Uchidoi, Masanori: *See*—
Kozuki, Susumu; Uchiyama, Takashi; Ito, Tadashi; Iwashita, Tomonori; Uchidoi, Masanori; and Mashimo, Yukio, 4,086,603, Cl. 354-204.000.
Uchiike, Hisayuki: *See*—
Wakasa, Yutaka; and Uchiike, Hisayuki, 4,086,570, Cl. 340-172.000.
Uchiyama, Takashi: *See*—
Kozuki, Susumu; Ichiyanagi, Toshikazu; Watanabe, Yoshiaki; Uchiyama, Takashi; and Sunouchi, Akio, 4,086,584, Cl. 354-38.000.
Kozuki, Susumu; Uchiyama, Takashi; Ito, Tadashi; Iwashita, Tomonori; Uchidoi, Masanori; and Mashimo, Yukio, 4,086,603, Cl. 354-204.000.
Ueda, Yasukiyo; Mori, Keiichi; and Mori, Keijiro, to Matsushita Electric Industrial Co., Ltd. Multiple-mode fluid-flow control valve arrangement. 4,085,921, Cl. 251-129.000.
Ueno, Yoshiki: *See*—
Hattori, Tadashi; Nishida, Minoru; and Ueno, Yoshiki, 4,085,714, Cl. 123-117.00R.
Ullakko, Richard J.; and Edwards, Gerald L., to Tone Commander Systems, Inc. Message-waiting and do-not-disturb communications system. 4,086,441, Cl. 179-84.00C.
Ullrich, Martin: *See*—
Bocker, Ernst; Kracht, Wolfgang; Rupp, Roland; Schellmann, Erhard; Trescher, Viktor; and Ullrich, Martin, 4,086,346, Cl. 424-253.000.
Unimation, Inc.: *See*—
Engelberger, Joseph F.; Dunne, Maurice J.; and Perzley, William, 4,086,522, Cl. 318-568.000.
Union Carbide Corporation: *See*—
Hanold, R. C. Frederick, III, 4,086,649, Cl. 361-321.000.
Karol, Frederick John; and Wu, Chi-Sung, 4,086,408, Cl. 526-130.000.
Karol, Frederick John; and Wu, Chi-Sung, 4,086,409, Cl. 526-130.000.
Koleske, Joseph Victor; and Smith, Oliver Wendell, 4,086,294, Cl. 260-834.000.
Nausedas, Joseph Anthony, 4,085,878, Cl. 225-19.000.
Reichle, Walter Thomas, 4,086,188, Cl. 252-463.000.
Smith, Oliver Wendell; and Koleske, Joseph Victor, 4,086,293, Cl. 260-830.00R.
Uniroyal Ltd.: *See*—
Mishra, Anupama, 4,086,499, Cl. 307-88.0ET.
United Kingdom Atomic Energy Authority: *See*—
Walton, Hyman, 4,086,528, Cl. 324-61.00R.
U.S. Engineering Corporation: *See*—
Conner, Gary L., 4,086,550, Cl. 335-132.000.
United States of America
Agriculture: *See*—
Rowland, Stanley P., 4,086,385, Cl. 428-272.000.
Air Force: *See*—
Arnold, Fred E.; and Hedberg, Frederick L., 4,086,248, Cl. 260-345.200.
Gaskill, James R., Jr.; and Weill, Lawrence R., 4,086,657, Cl. 364-757.000.
Goggins, William B., Jr., 4,086,590, Cl. 343-5.0CM.
Hausfeld, Brian A., 4,085,582, Cl. 60-203.000.
Heincker, William R., 4,085,678, Cl. 102-52.000.
Jones, Roy A.; and Mabry, Marshall W., 4,085,584, Cl. 60-250.000.

Kovar, Robert F.; and Arnold, Fred E., 4,086,232, Cl. 260-250.00Q.
Webb, George; and Burgess, Keith D., 4,085,679, Cl. 102-70.00R.
Army: *See—*
Redman, Charles M., 4,086,511, Cl. 313-101.000.
Solomon, Irvine J.; and Silberman, Louis B., 4,086,228, Cl. 260-239.0HM.
Energy: *See—*
Kustom, Robert L.; and Wehrle, Robert B., 4,086,506, Cl. 310-74.000.
Mathers, James P.; Olszanski, Theodore W.; and Boquist, Carl W., 4,086,396, Cl. 429-103.000.
Moore, Raymond H.; and Stegen, Gary E., 4,086,323, Cl. 423-210.500.
Powell, James R.; and Salzano, Francis J., 4,085,590, Cl. 60-673.000.
Vissers, Donald R.; Nelson, Paul A.; Kaun, Thomas D.; and Tomczuk, Zygmunt, 4,086,404, Cl. 429-220.000.
Navy: *See—*
Buckley, William H.; and Ryland, Garnett, II, 4,086,012, Cl. 403-2.000.
Catano, Paul S.; and Richards, William E., 4,086,616, Cl. 358-81.000.
Clawson, Arthur R.; and Wieder, Herman H., 4,086,608, Cl. 357-17.000.
Delagrange, Arthur D., 4,086,540, Cl. 328-167.000.
Johnston, Thomas F.; and Robinson, Aaron Z., 4,086,560, Cl. 340-3.00R.
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., 4,086,592, Cl. 343-100.0LE.
Losee, Jon R., 4,085,627, Cl. 74-574.000.
Vaughan, William H., 4,086,491, Cl. 250-397.000.
U.S. Philips Corporation: *See—*
Baggermans, Albertus Bernardus Antonius, 4,086,552, Cl. 336-119.000.
Biet, Jean-Pierre Henri; and Laou, Sio Dhat, 4,086,613, Cl. 357-54.000.
Dieleman, Jan; and Hoeberechts, Arthur Marie Eugene, 4,086,512, Cl. 313-366.000.
Ekkelboom, Tjepke Hendrik; and Geeven, Thomas, 4,086,075, Cl. 65-40.000.
Franssen, Nico Valentinus; Kuijk, Karel Elbert; and Siebelink, Johannes Willem, 4,086,431, Cl. 179-1.0SA.
Hallais, Jean-Philippe, 4,086,109, Cl. 148-175.000.
Knippenberg, Wilhelmus Franciscus; Verspui, Gerrit; and Hagen, Siegfried Hendrik, 4,086,559, Cl. 338-22.00R.
Ricouard, Jean-Pierre; and Schorter, Bruno, 4,086,533, Cl. 324-208.000.
Schorter, Bruno, 4,086,565, Cl. 340-81.00R.
Welle, Hendricus Bernardus Antonius; and Claassen, Volkert, 4,086,361, Cl. 424-304.000.
United States Steel Corporation: *See—*
Capriotti, Alfred J.; and Lazzaretti, Louis G., 4,085,513, Cl. 33-286.000.
Crane, Robert M.; and Redwine, Fletcher H., 4,086,029, Cl. 417-53.000.
United Technologies Corporation: *See—*
Brooks, Clyde S.; Lemkey, Franklin D.; and Golden, Gerald S., 4,086,264, Cl. 252-454.000.
Giggins, Charles Stanley, Jr.; and Kear, Bernard Henry, 4,086,391, Cl. 428-679.000.
Universal Manufacturing Corporation: *See—*
Miller, Fredric S., 4,086,495, Cl. 250-561.000.
University of Glasgow: *See—*
Jarrett, William Fleming Hoggan; Jarrett, James Oswald; and Mackey, Lindsay Joan, 4,086,134, Cl. 195-1.200.
University of Minnesota, The Regents of the: *See—*
Dodson, Raymond M.; and Hanson, Joseph B., 4,086,265, Cl. 260-455.00A.
Upadhyayula, Lakshminarasimha Chainulu, to RCA Corporation. Planar transferred electron logic device with improved biasing means. 4,086,501, Cl. 307-299.00R.
Upjohn Company, The: *See—*
Evenson, Gerald N., 4,086,230, Cl. 260-243.300.
Morton, Douglas Ross, Jr., 4,086,259, Cl. 260-413.000.
Nelson, Norman A., 4,086,247, Cl. 260-343.600.
Smith, Herman W., 4,086,258, Cl. 260-408.000.
Wierenga, Wendell, 4,086,254, Cl. 260-397.450.
Wiley, Paul F.; and Houser, David J., 4,086,245, Cl. 260-340.300.
USV Pharmaceutical Corporation: *See—*
Cervoni, Peter P.; and Wolf, Peter S., 4,086,363, Cl. 424-330.000.
Vail, Alfred Slocum: *See—*
Lawson, John B.; Cooper, Charles Simpson; and Vail, Alfred Slocum, 4,085,547, Cl. 51-47.000.
Vales, Richard J.: *See—*
Van Boven, Donald G.; Burdett, John C.; and Vales, Richard J., 4,085,726, Cl. 126-110.00R.
Van Boven, Donald G.; Burdett, John C.; and Vales, Richard J., to Westinghouse Electric Corporation. Forced air furnace motor lead wire protection. 4,085,726, Cl. 126-110.00R.
Van Dell, Robert D.: *See—*
Lamoria, Lz F.; and Van Dell, Robert D., 4,086,200, Cl. 260-29.60S.
Peters, James; VanDell, Robert D.; Eash, R. Douglas; and Lamoria, Lz F., 4,086,201, Cl. 260-29.70S.
van der Lely, Cornelis; and Nieuwenhoven, Hendricus Jacobus Cornelis. Construction of buildings or parts thereof. 4,085,853, Cl. 214-77.00R.
Vanderlinde, William: *See—*
Morgan, Albert W.; Schumacher, Ignatius; and Vanderlinde, William, 4,086,302, Cl. 260-926.000.
Vanderlinden, Andre: *See—*
De Clippeleir, Georges; and Vanderlinden, Andre, 4,086,170, Cl. 252-33.000.
VanderLinden, Paul Guisbert, Jr.; and Crutcher, James Elwyn, to Radio Mechanical Structures, Inc. Dish antenna with adjustable and collapsible support. 4,086,599, Cl. 343-881.000.
Vandorpe, Marc: *See—*
Cordier, Jean-Pierre; and Vandorpe, Marc, 4,086,325, Cl. 423-280.000.
Vanek, Jaroslav. Method of making V-shaped magnetic circuit elements. 4,085,603, Cl. 72-41.000.
van Haaften, Lourens Theodor. Fluid distribution system. 4,085,769, Cl. 137-119.000.
Vanotti, Guy, to Etablissements Vape. Screw fixing device for structural units of agglomerated material. 4,085,652, Cl. 85-83.000.
Vardi, Joseph; and Kittler, Milton J., to Exxon Research & Engineering Co. Evaporation purge control device. 4,085,721, Cl. 123-136.000.
Varga, John Maximilian Jules, to Carding Specialists Co. Limited. Feeding of fibrous material to carding machines. 4,085,977, Cl. 302-28.000.
Vartdal, Robert B. Tackle box. 4,085,987, Cl. 312-269.000.
Vasishth, Ramesh C.; and Chandramouli, Pitchaiya, to Cor Tech Research Ltd. Wood lamination method utilizing emulsified phenol-formaldehyde resins. 4,086,125, Cl. 156-62.200.
Vaughan, William H., to United States of America, Navy. Direct measurement of the electron beam of a scanning electron microscope. 4,086,491, Cl. 250-397.000.
VEB Arzneimittelwerk Dresden: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.
Vecchiotti, Camillo M., to Amerace Corporation. Method of making a battery separator. 4,086,119, Cl. 156-273.000.
Veeder Industries Inc.: *See—*
Szeluga, Ludwick; and Voegelin, Howard J., 4,085,931, Cl. 271-265.000.
Veithen, Valentin Raimund: *See—*
Hogenett, Helmut Johann; and Veithen, Valentin Raimund, 4,085,884, Cl. 229-17.00S.
Velsicol Chemical Corporation: *See—*
Krenzer, John, 4,086,238, Cl. 260-306.80D.
Wu, Chin Ching; and Krenzer, John, 4,086,240, Cl. 260-306.80R.
Wu, Chin Ching; and Krenzer, John, 4,086,241, Cl. 260-306.80D.
Vent-Cair, Inc.: *See—*
Kuechler, Irvin R., 4,085,736, Cl. 126-299.00D.
Ventron Corporation: *See—*
Rei, Nuno M.; and Hill, Nicholas J., 4,086,297, Cl. 260-859.0PV.
Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Mayrhofer, Max; and Taschner, Walter, 4,086,105, Cl. 148-12.00R.
Scheinecker, Alois; Koller, Karl; and Holleis, Gunter, 4,085,793, Cl. 164-436.000.
Vergato, Joseph Anthony: *See—*
Muir, Andrew Redvers; and Vergato, Joseph Anthony, 4,086,651, Cl. 364-487.000.
Vermehren, Poul Henrik: *See—*
Bye-Jorgensen, Jorgen Steen 4,; Larsen, Gunnar Valdemar Hartvig; and Vermehren, Poul Henrik, 4,085,887, Cl. 233-7.000.
Vernaleken, Hugo: *See—*
Bier, Peter; Binsack, Rudolf; and Vernaleken, Hugo, 4,086,212, Cl. 260-75.00R.
Bottenbruch, Ludwig; Kampf, Gunther; Serini, Volker; and Vernaleken, Hugo, 4,086,310, Cl. 264-41.000.
Verspui, Gerrit: *See—*
Knippenberg, Wilhelmus Franciscus; Verspui, Gerrit; and Hagen, Siegfried Hendrik, 4,086,559, Cl. 338-22.00R.
Vettiger, Peter: *See—*
Schindler, Hans Rudolf; and Vettiger, Peter, 4,086,447, Cl. 179-170.0NC.
Vick, Howard Andrew, to Hycel, Inc.; and Hycel, Inc. Hematocrit measurement in an automatic hematology analyzer. 4,086,631, Cl. 364-416.000.
Vicon Products Corporation: *See—*
Scrivo, Leonard; and Goldstein, Sidney, 4,086,004, Cl. 351-158.000.
Viktorov, Vladimir Borisovich: *See—*
Deribas, Andrei Andreevich; Demchuk, Alexandr Fedorovich; Braunshtein, Rudolf Aronovich; Bochkarev, Boris Nikolaevich; Viktorov, Vladimir Borisovich; Karkishko, Gennady Semenovich; Baranov, Sergei Vasilievich; Prakhov, Alexandr Ivanovich; Kasatkin, Vladimir Semenovich; and Rozhkov, Alexandr Timofeevich, 4,085,883, Cl. 228-2.500.
Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, to Science Union et Cie., Societe Francaise de Recherche Medicale. Novel dispirodecanes, processes for their preparation and pharmaceutical compositions. 4,086,355, Cl. 424-274.000.
Vissers, Donald R.; Nelson, Paul A.; Kaun, Thomas D.; and Tomczuk, Zygmunt, to United States of America, Energy. Electrode including porous particles with embedded active material for use in a secondary electrochemical cell. 4,086,404, Cl. 429-220.000.

Voegelin, Howard J.: *See—*
Szeluga, Ludwick; and Voegelin, Howard J., 4,085,931, Cl. 271-265.000.

Vogel, Christian: *See—*
Tournayre, Jean Claude; and Vogel, Christian, 4,086,080, Cl. 71-118.000.

Vola, Mathias J. J. M.: *See—*
Winthaegen, Leon M. W.; and Vola, Mathias J. J. M., 4,086,008, Cl. 355-7.000.

Volinskie, Robert, to AMP, Incorporated. Dual slot contact. 4,085,994, Cl. 339-95.00R.

Volzke, Klaus-Dieter: *See—*
Borowski, Eva; Braun, Klaus; Breuel, Klaus; Dauth, Christoph; Erge, Dieter; Grawert, Werner; Groger, Detlev; Hohne, Liselotte; Knothe, Edda; Muller, Monika; Nordmann, Gisela; Schirutschke, Rudolf; and Volzke, Klaus-Dieter, 4,086,141, Cl. 195-81.000.

Von Holdt, John W. Dispensing drawer assembly. 4,085,870, Cl. 222-361.000.

von Massow, Hans-Jurgen: *See—*
Teschner, Wolfgang; and von Massow, Hans-Jurgen, 4,085,852, Cl. 214-17.00R.

von Mullendorff, Erika: *See—*
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Wilhelms, Otto-Henning; von Mullendorff, Erika; and Sponer, Gisbert, 4,086,347, Cl. 424-253.000.

Voss, Peter, to Siemens Aktiengesellschaft. Thyristor. 4,086,612, Cl. 357-38.000.

Votaw, Ronald W.: *See—*
Cizmic, Stipe; Edwards, Wayne L., Jr.; Griffith, David L.; Halfhill, Martin O.; Jacques, James O.; Shenfield, Leonard R.; and Votaw, Ronald W., 4,086,659, Cl. 364-900.000.

Vowles, Sandra Rae; Jacobs, Michael Alan; and Jackson, Amos Ray. Class of line identifier apparatus and method therefor. 4,086,439, Cl. 179-27.0DA.

Vukasovic, Lovro, to Siemens Aktiengesellschaft. Cycloconverter and method for its operation. 4,086,621, Cl. 363-37.000.

Vukasovic, Lovro, to Siemens Aktiengesellschaft. Frequency converter and method of operating same. 4,086,622, Cl. 363-37.000.

Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: *See—*
Dadak, Zdenek; Janda, Jaroslav; and Kakac, Karel, 4,085,777, Cl. 139-370.200.

W. R. Grace & Co.: *See—*
Block, Jacob, 4,086,146, Cl. 203-7.000.

Waagner-Biro Aktiengesellschaft: *See—*
Jurgens, Wolfgang; Nageler, Jorg; Lippitsch, Josef; and Holzner, Julius, 4,086,308, Cl. 261-124.000.

Wachter, Michael P.; and Kanojia, Ramesh Maganlal, to Ortho Pharmaceutical Corporation. Purification of utero-evacuant extracts from plant substances. 4,086,358, Cl. 424-278.000.

Wagner, William A., to Windings, Inc. Straight hole formation with moving guide path. 4,085,902, Cl. 242-43.00R.

Wah Lo, Allen Kwok; and Nims, Jerry Curtis, to Dimensional Development Corporation. System and camera for controlling depth of field in three-dimensional photography. 4,086,585, Cl. 354-115.000.

Wahls, Robert A., to Freedman Seating Company, The. Seat assembly. 4,085,962, Cl. 296-65.00R.

Wakabayashi, Noboru: *See—*
Osujyo, Masahide; Yamanishi, Isamu; Inamori, Akio; Fujikawa, Kaoru; Wakabayashi, Noboru; Ikegami, Seiichi; Okada, Makoto; and Katayama, Morimitsu, 4,085,806, Cl. 172-9.000.

Wakasa, Yutaka; and Uchiike, Hisayuki, to Yokogawa Electric Works, Ltd. Controlled DC current supply device with open circuit detecting means. 4,086,570, Cl. 340-172.000.

Wakumoto, Hiroshi: *See—*
Mizui, Kinya; and Wakumoto, Hiroshi, 4,086,198, Cl. 260-23.70C.

Waldrop, Marless Wayne. Method and apparatus for depositing packages of soft-pack goods in a box. 4,085,561, Cl. 53-35.000.

Walker, David Richard William, to Rolls-Royce Motors Limited. Glass cleaning formulation. 4,086,178, Cl. 252-143.000.

Walkowiak, Michael: *See—*
Krohn, Wolfgang; Metzger, Karl Georg; Preiss, Michael; and Walkowiak, Michael, 4,086,341, Cl. 424-246.000.
Schrock, Wilfried; Konig, Hans-Bodo; Preiss, Michael; Metzger, Karl Georg; and Walkowiak, Michael, 4,086,340, Cl. 424-246.000.

Wallitsch, Frank, Jr.: *See—*
Hahn, William F.; Nigro, Joseph P.; and Wallitsch, Frank, Jr., 4,085,897, Cl. 241-18.000.

Walsh, James W.: *See—*
Nasuta, Anthony T., Jr.; and Walsh, James W., 4,086,427, Cl. 174-88.00C.

Walter, Manfred: *See—*
Hinselmann, Klaus; Penzien, Klaus; Schick, Rupert; Walter, Manfred; Weber, Heinz; and Wirth, Heinrich, 4,086,191, Cl. 260-2.50B.

Walton, Hyman, to United Kingdom Atomic Energy Authority. Capacitive transducers. 4,086,528, Cl. 324-61.00R.

Walton, Michael G.: *See—*
Curry, Byron V.; and Walton, Michael G., 4,085,895, Cl. 239-276.000.

Wang, Paul C.: *See—*
Sinsky, Allen I.; Wang, Paul C.; and Willey, Robert E., 4,086,597, Cl. 343-754.000.

Ward, Maurice Miller. Grinding machines. 4,085,551, Cl. 51-165.00R.

Ware, Richard E.: *See—*
Janoski, Edward J.; Schneider, Abraham; and Ware, Richard E., 4,086,286, Cl. 260-666.0PY.
Schneider, Abraham; Ware, Richard E.; and Janoski, Edward J., 4,086,284, Cl. 260-666.0PY.

Warner, Peter Stuart: *See—*
Bicht, John Richard; and Warner, Peter Stuart, 4,085,945, Cl. 280-106.50R.

Warren, Charles H.: *See—*
Olds, Dale F.; Allan, Arnold M.; and Warren, Charles H., 4,086,370, Cl. 426-613.000.

Watanabe, Seizo, to Olympus Optical Co., Ltd. Flat miniature dynamo-electric machine. 4,086,510, Cl. 310-242.000.

Watanabe, Yoshiaki: *See—*
Kozuki, Susumu; Ichiyanagi, Toshikazu; Watanabe, Yoshiaki; Uchiyama, Takashi; and Sunouchi, Akio, 4,086,584, Cl. 354-38.000.

Watanabe, Yutaka: *See—*
Nakagawa, Taizo; Ohmori, Kaoru; Watanabe, Yutaka; Tejima, Iwao; Ishida, Shuichi; Suzuki, Toshiyuki; and Yamada, Osamu, 4,086,360, Cl. 424-300.000.

Watson, James M., to Cosden Technology, Inc. Polymerization inhibitor for vinyl aromatic compounds. 4,086,147, Cl. 203-9.000.

Wattimena, Freddy, to Shell Oil Company. Process for preparation of 3,5-xylenol. 4,086,282, Cl. 260-621.00H.

Watts, Fred S., Jr.; and Beecher, Lynn Loren, to Public Service Company of Colorado. Modular I/O equipment for controlling field devices directly or as an interface. 4,086,568, Cl. 340-147.00R.

Watts, Lowell K.: *See—*
Horine, James H.; Watts, Lowell K.; Wininger, Hershel R.; Kelley, Dale; and Sears, Charles L., 4,085,552, Cl. 51-166.00R.

Waudoit, Claude A., to Caterpillar Tractor Co. Pilot control valve with servo means. 4,085,920, Cl. 251-57.000.

Weaver, Kenneth. Method and apparatus for performing an electrosurgical procedure. 4,085,756, Cl. 128-303.170.

Weaver, William W.: *See—*
Anderson, Leroy E.; Schmidt, Michael P.; and Weaver, William W., 4,085,604, Cl. 72-50.000.

Webb, George; and Burgess, Keith D., to United States of America, Air Force. Fuze for explosive magnetohydrodynamic generator. 4,085,679, Cl. 102-70.00R.

Weber, Heinz: *See—*
Hinselmann, Klaus; Penzien, Klaus; Schick, Rupert; Walter, Manfred; Weber, Heinz; and Wirth, Heinrich, 4,086,191, Cl. 260-2.50B.

Weber, Michael, to Wilhelm Bott KG. Central locking mechanism. 4,085,985, Cl. 312-216.000.

Wedding, Brent Merle: *See—*
Seward, Thomas Philip, III; and Wedding, Brent Merle, 4,086,089, Cl. 96-27.00R.

Wedemeyer, Karlfried: *See—*
Biedermann, Wolfgang; Koller, Horst; and Wedemeyer, Karlfried, 4,086,283, Cl. 260-626.00T.

Wehrle, Robert B.: *See—*
Kustom, Robert L.; and Wehrle, Robert B., 4,086,506, Cl. 310-74.000.

Weigl, James; and Lichte, Leo James, to Bourns, Inc. Adjustable gas mixing valve. 4,085,766, Cl. 137-88.000.

Weil, Edward D., to Stauffer Chemical Company. Copolycondensation products of β-haloalkyl phosphates and dialkyl phosphonates. 4,086,303, Cl. 260-928.000.

Weiland, Emil; Schwarz, Alois; Mautz, Karl-Heinz; and Frommlet, Hubert, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for connecting a rotor blade to a rotor hub. 4,086,024, Cl. 416-140.000.

Weill, Lawrence R.: *See—*
Gaskill, James R., Jr.; and Weill, Lawrence R., 4,086,657, Cl. 364-757.000.

Weir, Richard Lloyd. Solar energy conversion system. 4,085,731, Cl. 126-271.000.

Weisgerber, Willi; and Federhen, Ernst, to Miller Western Corporation. Sheet delivery mechanism for sheet fed printing machines. 4,085,930, Cl. 271-204.000.

Weisshappel, Helmut; Klie, Wolfgang; and Fischer, Wolfgang, to Daimler-Benz Aktiengesellschaft; and Daimler-Benz Aktiengesellschaft. Bumper constructed as an elastomeric hollow spring. 4,085,956, Cl. 293-86.000.

Welle, Hendricus Bernardus Antonius; and Claassen, Volkert, to U.S. Philips Corporation. Aminoethyl oximes having anti-depressive activity. 4,086,361, Cl. 424-304.000.

Wellman, Lester R. Weight bearing treadle. 4,085,810, Cl. 177-209.000.

Wells, Roy E., to Kartridg Pak Company, The. Packaging machine. 4,085,779, Cl. 140-93.00A.

Welty, Albert B., Jr. Removal of sulfur and nitrogen oxides with aqueous absorbent. 4,086,324, Cl. 423-235.000.

Werftunion G.m.b.H. & Co.: *See—*
Schilling, Karl; and Rathert, Horst, 4,085,694, Cl. 114-163.000.

West, Arthur C.: *See—*
Turbak, Albin Frank; Hammer, Richard Benjamin; Portnoy, Norman A.; and West, Arthur C., 4,086,418, Cl. 536-30.000.

Westendorf, Neal W. Quick attach means for end loaders or the like. 4,085,856, Cl. 214-145.00A.

Western Electric Company, Inc.: *See—*
Fulp, William W.; Nance, Jack G.; Owens, James L.; and Robbins, Theodore W., 4,086,546, Cl. 333-81.00R.

Nance, Jack G.; Owens, James L.; and Robbins, Theodore W., 4,086,547, Cl. 333-81.00R.
Owens, James L., 4,085,998, Cl. 339-258.00P.
Robbins, Theodore W.; and Terry, Raymond O., Jr., 4,086,548, Cl. 333-81.00R.

Westinghouse Electric Corporation: *See*—
Bolin, Philip C., 4,085,807, Cl. 174-14.00R.
Caputo, William R.; and De Lorenzi, John J., 4,085,823, Cl. 187-29.00R.
Collins, James D., 4,086,452, Cl. 200-50.0AA.
Cresswell, Michael W., 4,086,127, Cl. 156-643.000.
Fox, David A.; and Apfelbeck, Otto L., 4,086,503, Cl. 307-363.000.
Gamble, Dennis H., 4,085,988, Cl. 339-14.00R.
Lugosi, Robert, 4,085,606, Cl. 72-60.000.
Meuschke, Robert E.; and Satterlee, Adelbert E., 4,086,132, Cl. 176-30.000.
Nasuta, Anthony T., Jr.; and Walsh, James W., 4,086,427, Cl. 174-88.00C.
Todt, William H., Sr., 4,086,490, Cl. 250-385.000.
Van Boven, Donald G.; Burdett, John C.; and Vales, Richard J., 4,085,726, Cl. 126-110.00R.
Young, Robert R., 4,086,042, Cl. 418-139.000.

Whirlpool Corporation: *See*—
Robandt, William F.; Cartier, Roger J.; and Gay, Sandy C., 4,086,553, Cl. 336-192.000.

White, John Albert: *See*—
Michael, Anthony Dennis; White, John Albert; and Griffin, Gerald Louis, 4,086,083, Cl. 75-64.000.

White-Westinghouse Corporation: *See*—
Stephan, Alfred, 4,086,033, Cl. 417-368.000.

Whitehurst, Darrell Duayne: *See*—
Mitchell, Thomas Owen; and Whitehurst, Darrell Duayne, 4,086,261, Cl. 260-449.00M.

Whittingham, M. Stanley; and Newman, Gerald H., to Exxon Research & Engineering Co. Alkali metal/niobium triselenide cell having a dioxolane-based electrolyte. 4,086,403, Cl. 429-194.000.

Wieder, Herman H.: *See*—
Clawson, Arthur R.; and Wieder, Herman H., 4,086,608, Cl. 357-17.000.

Wierenga, Wendell, to Upjohn Company, The. Photocleavable steroids. 4,086,254, Cl. 260-397.450.

Wierszewski, Ronald R., to Xerox Corporation. Sheet feeding apparatus. 4,085,673, Cl. 101-242.000.

Wiles, Michael F.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,086,627, Cl. 364-200.000.

Wiley, Paul F.; and Houser, David J., to Upjohn Company, The. Antibiotics 7-O-alkylnogarols. 4,086,245, Cl. 260-340.300.

Wilhelm Bott KG: *See*—
Weber, Michael, 4,085,985, Cl. 312-216.000.

Wilhelms, Otto-Henning: *See*—
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; Plattner, Werner, administrator; Wilhelms, Otto-Henning; von Mullendorff, Erika; and Sponer, Gisbert, 4,086,347, Cl. 424-253.000.

Wilkerson, Joseph Felton. Composite construction form system. 4,085,918, Cl. 249-11.000.

Wilkes, Alan Leonard: *See*—
Golda, Eugene; and Wilkes, Alan Leonard, 4,086,092, Cl. 96-86.00R.

Wilkie, Leslie Raymond: *See*—
Brown, John Anthony; and Wilkie, Leslie Raymond, 4,086,046, Cl. 425-361.000.

Wilkinson, Horace Allan. Shoe support. 4,085,525, Cl. 36-34.00R.

Wilkinson, John Robert, to Facet Enterprises, Inc. On demand fluid pump. 4,086,518, Cl. 318-127.000.

Wilkinson, Samuel Clifford Walter; Sweett, Ronald Sydney; and Bunyan, Thomas Walter, to Crane Packing Limited. Stern seals for ships. 4,085,941, Cl. 277-3.000.

Willbanks, Charles E.: *See*—
Engels, Walter; and Willbanks, Charles E., 4,085,700, Cl. 118-37.000.

Willey, Robert E.: *See*—
Sinsky, Allen I.; Wang, Paul C.; and Willey, Robert E., 4,086,597, Cl. 343-754.000.

Williams, Christopher. Apparatus for adjusting condition of metal of saws. 4,085,630, Cl. 76-27.000.

Williams, John, to South Warwickshire Packaging Services Limited. Containers attached to pallets. 4,085,846, Cl. 206-600.000.

Williams, Robert D.: *See*—
Garzia, Aldo; and Williams, Robert D., 4,086,345, Cl. 424-251.000.

Williams, Thomas H.: *See*—
Fillmore, Gary L.; Hill, James D.; Robinson, William F.; and Williams, Thomas H., 4,086,601, Cl. 346-75.000.

Willmann, Karl; and Saufferer, Helmut, to Daimler-Benz Aktiengesellschaft. Atomization device for internal combustion engines. 4,085,717, Cl. 123-119.00E.

Willner, Howard; and Mangiardi, Vito J., to Bio-Rad Laboratories, Inc. Method for the analysis of thyroid hormones. 4,086,059, Cl. 23-230.300.

Wills, Lynn D.: *See*—
Gauss, Robert C.; Sathe, Hemant T.; and Wills, Lynn D., 4,086,596, Cl. 343-715.000.

Windings, Inc.: *See*—
Wagner, William A., 4,085,902, Cl. 242-43.00R.

Wininger, Hershel R.: *See*—
Horine, James H.; Watts, Lowell K.; Wininger, Hershel R.; Kelley, Dale; and Sears, Charles L., 4,085,552, Cl. 51-166.00R.

Winkler, Bruno, to Naturin-Werk Becker & Co. Apparatus for shirring tubular films. 4,085,483, Cl. 17-42.000.

Winkler, Robert J.: *See*—
Turner, Raymond R.; Turner, Elton W.; Turner, Jerry; and Winkler, Robert J., 4,085,686, Cl. 108-25.000.

Winslow, Elden D.: *See*—
Bosley, Roy E.; Mann, Paul T.; Decoteau, Gary D.; Ivie, Kert F.; and Winslow, Elden D., 4,086,368, Cl. 426-464.000.

Winthaegen, Leon M. W.; and Vola, Mathias J. J. M., to Oce-van der Grinten, N.V. Electrophotographic copying apparatus with device for exposing imaged photoconductive plate. 4,086,008, Cl. 355-7.000.

Wirth, Heinrich: *See*—
Hinselmann, Klaus; Penzien, Klaus; Schick, Rupert; Walter, Manfred; Weber, Heinz; and Wirth, Heinrich, 4,086,191, Cl. 260-2.50B.

Wise, Daniel J.: *See*—
Lisiecki, Robert E.; Crawford, Duncan J.; and Wise, Daniel J., 4,085,885, Cl. 229-17.00R.

Wittle, Eugene Leroy; and Rebstock, Mildred Catherine, to Parke, Davis & Company. Nonapeptides and methods for their production. 4,086,219, Cl. 260-112.5LH.

Wittmoser, Adalbert, to Grunzweig & Hartmann und Glasfaser AG. Casting method using cavityless mold. 4,085,790, Cl. 164-7.000.

Witzke, Horst: *See*—
Cartmell, Donald K.; and Witzke, Horst, 4,086,398, Cl. 429-111.000.

Wohleber, David A.: *See*—
Martin, Edward S.; and Wohleber, David A., 4,086,320, Cl. 423-135.000.

Wolf, Daniel Errol: *See*—
Crane, Hewitt David; and Wolf, Daniel Errol, 4,086,567, Cl. 340-146.3SY.

Wolf, Peter: *See*—
Thiel, Alfons W.; Martini, Hans; Wolf, Peter; and Runkel, Albert, 4,085,517, Cl. 34-21.000.

Wolf, Peter S.: *See*—
Cervoni, Peter P.; and Wolf, Peter S., 4,086,363, Cl. 424-330.000.

Wonder Products Company: *See*—
Morris, James B. N., 4,085,951, Cl. 285-334.000.

Wood, Donald L.; Moore, Robert J.; and Rhodes, Robert B., to Shell Oil Company. Lubricating composition having a selectively sulfonated and hydrogenated block copolymer viscosity-index improver. 4,086,171, Cl. 252-33.000.

Wood, Everett J., Jr. Automatic fishing device. 4,085,536, Cl. 43-15.000.

Wooddy, Douglas William, Jr. Marine seismograph cable balancing. 4,086,561, Cl. 340-7.0PC.

Woodrum, Luther Jay, to International Business Machines Corporation. Directory generation system having efficiency increase with sorted input. 4,086,628, Cl. 364-200.000.

Woods, Kevin James. Accelerator for phosphating solutions. 4,086,103, Cl. 148-6.15R.

Worback, David L., to Massey-Ferguson Inc. Mechanism control. 4,085,855, Cl. 214-138.00D.

Woronowicz, Romuald. Seat and trunnion assemblies for rotary valves. 4,085,770, Cl. 137-238.000.

Wrap-ade Machine Company, Inc.: *See*—
McClosky, Robert B., 4,085,560, Cl. 53-27.000.

Wright, Donald R., to Kartridg Pak Company, The. Packaging machine. 4,085,778, Cl. 140-93.00A.

Wu, Chi-Sung: *See*—
Karol, Frederick John; and Wu, Chi-Sung, 4,086,408, Cl. 526-130.000.
Karol, Frederick John; and Wu, Chi-Sung, 4,086,409, Cl. 526-130.000.

Wu, Chin Ching; and Krenzer, John, to Velsicol Chemical Corporation. 1-Thiazolyl-5-phenoxy and phenylthioalkanoyloxyimidazolidinones. 4,086,240, Cl. 260-306.80R.

Wu, Chin Ching; and Krenzer, John, to Velsicol Chemical Corporation. Benzothiazolylimidazolidinone esters of furyl and thienyl substituted acids. 4,086,241, Cl. 260-306.80D.

Wynkoop, Raymond; and Hancock, Allen W., II, to Suntech, Inc. Process for making terephthalic acid. 4,086,270, Cl. 260-515.00P.

Xerox Corporation: *See*—
Cizmic, Stipe; Edwards, Wayne L., Jr.; Jacques, James O.; Mahon, Douglas K.; and Shenfield, Leonard R., 4,086,636, Cl. 360-75.000.
Cizmic, Stipe; Edwards, Wayne L., Jr.; Griffith, David L.; Halfhill, Martin O.; Jacques, James O.; Shenfield, Leonard R.; and Votaw, Ronald W., 4,086,659, Cl. 364-900.000.
Davis, Thomas G.; and Safford, George J., 4,086,650, Cl. 361-229.000.
Gallo, Charles F., Jr.; Hammond, Thomas J.; and Rees, James D., 4,086,010, Cl. 355-70.000.
Gorham, Michael L.; and Norian, Roger F., 4,086,443, Cl. 179-90.0BD.
Hauser, Oscar G.; and Ruckdeschel, Frederick R., 4,086,006, Cl. 355-3.0DD.
Mueller, Karl, 4,085,794, Cl. 165-1.000.
Smith, Craig A.; and George, Clifford L., 4,086,007, Cl. 355-3.00R.
Wierszewski, Ronald R., 4,085,673, Cl. 101-242.000.

Yagi, Kiyoshi: *See*—
Honda, Tetsuya; Yagi, Kiyoshi; Shibata, Seiji; and Yamaguchi, Kazuo, 4,086,189, Cl. 252-519.000.

Yahagi, Hayao: *See*—
Miyamoto, Seigo; Takezoe, Kazuo; Yahagi, Hayao; and Sugimoto, Shigeo, 4,085,596, Cl. 62-476.000.

Yamada, Bunkichi: *See*—
Miyake, Kazuhiko; and Yamada, Bunkichi, 4,086,619, Cl. 358-183.000.

Yamada, Osamu: *See*—
Nakagawa, Taizo; Ohmori, Kaoru; Watanabe, Yutaka; Tejima, Iwao; Ishida, Shuichi; Suzuki, Toshiyuki; and Yamada, Osamu, 4,086,360, Cl. 424-300.000.

Yamada, Takahiro, to Hitachi, Ltd. Printing video signal information using ink drops. 4,086,602, Cl. 346-75.000.

Yamaguchi, Kazuo: *See*—
Honda, Tetsuya; Yagi, Kiyoshi; Shibata, Seiji; and Yamaguchi, Kazuo, 4,086,189, Cl. 252-519.000.

Yamaguchi, Takashi: *See*—
Yoshida, Mitsuo; Furukawa, Wataru; Yamaguchi, Takashi; and Sasaki, Kazuo, 4,085,942, Cl. 277-30.000.

Yamaki, Hiromi; and Arai, Hiroaki, to Okuma Machinery Works Ltd. System for controlling numerically controlled machine tool used for cutting threads. 4,086,517, Cl. 318-39.000.

Yamamoto Electric Industrial Co., Ltd.: *See*—
Soeda, Katsuji; Sakuma, Fumio; and Oyama, Mitsuhiro, 4,085,692, Cl. 112-275.000.

Yamanishi, Isamu: *See*—
Osujyo, Masahide; Yamanishi, Isamu; Inamori, Akio; Fujikawa, Kaoru; Wakabayashi, Noboru; Ikegami, Seiichi; Okada, Makoto; and Katayama, Morimitsu, 4,085,806, Cl. 172-9.000.

Yamano, Susumu; and Yasuda, Jyunichi, to Oji Yuka Synthetic Paper Sales Co., Ltd. Supports for photographic printing paper. 4,086,383, Cl. 428-174.000.

Yamasaki, Jun: *See*—
Mutoh, Fumio; Koizumi, Hiroshi; Yamasaki, Jun; and Ando, Toshifumi, 4,086,369, Cl. 426-519.000.

Yasuda, Jyunichi: *See*—
Yamano, Susumu; and Yasuda, Jyunichi, 4,086,383, Cl. 428-174.000.

Yasumoto, Yosiro: *See*—
Ito, Yukio; Yasumoto, Yosiro; Masuda, Etsuro; and Suzuki, Hiroshi, 4,086,327, Cl. 423-385.000.

Yazaki, Mutsunobu: *See*—
Kiyohara, Takehiko; Tsunekawa, Tokuichi; Yazaki, Mutsunobu; Sanada, Noriaki; Taguchi, Tetsuya; and Nakamura, Zenzo, 4,086,582, Cl. 354-33.000.

Yazaki, Takao; and Hattori, Kazuhide, to Mitsubishi Petrochemical Co., Ltd. Corrugated cardboard sheet and method for producing same. 4,086,116, Cl. 156-205.000.

Yen, Chung Hwai: *See*—
Adelstein, Gilbert W.; Dajani, Esam Z.; and Yen, Chung Hwai, 4,086,227, Cl. 260-239.00B.

Yokogawa Electric Works, Ltd.: *See*—
Wakasa, Yutaka; and Uchiike, Hisayuki, 4,086,570, Cl. 340-172.000.

Yokota, Hiromu: *See*—
Toyoshima, Iwao; Ishii, Kunio; Sawada, Hideo; Kawamoto, Junji; and Yokota, Hiromu, 4,085,760, Cl. 131-268.000.

Yonezawa, Keitaro, to Aioi Seiki Kabushiki Kaisha. Overload protector for mechanical press. 4,085,669, Cl. 100-53.000.

Yoon, In Bae. Multiple occlusion ring applicator and method. 4,085,743, Cl. 128-6.000.

York Trailer Company Limited: *See*—
Turner, William Stanley, 4,085,948, Cl. 280-682.000.

Yoshida, Hajime: *See*—
Nakayama, Kiyoshi; Araki, Kazumi; and Yoshida, Hajime, 4,086,137, Cl. 195-29.000.

Yoshida, Isao; Hori, Ryoichi; Masuda, Hiroo; Minato, Osamu; Etoh, Jun; and Nakai, Masaaki, to Hitachi, Ltd. Protective circuit and device for metal-oxide-semiconductor field effect transistor and method for fabricating the device. 4,086,642, Cl. 361-91.000.

Yoshida, Mitsuo; Furukawa, Wataru; Yamaguchi, Takashi; and Sasaki, Kazuo, to Sumitomo Kinzoku Kogyo Kabushiki Kaisha; Kabushiki Kaisha Yamamoto Suiatsu Kogyosho; and Nihon Valqua Kogyo Kabushiki Kaisha. Packing for use in steel-pipe hydraulic testing apparatus. 4,085,942, Cl. 277-30.000.

Yoshikawa, Naohiro; Sato, Sadaharu; Matsubara, Masanori; and Hosoda, Masao, to Janome Sewing Machine Co. Ltd. Automatic electrical credit-card imprinter. 4,085,675, Cl. 101-269.000.

Yoshinaga, Kaneyasu. Centrifugal pump. 4,086,306, Cl. 261-93.000.

Yoshinouchi, Sumio; and Tanaka, Hiroki, to Kabushiki Kaisha Komatsu Seisakusho. Pivotal support for a fluid actuated cylinder with means for communicating pressurized fluid thereto. 4,085,660, Cl. 92-119.000.

Young, Buck R., to Hudson Pulp & Paper Corporation. Coating for multi-wall bags. 4,085,851, Cl. 214-10.50R.

Young, Lewis B.: *See*—
Kaeding, Warren W.; and Young, Lewis B., 4,086,287, Cl. 260-671.00R.

Young, Robert R., to Westinghouse Electric Corporation. Rotary compressor and vane assembly therefor. 4,086,042, Cl. 418-139.000.

Yuda, Takuo, to NIFCO Inc. Device for adjusting length of rod. 4,085,623, Cl. 74-89.150.

(Zaidanhojin) Sagami Chemical Research Center: *See*—
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,086,136, Cl. 195-29.000.

Zaklady Mechaniczne im. Gen. Karola Swierczewskiego "Zamech": *See*—
Gundlach, Wladyslaw; Porochnicki, Jerzy; Prywer, Jerzy; Karewicz, Boguslaw; Potapczyk, Andrzej; and Zielenow, Krzysztof, 4,086,027, Cl. 416-184.000.

Zaluska, Philip J.: *See*—
Bechara, Ibrahim S.; Zaluska, Philip J.; and Mascioli, Rocco L., 4,086,213, Cl. 260-77.5AB.

Zeelen, Filippus Johannes: *See*—
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, 4,086,362, Cl. 424-305.000.

Zerpner, Dieter; Nedden, Klaus Zur; Frese, Albert; and Datene, Hans, to Chemische Werke Huls Aktiengesellschaft. Heat-sealable vulcanizates comprising polyolefin rubber and propylene polymer. 4,086,301, Cl. 260-897.00A.

Ziccarelli, Salvatore F., to Beatrice Foods Co. Fruit flavored composition. 4,086,367, Cl. 426-98.000.

Ziebold, Steven A.: *See*—
Argo, Wesley B.; Chen, Gilbert K. C.; Kocatas, Babur M.; and Ziebold, Steven A., 4,086,070, Cl. 55-97.000.

Zielenow, Krzysztof: *See*—
Gundlach, Wladyslaw; Porochnicki, Jerzy; Prywer, Jerzy; Karewicz, Boguslaw; Potapczyk, Andrzej; and Zielenow, Krzysztof, 4,086,027, Cl. 416-184.000.

Ziemba, Richard Thomas, to General Electric Company. Fuze encoder. 4,085,680, Cl. 102-70.20R.

Zimmerman, Ray A.: *See*—
Snetsinger, David C.; and Zimmerman, Ray A., 4,086,365, Cl. 426-2.000.

Zirkle, Charles Leon, to SmithKline Corporation. Pharmaceutical compositions and method of producing anti-psychotic activity without extrapyramidal symptoms. 4,086,350, Cl. 424-267.000.

Znamirowski, Henry: *See*—
Kromm, David C.; and Znamirowski, Henry, 4,085,480, Cl. 16-94.00D.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF APRIL, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Analog Devices, Incorporated: *See—*
Pastoriza, James J., Re. 29,619, Cl. 340-347.0DA.

Bacaner, Marvin B., to University of Minnesota, The Regents of the. Suppression of cardiac ventricular fibrillation and cardiac arrhythmias with bretylium tosylate. Re. 29,618, Cl. 424-316.000.

General Electric Company: *See—*
Takekoshi, Tohru, Re. 29,616, Cl. 260-52.000.
Takekoshi, Tohru; and Webb, Jimmy L., Re. 29,617, Cl. 260-49.000.

Pastoriza, James J., to Analog Devices, Incorporated. Constant-current digital-to-analog converter. Re. 29,619, Cl. 340-347.0DA.

Takekoshi, Tohru, to General Electric Company. Halovinylidene arylene polymers and process for making the same. Re. 29,616, Cl. 260-52.000.

Takekoshi, Tohru; and Webb, Jimmy L., to General Electric Company. Aryl methylene polymers prepared from chloral, bromal or glyoxalic acid. Re. 29,617, Cl. 260-49.000.

University of Minnesota, The Regents of the: *See—*
Bacaner, Marvin B., Re. 29,618, Cl. 424-316.000.

Webb, Jimmy L.: *See—*
Takekoshi, Tohru; and Webb, Jimmy L., Re. 29,617, Cl. 260-49.000.

LIST OF PLANT PATENTEES

Armstrong Nurseries, Inc.: *See—*
Swim, Herbert C.; and Ellis, Arnold W., 4,243, Cl. 11.000.

Ellis, Arnold W.: *See—*
Swim, Herbert C.; and Ellis, Arnold W., 4,243, Cl. 11.000.

Greinke, David, to Pan-American Plant Company. Chrysanthemum named Yellow Jacket. 4,244, 4-25-78, Cl. 75.000.

Pan-American Plant Company: *See—*
Greinke, David, 4,244, Cl. 75.000.

Swim, Herbert C.; and Ellis, Arnold W., to Armstrong Nurseries, Inc. Rose plant. 4,243, 4-25-78, Cl. 11.000.

LIST OF DESIGN PATENTEES

Albert, Gladys, to Albert, Gladys. Jewelry caddy. 247,761, 4-25-78, Cl. D6-132.000.

Alfred Dunhill Limited: *See—*
Weir, Robert James, 247,787, Cl. D27-36.000.

Barnich, Richard G.; and Johnson, Gary D., to Process Computer Systems, Inc. Desk top computer. 247,779, 4-25-78, Cl. D14-45.000.

Belkir, Marcel. Exerciser. 247,789, 4-25-78, Cl. D34-5.00K.

Bernyk, George S. Hair spray shield for attachment to spray cans. 247,788, 4-25-78, Cl. D28-9.000.

Blumberg, Armond. Lens cap retainer. 247,782, 4-25-78, Cl. D16-50.000.

Carbon, Fred S. Waffle baker. 247,763, 4-25-78, Cl. D7-87.000.

Carbon, Fred S. Waffle baker. 247,764, 4-25-78, Cl. D7-87.000.

Celotex Corporation, The: *See—*
Flood, David N., 247,786, Cl. D25-80.000.

Darrell, Jack. Push symbol for glass door or the like. 247,795, 4-25-78, Cl. D96-12.00C.

Davis, Ariel R.: *See—*
Topham, Silas Charles; and Davis, Ariel R., 247,773, Cl. D9-278.000.

DiLoreto, Edward, to Yale Engineering Company. Outer race for ball bearing. 247,781, 4-25-78, Cl. D15-143.000.

Ehrich, Robert D. Game call. 247,785, 4-25-78, Cl. D10-119.000.

Flood, David N., to Celotex Corporation, The. Roofing shingle. 247,786, 4-25-78, Cl. D25-80.000.

Fortune, William S. Self cleaning desoldering tool combination or the like. 247,766, 4-25-78, Cl. D8-51.000.

Ikeda, Kishio: *See—*
Tazawa, Keizaburo; Takahashi, Shinichiro; and Ikeda, Kishio, 247,794, Cl. D87-1.00D.

Jackson, Albert P. Combined golf ball marker and divot replacement tool. 247,790, 4-25-78, Cl. D34-5.0CB.

Johnson, Gary D.: *See—*
Barnich, Richard G.; and Johnson, Gary D., 247,779, Cl. D14-45.000.

Kawano, Takeyoshi, to Matsushita Electric Industrial Co., Ltd. Portable radio. 247,780, 4-25-78, Cl. D14-70.000.

Killian, Gerald I. Mounting plate for archery bow sights. 247,783, 4-25-78, Cl. D22-5.000.

Kim Craftsmen, Ltd.: *See—*
Moskowitz, Paul, 247,771, Cl. D9-191.000.

Kramer, Ralph. Cycle saddlebox. 247,776, 4-25-78, Cl. D12-158.000.

Lee, Richard J. Shotgun shell loading press. 247,784, 4-25-78, Cl. D22-99.000.

Lenoir, Kleber, to R. S. Furniture Inc. Shelf unit or similar article. 247,762, 4-25-78, Cl. D6-186.000.

Matay, Edward G. Novelty digit counter. 247,792, 4-25-78, Cl. D34-15.00R.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kawano, Takeyoshi, 247,780, Cl. D14-70.000.

McCarthy, Peter A. Coin container. 247,793, 4-25-78, Cl. D52-4.00R.

Monteleone, Salvatore. Golf putting head. 247,791, 4-25-78, Cl. D34-5.0GH.

Moskowitz, Paul, to Kim Craftsmen, Ltd. Display card for earrings or the like. 247,771, 4-25-78, Cl. D9-191.000.

Nagatomo, Daizi, to Sony Corporation. Tape cassette case. 247,778, 4-25-78, Cl. D14-11.000.

Pariente, Dorothy, to Pariente, Dorothy. Food service tray. 247,765, 4-25-78, Cl. D7-38.000.

Process Computer Systems, Inc.: *See—*
Barnich, Richard G.; and Johnson, Gary D., 247,779, Cl. D14-45.000.

R. S. Furniture Inc.: *See—*
Lenoir, Kleber, 247,762, Cl. D6-186.000.

Roberson, Donald. Housing for audio-visual entertainment system or similar article. 247,777, 4-25-78, Cl. D14-1.000.

Sagona, Charles. Plastic bottle. 247,767, 4-25-78, Cl. D9-130.000.

Sagona, Charles. Plastic bottle. 247,768, 4-25-78, Cl. D9-130.000.

Sagona, Charles. Plastic bottle. 247,769, 4-25-78, Cl. D9-156.000.

Sagona, Charles. Plastic bottle. 247,770, 4-25-78, Cl. D9-168.000.

Screenflow Accessories Limited: *See—*
Watson-O'Hara, Leonard, 247,775, Cl. D12-158.000.

Sexton, Edward William, Jr. Can. 247,772, 4-25-78, Cl. D9-218.000.

Sony Corporation: *See—*
Nagatomo, Daizi, 247,778, Cl. D14-11.000.
Tazawa, Keizaburo; Takahashi, Shinichiro; and Ikeda, Kishio, 247,794, Cl. D87-1.00D.

Takahashi, Shinichiro: *See—*
Tazawa, Keizaburo; Takahashi, Shinichiro; and Ikeda, Kishio, 247,794, Cl. D87-1.00D.

Tazawa, Keizaburo; Takahashi, Shinichiro; and Ikeda, Kishio, to Sony Corporation. Tape cassette case. 247,794, 4-25-78, Cl. D87-1.00D.

Topham, Silas Charles; and Davis, Ariel R. Dispenser cap. 247,773, 4-25-78, Cl. D9-278.000.

Underwood, Keith A. Wall plaque. 247,774, 4-25-78, Cl. D11-132.000.

Watson-O'Hara, Leonard, to Screenflow Accessories Limited. Motor cycle side pannier. 247,775, 4-25-78, Cl. D12-158.000.

Weir, Robert James, to Alfred Dunhill Limited. Lighter. 247,787, 4-25-78, Cl. D27-36.000.

Yale Engineering Company: *See—*
DiLoreto, Edward, 247,781, Cl. D15-143.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 25, 1978

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2

158 4,085,464
271 4,085,465

CLASS 3

1.91 4,085,466
13 4,085,467

CLASS 4

199 4,085,469
213 4,085,470
237 4,085,468

CLASS 5

90 4,085,471
4,085,472

CLASS 8

89 R 4,086,054
130.1 4,086,055

CLASS 9

1.7 4,085,473

CLASS 13

24 4,086,424

CLASS 15

104.1 R 4,085,474
209 D 4,085,475
229 A 4,085,476
243 4,085,477
245 4,085,478

CLASS 16

45 4,085,479
94 D 4,085,480
159 4,085,481

CLASS 17

26 4,085,482
42 4,085,483

CLASS 21

7 4,086,056
54 A 4,086,057

CLASS 23

230 B 4,086,058
230.3 4,086,059
259 4,086,060
4,086,061
4,086,062
288 F 4,086,063
288 G 4,086,064

CLASS 26

84 4,085,484

CLASS 28

104 4,085,485
110 4,085,486
252 4,085,487

CLASS 29

33 G 4,085,488
110 4,085,489
156.6 4,085,490
157.3 AH 4,085,491
431 4,085,492
446 4,086,065
455 R 4,085,493
468 4,085,494
469 4,085,495
527.2 4,085,496
566.3 4,085,497
571 4,085,498
4,085,499
589 4,085,500
593 4,085,501
629 4,085,502

CLASS 30

34.1 4,085,503
123 4,085,504
278 4,085,505

CLASS 32

2 4,085,506
17 4,085,507

CLASS 33

27 K 4,085,508
134 R 4,085,509
178 F 4,085,510
250 4,085,511
286 4,085,513
293 4,085,512
343 4,085,514
377 4,085,515

CLASS 34

10 4,085,516
21 4,085,517
37 4,085,518
79 4,085,520
89 4,085,521
104 4,085,519
156 4,085,522

CLASS 35

9 A 4,085,523
10.4 4,085,524

CLASS 36

34 R 4,085,525
59 R 4,085,526
114 4,085,527
121 4,085,528
125 4,085,529

CLASS 37

98 4,085,530
190 4,085,531

CLASS 38

102.2 4,085,532

CLASS 40

124.2 4,085,534
4,085,535
406 4,085,533

CLASS 43

15 4,085,536
17.2 4,085,537
17.6 4,085,538

CLASS 44

51 4,086,066

CLASS 46

1 C 4,085,539
119 4,085,540
228 4,085,541
256 4,085,542

CLASS 47

2 4,085,543
39 4,085,544
58 4,085,545
59 4,085,546

CLASS 51

47 4,085,547
103 WH 4,085,548
119 4,085,549
145 T 4,085,550
165 R 4,085,551
166 R 4,085,552
216 LP 4,085,553
296 4,086,067
325 4,085,554
395 4,086,068

CLASS 52

169.6 4,085,555
223 R 4,085,556
263 4,085,557
451 4,085,558
687 4,085,559

CLASS 53

27 4,085,560
32 4,085,564
35 4,085,561
59 R 4,085,562
4,085,563
112 A 4,085,565
124 D 4,085,566
225 4,085,567
234 4,085,568
389 4,085,569

CLASS 55

48 4,086,069
97 4,086,070
501 4,086,071

CLASS 56

2 4,085,570
208 4,085,571
330 4,085,572
364 4,085,573

CLASS 57

88 4,085,574

CLASS 58

4 A 4,085,575
23 D 4,085,577
23 R 4,085,576

CLASS 60

39.02 4,085,578
39.04 4,085,579
39.65 4,085,580
39.66 4,085,581
203 4,085,582
204 4,085,583
250 4,085,584
262 4,085,585
277 4,085,586
403 4,085,587
517 4,085,588
626 4,085,589
673 4,085,590
674 4,085,591
676 4,085,593

CLASS 61

45 D 4,085,592

CLASS 62

2 4,086,072
171 4,085,594
476 4,085,595
4,085,596

CLASS 65

30 E 4,086,073
31 4,086,074
40 4,086,075

CLASS 66

75.2 4,085,597
145 R 4,085,598

CLASS 70

14 4,085,599
39 4,085,600
364 R 4,085,601
456 B 4,085,602

CLASS 71

67 4,086,076
90 4,086,077
94 4,086,078
103 4,086,079
118 4,086,080
126 4,086,081

CLASS 72

41 4,085,603
50 4,085,604
54 4,085,605
60 4,085,606
77 4,085,607
297 4,085,608

CLASS 73

101 4,085,609
113 4,085,610
115 4,085,611
136 A 4,085,612
193 R 4,085,613
194 B 4,085,615
194 VS 4,085,614
215 4,085,616
362 CP 4,085,617
422 TC 4,085,618
462 4,085,619
727 4,085,620

CLASS 74

37 4,085,621
53 4,085,622
89.15 4,085,623
4,085,624
89.22 4,085,625
110 4,085,626
574 4,085,627
579 E 4,085,628
625 4,085,629

CLASS 75

.5 A 4,086,082
64 4,086,083
118 R 4,086,084
124 4,086,085
130 R 4,086,086
200 4,086,087

CLASS 76

27 4,085,630

CLASS 81

3 R 4,085,631
3.3 R 4,085,632
111 4,085,633

CLASS 82

19 4,085,634

CLASS 83

13 4,085,635
56 4,085,636
69 4,085,637
71 4,085,638
157 4,085,639
198 4,085,640
328 4,085,641
764 4,085,642

CLASS 84

1.01 4,085,643
4,085,644
4,085,645
1.09 4,085,646
1.24 4,085,647
4,085,648

CLASS 85

1 T 4,085,649
41 4,085,650
72 4,085,651
83 4,085,652

CLASS 89

7 4,085,653
191 A 4,085,654

CLASS 91

307 4,085,655
376 R 4,085,656
380 4,085,657
461 4,085,658

CLASS 92

8 4,085,659
119 4,085,660
170 4,085,661

CLASS 93

1 C 4,085,663
1 WZ 4,085,662
44.1 R 4,085,664

CLASS 96

1 R 4,086,088
27 R 4,086,089
35.1 4,086,090
36.2 4,086,091
86 P 4,086,093
86 R 4,086,092
100 R 4,086,094

CLASS 98

2.12 4,085,665
2.14 4,085,666
43 R 4,085,667

CLASS 99

483 4,085,668

CLASS 100

53 4,085,669

CLASS 101

76 4,085,670
128.1 4,085,671
169 4,085,672
242 4,085,673
248 4,085,674
269 4,085,675

CLASS 102

23 4,085,676
42 R 4,085,677
52 4,085,678
70 R 4,085,679
70.2 R 4,085,680

CLASS 104

23 FS 4,085,681

CLASS 105

157 R 4,085,682
424 4,085,683
482 4,085,684
498 4,085,685

CLASS 106

1.17 4,086,095
4,086,096
64 4,086,097
97 4,086,098
109 4,086,099
291 4,086,100
293 4,086,123

CLASS 108

25 4,085,686

CLASS 109

24.1 4,085,687

CLASS 110

238 4,085,688
252 4,085,689

CLASS 112

158 E 4,085,691
158 R 4,085,690
275 4,085,692

CLASS 114

29 4,085,693
163 4,085,694
260 4,085,695
266 4,085,696

CLASS 115

1 R 4,085,697

CLASS 116

114 J 4,085,698

CLASS 118

37 4,085,700
57 4,085,701
60 4,085,702
500 4,085,699
504 4,085,703

CLASS 119

1 4,085,704
17 4,085,705
61 4,085,706

CLASS 122

4 D 4,085,707
7 B 4,085,708

CLASS 123

1 A 4,085,709
19 4,085,710
46 B 4,085,711
75 B 4,085,713
117 A 4,085,715
117 R 4,085,714
119 A 4,085,718
119 E 4,085,717
119 EC 4,085,716
122 E 4,085,719
127 4,085,720
136 4,085,721
139 AL 4,085,722
139 AW 4,085,723
140 MC 4,085,724
205 4,085,712

CLASS 126

110 B 4,085,725
110 R 4,085,726
121 4,085,727
270 4,085,728
4,085,729
4,085,730
271 4,085,731
4,085,732
4,085,733
4,085,734
299 D 4,085,736
299 E 4,085,735

CLASS 128

2 F 4,085,737
2 N 4,085,738
2.05 R 4,085,740
2.08 4,085,741
2.1 B 4,085,739
4 4,085,742
6 4,085,743
69 4,085,744
165 4,085,745
166 4,085,746
214 F 4,085,747
215 4,085,748
4,085,749
233 4,085,750
275 4,085,751
283 4,085,752
284 4,085,753
287 4,085,754
295 4,085,755
303.17 4,085,756
325 4,085,757
589 4,085,758

CLASS 131

25 4,085,759
268 4,085,760

CLASS 134

104 4,085,761

CLASS 135

4 R 4,085,762
69 4,085,763

CLASS 136

89 CC 4,086,102
89 CD 4,086,101

CLASS 137

68 R 4,085,764
4,085,765
88 4,085,766
102 4,085,767
4,085,768
119 4,085,769
238 4,085,770
344 4,085,771
464 4,085,772
561 A 4,085,776
571 4,085,773
625.3 4,085,774
625.5 4,085,775

CLASS 139

370.2 4,085,777

CLASS 140

93 A 4,085,778
4,085,779

CLASS 141

1 4,085,780
4,085,781
4,085,782

CLASS 144

193 A 4,086,111
208 R 4,085,783

CLASS 145

29 R 4,085,784

CLASS 148

6.15 R 4,086,103
12 E 4,086,104
12 R 4,086,105
33 4,086,106
136 4,086,107
175 4,086,108
4,086,109

CLASS 149

19.4 4,086,110

CLASS 150

.5 4,085,785

CLASS 152

158 4,085,786
362 R 4,085,787

CLASS 156

62.2 4,086,125

73.1 4,086,112
98 4,086,113
153 4,086,114
178 4,086,115
205 4,086,116
212 4,086,117
246 4,086,118
273 4,086,119
473 4,086,120
526 4,086,121
556 4,086,122
603 4,086,124
642 4,086,126
643 4,086,127
661 4,086,128

CLASS 160

133 4,085,788
135 4,085,789

CLASS 162

49 4,086,129
123 4,086,130
203 4,086,131

CLASS 164

7 4,085,790
55 4,085,791
72 4,085,792
436 4,085,793

CLASS 165

1 4,085,794
45 4,085,795

CLASS 166

77.5 4,085,796
245 4,085,797
252 4,085,798
272 4,085,799
288 4,085,800
295 4,085,801
4,085,802
303 4,085,803
315 4,085,804

CLASS 172

4.5 4,085,805
9 4,085,806

CLASS 174

14 R 4,085,807
15 C 4,086,425
68.5 4,086,426
88 C 4,086,427

CLASS 175

94 4,085,808
410 4,085,809

CLASS 176

30 4,086,132
4,086,133

CLASS 177

209 4,085,810
210 EM 4,085,811

CLASS 178

60 4,086,428
69.1 4,086,429
88 4,086,430

CLASS 179

1 CN 4,086,432
1 GQ 4,086,433
1 SA 4,086,431
1.5 R 4,086,435
2 AM 4,086,434
15 AF 4,086,436
4,086,437
18 BE 4,086,438
27 DA 4,086,439
27 G 4,086,446
81 R 4,086,440
84 C 4,086,441
90 BD 4,086,443
90 CS 4,086,442
99 4,086,444
121 R 4,086,445
170 NC 4,086,447
175.3 R 4,086,448
181 R 4,086,449
4,086,450

CLASS 180

6.48 4,085,812
14 A 4,085,813
33 C 4,085,814
54 R 4,085,815
64 A 4,085,816
132 4,085,817

CLASS 182

47 4,085,818
121 4,085,819
204 4,085,820

CLASS 184

15 A 4,085,821

CLASS 186

1 A 4,085,822

CLASS 187

29 R 4,085,823

CLASS 188

1 A 4,085,824
4,085,826
4,085,827
1 B 4,085,825
71.6 4,085,828
72.5 4,085,829
196 D 4,085,830
210 4,085,831
268 4,085,832

CLASS 192

4 B 4,085,833
87.13 4,085,834
113 AB 4,085,835

CLASS 195

1.2 4,086,134
17 4,086,135
29 4,086,136
4,086,137
65 4,086,138
66 B 4,086,140
66 R 4,086,139
81 4,086,141
103.5 R 4,086,142

CLASS 197

19 4,085,836
133 R 4,085,837
181 4,085,838

CLASS 198

410 4,085,839
472 4,085,840

CLASS 200

5 A 4,086,451
50 AA 4,086,452
52 R 4,086,453
60 4,086,454
76 4,086,455
82 E 4,086,456
84 R 4,086,457
85 R 4,086,458
144 B 4,086,459
146 R 4,086,460
148 R 4,086,461

CLASS 201

41 4,086,143
4,086,144

CLASS 202

248 4,086,145
4,086,231

CLASS 203

7 4,086,146
9 4,086,147

CLASS 204

33 4,086,148
59 R 4,086,149
95 4,086,150
159.16 4,086,151
176 4,086,152
181 R 4,086,153
195 R 4,086,154
266 4,086,155
290 F 4,086,157
294 4,086,156

CLASS 206

45.15 4,085,841
289 4,085,842
328 4,085,843
335 4,085,844
454 4,086,263
564 4,085,845
600 4,085,846
4,085,847

CLASS 208

264 4,086,158
333 4,086,159

CLASS 210

7 4,086,160
13 4,086,161
20 4,086,162
22 D 4,086,163
46 4,086,164
104 4,086,165
134 4,086,166
150 4,086,167
330 4,086,168
519 4,086,169

CLASS 211

45 4,085,848

CLASS 214

1 BB 4,085,849
2 4,085,850
10.5 R 4,085,851
17 R 4,085,852
77 R 4,085,853
138 D 4,085,855
138 R 4,085,854
145 A 4,085,856
302 4,085,857
303 4,085,858
450 4,085,859

CLASS 219

10.71 4,086,462
145.22 4,086,463
156 4,086,464
236 4,086,465
377 4,086,468
494 4,086,466
544 4,086,467

CLASS 220

89 B 4,085,860
90.4 4,085,861

CLASS 221

8 4,085,862
20 4,085,863
155 4,085,864

CLASS 222

1 4,085,865
158 4,085,866
181 4,085,867
193 4,085,868
271 4,085,869
361 4,085,870
404 4,085,871

CLASS 224

5 D 4,085,872
8 R 4,085,873
29 R 4,085,874
45 K 4,085,875
45 R 4,085,876
48 R 4,085,877

CLASS 225

19 4,085,878
93 4,085,879

CLASS 226

90 4,085,880
95 4,085,881

CLASS 227

110 4,085,882

CLASS 228

2.5 4,085,883

CLASS 229

17 R 4,085,885
17 S 4,085,884
62.5 4,085,886

CLASS 233

7 4,085,887
4,085,888
20 R 4,085,889

CLASS 235

92 DM 4,086,471
92 DN 4,086,472
92 DP 4,086,470
92 EA 4,086,473
92 MP 4,086,469
419 4,085,890
4,086,475
462 4,086,476
464 4,086,477
466 4,086,478

CLASS 236

15 A 4,085,891

CLASS 239

15 4,085,892
102 4,085,893
121 4,085,894
276 4,085,895
504 4,085,896

CLASS 241

18 4,085,897
175 4,085,898
247 4,085,899

CLASS 242

18 DD 4,085,900
18 G 4,085,901
43 R 4,085,902
43.1 4,085,903
54 R 4,085,904
107.4 A 4,085,905
192 4,085,906
199 4,085,907
201 4,085,908

CLASS 244

3.16 4,085,910
3.21 4,085,909
12.4 4,085,911
25 4,085,912

CLASS 246

63 A 4,085,913

CLASS 248

19 4,085,914
187 4,085,915
188 4,085,916
489 4,085,917

CLASS 249

11 4,085,918
134 4,085,919

CLASS 250

199 4,086,484
203 R 4,086,485
207 4,086,486
4,086,487
231 P 4,086,488
372 4,086,489
385 4,086,490
397 4,086,491
416 TV 4,086,492
468 4,086,493
505 4,086,494
561 4,086,495
4,086,496
562 4,086,497

CLASS 251

57 4,085,920
129 4,085,921
298 4,085,952

CLASS 252

33 4,086,170
4,086,171
47.5 4,086,172
51.5 A 4,086,173
62.56 4,086,174
99 4,086,175
100 4,086,176
102 4,086,177
143 4,086,178
171 4,086,179
4,086,180
180 4,086,181
182 4,086,182
414 4,086,184
429 B 4,086,185
430 4,086,186
454 4,086,264
455 Z 4,086,187
463 4,086,188
519 4,086,189

CLASS 254

10 C 4,085,953

CLASS 256

34 4,085,954

CLASS 260

2 S 4,086,190
2.5 AJ 4,086,194
2.5 AY 4,086,193
2.5 B 4,086,191
2.5 FP 4,086,192
2.5 N 4,086,195
18 PN 4,086,197
23.7 C 4,086,198
29.6 S 4,086,200
29.7 S 4,086,201
29.7 UP 4,086,199
33.2 R 4,086,202
40 R 4,086,203
45.8 N 4,086,207
45.8 NT 4,086,204
4,086,206
45.8 R 4,086,205
47 C 4,086,208
49 Re.29,617
4,086,209
52 Re.29,616
67 R 4,086,210
75 NA 4,086,211
75 R 4,086,212
77.5 AB 4,086,213
77.5 AN 4,086,214
78 R 4,086,215
112 B 4,086,218
112 R 4,086,216
4,086,217
112.5 LH 4,086,219
112.5 R 4,086,196
4,086,220
112.5 T 4,086,221
122 4,086,222
151 4,086,223
192 4,086,224
239 B 4,086,227
239 BF 4,086,226
239 HM 4,086,228
239.3 P 4,086,225
243.3 4,086,230
250 Q 4,086,232
256.4 C 4,086,233
268 BC 4,086,234
270 D 4,086,229
287 AN 4,086,236
290 P 4,086,237
306.8 D 4,086,238
4,086,241
306.8 R 4,086,239
4,086,240
308 B 4,086,242
325 PH 4,086,243
340.3 4,086,244
4,086,245
340.9 R 4,086,246
343.6 4,086,247
345.2 4,086,248
345.5 4,086,249
346.6 4,086,250
346.74 4,086,251
376 4,086,252
396 N 4,086,253
397.45 4,086,254
397.6 4,086,255
400 4,086,256
403 4,086,257
408 4,086,258
413 4,086,259
448.8 R 4,086,260
449 M 4,086,261
449.6 R 4,086,262
455 A 4,086,265
465.4 4,086,266
514 D 4,086,269
515 P 4,086,270
555 A 4,086,271
559 D 4,086,272
561 N 4,086,275
561 S 4,086,273
4,086,274
563 R 4,086,276
591 4,086,277
609 R 4,086,278
615 B 4,086,279
617 R 4,086,280
621 H 4,086,282
621 R 4,086,281
626 T 4,086,283
666 PY 4,086,284
4,086,285
4,086,286
671 M 4,086,289
671 R 4,086,287
4,086,288
680 E 4,086,290
758 4,086,291
830 R 4,086,293
831 4,086,292
834 4,086,294
857 G 4,086,296
857 L 4,086,295
859 PV 4,086,297
880 B 4,086,298
885 4,086,299
4,086,300
897 A 4,086,301
926 4,086,302
928 4,086,303
989 4,086,304

CLASS 261

30 4,086,305
93 4,086,306
97 4,086,307
124 4,086,308

CLASS 264

35 4,086,309
41 4,086,310
43 4,086,311
46.6 4,086,312
70 4,086,313
89 4,086,314
97 4,086,315
120 4,086,316
134 4,086,317
135 4,086,318

CLASS 266

90 4,085,922
215 4,085,923
241 4,085,924

CLASS 267

64 R 4,085,925

CLASS 269

295 4,085,926

CLASS 270

54 4,085,927
61 R 4,085,928

CLASS 271

122 4,085,929
204 4,085,930
265 4,085,931

CLASS 272

8 P 4,085,932

CLASS 273

95 R 4,085,933
171 4,085,934
185 D 4,085,935
186 A 4,085,936
218 4,085,937
279 4,085,938

CLASS 274

1 R 4,085,939
15 R 4,085,940

CLASS 277

3 4,085,941
30 4,085,942

CLASS 279

1 K 4,085,943

CLASS 280

11.12 4,085,944
106.5 R 4,085,945
289 WC 4,085,946
607 4,085,947
682 4,085,948

CLASS 282

27.5 4,085,949

CLASS 285

45 4,085,950
334 4,085,951

CLASS 290

55 4,086,498

CLASS 293

86 4,085,956
88 4,085,957

CLASS 294

97 4,085 958

CLASS 296

23 MC 4,085,959
28 C 4,085,960
37.6 4,085,961
65 A 4,085,963
65 R 4,085,962-
91 4,085,964
137 F 4,085,965
146 4,085,966

CLASS 297

115 4,085,967
243 4,085,968
367 4,085,969
440 4,085,970

CLASS 299

4 4,085,971
7 4,085,972
8 4,085,973
53 4,085,974

CLASS 302

23 4,085,975
25 4,085,976
28 4,085,977

CLASS 303

6 C 4,085,978
92 4,085,979

CLASS 307

88 ET 4,086,499
270 4,086,500
299 R 4,086,501
308 4,086,502
363 4,086,503

CLASS 308

20 4,085,981
76 4,085,982
134.1 4,085,983
205 4,085,980
207 A 4,085,984

CLASS 310

74 4,086,505
4,086,506
86 4,086,508
88 4,086,507
232 4,086,509
242 4,086,510

CLASS 312

216 4,085,985
236 4,085,986
269 4,085,987

CLASS 313

101 4,086,511
366 4,086,512
414 4,086,513
500 4,086,514

CLASS 315

10 4,086,515
169 R 4,086,516

CLASS 318

39 4,086,517
127 4,086,518
254 4,086,519
269 4,086,520
307 4,086,521
568 4,086,522

CLASS 320

2 4,086,523
33 4,086,524
4,086,525

CLASS 323

34 4,086,526

CLASS 324

61 R 4,086,528
127 4,086,529
133 4,086,530
158 MG 4,086,531
166 4,086,532
208 4,086,533
233 4,086,527

CLASS 325

15 4,086,534
128 4,086,535
137 4,086,536
478 4,086,537

CLASS 328

112 4,086,538
155 4,086,539
167 4,086,540

CLASS 330

51 4,086,541
268 4,086,542
287 4,086,543

CLASS 331

1 A 4,086,544
16 4,086,545

CLASS 333

81 R 4,086,546
4,086,547
4,086,548

CLASS 335

18 4,086,549
132 4,086,550

CLASS 336

45 4,086,551
119 4,086,552
192 4,086,553

CLASS 337

102 4,086,558

CLASS 338

2 4,086,554
15 4,086,555
22 R 4,086,559
35 4,086,556
42 4,086,557

CLASS 339

14 R 4,085,988
59 M 4,085,989
74 R 4,085,990
75 P 4,085,991
91 R 4,085,992
94 M 4,085,993
95 R 4,085,994
97 R 4,085,995
159 C 4,085,996
255 P 4,085,997
258 P 4,085,998

CLASS 340

3 R 4,086,560
7 PC 4,086,561
15.5 TS 4,086,504
52 B 4,086,563
52 H 4,086,562
4,086,564
81 R 4,086,565
146.1 AB 4,086,566
146.3 SY 4,086,567
147 R 4,086,568
167 R 4,086,569
4,086,570
213 R 4,086,573
227 R 4,086,574
258 B 4,086,586
4,086,575
4,086,576
4,086,577
324 AD 4,086,578
4,086,579
347 DA Re.29,619
347 DD 4,086,587
347 P 4,086,580
365 S 4,086,588
384 E 4,086,589

CLASS 343

5 CM 4,086,590
18 A 4,086,591
100 LE 4,086,592
106 R 4,086,593
4,086,594
4,086,595
4,086,596
4,086,597
4,086,598
4,086,599

CLASS 346

4,086,600
4,086,601
4,086,602

CLASS 350

1.1 4,085,999
4,086,000
96.14 4,086,001
4,086,002
4,086,003

CLASS 351

158 4,086,004

CLASS 352

133 4,086,005

CLASS 354

23 D 4,086,581
4,086,582
4,086,584
4,086,583
4,086,585
4,086,603
4,086,604
4,086,605
4,086,606
4,086,607

CLASS 355

3 DD 4,086,006
3 R 4,086,007
4,086,008
4,086,009
4,086,010

CLASS 357

4,086,608
4,086,609
4,086,610
4,086,611
4,086,612
4,086,613
4,086,614

CLASS 358

4,086,615
4,086,616
4,086,617
4,086,618
4,086,619
4,086,620

CLASS 360

4,086,634
4,086,635
4,086,636
4,086,637
4,086,638
4,086,639
4,086,640
4,086,641

CLASS 361

4,086,642
4,086,643
4,086,648
4,086,644
4,086,645
4,086,646
4,086,650
4,086,647
4,086,649

CLASS 362

4,086,480
4,086,483
4,086,482
4,086,481
4,086,479

CLASS 363

4,086,621
4,086,622
4,086,623
4,086,624

CLASS 364

4,086,625
4,086,626
4,086,627
4,086,628
4,086,629
4,086,630
4,086,631
4,086,632
4,086,633
4,086,651
4,086,652
4,086,653
4,086,654
4,086,655
4,086,656
4,086,474
4,086,657
4,086,658
4,086,659
4,086,660

CLASS 365

4,086,572
4,086,571
4,086,661
4,086,662

CLASS 366

4,086,663
4,085,955

CLASS 401

4,086,011

CLASS 403

4,086,012
4,086,013
4,086,014

CLASS 404

4,086,015

CLASS 407

4,086,016

CLASS 408

4,086,017
4,086,018

CLASS 415

4,086,019
4,086,020
4,086,021
4,086,022

CLASS 416

132 B 4,086,023
4,086,024
4,086,025
4,086,026
4,086,027
227 A 4,086,028

CLASS 417

4,086,029
4,086,030
4,086,031
4,086,032
4,086,033
4,086,034
4,086,035
4,086,036
4,086,037

CLASS 418

4,086,038
61 R 4,086,039
4,086,040
4,086,041
4,086,042
4,086,043

CLASS 423

4,086,319
4,086,320
4,086,321
4,086,322
4,086,323
4,086,324
4,086,325
4,086,326
4,086,327
4,086,328
4,086,329

CLASS 424

4,086,330
4,086,331
4,086,332
4,086,333
4,086,334
4,086,335
4,086,336
4,086,337
4,086,338
4,086,339
4,086,340
4,086,341
4,086,342
4,086,343
4,086,344
4,086,345
4,086,346
4,086,347
4,086,348
4,086,349
4,086,350
4,086,351
4,086,352
4,086,353
4,086,235
4,086,354
4,086,355
4,086,356
4,086,357
4,086,358
4,086,359
4,086,360
4,086,361
4,086,362
Re.29,618
4,086,363
4,086,364

CLASS 425

4,086,044
4,086,045
4,086,046
4,086,047

CLASS 426

4,086,365
4,086,366
4,086,367
4,086,368
4,086,369
4,086,370
4,086,371

CLASS 427

4,086,372
4,086,373
4,086,374
4,086,375
4,086,183
4,086,376
4,086,377

CLASS 428

4,086,378
4,086,379
4,086,380
4,086,381
4,086,382
4,086,383
4,086,384
4,086,385
4,086,386
4,086,387
4,086,388
4,086,389
4,086,390
4,086,391

CLASS 429

4,086,392
4,086,393
4,086,394
4,086,395
4,086,396
4,086,397
4,086,398
4,086,399
4,086,400
4,086,401
4,086,402
4,086,403
4,086,404
4,086,405

CLASS 431

4,086,048
4,086,049

CLASS 432

4,086,050
4,086,051
4,086,052
4,086,053

CLASS 526

4,086,406
4,086,407
4,086,408
4,086,409
4,086,410

CLASS 528

4,086,411
4,086,412
4,086,413
4,086,414

CLASS 536

4,086,415
4,086,416
4,086,417
4,086,418
4,086,419

CLASS 542

4,086,420

CLASS 544

4,086,422
4,086,423
4,086,421

CLASS 560

4,086,267
4,086,268

CLASSIFICATION OF DESIGNS

D6— 132 247,761
186 247,762
D7— 38 247,765
87 247,763
247,764
D8— 51 247,766
D9— 130 247,767
247,768
156 247,769
168 247,770
191 247,771
218 247,772
278 247,773
D10— 119 247,785
D11— 132 247,774
D12— 158 247,775
247,776
D14— 1 247,777
11 247,778
45 247,779
70 247,780
D15— 143 247,781
D16— 50 247,782
D22— 5 247,783
99 247,784
D25— 80 247,786
D27— 36 247,787
D28— 9 247,788
D34— 5 CB 247,790
5 GH 247,791
5 K 247,789
15 R 247,792
D52— 4 R 247,793
D87— 1 D 247,794
D96— 12 C 247,795

CLASSIFICATION OF PLANTS

P.— 11 4,243
75 4,244

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,086,058		4,085,867		4,085,734		4,086,081		4,086,404		4,085,743
2 :	4,085,521		4,085,877		4,085,813		4,086,479		4,086,410		4,086,012
4 :	4,085,473		4,085,895		4,085,820		4,086,488		4,086,438		4,086,060
	4,085,491		4,085,909		4,086,114		4,086,536		4,086,457		4,086,120
	4,085,906		4,085,910		4,086,435	13 :	4,085,633		4,086,482		4,086,142
	4,085,936		4,085,913		4,086,439		4,085,740		4,086,506		4,086,146
	4,086,082		4,085,947		4,086,470		4,085,917		4,086,525		4,086,427
	4,086,426		4,085,952		4,086,486		4,086,585		4,086,529		4,086,491
	4,086,430		4,085,955		4,086,568	15 :	4,085,631		4,086,532		4,086,497
	4,086,610		4,085,961		4,086,601	16 :	4,086,368		4,086,557		4,086,540
	4,086,627		4,085,993		4,086,658	17 :	4,085,464		4,086,563		4,086,560
5 :	4,085,851		4,085,999	9 :	4,085,516		4,085,503		4,086,589		4,086,592
	4,086,030		4,086,013		4,085,637		4,085,538		4,086,596		4,086,597
6 :	4,085,467		4,086,031		4,085,798		4,085,540		4,086,647	25 :	Re.29,619
	4,085,474		4,086,048		4,085,931		4,085,616		4,086,648		4,085,553
	4,085,475		4,086,059		4,086,072		4,085,645	18 :	4,085,599		4,085,567
	4,085,479		4,086,061		4,086,181		4,085,651		4,085,679		4,085,600
	4,085,509		4,086,065		4,086,260		4,085,659		4,085,705		4,085,602
	4,085,524		4,086,076		4,086,264		4,085,709		4,085,753		4,085,614
	4,085,527		4,086,121		4,086,275		4,085,722		4,085,818		4,085,677
	4,085,537		4,086,133		4,086,391		4,085,789		4,085,826		4,085,765
	4,085,587		4,086,161		4,086,440		4,085,810		4,085,827		4,085,807
	4,085,591		4,086,166		4,086,460		4,085,815		4,085,882		4,085,919
	4,085,611		4,086,172		4,086,522		4,085,833		4,085,937		4,086,102
	4,085,619		4,086,187		4,086,530		4,085,842		4,086,382		4,086,257
	4,085,627		4,086,190		4,086,634		4,085,862		4,086,487		4,086,297
	4,085,628		4,086,218	10 :	4,085,518		4,085,870		4,086,509		4,086,397
	4,085,643		4,086,235		4,086,236		4,085,878		4,086,617		4,086,399
	4,085,644		4,086,239		4,086,384		4,085,892	19 :	4,085,779		4,086,400
	4,085,655		4,086,290	12 :	4,085,468		4,085,893		4,085,812		4,086,458
	4,085,668		4,086,318		4,085,504		4,085,943		4,085,856		4,086,466
	4,085,684		4,086,326		4,085,515		4,085,962		4,086,062		4,086,467
	4,085,686		4,086,370		4,085,541		4,085,970		4,086,593		4,086,474
	4,085,695		4,086,375		4,085,543		4,085,972		4,086,656		4,086,485
	4,085,696		4,086,378		4,085,549		4,085,983	20 :	4,085,546		4,086,539
	4,085,699		4,086,394		4,085,601		4,085,986		4,085,732		4,086,558
	4,085,703		4,086,416		4,085,613		4,085,991		4,085,764		4,086,591
	4,085,727		4,086,442		4,085,650		4,086,000		4,085,869		4,086,604
	4,085,728		4,086,465		4,085,678		4,086,036		4,086,077		4,086,606
	4,085,735		4,086,555		4,085,704		4,086,139		4,086,580		4,086,652
	4,085,736		4,086,566		4,085,733		4,086,220	21 :	4,085,520		4,086,653
	4,085,737		4,086,567		4,085,745		4,086,227		4,085,552	26 :	4,085,501
	4,085,750		4,086,579		4,085,767		4,086,228		4,086,053		4,085,508
	4,085,762		4,086,587		4,085,773		4,086,234	22 :	4,085,632		4,085,536
	4,085,766		4,086,608		4,085,788		4,086,238		4,085,772		4,085,573
	4,085,771		4,086,616		4,085,809		4,086,240		4,085,951		4,085,588
	4,085,781		4,086,626		4,085,868		4,086,241		4,086,335		4,085,608
	4,085,804		4,086,636		4,085,904		4,086,251		4,086,385		4,085,634
	4,085,825		4,086,640		4,085,912		4,086,268		4,086,414		4,085,665
	4,085,836		4,086,641		4,085,964		4,086,302		4,086,561		4,085,666
	4,085,839		4,086,657		4,085,980		4,086,367	23 :	4,085,958		4,085,685
	4,085,841		4,086,659		4,085,987		4,086,379		4,086,590		4,085,719
	4,085,864	8 :	4,085,492		4,086,057		4,086,396	24 :	4,085,480		4,085,778

4,085,782
4,085,832
4,085,844
4,085,847
4,085,855
4,085,859
4,085,885
4,085,896
4,085,960
4,085,966
4,085,975
4,085,989
4,086,018
4,086,087
4,086,095
4,086,096
4,086,118
4,086,151
4,086,192
4,086,200
4,086,201
4,086,219
4,086,230
4,086,245
4,086,247
4,086,253
4,086,254
4,086,258
4,086,259
4,086,273
4,086,274
4,086,279
4,086,344
4,086,393
4,086,505
4,086,518
4,086,531
4,086,550
4,086,553
4,086,577
4,086,637
4,086,643
4,086,644

27 : Re.29,618

4,085,465
4,085,500
4,085,539
4,085,604
4,085,693
4,085,711
4,085,729
4,085,730
4,085,805
4,085,819
4,085,838
4,085,843
4,085,934
4,086,001
4,086,005
4,086,068
4,086,106
4,086,255
4,086,265
4,086,388
4,086,392
4,086,434
4,086,519
4,086,534
4,086,538
4,086,551

29 : 4,085,490

4,085,683
4,085,751

31 :

33 :

34 :

4,085,795
4,086,070
4,086,078
4,086,195
4,086,205
4,086,365
4,085,860
4,085,957
4,086,507
4,085,502
4,085,923
4,086,152
4,086,168
4,086,319
4,086,424
4,085,523
4,085,560
4,085,565
4,085,617
4,085,622
4,085,691
4,085,712
4,085,747
4,085,754
4,085,823
4,085,845
4,085,871
4,085,928
4,085,982
4,086,119
4,086,163
4,086,173
4,086,179
4,086,183
4,086,188
4,086,217
4,086,242
4,086,243
4,086,244
4,086,249
4,086,261
4,086,262
4,086,266
4,086,278
4,086,287
4,086,296
4,086,300
4,086,324
4,086,338
4,086,356
4,086,358
4,086,359
4,086,364
4,086,398
4,086,403
4,086,408
4,086,409
4,086,418
4,086,419
4,086,421
4,086,423
4,086,436
4,086,446
4,086,448
4,086,484
4,086,495
4,086,501
4,086,516
4,086,620
4,086,646

35 : 4,086,511

36 : Re.29,616

Re.29,617
4,085,471
4,085,472
4,085,477
4,085,485
4,085,498
4,085,506
4,085,559
4,085,578
4,085,590
4,085,615
4,085,639
4,085,661
4,085,664
4,085,673
4,085,674
4,085,702
4,085,721
4,085,746
4,085,748
4,085,752
4,085,758
4,085,763
4,085,776
4,085,794
4,085,822
4,085,861
4,085,865
4,085,872
4,085,902
4,085,911
4,085,914
4,085,926
4,085,973
4,085,992
4,086,004
4,086,006
4,086,007
4,086,009
4,086,010
4,086,043
4,086,051
4,086,074
4,086,089
4,086,091
4,086,092
4,086,113
4,086,122
4,086,194
4,086,210
4,086,224
4,086,233
4,086,271
4,086,303
4,086,311
4,086,332
4,086,333
4,086,363
4,086,380
4,086,452
4,086,459
4,086,475
4,086,490
4,086,498
4,086,549
4,086,598
4,086,628
4,086,630
4,086,650

37 : 4,085,681

4,085,700
4,085,756

39 :

40 :

4,085,918
4,085,998
4,086,386
4,086,453
4,086,477
4,086,546
4,086,547
4,086,548
4,085,532
4,085,562
4,085,566
4,085,570
4,085,582
4,085,589
4,085,662
4,085,676
4,085,687
4,085,726
4,085,731
4,085,739
4,085,761
4,085,786
4,085,791
4,085,850
4,085,854
4,085,857
4,085,858
4,085,881
4,085,886
4,085,901
4,085,933
4,085,950
4,085,984
4,085,996
4,086,002
4,086,023
4,086,033
4,086,034
4,086,047
4,086,067
4,086,071
4,086,079
4,086,088
4,086,117
4,086,149
4,086,202
4,086,232
4,086,248
4,086,280
4,086,373
4,086,456
4,086,464
4,086,476
4,086,480
4,086,483
4,086,489
4,086,502
4,086,503
4,086,564
4,085,505
4,085,642
4,085,797
4,085,800
4,085,801
4,085,802
4,085,953
4,086,180
4,086,229
4,086,288
4,086,406
4,086,407
4,086,412

41 : 4,086,451
4,085,610
4,085,638
4,085,725
4,085,938
4,085,954
4,085,959
4,086,496

42 : 4,085,487

4,085,511
4,085,513
4,085,558
4,085,563
4,085,594
4,085,606
4,085,689
4,085,706
4,085,792
4,085,891
4,085,897
4,085,924
4,085,967
4,085,971
4,085,988
4,085,990
4,085,994
4,085,995
4,086,017
4,086,026
4,086,042
4,086,085
4,086,115
4,086,123
4,086,127
4,086,132
4,086,145
4,086,158
4,086,174
4,086,186
4,086,213
4,086,263
4,086,269
4,086,270
4,086,276
4,086,277
4,086,281
4,086,284
4,086,286
4,086,289
4,086,320
4,086,321
4,086,336
4,086,337
4,086,350
4,086,354
4,086,377
4,086,387
4,086,395
4,086,513
4,086,595
4,086,624
4,086,645

44 : 4,085,547

4,085,774

45 : 4,085,574

4,085,585
4,086,055
4,086,649

47 : 4,085,476

4,085,598
4,085,775
4,085,976

48 : 4,086,381
4,085,510
4,085,557
4,085,561
4,085,584
4,085,612
4,085,618
4,085,626
4,085,796
4,085,799
4,085,946
4,086,028
4,086,029
4,086,035
4,086,064
4,086,066
4,086,101
4,086,147
4,086,159
4,086,171
4,086,175
4,086,177
4,086,307
4,086,322
4,086,372
4,086,443
4,086,504
4,086,571
4,086,572
4,086,599
4,086,600
4,086,631
4,086,660

49 : 4,085,493
4,085,899
4,086,110

50 : 4,085,653
4,085,680

51 : 4,085,663
4,085,667
4,085,682
4,085,744
4,085,757
4,085,784
4,085,849
4,085,873
4,085,875

53 : 4,085,495
4,085,512
4,085,514
4,085,529
4,085,583
4,085,997
4,086,049
4,086,111
4,086,129
4,086,154
4,086,323
4,086,441
4,086,444
4,086,544
4,086,632

54 : 4,086,293
4,086,294

55 : 4,085,821
4,085,831
4,085,834
4,085,874
4,086,130
4,086,131
4,086,454
4,086,494

56 : 4,085,863

DESIGN PATENTS

6 : 247,766
247,781
247,788
247,791

12 : 247,767

247,768
247,769
247,770
247,786

17 : 247,792

18 : 247,785
19 : 247,790
25 : 247,772
26 : 247,763
247,764

247,779

34 : 247,793
36 : 247,761
247,765
247,771

247,782
247,789

39 : 247,774
247,776
247,777

41 : 247,783
48 : 247,795
49 : 247,773
55 : 247,784

PLANT PATENTS

6 : 4,243

12 : 4,244

U. S. GOVERNMENT PRINTING OFFICE : O - 1978

U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE
VOL. NO 969
APRIL
1978

MICRO PHOTO DIVISION

DD

BELL & HOWELL

END